



SAR EVALUATION REPORT

Applicant Name:

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Gyeonggi-do 443-742, Korea

Date of Testing:

09/09/14 - 10/04/14; 11/24/14 – 12/04/14

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Document Serial No.:

OY1412022198-R1.A3L

FCC ID:

A3LSMN915W8

APPLICANT:

SAMSUNG ELECTRONICS, CO. LTD.

DUT Type:

Portable Handset

Application Type:

Certification

FCC Rule Part(s):

CFR §2.1093

Model(s):

SM-N915W8

Equipment Class	Band & Mode	Tx Frequency	SAR			
			1 gm Head (W/kg)	1 gm Body-Worn (W/kg)	1 gm Hotspot (W/kg)	10 gm Extremity (W/kg)
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.16	0.31	0.61	2.36
PCE	UMTS 850	826.40 - 846.60 MHz	0.17	0.40	0.63	2.57
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	0.11	0.46	0.99	3.25
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.27	0.45	1.10	2.58
PCE	LTE Band 12	699.7 - 715.3 MHz	0.22	0.51	0.60	1.64
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	0.15	0.26	0.60	2.17
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	0.22	0.46	1.10	3.06
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	0.22	0.59	1.04	3.15
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.21	0.16	0.16	1.07
DTS	Bluetooth LE	2402 - 2480 MHz	N/A			
DTS	5.8 GHz WLAN	5745 - 5825 MHz	0.46	0.12	0.12	0.22
Nil	5.2 GHz WLAN	5180 - 5240 MHz	0.21	< 0.1		0.30
Nil	5.3 GHz WLAN	5260 - 5320 MHz	0.23	< 0.1		0.33
Nil	5.5 GHz WLAN	5500 - 5700 MHz	0.59	0.13		0.43
DSS	Bluetooth	2402 - 2480 MHz	N/A			
Simultaneous SAR per KDB 690783 D01v01r03:			1.16	0.76	1.10	3.46

This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE C95.1-1992 and has been tested in accordance with the measurement procedures specified in Section 1.9 of this report; for North American frequency bands only.

Note: This revised Test Report (S/N: OY1412022198-R1.A3L) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them. Test results reported herein relate only to the item(s) tested.


Randy Ortanez
President



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FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: OY1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 1 of 116

T A B L E O F C O N T E N T S

1	DEVICE UNDER TEST	3
2	LTE INFORMATION	10
3	INTRODUCTION	11
4	DOSIMETRIC ASSESSMENT	12
5	DEFINITION OF REFERENCE POINTS	13
6	TEST CONFIGURATION POSITIONS FOR HANDSETS	14
7	RF EXPOSURE LIMITS	18
8	FCC MEASUREMENT PROCEDURES.....	19
9	RF CONDUCTED POWERS.....	24
10	SYSTEM VERIFICATION.....	68
11	SAR DATA SUMMARY	72
12	FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS.....	90
13	SAR MEASUREMENT VARIABILITY	109
14	EQUIPMENT LIST.....	110
15	MEASUREMENT UNCERTAINTIES	112
16	CONCLUSION.....	114
17	REFERENCES	115
APPENDIX A: SAR TEST PLOTS		
APPENDIX B: SAR DIPOLE VERIFICATION PLOTS		
APPENDIX C: PROBE AND DIPOLE CALIBRATION CERTIFICATES		
APPENDIX D: SAR TISSUE SPECIFICATIONS		
APPENDIX E: SAR SYSTEM VALIDATION		
APPENDIX F: DUT ANTENNA DIAGRAM AND SAR TEST SETUP PHOTOGRAPHS		
APPENDIX G: SENSOR TRIGGERING DATA SUMMARY		

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 2 of 116	

1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 12	Data	699.7 - 715.3 MHz
LTE Band 17	Data	706.5 - 713.5 MHz
LTE Band 5 (Cell)	Data	824.7 - 848.3 MHz
LTE Band 4 (AWS)	Data	1710.7 - 1754.3 MHz
LTE Band 2 (PCS)	Data	1850.7 - 1909.3 MHz
2.4 GHz WLAN	Data	2412 - 2462 MHz
5.8 GHz WLAN	Data	5745 - 5825 MHz
5.2 GHz WLAN	Data	5180 - 5240 MHz
5.3 GHz WLAN	Data	5260 - 5320 MHz
5.5 GHz WLAN	Data	5500 - 5700 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
ANT+	Data	2402 - 2480 MHz

1.2 Power Reduction for SAR

The device utilizes power reduction under some portable hotspot and proximity sensor for SAR compliance. There is power reduction for UMTS Band 2, LTE Band 4 and Band 2. There is no power reduction for GSM/GPRS/EDGE 850/1900, UMTS Band 5, LTE Band 12/17/5, and WLAN modes. The reduced powers were confirmed via conducted power measurements at the RF port (See Section 9). Detailed description of the hotspot power reduction and proximity sensor mechanism is included in the operational description.

1.3 Nominal and Maximum Output Power Specifications

This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v05.

1.3.1 Maximum Power

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)		Burst Average 8-PSK (dBm)	
		1 TX Slot	1 TX Slot	2 TX Slots	1 TX Slot	2 TX Slots
GSM/GPRS/EDGE 850	Maximum	32.5	32.5	30.5	26.0	24.5
	Nominal	32.0	32.0	30.0	25.5	24.0
GSM/GPRS/EDGE 1900	Maximum	30.5	30.5	28.0	24.0	22.0
	Nominal	30.0	30.0	27.5	23.5	21.5

FCC ID: A3LSMN915W8	 SAR EVALUATION REPORT 			Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 3 of 116

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6	3GPP DC-HSDPA Rel 8
UMTS Band 5 (850 MHz)	Maximum	24.5	23.0	22.5	23.0
	Nominal	24.0	22.5	22.0	22.5
UMTS Band 2 (1900 MHz)	Maximum	24.0	23.5	23.0	23.5
	Nominal	23.5	23.0	22.5	23.0

Mode / Band		Modulated Average (dBm)
LTE Band 12	Maximum	24.0
	Nominal	23.5
LTE Band 5 (Cell)	Maximum	24.0
	Nominal	23.5
LTE Band 4 (AWS)	Maximum	24.0
	Nominal	23.5
LTE Band 2 (PCS)	Maximum	24.0
	Nominal	23.5

Mode / Band		Modulated Average (dBm)
IEEE 802.11b (2.4 GHz) - SISO	Maximum	15.5
	Nominal	15.0
IEEE 802.11g (2.4 GHz) - SISO	Maximum	14.5
	Nominal	14.0
IEEE 802.11n (2.4 GHz) - SISO	Maximum	13.5
	Nominal	13.0
IEEE 802.11n (2.4 GHz) - MIMO	Maximum	16.5
	Nominal	16.0
IEEE 802.11a (5 GHz) - SISO	Maximum	12.5
	Nominal	12.0
IEEE 802.11n/ac 20 MHz (5 GHz) - SISO	Maximum	12.5
	Nominal	12.0
IEEE 802.11n/ac 20 MHz (5 GHz) - MIMO	Maximum	15.5
	Nominal	15.0
IEEE 802.11n/ac 40 MHz (5 GHz) - SISO	Maximum	9.5
	Nominal	9.0
IEEE 802.11n/ac 40 MHz (5 GHz) - MIMO	Maximum	12.5
	Nominal	12.0
IEEE 802.11ac 80 MHz (5 GHz) - SISO	Maximum	10.5
	Nominal	10.0
IEEE 802.11ac 80 MHz (5 GHz) - MIMO	Maximum	13.5
	Nominal	13.0
Bluetooth	Maximum	9.0
	Nominal	8.5
Bluetooth LE	Maximum	4.5
	Nominal	4.0

FCC ID: A3LSMN915W8	 SAR EVALUATION REPORT 		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset	Page 4 of 116

1.3.2 Reduced Power – Hotspot Mode and/or Extremity Use at 0 mm

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6	3GPP DC-HSDPA Rel 8
UMTS Band 2 (1900 MHz)	Maximum	21.5	20.5	20.5	20.5
	Nominal	21.0	20.0	20.0	20.0
Mode / Band		Modulated Average (dBm)			
LTE Band 4 (AWS)	Maximum	22.5			
	Nominal	22.0			
LTE Band 2 (PCS)	Maximum	21.5			
	Nominal	21.0			

1.4 DUT Antenna Locations

1. A diagram showing the location of the device antennas can be found in Appendix F. Exact antenna dimensions and separation distances are shown in the Technical Descriptions in the FCC Filing.
2. Since the diagonal dimension of this device is more than 160 mm and less than 200 mm, it is considered a “phablet.”.

**Table 1-1
Sides for SAR Testing**

Mode	Exposure Condition	Back	Front	Top	Bottom	Right	Left
GPRS 850	Hotspot/Extremity	Yes	Yes	No	Yes	Yes	Yes
UMTS 850	Hotspot/Extremity	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Hotspot/Extremity	Yes	Yes	No	Yes	Yes	Yes
UMTS 1900	Hotspot/Extremity	Yes	Yes	No	Yes	Yes	Yes
LTE Band 12	Hotspot/Extremity	Yes	Yes	No	Yes	Yes	Yes
LTE Band 5 (Cell)	Hotspot/Extremity	Yes	Yes	No	Yes	Yes	Yes
LTE Band 4 (AWS)	Hotspot/Extremity	Yes	Yes	No	Yes	Yes	Yes
LTE Band 2 (PCS)	Hotspot/Extremity	Yes	Yes	No	Yes	Yes	Yes
2.4 GHz WLAN - Ant 1 & MIMO	Hotspot/Extremity	Yes	Yes	Yes	No	No	Yes
2.4 GHz WLAN - Ant 2	Hotspot/Extremity	Yes	Yes	Yes	No	No	No
5 GHz DTS WLAN - Ant 1 & MIMO	Hotspot/Extremity	Yes	Yes	Yes	No	No	Yes
5 GHz DTS WLAN - Ant 2	Hotspot/Extremity	Yes	Yes	Yes	No	No	No
5 GHz NII WLAN - Ant 1 & MIMO	Extremity	Yes	Yes	Yes	No	No	Yes
5 GHz NII WLAN - Ant 2	Extremity	Yes	Yes	Yes	No	No	No
Bluetooth	Extremity	Yes	Yes	Yes	No	No	No

Note: Particular DUT edges were not required to be evaluated for Wireless Router SAR or Extremity SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v01 guidance, page 2 and FCC KDB 648474 D04v01r01. The distances between the transmit antennas and the edges of the device are included in the filing. When wireless router mode is enabled, 5.2-5.7 GHz WLAN operations are disabled.

1.5 Near Field Communications (NFC) Antenna

This DUT has NFC operations. The NFC antenna is integrated into the specialized battery. The SAR tests were performed with the specialized battery (model: **EB-BN915BBU**). A diagram showing the location of the NFC antenna can be found in appendix F.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 5 of 116	

1.6 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D05v01, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. Possible transmission paths for the DUT are shown in Figure 1-1 and are color-coded to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.

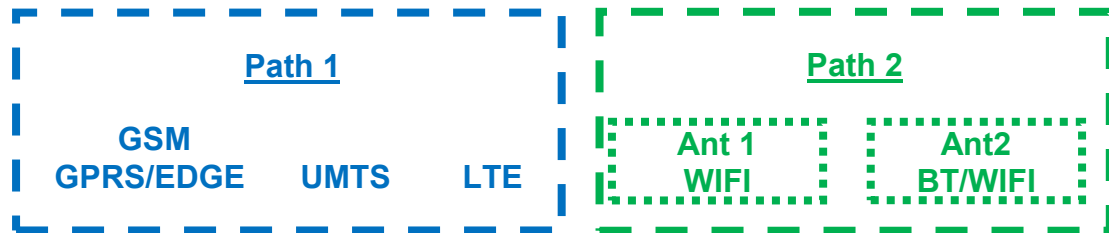


Figure 1-1
Simultaneous Transmission Paths

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB Publication 447498 D01v05 3) procedures.

Table 1-2
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Extremity	Notes
1	GSM voice + 2.4 GHz Wi-Fi	Yes	Yes	N/A	Yes	
2	GSM voice + 5 GHz Wi-Fi	Yes	Yes	N/A	Yes	
3	GSM voice + 2.4 GHz Bluetooth	N/A	Yes	N/A	Yes	
4	UMTS + 2.4 GHz Wi-Fi	Yes	Yes	Yes	Yes	
5	UMTS + 5 GHz Wi-Fi	Yes	Yes	Yes	Yes	
6	UMTS + 2.4 GHz Bluetooth	N/A	Yes	N/A	Yes	
7	LTE + 2.4 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
8	LTE + 5 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
9	LTE + 2.4 GHz Bluetooth	N/A	Yes*	N/A	Yes	*-Pre-installed VOIP applications are considered.
10	GPRS/EDGE + 2.4 GHz Wi-Fi	N/A	N/A	Yes	Yes	
11	GPRS/EDGE + 5 GHz Wi-Fi	N/A	N/A	Yes	Yes	

- 2.4 GHz WLAN, 5 GHz WLAN, and 2.4 GHz Bluetooth share the same antenna path and cannot transmit simultaneously.
- All licensed modes share the same antenna path and cannot transmit simultaneously.
- (*) = for pre-installed VOIP applications possibly used by the end-user
- When the user utilizes multiple services in UMTS 3G mode it uses multi-Radio Access Bearer or multi-RAB. The power control is based on a physical control channel (Dedicated Physical Control Channel [DPCCH]) and power control will be adjusted to meet the needs of both services. Therefore, the UMTS+WLAN scenario also represents the UMTS Voice/DATA + WLAN Hotspot scenario.
- Per the manufacturer, WIFI Direct is not expected to be used in conjunction with a held-to-ear or body-worn accessory voice call. Therefore, there are no simultaneous transmission scenarios involving WIFI direct beyond that listed in the above table.
- 5 GHz Wireless Router is only supported for the 5.8 GHz Band by S/W, therefore 5.2-5.7 GHz Bands were not evaluated for wireless router conditions.
- This device supports 2x2 MIMO Tx for WLAN 802.11n/ac. Each WLAN antenna can transmit independently or together when operating with MIMO.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 6 of 116

1.7 SAR Test Exclusions Applied

(A) WIFI/BT

Since Wireless Router operations are not allowed by the chipset firmware using 5.2-5.7 GHz WIFI, only 2.4 GHz and 5.8 GHz WIFI Hotspot SAR tests and combinations are considered for SAR with respect to Wireless Router configurations according to FCC KDB 941225 D06v01.

This device supports 40 MHz Bandwidths for IEEE 802.11n for 5 GHz WIFI only.

This device supports IEEE 802.11ac with the following features:

- a) Up to 80 MHz Bandwidth only
- b) No aggregate channel configurations
- c) 2 Tx antenna output
- d) 256 QAM is supported
- e) No new 5 GHz channels

Per FCC KDB 447498 D01v05, the 1g SAR exclusion threshold for distances <50mm is defined by the following equation:

$$\frac{\text{Max Power of Channel (mW)}}{\text{Test Separation Dist (mm)}} * \sqrt{\text{Frequency (GHz)}} \leq 3.0$$

Based on the maximum conducted power of Bluetooth (rounded to the nearest mW) and the antenna to user separation distance, body-worn Bluetooth SAR was not required; $[(8/15) * \sqrt{2.480}] = 0.8 < 3.0$. Per KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mW before calculation.

Per FCC KDB 447498 D01v05, the 10g SAR exclusion threshold for distances <50mm is defined by the following equation:

$$\frac{\text{Max Power of Channel (mW)}}{\text{Test Separation Dist (mm)}} * \sqrt{\text{Frequency (GHz)}} \leq 7.5$$

Based on the maximum conducted power of Bluetooth (rounded to the nearest mW) and the antenna to user separation distance, extremity Bluetooth SAR was not required; $[(8/5) * \sqrt{2.480}] = 2.5 < 7.5$. Per KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mW before calculation. Bluetooth 10g SAR measurement was additionally evaluated per manufacturer's request.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 7 of 116

(B) Licensed Transmitter(s)

GSM/GPRS/EDGE DTM is not supported for US bands. Therefore, the GSM Voice modes in this report do not transmit simultaneously with GPRS/EDGE Data.

This device is only capable of QPSK HSUPA in the uplink. Therefore, no additional SAR tests are required beyond that described for devices with HSUPA in KDB 941225 D01v03.

LTE SAR for the higher modulations and lower bandwidths were not tested since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth; and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05v02.

This device supports both LTE B12 and LTE B17. Since the supported frequency span for LTE B17 falls completely within the supported frequency span for LTE B12, both LTE bands have the same target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE B12.

This device supports inter-band LTE Carrier Aggregation (CA) in the downlink only. All uplink communications are identical to Release 8 specifications. Per FCC Guidance, LTE CA SAR was not needed for testing since the data sent by uplink on uplink physical channels does not change between Rel 8 and Rel 10.

1.8 Wireless Charging Battery Cover

This DUT may be used with a standard battery cover or with an optional wireless charging battery cover. Per FCC KDB Publication 648474 D04, SAR was measured using the standard battery cover and then repeated with the wireless charging battery cover for the configuration with the highest reported SAR for each wireless technology, frequency band, operating mode, and exposure condition. Since reported SAR did not exceed 1.2 W/kg, additional testing beyond that included in this report was not required.

1.9 Guidance Applied

- IEEE 1528-2003
- FCC KDB Publication 941225 D01v03, D05v02r03, D05Av01, D06v01r01 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v01r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v05r02 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r03, D02v01r01 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D03-D04 (Phablet Procedures, Wireless Charging Cover)
- April 2013 TCB Workshop Notes (IEEE 802.11ac)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 8 of 116

1.10 Device Serial Numbers

Several samples were used with identical hardware to support SAR testing. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.

	Head Serial Number	Body-Worn Serial Number	Hotspot Serial Number	Extremity Serial Number
GSM/GPRS/EDGE 850	2411-4	2411-4	2411-4	2411-4
UMTS 850	2411-9	2411-1	2411-1	2411-11
GSM/GPRS/EDGE 1900	2411-3	2411-4	2411-4	2411-4
UMTS 1900 - Max Power	2411-11	2411-11	-	2411-11
UMTS 1900 - Reduced Power	-	-	2411-12	2411-12
LTE Band 12	2411-1	2411-2	2411-2	2411-2
LTE Band 5 (Cell)	2411-1	2411-1	2411-1	2411-1
LTE Band 4 (AWS) - Max Power	2411-2	2411-2	-	2411-2
LTE Band 4 (AWS) - Reduced Power	2411-7	-	2411-7	2411-7
LTE Band 2 (PCS) - Max Power	2411-2	2411-2	-	2411-4
LTE Band 2 (PCS) - Reduced Power	2411-7	-	2411-7	2411-7
2.4 GHz WLAN	0809-12	0809-09	0809-09	0809-09
5.8 GHz WLAN	0809-12	0809-14	0809-14	0809-14
5.2 - 5.7 GHz WLAN	0809-12	0809-14	-	0809-14
Bluetooth	-	-	-	0809-14

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 9 of 116

2

LTE INFORMATION

LTE Information							
FCC ID		A3LSMN915W8					
Form Factor		Portable Handset					
Frequency Range of each LTE transmission band		LTE Band 12 (699.7 - 715.3 MHz)					
		LTE Band 17 (706.5 - 713.5 MHz)					
		LTE Band 5 (Cell) (824.7 - 848.3 MHz)					
		LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)					
		LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)					
Channel Bandwidths		LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz					
		LTE Band 17: 5 MHz, 10 MHz					
		LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz					
		LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz					
		LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz					
Channel Numbers and Frequencies (MHz)		Low	Mid	High			
LTE Band 12: 1.4 MHz		699.7 (23017)	707.5 (23095)	715.3 (23173)			
LTE Band 12: 3 MHz		700.5 (23025)	707.5 (23095)	714.5 (23165)			
LTE Band 12: 5 MHz		701.5 (23035)	707.5 (23095)	713.5 (23155)			
LTE Band 12: 10 MHz		704 (23060)	707.5 (23095)	711 (23130)			
LTE Band 17: 5 MHz		706.5 (23085)	710 (23790)	708.5 (23105)			
LTE Band 17: 10 MHz		709 (23780)	710 (23790)	711 (23800)			
LTE Band 5 (Cell): 1.4 MHz		824.7 (20407)	836.5 (20525)	848.3 (20643)			
LTE Band 5 (Cell): 3 MHz		825.5 (20415)	836.5 (20525)	847.5 (20635)			
LTE Band 5 (Cell): 5 MHz		826.5 (20425)	836.5 (20525)	846.5 (20625)			
LTE Band 5 (Cell): 10 MHz		829 (20450)	836.5 (20525)	844 (20600)			
LTE Band 4 (AWS): 1.4 MHz		1710.7 (19957)	1732.5 (20175)	1754.3 (20393)			
LTE Band 4 (AWS): 3 MHz		1711.5 (19965)	1732.5 (20175)	1753.5 (20385)			
LTE Band 4 (AWS): 5 MHz		1712.5 (19975)	1732.5 (20175)	1752.5 (20375)			
LTE Band 4 (AWS): 10 MHz		1715 (20000)	1732.5 (20175)	1750 (20350)			
LTE Band 4 (AWS): 15 MHz		1717.5 (20025)	1732.5 (20175)	1747.5 (20325)			
LTE Band 4 (AWS): 20 MHz		1720 (20050)	1732.5 (20175)	1745 (20300)			
LTE Band 2 (PCS): 1.4 MHz		1850.7 (18607)	1880 (18900)	1909.3 (19193)			
LTE Band 2 (PCS): 3 MHz		1851.5 (18615)	1880 (18900)	1908.5 (19185)			
LTE Band 2 (PCS): 5 MHz		1852.5 (18625)	1880 (18900)	1907.5 (19175)			
LTE Band 2 (PCS): 10 MHz		1855 (18650)	1880 (18900)	1905 (19150)			
LTE Band 2 (PCS): 15 MHz		1857.5 (18675)	1880 (18900)	1902.5 (19125)			
LTE Band 2 (PCS): 20 MHz		1860 (18700)	1880 (18900)	1900 (19100)			
UE Category		6					
Modulations Supported in UL		QPSK, 16QAM					
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)		YES					
A-MPR (Additional MPR) disabled for SAR Testing?		YES					
LTE Carrier Aggregation Possible Combinations	LTE B2 (PCC) + LTE B29 (SCC)	LTE B2 (PCC) + LTE B17 (SCC)	LTE B2 (PCC) + LTE B4 (SCC)	LTE B4 (PCC) + LTE B29 (SCC)	LTE B4 (PCC) + LTE B12 (SCC)	LTE B4 (PCC) + LTE B17 (SCC)	LTE B4 (PCC) + LTE B2 (SCC)
	5MHz (B2) + 5MHz (B29)	5MHz (B2) + 5MHz (B17)	5MHz (B2) + 5MHz (B4)	5MHz (B4) + 5MHz (B29)	5MHz (B4) + 5MHz (B12)	5MHz (B4) + 5MHz (B17)	5MHz (B4) + 5MHz (B2)
	5MHz (B2) + 10MHz (B29)	5MHz (B2) + 10MHz (B17)	5MHz (B2) + 10MHz (B4)	5MHz (B4) + 10MHz (B29)	5MHz (B4) + 10MHz (B12)	5MHz (B4) + 10MHz (B17)	5MHz (B4) + 10MHz (B2)
	10MHz (B2) + 5MHz (B29)	10MHz (B2) + 5MHz (B17)	5MHz (B2) + 15MHz (B4)	10MHz (B4) + 5MHz (B29)	10MHz (B4) + 5MHz (B12)	10MHz (B4) + 5MHz (B17)	5MHz (B4) + 15MHz (B2)
	10MHz (B2) + 10MHz (B29)	10MHz (B2) + 10MHz (B17)	5MHz (B2) + 20MHz (B4)	10MHz (B4) + 10MHz (B29)	10MHz (B4) + 10MHz (B12)	10MHz (B4) + 10MHz (B17)	5MHz (B4) + 20MHz (B2)
	15MHz (B2) + 5MHz (B29)		10MHz (B2) + 5MHz (B4)	15MHz (B4) + 5MHz (B29)	15MHz (B4) + 5MHz (B12)		10MHz (B4) + 5MHz (B2)
	15MHz (B2) + 10MHz (B29)		10MHz (B2) + 10MHz (B4)	15MHz (B4) + 10MHz (B29)	15MHz (B4) + 10MHz (B12)		10MHz (B4) + 10MHz (B2)
	20MHz (B2) + 5MHz (B29)		10MHz (B2) + 15MHz (B4)	20MHz (B4) + 5MHz (B29)	20MHz (B4) + 5MHz (B12)		10MHz (B4) + 15MHz (B2)
	20MHz (B2) + 10MHz (B29)		10MHz (B2) + 20MHz (B4)	20MHz (B4) + 10MHz (B29)	20MHz (B4) + 10MHz (B12)		10MHz (B4) + 20MHz (B2)
			15MHz (B2) + 5MHz (B4)				15MHz (B4) + 5MHz (B2)
			15MHz (B2) + 10MHz (B4)				15MHz (B4) + 10MHz (B2)
			15MHz (B2) + 15MHz (B4)				15MHz (B4) + 15MHz (B2)
			15MHz (B2) + 20MHz (B4)				15MHz (B4) + 20MHz (B2)
			20MHz (B2) + 5MHz (B4)				20MHz (B4) + 5MHz (B2)
			20MHz (B2) + 10MHz (B4)				20MHz (B4) + 10MHz (B2)
			20MHz (B2) + 15MHz (B4)				20MHz (B4) + 15MHz (B2)
			20MHz (B2) + 20MHz (B4)				20MHz (B4) + 20MHz (B2)
LTE Carrier Aggregation Additional Information	This device does not support full CA features on 3GPP Release 10. It supports a maximum of 2 carriers in the downlink with a total maximum bandwidth of 20 MHz of the spectrum. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. Due to carrier capability, only the combinations listed above are supported. The following LTE Release 10 Features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.						

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 10 of 116

3 INTRODUCTION

The FCC and Industry Canada have adopted the guidelines for evaluating the environmental effects of radio frequency (RF) radiation in ET Docket 93-62 on Aug. 6, 1996 and Health Canada Safety Code 6 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices. [1]

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz [3] and Health Canada RF Exposure Guidelines Safety Code 6 [22]. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave [4] is used for guidance in measuring the Specific Absorption Rate (SAR) due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields,” Report No. Vol 74. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

3.1 SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 3-1).

Equation 3-1
SAR Mathematical Equation

$$SAR = \frac{d}{dt} \left(\frac{dU}{dm} \right) = \frac{d}{dt} \left(\frac{dU}{\rho dv} \right)$$

SAR is expressed in units of Watts per Kilogram (W/kg).

$$SAR = \frac{\sigma \cdot E^2}{\rho}$$

where:

- σ = conductivity of the tissue-simulating material (S/m)
- ρ = mass density of the tissue-simulating material (kg/m³)
- E = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relation to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.[6]

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 11 of 116

4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01 and IEEE 1528-2013:

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01 (See Table 4-1) and IEEE 1528-2013.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01 (See Table 4-1) and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):
 - a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 4-1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).
 - b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.
 - c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

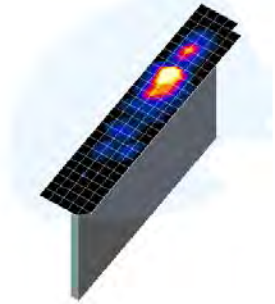


Figure 4-1
Sample SAR Area
Scan

Table 4-1
Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01*

Frequency	Maximum Area Scan Resolution (mm) ($\Delta x_{\text{area}}, \Delta y_{\text{area}}$)	Maximum Zoom Scan Resolution (mm) ($\Delta x_{\text{zoom}}, \Delta y_{\text{zoom}}$)	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid	Graded Grid		
				$\Delta z_{\text{zoom}}(n)$	$\Delta z_{\text{zoom}}(1)^*$	
≤2 GHz	≤15	≤8	≤5	≤4	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥30
2-3 GHz	≤12	≤5	≤5	≤4	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥30
3-4 GHz	≤12	≤5	≤4	≤3	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥28
4-5 GHz	≤10	≤4	≤3	≤2.5	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥25
5-6 GHz	≤10	≤4	≤2	≤2	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥22

*Also compliant to IEEE 1528-2013 Table 6

FCC ID: A3LSMN915W8	 SAR EVALUATION REPORT 		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset	Page 12 of 116

5

DEFINITION OF REFERENCE POINTS

5.1 EAR REFERENCE POINT

Figure 5-2 shows the front, back and side views of the SAM Twin Phantom. The point “M” is the reference point for the center of the mouth, “LE” is the left ear reference point (ERP), and “RE” is the right ERP. The ERP is 15mm posterior to the entrance to the ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 5-1. The plane passing through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck-Front), also called the Reference Pivoting Line, is not perpendicular to the reference plane (see Figure 5-1). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning [5].

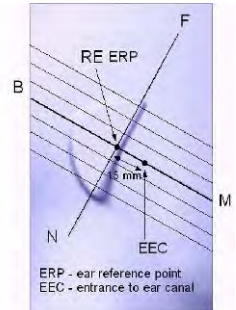


Figure 5-1
Close-Up Side view
of ERP

5.2 HANDSET REFERENCE POINTS

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The test device was placed in a normal operating position with the acoustic output located along the “vertical centerline” on the front of the device aligned to the “ear reference point” (See Figure 5-3). The acoustic output was then located at the same level as the center of the ear reference point. The test device was positioned so that the “vertical centerline” was bisecting the front surface of the handset at its top and bottom edges, positioning the “ear reference point” on the outer surface of the both the left and right head phantoms on the ear reference point.



Figure 5-2
Front, back and side view of SAM Twin Phantom

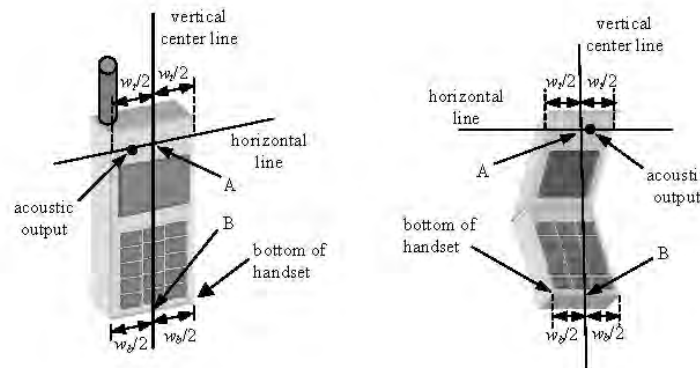


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 13 of 116

6 TEST CONFIGURATION POSITIONS FOR HANDSETS

6.1 Device Holder

The device holder is made out of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon = 3$ and loss tangent $\delta = 0.02$.

6.2 Positioning for Cheek

1. The test device was positioned with the device close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 6-1), such that the plane defined by the vertical center line and the horizontal line of the phone is approximately parallel to the sagittal plane of the phantom.

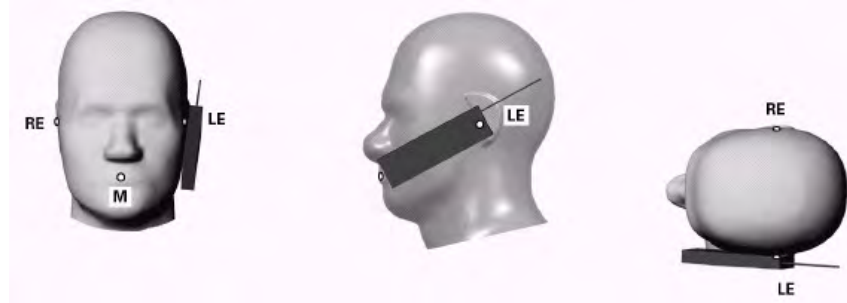


Figure 6-1 Front, Side and Top View of Cheek Position

2. The handset was translated towards the phantom along the line passing through RE & LE until the handset touches the pinna.
3. While maintaining the handset in this plane, the handset was rotated around the LE-RE line until the vertical centerline was in the reference plane.
4. The phone was then rotated around the vertical centerline until the phone (horizontal line) was symmetrical with respect to the line NF.
5. While maintaining the vertical centerline in the reference plane, keeping point A on the line passing through RE and LE, and maintaining the device contact with the ear, the device was rotated about the NF line until any point on the handset made contact with a phantom point below the ear (cheek) (See Figure 6-2).

6.3 Positioning for Ear / 15° Tilt

With the test device aligned in the “Cheek Position”:

1. While maintaining the orientation of the phone, the phone was retracted parallel to the reference plane far enough to enable a rotation of the phone by 15 degrees.
2. The phone was then rotated around the horizontal line by 15 degrees.
3. While maintaining the orientation of the phone, the phone was moved parallel to the reference plane until any part of the handset touched the head. (In this position, point A was located on the line RE-LE). The tilted position is obtained when the contact is on the pinna. If the contact was at any location other than the pinna, the angle of the phone would then be reduced. In this situation, the tilted position was obtained when any part of the phone was in contact of the ear as well as a second part of the phone was in contact with the head (see Figure 6-2).

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 14 of 116

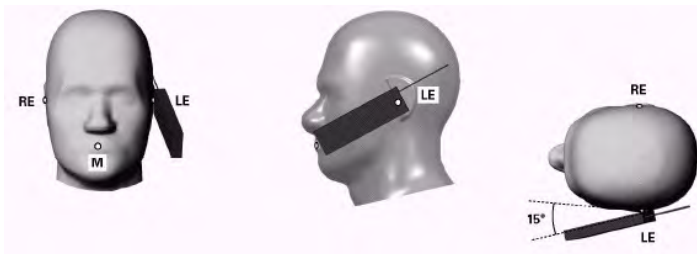


Figure 6-2 Front, Side and Top View of Ear/15° Tilt Position

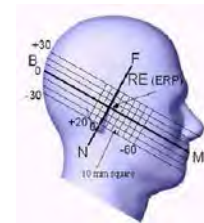


Figure 6-3 Side view w/ relevant markings

6.4 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6-4). Per FCC KDB Publication 648474 D04v01, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01v05 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is $> 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

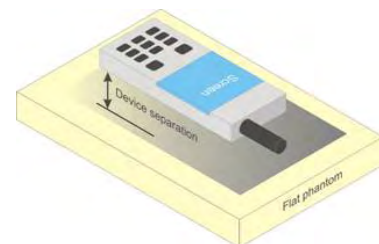


Figure 6-4 Sample Body-Worn Diagram

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented. Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 15 of 116

6.5 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v01 where SAR test considerations for handsets ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) are based on a composite test separation distance of 10 mm from the front, back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v05 publication procedures. The "Portable Hotspot" feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time. The device utilizes power reduction under some portable hotspot condition for SAR compliance.

There is power reduction for UMTS Band 2, LTE Band 2/4. There is no power reduction for GSM/GPRS/EDGE 850/1900, UMTS Band 5, LTE Band 5/12/17, and WLAN modes. The reduced powers were confirmed via conducted power measurements at the RF port (See Section 9). Detailed description of the hotspot power reduction and proximity sensor mechanism are included in the operational description.

6.6 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions; i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. The 1-g body and 10-g extremity SAR Exclusion Thresholds found in KDB Publication 447498 D01v05 should be applied to determine SAR test requirements.

For smart phones with a display diagonal dimension $> 15.0 \text{ cm}$ or an overall diagonal dimension $> 16.0 \text{ cm}$ that provide similar mobile web access and multimedia support found in mini-tablets or UMPC minitables that support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04 v01r01DR04 should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. In addition to the normally required head and body-worn accessory SAR test procedures required for handsets, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna $\leq 25 \text{ mm}$ from that surface or edge, in direct contact with the phantom, for 10-g SAR. The UMPC mini-tablet 1-g SAR at 5 mm is not required.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 16 of 116

6.7 Additional Test Positions due to Proximity Conditions

This device uses a sensor to reduce voice and data powers in extremity (hand-held) use conditions.

When the sensor detects a user is touching the device on or near to the antenna the device reduces the maximum allowed output power. However, the proximity sensor is not active when the device is moved beyond the sensor triggering distance and the maximum output power is no longer limited. Therefore, an additional exposure condition is needed in the vicinity of the triggering distance to ensure SAR is compliant when the device is allowed to operate at a non-reduced output power level.

FCC KDB 616217 D04 Section 6 was used as a guideline for selecting SAR test distances for this device at these additional exposure conditions. Since the sensor activation distance for the back side of the device is 3 mm, a conservative distance of 2 mm was tested for SAR on the back side at maximum power. Since the sensor activation distance for the front side of the device is 4 mm, a conservative distance of 3 mm was tested for SAR on the front side at maximum power. Since the sensor activation distance for the bottom edge of the device is 5 mm, a conservative distance of 4 mm was tested for SAR on the bottom edge at maximum power. Sensor triggering distance summary data is included in Appendix G.

Power reduction is applicable for UMTS Band 2, LTE Band 2/4 when the proximity sensor is active. There is no power reduction due to active proximity sensor for GSM/GPRS/EDGE 850/1900, UMTS Band 5, LTE Band 5/12/17, and WLAN modes.

The proximity sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the proximity sensor entirely covers the antenna.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 17 of 116

7 RF EXPOSURE LIMITS

7.1 Uncontrolled Environment

UNCONTROLLED ENVIRONMENTS are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

7.2 Controlled Environment

CONTROLLED ENVIRONMENTS are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Table 7-1
SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

HUMAN EXPOSURE LIMITS		
	UNCONTROLLED ENVIRONMENT <i>General Population</i> (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT <i>Occupational</i> (W/kg) or (mW/g)
Peak Spatial Average SAR Head	1.6	8.0
Whole Body SAR	0.08	0.4
Peak Spatial Average SAR Hands, Feet, Ankle, Wrists, etc.	4.0	20

1. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
2. The Spatial Average value of the SAR averaged over the whole body.
3. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 18 of 116

Power measurements were performed using a base station simulator under digital average power.

8.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D01v05, When SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as *reported* SAR. The highest *reported* SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r02.

8.2 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB Publication 941225 D01 "SAR Measurement Procedures for 3G Devices" v02, October 2007.

The device was placed into a simulated call using a base station simulator in a RF shielded chamber. Establishing connections in this manner ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. Devices under test were evaluated prior to testing, with a fully charged battery and were configured to operate at maximum output power. In order to verify that the device was tested throughout the SAR test at maximum output power, the SAR measurement system measures a "point SAR" at an arbitrary reference point at the start and end of the 1 gram SAR evaluation, to assess for any power drifts during the evaluation. If the power drift deviated by more than 5%, the SAR test and drift measurements were repeated.

8.3 SAR Measurement Conditions for UMTS

8.3.1 Output Power Verification

Maximum output power is measured on the High, Middle and Low channels for each applicable transmission band according to the general descriptions in section 5.2 of 3GPP TS 34.121, using the appropriate RMC or AMR with TPC (transmit power control) set to all "1s".

Maximum output power is verified on the High, Middle and Low channels according to the general descriptions in section 5.2 of 3GPP TS 34.121 (release 5), using the appropriate RMC with TPC (transmit power control) set to all "1s" or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

8.3.2 Head SAR Measurements for Handsets

SAR for head exposure configurations is measured using the 12.2 kbps RMC with TPC bits configured to all "1s". SAR in AMR configurations is not required when the maximum average output of each RF channel for 12.2 kbps AMR is less than 0.25 dB higher than that measured in

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 19 of 116

12.2 kbps RMC. Otherwise, SAR is measured on the maximum output channel in 12.2 AMR with a 3.4 kbps SRB (signaling radio bearer) using the exposure configuration that resulted in the highest SAR for that RF channel in the 12.2 kbps RMC mode.

8.3.3 Body SAR Measurements

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all “1s”.

8.3.4 SAR Measurements for Handsets with Rel 5 HSDPA

Body SAR for HSDPA is not required for handsets with HSDPA capabilities when the maximum average output power of each RF channel with HSDPA active is less than 0.25 dB higher than that measured without HSDPA using 12.2 kbps RMC and the maximum SAR for 12.2 kbps RMC is $\leq 75\%$ of the SAR limit. Otherwise, SAR is measured for HSDPA, using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, using the highest body SAR configuration measured in 12.2 kbps RMC without HSDPA, on the maximum output channel with the body exposure configuration that resulted in the highest SAR in 12.2 kbps RMC mode for that RF channel.

The H-set used in FRC for HSDPA should be configured according to the UE category of a test device. The number of HS-DSCH/HSPDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the applicable H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the FRC for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 2 ms to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors of $\beta_c=9$ and $\beta_d=15$, and power offset parameters of $\Delta_{ACK}=\Delta_{NACK}=5$ and $\Delta_{CQI}=2$ is used. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the FRC.

Sub-Test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{HS} = \beta_{HS}/\beta_c = 30/15 \Leftrightarrow \beta_{HS} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 8$ ($A_{HS} = 30/15$) with $\beta_{HS} = 30/15 * \beta_c$, and $\Delta_{CQI} = 7$ ($A_{HS} = 24/15$) with $\beta_{HS} = 24/15 * \beta_c$.

Note 3: CM = 1 for $\beta_c/\beta_d=12/15$, $\beta_{HS}/\beta_c=24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Figure 8-1
Table C.10.1.4 of TS 234.121-1

8.3.5 SAR Measurements for Handsets with Rel 6 HSUPA

Body SAR for HSUPA is not required when the maximum average output of each RF channel with HSUPA/HSDPA active is less than 0.25 dB higher than as measured without HSUPA/HSDPA using 12.2 kbps RMC and maximum SAR for 12.2 kbps RMC is $\leq 75\%$ of the SAR limit. Otherwise SAR is measured on the maximum output channel for the body exposure configuration produced highest SAR in 12.2 kbps RMC for that RF channel, using the additional procedures under “Release 6 HSPA data devices”

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 20 of 116

Head SAR for VOIP operations under HSPA is not required when maximum average output of each RF channel with HSPA is less than 0.25 dB higher than as measured using 12.2 kbps RMC. Otherwise SAR is measured using same HSPA configuration as used for body SAR.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	$\beta_{hs}^{(1)}$	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM ⁽²⁾ (dB)	MPR (dB)	AG ⁽⁴⁾ Index	E-TFCI
1	11/15 ⁽³⁾	15/15 ⁽³⁾	64	11/15 ⁽³⁾	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}: 47/15$ $\beta_{ed2}: 47/15$	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 ⁽⁴⁾	15/15 ⁽⁴⁾	64	15/15 ⁽⁴⁾	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{15} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCCH, HS-DPCCCH, E-DPDCH and E-DPCCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$.

Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.

Note 6: β_{ed1} can not be set directly; it is set by Absolute Grant Value.

8.3.6 SAR Measurement Conditions for DC-HSDPA

SAR test exclusion for DC-HSDPA devices is determined by power measurements according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to qualify for SAR test exclusion. DC-HSDPA uplink maximum output power measurements using the four Rel. 5 HSDPA subtests in Table C.10.1.4 of TS 234.121-1 is required.

When the maximum average output power of each RF channel with DC-HSDPA active is $\leq 1/4$ dB higher than that measured using 12.2 kbps RMC, or the maximum reported SAR for 12.2 kbps RMC is $\leq 75\%$ of the SAR limit, SAR evaluation for DC-HSDPA is not required.

8.4 SAR Measurement Conditions for LTE

LTE modes were tested according to FCC KDB 941225 D05v02 publication. Please see notes after the tabulated SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 was used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

8.4.1 Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

8.4.2 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 21 of 116

8.4.3 A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

8.4.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r01:

- a. Per Section 5.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
 - i. The required channel and offset combination with the highest maximum output power is required for SAR.
 - ii. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
 - iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
- b. Per Section 5.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 5.2.1.
- c. Per Section 5.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 0.8 W/kg.
- d. Per Section 5.2.4 and 5.3, SAR tests for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sections 5.2.1 through 5.2.3 is less than or equal to $\frac{1}{2}$ dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is < 1.45 W/kg.

8.4.5 Carrier Aggregation

LTE Carrier Aggregation (CA) measurements were made in accordance to 3GPP TS 36.521-1 V10.4.0 (2012-12). The RRC connection is only handled by one cell, the Primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds the Secondary component carrier (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to release 8 specifications on the PCC. Additional output powers were measured using two carriers in the downlink for the release 8 configurations with the highest output power among all channels, RB configurations and bandwidths for each uplink band. Per FCC Guidance, no SAR measurements were required.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 22 of 116

8.5 SAR Testing with 802.11 Transmitters

Normal network operating configurations are not suitable for measuring the SAR of 802.11 a/b/g/n/ac transmitters. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 D01v01r02 for more details.

8.5.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters. The test frequencies should correspond to actual channel frequencies defined for domestic use. SAR for devices with switched diversity should be measured with only one antenna transmitting at a time during each SAR measurement, according to a fixed modulation and data rate. The same data pattern should be used for all measurements.

8.5.2 Frequency Channel Configurations [24]

For 2.4 GHz, the highest average RF output power channel between the low, mid and high channel at the lowest data rate was selected for SAR evaluation in 802.11b mode. 802.11g/n modes and higher data rates for 802.11b were additionally evaluated for SAR if the output power of the respective mode was 0.25 dB or higher than the powers of the SAR configurations tested in the 802.11b mode.

For 5 GHz, the highest average RF output power channel across the default test channels at the lowest data rate was selected for SAR evaluation in 802.11a. When the adjacent channels are higher in power than the default channels, these “required channels” were considered instead of the default channels for SAR testing. 802.11n modes and higher data rates for 802.11a/n were evaluated only if the respective mode was higher than 0.25 dB or more than the 802.11a mode. 802.11ac SAR was evaluated for highest 802.11a configuration in each 5 GHz band and each exposure condition. 802.11ac modes were additionally evaluated for SAR if the output power for the respective mode was more than 0.25 dB higher than powers of 802.11a modes.

If the maximum extrapolated peak SAR of the zoom scan for the highest output channel was less than 1.6 W/kg and if the 1g averaged SAR was less than 0.8 W/kg, SAR testing was not required for the other test channels in the band. If 10g averaged SAR was less than 2 W/kg, extremity SAR testing was not required for the other test channels in the band.

8.5.3 MIMO SAR considerations

Per KDB 248227, SAR for MIMO was measured with both transmitting simultaneously and was evaluated independently of SISO operation. For 2.4 and 5 GHz MIMO, IEEE 802.11n 20 MHz bandwidth was evaluated. Other IEEE 802.11 modes and bandwidths were not investigated for MIMO operations since the maximum allowed output power (including tolerance) was not higher for these modes.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 23 of 116

9 RF CONDUCTED POWERS

9.1 GSM Conducted Powers

		Maximum Burst-Averaged Output Power				
		Voice	GPRS/EDGE Data (GMSK)		EDGE Data (8-PSK)	
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot
GSM 850	128	31.82	31.87	29.90	25.62	24.04
	190	31.79	31.85	29.81	25.48	23.98
	251	32.08	32.11	30.17	25.43	24.01
GSM 1900	512	29.22	29.27	27.50	23.24	21.17
	661	29.48	29.49	27.63	23.60	21.52
	810	29.33	29.41	27.79	23.44	21.23
		Calculated Maximum Frame-Averaged Output Power				
		Voice	GPRS/EDGE Data (GMSK)		EDGE Data (8-PSK)	
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot
GSM 850	128	22.79	22.84	23.88	16.59	18.02
	190	22.76	22.82	23.79	16.45	17.96
	251	23.05	23.08	24.15	16.40	17.99
GSM 1900	512	20.19	20.24	21.48	14.21	15.15
	661	20.45	20.46	21.61	14.57	15.50
	810	20.30	20.38	21.77	14.41	15.21
GSM 850	Frame	22.97	22.97	23.98	16.47	17.98
GSM 1900	Avg. Targets:	20.97	20.97	21.48	14.47	15.48

Note:

- Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
- The source-based frame-averaged output power was evaluated for all GPRS/EDGE slot configurations. The configuration with the highest target frame averaged output power was evaluated for hotspot and extremity SAR. When the maximum frame-averaged powers are equivalent across two or more slots (within 0.25 dB), the configuration with the most number of time slots was tested.
- GPRS/EDGE (GMSK) output powers were measured with coding scheme setting of 1 (CS1) on the base station simulator. CS1 was configured to measure GPRS output power measurements and SAR to ensure GMSK modulation in the signal. Our Investigation has shown that CS1 - CS4 settings do not have any impact on the output levels or modulation in the GPRS modes.
- EDGE (8-PSK) output powers were measured with MCS7 on the base station simulator. MCS7 coding scheme was used to measure the output powers for EDGE since investigation has shown that choosing MCS7 coding scheme will ensure 8-PSK modulation. It has been shown that MCS levels that produce 8PSK modulation do not have an impact on output power.

GSM Class: B

GPRS Multislot class: 10 (Max 2 Tx uplink slots)

EDGE Multislot class: 10 (Max 2 Tx uplink slots)

DTM Multislot Class: N/A



Figure 9-1
Power Measurement Setup

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 24 of 116

9.2 UMTS Conducted Powers

Table 9-1
Maximum Average RF Output Powers

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	23.75	23.67	24.05	23.21	22.95	23.15	-
		12.2 kbps AMR	23.78	23.73	24.07	23.14	22.84	23.00	-
6	HSDPA	Subtest 1	22.69	22.67	22.89	23.34	22.70	22.92	0
6		Subtest 2	22.73	22.68	22.90	23.32	22.72	22.94	0
6		Subtest 3	22.21	22.18	22.43	22.85	22.18	22.41	0.5
6		Subtest 4	22.19	22.17	22.41	22.84	22.16	22.40	0.5
6		Subtest 5	22.03	21.95	22.15	22.89	22.00	22.26	0
6	HSPA	Subtest 1	20.99	20.98	21.19	21.31	20.67	21.00	2
6		Subtest 2	21.64	21.56	21.81	22.25	21.55	21.88	1
6		Subtest 3	20.82	20.78	21.00	21.50	20.80	21.15	2
6		Subtest 4	22.25	21.78	21.99	22.68	21.69	22.05	0
6		Subtest 5	22.25	21.78	21.99	22.68	21.69	22.05	0
8	DC-HSDPA	Subtest 1	22.47	22.09	22.81	23.00	22.56	22.87	0
8		Subtest 2	22.75	22.63	22.90	22.98	22.61	22.77	0
8		Subtest 3	22.00	21.98	22.13	22.80	22.02	22.46	0.5
8		Subtest 4	22.10	22.16	22.38	22.79	22.07	22.31	0.5

Table 9-2
Reduced Average RF Output Powers

3GPP Release Version	Mode	3GPP 34.121 Subtest	PCS Band [dBm]			3GPP MPR [dB]
			9262	9400	9538	
99	WCDMA	12.2 kbps RMC	21.25	21.09	21.15	-
		12.2 kbps AMR	21.21	20.64	20.70	-
6	HSDPA	Subtest 1	20.05	19.61	19.72	0
6		Subtest 2	20.04	19.99	19.72	0
6		Subtest 3	19.54	18.88	19.32	0.5
6		Subtest 4	19.55	18.96	19.24	0.5
6		Subtest 5	19.41	18.73	18.69	0
6	HSPA	Subtest 1	19.32	18.62	18.96	2
6		Subtest 2	19.12	19.42	19.01	1
6		Subtest 3	19.22	18.54	18.36	2
6		Subtest 4	19.15	18.88	18.79	0
6		Subtest 5	19.15	18.88	18.79	0
8	DC-HSDPA	Subtest 1	20.00	19.92	19.69	0
8		Subtest 2	19.96	19.65	19.54	0
8		Subtest 3	19.76	18.63	19.36	0.5
8		Subtest 4	19.66	18.70	19.45	0.5

UMTS SAR was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.

DC-HSDPA considerations

- 3GPP Specification 34.121-1 Release 8 Ver 8.10.10 was used for DC-HSDPA guidance
- H-set 12 (QPSK) was confirmed to be used during DC-HSDPA measurements
- Measured maximum output powers for DC-HSDPA were not greater than ¼ dB higher than the WCDMA 12.2 kbps RMC maximum output, as a result, SAR is not required for DC-HSDPA
- The DUT supports UE Category 24 for DC-HSDPA

It is expected by the manufacturer that MPR for some HSPA subtests may be up to 2 dB more than specified by 3GPP, but also as low as 0 dB according to the chipset implementation in this model.

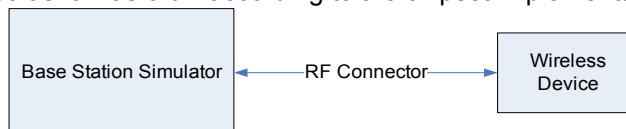


Figure 9-2
Power Measurement Setup

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 25 of 116

9.3 LTE Conducted Powers

9.3.1 LTE Band 12

Table 9-3
LTE Band 12 Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	707.5	23095	10	QPSK	1	0	23.27	0	0
	707.5	23095	10	QPSK	1	25	23.21	0	0
	707.5	23095	10	QPSK	1	49	22.89	0	0
	707.5	23095	10	QPSK	25	0	22.15	0-1	1
	707.5	23095	10	QPSK	25	12	22.26	0-1	1
	707.5	23095	10	QPSK	25	25	22.18	0-1	1
	707.5	23095	10	QPSK	50	0	22.15	0-1	1
	707.5	23095	10	16QAM	1	0	22.50	0-1	1
	707.5	23095	10	16QAM	1	25	22.47	0-1	1
	707.5	23095	10	16QAM	1	49	22.26	0-1	1
	707.5	23095	10	16QAM	25	0	21.37	0-2	2
	707.5	23095	10	16QAM	25	12	21.31	0-2	2
	707.5	23095	10	16QAM	25	25	21.21	0-2	2
	707.5	23095	10	16QAM	50	0	21.19	0-2	2

Note: LTE Band 12 at 10 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 9-4
LTE Band 12 Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	701.5	23035	5	QPSK	1	0	23.40	0	0
	701.5	23035	5	QPSK	1	12	22.91	0	0
	701.5	23035	5	QPSK	1	24	23.15	0	0
	701.5	23035	5	QPSK	12	0	22.05	0-1	1
	701.5	23035	5	QPSK	12	6	22.18	0-1	1
	701.5	23035	5	QPSK	12	13	22.15	0-1	1
	701.5	23035	5	QPSK	25	0	22.22	0-1	1
	701.5	23035	5	16-QAM	1	0	22.43	0-1	1
	701.5	23035	5	16-QAM	1	12	22.11	0-1	1
	701.5	23035	5	16-QAM	1	24	22.22	0-1	1
	701.5	23035	5	16-QAM	12	0	21.12	0-2	2
	701.5	23035	5	16-QAM	12	6	21.14	0-2	2
	701.5	23035	5	16-QAM	12	13	21.12	0-2	2
	701.5	23035	5	16-QAM	25	0	21.18	0-2	2

Mid	707.5	23095	5	QPSK	1	0	22.96	0	0
	707.5	23095	5	QPSK	1	12	23.20	0	0
	707.5	23095	5	QPSK	1	24	23.21	0	0
	707.5	23095	5	QPSK	12	0	22.15	0-1	1
	707.5	23095	5	QPSK	12	6	22.26	0-1	1
	707.5	23095	5	QPSK	12	13	22.22	0-1	1
	707.5	23095	5	QPSK	25	0	22.08	0-1	1
	707.5	23095	5	16-QAM	1	0	22.08	0-1	1
	707.5	23095	5	16-QAM	1	12	22.18	0-1	1
	707.5	23095	5	16-QAM	1	24	22.33	0-1	1
	707.5	23095	5	16-QAM	12	0	21.17	0-2	2
	707.5	23095	5	16-QAM	12	6	21.28	0-2	2
	707.5	23095	5	16-QAM	12	13	21.24	0-2	2
	707.5	23095	5	16-QAM	25	0	21.10	0-2	2

High	713.5	23155	5	QPSK	1	0	23.15	0	0
	713.5	23155	5	QPSK	1	12	23.01	0	0
	713.5	23155	5	QPSK	1	24	22.70	0	0
	713.5	23155	5	QPSK	12	0	21.89	0-1	1
	713.5	23155	5	QPSK	12	6	21.86	0-1	1
	713.5	23155	5	QPSK	12	13	21.56	0-1	1
	713.5	23155	5	QPSK	25	0	21.74	0-1	1
	713.5	23155	5	16-QAM	1	0	22.49	0-1	1
	713.5	23155	5	16-QAM	1	12	22.36	0-1	1
	713.5	23155	5	16-QAM	1	24	21.79	0-1	1
	713.5	23155	5	16-QAM	12	0	20.87	0-2	2
	713.5	23155	5	16-QAM	12	6	20.75	0-2	2
	713.5	23155	5	16-QAM	12	13	20.50	0-2	2
	713.5	23155	5	16-QAM	25	0	20.60	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 26 of 116

Table 9-5
LTE Band 12 Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	700.5	23025	3	QPSK	1	0	23.50	0	0
	700.5	23025	3	QPSK	1	7	23.15	0	0
	700.5	23025	3	QPSK	1	14	23.00	0	0
	700.5	23025	3	QPSK	8	0	22.24	0-1	1
	700.5	23025	3	QPSK	8	4	22.03	0-1	1
	700.5	23025	3	QPSK	8	7	22.13	0-1	1
	700.5	23025	3	QPSK	15	0	22.06	0-1	1
	700.5	23025	3	16-QAM	1	0	22.43	0-1	1
	700.5	23025	3	16-QAM	1	7	22.37	0-1	1
	700.5	23025	3	16-QAM	1	14	22.09	0-1	1
	700.5	23025	3	16-QAM	8	0	21.32	0-2	2
	700.5	23025	3	16-QAM	8	4	21.14	0-2	2
Mid	700.5	23025	3	16-QAM	8	7	21.28	0-2	2
	700.5	23025	3	16-QAM	15	0	20.95	0-2	2
	707.5	23095	3	QPSK	1	0	23.14	0	0
	707.5	23095	3	QPSK	1	7	23.31	0	0
	707.5	23095	3	QPSK	1	14	23.28	0	0
	707.5	23095	3	QPSK	8	0	22.16	0-1	1
	707.5	23095	3	QPSK	8	4	22.25	0-1	1
	707.5	23095	3	QPSK	8	7	22.28	0-1	1
	707.5	23095	3	QPSK	15	0	22.23	0-1	1
	707.5	23095	3	16-QAM	1	0	22.43	0-1	1
	707.5	23095	3	16-QAM	1	7	22.50	0-1	1
	707.5	23095	3	16-QAM	1	14	22.49	0-1	1
High	707.5	23095	3	16-QAM	8	0	21.10	0-2	2
	707.5	23095	3	16-QAM	8	4	21.17	0-2	2
	707.5	23095	3	16-QAM	8	7	21.20	0-2	2
	707.5	23095	3	16-QAM	15	0	21.34	0-2	2
	714.5	23165	3	QPSK	1	0	22.82	0	0
	714.5	23165	3	QPSK	1	7	22.77	0	0
	714.5	23165	3	QPSK	1	14	22.58	0	0
	714.5	23165	3	QPSK	8	0	21.72	0-1	1
	714.5	23165	3	QPSK	8	4	21.64	0-1	1
	714.5	23165	3	QPSK	8	7	21.61	0-1	1
	714.5	23165	3	QPSK	15	0	21.61	0-1	1
	714.5	23165	3	16-QAM	1	0	22.08	0-1	1
	714.5	23165	3	16-QAM	1	7	21.94	0-1	1
	714.5	23165	3	16-QAM	1	14	21.50	0-1	1
	714.5	23165	3	16-QAM	8	0	20.54	0-2	2
	714.5	23165	3	16-QAM	8	4	20.51	0-2	2
	714.5	23165	3	16-QAM	8	7	20.56	0-2	2
	714.5	23165	3	16-QAM	15	0	20.62	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 27 of 116

Table 9-6
LTE Band 12 Conducted Powers -1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	699.7	23017	1.4	QPSK	1	0	23.37	0	0
	699.7	23017	1.4	QPSK	1	2	23.35	0	0
	699.7	23017	1.4	QPSK	1	5	23.21	0	0
	699.7	23017	1.4	QPSK	3	0	23.34	0	0
	699.7	23017	1.4	QPSK	3	2	23.39	0	0
	699.7	23017	1.4	QPSK	3	3	23.32	0	0
	699.7	23017	1.4	QPSK	6	0	22.21	0-1	1
	699.7	23017	1.4	16-QAM	1	0	22.17	0-1	1
	699.7	23017	1.4	16-QAM	1	2	22.19	0-1	1
	699.7	23017	1.4	16-QAM	1	5	22.00	0-1	1
	699.7	23017	1.4	16-QAM	3	0	22.29	0-1	1
	699.7	23017	1.4	16-QAM	3	2	22.32	0-1	1
	699.7	23017	1.4	16-QAM	3	3	22.26	0-1	1
	699.7	23017	1.4	16-QAM	6	0	21.12	0-2	2
Mid	707.5	23095	1.4	QPSK	1	0	22.95	0	0
	707.5	23095	1.4	QPSK	1	2	23.10	0	0
	707.5	23095	1.4	QPSK	1	5	23.06	0	0
	707.5	23095	1.4	QPSK	3	0	23.18	0	0
	707.5	23095	1.4	QPSK	3	2	23.22	0	0
	707.5	23095	1.4	QPSK	3	3	23.25	0	0
	707.5	23095	1.4	QPSK	6	0	22.30	0-1	1
	707.5	23095	1.4	16-QAM	1	0	22.21	0-1	1
	707.5	23095	1.4	16-QAM	1	2	22.34	0-1	1
	707.5	23095	1.4	16-QAM	1	5	22.41	0-1	1
	707.5	23095	1.4	16-QAM	3	0	22.06	0-1	1
	707.5	23095	1.4	16-QAM	3	2	22.11	0-1	1
	707.5	23095	1.4	16-QAM	3	3	22.13	0-1	1
	707.5	23095	1.4	16-QAM	6	0	21.26	0-2	2
High	715.3	23173	1.4	QPSK	1	0	22.83	0	0
	715.3	23173	1.4	QPSK	1	2	22.78	0	0
	715.3	23173	1.4	QPSK	1	5	22.50	0	0
	715.3	23173	1.4	QPSK	3	0	22.51	0	0
	715.3	23173	1.4	QPSK	3	2	22.51	0	0
	715.3	23173	1.4	QPSK	3	3	22.52	0	0
	715.3	23173	1.4	QPSK	6	0	21.52	0-1	1
	715.3	23173	1.4	16-QAM	1	0	21.78	0-1	1
	715.3	23173	1.4	16-QAM	1	2	21.81	0-1	1
	715.3	23173	1.4	16-QAM	1	5	21.54	0-1	1
	715.3	23173	1.4	16-QAM	3	0	21.70	0-1	1
	715.3	23173	1.4	16-QAM	3	2	21.71	0-1	1
	715.3	23173	1.4	16-QAM	3	3	21.53	0-1	1
	715.3	23173	1.4	16-QAM	6	0	20.50	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 28 of 116	

9.3.2

LTE Band 5 (Cell)

Table 9-7

LTE Band 5 (Cell) Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	836.5	20525	10	QPSK	1	0	22.65	0	0
	836.5	20525	10	QPSK	1	25	22.60	0	0
	836.5	20525	10	QPSK	1	49	22.67	0	0
	836.5	20525	10	QPSK	25	0	21.54	0-1	1
	836.5	20525	10	QPSK	25	12	21.59	0-1	1
	836.5	20525	10	QPSK	25	25	21.65	0-1	1
	836.5	20525	10	QPSK	50	0	21.58	0-1	1
	836.5	20525	10	16QAM	1	0	21.60	0-1	1
	836.5	20525	10	16QAM	1	25	21.57	0-1	1
	836.5	20525	10	16QAM	1	49	21.61	0-1	1
	836.5	20525	10	16QAM	25	0	20.55	0-2	2
	836.5	20525	10	16QAM	25	12	20.57	0-2	2
	836.5	20525	10	16QAM	25	25	20.67	0-2	2
	836.5	20525	10	16QAM	50	0	20.58	0-2	2

Note: LTE Band 5 (Cell) at 10 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 9-8

LTE Band 5 (Cell) Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	826.5	20425	5	QPSK	1	0	22.75	0	0
	826.5	20425	5	QPSK	1	12	22.68	0	0
	826.5	20425	5	QPSK	1	24	22.81	0	0
	826.5	20425	5	QPSK	12	0	21.69	0-1	1
	826.5	20425	5	QPSK	12	6	21.77	0-1	1
	826.5	20425	5	QPSK	12	13	21.78	0-1	1
	826.5	20425	5	QPSK	25	0	21.73	0-1	1
	826.5	20425	5	16-QAM	1	0	21.80	0-1	1
	826.5	20425	5	16-QAM	1	12	21.77	0-1	1
	826.5	20425	5	16-QAM	1	24	21.76	0-1	1
	826.5	20425	5	16-QAM	12	0	20.58	0-2	2
	826.5	20425	5	16-QAM	12	6	20.67	0-2	2
	826.5	20425	5	16-QAM	12	13	20.66	0-2	2
	826.5	20425	5	16-QAM	25	0	20.70	0-2	2
Mid	836.5	20525	5	QPSK	1	0	22.43	0	0
	836.5	20525	5	QPSK	1	12	22.38	0	0
	836.5	20525	5	QPSK	1	24	22.47	0	0
	836.5	20525	5	QPSK	12	0	21.35	0-1	1
	836.5	20525	5	QPSK	12	6	21.37	0-1	1
	836.5	20525	5	QPSK	12	13	21.31	0-1	1
	836.5	20525	5	QPSK	25	0	21.34	0-1	1
	836.5	20525	5	16-QAM	1	0	21.68	0-1	1
	836.5	20525	5	16-QAM	1	12	21.60	0-1	1
	836.5	20525	5	16-QAM	1	24	21.70	0-1	1
	836.5	20525	5	16-QAM	12	0	20.40	0-2	2
	836.5	20525	5	16-QAM	12	6	20.46	0-2	2
	836.5	20525	5	16-QAM	12	13	20.35	0-2	2
	836.5	20525	5	16-QAM	25	0	20.34	0-2	2
High	846.5	20625	5	QPSK	1	0	22.89	0	0
	846.5	20625	5	QPSK	1	12	22.49	0	0
	846.5	20625	5	QPSK	1	24	22.22	0	0
	846.5	20625	5	QPSK	12	0	21.70	0-1	1
	846.5	20625	5	QPSK	12	6	21.61	0-1	1
	846.5	20625	5	QPSK	12	13	21.47	0-1	1
	846.5	20625	5	QPSK	25	0	21.60	0-1	1
	846.5	20625	5	16-QAM	1	0	21.95	0-1	1
	846.5	20625	5	16-QAM	1	12	21.91	0-1	1
	846.5	20625	5	16-QAM	1	24	21.51	0-1	1
	846.5	20625	5	16-QAM	12	0	20.65	0-2	2
	846.5	20625	5	16-QAM	12	6	20.68	0-2	2
	846.5	20625	5	16-QAM	12	13	20.56	0-2	2
	846.5	20625	5	16-QAM	25	0	20.62	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 29 of 116

Table 9-9
LTE Band 5 (Cell) Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	825.5	20415	3	QPSK	1	0	22.70	0	0
	825.5	20415	3	QPSK	1	7	22.79	0	0
	825.5	20415	3	QPSK	1	14	22.68	0	0
	825.5	20415	3	QPSK	8	0	21.74	0-1	1
	825.5	20415	3	QPSK	8	4	21.63	0-1	1
	825.5	20415	3	QPSK	8	7	21.76	0-1	1
	825.5	20415	3	QPSK	15	0	21.66	0-1	1
	825.5	20415	3	16-QAM	1	0	21.99	0-1	1
	825.5	20415	3	16-QAM	1	7	21.95	0-1	1
	825.5	20415	3	16-QAM	1	14	21.98	0-1	1
	825.5	20415	3	16-QAM	8	0	20.78	0-2	2
	825.5	20415	3	16-QAM	8	4	20.69	0-2	2
	825.5	20415	3	16-QAM	8	7	20.83	0-2	2
Mid	836.5	20525	3	QPSK	1	0	22.40	0	0
	836.5	20525	3	QPSK	1	7	22.47	0	0
	836.5	20525	3	QPSK	1	14	22.31	0	0
	836.5	20525	3	QPSK	8	0	21.30	0-1	1
	836.5	20525	3	QPSK	8	4	21.34	0-1	1
	836.5	20525	3	QPSK	8	7	21.33	0-1	1
	836.5	20525	3	QPSK	15	0	21.29	0-1	1
	836.5	20525	3	16-QAM	1	0	21.82	0-1	1
	836.5	20525	3	16-QAM	1	7	21.85	0-1	1
	836.5	20525	3	16-QAM	1	14	21.69	0-1	1
	836.5	20525	3	16-QAM	8	0	20.27	0-2	2
	836.5	20525	3	16-QAM	8	4	20.34	0-2	2
	836.5	20525	3	16-QAM	8	7	20.36	0-2	2
	836.5	20525	3	16-QAM	15	0	20.30	0-2	2
High	847.5	20635	3	QPSK	1	0	22.61	0	0
	847.5	20635	3	QPSK	1	7	22.50	0	0
	847.5	20635	3	QPSK	1	14	22.12	0	0
	847.5	20635	3	QPSK	8	0	21.54	0-1	1
	847.5	20635	3	QPSK	8	4	21.52	0-1	1
	847.5	20635	3	QPSK	8	7	21.36	0-1	1
	847.5	20635	3	QPSK	15	0	21.52	0-1	1
	847.5	20635	3	16-QAM	1	0	21.91	0-1	1
	847.5	20635	3	16-QAM	1	7	21.76	0-1	1
	847.5	20635	3	16-QAM	1	14	21.43	0-1	1
	847.5	20635	3	16-QAM	8	0	20.53	0-2	2
	847.5	20635	3	16-QAM	8	4	20.62	0-2	2
	847.5	20635	3	16-QAM	8	7	20.37	0-2	2
	847.5	20635	3	16-QAM	15	0	20.57	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 30 of 116

