



SAR EVALUATION REPORT

Applicant Name:

Samsung Electronics, Co. Ltd.
129, Samsung-ro, Maetan dong,
Yeongtong-gu, Suwon-si
Gyeonggi-do 443-742, Korea

Date of Testing:

02/03/14 - 02/26/14

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Document Serial No.:

OY1402030252.A3L

FCC ID:

A3LSMG900V

APPLICANT:

SAMSUNG ELECTRONICS, CO. LTD.

DUT Type:

Portable Handset

Application Type:

Certification

FCC Rule Part(s):

CFR §2.1093

Model(s):

SM-G900V

Equipment Class	Band & Mode	Tx Frequency	SAR		
			1 gm Head (W/kg)	1 gm Body-Worn (W/kg)	1 gm Hotspot (W/kg)
PCE	Cell. CDMA/EVDO	824.70 - 848.31 MHz	0.39	0.50	0.59
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	1.07	0.36	0.78
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.38	0.53	0.73
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	0.31	0.31	0.96
PCE	UMTS 850	826.40 - 846.60 MHz	0.33	0.36	0.66
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.59	0.41	0.89
PCE	LTE Band 13	782 MHz	0.35	0.34	0.42
PCE	LTE Band 4 (AWS)	1712.5 - 1752.5 MHz	0.71	0.54	0.86
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.19	0.26	0.26
DTS	5.8 GHz WLAN	5745 - 5825 MHz	0.17	0.33	0.33
NII	5.2 GHz WLAN	5180 - 5240 MHz	< 0.1	0.24	
NII	5.3 GHz WLAN	5260 - 5320 MHz	< 0.1	0.23	
NII	5.5 GHz WLAN	5500 - 5700 MHz	0.22	0.35	
DSS/DTS	Bluetooth	2402 - 2480 MHz	N/A		
Simultaneous SAR per KDB 690783 D01v01r02:			1.47		

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.

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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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
Cell. CDMA/EVDO	Voice/Data	824.70 - 848.31 MHz
PCS CDMA/EVDO	Voice/Data	1851.25 - 1908.75 MHz
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 13	Data	782 MHz
LTE Band 4 (AWS)	Data	1712.5 - 1752.5 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 using an independent single fixed level of reduction through a static table look-up, triggered by a single event/operation for the following modes:

1.2.1 LTE

- Power is reduced when simultaneously transmitting with 1x-RTT CDMA Voice in certain SVLTE conditions

1.2.2 CDMA2000

- Power is reduced when Hotspot is ON

1.2.3 WI-FI

- Power is reduced for all held-to-ear exposure conditions

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1.3 RF Output Target 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 GSM/UMTS Maximum Output Power

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
GSM/GPRS/EDGE 850	Maximum	33.5	33.5	31.5	30.0	28.5	27.5	27.5	23.5	22.5
	Nominal	33.0	33.0	31.0	29.5	28.0	27.0	27.0	23.0	22.0
GSM/GPRS/EDGE 1900	Maximum	30.5	30.5	29.0	27.5	26.0	26.5	26.5	21.5	20.5
	Nominal	30.0	30.0	28.5	27.0	25.5	26.0	26.0	21.0	20.0

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

1.3.2 LTE Maximum Output Power

Mode / Band		Modulated Average (dBm)
LTE Band 13	Maximum	23.5
	Nominal	23.0
LTE Band 4 (AWS)	Maximum	23.5
	Nominal	23.0

Mode / Band			Modulated Average (dBm)
LTE Band 13	CDMA Power $\geq$ Threshold Power	Maximum	19.5
		Nominal	19.0
LTE Band 4 (AWS)	CDMA Power $\geq$ Threshold Power	Maximum	19.5
		Nominal	19.0

(Only applies in SVLTE conditions where the 1x-RTT CDMA voice power is 18 dBm or greater)

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1.3.3 CDMA2000 Maximum Output Power

Mode / Band		Modulated Average (dBm)
Cell. CDMA/EVDO	Maximum	25.0
	Nominal	24.5
PCS CDMA/EVDO	Maximum	25.0
	Nominal	24.5

Mode / Band		Modulated Average (dBm)
PCS CDMA/EVDO	Maximum	23.0
	Nominal	22.5

(Only when Hotspot is ON)

1.3.4 Wi-Fi Maximum Output Power

Mode / Band		Modulated Average (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	17.5
	Nominal	17.0
IEEE 802.11g (2.4 GHz)	Maximum	14.5
	Nominal	14.0
IEEE 802.11n (2.4 GHz)	Maximum	14.0
	Nominal	13.5
IEEE 802.11a (5 GHz)	Maximum	14.0
	Nominal	13.5
IEEE 802.11n (5 GHz 20MHz BW)	Maximum	13.5
	Nominal	13.0
IEEE 802.11n (5 GHz 40MHz BW)	Maximum	12.5
	Nominal	12.0
IEEE 802.11ac (5 GHz)	Maximum	11.5
	Nominal	11.0
Bluetooth	Maximum	10.0
	Nominal	9.5
Bluetooth LE	Maximum	8.5
	Nominal	8.0

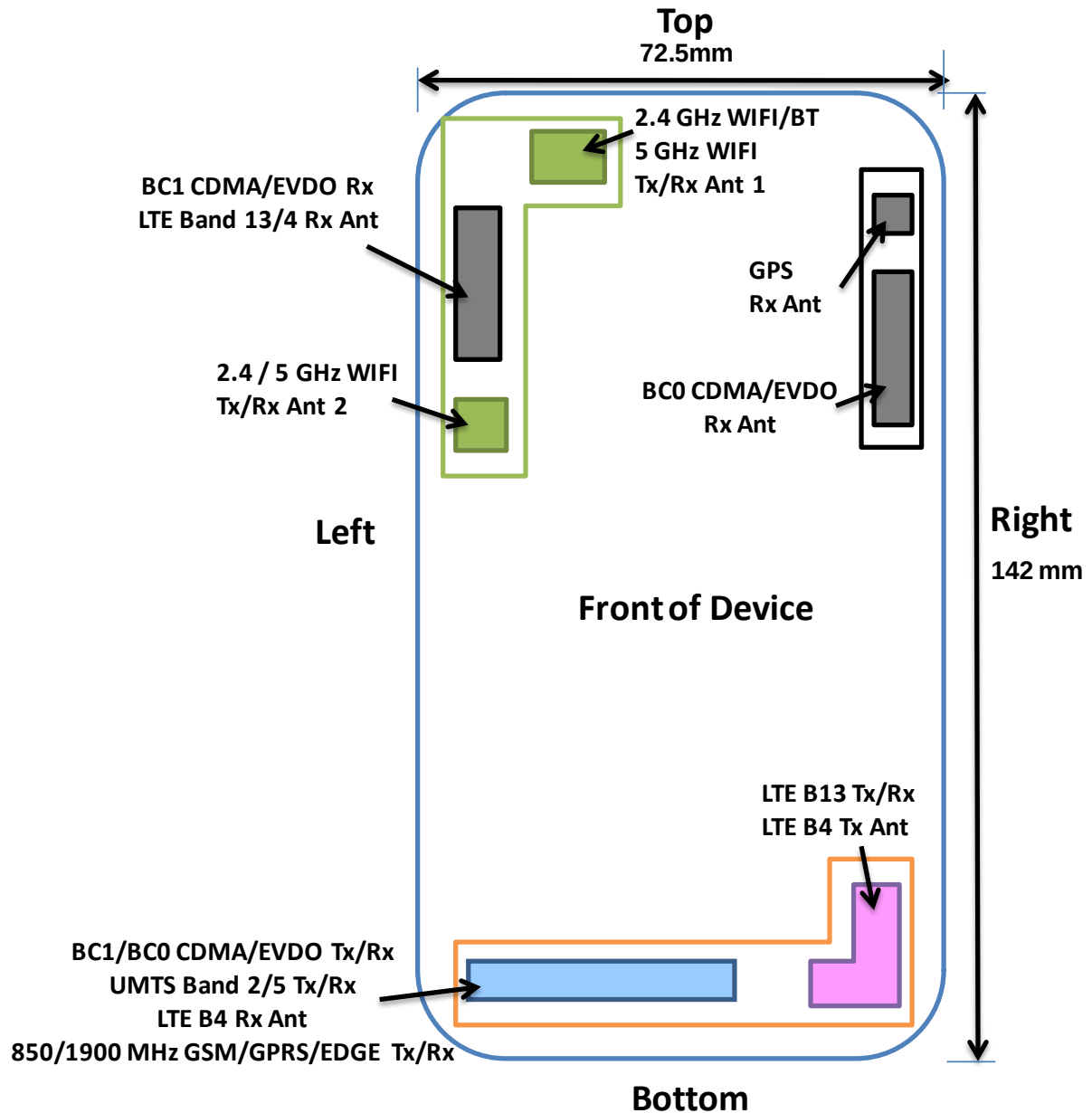
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1.3.5 Wi-Fi Maximum Output Power (Held-to-Ear Only)

Mode / Band		Modulated Average (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	12.5
	Nominal	12.0
IEEE 802.11g (2.4 GHz)	Maximum	12.5
	Nominal	12.0
IEEE 802.11n (2.4 GHz)	Maximum	12.5
	Nominal	12.0
IEEE 802.11a (5 GHz)	Maximum	7.5
	Nominal	7.0
IEEE 802.11n (5 GHz 20MHz BW)	Maximum	7.5
	Nominal	7.0
IEEE 802.11n (5 GHz 40MHz BW)	Maximum	7.5
	Nominal	7.0
IEEE 802.11ac (5 GHz 80MHz BW)	Maximum	7.5
	Nominal	7.0

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1.4 DUT Antenna Locations



Note: Exact antenna dimensions and separation distances are shown in the Technical Descriptions in the FCC Filing.

Figure 1-1
DUT Antenna Locations

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Table 1-1
Mobile Hotspot Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
Cell. EVDO/CDMA	Yes	Yes	No	Yes	No	Yes
PCS EVDO/CDMA	Yes	Yes	No	Yes	No	Yes
GPRS 850	Yes	Yes	No	Yes	No	Yes
GPRS 1900	Yes	Yes	No	Yes	No	Yes
UMTS 850	Yes	Yes	No	Yes	No	Yes
UMTS 1900	Yes	Yes	No	Yes	No	Yes
LTE Band 13	Yes	Yes	No	Yes	Yes	No
LTE Band 4 (AWS)	Yes	Yes	No	Yes	Yes	No
2.4 GHz WLAN	Yes	Yes	Yes	No	No	Yes
5.8 GHz WLAN	Yes	Yes	Yes	No	No	Yes

Note: Particular DUT edges were not required to be evaluated for Wireless Router SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v01 guidance, page 2. The antenna document shows the distances between the transmit antennas and the edges of the device. Mobile hotspot for 5.2 GHz - 5.7 GHz WIFI is not supported and therefore is not considered in this section.

1.5 Near Field Communications (NFC) Antenna

This DUT has NFC operations. The NFC antenna is integrated into the battery. The SAR tests were performed with the standard battery (Model: **EB-BG900BBZ**).

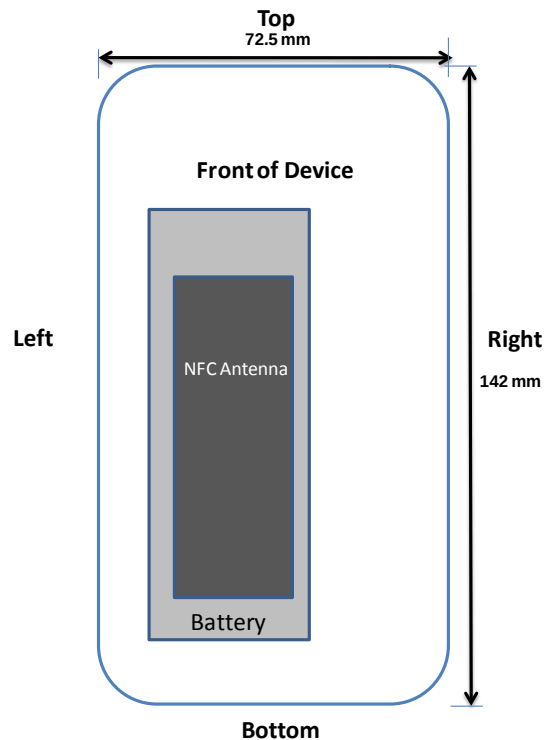


Figure 1-2
NFC Antenna Locations

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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 1-3 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. This device supports MIMO Tx for IEEE 802.11n/ac. Each WI-FI antenna can transmit independently or together when operating in MIMO mode.



Figure 1-3
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	Notes
1	1x CDMA voice + 2.4 GHz WI-FI	Yes	Yes	N/A	
2	1x CDMA voice + 5 GHz WI-FI	Yes	Yes	N/A	
3	1x CDMA voice + 2.4 GHz Bluetooth	N/A	Yes	N/A	
4	GSM voice + 2.4 GHz WI-FI	Yes	Yes	N/A	
5	GSM voice + 5 GHz WI-FI	Yes	Yes	N/A	
6	GSM voice + 2.4 GHz Bluetooth	N/A	Yes	N/A	
7	UMTS + 2.4 GHz WI-FI	Yes	Yes	Yes	
8	UMTS + 5 GHz WI-FI	Yes	Yes	Yes	
9	UMTS + 2.4 GHz Bluetooth	N/A	Yes	N/A	
10	LTE + 2.4 GHz WI-FI	Yes*	Yes*	Yes	*-Pre-installed VOIP applications are considered.
11	LTE + 5 GHz WI-FI	Yes*	Yes*	Yes	*-Pre-installed VOIP applications are considered.
12	LTE + 2.4 GHz Bluetooth	N/A	Yes*	N/A	*-Pre-installed VOIP applications are considered.
13	CDMA/EVDO data + 2.4 GHz WI-FI	Yes*	Yes*	Yes	*-Pre-installed VOIP applications are considered.
14	CDMA/EVDO data + 5 GHz WI-FI	Yes*	Yes*	Yes	*-Pre-installed VOIP applications are considered.
15	CDMA/EVDO data + 2.4 GHz Bluetooth	N/A	Yes*	N/A	*-Pre-installed VOIP applications are considered.
16	GPRS/EDGE + 2.4 GHz WI-FI	N/A	N/A	Yes	
17	GPRS/EDGE + 5 GHz WI-FI	N/A	N/A	Yes	
18	1x CDMA voice + LTE	Yes	Yes	N/A	SVLTE
19	1x CDMA voice + LTE + 2.4 GHz WI-FI	Yes	Yes	Yes	SVLTE
20	1x CDMA voice + LTE + 5 GHz WI-FI	Yes	Yes	Yes	SVLTE
21	1x CDMA voice + LTE + 2.4 GHz Bluetooth	N/A	Yes	N/A	SVLTE
22	1x CDMA voice + CDMA/EVDO data	N/A	N/A	N/A	Not supported by HW
23	CDMA/EVDO data + LTE	N/A	N/A	N/A	Not supported by SW
24	1x CDMA Voice + GSM/UMTS	N/A	N/A	N/A	Not supported by SW

Note:

1. 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.

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2. 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.
3. This device supports 2x2 MIMO Tx for IEEE 802.11n/ac. Each WLAN antenna can transmit independently or together when operating in MIMO mode.
4. GSM/GPRS, UMTS, and LTE share the same antenna and cannot transmit simultaneously.
5. 5 GHz Wireless Router is only supported for the 5.8 GHz Band, therefore all other 5 GHz NII Bands were not evaluated for Wireless Router exposure conditions.

1.7 Wireless Charging 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 highest reported SAR for each wireless technology, frequency band, operating mode, and exposure condition. No additional testing with wireless charging cover was required since all the reported SAR was less than 1.2 W/kg.

1.8 SAR Test Exclusions Applied

(A) WIFI/BT

Since Wireless Router operations are not allowed by the chipset firmware using 5 GHz NII 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.

Per FCC KDB 447498 D01v05, the 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, Bluetooth SAR was not required; $[(10/10) * \sqrt{2.441}] = 1.6 < 3.0$. Per KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mW before calculation.

This device supports up to 20 MHz BW for IEEE 802.11n for 2.4 GHz WIFI.

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 outputs
- d) 256 QAM is supported
- e) No new 5 GHz channels

(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 D01v02.

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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.

1.9 Guidance Applied

- IEEE 1528-2003
- FCC KDB Publication 941225 D01-D06 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v01r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v05 (General SAR Guidance)
- FCC KDB Publication 865664 D01-D02 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D03-D04 (Wireless Charging Cover)
- April 2013 TCB Workshop Notes (IEEE 802.11ac)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)

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.

Mode/Band	Head Serial Number	Body-Worn Serial Number	Hotspot Serial Number
GSM/GPRS/EDGE 850	32723	32723	32723
GSM/GPRS/EDGE 1900	32723	32723	32723
UMTS 850	32723	32723	32723
UMTS 1900	3271D	3271D	3271D
2.4 GHz WLAN (Ant1,Ant2,MIMO)	328C6	00F05	00F05
5 GHz WLAN (Ant1)	31F35	32712	32712
5 GHz WLAN (Ant2)	31F35	15ECE	15ECE
5 GHz WLAN (MIMO)	31F35	15ECE	15ECE

Mode/Band	Target Power	Serial Number
Cell. CDMA/EVDO	24.5 dBm	32723
	18 dBm	32732
PCS CDMA/EVDO	24.5 dBm	3272C
	22.5 dBm	3271E
	18 dBm	32732
LTE Band 13	23 dBm	32725
	19 dBm	32722
LTE Band 4 (AWS)	23 dBm	32725
	19 dBm	32722

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2 LTE INFORMATION

LTE Information			
FCC ID	A3LSMG900V		
Form Factor	Portable Handset		
Frequency Range of each LTE transmission band	LTE Band 13 (782 MHz)		
	LTE Band 4 (AWS) (1712.5 - 1752.5 MHz)		
Channel Bandwidths	LTE Band 13: 10 MHz		
	LTE Band 4 (AWS): 5 MHz, 10 MHz, 15 MHz, 20 MHz		
Channel Numbers and Frequencies (MHz)	Low	Mid	High
LTE Band 13: 10 MHz	782 (23230)	782 (23230)	782 (23230)
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)
UE Category	3		
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		

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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/m^3)
- 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]

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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 also 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.

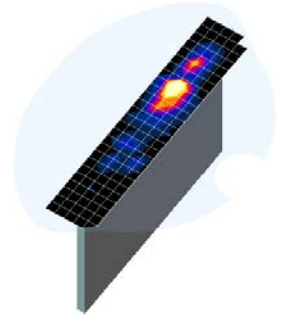


Figure 4-1
Sample SAR Area Scan

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

Frequency	Maximum Area Scan Resolution (mm) (Δx_{area} , Δy_{area})	Maximum Zoom Scan Resolution (mm) (Δx_{zoom} , Δy_{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

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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].

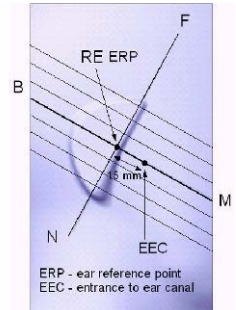


Figure 5-1
Close-Up Side view
of ERP

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

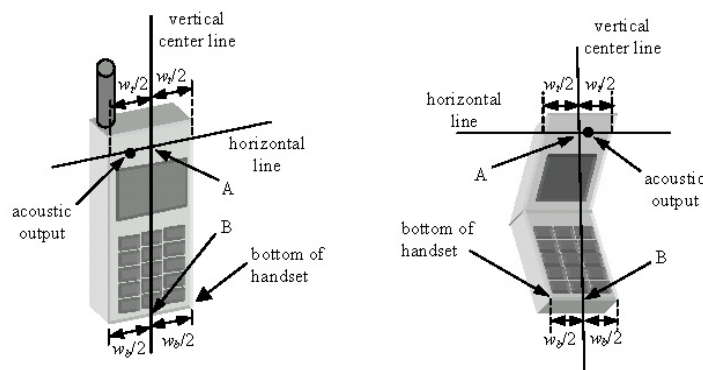


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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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.

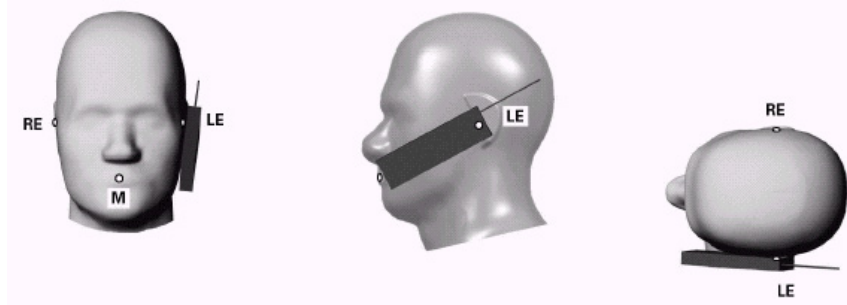


Figure 6-1 Front, Side and Top View of Cheek Position

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).

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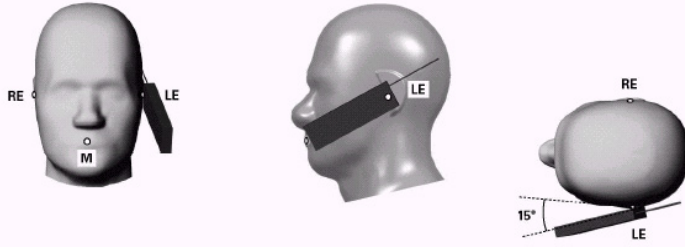


Figure 6-2 Front, Side and Top View of Ear/15° Tilt Position

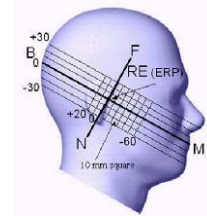


Figure 6-3 Side view w/ relevant markings

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 6-5). 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.

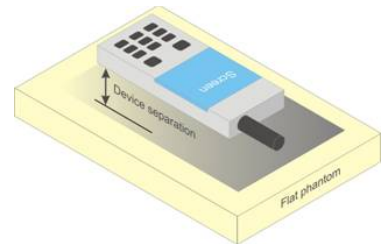


Figure 6-4 Sample Body-Worn Diagram

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.

6.5 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

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required. The 1-g body and 10-g extremity SAR Exclusion Thresholds found in KDB Publication 44798 D01v05 should be applied to determine SAR test requirements.

Per KDB Publication 44798 D01v05, Cell phones (handsets) are not normally designed to be used on extremities or operated in extremity only exposure conditions. The maximum output power levels of handsets generally do not require extremity SAR testing to show compliance.

6.6 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.

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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.

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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 CDMA2000

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

8.3.1 Output Power Verification

See 3GPP2 C.S0011/TIA-98-E as recommended by "SAR Measurement Procedures for 3G Devices" v02, October 2007. Maximum output power is verified on the High, Middle and Low channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. SO55 tests were measured with power control bits in the "All Up" condition.

1. If the mobile station (MS) supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only.
2. Under RC1, C.S0011 Table 4.4.5.2-1, Table 8-1 parameters were applied.
3. If the MS supports the RC 3 Reverse FCH, RC3 Reverse SCH₀ and demodulation of RC 3,4, or 5, set up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9600 bps Fundamental Channel and 9600 bps SCH₀ data rate.
4. Under RC3, C.S0011 Table 4.4.5.2-2, Table 8-2 was applied.

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Table 8-1
Parameters for Max. Power for RC1

Parameter	Units	Value
I_{or}	dBm/1.23 MHz	-104
$\frac{Pilot E_c}{I_{or}}$	dB	-7
$\frac{Traffic E_c}{I_{or}}$	dB	-7.4

Table 8-2
Parameters for Max. Power for RC3

Parameter	Units	Value
I_{or}	dBm/1.23 MHz	-86
$\frac{Pilot E_c}{I_{or}}$	dB	-7
$\frac{Traffic E_c}{I_{or}}$	dB	-7.4

5. FCHs were configured at full rate for maximum SAR with “All Up” power control bits.

8.3.2 Head SAR Measurements

SAR for head exposure configurations is measured in RC3 with the DUT configured to transmit at full rate using Loopback Service Option SO55. SAR for RC1 is not required when the maximum average output of each channel is less than ¼ dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel in RC1 using the exposure configuration that results in the highest SAR for that channel in RC3.

Head SAR was additionally evaluated using EVDO Rev. A to support compliance for VoIP operations. See Section 8.3.4 for EVDO Rev. A configuration parameters.

8.3.3 Body SAR Measurements

SAR for body exposure configurations is measured in RC3 with the DUT configured to transmit at full rate on FCH with all other code channels disabled using TDSO / SO32. SAR for multiple code channels (FCH + SCH_n) is not required when the maximum average output of each RF channel is less than ¼ dB higher than that measured with FCH only. Otherwise, SAR is measured on the maximum output channel (FCH + SCH_n) with FCH at full rate and SCH₀ enabled at 9600 bps using the exposure configuration that results in the highest SAR for that channel with FCH only. When multiple code channels are enabled, the DUT output may shift by more than 0.5 dB and lead to higher SAR drifts and SCH dropouts. Body SAR was measured using TDSO / SO32 with power control bits in the “All Up”

Body SAR in RC1 is not required when the maximum average output of each channel is less than ¼ dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel in RC1; with Loopback Service Option SO55, at full rate, using the body exposure configuration that results in the highest SAR for that channel in RC3.

8.3.4 Handsets with EVDO

For handsets with Ev-Do capabilities, when the maximum average output of each channel in Rev. 0 is less than ¼ dB higher than that measured in RC3 (1x RTT), body SAR for EV-DO is not required. Otherwise, SAR for Rev. 0 is measured on the maximum output channel at 153.6 kbps using the body exposure configuration that results in the highest SAR for that channel in RC3. SAR for Rev. A is not required when the maximum average output of each channel is less than that measured in Rev. 0 or less than ¼ dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel for Rev. A using a Reverse Data Channel payload size of 4096 bits and a Termination Target of 16 slots defined for Subtype 2 Physical Layer configurations. A Forward Traffic Channel data rate corresponding to the 2-slot version of 307.2 kbps with the ACK Channel transmitting in all slots would be configured in the downlink for both Rev. 0 and Rev. A.

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8.3.5

Body SAR Measurements for EVDO Hotspot

Hotspot Body SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 per KDB Publication 941225 D01 procedures for “1x Ev-Do data Devices”. SAR for Subtype 2 Physical layer configurations is not required for Rev. A when the maximum average output of each RF channels is less than that measured in Subtype 0/1 Physical layer configurations. Otherwise, SAR is measured on the maximum output channel for Rev. A using the exposure configuration that results in the highest SAR for the RF channels in Rev. 0. The AT is tested with a Reverse Data Channel rate of 153.6 kbps in Subtype 0/1 Physical Layer configurations; and a Reverse Data Channel payload size of 4096 bits and Termination Target of 16 slots in Subtype 2 Physical Layer configurations.

SAR is not required for 1x RTT for Ev-Do devices that also support 1x RTT voice and/or data operations, when the maximum average output of each channel is less than 1/4 dB higher than that measured in Subtype 0/1 Physical Layer configurations for Rev. 0. Otherwise, CDMA “Body-SAR Measurement” procedures for “CDMA 2000 1x Handsets” were applied.

8.4 SAR Measurement Conditions for UMTS

8.4.1 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.

8.4.2 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 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.

8.4.3 Body SAR Measurements

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

8.4.4 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

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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

8.4.5 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"

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 $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d=12/15$, $\beta_{hs}/\beta_c=24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPCCH and E-DPCCH 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-DPCCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.

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

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8.5 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).

8.5.1 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.

8.5.2 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.

8.5.3 A-MPR

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

8.5.4 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.

8.6 SAR Testing with 802.11 Transmitters

Normal network operating configurations are not suitable for measuring the SAR of IEEE 802.11 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

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based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 D01v01r02 for more details.

8.6.1 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.

8.6.2 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 SISO SAR evaluation in 802.11b mode. 802.11g/n modes and higher data rates for 802.11b were additionally evaluated for SISO 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 SISO 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.

8.6.3 MIMO SAR Considerations

Per KDB 248227, SAR for MIMO was measured with both transmitting simultaneously and was evaluated independently of SISO operation considerations. 802.11n was evaluated for both 2.4 GHz and 5 GHz MIMO modes since 802.11n represents the highest output power in MIMO mode. Additional evaluations for 40 MHz bandwidth 802.11n and 802.11ac were not required since the maximum allowed output power was not higher than the 802.11n 20 MHz BW output powers.

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9 RF CONDUCTED POWERS

9.1 CDMA2000 Conducted Powers

Table 9-1
Maximum Average RF Output Powers

Band	Channel	Frequency	SO55 [dBm]	SO55 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC	MHz	RC1	RC3	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	1013	824.7	24.90	24.86	24.81	24.82	24.67	24.65
	384	836.52	24.86	24.75	24.73	24.74	24.62	24.56
	777	848.31	24.72	24.58	24.58	24.59	24.45	24.42
PCS	25	1851.25	24.73	24.61	24.57	24.57	24.60	24.59
	600	1880	24.54	24.40	24.35	24.39	24.43	24.39
	1175	1908.75	24.72	24.63	24.52	24.53	24.60	24.54

Note: RC1 is only applicable for IS-95 compatibility.

Table 9-2
Maximum Average RF Output Powers – Hotspot Mode ON

Band	Channel	Frequency	SO55 [dBm]	SO55 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC	MHz	RC1	RC3	FCH+SCH	FCH	(RTAP)	(RETAP)
PCS	25	1851.25	22.09	22.05	22.04	22.12	22.00	21.99
	600	1880	21.90	21.83	21.80	22.05	21.81	21.80
	1175	1908.75	21.89	21.90	21.87	21.88	21.85	21.84

Per FCC KDB Publication 941225 D01v02:

1. Head SAR was tested with SO55 RC3. SO55 RC1 was not required since the average output power was not more than 0.25 dB than the SO55 RC3 powers.
2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. Ev-Do and TDSO / SO32 FCH+SCH SAR tests were not required since the average output power was not more than 0.25 dB higher than the TDSO / SO32 FCH only powers.
3. Hotspot SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0. If the average output power of Subtype 2 for Rev. A is less than the Rev. 0 power levels, then Rev. A SAR is not required. Otherwise, SAR is measured on the maximum output channel for Rev. A using the exposure configuration that results in the highest SAR for that RF channel in Rev. 0.
4. CDMA 1x-RTT SAR was additionally required to be evaluated for Hotspot exposure conditions to support simultaneous transmission capabilities.
5. Head SAR was additionally evaluated with EVDO Rev. A to determine compliance for held-to-ear VoIP operations.

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9.2 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	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 850	128	33.10	32.92	31.15	29.41	28.28	27.35	27.23	22.71	21.57
	190	33.09	33.10	31.06	29.68	28.43	27.38	27.27	22.95	21.82
	251	33.14	33.21	31.33	29.75	28.45	27.44	27.30	22.99	21.93
GSM 1900	512	30.17	30.28	28.55	27.43	25.79	26.49	26.00	21.35	20.14
	661	30.33	30.30	28.62	27.40	25.91	26.30	25.81	21.30	20.09
	810	30.21	30.29	28.52	27.28	25.83	26.14	25.68	21.19	20.05

		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	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 850	128	24.07	23.89	25.13	25.15	25.27	18.32	21.21	18.45	18.56
	190	24.06	24.07	25.04	25.42	25.42	18.35	21.25	18.69	18.81
	251	24.11	24.18	25.31	25.49	25.44	18.41	21.28	18.73	18.92
GSM 1900	512	21.14	21.25	22.53	23.17	22.78	17.46	19.98	17.09	17.13
	661	21.30	21.27	22.60	23.14	22.90	17.27	19.79	17.04	17.08
	810	21.18	21.26	22.50	23.02	22.82	17.11	19.66	16.93	17.04
GSM 850	Frame Avg.Targets:	23.97	23.97	24.98	25.24	24.99	17.97	20.98	18.74	18.99
GSM 1900		20.97	20.97	22.48	22.74	22.49	16.97	19.98	16.74	16.99

Note:

- Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged powers were calculated from the measured burst-averaged powers 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 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.

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4. 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: 33 (Max 4 Tx uplink slots)
EDGE Multislot class: 33 (Max 4 Tx uplink slots)
DTM Multislot Class: N/A

9.3 UMTS Conducted 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	22.92	23.00	22.93	23.04	23.08	23.05	-
99		12.2 kbps AMR	22.88	22.95	22.94	23.02	23.05	23.07	-
6	HSDPA	Subtest 1	21.48	21.56	21.51	21.58	21.60	21.62	0
6		Subtest 2	21.47	21.55	21.52	21.57	21.59	21.64	0
6		Subtest 3	21.37	21.48	21.46	21.55	21.53	21.58	0.5
6		Subtest 4	21.38	21.52	21.45	21.53	21.53	21.58	0.5
6	HSUPA	Subtest 1	21.17	21.26	21.31	21.22	21.27	21.13	0
6		Subtest 2	20.89	20.85	20.81	20.95	20.69	20.99	2
6		Subtest 3	20.48	20.75	20.62	21.04	20.65	21.00	1
6		Subtest 4	21.03	20.83	21.16	21.18	21.63	21.52	2
6		Subtest 5	20.62	20.57	20.51	21.08	20.58	20.83	0

UMTS SAR was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v02. 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.

This device does not support DC-HSDPA.

It is expected by the manufacturer that MPR for some HSUPA 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.

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9.4 LTE Conducted Powers

9.4.1 LTE Band 13

Table 9-3
LTE Band 13 Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Mid	782.0	23230	10	QPSK	1	0	23.19	0	0
	782.0	23230	10	QPSK	1	25	23.16	0	0
	782.0	23230	10	QPSK	1	49	23.27	0	0
	782.0	23230	10	QPSK	25	0	22.16	1	0-1
	782.0	23230	10	QPSK	25	12	22.14	1	0-1
	782.0	23230	10	QPSK	25	25	22.25	1	0-1
	782.0	23230	10	QPSK	50	0	22.20	1	0-1
	782.0	23230	10	16QAM	1	0	22.15	1	0-1
	782.0	23230	10	16QAM	1	25	22.14	1	0-1
	782.0	23230	10	16QAM	1	49	22.24	1	0-1
	782.0	23230	10	16QAM	25	0	21.19	2	0-2
	782.0	23230	10	16QAM	25	12	21.16	2	0-2
	782.0	23230	10	16QAM	25	25	21.14	2	0-2
	782.0	23230	10	16QAM	50	0	21.13	2	0-2

9.4.2 LTE Band 4 (AWS)

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Mid	1732.5	20175	20	QPSK	1	0	23.50	0	0
	1732.5	20175	20	QPSK	1	50	23.42	0	0
	1732.5	20175	20	QPSK	1	99	23.47	0	0
	1732.5	20175	20	QPSK	50	0	22.50	1	0-1
	1732.5	20175	20	QPSK	50	25	22.44	1	0-1
	1732.5	20175	20	QPSK	50	50	22.49	1	0-1
	1732.5	20175	20	QPSK	100	0	22.46	1	0-1
	1732.5	20175	20	16QAM	1	0	22.50	1	0-1
	1732.5	20175	20	16QAM	1	50	22.48	1	0-1
	1732.5	20175	20	16QAM	1	99	22.47	1	0-1
	1732.5	20175	20	16QAM	50	0	21.50	2	0-2
	1732.5	20175	20	16QAM	50	25	21.45	2	0-2
	1732.5	20175	20	16QAM	50	50	21.48	2	0-2
	1732.5	20175	20	16QAM	100	0	21.47	2	0-2

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.

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Table 9-5
LTE Band 4 (AWS) Conducted Powers - 15 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1717.5	20025	15	QPSK	1	0	23.43	0	0
	1717.5	20025	15	QPSK	1	36	23.35	0	0
	1717.5	20025	15	QPSK	1	74	23.40	0	0
	1717.5	20025	15	QPSK	36	0	22.43	1	0-1
	1717.5	20025	15	QPSK	36	18	22.50	1	0-1
	1717.5	20025	15	QPSK	36	37	22.42	1	0-1
	1717.5	20025	15	QPSK	75	0	22.39	1	0-1
	1717.5	20025	15	16QAM	1	0	22.43	1	0-1
	1717.5	20025	15	16QAM	1	36	22.41	1	0-1
	1717.5	20025	15	16QAM	1	74	22.40	1	0-1
	1717.5	20025	15	16QAM	36	0	21.43	2	0-2
	1717.5	20025	15	16QAM	36	18	21.38	2	0-2
	1717.5	20025	15	16QAM	36	37	21.41	2	0-2
	1717.5	20025	15	16QAM	75	0	21.40	2	0-2
Mid	1732.5	20175	15	QPSK	1	0	23.48	0	0
	1732.5	20175	15	QPSK	1	36	23.49	0	0
	1732.5	20175	15	QPSK	1	74	23.45	0	0
	1732.5	20175	15	QPSK	36	0	22.48	1	0-1
	1732.5	20175	15	QPSK	36	18	22.42	1	0-1
	1732.5	20175	15	QPSK	36	37	22.50	1	0-1
	1732.5	20175	15	QPSK	75	0	22.44	1	0-1
	1732.5	20175	15	16QAM	1	0	22.42	1	0-1
	1732.5	20175	15	16QAM	1	36	22.47	1	0-1
	1732.5	20175	15	16QAM	1	74	22.45	1	0-1
	1732.5	20175	15	16QAM	36	0	21.48	2	0-2
	1732.5	20175	15	16QAM	36	18	21.43	2	0-2
	1732.5	20175	15	16QAM	36	37	21.46	2	0-2
	1732.5	20175	15	16QAM	75	0	21.45	2	0-2
High	1747.5	20325	15	QPSK	1	0	23.46	0	0
	1747.5	20325	15	QPSK	1	36	23.37	0	0
	1747.5	20325	15	QPSK	1	74	23.43	0	0
	1747.5	20325	15	QPSK	36	0	22.46	1	0-1
	1747.5	20325	15	QPSK	36	18	22.40	1	0-1
	1747.5	20325	15	QPSK	36	37	22.48	1	0-1
	1747.5	20325	15	QPSK	75	0	22.42	1	0-1
	1747.5	20325	15	16QAM	1	0	22.40	1	0-1
	1747.5	20325	15	16QAM	1	36	22.45	1	0-1
	1747.5	20325	15	16QAM	1	74	22.43	1	0-1
	1747.5	20325	15	16QAM	36	0	21.46	2	0-2
	1747.5	20325	15	16QAM	36	18	21.41	2	0-2
	1747.5	20325	15	16QAM	36	37	21.44	2	0-2
	1747.5	20325	15	16QAM	75	0	21.43	2	0-2

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Table 9-6
LTE Band 4 (AWS) Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1715	20000	10	QPSK	1	0	23.46	0	0
	1715	20000	10	QPSK	1	25	23.37	0	0
	1715	20000	10	QPSK	1	49	23.43	0	0
	1715	20000	10	QPSK	25	0	22.46	1	0-1
	1715	20000	10	QPSK	25	12	22.40	1	0-1
	1715	20000	10	QPSK	25	25	22.48	1	0-1
	1715	20000	10	QPSK	50	0	22.42	1	0-1
	1715	20000	10	16QAM	1	0	22.40	1	0-1
	1715	20000	10	16QAM	1	25	22.45	1	0-1
	1715	20000	10	16QAM	1	49	22.43	1	0-1
	1715	20000	10	16QAM	25	0	21.46	2	0-2
	1715	20000	10	16QAM	25	12	21.41	2	0-2
	1715	20000	10	16QAM	25	25	21.44	2	0-2
	1715	20000	10	16QAM	50	0	21.43	2	0-2
Mid	1732.5	20175	10	QPSK	1	0	23.44	0	0
	1732.5	20175	10	QPSK	1	25	23.35	0	0
	1732.5	20175	10	QPSK	1	49	23.41	0	0
	1732.5	20175	10	QPSK	25	0	22.44	1	0-1
	1732.5	20175	10	QPSK	25	12	22.38	1	0-1
	1732.5	20175	10	QPSK	25	25	22.46	1	0-1
	1732.5	20175	10	QPSK	50	0	22.40	1	0-1
	1732.5	20175	10	16QAM	1	0	22.38	1	0-1
	1732.5	20175	10	16QAM	1	25	22.43	1	0-1
	1732.5	20175	10	16QAM	1	49	22.41	1	0-1
	1732.5	20175	10	16QAM	25	0	21.44	2	0-2
	1732.5	20175	10	16QAM	25	12	21.39	2	0-2
	1732.5	20175	10	16QAM	25	25	21.42	2	0-2
	1732.5	20175	10	16QAM	50	0	21.41	2	0-2
High	1750	20350	10	QPSK	1	0	23.41	0	0
	1750	20350	10	QPSK	1	25	23.32	0	0
	1750	20350	10	QPSK	1	49	23.38	0	0
	1750	20350	10	QPSK	25	0	22.41	1	0-1
	1750	20350	10	QPSK	25	12	22.35	1	0-1
	1750	20350	10	QPSK	25	25	22.43	1	0-1
	1750	20350	10	QPSK	50	0	22.37	1	0-1
	1750	20350	10	16QAM	1	0	22.35	1	0-1
	1750	20350	10	16QAM	1	25	22.40	1	0-1
	1750	20350	10	16QAM	1	49	22.38	1	0-1
	1750	20350	10	16QAM	25	0	21.41	2	0-2
	1750	20350	10	16QAM	25	12	21.36	2	0-2
	1750	20350	10	16QAM	25	25	21.39	2	0-2
	1750	20350	10	16QAM	50	0	21.38	2	0-2

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Table 9-7
LTE Band 4 (AWS) Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1712.5	19975	5	QPSK	1	0	23.46	0	0
	1712.5	19975	5	QPSK	1	12	23.37	0	0
	1712.5	19975	5	QPSK	1	24	23.43	0	0
	1712.5	19975	5	QPSK	12	0	22.46	1	0-1
	1712.5	19975	5	QPSK	12	6	22.50	1	0-1
	1712.5	19975	5	QPSK	12	13	22.48	1	0-1
	1712.5	19975	5	QPSK	25	0	22.42	1	0-1
	1712.5	19975	5	16-QAM	1	0	22.40	1	0-1
	1712.5	19975	5	16-QAM	1	12	22.45	1	0-1
	1712.5	19975	5	16-QAM	1	24	22.48	1	0-1
	1712.5	19975	5	16-QAM	12	0	21.46	2	0-2
	1712.5	19975	5	16-QAM	12	6	21.41	2	0-2
Mid	1712.5	19975	5	16-QAM	12	13	21.44	2	0-2
	1712.5	19975	5	16-QAM	25	0	21.43	2	0-2
	1732.5	20175	5	QPSK	1	0	23.43	0	0
	1732.5	20175	5	QPSK	1	12	23.35	0	0
	1732.5	20175	5	QPSK	1	24	23.50	0	0
	1732.5	20175	5	QPSK	12	0	22.43	1	0-1
	1732.5	20175	5	QPSK	12	6	22.37	1	0-1
	1732.5	20175	5	QPSK	12	13	22.42	1	0-1
	1732.5	20175	5	QPSK	25	0	22.39	1	0-1
	1732.5	20175	5	16-QAM	1	0	22.43	1	0-1
	1732.5	20175	5	16-QAM	1	12	22.41	1	0-1
	1732.5	20175	5	16-QAM	1	24	22.40	1	0-1
High	1732.5	20175	5	16-QAM	12	0	21.43	2	0-2
	1732.5	20175	5	16-QAM	12	6	21.38	2	0-2
	1732.5	20175	5	16-QAM	12	13	21.41	2	0-2
	1732.5	20175	5	16-QAM	25	0	21.40	2	0-2
	1752.5	20375	5	QPSK	1	0	23.48	0	0
	1752.5	20375	5	QPSK	1	12	23.32	0	0
	1752.5	20375	5	QPSK	1	24	23.43	0	0
	1752.5	20375	5	QPSK	12	0	22.48	1	0-1
	1752.5	20375	5	QPSK	12	6	22.39	1	0-1
	1752.5	20375	5	QPSK	12	13	22.43	1	0-1
	1752.5	20375	5	QPSK	25	0	22.37	1	0-1
	1752.5	20375	5	16-QAM	1	0	22.35	1	0-1
	1752.5	20375	5	16-QAM	1	12	22.40	1	0-1
	1752.5	20375	5	16-QAM	1	24	22.38	1	0-1
	1752.5	20375	5	16-QAM	12	0	21.41	2	0-2
	1752.5	20375	5	16-QAM	12	6	21.36	2	0-2
	1752.5	20375	5	16-QAM	12	13	21.39	2	0-2
	1752.5	20375	5	16-QAM	25	0	21.38	2	0-2



Figure 9-1
Power Measurement Setup

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9.5 WI-FI

9.5.1

Maximum WI-FI Conducted RF Output Powers

Table 9-8
IEEE 802.11b Average RF Power

802.11b	Antenna	Freq [MHz]	Channel	802.11b Conducted Power [dBm]			
				Data Rate [Mbps]			
				1	2	5.5	11
	Antenna 1	2412	1*	16.57	16.54	16.74	16.62
		2437	6*	17.05	17.02	17.22	17.10
		2462	11*	16.81	16.78	16.98	16.86
	Antenna 2	2412	1*	17.07	17.24	17.29	17.17
		2437	6*	16.54	16.71	16.76	16.64
		2462	11*	16.49	16.66	16.71	16.59

Table 9-9
IEEE 802.11g Average RF Power

802.11g	Antenna	Freq [MHz]	Channel	802.11g Conducted Power [dBm]							
				Data Rate [Mbps]							
				6	9	12	18	24	36	48	54
	Antenna 1	2412	1	14.09	13.97	14.10	13.92	14.22	14.25	14.21	14.24
		2437	6	13.90	13.78	13.91	13.73	14.03	14.06	14.02	14.05
		2462	11	13.54	13.42	13.55	13.37	13.67	13.70	13.66	13.69
	Antenna 2	2412	1	13.82	13.62	13.57	13.61	13.94	14.04	14.12	14.11
		2437	6	13.64	13.44	13.39	13.43	13.76	13.86	13.94	13.93
		2462	11	13.37	13.17	13.12	13.16	13.49	13.59	13.67	13.66

Table 9-10
IEEE 802.11n Average RF Power

802.11n (2.4GHz)	Antenna	Freq [MHz]	Channel	802.11n (2.4GHz) Conducted Power [dBm]							
				Data Rate [Mbps]							
				6.5	13	19.5	26	39	52	58.5	65
	Antenna 1	2412	1	13.14	13.34	13.17	13.39	13.34	13.42	13.45	13.24
		2437	6	12.95	13.15	12.98	13.20	13.15	13.23	13.26	13.05
		2462	11	12.81	13.01	12.84	13.06	13.01	13.09	13.12	12.91
	Antenna 2	2412	1	12.93	12.97	12.82	12.94	13.07	13.12	13.09	13.14
		2437	6	12.85	12.89	12.74	12.86	12.99	13.04	13.01	13.06
		2462	11	12.64	12.68	12.53	12.65	12.78	12.83	12.80	12.85

Table 9-11
MIMO IEEE 802.11n Average RF Power

802.11n (2.4GHz)	Antenna	Freq [MHz]	Channel	802.11n (2.4GHz) Conducted Power [dBm]	
				Data Rate [Mbps]	
				13	
	MIMO	2412	1	13.87	
		2437	6	13.64	
		2462	11	13.48	

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Table 9-12
IEEE 802.11a Average RF Power

802.11a	Antenna	Freq [MHz]	Channel	802.11a Conducted Power [dBm]							
				Data Rate [Mbps]							
				6	9	12	18	24	36	48	54
Antenna 1		5180	36*	13.02	12.76	12.89	12.84	13.11	13.18	13.24	13.17
		5200	40	13.08	12.82	12.95	12.90	13.17	13.24	13.30	13.23
		5220	44	13.12	12.86	12.99	12.94	13.21	13.28	13.34	13.27
		5240	48*	12.93	12.67	12.80	12.75	13.02	13.09	13.15	13.08
		5260	52*	12.85	12.78	13.04	12.99	12.67	12.54	12.68	12.65
		5280	56	12.97	12.90	13.16	13.11	12.79	12.66	12.80	12.77
		5300	60	12.57	12.50	12.76	12.71	12.39	12.26	12.40	12.37
		5320	64*	12.54	12.47	12.73	12.68	12.36	12.23	12.37	12.34
		5500	100	13.33	12.62	13.26	13.19	13.11	13.37	13.32	13.26
		5520	104*	13.36	12.65	13.29	13.22	13.14	13.40	13.35	13.29
		5540	108	13.41	12.70	13.34	13.27	13.19	13.45	13.40	13.34
		5560	112	13.27	12.56	13.20	13.13	13.05	13.31	13.26	13.20
		5580	116*	13.40	12.69	13.33	13.26	13.18	13.44	13.39	13.33
		5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5620	124*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5660	132	13.19	12.48	13.12	13.05	12.97	13.23	13.18	13.12
		5680	136*	13.01	12.30	12.94	12.87	12.79	13.05	13.00	12.94
		5700	140	13.06	12.35	12.99	12.92	12.84	13.10	13.05	12.99
		5745	149*	13.31	13.12	13.33	13.25	12.81	12.63	12.79	12.56
		5765	153	13.21	13.02	13.23	13.15	12.71	12.53	12.69	12.46
		5785	157*	13.15	12.96	13.17	13.09	12.65	12.47	12.63	12.40
		5805	161*	13.20	13.01	13.22	13.14	12.70	12.52	12.68	12.45
		5825	165	12.98	12.79	13.00	12.92	12.48	12.30	12.46	12.23
Antenna 2		5180	36*	13.94	13.87	13.97	13.37	13.72	13.92	13.34	13.48
		5200	40	13.84	13.77	13.87	13.27	13.62	13.82	13.24	13.38
		5220	44	13.86	13.79	13.89	13.29	13.64	13.84	13.26	13.40
		5240	48*	13.74	13.67	13.77	13.17	13.52	13.72	13.14	13.28
		5260	52*	13.21	12.91	12.98	12.92	13.42	13.35	13.10	13.44
		5280	56	13.02	12.72	12.79	12.73	13.23	13.16	12.91	13.25
		5300	60	13.11	12.81	12.88	12.82	13.32	13.25	13.00	13.34
		5320	64*	12.99	12.69	12.76	12.70	13.20	13.13	12.88	13.22
		5500	100	13.26	12.98	13.22	13.16	13.44	13.40	13.04	12.94
		5520	104*	13.17	12.89	13.13	13.07	13.35	13.31	12.95	12.85
		5540	108	13.04	12.76	13.00	12.94	13.22	13.18	12.82	12.72
		5560	112	13.21	12.93	13.17	13.11	13.39	13.35	12.99	12.89
		5580	116*	12.91	12.63	12.87	12.81	13.09	13.05	12.69	12.59
		5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5620	124*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5660	132	13.01	12.73	12.97	12.91	13.19	13.15	12.79	12.69
		5680	136*	12.81	12.53	12.77	12.71	12.99	12.95	12.59	12.49
		5700	140	12.61	12.33	12.57	12.51	12.79	12.75	12.39	12.29
		5745	149*	13.37	13.09	12.91	12.95	13.35	13.17	13.24	13.37
		5765	153	13.44	13.16	12.98	13.02	13.42	13.24	13.31	13.44
		5785	157*	13.31	13.03	12.85	12.89	13.29	13.11	13.18	13.31
		5805	161*	13.11	12.83	12.65	12.69	13.09	12.91	12.98	13.11
		5825	165	13.25	12.97	12.79	12.83	13.23	13.05	13.12	13.25

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.