Table 9-10
LTE Band 5 (Cell) Conducted Powers -1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	824.7	20407	1.4	QPSK	1	0	22.75	0	0
	824.7	20407	1.4	QPSK	1	2	22.79	0	0
	824.7	20407	1.4	QPSK	1	5	22.74	0	0
	824.7	20407	1.4	QPSK	3	0	22.76	0	0
	824.7	20407	1.4	QPSK	3	2	22.77	0	0
	824.7	20407	1.4	QPSK	3	3	22.73	0	0
	824.7	20407	1.4	QPSK	6	0	21.75	0-1	1
	824.7	20407	1.4	16-QAM	1	0	21.74	0-1	1
	824.7	20407	1.4	16-QAM	1	2	21.84	0-1	1
	824.7	20407	1.4	16-QAM	1	5	21.76	0-1	1
	824.7	20407	1.4	16-QAM	3	0	21.77	0-1	1
	824.7	20407	1.4	16-QAM	3	2	21.83	0-1	1
	824.7	20407	1.4	16-QAM	3	3	21.78	0-1	1
	824.7	20407	1.4	16-QAM	6	0	20.87	0-2	2
Mid	836.5	20525	1.4	QPSK	1	0	22.25	0	0
	836.5	20525	1.4	QPSK	1	2	22.41	0	0
	836.5	20525	1.4	QPSK	1	5	22.36	0	0
	836.5	20525	1.4	QPSK	3	0	22.34	0	0
	836.5	20525	1.4	QPSK	3	2	22.46	0	0
	836.5	20525	1.4	QPSK	3	3	22.33	0	0
	836.5	20525	1.4	QPSK	6	0	21.30	0-1	1
	836.5	20525	1.4	16-QAM	1	0	21.58	0-1	1
	836.5	20525	1.4	16-QAM	1	2	21.78	0-1	1
	836.5	20525	1.4	16-QAM	1	5	21.76	0-1	1
	836.5	20525	1.4	16-QAM	3	0	21.36	0-1	1
	836.5	20525	1.4	16-QAM	3	2	21.49	0-1	1
	836.5	20525	1.4	16-QAM	3	3	21.26	0-1	1
	836.5	20525	1.4	16-QAM	6	0	20.38	0-2	2
High	848.3	20643	1.4	QPSK	1	0	22.34	0	0
	848.3	20643	1.4	QPSK	1	2	22.22	0	0
	848.3	20643	1.4	QPSK	1	5	22.05	0	0
	848.3	20643	1.4	QPSK	3	0	22.32	0	0
	848.3	20643	1.4	QPSK	3	2	22.13	0	0
	848.3	20643	1.4	QPSK	3	3	22.10	0	0
	848.3	20643	1.4	QPSK	6	0	21.29	0-1	1
	848.3	20643	1.4	16-QAM	1	0	21.66	0-1	1
	848.3	20643	1.4	16-QAM	1	2	21.58	0-1	1
	848.3	20643	1.4	16-QAM	1	5	21.38	0-1	1
	848.3	20643	1.4	16-QAM	3	0	21.43	0-1	1
	848.3	20643	1.4	16-QAM	3	2	21.36	0-1	1
	848.3	20643	1.4	16-QAM	3	3	21.25	0-1	1
	848.3	20643	1.4	16-QAM	6	0	20.38	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 31 of 116	

9.3.3

LTE Band 4 (AWS)

Table 9-11
Maximum LTE Band 4 (AWS) Conducted Powers - 20 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	1732.5	20175	20	QPSK	1	0	23.39	0	0
	1732.5	20175	20	QPSK	1	50	23.50	0	0
	1732.5	20175	20	QPSK	1	99	23.48	0	0
	1732.5	20175	20	QPSK	50	0	22.45	0-1	1
	1732.5	20175	20	QPSK	50	25	22.50	0-1	1
	1732.5	20175	20	QPSK	50	50	22.45	0-1	1
	1732.5	20175	20	QPSK	100	0	22.49	0-1	1
	1732.5	20175	20	16QAM	1	0	22.40	0-1	1
	1732.5	20175	20	16QAM	1	50	22.50	0-1	1
	1732.5	20175	20	16QAM	1	99	22.49	0-1	1
	1732.5	20175	20	16QAM	50	0	21.47	0-2	2
	1732.5	20175	20	16QAM	50	25	21.50	0-2	2
	1732.5	20175	20	16QAM	50	50	21.48	0-2	2
	1732.5	20175	20	16QAM	100	0	21.50	0-2	2

Note: LTE Band 4 (AWS) at 20 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 9-12
Maximum LTE Band 4 (AWS) Conducted Powers - 15 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1717.5	20025	15	QPSK	1	0	22.69	0	0
	1717.5	20025	15	QPSK	1	36	22.78	0	0
	1717.5	20025	15	QPSK	1	74	23.13	0	0
	1717.5	20025	15	QPSK	36	0	21.75	0-1	1
	1717.5	20025	15	QPSK	36	18	21.85	0-1	1
	1717.5	20025	15	QPSK	36	37	22.04	0-1	1
	1717.5	20025	15	QPSK	75	0	21.84	0-1	1
	1717.5	20025	15	16QAM	1	0	21.97	0-1	1
	1717.5	20025	15	16QAM	1	36	21.70	0-1	1
	1717.5	20025	15	16QAM	1	74	22.49	0-1	1
	1717.5	20025	15	16QAM	36	0	20.73	0-2	2
	1717.5	20025	15	16QAM	36	18	20.86	0-2	2
	1717.5	20025	15	16QAM	36	37	21.06	0-2	2
	1717.5	20025	15	16QAM	75	0	20.93	0-2	2
Mid	1732.5	20175	15	QPSK	1	0	23.35	0	0
	1732.5	20175	15	QPSK	1	36	23.26	0	0
	1732.5	20175	15	QPSK	1	74	23.25	0	0
	1732.5	20175	15	QPSK	36	0	22.17	0-1	1
	1732.5	20175	15	QPSK	36	18	22.18	0-1	1
	1732.5	20175	15	QPSK	36	37	22.20	0-1	1
	1732.5	20175	15	QPSK	75	0	22.15	0-1	1
	1732.5	20175	15	16QAM	1	0	22.25	0-1	1
	1732.5	20175	15	16QAM	1	36	22.32	0-1	1
	1732.5	20175	15	16QAM	1	74	22.31	0-1	1
	1732.5	20175	15	16QAM	36	0	21.26	0-2	2
	1732.5	20175	15	16QAM	36	18	21.27	0-2	2
	1732.5	20175	15	16QAM	36	37	21.30	0-2	2
	1732.5	20175	15	16QAM	75	0	21.13	0-2	2
High	1747.5	20325	15	QPSK	1	0	23.11	0	0
	1747.5	20325	15	QPSK	1	36	22.76	0	0
	1747.5	20325	15	QPSK	1	74	22.73	0	0
	1747.5	20325	15	QPSK	36	0	21.95	0-1	1
	1747.5	20325	15	QPSK	36	18	22.04	0-1	1
	1747.5	20325	15	QPSK	36	37	21.98	0-1	1
	1747.5	20325	15	QPSK	75	0	21.91	0-1	1
	1747.5	20325	15	16QAM	1	0	22.35	0-1	1
	1747.5	20325	15	16QAM	1	36	22.14	0-1	1
	1747.5	20325	15	16QAM	1	74	22.03	0-1	1
	1747.5	20325	15	16QAM	36	0	21.01	0-2	2
	1747.5	20325	15	16QAM	36	18	21.12	0-2	2
	1747.5	20325	15	16QAM	36	37	21.05	0-2	2
	1747.5	20325	15	16QAM	75	0	21.00	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 32 of 116

Table 9-13
Maximum LTE Band 4 (AWS) Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1715	20000	10	QPSK	1	0	22.57	0	0
	1715	20000	10	QPSK	1	25	22.78	0	0
	1715	20000	10	QPSK	1	49	22.78	0	0
	1715	20000	10	QPSK	25	0	21.71	0-1	1
	1715	20000	10	QPSK	25	12	21.75	0-1	1
	1715	20000	10	QPSK	25	25	21.78	0-1	1
	1715	20000	10	QPSK	50	0	21.70	0-1	1
	1715	20000	10	16QAM	1	0	21.87	0-1	1
	1715	20000	10	16QAM	1	25	21.71	0-1	1
	1715	20000	10	16QAM	1	49	21.70	0-1	1
	1715	20000	10	16QAM	25	0	20.82	0-2	2
	1715	20000	10	16QAM	25	12	20.85	0-2	2
	1715	20000	10	16QAM	25	25	20.88	0-2	2
Mid	1732.5	20175	10	QPSK	1	0	23.29	0	0
	1732.5	20175	10	QPSK	1	25	23.43	0	0
	1732.5	20175	10	QPSK	1	49	23.19	0	0
	1732.5	20175	10	QPSK	25	0	22.19	0-1	1
	1732.5	20175	10	QPSK	25	12	22.20	0-1	1
	1732.5	20175	10	QPSK	25	25	22.12	0-1	1
	1732.5	20175	10	QPSK	50	0	22.21	0-1	1
	1732.5	20175	10	16QAM	1	0	22.27	0-1	1
	1732.5	20175	10	16QAM	1	25	22.41	0-1	1
	1732.5	20175	10	16QAM	1	49	22.20	0-1	1
	1732.5	20175	10	16QAM	25	0	21.21	0-2	2
	1732.5	20175	10	16QAM	25	12	21.24	0-2	2
	1732.5	20175	10	16QAM	25	25	21.18	0-2	2
High	1750	20350	10	QPSK	1	0	22.76	0	0
	1750	20350	10	QPSK	1	25	22.81	0	0
	1750	20350	10	QPSK	1	49	22.54	0	0
	1750	20350	10	QPSK	25	0	21.83	0-1	1
	1750	20350	10	QPSK	25	12	21.94	0-1	1
	1750	20350	10	QPSK	25	25	21.83	0-1	1
	1750	20350	10	QPSK	50	0	21.92	0-1	1
	1750	20350	10	16QAM	1	0	22.19	0-1	1
	1750	20350	10	16QAM	1	25	22.25	0-1	1
	1750	20350	10	16QAM	1	49	22.01	0-1	1
	1750	20350	10	16QAM	25	0	20.88	0-2	2
	1750	20350	10	16QAM	25	12	21.00	0-2	2
	1750	20350	10	16QAM	25	25	20.91	0-2	2
	1750	20350	10	16QAM	50	0	20.95	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 33 of 116	

Table 9-14
Maximum LTE Band 4 (AWS) Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1712.5	19975	5	QPSK	1	0	22.74	0	0
	1712.5	19975	5	QPSK	1	12	22.78	0	0
	1712.5	19975	5	QPSK	1	24	22.86	0	0
	1712.5	19975	5	QPSK	12	0	21.80	0-1	1
	1712.5	19975	5	QPSK	12	6	21.89	0-1	1
	1712.5	19975	5	QPSK	12	13	21.88	0-1	1
	1712.5	19975	5	QPSK	25	0	21.86	0-1	1
	1712.5	19975	5	16-QAM	1	0	21.79	0-1	1
	1712.5	19975	5	16-QAM	1	12	21.80	0-1	1
	1712.5	19975	5	16-QAM	1	24	21.88	0-1	1
	1712.5	19975	5	16-QAM	12	0	20.87	0-2	2
	1712.5	19975	5	16-QAM	12	6	20.95	0-2	2
Mid	1712.5	19975	5	16-QAM	12	13	20.92	0-2	2
	1712.5	19975	5	16-QAM	25	0	20.83	0-2	2
	1732.5	20175	5	QPSK	1	0	23.33	0	0
	1732.5	20175	5	QPSK	1	12	23.23	0	0
	1732.5	20175	5	QPSK	1	24	23.28	0	0
	1732.5	20175	5	QPSK	12	0	22.27	0-1	1
	1732.5	20175	5	QPSK	12	6	22.28	0-1	1
	1732.5	20175	5	QPSK	12	13	22.29	0-1	1
	1732.5	20175	5	QPSK	25	0	22.24	0-1	1
	1732.5	20175	5	16-QAM	1	0	22.50	0-1	1
	1732.5	20175	5	16-QAM	1	12	22.48	0-1	1
	1732.5	20175	5	16-QAM	1	24	22.43	0-1	1
High	1732.5	20175	5	16-QAM	12	0	21.22	0-2	2
	1732.5	20175	5	16-QAM	12	6	21.30	0-2	2
	1732.5	20175	5	16-QAM	12	13	21.31	0-2	2
	1732.5	20175	5	16-QAM	25	0	21.19	0-2	2
	1752.5	20375	5	QPSK	1	0	22.85	0	0
	1752.5	20375	5	QPSK	1	12	22.79	0	0
	1752.5	20375	5	QPSK	1	24	22.53	0	0
	1752.5	20375	5	QPSK	12	0	21.92	0-1	1
	1752.5	20375	5	QPSK	12	6	21.95	0-1	1
	1752.5	20375	5	QPSK	12	13	21.83	0-1	1
	1752.5	20375	5	QPSK	25	0	21.95	0-1	1
	1752.5	20375	5	16-QAM	1	0	22.00	0-1	1
	1752.5	20375	5	16-QAM	1	12	21.95	0-1	1
	1752.5	20375	5	16-QAM	1	24	21.95	0-1	1
	1752.5	20375	5	16-QAM	12	0	20.97	0-2	2
	1752.5	20375	5	16-QAM	12	6	21.10	0-2	2
	1752.5	20375	5	16-QAM	12	13	20.88	0-2	2
	1752.5	20375	5	16-QAM	25	0	20.95	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset	Page 34 of 116	

Table 9-15
Maximum LTE Band 4 (AWS) Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1711.5	19965	3	QPSK	1	0	22.78	0	0
	1711.5	19965	3	QPSK	1	7	22.86	0	0
	1711.5	19965	3	QPSK	1	14	22.75	0	0
	1711.5	19965	3	QPSK	8	0	21.76	0-1	1
	1711.5	19965	3	QPSK	8	4	21.87	0-1	1
	1711.5	19965	3	QPSK	8	7	21.81	0-1	1
	1711.5	19965	3	QPSK	15	0	21.88	0-1	1
	1711.5	19965	3	16-QAM	1	0	21.69	0-1	1
	1711.5	19965	3	16-QAM	1	7	21.80	0-1	1
	1711.5	19965	3	16-QAM	1	14	21.67	0-1	1
	1711.5	19965	3	16-QAM	8	0	20.71	0-2	2
	1711.5	19965	3	16-QAM	8	4	20.84	0-2	2
	1711.5	19965	3	16-QAM	8	7	20.76	0-2	2
Mid	1711.5	19965	3	16-QAM	15	0	20.83	0-2	2
	1732.5	20175	3	QPSK	1	0	23.34	0	0
	1732.5	20175	3	QPSK	1	7	23.33	0	0
	1732.5	20175	3	QPSK	1	14	23.32	0	0
	1732.5	20175	3	QPSK	8	0	22.44	0-1	1
	1732.5	20175	3	QPSK	8	4	22.44	0-1	1
	1732.5	20175	3	QPSK	8	7	22.39	0-1	1
	1732.5	20175	3	QPSK	15	0	22.50	0-1	1
	1732.5	20175	3	16-QAM	1	0	22.45	0-1	1
	1732.5	20175	3	16-QAM	1	7	22.49	0-1	1
	1732.5	20175	3	16-QAM	1	14	22.41	0-1	1
	1732.5	20175	3	16-QAM	8	0	21.18	0-2	2
	1732.5	20175	3	16-QAM	8	4	21.16	0-2	2
High	1732.5	20175	3	16-QAM	8	7	21.22	0-2	2
	1732.5	20175	3	16-QAM	15	0	21.34	0-2	2
	1753.5	20385	3	QPSK	1	0	22.83	0	0
	1753.5	20385	3	QPSK	1	7	22.77	0	0
	1753.5	20385	3	QPSK	1	14	22.67	0	0
	1753.5	20385	3	QPSK	8	0	21.84	0-1	1
	1753.5	20385	3	QPSK	8	4	21.82	0-1	1
	1753.5	20385	3	QPSK	8	7	21.79	0-1	1
	1753.5	20385	3	QPSK	15	0	21.81	0-1	1
	1753.5	20385	3	16-QAM	1	0	22.10	0-1	1
	1753.5	20385	3	16-QAM	1	7	22.05	0-1	1
	1753.5	20385	3	16-QAM	1	14	21.91	0-1	1
	1753.5	20385	3	16-QAM	8	0	21.04	0-2	2
	1753.5	20385	3	16-QAM	8	4	21.00	0-2	2
	1753.5	20385	3	16-QAM	8	7	20.99	0-2	2
	1753.5	20385	3	16-QAM	15	0	20.81	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset	Page 35 of 116	

Table 9-16
Maximum LTE Band 4 (AWS) Conducted Powers -1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1710.7	19957	1.4	QPSK	1	0	22.97	0	0
	1710.7	19957	1.4	QPSK	1	2	23.02	0	0
	1710.7	19957	1.4	QPSK	1	5	22.95	0	0
	1710.7	19957	1.4	QPSK	3	0	23.02	0	0
	1710.7	19957	1.4	QPSK	3	2	23.06	0	0
	1710.7	19957	1.4	QPSK	3	3	23.01	0	0
	1710.7	19957	1.4	QPSK	6	0	21.96	0-1	1
	1710.7	19957	1.4	16-QAM	1	0	21.87	0-1	1
	1710.7	19957	1.4	16-QAM	1	2	22.29	0-1	1
	1710.7	19957	1.4	16-QAM	1	5	21.88	0-1	1
	1710.7	19957	1.4	16-QAM	3	0	22.30	0-1	1
	1710.7	19957	1.4	16-QAM	3	2	22.13	0-1	1
Mid	1710.7	19957	1.4	16-QAM	3	3	22.07	0-1	1
	1710.7	19957	1.4	16-QAM	6	0	21.04	0-2	2
	1732.5	20175	1.4	QPSK	1	0	23.40	0	0
	1732.5	20175	1.4	QPSK	1	2	23.42	0	0
	1732.5	20175	1.4	QPSK	1	5	23.42	0	0
	1732.5	20175	1.4	QPSK	3	0	23.41	0	0
	1732.5	20175	1.4	QPSK	3	2	23.42	0	0
	1732.5	20175	1.4	QPSK	3	3	23.42	0	0
	1732.5	20175	1.4	QPSK	6	0	22.35	0-1	1
	1732.5	20175	1.4	16-QAM	1	0	22.06	0-1	1
	1732.5	20175	1.4	16-QAM	1	2	22.11	0-1	1
	1732.5	20175	1.4	16-QAM	1	5	22.14	0-1	1
High	1732.5	20175	1.4	16-QAM	3	0	22.22	0-1	1
	1732.5	20175	1.4	16-QAM	3	2	22.31	0-1	1
	1732.5	20175	1.4	16-QAM	3	3	22.33	0-1	1
	1732.5	20175	1.4	16-QAM	6	0	21.48	0-2	2
	1754.3	20393	1.4	QPSK	1	0	22.98	0	0
	1754.3	20393	1.4	QPSK	1	2	22.90	0	0
	1754.3	20393	1.4	QPSK	1	5	22.93	0	0
	1754.3	20393	1.4	QPSK	3	0	22.95	0	0
	1754.3	20393	1.4	QPSK	3	2	23.04	0	0
	1754.3	20393	1.4	QPSK	3	3	22.97	0	0
	1754.3	20393	1.4	QPSK	6	0	21.98	0-1	1
	1754.3	20393	1.4	16-QAM	1	0	22.12	0-1	1
	1754.3	20393	1.4	16-QAM	1	2	22.16	0-1	1
	1754.3	20393	1.4	16-QAM	1	5	22.09	0-1	1
	1754.3	20393	1.4	16-QAM	3	0	22.05	0-1	1
	1754.3	20393	1.4	16-QAM	3	2	22.15	0-1	1
	1754.3	20393	1.4	16-QAM	3	3	22.12	0-1	1
	1754.3	20393	1.4	16-QAM	6	0	21.00	0-2	2
	1754.3	20393	1.4	16-QAM	6	0	21.00	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 36 of 116	

Table 9-17
Reduced LTE Band 4 (AWS) Conducted Powers - 20 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	1732.5	20175	20	QPSK	1	0	21.55	0	0
	1732.5	20175	20	QPSK	1	50	21.61	0	0
	1732.5	20175	20	QPSK	1	99	21.82	0	0
	1732.5	20175	20	QPSK	50	0	20.59	0-1	1
	1732.5	20175	20	QPSK	50	25	20.70	0-1	1
	1732.5	20175	20	QPSK	50	50	20.79	0-1	1
	1732.5	20175	20	QPSK	100	0	20.63	0-1	1
	1732.5	20175	20	16QAM	1	0	20.54	0-1	1
	1732.5	20175	20	16QAM	1	50	20.96	0-1	1
	1732.5	20175	20	16QAM	1	99	21.06	0-1	1
	1732.5	20175	20	16QAM	50	0	19.62	0-2	2
	1732.5	20175	20	16QAM	50	25	19.70	0-2	2
	1732.5	20175	20	16QAM	50	50	19.77	0-2	2
	1732.5	20175	20	16QAM	100	0	19.65	0-2	2

Note: LTE Band 4 (AWS) at 20 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 9-18
Reduced LTE Band 4 (AWS) Conducted Powers - 15 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1717.5	20025	15	QPSK	1	0	21.64	0	0
	1717.5	20025	15	QPSK	1	36	21.66	0	0
	1717.5	20025	15	QPSK	1	74	21.81	0	0
	1717.5	20025	15	QPSK	36	0	20.77	0-1	1
	1717.5	20025	15	QPSK	36	18	20.68	0-1	1
	1717.5	20025	15	QPSK	36	37	20.82	0-1	1
	1717.5	20025	15	QPSK	75	0	20.68	0-1	1
	1717.5	20025	15	16QAM	1	0	20.56	0-1	1
	1717.5	20025	15	16QAM	1	36	20.98	0-1	1
	1717.5	20025	15	16QAM	1	74	21.19	0-1	1
	1717.5	20025	15	16QAM	36	0	19.64	0-2	2
	1717.5	20025	15	16QAM	36	18	19.91	0-2	2
	1717.5	20025	15	16QAM	36	37	19.78	0-2	2
	1717.5	20025	15	16QAM	75	0	19.74	0-2	2
	1732.5	20175	15	QPSK	1	0	21.57	0	0
Mid	1732.5	20175	15	QPSK	1	36	21.66	0	0
	1732.5	20175	15	QPSK	1	74	21.80	0	0
	1732.5	20175	15	QPSK	36	0	20.63	0-1	1
	1732.5	20175	15	QPSK	36	18	20.82	0-1	1
	1732.5	20175	15	QPSK	36	37	20.80	0-1	1
	1732.5	20175	15	QPSK	75	0	20.72	0-1	1
	1732.5	20175	15	16QAM	1	0	20.70	0-1	1
	1732.5	20175	15	16QAM	1	36	21.06	0-1	1
	1732.5	20175	15	16QAM	1	74	21.17	0-1	1
	1732.5	20175	15	16QAM	36	0	19.67	0-2	2
	1732.5	20175	15	16QAM	36	18	19.81	0-2	2
	1732.5	20175	15	16QAM	36	37	19.84	0-2	2
	1732.5	20175	15	16QAM	75	0	19.74	0-2	2
	1747.5	20325	15	QPSK	1	0	21.56	0	0
	1747.5	20325	15	QPSK	1	36	21.80	0	0
	1747.5	20325	15	QPSK	1	74	21.81	0	0
High	1747.5	20325	15	QPSK	36	0	20.53	0-1	1
	1747.5	20325	15	QPSK	36	18	20.77	0-1	1
	1747.5	20325	15	QPSK	36	37	20.73	0-1	1
	1747.5	20325	15	QPSK	75	0	20.71	0-1	1
	1747.5	20325	15	16QAM	1	0	20.71	0-1	1
	1747.5	20325	15	16QAM	1	36	21.13	0-1	1
	1747.5	20325	15	16QAM	1	74	21.37	0-1	1
	1747.5	20325	15	16QAM	36	0	19.67	0-2	2
	1747.5	20325	15	16QAM	36	18	19.99	0-2	2
	1747.5	20325	15	16QAM	36	37	19.76	0-2	2
	1747.5	20325	15	16QAM	75	0	19.63	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 37 of 116	

Table 9-19
Reduced LTE Band 4 (AWS) Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1715	20000	10	QPSK	1	0	21.65	0	0
	1715	20000	10	QPSK	1	25	21.79	0	0
	1715	20000	10	QPSK	1	49	21.74	0	0
	1715	20000	10	QPSK	25	0	20.60	0-1	1
	1715	20000	10	QPSK	25	12	21.01	0-1	1
	1715	20000	10	QPSK	25	25	20.85	0-1	1
	1715	20000	10	QPSK	50	0	20.95	0-1	1
	1715	20000	10	16QAM	1	0	20.95	0-1	1
	1715	20000	10	16QAM	1	25	20.94	0-1	1
	1715	20000	10	16QAM	1	49	21.43	0-1	1
	1715	20000	10	16QAM	25	0	19.63	0-2	2
	1715	20000	10	16QAM	25	12	19.88	0-2	2
	1715	20000	10	16QAM	25	25	19.84	0-2	2
Mid	1715	20000	10	16QAM	50	0	19.88	0-2	2
	1732.5	20175	10	QPSK	1	0	21.67	0	0
	1732.5	20175	10	QPSK	1	25	21.71	0	0
	1732.5	20175	10	QPSK	1	49	21.80	0	0
	1732.5	20175	10	QPSK	25	0	20.63	0-1	1
	1732.5	20175	10	QPSK	25	12	20.86	0-1	1
	1732.5	20175	10	QPSK	25	25	20.96	0-1	1
	1732.5	20175	10	QPSK	50	0	20.78	0-1	1
	1732.5	20175	10	16QAM	1	0	20.78	0-1	1
	1732.5	20175	10	16QAM	1	25	21.06	0-1	1
	1732.5	20175	10	16QAM	1	49	21.25	0-1	1
	1732.5	20175	10	16QAM	25	0	19.82	0-2	2
	1732.5	20175	10	16QAM	25	12	19.97	0-2	2
High	1732.5	20175	10	16QAM	25	25	19.89	0-2	2
	1732.5	20175	10	16QAM	50	0	19.92	0-2	2
	1750	20350	10	QPSK	1	0	21.62	0	0
	1750	20350	10	QPSK	1	25	21.78	0	0
	1750	20350	10	QPSK	1	49	21.81	0	0
	1750	20350	10	QPSK	25	0	20.66	0-1	1
	1750	20350	10	QPSK	25	12	20.69	0-1	1
	1750	20350	10	QPSK	25	25	20.98	0-1	1
	1750	20350	10	QPSK	50	0	20.62	0-1	1
	1750	20350	10	16QAM	1	0	20.63	0-1	1
	1750	20350	10	16QAM	1	25	20.97	0-1	1
	1750	20350	10	16QAM	1	49	21.10	0-1	1
	1750	20350	10	16QAM	25	0	19.90	0-2	2
	1750	20350	10	16QAM	25	12	19.91	0-2	2
	1750	20350	10	16QAM	25	25	19.84	0-2	2
	1750	20350	10	16QAM	50	0	19.94	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 38 of 116

Table 9-20
Reduced LTE Band 4 (AWS) Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1712.5	19975	5	QPSK	1	0	21.77	0	0
	1712.5	19975	5	QPSK	1	12	21.71	0	0
	1712.5	19975	5	QPSK	1	24	21.81	0	0
	1712.5	19975	5	QPSK	12	0	20.52	0-1	1
	1712.5	19975	5	QPSK	12	6	20.97	0-1	1
	1712.5	19975	5	QPSK	12	13	21.09	0-1	1
	1712.5	19975	5	QPSK	25	0	21.15	0-1	1
	1712.5	19975	5	16-QAM	1	0	20.83	0-1	1
	1712.5	19975	5	16-QAM	1	12	21.25	0-1	1
	1712.5	19975	5	16-QAM	1	24	21.26	0-1	1
	1712.5	19975	5	16-QAM	12	0	20.08	0-2	2
	1712.5	19975	5	16-QAM	12	6	19.81	0-2	2
Mid	1712.5	19975	5	16-QAM	12	13	20.01	0-2	2
	1712.5	19975	5	16-QAM	25	0	19.97	0-2	2
	1732.5	20175	5	QPSK	1	0	21.70	0	0
	1732.5	20175	5	QPSK	1	12	21.81	0	0
	1732.5	20175	5	QPSK	1	24	22.09	0	0
	1732.5	20175	5	QPSK	12	0	20.70	0-1	1
	1732.5	20175	5	QPSK	12	6	21.02	0-1	1
	1732.5	20175	5	QPSK	12	13	21.08	0-1	1
	1732.5	20175	5	QPSK	25	0	20.96	0-1	1
	1732.5	20175	5	16-QAM	1	0	20.82	0-1	1
	1732.5	20175	5	16-QAM	1	12	21.09	0-1	1
	1732.5	20175	5	16-QAM	1	24	21.29	0-1	1
High	1732.5	20175	5	16-QAM	12	0	20.02	0-2	2
	1732.5	20175	5	16-QAM	12	6	20.00	0-2	2
	1732.5	20175	5	16-QAM	12	13	20.07	0-2	2
	1732.5	20175	5	16-QAM	25	0	20.11	0-2	2
	1752.5	20375	5	QPSK	1	0	21.73	0	0
	1752.5	20375	5	QPSK	1	12	21.81	0	0
	1752.5	20375	5	QPSK	1	24	21.80	0	0
	1752.5	20375	5	QPSK	12	0	20.53	0-1	1
	1752.5	20375	5	QPSK	12	6	21.19	0-1	1
	1752.5	20375	5	QPSK	12	13	21.02	0-1	1
	1752.5	20375	5	QPSK	25	0	21.06	0-1	1
	1752.5	20375	5	16-QAM	1	0	20.77	0-1	1
	1752.5	20375	5	16-QAM	1	12	20.90	0-1	1
	1752.5	20375	5	16-QAM	1	24	21.20	0-1	1
	1752.5	20375	5	16-QAM	12	0	20.18	0-2	2
	1752.5	20375	5	16-QAM	12	6	20.20	0-2	2
	1752.5	20375	5	16-QAM	12	13	20.15	0-2	2
	1752.5	20375	5	16-QAM	25	0	19.94	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 39 of 116

Table 9-21
Reduced LTE Band 4 (AWS) Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1711.5	19965	3	QPSK	1	0	21.73	0	0
	1711.5	19965	3	QPSK	1	7	21.87	0	0
	1711.5	19965	3	QPSK	1	14	22.20	0	0
	1711.5	19965	3	QPSK	8	0	20.80	0-1	1
	1711.5	19965	3	QPSK	8	4	21.27	0-1	1
	1711.5	19965	3	QPSK	8	7	21.25	0-1	1
	1711.5	19965	3	QPSK	15	0	20.94	0-1	1
	1711.5	19965	3	16-QAM	1	0	20.96	0-1	1
	1711.5	19965	3	16-QAM	1	7	21.25	0-1	1
	1711.5	19965	3	16-QAM	1	14	21.32	0-1	1
	1711.5	19965	3	16-QAM	8	0	20.03	0-2	2
	1711.5	19965	3	16-QAM	8	4	20.01	0-2	2
	1711.5	19965	3	16-QAM	8	7	20.19	0-2	2
Mid	1711.5	19965	3	16-QAM	15	0	20.33	0-2	2
	1732.5	20175	3	QPSK	1	0	21.79	0	0
	1732.5	20175	3	QPSK	1	7	22.06	0	0
	1732.5	20175	3	QPSK	1	14	22.20	0	0
	1732.5	20175	3	QPSK	8	0	20.77	0-1	1
	1732.5	20175	3	QPSK	8	4	21.11	0-1	1
	1732.5	20175	3	QPSK	8	7	21.27	0-1	1
	1732.5	20175	3	QPSK	15	0	21.13	0-1	1
	1732.5	20175	3	16-QAM	1	0	20.84	0-1	1
	1732.5	20175	3	16-QAM	1	7	21.28	0-1	1
	1732.5	20175	3	16-QAM	1	14	21.46	0-1	1
	1732.5	20175	3	16-QAM	8	0	20.11	0-2	2
	1732.5	20175	3	16-QAM	8	4	20.15	0-2	2
High	1732.5	20175	3	16-QAM	8	7	20.25	0-2	2
	1732.5	20175	3	16-QAM	15	0	20.14	0-2	2
	1753.5	20385	3	QPSK	1	0	21.88	0	0
	1753.5	20385	3	QPSK	1	7	21.96	0	0
	1753.5	20385	3	QPSK	1	14	22.00	0	0
	1753.5	20385	3	QPSK	8	0	20.64	0-1	1
	1753.5	20385	3	QPSK	8	4	21.18	0-1	1
	1753.5	20385	3	QPSK	8	7	21.36	0-1	1
	1753.5	20385	3	QPSK	15	0	21.11	0-1	1
	1753.5	20385	3	16-QAM	1	0	20.78	0-1	1
	1753.5	20385	3	16-QAM	1	7	21.23	0-1	1
	1753.5	20385	3	16-QAM	1	14	21.44	0-1	1
	1753.5	20385	3	16-QAM	8	0	20.22	0-2	2
	1753.5	20385	3	16-QAM	8	4	20.07	0-2	2
	1753.5	20385	3	16-QAM	8	7	20.37	0-2	2
	1753.5	20385	3	16-QAM	15	0	19.98	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset	Page 40 of 116	

Table 9-22
Reduced LTE Band 4 (AWS) Conducted Powers – 1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1710.7	19957	1.4	QPSK	1	0	21.87	0	0
	1710.7	19957	1.4	QPSK	1	2	22.06	0	0
	1710.7	19957	1.4	QPSK	1	5	22.15	0	0
	1710.7	19957	1.4	QPSK	3	0	21.93	0	0
	1710.7	19957	1.4	QPSK	3	2	22.14	0	0
	1710.7	19957	1.4	QPSK	3	3	22.39	0	0
	1710.7	19957	1.4	QPSK	6	0	21.02	0-1	1
	1710.7	19957	1.4	16-QAM	1	0	21.05	0-1	1
	1710.7	19957	1.4	16-QAM	1	2	21.41	0-1	1
	1710.7	19957	1.4	16-QAM	1	5	21.35	0-1	1
	1710.7	19957	1.4	16-QAM	3	0	21.43	0-1	1
	1710.7	19957	1.4	16-QAM	3	2	21.11	0-1	1
Mid	1710.7	19957	1.4	16-QAM	3	3	21.39	0-1	1
	1710.7	19957	1.4	16-QAM	6	0	20.28	0-2	2
	1732.5	20175	1.4	QPSK	1	0	21.85	0	0
	1732.5	20175	1.4	QPSK	1	2	22.23	0	0
	1732.5	20175	1.4	QPSK	1	5	22.24	0	0
	1732.5	20175	1.4	QPSK	3	0	21.83	0	0
	1732.5	20175	1.4	QPSK	3	2	22.38	0	0
	1732.5	20175	1.4	QPSK	3	3	22.34	0	0
	1732.5	20175	1.4	QPSK	6	0	21.17	0-1	1
	1732.5	20175	1.4	16-QAM	1	0	20.87	0-1	1
	1732.5	20175	1.4	16-QAM	1	2	21.38	0-1	1
	1732.5	20175	1.4	16-QAM	1	5	21.49	0-1	1
High	1732.5	20175	1.4	16-QAM	3	0	21.31	0-1	1
	1732.5	20175	1.4	16-QAM	3	2	21.21	0-1	1
	1732.5	20175	1.4	16-QAM	3	3	21.25	0-1	1
	1732.5	20175	1.4	16-QAM	6	0	20.26	0-2	2
	1754.3	20393	1.4	QPSK	1	0	21.86	0	0
	1754.3	20393	1.4	QPSK	1	2	22.10	0	0
	1754.3	20393	1.4	QPSK	1	5	22.36	0	0
	1754.3	20393	1.4	QPSK	3	0	21.83	0	0
	1754.3	20393	1.4	QPSK	3	2	22.14	0	0
	1754.3	20393	1.4	QPSK	3	3	21.50	0	0
	1754.3	20393	1.4	QPSK	6	0	21.05	0-1	1
	1754.3	20393	1.4	16-QAM	1	0	20.84	0-1	1
	1754.3	20393	1.4	16-QAM	1	2	21.37	0-1	1
	1754.3	20393	1.4	16-QAM	1	5	21.24	0-1	1
	1754.3	20393	1.4	16-QAM	3	0	21.15	0-1	1
	1754.3	20393	1.4	16-QAM	3	2	21.32	0-1	1
	1754.3	20393	1.4	16-QAM	3	3	21.42	0-1	1
	1754.3	20393	1.4	16-QAM	6	0	20.28	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 41 of 116	

9.3.4

LTE Band 2 (PCS)

Table 9-23
Maximum LTE Band 2 (PCS) Conducted Powers - 20 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1860	18700	20	QPSK	1	0	23.50	0	0
	1860	18700	20	QPSK	1	50	23.38	0	0
	1860	18700	20	QPSK	1	99	23.40	0	0
	1860	18700	20	QPSK	50	0	22.48	0-1	1
	1860	18700	20	QPSK	50	25	22.49	0-1	1
	1860	18700	20	QPSK	50	50	22.47	0-1	1
	1860	18700	20	QPSK	100	0	22.48	0-1	1
	1860	18700	20	16QAM	1	0	22.50	0-1	1
	1860	18700	20	16QAM	1	50	22.46	0-1	1
	1860	18700	20	16QAM	1	99	22.49	0-1	1
	1860	18700	20	16QAM	50	0	21.49	0-2	2
	1860	18700	20	16QAM	50	25	21.39	0-2	2
	1860	18700	20	16QAM	50	50	21.44	0-2	2
	1860	18700	20	16QAM	100	0	21.42	0-2	2
Mid	1880.0	18900	20	QPSK	1	0	23.44	0	0
	1880.0	18900	20	QPSK	1	50	23.37	0	0
	1880.0	18900	20	QPSK	1	99	23.32	0	0
	1880.0	18900	20	QPSK	50	0	22.34	0-1	1
	1880.0	18900	20	QPSK	50	25	22.30	0-1	1
	1880.0	18900	20	QPSK	50	50	22.30	0-1	1
	1880.0	18900	20	QPSK	100	0	22.38	0-1	1
	1880.0	18900	20	16QAM	1	0	22.50	0-1	1
	1880.0	18900	20	16QAM	1	50	22.43	0-1	1
	1880.0	18900	20	16QAM	1	99	22.39	0-1	1
	1880.0	18900	20	16QAM	50	0	21.41	0-2	2
	1880.0	18900	20	16QAM	50	25	21.35	0-2	2
	1880.0	18900	20	16QAM	50	50	21.38	0-2	2
	1880.0	18900	20	16QAM	100	0	21.39	0-2	2
High	1900	19100	20	QPSK	1	0	23.10	0	0
	1900	19100	20	QPSK	1	50	22.85	0	0
	1900	19100	20	QPSK	1	99	22.52	0	0
	1900	19100	20	QPSK	50	0	22.13	0-1	1
	1900	19100	20	QPSK	50	25	22.07	0-1	1
	1900	19100	20	QPSK	50	50	22.08	0-1	1
	1900	19100	20	QPSK	100	0	22.01	0-1	1
	1900	19100	20	16QAM	1	0	22.36	0-1	1
	1900	19100	20	16QAM	1	50	22.27	0-1	1
	1900	19100	20	16QAM	1	99	22.05	0-1	1
	1900	19100	20	16QAM	50	0	21.08	0-2	2
	1900	19100	20	16QAM	50	25	21.09	0-2	2
	1900	19100	20	16QAM	50	50	21.04	0-2	2
	1900	19100	20	16QAM	100	0	21.03	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 42 of 116

Table 9-24
Maximum LTE Band 2 (PCS) Conducted Powers - 15 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1857.5	18675	15	QPSK	1	0	23.17	0	0
	1857.5	18675	15	QPSK	1	36	23.21	0	0
	1857.5	18675	15	QPSK	1	74	23.30	0	0
	1857.5	18675	15	QPSK	36	0	22.20	0-1	1
	1857.5	18675	15	QPSK	36	18	22.11	0-1	1
	1857.5	18675	15	QPSK	36	37	22.14	0-1	1
	1857.5	18675	15	QPSK	75	0	22.12	0-1	1
	1857.5	18675	15	16QAM	1	0	22.14	0-1	1
	1857.5	18675	15	16QAM	1	36	22.09	0-1	1
	1857.5	18675	15	16QAM	1	74	22.30	0-1	1
	1857.5	18675	15	16QAM	36	0	21.18	0-2	2
	1857.5	18675	15	16QAM	36	18	21.09	0-2	2
Mid	1857.5	18675	15	16QAM	36	37	21.10	0-2	2
	1857.5	18675	15	16QAM	75	0	21.06	0-2	2
	1880.0	18900	15	QPSK	1	0	23.49	0	0
	1880.0	18900	15	QPSK	1	36	23.40	0	0
	1880.0	18900	15	QPSK	1	74	23.39	0	0
	1880.0	18900	15	QPSK	36	0	22.50	0-1	1
	1880.0	18900	15	QPSK	36	18	22.48	0-1	1
	1880.0	18900	15	QPSK	36	37	22.49	0-1	1
	1880.0	18900	15	QPSK	75	0	22.50	0-1	1
	1880.0	18900	15	16QAM	1	0	22.47	0-1	1
	1880.0	18900	15	16QAM	1	36	22.46	0-1	1
	1880.0	18900	15	16QAM	1	74	22.46	0-1	1
High	1880.0	18900	15	16QAM	36	0	21.45	0-2	2
	1880.0	18900	15	16QAM	36	18	21.50	0-2	2
	1880.0	18900	15	16QAM	36	37	21.49	0-2	2
	1880.0	18900	15	16QAM	75	0	21.47	0-2	2
	1902.5	19125	15	QPSK	1	0	23.36	0	0
	1902.5	19125	15	QPSK	1	36	23.05	0	0
	1902.5	19125	15	QPSK	1	74	22.67	0	0
	1902.5	19125	15	QPSK	36	0	22.10	0-1	1
	1902.5	19125	15	QPSK	36	18	22.04	0-1	1
	1902.5	19125	15	QPSK	36	37	21.94	0-1	1
	1902.5	19125	15	QPSK	75	0	21.99	0-1	1
	1902.5	19125	15	16QAM	1	0	22.29	0-1	1
	1902.5	19125	15	16QAM	1	36	21.96	0-1	1
	1902.5	19125	15	16QAM	1	74	21.57	0-1	1
	1902.5	19125	15	16QAM	36	0	21.14	0-2	2
	1902.5	19125	15	16QAM	36	18	21.07	0-2	2
	1902.5	19125	15	16QAM	36	37	21.07	0-2	2
	1902.5	19125	15	16QAM	75	0	21.11	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT 	Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 43 of 116

Table 9-25
Maximum LTE Band 2 (PCS) Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1855	18650	10	QPSK	1	0	23.12	0	0
	1855	18650	10	QPSK	1	25	23.32	0	0
	1855	18650	10	QPSK	1	49	23.18	0	0
	1855	18650	10	QPSK	25	0	22.36	0-1	1
	1855	18650	10	QPSK	25	12	22.42	0-1	1
	1855	18650	10	QPSK	25	25	22.36	0-1	1
	1855	18650	10	QPSK	50	0	22.42	0-1	1
	1855	18650	10	16QAM	1	0	22.14	0-1	1
	1855	18650	10	16QAM	1	25	22.20	0-1	1
	1855	18650	10	16QAM	1	49	22.11	0-1	1
	1855	18650	10	16QAM	25	0	21.41	0-2	2
	1855	18650	10	16QAM	25	12	21.46	0-2	2
Mid	1855	18650	10	16QAM	25	25	21.38	0-2	2
	1855	18650	10	16QAM	50	0	21.36	0-2	2
	1880.0	18900	10	QPSK	1	0	23.44	0	0
	1880.0	18900	10	QPSK	1	25	23.45	0	0
	1880.0	18900	10	QPSK	1	49	23.34	0	0
	1880.0	18900	10	QPSK	25	0	22.50	0-1	1
	1880.0	18900	10	QPSK	25	12	22.49	0-1	1
	1880.0	18900	10	QPSK	25	25	22.50	0-1	1
	1880.0	18900	10	QPSK	50	0	22.47	0-1	1
	1880.0	18900	10	16QAM	1	0	22.48	0-1	1
	1880.0	18900	10	16QAM	1	25	22.46	0-1	1
	1880.0	18900	10	16QAM	1	49	22.46	0-1	1
High	1880.0	18900	10	16QAM	25	0	21.42	0-2	2
	1880.0	18900	10	16QAM	25	12	21.45	0-2	2
	1880.0	18900	10	16QAM	25	25	21.50	0-2	2
	1880.0	18900	10	16QAM	50	0	21.48	0-2	2
	1905	19150	10	QPSK	1	0	23.44	0	0
	1905	19150	10	QPSK	1	25	23.30	0	0
	1905	19150	10	QPSK	1	49	22.87	0	0
	1905	19150	10	QPSK	25	0	22.45	0-1	1
	1905	19150	10	QPSK	25	12	22.32	0-1	1
	1905	19150	10	QPSK	25	25	22.05	0-1	1
	1905	19150	10	QPSK	50	0	22.24	0-1	1
	1905	19150	10	16QAM	1	0	22.37	0-1	1
	1905	19150	10	16QAM	1	25	22.10	0-1	1
	1905	19150	10	16QAM	1	49	21.88	0-1	1
	1905	19150	10	16QAM	25	0	21.49	0-2	2
	1905	19150	10	16QAM	25	12	21.42	0-2	2
	1905	19150	10	16QAM	25	25	21.17	0-2	2
	1905	19150	10	16QAM	50	0	21.34	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 44 of 116	

Table 9-26
Maximum LTE Band 2 (PCS) Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1852.5	18625	5	QPSK	1	0	23.09	0	0
	1852.5	18625	5	QPSK	1	12	23.11	0	0
	1852.5	18625	5	QPSK	1	24	23.14	0	0
	1852.5	18625	5	QPSK	12	0	22.28	0-1	1
	1852.5	18625	5	QPSK	12	6	22.31	0-1	1
	1852.5	18625	5	QPSK	12	13	22.34	0-1	1
	1852.5	18625	5	QPSK	25	0	22.29	0-1	1
	1852.5	18625	5	16-QAM	1	0	22.35	0-1	1
	1852.5	18625	5	16-QAM	1	12	22.38	0-1	1
	1852.5	18625	5	16-QAM	1	24	22.41	0-1	1
	1852.5	18625	5	16-QAM	12	0	21.35	0-2	2
	1852.5	18625	5	16-QAM	12	6	21.30	0-2	2
Mid	1852.5	18625	5	16-QAM	12	13	21.42	0-2	2
	1852.5	18625	5	16-QAM	25	0	21.34	0-2	2
	1880.0	18900	5	QPSK	1	0	23.40	0	0
	1880.0	18900	5	QPSK	1	12	23.39	0	0
	1880.0	18900	5	QPSK	1	24	23.36	0	0
	1880.0	18900	5	QPSK	12	0	22.50	0-1	1
	1880.0	18900	5	QPSK	12	6	22.48	0-1	1
	1880.0	18900	5	QPSK	12	13	22.48	0-1	1
	1880.0	18900	5	QPSK	25	0	22.46	0-1	1
	1880.0	18900	5	16-QAM	1	0	22.48	0-1	1
	1880.0	18900	5	16-QAM	1	12	22.50	0-1	1
	1880.0	18900	5	16-QAM	1	24	22.49	0-1	1
High	1880.0	18900	5	16-QAM	12	0	21.44	0-2	2
	1880.0	18900	5	16-QAM	12	6	21.48	0-2	2
	1880.0	18900	5	16-QAM	12	13	21.50	0-2	2
	1880.0	18900	5	16-QAM	25	0	21.50	0-2	2
	1907.5	19175	5	QPSK	1	0	23.01	0	0
	1907.5	19175	5	QPSK	1	12	22.76	0	0
	1907.5	19175	5	QPSK	1	24	22.62	0	0
	1907.5	19175	5	QPSK	12	0	21.95	0-1	1
	1907.5	19175	5	QPSK	12	6	21.91	0-1	1
	1907.5	19175	5	QPSK	12	13	21.65	0-1	1
	1907.5	19175	5	QPSK	25	0	21.84	0-1	1
	1907.5	19175	5	16-QAM	1	0	22.36	0-1	1
	1907.5	19175	5	16-QAM	1	12	21.79	0-1	1
	1907.5	19175	5	16-QAM	1	24	21.70	0-1	1
	1907.5	19175	5	16-QAM	12	0	20.99	0-2	2
	1907.5	19175	5	16-QAM	12	6	20.86	0-2	2
	1907.5	19175	5	16-QAM	12	13	20.73	0-2	2
	1907.5	19175	5	16-QAM	25	0	20.87	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 45 of 116

Table 9-27
Maximum LTE Band 2 (PCS) Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1851.5	18615	3	QPSK	1	0	23.21	0	0
	1851.5	18615	3	QPSK	1	7	23.28	0	0
	1851.5	18615	3	QPSK	1	14	23.14	0	0
	1851.5	18615	3	QPSK	8	0	22.35	0-1	1
	1851.5	18615	3	QPSK	8	4	22.40	0-1	1
	1851.5	18615	3	QPSK	8	7	22.39	0-1	1
	1851.5	18615	3	QPSK	15	0	22.37	0-1	1
	1851.5	18615	3	16-QAM	1	0	22.49	0-1	1
	1851.5	18615	3	16-QAM	1	7	22.50	0-1	1
	1851.5	18615	3	16-QAM	1	14	22.47	0-1	1
	1851.5	18615	3	16-QAM	8	0	21.32	0-2	2
	1851.5	18615	3	16-QAM	8	4	21.34	0-2	2
Mid	1851.5	18615	3	16-QAM	8	7	21.35	0-2	2
	1851.5	18615	3	16-QAM	15	0	21.42	0-2	2
	1880.0	18900	3	QPSK	1	0	23.43	0	0
	1880.0	18900	3	QPSK	1	7	23.44	0	0
	1880.0	18900	3	QPSK	1	14	23.44	0	0
	1880.0	18900	3	QPSK	8	0	22.49	0-1	1
	1880.0	18900	3	QPSK	8	4	22.46	0-1	1
	1880.0	18900	3	QPSK	8	7	22.50	0-1	1
	1880.0	18900	3	QPSK	15	0	22.49	0-1	1
	1880.0	18900	3	16-QAM	1	0	22.46	0-1	1
	1880.0	18900	3	16-QAM	1	7	22.49	0-1	1
	1880.0	18900	3	16-QAM	1	14	22.50	0-1	1
High	1880.0	18900	3	16-QAM	8	0	21.50	0-2	2
	1880.0	18900	3	16-QAM	8	4	21.47	0-2	2
	1880.0	18900	3	16-QAM	8	7	21.45	0-2	2
	1880.0	18900	3	16-QAM	15	0	21.46	0-2	2
	1908.5	19185	3	QPSK	1	0	22.98	0	0
	1908.5	19185	3	QPSK	1	7	22.73	0	0
	1908.5	19185	3	QPSK	1	14	22.59	0	0
	1908.5	19185	3	QPSK	8	0	21.86	0-1	1
	1908.5	19185	3	QPSK	8	4	21.71	0-1	1
	1908.5	19185	3	QPSK	8	7	21.60	0-1	1
	1908.5	19185	3	QPSK	15	0	21.73	0-1	1
	1908.5	19185	3	16-QAM	1	0	22.39	0-1	1
	1908.5	19185	3	16-QAM	1	7	22.16	0-1	1
	1908.5	19185	3	16-QAM	1	14	21.80	0-1	1
	1908.5	19185	3	16-QAM	8	0	20.90	0-2	2
	1908.5	19185	3	16-QAM	8	4	20.79	0-2	2
	1908.5	19185	3	16-QAM	8	7	20.67	0-2	2
	1908.5	19185	3	16-QAM	15	0	20.82	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT 	Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset	Page 46 of 116

Table 9-28
Maximum LTE Band 2 (PCS) Conducted Powers -1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1850.7	18607	1.4	QPSK	1	0	23.02	0	0
	1850.7	18607	1.4	QPSK	1	2	23.07	0	0
	1850.7	18607	1.4	QPSK	1	5	23.03	0	0
	1850.7	18607	1.4	QPSK	3	0	23.02	0	0
	1850.7	18607	1.4	QPSK	3	2	23.18	0	0
	1850.7	18607	1.4	QPSK	3	3	23.14	0	0
	1850.7	18607	1.4	QPSK	6	0	22.18	0-1	1
	1850.7	18607	1.4	16-QAM	1	0	22.28	0-1	1
	1850.7	18607	1.4	16-QAM	1	2	22.35	0-1	1
	1850.7	18607	1.4	16-QAM	1	5	22.32	0-1	1
	1850.7	18607	1.4	16-QAM	3	0	22.17	0-1	1
	1850.7	18607	1.4	16-QAM	3	2	21.90	0-1	1
Mid	1850.7	18607	1.4	16-QAM	3	3	22.22	0-1	1
	1850.7	18607	1.4	16-QAM	6	0	21.19	0-2	2
	1880.0	18900	1.4	QPSK	1	0	23.44	0	0
	1880.0	18900	1.4	QPSK	1	2	23.44	0	0
	1880.0	18900	1.4	QPSK	1	5	23.43	0	0
	1880.0	18900	1.4	QPSK	3	0	23.43	0	0
	1880.0	18900	1.4	QPSK	3	2	23.44	0	0
	1880.0	18900	1.4	QPSK	3	3	23.39	0	0
	1880.0	18900	1.4	QPSK	6	0	22.45	0-1	1
	1880.0	18900	1.4	16-QAM	1	0	22.17	0-1	1
	1880.0	18900	1.4	16-QAM	1	2	22.28	0-1	1
	1880.0	18900	1.4	16-QAM	1	5	22.21	0-1	1
High	1880.0	18900	1.4	16-QAM	3	0	22.48	0-1	1
	1880.0	18900	1.4	16-QAM	3	2	22.45	0-1	1
	1880.0	18900	1.4	16-QAM	3	3	22.50	0-1	1
	1880.0	18900	1.4	16-QAM	6	0	21.49	0-2	2
	1909.3	19193	1.4	QPSK	1	0	22.60	0	0
	1909.3	19193	1.4	QPSK	1	2	22.56	0	0
	1909.3	19193	1.4	QPSK	1	5	22.52	0	0
	1909.3	19193	1.4	QPSK	3	0	22.51	0	0
	1909.3	19193	1.4	QPSK	3	2	22.54	0	0
	1909.3	19193	1.4	QPSK	3	3	22.50	0	0
	1909.3	19193	1.4	QPSK	6	0	21.51	0-1	1
	1909.3	19193	1.4	16-QAM	1	0	21.99	0-1	1
	1909.3	19193	1.4	16-QAM	1	2	21.98	0-1	1
	1909.3	19193	1.4	16-QAM	1	5	21.82	0-1	1
	1909.3	19193	1.4	16-QAM	3	0	21.70	0-1	1
	1909.3	19193	1.4	16-QAM	3	2	21.66	0-1	1
	1909.3	19193	1.4	16-QAM	3	3	21.57	0-1	1
	1909.3	19193	1.4	16-QAM	6	0	20.72	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 47 of 116	

Table 9-29
Reduced LTE Band 2 (PCS) Conducted Powers - 20 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1860	18700	20	QPSK	1	0	21.42	0	0
	1860	18700	20	QPSK	1	50	21.17	0	0
	1860	18700	20	QPSK	1	99	21.01	0	0
	1860	18700	20	QPSK	50	0	20.42	0-1	1
	1860	18700	20	QPSK	50	25	20.31	0-1	1
	1860	18700	20	QPSK	50	50	20.19	0-1	1
	1860	18700	20	QPSK	100	0	20.24	0-1	1
	1860	18700	20	16QAM	1	0	20.34	0-1	1
	1860	18700	20	16QAM	1	50	20.07	0-1	1
	1860	18700	20	16QAM	1	99	20.40	0-1	1
	1860	18700	20	16QAM	50	0	19.11	0-2	2
	1860	18700	20	16QAM	50	25	19.19	0-2	2
	1860	18700	20	16QAM	50	50	19.36	0-2	2
	1860	18700	20	16QAM	100	0	19.06	0-2	2
Mid	1880.0	18900	20	QPSK	1	0	21.12	0	0
	1880.0	18900	20	QPSK	1	50	20.88	0	0
	1880.0	18900	20	QPSK	1	99	20.96	0	0
	1880.0	18900	20	QPSK	50	0	19.89	0-1	1
	1880.0	18900	20	QPSK	50	25	19.89	0-1	1
	1880.0	18900	20	QPSK	50	50	19.95	0-1	1
	1880.0	18900	20	QPSK	100	0	19.85	0-1	1
	1880.0	18900	20	16QAM	1	0	20.14	0-1	1
	1880.0	18900	20	16QAM	1	50	19.82	0-1	1
	1880.0	18900	20	16QAM	1	99	20.18	0-1	1
	1880.0	18900	20	16QAM	50	0	18.87	0-2	2
	1880.0	18900	20	16QAM	50	25	18.89	0-2	2
	1880.0	18900	20	16QAM	50	50	18.96	0-2	2
	1880.0	18900	20	16QAM	100	0	18.86	0-2	2
High	1900	19100	20	QPSK	1	0	20.92	0	0
	1900	19100	20	QPSK	1	50	20.66	0	0
	1900	19100	20	QPSK	1	99	20.63	0	0
	1900	19100	20	QPSK	50	0	20.40	0-1	1
	1900	19100	20	QPSK	50	25	19.99	0-1	1
	1900	19100	20	QPSK	50	50	19.83	0-1	1
	1900	19100	20	QPSK	100	0	20.05	0-1	1
	1900	19100	20	16QAM	1	0	19.86	0-1	1
	1900	19100	20	16QAM	1	50	20.41	0-1	1
	1900	19100	20	16QAM	1	99	20.07	0-1	1
	1900	19100	20	16QAM	50	0	19.17	0-2	2
	1900	19100	20	16QAM	50	25	18.88	0-2	2
	1900	19100	20	16QAM	50	50	18.84	0-2	2
	1900	19100	20	16QAM	100	0	19.26	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 48 of 116

Table 9-30
Reduced LTE Band 2 (PCS) Conducted Powers - 15 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1857.5	18675	15	QPSK	1	0	21.40	0	0
	1857.5	18675	15	QPSK	1	36	21.11	0	0
	1857.5	18675	15	QPSK	1	74	20.99	0	0
	1857.5	18675	15	QPSK	36	0	20.28	0-1	1
	1857.5	18675	15	QPSK	36	18	20.23	0-1	1
	1857.5	18675	15	QPSK	36	37	20.16	0-1	1
	1857.5	18675	15	QPSK	75	0	20.15	0-1	1
	1857.5	18675	15	16QAM	1	0	20.15	0-1	1
	1857.5	18675	15	16QAM	1	36	19.89	0-1	1
	1857.5	18675	15	16QAM	1	74	20.39	0-1	1
	1857.5	18675	15	16QAM	36	0	19.08	0-2	2
	1857.5	18675	15	16QAM	36	18	19.03	0-2	2
	1857.5	18675	15	16QAM	36	37	19.19	0-2	2
Mid	1857.5	18675	15	16QAM	75	0	19.04	0-2	2
	1880.0	18900	15	QPSK	1	0	21.04	0	0
	1880.0	18900	15	QPSK	1	36	20.88	0	0
	1880.0	18900	15	QPSK	1	74	20.90	0	0
	1880.0	18900	15	QPSK	36	0	19.83	0-1	1
	1880.0	18900	15	QPSK	36	18	19.79	0-1	1
	1880.0	18900	15	QPSK	36	37	19.77	0-1	1
	1880.0	18900	15	QPSK	75	0	19.78	0-1	1
	1880.0	18900	15	16QAM	1	0	19.95	0-1	1
	1880.0	18900	15	16QAM	1	36	19.81	0-1	1
	1880.0	18900	15	16QAM	1	74	20.04	0-1	1
	1880.0	18900	15	16QAM	36	0	18.86	0-2	2
	1880.0	18900	15	16QAM	36	18	18.69	0-2	2
	1880.0	18900	15	16QAM	36	37	18.93	0-2	2
High	1880.0	18900	15	16QAM	75	0	18.78	0-2	2
	1902.5	19125	15	QPSK	1	0	20.77	0	0
	1902.5	19125	15	QPSK	1	36	20.66	0	0
	1902.5	19125	15	QPSK	1	74	20.50	0	0
	1902.5	19125	15	QPSK	36	0	20.21	0-1	1
	1902.5	19125	15	QPSK	36	18	19.94	0-1	1
	1902.5	19125	15	QPSK	36	37	19.68	0-1	1
	1902.5	19125	15	QPSK	75	0	19.85	0-1	1
	1902.5	19125	15	16QAM	1	0	19.72	0-1	1
	1902.5	19125	15	16QAM	1	36	20.31	0-1	1
	1902.5	19125	15	16QAM	1	74	19.88	0-1	1
	1902.5	19125	15	16QAM	36	0	19.07	0-2	2
	1902.5	19125	15	16QAM	36	18	18.75	0-2	2
	1902.5	19125	15	16QAM	36	37	18.75	0-2	2
	1902.5	19125	15	16QAM	75	0	19.25	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 49 of 116	

Table 9-31
Reduced LTE Band 2 (PCS) Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1855	18650	10	QPSK	1	0	21.25	0	0
	1855	18650	10	QPSK	1	25	21.16	0	0
	1855	18650	10	QPSK	1	49	20.92	0	0
	1855	18650	10	QPSK	25	0	20.38	0-1	1
	1855	18650	10	QPSK	25	12	20.30	0-1	1
	1855	18650	10	QPSK	25	25	20.19	0-1	1
	1855	18650	10	QPSK	50	0	20.12	0-1	1
	1855	18650	10	16QAM	1	0	20.32	0-1	1
	1855	18650	10	16QAM	1	25	20.05	0-1	1
	1855	18650	10	16QAM	1	49	20.30	0-1	1
	1855	18650	10	16QAM	25	0	18.95	0-2	2
	1855	18650	10	16QAM	25	12	19.02	0-2	2
Mid	1880.0	18900	10	QPSK	1	0	20.92	0	0
	1880.0	18900	10	QPSK	1	25	20.74	0	0
	1880.0	18900	10	QPSK	1	49	20.81	0	0
	1880.0	18900	10	QPSK	25	0	19.82	0-1	1
	1880.0	18900	10	QPSK	25	12	19.78	0-1	1
	1880.0	18900	10	QPSK	25	25	19.87	0-1	1
	1880.0	18900	10	QPSK	50	0	19.77	0-1	1
	1880.0	18900	10	16QAM	1	0	19.94	0-1	1
	1880.0	18900	10	16QAM	1	25	19.63	0-1	1
	1880.0	18900	10	16QAM	1	49	20.13	0-1	1
	1880.0	18900	10	16QAM	25	0	18.78	0-2	2
	1880.0	18900	10	16QAM	25	12	18.73	0-2	2
High	1905	19150	10	QPSK	1	0	20.84	0	0
	1905	19150	10	QPSK	1	25	20.65	0	0
	1905	19150	10	QPSK	1	49	20.53	0	0
	1905	19150	10	QPSK	25	0	20.39	0-1	1
	1905	19150	10	QPSK	25	12	19.86	0-1	1
	1905	19150	10	QPSK	25	25	19.76	0-1	1
	1905	19150	10	QPSK	50	0	20.00	0-1	1
	1905	19150	10	16QAM	1	0	19.70	0-1	1
	1905	19150	10	16QAM	1	25	20.29	0-1	1
	1905	19150	10	16QAM	1	49	19.98	0-1	1
	1905	19150	10	16QAM	25	0	19.00	0-2	2
	1905	19150	10	16QAM	25	12	18.84	0-2	2
	1905	19150	10	16QAM	25	25	18.72	0-2	2
	1905	19150	10	16QAM	50	0	19.06	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 50 of 116

Table 9-32
Reduced LTE Band 2 (PCS) Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1852.5	18625	5	QPSK	1	0	21.40	0	0
	1852.5	18625	5	QPSK	1	12	21.09	0	0
	1852.5	18625	5	QPSK	1	24	20.92	0	0
	1852.5	18625	5	QPSK	12	0	20.37	0-1	1
	1852.5	18625	5	QPSK	12	6	20.22	0-1	1
	1852.5	18625	5	QPSK	12	13	20.01	0-1	1
	1852.5	18625	5	QPSK	25	0	20.22	0-1	1
	1852.5	18625	5	16-QAM	1	0	20.30	0-1	1
	1852.5	18625	5	16-QAM	1	12	20.04	0-1	1
	1852.5	18625	5	16-QAM	1	24	20.30	0-1	1
	1852.5	18625	5	16-QAM	12	0	18.96	0-2	2
	1852.5	18625	5	16-QAM	12	6	19.03	0-2	2
Mid	1852.5	18625	5	16-QAM	12	13	19.25	0-2	2
	1852.5	18625	5	16-QAM	25	0	19.06	0-2	2
	1880.0	18900	5	QPSK	1	0	21.07	0	0
	1880.0	18900	5	QPSK	1	12	20.76	0	0
	1880.0	18900	5	QPSK	1	24	20.90	0	0
	1880.0	18900	5	QPSK	12	0	19.88	0-1	1
	1880.0	18900	5	QPSK	12	6	19.80	0-1	1
	1880.0	18900	5	QPSK	12	13	19.86	0-1	1
	1880.0	18900	5	QPSK	25	0	19.70	0-1	1
	1880.0	18900	5	16-QAM	1	0	20.10	0-1	1
	1880.0	18900	5	16-QAM	1	12	19.64	0-1	1
	1880.0	18900	5	16-QAM	1	24	20.04	0-1	1
High	1880.0	18900	5	16-QAM	12	0	18.74	0-2	2
	1880.0	18900	5	16-QAM	12	6	18.72	0-2	2
	1880.0	18900	5	16-QAM	12	13	18.96	0-2	2
	1880.0	18900	5	16-QAM	25	0	18.78	0-2	2
	1907.5	19175	5	QPSK	1	0	20.92	0	0
	1907.5	19175	5	QPSK	1	12	20.64	0	0
	1907.5	19175	5	QPSK	1	24	20.54	0	0
	1907.5	19175	5	QPSK	12	0	20.32	0-1	1
	1907.5	19175	5	QPSK	12	6	19.85	0-1	1
	1907.5	19175	5	QPSK	12	13	19.74	0-1	1
	1907.5	19175	5	QPSK	25	0	19.93	0-1	1
	1907.5	19175	5	16-QAM	1	0	19.76	0-1	1
	1907.5	19175	5	16-QAM	1	12	20.29	0-1	1
	1907.5	19175	5	16-QAM	1	24	20.06	0-1	1
	1907.5	19175	5	16-QAM	12	0	18.98	0-2	2
	1907.5	19175	5	16-QAM	12	6	18.86	0-2	2
	1907.5	19175	5	16-QAM	12	13	18.78	0-2	2
	1907.5	19175	5	16-QAM	25	0	19.13	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 51 of 116

Table 9-33
Reduced LTE Band 2 (PCS) Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1851.5	18615	3	QPSK	1	0	21.31	0	0
	1851.5	18615	3	QPSK	1	7	21.06	0	0
	1851.5	18615	3	QPSK	1	14	20.96	0	0
	1851.5	18615	3	QPSK	8	0	20.29	0-1	1
	1851.5	18615	3	QPSK	8	4	20.15	0-1	1
	1851.5	18615	3	QPSK	8	7	20.15	0-1	1
	1851.5	18615	3	QPSK	15	0	20.08	0-1	1
	1851.5	18615	3	16-QAM	1	0	20.34	0-1	1
	1851.5	18615	3	16-QAM	1	7	19.98	0-1	1
	1851.5	18615	3	16-QAM	1	14	20.36	0-1	1
	1851.5	18615	3	16-QAM	8	0	19.05	0-2	2
	1851.5	18615	3	16-QAM	8	4	19.11	0-2	2
Mid	1851.5	18615	3	16-QAM	8	7	19.18	0-2	2
	1851.5	18615	3	16-QAM	15	0	19.05	0-2	2
	1880.0	18900	3	QPSK	1	0	21.11	0	0
	1880.0	18900	3	QPSK	1	7	20.86	0	0
	1880.0	18900	3	QPSK	1	14	20.88	0	0
	1880.0	18900	3	QPSK	8	0	19.75	0-1	1
	1880.0	18900	3	QPSK	8	4	19.78	0-1	1
	1880.0	18900	3	QPSK	8	7	19.88	0-1	1
	1880.0	18900	3	QPSK	15	0	19.65	0-1	1
	1880.0	18900	3	16-QAM	1	0	19.96	0-1	1
	1880.0	18900	3	16-QAM	1	7	19.69	0-1	1
	1880.0	18900	3	16-QAM	1	14	20.08	0-1	1
High	1880.0	18900	3	16-QAM	8	0	18.71	0-2	2
	1880.0	18900	3	16-QAM	8	4	18.86	0-2	2
	1880.0	18900	3	16-QAM	8	7	18.76	0-2	2
	1880.0	18900	3	16-QAM	15	0	18.67	0-2	2
	1908.5	19185	3	QPSK	1	0	20.73	0	0
	1908.5	19185	3	QPSK	1	7	20.60	0	0
	1908.5	19185	3	QPSK	1	14	20.59	0	0
	1908.5	19185	3	QPSK	8	0	20.30	0-1	1
	1908.5	19185	3	QPSK	8	4	19.96	0-1	1
	1908.5	19185	3	QPSK	8	7	19.63	0-1	1
	1908.5	19185	3	QPSK	15	0	19.99	0-1	1
	1908.5	19185	3	16-QAM	1	0	19.81	0-1	1
	1908.5	19185	3	16-QAM	1	7	20.22	0-1	1
	1908.5	19185	3	16-QAM	1	14	19.90	0-1	1
	1908.5	19185	3	16-QAM	8	0	18.97	0-2	2
	1908.5	19185	3	16-QAM	8	4	18.70	0-2	2
	1908.5	19185	3	16-QAM	8	7	18.74	0-2	2
	1908.5	19185	3	16-QAM	15	0	19.16	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT 	Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 52 of 116

Table 9-34
Reduced LTE Band 2 (PCS) Conducted Powers – 1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1850.7	18607	1.4	QPSK	1	0	21.29	0	0
	1850.7	18607	1.4	QPSK	1	2	21.02	0	0
	1850.7	18607	1.4	QPSK	1	5	20.83	0	0
	1850.7	18607	1.4	QPSK	3	0	21.04	0	0
	1850.7	18607	1.4	QPSK	3	2	21.13	0	0
	1850.7	18607	1.4	QPSK	3	3	21.06	0	0
	1850.7	18607	1.4	QPSK	6	0	20.07	0-1	1
	1850.7	18607	1.4	16-QAM	1	0	20.28	0-1	1
	1850.7	18607	1.4	16-QAM	1	2	19.90	0-1	1
	1850.7	18607	1.4	16-QAM	1	5	20.35	0-1	1
	1850.7	18607	1.4	16-QAM	3	0	19.94	0-1	1
	1850.7	18607	1.4	16-QAM	3	2	20.07	0-1	1
Mid	1880.0	18900	1.4	QPSK	1	0	21.06	0	0
	1880.0	18900	1.4	QPSK	1	2	20.84	0	0
	1880.0	18900	1.4	QPSK	1	5	20.93	0	0
	1880.0	18900	1.4	QPSK	3	0	20.74	0	0
	1880.0	18900	1.4	QPSK	3	2	20.80	0	0
	1880.0	18900	1.4	QPSK	3	3	20.83	0	0
	1880.0	18900	1.4	QPSK	6	0	19.71	0-1	1
	1880.0	18900	1.4	16-QAM	1	0	19.97	0-1	1
	1880.0	18900	1.4	16-QAM	1	2	19.69	0-1	1
	1880.0	18900	1.4	16-QAM	1	5	20.05	0-1	1
	1880.0	18900	1.4	16-QAM	3	0	19.73	0-1	1
	1880.0	18900	1.4	16-QAM	3	2	19.79	0-1	1
High	1909.3	19193	1.4	QPSK	1	0	20.78	0	0
	1909.3	19193	1.4	QPSK	1	2	20.54	0	0
	1909.3	19193	1.4	QPSK	1	5	20.50	0	0
	1909.3	19193	1.4	QPSK	3	0	20.70	0	0
	1909.3	19193	1.4	QPSK	3	2	20.82	0	0
	1909.3	19193	1.4	QPSK	3	3	20.73	0	0
	1909.3	19193	1.4	QPSK	6	0	19.91	0-1	1
	1909.3	19193	1.4	16-QAM	1	0	19.76	0-1	1
	1909.3	19193	1.4	16-QAM	1	2	20.22	0-1	1
	1909.3	19193	1.4	16-QAM	1	5	19.93	0-1	1
	1909.3	19193	1.4	16-QAM	3	0	20.12	0-1	1
	1909.3	19193	1.4	16-QAM	3	2	19.76	0-1	1
	1909.3	19193	1.4	16-QAM	3	3	19.72	0-1	1
	1909.3	19193	1.4	16-QAM	6	0	19.21	0-2	2

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT 	Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 53 of 116

9.3.5

LTE Carrier Aggregation Conducted Powers

Table 9-35

Maximum LTE Carrier Aggregation Conducted Powers – Band 2 (PCC) 20MHz BW + Band 29 (SCC) 10 MHz BW

Band 2 (PCC) 20MHz + Band 29 (SCC) 10 MHz				
1860 MHz / ch.18700 + 722.7 MHz / ch. 9715	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	0	23.15	23.50

Table 9-36

Reduced LTE Carrier Aggregation Conducted Powers – Band 2 (PCC) 20MHz BW+ Band 29 (SCC) 10 MHz BW

Band 2 (PCC) 20MHz + Band 29 (SCC) 10 MHz				
1860 MHz / ch.18700 + 722.7 MHz / ch. 9715	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	0	21.50	21.42

Table 9-37

Maximum LTE Carrier Aggregation Conducted Powers – Band 2 (PCC) 10MHz BW + Band 17 (SCC) 10 MHz BW

Band 2 (PCC) 10MHz + Band 17 (SCC) 10 MHz				
1880 MHz / ch.18900 + 740 MHz / ch. 5790	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	25	22.98	23.45

Table 9-38

Reduced LTE Carrier Aggregation Conducted Powers – Band 2 (PCC) 10MHz BW + Band 17 (SCC) 10 MHz BW

Band 2 (PCC) 10MHz + Band 17 (SCC) 10 MHz				
1855 MHz / ch.18650 + 740 MHz / ch. 5790	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	0	21.27	21.25

Table 9-39

Maximum LTE Carrier Aggregation Conducted Powers – Band 2 (PCC) 20MHz BW + Band 4 (SCC) 20 MHz BW

Band 2 (PCC) 20MHz + Band 4 (SCC) 20 MHz				
1860 MHz / ch.18700 + 2132.5 MHz / ch. 2175	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	0	23.13	23.50

Table 9-40

Reduced LTE Carrier Aggregation Conducted Powers – Band 2 (PCC) 20MHz BW + Band 4 (SCC) 20 MHz BW

Band 2 (PCC) 20MHz + Band 4 (SCC) 20 MHz				
1860 MHz / ch.18700 + 2132.5 MHz / ch. 2175	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	0	21.32	21.42

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 54 of 116

Table 9-41**Maximum LTE Carrier Aggregation Conducted Powers – Band 4 (PCC) 20MHz BW + Band 29 (SCC) 10 MHz BW**

Band 4 (PCC) 20MHz + Band 29 (SCC) 10 MHz				
1732.5 MHz / ch.20175 + 722.7 MHz / ch. 9715	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	50	23.43	23.50

Table 9-42**Reduced LTE Carrier Aggregation Conducted Powers – Band 4 (PCC) 20MHz BW + Band 29 (SCC) 10 MHz BW**

Band 4 (PCC) 20MHz + Band 29 (SCC) 10 MHz				
1732.5 MHz / ch.20175 + 722.7 MHz / ch. 9715	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	99	21.79	21.82

Table 9-43**Maximum LTE Carrier Aggregation Conducted Powers – Band 4 (PCC) 20MHz BW + Band 12 (SCC) 10 MHz BW**

Band 4 (PCC) 20MHz + Band 12 (SCC) 10 MHz				
1732.5 MHz / ch.20175 + 737.5 MHz / ch. 5095	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	50	23.39	23.50

Table 9-44**Reduced LTE Carrier Aggregation Conducted Powers – Band 4 (PCC) 20MHz BW + Band 12 (SCC) 10 MHz BW**

Band 4 (PCC) 20MHz + Band 12 (SCC) 10 MHz				
1732.5 MHz / ch.20175 + 737.5 MHz / ch. 5095	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	99	21.65	21.82

Table 9-45**Maximum LTE Carrier Aggregation Conducted Powers – Band 4 (PCC) 10MHz BW + Band 17 (SCC) 10 MHz BW**

Band 4 (PCC) 10MHz + Band 17 (SCC) 10 MHz				
1732.5 MHz / ch.20175 + 740 MHz / ch. 5790	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	25	23.34	23.43

Table 9-46**Reduced LTE Carrier Aggregation Conducted Powers – Band 4 (PCC) 10 MHz BW + Band 17 (SCC) 10 MHz BW**

Band 4 (PCC) 10MHz + Band 17 (SCC) 10 MHz				
1750 MHz / ch.20350 + 740 MHz / ch. 5790	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	49	21.35	21.81

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 55 of 116

Table 9-47

Maximum LTE Carrier Aggregation Conducted Powers – Band 4 (PCC) 20 MHz BW + Band 2 (SCC) 20 MHz BW

Band 4 (PCC) 20 MHz + Band 2 (SCC) 20 MHz				
1732.5 MHz / ch.20175 + 1960 MHz / ch. 900	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	50	23.42	23.50

Table 9-48

Reduced LTE Carrier Aggregation Conducted Powers – Band 4 (PCC) 20 MHz BW + Band 2 (SCC) 20 MHz BW

Band 4 (PCC) 20 MHz + Band 2 (SCC) 20 MHz				
1732.5 MHz / ch.20175 + 1960 MHz / ch. 900	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	99	21.55	21.82

Notes:

1. The device does not support all Rel. 10 Carrier Aggregation features due to modem chipset limitation.
2. The device only supports downlink Carrier Aggregation. Uplink Carrier Aggregation is not supported. Power measurements were performed with two DL carriers for the Release 8 configuration that had the highest output power (across all bandwidths, channels and RB Configurations) for each band
3. This device only supports inter-band CA with 2 carriers (B2+B29, B2+B17, B2+B4, B4+B29, B4+B12, B4+B17, B4+B2) with a maximum of 10 MHz of spectrum for LTE Band 29/12/17 and a maximum of 20 MHz of spectrum for LTE Band 4/2
4. All control and acknowledge data is sent on uplink channels that operate identical to release 8 specifications.