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Table 9-13
IEEE 802.11n Average RF Power – 20 MHz Bandwidth

20MHz 802.11n (5GHz)	Antenna	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
Antenna 1		5180	36	12.89	13.27	12.81	12.92	13.24	13.35	13.21	13.28
		5200	40	12.83	13.31	12.75	12.86	13.18	13.32	13.15	13.22
		5220	44	12.92	13.30	12.84	12.95	13.27	13.34	13.24	13.31
		5240	48	12.72	13.20	12.64	12.75	13.07	13.27	13.04	13.11
		5260	52	13.09	12.57	12.75	13.21	13.14	12.92	13.02	13.14
		5280	56	13.02	12.50	12.68	13.20	13.07	12.85	12.95	13.07
		5300	60	12.91	12.39	12.57	13.19	12.96	12.74	12.84	12.96
		5320	64	13.21	12.69	12.87	13.17	13.21	13.04	13.14	13.21
		5500	100	13.14	13.28	13.21	13.39	13.33	12.97	13.02	13.07
		5520	104	13.08	13.22	13.15	13.33	13.27	12.91	12.96	13.01
		5540	108	13.25	13.39	13.32	13.48	13.44	13.08	13.13	13.18
		5560	112	13.29	13.43	13.36	13.44	13.48	13.12	13.17	13.22
		5580	116	13.21	13.35	13.28	13.46	13.40	13.04	13.09	13.14
		5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5660	132	12.82	12.96	12.89	13.07	13.01	12.65	12.70	12.75
		5680	136	13.04	13.18	13.11	13.29	13.23	12.87	12.92	12.97
		5700	140	12.81	12.95	12.88	13.06	13.00	12.64	12.69	12.74
		5745	149	12.74	12.95	13.14	13.21	13.15	13.01	12.94	13.08
		5765	153	12.56	12.77	12.96	13.03	12.97	12.83	12.76	12.90
		5785	157	12.72	12.93	13.12	13.19	13.13	12.99	12.92	13.06
		5805	161	12.52	12.73	12.92	12.99	12.93	12.79	12.72	12.86
		5825	165	12.74	12.95	13.14	13.21	13.15	13.01	12.94	13.08
Antenna 2		5180	36	12.78	12.95	13.02	13.11	13.04	13.07	12.99	13.12
		5200	40	12.96	13.13	13.20	13.29	13.22	13.25	13.17	13.30
		5220	44	12.72	12.89	12.96	13.05	12.98	13.01	12.93	13.06
		5240	48	12.84	13.01	13.08	13.17	13.10	13.13	13.05	13.18
		5260	52	13.15	13.02	13.25	13.37	13.34	13.17	13.27	13.25
		5280	56	13.04	12.91	13.14	13.26	13.23	13.06	13.16	13.14
		5300	60	13.12	12.99	13.22	13.34	13.31	13.14	13.24	13.22
		5320	64	12.89	12.76	12.99	13.11	13.08	12.91	13.01	12.99
		5500	100	13.01	13.18	13.27	13.24	13.28	13.32	13.29	13.32
		5520	104	13.18	13.35	13.44	13.41	13.45	13.44	13.46	13.42
		5540	108	13.01	13.18	13.27	13.24	13.28	13.32	13.29	13.32
		5560	112	13.09	13.26	13.35	13.32	13.36	13.40	13.37	13.40
		5580	116	13.04	13.21	13.30	13.27	13.31	13.35	13.32	13.35
		5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5660	132	12.82	12.99	13.08	13.05	13.09	13.13	13.10	13.13
		5680	136	12.68	12.85	12.94	12.91	12.95	12.99	12.96	12.99
		5700	140	12.60	12.77	12.86	12.83	12.87	12.91	12.88	12.91
		5745	149	13.08	13.12	13.27	13.29	13.25	13.21	13.30	13.24
		5765	153	13.11	13.15	13.30	13.32	13.28	13.24	13.33	13.27
		5785	157	13.21	13.25	13.40	13.42	13.38	13.34	13.43	13.37
		5805	161	13.25	13.29	13.44	13.46	13.42	13.38	13.47	13.41
		5825	165	13.16	13.20	13.35	13.37	13.33	13.29	13.38	13.32

Table 9-14
MIMO IEEE 802.11n Average RF Power – 20 MHz Bandwidth

20MHz 802.11n (5GHz)	Antenna	Freq [MHz]	Channel	20MHz BW 802.11n (5GHz) Conducted Power [dBm]
				Data Rate [Mbps]
				13
MIMO		5180	36	12.63
		5200	40	12.60
		5220	44	12.62
		5240	48	12.55
		5260	52	12.75
		5280	56	12.76
		5300	60	12.77
		5320	64	12.63
		5500	100	12.30
		5520	104	12.28
		5540	108	12.25
		5560	112	12.24
		5580	116	12.18
		5600	120	N/A
		5620	124	N/A
		5640	128	N/A
		5660	132	12.08
		5680	136	12.12
		5700	140	12.06
		5745	149	13.44
		5765	153	13.47
		5785	157	13.44
		5805	161	13.43
		5825	165	13.41

Table 9-15
IEEE 802.11n Average RF Power – 40 MHz Bandwidth

40MHz 802.11n (5GHz)	Antenna	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
Antenna 1		5190	38	11.42	12.05	12.24	12.28	11.93	12.12	12.38	12.24
		5230	46	11.26	11.89	12.08	12.12	11.77	11.96	12.22	12.08
		5270	54	11.29	11.85	12.09	12.35	12.14	12.36	12.04	12.12
		5310	62	11.36	11.92	12.16	12.42	12.21	12.43	12.11	12.19
		5510	102	11.45	11.48	11.65	11.84	11.67	11.95	11.72	11.62
		5550	110	11.69	11.72	11.89	12.08	11.91	12.19	11.96	11.86
		5590	118	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5630	126	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5670	134	11.51	11.54	11.71	11.90	11.73	12.01	11.78	11.68
		5755	151	11.43	11.23	11.42	11.48	11.52	11.46	11.32	11.47
Antenna 2		5795	159	11.29	11.09	11.28	11.34	11.38	11.32	11.18	11.33
		5190	38	12.25	12.38	12.41	12.25	12.34	12.43	12.32	12.29
		5230	46	12.17	12.30	12.33	12.17	12.26	12.35	12.24	12.21
		5270	54	11.54	11.52	11.61	11.79	11.35	11.62	11.55	11.67
		5310	62	11.41	11.39	11.48	11.66	11.22	11.49	11.42	11.54
		5510	102	11.67	11.85	11.58	11.79	11.82	11.98	11.67	11.54
		5550	110	11.61	11.79	11.52	11.73	11.76	11.92	11.61	11.48
		5590	118	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5630	126	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5670	134	11.32	11.50	11.23	11.44	11.47	11.63	11.32	11.19
		5755	151	11.74	11.84	11.81	12.02	12.05	11.98	11.90	11.84
		5795	159	11.77	11.87	11.84	12.05	12.08	12.01	11.93	11.87

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Table 9-16
MIMO IEEE 802.11n Average RF Power – 40 MHz Bandwidth

40MHz 802.11n (5GHz)	Antenna	Freq [MHz]	Channel	40MHz BW 802.11n (5GHz) Conducted Power [dBm]
				Data Rate [Mbps]
				27
	MIMO	5190	38	11.63
		5230	46	11.79
		5270	54	11.58
		5310	62	11.73
		5510	102	12.33
		5550	110	12.41
		5590	118	N/A
		5630	126	N/A
		5670	134	12.14
		5755	151	12.44
		5795	159	12.28

Table 9-17
IEEE 802.11ac Average RF Power – 80 MHz Bandwidth

80MHz 802.11ac (5GHz)	Antenna	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
	Antenna 1	5210	42	10.71	10.76	10.69	10.77	10.94	10.92	10.87	10.91	10.88	10.79
		5290	58	10.77	10.81	10.72	10.60	10.98	10.87	10.91	10.82	10.87	10.97
		5530	106	11.15	11.18	11.11	11.38	11.17	11.32	11.34	11.21	11.25	11.37
		5775	155	11.25	11.14	10.94	11.09	11.32	10.92	11.10	11.17	10.89	10.52
	Antenna 2	5210	42	10.78	10.61	10.64	10.59	10.86	10.79	10.81	10.95	11.01	10.98
		5290	58	10.94	10.75	10.74	10.93	11.05	11.01	11.12	11.07	10.95	11.18
		5530	106	10.98	10.84	10.97	10.75	11.14	11.04	11.16	11.07	11.12	11.14
		5775	155	11.26	11.23	11.14	11.24	11.37	11.24	11.42	11.38	11.27	11.35

Table 9-18
MIMO IEEE 802.11ac Average RF Power – 80 MHz Bandwidth

80MHz 802.11ac (5GHz)	Antenna	Freq [MHz]	Channel	80MHz BW 802.11ac (5GHz) Conducted Power [dBm]
				Data Rate [Mbps]
				58.5
	MIMO	5210	42	11.23
		5290	58	11.27
		5530	106	10.89
		5775	155	10.76

9.5.2 WI-FI RF Output Powers (In Held-to-Ear conditions only)

Table 9-19
IEEE 802.11b Average RF Power

802.11b	Antenna	Freq [MHz]	Channel	802.11b Conducted Power [dBm]			
				Data Rate [Mbps]			
				1	2	5.5	11
	Antenna 1	2412	1*	11.94	12.03	12.09	12.08
		2437	6*	11.23	11.39	11.31	11.33
		2462	11*	11.27	11.36	11.39	11.48
	Antenna 2	2412	1*	11.74	11.67	11.75	11.70
		2437	6*	11.50	11.43	11.35	11.44
		2462	11*	11.39	11.35	11.32	11.27

Table 9-20
IEEE 802.11g Average RF Power

802.11g	Antenna	Freq [MHz]	Channel	802.11g Conducted Power [dBm]							
				Data Rate [Mbps]							
				6	9	12	18	24	36	48	54
	Antenna 1	2412	1	11.42	11.55	11.52	11.41	11.46	11.44	11.40	11.38
		2437	6	11.87	11.92	11.93	11.87	11.98	11.93	11.92	11.94
		2462	11	11.89	11.71	11.75	11.79	11.82	11.82	11.81	11.81
	Antenna 2	2412	1	11.66	11.78	11.61	11.76	11.75	11.73	11.59	11.78
		2437	6	11.63	11.62	11.80	11.77	11.69	11.76	11.75	11.76
		2462	11	11.38	11.51	11.49	11.43	11.44	11.50	11.47	11.45

Table 9-21
IEEE 802.11n Average RF Power

802.11n (2.4GHz)	Antenna	Freq [MHz]	Channel	802.11n (2.4GHz) Conducted Power [dBm]							
				Data Rate [Mbps]							
				6.5	13	19.5	26	39	52	58.5	65
	Antenna 1	2412	1	11.25	11.25	11.30	11.18	11.24	11.24	11.32	11.31
		2437	6	11.90	11.89	11.90	11.85	11.90	11.79	11.92	11.79
		2462	11	11.66	11.78	11.78	11.64	11.81	11.70	11.75	11.70
	Antenna 2	2412	1	11.83	11.97	11.93	11.92	11.81	11.97	11.91	11.81
		2437	6	11.73	11.70	11.69	11.79	11.82	11.78	11.83	11.69
		2462	11	11.69	11.79	11.75	11.77	11.85	11.75	11.70	11.71

Table 9-22
MIMO IEEE 802.11n Average RF Power

802.11n (2.4GHz)	Antenna	Freq [MHz]	Channel	802.11n (2.4GHz) Conducted Power [dBm]
				Data Rate [Mbps]
				13
	MIMO	2412	1	11.85
		2437	6	11.70
		2462	11	11.34

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Table 9-23
IEEE 802.11a Average RF Power

802.11a	Antenna	Freq [MHz]	Channel	802.11a Conducted Power [dBm]							
				Data Rate [Mbps]							
				6	9	12	18	24	36	48	54
Antenna 1		5180	36*	6.74	6.47	6.64	6.39	6.48	6.32	6.29	6.47
		5200	40	6.66	6.37	6.71	6.56	6.51	6.35	6.43	6.40
		5220	44	6.74	6.50	6.78	6.59	6.69	6.43	6.58	6.48
		5240	48*	6.32	6.63	6.47	6.22	6.27	6.62	6.39	6.31
		5260	52*	6.69	6.55	6.39	6.69	6.59	6.61	6.47	6.64
		5280	56	6.58	6.87	6.69	6.87	6.67	6.53	6.77	6.91
		5300	60	6.53	6.57	6.79	6.68	6.55	6.91	6.65	6.89
		5320	64*	6.63	6.84	6.47	6.63	6.69	6.89	6.86	6.46
		5500	100	6.82	6.48	6.44	6.82	6.67	6.67	6.77	6.65
		5520	104*	6.74	6.68	6.82	6.88	6.88	6.87	6.69	6.55
		5540	108	6.45	6.67	6.40	6.87	6.54	6.65	6.48	6.46
		5560	112	6.66	6.59	6.91	6.62	6.89	6.79	6.52	6.46
		5580	116*	6.83	6.62	6.45	6.39	6.75	6.63	6.82	6.37
		5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5620	124*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5660	132	6.39	6.55	6.64	6.73	6.44	6.46	6.82	6.80
		5680	136*	6.56	6.44	6.56	6.79	6.38	6.52	6.71	6.59
		5700	140	6.33	6.46	6.49	6.36	6.42	6.66	6.31	6.58
		5745	149*	6.84	6.88	6.55	6.64	6.92	6.63	6.81	6.78
		5765	153	6.53	6.69	6.67	6.41	6.58	6.49	6.69	6.76
		5785	157*	6.87	6.79	6.66	6.86	6.70	6.67	6.90	6.75
		5805	161*	6.56	6.64	6.55	6.66	6.37	6.40	6.76	6.55
		5825	165	6.67	6.70	6.27	6.53	6.56	6.47	6.55	6.25
Antenna 2		5180	36*	6.65	6.70	6.75	6.82	6.77	6.70	6.83	6.76
		5200	40	6.72	6.84	6.75	6.74	6.79	6.75	6.88	6.79
		5220	44	6.86	6.89	6.79	6.86	6.87	6.79	6.93	6.81
		5240	48*	6.70	6.63	6.64	6.63	6.74	6.72	6.77	6.81
		5260	52*	6.95	7.02	6.99	6.93	6.94	6.88	6.98	6.86
		5280	56	6.83	6.91	6.78	6.85	6.92	6.80	6.83	6.81
		5300	60	6.83	6.90	6.98	6.95	6.93	6.97	6.87	6.93
		5320	64*	6.90	6.90	6.85	6.70	6.83	6.83	6.81	6.90
		5500	100	5.71	5.77	5.69	5.76	5.77	5.81	5.75	5.67
		5520	104*	5.79	5.75	5.88	5.76	5.82	5.87	5.92	5.73
		5540	108	5.81	5.70	5.76	5.86	5.88	5.79	5.69	5.84
		5560	112	5.83	5.85	5.92	5.95	6.00	5.99	5.95	5.85
		5580	116*	5.86	5.80	5.94	5.96	5.93	5.95	5.90	5.82
		5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5620	124*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5660	132	5.74	5.86	5.84	5.87	5.87	5.87	5.89	5.77
		5680	136*	6.01	5.97	5.85	5.90	6.01	6.00	5.95	6.03
		5700	140	5.91	5.93	5.89	5.94	6.01	5.95	5.92	5.94
		5745	149*	6.29	6.43	6.31	6.31	6.42	6.25	6.44	6.31
		5765	153	6.58	6.66	6.50	6.66	6.57	6.57	6.57	6.62
		5785	157*	6.47	6.57	6.47	6.54	6.54	6.42	6.58	6.40
		5805	161*	6.37	6.40	6.52	6.43	6.42	6.53	6.53	6.50
		5825	165	6.33	6.41	6.44	6.37	6.46	6.47	6.36	6.33

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.

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Table 9-24
IEEE 802.11n Average RF Power – 20 MHz Bandwidth

20MHz 802.11n (5GHz)	Antenna	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
Antenna 1		5180	36	6.73	6.95	6.84	6.72	6.70	6.96	6.61	6.49
		5200	40	6.92	6.46	6.87	6.92	6.65	6.80	6.83	6.66
		5220	44	6.70	6.35	6.72	6.46	6.53	6.76	6.77	6.69
		5240	48	6.36	6.36	6.65	6.54	6.33	6.50	6.37	6.55
		5260	52	6.69	6.57	6.22	6.55	6.60	6.65	6.22	6.53
		5280	56	6.56	6.41	6.33	6.60	6.35	6.48	6.61	6.50
		5300	60	6.43	6.38	6.58	6.73	6.41	6.40	6.40	6.35
		5320	64	6.39	6.66	6.74	6.44	6.65	6.60	6.79	6.68
		5500	100	6.73	6.83	6.69	6.99	6.70	6.73	6.94	6.92
		5520	104	6.92	6.66	6.49	6.63	6.60	6.68	6.60	6.96
		5540	108	6.74	6.42	6.63	6.51	6.63	6.68	6.45	6.77
		5560	112	6.58	6.58	7.00	6.92	6.75	6.67	6.82	6.88
		5580	116	6.94	6.75	6.87	6.84	6.79	6.88	6.75	6.91
		5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5660	132	7.07	6.97	7.05	6.87	6.86	6.63	7.07	6.80
		5680	136	6.92	6.90	6.48	6.88	6.45	6.96	6.74	6.47
		5700	140	6.87	6.84	6.62	6.70	6.68	6.56	6.53	6.71
		5745	149	6.49	6.72	6.62	6.54	6.80	6.95	6.56	6.68
		5765	153	6.44	6.70	6.74	6.80	6.69	6.62	6.81	6.71
		5785	157	6.49	6.65	6.64	6.83	6.66	6.59	6.47	6.77
		5805	161	6.20	6.57	6.37	6.25	6.51	6.44	6.66	6.26
		5825	165	6.58	6.63	6.53	6.31	6.70	6.30	6.75	6.59
Antenna 2		5180	36	6.66	6.73	6.58	6.64	6.66	6.57	6.67	6.71
		5200	40	6.84	6.91	6.98	6.99	6.88	6.98	6.86	6.90
		5220	44	6.68	6.76	6.81	6.67	6.74	6.78	6.80	6.84
		5240	48	6.76	6.74	6.81	6.83	6.81	6.77	6.85	6.79
		5260	52	6.74	6.83	6.77	6.75	6.71	6.74	6.89	6.82
		5280	56	6.83	6.67	6.76	6.67	6.71	6.81	6.73	6.70
		5300	60	6.78	6.97	6.78	6.80	6.86	6.91	6.93	6.97
		5320	64	6.69	6.74	6.83	6.79	6.78	6.81	6.84	6.85
		5500	100	5.70	5.63	5.70	5.70	5.74	5.65	5.75	5.71
		5520	104	5.92	5.97	5.90	5.90	5.98	5.90	5.95	5.93
		5540	108	5.76	5.90	5.76	5.84	5.83	5.90	5.86	5.76
		5560	112	6.04	5.97	5.90	5.95	5.96	5.95	5.97	6.02
		5580	116	6.03	5.92	6.01	6.11	5.97	5.92	6.09	6.10
		5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5660	132	5.91	5.95	5.85	5.88	5.84	5.92	5.82	5.90
		5680	136	5.86	5.94	5.92	5.83	5.89	5.99	5.82	5.98
		5700	140	5.78	5.82	5.93	5.92	5.91	5.90	5.83	5.78
		5745	149	6.44	6.44	6.59	6.47	6.49	6.43	6.46	6.51
		5765	153	6.60	6.61	6.56	6.66	6.65	6.69	6.73	6.69
		5785	157	6.60	6.52	6.70	6.56	6.57	6.60	6.54	6.57
		5805	161	6.65	6.66	6.59	6.63	6.64	6.57	6.60	6.63
		5825	165	6.54	6.39	6.52	6.45	6.47	6.43	6.49	6.53

Table 9-25
MIMO IEEE 802.11n Average RF Power – 20 MHz Bandwidth

20MHz 802.11n (5GHz)	Antenna	Freq [MHz]	Channel	20MHz BW 802.11n (5GHz) Conducted Power [dBm]
				Data Rate [Mbps]
				13
MIMO		5180	36	5.98
		5200	40	6.02
		5220	44	6.04
		5240	48	6.06
		5260	52	5.64
		5280	56	5.62
		5300	60	5.67
		5320	64	5.62
		5500	100	7.38
		5520	104	7.31
		5540	108	7.33
		5560	112	7.30
		5580	116	7.36
		5600	120	N/A
		5620	124	N/A
		5640	128	N/A
		5660	132	7.22
		5680	136	7.19
		5700	140	7.29
		5745	149	6.52
		5765	153	6.57
		5785	157	6.54
		5805	161	6.41
		5825	165	6.44

Table 9-26
IEEE 802.11n Average RF Power – 40 MHz Bandwidth

40MHz 802.11n (5GHz)	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
Antenna 1		5190	38	6.57	6.46	6.55	6.31	6.24	6.72	6.49	6.15
		5230	46	6.54	6.97	6.18	6.14	6.91	6.71	6.80	6.66
		5270	54	6.35	6.36	6.25	6.64	6.85	6.33	6.27	6.81
		5310	62	6.39	6.33	6.24	6.84	6.82	6.63	6.02	6.86
		5510	102	6.59	6.84	6.25	6.59	6.87	6.78	6.58	6.35
		5550	110	6.64	6.69	6.85	7.07	6.27	6.69	6.87	7.02
		5590	118	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5630	126	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5670	134	6.69	6.17	6.39	6.42	6.20	6.42	6.82	6.36
		5755	151	6.77	6.74	6.76	6.80	6.25	6.05	5.92	6.29
		5795	159	6.54	6.56	6.36	6.18	6.69	6.07	6.51	6.67
		5190	38	6.63	6.73	6.66	6.80	6.67	6.72	6.69	6.76
		5230	46	6.74	6.62	6.72	6.58	6.62	6.69	6.64	6.72
		5270	54	6.72	6.67	6.58	6.64	6.72	6.65	6.67	6.60
		5310	62	6.92	6.81	6.87	6.75	6.87	6.81	6.75	6.79
		5510	102	5.56	5.67	5.62	5.58	5.52	5.59	5.57	5.52
Antenna 2		5550	110	5.73	5.70	5.76	5.62	5.62	5.77	5.79	5.62
		5590	118	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5630	126	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		5670	134	5.63	5.57	5.73	5.71	5.66	5.65	5.58	5.63
		5755	151	6.52	6.53	6.52	6.41	6.40	6.52	6.52	6.44
		5795	159	6.44	6.41	6.40	6.42	6.46	6.30	6.37	6.43

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Table 9-27
MIMO IEEE 802.11n Average RF Power – 40 MHz Bandwidth

40MHz 802.11n (5GHz)	Antenna	Freq [MHz]	Channel	40MHz BW 802.11n (5GHz) Conducted Power [dBm]
				Data Rate [Mbps]
				27
	MIMO	5190	38	6.06
		5230	46	6.09
		5270	54	6.10
		5310	62	6.08
		5510	102	7.39
		5550	110	7.33
		5590	118	N/A
		5630	126	N/A
		5670	134	7.38
		5755	151	5.90
		5795	159	6.01

Table 9-28
IEEE 802.11ac Average RF Power – 80 MHz Bandwidth

80MHz 802.11ac (5GHz)	Antenna	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
Antenna 1	Antenna 1	5210	42	6.56	6.50	6.64	6.61	6.50	6.46	6.59	6.39	6.40	6.50
		5290	58	6.48	6.32	6.35	6.44	6.35	6.45	6.40	6.42	6.50	6.33
		5530	106	6.51	6.57	6.40	6.33	6.45	6.47	6.50	6.39	6.34	6.54
		5775	155	6.38	6.33	6.47	6.33	6.29	6.41	6.37	6.55	6.46	6.46
	Antenna 2	5210	42	6.63	6.58	6.60	6.59	6.54	6.52	6.53	6.52	6.61	6.51
		5290	58	6.55	6.52	6.44	6.46	6.41	6.50	6.52	6.52	6.41	6.54
		5530	106	5.57	5.44	5.50	5.61	5.48	5.53	5.61	5.46	5.60	5.46
		5775	155	6.25	6.13	6.13	6.28	6.21	6.11	6.10	6.11	6.26	6.21

Table 9-29
MIMO IEEE 802.11ac Average RF Power – 80 MHz Bandwidth

80MHz 802.11ac (5GHz)	Antenna	Freq [MHz]	Channel	80MHz BW 802.11ac (5GHz)
				Data Rate [Mbps]
				58.5
	MIMO	5210	42	5.94
		5290	58	5.56
		5530	106	7.27
		5775	155	7.41

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

- For SISO 2.4 GHz, highest average RF output power channel for the lowest data rate for IEEE 802.11b were selected for SAR evaluation. Other 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.
- For SISO 5 GHz, highest average RF output power channel for the lowest data rate for IEEE 802.11a were selected for SAR evaluation. Other IEEE 802.11 modes (including 802.11n 20 MHz and 40 MHz) 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.
- For MIMO 2.4 GHz, highest average RF output power channel for the lowest data rate for IEEE 802.11n was selected for SAR evaluation.
- For 5 GHz MIMO, 20 MHz BW 802.11n was evaluated. Additional evaluations for 40 MHz bandwidth 802.11n and 802.11ac were not required since the maximum allowed output power was not higher than 802.11n 20 MHz Bandwidth.
- For SISO, full 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. However, IEEE 802.11ac was evaluated for the highest IEEE 802.11a position in each 5 GHz band and exposure condition.
- If the maximum extrapolated peak SAR of the zoom scan for the maximum output channel was < 1.6 W/kg and the reported 1g averaged SAR was < 0.8 W/kg, SAR testing on other channels was not required to be tested. Otherwise, the other default (or corresponding required) test channels using the lowest data rate were additionally tested.
- The individual spectra for each 2x2 MIMO WIFI Antenna were summed mathematically in linear power units for the MIMO output power measurements.
- The bolded typeface indicates the data rate and channel that was tested for SAR.

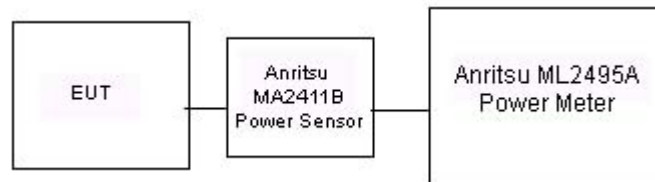


Figure 9-2
Power Measurement Setup for SISO Bandwidths < 50 MHz

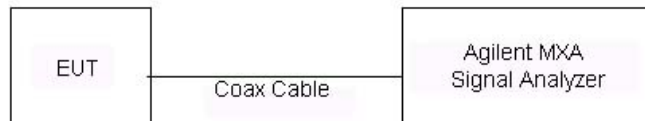


Figure 9-3
Power Measurement Setup for SISO Bandwidths > 50 MHz

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10 LTE POWER REDUCTION

10.1 SVLTE Operation

This device is capable of Simultaneous Voice and LTE (SVLTE) calls, with the voice call supported by a CDMA 1x-RTT transmitter and the data connection supported by a separate LTE transmitter. A LTE power reduction scheme is applied during a LTE connection operating simultaneously with 1x-RTT voice calls. The maximum transmit power of LTE is limited depending on the CDMA 1x voice transmit power level. When CDMA 1x Voice is operating at a certain range of high power levels, the maximum LTE transmit power is limited. When CDMA 1x Voice transmit power is below a certain threshold transmit power level, LTE can transmit at the maximum power. Target levels of power reduction and CDMA voice threshold levels are provided in Table 10-1.

Table 10-1
SVLTE Power Reduction Scheme

Mode	Voice Avg Power(P) 1x 850/1900 MHz (dBm)	Max. B13/B4 LTE Data Avg Power (dBm)
SVLTE	$P \geq 18$	19
	$P < 18$	23

10.2 Output Power Verification

Per KDB Publication 941225 D05v02 Section 4.4, output powers were measured in SVLTE mode to determine that the power reduction mechanism was operating reliably and consistently. The power reduction was investigated by simultaneously connecting the device to both LTE and CDMA base station simulators. LTE output powers were measured through conducted RF connections by first connecting the device in a LTE data call and subsequently a CDMA 1x-RTT call. CDMA powers were controlled by configuring the CDMA base station simulator to active bits. The LTE output power was monitored while changing the cell output power level. The power reduction targets and threshold level described in Table 10-1 were confirmed. Please see results in Table 10-2.