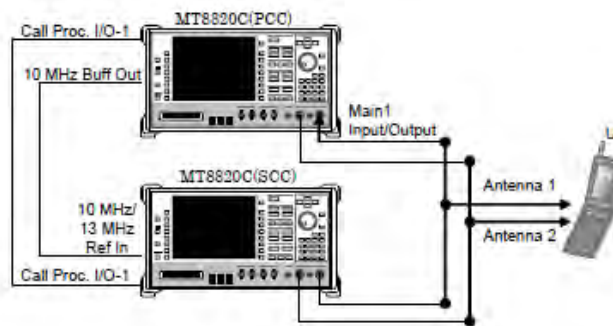


Figure 9-2
Power Measurement Setup

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 56 of 116

9.4 WLAN Conducted Powers

Table 9-49
SISO IEEE 802.11b Average RF Power- Antenna 1

Mode	Freq [MHz]	Channel	802.11b Conducted Power [dBm]			
			Data Rate [Mbps]			
			1	2	5.5	11
802.11b	2412	1*	14.75	15.09	15.12	15.13
802.11b	2437	6*	14.88	15.25	15.27	15.24
802.11b	2462	11*	15.19	15.39	15.43	15.42

Table 9-50
SISO IEEE 802.11b Average RF Power- Antenna 2

Mode	Freq [MHz]	Channel	802.11b Conducted Power [dBm]			
			Data Rate [Mbps]			
			1	2	5.5	11
802.11b	2412	1*	14.04	14.20	14.19	14.17
802.11b	2437	6*	14.71	14.92	14.82	14.87
802.11b	2462	11*	14.72	14.82	14.87	14.93

Table 9-51
SISO IEEE 802.11g Average RF Power- Antenna 1

Mode	Freq [MHz]	Channel	802.11g Conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11g	2412	1	14.20	14.23	14.20	14.14	14.31	14.24	14.17	14.03
802.11g	2437	6	14.41	14.49	14.41	14.37	14.48	14.42	14.33	14.18
802.11g	2462	11	14.41	14.41	14.45	14.27	14.48	14.41	14.43	14.19

Table 9-52
SISO IEEE 802.11g Average RF Power- Antenna 2

Mode	Freq [MHz]	Channel	802.11g Conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11g	2412	1	14.03	13.94	14.05	13.93	14.12	14.05	14.29	14.08
802.11g	2437	6	14.39	14.31	14.40	14.29	14.43	14.42	14.49	14.44
802.11g	2462	11	13.62	13.58	13.66	13.51	13.62	13.61	13.87	13.66

Table 9-53
SISO IEEE 802.11n Average RF Power- Antenna 1

Mode	Freq [MHz]	Channel	802.11n (2.4GHz) Conducted Power [dBm]							
			Data Rate [Mbps]							
			6.5	13	19.5	26	39	52	58.5	65
802.11n	2412	1	12.91	12.96	13.01	13.18	13.17	13.27	13.31	13.33
802.11n	2437	6	13.09	13.11	13.23	13.37	13.29	13.43	13.49	13.47
802.11n	2462	11	13.26	13.27	13.33	13.48	13.47	13.47	13.49	13.46

Table 9-54
SISO IEEE 802.11n Average RF Power- Antenna 2

Mode	Freq [MHz]	Channel	802.11n (2.4GHz) Conducted Power [dBm]							
			Data Rate [Mbps]							
			6.5	13	19.5	26	39	52	58.5	65
802.11n	2412	1	12.77	12.81	12.83	13.08	13.04	13.26	13.18	13.19
802.11n	2437	6	13.34	13.47	13.36	13.43	13.47	13.49	13.47	13.48
802.11n	2462	11	13.24	13.29	13.29	13.47	13.42	13.45	13.49	13.40

FCC ID: A3LSMN915W8			SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset			Page 57 of 116

Table 9-55
MIMO IEEE 802.11n Average RF Power

802.11n (2.4 GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			13
802.11n	2412	1*	15.85
802.11n	2437	6*	16.23
802.11n	2462	11*	16.26

Table 9-56
SISO IEEE 802.11a Average RF Power-Antenna 1

Mode	Freq [MHz]	Channel	802.11a Conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11a	5180	36*	11.98	11.91	11.98	11.89	12.08	12.05	12.16	11.94
802.11a	5200	40	12.11	12.05	12.12	11.95	12.25	12.21	12.26	12.04
802.11a	5220	44	12.16	12.13	12.21	12.04	12.23	12.25	12.37	12.13
802.11a	5240	48*	12.40	12.30	12.39	12.33	12.42	12.44	12.49	12.30
802.11a	5260	52*	11.96	11.92	11.91	11.84	12.17	12.09	12.14	12.07
802.11a	5280	56	12.21	12.16	12.17	12.00	12.39	12.33	12.43	12.32
802.11a	5300	60	12.38	12.41	12.34	12.22	12.45	12.48	12.49	12.46
802.11a	5320	64*	12.32	12.30	12.28	12.14	12.46	12.49	12.49	12.46
802.11a	5500	100	12.07	12.06	12.09	12.06	12.29	12.17	12.28	12.06
802.11a	5520	104*	12.01	12.05	11.98	12.03	12.26	12.05	12.30	12.05
802.11a	5540	108	11.98	11.90	12.03	11.92	12.22	12.13	12.27	12.02
802.11a	5560	112	12.01	12.00	12.06	11.99	12.25	12.09	12.29	12.03
802.11a	5580	116*	12.03	12.06	12.08	12.01	12.28	12.17	12.19	11.98
802.11a	5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5660	132	11.71	11.71	11.68	11.68	11.88	11.79	11.91	11.69
802.11a	5680	136*	11.57	11.60	11.63	11.59	11.80	11.72	11.81	11.59
802.11a	5700	140	11.67	11.62	11.69	11.62	11.92	11.82	11.89	11.62
802.11a	5745	149*	12.03	12.08	12.01	11.98	12.16	12.11	12.27	11.97
802.11a	5765	153	11.95	11.97	11.93	11.89	12.08	12.07	12.16	11.88
802.11a	5785	157*	11.92	11.99	11.93	11.90	11.97	12.01	12.17	11.84
802.11a	5805	161	11.84	11.91	11.78	11.83	12.05	11.97	12.04	11.87
802.11a	5825	165*	11.87	11.93	11.88	11.81	11.99	11.92	12.02	11.79

Per FCC KDB Publication 443999 and RSS-210 A9.2(3), transmission on channels which overlap the 5600-5650 MHz is prohibited as a client. This device does not transmit any beacons or initiate any transmissions in 5.3 and 5.5 GHz Band.

(*) – indicates default channels per KDB Publication 248227 D01v01r02. When the adjacent channels are higher in power than the default channels, these “required channels” are considered for SAR testing instead of the default channels.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT 	Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 58 of 116

Table 9-57
SISO IEEE 802.11a Average RF Power - Antenna 2

Mode	Freq [MHz]	Channel	802.11a Conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11a	5180	36*	12.13	12.23	12.19	12.08	12.34	12.29	12.37	12.29
802.11a	5200	40	12.09	12.24	12.17	12.04	12.23	12.30	12.37	12.31
802.11a	5220	44	12.01	12.15	12.05	11.89	12.18	12.19	12.26	12.22
802.11a	5240	48*	11.95	12.06	12.02	11.91	12.17	12.11	12.20	12.11
802.11a	5260	52*	11.62	11.61	11.64	11.61	11.83	11.69	11.86	11.73
802.11a	5280	56	11.59	11.65	11.55	11.50	11.80	11.65	11.84	11.64
802.11a	5300	60	11.41	11.41	11.43	11.35	11.64	11.46	11.56	11.53
802.11a	5320	64*	11.40	11.38	11.36	11.34	11.65	11.47	11.56	11.58
802.11a	5500	100	11.65	11.72	11.64	11.64	11.88	11.87	12.08	11.83
802.11a	5520	104*	11.79	11.85	11.77	11.81	12.01	12.01	12.26	11.91
802.11a	5540	108	11.73	11.77	11.69	11.77	11.95	11.96	12.22	11.90
802.11a	5560	112	11.74	11.80	11.78	11.69	11.94	11.88	12.21	11.93
802.11a	5580	116*	11.82	11.88	11.86	11.83	12.13	11.98	12.29	12.05
802.11a	5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5660	132	12.01	12.08	11.99	11.95	12.23	12.26	12.30	12.20
802.11a	5680	136*	12.04	12.11	12.00	12.01	12.21	12.28	12.27	12.25
802.11a	5700	140	12.06	12.09	12.10	12.02	12.29	12.22	12.29	12.25
802.11a	5745	149*	12.11	11.91	12.03	11.95	12.21	12.09	12.35	12.06
802.11a	5765	153	12.04	11.90	11.89	11.93	12.20	12.02	12.27	12.06
802.11a	5785	157*	12.21	12.01	12.21	12.04	12.25	12.16	12.47	12.12
802.11a	5805	161	12.26	12.02	12.18	12.07	12.43	12.26	12.46	12.20
802.11a	5825	165*	12.33	12.14	12.18	12.18	12.49	12.30	12.49	12.23

Per FCC KDB Publication 443999 and RSS-210 A9.2(3), transmission on channels which overlap the 5600-5650 MHz is prohibited as a client. This device does not transmit any beacons or initiate any transmissions in 5.3 and 5.5 GHz Band.

(*) – indicates default channels per KDB Publication 248227 D01v01r02. When the adjacent channels are higher in power then the default channels, these “required channels” are considered for SAR testing instead of the default channels.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT 	Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 59 of 116

Table 9-58
SISO IEEE 802.11n Average RF Power – 20 MHz Bandwidth- Antenna 1

Mode	Freq [MHz]	Channel	20MHz BW 802.11n (5GHz) Conducted Power [dBm]							
			Data Rate [Mbps]							
			6.5	13	19.5	26	39	52	58.5	65
802.11n	5180	36	11.83	11.77	11.85	12.31	12.37	12.27	12.31	12.32
802.11n	5200	40	11.85	11.84	11.86	12.32	12.33	12.32	12.36	12.25
802.11n	5220	44	12.02	11.91	12.09	12.49	12.46	12.47	12.47	12.43
802.11n	5240	48	12.09	11.99	12.11	12.47	12.47	12.48	12.44	12.49
802.11n	5260	52	12.08	12.06	12.11	12.35	12.41	12.46	12.45	12.48
802.11n	5280	56	12.09	12.07	12.12	12.29	12.35	12.48	12.41	12.46
802.11n	5300	60	12.04	12.00	12.01	12.35	12.35	12.49	12.40	12.41
802.11n	5320	64	12.16	12.21	12.22	12.44	12.49	12.49	12.44	12.47
802.11n	5500	100	11.85	11.78	11.77	12.11	12.07	12.06	12.05	12.03
802.11n	5520	104	11.92	11.81	11.82	12.22	12.13	12.09	12.07	12.09
802.11n	5540	108	12.14	12.06	12.08	12.27	12.28	12.30	12.29	12.24
802.11n	5560	112	12.15	12.08	12.09	12.29	12.26	12.30	12.28	12.28
802.11n	5580	116	12.09	12.07	12.00	12.28	12.22	12.31	12.29	12.31
802.11n	5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5660	132	12.27	12.16	12.22	12.24	12.30	12.28	12.29	12.19
802.11n	5680	136	12.29	12.24	12.16	12.26	12.31	12.31	12.30	12.28
802.11n	5700	140	12.31	12.17	12.16	12.29	12.29	12.27	12.26	12.30
802.11n	5745	149	11.99	11.33	11.29	11.58	11.53	11.58	11.47	11.10
802.11n	5765	153	11.86	11.23	11.19	11.44	11.34	11.49	11.34	11.02
802.11n	5785	157	11.78	11.19	11.04	11.37	11.31	11.38	11.24	10.94
802.11n	5805	161	11.74	11.12	11.05	11.30	11.31	11.37	11.23	10.91
802.11n	5825	165	11.81	11.21	11.17	11.44	11.36	11.46	11.24	10.90

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 60 of 116

Table 9-59
SISO IEEE 802.11n Average RF Power – 20 MHz Bandwidth- Antenna 2

Mode	Freq [MHz]	Channel	20MHz BW 802.11n (5GHz) Conducted Power [dBm]							
			Data Rate [Mbps]							
			6.5	13	19.5	26	39	52	58.5	65
802.11n	5180	36	12.04	12.11	12.04	12.31	12.22	12.25	12.33	12.37
802.11n	5200	40	11.97	12.01	12.01	12.21	12.16	12.11	12.33	12.26
802.11n	5220	44	12.03	12.10	12.10	12.24	12.18	12.24	12.26	12.37
802.11n	5240	48	11.81	11.84	11.80	12.01	12.07	12.06	12.09	12.11
802.11n	5260	52	11.51	11.42	11.64	11.65	11.73	11.74	11.71	11.77
802.11n	5280	56	11.41	11.32	11.45	11.52	11.55	11.70	11.61	11.66
802.11n	5300	60	11.38	11.34	11.45	11.53	11.57	11.63	11.61	11.65
802.11n	5320	64	11.29	11.26	11.42	11.43	11.52	11.46	11.50	11.59
802.11n	5500	100	11.62	11.56	11.48	11.74	11.77	11.83	11.87	11.93
802.11n	5520	104	11.63	11.56	11.48	11.70	11.74	11.83	11.90	12.01
802.11n	5540	108	11.67	11.65	11.59	11.86	11.77	11.93	11.92	11.96
802.11n	5560	112	11.57	11.47	11.43	11.72	11.70	11.80	11.78	11.89
802.11n	5580	116	11.67	11.62	11.49	11.79	11.89	11.95	11.92	11.98
802.11n	5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5660	132	11.81	11.74	11.66	11.96	11.89	11.99	12.10	12.08
802.11n	5680	136	11.89	11.81	11.73	11.92	12.06	12.11	12.12	12.19
802.11n	5700	140	11.93	11.86	11.84	12.05	12.09	12.09	12.12	12.18
802.11n	5745	149	11.96	12.08	11.94	12.11	12.19	12.22	12.31	12.17
802.11n	5765	153	11.92	12.05	11.90	12.05	12.13	12.18	12.23	12.14
802.11n	5785	157	12.02	12.15	11.92	12.17	12.23	12.27	12.42	12.18
802.11n	5805	161	12.17	12.33	12.12	12.39	12.39	12.45	12.49	12.35
802.11n	5825	165	12.22	12.36	12.24	12.31	12.38	12.44	12.44	12.47

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 61 of 116

Table 9-60
MIMO IEEE 802.11n Average RF Power – 20 MHz Bandwidth

802.11n (5 GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			13
802.11n	5180	36*	14.95
802.11n	5200	40	14.92
802.11n	5220	44	15.04
802.11n	5240	48*	14.96
802.11n	5260	52*	14.81
802.11n	5280	56	14.77
802.11n	5300	60	14.73
802.11n	5320	64*	14.76
802.11n	5500	100	14.75
802.11n	5520	104*	14.79
802.11n	5540	108	14.92
802.11n	5560	112	14.88
802.11n	5580	116*	14.90
802.11n	5600	120	N/A
802.11n	5620	124	N/A
802.11n	5640	128	N/A
802.11n	5660	132	15.06
802.11n	5680	136*	15.10
802.11n	5700	140	15.13
802.11n	5745	149*	14.93
802.11n	5765	153	14.90
802.11n	5785	157*	14.91
802.11n	5805	161	14.97
802.11n	5825	165*	15.03

Table 9-61
SISO IEEE 802.11ac Average RF Power – 20 MHz Bandwidth – Antenna 1

20MHz BW 802.11ac (5GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			6.5
802.11ac	5180	36	11.78
802.11ac	5200	40	11.94
802.11ac	5240	48	12.06
802.11ac	5260	52	12.46
802.11ac	5280	56	12.45
802.11ac	5320	64	12.47
802.11ac	5500	100	12.12
802.11ac	5580	116	12.05
802.11ac	5600	120	N/A
802.11ac	5620	124	N/A
802.11ac	5640	128	N/A
802.11ac	5700	140	11.98
802.11ac	5745	149	11.96
802.11ac	5785	157	11.81
802.11ac	5825	165	11.75

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 62 of 116

Table 9-62
SISO IEEE 802.11ac Average RF Power – 20 MHz Bandwidth – Antenna 2

20MHz BW 802.11ac (5GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			6.5
802.11ac	5180	36	12.08
802.11ac	5200	40	11.92
802.11ac	5240	48	11.68
802.11ac	5260	52	11.53
802.11ac	5280	56	11.51
802.11ac	5320	64	11.47
802.11ac	5500	100	11.56
802.11ac	5580	116	11.69
802.11ac	5600	120	N/A
802.11ac	5620	124	N/A
802.11ac	5640	128	N/A
802.11ac	5700	140	11.89
802.11ac	5745	149	11.88
802.11ac	5785	157	12.14
802.11ac	5825	165	12.09

Table 9-63
MIMO IEEE 802.11ac Average RF Power – 20 MHz Bandwidth

20MHz BW 802.11ac (5GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			13
802.11ac	5180	36	14.94
802.11ac	5200	40	14.94
802.11ac	5240	48	14.88
802.11ac	5260	52	15.03
802.11ac	5280	56	15.02
802.11ac	5320	64	15.01
802.11ac	5500	100	14.86
802.11ac	5580	116	14.88
802.11ac	5600	120	N/A
802.11ac	5620	124	N/A
802.11ac	5640	128	N/A
802.11ac	5700	140	14.95
802.11ac	5745	149	14.93
802.11ac	5785	157	14.99
802.11ac	5825	165	14.93

Table 9-64
SISO IEEE 802.11n Average RF Power – 40 MHz Bandwidth- Antenna 1

Mode	Freq [MHz]	Channel	40MHz BW 802.11n (5GHz) Conducted Power [dBm]							
			Data Rate [Mbps]							
			13.5	27	40.5	54	81	108	121.5	135
802.11n	5190	38	8.85	8.69	8.91	8.95	8.96	9.03	9.08	8.91
802.11n	5230	46	9.01	8.78	9.04	9.09	9.19	9.20	9.22	9.09
802.11n	5270	54	9.17	9.22	9.14	9.03	8.85	9.16	9.39	9.38
802.11n	5310	62	9.42	9.47	9.46	9.27	9.08	9.44	9.42	9.48
802.11n	5510	102	9.19	9.17	9.13	9.17	9.46	9.32	9.15	9.33
802.11n	5550	110	8.91	8.81	8.91	8.91	9.21	9.01	8.87	9.04
802.11n	5590	118	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5630	126	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5670	134	8.83	8.79	8.72	8.79	9.07	9.00	8.84	8.98
802.11n	5755	151	8.73	8.63	8.67	8.89	8.83	8.82	8.84	8.81
802.11n	5795	159	8.67	8.48	8.57	8.78	8.78	8.78	8.76	8.78

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT 	Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 63 of 116

Table 9-65
SISO IEEE 802.11n Average RF Power – 40 MHz Bandwidth- Antenna 2

Mode	Freq [MHz]	Channel	40MHz BW 802.11n (5GHz) Conducted Power [dBm]							
			Data Rate [Mbps]							
			13.5	27	40.5	54	81	108	121.5	135
802.11n	5190	38	8.78	9.30	8.27	9.02	8.26	8.40	8.38	8.26
802.11n	5230	46	8.53	8.99	8.66	8.09	8.79	8.62	9.04	8.90
802.11n	5270	54	8.93	9.27	8.77	8.61	9.24	8.72	8.80	8.72
802.11n	5310	62	8.99	8.74	9.18	8.53	9.30	8.49	9.45	9.26
802.11n	5510	102	9.17	9.38	9.49	9.46	9.08	9.44	9.45	9.06
802.11n	5550	110	9.29	9.27	9.40	9.46	9.06	9.46	9.46	9.42
802.11n	5590	118	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5630	126	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5670	134	9.47	9.48	9.31	9.49	9.47	9.14	9.13	9.44
802.11n	5755	151	8.58	8.98	8.51	8.97	8.44	8.74	8.06	8.51
802.11n	5795	159	8.64	8.71	8.36	8.62	8.67	8.16	8.79	8.30

Table 9-66
MIMO IEEE 802.11n Average RF Power – 40 MHz Bandwidth

802.11n (5 GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			27
802.11n	5190	38	11.83
802.11n	5230	46	11.79
802.11n	5270	54	12.06
802.11n	5310	62	12.22
802.11n	5510	102	12.19
802.11n	5550	110	12.11
802.11n	5590	118	N/A
802.11n	5630	126	N/A
802.11n	5670	134	12.17
802.11n	5755	151	11.67
802.11n	5795	159	11.67

Table 9-67
SISO IEEE 802.11ac Average RF Power – 40 MHz Bandwidth – Antenna 1

40MHz BW 802.11ac (5GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			13.5
802.11ac	5190	38	8.92
802.11ac	5230	46	9.09
802.11ac	5270	54	9.26
802.11ac	5310	62	9.39
802.11ac	5510	102	9.21
802.11ac	5550	110	8.98
802.11ac	5590	118	N/A
802.11ac	5630	126	N/A
802.11ac	5670	134	8.43
802.11ac	5755	151	8.59
802.11ac	5795	159	8.57

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 64 of 116

Table 9-68
SISO IEEE 802.11ac Average RF Power – 40 MHz Bandwidth – Antenna 2

40MHz BW 802.11ac (5GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			13.5
802.11ac	5190	38	8.86
802.11ac	5230	46	8.59
802.11ac	5270	54	9.03
802.11ac	5310	62	8.88
802.11ac	5510	102	9.17
802.11ac	5550	110	9.27
802.11ac	5590	118	N/A
802.11ac	5630	126	N/A
802.11ac	5670	134	9.47
802.11ac	5755	151	8.57
802.11ac	5795	159	8.69

Table 9-69
MIMO IEEE 802.11ac Average RF Power – 40 MHz Bandwidth

40MHz BW 802.11ac (5GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			27
802.11ac	5190	38	11.90
802.11ac	5230	46	11.86
802.11ac	5270	54	12.16
802.11ac	5310	62	12.15
802.11ac	5510	102	12.20
802.11ac	5550	110	12.14
802.11ac	5590	118	N/A
802.11ac	5630	126	N/A
802.11ac	5670	134	11.99
802.11ac	5755	151	11.59
802.11ac	5795	159	11.64

Table 9-70
SISO IEEE 802.11ac Average RF Power – 80 MHz Bandwidth- Antenna 1

Mode	Freq [MHz]	Channel	80MHz BW 802.11ac (5GHz) Conducted Power [dBm]									
			Data Rate [Mbps]									
			29.3	58.5	87.8	117	175.5	234	263.3	292.5	351	390
802.11ac	5210	42	10.18	10.21	10.21	10.40	10.16	10.19	10.25	10.30	10.35	10.28
802.11ac	5290	58	9.69	9.74	9.78	9.83	9.72	9.77	9.83	9.86	9.88	9.79
802.11ac	5530	106	10.31	10.24	10.33	10.31	10.37	10.42	10.49	10.29	10.38	10.44
802.11ac	5775	155	9.89	9.86	9.94	10.11	10.03	9.93	10.03	10.11	9.84	9.91

Table 9-71
SISO IEEE 802.11ac Average RF Power – 80 MHz Bandwidth- Antenna 2

Mode	Freq [MHz]	Channel	80MHz BW 802.11ac (5GHz) Conducted Power [dBm]									
			Data Rate [Mbps]									
			29.3	58.5	87.8	117	175.5	234	263.3	292.5	351	390
802.11ac	5210	42	10.15	10.28	10.09	9.92	9.96	10.33	9.91	9.95	9.90	10.30
802.11ac	5290	58	9.67	9.81	9.44	9.31	9.38	9.79	9.84	9.50	9.30	9.89
802.11ac	5530	106	9.73	9.77	9.50	9.46	9.71	9.69	9.42	9.39	9.45	9.38
802.11ac	5775	155	10.06	10.21	10.22	9.93	10.17	10.21	9.71	9.98	9.87	9.71

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 65 of 116

Table 9-72
MIMO IEEE 802.11ac Average RF Power – 80 MHz Bandwidth

802.11ac (5 GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			58.5
802.11ac	5210	42	13.18
802.11ac	5290	58	12.69
802.11ac	5530	106	13.04
802.11ac	5775	155	12.99

Justification for reduced test configurations for WIFI channels per KDB Publication 248227 D01v01r02 and October 2012/April 2013 FCC/TCB Meeting Notes:

- For 2.4 GHz SISO operations, highest average RF output power channel for the lowest data rate for IEEE 802.11b were selected for SAR evaluation. Other IEEE 802.11 SISO modes (including 802.11g/n) were not required since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11b mode. Some additional IEEE 802.11n SAR tests for the highest measured SAR positions were included in this report per manufacture request.
- For 5 GHz SISO operations, highest average RF output power channel for the lowest data rate for IEEE 802.11a were selected for SAR evaluation. Other IEEE 802.11 SISO modes (including 802.11n 20 MHz and 40 MHz) were not required since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11a mode. Some additional IEEE 802.11n and IEEE 802.11ac SAR tests for the highest measured SAR positions were included in this report per manufacture request.
- Full SAR tests for all SISO IEEE 802.11ac configurations were not required because the average output power was not more than 0.25 dB higher than IEEE 802.11a mode. IEEE 802.11ac in SISO mode was evaluated for the highest IEEE 802.11a position in each 5 GHz band and exposure condition.
- For MIMO 2.4 GHz and 5 GHz operations, the highest average RF output power channel for the lowest data rate for IEEE 802.11n (20 MHz bandwidth) was selected for SAR evaluation. Other IEEE 802.11 modes and bandwidths were not investigated for MIMO operations since the maximum allowed output power (including tolerance) was not higher for these modes.
- The individual spectra for each 2x2 MIMO WIFI Antenna were summed mathematically in linear power units for the MIMO output power measurements.
- When the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the reported 1g averaged SAR is <0.8 W/kg, or the reported 10g averaged SAR is <2.0 W/kg, SAR testing on other channels is not required. Otherwise, the other default (or corresponding required) test channels were additionally tested using the lowest data rate.
- The bolded data rate and channel above were tested for SAR.

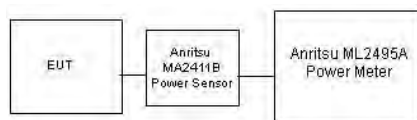


Figure 9-3
Power Measurement Setup for Bandwidths < 50 MHz

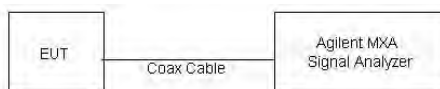


Figure 9-4
Power Measurement Setup for Bandwidths > 50 MHz

FCC ID: A3LSMN915W8	 SAR EVALUATION REPORT 	Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset
Page 66 of 116		

9.5 Bluetooth Conducted Powers

Table 9-73
Bluetooth RF Conducted Powers

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	6.46	4.431
2441	1.0	39	8.83	7.646
2480	1.0	78	7.45	5.565
2402	2.0	0	2.20	1.659
2441	2.0	39	4.41	2.762
2480	2.0	78	2.87	1.936
2402	3.0	0	2.27	1.688
2441	3.0	39	4.46	2.794
2480	3.0	78	2.93	1.961

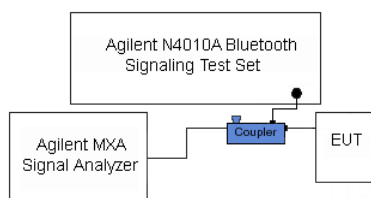


Figure 9-5
Power Measurement Setup

Notes:

- The bolded data rate and channel above were tested for SAR.
- Bluetooth 10g SAR was additionally evaluated per manufacturer's request.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 67 of 116

10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Head Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (C°)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ϵ	% dev σ	% dev ϵ
12/03/2014	750H	20.3	695	0.876	42.464	0.889	42.227	-1.46%	0.56%
			710	0.891	42.276	0.890	42.149	0.11%	0.30%
			725	0.903	42.031	0.891	42.071	1.35%	-0.10%
			740	0.918	41.841	0.893	41.994	2.80%	-0.36%
			755	0.932	41.633	0.894	41.916	4.25%	-0.68%
11/24/2014	835H	21.6	820	0.926	41.843	0.899	41.578	3.00%	0.64%
			835	0.937	41.640	0.900	41.500	4.11%	0.34%
			850	0.945	41.370	0.916	41.500	3.17%	-0.31%
12/03/2014	835H	22.5	820	0.924	40.398	0.899	41.578	2.78%	-2.84%
			835	0.937	40.218	0.900	41.500	4.11%	-3.09%
			850	0.951	40.013	0.916	41.500	3.82%	-3.58%
11/28/2014	1750H	22.4	1710	1.307	38.942	1.348	40.142	-3.04%	-2.99%
			1750	1.345	38.778	1.371	40.079	-1.90%	-3.25%
			1790	1.384	38.573	1.394	40.016	-0.72%	-3.61%
11/24/2014	1900H	22.9	1850	1.380	39.097	1.400	40.000	-1.43%	-2.26%
			1880	1.419	39.021	1.400	40.000	1.36%	-2.45%
			1910	1.456	39.090	1.400	40.000	4.00%	-2.27%
09/15/2014	2450H	23.4	2401	1.756	39.846	1.756	39.287	0.00%	1.42%
			2450	1.815	39.696	1.800	39.200	0.83%	1.27%
			2499	1.866	39.504	1.853	39.138	0.70%	0.94%
09/15/2014	5200H-5800H	21.9	5180	4.601	35.664	4.635	36.009	-0.73%	-0.96%
			5200	4.616	35.605	4.655	35.986	-0.84%	-1.06%
			5220	4.649	35.550	4.676	35.963	-0.58%	-1.15%
			5240	4.672	35.546	4.696	35.940	-0.51%	-1.10%
			5260	4.697	35.545	4.717	35.917	-0.42%	-1.04%
			5280	4.705	35.527	4.737	35.894	-0.68%	-1.02%
			5300	4.718	35.464	4.758	35.871	-0.84%	-1.13%
			5320	4.745	35.419	4.778	35.849	-0.69%	-1.20%
			5500	4.930	35.172	4.963	35.643	-0.66%	-1.32%
			5520	4.945	35.181	4.983	35.620	-0.76%	-1.23%
			5540	4.959	35.148	5.004	35.597	-0.90%	-1.26%
			5600	5.028	35.015	5.065	35.529	-0.73%	-1.45%
			5660	5.086	34.984	5.127	35.460	-0.80%	-1.34%
			5680	5.098	34.917	5.147	35.437	-0.95%	-1.47%
			5700	5.122	34.879	5.168	35.414	-0.89%	-1.51%
			5745	5.199	34.834	5.214	35.363	-0.29%	-1.50%
			5765	5.201	34.824	5.234	35.340	-0.63%	-1.46%
			5785	5.214	34.821	5.255	35.317	-0.78%	-1.40%
			5800	5.218	34.764	5.270	35.300	-0.99%	-1.52%
			5825	5.256	34.705	5.296	35.271	-0.76%	-1.60%

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 68 of 116

Table 10-2
Measured Body Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (C°)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ϵ	% dev σ	% dev ϵ
12/04/2014	750B	22.8	695	0.941	55.905	0.959	55.745	-1.88%	0.29%
			710	0.955	55.749	0.960	55.687	-0.52%	0.11%
			725	0.968	55.595	0.961	55.629	0.73%	-0.06%
			740	0.981	55.482	0.963	55.570	1.87%	-0.16%
			755	0.995	55.305	0.964	55.512	3.22%	-0.37%
11/24/2014	835B	22.5	820	0.996	53.077	0.969	55.258	2.79%	-3.95%
			835	1.012	52.893	0.970	55.200	4.33%	-4.18%
			850	1.027	52.720	0.988	55.154	3.95%	-4.41%
12/01/2014	835B	21.4	820	0.973	54.526	0.969	55.258	0.41%	-1.32%
			835	0.985	54.302	0.970	55.200	1.55%	-1.63%
			850	0.998	54.135	0.988	55.154	1.01%	-1.85%
12/03/2014	835B	22.1	820	0.988	53.377	0.969	55.258	1.96%	-3.40%
			835	1.000	53.180	0.970	55.200	3.09%	-3.66%
			850	1.013	52.998	0.988	55.154	2.53%	-3.91%
12/01/2014	1750B	21.5	1710	1.417	51.954	1.463	53.537	-3.14%	-2.96%
			1750	1.465	51.775	1.488	53.432	-1.55%	-3.10%
			1790	1.508	51.719	1.514	53.326	-0.40%	-3.01%
11/24/2014	1900B	22.0	1850	1.504	52.800	1.520	53.300	-1.05%	-0.94%
			1880	1.549	52.820	1.520	53.300	1.91%	-0.90%
			1910	1.589	52.894	1.520	53.300	4.54%	-0.76%
11/28/2014	1900B	23.4	1850	1.450	52.217	1.520	53.300	-4.61%	-2.03%
			1880	1.480	52.320	1.520	53.300	-2.63%	-1.84%
			1910	1.509	52.038	1.520	53.300	-0.72%	-2.37%
12/01/2014	1900B	21.4	1850	1.519	52.095	1.520	53.300	-0.07%	-2.26%
			1880	1.558	52.024	1.520	53.300	2.50%	-2.39%
			1910	1.595	51.906	1.520	53.300	4.93%	-2.62%
09/09/2014	2450B	22.8	2401	1.895	50.955	1.903	52.765	-0.42%	-3.43%
			2450	1.966	50.772	1.950	52.700	0.82%	-3.66%
			2499	2.029	50.594	2.019	52.638	0.50%	-3.88%
10/14/2014	2450B	24.3	2401	1.892	51.818	1.903	52.765	-0.58%	-1.79%
			2450	1.956	51.649	1.950	52.700	0.31%	-1.99%
			2499	2.022	51.474	2.019	52.638	0.15%	-2.21%
12/04/2014	2450B	24.0	2401	1.960	53.506	1.903	52.765	3.00%	1.40%
			2450	2.027	53.326	1.950	52.700	3.95%	1.19%
			2499	2.096	53.170	2.019	52.638	3.81%	1.01%
09/09/2014	5200B-5800B	23.3	5180	5.120	48.059	5.276	49.041	-2.96%	-2.00%
			5200	5.137	48.028	5.299	49.014	-3.06%	-2.01%
			5220	5.179	47.907	5.323	48.987	-2.71%	-2.20%
			5240	5.217	47.897	5.346	48.960	-2.41%	-2.17%
			5260	5.248	47.886	5.369	48.933	-2.25%	-2.14%
			5280	5.267	47.866	5.393	48.906	-2.34%	-2.13%
			5300	5.288	47.796	5.416	48.879	-2.36%	-2.22%
			5320	5.328	47.702	5.439	48.851	-2.04%	-2.35%
			5500	5.585	47.304	5.650	48.607	-1.15%	-2.68%
			5520	5.628	47.252	5.673	48.580	-0.79%	-2.73%
			5540	5.647	47.226	5.696	48.553	-0.86%	-2.73%
			5600	5.743	47.072	5.766	48.471	-0.40%	-2.89%
			5660	5.841	46.945	5.837	48.390	0.07%	-2.99%
			5680	5.860	46.904	5.860	48.363	0.00%	-3.02%
			5700	5.894	46.838	5.883	48.336	0.19%	-3.10%
			5745	5.971	46.743	5.936	48.275	0.59%	-3.17%
			5765	6.004	46.724	5.959	48.248	0.76%	-3.16%
			5785	6.022	46.693	5.982	48.220	0.67%	-3.17%
			5800	6.026	46.631	6.000	48.200	0.43%	-3.26%
			5825	6.077	46.581	6.029	48.166	0.80%	-3.29%

The above measured tissue parameters were used in the DASY software. The DASY software was used to perform interpolation to determine the dielectric parameters at the SAR test device frequencies (per KDB Publication 865664 and IEEE 1528-2013 6.6.1.2). The tissue parameters listed in the SAR test plots may slightly differ from the table above due to significant digit rounding in the software.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 69 of 116

10.2 Test System Verification

Prior to SAR assessment, the system is verified to $\pm 10\%$ of the SAR measurement on the reference dipole at the time of calibration by the calibration facility. Full system validation status and result summary can be found in Appendix E.

Table 10-3
System Verification Results – 1g SAR

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR _{1g} (W/kg)	1 W Target SAR _{1g} (W/kg)	1 W Normalized SAR _{1g} (W/kg)	Deviation _{1g} (%)
J	750	HEAD	12/03/2014	23.3	21.5	0.100	1003	3022	0.804	8.370	8.040	-3.94%
D	835	HEAD	11/24/2014	24.4	22.5	0.100	4d119	3263	0.928	9.220	9.280	0.65%
E	835	HEAD	12/03/2014	23.6	22.5	0.100	4d119	3332	0.884	9.220	8.840	-4.12%
G	1750	HEAD	11/28/2014	23.0	22.1	0.100	1008	3258	3.400	36.900	34.000	-7.86%
K	1900	HEAD	11/24/2014	22.8	22.9	0.100	5d141	3288	4.150	40.100	41.500	3.49%
G	2450	HEAD	09/15/2014	24.4	23.6	0.100	797	3258	5.360	51.800	53.600	3.47%
E	5200	HEAD	09/15/2014	22.7	22.1	0.100	1057	3914	7.640	78.000	76.400	-2.05%
E	5300	HEAD	09/15/2014	22.7	22.1	0.100	1057	3914	7.980	83.000	79.800	-3.86%
E	5500	HEAD	09/15/2014	22.8	22.1	0.100	1057	3914	8.110	84.300	81.100	-3.80%
E	5600	HEAD	09/15/2014	22.8	22.2	0.100	1057	3914	8.320	83.500	83.200	-0.36%
E	5800	HEAD	09/15/2014	22.8	22.1	0.100	1057	3914	7.350	79.300	73.500	-7.31%
G	750	BODY	12/04/2014	23.3	22.8	0.100	1003	3258	0.879	8.770	8.790	0.23%
J	835	BODY	11/24/2014	23.4	22.5	0.100	4d119	3022	0.978	9.340	9.780	4.71%
K	1750	BODY	12/01/2014	23.1	21.7	0.100	1008	3288	3.830	37.600	38.300	1.86%
G	1900	BODY	11/24/2014	20.6	22.0	0.100	5d141	3258	4.150	40.600	41.500	2.22%
H	1900	BODY	11/28/2014	21.1	23.0	0.100	5d141	3319	3.770	40.600	37.700	-7.14%
G	1900	BODY	12/01/2014	24.5	22.8	0.100	5d141	3258	4.230	40.600	42.300	4.19%
G	2450	BODY	09/09/2014	22.2	23.2	0.100	797	3258	5.130	49.400	51.300	3.85%
I	5200	BODY	09/09/2014	24.1	23.2	0.100	1057	3589	7.960	75.300	79.600	5.71%
I	5300	BODY	09/09/2014	24.2	23.3	0.100	1057	3589	8.130	77.400	81.300	5.04%
I	5500	BODY	09/09/2014	24.2	23.4	0.100	1057	3589	7.390	79.100	73.900	-6.57%
I	5600	BODY	09/09/2014	24.1	23.3	0.100	1057	3589	7.710	80.200	77.100	-3.87%
I	5800	BODY	09/09/2014	24.1	23.3	0.100	1057	3589	7.110	74.300	71.100	-4.31%

FCC ID: A3LSMN915W8	 SAR EVALUATION REPORT 		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 70 of 116

Table 10-4
System Verification Results – 10g SAR

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR _{10g} (W/kg)	1 W Target SAR _{10g} (W/kg)	1 W Normalized SAR _{10g} (W/kg)	Deviation _{10g} (%)
G	750	BODY	12/04/2014	23.3	22.8	0.100	1003	3258	0.584	5.780	5.840	1.04%
I	835	BODY	12/01/2014	23.4	21.5	0.100	4d119	3209	0.619	6.150	6.190	0.65%
K	835	BODY	12/03/2014	23.1	22.1	0.100	4d119	3288	0.664	6.150	6.640	7.97%
K	1750	BODY	12/01/2014	23.1	21.7	0.100	1008	3288	2.030	20.100	20.300	1.00%
G	1900	BODY	12/01/2014	24.5	22.8	0.100	5d141	3258	2.230	21.600	22.300	3.24%
B	2450	BODY	10/14/2014	23.1	23.8	0.100	882	3318	2.200	23.100	22.000	-4.76%
H	2450	BODY	12/04/2014	24.5	24.0	0.100	797	3319	2.190	23.100	21.900	-5.19%
I	5200	BODY	09/09/2014	24.1	23.2	0.100	1057	3589	2.240	21.000	22.400	6.67%
I	5300	BODY	09/09/2014	24.2	23.3	0.100	1057	3589	2.270	21.500	22.700	5.58%
I	5500	BODY	09/09/2014	24.2	23.4	0.100	1057	3589	2.060	22.000	20.600	-6.36%
I	5600	BODY	09/09/2014	24.1	23.3	0.100	1057	3589	2.140	22.200	21.400	-3.60%
I	5800	BODY	09/09/2014	24.1	23.3	0.100	1057	3589	1.960	20.400	19.600	-3.92%

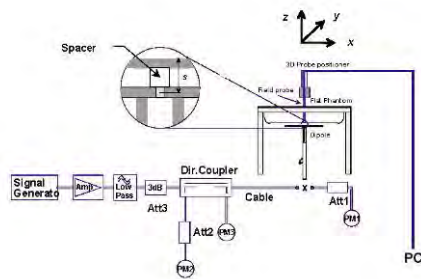


Figure 10-1
System Verification Setup Diagram



Figure 10-2
System Verification Setup Photo

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 71 of 116	

11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

**Table 11-1
GSM 850 Head SAR**

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	Duty Cycle	SAR(1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	32.5	31.79	-0.09	Right	Cheek	Standard	2411-4	1:8.3	0.134	1.178	0.158	A1
836.60	190	GSM 850	GSM	32.5	31.79	0.15	Right	Cheek	Wireless Charging	2411-4	1:8.3	0.112	1.178	0.132	
836.60	190	GSM 850	GSM	32.5	31.79	0.03	Right	Tilt	Standard	2411-4	1:8.3	0.073	1.178	0.086	
836.60	190	GSM 850	GSM	32.5	31.79	-0.01	Left	Cheek	Standard	2411-4	1:8.3	0.086	1.178	0.101	
836.60	190	GSM 850	GSM	32.5	31.79	0.09	Left	Tilt	Standard	2411-4	1:8.3	0.067	1.178	0.079	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Head							
Spatial Peak								1.6 W/kg (mW/g)							
Uncontrolled Exposure/General Population								averaged over 1 gram							

**Table 11-2
UMTS 850 Head SAR**

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	Duty Cycle	SAR [1g]	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	4183	UMTS 850	RMC	24.5	23.67	0.05	Right	Cheek	Standard	2411-9	1:1	0.137	1.211	0.166	A2
836.60	4183	UMTS 850	RMC	24.5	23.67	0.11	Right	Cheek	Wireless Charging	2411-9	1:1	0.129	1.211	0.156	
836.60	4183	UMTS 850	RMC	24.5	23.67	-0.05	Right	Tilt	Standard	2411-9	1:1	0.077	1.211	0.093	
836.60	4183	UMTS 850	RMC	24.5	23.67	0.06	Left	Cheek	Standard	2411-9	1:1	0.091	1.211	0.110	
836.60	4183	UMTS 850	RMC	24.5	23.67	0.02	Left	Tilt	Standard	2411-9	1:1	0.066	1.211	0.080	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Head							
Spatial Peak								1.6 W/kg (mW/g)							
Uncontrolled Exposure/General Population								averaged over 1 gram							

**Table 11-3
GSM 1900 Head SAR**

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	30.5	29.48	0.09	Right	Cheek	Standard	2411-3	1:8.3	0.083	1.265	0.105	
1880.00	661	GSM 1900	GSM	30.5	29.48	-0.20	Right	Cheek	Wireless Charging	2411-3	1:8.3	0.086	1.265	0.109	A3
1880.00	661	GSM 1900	GSM	30.5	29.48	-0.03	Right	Tilt	Standard	2411-3	1:8.3	0.046	1.265	0.058	
1880.00	661	GSM 1900	GSM	30.5	29.48	-0.04	Left	Cheek	Standard	2411-3	1:8.3	0.062	1.265	0.078	
1880.00	661	GSM 1900	GSM	30.5	29.48	0.01	Left	Tilt	Standard	2411-3	1:8.3	0.026	1.265	0.033	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Head							
Spatial Peak								1.6 W/kg (mW/g)							
Uncontrolled Exposure/General Population								averaged over 1 gram							

**Table 11-4
UMTS 1900 Head SAR**

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	24.0	22.95	0.02	Right	Cheek	Standard	2411-11	1:1	0.209	1.274	0.266	
1880.00	9400	UMTS 1900	RMC	24.0	22.95	0.01	Right	Cheek	Wireless Charging	2411-11	1:1	0.214	1.274	0.273	A4
1880.00	9400	UMTS 1900	RMC	24.0	22.95	0.10	Right	Tilt	Standard	2411-11	1:1	0.118	1.274	0.150	
1880.00	9400	UMTS 1900	RMC	24.0	22.95	0.05	Left	Cheek	Standard	2411-11	1:1	0.197	1.274	0.251	
1880.00	9400	UMTS 1900	RMC	24.0	22.95	-0.05	Left	Tilt	Standard	2411-11	1:1	0.099	1.274	0.126	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT							Head								
Spatial Peak							1.6 W/kg (mW/g)								
Uncontrolled Exposure/General Population							averaged over 1 gram								

FCC ID: A3LSMN915W8				SAR EVALUATION REPORT				Reviewed by:	
Document S/N:		Test Dates:		DUT Type:				Quality Manager	
0Y1412022198-R1.A3L		09/09/14 - 10/14/14 11/24/14 - 12/04/14		Portable Handset				Page 72 of 116	

Table 11-5
LTE Band 12 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
707.50	23095	Mid	LTE Band 12	10	Standard	24.0	23.27	-0.01	0	Right	Cheek	QPSK	1	0	2411-1	1:1	0.187	1.183	0.221	A5
707.50	23095	Mid	LTE Band 12	10	Wireless Charging	24.0	23.27	0.04	0	Right	Cheek	QPSK	1	0	2411-1	1:1	0.184	1.183	0.218	
707.50	23095	Mid	LTE Band 12	10	Standard	23.0	22.26	0.01	1	Right	Cheek	QPSK	25	12	2411-1	1:1	0.145	1.186	0.172	
707.50	23095	Mid	LTE Band 12	10	Standard	24.0	23.27	0.05	0	Right	Tilt	QPSK	1	0	2411-1	1:1	0.080	1.183	0.095	
707.50	23095	Mid	LTE Band 12	10	Standard	23.0	22.26	0.02	1	Right	Tilt	QPSK	25	12	2411-1	1:1	0.066	1.186	0.078	
707.50	23095	Mid	LTE Band 12	10	Standard	24.0	23.27	0.19	0	Left	Cheek	QPSK	1	0	2411-1	1:1	0.165	1.183	0.195	
707.50	23095	Mid	LTE Band 12	10	Standard	23.0	22.26	0.01	1	Left	Cheek	QPSK	25	12	2411-1	1:1	0.141	1.186	0.167	
707.50	23095	Mid	LTE Band 12	10	Standard	24.0	23.27	-0.03	0	Left	Tilt	QPSK	1	0	2411-1	1:1	0.099	1.183	0.117	
707.50	23095	Mid	LTE Band 12	10	Standard	23.0	22.26	0.11	1	Left	Tilt	QPSK	25	12	2411-1	1:1	0.079	1.186	0.094	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-6
LTE Band 5 (Cell) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	24.0	22.67	0.08	0	Right	Cheek	QPSK	1	49	2411-1	1:1	0.098	1.358	0.133	A6
836.50	20525	Mid	LTE Band 5 (Cell)	10	Wireless Charging	24.0	22.67	0.05	0	Right	Cheek	QPSK	1	49	2411-1	1:1	0.111	1.358	0.151	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.0	21.65	0.10	1	Right	Cheek	QPSK	25	25	2411-1	1:1	0.075	1.365	0.102	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	24.0	22.67	0.03	0	Right	Tilt	QPSK	1	49	2411-1	1:1	0.061	1.358	0.083	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.0	21.65	0.04	1	Right	Tilt	QPSK	25	25	2411-1	1:1	0.046	1.365	0.063	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	24.0	22.67	0.05	0	Left	Cheek	QPSK	1	49	2411-1	1:1	0.071	1.358	0.096	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.0	21.65	0.12	1	Left	Cheek	QPSK	25	25	2411-1	1:1	0.053	1.365	0.072	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	24.0	22.67	0.12	0	Left	Tilt	QPSK	1	49	2411-1	1:1	0.051	1.358	0.069	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.0	21.65	0.11	1	Left	Tilt	QPSK	25	25	2411-1	1:1	0.039	1.365	0.053	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-7
LTE Band 4 (AWS) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	24.0	23.50	0.05	0	Right	Cheek	QPSK	1	50	2411-2	1:1	0.179	1.122	0.201	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	23.0	22.50	0.07	1	Right	Cheek	QPSK	50	25	2411-2	1:1	0.154	1.122	0.173	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	24.0	23.50	0.14	0	Right	Tilt	QPSK	1	50	2411-2	1:1	0.109	1.122	0.122	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	23.0	22.50	0.07	1	Right	Tilt	QPSK	50	25	2411-2	1:1	0.080	1.122	0.090	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	24.0	23.50	-0.20	0	Left	Cheek	QPSK	1	50	2411-2	1:1	0.195	1.122	0.219	A7
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Wireless Charging	24.0	23.50	0.08	0	Left	Cheek	QPSK	1	50	2411-2	1:1	0.177	1.122	0.199	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	23.0	22.50	0.04	1	Left	Cheek	QPSK	50	25	2411-2	1:1	0.161	1.122	0.181	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	24.0	23.50	-0.03	0	Left	Tilt	QPSK	1	50	2411-2	1:1	0.115	1.122	0.129	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	23.0	22.50	0.06	1	Left	Tilt	QPSK	50	25	2411-2	1:1	0.095	1.122	0.107	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	21.82	-0.09	0	Right	Cheek	QPSK	1	99	2411-7	1:1	0.103	1.169	0.120	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	21.5	20.79	-0.04	1	Right	Cheek	QPSK	50	50	2411-7	1:1	0.084	1.178	0.099	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	21.82	0.06	0	Right	Tilt	QPSK	1	99	2411-7	1:1	0.058	1.169	0.068	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	21.5	20.79	0.01	1	Right	Tilt	QPSK	50	50	2411-7	1:1	0.049	1.178	0.058	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	21.82	0.03	0	Left	Cheek	QPSK	1	99	2411-7	1:1	0.109	1.169	0.127	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	21.5	20.79	0.03	1	Left	Cheek	QPSK	50	50	2411-7	1:1	0.085	1.178	0.100	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	21.82	0.18	0	Left	Tilt	QPSK	1	99	2411-7	1:1	0.055	1.169	0.064	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	21.5	20.79	0.02	1	Left	Tilt	QPSK	50	50	2411-7	1:1	0.053	1.178	0.062	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 73 of 116

Table 11-8
LTE Band 2 (PCS) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.	(W/kg)															(W/kg)			
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	24.0	23.50	0.16	0	Right	Cheek	QPSK	1	0	2411-2	1:1	0.190	1.122	0.213	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	23.0	22.49	0.06	1	Right	Cheek	QPSK	50	25	2411-2	1:1	0.150	1.125	0.169	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	24.0	23.50	0.01	0	Right	Tilt	QPSK	1	0	2411-2	1:1	0.118	1.122	0.132	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	23.0	22.49	-0.01	1	Right	Tilt	QPSK	50	25	2411-2	1:1	0.103	1.125	0.116	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	24.0	23.50	-0.17	0	Left	Cheek	QPSK	1	0	2411-2	1:1	0.198	1.122	0.222	AB
1860.00	18700	Low	LTE Band 2 (PCS)	20	Wireless Charging	24.0	23.50	-0.05	0	Left	Cheek	QPSK	1	0	2411-2	1:1	0.196	1.122	0.220	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	23.0	22.49	0.01	1	Left	Cheek	QPSK	50	25	2411-2	1:1	0.156	1.125	0.176	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	24.0	23.50	0.02	0	Left	Tilt	QPSK	1	0	2411-2	1:1	0.113	1.122	0.127	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	23.0	22.49	0.08	1	Left	Tilt	QPSK	50	25	2411-2	1:1	0.070	1.125	0.079	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	21.5	21.42	-0.04	0	Right	Cheek	QPSK	1	0	2411-7	1:1	0.119	1.019	0.121	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	20.5	20.42	0.02	1	Right	Cheek	QPSK	50	0	2411-7	1:1	0.097	1.019	0.099	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	21.5	21.42	-0.04	0	Right	Tilt	QPSK	1	0	2411-7	1:1	0.074	1.019	0.075	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	20.5	20.42	0.04	1	Right	Tilt	QPSK	50	0	2411-7	1:1	0.061	1.019	0.062	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	21.5	21.42	0.03	0	Left	Cheek	QPSK	1	0	2411-7	1:1	0.152	1.019	0.155	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	20.5	20.42	0.05	1	Left	Cheek	QPSK	50	0	2411-7	1:1	0.112	1.019	0.114	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	21.5	21.42	0.03	0	Left	Tilt	QPSK	1	0	2411-7	1:1	0.064	1.019	0.065	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	20.5	20.42	0.12	1	Left	Tilt	QPSK	50	0	2411-7	1:1	0.047	1.019	0.048	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-9
DTS 2.4 GHz Head SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Bandwidth [MHz]	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.														(W/kg)		(W/kg)	
2462	11	IEEE 802.11b	22	DSSS	15.5	15.19	0.03	Right	Cheek	1	Standard	0809-12	1	1:1	0.021	1.074	0.023	
2462	11	IEEE 802.11n	20	OFDM	13.5	13.26	0.20	Right	Cheek	1	Standard	0809-12	6.5	1:1	0.014	1.057	0.015	
2462	11	IEEE 802.11b	22	DSSS	15.5	15.19	0.04	Right	Tilt	1	Standard	0809-12	1	1:1	0.013	1.074	0.014	
2462	11	IEEE 802.11b	22	DSSS	15.5	15.19	0.02	Left	Cheek	1	Standard	0809-12	1	1:1	0.008	1.074	0.009	
2462	11	IEEE 802.11b	22	DSSS	15.5	15.19	0.01	Left	Tilt	1	Standard	0809-12	1	1:1	0.007	1.074	0.008	
2462	11	IEEE 802.11b	22	DSSS	15.5	14.72	-0.13	Right	Cheek	2	Standard	0809-12	1	1:1	0.178	1.197	0.213	A9
2462	11	IEEE 802.11b	22	DSSS	15.5	14.72	0.06	Right	Cheek	2	Wireless Charging	0809-12	1	1:1	0.129	1.197	0.154	
2437	6	IEEE 802.11n	20	OFDM	13.5	13.34	0.07	Right	Cheek	2	Standard	0809-12	6.5	1:1	0.045	1.038	0.047	
2462	11	IEEE 802.11b	22	DSSS	15.5	14.72	0.13	Right	Tilt	2	Standard	0809-12	1	1:1	0.055	1.197	0.066	
2462	11	IEEE 802.11b	22	DSSS	15.5	14.72	0.02	Left	Cheek	2	Standard	0809-12	1	1:1	0.041	1.197	0.049	
2462	11	IEEE 802.11b	22	DSSS	15.5	14.72	0.20	Left	Tilt	2	Standard	0809-12	1	1:1	0.029	1.197	0.035	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	0.09	Right	Cheek	MIMO	Standard	0809-12	13	1:1	0.162	1.057	0.171	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	0.05	Right	Cheek	MIMO	Wireless Charging	0809-12	13	1:1	0.097	1.057	0.103	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	0.04	Right	Tilt	MIMO	Standard	0809-12	13	1:1	0.035	1.057	0.037	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	0.05	Left	Cheek	MIMO	Standard	0809-12	13	1:1	0.028	1.057	0.030	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	0.03	Left	Tilt	MIMO	Standard	0809-12	13	1:1	0.016	1.057	0.017	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram									

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 74 of 116

Table 11-10
DTS 5 GHz Head SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Bandwidth [MHz]	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.														(W/kg)		(W/kg)	
5745	149	IEEE 802.11a	20	OFDM	12.5	12.03	0.00	Right	Cheek	1	Standard	0809-12	6	1:1	0.000	1.114	0.000	
5775	155	IEEE 802.11ac	80	OFDM	10.5	9.89	0.00	Right	Cheek	1	Standard	0809-12	29.3	1:1	0.000	1.151	0.000	
5745	149	IEEE 802.11ac	20	OFDM	12.5	11.96	0.10	Right	Cheek	1	Standard	0809-12	6.5	1:1	0.020	1.132	0.023	
5755	151	IEEE 802.11n	40	OFDM	9.5	8.73	0.04	Right	Cheek	1	Standard	0809-12	13.5	1:1	0.010	1.194	0.012	
5745	149	IEEE 802.11n	20	OFDM	12.5	11.99	0.12	Right	Cheek	1	Standard	0809-12	6.5	1:1	0.018	1.125	0.020	
5745	149	IEEE 802.11a	20	OFDM	12.5	12.03	0.00	Right	Tilt	1	Standard	0809-12	6	1:1	0.000	1.114	0.000	
5745	149	IEEE 802.11a	20	OFDM	12.5	12.03	0.00	Left	Cheek	1	Standard	0809-12	6	1:1	0.000	1.114	0.000	
5745	149	IEEE 802.11a	20	OFDM	12.5	12.03	0.00	Left	Tilt	1	Standard	0809-12	6	1:1	0.000	1.114	0.000	
5745	149	IEEE 802.11a	20	OFDM	12.5	12.11	0.06	Right	Cheek	2	Standard	0809-12	6	1:1	0.415	1.094	0.454	
5805	161	IEEE 802.11a	20	OFDM	12.5	12.26	0.02	Right	Cheek	2	Standard	0809-12	6	1:1	0.437	1.057	0.462	
5825	165	IEEE 802.11a	20	OFDM	12.5	12.33	0.13	Right	Cheek	2	Standard	0809-12	6	1:1	0.401	1.040	0.417	
5775	155	IEEE 802.11ac	80	OFDM	10.5	10.06	0.07	Right	Cheek	2	Standard	0809-12	29.3	1:1	0.223	1.107	0.247	
5785	157	IEEE 802.11ac	20	OFDM	12.5	12.14	0.02	Right	Cheek	2	Standard	0809-12	6.5	1:1	0.340	1.086	0.369	
5795	159	IEEE 802.11n	40	OFDM	9.5	8.64	0.03	Right	Cheek	2	Standard	0809-12	13.5	1:1	0.155	1.219	0.189	
5825	165	IEEE 802.11n	20	OFDM	12.5	12.22	0.03	Right	Cheek	2	Standard	0809-12	6.5	1:1	0.348	1.067	0.371	
5825	165	IEEE 802.11a	20	OFDM	12.5	12.33	0.08	Right	Tilt	2	Standard	0809-12	6	1:1	0.225	1.040	0.234	
5745	149	IEEE 802.11a	20	OFDM	12.5	12.11	0.12	Left	Cheek	2	Standard	0809-12	6	1:1	0.334	1.094	0.365	
5805	161	IEEE 802.11a	20	OFDM	12.5	12.26	0.08	Left	Cheek	2	Standard	0809-12	6	1:1	0.340	1.057	0.359	
5825	165	IEEE 802.11a	20	OFDM	12.5	12.33	0.07	Left	Cheek	2	Standard	0809-12	6	1:1	0.324	1.040	0.337	
5825	165	IEEE 802.11a	20	OFDM	12.5	12.33	-0.06	Left	Tilt	2	Standard	0809-12	6	1:1	0.174	1.040	0.181	
5745	149	IEEE 802.11n	20	OFDM	15.5	14.93	0.06	Right	Cheek	MIMO	Standard	0809-12	13	1:1	0.555	1.140	0.633	
5805	161	IEEE 802.11n	20	OFDM	15.5	14.97	0.05	Right	Cheek	MIMO	Standard	0809-12	13	1:1	0.535	1.130	0.605	
5825	165	IEEE 802.11n	20	OFDM	15.5	15.03	0.08	Right	Cheek	MIMO	Standard	0809-12	13	1:1	0.548	1.114	0.610	
5745	149	IEEE 802.11n	20	OFDM	15.5	14.93	-0.08	Right	Tilt	MIMO	Standard	0809-12	13	1:1	0.354	1.140	0.404	
5805	161	IEEE 802.11n	20	OFDM	15.5	14.97	0.04	Right	Tilt	MIMO	Standard	0809-12	13	1:1	0.329	1.130	0.372	
5825	165	IEEE 802.11n	20	OFDM	15.5	15.03	0.01	Right	Tilt	MIMO	Standard	0809-12	13	1:1	0.317	1.114	0.353	
5745	149	IEEE 802.11n	20	OFDM	15.5	14.93	0.09	Left	Cheek	MIMO	Standard	0809-12	13	1:1	0.625	1.140	0.713	
5745	149	IEEE 802.11n	20	OFDM	15.5	14.93	-0.01	Left	Cheek	MIMO	Wireless Charging	0809-12	13	1:1	0.793	1.140	0.904	A10
5805	161	IEEE 802.11n	20	OFDM	15.5	14.97	0.13	Left	Cheek	MIMO	Standard	0809-12	13	1:1	0.597	1.130	0.675	
5825	165	IEEE 802.11n	20	OFDM	15.5	15.03	0.12	Left	Cheek	MIMO	Standard	0809-12	13	1:1	0.586	1.114	0.653	
5745	149	IEEE 802.11n	20	OFDM	15.5	14.93	0.13	Left	Tilt	MIMO	Standard	0809-12	13	1:1	0.366	1.140	0.417	
5805	161	IEEE 802.11n	20	OFDM	15.5	14.97	0.07	Left	Tilt	MIMO	Standard	0809-12	13	1:1	0.344	1.130	0.389	
5825	165	IEEE 802.11n	20	OFDM	15.5	15.03	0.01	Left	Tilt	MIMO	Standard	0809-12	13	1:1	0.327	1.114	0.364	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram									

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 75 of 116

Table 11-11
NII Head SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Bandwidth [MHz]	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #
MHz	Ch.																	
5240	48	IEEE 802.11a	20	OFDM	12.5	12.40	-0.07	Right	Cheek	1	Standard	0809-12	6	1:1	0.002	1.023	0.002	A11
5210	42	IEEE 802.11ac	80	OFDM	10.5	10.18	0.00	Right	Cheek	1	Standard	0809-12	29.3	1:1	0.000	1.076	0.000	
5240	48	IEEE 802.11a	20	OFDM	12.5	12.40	0.00	Right	Tilt	1	Standard	0809-12	6	1:1	0.000	1.023	0.000	
5240	48	IEEE 802.11a	20	OFDM	12.5	12.40	0.00	Left	Cheek	1	Standard	0809-12	6	1:1	0.000	1.023	0.000	
5240	48	IEEE 802.11a	20	OFDM	12.5	12.40	0.00	Left	Tilt	1	Standard	0809-12	6	1:1	0.000	1.023	0.000	
5300	60	IEEE 802.11a	20	OFDM	12.5	12.38	0.00	Right	Cheek	1	Standard	0809-12	6	1:1	0.000	1.028	0.000	
5290	58	IEEE 802.11ac	80	OFDM	10.5	9.69	0.00	Right	Cheek	1	Standard	0809-12	29.3	1:1	0.000	1.205	0.000	
5320	64	IEEE 802.11ac	20	OFDM	12.5	12.47	0.06	Right	Cheek	1	Standard	0809-12	6.5	1:1	0.016	1.007	0.016	
5310	62	IEEE 802.11n	40	OFDM	9.5	9.42	-0.03	Right	Cheek	1	Standard	0809-12	13.5	1:1	0.008	1.019	0.008	
5320	64	IEEE 802.11n	20	OFDM	12.5	12.16	-0.03	Right	Cheek	1	Standard	0809-12	6.5	1:1	0.016	1.081	0.017	
5300	60	IEEE 802.11a	20	OFDM	12.5	12.38	0.00	Right	Tilt	1	Standard	0809-12	6	1:1	0.000	1.028	0.000	
5300	60	IEEE 802.11a	20	OFDM	12.5	12.38	0.00	Left	Cheek	1	Standard	0809-12	6	1:1	0.000	1.028	0.000	
5300	60	IEEE 802.11a	20	OFDM	12.5	12.38	0.00	Left	Tilt	1	Standard	0809-12	6	1:1	0.000	1.028	0.000	
5500	100	IEEE 802.11a	20	OFDM	12.5	12.07	0.00	Right	Cheek	1	Standard	0809-12	6	1:1	0.000	1.104	0.000	
5530	106	IEEE 802.11ac	80	OFDM	10.5	10.31	0.00	Right	Cheek	1	Standard	0809-12	29.3	1:1	0.000	1.045	0.000	
5500	100	IEEE 802.11ac	20	OFDM	12.5	12.12	0.05	Right	Cheek	1	Standard	0809-12	6.5	1:1	0.017	1.091	0.019	
5510	102	IEEE 802.11n	40	OFDM	9.5	9.19	0.04	Right	Cheek	1	Standard	0809-12	13.5	1:1	0.009	1.074	0.010	
5700	140	IEEE 802.11n	20	OFDM	12.5	12.31	0.02	Right	Cheek	1	Standard	0809-12	6.5	1:1	0.020	1.045	0.021	
5500	100	IEEE 802.11a	20	OFDM	12.5	12.07	0.00	Right	Tilt	1	Standard	0809-12	6	1:1	0.000	1.104	0.000	
5500	100	IEEE 802.11a	20	OFDM	12.5	12.07	0.00	Left	Cheek	1	Standard	0809-12	6	1:1	0.000	1.104	0.000	
5500	100	IEEE 802.11a	20	OFDM	12.5	12.07	0.00	Left	Tilt	1	Standard	0809-12	6	1:1	0.000	1.104	0.000	
5180	36	IEEE 802.11a	20	OFDM	12.5	12.13	-0.04	Right	Cheek	2	Standard	0809-12	6	1:1	0.189	1.089	0.206	
5210	42	IEEE 802.11ac	80	OFDM	10.5	10.15	-0.01	Right	Cheek	2	Standard	0809-12	29.3	1:1	0.109	1.084	0.118	
5180	36	IEEE 802.11a	20	OFDM	12.5	12.13	0.07	Right	Tilt	2	Standard	0809-12	6	1:1	0.140	1.089	0.152	
5180	36	IEEE 802.11a	20	OFDM	12.5	12.13	0.02	Left	Cheek	2	Standard	0809-12	6	1:1	0.159	1.089	0.173	
5180	36	IEEE 802.11a	20	OFDM	12.5	12.13	0.08	Left	Tilt	2	Standard	0809-12	6	1:1	0.100	1.089	0.109	
5260	52	IEEE 802.11a	20	OFDM	12.5	11.82	0.20	Right	Cheek	2	Standard	0809-12	6	1:1	0.181	1.225	0.222	
5290	58	IEEE 802.11ac	80	OFDM	10.5	9.67	0.12	Right	Cheek	2	Standard	0809-12	29.3	1:1	0.090	1.211	0.109	
5260	52	IEEE 802.11ac	20	OFDM	12.5	11.53	0.20	Right	Cheek	2	Standard	0809-12	6.5	1:1	0.165	1.250	0.206	
5310	62	IEEE 802.11n	40	OFDM	9.5	8.99	0.03	Right	Cheek	2	Standard	0809-12	13.5	1:1	0.091	1.125	0.102	
5260	52	IEEE 802.11n	20	OFDM	12.5	11.51	0.04	Right	Cheek	2	Standard	0809-12	6.5	1:1	0.180	1.256	0.226	
5260	52	IEEE 802.11a	20	OFDM	12.5	11.82	0.12	Right	Tilt	2	Standard	0809-12	6	1:1	0.118	1.225	0.145	
5260	52	IEEE 802.11a	20	OFDM	12.5	11.82	0.12	Left	Cheek	2	Standard	0809-12	6	1:1	0.144	1.225	0.176	
5260	52	IEEE 802.11a	20	OFDM	12.5	11.82	0.06	Left	Tilt	2	Standard	0809-12	6	1:1	0.089	1.225	0.109	
5520	104	IEEE 802.11a	20	OFDM	12.5	11.79	-0.01	Right	Cheek	2	Standard	0809-12	6	1:1	0.242	1.178	0.285	
5580	116	IEEE 802.11a	20	OFDM	12.5	11.82	0.17	Right	Cheek	2	Standard	0809-12	6	1:1	0.330	1.169	0.386	
5700	140	IEEE 802.11a	20	OFDM	12.5	12.06	0.03	Right	Cheek	2	Standard	0809-12	6	1:1	0.456	1.107	0.505	
5700	140	IEEE 802.11a	20	OFDM	12.5	12.06	0.02	Right	Cheek	2	Wireless Charging	0809-12	6	1:1	0.536	1.107	0.593	
5530	106	IEEE 802.11ac	80	OFDM	10.5	9.73	0.02	Right	Cheek	2	Standard	0809-12	29.3	1:1	0.133	1.194	0.159	
5700	140	IEEE 802.11ac	20	OFDM	12.5	11.89	0.19	Right	Cheek	2	Standard	0809-12	6.5	1:1	0.382	1.151	0.440	
5670	134	IEEE 802.11n	40	OFDM	9.5	9.47	0.13	Right	Cheek	2	Standard	0809-12	13.5	1:1	0.201	1.007	0.202	
5700	140	IEEE 802.11n	20	OFDM	12.5	11.93	0.01	Right	Cheek	2	Standard	0809-12	6.5	1:1	0.381	1.140	0.434	
5520	104	IEEE 802.11a	20	OFDM	12.5	11.79	0.04	Right	Tilt	2	Standard	0809-12	6	1:1	0.170	1.178	0.200	
5580	116	IEEE 802.11a	20	OFDM	12.5	11.82	0.17	Right	Tilt	2	Standard	0809-12	6	1:1	0.206	1.169	0.241	
5700	140	IEEE 802.11a	20	OFDM	12.5	12.06	-0.07	Right	Tilt	2	Standard	0809-12	6	1:1	0.299	1.107	0.331	
5520	104	IEEE 802.11a	20	OFDM	12.5	11.79	-0.10	Left	Cheek	2	Standard	0809-12	6	1:1	0.253	1.178	0.298	
5580	116	IEEE 802.11a	20	OFDM	12.5	11.82	0.16	Left	Cheek	2	Standard	0809-12	6	1:1	0.299	1.169	0.350	
5700	140	IEEE 802.11a	20	OFDM	12.5	12.06	0.06	Left	Cheek	2	Standard	0809-12	6	1:1	0.402	1.107	0.445	
5700	140	IEEE 802.11ac	20	OFDM	12.5	11.89	-0.01	Left	Cheek	2	Standard	0809-12	6.5	1:1	0.403	1.151	0.464	
5700	140	IEEE 802.11n	20	OFDM	12.5	11.93	0.20	Left	Cheek	2	Standard	0809-12	6.5	1:1	0.367	1.140	0.418	
5700	140	IEEE 802.11a	20	OFDM	12.5	12.06	0.08	Left	Tilt	2	Standard	0809-12	6	1:1	0.236	1.107	0.261	
5220	44	IEEE 802.11n	20	OFDM	15.5	15.04	0.09	Right	Cheek	MMMO	Standard	0809-12	13	1:1	0.244	1.112	0.271	
5220	44	IEEE 802.11n	20	OFDM	15.5	15.04	-0.04	Right	Tilt	MMMO	Standard	0809-12	13	1:1	0.167	1.112	0.186	
5220	44	IEEE 802.11n	20	OFDM	15.5	15.04	0.01	Left	Cheek	MMMO	Standard	0809-12	13	1:1	0.208	1.112	0.231	
5220	44	IEEE 802.11n	20	OFDM	15.5	15.04	0.02	Left	Tilt	MMMO	Standard	0809-12	13	1:1	0.147	1.112	0.163	
5260	52	IEEE 802.11n	20	OFDM	15.5	14.81	0.04	Right	Cheek	MMMO	Standard	0809-12	13	1:1	0.217	1.172	0.254	
5260	52	IEEE 802.11n	20	OFDM	15.5	14.81	-0.04	Right	Tilt	MMMO	Standard	0809-12	13	1:1	0.147	1.172	0.172	
5260	52	IEEE 802.11n	20	OFDM	15.5	14.81	0.12	Left	Cheek	MMMO	Standard	0809-12	13	1:1	0.202	1.172	0.237	
5260	52	IEEE 802.11n	20	OFDM	15.5	14.81	0.06	Left	Tilt	MMMO	Standard	0809-12	13	1:1	0.132	1.172	0.155	
5540	108	IEEE 802.11n	20	OFDM	15.5	14.92	-0.17	Right	Cheek	MMMO	Standard	0809-12	13	1:1	0.333	1.143	0.381	
5580	116	IEEE 802.11n	20	OFDM	15.5	14.90	0.09	Right	Cheek	MMMO	Standard	0809-12	13	1:1	0.370	1.148	0.425	
5700	140	IEEE 802.11n	20	OFDM	15.5	15.13	0.13	Right	Cheek	MMMO	Standard	0809-12	13	1:1	0.497	1.089	0.541	
5540	108	IEEE 802.11n	20	OFDM	15.5	14.92	0.02	Right	Tilt	MMMO	Standard	0809-12	13	1:1	0.217	1.143	0.248	
5580	116	IEEE 802.11n	20	OFDM	15.5	14.90	-0.08	Right	Tilt	MMMO	Standard	0809-12	13	1:1	0.242	1.148	0.278	
5700	140	IEEE 802.11n	20	OFDM	15.5	15.13	0.09	Right	Tilt	MMMO	Standard	0809-12	13	1:1	0.312	1.089	0.340	
5540	108	IEEE 802.11n	20	OFDM	15.5	14.92	0.07	Left	Cheek	MMMO	Standard	0809-12	13	1:1	0.349	1.143	0.399	
5580	116	IEEE 802.11n	20	OFDM	15.5	14.90	0.16	Left	Cheek	MMMO	Standard	0809-12	13	1:1	0.373	1.148	0.428	
5700	140	IEEE 802.11n	20	OFDM	15.5	15.13	0.06	Left	Cheek	MMMO	Standard	0809-12	13	1:1	0.504	1.089	0.549	
5540	108	IEEE 802.11n	20	OFDM	15.5	14.92	-0.04	Left	Tilt	MMMO	Standard	0809-12	13	1:1	0.193	1.143	0.221	
5580	116	IEEE 802.11n	20	OFDM	15.5	14.90	0.02	Left	Tilt	MMMO	Standard	0809-12	13	1:1</				

FCC ID: A3LSMN915W8	
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11.2 Standalone Body-Worn SAR Data

Table 11-12
GSM/UMTS Body-Worn SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Cover Type	Device Serial Number	Duty Cycle	Side	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	32.5	31.79	0.00	10 mm	Standard	2411-4	1:8.3	back	0.265	1.178	0.312	A12
836.60	190	GSM 850	GSM	32.5	31.79	0.06	10 mm	Wireless Charging	2411-4	1:8.3	back	0.218	1.178	0.257	
836.60	4183	UMTS 850	RMC	24.5	23.67	0.04	10 mm	Standard	2411-1	1:1	back	0.328	1.211	0.397	A14
836.60	4183	UMTS 850	RMC	24.5	23.67	0.01	10 mm	Wireless Charging	2411-1	1:1	back	0.300	1.211	0.363	
1880.00	661	GSM 1900	GSM	30.5	29.48	-0.03	10 mm	Standard	2411-4	1:8.3	back	0.361	1.265	0.457	A16
1880.00	661	GSM 1900	GSM	30.5	29.48	0.02	10 mm	Wireless Charging	2411-4	1:8.3	back	0.298	1.265	0.377	
1880.00	9400	UMTS 1900	RMC	24.0	22.95	-0.01	15 mm	Standard	2411-11	1:1	back	0.349	1.274	0.445	A18
1880.00	9400	UMTS 1900	RMC	24.0	22.95	0.02	15 mm	Wireless Charging	2411-11	1:1	back	0.306	1.274	0.390	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT							Body								
Spatial Peak							1.6 W/kg (mW/g)								
Uncontrolled Exposure/General Population							averaged over 1 gram								

Table 11-13
LTE Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.	(W/kg)															(W/kg)			
707.50	23095	Mid	LTE Band 12	10	Standard	24.0	23.27	-0.04	0	2411-2	QPSK	1	0	10 mm	back	1:1	0.430	1.183	0.509	A20
707.50	23095	Mid	LTE Band 12	10	Wireless Charging	24.0	23.27	0.02	0	2411-2	QPSK	1	0	10 mm	back	1:1	0.273	1.183	0.323	
707.50	23095	Mid	LTE Band 12	10	Standard	23.0	22.26	-0.03	1	2411-2	QPSK	25	12	10 mm	back	1:1	0.358	1.186	0.425	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	24.0	22.67	0.01	0	2411-1	QPSK	1	49	10 mm	back	1:1	0.189	1.358	0.257	A22
836.50	20525	Mid	LTE Band 5 (Cell)	10	Wireless Charging	24.0	22.67	-0.03	0	2411-1	QPSK	1	49	10 mm	back	1:1	0.170	1.358	0.231	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.0	21.65	0.01	1	2411-1	QPSK	25	25	10 mm	back	1:1	0.148	1.365	0.202	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	24.0	23.50	-0.01	0	2411-2	QPSK	1	50	15 mm	back	1:1	0.409	1.122	0.459	A24
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Wireless Charging	24.0	23.50	-0.04	0	2411-2	QPSK	1	50	15 mm	back	1:1	0.376	1.122	0.422	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	23.0	22.50	0.00	1	2411-2	QPSK	50	25	15 mm	back	1:1	0.322	1.122	0.361	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	24.0	23.50	-0.06	0	2411-2	QPSK	1	0	15 mm	back	1:1	0.524	1.122	0.588	A26
1860.00	18700	Low	LTE Band 2 (PCS)	20	Wireless Charging	24.0	23.50	-0.03	0	2411-2	QPSK	1	0	15 mm	back	1:1	0.477	1.122	0.535	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	23.0	22.49	0.01	1	2411-2	QPSK	50	25	15 mm	back	1:1	0.414	1.125	0.466	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Body										
Spatial Peak										1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population										averaged over 1 gram										

FCC ID: A3LSMN915W8			SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 77 of 116	

Table 11-14
DTS Body-Worn SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Bandwidth [MHz]	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.														(W/kg)		(W/kg)	
2462	11	IEEE 802.11b	22	DSSS	15.5	15.19	0.09	10 mm	1	Standard	0809-09	1	back	1:1	0.153	1.074	0.164	A28
2462	11	IEEE 802.11b	22	DSSS	15.5	15.19	0.05	10 mm	1	Wireless Charging	0809-09	1	back	1:1	0.141	1.074	0.151	
2462	11	IEEE 802.11n	20	OFDM	13.5	13.26	0.09	10 mm	1	Standard	0809-09	6.5	back	1:1	0.105	1.057	0.111	
2462	11	IEEE 802.11b	22	DSSS	15.5	14.72	0.11	10 mm	2	Standard	0809-09	1	back	1:1	0.100	1.197	0.120	
2437	6	IEEE 802.11n	20	OFDM	13.5	13.34	0.04	10 mm	2	Standard	0809-09	6.5	back	1:1	0.023	1.038	0.024	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	0.16	10 mm	MIMO	Standard	0809-09	13	back	1:1	0.153	1.057	0.162	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	0.10	10 mm	MIMO	Wireless Charging	0809-09	13	back	1:1	0.119	1.057	0.126	
5745	149	IEEE 802.11a	20	OFDM	12.5	12.03	0.05	10 mm	1	Standard	0809-14	6	back	1:1	0.043	1.114	0.048	
5775	155	IEEE 802.11ac	80	OFDM	10.5	9.89	0.03	10 mm	1	Standard	0809-14	29.3	back	1:1	0.025	1.151	0.029	
5745	149	IEEE 802.11ac	20	OFDM	12.5	11.96	0.18	10 mm	1	Standard	0809-14	6.5	back	1:1	0.039	1.132	0.044	
5755	151	IEEE 802.11n	40	OFDM	9.5	8.73	0.12	10 mm	1	Standard	0809-14	13.5	back	1:1	0.009	1.194	0.011	
5745	149	IEEE 802.11n	20	OFDM	12.5	11.99	0.15	10 mm	1	Standard	0809-14	6.5	back	1:1	0.037	1.125	0.042	
5825	165	IEEE 802.11a	20	OFDM	12.5	12.33	0.05	10 mm	2	Standard	0809-14	6	back	1:1	0.111	1.040	0.115	
5775	155	IEEE 802.11ac	80	OFDM	10.5	10.06	-0.18	10 mm	2	Standard	0809-14	29.3	back	1:1	0.066	1.107	0.073	
5785	157	IEEE 802.11ac	20	OFDM	12.5	12.14	0.19	10 mm	2	Standard	0809-14	6.5	back	1:1	0.063	1.086	0.068	
5795	159	IEEE 802.11n	40	OFDM	9.5	8.64	0.09	10 mm	2	Standard	0809-14	13.5	back	1:1	0.020	1.219	0.024	
5825	165	IEEE 802.11n	20	OFDM	12.5	12.22	-0.03	10 mm	2	Standard	0809-14	6.5	back	1:1	0.074	1.067	0.079	
5825	165	IEEE 802.11n	20	OFDM	15.5	15.03	0.04	10 mm	MIMO	Standard	0809-14	13	back	1:1	0.157	1.114	0.175	A29
5825	165	IEEE 802.11n	20	OFDM	15.5	15.03	0.01	10 mm	MIMO	Wireless Charging	0809-14	13	back	1:1	0.140	1.114	0.156	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram									

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 78 of 116

Table 11-15
NII Body-Worn SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Bandwidth [MHz]	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.														(W/kg)		(W/kg)	
5240	48	IEEE 802.11a	20	OFDM	12.5	12.40	0.06	10 mm	1	Standard	0809-14	6	back	1:1	0.044	1.023	0.045	
5210	42	IEEE 802.11ac	80	OFDM	10.5	10.18	0.09	10 mm	1	Standard	0809-14	29.3	back	1:1	0.024	1.076	0.026	
5300	60	IEEE 802.11a	20	OFDM	12.5	12.38	0.03	10 mm	1	Standard	0809-14	6	back	1:1	0.060	1.028	0.062	
5290	58	IEEE 802.11ac	80	OFDM	10.5	9.69	0.04	10 mm	1	Standard	0809-14	29.3	back	1:1	0.027	1.205	0.033	
5320	64	IEEE 802.11ac	20	OFDM	12.5	12.47	0.11	10 mm	1	Standard	0809-14	6.5	back	1:1	0.053	1.007	0.053	
5310	62	IEEE 802.11n	40	OFDM	9.5	9.42	0.20	10 mm	1	Standard	0809-14	13.5	back	1:1	0.015	1.019	0.015	
5320	64	IEEE 802.11n	20	OFDM	12.5	12.16	0.10	10 mm	1	Standard	0809-14	6.5	back	1:1	0.042	1.081	0.045	
5500	100	IEEE 802.11a	20	OFDM	12.5	12.07	0.08	10 mm	1	Standard	0809-14	6	back	1:1	0.080	1.104	0.088	
5530	106	IEEE 802.11ac	80	OFDM	10.5	10.31	0.03	10 mm	1	Standard	0809-14	29.3	back	1:1	0.047	1.045	0.049	
5500	100	IEEE 802.11ac	20	OFDM	12.5	12.12	0.11	10 mm	1	Standard	0809-14	6.5	back	1:1	0.070	1.091	0.076	
5510	102	IEEE 802.11n	40	OFDM	9.5	9.19	0.20	10 mm	1	Standard	0809-14	13.5	back	1:1	0.021	1.074	0.023	
5700	140	IEEE 802.11n	20	OFDM	12.5	12.31	0.09	10 mm	1	Standard	0809-14	6.5	back	1:1	0.046	1.045	0.048	
5180	36	IEEE 802.11a	20	OFDM	12.5	12.13	0.04	10 mm	2	Standard	0809-14	6	back	1:1	0.064	1.089	0.070	
5210	42	IEEE 802.11ac	80	OFDM	10.5	10.15	0.01	10 mm	2	Standard	0809-14	29.3	back	1:1	0.036	1.084	0.039	
5260	52	IEEE 802.11a	20	OFDM	12.5	11.62	0.01	10 mm	2	Standard	0809-14	6	back	1:1	0.052	1.225	0.064	
5290	58	IEEE 802.11ac	80	OFDM	10.5	9.67	0.05	10 mm	2	Standard	0809-14	29.3	back	1:1	0.028	1.211	0.034	
5260	52	IEEE 802.11ac	20	OFDM	12.5	11.53	0.18	10 mm	2	Standard	0809-14	6.5	back	1:1	0.030	1.250	0.038	
5310	62	IEEE 802.11n	40	OFDM	9.5	8.99	0.09	10 mm	2	Standard	0809-14	13.5	back	1:1	0.009	1.125	0.010	
5260	52	IEEE 802.11n	20	OFDM	12.5	11.51	0.02	10 mm	2	Standard	0809-14	6.5	back	1:1	0.033	1.256	0.041	
5700	140	IEEE 802.11a	20	OFDM	12.5	12.06	0.03	10 mm	2	Standard	0809-14	6	back	1:1	0.118	1.107	0.131	A30
5700	140	IEEE 802.11a	20	OFDM	12.5	12.06	0.04	10 mm	2	Wireless Charging	0809-14	6	back	1:1	0.110	1.107	0.122	
5530	106	IEEE 802.11ac	80	OFDM	10.5	9.73	0.09	10 mm	2	Standard	0809-14	29.3	back	1:1	0.039	1.194	0.047	
5700	140	IEEE 802.11ac	20	OFDM	12.5	11.89	-0.08	10 mm	2	Standard	0809-14	6.5	back	1:1	0.082	1.151	0.094	
5670	134	IEEE 802.11n	40	OFDM	9.5	9.47	0.04	10 mm	2	Standard	0809-14	13.5	back	1:1	0.034	1.007	0.034	
5700	140	IEEE 802.11n	20	OFDM	12.5	11.93	0.11	10 mm	2	Standard	0809-14	6.5	back	1:1	0.095	1.140	0.108	
5220	44	IEEE 802.11n	20	OFDM	15.5	15.04	0.07	10 mm	MIMO	Standard	0809-14	13	back	1:1	0.072	1.112	0.080	
5260	52	IEEE 802.11n	20	OFDM	15.5	14.81	0.02	10 mm	MIMO	Standard	0809-14	13	back	1:1	0.069	1.172	0.081	
5700	140	IEEE 802.11n	20	OFDM	15.5	15.13	0.06	10 mm	MIMO	Standard	0809-14	13	back	1:1	0.115	1.089	0.125	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram										

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Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 79 of 116

11.3 Standalone Wireless Router SAR Data

Table 11-16
GPRS/UMTS Hotspot SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Cover Type	Device Serial Number	# of GPRS Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.60	190	GSM 850	GPRS	30.5	29.81	-0.01	10 mm	Standard	2411-4	2	1:4.15	back	0.396	1.172	0.464	
836.60	190	GSM 850	GPRS	30.5	29.81	0.01	10 mm	Standard	2411-4	2	1:4.15	front	0.463	1.172	0.543	
836.60	190	GSM 850	GPRS	30.5	29.81	0.04	10 mm	Wireless Charging	2411-4	2	1:4.15	front	0.517	1.172	0.606	A13
836.60	190	GSM 850	GPRS	30.5	29.81	-0.05	10 mm	Standard	2411-4	2	1:4.15	bottom	0.438	1.172	0.513	
836.60	190	GSM 850	GPRS	30.5	29.81	0.06	10 mm	Standard	2411-4	2	1:4.15	right	0.224	1.172	0.263	
836.60	190	GSM 850	GPRS	30.5	29.81	-0.03	10 mm	Standard	2411-4	2	1:4.15	left	0.084	1.172	0.098	
836.60	4183	UMTS 850	RMC	24.5	23.67	0.04	10 mm	Standard	2411-1	N/A	1:1	back	0.328	1.211	0.397	
836.60	4183	UMTS 850	RMC	24.5	23.67	-0.03	10 mm	Standard	2411-1	N/A	1:1	front	0.521	1.211	0.631	A15
836.60	4183	UMTS 850	RMC	24.5	23.67	-0.01	10 mm	Wireless Charging	2411-1	N/A	1:1	front	0.428	1.211	0.518	
836.60	4183	UMTS 850	RMC	24.5	23.67	-0.02	10 mm	Standard	2411-1	N/A	1:1	bottom	0.394	1.211	0.477	
836.60	4183	UMTS 850	RMC	24.5	23.67	0.00	10 mm	Standard	2411-1	N/A	1:1	right	0.177	1.211	0.214	
836.60	4183	UMTS 850	RMC	24.5	23.67	0.00	10 mm	Standard	2411-1	N/A	1:1	left	0.069	1.211	0.084	
1880.00	661	GSM 1900	GPRS	28.0	27.63	-0.05	10 mm	Standard	2411-4	2	1:4.15	back	0.485	1.089	0.528	
1880.00	661	GSM 1900	GPRS	28.0	27.63	-0.05	10 mm	Standard	2411-4	2	1:4.15	front	0.699	1.089	0.761	
1850.20	512	GSM 1900	GPRS	28.0	27.50	-0.02	10 mm	Standard	2411-4	2	1:4.15	bottom	0.880	1.122	0.987	
1880.00	661	GSM 1900	GPRS	28.0	27.63	-0.03	10 mm	Standard	2411-4	2	1:4.15	bottom	0.892	1.089	0.971	
1909.80	810	GSM 1900	GPRS	28.0	27.79	-0.08	10 mm	Standard	2411-4	2	1:4.15	bottom	0.930	1.050	0.977	A17
1909.80	810	GSM 1900	GPRS	28.0	27.79	0.00	10 mm	Wireless Charging	2411-4	2	1:4.15	bottom	0.847	1.050	0.889	
1880.00	661	GSM 1900	GPRS	28.0	27.63	-0.09	10 mm	Standard	2411-4	2	1:4.15	right	0.142	1.089	0.155	
1880.00	661	GSM 1900	GPRS	28.0	27.63	0.06	10 mm	Standard	2411-4	2	1:4.15	left	0.157	1.089	0.171	
1880.00	9400	UMTS 1900	RMC	21.5	21.09	0.00	10 mm	Standard	2411-12	N/A	1:1	back	0.382	1.099	0.420	
1880.00	9400	UMTS 1900	RMC	21.5	21.09	0.00	10 mm	Standard	2411-12	N/A	1:1	front	0.604	1.099	0.664	
1852.40	9262	UMTS 1900	RMC	21.5	21.25	0.04	10 mm	Standard	2411-12	N/A	1:1	bottom	0.996	1.059	1.055	
1880.00	9400	UMTS 1900	RMC	21.5	21.09	0.03	10 mm	Standard	2411-12	N/A	1:1	bottom	0.836	1.099	0.919	
1907.60	9538	UMTS 1900	RMC	21.5	21.15	0.03	10 mm	Standard	2411-12	N/A	1:1	bottom	1.010	1.084	1.095	A19
1907.60	9538	UMTS 1900	RMC	21.5	21.15	-0.04	10 mm	Wireless Charging	2411-12	N/A	1:1	bottom	0.924	1.084	1.002	
1880.00	9400	UMTS 1900	RMC	21.5	21.09	-0.04	10 mm	Standard	2411-12	N/A	1:1	right	0.111	1.099	0.122	
1880.00	9400	UMTS 1900	RMC	21.5	21.09	0.04	10 mm	Standard	2411-12	N/A	1:1	left	0.125	1.099	0.137	
1907.60	9538	UMTS 1900	RMC	21.5	21.15	0.05	10 mm	Standard	2411-12	N/A	1:1	bottom	1.000	1.084	1.084	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT							Body									
Spatial Peak							1.6 W/kg (mW/g)									
Uncontrolled Exposure/General Population							averaged over 1 gram									

Blue entry represents variability measurement.

Table 11-17
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #	
MHz	Ch.																			
707.50	23095	Mid	LTE Band 12	10	Standard	24.0	23.27	-0.04	0	2411-2	QPSK	1	0	10 mm	back	1:1	0.430	1.183	0.509	A21
707.50	23095	Mid	LTE Band 12	10	Standard	23.0	22.26	-0.03	1	2411-2	QPSK	25	12	10 mm	back	1:1	0.358	1.186	0.425	
707.50	23095	Mid	LTE Band 12	10	Standard	24.0	23.27	0.07	0	2411-2	QPSK	1	0	10 mm	front	1:1	0.506	1.183	0.599	
707.50	23095	Mid	LTE Band 12	10	Wireless Charging	24.0	23.27	-0.02	0	2411-2	QPSK	1	0	10 mm	front	1:1	0.414	1.183	0.490	
707.50	23095	Mid	LTE Band 12	10	Standard	23.0	22.26	0.03	1	2411-2	QPSK	25	12	10 mm	front	1:1	0.409	1.186	0.485	
707.50	23095	Mid	LTE Band 12	10	Standard	24.0	23.27	-0.14	0	2411-2	QPSK	1	0	10 mm	bottom	1:1	0.265	1.183	0.313	
707.50	23095	Mid	LTE Band 12	10	Standard	23.0	22.26	0.02	1	2411-2	QPSK	25	12	10 mm	bottom	1:1	0.222	1.186	0.263	
707.50	23095	Mid	LTE Band 12	10	Standard	24.0	23.27	0.03	0	2411-2	QPSK	1	0	10 mm	right	1:1	0.109	1.183	0.129	
707.50	23095	Mid	LTE Band 12	10	Standard	23.0	22.26	0.01	1	2411-2	QPSK	25	12	10 mm	right	1:1	0.082	1.186	0.097	
707.50	23095	Mid	LTE Band 12	10	Standard	24.0	23.27	-0.02	0	2411-2	QPSK	1	0	10 mm	left	1:1	0.154	1.183	0.182	
707.50	23095	Mid	LTE Band 12	10	Standard	23.0	22.26	0.00	1	2411-2	QPSK	25	12	10 mm	left	1:1	0.114	1.186	0.135	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT												Body								
Spatial Peak												1.6 W/kg (mW/g)								
Uncontrolled Exposure/General Population												averaged over 1 gram								

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Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14		DUT Type: Portable Handset		Page 80 of 116	

Table 11-18
LTE Band 5 (Cell) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	24.0	22.67	0.01	0	2411-1	QPSK	1	49	10 mm	back	1:1	0.189	1.358	0.257	A23
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.0	21.65	0.01	1	2411-1	QPSK	25	25	10 mm	back	1:1	0.148	1.365	0.202	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	24.0	22.67	-0.01	0	2411-1	QPSK	1	49	10 mm	front	1:1	0.398	1.358	0.540	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.0	21.65	0.02	1	2411-1	QPSK	25	25	10 mm	front	1:1	0.297	1.365	0.405	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	24.0	22.67	-0.03	0	2411-1	QPSK	1	49	10 mm	bottom	1:1	0.400	1.358	0.543	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Wireless Charging	24.0	22.67	0.02	0	2411-1	QPSK	1	49	10 mm	bottom	1:1	0.440	1.358	0.598	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.0	21.65	-0.03	1	2411-1	QPSK	25	25	10 mm	bottom	1:1	0.304	1.365	0.415	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	24.0	22.67	-0.06	0	2411-1	QPSK	1	49	10 mm	right	1:1	0.212	1.358	0.288	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.0	21.65	0.04	1	2411-1	QPSK	25	25	10 mm	right	1:1	0.152	1.365	0.207	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	24.0	22.67	-0.09	0	2411-1	QPSK	1	49	10 mm	left	1:1	0.050	1.358	0.068	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.0	21.65	0.08	1	2411-1	QPSK	25	25	10 mm	left	1:1	0.035	1.365	0.048	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT									Body											
Spatial Peak									1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population									averaged over 1 gram											

Table 11-19
LTE Band 4 (AWS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	21.82	-0.04	0	2411-7	QPSK	1	99	10 mm	back	1:1	0.524	1.169	0.613	A25
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	21.5	20.79	0.02	1	2411-7	QPSK	50	50	10 mm	back	1:1	0.394	1.178	0.464	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	21.82	0.01	0	2411-7	QPSK	1	99	10 mm	front	1:1	0.670	1.169	0.783	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	21.5	20.79	0.02	1	2411-7	QPSK	50	50	10 mm	front	1:1	0.504	1.178	0.594	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	21.82	0.01	0	2411-7	QPSK	1	99	10 mm	bottom	1:1	0.936	1.169	1.094	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Wireless Charging	22.5	21.82	-0.14	0	2411-7	QPSK	1	99	10 mm	bottom	1:1	0.939	1.169	1.098	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	21.5	20.79	-0.01	1	2411-7	QPSK	50	50	10 mm	bottom	1:1	0.690	1.178	0.813	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	21.5	20.63	0.00	1	2411-7	QPSK	100	0	10 mm	bottom	1:1	0.628	1.222	0.767	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	21.82	0.04	0	2411-7	QPSK	1	99	10 mm	right	1:1	0.100	1.169	0.117	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	21.5	20.79	0.00	1	2411-7	QPSK	50	50	10 mm	right	1:1	0.076	1.178	0.090	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	21.82	0.04	0	2411-7	QPSK	1	99	10 mm	left	1:1	0.199	1.169	0.233	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	21.5	20.79	0.00	1	2411-7	QPSK	50	50	10 mm	left	1:1	0.146	1.178	0.172	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Wireless Charging	22.5	21.82	-0.15	0	2411-7	QPSK	1	99	10 mm	bottom	1:1	0.922	1.169	1.078	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Body										
Spatial Peak										1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population										averaged over 1 gram										

Blue entry represents variability measurement.

Table 11-20
LTE Band 2 (PCS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #	
MHz	Ch.																			
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	21.5	21.42	-0.04	0	2411-7	QPSK	1	0	10 mm	back	1:1	0.424	1.019	0.432	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	20.5	20.42	-0.01	1	2411-7	QPSK	50	0	10 mm	back	1:1	0.344	1.019	0.351	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	21.5	21.42	0.00	0	2411-7	QPSK	1	0	10 mm	front	1:1	0.605	1.019	0.616	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	20.5	20.42	0.03	1	2411-7	QPSK	50	0	10 mm	front	1:1	0.493	1.019	0.502	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	21.5	21.42	-0.04	0	2411-7	QPSK	1	0	10 mm	bottom	1:1	0.894	1.019	0.911	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	Standard	21.5	21.12	-0.08	0	2411-7	QPSK	1	0	10 mm	bottom	1:1	0.935	1.091	1.020	A27
1880.00	18900	Mid	LTE Band 2 (PCS)	20	Wireless Charging	21.5	21.12	-0.02	0	2411-7	QPSK	1	0	10 mm	bottom	1:1	0.832	1.091	0.908	
1900.00	19100	High	LTE Band 2 (PCS)	20	Standard	21.5	20.92	-0.03	0	2411-7	QPSK	1	0	10 mm	bottom	1:1	0.909	1.143	1.039	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	20.5	20.42	-0.05	1	2411-7	QPSK	50	0	10 mm	bottom	1:1	0.730	1.019	0.744	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	20.5	20.24	-0.05	1	2411-7	QPSK	100	0	10 mm	bottom	1:1	0.712	1.062	0.756	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	21.5	21.42	0.00	0	2411-7	QPSK	1	0	10 mm	right	1:1	0.120	1.019	0.122	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	20.5	20.42	-0.03	1	2411-7	QPSK	50	0	10 mm	right	1:1	0.093	1.019	0.095	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	21.5	21.42	-0.12	0	2411-7	QPSK	1	0	10 mm	left	1:1	0.141	1.019	0.144	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	20.5	20.42	-0.06	1	2411-7	QPSK	50	0	10 mm	left	1:1	0.112	1.019	0.114	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Body										
Spatial Peak										1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population										averaged over 1 gram										

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Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 81 of 116

Table 11-21
WLAN Hotspot SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Bandwidth [MHz]	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.														(W/kg)		(W/kg)	
2462	11	IEEE 802.11b	22	DSSS	15.5	15.19	0.09	10 mm	1	Standard	0809-09	1	back	1:1	0.153	1.074	0.164	A28
2462	11	IEEE 802.11b	22	DSSS	15.5	15.19	0.05	10 mm	1	Wireless Charging	0809-09	1	back	1:1	0.141	1.074	0.151	
2462	11	IEEE 802.11n	20	OFDM	13.5	13.26	0.09	10 mm	1	Standard	0809-09	6.5	back	1:1	0.105	1.057	0.111	
2462	11	IEEE 802.11b	22	DSSS	15.5	15.19	0.04	10 mm	1	Standard	0809-09	1	front	1:1	0.006	1.074	0.006	
2462	11	IEEE 802.11b	22	DSSS	15.5	15.19	-0.08	10 mm	1	Standard	0809-09	1	top	1:1	0.010	1.074	0.011	
2462	11	IEEE 802.11b	22	DSSS	15.5	15.19	0.13	10 mm	1	Standard	0809-09	1	left	1:1	0.039	1.074	0.042	
2462	11	IEEE 802.11b	22	DSSS	15.5	14.72	0.11	10 mm	2	Standard	0809-09	1	back	1:1	0.100	1.197	0.120	
2437	6	IEEE 802.11n	20	OFDM	13.5	13.34	0.04	10 mm	2	Standard	0809-09	6.5	back	1:1	0.023	1.038	0.024	
2462	11	IEEE 802.11b	22	DSSS	15.5	14.72	0.08	10 mm	2	Standard	0809-09	1	front	1:1	0.017	1.197	0.020	
2462	11	IEEE 802.11b	22	DSSS	15.5	14.72	0.03	10 mm	2	Standard	0809-09	1	top	1:1	0.011	1.197	0.013	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	0.16	10 mm	MIMO	Standard	0809-09	13	back	1:1	0.153	1.057	0.162	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	0.10	10 mm	MIMO	Wireless Charging	0809-09	13	back	1:1	0.119	1.057	0.126	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	0.02	10 mm	MIMO	Standard	0809-09	13	front	1:1	0.010	1.057	0.011	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	0.01	10 mm	MIMO	Standard	0809-09	13	top	1:1	0.022	1.057	0.023	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	0.02	10 mm	MIMO	Standard	0809-09	13	left	1:1	0.037	1.057	0.039	
5745	149	IEEE 802.11a	20	OFDM	12.5	12.03	0.05	10 mm	1	Standard	0809-14	6	back	1:1	0.043	1.114	0.048	
5775	155	IEEE 802.11ac	80	OFDM	10.5	9.89	0.03	10 mm	1	Standard	0809-14	29.3	back	1:1	0.025	1.151	0.029	
5745	149	IEEE 802.11ac	20	OFDM	12.5	11.96	0.18	10 mm	1	Standard	0809-14	6.5	back	1:1	0.039	1.132	0.044	
5755	151	IEEE 802.11n	40	OFDM	9.5	8.73	0.12	10 mm	1	Standard	0809-14	13.5	back	1:1	0.009	1.194	0.011	
5745	149	IEEE 802.11n	20	OFDM	12.5	11.99	0.15	10 mm	1	Standard	0809-14	6.5	back	1:1	0.037	1.125	0.042	
5745	149	IEEE 802.11a	20	OFDM	12.5	12.03	0.00	10 mm	1	Standard	0809-14	6	front	1:1	0.004	1.114	0.004	
5745	149	IEEE 802.11a	20	OFDM	12.5	12.03	0.09	10 mm	1	Standard	0809-14	6	top	1:1	0.015	1.114	0.017	
5745	149	IEEE 802.11a	20	OFDM	12.5	12.03	0.02	10 mm	1	Standard	0809-14	6	left	1:1	0.005	1.114	0.006	
5825	165	IEEE 802.11a	20	OFDM	12.5	12.33	0.05	10 mm	2	Standard	0809-14	6	back	1:1	0.111	1.040	0.115	
5825	165	IEEE 802.11a	20	OFDM	12.5	12.33	-0.18	10 mm	2	Wireless Charging	0809-14	6	back	1:1	0.097	1.040	0.101	
5775	155	IEEE 802.11ac	80	OFDM	10.5	10.06	0.11	10 mm	2	Standard	0809-14	29.3	back	1:1	0.066	1.107	0.073	
5785	157	IEEE 802.11ac	20	OFDM	12.5	12.14	0.19	10 mm	2	Standard	0809-14	6.5	back	1:1	0.063	1.086	0.067	
5795	159	IEEE 802.11n	40	OFDM	9.5	8.64	0.09	10 mm	2	Standard	0809-14	13.5	back	1:1	0.020	1.219	0.024	
5825	165	IEEE 802.11n	20	OFDM	12.5	12.22	-0.03	10 mm	2	Standard	0809-14	6.5	back	1:1	0.074	1.067	0.077	
5825	165	IEEE 802.11a	20	OFDM	12.5	12.33	0.02	10 mm	2	Standard	0809-14	6	front	1:1	0.028	1.040	0.029	
5825	165	IEEE 802.11a	20	OFDM	12.5	12.33	0.08	10 mm	2	Standard	0809-14	6	top	1:1	0.063	1.040	0.066	
5825	165	IEEE 802.11n	20	OFDM	15.5	15.03	0.04	10 mm	MIMO	Standard	0809-14	13	back	1:1	0.157	1.114	0.175	A29
5825	165	IEEE 802.11n	20	OFDM	15.5	15.03	0.10	10 mm	MIMO	Wireless Charging	0809-14	13	back	1:1	0.140	1.114	0.156	
5825	165	IEEE 802.11n	20	OFDM	15.5	15.03	0.07	10 mm	MIMO	Standard	0809-14	13	front	1:1	0.047	1.114	0.052	
5825	165	IEEE 802.11n	20	OFDM	15.5	15.03	0.18	10 mm	MIMO	Standard	0809-14	13	top	1:1	0.110	1.114	0.123	
5825	165	IEEE 802.11n	20	OFDM	15.5	15.03	0.08	10 mm	MIMO	Standard	0809-14	13	left	1:1	0.060	1.114	0.067	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body										
Spatial Peak								1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population								averaged over 1 gram										

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 82 of 116

11.4 Standalone Extremity SAR Data

Table 11-22
GPRS/UMTS Extremity SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Cover Type	Device Serial Number	# of GPRS Slots	Duty Cycle	Side	SAR (10g)	Scaling Factor	Scaled SAR (10g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.60	190	GSM 850	GPRS	30.5	29.81	-0.07	0 mm	Standard	2411-4	2	1:4.15	back	1.270	1.172	1.488	
824.20	128	GSM 850	GPRS	30.5	29.90	-0.06	0 mm	Standard	2411-4	2	1:4.15	front	1.820	1.148	2.089	
836.60	190	GSM 850	GPRS	30.5	29.81	0.00	0 mm	Standard	2411-4	2	1:4.15	front	2.000	1.172	2.344	
848.80	251	GSM 850	GPRS	30.5	30.17	-0.02	0 mm	Standard	2411-4	2	1:4.15	front	2.130	1.079	2.298	
848.80	251	GSM 850	GPRS	30.5	30.17	0.00	0 mm	Wireless Charging	2411-4	2	1:4.15	front	2.190	1.079	2.363	A31
836.60	190	GSM 850	GPRS	30.5	29.81	0.04	0 mm	Standard	2411-4	2	1:4.15	bottom	1.320	1.172	1.547	
836.60	190	GSM 850	GPRS	30.5	29.81	-0.10	0 mm	Standard	2411-4	2	1:4.15	right	0.161	1.172	0.189	
836.60	190	GSM 850	GPRS	30.5	29.81	0.01	0 mm	Standard	2411-4	2	1:4.15	left	0.230	1.172	0.270	
836.60	4183	UMTS 850	RMC	24.5	23.67	-0.08	0 mm	Standard	2411-11	N/A	1:1	back	1.300	1.211	1.574	
826.40	4132	UMTS 850	RMC	24.5	23.75	-0.06	0 mm	Standard	2411-11	N/A	1:1	front	1.770	1.189	2.105	
836.60	4183	UMTS 850	RMC	24.5	23.67	-0.04	0 mm	Standard	2411-11	N/A	1:1	front	2.000	1.211	2.422	
846.60	4233	UMTS 850	RMC	24.5	24.05	-0.04	0 mm	Standard	2411-11	N/A	1:1	front	2.320	1.109	2.573	A32
846.60	4233	UMTS 850	RMC	24.5	24.05	0.13	0 mm	Wireless Charging	2411-11	N/A	1:1	front	2.110	1.109	2.340	
836.60	4183	UMTS 850	RMC	24.5	23.67	0.06	0 mm	Standard	2411-11	N/A	1:1	bottom	1.400	1.211	1.695	
836.60	4183	UMTS 850	RMC	24.5	23.67	-0.07	0 mm	Standard	2411-11	N/A	1:1	right	0.149	1.211	0.180	
836.60	4183	UMTS 850	RMC	24.5	23.67	0.10	0 mm	Standard	2411-11	N/A	1:1	left	0.217	1.211	0.263	
846.60	4233	UMTS 850	RMC	24.5	24.05	0.08	0 mm	Standard	2411-11	N/A	1:1	front	2.010	1.109	2.229	
1880.00	661	GSM 1900	GPRS	28.0	27.63	-0.04	0 mm	Standard	2411-4	2	1:4.15	back	1.230	1.089	1.339	
1850.20	512	GSM 1900	GPRS	28.0	27.50	-0.02	0 mm	Standard	2411-4	2	1:4.15	front	2.530	1.122	2.839	
1880.00	661	GSM 1900	GPRS	28.0	27.63	0.01	0 mm	Standard	2411-4	2	1:4.15	front	2.440	1.089	2.657	
1909.80	810	GSM 1900	GPRS	28.0	27.79	0.03	0 mm	Standard	2411-4	2	1:4.15	front	2.190	1.050	2.300	
1850.20	512	GSM 1900	GPRS	28.0	27.50	-0.15	0 mm	Standard	2411-4	2	1:4.15	bottom	2.720	1.122	3.052	
1850.20	512	GSM 1900	GPRS	28.0	27.50	-0.20	0 mm	Wireless Charging	2411-4	2	1:4.15	bottom	2.850	1.122	3.198	
1880.00	661	GSM 1900	GPRS	28.0	27.63	-0.03	0 mm	Standard	2411-4	2	1:4.15	bottom	2.520	1.089	2.744	
1909.80	810	GSM 1900	GPRS	28.0	27.79	-0.02	0 mm	Standard	2411-4	2	1:4.15	bottom	2.070	1.050	2.174	
1880.00	661	GSM 1900	GPRS	28.0	27.63	-0.13	0 mm	Standard	2411-4	2	1:4.15	right	0.260	1.089	0.283	
1880.00	661	GSM 1900	GPRS	28.0	27.63	0.10	0 mm	Standard	2411-4	2	1:4.15	left	0.338	1.089	0.368	
1850.20	512	GSM 1900	GPRS	28.0	27.50	-0.11	0 mm	Wireless Charging	2411-4	2	1:4.15	bottom	2.900	1.122	3.254	A33
1880.00	9400	UMTS 1900	RMC	24.0	22.95	-0.05	2 mm	Standard	2411-11	N/A	1:1	back	1.140	1.274	1.452	
1880.00	9400	UMTS 1900	RMC	24.0	22.95	0.01	3 mm	Standard	2411-11	N/A	1:1	front	1.480	1.274	1.886	
1852.40	9262	UMTS 1900	RMC	24.0	23.21	-0.05	4 mm	Standard	2411-11	N/A	1:1	bottom	2.020	1.199	2.422	
1880.00	9400	UMTS 1900	RMC	24.0	22.95	-0.04	4 mm	Standard	2411-11	N/A	1:1	bottom	1.890	1.274	2.408	
1907.60	9538	UMTS 1900	RMC	24.0	23.15	-0.02	4 mm	Standard	2411-11	N/A	1:1	bottom	2.120	1.216	2.578	
1880.00	9400	UMTS 1900	RMC	24.0	22.95	-0.02	0 mm	Standard	2411-11	N/A	1:1	right	0.369	1.274	0.470	
1880.00	9400	UMTS 1900	RMC	24.0	22.95	-0.12	0 mm	Standard	2411-11	N/A	1:1	left	0.541	1.274	0.689	
1880.00	9400	UMTS 1900	RMC	21.5	21.09	-0.02	0 mm	Standard	2411-12	N/A	1:1	back	1.400	1.099	1.539	
1852.40	9262	UMTS 1900	RMC	21.5	21.25	0.01	0 mm	Standard	2411-12	N/A	1:1	front	2.110	1.059	2.234	
1880.00	9400	UMTS 1900	RMC	21.5	21.09	0.04	0 mm	Standard	2411-12	N/A	1:1	front	1.890	1.099	2.077	
1907.60	9538	UMTS 1900	RMC	21.5	21.15	0.05	0 mm	Standard	2411-12	N/A	1:1	front	2.040	1.084	2.211	
1852.40	9262	UMTS 1900	RMC	21.5	21.25	0.01	0 mm	Standard	2411-12	N/A	1:1	bottom	2.230	1.059	2.362	A34
1852.40	9262	UMTS 1900	RMC	21.5	21.25	-0.03	0 mm	Wireless Charging	2411-12	N/A	1:1	bottom	2.230	1.059	2.362	
1880.00	9400	UMTS 1900	RMC	21.5	21.09	-0.03	0 mm	Standard	2411-12	N/A	1:1	bottom	1.890	1.099	2.077	
1907.60	9538	UMTS 1900	RMC	21.5	21.15	-0.02	0 mm	Standard	2411-12	N/A	1:1	bottom	1.910	1.084	2.070	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Extremity 4.0 W/kg (mW/g) averaged over 10 grams									

Blue entries represent variability measurement.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 83 of 116

Table 11-23
LTE Extremity SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth (MHz)	Cover Type	Maximum Allowed Power (dBm)	Conducted Power (dBm)	Power Drift (dB)	MPR (dB)	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g) (W/kg)	Scaling Factor	Scaled SAR (10g) (W/kg)	Plot #	
MHz	Ch.																			
707.50	23095	Md	LTE Band 12	10	Standard	24.0	23.27	0.02	0	2411-2	QPSK	1	0	0 mm	back	1:1	0.709	1.183	0.839	A35
707.50	23095	Md	LTE Band 12	10	Standard	23.0	22.26	0.06	1	2411-2	QPSK	25	12	0 mm	back	1:1	0.597	1.186	0.708	
707.50	23095	Md	LTE Band 12	10	Standard	24.0	23.27	0.01	0	2411-2	QPSK	1	0	0 mm	front	1:1	0.844	1.183	0.998	
707.50	23095	Md	LTE Band 12	10	Wireless Charging	24.0	23.27	-0.04	0	2411-2	QPSK	1	0	0 mm	front	1:1	1.390	1.183	1.644	
707.50	23095	Md	LTE Band 12	10	Standard	23.0	22.26	0.01	1	2411-2	QPSK	25	12	0 mm	front	1:1	0.630	1.186	0.747	
707.50	23095	Md	LTE Band 12	10	Standard	24.0	23.27	0.06	0	2411-2	QPSK	1	0	0 mm	bottom	1:1	0.276	1.183	0.327	
707.50	23095	Md	LTE Band 12	10	Standard	23.0	22.26	0.01	1	2411-2	QPSK	25	12	0 mm	bottom	1:1	0.201	1.186	0.238	
707.50	23095	Md	LTE Band 12	10	Standard	24.0	23.27	-0.11	0	2411-2	QPSK	1	0	0 mm	right	1:1	0.113	1.183	0.134	
707.50	23095	Md	LTE Band 12	10	Standard	23.0	22.26	-0.03	1	2411-2	QPSK	25	12	0 mm	right	1:1	0.088	1.186	0.104	
707.50	23095	Md	LTE Band 12	10	Standard	24.0	23.27	-0.19	0	2411-2	QPSK	1	0	0 mm	left	1:1	0.149	1.183	0.176	
707.50	23095	Md	LTE Band 12	10	Standard	23.0	22.26	-0.20	1	2411-2	QPSK	25	12	0 mm	left	1:1	0.137	1.186	0.162	
836.50	20525	Md	LTE Band 5 (Cell)	10	Standard	24.0	22.67	-0.06	0	2411-1	QPSK	1	49	0 mm	back	1:1	0.918	1.358	1.247	A36
836.50	20525	Md	LTE Band 5 (Cell)	10	Standard	23.0	21.65	-0.07	1	2411-1	QPSK	25	25	0 mm	back	1:1	0.724	1.365	0.988	
836.50	20525	Md	LTE Band 5 (Cell)	10	Standard	24.0	22.67	0.02	0	2411-1	QPSK	1	49	0 mm	front	1:1	1.580	1.358	2.146	
836.50	20525	Md	LTE Band 5 (Cell)	10	Wireless Charging	24.0	22.67	0.02	0	2411-1	QPSK	1	49	0 mm	front	1:1	1.600	1.358	2.173	
836.50	20525	Md	LTE Band 5 (Cell)	10	Standard	23.0	21.65	0.02	1	2411-1	QPSK	25	25	0 mm	front	1:1	1.270	1.365	1.734	
836.50	20525	Md	LTE Band 5 (Cell)	10	Standard	23.0	21.58	-0.01	1	2411-1	QPSK	50	0	0 mm	front	1:1	1.410	1.387	1.956	
836.50	20525	Md	LTE Band 5 (Cell)	10	Standard	24.0	22.67	0.00	0	2411-1	QPSK	1	49	0 mm	bottom	1:1	1.280	1.358	1.738	
836.50	20525	Md	LTE Band 5 (Cell)	10	Standard	23.0	21.65	0.01	1	2411-1	QPSK	25	25	0 mm	bottom	1:1	1.100	1.365	1.502	
836.50	20525	Md	LTE Band 5 (Cell)	10	Standard	24.0	22.67	-0.03	0	2411-1	QPSK	1	49	0 mm	right	1:1	0.113	1.358	0.153	
836.50	20525	Md	LTE Band 5 (Cell)	10	Standard	23.0	21.65	0.04	1	2411-1	QPSK	25	25	0 mm	right	1:1	0.085	1.365	0.116	
836.50	20525	Md	LTE Band 5 (Cell)	10	Standard	24.0	22.67	-0.10	0	2411-1	QPSK	1	49	0 mm	left	1:1	0.174	1.358	0.236	
836.50	20525	Md	LTE Band 5 (Cell)	10	Standard	23.0	21.65	0.01	1	2411-1	QPSK	25	25	0 mm	left	1:1	0.128	1.365	0.175	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	24.0	23.50	-0.03	0	2411-2	QPSK	1	50	2 mm	back	1:1	1.500	1.122	1.683	A37
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	23.0	22.50	0.02	1	2411-2	QPSK	50	25	2 mm	back	1:1	1.230	1.122	1.380	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	24.0	23.50	0.02	0	2411-2	QPSK	1	50	3 mm	front	1:1	2.020	1.122	2.266	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	23.0	22.50	0.02	1	2411-2	QPSK	50	25	3 mm	front	1:1	1.670	1.122	1.874	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	23.0	22.49	0.03	1	2411-2	QPSK	100	0	3 mm	front	1:1	1.840	1.125	1.845	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	24.0	23.50	-0.03	0	2411-2	QPSK	1	50	4 mm	bottom	1:1	2.030	1.122	2.278	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	23.0	22.50	-0.03	1	2411-2	QPSK	50	25	4 mm	bottom	1:1	1.690	1.122	1.896	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	23.0	22.49	-0.03	1	2411-2	QPSK	100	0	4 mm	bottom	1:1	1.660	1.125	1.868	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	24.0	23.50	-0.01	0	2411-2	QPSK	1	50	0 mm	right	1:1	0.380	1.122	0.426	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	23.0	22.50	0.03	1	2411-2	QPSK	50	25	0 mm	right	1:1	0.318	1.122	0.357	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	24.0	23.50	0.01	0	2411-2	QPSK	1	50	0 mm	left	1:1	0.505	1.122	0.567	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	23.0	22.50	-0.02	1	2411-2	QPSK	50	25	0 mm	left	1:1	0.419	1.122	0.470	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	22.5	21.82	-0.02	0	2411-7	QPSK	1	99	0 mm	back	1:1	1.590	1.169	1.859	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	21.5	20.79	-0.02	1	2411-7	QPSK	50	50	0 mm	back	1:1	1.200	1.178	1.414	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	22.5	21.82	0.06	0	2411-7	QPSK	1	99	0 mm	front	1:1	2.360	1.169	2.759	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	21.5	20.79	0.08	1	2411-7	QPSK	50	50	0 mm	front	1:1	1.820	1.178	2.144	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	21.5	20.63	0.05	1	2411-7	QPSK	100	0	0 mm	front	1:1	1.710	1.222	2.090	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	22.5	21.82	-0.11	0	2411-7	QPSK	1	99	0 mm	bottom	1:1	2.580	1.169	3.016	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Wireless Charging	22.5	21.82	-0.09	0	2411-7	QPSK	1	99	0 mm	bottom	1:1	2.620	1.169	3.063	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	21.5	20.79	-0.08	1	2411-7	QPSK	50	50	0 mm	bottom	1:1	2.020	1.178	2.380	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Standard	21.5	20.63	-0.11	1	2411-7	QPSK	100	0	0 mm	bottom	1:1	1.980	1.222	2.420	
1732.50	20175	Md	LTE Band 4 (AWS)	20	Wireless Charging	22.5	21.82	-0.06	0	2411-7	QPSK	1	99	0 mm	bottom	1:1	2.590	1.169	3.028	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	24.0	23.50	-0.05	0	2411-4	QPSK	1	0	2 mm	back	1:1	1.650	1.122	1.851	A38
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	23.0	22.49	-0.01	1	2411-4	QPSK	50	25	2 mm	back	1:1	1.270	1.125	1.429	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	24.0	23.50	-0.05	0	2411-4	QPSK	1	0	3 mm	front	1:1	2.800	1.122	3.142	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Wireless Charging	24.0	23.50	0.00	0	2411-4	QPSK	1	0	3 mm	front	1:1	2.810	1.122	3.153	
1860.00	18900	Md	LTE Band 2 (PCS)	20	Standard	24.0	23.44	-0.03	0	2411-4	QPSK	1	0	3 mm	front	1:1	2.180	1.138	2.481	
1900.00	19100	High	LTE Band 2 (PCS)	20	Standard	24.0	23.10	-0.02	0	2411-4	QPSK	1	0	3 mm	front	1:1	2.200	1.230	2.706	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	23.0	22.49	-0.02	1	2411-4	QPSK	50	25	3 mm	front	1:1	2.190	1.125	2.464	
1860.00	18900	Md	LTE Band 2 (PCS)	20	Standard	23.0	22.34	-0.08	1	2411-4	QPSK	50	0	3 mm	front	1:1	1.760	1.164	2.049	
1900.00	19100	High	LTE Band 2 (PCS)	20	Standard	23.0	22.13	-0.04	1	2411-4	QPSK	50	0	3 mm	front	1:1	1.750	1.222	2.139	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	23.0	22.48	-0.08	1	2411-4	QPSK	100	0	3 mm	front	1:1	2.200	1.127	2.479	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	24.0	23.50	-0.04	0	2411-4	QPSK	1	0	4 mm	bottom	1:1	1.670	1.122	1.874	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	23.0	22.49	-0.04	1	2411-4	QPSK	50	25	4 mm	bottom	1:1	1.360	1.125	1.530	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	24.0	23.50	-0.07	0	2411-4	QPSK	1	0	0 mm	right	1:1	0.508	1.122	0.570	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	23.0	22.49	0.02	1	2411-4	QPSK	50	25	0 mm	right	1:1	0.390	1.125	0.439	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	24.0	23.50	-0.06	0	2411-4	QPSK	1	0	0 mm	left	1:1	0.620	1.122	0.696	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	23.0	22.49	-0.03	1	2411-4	QPSK	50	25	0 mm	left	1:1	0.557	1.125	0.627	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	21.5	21.42	0.00	0	2411-7	QPSK	1	0	0 mm	back	1:1	1.180	1.019	1.202	
1860.00	18700	Low	LTE Band 2 (PCS)	20	Standard	20.5	20.42	0.00	1	2411-7	QPSK	50	0	0 mm	back	1:1	0.953	1		

Table 11-24
2.4 GHz DTS WLAN Extremity SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Bandwidth [MHz]	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (10g)	Scaling Factor	Scaled SAR (10g)	Plot #
MHz	Ch.														(W/kg)		(W/kg)	
2462	11	IEEE 802.11b	22	DSSS	15.5	15.19	0.06	0 mm	1	Standard	0809-09	1	back	1:1	1.000	1.074	1.074	A39
2462	11	IEEE 802.11b	22	DSSS	15.5	15.19	0.05	0 mm	1	Wireless Charging	0809-09	1	back	1:1	0.775	1.074	0.832	
2462	11	IEEE 802.11n	20	OFDM	13.5	13.26	0.00	0 mm	1	Standard	0809-09	6.5	back	1:1	0.304	1.057	0.321	
2462	11	IEEE 802.11b	22	DSSS	15.5	15.19	-0.11	0 mm	1	Standard	0809-09	1	front	1:1	0.021	1.074	0.023	
2462	11	IEEE 802.11b	22	DSSS	15.5	15.19	0.04	0 mm	1	Standard	0809-09	1	top	1:1	0.024	1.074	0.026	
2462	11	IEEE 802.11b	22	DSSS	15.5	15.19	0.07	0 mm	1	Standard	0809-09	1	left	1:1	0.307	1.074	0.330	
2462	11	IEEE 802.11b	22	DSSS	15.5	14.72	0.15	0 mm	2	Standard	0809-09	1	back	1:1	0.371	1.197	0.444	
2437	6	IEEE 802.11n	20	OFDM	13.5	13.34	0.14	0 mm	2	Standard	0809-09	6.5	back	1:1	0.094	1.038	0.098	
2462	11	IEEE 802.11b	22	DSSS	15.5	14.72	-0.01	0 mm	2	Standard	0809-09	1	front	1:1	0.109	1.197	0.130	
2462	11	IEEE 802.11b	22	DSSS	15.5	14.72	0.10	0 mm	2	Standard	0809-09	1	top	1:1	0.051	1.197	0.061	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	0.09	0 mm	MIMO	Standard	0809-09	13	back	1:1	0.358	1.057	0.378	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	0.09	0 mm	MIMO	Wireless Charging	0809-09	13	back	1:1	0.524	1.057	0.554	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	-0.01	0 mm	MIMO	Standard	0809-09	13	front	1:1	0.069	1.057	0.073	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	-0.12	0 mm	MIMO	Standard	0809-09	13	top	1:1	0.032	1.057	0.034	
2462	11	IEEE 802.11n	20	OFDM	16.5	16.26	-0.08	0 mm	MIMO	Standard	0809-09	13	left	1:1	0.206	1.057	0.218	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Extremity 4.0 W/kg (mW/g) averaged over 10 grams									

Table 11-25
5 GHz DTS WLAN Extremity SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Bandwidth [MHz]	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (10g)	Scaling Factor	Scaled SAR (10g)	Plot #
MHz	Ch.														(W/kg)		(W/kg)	
5745	149	IEEE 802.11a	20	OFDM	12.5	12.03	0.03	0 mm	1	Standard	0809-14	6	back	1:1	0.116	1.114	0.129	
5775	155	IEEE 802.11ac	80	OFDM	10.5	9.89	0.07	0 mm	1	Standard	0809-14	29.3	back	1:1	0.073	1.151	0.084	
5745	149	IEEE 802.11ac	20	OFDM	12.5	11.96	0.03	0 mm	1	Standard	0809-14	6.5	back	1:1	0.089	1.132	0.101	
5755	151	IEEE 802.11n	40	OFDM	9.5	8.73	0.14	0 mm	1	Standard	0809-14	13.5	back	1:1	0.079	1.194	0.094	
5745	149	IEEE 802.11n	20	OFDM	12.5	11.99	0.02	0 mm	1	Standard	0809-14	6.5	back	1:1	0.140	1.125	0.158	
5745	149	IEEE 802.11a	20	OFDM	12.5	12.03	0.02	0 mm	1	Standard	0809-14	6	front	1:1	0.007	1.114	0.008	
5745	149	IEEE 802.11a	20	OFDM	12.5	12.03	0.00	0 mm	1	Standard	0809-14	6	top	1:1	0.002	1.114	0.002	
5745	149	IEEE 802.11a	20	OFDM	12.5	12.03	0.07	0 mm	1	Standard	0809-14	6	left	1:1	0.012	1.114	0.013	
5825	165	IEEE 802.11a	20	OFDM	12.5	12.33	0.04	0 mm	2	Standard	0809-14	6	back	1:1	0.181	1.040	0.188	
5775	155	IEEE 802.11ac	80	OFDM	10.5	10.06	0.02	0 mm	2	Standard	0809-14	29.3	back	1:1	0.102	1.107	0.113	
5785	157	IEEE 802.11ac	20	OFDM	12.5	12.14	-0.03	0 mm	2	Standard	0809-14	6.5	back	1:1	0.189	1.086	0.205	
5795	159	IEEE 802.11n	40	OFDM	9.5	8.64	0.10	0 mm	2	Standard	0809-14	13.5	back	1:1	0.125	1.219	0.152	
5825	165	IEEE 802.11n	20	OFDM	12.5	12.22	0.06	0 mm	2	Standard	0809-14	6.5	back	1:1	0.208	1.067	0.222	
5825	165	IEEE 802.11a	20	OFDM	12.5	12.33	0.01	0 mm	2	Standard	0809-14	6	front	1:1	0.163	1.040	0.170	
5825	165	IEEE 802.11a	20	OFDM	12.5	12.33	0.07	0 mm	2	Standard	0809-14	6	top	1:1	0.110	1.040	0.114	
5825	165	IEEE 802.11n	20	OFDM	15.5	15.03	0.03	0 mm	MIMO	Standard	0809-14	13	back	1:1	0.371	1.114	0.413	A40
5825	165	IEEE 802.11n	20	OFDM	15.5	15.03	0.12	0 mm	MIMO	Standard	0809-14	13	front	1:1	0.272	1.114	0.303	
5825	165	IEEE 802.11n	20	OFDM	15.5	15.03	0.19	0 mm	MIMO	Standard	0809-14	13	top	1:1	0.150	1.114	0.167	
5825	165	IEEE 802.11n	20	OFDM	15.5	15.03	0.06	0 mm	MIMO	Standard	0809-14	13	left	1:1	0.017	1.114	0.019	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Extremity 4.0 W/kg (mW/g) averaged over 10 grams									

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 85 of 116

Table 11-26
5 GHz NII WLAN Extremity SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (10g)		Scaling Factor	Scaled SAR (10g) (W/kg)	Plot
MHz	Ch.														(W/kg)				
5240	48	IEEE 802.11a	20	OFDM	12.5	12.40	0.09	0 mm	1	Standard	0809-14	6	back	1:1		0.136	1.023	0.139	
5210	42	IEEE 802.11ac	80	OFDM	10.5	10.18	0.06	0 mm	1	Standard	0809-14	29.3	back	1:1		0.081	1.076	0.087	
5240	48	IEEE 802.11a	20	OFDM	12.5	12.40	0.00	0 mm	1	Standard	0809-14	6	front	1:1		0.006	1.023	0.006	
5240	48	IEEE 802.11a	20	OFDM	12.5	12.40	0.03	0 mm	1	Standard	0809-14	6	top	1:1		0.002	1.023	0.002	
5240	48	IEEE 802.11a	20	OFDM	12.5	12.40	0.12	0 mm	1	Standard	0809-14	6	left	1:1		0.009	1.023	0.009	
5300	60	IEEE 802.11a	20	OFDM	12.5	12.38	0.08	0 mm	1	Standard	0809-14	6	back	1:1		0.150	1.028	0.154	
5290	58	IEEE 802.11ac	80	OFDM	10.5	9.69	0.13	0 mm	1	Standard	0809-14	29.3	back	1:1		0.074	1.205	0.089	
5320	64	IEEE 802.11ac	20	OFDM	12.5	12.47	0.01	0 mm	1	Standard	0809-14	6.5	back	1:1		0.125	1.007	0.126	
5310	62	IEEE 802.11n	40	OFDM	9.5	9.42	0.04	0 mm	1	Standard	0809-14	13.5	back	1:1		0.089	1.019	0.091	
5320	64	IEEE 802.11n	20	OFDM	12.5	12.16	0.04	0 mm	1	Standard	0809-14	6.5	back	1:1		0.167	1.081	0.181	
5300	60	IEEE 802.11a	20	OFDM	12.5	12.38	0.06	0 mm	1	Standard	0809-14	6	front	1:1		0.020	1.028	0.021	
5300	60	IEEE 802.11a	20	OFDM	12.5	12.38	-0.20	0 mm	1	Standard	0809-14	6	top	1:1		0.000	1.028	0.000	
5300	60	IEEE 802.11a	20	OFDM	12.5	12.38	0.04	0 mm	1	Standard	0809-14	6	left	1:1		0.011	1.028	0.011	
5500	100	IEEE 802.11a	20	OFDM	12.5	12.07	0.00	0 mm	1	Standard	0809-14	6	back	1:1		0.172	1.104	0.190	
5530	106	IEEE 802.11ac	80	OFDM	10.5	10.31	0.09	0 mm	1	Standard	0809-14	29.3	back	1:1		0.011	1.045	0.011	
5500	100	IEEE 802.11ac	20	OFDM	12.5	12.12	0.07	0 mm	1	Standard	0809-14	6.5	back	1:1		0.149	1.091	0.163	
5510	102	IEEE 802.11n	40	OFDM	9.5	9.19	-0.01	0 mm	1	Standard	0809-14	13.5	back	1:1		0.110	1.074	0.118	
5700	140	IEEE 802.11n	20	OFDM	12.5	12.31	0.07	0 mm	1	Standard	0809-14	6.5	back	1:1		0.151	1.045	0.158	
5500	100	IEEE 802.11a	20	OFDM	12.5	12.07	0.01	0 mm	1	Standard	0809-14	6	front	1:1		0.006	1.104	0.007	
5500	100	IEEE 802.11a	20	OFDM	12.5	12.07	0.00	0 mm	1	Standard	0809-14	6	top	1:1		0.000	1.104	0.000	
5500	100	IEEE 802.11a	20	OFDM	12.5	12.07	0.09	0 mm	1	Standard	0809-14	6	left	1:1		0.016	1.104	0.018	
5180	36	IEEE 802.11a	20	OFDM	12.5	12.13	0.01	0 mm	2	Standard	0809-14	6	back	1:1		0.279	1.089	0.304	
5210	42	IEEE 802.11ac	80	OFDM	10.5	10.15	0.00	0 mm	2	Standard	0809-14	29.3	back	1:1		0.095	1.084	0.103	
5180	36	IEEE 802.11a	20	OFDM	12.5	12.13	0.15	0 mm	2	Standard	0809-14	6	front	1:1		0.081	1.089	0.088	
5180	36	IEEE 802.11a	20	OFDM	12.5	12.13	-0.15	0 mm	2	Standard	0809-14	6	top	1:1		0.068	1.089	0.074	
5260	52	IEEE 802.11a	20	OFDM	12.5	11.62	-0.14	0 mm	2	Standard	0809-14	6	back	1:1		0.240	1.225	0.294	
5290	58	IEEE 802.11ac	80	OFDM	10.5	9.67	0.08	0 mm	2	Standard	0809-14	29.3	back	1:1		0.106	1.211	0.128	
5260	52	IEEE 802.11ac	20	OFDM	12.5	11.53	0.03	0 mm	2	Standard	0809-14	6.5	back	1:1		0.225	1.250	0.281	
5310	62	IEEE 802.11n	40	OFDM	9.5	8.99	0.05	0 mm	2	Standard	0809-14	13.5	back	1:1		0.157	1.125	0.177	
5260	52	IEEE 802.11n	20	OFDM	12.5	11.51	0.02	0 mm	2	Standard	0809-14	6.5	back	1:1		0.262	1.256	0.329	
5260	52	IEEE 802.11a	20	OFDM	12.5	11.62	-0.05	0 mm	2	Standard	0809-14	6	front	1:1		0.116	1.225	0.142	
5260	52	IEEE 802.11a	20	OFDM	12.5	11.62	-0.03	0 mm	2	Standard	0809-14	6	top	1:1		0.052	1.225	0.064	
5700	140	IEEE 802.11a	20	OFDM	12.5	12.06	-0.08	0 mm	2	Standard	0809-14	6	back	1:1		0.334	1.107	0.370	
5700	140	IEEE 802.11a	20	OFDM	12.5	12.06	0.05	0 mm	2	Wireless Charging	0809-14	6	back	1:1		0.386	1.107	0.427	
5530	106	IEEE 802.11ac	80	OFDM	10.5	9.73	0.08	0 mm	2	Standard	0809-14	29.3	back	1:1		0.145	1.194	0.173	
5700	140	IEEE 802.11ac	20	OFDM	12.5	11.89	0.20	0 mm	2	Standard	0809-14	6.5	back	1:1		0.315	1.151	0.363	
5670	134	IEEE 802.11n	40	OFDM	9.5	9.47	0.03	0 mm	2	Standard	0809-14	13.5	back	1:1		0.238	1.007	0.240	
5700	140	IEEE 802.11n	20	OFDM	12.5	11.93	0.03	0 mm	2	Standard	0809-14	6.5	back	1:1		0.359	1.140	0.409	
5700	140	IEEE 802.11a	20	OFDM	12.5	12.06	0.01	0 mm	2	Standard	0809-14	6	front	1:1		0.210	1.107	0.232	
5700	140	IEEE 802.11a	20	OFDM	12.5	12.06	-0.13	0 mm	2	Standard	0809-14	6	top	1:1		0.180	1.107	0.199	
5220	44	IEEE 802.11n	20	OFDM	15.5	15.04	0.01	0 mm	MMIO	Standard	0809-14	13	back	1:1		0.375	1.112	0.417	
5220	44	IEEE 802.11n	20	OFDM	15.5	15.04	0.06	0 mm	MMIO	Standard	0809-14	13	front	1:1		0.125	1.112	0.139	
5220	44	IEEE 802.11n	20	OFDM	15.5	15.04	-0.08	0 mm	MMIO	Standard	0809-14	13	top	1:1		0.069	1.112	0.077	
5220	44	IEEE 802.11n	20	OFDM	15.5	15.04	0.15	0 mm	MMIO	Standard	0809-14	13	left	1:1		0.025	1.112	0.028	
5260	52	IEEE 802.11n	20	OFDM	15.5	14.81	0.20	0 mm	MMIO	Standard	0809-14	13	back	1:1		0.347	1.172	0.407	
5260	52	IEEE 802.11n	20	OFDM	15.5	14.81	0.05	0 mm	MMIO	Standard	0809-14	13	front	1:1		0.130	1.172	0.152	
5260	52	IEEE 802.11n	20	OFDM	15.5	14.81	-0.09	0 mm	MMIO	Standard	0809-14	13	top	1:1		0.066	1.172	0.077	
5260	52	IEEE 802.11n	20	OFDM	15.5	14.81	0.03	0 mm	MMIO	Standard	0809-14	13	left	1:1		0.028	1.172	0.033	
5700	140	IEEE 802.11n	20	OFDM	15.5	15.13	0.01	0 mm	MMIO	Standard	0809-14	13	back	1:1		0.404	1.089	0.440	A41
5700	140	IEEE 802.11n	20	OFDM	15.5	15.13	0.09	0 mm	MMIO	Wireless Charging	0809-14	13	back	1:1		0.350	1.089	0.381	
5700	140	IEEE 802.11n	20	OFDM	15.5	15.13	0.12	0 mm	MMIO	Standard	0809-14	13	front	1:1		0.214	1.089	0.233	
5700	140	IEEE 802.11n	20	OFDM	15.5	15.13	-0.02	0 mm	MMIO	Standard	0809-14	13	top	1:1		0.221	1.089	0.241	
5700	140	IEEE 802.11n	20	OFDM	15.5	15.13	0.01	0 mm	MMIO	Standard	0809-14	13	left	1:1		0.035	1.089	0.038	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Extremity 4.0 W/kg (mW/g) averaged over 10 grams											

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 86 of 116

Table 11-27
Bluetooth Extremity SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Cover Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (10g)	Scaling Factor	Scaled SAR (10g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
2441	39	Bluetooth	FHSS	9.0	8.83	0.17	0 mm	Standard	0809-14	1	back	1:1	0.008	1.040	0.008	A42
2441	39	Bluetooth	FHSS	9.0	8.83	0.10	0 mm	Wireless Charging	0809-14	1	back	1:1	0.008	1.040	0.008	
2441	39	Bluetooth	FHSS	9.0	8.83	0.02	0 mm	Standard	0809-14	1	front	1:1	0.001	1.040	0.001	
2441	39	Bluetooth	FHSS	9.0	8.83	0.00	0 mm	Standard	0809-14	1	top	1:1	0.000	1.040	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Extremity 4.0 W/kg (mW/g) averaged over 10 grams									

11.5 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2003, and FCC KDB Publication 447498 D01v05.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v05.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 15 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance. A test separation of 10 mm for body-worn SAR was also used for GSM 850/1900, UMTS Band 5, LTE Band 12/5, and 2.4/5 GHz WLAN as it is more conservative.
7. Per FCC KDB Publication 648474 D04v01, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. Per FCC KDB 865664 D01 v01, variability SAR tests were performed when the measured SAR results for a frequency band were greater than 0.8 W/kg for 1g SAR and 2.0 W/kg for 10g SAR. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 13 for variability analysis.
9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.5 for more details).
10. This device utilizes power reduction for UMTS Band 2, LTE Band 2/4 under some portable Hotspot and proximity sensor for SAR compliance. Therefore, these wireless router configurations were tested at reduced output power levels.
11. Per FCC KDB Publication 648474 D04, SAR was measured using the standard battery cover and then repeated with the wireless charging battery cover for the configuration with the highest reported SAR for each wireless technology, frequency band, operating mode, and exposure condition. Since reported SAR did not exceed 1.2 W/kg, additional testing beyond that included in this test report was not required.
12. Extremity SAR was additionally evaluated at maximum output power with distance of 2mm for back side, 3mm for front side, and 4mm for bottom edge due to proximity sensor considerations. (See Section 6.7 for more information)

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 87 of 116

GSM Test Notes:

1. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
2. Justification for reduced test configurations per KDB Publication 941225 D01v03 and October 2013 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all GPRS/EDGE slot configurations. The configuration with the highest target frame averaged output power was evaluated for hotspot and extremity SAR. When the maximum frame-averaged powers are equivalent across two or more slots (within 0.25 dB), the configuration with the most number of time slots was tested.
3. Per FCC KDB Publication 447498 D01v05, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.