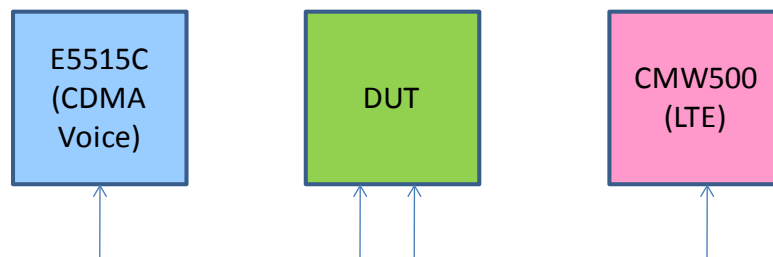


Figure 10-1
SVLTE Conducted Power Measurement Setup

FCC ID: A3LSMG900V	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
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Table 10-2
SVLTE Power Reduction Verification Results

BC0 1xRTT CDMA Voice Channel	BC0 1xRTT CDMA Voice Tx [dBm]	LTE Band 13 Conducted Power (dBm)													
		Mid													
		QPSK 1 RB, Low Edge	QPSK 1 RB, Mid Edge	QPSK 1 RB, Upper Edge	QPSK 50% RB, Low Edge	QPSK 50% RB, Mid Edge	QPSK 50% RB, Upper Edge	QPSK 100% RB ORB offset	16 QAM 1 RB, Low Edge	16 QAM 1 RB, Mid Edge	16 QAM 1 RB, Upper Edge	16 QAM 50% RB, Low Edge	16 QAM 50% RB, Mid Edge	16 QAM 50% RB, Upper Edge	16 QAM 100% RB ORB offset
384	25	18.75	18.92	18.99	18.85	18.97	19.08	18.93	18.72	18.99	19.04	18.94	19.05	19.03	18.8
	24	18.74	18.94	18.98	18.87	18.97	19.03	18.92	18.83	18.98	19.05	18.92	19.06	19.02	18.83
	23	18.73	18.96	18.98	18.9	18.97	19.04	18.9	18.82	19	19.07	18.95	19.05	19	18.81
	22	18.74	18.98	18.99	18.92	18.98	19.06	18.92	18.8	18.87	19.03	18.94	19.03	19.11	18.8
	21	18.74	18.99	19	18.93	18.99	19	18.91	18.78	18.99	19.04	18.95	19.01	19.08	18.84
	20	18.75	18.95	19.01	18.95	19	19.01	18.9	18.77	19.02	19.07	18.92	19.02	19.08	18.83
	19	18.76	18.95	18.96	18.95	19.02	19.05	18.93	18.79	18.98	19.06	18.95	19	19.07	18.82
	18	18.77	18.94	19	18.94	19.03	19.04	18.93	18.8	19	19.05	18.94	19.01	19.05	18.82
	17	22.83	22.89	22.81	21.95	22.06	22.04	21.91	22.01	22.14	22.15	21.02	21.13	21.14	20.79
	16	22.82	22.85	22.84	21.96	22.05	22.04	21.95	22.01	22.12	22.14	21.01	21.12	21.13	20.78
	15	22.75	22.87	22.81	21.97	22.01	22.05	21.9	22.03	22.13	22.1	21.03	21.11	21.14	20.87
	14	22.79	22.88	22.82	21.99	22.04	22.05	21.91	22.02	22.15	22.13	21.02	21.14	21.15	20.84
	13	22.83	22.88	22.88	22	22.03	22.02	21.92	22.01	22.1	22.19	21.04	21.09	21.13	20.85
	12	22.84	22.87	22.84	22	22	22.01	21.9	22.03	22.11	22.18	21.02	21.08	21.14	20.83
	11	22.92	22.86	22.9	21.99	22.01	22.03	21.91	22.07	22.15	22.16	21.05	21.08	21.12	20.84

BC1 1xRTT CDMA Voice Channel	BC1 1xRTT CDMA Voice Tx [dBm]	LTE Band 13 Conducted Power (dBm)													
		Mid													
		QPSK 1 RB, Low Edge	QPSK 1 RB, Mid Edge	QPSK 1 RB, Upper Edge	QPSK 50% RB, Low Edge	QPSK 50% RB, Mid Edge	QPSK 50% RB, Upper Edge	QPSK 100% RB ORB offset	16 QAM 1 RB, Low Edge	16 QAM 1 RB, Mid Edge	16 QAM 1 RB, Upper Edge	16 QAM 50% RB, Low Edge	16 QAM 50% RB, Mid Edge	16 QAM 50% RB, Upper Edge	16 QAM 100% RB ORB offset
600	25	18.74	18.92	19	18.96	19.07	19.08	18.91	18.89	19.03	19.06	18.94	19.03	19.09	18.82
	24	18.73	18.93	19.01	18.95	19.05	19.07	18.9	18.85	19.02	19.07	18.93	19.04	19.06	18.8
	23	18.75	18.9	19.02	18.96	19.05	19.09	18.91	18.86	19.03	19.09	18.94	19.03	19.07	18.82
	22	18.77	18.94	19	18.95	19.04	19.08	18.92	18.87	19.04	19.08	18.95	19.07	19.05	18.81
	21	18.76	18.95	18.98	18.97	19.07	19.05	18.94	18.85	19.01	19.03	18.97	19.08	19.03	18.8
	20	18.72	18.93	18.99	18.98	19.03	19.03	18.95	18.86	19.02	19.07	18.98	19.08	19.04	18.78
	19	18.78	18.95	19.01	19	19.05	19.04	18.93	18.84	19	19.06	18.97	19.09	19.03	18.79
	18	18.72	18.94	19.02	19	19.06	19.03	18.85	18.82	19	19.06	18.94	19.1	19.05	18.8
	17	22.81	22.91	22.92	22.02	22.12	22.14	21.86	22.04	22.12	22.11	21.05	21.11	21.16	20.82
	16	22.77	22.9	22.91	22.06	22.1	22.1	21.87	22.05	22.14	22.13	21.04	21.12	21.16	20.83
	15	22.76	22.91	22.9	22.04	22.11	22.09	21.86	22.08	22.13	22.15	21.03	21.11	21.17	20.84
	14	22.76	22.92	22.91	22.04	22.1	22.08	21.88	22.04	22.11	22.16	21.06	21.12	21.09	20.83
	13	22.74	22.93	22.92	22.06	22.12	22.07	21.9	22	22.13	22.15	21.07	21.14	21.15	20.85
	12	22.78	22.91	22.91	22.05	22.13	22.05	21.87	21.98	22.13	22.12	21.05	21.13	21.14	20.84
	11	22.79	22.92	22.92	22.06	22.13	22.15	21.88	21.97	22.12	22.13	20.98	21.16	21.12	20.85

BC0 1xRTT CDMA Voice Channel	BC0 1xRTT CDMA Voice Tx [dBm]	LTE Band 4 Conducted Power (dBm) - 20 MHz BW													
		Mid													
		QPSK 1 RB, Low Edge	QPSK 1 RB, Mid Edge	QPSK 1 RB, Upper Edge	QPSK 50% RB, Low Edge	QPSK 50% RB, Mid Edge	QPSK 50% RB, Upper Edge	QPSK 100% RB ORB offset	16 QAM 1 RB, Low Edge	16 QAM 1 RB, Mid Edge	16 QAM 1 RB, Upper Edge	16 QAM 50% RB, Low Edge	16 QAM 50% RB, Mid Edge	16 QAM 50% RB, Upper Edge	16 QAM 100% RB ORB offset
384	25	19.18	19.41	19.02	18.91	19.07	19.01	19.04	19.21	19.41	19.06	18.92	19.08	18.95	18.97
	24	19.21	19.37	19.1	18.99	19.11	19.12	19.03	19.31	19.4	19.11	18.91	19.12	18.94	19.01
	23	19.21	19.37	19.02	18.98	19.15	19.05	19.01	19.32	19.43	19.02	18.91	19.1	18.97	19.08
	22	19.22	19.36	19.05	19.02	19.19	19.06	18.95	19.31	19.42	19.04	18.88	19.04	18.92	19.02
	21	19.16	19.34	19.07	19.05	19.22	19.07	19	19.28	19.4	19.11	18.96	19.05	18.91	18.99
	20	19.18	19.35	19.07	19.06	19.21	19.03	19.04	19.24	19.41	19.13	18.95	19.13	18.98	19.2
	19	19.2	19.25	19.03	19.1	19.2	19.1	19.03	19.23	19.42	19.17	18.94	19.11	19	19
	18	19.23	19.32	19.03	18.94	19.09	19.05	19.06	19.27	19.42	19.15	18.89	19.07	18.91	18.92
	17	23.04	23.23	22.94	21.98	22.09	21.96	21.97	22.09	22.28	21.94	20.85	21.13	20.94	20.97
	16	23.12	23.26	22.91	21.97	22.11	22.01	22.06	22.13	22.22	22.01	20.95	21.15	21.1	20.98
	15	23.11	23.33	22.92	21.95	22.12	22.06	22	22.15	22.24	22.07	20.97	21.1	21.06	21.06
	14	23.16	23.31	22.91	21.9	22.14	22.08	22.01	22.21	22.26	22.1	20.99	21.03	21.04	21.13
	13	23.06	23.31	22.94	21.91	22.18	21.99	22.05	22.24	22.28	22.22	20.91	21.08	21.02	21.11
	12	23.1	23.32	22.97	21.92	22.21	22	22.02	22.19	22.32	22.01	20.92	21.12	21	21.1
	11	23.07	23.25	22.89	21.95	22.11	21.99	22	22.1	22.3	21.96	20.88	21.07	20.97	20.98

BC1 1xRTT CDMA Voice Channel	BC1 1xRTT CDMA Voice Tx [dBm]	LTE Band 4 Conducted Power (dBm) - 20 MHz BW													
		Mid													
		QPSK 1 RB, Low Edge	QPSK 1 RB, Mid Edge	QPSK 1 RB, Upper Edge	QPSK 50% RB, Low Edge	QPSK 50% RB, Mid Edge	QPSK 50% RB, Upper Edge	QPSK 100% RB ORB offset	16 QAM 1 RB, Low Edge	16 QAM 1 RB, Mid Edge	16 QAM 1 RB, Upper Edge	16 QAM 50% RB, Low Edge	16 QAM 50% RB, Mid Edge	16 QAM 50% RB, Upper Edge	16 QAM 100% RB ORB offset
600	25	19.19	19.35	19.07	18.96	19.12	18.98	19.05	19.21	19.45	19.1	18.91	19.06	18.95	18.96
	24	19.21	19.36	19.11	18.97	19.15	19	19.02	19.28	19.44	19.11	18.93	19.07	19.01	18.97
	23	19.22	19.39	19.12	18.96	19.16	19.07	19.01	19.31	19.43	19.09	18.91	19.11	19.02	19.03
	22	19.27	19.4	19.15	18.98	19.2	19.06	19	19.23	19.44	19.12	18.97	19.1	18.98	19
	21	19.25	19.37	19.13	18.94	19.21	19.02	19.06	19.25	19.41	19.11	18.96	19.06	19.01	19.01
	20	19.21	19.38	19.18	18.91	19.16	19.1	18.97	19.31	19.42	19.1	18.95	19.07	19.05	18.96
	19	19.19	19.41	19.08	18.95	19.15	19.06	19.04	19.32	19.43	19.08	18.93	19.11	18.99	19.02
	18	19.22	19.38	19.02	18.99	19.14	19.01	19.07	19.24	19.44	19.07	18.95	19.08	18.95	18.96
	17	23.03	23.22	22.93	21.98	22.14	22.04	21.97	22.15	22.31	21.93	20.97	21.09	20.95	20.93
	16	23.12	23.27	22.91	21.99	22.24	22.1	22.1	22.1	22.32	22	20.92	21.12	21	20.94
	15	23.24	23.24	22.93	22.01	22.1	22.03	22.08	22.1	22.33	22.01	20.97	21.1	21.02	20.91
	14	23.15	23.26	22.97	22.04	22.15	22.17	22.06	22.12	22.34	22.02	20.96	21.08	21.03	20.85
	13	23.24	23.31	22.88	22.03	22.17	22.11	22.05	22.11	22.35	22.05	20.94	21.15	21.05	20.88
	12	23.26	23.35	22.8	22.01	22.2	22.16	22.01	22.12	22.31	22.07	20.95	21.13	21.01	20.93
	11	23.05	23.23	22.91	21.98	22.16	22.06	21.99	22.13	22.33	21.92	20.94	21.11	20.93	20.91

10.3 SVLTE SAR Testing Procedures

Per KDB 941225 D05v02 Section 4.4 B), SAR testing was additionally performed at the reduced CDMA and LTE power levels to evaluate each potential simultaneous transmission scenario. Separate test samples were tuned to fixed reduced power levels to represent the SVLTE conditions in a standalone environment for SAR testing purposes only.

10.3.1 Reduced LTE B13 Conducted Powers

Table 10-3
Reduced LTE Band 13 Conducted Power – 10 MHz BW

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Mid	782.0	23230	10	QPSK	1	0	19.06	0	0
	782.0	23230	10	QPSK	1	25	19.00	0	0
	782.0	23230	10	QPSK	1	49	19.17	0	0
	782.0	23230	10	QPSK	25	0	18.97	0	0-1
	782.0	23230	10	QPSK	25	12	18.86	0	0-1
	782.0	23230	10	QPSK	25	25	18.96	0	0-1
	782.0	23230	10	QPSK	50	0	18.93	0	0-1
	782.0	23230	10	16QAM	1	0	18.72	0	0-1
	782.0	23230	10	16QAM	1	25	18.97	0	0-1
	782.0	23230	10	16QAM	1	49	18.82	0	0-1
	782.0	23230	10	16QAM	25	0	18.83	0	0-2
	782.0	23230	10	16QAM	25	12	18.90	0	0-2
	782.0	23230	10	16QAM	25	25	18.89	0	0-2
	782.0	23230	10	16QAM	50	0	18.97	0	0-2

10.3.2 Reduced LTE B4 Conducted Powers

Table 10-4
Reduced LTE Band 4 Conducted Power – 20MHz BW

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Mid	1732.5	20175	20	QPSK	1	0	19.25	0	0
	1732.5	20175	20	QPSK	1	50	19.44	0	0
	1732.5	20175	20	QPSK	1	99	19.19	0	0
	1732.5	20175	20	QPSK	50	0	19.33	0	0-1
	1732.5	20175	20	QPSK	50	25	19.16	0	0-1
	1732.5	20175	20	QPSK	50	50	19.17	0	0-1
	1732.5	20175	20	QPSK	100	0	19.32	0	0-1
	1732.5	20175	20	16QAM	1	0	19.34	0	0-1
	1732.5	20175	20	16QAM	1	50	19.02	0	0-1
	1732.5	20175	20	16QAM	1	99	19.21	0	0-1
	1732.5	20175	20	16QAM	50	0	19.34	0	0-2
	1732.5	20175	20	16QAM	50	25	19.33	0	0-2
	1732.5	20175	20	16QAM	50	50	19.21	0	0-2
	1732.5	20175	20	16QAM	100	0	19.35	0	0-2

Note: LTE Band 4 (AWS) at 20 MHz BW 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.

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Table 10-5
Reduced LTE Band 4 Conducted Power – 15 MHz BW

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1717.5	20025	15	QPSK	1	0	19.07	0	0
	1717.5	20025	15	QPSK	1	36	19.26	0	0
	1717.5	20025	15	QPSK	1	74	19.29	0	0
	1717.5	20025	15	QPSK	36	0	19.19	0	0-1
	1717.5	20025	15	QPSK	36	18	19.17	0	0-1
	1717.5	20025	15	QPSK	36	37	19.18	0	0-1
	1717.5	20025	15	QPSK	75	0	19.22	0	0-1
	1717.5	20025	15	16QAM	1	0	19.02	0	0-1
	1717.5	20025	15	16QAM	1	36	19.20	0	0-1
	1717.5	20025	15	16QAM	1	74	19.27	0	0-1
	1717.5	20025	15	16QAM	36	0	19.16	0	0-2
	1717.5	20025	15	16QAM	36	18	19.20	0	0-2
	1717.5	20025	15	16QAM	36	37	19.21	0	0-2
	1717.5	20025	15	16QAM	75	0	19.21	0	0-2
Mid	1732.5	20175	15	QPSK	1	0	19.35	0	0
	1732.5	20175	15	QPSK	1	36	19.36	0	0
	1732.5	20175	15	QPSK	1	74	19.40	0	0
	1732.5	20175	15	QPSK	36	0	19.27	0	0-1
	1732.5	20175	15	QPSK	36	18	19.38	0	0-1
	1732.5	20175	15	QPSK	36	37	19.25	0	0-1
	1732.5	20175	15	QPSK	75	0	19.40	0	0-1
	1732.5	20175	15	16QAM	1	0	19.28	0	0-1
	1732.5	20175	15	16QAM	1	36	19.34	0	0-1
	1732.5	20175	15	16QAM	1	74	19.36	0	0-1
	1732.5	20175	15	16QAM	36	0	19.32	0	0-2
	1732.5	20175	15	16QAM	36	18	19.36	0	0-2
	1732.5	20175	15	16QAM	36	37	19.28	0	0-2
	1732.5	20175	15	16QAM	75	0	19.35	0	0-2
High	1747.5	20325	15	QPSK	1	0	19.47	0	0
	1747.5	20325	15	QPSK	1	36	19.50	0	0
	1747.5	20325	15	QPSK	1	74	19.50	0	0
	1747.5	20325	15	QPSK	36	0	19.48	0	0-1
	1747.5	20325	15	QPSK	36	18	19.47	0	0-1
	1747.5	20325	15	QPSK	36	37	19.43	0	0-1
	1747.5	20325	15	QPSK	75	0	19.46	0	0-1
	1747.5	20325	15	16QAM	1	0	19.49	0	0-1
	1747.5	20325	15	16QAM	1	36	19.43	0	0-1
	1747.5	20325	15	16QAM	1	74	19.48	0	0-1
	1747.5	20325	15	16QAM	36	0	19.43	0	0-2
	1747.5	20325	15	16QAM	36	18	19.44	0	0-2
	1747.5	20325	15	16QAM	36	37	19.49	0	0-2
	1747.5	20325	15	16QAM	75	0	19.41	0	0-2

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Table 10-6
Reduced LTE Band 4 Conducted Power – 10MHz BW

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1715	20000	10	QPSK	1	0	19.11	0	0
	1715	20000	10	QPSK	1	25	19.28	0	0
	1715	20000	10	QPSK	1	49	19.33	0	0
	1715	20000	10	QPSK	25	0	19.01	0	0-1
	1715	20000	10	QPSK	25	12	19.18	0	0-1
	1715	20000	10	QPSK	25	25	19.15	0	0-1
	1715	20000	10	QPSK	50	0	19.16	0	0-1
	1715	20000	10	16QAM	1	0	18.99	0	0-1
	1715	20000	10	16QAM	1	25	19.16	0	0-1
	1715	20000	10	16QAM	1	49	19.21	0	0-1
	1715	20000	10	16QAM	25	0	19.12	0	0-2
	1715	20000	10	16QAM	25	12	19.20	0	0-2
	1715	20000	10	16QAM	25	25	19.24	0	0-2
	1715	20000	10	16QAM	50	0	19.19	0	0-2
Mid	1732.5	20175	10	QPSK	1	0	19.29	0	0
	1732.5	20175	10	QPSK	1	25	19.34	0	0
	1732.5	20175	10	QPSK	1	49	19.41	0	0
	1732.5	20175	10	QPSK	25	0	19.26	0	0-1
	1732.5	20175	10	QPSK	25	12	19.33	0	0-1
	1732.5	20175	10	QPSK	25	25	19.29	0	0-1
	1732.5	20175	10	QPSK	50	0	19.37	0	0-1
	1732.5	20175	10	16QAM	1	0	19.21	0	0-1
	1732.5	20175	10	16QAM	1	25	19.23	0	0-1
	1732.5	20175	10	16QAM	1	49	19.28	0	0-1
	1732.5	20175	10	16QAM	25	0	19.32	0	0-2
	1732.5	20175	10	16QAM	25	12	19.39	0	0-2
	1732.5	20175	10	16QAM	25	25	19.38	0	0-2
	1732.5	20175	10	16QAM	50	0	19.32	0	0-2
High	1750	20350	10	QPSK	1	0	19.39	0	0
	1750	20350	10	QPSK	1	25	19.46	0	0
	1750	20350	10	QPSK	1	49	19.43	0	0
	1750	20350	10	QPSK	25	0	19.50	0	0-1
	1750	20350	10	QPSK	25	12	19.45	0	0-1
	1750	20350	10	QPSK	25	25	19.49	0	0-1
	1750	20350	10	QPSK	50	0	19.50	0	0-1
	1750	20350	10	16QAM	1	0	19.45	0	0-1
	1750	20350	10	16QAM	1	25	19.44	0	0-1
	1750	20350	10	16QAM	1	49	19.44	0	0-1
	1750	20350	10	16QAM	25	0	19.45	0	0-2
	1750	20350	10	16QAM	25	12	19.50	0	0-2
	1750	20350	10	16QAM	25	25	19.49	0	0-2
	1750	20350	10	16QAM	50	0	19.46	0	0-2

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Table 10-7
Reduced LTE Band 4 Conducted Power – 5MHz BW

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1712.5	19975	5	QPSK	1	0	19.12	0	0
	1712.5	19975	5	QPSK	1	12	19.21	0	0
	1712.5	19975	5	QPSK	1	24	19.30	0	0
	1712.5	19975	5	QPSK	12	0	18.91	0	0-1
	1712.5	19975	5	QPSK	12	6	19.05	0	0-1
	1712.5	19975	5	QPSK	12	13	19.11	0	0-1
	1712.5	19975	5	QPSK	25	0	19.03	0	0-1
	1712.5	19975	5	16-QAM	1	0	18.97	0	0-1
	1712.5	19975	5	16-QAM	1	12	19.03	0	0-1
	1712.5	19975	5	16-QAM	1	24	19.17	0	0-1
	1712.5	19975	5	16-QAM	12	0	18.88	0	0-2
	1712.5	19975	5	16-QAM	12	6	19.01	0	0-2
Mid	1712.5	19975	5	16-QAM	12	13	19.03	0	0-2
	1712.5	19975	5	16-QAM	25	0	19.08	0	0-2
	1732.5	20175	5	QPSK	1	0	19.42	0	0
	1732.5	20175	5	QPSK	1	12	19.37	0	0
	1732.5	20175	5	QPSK	1	24	19.39	0	0
	1732.5	20175	5	QPSK	12	0	19.28	0	0-1
	1732.5	20175	5	QPSK	12	6	19.29	0	0-1
	1732.5	20175	5	QPSK	12	13	19.20	0	0-1
	1732.5	20175	5	QPSK	25	0	19.34	0	0-1
	1732.5	20175	5	16-QAM	1	0	19.24	0	0-1
	1732.5	20175	5	16-QAM	1	12	19.15	0	0-1
	1732.5	20175	5	16-QAM	1	24	19.18	0	0-1
High	1732.5	20175	5	16-QAM	12	0	19.42	0	0-2
	1732.5	20175	5	16-QAM	12	6	19.41	0	0-2
	1732.5	20175	5	16-QAM	12	13	19.36	0	0-2
	1732.5	20175	5	16-QAM	25	0	19.38	0	0-2
	1752.5	20375	5	QPSK	1	0	19.45	0	0
	1752.5	20375	5	QPSK	1	12	19.36	0	0
	1752.5	20375	5	QPSK	1	24	19.41	0	0
	1752.5	20375	5	QPSK	12	0	19.43	0	0-1
	1752.5	20375	5	QPSK	12	6	19.49	0	0-1
	1752.5	20375	5	QPSK	12	13	19.50	0	0-1
	1752.5	20375	5	QPSK	25	0	19.47	0	0-1
	1752.5	20375	5	16-QAM	1	0	19.44	0	0-1
	1752.5	20375	5	16-QAM	1	12	19.35	0	0-1
	1752.5	20375	5	16-QAM	1	24	19.40	0	0-1
	1752.5	20375	5	16-QAM	12	0	19.50	0	0-2
	1752.5	20375	5	16-QAM	12	6	19.48	0	0-2
	1752.5	20375	5	16-QAM	12	13	19.49	0	0-2
	1752.5	20375	5	16-QAM	25	0	19.46	0	0-2
	1752.5	20375	5	16-QAM	25	0	19.46	0	0-2

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10.3.3 CDMA RF Output Powers (For SVLTE SAR assessment purposes)

Table 10-8
Fixed CDMA Conducted Powers

Band	Channel	Rule Part	Frequency	SO55 [dBm]	SO55 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]
	F-RC		MHz	RC1	RC3	FCH+SCH	FCH
Cellular	1013	22H	824.7	17.71	17.90	17.88	17.91
	384	22H	836.52	18.08	18.01	18.08	18.01
	777	22H	848.31	17.93	17.90	17.95	17.99
PCS	25	24E	1851.25	17.83	17.94	17.85	17.85
	600	24E	1880	17.81	17.96	17.83	17.92
	1175	24E	1908.75	17.54	17.58	17.51	17.52

Note:

1. When the CDMA voice power is below a certain power threshold, LTE is allowed to operate at the maximum output power. The CDMA output powers represented in the table above was measured with the device tuned down (for SAR Test purposes only) to assess the standalone CDMA SAR in the SVLTE scenario where LTE is operating at maximum output power in conjunction with a low CDMA voice level (see Table 10-1).

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11 SYSTEM VERIFICATION

11.1 Tissue Verification

Table 11-1
Measured Tissue Properties – Head

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
2/20/2014	750H	22.0	740	0.891	40.621	0.893	41.994	-0.22%	-3.27%
			755	0.905	40.435	0.894	41.916	1.23%	-3.53%
			770	0.918	40.230	0.895	41.838	2.57%	-3.84%
			785	0.932	40.032	0.896	41.760	4.02%	-4.14%
2/13/2014	835H	22.8	820	0.902	42.448	0.899	41.578	0.33%	2.09%
			835	0.916	42.250	0.900	41.500	1.78%	1.81%
			850	0.930	42.086	0.916	41.500	1.53%	1.41%
2/19/2014	835H	23.8	820	0.925	43.018	0.899	41.578	2.89%	3.46%
			835	0.939	42.810	0.900	41.500	4.33%	3.16%
			850	0.954	42.634	0.916	41.500	4.15%	2.73%
2/21/2014	1750H	23.5	1710	1.368	40.278	1.348	40.142	1.48%	0.34%
			1750	1.407	40.108	1.371	40.079	2.63%	0.07%
			1790	1.450	39.932	1.394	40.016	4.02%	-0.21%
2/12/2014	1900H	23.0	1850	1.348	39.260	1.400	40.000	-3.71%	-1.85%
			1880	1.378	39.128	1.400	40.000	-1.57%	-2.18%
			1910	1.411	39.022	1.400	40.000	0.79%	-2.45%
2/14/2014	1900H	23.0	1850	1.341	38.513	1.400	40.000	-4.21%	-3.72%
			1880	1.370	38.396	1.400	40.000	-2.14%	-4.01%
			1910	1.401	38.281	1.400	40.000	0.07%	-4.30%
2/26/2014	1900H	22.1	1850	1.362	39.343	1.400	40.000	-2.71%	-1.64%
			1880	1.394	39.229	1.400	40.000	-0.43%	-1.93%
			1910	1.427	39.090	1.400	40.000	1.93%	-2.27%
2/18/2014	2450H	22.8	2401	1.822	38.991	1.756	39.287	3.76%	-0.75%
			2450	1.879	38.816	1.800	39.200	4.39%	-0.98%
			2499	1.935	38.638	1.853	39.138	4.43%	-1.28%
2/3/2014	5200-5800H	23.0	5180	4.474	36.244	4.635	36.009	-3.47%	0.65%
			5200	4.508	36.214	4.655	35.986	-3.16%	0.63%
			5220	4.522	36.197	4.676	35.963	-3.29%	0.65%
			5240	4.538	36.162	4.696	35.940	-3.36%	0.62%
			5260	4.570	36.130	4.717	35.917	-3.12%	0.59%
			5280	4.590	36.108	4.737	35.894	-3.10%	0.60%
			5300	4.605	36.076	4.758	35.871	-3.22%	0.57%
			5500	4.822	35.798	4.963	35.643	-2.84%	0.43%
			5520	4.842	35.754	4.983	35.620	-2.83%	0.38%
			5540	4.868	35.725	5.004	35.597	-2.72%	0.36%
			5580	4.910	35.706	5.045	35.551	-2.68%	0.44%
			5600	4.925	35.697	5.065	35.529	-2.76%	0.47%
			5680	5.006	35.596	5.147	35.437	-2.74%	0.45%
			5765	5.088	35.493	5.234	35.340	-2.79%	0.43%
			5785	5.101	35.458	5.255	35.317	-2.93%	0.40%
			5800	5.112	35.479	5.270	35.300	-3.00%	0.51%

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Table 11-2
Measured Tissue Properties – Body

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
2/14/2014	750B	21.1	740	0.956	55.018	0.963	55.570	-0.73%	-0.99%
			755	0.968	54.825	0.964	55.512	0.41%	-1.24%
			770	0.982	54.727	0.965	55.453	1.76%	-1.31%
			785	1.000	54.620	0.966	55.395	3.52%	-1.40%
2/20/2014	750B	23.0	740	0.972	54.717	0.963	55.570	0.93%	-1.54%
			755	0.986	54.548	0.964	55.512	2.28%	-1.74%
			770	1.000	54.426	0.965	55.453	3.63%	-1.85%
			785	1.014	54.273	0.966	55.395	4.97%	-2.03%
2/10/2014	835B	20.4	820	0.939	54.771	0.969	55.258	-3.10%	-0.88%
			835	0.954	54.628	0.970	55.200	-1.65%	-1.04%
			850	0.969	54.462	0.988	55.154	-1.92%	-1.25%
2/14/2014	835B	23.1	820	1.001	54.549	0.969	55.258	3.30%	-1.28%
			835	1.015	54.431	0.970	55.200	4.64%	-1.39%
			850	1.028	54.304	0.988	55.154	4.05%	-1.54%
2/20/2014	835B	23.8	820	0.999	54.294	0.969	55.258	3.10%	-1.74%
			835	1.012	54.173	0.970	55.200	4.33%	-1.86%
			850	1.028	54.019	0.988	55.154	4.05%	-2.06%
2/20/2014	1750B	23.3	1710	1.393	52.653	1.463	53.537	-4.78%	-1.65%
			1750	1.435	52.492	1.488	53.432	-3.56%	-1.76%
			1790	1.473	52.354	1.514	53.326	-2.71%	-1.82%
2/21/2014	1750B	22.8	1710	1.435	51.962	1.463	53.537	-1.91%	-2.94%
			1750	1.477	51.827	1.488	53.432	-0.74%	-3.00%
			1790	1.519	51.688	1.514	53.326	0.33%	-3.07%
2/13/2014	1900B	23.0	1850	1.489	52.697	1.520	53.300	-2.04%	-1.13%
			1880	1.523	52.598	1.520	53.300	0.20%	-1.32%
			1910	1.558	52.505	1.520	53.300	2.50%	-1.49%
2/19/2014	1900B	22.0	1850	1.519	52.266	1.520	53.300	-0.07%	-1.94%
			1880	1.551	52.184	1.520	53.300	2.04%	-2.09%
			1910	1.589	52.074	1.520	53.300	4.54%	-2.30%
2/24/2014	1900B	23.1	1850	1.482	51.713	1.520	53.300	-2.50%	-2.98%
			1880	1.515	51.631	1.520	53.300	-0.33%	-3.13%
			1910	1.551	51.525	1.520	53.300	2.04%	-3.33%
2/12/2014	2450B	24.0	2401	1.872	51.518	1.903	52.765	-1.63%	-2.36%
			2450	1.937	51.331	1.950	52.700	-0.67%	-2.60%
			2499	1.998	51.123	2.019	52.638	-1.04%	-2.88%
2/6/2014	5200-5800B	24.3	5180	5.116	47.453	5.276	49.041	-3.03%	-3.24%
			5200	5.147	47.331	5.299	49.014	-2.87%	-3.43%
			5220	5.173	47.224	5.323	48.987	-2.82%	-3.60%
			5260	5.256	47.134	5.369	48.933	-2.10%	-3.68%
			5280	5.277	47.164	5.393	48.906	-2.15%	-3.56%
			5300	5.298	47.170	5.416	48.879	-2.18%	-3.50%
			5500	5.600	46.464	5.650	48.607	-0.88%	-4.41%
			5520	5.646	46.503	5.673	48.580	-0.48%	-4.28%
			5540	5.663	46.576	5.696	48.553	-0.58%	-4.07%
			5745	5.980	45.916	5.936	48.275	0.74%	-4.89%
			5765	6.028	45.890	5.959	48.248	1.16%	-4.89%
			5785	6.055	45.952	5.982	48.220	1.22%	-4.70%
			5800	6.062	45.987	6.000	48.200	1.03%	-4.59%

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 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.

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11.2 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 11-3
System Verification Results

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} (%)
D	750	HEAD	02/20/2014	23.9	22.0	0.100	1003	3022	0.818	8.370	8.180	-2.27%
J	835	HEAD	02/13/2014	21.9	22.8	0.100	4d119	3332	0.943	9.680	9.430	-2.58%
J	835	HEAD	02/19/2014	24.2	23.4	0.100	4d119	3332	0.956	9.680	9.560	-1.24%
G	1750	HEAD	02/21/2014	24.5	23.6	0.100	1051	3209	3.690	36.500	36.900	1.10%
D	1900	HEAD	02/12/2014	23.0	23.0	0.100	5d149	3287	3.870	40.400	38.700	-4.21%
D	1900	HEAD	02/14/2014	23.2	23.0	0.100	5d149	3022	3.750	40.400	37.500	-7.18%
D	1900	HEAD	02/26/2014	23.6	22.1	0.100	5d149	3022	3.830	40.400	38.300	-5.20%
K	2450	HEAD	02/18/2014	23.5	23.0	0.100	719	3287	5.180	53.200	51.800	-2.63%
A	5200	HEAD	02/03/2014	24.4	23.0	0.100	1007	3920	7.720	77.500	77.200	-0.39%
A	5300	HEAD	02/03/2014	24.4	23.1	0.100	1007	3920	7.900	80.200	79.000	-1.50%
A	5500	HEAD	02/03/2014	24.2	23.2	0.100	1007	3920	7.740	81.400	77.400	-4.91%
A	5600	HEAD	02/03/2014	24.5	23.3	0.100	1007	3920	7.900	80.000	79.000	-1.25%
A	5800	HEAD	02/03/2014	24.3	23.3	0.100	1007	3920	7.680	77.500	76.800	-0.90%
C	750	BODY	02/14/2014	21.7	20.8	0.100	1054	3263	0.852	8.720	8.520	-2.29%
B	750	BODY	02/20/2014	23.3	23.0	0.100	1054	3288	0.927	8.720	9.270	6.31%
C	835	BODY	02/10/2014	23.4	20.1	0.100	4d133	3263	0.956	9.610	9.560	-0.52%
G	835	BODY	02/14/2014	21.3	23.1	0.100	4d119	3209	1.020	9.540	10.200	6.92%
G	835	BODY	02/20/2014	24.1	23.8	0.100	4d119	3209	0.995	9.540	9.950	4.30%
G	1750	BODY	02/20/2014	24.1	23.0	0.100	1051	3209	3.690	37.800	36.900	-2.38%
G	1750	BODY	02/21/2014	24.4	22.8	0.100	1051	3209	3.790	37.800	37.900	0.26%
G	1900	BODY	02/13/2014	23.5	23.0	0.100	5d149	3209	3.890	40.500	38.900	-3.95%
E	1900	BODY	02/19/2014	24.1	22.0	0.100	5d149	3914	4.270	40.500	42.700	5.43%
G	1900	BODY	02/24/2014	24.4	23.0	0.100	5d149	3209	3.920	40.500	39.200	-3.21%
H	2450	BODY	02/12/2014	24.6	24.0	0.100	719	3318	5.410	51.700	54.100	4.64%
E	5200	BODY	02/06/2014	24.0	23.7	0.100	1120	3914	7.700	76.600	77.000	0.52%
E	5300	BODY	02/06/2014	24.0	23.8	0.100	1120	3914	7.650	76.800	76.500	-0.39%
E	5500	BODY	02/06/2014	24.1	23.8	0.100	1120	3914	7.840	79.800	78.400	-1.75%
E	5800	BODY	02/06/2014	24.1	23.8	0.100	1120	3914	7.170	75.500	71.700	-5.03%

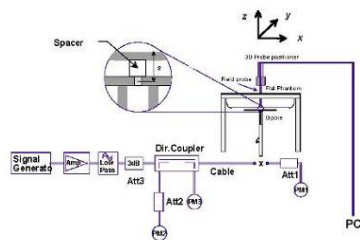


Figure 11-1
System Verification Setup Diagram



Figure 11-2
System Verification Setup Photo

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12 SAR DATA SUMMARY

12.1 Standalone Head SAR Data

Table 12-1
Cell. CDMA 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)	
836.52	384	Cell. CDMA	RC3 / SO55	25.0	24.75	0.06	Right	Cheek	Standard	32723	1:1	0.250	1.059	0.265	
836.52	384	Cell. CDMA	RC3 / SO55	25.0	24.75	0.10	Right	Tilt	Standard	32723	1:1	0.192	1.059	0.203	
836.52	384	Cell. CDMA	RC3 / SO55	25.0	24.75	0.07	Left	Cheek	Standard	32723	1:1	0.312	1.059	0.330	
836.52	384	Cell. CDMA	RC3 / SO55	25.0	24.75	0.03	Left	Cheek	Wireless Charging Cover	32723	1:1	0.370	1.059	0.392	A1
836.52	384	Cell. CDMA	RC3 / SO55	25.0	24.75	0.12	Left	Tilt	Standard	32723	1:1	0.169	1.059	0.179	
836.52	384	Cell. CDMA	RC3 / SO55	18.5	18.01	0.12	Right	Cheek	Standard	32732	1:1	0.057	1.119	0.064	
836.52	384	Cell. CDMA	RC3 / SO55	18.5	18.01	0.16	Right	Tilt	Standard	32732	1:1	0.044	1.119	0.049	
836.52	384	Cell. CDMA	RC3 / SO55	18.5	18.01	0.16	Left	Cheek	Standard	32732	1:1	0.034	1.119	0.038	
836.52	384	Cell. CDMA	RC3 / SO55	18.5	18.01	0.04	Left	Tilt	Standard	32732	1:1	0.020	1.119	0.022	
836.52	384	Cell. CDMA	EVDO Rev. A	25.0	24.56	0.01	Right	Cheek	Standard	32723	1:1	0.265	1.107	0.293	
836.52	384	Cell. CDMA	EVDO Rev. A	25.0	24.56	0.01	Right	Cheek	Wireless Charging Cover	32723	1:1	0.293	1.107	0.324	
836.52	384	Cell. CDMA	EVDO Rev. A	25.0	24.56	0.04	Right	Tilt	Standard	32723	1:1	0.059	1.107	0.065	
836.52	384	Cell. CDMA	EVDO Rev. A	25.0	24.56	0.01	Left	Cheek	Standard	32723	1:1	0.140	1.107	0.155	
836.52	384	Cell. CDMA	EVDO Rev. A	25.0	24.56	0.13	Left	Tilt	Standard	32723	1:1	0.067	1.107	0.074	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

Note: 18 dBm CDMA standalone SAR data was included for the purpose of simultaneous Tx SAR assessments for SVLTE operations in Section 13.

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Table 12-2
PCS CDMA 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	600	PCS CDMA	RC3 / SO55	25.0	24.40	-0.02	Right	Cheek	Standard	3272C	1:1	0.421	1.148	0.483	
1880.00	600	PCS CDMA	RC3 / SO55	25.0	24.40	-0.11	Right	Tilt	Standard	3272C	1:1	0.257	1.148	0.295	
1851.25	25	PCS CDMA	RC3 / SO55	25.0	24.61	-0.06	Left	Cheek	Standard	3272C	1:1	0.839	1.094	0.918	
1880.00	600	PCS CDMA	RC3 / SO55	25.0	24.40	0.00	Left	Cheek	Standard	3272C	1:1	0.764	1.148	0.877	
1908.75	1175	PCS CDMA	RC3 / SO55	25.0	24.63	-0.05	Left	Cheek	Standard	3272C	1:1	0.746	1.089	0.812	
1851.25	25	PCS CDMA	RC3 / SO55	25.0	24.61	-0.05	Left	Cheek	Wireless Charging Cover	3272C	1:1	0.833	1.094	0.911	
1880.00	600	PCS CDMA	RC3 / SO55	25.0	24.40	-0.07	Left	Tilt	Standard	3272C	1:1	0.254	1.148	0.292	
1880.00	600	PCS CDMA	RC3 / SO55	23.0	21.83	0.03	Right	Cheek	Standard	3271E	1:1	0.282	1.309	0.369	
1880.00	600	PCS CDMA	RC3 / SO55	23.0	21.83	0.04	Right	Tilt	Standard	3271E	1:1	0.108	1.309	0.141	
1880.00	600	PCS CDMA	RC3 / SO55	23.0	21.83	0.02	Left	Cheek	Standard	3271E	1:1	0.177	1.309	0.232	
1880.00	600	PCS CDMA	RC3 / SO55	23.0	21.83	-0.02	Left	Tilt	Standard	3271E	1:1	0.137	1.309	0.179	
1880.00	600	PCS CDMA	RC3 / SO55	18.5	17.96	-0.10	Right	Cheek	Standard	32732	1:1	0.142	1.132	0.161	
1880.00	600	PCS CDMA	RC3 / SO55	18.5	17.96	-0.05	Right	Tilt	Standard	32732	1:1	0.047	1.132	0.053	
1880.00	600	PCS CDMA	RC3 / SO55	18.5	17.96	0.11	Left	Cheek	Standard	32732	1:1	0.085	1.132	0.096	
1880.00	600	PCS CDMA	RC3 / SO55	18.5	17.96	0.15	Left	Tilt	Standard	32732	1:1	0.053	1.132	0.060	
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	24.39	-0.03	Right	Cheek	Standard	3272C	1:1	0.470	1.151	0.541	
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	24.39	-0.03	Right	Tilt	Standard	3272C	1:1	0.339	1.151	0.390	
1851.25	25	PCS CDMA	EVDO Rev. A	25.0	24.59	-0.02	Left	Cheek	Standard	3272C	1:1	0.942	1.099	1.035	
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	24.39	-0.10	Left	Cheek	Standard	3272C	1:1	0.834	1.151	0.960	
1908.75	1175	PCS CDMA	EVDO Rev. A	25.0	24.54	-0.10	Left	Cheek	Standard	3272C	1:1	0.816	1.112	0.907	
1851.25	25	PCS CDMA	EVDO Rev. A	25.0	24.59	-0.06	Left	Cheek	Wireless Charging Cover	3272C	1:1	0.977	1.099	1.074	A2
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	24.39	-0.06	Left	Tilt	Standard	3272C	1:1	0.271	1.151	0.312	
1880.00	600	PCS CDMA	EVDO Rev. A	23.0	21.80	0.01	Right	Cheek	Standard	3271E	1:1	0.277	1.318	0.365	
1880.00	600	PCS CDMA	EVDO Rev. A	23.0	21.80	0.01	Right	Tilt	Standard	3271E	1:1	0.107	1.318	0.141	
1880.00	600	PCS CDMA	EVDO Rev. A	23.0	21.80	-0.03	Left	Cheek	Standard	3271E	1:1	0.179	1.318	0.236	
1880.00	600	PCS CDMA	EVDO Rev. A	23.0	21.80	0.03	Left	Tilt	Standard	3271E	1:1	0.140	1.318	0.185	
1851.25	25	PCS CDMA	EVDO Rev. A	25.0	24.59	0.05	Left	Cheek	Wireless Charging Cover	3272C	1:1	0.857	1.099	0.942	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

Note 1: Blue highlighted entry represents variability measurement data.

Note 2: 18 dBm CDMA standalone SAR data was included for the purpose of simultaneous Tx SAR assessments for SVLTE operations in Section 13.

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Table 12-3
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	33.5	33.09	-0.03	Right	Cheek	Standard	32723	1:8.3	0.276	1.099	0.303	
836.60	190	GSM 850	GSM	33.5	33.09	0.04	Right	Tilt	Standard	32723	1:8.3	0.207	1.099	0.227	
836.60	190	GSM 850	GSM	33.5	33.09	0.11	Left	Cheek	Standard	32723	1:8.3	0.331	1.099	0.364	
836.60	190	GSM 850	GSM	33.5	33.09	0.03	Left	Cheek	Wireless Charging Cover	32723	1:8.3	0.342	1.099	0.376	A3
836.60	190	GSM 850	GSM	33.5	33.09	0.01	Left	Tilt	Standard	32723	1:8.3	0.161	1.099	0.177	
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 12-4
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	30.33	0.16	Right	Cheek	Standard	32723	1:8.3	0.294	1.040	0.306	A4
1880.00	661	GSM 1900	GSM	30.5	30.33	-0.05	Right	Cheek	Wireless Charging Cover	32723	1:8.3	0.293	1.040	0.305	
1880.00	661	GSM 1900	GSM	30.5	30.33	0.07	Right	Tilt	Standard	32723	1:8.3	0.063	1.040	0.066	
1880.00	661	GSM 1900	GSM	30.5	30.33	-0.02	Left	Cheek	Standard	32723	1:8.3	0.163	1.040	0.170	
1880.00	661	GSM 1900	GSM	30.5	30.33	0.03	Left	Tilt	Standard	32723	1:8.3	0.070	1.040	0.073	
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 12-5
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	23.5	23.00	-0.07	Right	Cheek	Standard	32723	1:1	0.197	1.122	0.221	
836.60	4183	UMTS 850	RMC	23.5	23.00	0.05	Right	Tilt	Standard	32723	1:1	0.128	1.122	0.144	
836.60	4183	UMTS 850	RMC	23.5	23.00	0.01	Left	Cheek	Standard	32723	1:1	0.261	1.122	0.293	
836.60	4183	UMTS 850	RMC	23.5	23.00	0.06	Left	Cheek	Wireless Charging Cover	32723	1:1	0.291	1.122	0.327	A5
836.60	4183	UMTS 850	RMC	23.5	23.00	0.15	Left	Tilt	Standard	32723	1:1	0.127	1.122	0.142	
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 12-6
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)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	23.5	23.08	-0.09	Right	Cheek	Standard	3271D	1:1	0.283	1.102	0.312	
1880.00	9400	UMTS 1900	RMC	23.5	23.08	0.03	Right	Tilt	Standard	3271D	1:1	0.167	1.102	0.184	
1880.00	9400	UMTS 1900	RMC	23.5	23.08	-0.11	Left	Cheek	Standard	3271D	1:1	0.532	1.102	0.586	A6
1880.00	9400	UMTS 1900	RMC	23.5	23.08	0.00	Left	Cheek	Wireless Charging Cover	3271D	1:1	0.478	1.102	0.527	
1880.00	9400	UMTS 1900	RMC	23.5	23.08	-0.03	Left	Tilt		Standard	3271D	1:1	0.157	1.102	0.173
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

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Table 12-7
LTE Band 13 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) (W/kg)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #	
MHz	Ch.																			
782.00	23230	Mid	LTE Band 13	10	Standard	23.5	23.27	0.10	0	Right	Cheek	QPSK	1	49	32725	1:1	0.335	1.054	0.353	A7
782.00	23230	Mid	LTE Band 13	10	Wireless Charging Cover	23.5	23.27	0.05	0	Right	Cheek	QPSK	1	49	32725	1:1	0.319	1.054	0.336	
782.00	23230	Mid	LTE Band 13	10	Standard	22.5	22.25	0.08	1	Right	Cheek	QPSK	25	25	32725	1:1	0.287	1.059	0.304	
782.00	23230	Mid	LTE Band 13	10	Standard	23.5	23.27	0.00	0	Right	Tilt	QPSK	1	49	32725	1:1	0.208	1.054	0.219	
782.00	23230	Mid	LTE Band 13	10	Standard	22.5	22.25	0.02	1	Right	Tilt	QPSK	25	25	32725	1:1	0.178	1.059	0.189	
782.00	23230	Mid	LTE Band 13	10	Standard	23.5	23.27	-0.03	0	Left	Cheek	QPSK	1	49	32725	1:1	0.231	1.054	0.243	
782.00	23230	Mid	LTE Band 13	10	Standard	22.5	22.25	0.01	1	Left	Cheek	QPSK	25	25	32725	1:1	0.193	1.059	0.204	
782.00	23230	Mid	LTE Band 13	10	Standard	23.5	23.27	0.04	0	Left	Tilt	QPSK	1	49	32725	1:1	0.151	1.054	0.159	
782.00	23230	Mid	LTE Band 13	10	Standard	22.5	22.25	0.02	1	Left	Tilt	QPSK	25	25	32725	1:1	0.125	1.059	0.132	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	19.17	0.08	0	Right	Cheek	QPSK	1	49	32722	1:1	0.127	1.079	0.137	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	18.97	0.06	0	Right	Cheek	QPSK	25	0	32722	1:1	0.136	1.130	0.154	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	19.17	0.07	0	Right	Tilt	QPSK	1	49	32722	1:1	0.068	1.079	0.073	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	18.97	0.08	0	Right	Tilt	QPSK	25	0	32722	1:1	0.076	1.130	0.086	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	19.17	0.09	0	Left	Cheek	QPSK	1	49	32722	1:1	0.091	1.079	0.098	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	18.97	0.06	0	Left	Cheek	QPSK	25	0	32722	1:1	0.100	1.130	0.113	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	19.17	0.07	0	Left	Tilt	QPSK	1	49	32722	1:1	0.049	1.079	0.053	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	18.97	0.03	0	Left	Tilt	QPSK	25	0	32722	1:1	0.053	1.130	0.060	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Note: 19 dBm LTE standalone SAR data was included for the purpose of simultaneous Tx SAR assessments for SVLTE operations in Section 13.

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Table 12-8
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 #
																	(W/kg)		(W/kg)	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	23.5	23.50	0.01	0	Right	Cheek	QPSK	1	0	32725	1:1	0.705	1.000	0.705	A8
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Wireless Charging Cover	23.5	23.50	0.10	0	Right	Cheek	QPSK	1	0	32725	1:1	0.675	1.000	0.675	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	22.50	0.00	1	Right	Cheek	QPSK	50	0	32725	1:1	0.690	1.000	0.690	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	23.5	23.50	-0.17	0	Right	Tilt	QPSK	1	0	32725	1:1	0.392	1.000	0.392	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	22.50	0.12	1	Right	Tilt	QPSK	50	0	32725	1:1	0.366	1.000	0.366	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	23.5	23.50	-0.14	0	Left	Cheek	QPSK	1	0	32725	1:1	0.528	1.000	0.528	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	22.50	-0.09	1	Left	Cheek	QPSK	50	0	32725	1:1	0.459	1.000	0.459	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	23.5	23.50	-0.07	0	Left	Tilt	QPSK	1	0	32725	1:1	0.387	1.000	0.387	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	22.50	-0.05	1	Left	Tilt	QPSK	50	0	32725	1:1	0.346	1.000	0.346	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.44	0.02	0	Right	Cheek	QPSK	1	50	32722	1:1	0.244	1.014	0.247	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.33	0.02	0	Right	Cheek	QPSK	50	0	32722	1:1	0.247	1.040	0.257	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.44	0.00	0	Right	Tilt	QPSK	1	50	32722	1:1	0.111	1.014	0.113	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.33	0.10	0	Right	Tilt	QPSK	50	0	32722	1:1	0.117	1.040	0.122	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.44	-0.05	0	Left	Cheek	QPSK	1	50	32722	1:1	0.145	1.014	0.147	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.33	-0.05	0	Left	Cheek	QPSK	50	0	32722	1:1	0.140	1.040	0.146	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.44	0.19	0	Left	Tilt	QPSK	1	50	32722	1:1	0.100	1.014	0.101	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.33	0.02	0	Left	Tilt	QPSK	50	0	32722	1:1	0.107	1.040	0.111	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Head										
Spatial Peak										1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population										averaged over 1 gram										

Note: 19 dBm LTE standalone SAR data was included for the purpose of simultaneous Tx SAR assessments for SVLTE operations in Section 13.