UMTS Notes:

1. UMTS mode in was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.
2. Per FCC KDB Publication 447498 D01v05, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r01. The general test procedures used for testing can be found in Section 8.4.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC Guidance, LTE CA SAR was not needed for testing since the data sent by uplink on the uplink physical channels does not change between Rel. 8 and Rel. 10.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 88 of 116

WLAN/BT Notes:

1. Justification for reduced test configurations for WIFI channels per KDB Publication 248227 D01v01r02 and October 2012 FCC/TCB Meeting Notes for 2.4 GHz WIFI SISO operations: Highest average RF output power channel for the lowest data rate was selected for SAR evaluation in 802.11b. Other SISO IEEE 802.11 modes (including 802.11g/n) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11b mode. Some additional IEEE 802.11n SAR tests for the highest measured SAR positions were included in this report per manufacture request.
2. Justification for reduced test configurations for WIFI channels per KDB Publication 248227 D01v01r02 and October 2012 FCC/TCB Meeting Notes for SISO 5 GHz WIFI operations: Highest average RF output power channel for the lowest data rate was selected for SAR evaluation in 802.11a. Other IEEE SISO 802.11 modes (including 802.11n 20 MHz and 40 MHz bandwidths) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11a mode. Some additional IEEE 802.11n and IEEE 802.11ac SAR tests for the highest measured SAR positions were included in this report per manufacture request.
3. Per April 2013 TCB Workshop notes, full SISO SAR tests for all IEEE 802.11ac configurations were not required because the average output power was not more than 0.25 dB higher than IEEE 802.11a mode. IEEE 802.11ac SISO was evaluated for the highest IEEE 802.11a position in each 5 GHz band and exposure condition.
4. When Hotspot is enabled, 5.2-5.7 GHz bands are disabled. Therefore no 5.2 – 5.7 GHz WIFI Wireless Router SAR Data was required.
5. Per KDB 248227, SAR for MIMO was measured with both transmitting simultaneously and was evaluated in dependently of SISO operation. For 2.4 GHz MIMO, IEEE 802.11n was evaluated. For 5 GHz MIMO, IEEE 802.11n 20 MHz bandwidth was evaluated.
6. WIFI transmission was verified using an uncalibrated spectrum analyzer.
7. When the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the reported 1g averaged SAR is <0.8 W/kg, SAR testing on other default channels was required. Testing on other default channels was not required for 10g Extremity SAR since the reported 10g averaged SAR is < 2.0 W/kg.
8. The channel and data rate with the highest average output power were evaluated for Bluetooth.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 89 of 116

12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

The following procedures adopted from FCC KDB Publication 447498 D01v05 are applicable to handsets with built-in unlicensed transmitters such as 802.11a/b/g/n/ac and Bluetooth devices which may simultaneously transmit with the licensed transmitter.

12.2 Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 D01v05 IV.C.1.iii and IEEE 1528-2013 Section 6.3.4.1.2, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific physical test configuration is ≤ 1.6 W/kg. When standalone SAR is not required to be measured, per FCC KDB 447498 D01v05 4.3.2 2), the following equation must be used to estimate the standalone 1g or 10g SAR for simultaneous transmission assessment involving that transmitter.

$$\text{Estimated 1g SAR} = \frac{\sqrt{f(\text{GHz})}}{7.5} * \frac{(\text{Max Power of channel, mW})}{\text{Min. Separation Distance, mm}}$$

$$\text{Estimated 10g SAR} = \frac{\sqrt{f(\text{GHz})}}{18.75} * \frac{(\text{Max Power of channel, mW})}{\text{Min. Separation Distance, mm}}$$

Table 12-1
Estimated 1g SAR

Mode	Configuration	Frequency	Maximum Allowed Power	Separation Distance (Body)	Estimated SAR
		[MHz]	[dBm]	[mm]	[W/kg]
Bluetooth	Back Side	2480	9.00	15	0.112

Table 12-2
Estimated 10g SAR

Mode	Configuration	Frequency	Maximum Allowed Power	Separation Distance (Body)	Estimated SAR
		[MHz]	[dBm]	[mm]	[W/kg]
Bluetooth LE	Back, Front & Top Edge Touching (*)	2480	4.5	5	0.05

Notes:

1. Held-to ear configurations are not applicable to Bluetooth operations and therefore were not considered for simultaneous transmission. Per KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mW before calculation.
2. (*) – Per FCC KDB Publication 447498, when the test separation distance is < 5 mm, a distance of 5 mm is applied to determine estimated SAR.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 90 of 116

12.3 Head SAR Simultaneous Transmission Analysis

Table 12-3
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 (Held to Ear)

Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.158	0.023	0.181	Head SAR	Right Cheek	0.166	0.023	0.189
	Right Tilt	0.086	0.014	0.100		Right Tilt	0.093	0.014	0.107
	Left Cheek	0.101	0.009	0.110		Left Cheek	0.110	0.009	0.119
	Left Tilt	0.079	0.008	0.087		Left Tilt	0.080	0.008	0.088
Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.109	0.023	0.132	Head SAR	Right Cheek	0.273	0.023	0.296
	Right Tilt	0.058	0.014	0.072		Right Tilt	0.150	0.014	0.164
	Left Cheek	0.078	0.009	0.087		Left Cheek	0.251	0.009	0.260
	Left Tilt	0.033	0.008	0.041		Left Tilt	0.126	0.008	0.134
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.221	0.023	0.244	Head SAR	Right Cheek	0.151	0.023	0.174
	Right Tilt	0.095	0.014	0.109		Right Tilt	0.083	0.014	0.097
	Left Cheek	0.195	0.009	0.204		Left Cheek	0.096	0.009	0.105
	Left Tilt	0.117	0.008	0.125		Left Tilt	0.069	0.008	0.077
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.120	0.023	0.143	Head SAR	Right Cheek	0.121	0.023	0.144
	Right Tilt	0.068	0.014	0.082		Right Tilt	0.075	0.014	0.089
	Left Cheek	0.127	0.009	0.136		Left Cheek	0.155	0.009	0.164
	Left Tilt	0.064	0.008	0.072		Left Tilt	0.065	0.008	0.073

Table 12-4
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 2 (Held to Ear)

Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.158	0.213	0.371	Head SAR	Right Cheek	0.166	0.213	0.379
	Right Tilt	0.086	0.066	0.152		Right Tilt	0.093	0.066	0.159
	Left Cheek	0.101	0.049	0.150		Left Cheek	0.110	0.049	0.159
	Left Tilt	0.079	0.035	0.114		Left Tilt	0.080	0.035	0.115
Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.109	0.213	0.322	Head SAR	Right Cheek	0.273	0.213	0.486
	Right Tilt	0.058	0.066	0.124		Right Tilt	0.150	0.066	0.216
	Left Cheek	0.078	0.049	0.127		Left Cheek	0.251	0.049	0.300
	Left Tilt	0.033	0.035	0.068		Left Tilt	0.126	0.035	0.161
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.221	0.213	0.434	Head SAR	Right Cheek	0.151	0.213	0.364
	Right Tilt	0.095	0.066	0.161		Right Tilt	0.083	0.066	0.149
	Left Cheek	0.195	0.049	0.244		Left Cheek	0.096	0.049	0.145
	Left Tilt	0.117	0.035	0.152		Left Tilt	0.069	0.035	0.104

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 91 of 116

Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.120	0.213	0.333	Head SAR	Right Cheek	0.121	0.213	0.334
	Right Tilt	0.068	0.066	0.134		Right Tilt	0.075	0.066	0.141
	Left Cheek	0.127	0.049	0.176		Left Cheek	0.155	0.049	0.204
	Left Tilt	0.064	0.035	0.099		Left Tilt	0.065	0.035	0.100

Table 12-5
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO (Held to Ear)

Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.158	0.171	0.329	Head SAR	Right Cheek	0.166	0.171	0.337
	Right Tilt	0.086	0.037	0.123		Right Tilt	0.093	0.037	0.130
	Left Cheek	0.101	0.030	0.131		Left Cheek	0.110	0.030	0.140
	Left Tilt	0.079	0.017	0.096		Left Tilt	0.080	0.017	0.097
Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.109	0.171	0.280	Head SAR	Right Cheek	0.273	0.171	0.444
	Right Tilt	0.058	0.037	0.095		Right Tilt	0.150	0.037	0.187
	Left Cheek	0.078	0.030	0.108		Left Cheek	0.251	0.030	0.281
	Left Tilt	0.033	0.017	0.050		Left Tilt	0.126	0.017	0.143
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.221	0.171	0.392	Head SAR	Right Cheek	0.151	0.171	0.322
	Right Tilt	0.095	0.037	0.132		Right Tilt	0.083	0.037	0.120
	Left Cheek	0.195	0.030	0.225		Left Cheek	0.096	0.030	0.126
	Left Tilt	0.117	0.017	0.134		Left Tilt	0.069	0.017	0.086
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.120	0.171	0.291	Head SAR	Right Cheek	0.121	0.171	0.292
	Right Tilt	0.068	0.037	0.105		Right Tilt	0.075	0.037	0.112
	Left Cheek	0.127	0.030	0.157		Left Cheek	0.155	0.030	0.185
	Left Tilt	0.064	0.017	0.081		Left Tilt	0.065	0.017	0.082

Table 12-6
Simultaneous Transmission Scenario with 5 GHz WLAN Ant 1 (Held to Ear)

Simult Tx	Configuration	GSM 850 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.158	0.023	0.181	Head SAR	Right Cheek	0.166	0.023	0.189
	Right Tilt	0.086	0.000	0.086		Right Tilt	0.093	0.000	0.093
	Left Cheek	0.101	0.000	0.101		Left Cheek	0.110	0.000	0.110
	Left Tilt	0.079	0.000	0.079		Left Tilt	0.080	0.000	0.080
Simult Tx	Configuration	GSM 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.109	0.023	0.132	Head SAR	Right Cheek	0.273	0.023	0.296
	Right Tilt	0.058	0.000	0.058		Right Tilt	0.150	0.000	0.150
	Left Cheek	0.078	0.000	0.078		Left Cheek	0.251	0.000	0.251
	Left Tilt	0.033	0.000	0.033		Left Tilt	0.126	0.000	0.126

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 92 of 116

Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.221	0.023	0.244	Head SAR	Right Cheek	0.151	0.023	0.174
	Right Tilt	0.095	0.000	0.095		Right Tilt	0.083	0.000	0.083
	Left Cheek	0.195	0.000	0.195		Left Cheek	0.096	0.000	0.096
	Left Tilt	0.117	0.000	0.117		Left Tilt	0.069	0.000	0.069
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.120	0.023	0.143	Head SAR	Right Cheek	0.121	0.023	0.144
	Right Tilt	0.068	0.000	0.068		Right Tilt	0.075	0.000	0.075
	Left Cheek	0.127	0.000	0.127		Left Cheek	0.155	0.000	0.155
	Left Tilt	0.064	0.000	0.064		Left Tilt	0.065	0.000	0.065

The worst case 5 GHz WIFI reported SAR for each head configuration was considered for simultaneous SAR exclusion via summation of standalone SAR, regardless of whether the WIFI channel has WIFI Hotspot capability, for simplicity to determine compliance. Please note that the actual simultaneous transmission SAR will not exceed the summed levels indicated.

Table 12-7
Simultaneous Transmission Scenario with 5 GHz WLAN Ant 2 (Held to Ear)

Simult Tx	Configuration	GSM 850 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.158	0.593	0.751	Head SAR	Right Cheek	0.166	0.593	0.759
	Right Tilt	0.086	0.331	0.417		Right Tilt	0.093	0.331	0.424
	Left Cheek	0.101	0.464	0.565		Left Cheek	0.110	0.464	0.574
	Left Tilt	0.079	0.261	0.340		Left Tilt	0.080	0.261	0.341
Simult Tx	Configuration	GSM 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.109	0.593	0.702	Head SAR	Right Cheek	0.273	0.593	0.866
	Right Tilt	0.058	0.331	0.389		Right Tilt	0.150	0.331	0.481
	Left Cheek	0.078	0.464	0.542		Left Cheek	0.251	0.464	0.715
	Left Tilt	0.033	0.261	0.294		Left Tilt	0.126	0.261	0.387
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.221	0.593	0.814	Head SAR	Right Cheek	0.151	0.593	0.744
	Right Tilt	0.095	0.331	0.426		Right Tilt	0.083	0.331	0.414
	Left Cheek	0.195	0.464	0.659		Left Cheek	0.096	0.464	0.560
	Left Tilt	0.117	0.261	0.378		Left Tilt	0.069	0.261	0.330
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.120	0.593	0.713	Head SAR	Right Cheek	0.121	0.593	0.714
	Right Tilt	0.068	0.331	0.399		Right Tilt	0.075	0.331	0.406
	Left Cheek	0.127	0.464	0.591		Left Cheek	0.155	0.464	0.619
	Left Tilt	0.064	0.261	0.325		Left Tilt	0.065	0.261	0.326

The worst case 5 GHz WIFI reported SAR for each head configuration was considered for simultaneous SAR exclusion via summation of standalone SAR, regardless of whether the WIFI channel has WIFI Hotspot capability, for simplicity to determine compliance. Please note that the actual simultaneous transmission SAR will not exceed the summed levels indicated.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 93 of 116

Table 12-8
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO (Held to Ear)

Simult Tx	Configuration	GSM 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.158	0.633	0.791	Head SAR	Right Cheek	0.166	0.633	0.799
	Right Tilt	0.086	0.404	0.490		Right Tilt	0.093	0.404	0.497
	Left Cheek	0.101	0.904	1.005		Left Cheek	0.110	0.904	1.014
	Left Tilt	0.079	0.417	0.496		Left Tilt	0.080	0.417	0.497
Simult Tx	Configuration	GSM 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.109	0.633	0.742	Head SAR	Right Cheek	0.273	0.633	0.906
	Right Tilt	0.058	0.404	0.462		Right Tilt	0.150	0.404	0.554
	Left Cheek	0.078	0.904	0.982		Left Cheek	0.251	0.904	1.155
	Left Tilt	0.033	0.417	0.450		Left Tilt	0.126	0.417	0.543
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.221	0.633	0.854	Head SAR	Right Cheek	0.151	0.633	0.784
	Right Tilt	0.095	0.404	0.499		Right Tilt	0.083	0.404	0.487
	Left Cheek	0.195	0.904	1.099		Left Cheek	0.096	0.904	1.000
	Left Tilt	0.117	0.417	0.534		Left Tilt	0.069	0.417	0.486
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.120	0.633	0.753	Head SAR	Right Cheek	0.121	0.633	0.754
	Right Tilt	0.068	0.404	0.472		Right Tilt	0.075	0.404	0.479
	Left Cheek	0.127	0.904	1.031		Left Cheek	0.155	0.904	1.059
	Left Tilt	0.064	0.417	0.481		Left Tilt	0.065	0.417	0.482

The worst case 5 GHz WIFI reported SAR for each head configuration was considered for simultaneous SAR exclusion via summation of standalone SAR, regardless of whether the WIFI channel has WIFI Hotspot capability, for simplicity to determine compliance. Please note that the actual simultaneous transmission SAR will not exceed the summed levels indicated.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT 	Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 94 of 116

12.4 Body-Worn Simultaneous Transmission Analysis

Notes:

1. For SAR summation for body-worn back side at 15mm, GSM 850/1900, UMTS 850, and LTE B12/5 SAR values at 10mm were used since the 10mm test distance was more conservative. "<" denotes that the 10mm GSM 850/1900, UMTS 850, and LTE B12/5 SAR values were used for summation purposes.
2. For SAR summation for body-worn back side at 15mm, LTE B2/4 SAR values at maximum power level were used since the SAR values at maximum power level were more conservative than SAR values at reduced power level. "<" denotes that the LTE B2/4 SAR values at maximum power level were used for summation purposes.
3. For SAR summations for body-worn back side at 15mm, WLAN SAR values for 10mm were used since the 10mm test distance is more conservative. "<" denotes that the 10mm WLAN SAR values were used for summation purposes.

Table 12-9
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.312	< 0.164	< 0.476
Back Side	UMTS 850	< 0.397	< 0.164	< 0.561
Back Side	GSM 1900	< 0.457	< 0.164	< 0.621
Back Side	UMTS 1900	0.445	< 0.164	< 0.609
Back Side	LTE Band 12	< 0.509	< 0.164	< 0.673
Back Side	LTE Band 5 (Cell)	< 0.257	< 0.164	< 0.421
Back Side	LTE Band 4 (AWS)	< 0.459	< 0.164	< 0.623
Back Side	LTE Band 2 (PCS)	< 0.588	< 0.164	< 0.752

Table 12-10
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 2 (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.312	< 0.120	< 0.432
Back Side	UMTS 850	< 0.397	< 0.120	< 0.517
Back Side	GSM 1900	< 0.457	< 0.120	< 0.577
Back Side	UMTS 1900	0.445	< 0.120	< 0.565
Back Side	LTE Band 12	< 0.509	< 0.120	< 0.629
Back Side	LTE Band 5 (Cell)	< 0.257	< 0.120	< 0.377
Back Side	LTE Band 4 (AWS)	< 0.459	< 0.120	< 0.579
Back Side	LTE Band 2 (PCS)	< 0.588	< 0.120	< 0.708

Table 12-11
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.312	< 0.162	< 0.474
Back Side	UMTS 850	< 0.397	< 0.162	< 0.559
Back Side	GSM 1900	< 0.457	< 0.162	< 0.619
Back Side	UMTS 1900	0.445	< 0.162	< 0.607
Back Side	LTE Band 12	< 0.509	< 0.162	< 0.671
Back Side	LTE Band 5 (Cell)	< 0.257	< 0.162	< 0.419
Back Side	LTE Band 4 (AWS)	< 0.459	< 0.162	< 0.621
Back Side	LTE Band 2 (PCS)	< 0.588	< 0.162	< 0.750

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 95 of 116

Table 12-12
Simultaneous Transmission Scenario with 5 GHz WLAN Ant 1 (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.312	< 0.088	< 0.400
Back Side	UMTS 850	< 0.397	< 0.088	< 0.485
Back Side	GSM 1900	< 0.457	< 0.088	< 0.545
Back Side	UMTS 1900	0.445	< 0.088	< 0.533
Back Side	LTE Band 12	< 0.509	< 0.088	< 0.597
Back Side	LTE Band 5 (Cell)	< 0.257	< 0.088	< 0.345
Back Side	LTE Band 4 (AWS)	< 0.459	< 0.088	< 0.547
Back Side	LTE Band 2 (PCS)	< 0.588	< 0.088	< 0.676

The worst case 5 GHz WIFI reported SAR for each body-worn configuration was considered for simultaneous SAR exclusion via summation of standalone SAR, regardless of whether the WIFI channel has WIFI Hotspot capability, for simplicity to determine compliance. Please note that the actual simultaneous transmission SAR will not exceed the summed levels indicated.

Table 12-13
Simultaneous Transmission Scenario with 5 GHz WLAN Ant 2 (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.312	< 0.131	< 0.443
Back Side	UMTS 850	< 0.397	< 0.131	< 0.528
Back Side	GSM 1900	< 0.457	< 0.131	< 0.588
Back Side	UMTS 1900	0.445	< 0.131	< 0.576
Back Side	LTE Band 12	< 0.509	< 0.131	< 0.640
Back Side	LTE Band 5 (Cell)	< 0.257	< 0.131	< 0.388
Back Side	LTE Band 4 (AWS)	< 0.459	< 0.131	< 0.590
Back Side	LTE Band 2 (PCS)	< 0.588	< 0.131	< 0.719

The worst case 5 GHz WIFI reported SAR for each body-worn configuration was considered for simultaneous SAR exclusion via summation of standalone SAR, regardless of whether the WIFI channel has WIFI Hotspot capability, for simplicity to determine compliance. Please note that the actual simultaneous transmission SAR will not exceed the summed levels indicated.

Table 12-14
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.312	< 0.175	< 0.487
Back Side	UMTS 850	< 0.397	< 0.175	< 0.572
Back Side	GSM 1900	< 0.457	< 0.175	< 0.632
Back Side	UMTS 1900	0.445	< 0.175	< 0.620
Back Side	LTE Band 12	< 0.509	< 0.175	< 0.684
Back Side	LTE Band 5 (Cell)	< 0.257	< 0.175	< 0.432
Back Side	LTE Band 4 (AWS)	< 0.459	< 0.175	< 0.634
Back Side	LTE Band 2 (PCS)	< 0.588	< 0.175	< 0.763

The worst case 5 GHz WIFI reported SAR for each body-worn configuration was considered for simultaneous SAR exclusion via summation of standalone SAR, regardless of whether the WIFI channel has WIFI Hotspot capability, for simplicity to determine compliance. Please note that the actual simultaneous transmission SAR will not exceed the summed levels indicated.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT 	Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 96 of 116

Table 12-15
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.312	0.112	< 0.424
Back Side	UMTS 850	< 0.397	0.112	< 0.509
Back Side	GSM 1900	< 0.457	0.112	< 0.569
Back Side	UMTS 1900	0.445	0.112	0.557
Back Side	LTE Band 12	< 0.509	0.112	< 0.621
Back Side	LTE Band 5 (Cell)	< 0.257	0.112	< 0.369
Back Side	LTE Band 4 (AWS)	0.459	0.112	0.571
Back Side	LTE Band 2 (PCS)	0.588	0.112	0.700

Note: Bluetooth SAR was not required to be measured per FCC KDB 447498. Estimated SAR results were used in the above table to determine simultaneous transmission SAR test exclusion.

12.5 Hotspot SAR Simultaneous Transmission Analysis

Per FCC KDB Publication 941225 D06v01, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR ("-").

Table 12-16
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 (Hotspot at 1.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.464	0.164	0.628	Body SAR	Back	0.397	0.164	0.561
	Front	0.606	0.006	0.612		Front	0.631	0.006	0.637
	Top	-	0.011	0.011		Top	-	0.011	0.011
	Bottom	0.513	-	0.513		Bottom	0.477	-	0.477
	Right	0.263	-	0.263		Right	0.214	-	0.214
	Left	0.098	0.042	0.140		Left	0.084	0.042	0.126
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.528	0.164	0.692	Body SAR	Back	0.420	0.164	0.584
	Front	0.761	0.006	0.767		Front	0.664	0.006	0.670
	Top	-	0.011	0.011		Top	-	0.011	0.011
	Bottom	0.987	-	0.987		Bottom	1.095	-	1.095
	Right	0.155	-	0.155		Right	0.122	-	0.122
	Left	0.171	0.042	0.213		Left	0.137	0.042	0.179
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.509	0.164	0.673	Body SAR	Back	0.257	0.164	0.421
	Front	0.599	0.006	0.605		Front	0.540	0.006	0.546
	Top	-	0.011	0.011		Top	-	0.011	0.011
	Bottom	0.313	-	0.313		Bottom	0.598	-	0.598
	Right	0.129	-	0.129		Right	0.288	-	0.288
	Left	0.182	0.042	0.224		Left	0.068	0.042	0.110
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.613	0.164	0.777	Body SAR	Back	0.432	0.164	0.596
	Front	0.783	0.006	0.789		Front	0.616	0.006	0.622
	Top	-	0.011	0.011		Top	-	0.011	0.011
	Bottom	1.098	-	1.098		Bottom	1.039	-	1.039
	Right	0.117	-	0.117		Right	0.122	-	0.122
	Left	0.233	0.042	0.275		Left	0.144	0.042	0.186

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT 	Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset	Page 97 of 116

Table 12-17
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 2 (Hotspot at 1.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.464	0.120	0.584	Body SAR	Back	0.397	0.120	0.517
	Front	0.606	0.020	0.626		Front	0.631	0.020	0.651
	Top	-	0.013	0.013		Top	-	0.013	0.013
	Bottom	0.513	-	0.513		Bottom	0.477	-	0.477
	Right	0.263	-	0.263		Right	0.214	-	0.214
	Left	0.098	-	0.098		Left	0.084	-	0.084
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.528	0.120	0.648	Body SAR	Back	0.420	0.120	0.540
	Front	0.761	0.020	0.781		Front	0.664	0.020	0.684
	Top	-	0.013	0.013		Top	-	0.013	0.013
	Bottom	0.987	-	0.987		Bottom	1.095	-	1.095
	Right	0.155	-	0.155		Right	0.122	-	0.122
	Left	0.171	-	0.171		Left	0.137	-	0.137
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.509	0.120	0.629	Body SAR	Back	0.257	0.120	0.377
	Front	0.599	0.020	0.619		Front	0.540	0.020	0.560
	Top	-	0.013	0.013		Top	-	0.013	0.013
	Bottom	0.313	-	0.313		Bottom	0.598	-	0.598
	Right	0.129	-	0.129		Right	0.288	-	0.288
	Left	0.182	-	0.182		Left	0.068	-	0.068
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.613	0.120	0.733	Body SAR	Back	0.432	0.120	0.552
	Front	0.783	0.020	0.803		Front	0.616	0.020	0.636
	Top	-	0.013	0.013		Top	-	0.013	0.013
	Bottom	1.098	-	1.098		Bottom	1.039	-	1.039
	Right	0.117	-	0.117		Right	0.122	-	0.122
	Left	0.233	-	0.233		Left	0.144	-	0.144

Table 12-18
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO (Hotspot at 1.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.464	0.162	0.626	Body SAR	Back	0.397	0.162	0.559
	Front	0.606	0.011	0.617		Front	0.631	0.011	0.642
	Top	-	0.023	0.023		Top	-	0.023	0.023
	Bottom	0.513	-	0.513		Bottom	0.477	-	0.477
	Right	0.263	-	0.263		Right	0.214	-	0.214
	Left	0.098	0.039	0.137		Left	0.084	0.039	0.123
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.528	0.162	0.690	Body SAR	Back	0.420	0.162	0.582
	Front	0.761	0.011	0.772		Front	0.664	0.011	0.675
	Top	-	0.023	0.023		Top	-	0.023	0.023
	Bottom	0.987	-	0.987		Bottom	1.095	-	1.095
	Right	0.155	-	0.155		Right	0.122	-	0.122
	Left	0.171	0.039	0.210		Left	0.137	0.039	0.176

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 98 of 116

Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.509	0.162	0.671	Body SAR	Back	0.257	0.162	0.419
	Front	0.599	0.011	0.610		Front	0.540	0.011	0.551
	Top	-	0.023	0.023		Top	-	0.023	0.023
	Bottom	0.313	-	0.313		Bottom	0.598	-	0.598
	Right	0.129	-	0.129		Right	0.288	-	0.288
	Left	0.182	0.039	0.221		Left	0.068	0.039	0.107
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.613	0.162	0.775	Body SAR	Back	0.432	0.162	0.594
	Front	0.783	0.011	0.794		Front	0.616	0.011	0.627
	Top	-	0.023	0.023		Top	-	0.023	0.023
	Bottom	1.098	-	1.098		Bottom	1.039	-	1.039
	Right	0.117	-	0.117		Right	0.122	-	0.122
	Left	0.233	0.039	0.272		Left	0.144	0.039	0.183

Table 12-19
Simultaneous Transmission Scenario with 5 GHz WLAN Ant 1 (Hotspot at 1.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.464	0.048	0.512	Body SAR	Back	0.397	0.048	0.445
	Front	0.606	0.004	0.610		Front	0.631	0.004	0.635
	Top	-	0.017	0.017		Top	-	0.017	0.017
	Bottom	0.513	-	0.513		Bottom	0.477	-	0.477
	Right	0.263	-	0.263		Right	0.214	-	0.214
	Left	0.098	0.006	0.104		Left	0.084	0.006	0.090
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.528	0.048	0.576	Body SAR	Back	0.420	0.048	0.468
	Front	0.761	0.004	0.765		Front	0.664	0.004	0.668
	Top	-	0.017	0.017		Top	-	0.017	0.017
	Bottom	0.987	-	0.987		Bottom	1.095	-	1.095
	Right	0.155	-	0.155		Right	0.122	-	0.122
	Left	0.171	0.006	0.177		Left	0.137	0.006	0.143
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.509	0.048	0.557	Body SAR	Back	0.257	0.048	0.305
	Front	0.599	0.004	0.603		Front	0.540	0.004	0.544
	Top	-	0.017	0.017		Top	-	0.017	0.017
	Bottom	0.313	-	0.313		Bottom	0.598	-	0.598
	Right	0.129	-	0.129		Right	0.288	-	0.288
	Left	0.182	0.006	0.188		Left	0.068	0.006	0.074
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.613	0.048	0.661	Body SAR	Back	0.432	0.048	0.480
	Front	0.783	0.004	0.787		Front	0.616	0.004	0.620
	Top	-	0.017	0.017		Top	-	0.017	0.017
	Bottom	1.098	-	1.098		Bottom	1.039	-	1.039
	Right	0.117	-	0.117		Right	0.122	-	0.122
	Left	0.233	0.006	0.239		Left	0.144	0.006	0.150

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 99 of 116

Table 12-20
Simultaneous Transmission Scenario with 5 GHz WLAN Ant 2 (Hotspot at 1.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.464	0.115	0.579	Body SAR	Back	0.397	0.115	0.512
	Front	0.606	0.029	0.635		Front	0.631	0.029	0.660
	Top	-	0.066	0.066		Top	-	0.066	0.066
	Bottom	0.513	-	0.513		Bottom	0.477	-	0.477
	Right	0.263	-	0.263		Right	0.214	-	0.214
	Left	0.098	-	0.098		Left	0.084	-	0.084
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.528	0.115	0.643	Body SAR	Back	0.420	0.115	0.535
	Front	0.761	0.029	0.790		Front	0.664	0.029	0.693
	Top	-	0.066	0.066		Top	-	0.066	0.066
	Bottom	0.987	-	0.987		Bottom	1.095	-	1.095
	Right	0.155	-	0.155		Right	0.122	-	0.122
	Left	0.171	-	0.171		Left	0.137	-	0.137
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.509	0.115	0.624	Body SAR	Back	0.257	0.115	0.372
	Front	0.599	0.029	0.628		Front	0.540	0.029	0.569
	Top	-	0.066	0.066		Top	-	0.066	0.066
	Bottom	0.313	-	0.313		Bottom	0.598	-	0.598
	Right	0.129	-	0.129		Right	0.288	-	0.288
	Left	0.182	-	0.182		Left	0.068	-	0.068
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.613	0.115	0.728	Body SAR	Back	0.432	0.115	0.547
	Front	0.783	0.029	0.812		Front	0.616	0.029	0.645
	Top	-	0.066	0.066		Top	-	0.066	0.066
	Bottom	1.098	-	1.098		Bottom	1.039	-	1.039
	Right	0.117	-	0.117		Right	0.122	-	0.122
	Left	0.233	-	0.233		Left	0.144	-	0.144

Table 12-21
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO (Hotspot at 1.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.464	0.175	0.639	Body SAR	Back	0.397	0.175	0.572
	Front	0.606	0.052	0.658		Front	0.631	0.052	0.683
	Top	-	0.123	0.123		Top	-	0.123	0.123
	Bottom	0.513	-	0.513		Bottom	0.477	-	0.477
	Right	0.263	-	0.263		Right	0.214	-	0.214
	Left	0.098	0.067	0.165		Left	0.084	0.067	0.151
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.528	0.175	0.703	Body SAR	Back	0.420	0.175	0.595
	Front	0.761	0.052	0.813		Front	0.664	0.052	0.716
	Top	-	0.123	0.123		Top	-	0.123	0.123
	Bottom	0.987	-	0.987		Bottom	1.095	-	1.095
	Right	0.155	-	0.155		Right	0.122	-	0.122
	Left	0.171	0.067	0.238		Left	0.137	0.067	0.204
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.509	0.175	0.684	Body SAR	Back	0.257	0.175	0.432
	Front	0.599	0.052	0.651		Front	0.540	0.052	0.592
	Top	-	0.123	0.123		Top	-	0.123	0.123
	Bottom	0.313	-	0.313		Bottom	0.598	-	0.598
	Right	0.129	-	0.129		Right	0.288	-	0.288
	Left	0.182	0.067	0.249		Left	0.068	0.067	0.135

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 100 of 116

Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.613	0.175	0.788	Body SAR	Back	0.432	0.175	0.607
	Front	0.783	0.052	0.835		Front	0.616	0.052	0.668
	Top	-	0.123	0.123		Top	-	0.123	0.123
	Bottom	1.098	-	1.098		Bottom	1.039	-	1.039
	Right	0.117	-	0.117		Right	0.122	-	0.122
	Left	0.233	0.067	0.300		Left	0.144	0.067	0.211

12.6 Extremity SAR Simultaneous Transmission Analysis

Notes:

1. Per FCC KDB Publication 648474 D04 Handset SAR v01r01, the device edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR. These excluded configurations are denoted in the tables below as (“-”).
2. For SAR summations for extremity back side at 2 mm and front side at 3mm, WLAN SAR values for 0.0 cm were used since the 0.0 cm test distance was more conservative.
3. For SAR summations for extremity, estimated Bluetooth LE 10g SAR values were used since the estimated Bluetooth LE SAR were more conservative than the measured Bluetooth SAR.

Table 12-22
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 (Extremity at 0.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.488	1.074	2.562	Extremity	Back	1.574	1.074	2.648
	Front	2.363	0.023	2.386		Front	2.573	0.023	2.596
	Top	-	0.026	0.026		Top	-	0.026	0.026
	Bottom	1.547	-	1.547		Bottom	1.695	-	1.695
	Right	0.189	-	0.189		Right	0.180	-	0.180
	Left	0.270	0.330	0.600		Left	0.263	0.330	0.593
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.339	1.074	2.413	Extremity	Back	1.539	1.074	2.613
	Front	2.839	0.023	2.862		Front	2.234	0.023	2.257
	Top	-	0.026	0.026		Top	-	0.026	0.026
	Bottom	3.254	-	3.254		Bottom	2.362	-	2.362
	Right	0.283	-	0.283		Right	0.470	-	0.470
	Left	0.368	0.330	0.698		Left	0.689	0.330	1.019
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	0.839	1.074	1.913	Extremity	Back	1.247	1.074	2.321
	Front	1.644	0.023	1.667		Front	2.173	0.023	2.196
	Top	-	0.026	0.026		Top	-	0.026	0.026
	Bottom	0.327	-	0.327		Bottom	1.738	-	1.738
	Right	0.134	-	0.134		Right	0.153	-	0.153
	Left	0.176	0.330	0.506		Left	0.236	0.330	0.566
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.859	1.074	2.933	Extremity	Back	1.202	1.074	2.276
	Front	2.759	0.023	2.782		Front	2.537	0.023	2.560
	Top	-	0.026	0.026		Top	-	0.026	0.026
	Bottom	3.063	-	3.063		Bottom	2.649	-	2.649
	Right	0.426	-	0.426		Right	0.570	-	0.570
	Left	0.567	0.330	0.897		Left	0.696	0.330	1.026

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 101 of 116

Table 12-23
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 2 (Extremity at 0.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.488	0.444	1.932	Extremity	Back	1.574	0.444	2.018
	Front	2.363	0.130	2.493		Front	2.573	0.130	2.703
	Top	-	0.061	0.061		Top	-	0.061	0.061
	Bottom	1.547	-	1.547		Bottom	1.695	-	1.695
	Right	0.189	-	0.189		Right	0.180	-	0.180
	Left	0.270	-	0.270		Left	0.263	-	0.263
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.339	0.444	1.783	Extremity	Back	1.539	0.444	1.983
	Front	2.839	0.130	2.969		Front	2.234	0.130	2.364
	Top	-	0.061	0.061		Top	-	0.061	0.061
	Bottom	3.254	-	3.254		Bottom	2.362	-	2.362
	Right	0.283	-	0.283		Right	0.470	-	0.470
	Left	0.368	-	0.368		Left	0.689	-	0.689
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	0.839	0.444	1.283	Extremity	Back	1.247	0.444	1.691
	Front	1.644	0.130	1.774		Front	2.173	0.130	2.303
	Top	-	0.061	0.061		Top	-	0.061	0.061
	Bottom	0.327	-	0.327		Bottom	1.738	-	1.738
	Right	0.134	-	0.134		Right	0.153	-	0.153
	Left	0.176	-	0.176		Left	0.236	-	0.236
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.859	0.444	2.303	Extremity	Back	1.202	0.444	1.646
	Front	2.759	0.130	2.889		Front	2.537	0.130	2.667
	Top	-	0.061	0.061		Top	-	0.061	0.061
	Bottom	3.063	-	3.063		Bottom	2.649	-	2.649
	Right	0.426	-	0.426		Right	0.570	-	0.570
	Left	0.567	-	0.567		Left	0.696	-	0.696

Table 12-24
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO (Extremity at 0.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.488	0.554	2.042	Extremity	Back	1.574	0.554	2.128
	Front	2.363	0.073	2.436		Front	2.573	0.073	2.646
	Top	-	0.034	0.034		Top	-	0.034	0.034
	Bottom	1.547	-	1.547		Bottom	1.695	-	1.695
	Right	0.189	-	0.189		Right	0.180	-	0.180
	Left	0.270	0.218	0.488		Left	0.263	0.218	0.481
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.339	0.554	1.893	Extremity	Back	1.539	0.554	2.093
	Front	2.839	0.073	2.912		Front	2.234	0.073	2.307
	Top	-	0.034	0.034		Top	-	0.034	0.034
	Bottom	3.254	-	3.254		Bottom	2.362	-	2.362
	Right	0.283	-	0.283		Right	0.470	-	0.470
	Left	0.368	0.218	0.586		Left	0.689	0.218	0.907
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	0.839	0.554	1.393	Extremity	Back	1.247	0.554	1.801
	Front	1.644	0.073	1.717		Front	2.173	0.073	2.246
	Top	-	0.034	0.034		Top	-	0.034	0.034
	Bottom	0.327	-	0.327		Bottom	1.738	-	1.738
	Right	0.134	-	0.134		Right	0.153	-	0.153
	Left	0.176	0.218	0.394		Left	0.236	0.218	0.454

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset	Page 102 of 116	

Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.859	0.554	2.413	Extremity	Back	1.202	0.554	1.756
	Front	2.759	0.073	2.832		Front	2.537	0.073	2.610
	Top	-	0.034	0.034		Top	-	0.034	0.034
	Bottom	3.063	-	3.063		Bottom	2.649	-	2.649
	Right	0.426	-	0.426		Right	0.570	-	0.570
	Left	0.567	0.218	0.785		Left	0.696	0.218	0.914

Table 12-25
Simultaneous Transmission Scenario with 5 GHz WLAN Ant 1 (Extremity at 0.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.488	0.190	1.678	Extremity	Back	1.574	0.190	1.764
	Front	2.363	0.021	2.384		Front	2.573	0.021	2.594
	Top	-	0.002	0.002		Top	-	0.002	0.002
	Bottom	1.547	-	1.547		Bottom	1.695	-	1.695
	Right	0.189	-	0.189		Right	0.180	-	0.180
	Left	0.270	0.018	0.288		Left	0.263	0.018	0.281
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.339	0.190	1.529	Extremity	Back	1.539	0.190	1.729
	Front	2.839	0.021	2.860		Front	2.234	0.021	2.255
	Top	-	0.002	0.002		Top	-	0.002	0.002
	Bottom	3.254	-	3.254		Bottom	2.362	-	2.362
	Right	0.283	-	0.283		Right	0.470	-	0.470
	Left	0.368	0.018	0.386		Left	0.689	0.018	0.707
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	0.839	0.190	1.029	Extremity	Back	1.247	0.190	1.437
	Front	1.644	0.021	1.665		Front	2.173	0.021	2.194
	Top	-	0.002	0.002		Top	-	0.002	0.002
	Bottom	0.327	-	0.327		Bottom	1.738	-	1.738
	Right	0.134	-	0.134		Right	0.153	-	0.153
	Left	0.176	0.018	0.194		Left	0.236	0.018	0.254
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.859	0.190	2.049	Extremity	Back	1.202	0.190	1.392
	Front	2.759	0.021	2.780		Front	2.537	0.021	2.558
	Top	-	0.002	0.002		Top	-	0.002	0.002
	Bottom	3.063	-	3.063		Bottom	2.649	-	2.649
	Right	0.426	-	0.426		Right	0.570	-	0.570
	Left	0.567	0.018	0.585		Left	0.696	0.018	0.714

Table 12-26
Simultaneous Transmission Scenario with 5 GHz WLAN Ant 2 (Extremity at 0.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.488	0.427	1.915	Extremity	Back	1.574	0.427	2.001
	Front	2.363	0.232	2.595		Front	2.573	0.232	2.805
	Top	-	0.199	0.199		Top	-	0.199	0.199
	Bottom	1.547	-	1.547		Bottom	1.695	-	1.695
	Right	0.189	-	0.189		Right	0.180	-	0.180
	Left	0.270	-	0.270		Left	0.263	-	0.263
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.339	0.427	1.766	Extremity	Back	1.539	0.427	1.966
	Front	2.839	0.232	3.071		Front	2.234	0.232	2.466
	Top	-	0.199	0.199		Top	-	0.199	0.199
	Bottom	3.254	-	3.254		Bottom	2.362	-	2.362
	Right	0.283	-	0.283		Right	0.470	-	0.470
	Left	0.368	-	0.368		Left	0.689	-	0.689

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 103 of 116	

Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	0.839	0.427	1.266	Extremity	Back	1.247	0.427	1.674
	Front	1.644	0.232	1.876		Front	2.173	0.232	2.405
	Top	-	0.199	0.199		Top	-	0.199	0.199
	Bottom	0.327	-	0.327		Bottom	1.738	-	1.738
	Right	0.134	-	0.134		Right	0.153	-	0.153
	Left	0.176	-	0.176		Left	0.236	-	0.236
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.859	0.427	2.286	Extremity	Back	1.202	0.427	1.629
	Front	2.759	0.232	2.991		Front	2.537	0.232	2.769
	Top	-	0.199	0.199		Top	-	0.199	0.199
	Bottom	3.063	-	3.063		Bottom	2.649	-	2.649
	Right	0.426	-	0.426		Right	0.570	-	0.570
	Left	0.567	-	0.567		Left	0.696	-	0.696

Table 12-27
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO (Extremity at 0.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.488	0.440	1.928	Extremity	Back	1.574	0.440	2.014
	Front	2.363	0.303	2.666		Front	2.573	0.303	2.876
	Top	-	0.241	0.241		Top	-	0.241	0.241
	Bottom	1.547	-	1.547		Bottom	1.695	-	1.695
	Right	0.189	-	0.189		Right	0.180	-	0.180
	Left	0.270	0.038	0.308		Left	0.263	0.038	0.301
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.339	0.440	1.779	Extremity	Back	1.539	0.440	1.979
	Front	2.839	0.303	3.142		Front	2.234	0.303	2.537
	Top	-	0.241	0.241		Top	-	0.241	0.241
	Bottom	3.254	-	3.254		Bottom	2.362	-	2.362
	Right	0.283	-	0.283		Right	0.470	-	0.470
	Left	0.368	0.038	0.406		Left	0.689	0.038	0.727
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	0.839	0.440	1.279	Extremity	Back	1.247	0.440	1.687
	Front	1.644	0.303	1.947		Front	2.173	0.303	2.476
	Top	-	0.241	0.241		Top	-	0.241	0.241
	Bottom	0.327	-	0.327		Bottom	1.738	-	1.738
	Right	0.134	-	0.134		Right	0.153	-	0.153
	Left	0.176	0.038	0.214		Left	0.236	0.038	0.274
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.859	0.440	2.299	Extremity	Back	1.202	0.440	1.642
	Front	2.759	0.303	3.062		Front	2.537	0.303	2.840
	Top	-	0.241	0.241		Top	-	0.241	0.241
	Bottom	3.063	-	3.063		Bottom	2.649	-	2.649
	Right	0.426	-	0.426		Right	0.570	-	0.570
	Left	0.567	0.038	0.605		Left	0.696	0.038	0.734

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 104 of 116	

Table 12-28
Simultaneous Transmission Scenario with Bluetooth (Extremity at 0.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.488	0.050	1.538	Extremity	Back	1.574	0.050	1.624
	Front	2.363	0.050	2.413		Front	2.573	0.050	2.623
	Top	-	0.050	0.050		Top	-	0.050	0.050
	Bottom	1.547	-	1.547		Bottom	1.695	-	1.695
	Right	0.189	-	0.189		Right	0.180	-	0.180
	Left	0.270	-	0.270		Left	0.263	-	0.263
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.339	0.050	1.389	Extremity	Back	1.539	0.050	1.589
	Front	2.839	0.050	2.889		Front	2.234	0.050	2.284
	Top	-	0.050	0.050		Top	-	0.050	0.050
	Bottom	3.254	-	3.254		Bottom	2.362	-	2.362
	Right	0.283	-	0.283		Right	0.470	-	0.470
	Left	0.368	-	0.368		Left	0.689	-	0.689
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	0.839	0.050	0.889	Extremity	Back	1.247	0.050	1.297
	Front	1.644	0.050	1.694		Front	2.173	0.050	2.223
	Top	-	0.050	0.050		Top	-	0.050	0.050
	Bottom	0.327	-	0.327		Bottom	1.738	-	1.738
	Right	0.134	-	0.134		Right	0.153	-	0.153
	Left	0.176	-	0.176		Left	0.236	-	0.236
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
Extremity	Back	1.859	0.050	1.909	Extremity	Back	1.202	0.050	1.252
	Front	2.759	0.050	2.809		Front	2.537	0.050	2.587
	Top	-	0.050	0.050		Top	-	0.050	0.050
	Bottom	3.063	-	3.063		Bottom	2.649	-	2.649
	Right	0.426	-	0.426		Right	0.570	-	0.570
	Left	0.567	-	0.567		Left	0.696	-	0.696

Table 12-29
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 (Extremity Back Side at 0.2 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Back Side	UMTS 1900	1.452	< 1.074	< 2.526
Back Side	LTE Band 4 (AWS)	1.683	< 1.074	< 2.757
Back Side	LTE Band 2 (PCS)	1.851	< 1.074	< 2.925

Table 12-30
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 2 (Extremity Back Side at 0.2 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Back Side	UMTS 1900	1.452	< 0.444	< 1.896
Back Side	LTE Band 4 (AWS)	1.683	< 0.444	< 2.127
Back Side	LTE Band 2 (PCS)	1.851	< 0.444	< 2.295

Table 12-31
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO (Extremity Back Side at 0.2 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Back Side	UMTS 1900	1.452	< 0.554	< 2.006
Back Side	LTE Band 4 (AWS)	1.683	< 0.554	< 2.237
Back Side	LTE Band 2 (PCS)	1.851	< 0.554	< 2.405

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 105 of 116	

Table 12-32
Simultaneous Transmission Scenario with 5 GHz WLAN Ant 1 (Extremity Back Side at 0.2 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Back Side	UMTS 1900	1.452	< 0.190	< 1.642
Back Side	LTE Band 4 (AWS)	1.683	< 0.190	< 1.873
Back Side	LTE Band 2 (PCS)	1.851	< 0.190	< 2.041

Table 12-33
Simultaneous Transmission Scenario with 5 GHz WLAN Ant 2 (Extremity Back Side at 0.2 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Back Side	UMTS 1900	1.452	< 0.427	< 1.879
Back Side	LTE Band 4 (AWS)	1.683	< 0.427	< 2.110
Back Side	LTE Band 2 (PCS)	1.851	< 0.427	< 2.278

Table 12-34
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO (Extremity Back Side at 0.2 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Back Side	UMTS 1900	1.452	< 0.440	< 1.892
Back Side	LTE Band 4 (AWS)	1.683	< 0.440	< 2.123
Back Side	LTE Band 2 (PCS)	1.851	< 0.440	< 2.291

Table 12-35
Simultaneous Transmission Scenario with Bluetooth (Extremity Back Side at 0.2 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
Back Side	UMTS 1900	1.452	0.050	1.502
Back Side	LTE Band 4 (AWS)	1.683	0.050	1.733
Back Side	LTE Band 2 (PCS)	1.851	0.050	1.901

Table 12-36
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 (Extremity Front Side at 0.3 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Front Side	UMTS 1900	1.886	< 0.023	< 1.909
Front Side	LTE Band 4 (AWS)	2.266	< 0.023	< 2.289
Front Side	LTE Band 2 (PCS)	3.153	< 0.023	< 3.176

Table 12-37
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 2 (Extremity Front Side at 0.3 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Front Side	UMTS 1900	1.886	< 0.130	< 2.016
Front Side	LTE Band 4 (AWS)	2.266	< 0.130	< 2.396
Front Side	LTE Band 2 (PCS)	3.153	< 0.130	< 3.283

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT 	Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 106 of 116

Table 12-38
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO (Extremity Front Side at 0.3 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Front Side	UMTS 1900	1.886	< 0.073	< 1.959
Front Side	LTE Band 4 (AWS)	2.266	< 0.073	< 2.339
Front Side	LTE Band 2 (PCS)	3.153	< 0.073	< 3.226

Table 12-39
Simultaneous Transmission Scenario with 5 GHz WLAN Ant 1 (Extremity Front Side at 0.3 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Front Side	UMTS 1900	1.886	< 0.021	< 1.907
Front Side	LTE Band 4 (AWS)	2.266	< 0.021	< 2.287
Front Side	LTE Band 2 (PCS)	3.153	< 0.021	< 3.174

Table 12-40
Simultaneous Transmission Scenario with 5 GHz WLAN Ant 2 (Extremity Front Side at 0.3 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Front Side	UMTS 1900	1.886	< 0.232	< 2.118
Front Side	LTE Band 4 (AWS)	2.266	< 0.232	< 2.498
Front Side	LTE Band 2 (PCS)	3.153	< 0.232	< 3.385

Table 12-41
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO (Extremity Front Side at 0.3 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Front Side	UMTS 1900	1.886	< 0.303	< 2.189
Front Side	LTE Band 4 (AWS)	2.266	< 0.303	< 2.569
Front Side	LTE Band 2 (PCS)	3.153	< 0.303	< 3.456

Table 12-42
Simultaneous Transmission Scenario with Bluetooth (Extremity Front Side at 0.3 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
Front Side	UMTS 1900	1.886	0.050	1.936
Front Side	LTE Band 4 (AWS)	2.266	0.050	2.316
Front Side	LTE Band 2 (PCS)	3.153	0.050	3.203

Table 12-43
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 (Extremity Bottom Edge at 0.4 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Bottom Edge	UMTS 1900	2.578	-	2.578
Bottom Edge	LTE Band 4 (AWS)	2.278	-	2.278
Bottom Edge	LTE Band 2 (PCS)	1.874	-	1.874

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 107 of 116

Table 12-44**Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 2 (Extremity Bottom Edge at 0.4 cm)**

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Bottom Edge	UMTS 1900	2.578	-	2.578
Bottom Edge	LTE Band 4 (AWS)	2.278	-	2.278
Bottom Edge	LTE Band 2 (PCS)	1.874	-	1.874

Table 12-45**Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO (Extremity Bottom Edge at 0.4 cm)**

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Bottom Edge	UMTS 1900	2.578	-	2.578
Bottom Edge	LTE Band 4 (AWS)	2.278	-	2.278
Bottom Edge	LTE Band 2 (PCS)	1.874	-	1.874

Table 12-46**Simultaneous Transmission Scenario with 5 GHz WLAN Ant 1 (Extremity Bottom Edge at 0.4 cm)**

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Bottom Edge	UMTS 1900	2.578	-	2.578
Bottom Edge	LTE Band 4 (AWS)	2.278	-	2.278
Bottom Edge	LTE Band 2 (PCS)	1.874	-	1.874

Table 12-47**Simultaneous Transmission Scenario with 5 GHz WLAN Ant 2 (Extremity Bottom Edge at 0.4 cm)**

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Bottom Edge	UMTS 1900	2.578	-	2.578
Bottom Edge	LTE Band 4 (AWS)	2.278	-	2.278
Bottom Edge	LTE Band 2 (PCS)	1.874	-	1.874

Table 12-48**Simultaneous Transmission Scenario with 5 GHz WLAN MIMO (Extremity Bottom Edge at 0.4 cm)**

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Bottom Edge	UMTS 1900	2.578	-	2.578
Bottom Edge	LTE Band 4 (AWS)	2.278	-	2.278
Bottom Edge	LTE Band 2 (PCS)	1.874	-	1.874

Table 12-49**Simultaneous Transmission Scenario with Bluetooth (Extremity Bottom Edge at 0.4 cm)**

Configuration	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
Bottom Edge	UMTS 1900	2.578	-	2.578
Bottom Edge	LTE Band 4 (AWS)	2.278	-	2.278
Bottom Edge	LTE Band 2 (PCS)	1.874	-	1.874

12.7 Simultaneous Transmission Conclusion

The above numerical summed SAR results for all the worst-case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v05 and IEEE 1528-2013 Section 6.3.4.1.2.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset		Page 108 of 116

13 SAR MEASUREMENT VARIABILITY

13.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement Variability was assessed using the following procedures for each frequency band:

- 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
- 2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).
- 3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .
- 4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg
- 5) 10g Extremity SAR measurement variability analysis applies a factor of 2.5 to the procedures outlined above.

Table 13-1
Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS													
Band	FREQUENCY		Mode	Service	Cover Type	Side	Spacing	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)
	MHz	Ch.						(W/kg)	(W/kg)		(W/kg)		(W/kg)
1750	1732.50	20175	LTE Band 4 (AWS)	QPSK, 1 RB, 99 RB Offset	Wireless Charging	bottom	10 mm	0.939	0.922	1.02	N/A	N/A	N/A
1900	1907.60	9538	UMTS 1900	RMC	Standard	bottom	10 mm	1.010	1.000	1.01	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram					

Table 13-2
Extremity SAR Measurement Variability Results

EXTREMITY VARIABILITY RESULTS													
Band	FREQUENCY		Mode	Service	# of GPRS Slots	Cover Type	Side	Spacing	Measured SAR (10g)	1st Repeated SAR (10g)	Ratio	2nd Repeated SAR (10g)	Ratio
	MHz	Ch.							(W/kg)	(W/kg)		(W/kg)	
835	846.60	4233	UMTS 850	RMC	N/A	Standard	front	0 mm	2.320	2.010	1.15	N/A	N/A
1750	1732.50	20175	LTE Band 4 (AWS)	QPSK, 1 RB, 99 RB Offset	N/A	Wireless Charging	bottom	0 mm	2.620	2.590	1.01	N/A	N/A
1900	1850.20	512	GSM 1900	GPRS	2	Wireless Charging	bottom	0 mm	2.850	2.900	1.02	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Extremity 4.0 W/kg (mW/g) averaged over 10 grams					

13.2 Measurement Uncertainty

The measured 1g SAR was < 1.5 W/kg and the measured 10g SAR was < 3.75 W/kg for all frequency bands. Therefore, per KDB Publication 865664 D01v01, the extended measurement uncertainty analysis per IEEE 1528-2003 was not required.

FCC ID: A3LSMN915W8	 SAR EVALUATION REPORT 		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset	Page 109 of 116

14 EQUIPMENT LIST

For testing period: 09/09/14 – 10/14/14

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/15/2014	Annual	4/15/2015	MY45470194
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	8648D	(9kHz-4GHz) Signal Generator	4/15/2014	Annual	4/15/2015	3629U00687
Agilent	N9020A	MXA Signal Analyzer	10/29/2013	Annual	10/29/2014	US46470561
Agilent	8753ES	S-Parameter Network Analyzer	5/22/2014	Annual	5/22/2015	US39170118
Agilent	E5515C	Wireless Communications Test Set	3/18/2014	Annual	3/18/2015	GB46110872
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Anritsu	ML2495A	Power Meter	10/31/2013	Biennial	10/31/2015	941001
Anritsu	MA2411B	Pulse Power Sensor	2/3/2014	Annual	2/3/2015	1339018
Anritsu	MT8820C	Radio Communication Analyzer	12/12/2013	Annual	12/12/2014	6200901190
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
Control Company	4052	Long Stem Thermometer	9/27/2013	Biennial	9/27/2015	130567447
Control Company	36934-158	Wall-Mounted Thermometer	4/29/2014	Biennial	4/29/2016	122014488
Fisher Scientific	15-077-960	Digital Thermometer	12/4/2013	Biennial	12/4/2015	130764551
Fisher Scientific	S97611	Thermometer	4/12/2013	Biennial	4/12/2015	130219304
Gigatronics	80701A	(0.05-18GHz) Power Sensor	10/30/2013	Annual	10/30/2014	1833460
Gigatronics	8651A	Universal Power Meter	10/30/2013	Annual	10/30/2014	8650319
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mitutoyo	CD-6°CSX	Digital Caliper	5/8/2014	Biennial	5/8/2016	13264162
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Seekonk	NC-100	Torque Wrench	3/18/2014	Biennial	3/18/2016	N/A
SPEAG	D2450V2	2450 MHz SAR Dipole	1/21/2014	Annual	1/21/2015	797
SPEAG	D2450V2	2450 MHz SAR Dipole	2/24/2014	Annual	2/24/2015	882
SPEAG	D5GHV2	5 GHz SAR Dipole	1/27/2014	Annual	1/27/2015	1057
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/19/2013	Annual	11/19/2014	1333
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/19/2014	Annual	6/19/2015	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/26/2014	Annual	2/26/2015	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/17/2014	Annual	3/17/2015	1334
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/6/2014	Annual	5/6/2015	1070
SPEAG	EX3DV4	SAR Probe	10/23/2013	Annual	10/23/2014	3914
SPEAG	EX3DV4	SAR Probe	1/29/2014	Annual	1/29/2015	3589
SPEAG	ES3DV3	SAR Probe	2/25/2014	Annual	2/25/2015	3258
SPEAG	ES3DV3	SAR Probe	3/19/2014	Annual	3/19/2015	3318
Tektronix	RSA6114A	Real Time Spectrum Analyzer	4/16/2014	Annual	4/16/2015	B010177
VWR	36934-158	Wall-Mounted Thermometer	8/8/2013	Biennial	8/8/2015	130477877

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 110 of 116

For testing period: 11/24/14 – 12/04/14

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/15/2014	Annual	4/15/2015	MY45470194
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	8648D	(9kHz-4GHz) Signal Generator	4/15/2014	Annual	4/15/2015	3629U00687
Agilent	E4438C	ESG Vector Signal Generator	3/31/2014	Annual	3/31/2015	MY42082659
Agilent	N9020A	MXA Signal Analyzer	10/27/2014	Annual	10/27/2015	US46470561
Agilent	N5182A	MXG Vector Signal Generator	4/15/2014	Annual	4/15/2015	MY47420800
Agilent	8753ES	S-Parameter Network Analyzer	5/22/2014	Annual	5/22/2015	US39170118
Agilent	E5515C	Wireless Communications Test Set	3/18/2014	Annual	3/18/2015	GB46110872
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Anritsu	ML2495A	Power Meter	10/31/2013	Biennial	10/31/2015	941001
Anritsu	MA2411B	Pulse Power Sensor	2/3/2014	Annual	2/3/2015	1339018
Anritsu	MT8820C	Radio Communication Analyzer	12/12/2013	Annual	12/12/2014	6200901190
Anritsu	MA24106A	USB Power Sensor	12/18/2013	Annual	12/18/2014	1344555
Anritsu	MA24106A	USB Power Sensor	12/18/2013	Annual	12/18/2014	1344556
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
Control Company	4052	Long Stem Thermometer	9/27/2013	Biennial	9/27/2015	130567447
Control Company	36934-158	Wall-Mounted Thermometer	4/29/2014	Biennial	4/29/2016	122014488
Fisher Scientific	15-077-960	Digital Thermometer	12/4/2013	Biennial	12/4/2015	130764551
Fisher Scientific	S97611	Thermometer	4/12/2013	Biennial	4/12/2015	130219304
Gigatronics	80701A	(0.05-18GHz) Power Sensor	10/30/2014	Annual	10/30/2015	1833460
Gigatronics	8651A	Universal Power Meter	10/30/2014	Annual	10/30/2015	8650319
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mitutoyo	CD-6"CSX	Digital Caliper	5/8/2014	Biennial	5/8/2016	13264162
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMW500	Radio Communication Tester	9/2/2014	Biennial	9/2/2016	101767
Rohde & Schwarz	CMW500	Radio Communication Tester	10/4/2013	Biennial	10/4/2015	108798
Seekonk	NC-100	Torque Wrench	3/18/2014	Biennial	3/18/2016	N/A
SPEAG	D1765V2	1765 MHz SAR Dipole	5/7/2014	Annual	5/7/2015	1008
SPEAG	D1900V2	1900 MHz SAR Dipole	4/9/2014	Annual	4/9/2015	5d141
SPEAG	D2450V2	2450 MHz SAR Dipole	1/21/2014	Annual	1/21/2015	797
SPEAG	D750V3	750 MHz Dipole	1/20/2014	Annual	1/20/2015	1003
SPEAG	D835V2	835 MHz SAR Dipole	4/7/2014	Annual	4/7/2015	4d119
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/26/2014	Annual	2/26/2015	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/17/2014	Annual	3/17/2015	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/11/2014	Annual	4/11/2015	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/14/2014	Annual	5/14/2015	859
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/12/2014	Annual	8/12/2015	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/17/2014	Annual	9/17/2015	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/18/2014	Annual	9/18/2015	1364
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/6/2014	Annual	5/6/2015	1070
SPEAG	ES3DV3	SAR Probe	2/25/2014	Annual	2/25/2015	3258
SPEAG	ES3DV3	SAR Probe	3/19/2014	Annual	3/19/2015	3209
SPEAG	ES3DV3	SAR Probe	4/17/2014	Annual	4/17/2015	3319
SPEAG	ES3DV3	SAR Probe	5/15/2014	Annual	5/15/2015	3263
SPEAG	ES3DV2	SAR Probe	8/19/2014	Annual	8/19/2015	3022
SPEAG	ES3DV3	SAR Probe	9/18/2014	Annual	9/18/2015	3332
SPEAG	ES3DV3	SAR Probe	9/24/2014	Annual	9/24/2015	3288
Tektronix	RSA6114A	Real Time Spectrum Analyzer	4/16/2014	Annual	4/16/2015	B010177
VWR	36934-158	Wall-Mounted Thermometer	8/8/2013	Biennial	8/8/2015	130477877

Note:

- CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.
- All calibrated equipments are used in within their calibration period.

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 111 of 116

15 MEASUREMENT UNCERTAINTIES

Applicable for frequencies less than 3000 MHz.

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	IEEE 1528 Sec.	Tol. (± %)	Prob. Dist.	Div.	c _i 1gm	c _i 10 gms	1gm u _i (± %)	10gms u _i (± %)	v _i
Measurement System									
Probe Calibration	E.2.1	6.0	N	1	1.0	1.0	6.0	6.0	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	1.0	1.0	1.3	1.3	∞
Boundary Effect	E.2.3	0.4	N	1	1.0	1.0	0.4	0.4	∞
Linearity	E.2.4	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	E.2.5	5.1	N	1	1.0	1.0	5.1	5.1	∞
Readout Electronics	E.2.6	1.0	N	1	1.0	1.0	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	E.6.3	2.9	R	1.73	1.0	1.0	1.7	1.7	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	1.0	R	1.73	1.0	1.0	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	E.4.2	6.0	N	1	1.0	1.0	6.0	6.0	287
Device Holder Uncertainty	E.4.1	3.32	R	1.73	1.0	1.0	1.9	1.9	∞
Output Power Variation - SAR drift measurement	6.6.2	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity - measurement uncertainty	E.3.3	3.8	N	1	0.64	0.43	2.4	1.6	6
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Liquid Permittivity - measurement uncertainty	E.3.3	4.5	N	1	0.60	0.49	2.7	2.2	6
Combined Standard Uncertainty (k=1)							RSS	12.1	11.7
Expanded Uncertainty (95% CONFIDENCE LEVEL)							k=2	24.2	23.5

The above measurement uncertainties are according to IEEE Std. 1528-2003

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 - 12/04/14	DUT Type: Portable Handset	Page 112 of 116	

Applicable for frequencies up to 6 GHz.

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	IEEE 1528 Sec.	Tol. (± %)	Prob. Dist.	Div.	c _i 1gm	c _i 10 gms	1gm u _i (± %)	10gms u _i (± %)	v _i
Measurement System									
Probe Calibration	E.2.1	6.55	N	1	1.0	1.0	6.6	6.6	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	1.0	1.0	1.3	1.3	∞
Boundary Effect	E.2.3	0.4	N	1	1.0	1.0	0.4	0.4	∞
Linearity	E.2.4	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	E.2.5	5.1	N	1	1.0	1.0	5.1	5.1	∞
Readout Electronics	E.2.6	1.0	N	1	1.0	1.0	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	E.6.3	2.9	R	1.73	1.0	1.0	1.7	1.7	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	1.0	R	1.73	1.0	1.0	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	E.4.2	6.0	N	1	1.0	1.0	6.0	6.0	287
Device Holder Uncertainty	E.4.1	3.32	R	1.73	1.0	1.0	1.9	1.9	∞
Output Power Variation - SAR drift measurement	6.6.2	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity - measurement uncertainty	E.3.3	3.8	N	1	0.64	0.43	2.4	1.6	6
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Liquid Permittivity - measurement uncertainty	E.3.3	4.5	N	1	0.60	0.49	2.7	2.2	6
Combined Standard Uncertainty (k=1)							RSS	12.4	12.0
Expanded Uncertainty (95% CONFIDENCE LEVEL)							k=2	24.7	24.0

The above measurement uncertainties are according to IEEE Std. 1528-2003

FCC ID: A3LSMN915W8	 SAR EVALUATION REPORT 		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset	Page 113 of 116

16 CONCLUSION

16.1 Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Industry Canada, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables. [3]

FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 114 of 116

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FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 115 of 116

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FCC ID: A3LSMN915W8		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1412022198-R1.A3L	Test Dates: 09/09/14 - 10/14/14 11/24/14 – 12/04/14	DUT Type: Portable Handset		Page 116 of 116

APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-4

Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.938 \text{ S/m}$; $\epsilon_r = 41.611$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-24-2014; Ambient Temp: 24.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3263; ConvF(6.23, 6.23, 6.23); Calibrated: 5/15/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/14/2014

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GSM 850, Right Head, Cheek, Mid.ch, Standard Cover

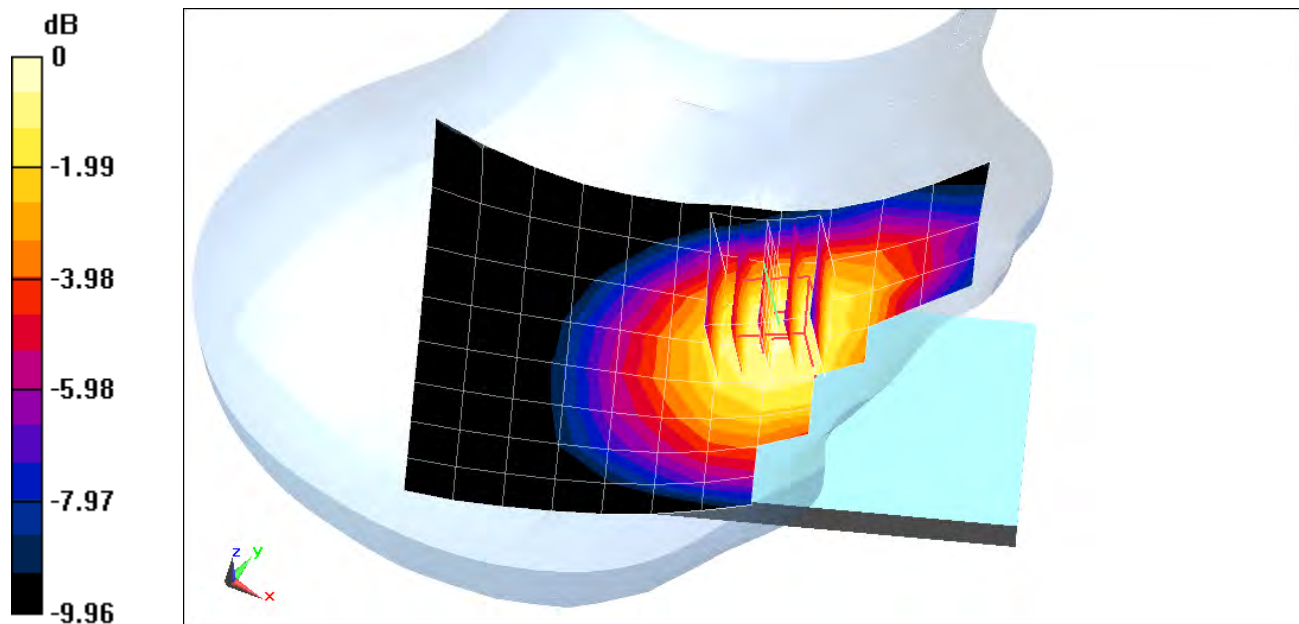
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 3.459 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.165 W/kg

SAR(1 g) = 0.134 W/kg



0 dB = 0.144 W/kg = -8.42 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-9

Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.938 \text{ S/m}$; $\epsilon_r = 41.611$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-24-2014; Ambient Temp: 24.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3263; ConvF(6.23, 6.23, 6.23); Calibrated: 5/15/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/14/2014

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 850, Right Head, Cheek, Mid.ch, Standard Cover

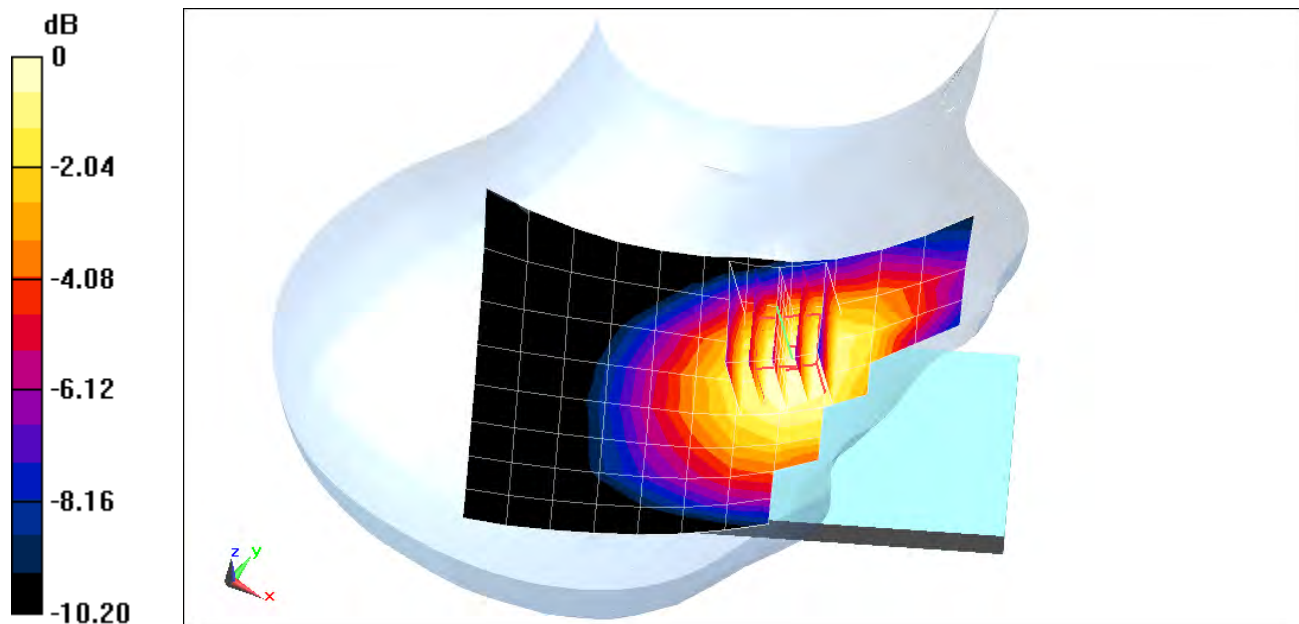
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 3.767 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.168 W/kg

SAR(1 g) = 0.137 W/kg



0 dB = 0.148 W/kg = -8.30 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-3

Communication System: UID 0, GSM1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.419 \text{ S/m}$; $\epsilon_r = 39.021$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-24-2014; Ambient Temp: 22.8°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.17, 5.17, 5.17); Calibrated: 9/24/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1364; Calibrated: 9/18/2014

Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GSM 1900, Right Head, Cheek, Mid.ch, Wireless Charging Cover

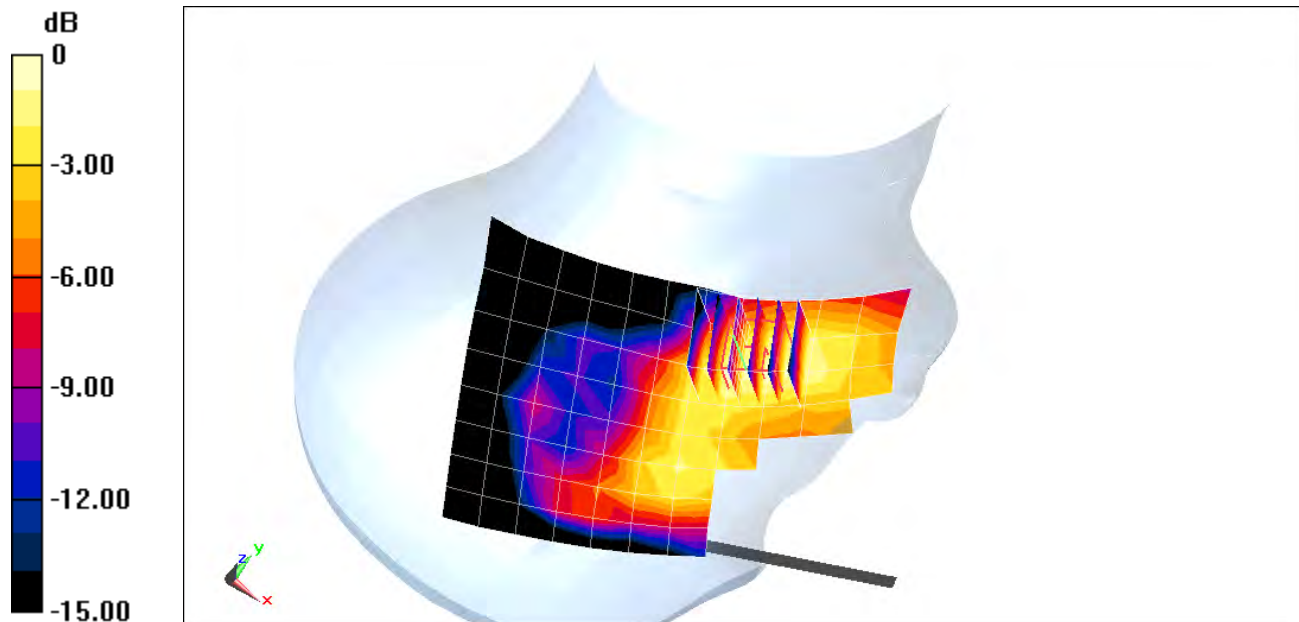
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.929 V/m; Power Drift = -0.20 dB

Peak SAR (extrapolated) = 0.128 W/kg

SAR(1 g) = 0.086 W/kg



0 dB = 0.100 W/kg = -10.00 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-11

Communication System: UID 0, UMTS (0); Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.419 \text{ S/m}$; $\epsilon_r = 39.021$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-24-2014; Ambient Temp: 22.8°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.17, 5.17, 5.17); Calibrated: 9/24/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1364; Calibrated: 9/18/2014

Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 1900, Right Head, Cheek, Mid.ch, Wireless Charging Cover

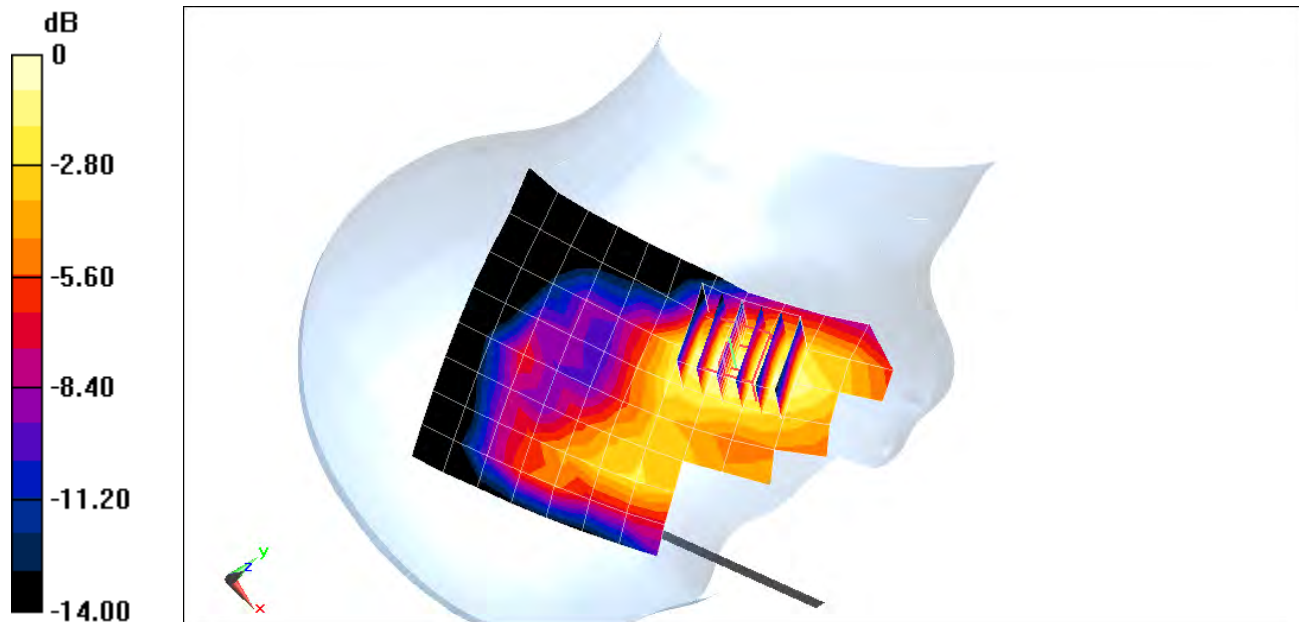
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 12.64 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.318 W/kg

SAR(1 g) = 0.214 W/kg



0 dB = 0.246 W/kg = -6.09 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-1

Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: 750 Head Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.888 \text{ S/m}$; $\epsilon_r = 42.307$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 12-03-2014; Ambient Temp: 23.3°C; Tissue Temp: 21.5°C

Probe: ES3DV2 - SN3022; ConvF(6.39, 6.39, 6.39); Calibrated: 8/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/12/2014

Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 12, Right Head, Cheek, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset, Standard Cover

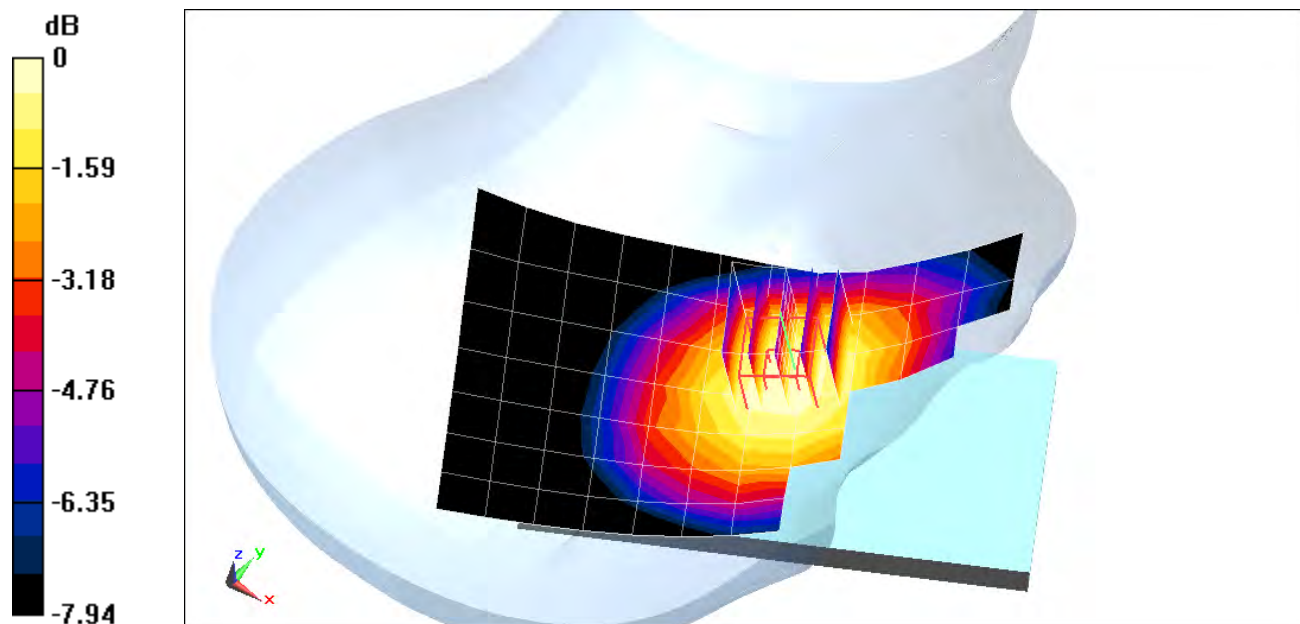
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 15.14 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.222 W/kg

SAR(1 g) = 0.187 W/kg



0 dB = 0.201 W/kg = -6.97 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-1

Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 0.938 \text{ S/m}$; $\epsilon_r = 40.198$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 12-03-2014; Ambient Temp: 23.6°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3332; ConvF(6.31, 6.31, 6.31); Calibrated: 9/18/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/17/2014

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 5 (Cell.), Right Head, Cheek, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset, Wireless Charging Cover

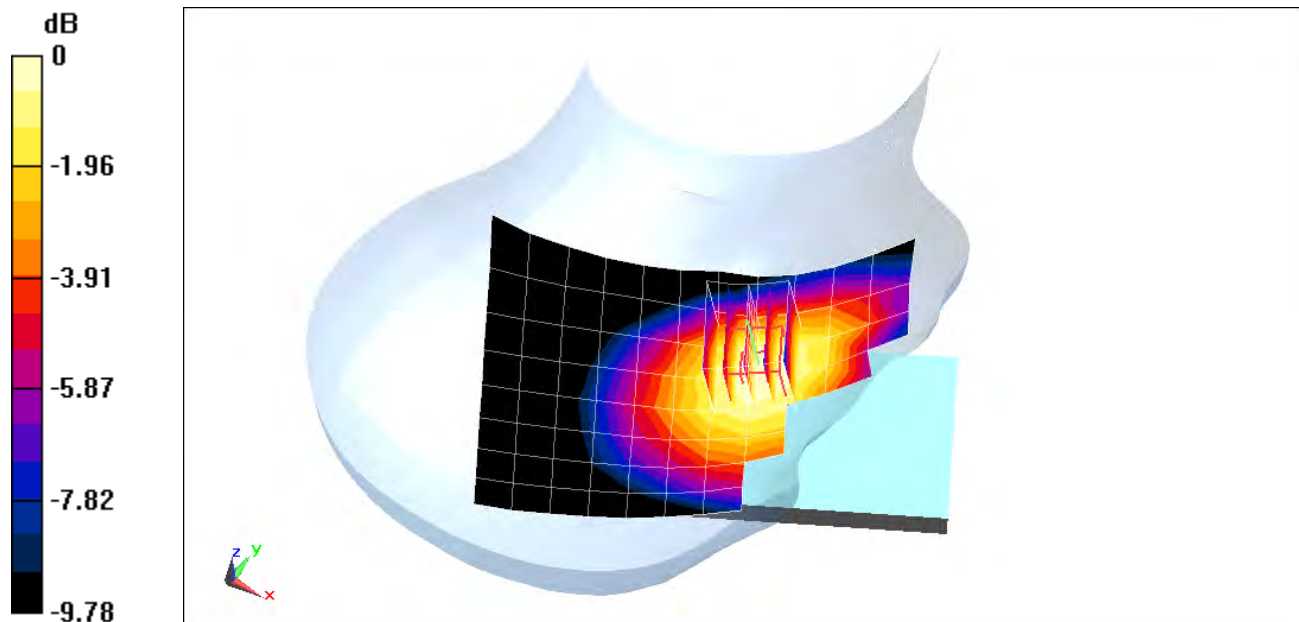
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 11.72 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.142 W/kg

SAR(1 g) = 0.111 W/kg



0 dB = 0.121 W/kg = -9.17 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-2

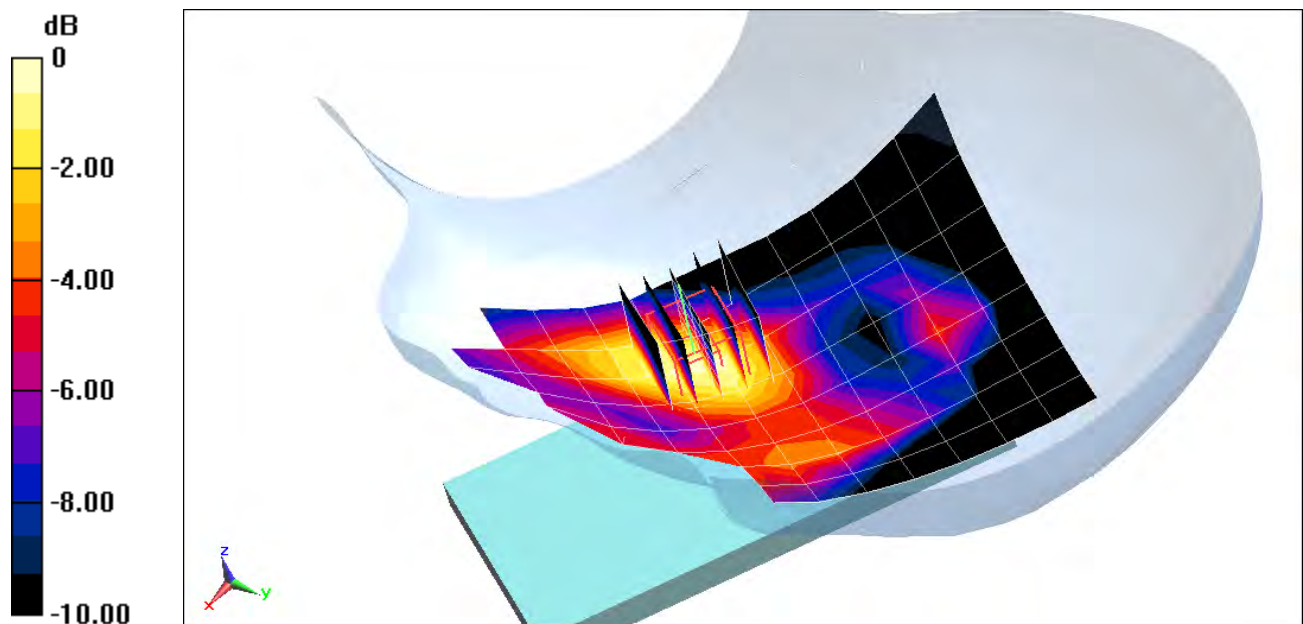
Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
 $f = 1732.5 \text{ MHz}$; $\sigma = 1.328 \text{ S/m}$; $\epsilon_r = 38.850$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Left Section

Test Date: 11-28-2014; Ambient Temp: 23.0°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3258; ConvF(5.19, 5.19, 5.19); Calibrated: 2/25/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/26/2014
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 4 (AWS), Left Head, Cheek, Mid.ch
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset, Standard Cover

Area Scan (9x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 13.31 V/m; Power Drift = -0.20 dB
Peak SAR (extrapolated) = 0.301 W/kg
SAR(1 g) = 0.195 W/kg



0 dB = 0.224 W/kg = -6.50 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-2

Communication System: UID 0, LTE Band 2 (PCS) (0); Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1860 \text{ MHz}$; $\sigma = 1.393 \text{ S/m}$; $\epsilon_r = 39.072$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 11-24-2014; Ambient Temp: 22.8°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.17, 5.17, 5.17); Calibrated: 9/24/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1364; Calibrated: 9/18/2014

Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 2 (PCS), Left Head, Cheek, Low.ch
QPSK, 20 MHz Bandwidth, 1 RB, 0 RB Offset, Standard Cover

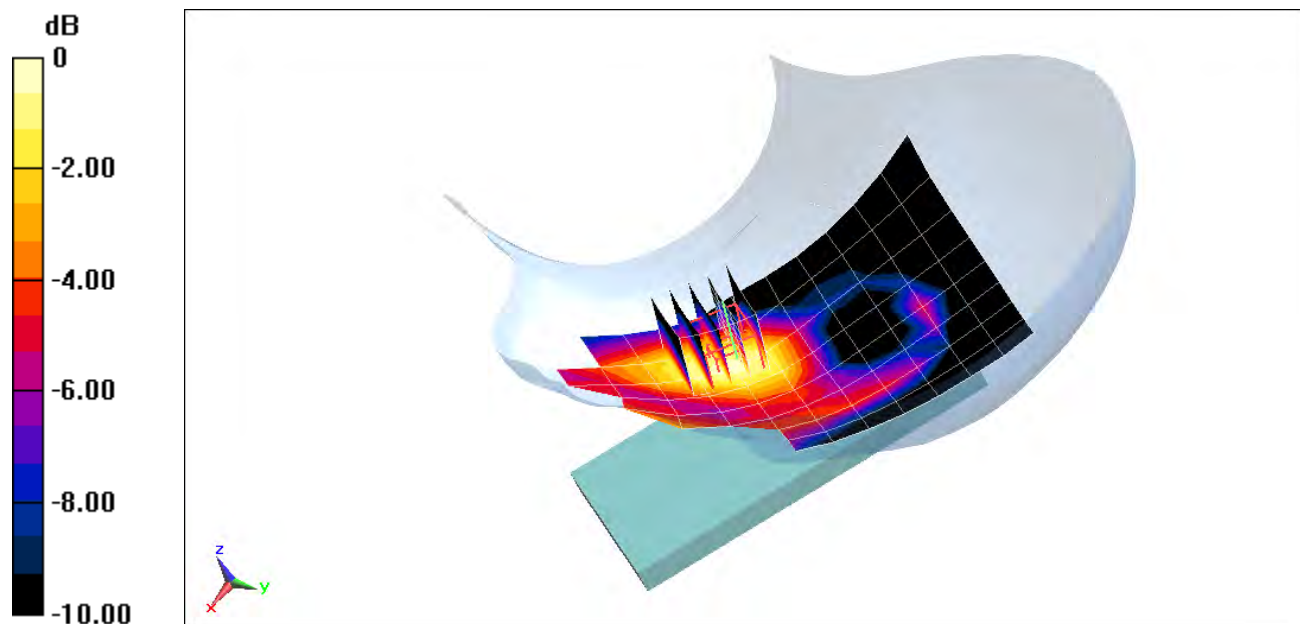
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 13.36 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 0.292 W/kg

SAR(1 g) = 0.198 W/kg



0 dB = 0.227 W/kg = -6.44 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 0809-12

Communication System: UID 0, IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: 2450 Head, Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.827 \text{ S/m}$; $\epsilon_r = 39.649$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 09-15-2014; Ambient Temp: 24.4°C; Tissue Temp: 23.6°C

Probe: ES3DV3 - SN3258; ConvF(4.52, 4.52, 4.52); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Mode: IEEE 802.11b, Right Head, Cheek, Ch 11, 1 Mbps, Antenna 2,
Standard Cover**

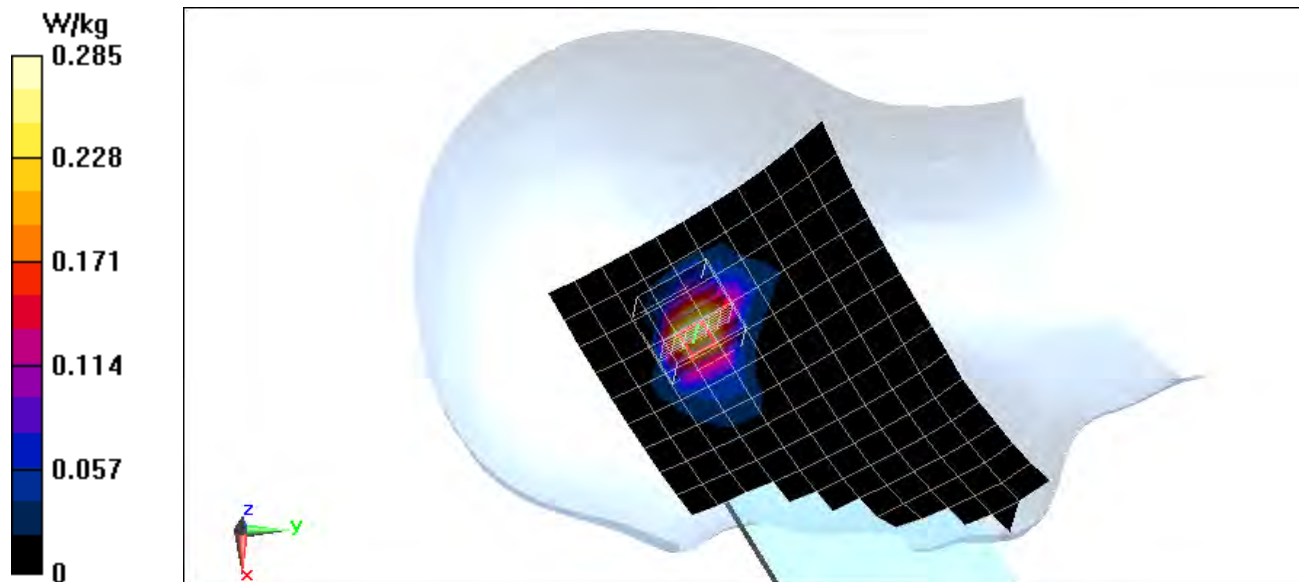
Area Scan (11x18x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 9.146 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.465 W/kg

SAR(1 g) = 0.178 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 0809-12

Communication System: UID 0, IEEE 802.11n; Frequency: 5745 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head, Medium parameters used:

$f = 5745 \text{ MHz}$; $\sigma = 5.199 \text{ S/m}$; $\epsilon_r = 34.834$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 09-15-2014; Ambient Temp: 22.8°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN3914; ConvF(4.52, 4.52, 4.52); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 11/19/2013

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Mode: IEEE 802.11n, 5.8 GHz, Left Head, Cheek, Ch 149, 13 Mbps, MIMO,
Wireless Charging Cover**

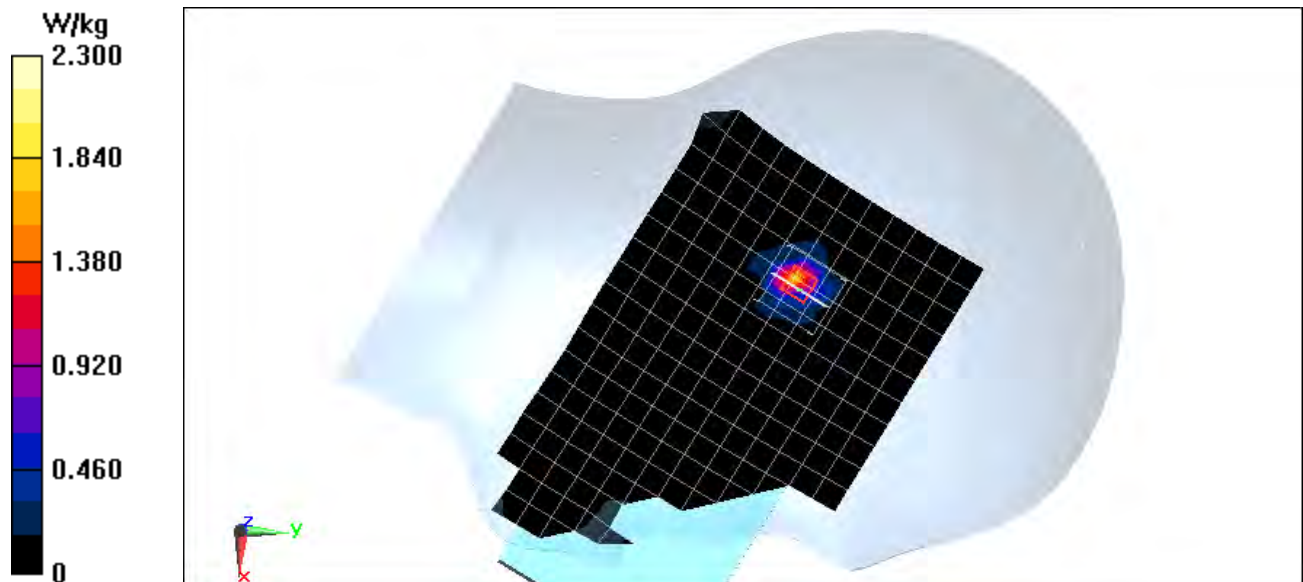
Area Scan (13x22x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 14.49 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 4.89 W/kg

SAR(1 g) = 0.793 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 0809-12

Communication System: UID 0, IEEE 802.11a; Frequency: 5700 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head, Medium parameters used:

$f = 5700 \text{ MHz}$; $\sigma = 5.122 \text{ S/m}$; $\epsilon_r = 34.879$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 09-15-2014; Ambient Temp: 22.8°C; Tissue Temp: 22.2°C

Probe: EX3DV4 - SN3914; ConvF(4.37, 4.37, 4.37); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 11/19/2013

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Mode: IEEE 802.11a, 5.5-5.7 GHz, Right Head, Cheek, Ch 140, 6 Mbps, Antenna 2,
Wireless Charging Cover**

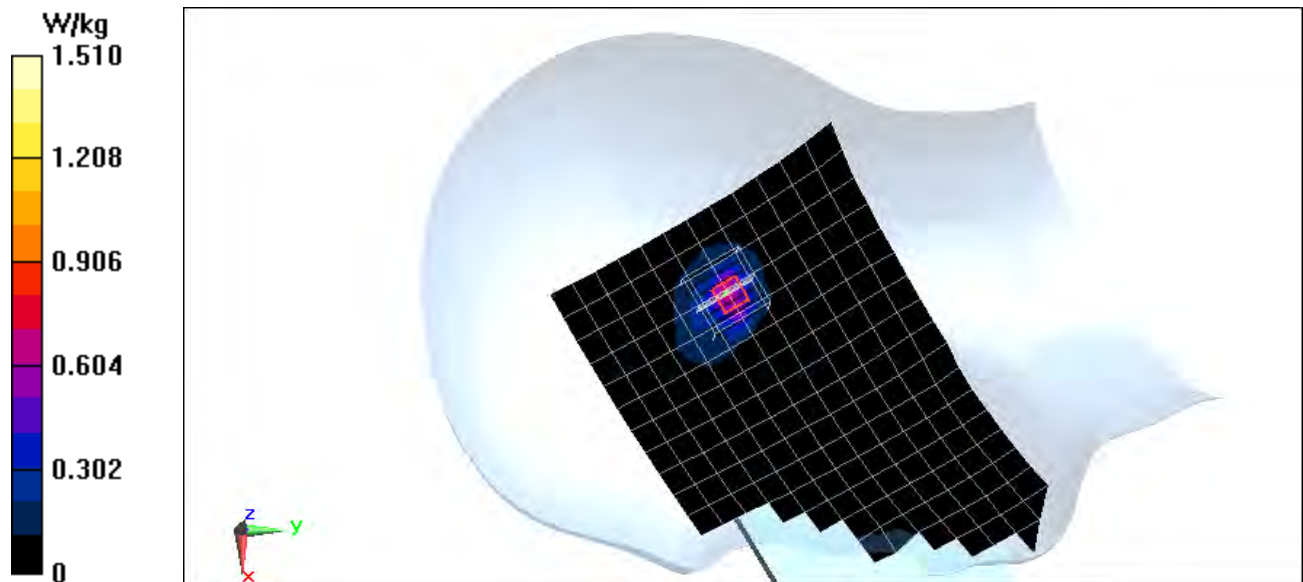
Area Scan (13x22x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 9.765 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 3.15 W/kg

SAR(1 g) = 0.536 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-4

Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.014 \text{ S/m}$; $\epsilon_r = 52.875$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2014; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV2 - SN3022; ConvF(5.98, 5.98, 5.98); Calibrated: 8/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/12/2014

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1226

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GSM 850, Body SAR, Back side, Mid.ch, Standard Cover

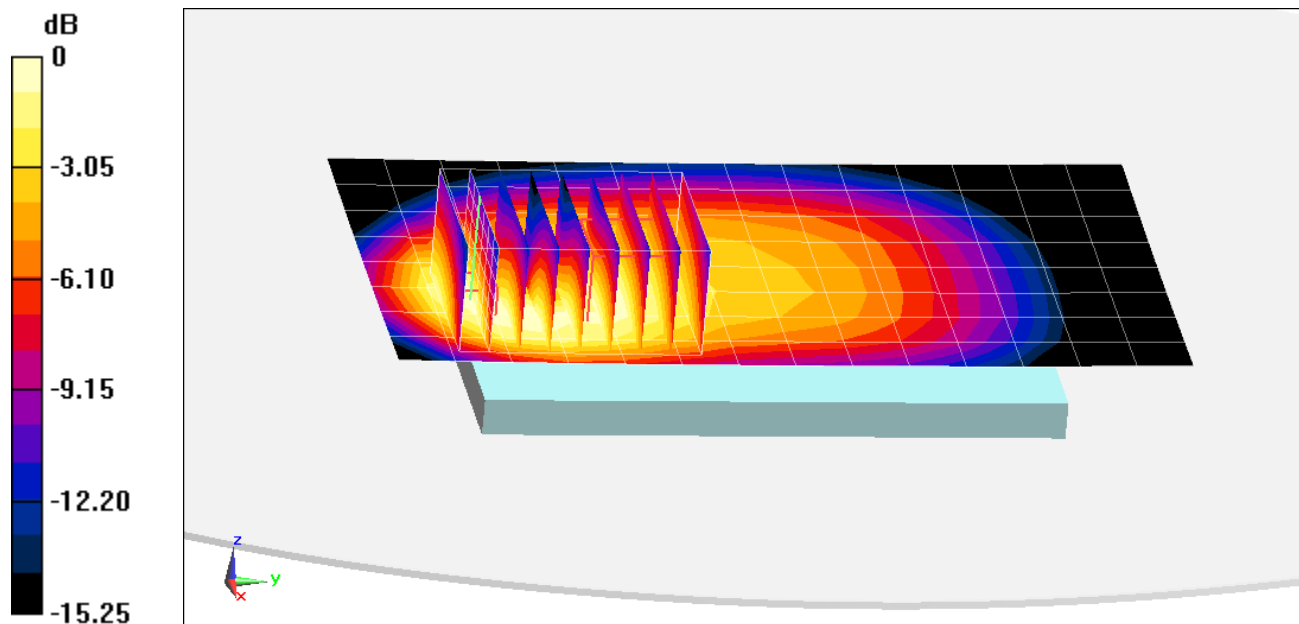
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (7x9x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 17.11 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.425 W/kg

SAR(1 g) = 0.265 W/kg



0 dB = 0.320 W/kg = -4.95 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-4

Communication System: UID 0, GSM GPRS; 2 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:4.15

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.014 \text{ S/m}$; $\epsilon_r = 52.875$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2014; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV2 - SN3022; ConvF(5.98, 5.98, 5.98); Calibrated: 8/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/12/2014

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1226

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GPRS 850, Body SAR, Front side, Mid.ch, 2 Tx Slots, Wireless Charging Cover

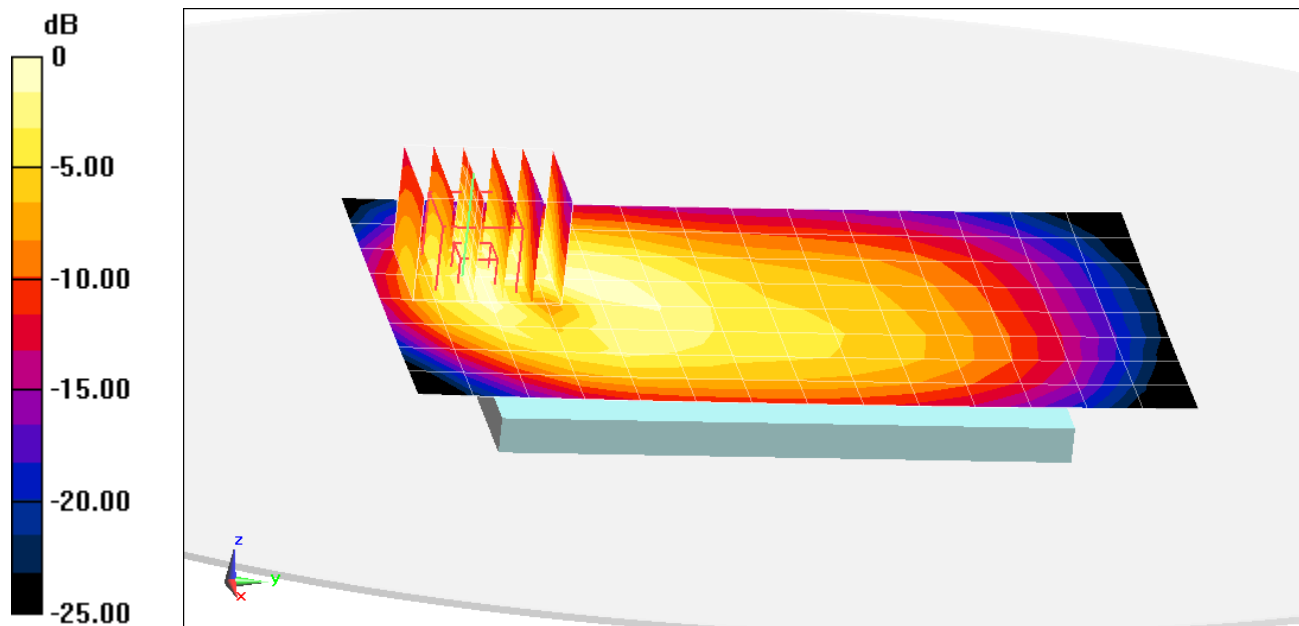
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 23.79 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.881 W/kg

SAR(1 g) = 0.517 W/kg



0 dB = 0.602 W/kg = -2.20 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-1

Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.014 \text{ S/m}$; $\epsilon_r = 52.875$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2014; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV2 - SN3022; ConvF(5.98, 5.98, 5.98); Calibrated: 8/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/12/2014

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1226

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 850, Body SAR, Back side, Mid.ch, Standard Cover

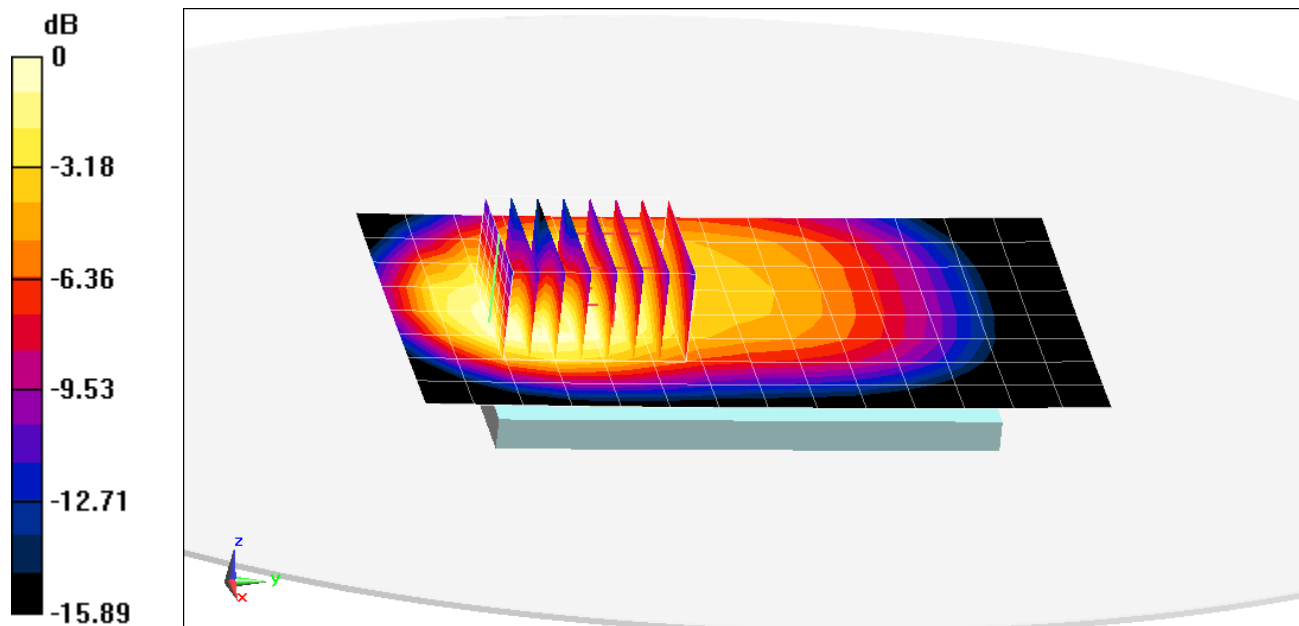
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (7x8x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 18.80 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.537 W/kg

SAR(1 g) = 0.328 W/kg



0 dB = 0.395 W/kg = -4.03 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-1

Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.014 \text{ S/m}$; $\epsilon_r = 52.875$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2014; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV2 - SN3022; ConvF(5.98, 5.98, 5.98); Calibrated: 8/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/12/2014

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1226

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 850, Body SAR, Front side, Mid.ch, Standard Cover

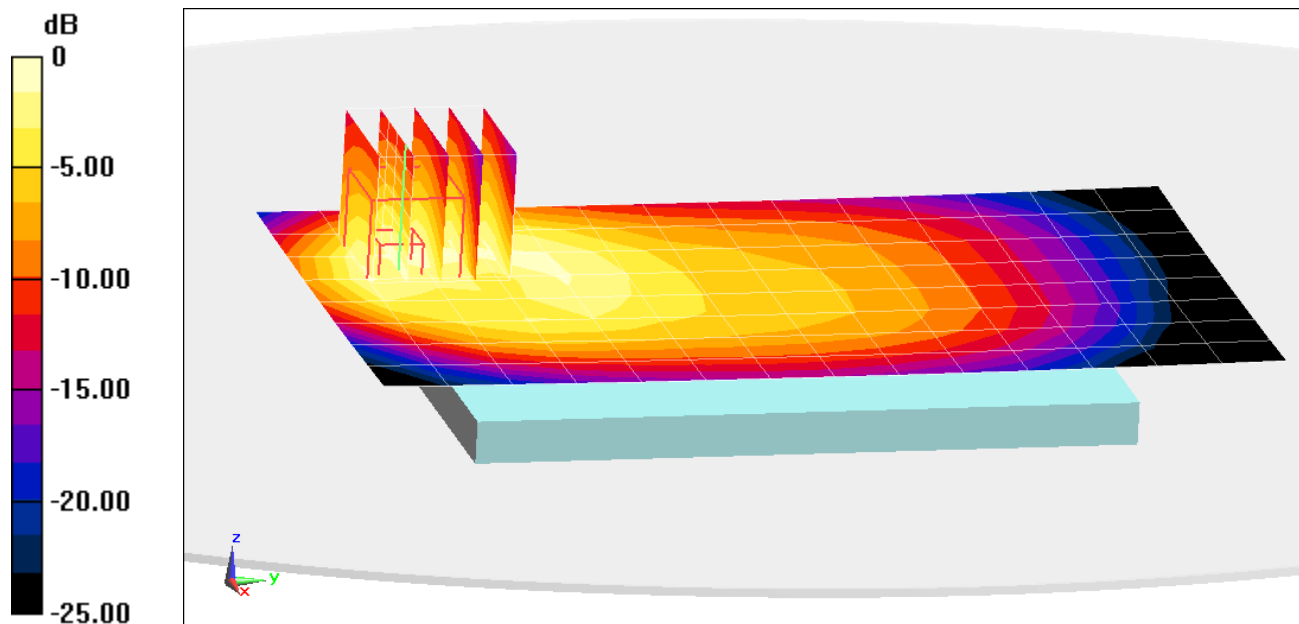
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 23.26 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.891 W/kg

SAR(1 g) = 0.521 W/kg



0 dB = 0.637 W/kg = -1.96 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-4

Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.549 \text{ S/m}$; $\epsilon_r = 52.820$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2014; Ambient Temp: 20.6°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3258; ConvF(4.61, 4.61, 4.61); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GSM 1900, Body SAR, Back side, Mid.ch, Standard Cover

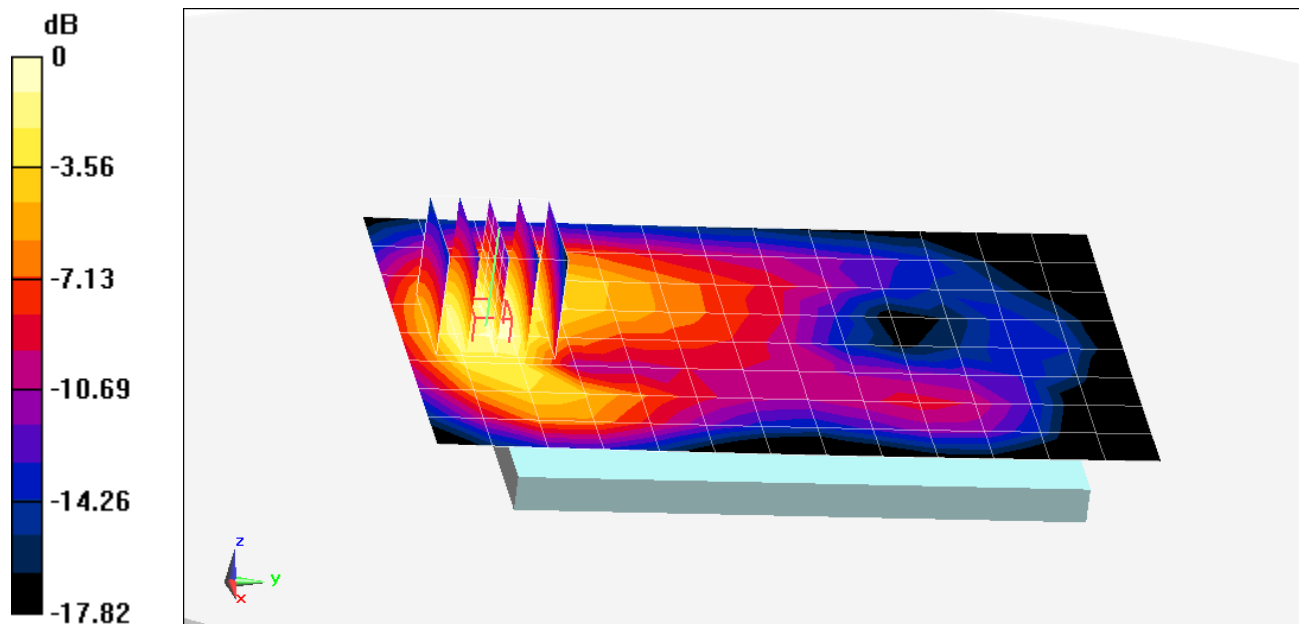
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 14.90 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.574 W/kg

SAR(1 g) = 0.361 W/kg



0 dB = 0.434 W/kg = -3.63 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-4

Communication System: UID 0, GSM GPRS; 2 Tx slots; Frequency: 1909.8 MHz; Duty Cycle: 1:4.15

Medium: 1900 Body Medium parameters used:

$f = 1910 \text{ MHz}$; $\sigma = 1.589 \text{ S/m}$; $\epsilon_r = 52.894$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2014; Ambient Temp: 20.6°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3258; ConvF(4.61, 4.61, 4.61); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GPRS 1900, Body SAR, Bottom Edge, High.ch, 2 Tx Slots, Standard Cover

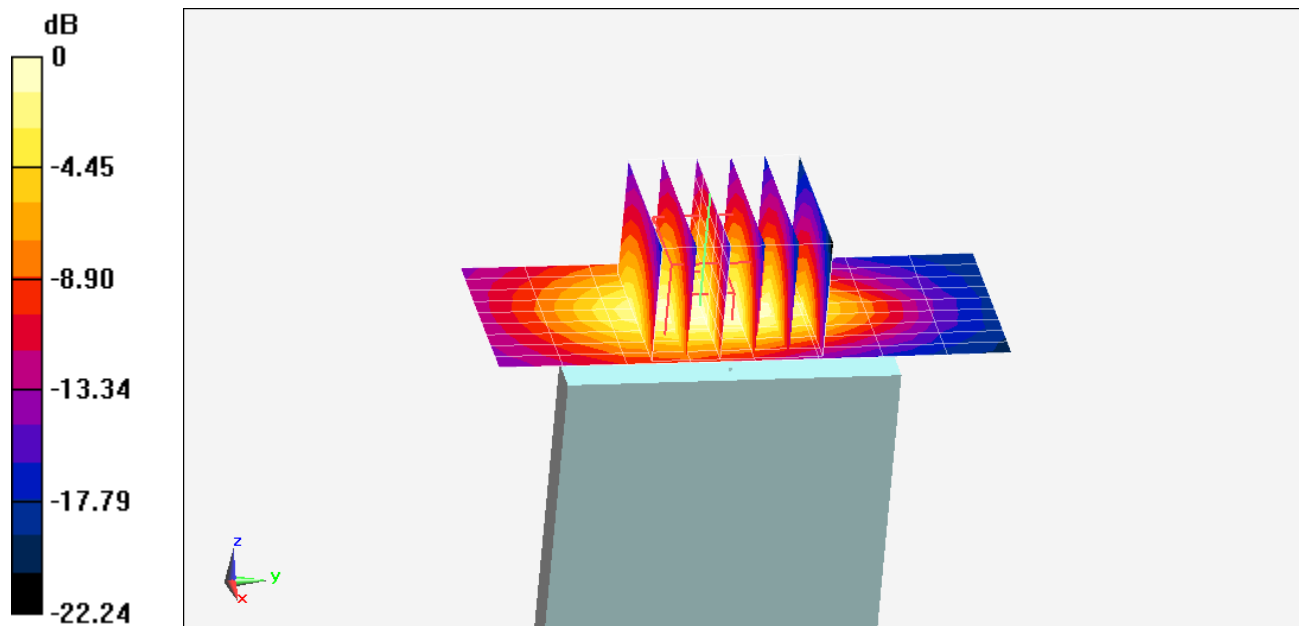
Area Scan (10x9x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 25.12 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 1.54 W/kg

SAR(1 g) = 0.930 W/kg



0 dB = 1.13 W/kg = 0.53 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-11

Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.480 \text{ S/m}$; $\epsilon_r = 52.320$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-28-2014; Ambient Temp: 21.1°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3319; ConvF(4.67, 4.67, 4.67); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/11/2014

Phantom: ELI left; Type: QDOVA002AA; Serial: TP:1202

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 1900, Body SAR, Back side, Mid.ch, Standard Cover

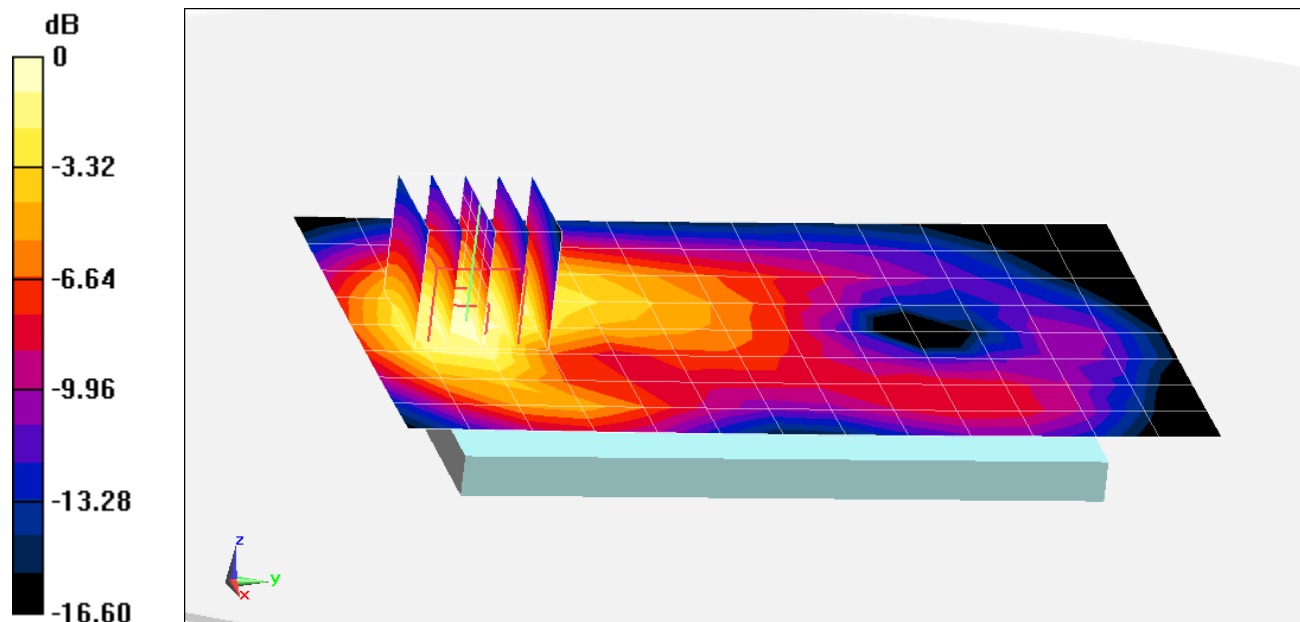
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 16.10 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.546 W/kg

SAR(1 g) = 0.349 W/kg



0 dB = 0.413 W/kg = -3.84 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-12

Communication System: UID 0, UMTS; Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):

$f = 1907.6 \text{ MHz}$; $\sigma = 1.507 \text{ S/m}$; $\epsilon_r = 52.061$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-28-2014; Ambient Temp: 21.1°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3319; ConvF(4.67, 4.67, 4.67); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/11/2014

Phantom: ELI left; Type: QDOVA002AA; Serial: TP:1202

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 1900, Body SAR, Bottom Edge, High.ch, Standard Cover

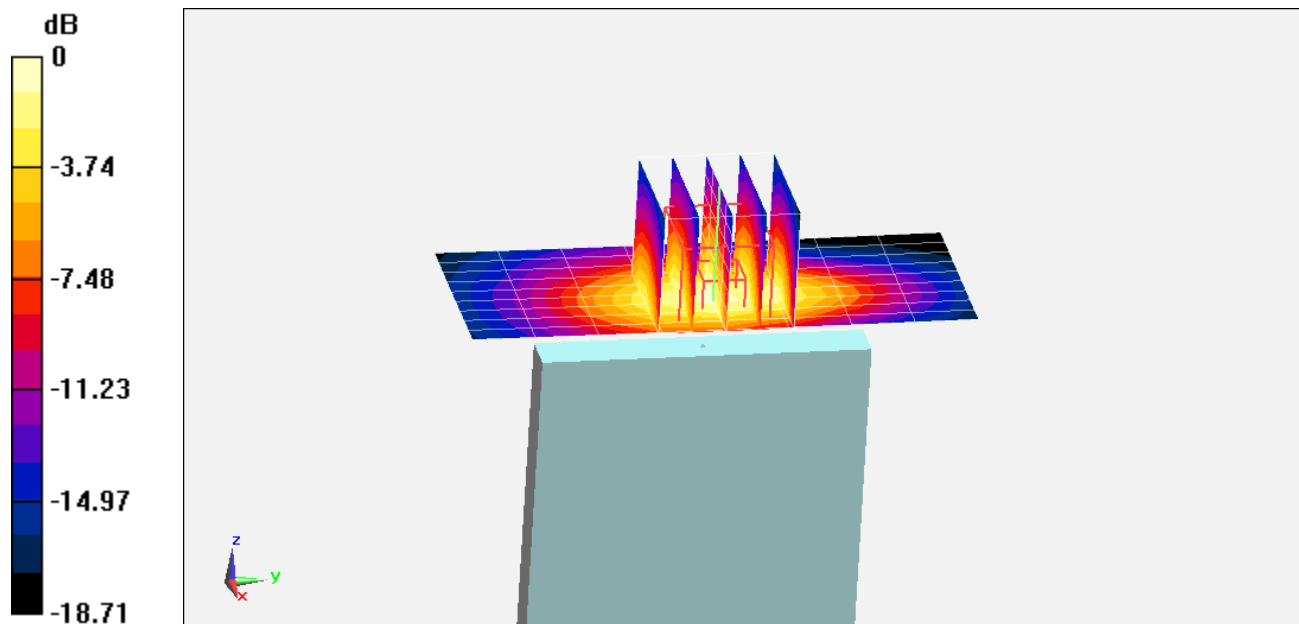
Area Scan (10x9x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 27.56 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 1.70 W/kg

SAR(1 g) = 1.01 W/kg



0 dB = 1.21 W/kg = 0.83 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-2

Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.953 \text{ S/m}$; $\epsilon_r = 55.775$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-04-2014; Ambient Temp: 23.3°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3258; ConvF(6.15, 6.15, 6.15); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 12, Body SAR, Back side, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset, Standard Cover

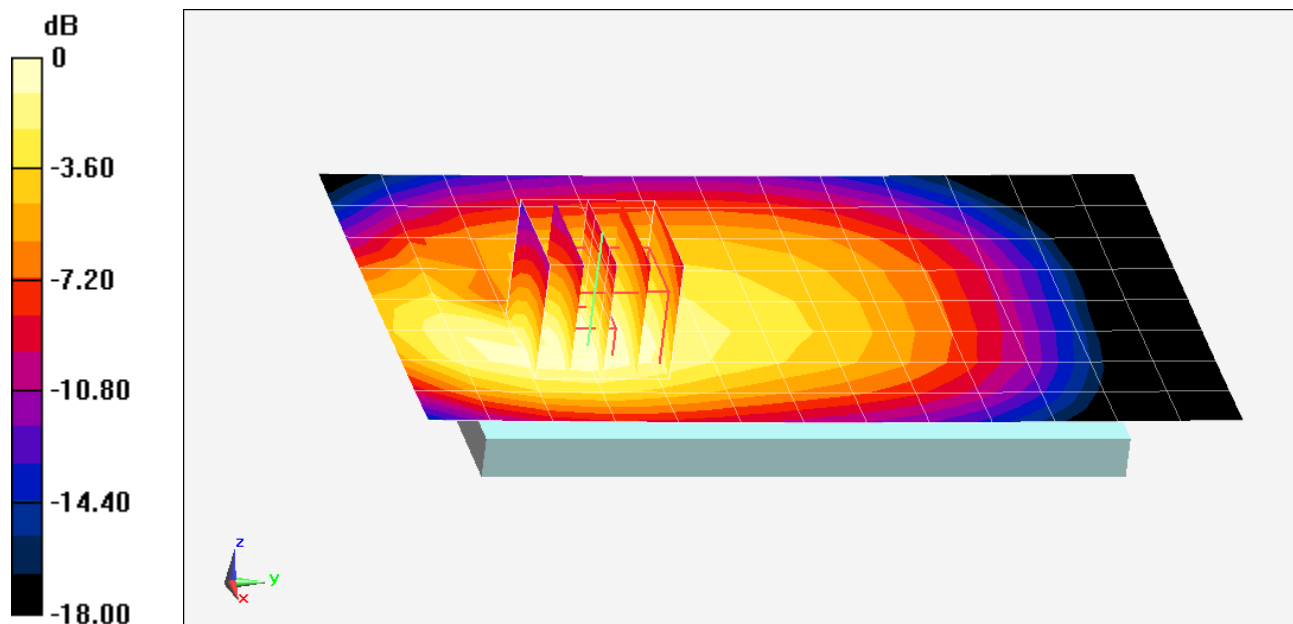
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 21.64 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.600 W/kg

SAR(1 g) = 0.430 W/kg



0 dB = 0.491 W/kg = -3.09 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-2

Communication System: UID 0, LTE Band 12 (0); Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.953 \text{ S/m}$; $\epsilon_r = 55.775$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-04-2014; Ambient Temp: 23.3°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3258; ConvF(6.15, 6.15, 6.15); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 12, Body SAR, Front side, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset, Standard Cover

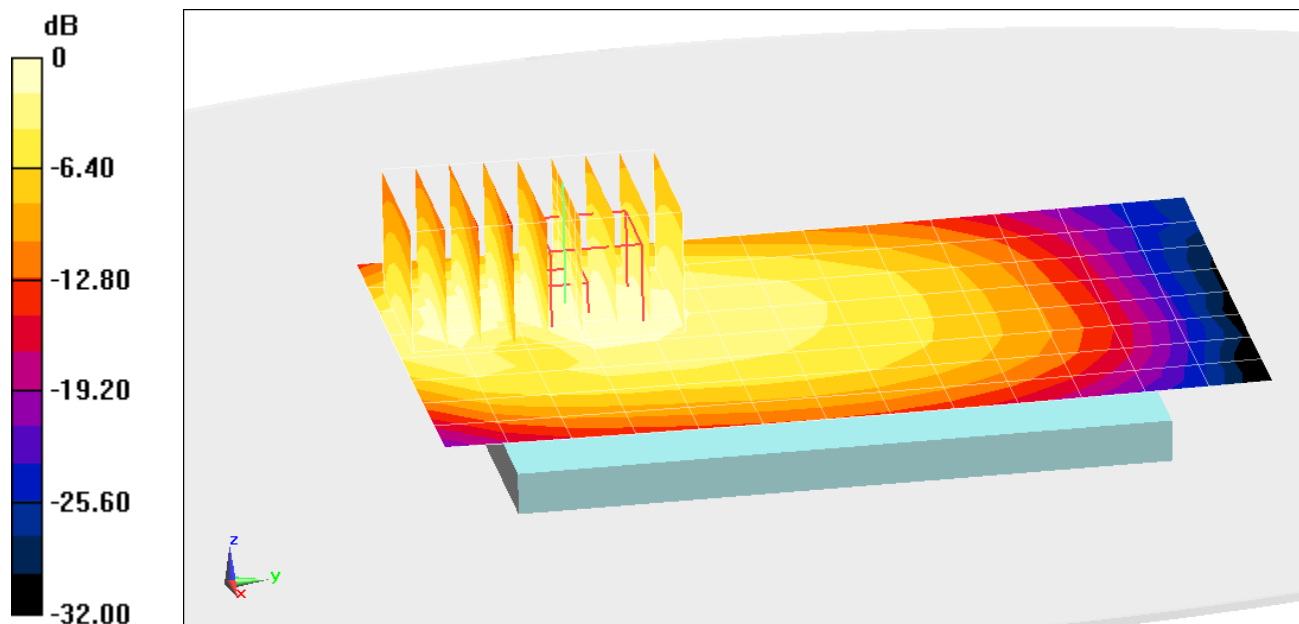
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x9x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 23.46 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.748 W/kg