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Table 12-9
DTS WI-FI Head SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna	Cover Type	Device Serial Number	Data Rate (Mbps)	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.													(W/kg)		(W/kg)	
2412	1	IEEE 802.11b	DSSS	12.5	11.94	0.20	Right	Cheek	Antenna 1	Standard	328C6	1	1:1	0.163	1.138	0.185	A9
2412	1	IEEE 802.11b	DSSS	12.5	11.94	0.02	Right	Cheek	Antenna 1	Wireless Charging Cover	328C6	1	1:1	0.156	1.138	0.178	
2412	1	IEEE 802.11b	DSSS	12.5	11.94	-0.04	Right	Tilt	Antenna 1	Standard	328C6	1	1:1	0.158	1.138	0.180	
2412	1	IEEE 802.11b	DSSS	12.5	11.94	0.02	Left	Cheek	Antenna 1	Standard	328C6	1	1:1	0.129	1.138	0.147	
2412	1	IEEE 802.11b	DSSS	12.5	11.94	0.03	Left	Tilt	Antenna 1	Standard	328C6	1	1:1	0.128	1.138	0.146	
2412	1	IEEE 802.11b	DSSS	12.5	11.74	0.10	Right	Cheek	Antenna 2	Standard	328C6	1	1:1	0.033	1.191	0.039	
2412	1	IEEE 802.11b	DSSS	12.5	11.74	0.12	Right	Tilt	Antenna 2	Standard	328C6	1	1:1	0.007	1.191	0.008	
2412	1	IEEE 802.11b	DSSS	12.5	11.74	0.06	Left	Cheek	Antenna 2	Standard	328C6	1	1:1	0.009	1.191	0.011	
2412	1	IEEE 802.11b	DSSS	12.5	11.74	0.20	Left	Tilt	Antenna 2	Standard	328C6	1	1:1	0.004	1.191	0.005	
2412	1	IEEE 802.11n	OFDM	12.5	11.85	-0.08	Right	Cheek	MIMO	Standard	328C6	13	1:1	0.089	1.161	0.103	
2412	1	IEEE 802.11n	OFDM	12.5	11.85	-0.10	Right	Tilt	MIMO	Standard	328C6	13	1:1	0.078	1.161	0.091	
2412	1	IEEE 802.11n	OFDM	12.5	11.85	0.03	Left	Cheek	MIMO	Standard	328C6	13	1:1	0.104	1.161	0.121	
2412	1	IEEE 802.11n	OFDM	12.5	11.85	0.03	Left	Tilt	MIMO	Standard	328C6	13	1:1	0.107	1.161	0.124	
2412	1	IEEE 802.11n	OFDM	12.5	11.85	-0.02	Left	Tilt	MIMO	Wireless Charging Cover	328C6	13	1:1	0.098	1.161	0.114	
5785	157	IEEE 802.11a	OFDM	7.5	6.87	0.06	Right	Cheek	Antenna 1	Standard	31F35	6	1:1	0.014	1.156	0.016	
5785	157	IEEE 802.11a	OFDM	7.5	6.87	0.10	Right	Tilt	Antenna 1	Standard	31F35	6	1:1	0.022	1.156	0.025	
5775	155	IEEE 802.11ac	OFDM	7.5	6.38	0.04	Right	Tilt	Antenna 1	Standard	31F35	29.3	1:1	0.013	1.294	0.017	
5785	157	IEEE 802.11a	OFDM	7.5	6.87	0.16	Left	Cheek	Antenna 1	Standard	31F35	6	1:1	0.011	1.156	0.013	
5785	157	IEEE 802.11a	OFDM	7.5	6.87	0.04	Left	Tilt	Antenna 1	Standard	31F35	6	1:1	0.014	1.156	0.016	
5765	153	IEEE 802.11a	OFDM	7.5	6.58	0.06	Right	Cheek	Antenna 2	Standard	31F35	6	1:1	0.134	1.236	0.166	A10
5775	155	IEEE 802.11ac	OFDM	7.5	6.25	0.06	Right	Cheek	Antenna 2	Standard	31F35	29.3	1:1	0.112	1.334	0.149	
5765	153	IEEE 802.11a	OFDM	7.5	6.58	0.06	Right	Tilt	Antenna 2	Standard	31F35	6	1:1	0.060	1.236	0.074	
5765	153	IEEE 802.11a	OFDM	7.5	6.58	0.04	Left	Cheek	Antenna 2	Standard	31F35	6	1:1	0.037	1.236	0.046	
5765	153	IEEE 802.11a	OFDM	7.5	6.58	-0.07	Left	Tilt	Antenna 2	Standard	31F35	6	1:1	0.034	1.236	0.042	
5765	153	IEEE 802.11n	OFDM	7.5	6.57	-0.05	Right	Cheek	MIMO	Standard	31F35	13	1:1	0.019	1.239	0.024	
5765	153	IEEE 802.11n	OFDM	7.5	6.57	0.03	Right	Tilt	MIMO	Standard	31F35	13	1:1	0.014	1.239	0.017	
5765	153	IEEE 802.11n	OFDM	7.5	6.57	0.07	Left	Cheek	MIMO	Standard	31F35	13	1:1	0.016	1.239	0.020	
5765	153	IEEE 802.11n	OFDM	7.5	6.57	0.05	Left	Tilt	MIMO	Standard	31F35	13	1:1	0.011	1.239	0.014	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram										

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Table 12-10
NII WI-FI Head SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna	Cover Type	Device Serial Number	Data Rate (Mbps)	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #
MHz	Ch.													(W/kg)		(W/kg)	
5180	36	IEEE 802.11a	OFDM	7.5	6.74	0.08	Right	Cheek	Antenna 1	Standard	31F35	6	1:1	0.053	1.191	0.063	
5210	42	IEEE 802.11ac	OFDM	7.5	6.56	0.02	Right	Cheek	Antenna 1	Standard	31F35	29.3	1:1	0.039	1.242	0.048	
5180	36	IEEE 802.11a	OFDM	7.5	6.74	0.12	Right	Tilt	Antenna 1	Standard	31F35	6	1:1	0.052	1.191	0.062	
5180	36	IEEE 802.11a	OFDM	7.5	6.74	-0.10	Left	Cheek	Antenna 1	Standard	31F35	6	1:1	0.035	1.191	0.042	
5180	36	IEEE 802.11a	OFDM	7.5	6.74	-0.10	Left	Tilt	Antenna 1	Standard	31F35	6	1:1	0.038	1.191	0.045	
5220	44	IEEE 802.11a	OFDM	7.5	6.86	0.07	Right	Cheek	Antenna 2	Standard	31F35	6	1:1	0.022	1.159	0.025	
5210	42	IEEE 802.11ac	OFDM	7.5	6.63	0.04	Right	Cheek	Antenna 2	Standard	31F35	29.3	1:1	0.021	1.222	0.026	
5220	44	IEEE 802.11a	OFDM	7.5	6.86	0.09	Right	Tilt	Antenna 2	Standard	31F35	6	1:1	0.011	1.159	0.013	
5220	44	IEEE 802.11a	OFDM	7.5	6.86	0.00	Left	Cheek	Antenna 2	Standard	31F35	6	1:1	0.000	1.159	0.000	
5220	44	IEEE 802.11a	OFDM	7.5	6.86	0.00	Left	Tilt	Antenna 2	Standard	31F35	6	1:1	0.000	1.159	0.000	
5240	48	IEEE 802.11n	OFDM	7.5	6.06	0.08	Right	Cheek	MIMO	Standard	31F35	13	1:1	0.032	1.392	0.045	
5240	48	IEEE 802.11n	OFDM	7.5	6.06	0.07	Right	Cheek	MIMO	Wireless Charging Cover	31F35	13	1:1	0.044	1.392	0.061	
5240	48	IEEE 802.11n	OFDM	7.5	6.06	0.11	Right	Tilt	MIMO	Standard	31F35	13	1:1	0.012	1.392	0.017	
5240	48	IEEE 802.11n	OFDM	7.5	6.06	0.21	Left	Cheek	MIMO	Standard	31F35	13	1:1	0.009	1.392	0.013	
5240	48	IEEE 802.11n	OFDM	7.5	6.06	0.06	Left	Tilt	MIMO	Standard	31F35	13	1:1	0.009	1.392	0.013	
5260	52	IEEE 802.11a	OFDM	7.5	6.69	0.08	Right	Cheek	Antenna 1	Standard	31F35	6	1:1	0.047	1.205	0.057	
5260	52	IEEE 802.11a	OFDM	7.5	6.69	0.12	Right	Tilt	Antenna 1	Standard	31F35	6	1:1	0.052	1.205	0.063	
5290	58	IEEE 802.11ac	OFDM	7.5	6.48	0.07	Right	Tilt	Antenna 1	Standard	31F35	29.3	1:1	0.035	1.265	0.044	
5260	52	IEEE 802.11a	OFDM	7.5	6.69	0.06	Left	Cheek	Antenna 1	Standard	31F35	6	1:1	0.032	1.205	0.039	
5260	52	IEEE 802.11a	OFDM	7.5	6.69	0.06	Left	Tilt	Antenna 1	Standard	31F35	6	1:1	0.041	1.205	0.049	
5260	52	IEEE 802.11a	OFDM	7.5	6.95	0.07	Right	Cheek	Antenna 2	Standard	31F35	6	1:1	0.047	1.135	0.053	
5290	58	IEEE 802.11ac	OFDM	7.5	6.55	0.11	Right	Cheek	Antenna 2	Standard	31F35	29.3	1:1	0.036	1.245	0.045	
5260	52	IEEE 802.11a	OFDM	7.5	6.95	-0.07	Right	Tilt	Antenna 2	Standard	31F35	6	1:1	0.013	1.135	0.015	
5260	52	IEEE 802.11a	OFDM	7.5	6.95	0.08	Left	Cheek	Antenna 2	Standard	31F35	6	1:1	0.007	1.135	0.008	
5260	52	IEEE 802.11a	OFDM	7.5	6.95	-0.12	Left	Tilt	Antenna 2	Standard	31F35	6	1:1	0.006	1.135	0.007	
5300	60	IEEE 802.11n	OFDM	7.5	5.67	0.00	Right	Cheek	MIMO	Standard	31F35	13	1:1	0.009	1.524	0.014	
5300	60	IEEE 802.11n	OFDM	7.5	5.67	0.15	Right	Tilt	MIMO	Standard	31F35	13	1:1	0.010	1.524	0.015	
5300	60	IEEE 802.11n	OFDM	7.5	5.67	0.08	Left	Cheek	MIMO	Standard	31F35	13	1:1	0.009	1.524	0.014	
5300	60	IEEE 802.11n	OFDM	7.5	5.67	0.03	Left	Tilt	MIMO	Standard	31F35	13	1:1	0.009	1.524	0.014	
5580	116	IEEE 802.11a	OFDM	7.5	6.83	0.08	Right	Cheek	Antenna 1	Standard	31F35	6	1:1	0.022	1.167	0.026	
5580	116	IEEE 802.11a	OFDM	7.5	6.83	0.09	Right	Tilt	Antenna 1	Standard	31F35	6	1:1	0.029	1.167	0.034	
5530	106	IEEE 802.11ac	OFDM	7.5	6.51	0.05	Right	Tilt	Antenna 1	Standard	31F35	29.3	1:1	0.044	1.256	0.055	
5580	116	IEEE 802.11a	OFDM	7.5	6.83	0.02	Left	Cheek	Antenna 1	Standard	31F35	6	1:1	0.016	1.167	0.019	
5580	116	IEEE 802.11a	OFDM	7.5	6.83	0.16	Left	Tilt	Antenna 1	Standard	31F35	6	1:1	0.019	1.167	0.022	
5680	136	IEEE 802.11a	OFDM	7.5	6.01	0.02	Right	Cheek	Antenna 2	Standard	31F35	6	1:1	0.154	1.409	0.217	A11
5530	106	IEEE 802.11ac	OFDM	7.5	5.57	0.02	Right	Cheek	Antenna 2	Standard	31F35	29.3	1:1	0.045	1.560	0.070	
5680	136	IEEE 802.11a	OFDM	7.5	6.01	0.02	Right	Cheek	Antenna 2	Wireless Charging Cover	31F35	6	1:1	0.133	1.409	0.187	
5680	136	IEEE 802.11a	OFDM	7.5	6.01	0.07	Right	Tilt	Antenna 2	Standard	31F35	6	1:1	0.057	1.409	0.080	
5680	136	IEEE 802.11a	OFDM	7.5	6.01	0.14	Left	Cheek	Antenna 2	Standard	31F35	6	1:1	0.032	1.409	0.045	
5680	136	IEEE 802.11a	OFDM	7.5	6.01	-0.08	Left	Tilt	Antenna 2	Standard	31F35	6	1:1	0.031	1.409	0.044	
5500	100	IEEE 802.11n	OFDM	7.5	7.38	0.18	Right	Cheek	MIMO	Standard	31F35	13	1:1	0.010	1.028	0.010	
5500	100	IEEE 802.11n	OFDM	7.5	7.38	0.07	Right	Tilt	MIMO	Standard	31F35	13	1:1	0.014	1.028	0.014	
5500	100	IEEE 802.11n	OFDM	7.5	7.38	-0.20	Left	Cheek	MIMO	Standard	31F35	13	1:1	0.012	1.028	0.012	
5500	100	IEEE 802.11n	OFDM	7.5	7.38	0.19	Left	Tilt	MIMO	Standard	31F35	13	1:1	0.011	1.028	0.011	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram									

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12.2 Standalone Body-Worn SAR Data

Table 12-11
CDMA/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	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.52	384	Cell. CDMA	TDSO / SO32	25.0	24.74	-0.06	15 mm	Standard	32723	N/A	1:1	back	0.472	1.062	0.501	A12
836.52	384	Cell. CDMA	TDSO / SO32	25.0	24.74	-0.03	15 mm	Wireless Charging Cover	32723	N/A	1:1	back	0.382	1.062	0.406	
836.52	384	Cell. CDMA	TDSO / SO32	18.5	18.01	0.04	15 mm	Standard	32732	N/A	1:1	back	0.080	1.119	0.090	
1880.00	600	PCS CDMA	TDSO / SO32	25.0	24.39	-0.05	15 mm	Standard	3272C	N/A	1:1	back	0.315	1.151	0.363	A14
1880.00	600	PCS CDMA	TDSO / SO32	25.0	24.39	-0.05	15 mm	Wireless Charging Cover	3272C	N/A	1:1	back	0.285	1.151	0.328	
1880.00	600	PCS CDMA	TDSO / SO32	23.0	22.05	0.06	15 mm	Standard	3271E	N/A	1:1	back	0.256	1.245	0.319	
1880.00	600	PCS CDMA	TDSO / SO32	18.5	17.92	-0.06	15 mm	Standard	32732	N/A	1:1	back	0.118	1.143	0.135	
836.60	190	GSM 850	GSM	33.5	33.09	-0.04	15 mm	Standard	32723	1	1:8.3	back	0.483	1.099	0.531	A16
836.60	190	GSM 850	GSM	33.5	33.09	0.07	15 mm	Wireless Charging Cover	32723	1	1:8.3	back	0.424	1.099	0.466	
1880.00	661	GSM 1900	GSM	30.5	30.33	0.08	15 mm	Standard	32723	1	1:8.3	back	0.301	1.040	0.313	A18
1880.00	661	GSM 1900	GSM	30.5	30.33	0.02	15 mm	Wireless Charging Cover	32723	1	1:8.3	back	0.266	1.040	0.277	
836.60	4183	UMTS 850	RMC	23.5	23.00	-0.03	15 mm	Standard	32723	N/A	1:1	back	0.316	1.122	0.355	A20
836.60	4183	UMTS 850	RMC	23.5	23.00	-0.06	15 mm	Wireless Charging Cover	32723	N/A	1:1	back	0.287	1.122	0.322	
1880.00	9400	UMTS 1900	RMC	23.5	23.08	-0.02	15 mm	Standard	3271D	N/A	1:1	back	0.368	1.102	0.406	A22
1880.00	9400	UMTS 1900	RMC	23.5	23.08	0.00	15 mm	Wireless Charging Cover	3271D	N/A	1:1	back	0.259	1.102	0.285	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram									

Note: 18 dBm CDMA standalone SAR data was included for the purpose of simultaneous Tx SAR assessments for SVLTE operations in Section 13.

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Table 12-12
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)		
782.00	23230	Mid	LTE Band 13	10	Standard	23.5	23.27	0.06	0	32725	QPSK	1	49	15 mm	back	1:1	0.325	1.054	0.343	A24
782.00	23230	Mid	LTE Band 13	10	Wireless Charging Cover	23.5	23.27	0.01	0	32725	QPSK	1	49	15 mm	back	1:1	0.252	1.054	0.266	
782.00	23230	Mid	LTE Band 13	10	Standard	22.5	22.25	0.01	1	32725	QPSK	25	25	15 mm	back	1:1	0.244	1.059	0.258	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	19.17	-0.04	0	32722	QPSK	1	49	15 mm	back	1:1	0.131	1.079	0.141	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	18.97	0.00	0	32722	QPSK	25	0	15 mm	back	1:1	0.120	1.130	0.136	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	23.5	23.50	0.05	0	32725	QPSK	1	0	15 mm	back	1:1	0.541	1.000	0.541	A26
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Wireless Charging Cover	23.5	23.50	-0.14	0	32725	QPSK	1	0	15 mm	back	1:1	0.408	1.000	0.408	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	22.50	0.07	0	32725	QPSK	50	0	15 mm	back	1:1	0.539	1.000	0.539	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.44	0.07	0	32722	QPSK	1	50	15 mm	back	1:1	0.191	1.014	0.194	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.33	0.05	0	32722	QPSK	50	0	15 mm	back	1:1	0.176	1.040	0.183	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT																				
Spatial Peak										Body										
Uncontrolled Exposure/General Population										1.6 W/kg (mW/g)										
										averaged over 1 gram										

Note: 19 dBm LTE standalone SAR data was included for the purpose of simultaneous Tx SAR assessments for SVLTE operations in Section 13.

Table 12-13
DTS Body-Worn SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna	Cover Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #
MHz	Ch.																
2437	6	IEEE 802.11b	DSSS	17.5	17.05	-0.08	10 mm	Antenna 1	Standard	00F05	1	back	1:1	0.235	1.109	0.261	A28
2437	6	IEEE 802.11b	DSSS	17.5	17.05	0.16	10 mm	Antenna 1	Wireless Charging Cover	00F05	1	back	1:1	0.103	1.109	0.114	
2412	1	IEEE 802.11b	DSSS	17.5	17.07	0.04	10 mm	Antenna 2	Standard	00F05	1	back	1:1	0.087	1.104	0.096	
2412	1	IEEE 802.11n	OFDM	14.0	13.87	0.11	10 mm	MIMO	Standard	00F05	13	back	1:1	0.066	1.030	0.068	
2412	1	IEEE 802.11n	OFDM	14.0	13.87	0.10	10 mm	MIMO	Wireless Charging Cover	00F05	13	back	1:1	0.053	1.030	0.055	
5745	149	IEEE 802.11a	OFDM	14.0	13.31	0.06	10 mm	Antenna 1	Standard	32712	6	back	1:1	0.138	1.172	0.162	
5775	155	IEEE 802.11ac	OFDM	11.5	11.25	0.09	10 mm	Antenna 1	Standard	32712	29.3	back	1:1	0.041	1.059	0.043	
5765	153	IEEE 802.11a	OFDM	14.0	13.44	0.10	10 mm	Antenna 2	Standard	15ECE	6	back	1:1	0.287	1.138	0.327	A29
5775	155	IEEE 802.11ac	OFDM	11.5	11.26	0.03	10 mm	Antenna 2	Standard	15ECE	29.3	back	1:1	0.128	1.057	0.135	
5765	153	IEEE 802.11n	OFDM	13.5	13.47	0.16	10 mm	MIMO	Standard	15ECE	13	back	1:1	0.220	1.007	0.222	
5765	153	IEEE 802.11n	OFDM	13.5	13.47	0.00	10 mm	MIMO	Wireless Charging Cover	15ECE	13	back	1:1	0.121	1.007	0.122	
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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Table 12-14
NII Body-Worn SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna	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)	
5220	44	IEEE 802.11a	OFDM	14.0	13.12	0.06	10 mm	Antenna 1	Standard	32712	6	back	1:1	0.196	1.225	0.240	
5210	42	IEEE 802.11ac	OFDM	11.5	10.71	0.09	10 mm	Antenna 1	Standard	32712	29.3	back	1:1	0.079	1.199	0.095	
5180	36	IEEE 802.11a	OFDM	14.0	13.94	-0.12	10 mm	Antenna 2	Standard	15ECE	6	back	1:1	0.104	1.014	0.105	
5210	42	IEEE 802.11ac	OFDM	11.5	10.78	0.18	10 mm	Antenna 2	Standard	15ECE	29.3	back	1:1	0.056	1.180	0.066	
5180	36	IEEE 802.11n	OFDM	13.5	12.63	0.07	10 mm	MIMO	Standard	15ECE	13	back	1:1	0.065	1.222	0.079	
5280	56	IEEE 802.11a	OFDM	14.0	12.97	0.10	10 mm	Antenna 1	Standard	32712	6	back	1:1	0.162	1.268	0.205	
5290	58	IEEE 802.11ac	OFDM	11.5	10.77	0.04	10 mm	Antenna 1	Standard	32712	29.3	back	1:1	0.080	1.183	0.095	
5260	52	IEEE 802.11a	OFDM	14.0	13.21	-0.04	10 mm	Antenna 2	Standard	15ECE	6	back	1:1	0.195	1.199	0.234	
5290	58	IEEE 802.11ac	OFDM	11.5	10.94	0.08	10 mm	Antenna 2	Standard	15ECE	29.3	back	1:1	0.074	1.138	0.084	
5300	60	IEEE 802.11n	OFDM	13.5	12.77	0.09	10 mm	MIMO	Standard	15ECE	13	back	1:1	0.060	1.184	0.071	
5540	108	IEEE 802.11a	OFDM	14.0	13.41	0.05	10 mm	Antenna 1	Standard	32712	6	back	1:1	0.235	1.146	0.269	
5530	106	IEEE 802.11ac	OFDM	11.5	11.15	0.03	10 mm	Antenna 1	Standard	32712	29.3	back	1:1	0.119	1.084	0.129	
5500	100	IEEE 802.11a	OFDM	14.0	13.26	0.03	10 mm	Antenna 2	Standard	15ECE	6	back	1:1	0.296	1.186	0.351	A30
5500	100	IEEE 802.11a	OFDM	14.0	13.26	0.03	10 mm	Antenna 2	Wireless Charging Cover	15ECE	6	back	1:1	0.167	1.186	0.198	
5530	106	IEEE 802.11ac	OFDM	11.5	10.98	-0.03	10 mm	Antenna 2	Standard	15ECE	29.3	back	1:1	0.099	1.127	0.112	
5500	100	IEEE 802.11n	OFDM	13.5	12.30	0.06	10 mm	MIMO	Standard	15ECE	13	back	1:1	0.075	1.319	0.099	
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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12.3 Standalone Wireless Router SAR Data

Table 12-15
Hotspot SAR Data with Cellular Band CDMA in Operation

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)	
836.52	384	Cell. CDMA	TDSO / SO32	25.0	24.74	-0.01	10 mm	Standard	32723	1:1	back	0.551	1.062	0.585	A13
836.52	384	Cell. CDMA	TDSO / SO32	25.0	24.74	-0.03	10 mm	Wireless Charging Cover	32723	1:1	back	0.448	1.062	0.476	
836.52	384	Cell. CDMA	TDSO / SO32	25.0	24.74	-0.01	10 mm	Standard	32723	1:1	front	0.441	1.062	0.468	
836.52	384	Cell. CDMA	TDSO / SO32	25.0	24.74	-0.03	10 mm	Standard	32723	1:1	bottom	0.170	1.062	0.181	
836.52	384	Cell. CDMA	TDSO / SO32	25.0	24.74	-0.04	10 mm	Standard	32723	1:1	left	0.293	1.062	0.311	
836.52	384	Cell. CDMA	TDSO / SO32	18.5	18.01	0.03	10 mm	Standard	32732	1:1	back	0.103	1.119	0.115	
836.52	384	Cell. CDMA	TDSO / SO32	18.5	18.01	-0.01	10 mm	Standard	32732	1:1	front	0.099	1.119	0.111	
836.52	384	Cell. CDMA	TDSO / SO32	18.5	18.01	-0.03	10 mm	Standard	32732	1:1	bottom	0.089	1.119	0.100	
836.52	384	Cell. CDMA	TDSO / SO32	18.5	18.01	0.04	10 mm	Standard	32732	1:1	left	0.004	1.119	0.004	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.0	24.62	0.01	10 mm	Standard	32723	1:1	back	0.533	1.091	0.582	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.0	24.62	-0.04	10 mm	Wireless Charging Cover	32723	1:1	back	0.438	1.091	0.478	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.0	24.62	0.01	10 mm	Standard	32723	1:1	front	0.428	1.091	0.467	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.0	24.62	0.07	10 mm	Standard	32723	1:1	bottom	0.175	1.091	0.191	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.0	24.62	-0.03	10 mm	Standard	32723	1:1	left	0.470	1.091	0.513	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT							Body								
Spatial Peak							1.6 W/kg (mW/g)								
Uncontrolled Exposure/General Population							averaged over 1 gram								

Note: 18 dBm CDMA voice standalone SAR data was included for the purpose of simultaneous Tx SAR assessments for SVLTE operations in Section 13.

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Table 12-16
Hotspot SAR Data with PCS Band CDMA in Operation

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)	
1880.00	600	PCS CDMA	TDSO / SO32	23.0	22.05	-0.05	10 mm	Standard	3271E	1:1	back	0.550	1.245	0.685	
1880.00	600	PCS CDMA	TDSO / SO32	23.0	22.05	-0.05	10 mm	Wireless Charging Cover	3271E	1:1	back	0.442	1.245	0.550	
1880.00	600	PCS CDMA	TDSO / SO32	23.0	22.05	-0.03	10 mm	Standard	3271E	1:1	front	0.524	1.245	0.652	
1880.00	600	PCS CDMA	TDSO / SO32	23.0	22.05	0.00	10 mm	Standard	3271E	1:1	bottom	0.464	1.245	0.578	
1880.00	600	PCS CDMA	TDSO / SO32	23.0	22.05	-0.01	10 mm	Standard	3271E	1:1	left	0.069	1.245	0.086	
1880.00	600	PCS CDMA	TDSO / SO32	18.5	17.92	0.00	10 mm	Standard	32732	1:1	back	0.247	1.143	0.282	
1880.00	600	PCS CDMA	TDSO / SO32	18.5	17.92	-0.08	10 mm	Standard	32732	1:1	front	0.250	1.143	0.286	
1880.00	600	PCS CDMA	TDSO / SO32	18.5	17.92	-0.03	10 mm	Standard	32732	1:1	bottom	0.190	1.143	0.217	
1880.00	600	PCS CDMA	TDSO / SO32	18.5	17.92	0.07	10 mm	Standard	32732	1:1	left	0.043	1.143	0.049	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.0	21.81	-0.04	10 mm	Standard	3271E	1:1	back	0.595	1.315	0.782	A15
1880.00	600	PCS CDMA	EVDO Rev. 0	23.0	21.81	-0.13	10 mm	Wireless Charging Cover	3271E	1:1	back	0.507	1.315	0.667	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.0	21.81	0.08	10 mm	Standard	3271E	1:1	front	0.398	1.315	0.523	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.0	21.81	0.02	10 mm	Standard	3271E	1:1	bottom	0.329	1.315	0.433	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.0	21.81	0.08	10 mm	Standard	3271E	1:1	left	0.047	1.315	0.062	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram								

Note: 18 dBm CDMA voice standalone SAR data was included for the purpose of simultaneous Tx SAR assessments for SVLTE operations in Section 13.