SAR(1 g) = 0.506 W/kg



0 dB = 0.579 W/kg = -2.37 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-1

Communication System: UID 0, LTE Band 5; Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 1.014 \text{ S/m}$; $\epsilon_r = 52.876$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2014; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV2 - SN3022; ConvF(5.98, 5.98, 5.98); Calibrated: 8/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/12/2014

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1226

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 5 (Cell.), Body SAR, Back side, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset, Standard Cover

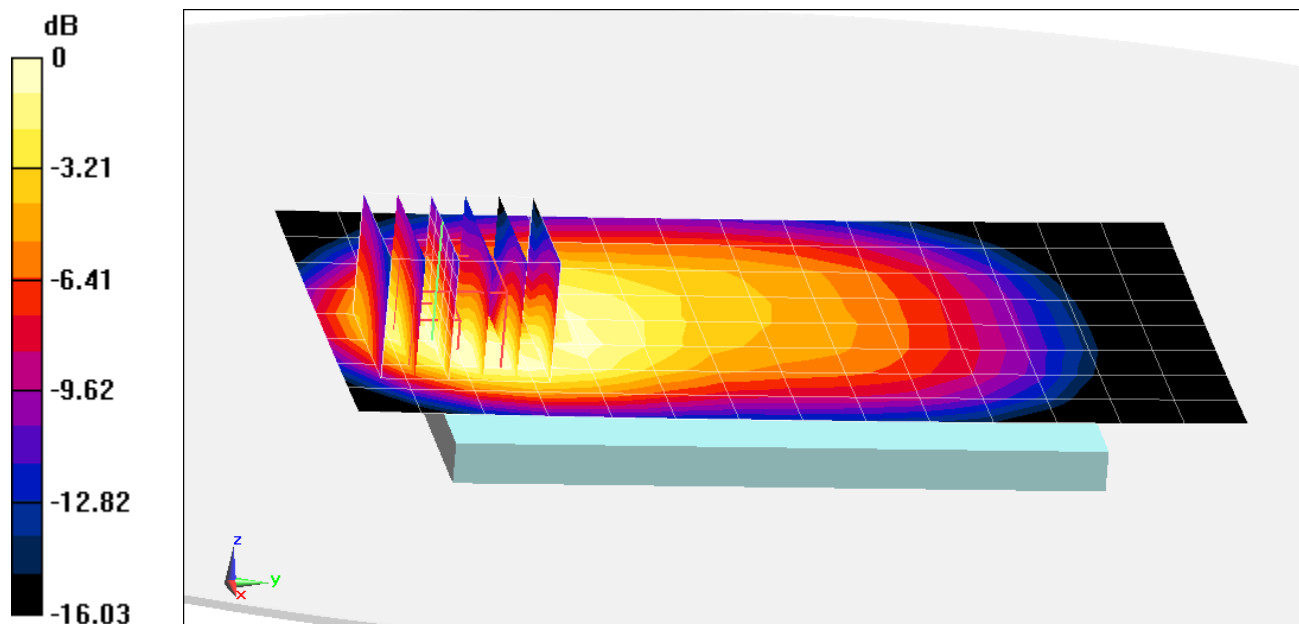
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 14.29 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.309 W/kg

SAR(1 g) = 0.189 W/kg



0 dB = 0.228 W/kg = -6.42 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-1

Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 1.014 \text{ S/m}$; $\epsilon_r = 52.876$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2014; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV2 - SN3022; ConvF(5.98, 5.98, 5.98); Calibrated: 8/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/12/2014

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1226

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 5 (Cell.), Body SAR, Bottom Edge, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset, Wireless Charging Cover

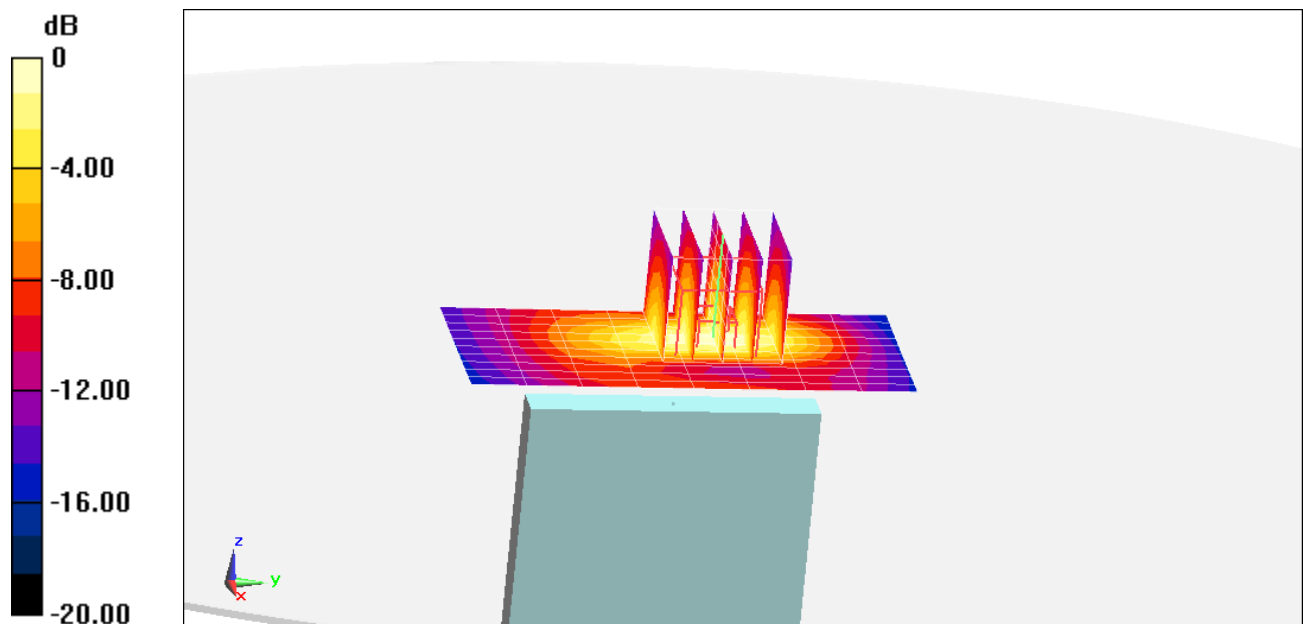
Area Scan (11x9x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 22.44 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.768 W/kg

SAR(1 g) = 0.440 W/kg



0 dB = 0.554 W/kg = -2.56 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-2

Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.444 \text{ S/m}$; $\epsilon_r = 51.853$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-01-2014; Ambient Temp: 23.1°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3288; ConvF(5.03, 5.03, 5.03); Calibrated: 9/24/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1364; Calibrated: 9/18/2014

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 4 (AWS), Body SAR, Back Side, Mid.ch
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset, Standard Cover

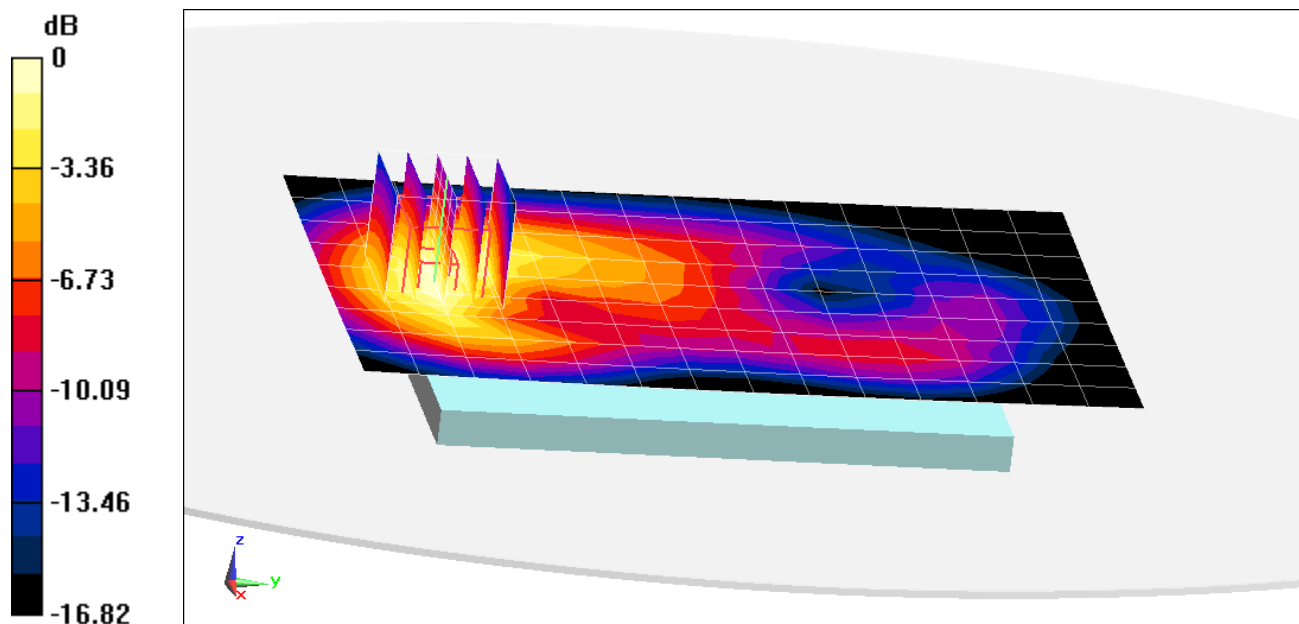
Area Scan (10x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 17.99 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.634 W/kg

SAR(1 g) = 0.409 W/kg



0 dB = 0.488 W/kg = -3.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-7

Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5$ MHz; $\sigma = 1.444$ S/m; $\epsilon_r = 51.853$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-01-2014; Ambient Temp: 23.1°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3288; ConvF(5.03, 5.03, 5.03); Calibrated: 9/24/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1364; Calibrated: 9/18/2014

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 4 (AWS), Body SAR, Bottom Edge, Mid.ch
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset, Wireless Charging Cover

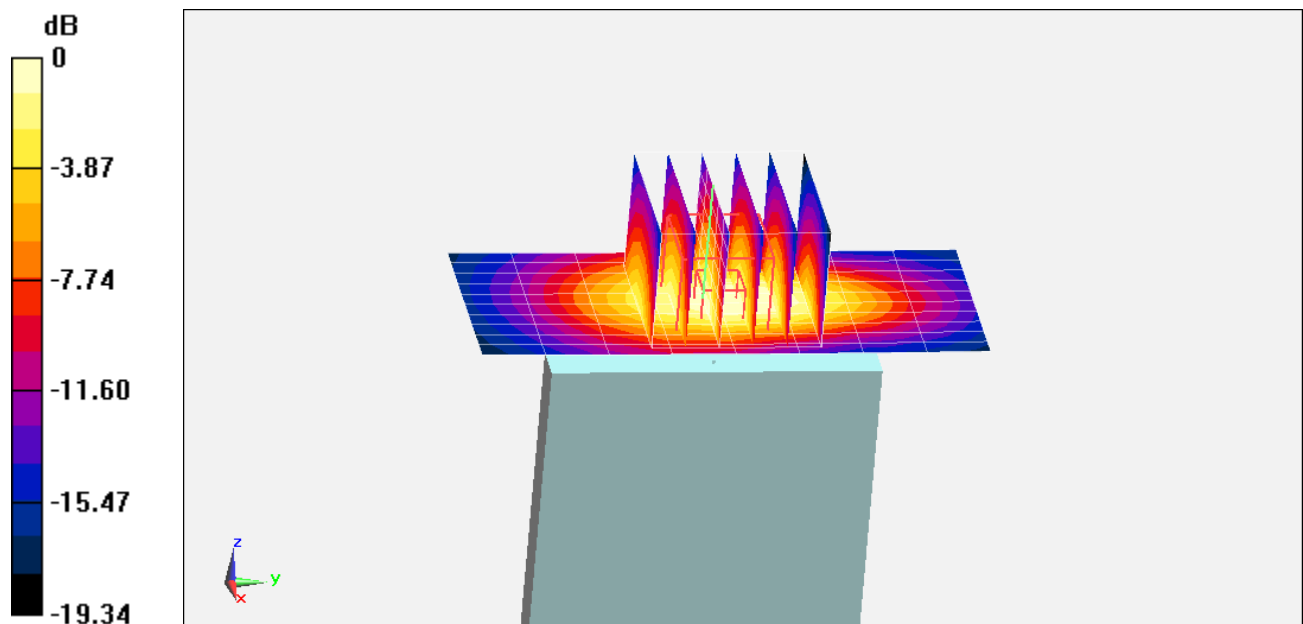
Area Scan (11x9x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 25.84 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 1.54 W/kg

SAR(1 g) = 0.939 W/kg



0 dB = 1.04 W/kg = 0.17 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-2

Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1860 \text{ MHz}$; $\sigma = 1.532 \text{ S/m}$; $\epsilon_r = 52.071$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-01-2014; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3258; ConvF(4.61, 4.61, 4.61); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 2 (PCS), Body SAR, Back side, Low.ch
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset, Standard Cover

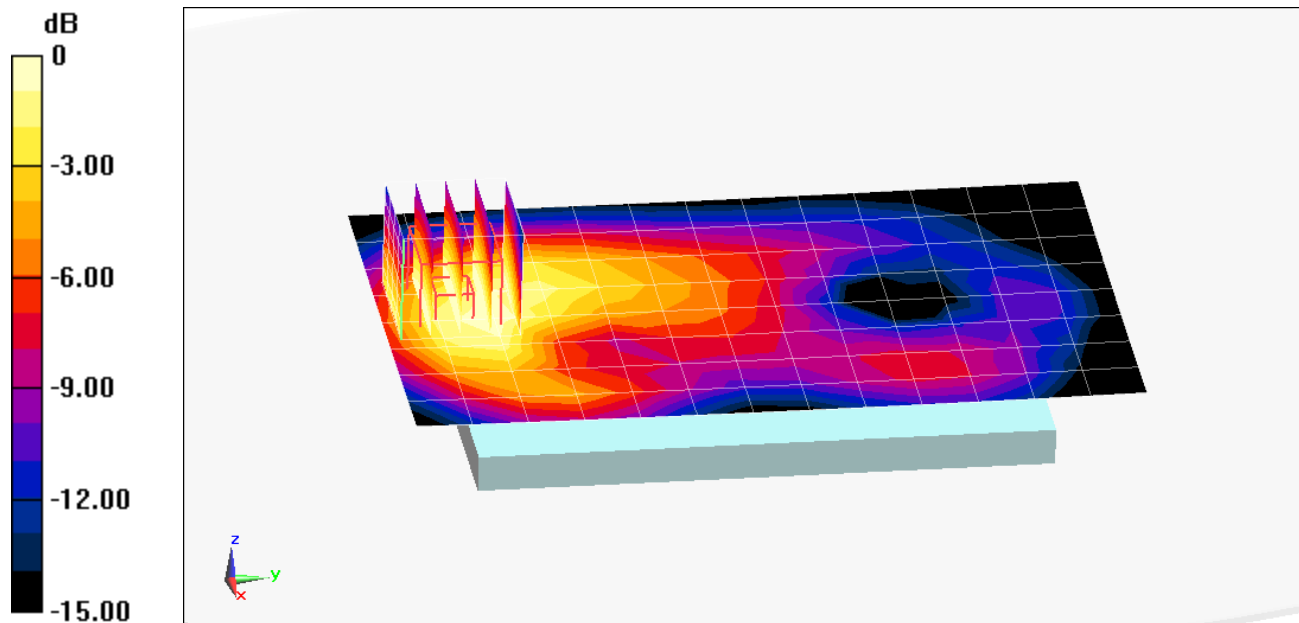
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.15 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.793 W/kg

SAR(1 g) = 0.524 W/kg



0 dB = 0.401 W/kg = -3.97 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-7

Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.558 \text{ S/m}$; $\epsilon_r = 52.024$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-01-2014; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3258; ConvF(4.61, 4.61, 4.61); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 2 (PCS), Body SAR, Bottom Edge, Mid.ch
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset, Standard Cover

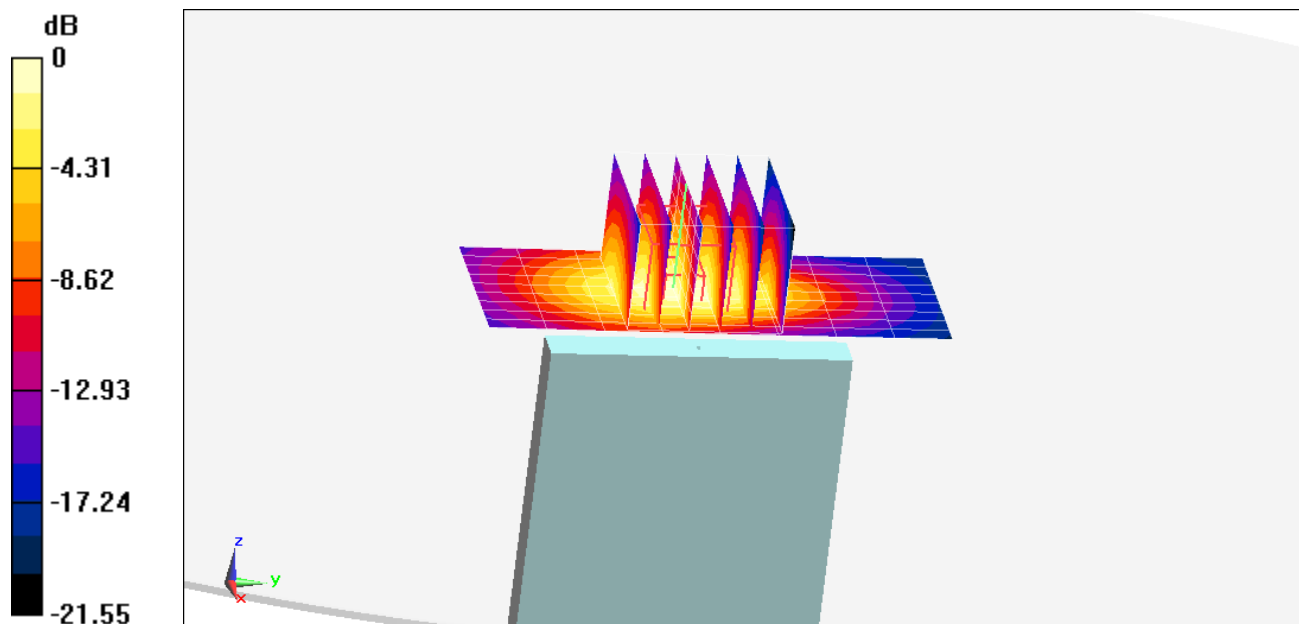
Area Scan (10x9x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 25.71 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 1.52 W/kg

SAR(1 g) = 0.935 W/kg



0 dB = 1.13 W/kg = 0.53 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 0809-09

Communication System: UID 0, IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: 2450 Body, Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.981 \text{ S/m}$; $\epsilon_r = 50.728$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-09-2014; Ambient Temp: 22.2°C; Tissue Temp: 23.2°C

Probe: ES3DV3 - SN3258; ConvF(4.14, 4.14, 4.14); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Mode: IEEE 802.11b, Body SAR, Ch 11, 1 Mbps, Back Side,
Antenna 1, Standard Cover**

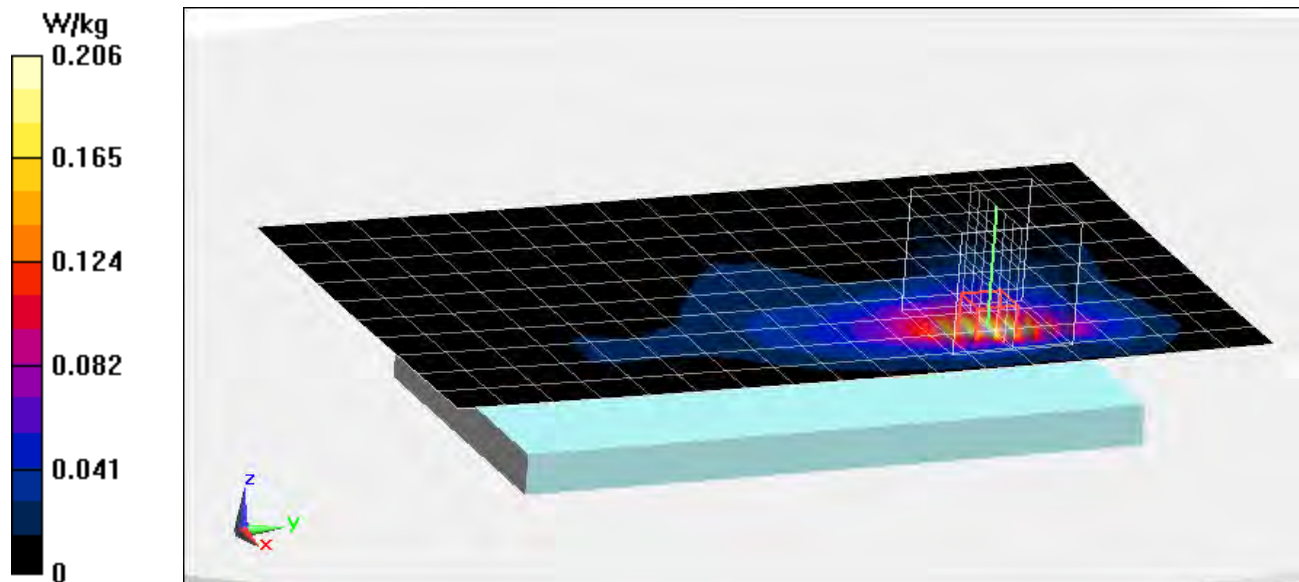
Area Scan (11x18x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 9.570 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.336 W/kg

SAR(1 g) = 0.153 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 0809-14

Communication System: UID 0, IEEE 802.11n; Frequency: 5825 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5825 \text{ MHz}$; $\sigma = 6.077 \text{ S/m}$; $\epsilon_r = 46.581$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-09-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.3°C

Probe: EX3DV4 - SN3589; ConvF(3.97, 3.97, 3.97); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11n, 5.8 GHz, Body SAR, Ch 165, 13 Mbps, Back Side, MIMO, Standard Cover

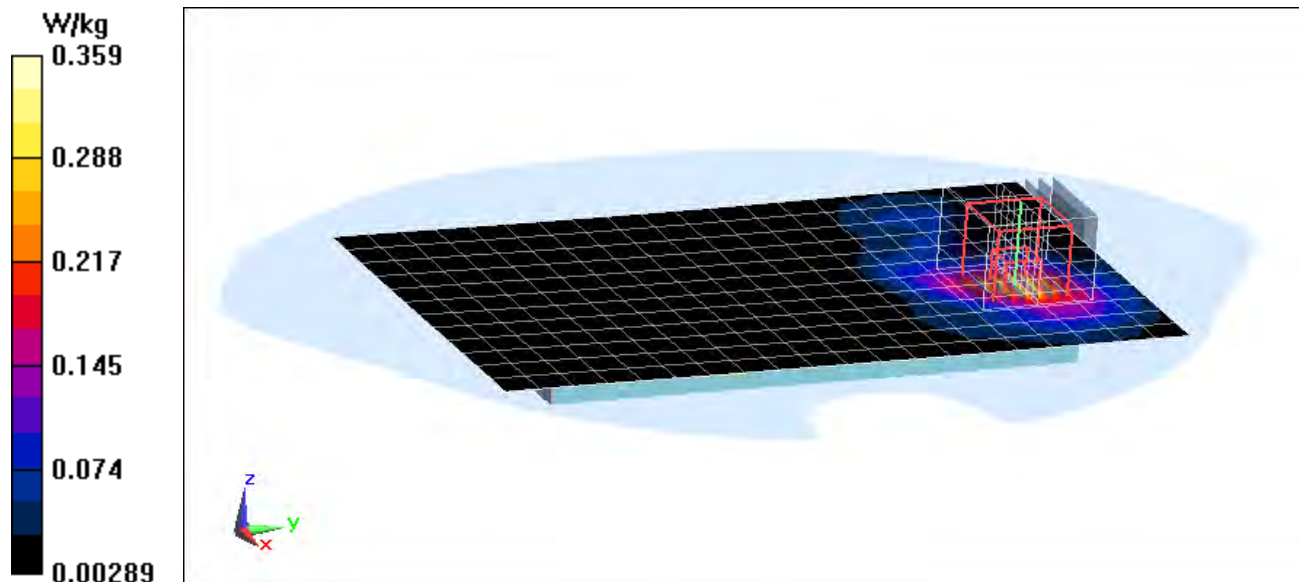
Area Scan (13x21x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 4.854 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.706 W/kg

SAR(1 g) = 0.157 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 0809-14

Communication System: UID 0, IEEE 802.11a; Frequency: 5700 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5700 \text{ MHz}$; $\sigma = 5.894 \text{ S/m}$; $\epsilon_r = 46.838$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-09-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.3°C

Probe: EX3DV4 - SN3589; ConvF(3.81, 3.81, 3.81); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Mode: IEEE 802.11a, 5.5 - 5.7 GHz, Body SAR, Ch 140, 6 Mbps, Back Side,
Antenna 2, Standard Cover**

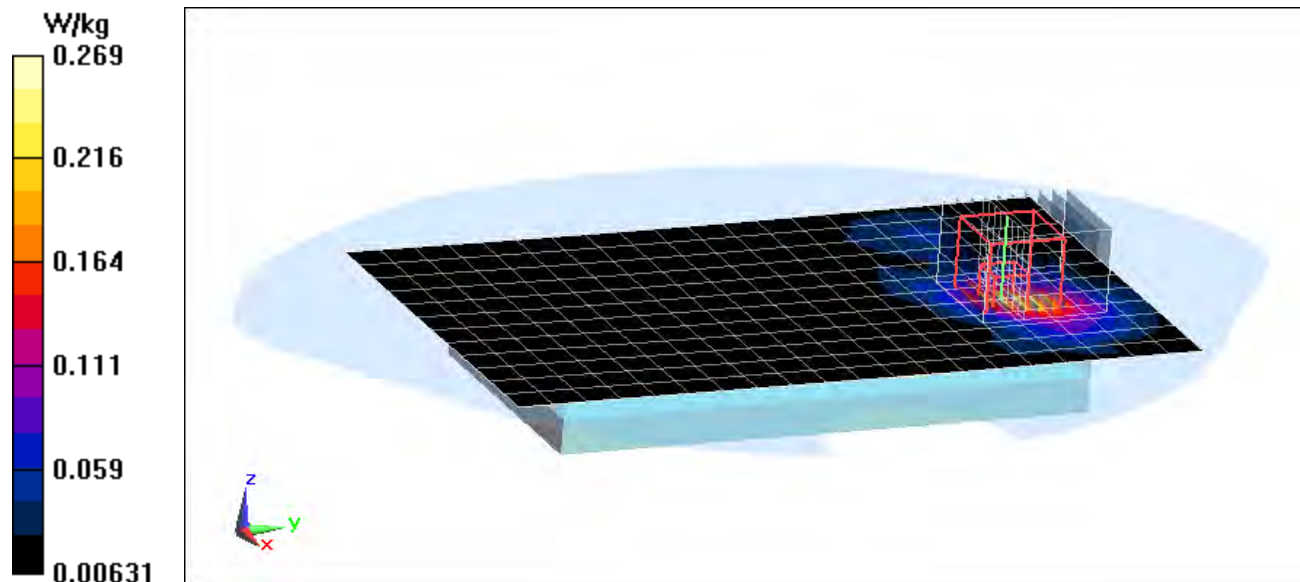
Area Scan (13x21x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (9x10x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 3.917 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.469 W/kg

SAR(1 g) = 0.118 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-4

Communication System: UID 0, GSM GPRS; 2 Tx slots; Frequency: 848.8 MHz; Duty Cycle: 1:4.15

Medium: 835 Body Medium parameters used (interpolated):

$f = 848.8 \text{ MHz}$; $\sigma = 0.997 \text{ S/m}$; $\epsilon_r = 54.148$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-01-2014; Ambient Temp: 23.4°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3209; ConvF(6.14, 6.14, 6.14); Calibrated: 3/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM front; Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GPRS 850, Extremity SAR, Front side, High.ch, 2 Tx Slots
Wireless Charging Cover

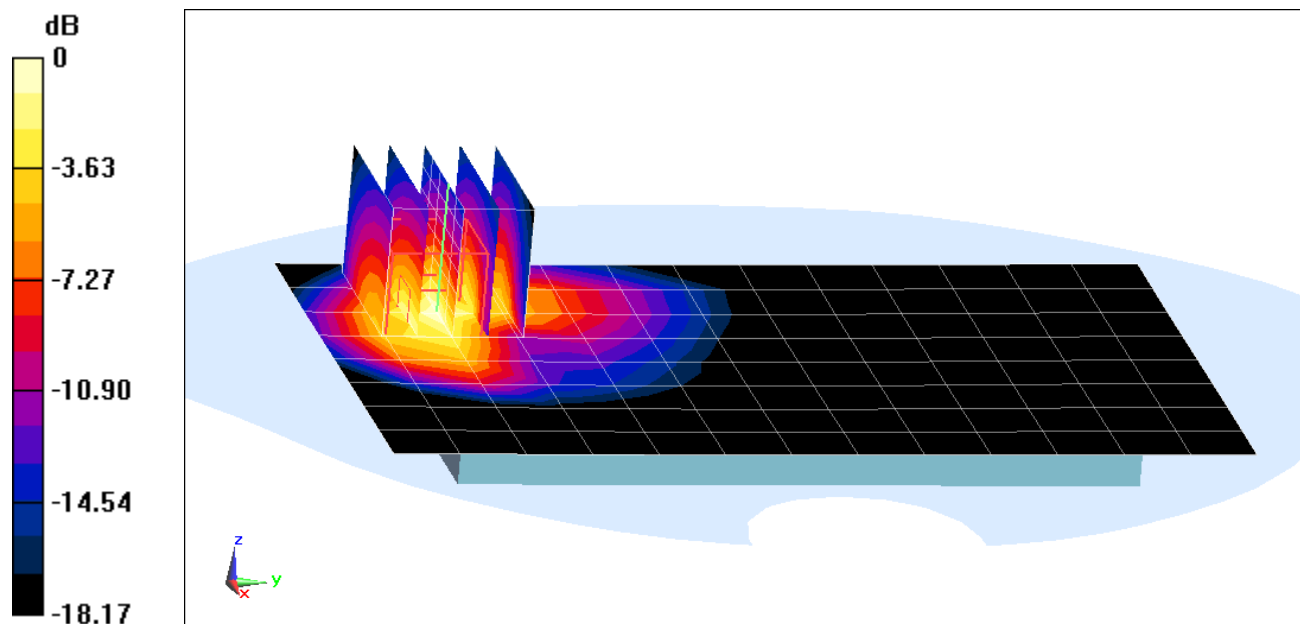
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 71.48 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 9.71 W/kg

SAR(10 g) = 2.19 W/kg



0 dB = 5.90 W/kg = 7.71 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-11

Communication System: UID 0, UMTS; Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 846.6 \text{ MHz}$; $\sigma = 0.995 \text{ S/m}$; $\epsilon_r = 54.173$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-01-2014; Ambient Temp: 23.4°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3209; ConvF(6.14, 6.14, 6.14); Calibrated: 3/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM front; Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 850, Extremity SAR, Front side, High.ch, Standard Cover

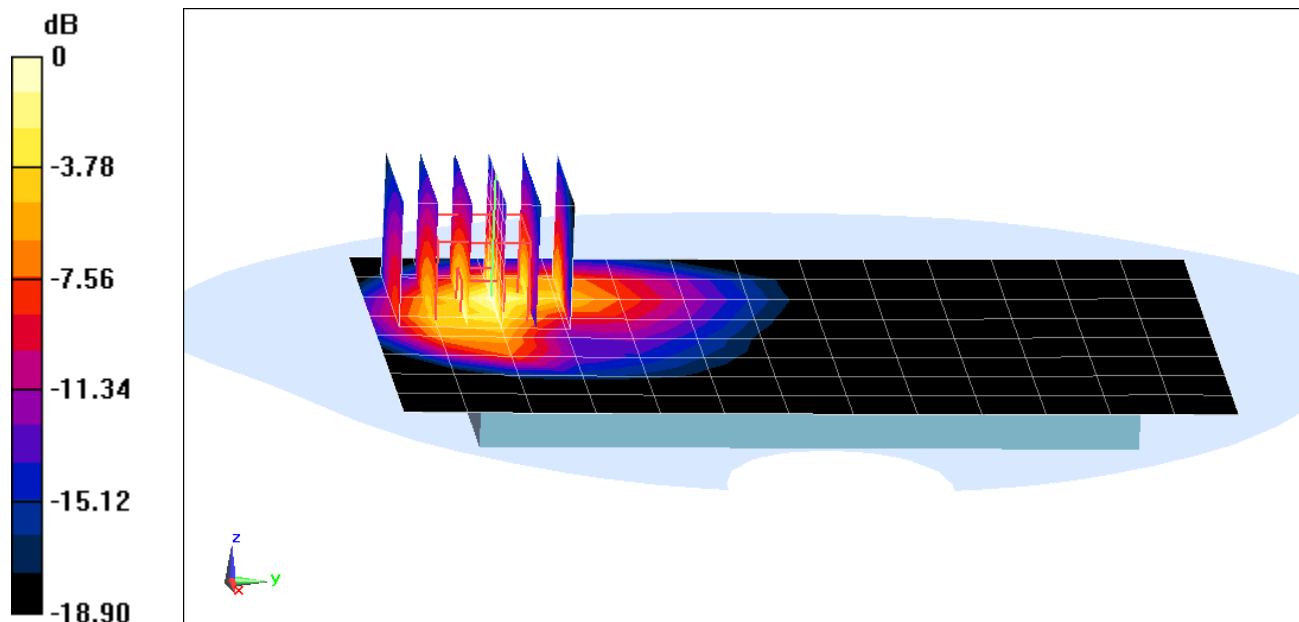
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 72.98 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 10.7 W/kg

SAR(10 g) = 2.32 W/kg



0 dB = 6.14 W/kg = 7.88 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-4

Communication System: UID 0, GSM GPRS; 2 Tx slots; Frequency: 1850.2 MHz; Duty Cycle: 1:4.15

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1850.2 \text{ MHz}$; $\sigma = 1.519 \text{ S/m}$; $\epsilon_r = 52.095$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-01-2014; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3258; ConvF(4.61, 4.61, 4.61); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GPRS 1900, Extremity SAR, Bottom Edge, Low ch, 2 Tx Slots
Wireless Charging Cover

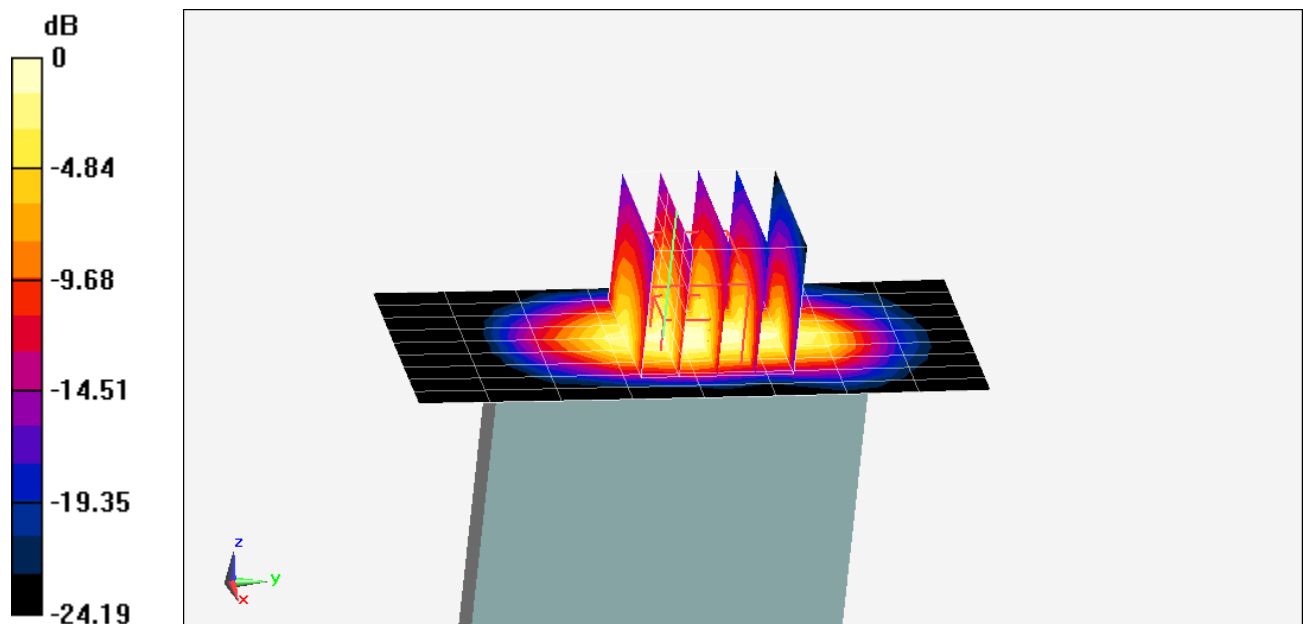
Area Scan (10x9x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 72.44 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 12.3 W/kg

SAR(10 g) = 2.90 W/kg



0 dB = 8.46 W/kg = 9.27 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-12

Communication System: UID 0, UMTS; Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1852.4 \text{ MHz}$; $\sigma = 1.522 \text{ S/m}$; $\epsilon_r = 52.089$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-01-2014; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3258; ConvF(4.61, 4.61, 4.61); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 1900, Extremity SAR, Bottom Edge, Low.ch, Standard Cover

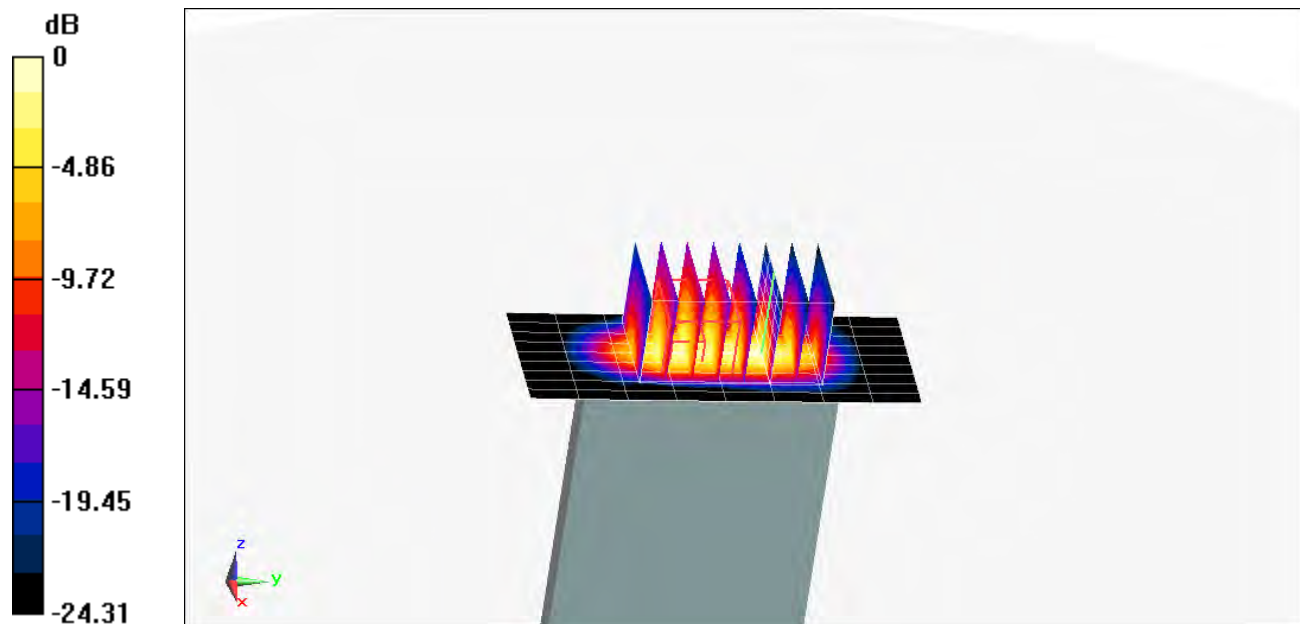
Area Scan (10x9x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x8x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 62.38 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 11.7 W/kg

SAR(10 g) = 2.23 W/kg



0 dB = 7.04 W/kg = 8.48 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-2

Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.953 \text{ S/m}$; $\epsilon_r = 55.775$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-04-2014; Ambient Temp: 23.3°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3258; ConvF(6.15, 6.15, 6.15); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 12, Extremity SAR, Front side, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset, Wireless Charging Cover

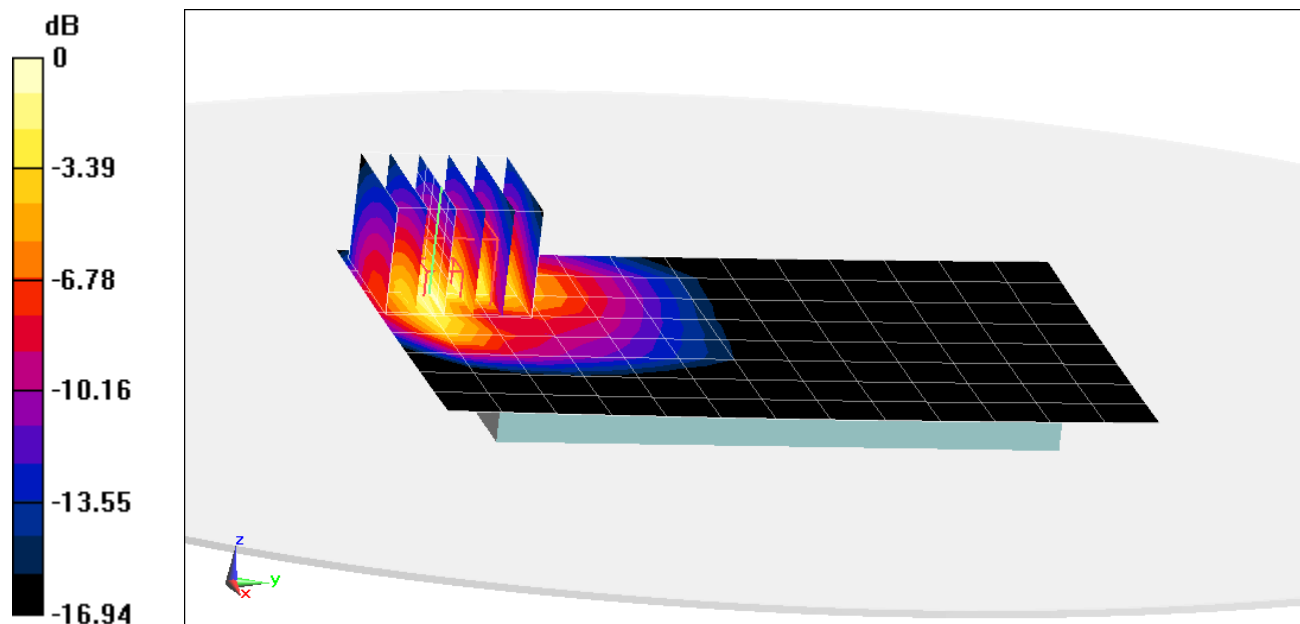
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 51.61 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 5.75 W/kg

SAR(10 g) = 1.39 W/kg



0 dB = 3.53 W/kg = 5.48 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-1

Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 0.986 \text{ S/m}$; $\epsilon_r = 54.285$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-01-2014; Ambient Temp: 23.4°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3209; ConvF(6.14, 6.14, 6.14); Calibrated: 3/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM front; Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 5 (Cell.), Extremity SAR, Front side, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset, Wireless Charging Cover

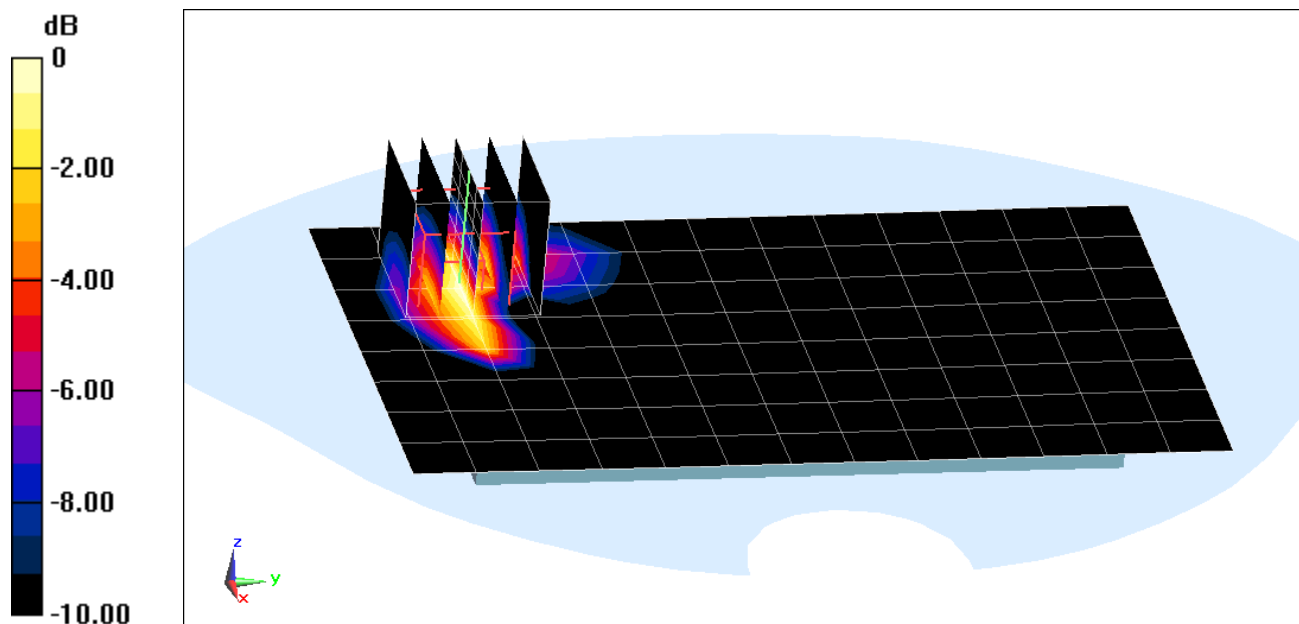
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 62.61 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 7.11 W/kg

SAR(10 g) = 1.60 W/kg



0 dB = 4.51 W/kg = 6.54 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-7

Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5$ MHz; $\sigma = 1.444$ S/m; $\epsilon_r = 51.853$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-01-2014; Ambient Temp: 23.1°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3288; ConvF(5.03, 5.03, 5.03); Calibrated: 9/24/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1364; Calibrated: 9/18/2014

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 4 (AWS), Extremity SAR, Bottom Edge, Mid.ch
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset, Wireless Charging Cover

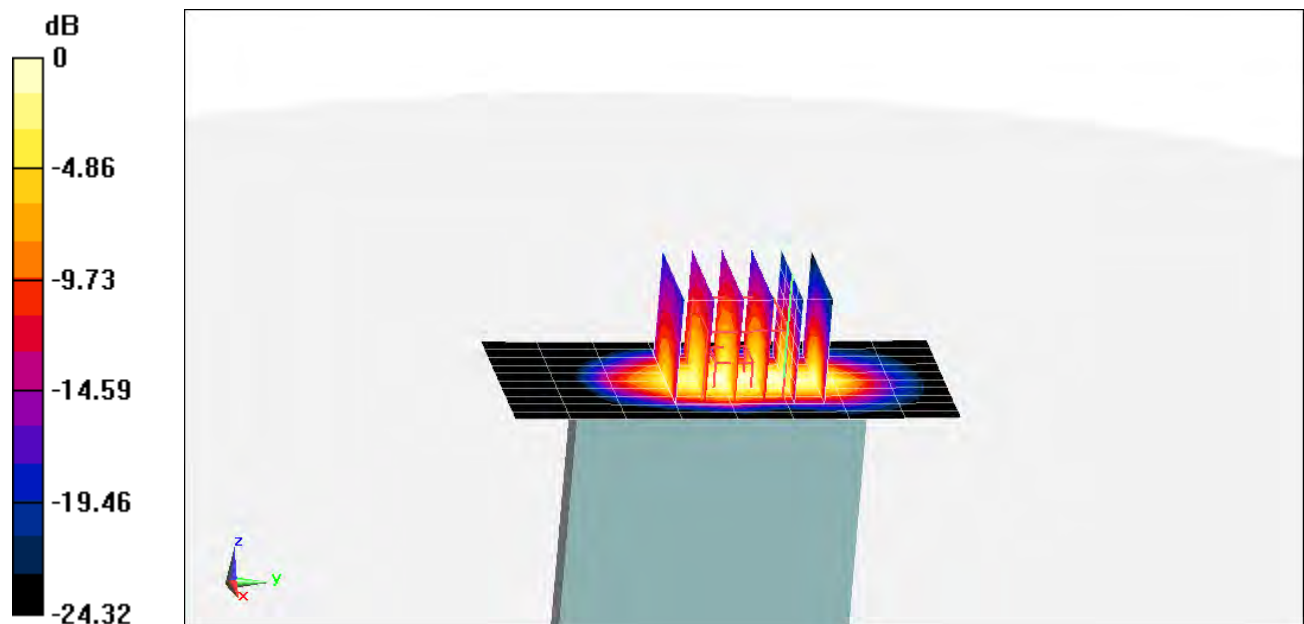
Area Scan (11x9x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 67.41 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 15.0 W/kg

SAR(10 g) = 2.62 W/kg



0 dB = 8.49 W/kg = 9.29 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 2411-4

Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1860 \text{ MHz}$; $\sigma = 1.532 \text{ S/m}$; $\epsilon_r = 52.071$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.3 cm

Test Date: 12-01-2014; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3258; ConvF(4.61, 4.61, 4.61); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 2 (PCS), Extremity SAR, Front side, Low.ch
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset, Wireless Charging Cover

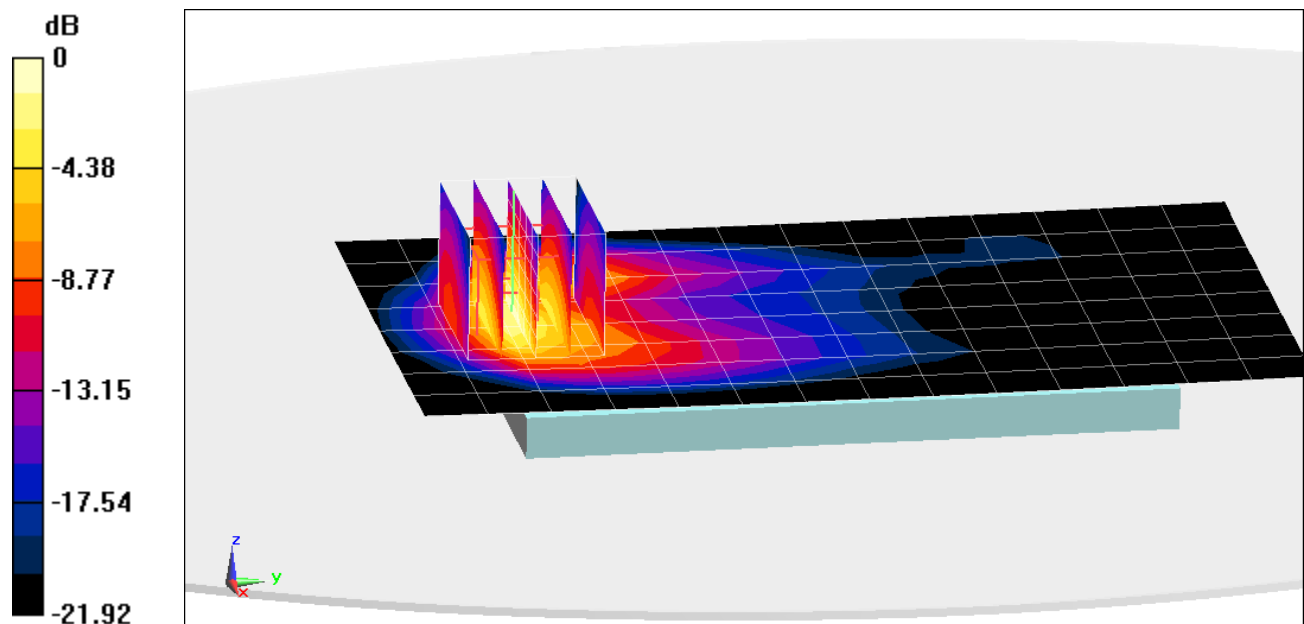
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 61.50 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 10.4 W/kg

SAR(10 g) = 2.81 W/kg



0 dB = 7.65 W/kg = 8.84 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 0809-09

Communication System: UID 0, IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: 2450 Body, Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.972 \text{ S/m}$; $\epsilon_r = 51.606$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 10-14-2014; Ambient Temp: 23.1°C; Tissue Temp: 23.8°C

Probe: ES3DV3 - SN3318; ConvF(4.15, 4.15, 4.15); Calibrated: 3/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 6/19/2014

Phantom: Main Twin Sam; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Mode: IEEE 802.11b, Extremity SAR, Ch 11, 1 Mbps, Back Side,
Antenna 1, Standard Cover**

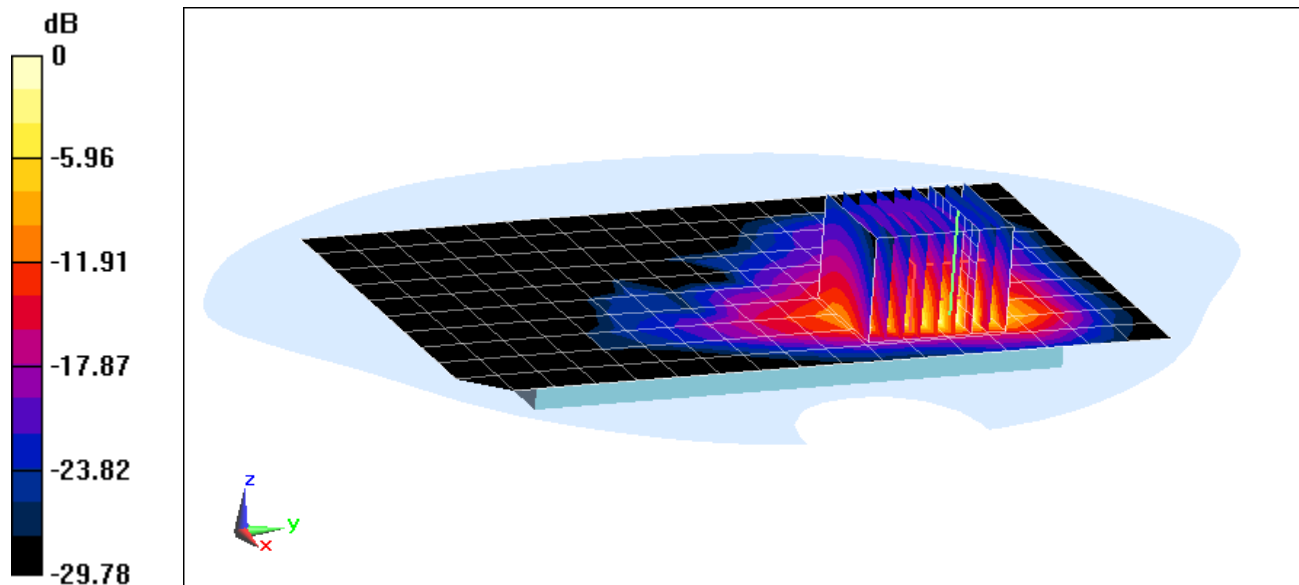
Area Scan (11x18x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (8x9x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 30.52 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 11.0 W/kg

SAR(10 g) = 1 W/kg



0 dB = 4.71 W/kg = 6.73 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 0809-14

Communication System: UID 0, IEEE 802.11n; Frequency: 5825 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5825 \text{ MHz}$; $\sigma = 6.077 \text{ S/m}$; $\epsilon_r = 46.581$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 09-09-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.3°C

Probe: EX3DV4 - SN3589; ConvF(3.97, 3.97, 3.97); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11n, 5.8 GHz, Extremity SAR, Ch 165, 13 Mbps, Back Side, MIMO, Standard Cover

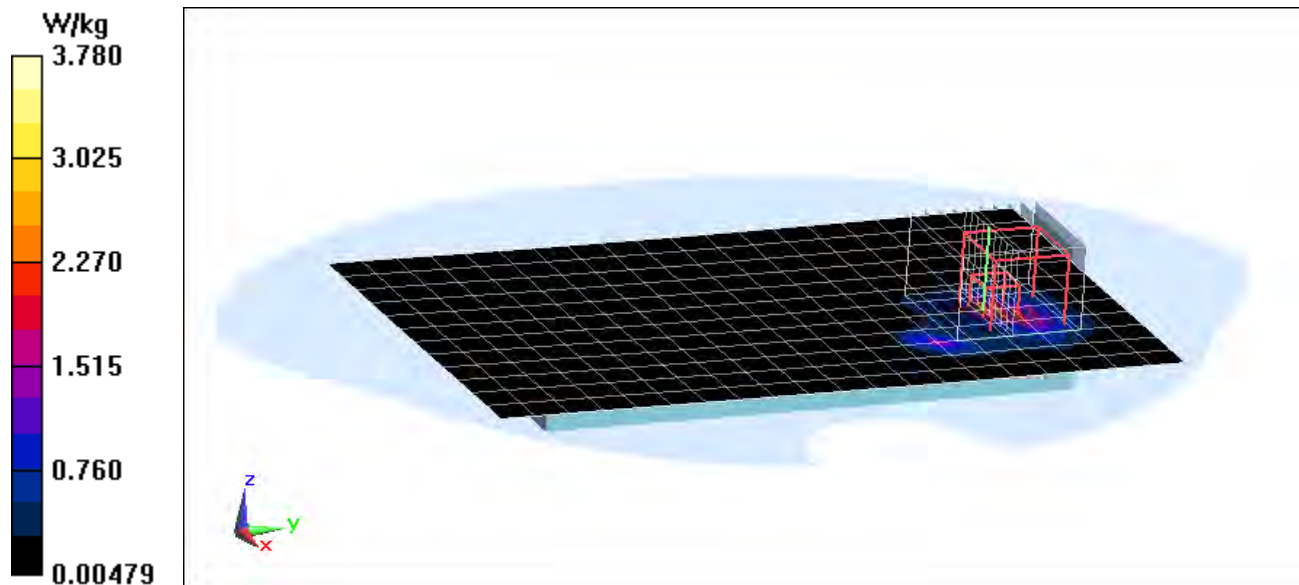
Area Scan (13x21x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (10x10x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 11.97 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 10.8 W/kg

SAR(10 g) = 0.371 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 0809-14

Communication System: UID 0, IEEE 802.11n; Frequency: 5700 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5700 \text{ MHz}$; $\sigma = 5.894 \text{ S/m}$; $\epsilon_r = 46.838$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 09-09-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.3°C

Probe: EX3DV4 - SN3589; ConvF(3.81, 3.81, 3.81); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11n, 5.5 - 5.7 GHz, Extremity SAR, Ch 140, 13 Mbps, Back Side, MIMO, Standard Cover

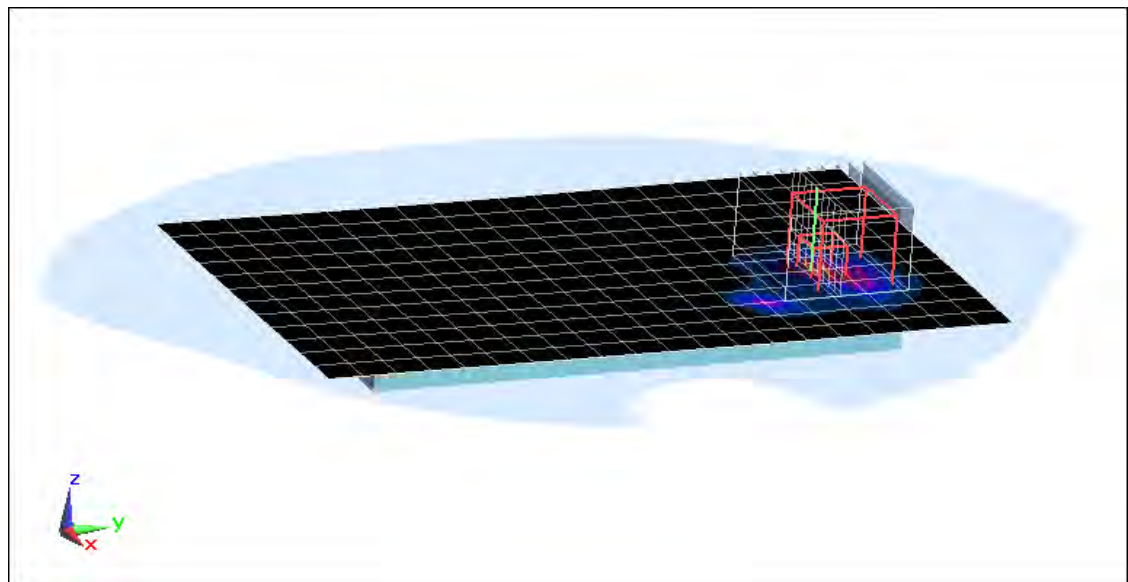
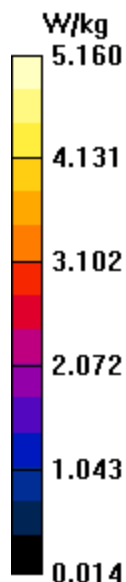
Area Scan (13x21x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (9x10x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 12.78 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 13.7 W/kg

SAR(10 g) = 0.404 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN915W8; Type: Portable Handset; Serial: 0809-14

Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2441 \text{ MHz}$; $\sigma = 2.015 \text{ S/m}$; $\epsilon_r = 53.359$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-04-2014; Ambient Temp: 24.5°C; Tissue Temp: 24.0°C

Probe: ES3DV3 - SN3319; ConvF(4.24, 4.24, 4.24); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/11/2014

Phantom: SAM; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: Bluetooth, Extremity, Ch 39, 1 Mbps, Back Side, Standard Cover

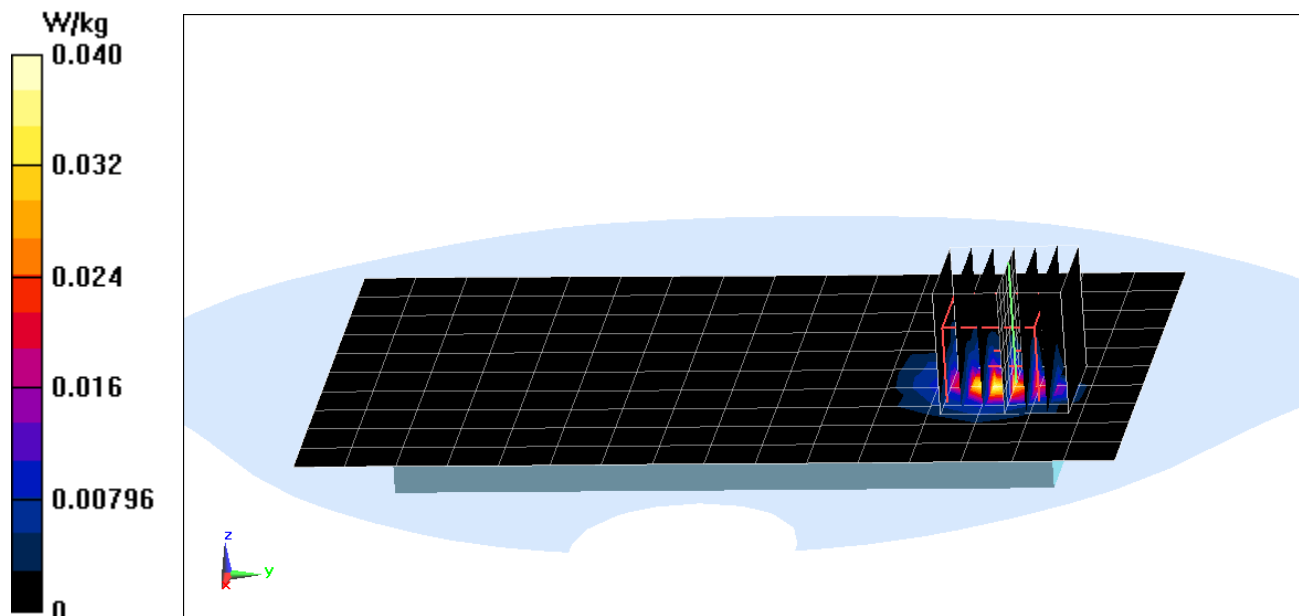
Area Scan (11x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 3.959 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 0.0690 W/kg

SAR (10g) = 0.00766 W/kg



APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1003

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 750 Head Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.927 \text{ S/m}$; $\epsilon_r = 41.702$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-03-2014; Ambient Temp: 23.3°C; Tissue Temp: 21.5°C

Probe: ES3DV2 - SN3022; ConvF(6.39, 6.39, 6.39); Calibrated: 8/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/12/2014

Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

750 MHz System Verification

Area Scan (7x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

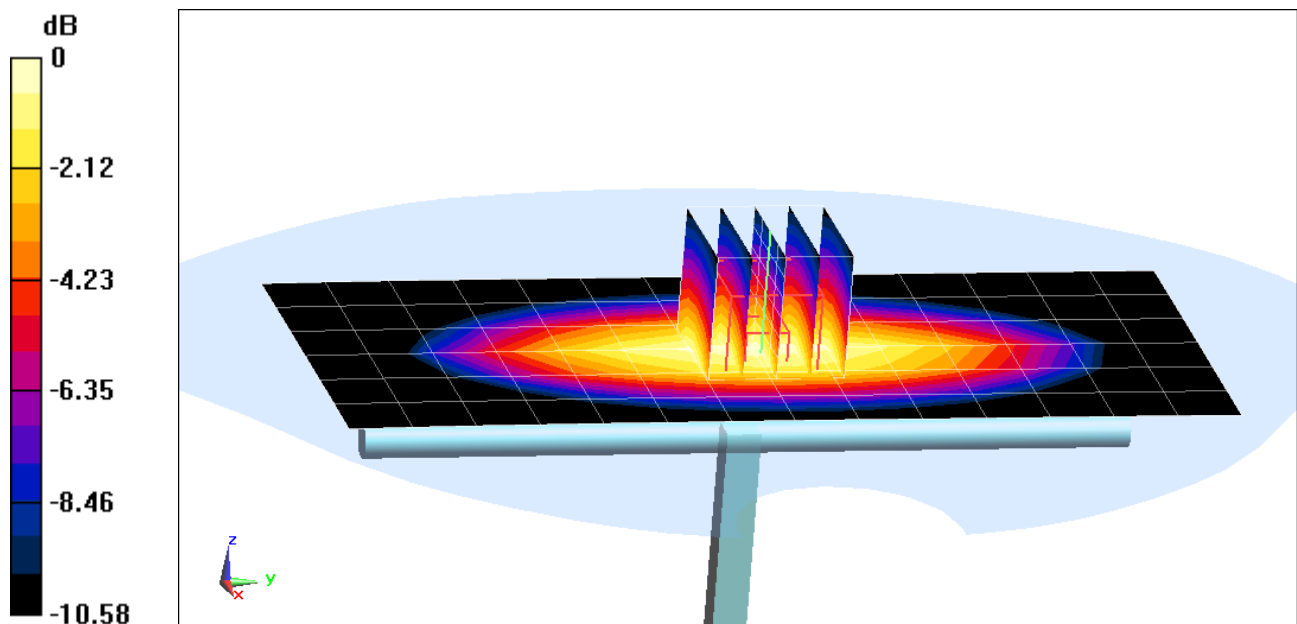
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Power Input = 20 dBm (100 mW)

Peak SAR (extrapolated) = 1.19 W/kg

SAR(1 g) = 0.804 W/kg

Deviation = -3.94%



0 dB = 0.940 W/kg = -0.27 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.937 \text{ S/m}$; $\epsilon_r = 41.640$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-24-2014; Ambient Temp: 24.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3263; ConvF(6.23, 6.23, 6.23); Calibrated: 5/15/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/14/2014

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

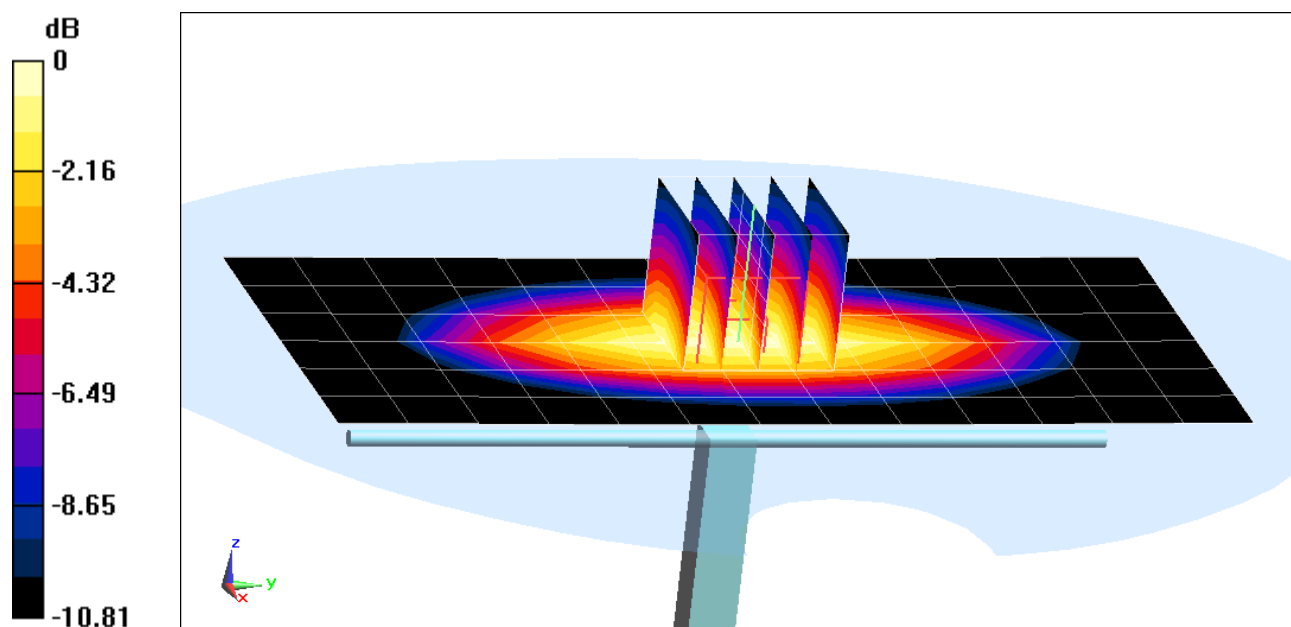
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Power Input = 20 dBm (100 mW)

Peak SAR (extrapolated) = 1.39 W/kg

SAR(1 g) = 0.928 W/kg

Deviation = 0.65%



0 dB = 1.09 W/kg = 0.37 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.937 \text{ S/m}$; $\epsilon_r = 40.218$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-03-2014; Ambient Temp: 23.6°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3332; ConvF(6.31, 6.31, 6.31); Calibrated: 9/18/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/17/2014

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

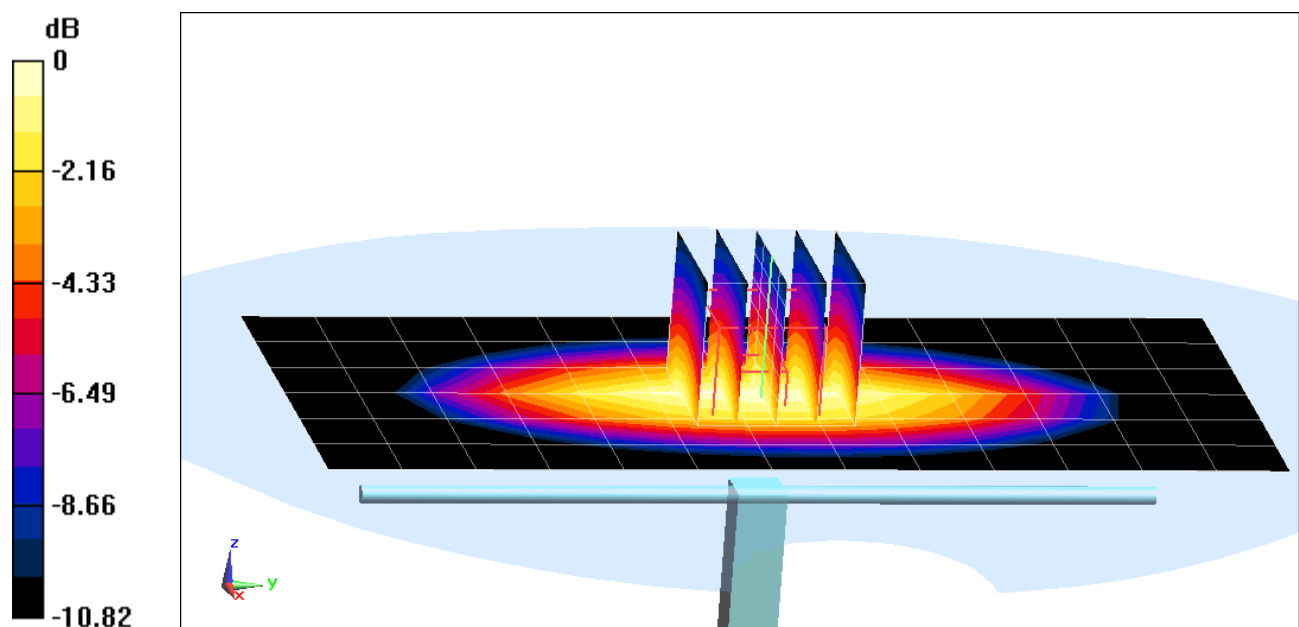
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Power Input = 20 dBm (100 mW)

Peak SAR (extrapolated) = 1.31 W/kg

SAR(1 g) = 0.884 W/kg

Deviation = -4.12%



0 dB = 1.04 W/kg = 0.17 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1765V2; Serial: 1008

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.345 \text{ S/m}$; $\epsilon_r = 38.778$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-28-2014; Ambient Temp: 23.0°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3258; ConvF(5.19, 5.19, 5.19); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1750 MHz System Verification

Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

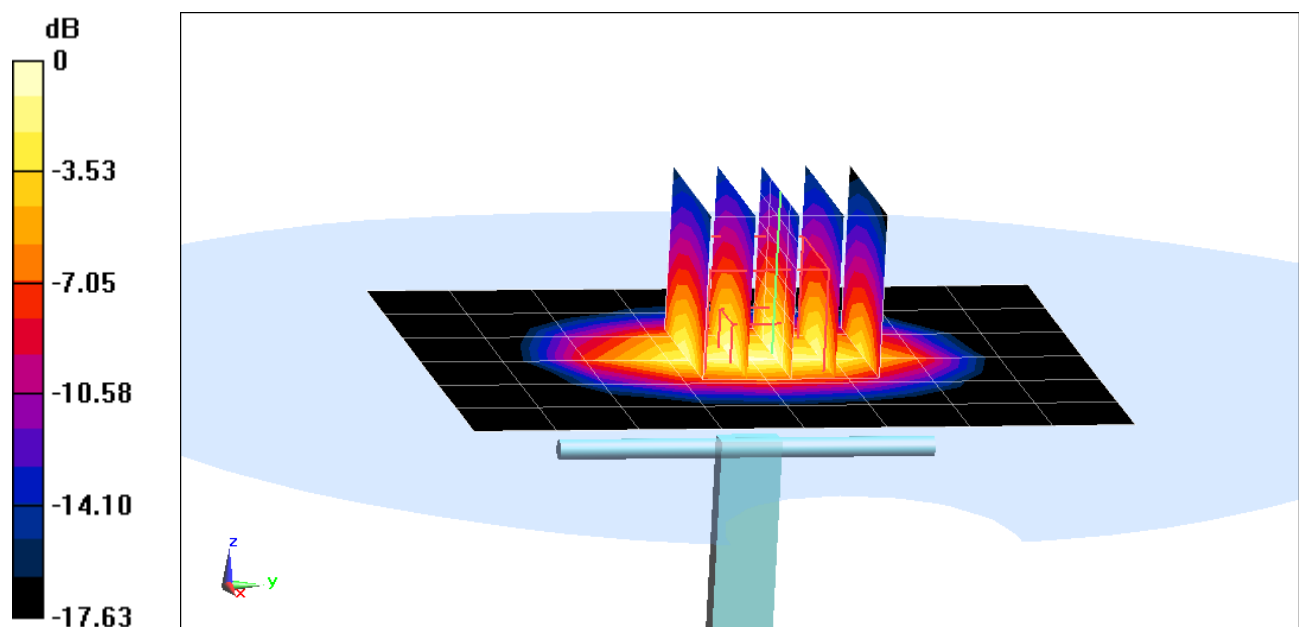
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Power Input = 20 dBm (100 mW)

Peak SAR (extrapolated) = 6.22 W/kg

SAR(1 g) = 3.40 W/kg

Deviation = -7.86%



0 dB = 4.25 W/kg = 6.28 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d141

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.444 \text{ S/m}$; $\epsilon_r = 39.067$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2014; Ambient Temp: 22.8°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.17, 5.17, 5.17); Calibrated: 9/24/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1364; Calibrated: 9/18/2014

Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

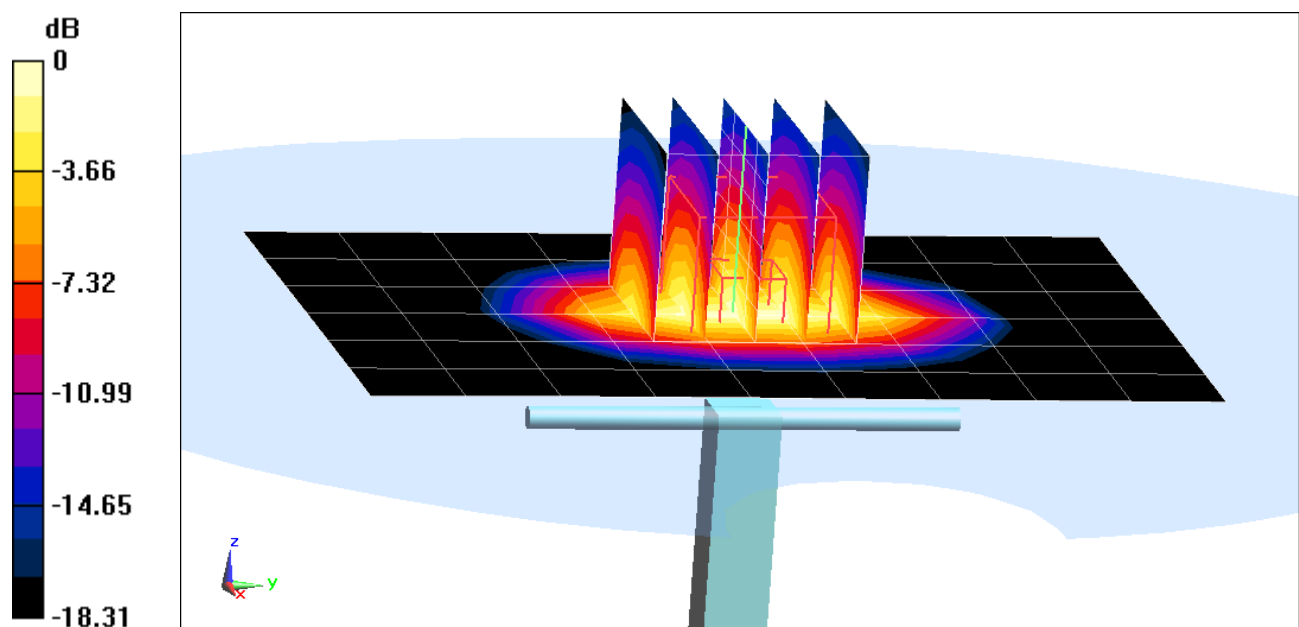
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Power Input = 20 dBm (100 mW)

Peak SAR (extrapolated) = 7.72 W/kg

SAR(1 g) = 4.15 W/kg

Deviation = 3.49%



0 dB = 5.27 W/kg = 7.22 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Head, Medium parameters used:

$f = 2450$ MHz; $\sigma = 1.815$ S/m; $\epsilon_r = 39.696$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-15-2014; Ambient Temp: 24.4°C; Tissue Temp: 23.6°C

Probe: ES3DV3 - SN3258; ConvF(4.52, 4.52, 4.52); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2450 MHz System Verification

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

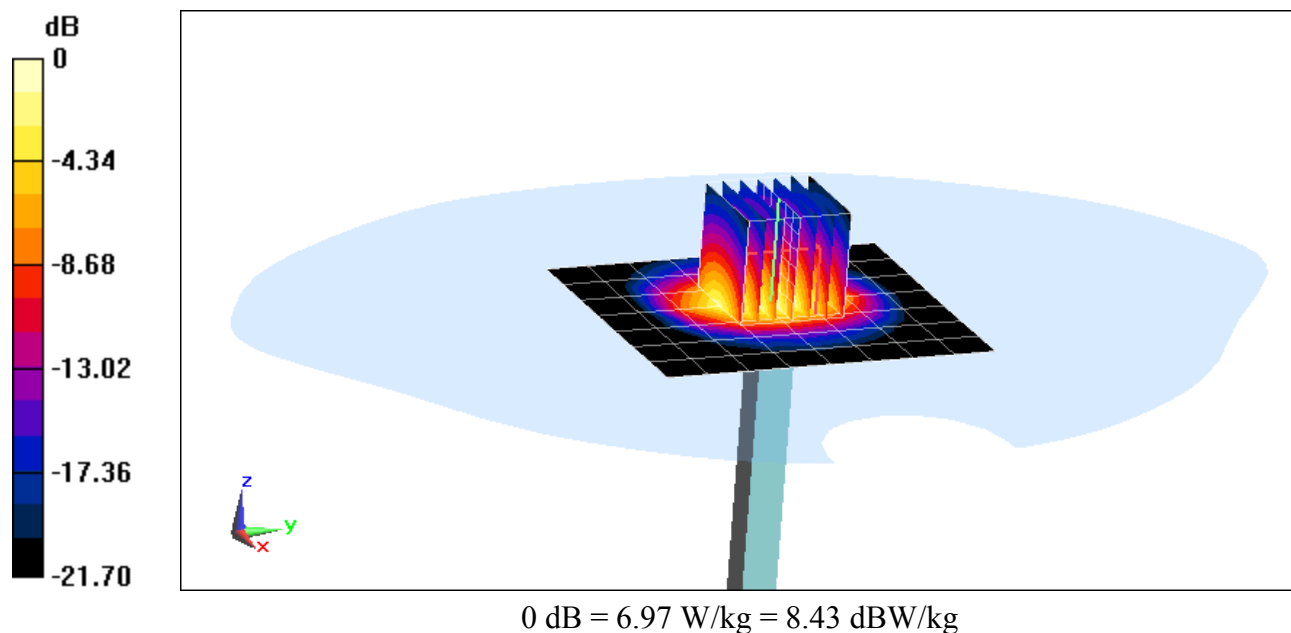
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Power Input = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 10.9 W/kg

SAR(1 g) = 5.36 W/kg

Deviation(1 g) = 3.47%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5200 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5200 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head, Medium parameters used:

$f = 5200 \text{ MHz}$; $\sigma = 4.616 \text{ S/m}$; $\epsilon_r = 35.605$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-15-2014; Ambient Temp: 22.7°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN3914; ConvF(4.99, 4.99, 4.99); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 11/19/2013

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5200 MHz System Verification

Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

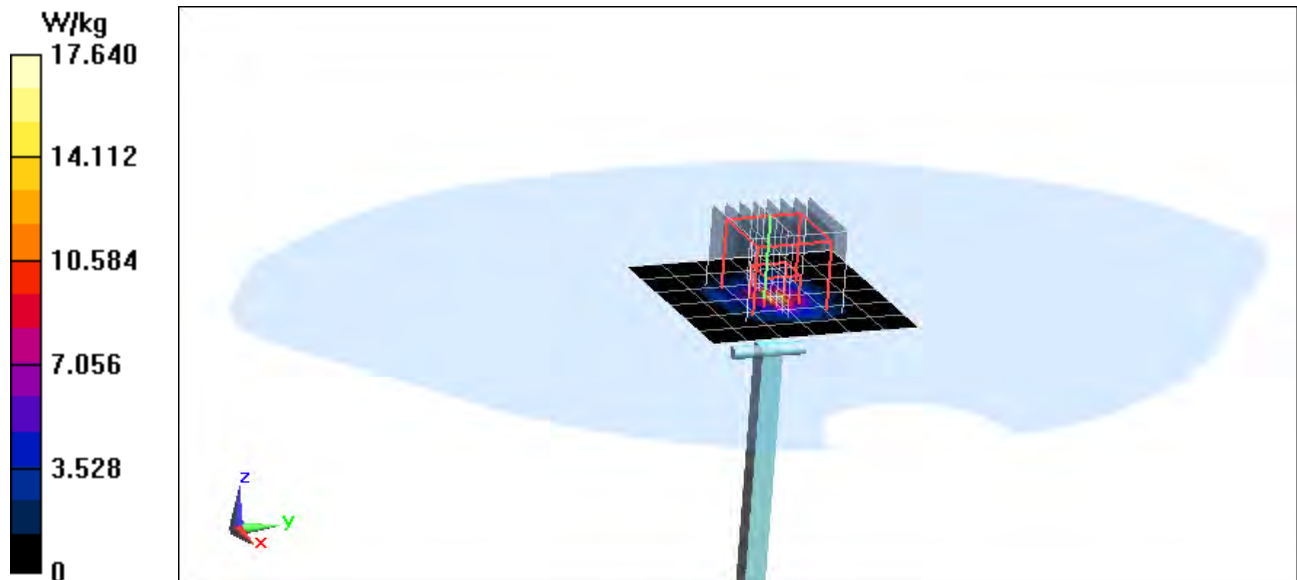
Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Power Input = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 32.3 W/kg

SAR(1 g) = 7.64 W/kg

Deviation(1 g) = -2.05%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5300 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5300 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head, Medium parameters used:

$f = 5300 \text{ MHz}$; $\sigma = 4.718 \text{ S/m}$; $\epsilon_r = 35.464$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-15-2014; Ambient Temp: 22.7°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN3914; ConvF(4.82, 4.82, 4.82); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 11/19/2013

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5300 MHz System Verification

Area Scan (7x8x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

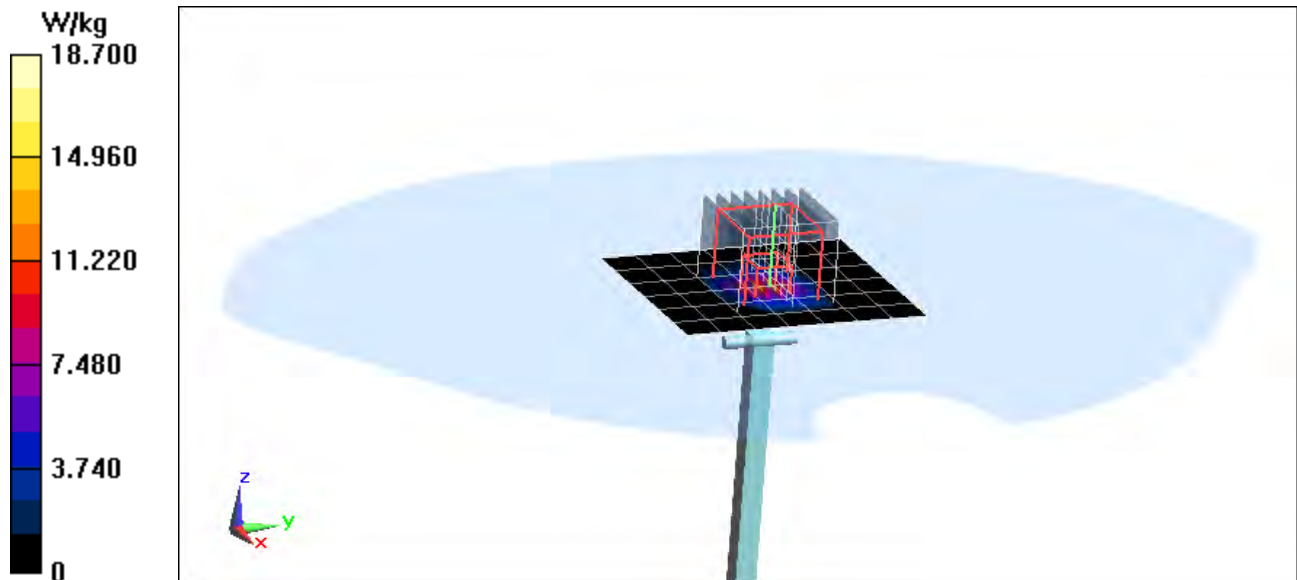
Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Power Input = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 34.8 W/kg

SAR(1 g) = 7.98 W/kg

Deviation(1 g) = -3.86%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head, Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 4.930 \text{ S/m}$; $\epsilon_r = 35.172$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-15-2014; Ambient Temp: 22.8°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN3914; ConvF(4.55, 4.55, 4.55); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 11/19/2013

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5500 MHz System Verification

Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

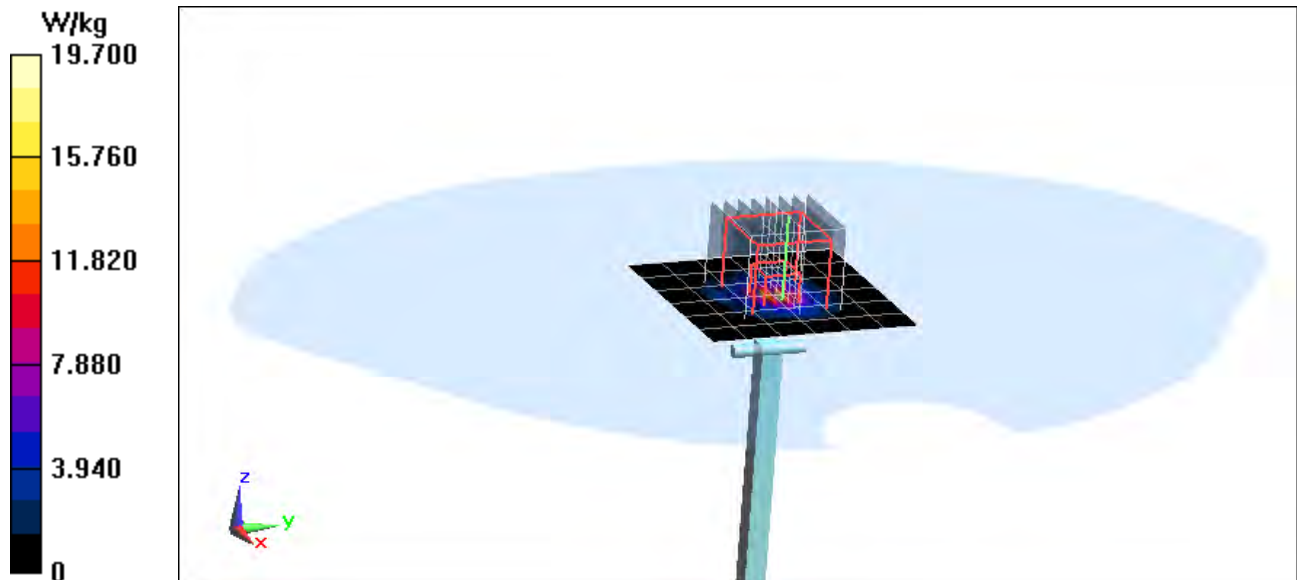
Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Power Input = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 36.5 W/kg

SAR(1 g) = 8.11 W/kg

Deviation(1 g) = -3.80%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5600 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head, Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 5.028 \text{ S/m}$; $\epsilon_r = 35.015$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-15-2014; Ambient Temp: 22.8°C; Tissue Temp: 22.2°C

Probe: EX3DV4 - SN3914; ConvF(4.37, 4.37, 4.37); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 11/19/2013

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5600 MHz System Verification

Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

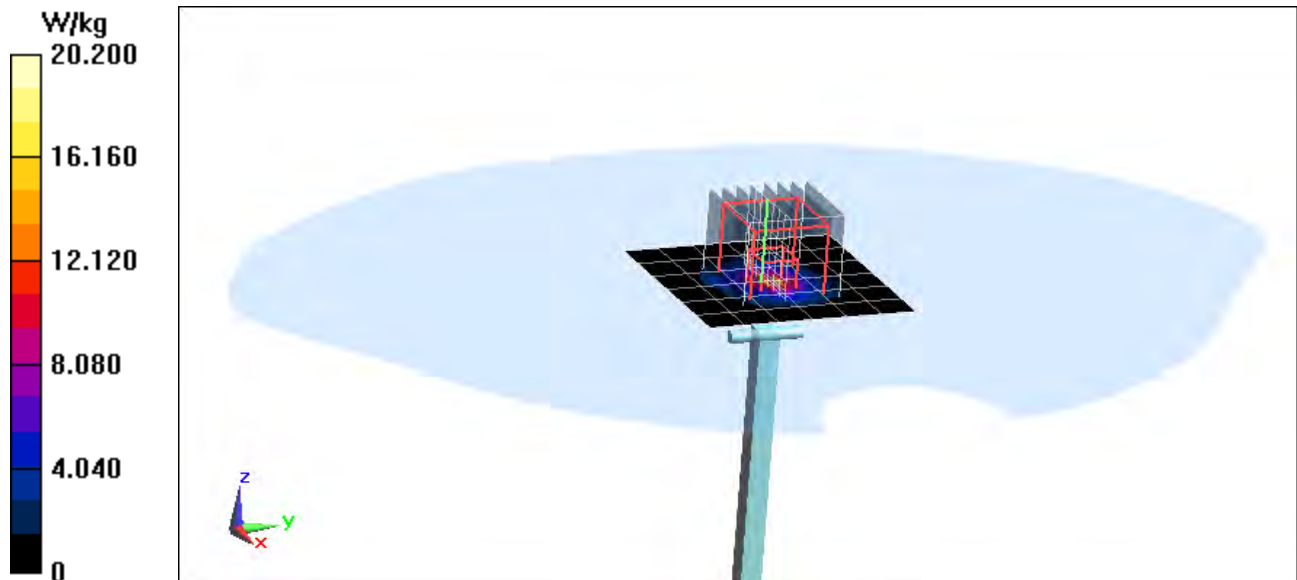
Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Power Input = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 37.6 W/kg

SAR(1 g) = 8.32 W/kg

Deviation(1 g) = -0.36%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head, Medium parameters used:

$f = 5800 \text{ MHz}$; $\sigma = 5.218 \text{ S/m}$; $\epsilon_r = 34.764$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-15-2014; Ambient Temp: 22.8°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN3914; ConvF(4.52, 4.52, 4.52); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 11/19/2013

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5800 MHz System Verification

Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

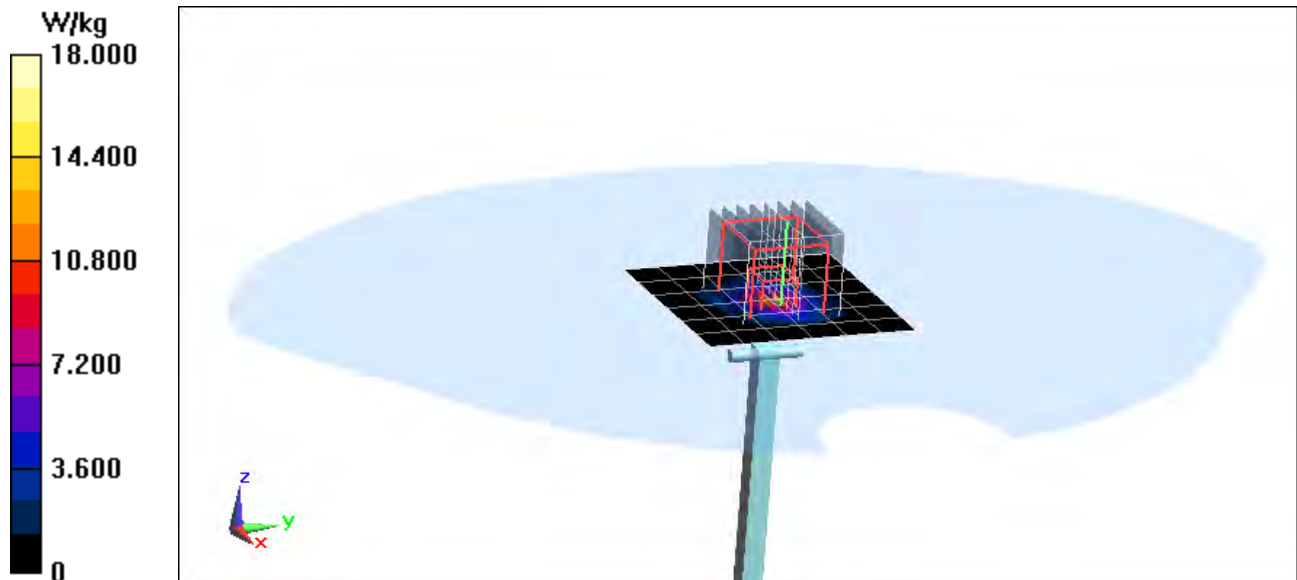
Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Power Input = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 34.9 W/kg

SAR(1 g) = 7.35 W/kg

Deviation(1 g) = -7.31%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1003

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.990 \text{ S/m}$; $\epsilon_r = 55.364$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-04-2014; Ambient Temp: 23.3°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3258; ConvF(6.15, 6.15, 6.15); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

750 MHz System Verification

Area Scan (7x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

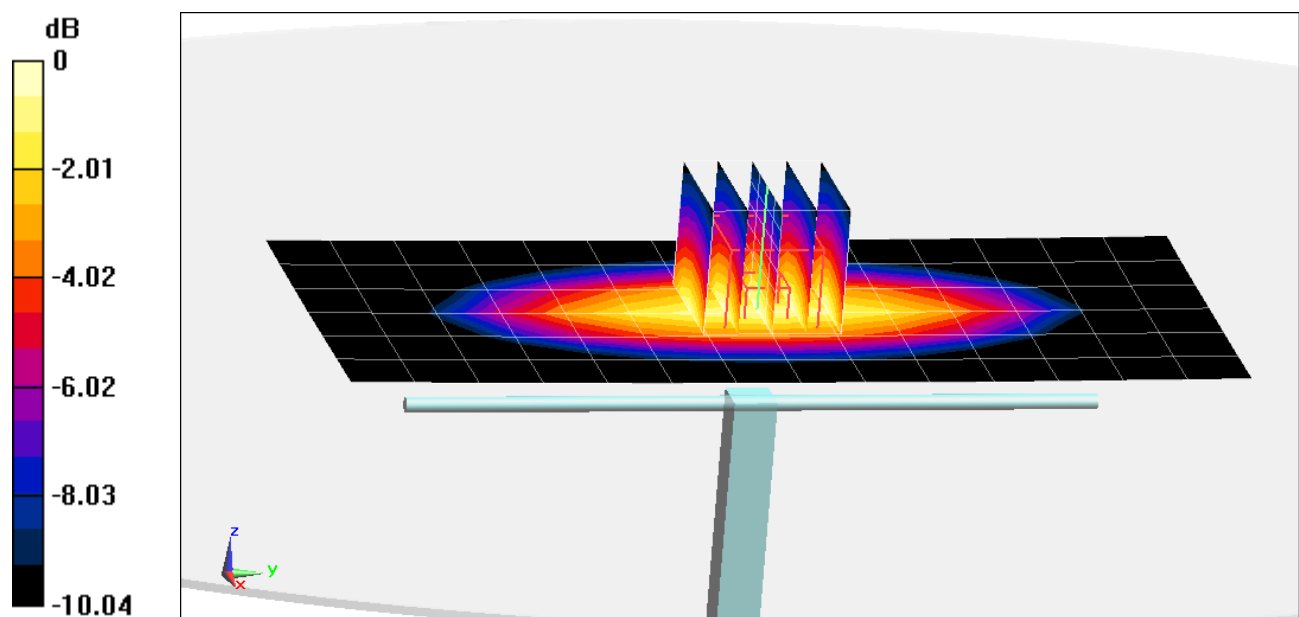
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Power Input = 20 dBm (100 mW)

Peak SAR (extrapolated) = 1.28 W/kg

SAR (1g) = 0.879 W/kg; SAR (10g) = 0.584 W/kg

Deviation (1g) = 0.23%; Deviation (10g) = 1.04%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 1.012 \text{ S/m}$; $\epsilon_r = 52.893$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-24-2014; Ambient Temp: 23.4°C; Tissue Temp: 22.5°C

Probe: ES3DV2 - SN3022; ConvF(5.98, 5.98, 5.98); Calibrated: 8/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/12/2014

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1226

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

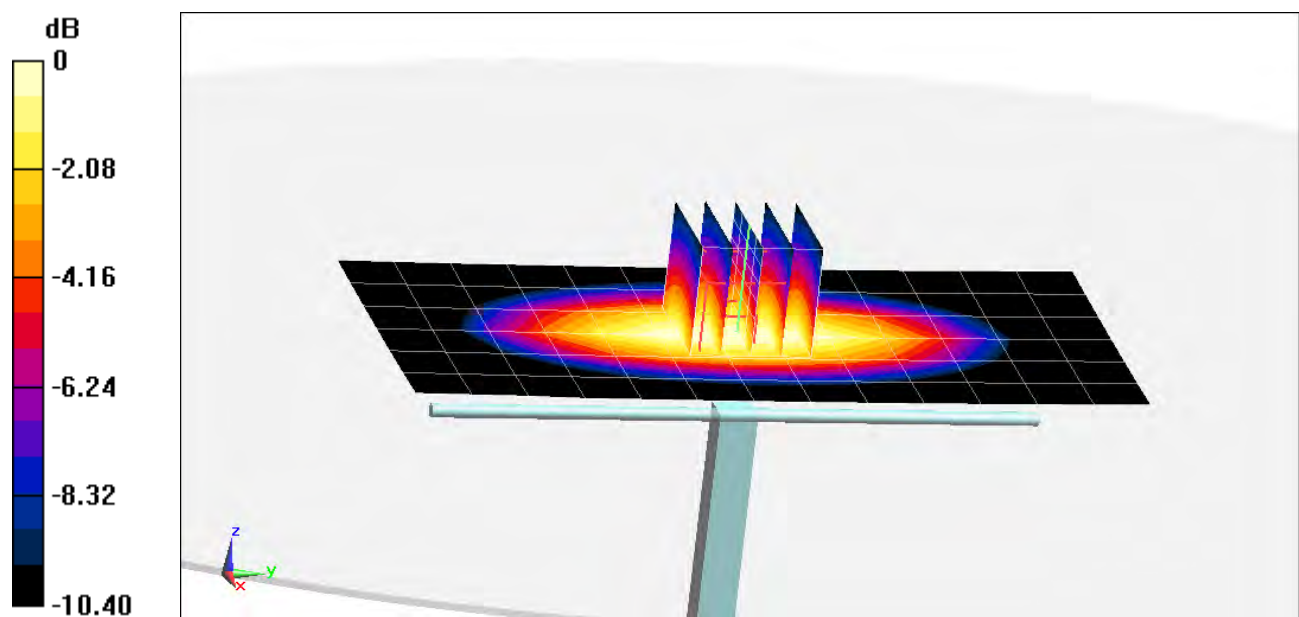
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Power Input = 20 dBm (100 mW)

Peak SAR (extrapolated) = 1.43 W/kg

SAR(1 g) = 0.978 W/kg

Deviation = 4.71%



0 dB = 1.14 W/kg = 0.57 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.985 \text{ S/m}$; $\epsilon_r = 54.302$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-01-2014; Ambient Temp: 23.4°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3209; ConvF(6.14, 6.14, 6.14); Calibrated: 3/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM front; Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

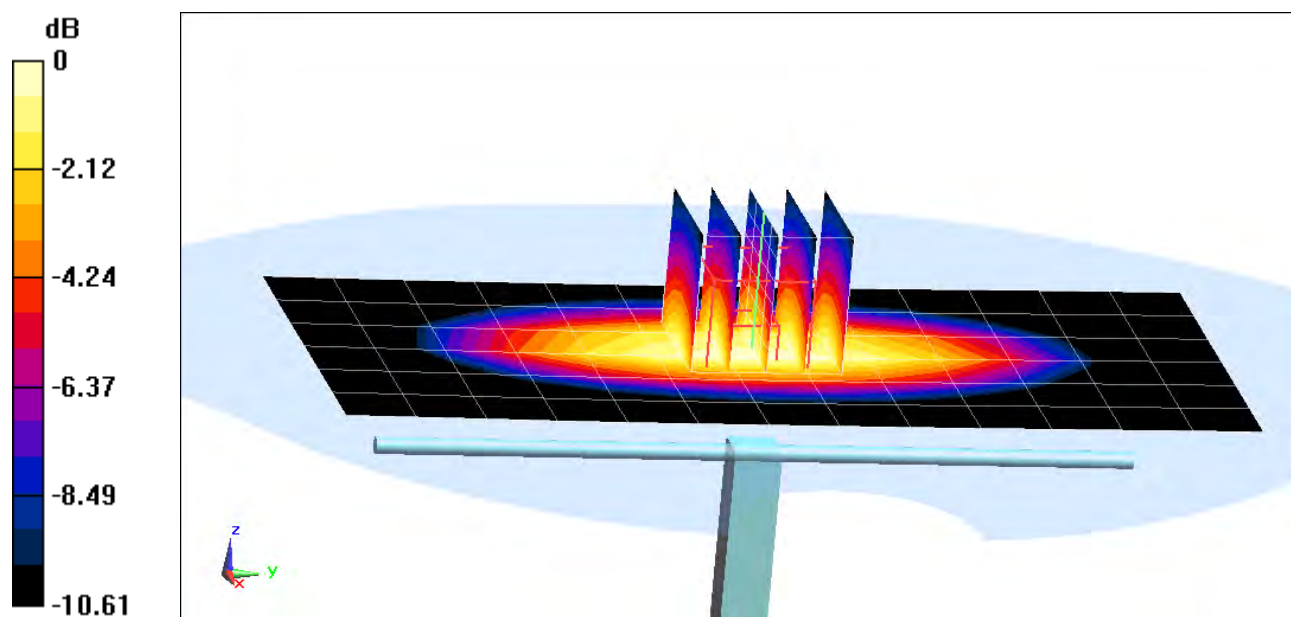
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Power Input = 20 dBm (100 mW)

Peak SAR (extrapolated) = 1.43 W/kg

SAR(10 g) = 0.619 W/kg

Deviation (10g) = 0.65%



0 dB = 1.11 W/kg = 0.45 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 1.000 \text{ S/m}$; $\epsilon_r = 53.180$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-03-2014; Ambient Temp: 23.1°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3288; ConvF(6.32, 6.32, 6.32); Calibrated: 9/24/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1364; Calibrated: 9/18/2014

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

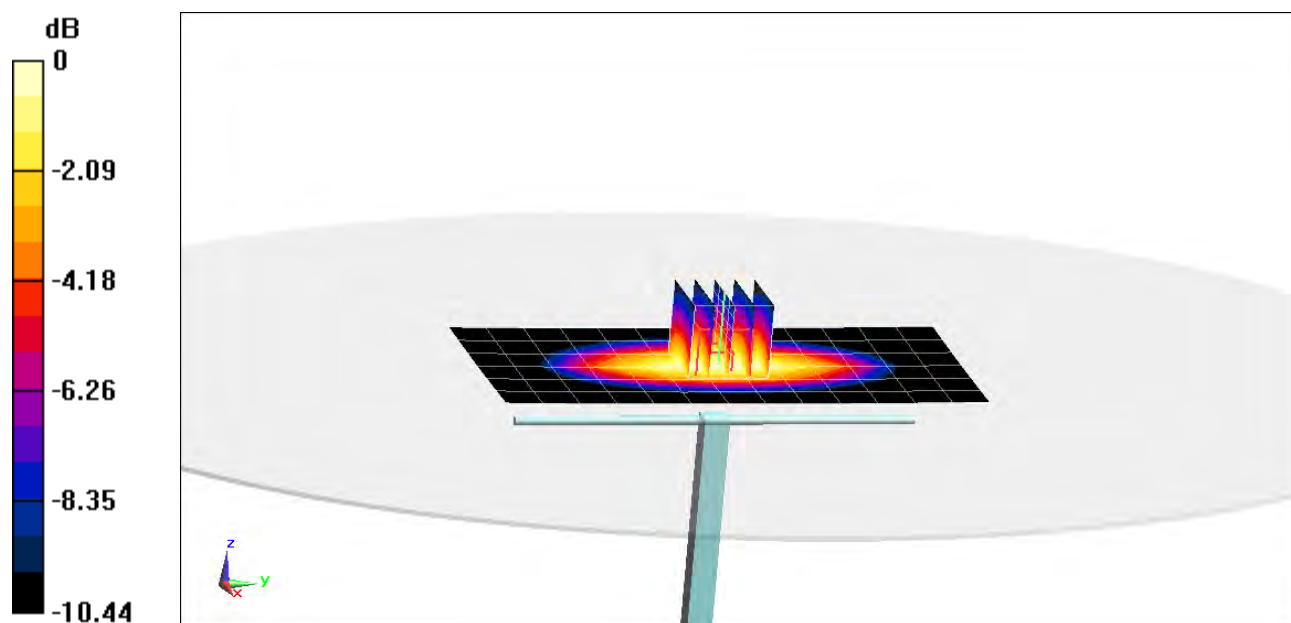
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Power Input = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 1.44 W/kg

SAR(10 g) = 0.664 W/kg

Deviation = 7.97%



0 dB = 1.15 W/kg = 0.61 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1765V2; Serial: 1008

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.465 \text{ S/m}$; $\epsilon_r = 51.775$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-01-2014; Ambient Temp: 23.1°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3288; ConvF(5.03, 5.03, 5.03); Calibrated: 9/24/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1364; Calibrated: 9/18/2014

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1750 MHz System Verification

Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

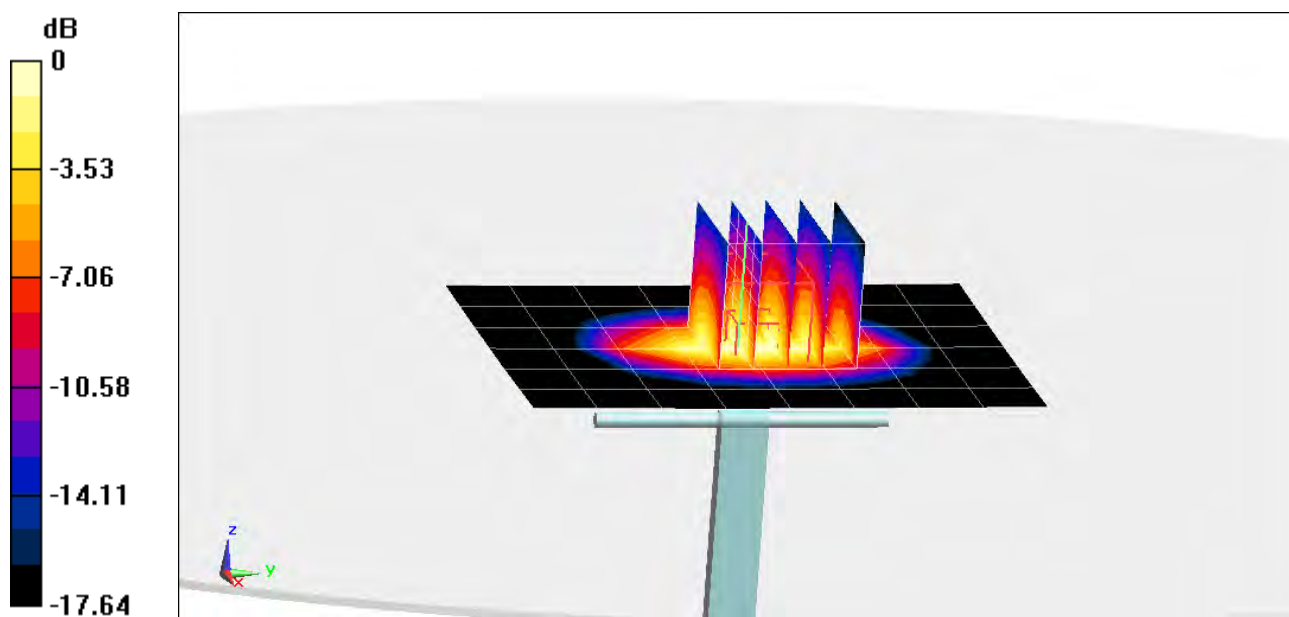
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Power Input = 20 dBm (100 mW)

Peak SAR (extrapolated) = 6.72 W/kg

SAR(1 g) = 3.83 W/kg; SAR(10 g) = 2.03 W/kg

Deviation (1g) = 1.86%; Deviation (10g) = 1.00%



0 dB = 4.74 W/kg = 6.76 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d141

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.499 \text{ S/m}$; $\epsilon_r = 52.132$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-28-2014; Ambient Temp: 21.1°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3319; ConvF(4.67, 4.67, 4.67); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/11/2014

Phantom: ELI left; Type: QDOVA002AA; Serial: TP:1202

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

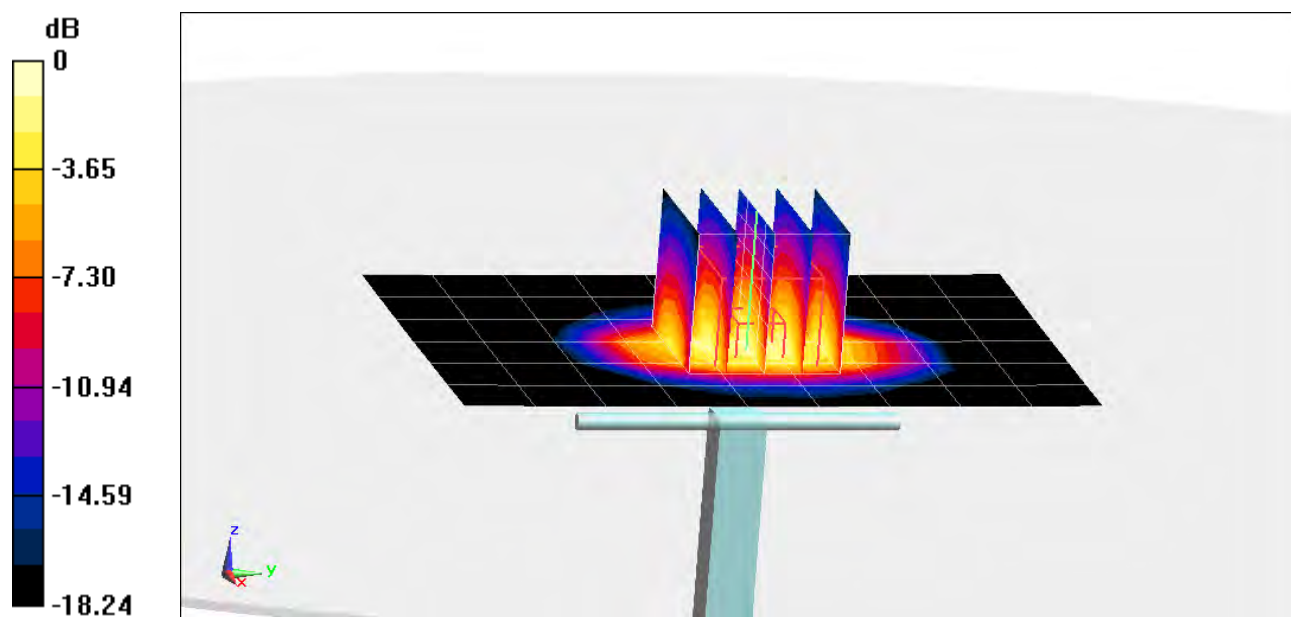
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Power Input = 20 dBm (100 mW)

Peak SAR (extrapolated) = 6.70 W/kg

SAR(1 g) = 3.77 W/kg

Deviation = -7.14%



0 dB = 4.76 W/kg = 6.78 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d141

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.583 \text{ S/m}$; $\epsilon_r = 51.945$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-01-2014; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3258; ConvF(4.61, 4.61, 4.61); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

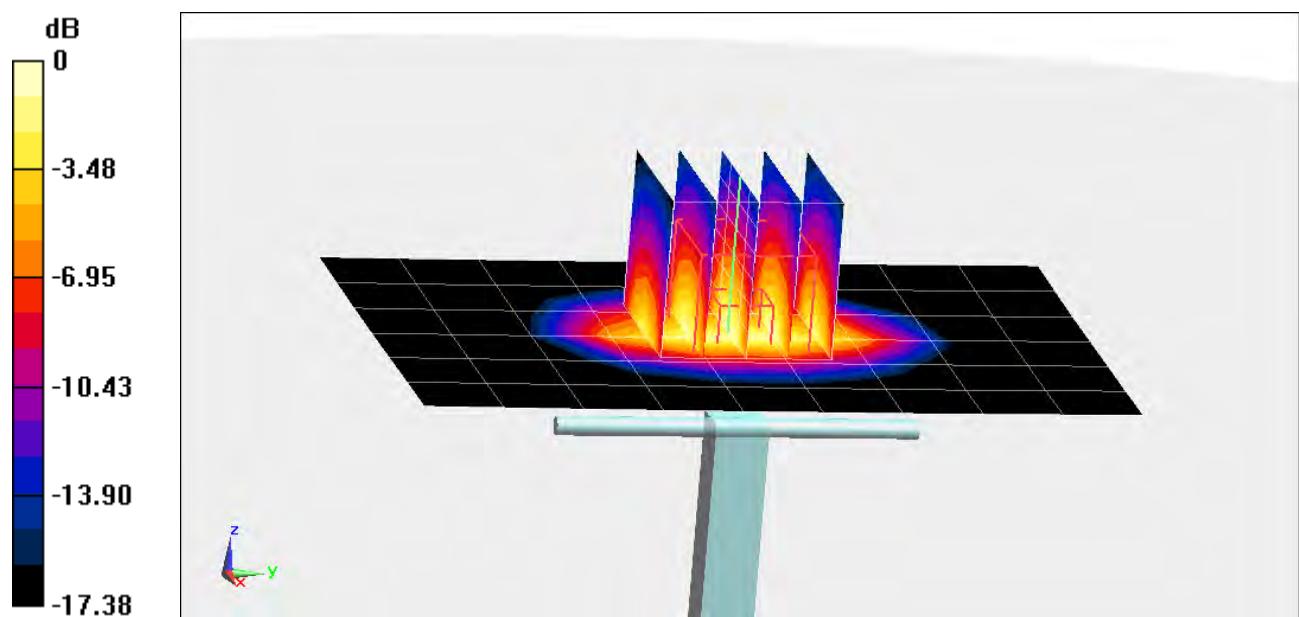
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Power Input = 20 dBm (100 mW)

Peak SAR (extrapolated) = 7.30 W/kg

SAR(1 g) = 4.23 W/kg; SAR(10 g) = 2.23 W/kg

Deviation (1g) = 4.19%; Deviation (10g) = 3.24%



0 dB = 5.30 W/kg = 7.24 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body, Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.966 \text{ S/m}$; $\epsilon_r = 50.772$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-09-2014; Ambient Temp: 22.2°C; Tissue Temp: 23.2°C

Probe: ES3DV3 - SN3258; ConvF(4.14, 4.14, 4.14); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2450 MHz System Verification

Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

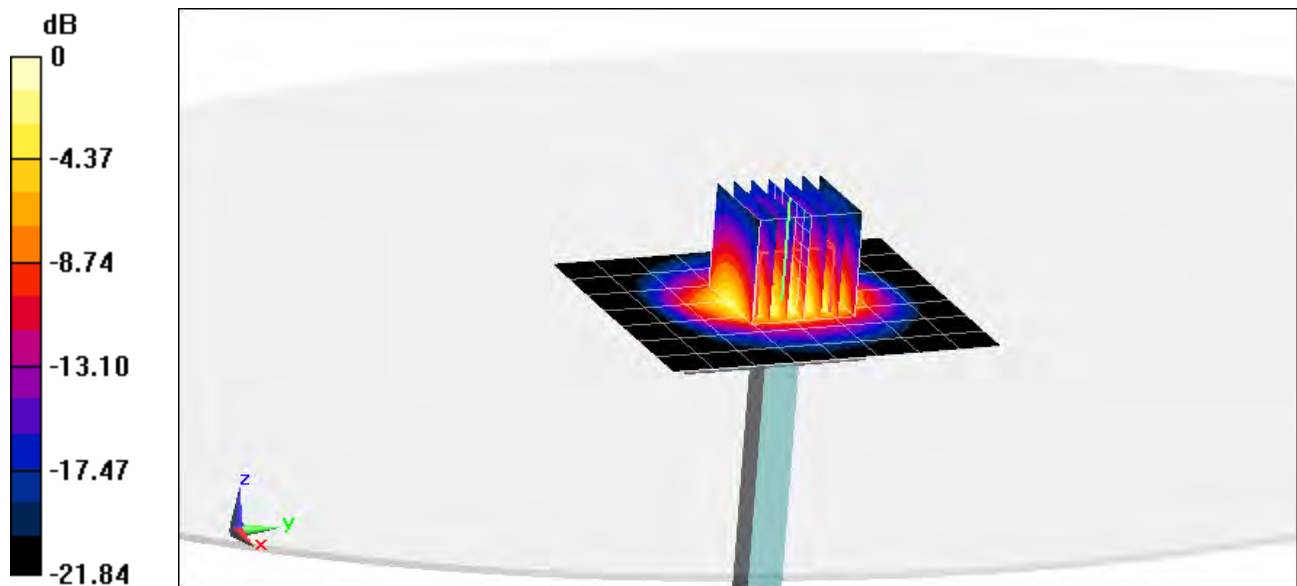
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Power Input = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 10.8 W/kg

SAR(1 g) = 5.13 W/kg

Deviation(1 g) = 3.85%



0 dB = 6.72 W/kg = 8.27 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 2450 MHz; Type: D2450V2; Serial: 882

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.956 \text{ S/m}$; $\epsilon_r = 51.649$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-14-2014; Ambient Temp: 23.1°C; Tissue Temp: 23.8°C

Probe: ES3DV3 - SN3318; ConvF(4.15, 4.15, 4.15); Calibrated: 3/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 6/19/2014

Phantom: Main Twin Sam; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2450 MHz System Verification

Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

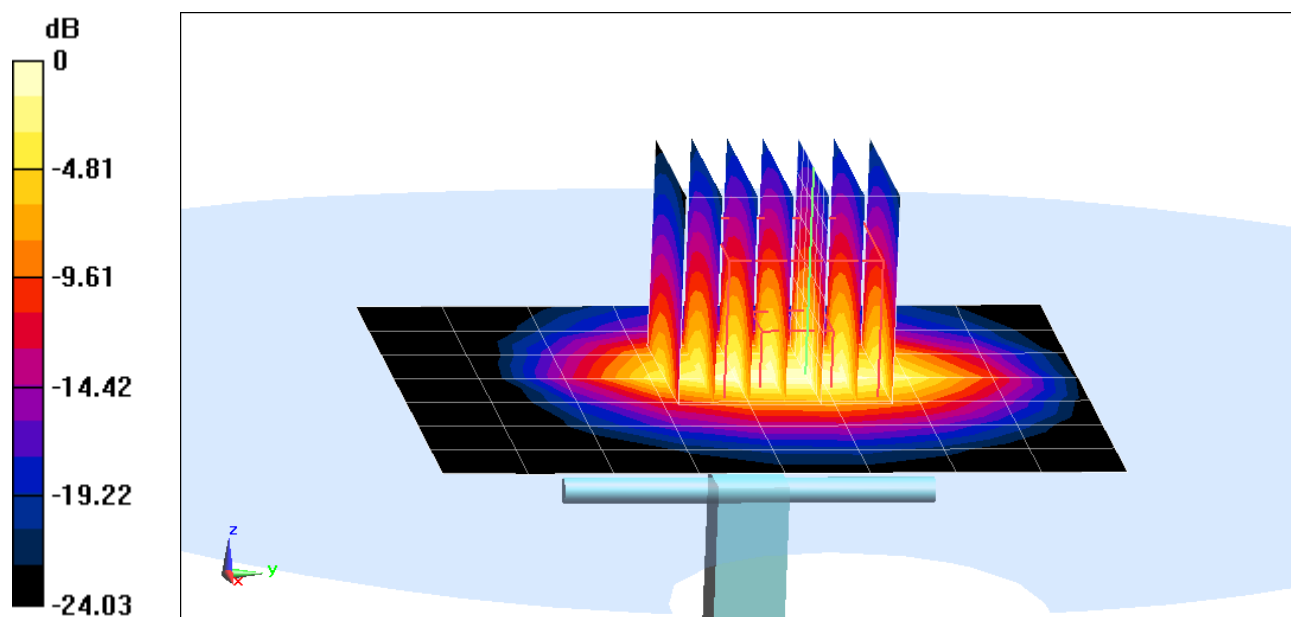
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Power Input = 20 dBm (100 mW)

Peak SAR (extrapolated) = 12.1 W/kg

SAR(10 g) = 2.20 W/kg

Deviation = -4.76%



0 dB = 7.83 W/kg = 8.94 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 2.027 \text{ S/m}$; $\epsilon_r = 53.326$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-04-2014; Ambient Temp: 24.5°C; Tissue Temp: 24.0°C

Probe: ES3DV3 - SN3319; ConvF(4.24, 4.24, 4.24); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/11/2014

Phantom: SAM; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2450 MHz System Verification

Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

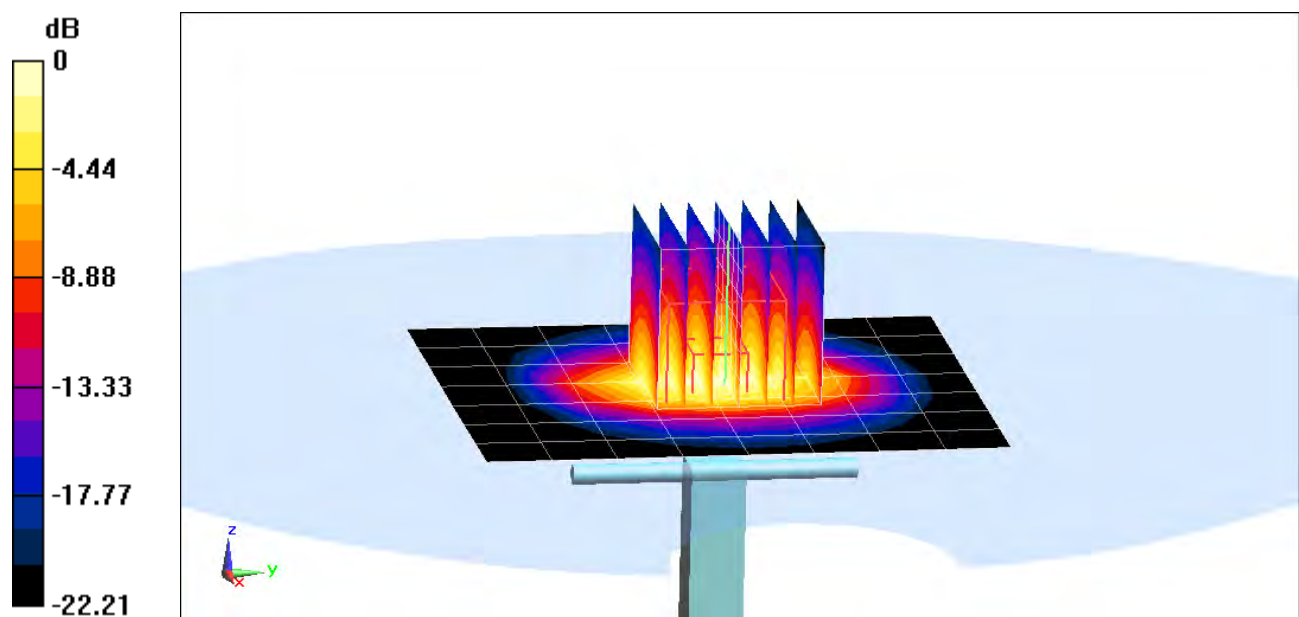
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Power Input = 20 dBm (100 mW)

Peak SAR (extrapolated) = 10.2 W/kg

SAR(10 g) = 2.19 W/kg

Deviation = -5.19%



0 dB = 6.27 W/kg = 7.97 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5200 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5200 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5200 \text{ MHz}$; $\sigma = 5.137 \text{ S/m}$; $\epsilon_r = 48.028$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-09-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.2°C

Probe: EX3DV4 - SN3589; ConvF(4.19, 4.19, 4.19); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5200 MHz System Verification

Area Scan (7x8x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

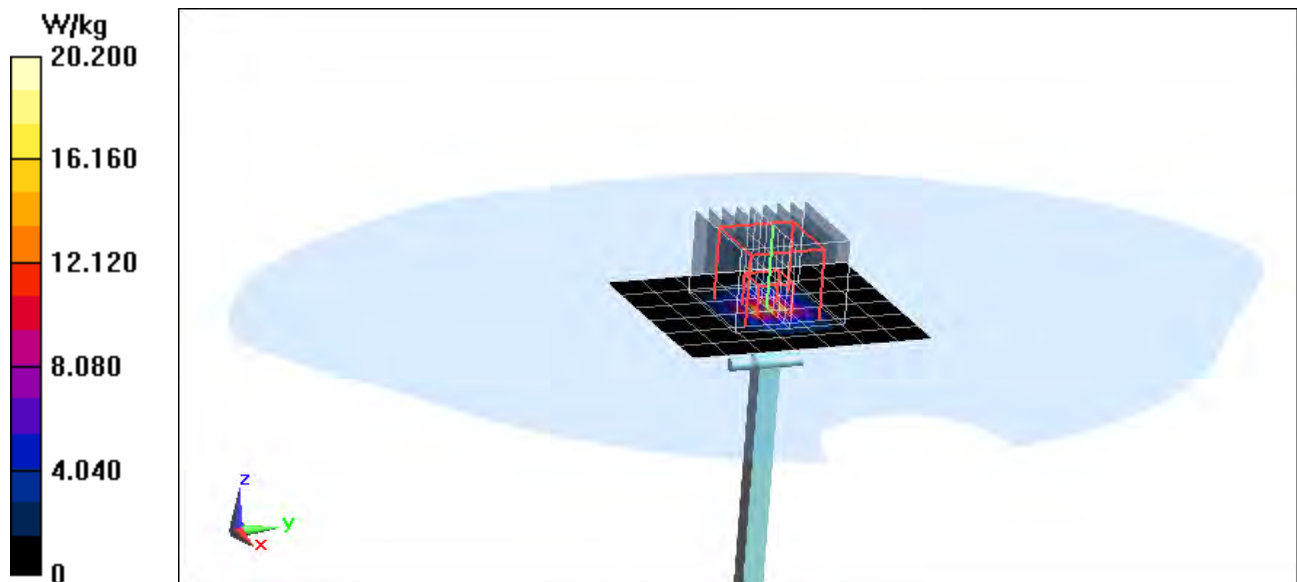
Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Power Input = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 33.6 W/kg

SAR(1 g) = 7.96 W/kg; SAR(10 g) = 2.24 W/kg

Deviation(1 g) = 5.71%; Deviation(10 g) = 6.67%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5300 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5300 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5300 \text{ MHz}$; $\sigma = 5.288 \text{ S/m}$; $\epsilon_r = 47.796$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-09-2014; Ambient Temp: 24.2°C; Tissue Temp: 23.3°C

Probe: EX3DV4 - SN3589; ConvF(3.98, 3.98, 3.98); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5300 MHz System Verification

Area Scan (7x8x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

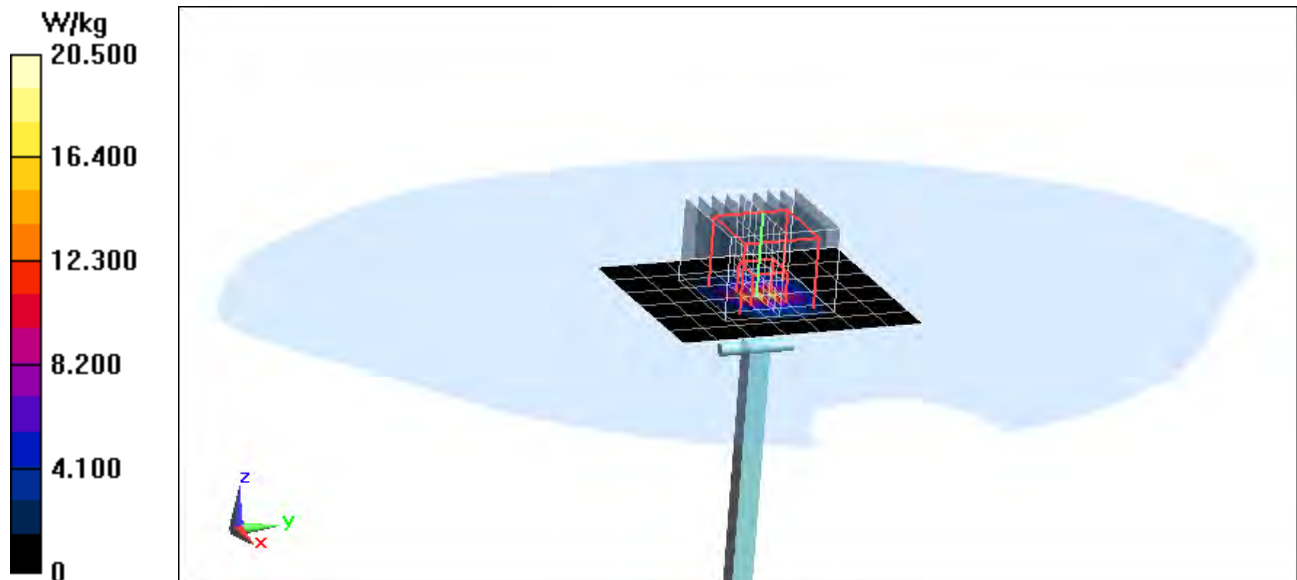
Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Power Input = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 35.8 W/kg

SAR(1 g) = 8.13 W/kg; SAR(10 g) = 2.27 W/kg

Deviation(1 g) = 5.04%; Deviation(10 g) = 5.58%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 5.585 \text{ S/m}$; $\epsilon_r = 47.304$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-09-2014; Ambient Temp: 24.2°C; Tissue Temp: 23.4°C

Probe: EX3DV4 - SN3589; ConvF(3.76, 3.76, 3.76); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5500 MHz System Verification

Area Scan (7x8x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

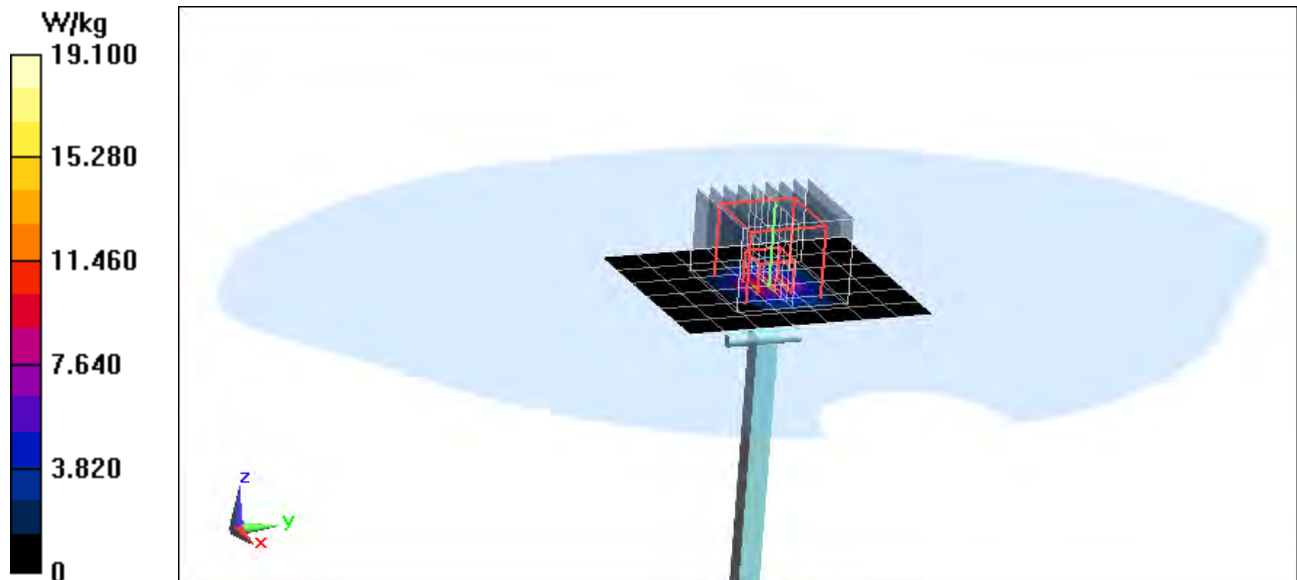
Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Power Input = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 33.2 W/kg

SAR(1 g) = 7.39 W/kg; SAR(10 g) = 2.06 W/kg

Deviation(1 g) = -6.57%; Deviation(10 g) = -6.36%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5600 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 5.743 \text{ S/m}$; $\epsilon_r = 47.072$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-09-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.3°C

Probe: EX3DV4 - SN3589; ConvF(3.81, 3.81, 3.81); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5600 MHz System Verification

Area Scan (7x8x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

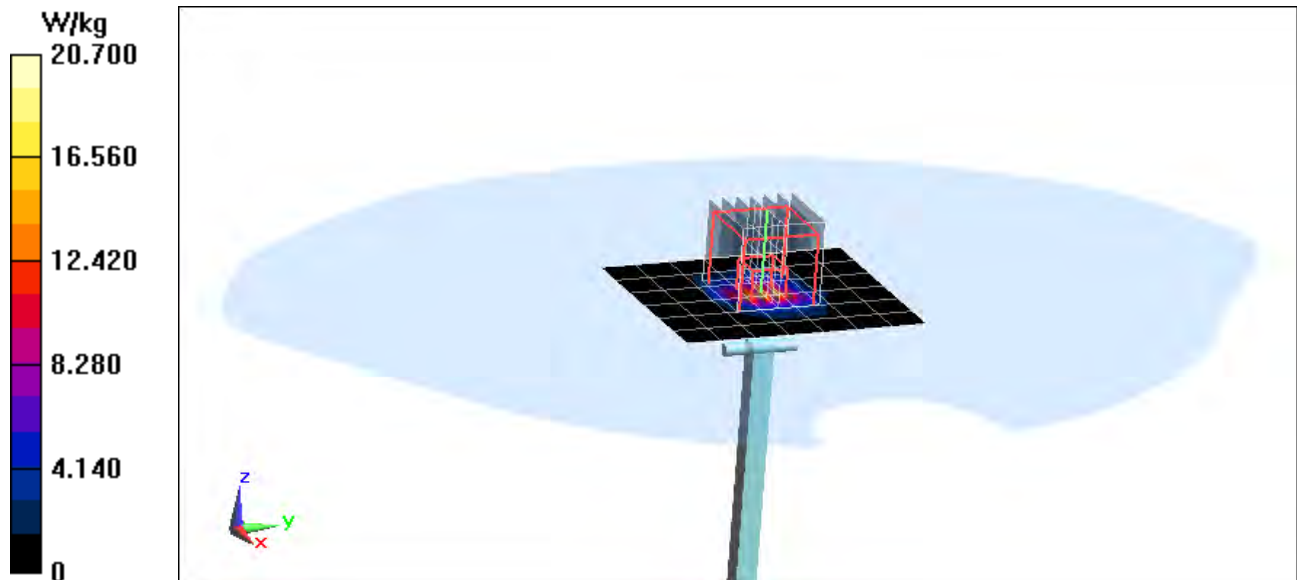
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Power Input = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 38.8 W/kg

SAR(1 g) = 7.71 W/kg; SAR(10 g) = 2.14 W/kg

Deviation(1 g) = -3.87%; Deviation(10 g) = -3.60%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5800 \text{ MHz}$; $\sigma = 6.026 \text{ S/m}$; $\epsilon_r = 46.631$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-09-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.3°C

Probe: EX3DV4 - SN3589; ConvF(3.97, 3.97, 3.97); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5800 MHz System Verification

Area Scan (7x8x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Power Input = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 34.5 W/kg

SAR (1g) = 7.11 W/kg; SAR (10g) = 1.96 W/kg

Deviation(1g) = -4.31%; Deviation (10g) = -3.92%