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Table 12-17
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	30.0	29.68	-0.04	10 mm	Standard	32723	3	1:2.76	back	0.680	1.076	0.732	A17
836.60	190	GSM 850	GPRS	30.0	29.68	-0.01	10 mm	Wireless Charging Cover	32723	3	1:2.76	back	0.520	1.076	0.560	
836.60	190	GSM 850	GPRS	30.0	29.68	-0.10	10 mm	Standard	32723	3	1:2.76	front	0.553	1.076	0.595	
836.60	190	GSM 850	GPRS	30.0	29.68	0.00	10 mm	Standard	32723	3	1:2.76	bottom	0.275	1.076	0.296	
836.60	190	GSM 850	GPRS	30.0	29.68	-0.08	10 mm	Standard	32723	3	1:2.76	left	0.603	1.076	0.649	
1850.20	512	GSM 1900	GPRS	27.5	27.43	-0.15	10 mm	Standard	32723	3	1:2.76	back	0.754	1.016	0.766	
1880.00	661	GSM 1900	GPRS	27.5	27.40	-0.05	10 mm	Standard	32723	3	1:2.76	back	0.888	1.023	0.908	
1909.80	810	GSM 1900	GPRS	27.5	27.28	-0.20	10 mm	Standard	32723	3	1:2.76	back	0.915	1.052	0.963	A19
1909.80	810	GSM 1900	GPRS	27.5	27.28	0.05	10 mm	Wireless Charging Cover	32723	3	1:2.76	back	0.737	1.052	0.775	
1850.20	512	GSM 1900	GPRS	27.5	27.43	-0.11	10 mm	Standard	32723	3	1:2.76	front	0.816	1.016	0.829	
1880.00	661	GSM 1900	GPRS	27.5	27.40	-0.12	10 mm	Standard	32723	3	1:2.76	front	0.829	1.023	0.848	
1909.80	810	GSM 1900	GPRS	27.5	27.28	-0.21	10 mm	Standard	32723	3	1:2.76	front	0.863	1.052	0.908	
1880.00	661	GSM 1900	GPRS	27.5	27.40	-0.11	10 mm	Standard	32723	3	1:2.76	bottom	0.565	1.023	0.578	
1880.00	661	GSM 1900	GPRS	27.5	27.40	-0.02	10 mm	Standard	32723	3	1:2.76	left	0.044	1.023	0.045	
836.60	4183	UMTS 850	RMC	23.5	23.00	0.09	10 mm	Standard	32723	N/A	1:1	back	0.508	1.122	0.570	
836.60	4183	UMTS 850	RMC	23.5	23.00	-0.01	10 mm	Standard	32723	N/A	1:1	front	0.585	1.122	0.656	A21
836.60	4183	UMTS 850	RMC	23.5	23.00	-0.03	10 mm	Wireless Charging Cover	32723	N/A	1:1	front	0.561	1.122	0.629	
836.60	4183	UMTS 850	RMC	23.5	23.00	0.10	10 mm	Standard	32723	N/A	1:1	bottom	0.390	1.122	0.438	
836.60	4183	UMTS 850	RMC	23.5	23.00	0.00	10 mm	Standard	32723	N/A	1:1	left	0.025	1.122	0.028	
1880.00	9400	UMTS 1900	RMC	23.5	23.08	-0.02	10 mm	Standard	3271D	N/A	1:1	back	0.714	1.102	0.787	
1852.40	9262	UMTS 1900	RMC	23.5	23.04	-0.02	10 mm	Standard	3271D	N/A	1:1	front	0.717	1.112	0.797	
1880.00	9400	UMTS 1900	RMC	23.5	23.08	0.03	10 mm	Standard	3271D	N/A	1:1	front	0.770	1.102	0.849	
1907.60	9538	UMTS 1900	RMC	23.5	23.05	-0.01	10 mm	Standard	3271D	N/A	1:1	front	0.672	1.109	0.745	
1880.00	9400	UMTS 1900	RMC	23.5	23.08	-0.08	10 mm	Wireless Charging Cover	3271D	N/A	1:1	front	0.805	1.102	0.887	A23
1880.00	9400	UMTS 1900	RMC	23.5	23.08	0.00	10 mm	Standard	3271D	N/A	1:1	bottom	0.373	1.102	0.411	
1880.00	9400	UMTS 1900	RMC	23.5	23.08	0.03	10 mm	Standard	3271D	N/A	1:1	left	0.285	1.102	0.314	
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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Table 12-18
LTE Band 13 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.																			
782.00	23230	Mid	LTE Band 13	10	Standard	23.5	23.27	0.01	0	32725	QPSK	1	49	10 mm	back	1:1	0.327	1.054	0.345	
782.00	23230	Mid	LTE Band 13	10	Standard	22.5	22.25	-0.01	1	32725	QPSK	25	25	10 mm	back	1:1	0.266	1.059	0.282	
782.00	23230	Mid	LTE Band 13	10	Standard	23.5	23.27	0.09	0	32725	QPSK	1	49	10 mm	front	1:1	0.352	1.054	0.371	
782.00	23230	Mid	LTE Band 13	10	Standard	22.5	22.25	0.04	1	32725	QPSK	25	25	10 mm	front	1:1	0.284	1.059	0.301	
782.00	23230	Mid	LTE Band 13	10	Standard	23.5	23.27	0.02	0	32725	QPSK	1	49	10 mm	bottom	1:1	0.302	1.054	0.318	
782.00	23230	Mid	LTE Band 13	10	Standard	22.5	22.25	-0.04	1	32725	QPSK	25	25	10 mm	bottom	1:1	0.250	1.059	0.265	
782.00	23230	Mid	LTE Band 13	10	Standard	23.5	23.27	0.03	0	32725	QPSK	1	49	10 mm	right	1:1	0.395	1.054	0.416	
782.00	23230	Mid	LTE Band 13	10	Standard	22.5	22.25	0.06	1	32725	QPSK	25	25	10 mm	right	1:1	0.323	1.059	0.342	
782.00	23230	Mid	LTE Band 13	10	Wireless Charging Cover	23.5	23.27	-0.05	0	32725	QPSK	1	49	10 mm	right	1:1	0.400	1.054	0.422	A25
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	19.17	-0.04	0	32722	QPSK	1	49	10 mm	back	1:1	0.132	1.079	0.142	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	18.97	-0.01	0	32722	QPSK	25	0	10 mm	back	1:1	0.125	1.130	0.141	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	19.17	0.00	0	32722	QPSK	1	49	10 mm	front	1:1	0.139	1.079	0.150	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	18.97	0.03	0	32722	QPSK	25	0	10 mm	front	1:1	0.121	1.130	0.137	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	19.17	-0.01	0	32722	QPSK	1	49	10 mm	bottom	1:1	0.115	1.079	0.124	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	18.97	0.08	0	32722	QPSK	25	0	10 mm	bottom	1:1	0.106	1.130	0.120	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	19.17	0.02	0	32722	QPSK	1	49	10 mm	right	1:1	0.160	1.079	0.173	
782.00	23230	Mid	LTE Band 13	10	Standard	19.5	18.97	0.07	0	32722	QPSK	25	0	10 mm	right	1:1	0.171	1.130	0.193	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram										

Note: 19 dBm LTE standalone SAR data was included for the purpose of simultaneous Tx SAR assessments for SVLTE operations in Section 13.

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Table 12-19
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	23.5	23.50	-0.06	0	32725	QPSK	1	0	10 mm	back	1:1	0.858	1.000	0.858	A27
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	22.50	0.00	1	32725	QPSK	50	0	10 mm	back	1:1	0.838	1.000	0.838	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	22.46	-0.04	1	32725	QPSK	100	0	10 mm	back	1:1	0.774	1.009	0.781	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Wireless Charging Cover	23.5	23.50	-0.04	0	32725	QPSK	1	0	10 mm	back	1:1	0.614	1.000	0.614	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	23.5	23.50	0.00	0	32725	QPSK	1	0	10 mm	front	1:1	0.753	1.000	0.753	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	22.50	0.02	1	32725	QPSK	50	0	10 mm	front	1:1	0.742	1.000	0.742	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	23.5	23.50	-0.02	0	32725	QPSK	1	0	10 mm	bottom	1:1	0.478	1.000	0.478	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	22.50	0.02	1	32725	QPSK	50	0	10 mm	bottom	1:1	0.412	1.000	0.412	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	23.5	23.50	-0.02	0	32725	QPSK	1	0	10 mm	right	1:1	0.417	1.000	0.417	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	22.5	22.50	0.12	1	32725	QPSK	50	0	10 mm	right	1:1	0.470	1.000	0.470	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.44	0.04	0	32722	QPSK	1	50	10 mm	back	1:1	0.398	1.014	0.404	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.33	0.00	0	32722	QPSK	50	0	10 mm	back	1:1	0.374	1.040	0.389	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.44	0.00	0	32722	QPSK	1	50	10 mm	front	1:1	0.394	1.014	0.400	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.33	0.00	0	32722	QPSK	50	0	10 mm	front	1:1	0.373	1.040	0.388	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.44	0.00	0	32722	QPSK	1	50	10 mm	bottom	1:1	0.196	1.014	0.199	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.33	0.00	0	32722	QPSK	50	0	10 mm	bottom	1:1	0.188	1.040	0.196	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.44	0.05	0	32722	QPSK	1	50	10 mm	right	1:1	0.189	1.014	0.192	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	19.5	19.33	0.05	0	32722	QPSK	50	0	10 mm	right	1:1	0.183	1.040	0.190	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	Standard	23.5	23.50	0.04	0	32725	QPSK	1	0	10 mm	back	1:1	0.850	1.000	0.850	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Body										
Spatial Peak										1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population										averaged over 1 gram										

Note 1: Blue highlighted entry represents variability measurement data.

Note 2: 19 dBm LTE standalone SAR data was included for the purpose of simultaneous Tx SAR assessments for SVLTE operations in Section 13.

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Table 12-20
Hotspot SAR for WI-FI Modes

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna	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)	
2437	6	IEEE 802.11b	DSSS	17.5	17.05	-0.08	10 mm	Antenna 1	Standard	00F05	1	back	1:1	0.235	1.109	0.261	A28
2437	6	IEEE 802.11b	DSSS	17.5	17.05	0.16	10 mm	Antenna 1	Wireless Charging Cover	00F05	1	back	1:1	0.103	1.109	0.114	
2437	6	IEEE 802.11b	DSSS	17.5	17.05	0.06	10 mm	Antenna 1	Standard	00F05	1	front	1:1	0.193	1.109	0.214	
2437	6	IEEE 802.11b	DSSS	17.5	17.05	0.04	10 mm	Antenna 1	Standard	00F05	1	top	1:1	0.114	1.109	0.126	
2437	6	IEEE 802.11b	DSSS	17.5	17.05	0.04	10 mm	Antenna 1	Standard	00F05	1	left	1:1	0.111	1.109	0.123	
2412	1	IEEE 802.11b	DSSS	17.5	17.07	0.04	10 mm	Antenna 2	Standard	00F05	1	back	1:1	0.087	1.104	0.096	
2412	1	IEEE 802.11b	DSSS	17.5	17.07	0.09	10 mm	Antenna 2	Standard	00F05	1	front	1:1	0.053	1.104	0.059	
2412	1	IEEE 802.11b	DSSS	17.5	17.07	0.06	10 mm	Antenna 2	Standard	00F05	1	top	1:1	0.022	1.104	0.024	
2412	1	IEEE 802.11b	DSSS	17.5	17.07	0.05	10 mm	Antenna 2	Standard	00F05	1	left	1:1	0.077	1.104	0.085	
2412	1	IEEE 802.11n	OFDM	14.0	13.87	0.11	10 mm	MIMO	Standard	00F05	13	back	1:1	0.066	1.030	0.068	
2412	1	IEEE 802.11n	OFDM	14.0	13.87	0.10	10 mm	MIMO	Wireless Charging Cover	00F05	13	back	1:1	0.053	1.030	0.055	
2412	1	IEEE 802.11n	OFDM	14.0	13.87	0.04	10 mm	MIMO	Standard	00F05	13	front	1:1	0.056	1.030	0.058	
2412	1	IEEE 802.11n	OFDM	14.0	13.87	0.04	10 mm	MIMO	Standard	00F05	13	top	1:1	0.037	1.030	0.038	
2412	1	IEEE 802.11n	OFDM	14.0	13.87	0.15	10 mm	MIMO	Standard	00F05	13	left	1:1	0.029	1.030	0.030	
5745	149	IEEE 802.11a	OFDM	14.0	13.31	0.06	10 mm	Antenna 1	Standard	32712	6	back	1:1	0.138	1.172	0.162	
5745	149	IEEE 802.11a	OFDM	14.0	13.31	0.12	10 mm	Antenna 1	Standard	32712	6	front	1:1	0.089	1.172	0.104	
5745	149	IEEE 802.11a	OFDM	14.0	13.31	-0.02	10 mm	Antenna 1	Standard	32712	6	top	1:1	0.260	1.172	0.305	
5775	155	IEEE 802.11ac	OFDM	11.5	11.25	0.02	10 mm	Antenna 1	Standard	32712	29.3	top	1:1	0.104	1.059	0.110	
5745	149	IEEE 802.11a	OFDM	14.0	13.31	0.05	10 mm	Antenna 1	Standard	32712	6	left	1:1	0.025	1.172	0.029	
5765	153	IEEE 802.11a	OFDM	14.0	13.44	0.10	10 mm	Antenna 2	Standard	15ECE	6	back	1:1	0.287	1.138	0.327	A29
5775	155	IEEE 802.11ac	OFDM	11.5	11.26	0.03	10 mm	Antenna 2	Standard	15ECE	29.3	back	1:1	0.128	1.057	0.135	
5765	153	IEEE 802.11a	OFDM	14.0	13.44	0.17	10 mm	Antenna 2	Wireless Charging Cover	15ECE	6	back	1:1	0.204	1.138	0.232	
5765	153	IEEE 802.11a	OFDM	14.0	13.44	0.04	10 mm	Antenna 2	Standard	15ECE	6	front	1:1	0.078	1.138	0.089	
5765	153	IEEE 802.11a	OFDM	14.0	13.44	0.04	10 mm	Antenna 2	Standard	15ECE	6	top	1:1	0.066	1.138	0.075	
5765	153	IEEE 802.11a	OFDM	14.0	13.44	0.02	10 mm	Antenna 2	Standard	15ECE	6	left	1:1	0.173	1.138	0.197	
5765	153	IEEE 802.11n	OFDM	13.5	13.47	0.16	10 mm	MIMO	Standard	15ECE	13	back	1:1	0.220	1.007	0.222	
5765	153	IEEE 802.11n	OFDM	13.5	13.47	0.00	10 mm	MIMO	Wireless Charging Cover	15ECE	13	back	1:1	0.121	1.007	0.122	
5765	153	IEEE 802.11n	OFDM	13.5	13.47	-0.01	10 mm	MIMO	Standard	15ECE	13	front	1:1	0.032	1.007	0.032	
5765	153	IEEE 802.11n	OFDM	13.5	13.47	0.06	10 mm	MIMO	Standard	15ECE	13	top	1:1	0.097	1.007	0.098	
5765	153	IEEE 802.11n	OFDM	13.5	13.47	0.03	10 mm	MIMO	Standard	15ECE	13	left	1:1	0.060	1.007	0.060	
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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12.4 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.
7. Per FCC KDB Publication 648474 D04v01, SAR was evaluated without a headset connected to the device. Since the standalone reported SAR was ≤ 1.2 W/kg, no additional 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. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 14 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 6.6 for more details).
10. 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 highest reported SAR for each wireless technology, frequency band, operating mode, and exposure condition.

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 D03v01 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 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.

CDMA Test Notes:

1. Head SAR for CDMA2000 mode was tested under RC3/SO55 per FCC KDB Publication 941225 D01v02.
2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. EVDO and TDSO / SO32 FCH+SCH SAR tests were not required since the average output power was not more than 0.25 dB higher than the TDSO / SO32 FCH only powers, per FCC KDB Publication 941225 D01v02.
3. CDMA Wireless Router SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 according to KDB 941225 D01 procedures for data devices. Since the average output

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power of Subtype 2 for Rev. A is less than the Rev. 0 power levels, EVDO Rev. A SAR is not required. SAR is not required for 1x RTT for Ev-Do hotspot devices when the maximum average output of each channel is less than 1/4 dB higher than that measured in Subtype 0/1 Physical Layer configurations for Rev. 0.

4. 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.
5. Head SAR was additionally evaluated using EVDO Rev. A to determine compliance for VoIP operations.
6. CDMA 1x-RTT SAR was required to be evaluated for Hotspot exposure conditions to support simultaneous transmission capabilities.
7. This device applies power reduction for PCS CDMA modes when Hotspot is ON. Therefore PCS CDMA/EVDO modes were evaluated at hotspot reduced power levels. There is no power reduction applied to the Cellular 850 MHz band.

UMTS Test Notes:

1. UMTS mode in was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v02. 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 Test 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 8.5.4.
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).

WI-FI Test Notes:

1. Justification for reduced test configurations for SISO WIFI channels per KDB Publication 248227 D01v01r02 and October 2012 FCC/TCB Meeting Notes for 2.4 GHz WIFI: Highest average RF output power channel for the lowest data rate was selected for SAR evaluation in 802.11b. Other 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.
2. Justification for reduced test configurations for SISO WIFI channels per KDB Publication 248227 D01v01r02 and October 2012 FCC/TCB Meeting Notes for 5 GHz WIFI: Highest average RF output power channel for the lowest data rate was selected for SAR evaluation in 802.11a. Other IEEE 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.
3. Per April 2013 TCB Workshop notes, 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

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IEEE 802.11a mode. SISO IEEE 802.11ac was evaluated for the highest SISO IEEE 802.11a position in each 5 GHz band and exposure condition.

4. This device only supports Hotspot for 2.4 GHz and 5.8 GHz bands. Therefore all other bands were not evaluated for Hotspot SAR conditions.
5. WIFI transmission was verified using an uncalibrated spectrum analyzer.
6. Since 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 not required.
7. Per KDB 248227, SAR for MIMO was measured with both transmitting simultaneously and was evaluated independently of SISO operation. For 2.4 GHz MIMO, 802.11n was evaluated. For 5 GHz MIMO, 20 MHz Bandwidth 802.11n was evaluated. Additional evaluations for 40 MHz bandwidth 802.11n and 802.11ac were not required since the maximum allowed output power was not higher than 802.11n 20 MHz Bandwidth.
8. This device requires WIFI power reduction for SAR compliance. It always applies power reduction in voice or VOIP held to ear scenarios on the WIFI transmitter, and does not impact any other transmitter in the device. Therefore WIFI head SAR was evaluated at reduced power levels.
9. WI-FI Body-Worn compliance and simultaneous transmission compliance at 15mm separation distance was confirmed using WI-FI SAR testing performed at 10 mm.

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13 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

13.1 Introduction

The following procedures adopted from FCC KDB Publication 447498 D01v05 are applicable to handsets with built-in unlicensed transmitters such as WI-FI and Bluetooth devices which may simultaneously transmit with the licensed transmitter.

13.2 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 a 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 SAR for simultaneous transmission assessment involving that transmitter.

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

Table 13-1
Estimated SAR

Mode	Frequency	Maximum Allowed Power	Separation Distance (Body)	Estimated SAR (Body)
	[MHz]	[dBm]	[mm]	[W/kg]
Bluetooth	2441	10.00	15	0.139

Note: 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.

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13.3 Head SAR Simultaneous Transmission Analysis

Table 13-2
Simultaneous Transmission Scenario with Antenna #1 - 2.4 GHz WLAN (Held to Ear)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.265	0.185	0.450	Head SAR	Right Cheek	0.324	0.185	0.509
	Right Tilt	0.203	0.180	0.383		Right Tilt	0.065	0.180	0.245
	Left Cheek	0.392	0.147	0.539		Left Cheek	0.155	0.147	0.302
	Left Tilt	0.179	0.146	0.325		Left Tilt	0.074	0.146	0.220
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.483	0.185	0.668	Head SAR	Right Cheek	0.365	0.185	0.550
	Right Tilt	0.295	0.180	0.475		Right Tilt	0.141	0.180	0.321
	Left Cheek	0.918	0.147	1.065		Left Cheek	0.236	0.147	0.383
	Left Tilt	0.292	0.146	0.438		Left Tilt	0.185	0.146	0.331
Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.303	0.185	0.488	Head SAR	Right Cheek	0.306	0.185	0.491
	Right Tilt	0.227	0.180	0.407		Right Tilt	0.066	0.180	0.246
	Left Cheek	0.376	0.147	0.523		Left Cheek	0.170	0.147	0.317
	Left Tilt	0.177	0.146	0.323		Left Tilt	0.073	0.146	0.219
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.221	0.185	0.406	Head SAR	Right Cheek	0.312	0.185	0.497
	Right Tilt	0.144	0.180	0.324		Right Tilt	0.184	0.180	0.364
	Left Cheek	0.327	0.147	0.474		Left Cheek	0.586	0.147	0.733
	Left Tilt	0.142	0.146	0.288		Left Tilt	0.173	0.146	0.319
Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.353	0.185	0.538	Head SAR	Right Cheek	0.705	0.185	0.890
	Right Tilt	0.219	0.180	0.399		Right Tilt	0.392	0.180	0.572
	Left Cheek	0.243	0.147	0.390		Left Cheek	0.528	0.147	0.675
	Left Tilt	0.159	0.146	0.305		Left Tilt	0.387	0.146	0.533

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Table 13-3
Simultaneous Transmission Scenario with Antenna #2 - 2.4 GHz WLAN (Held to Ear)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.265	0.039	0.304	Head SAR	Right Cheek	0.324	0.039	0.363
	Right Tilt	0.203	0.008	0.211		Right Tilt	0.065	0.008	0.073
	Left Cheek	0.392	0.011	0.403		Left Cheek	0.155	0.011	0.166
	Left Tilt	0.179	0.005	0.184		Left Tilt	0.074	0.005	0.079
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.483	0.039	0.522	Head SAR	Right Cheek	0.365	0.039	0.404
	Right Tilt	0.295	0.008	0.303		Right Tilt	0.141	0.008	0.149
	Left Cheek	0.918	0.011	0.929		Left Cheek	0.236	0.011	0.247
	Left Tilt	0.292	0.005	0.297		Left Tilt	0.185	0.005	0.190
Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.303	0.039	0.342	Head SAR	Right Cheek	0.306	0.039	0.345
	Right Tilt	0.227	0.008	0.235		Right Tilt	0.066	0.008	0.074
	Left Cheek	0.376	0.011	0.387		Left Cheek	0.170	0.011	0.181
	Left Tilt	0.177	0.005	0.182		Left Tilt	0.073	0.005	0.078
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.221	0.039	0.260	Head SAR	Right Cheek	0.312	0.039	0.351
	Right Tilt	0.144	0.008	0.152		Right Tilt	0.184	0.008	0.192
	Left Cheek	0.327	0.011	0.338		Left Cheek	0.586	0.011	0.597
	Left Tilt	0.142	0.005	0.147		Left Tilt	0.173	0.005	0.178
Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.353	0.039	0.392	Head SAR	Right Cheek	0.705	0.039	0.744
	Right Tilt	0.219	0.008	0.227		Right Tilt	0.392	0.008	0.400
	Left Cheek	0.243	0.011	0.254		Left Cheek	0.528	0.011	0.539
	Left Tilt	0.159	0.005	0.164		Left Tilt	0.387	0.005	0.392

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Table 13-4
Simultaneous Transmission Scenario with 2x2 MIMO - 2.4 GHz WLAN (Held to Ear)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.265	0.103	0.368	Head SAR	Right Cheek	0.324	0.103	0.427
	Right Tilt	0.203	0.091	0.294		Right Tilt	0.065	0.091	0.156
	Left Cheek	0.392	0.121	0.513		Left Cheek	0.155	0.121	0.276
	Left Tilt	0.179	0.124	0.303		Left Tilt	0.074	0.124	0.198
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.483	0.103	0.586	Head SAR	Right Cheek	0.365	0.103	0.468
	Right Tilt	0.295	0.091	0.386		Right Tilt	0.141	0.091	0.232
	Left Cheek	0.918	0.121	1.039		Left Cheek	0.236	0.121	0.357
	Left Tilt	0.292	0.124	0.416		Left Tilt	0.185	0.124	0.309
Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.303	0.103	0.406	Head SAR	Right Cheek	0.306	0.103	0.409
	Right Tilt	0.227	0.091	0.318		Right Tilt	0.066	0.091	0.157
	Left Cheek	0.376	0.121	0.497		Left Cheek	0.170	0.121	0.291
	Left Tilt	0.177	0.124	0.301		Left Tilt	0.073	0.124	0.197
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.221	0.103	0.324	Head SAR	Right Cheek	0.312	0.103	0.415
	Right Tilt	0.144	0.091	0.235		Right Tilt	0.184	0.091	0.275
	Left Cheek	0.327	0.121	0.448		Left Cheek	0.586	0.121	0.707
	Left Tilt	0.142	0.124	0.266		Left Tilt	0.173	0.124	0.297
Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.353	0.103	0.456	Head SAR	Right Cheek	0.705	0.103	0.808
	Right Tilt	0.219	0.091	0.310		Right Tilt	0.392	0.091	0.483
	Left Cheek	0.243	0.121	0.364		Left Cheek	0.528	0.121	0.649
	Left Tilt	0.159	0.124	0.283		Left Tilt	0.387	0.124	0.511

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Table 13-5
Simultaneous Transmission Scenario with Antenna #1 - 5 GHz WLAN (Held to Ear)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.265	0.063	0.328	Head SAR	Right Cheek	0.324	0.063	0.387
	Right Tilt	0.203	0.063	0.266		Right Tilt	0.065	0.063	0.128
	Left Cheek	0.392	0.042	0.434		Left Cheek	0.155	0.042	0.197
	Left Tilt	0.179	0.049	0.228		Left Tilt	0.074	0.049	0.123
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.483	0.063	0.546	Head SAR	Right Cheek	0.365	0.063	0.428
	Right Tilt	0.295	0.063	0.358		Right Tilt	0.141	0.063	0.204
	Left Cheek	0.918	0.042	0.960		Left Cheek	0.236	0.042	0.278
	Left Tilt	0.292	0.049	0.341		Left Tilt	0.185	0.049	0.234
Simult Tx	Configuration	GSM 850 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GSM 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.303	0.063	0.366	Head SAR	Right Cheek	0.306	0.063	0.369
	Right Tilt	0.227	0.063	0.290		Right Tilt	0.066	0.063	0.129
	Left Cheek	0.376	0.042	0.418		Left Cheek	0.170	0.042	0.212
	Left Tilt	0.177	0.049	0.226		Left Tilt	0.073	0.049	0.122
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.221	0.063	0.284	Head SAR	Right Cheek	0.312	0.063	0.375
	Right Tilt	0.144	0.063	0.207		Right Tilt	0.184	0.063	0.247
	Left Cheek	0.327	0.042	0.369		Left Cheek	0.586	0.042	0.628
	Left Tilt	0.142	0.049	0.191		Left Tilt	0.173	0.049	0.222
Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.353	0.063	0.416	Head SAR	Right Cheek	0.705	0.063	0.768
	Right Tilt	0.219	0.063	0.282		Right Tilt	0.392	0.063	0.455
	Left Cheek	0.243	0.042	0.285		Left Cheek	0.528	0.042	0.570
	Left Tilt	0.159	0.049	0.208		Left Tilt	0.387	0.049	0.436

Note: The highest 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.

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Table 13-6
Simultaneous Transmission Scenario with Antenna #2 - 5 GHz WLAN (Held to Ear)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.265	0.217	0.482	Head SAR	Right Cheek	0.324	0.217	0.541
	Right Tilt	0.203	0.080	0.283		Right Tilt	0.065	0.080	0.145
	Left Cheek	0.392	0.046	0.438		Left Cheek	0.155	0.046	0.201
	Left Tilt	0.179	0.044	0.223		Left Tilt	0.074	0.044	0.118
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.483	0.217	0.700	Head SAR	Right Cheek	0.365	0.217	0.582
	Right Tilt	0.295	0.080	0.375		Right Tilt	0.141	0.080	0.221
	Left Cheek	0.918	0.046	0.964		Left Cheek	0.236	0.046	0.282
	Left Tilt	0.292	0.044	0.336		Left Tilt	0.185	0.044	0.229
Simult Tx	Configuration	GSM 850 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GSM 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.303	0.217	0.520	Head SAR	Right Cheek	0.306	0.217	0.523
	Right Tilt	0.227	0.080	0.307		Right Tilt	0.066	0.080	0.146
	Left Cheek	0.376	0.046	0.422		Left Cheek	0.170	0.046	0.216
	Left Tilt	0.177	0.044	0.221		Left Tilt	0.073	0.044	0.117
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.221	0.217	0.438	Head SAR	Right Cheek	0.312	0.217	0.529
	Right Tilt	0.144	0.080	0.224		Right Tilt	0.184	0.080	0.264
	Left Cheek	0.327	0.046	0.373		Left Cheek	0.586	0.046	0.632
	Left Tilt	0.142	0.044	0.186		Left Tilt	0.173	0.044	0.217
Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.353	0.217	0.570	Head SAR	Right Cheek	0.705	0.217	0.922
	Right Tilt	0.219	0.080	0.299		Right Tilt	0.392	0.080	0.472
	Left Cheek	0.243	0.046	0.289		Left Cheek	0.528	0.046	0.574
	Left Tilt	0.159	0.044	0.203		Left Tilt	0.387	0.044	0.431

Note: The highest 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.

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Table 13-7
Simultaneous Transmission Scenario with 2x2 MIMO - 5 GHz WLAN (Held to Ear)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.265	0.061	0.326	Head SAR	Right Cheek	0.324	0.061	0.385
	Right Tilt	0.203	0.017	0.220		Right Tilt	0.065	0.017	0.082
	Left Cheek	0.392	0.020	0.412		Left Cheek	0.155	0.020	0.175
	Left Tilt	0.179	0.014	0.193		Left Tilt	0.074	0.014	0.088
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.483	0.061	0.544	Head SAR	Right Cheek	0.365	0.061	0.426
	Right Tilt	0.295	0.017	0.312		Right Tilt	0.141	0.017	0.158
	Left Cheek	0.918	0.020	0.938		Left Cheek	0.236	0.020	0.256
	Left Tilt	0.292	0.014	0.306		Left Tilt	0.185	0.014	0.199
Simult Tx	Configuration	GSM 850 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GSM 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.303	0.061	0.364	Head SAR	Right Cheek	0.306	0.061	0.367
	Right Tilt	0.227	0.017	0.244		Right Tilt	0.066	0.017	0.083
	Left Cheek	0.376	0.020	0.396		Left Cheek	0.170	0.020	0.190
	Left Tilt	0.177	0.014	0.191		Left Tilt	0.073	0.014	0.087
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.221	0.061	0.282	Head SAR	Right Cheek	0.312	0.061	0.373
	Right Tilt	0.144	0.017	0.161		Right Tilt	0.184	0.017	0.201
	Left Cheek	0.327	0.020	0.347		Left Cheek	0.586	0.020	0.606
	Left Tilt	0.142	0.014	0.156		Left Tilt	0.173	0.014	0.187
Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.353	0.061	0.414	Head SAR	Right Cheek	0.705	0.061	0.766
	Right Tilt	0.219	0.017	0.236		Right Tilt	0.392	0.017	0.409
	Left Cheek	0.243	0.020	0.263		Left Cheek	0.528	0.020	0.548
	Left Tilt	0.159	0.014	0.173		Left Tilt	0.387	0.014	0.401

Note: The highest 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.

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13.4 Body-Worn Simultaneous Transmission Analysis

Table 13-8

Simultaneous Transmission Scenario with Antenna #1 - 2.4 GHz WLAN (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Back Side	Cell. CDMA	0.501	<0.261	<0.762
Back Side	PCS CDMA	0.363	<0.261	<0.624
Back Side	GSM 850	0.531	<0.261	<0.792
Back Side	GSM 1900	0.313	<0.261	<0.574
Back Side	UMTS 850	0.355	<0.261	<0.616
Back Side	UMTS 1900	0.406	<0.261	<0.667
Back Side	LTE Band 13	0.343	<0.261	<0.604
Back Side	LTE Band 4 (AWS)	0.541	<0.261	<0.802

Table 13-9

Simultaneous Transmission Scenario with Antenna #2 - 2.4 GHz WLAN (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Back Side	Cell. CDMA	0.501	<0.096	<0.597
Back Side	PCS CDMA	0.363	<0.096	<0.459
Back Side	GSM 850	0.531	<0.096	<0.627
Back Side	GSM 1900	0.313	<0.096	<0.409
Back Side	UMTS 850	0.355	<0.096	<0.451
Back Side	UMTS 1900	0.406	<0.096	<0.502
Back Side	LTE Band 13	0.343	<0.096	<0.439
Back Side	LTE Band 4 (AWS)	0.541	<0.096	<0.637

Note: For SAR summations for body worn at 15 mm, WLAN SAR values for 10mm were used since the 10mm test distance for WLAN was more conservative for SAR compliance determination purposes. "<" denotes that the 10mm WLAN SAR values were used for the summation calculations.

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Table 13-10
Simultaneous Transmission Scenario with MIMO 2.4 GHz WLAN (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Back Side	Cell. CDMA	0.501	<0.068	<0.569
Back Side	PCS CDMA	0.363	<0.068	<0.431
Back Side	GSM 850	0.531	<0.068	<0.599
Back Side	GSM 1900	0.313	<0.068	<0.381
Back Side	UMTS 850	0.355	<0.068	<0.423
Back Side	UMTS 1900	0.406	<0.068	<0.474
Back Side	LTE Band 13	0.343	<0.068	<0.411
Back Side	LTE Band 4 (AWS)	0.541	<0.068	<0.609

Table 13-11
Simultaneous Transmission Scenario with Antenna 1 5 GHz WLAN (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Back Side	Cell. CDMA	0.501	<0.269	<0.770
Back Side	PCS CDMA	0.363	<0.269	<0.632
Back Side	GSM 850	0.531	<0.269	<0.800
Back Side	GSM 1900	0.313	<0.269	<0.582
Back Side	UMTS 850	0.355	<0.269	<0.624
Back Side	UMTS 1900	0.406	<0.269	<0.675
Back Side	LTE Band 13	0.343	<0.269	<0.612
Back Side	LTE Band 4 (AWS)	0.541	<0.269	<0.810

Note: For SAR summations for body worn at 15 mm, WLAN SAR values for 10mm were used since the 10mm test distance for WLAN was more conservative for SAR compliance determination purposes. "<" denotes that the 10mm WLAN SAR values were used for the summation calculations.

Note: The highest 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.

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Back Side	Cell. CDMA	0.501	<0.351	<0.852
Back Side	PCS CDMA	0.363	<0.351	<0.714
Back Side	GSM 850	0.531	<0.351	<0.882
Back Side	GSM 1900	0.313	<0.351	<0.664
Back Side	UMTS 850	0.355	<0.351	<0.706
Back Side	UMTS 1900	0.406	<0.351	<0.757
Back Side	LTE Band 13	0.343	<0.351	<0.694
Back Side	LTE Band 4 (AWS)	0.541	<0.351	<0.892

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Back Side	Cell. CDMA	0.501	<0.222	<0.723
Back Side	PCS CDMA	0.363	<0.222	<0.585
Back Side	GSM 850	0.531	<0.222	<0.753
Back Side	GSM 1900	0.313	<0.222	<0.535
Back Side	UMTS 850	0.355	<0.222	<0.577
Back Side	UMTS 1900	0.406	<0.222	<0.628
Back Side	LTE Band 13	0.343	<0.222	<0.565
Back Side	LTE Band 4 (AWS)	0.541	<0.222	<0.763

Note: For SAR summations for body worn at 15 mm, WLAN SAR values for 10mm were used since the 10mm test distance for WLAN was more conservative for SAR compliance determination purposes. "<" denotes that the 10mm WLAN SAR values were used for the summation calculations.

Note: The highest 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.

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Table 13-14
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	Cell. CDMA	0.501	0.139	0.640
Back Side	PCS CDMA	0.363	0.139	0.502
Back Side	GSM 850	0.531	0.139	0.670
Back Side	GSM 1900	0.313	0.139	0.452
Back Side	UMTS 850	0.355	0.139	0.494
Back Side	UMTS 1900	0.406	0.139	0.545
Back Side	LTE Band 13	0.343	0.139	0.482
Back Side	LTE Band 4 (AWS)	0.541	0.139	0.680

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.

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13.5 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 13-15
Antenna #1 Simultaneous Transmission Scenario (2.4 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.582	0.261	0.843	Body SAR	Back	0.782	0.261	1.043
	Front	0.467	0.214	0.681		Front	0.523	0.214	0.737
	Top	-	0.126	0.126		Top	-	0.126	0.126
	Bottom	0.191	-	0.191		Bottom	0.433	-	0.433
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.513	0.123	0.636		Left	0.062	0.123	0.185
Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.732	0.261	0.993	Body SAR	Back	0.963	0.261	1.224
	Front	0.595	0.214	0.809		Front	0.908	0.214	1.122
	Top	-	0.126	0.126		Top	-	0.126	0.126
	Bottom	0.296	-	0.296		Bottom	0.578	-	0.578
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.649	0.123	0.772		Left	0.045	0.123	0.168
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.570	0.261	0.831	Body SAR	Back	0.787	0.261	1.048
	Front	0.656	0.214	0.870		Front	0.887	0.214	1.101
	Top	-	0.126	0.126		Top	-	0.126	0.126
	Bottom	0.438	-	0.438		Bottom	0.411	-	0.411
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.028	0.123	0.151		Left	0.314	0.123	0.437
Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.345	0.261	0.606	Body SAR	Back	0.858	0.261	1.119
	Front	0.371	0.214	0.585		Front	0.753	0.214	0.967
	Top	-	0.126	0.126		Top	-	0.126	0.126
	Bottom	0.318	-	0.318		Bottom	0.478	-	0.478
	Right	0.422	-	0.422		Right	0.470	-	0.470
	Left	-	0.123	0.123		Left	-	0.123	0.123

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Table 13-16
Antenna #2 Simultaneous Transmission Scenario (2.4 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.582	0.096	0.678	Body SAR	Back	0.782	0.096	0.878
	Front	0.467	0.059	0.526		Front	0.523	0.059	0.582
	Top	-	0.024	0.024		Top	-	0.024	0.024
	Bottom	0.191	-	0.191		Bottom	0.433	-	0.433
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.513	0.085	0.598		Left	0.062	0.085	0.147
Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.732	0.096	0.828	Body SAR	Back	0.963	0.096	1.059
	Front	0.595	0.059	0.654		Front	0.908	0.059	0.967
	Top	-	0.024	0.024		Top	-	0.024	0.024
	Bottom	0.296	-	0.296		Bottom	0.578	-	0.578
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.649	0.085	0.734		Left	0.045	0.085	0.130
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.570	0.096	0.666	Body SAR	Back	0.787	0.096	0.883
	Front	0.656	0.059	0.715		Front	0.887	0.059	0.946
	Top	-	0.024	0.024		Top	-	0.024	0.024
	Bottom	0.438	-	0.438		Bottom	0.411	-	0.411
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.028	0.085	0.113		Left	0.314	0.085	0.399
Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.345	0.096	0.441	Body SAR	Back	0.858	0.096	0.954
	Front	0.371	0.059	0.430		Front	0.753	0.059	0.812
	Top	-	0.024	0.024		Top	-	0.024	0.024
	Bottom	0.318	-	0.318		Bottom	0.478	-	0.478
	Right	0.422	-	0.422		Right	0.470	-	0.470
	Left	-	0.085	0.085		Left	-	0.085	0.085

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Table 13-17
MIMO Simultaneous Transmission Scenario (2.4 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.582	0.068	0.650	Body SAR	Back	0.782	0.068	0.850
	Front	0.467	0.058	0.525		Front	0.523	0.058	0.581
	Top	-	0.038	0.038		Top	-	0.038	0.038
	Bottom	0.191	-	0.191		Bottom	0.433	-	0.433
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.513	0.030	0.543		Left	0.062	0.030	0.092
Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.732	0.068	0.800	Body SAR	Back	0.963	0.068	1.031
	Front	0.595	0.058	0.653		Front	0.908	0.058	0.966
	Top	-	0.038	0.038		Top	-	0.038	0.038
	Bottom	0.296	-	0.296		Bottom	0.578	-	0.578
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.649	0.030	0.679		Left	0.045	0.030	0.075
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.570	0.068	0.638	Body SAR	Back	0.787	0.068	0.855
	Front	0.656	0.058	0.714		Front	0.887	0.058	0.945
	Top	-	0.038	0.038		Top	-	0.038	0.038
	Bottom	0.438	-	0.438		Bottom	0.411	-	0.411
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.028	0.030	0.058		Left	0.314	0.030	0.344
Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.345	0.068	0.413	Body SAR	Back	0.858	0.068	0.926
	Front	0.371	0.058	0.429		Front	0.753	0.058	0.811
	Top	-	0.038	0.038		Top	-	0.038	0.038
	Bottom	0.318	-	0.318		Bottom	0.478	-	0.478
	Right	0.422	-	0.422		Right	0.470	-	0.470
	Left	-	0.030	0.030		Left	-	0.030	0.030

Table 13-18
Antenna #1 Simultaneous Transmission Scenario (5.8 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.582	0.162	0.744	Body SAR	Back	0.782	0.162	0.944
	Front	0.467	0.104	0.571		Front	0.523	0.104	0.627
	Top	-	0.305	0.305		Top	-	0.305	0.305
	Bottom	0.191	-	0.191		Bottom	0.433	-	0.433
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.513	0.029	0.542		Left	0.062	0.029	0.091
Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.732	0.162	0.894	Body SAR	Back	0.963	0.162	1.125
	Front	0.595	0.104	0.699		Front	0.908	0.104	1.012
	Top	-	0.305	0.305		Top	-	0.305	0.305
	Bottom	0.296	-	0.296		Bottom	0.578	-	0.578
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.649	0.029	0.678		Left	0.045	0.029	0.074
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.570	0.162	0.732	Body SAR	Back	0.787	0.162	0.949
	Front	0.656	0.104	0.760		Front	0.887	0.104	0.991
	Top	-	0.305	0.305		Top	-	0.305	0.305
	Bottom	0.438	-	0.438		Bottom	0.411	-	0.411
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.028	0.029	0.057		Left	0.314	0.029	0.343
Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.345	0.162	0.507	Body SAR	Back	0.858	0.162	1.020
	Front	0.371	0.104	0.475		Front	0.753	0.104	0.857
	Top	-	0.305	0.305		Top	-	0.305	0.305
	Bottom	0.318	-	0.318		Bottom	0.478	-	0.478
	Right	0.422	-	0.422		Right	0.470	-	0.470
	Left	-	0.029	0.029		Left	-	0.029	0.029

Table 13-19
Antenna #2 Simultaneous Transmission Scenario (5.8 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.582	0.327	0.909	Body SAR	Back	0.782	0.327	1.109
	Front	0.467	0.089	0.556		Front	0.523	0.089	0.612
	Top	-	0.075	0.075		Top	-	0.075	0.075
	Bottom	0.191	-	0.191		Bottom	0.433	-	0.433
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.513	0.197	0.710		Left	0.062	0.197	0.259
Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.732	0.327	1.059	Body SAR	Back	0.963	0.327	1.290
	Front	0.595	0.089	0.684		Front	0.908	0.089	0.997
	Top	-	0.075	0.075		Top	-	0.075	0.075
	Bottom	0.296	-	0.296		Bottom	0.578	-	0.578
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.649	0.197	0.846		Left	0.045	0.197	0.242
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.570	0.327	0.897	Body SAR	Back	0.787	0.327	1.114
	Front	0.656	0.089	0.745		Front	0.887	0.089	0.976
	Top	-	0.075	0.075		Top	-	0.075	0.075
	Bottom	0.438	-	0.438		Bottom	0.411	-	0.411
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.028	0.197	0.225		Left	0.314	0.197	0.511
Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.345	0.327	0.672	Body SAR	Back	0.858	0.327	1.185
	Front	0.371	0.089	0.460		Front	0.753	0.089	0.842
	Top	-	0.075	0.075		Top	-	0.075	0.075
	Bottom	0.318	-	0.318		Bottom	0.478	-	0.478
	Right	0.422	-	0.422		Right	0.470	-	0.470
	Left	-	0.197	0.197		Left	-	0.197	0.197

Table 13-20
MIMO Simultaneous Transmission Scenario (5.8 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.582	0.222	0.804	Body SAR	Back	0.782	0.222	1.004
	Front	0.467	0.032	0.499		Front	0.523	0.032	0.555
	Top	-	0.098	0.098		Top	-	0.098	0.098
	Bottom	0.191	-	0.191		Bottom	0.433	-	0.433
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.513	0.060	0.573		Left	0.062	0.060	0.122
Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.732	0.222	0.954	Body SAR	Back	0.963	0.222	1.185
	Front	0.595	0.032	0.627		Front	0.908	0.032	0.940
	Top	-	0.098	0.098		Top	-	0.098	0.098
	Bottom	0.296	-	0.296		Bottom	0.578	-	0.578
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.649	0.060	0.709		Left	0.045	0.060	0.105
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.570	0.222	0.792	Body SAR	Back	0.787	0.222	1.009
	Front	0.656	0.032	0.688		Front	0.887	0.032	0.919
	Top	-	0.098	0.098		Top	-	0.098	0.098
	Bottom	0.438	-	0.438		Bottom	0.411	-	0.411
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.028	0.060	0.088		Left	0.314	0.060	0.374
Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.345	0.222	0.567	Body SAR	Back	0.858	0.222	1.080
	Front	0.371	0.032	0.403		Front	0.753	0.032	0.785
	Top	-	0.098	0.098		Top	-	0.098	0.098
	Bottom	0.318	-	0.318		Bottom	0.478	-	0.478
	Right	0.422	-	0.422		Right	0.470	-	0.470
	Left	-	0.060	0.060		Left	-	0.060	0.060

13.6 SVLTE Simultaneous Transmission Analysis

13.6.1 Held-to-Ear Simultaneous Transmission Assessment

Table 13-21
Simultaneous Transmission Scenario - Held to Ear

Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	Σ SAR (W/kg)
		Target Power (without tolerance) (dBm)	24.5	19	
Head SAR	P $\geq$ 18	Right Cheek	0.265	0.154	0.419
		Right Tilt	0.203	0.086	0.289
		Left Cheek	0.392	0.113	0.505
		Left Tilt	0.179	0.060	0.239
		Target Power (without tolerance) (dBm)	18	23	
	P < 18	Right Cheek	0.064	0.353	0.417
		Right Tilt	0.049	0.219	0.268
		Left Cheek	0.038	0.243	0.281
		Left Tilt	0.022	0.159	0.181
Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	Σ SAR (W/kg)
		Target Power (without tolerance) (dBm)	24.5	19	
Head SAR	P $\geq$ 18	Right Cheek	0.265	0.257	0.522
		Right Tilt	0.203	0.122	0.325
		Left Cheek	0.392	0.147	0.539
		Left Tilt	0.179	0.111	0.290
		Target Power (without tolerance) (dBm)	18	23	
	P < 18	Right Cheek	0.064	0.705	0.769
		Right Tilt	0.049	0.392	0.441
		Left Cheek	0.038	0.528	0.566
		Left Tilt	0.022	0.387	0.409

Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	
		Target Power (without tolerance) (dBm)	24.5	19	
Head SAR	$P \geq 18$	Right Cheek	0.483	0.154	0.637
		Right Tilt	0.295	0.086	0.381
		Left Cheek	0.918	0.113	1.031
		Left Tilt	0.292	0.060	0.352
		Target Power (without tolerance) (dBm)	18	23	
	$P < 18$	Right Cheek	0.161	0.353	0.514
		Right Tilt	0.053	0.219	0.272
		Left Cheek	0.096	0.243	0.339
		Left Tilt	0.060	0.159	0.219
Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	
		Target Power (without tolerance) (dBm)	24.5	19	
Head SAR	$P \geq 18$	Right Cheek	0.483	0.257	0.740
		Right Tilt	0.295	0.122	0.417
		Left Cheek	0.918	0.147	1.065
		Left Tilt	0.292	0.111	0.403
		Target Power (without tolerance) (dBm)	18	23	
	$P < 18$	Right Cheek	0.161	0.705	0.866
		Right Tilt	0.053	0.392	0.445
		Left Cheek	0.096	0.528	0.624
		Left Tilt	0.060	0.387	0.447

Table 13-22
Simultaneous Transmission Scenario with Antenna 1 2.4 GHz WLAN (Held to Ear)

Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	12	
Head SAR	$P \geq 18$	Right Cheek	0.265	0.154	0.185	0.604
		Right Tilt	0.203	0.086	0.180	0.469
		Left Cheek	0.392	0.113	0.147	0.652
		Left Tilt	0.179	0.060	0.146	0.385
		Target Power (without tolerance) (dBm)	18	23	12	
	$P < 18$	Right Cheek	0.064	0.353	0.185	0.602
		Right Tilt	0.049	0.219	0.180	0.448
		Left Cheek	0.038	0.243	0.147	0.428
		Left Tilt	0.022	0.159	0.146	0.327

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Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	12	
Head SAR	P ≥ 18	Right Cheek	0.265	0.257	0.185	0.707
		Right Tilt	0.203	0.122	0.180	0.505
		Left Cheek	0.392	0.147	0.147	0.686
		Left Tilt	0.179	0.111	0.146	0.436
		Target Power (without tolerance) (dBm)	18	23	12	
	P < 18	Right Cheek	0.064	0.705	0.185	0.954
		Right Tilt	0.049	0.392	0.180	0.621
		Left Cheek	0.038	0.528	0.147	0.713
		Left Tilt	0.022	0.387	0.146	0.555

Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	12	
Head SAR	P ≥ 18	Right Cheek	0.369	0.154	0.185	0.708
		Right Tilt	0.141	0.086	0.180	0.407
		Left Cheek	0.232	0.113	0.147	0.492
		Left Tilt	0.179	0.060	0.146	0.385
		Target Power (without tolerance) (dBm)	18	23	12	
	P < 18	Right Cheek	0.161	0.353	0.185	0.699
		Right Tilt	0.053	0.219	0.180	0.452
		Left Cheek	0.096	0.243	0.147	0.486
		Left Tilt	0.060	0.159	0.146	0.365

Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	12	
Head SAR	P ≥ 18	Right Cheek	0.369	0.257	0.185	0.811
		Right Tilt	0.141	0.122	0.180	0.443
		Left Cheek	0.232	0.147	0.147	0.526
		Left Tilt	0.179	0.111	0.146	0.436
		Target Power (without tolerance) (dBm)	18	23	12	
	P < 18	Right Cheek	0.161	0.705	0.185	1.051
		Right Tilt	0.053	0.392	0.180	0.625
		Left Cheek	0.096	0.528	0.147	0.771
		Left Tilt	0.060	0.387	0.146	0.593

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Table 13-23
Simultaneous Transmission Scenario with Antenna 2 2.4 GHz WLAN (Held to Ear)

Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	12	
Head SAR	P ≥ 18	Right Cheek	0.265	0.154	0.039	0.458
		Right Tilt	0.203	0.086	0.008	0.297
		Left Cheek	0.392	0.113	0.011	0.516
		Left Tilt	0.179	0.060	0.005	0.244
		Target Power	18	23	12	
	P < 18	Right Cheek	0.064	0.353	0.039	0.456
		Right Tilt	0.049	0.219	0.008	0.276
		Left Cheek	0.038	0.243	0.011	0.292
		Left Tilt	0.022	0.159	0.005	0.186
Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	12	
Head SAR	P ≥ 18	Right Cheek	0.265	0.257	0.039	0.561
		Right Tilt	0.203	0.122	0.008	0.333
		Left Cheek	0.392	0.147	0.011	0.550
		Left Tilt	0.179	0.111	0.005	0.295
		Target Power (without tolerance) (dBm)	18	23	12	
	P < 18	Right Cheek	0.064	0.705	0.039	0.808
		Right Tilt	0.049	0.392	0.008	0.449
		Left Cheek	0.038	0.528	0.011	0.577
		Left Tilt	0.022	0.387	0.005	0.414
Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	12	
Head SAR	P ≥ 18	Right Cheek	0.369	0.154	0.039	0.562
		Right Tilt	0.141	0.086	0.008	0.235
		Left Cheek	0.232	0.113	0.011	0.356
		Left Tilt	0.179	0.060	0.005	0.244
		Target Power (without tolerance) (dBm)	18	23	12	
	P < 18	Right Cheek	0.161	0.353	0.039	0.553
		Right Tilt	0.053	0.219	0.008	0.280
		Left Cheek	0.096	0.243	0.011	0.350
		Left Tilt	0.060	0.159	0.005	0.224

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Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	12	
Head SAR	P ≥ 18	Right Cheek	0.369	0.257	0.039	0.665
		Right Tilt	0.141	0.122	0.008	0.271
		Left Cheek	0.232	0.147	0.011	0.390
		Left Tilt	0.179	0.111	0.005	0.295
		Target Power (without tolerance) (dBm)	18	23	12	
	P < 18	Right Cheek	0.161	0.705	0.039	0.905
		Right Tilt	0.053	0.392	0.008	0.453
		Left Cheek	0.096	0.528	0.011	0.635
		Left Tilt	0.060	0.387	0.005	0.452

Table 13-24
Simultaneous Transmission Scenario with MIMO 2.4 GHz WLAN (Held to Ear)

Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	12	
Head SAR	P ≥ 18	Right Cheek	0.265	0.154	0.103	0.522
		Right Tilt	0.203	0.086	0.091	0.380
		Left Cheek	0.392	0.113	0.121	0.626
		Left Tilt	0.179	0.060	0.124	0.363
		Target Power (without tolerance) (dBm)	18	23	12	
	P < 18	Right Cheek	0.064	0.353	0.103	0.520
		Right Tilt	0.049	0.219	0.091	0.359
		Left Cheek	0.038	0.243	0.121	0.402
		Left Tilt	0.022	0.159	0.124	0.305
Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	12	
Head SAR	P ≥ 18	Right Cheek	0.265	0.257	0.103	0.625
		Right Tilt	0.203	0.122	0.091	0.416
		Left Cheek	0.392	0.147	0.121	0.660
		Left Tilt	0.179	0.111	0.124	0.414
		Target Power (without tolerance) (dBm)	18	23	12	
	P < 18	Right Cheek	0.064	0.705	0.103	0.872
		Right Tilt	0.049	0.392	0.091	0.532
		Left Cheek	0.038	0.528	0.121	0.687
		Left Tilt	0.022	0.387	0.124	0.533

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Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	12	
Head SAR	P ≥ 18	Right Cheek	0.369	0.154	0.103	0.626
		Right Tilt	0.141	0.086	0.091	0.318
		Left Cheek	0.232	0.113	0.121	0.466
		Left Tilt	0.179	0.060	0.124	0.363
		Target Power (without tolerance) (dBm)	18	23	12	
	P < 18	Right Cheek	0.161	0.353	0.103	0.617
		Right Tilt	0.053	0.219	0.091	0.363
		Left Cheek	0.096	0.243	0.121	0.460
		Left Tilt	0.060	0.159	0.124	0.343

Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	12	
Head SAR	P ≥ 18	Right Cheek	0.369	0.257	0.103	0.729
		Right Tilt	0.141	0.122	0.091	0.354
		Left Cheek	0.232	0.147	0.121	0.500
		Left Tilt	0.179	0.111	0.124	0.414
		Target Power (without tolerance) (dBm)	18	23	12	
	P < 18	Right Cheek	0.161	0.705	0.103	0.969
		Right Tilt	0.053	0.392	0.091	0.536
		Left Cheek	0.096	0.528	0.121	0.745
		Left Tilt	0.060	0.387	0.124	0.571

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Table 13-25
Simultaneous Transmission Scenario with Antenna 1 5 GHz WLAN (Held to Ear)

Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	7	
Head SAR	P ≥ 18	Right Cheek	0.265	0.154	0.063	0.482
		Right Tilt	0.203	0.086	0.063	0.352
		Left Cheek	0.392	0.113	0.042	0.547
		Left Tilt	0.179	0.060	0.049	0.288
		Target Power (without tolerance) (dBm)	18	23	7	
	P < 18	Right Cheek	0.064	0.353	0.063	0.480
		Right Tilt	0.049	0.219	0.063	0.331
		Left Cheek	0.038	0.243	0.042	0.323
		Left Tilt	0.022	0.159	0.049	0.230

Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	7	
Head SAR	P ≥ 18	Right Cheek	0.265	0.257	0.063	0.585
		Right Tilt	0.203	0.122	0.063	0.388
		Left Cheek	0.392	0.147	0.042	0.581
		Left Tilt	0.179	0.111	0.049	0.339
		Target Power (without tolerance) (dBm)	18	23	7	
	P < 18	Right Cheek	0.064	0.705	0.063	0.832
		Right Tilt	0.049	0.392	0.063	0.504
		Left Cheek	0.038	0.528	0.042	0.608
		Left Tilt	0.022	0.387	0.049	0.458

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Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	7	
Head SAR	P ≥ 18	Right Cheek	0.369	0.154	0.063	0.586
		Right Tilt	0.141	0.086	0.063	0.290
		Left Cheek	0.232	0.113	0.042	0.387
		Left Tilt	0.179	0.060	0.049	0.288
		Target Power (without tolerance) (dBm)	18	23	7	
	P < 18	Right Cheek	0.161	0.353	0.063	0.577
		Right Tilt	0.053	0.219	0.063	0.335
		Left Cheek	0.096	0.243	0.042	0.381
		Left Tilt	0.060	0.159	0.049	0.268

Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	7	
Head SAR	P ≥ 18	Right Cheek	0.369	0.257	0.063	0.689
		Right Tilt	0.141	0.122	0.063	0.326
		Left Cheek	0.232	0.147	0.042	0.421
		Left Tilt	0.179	0.111	0.049	0.339
		Target Power (without tolerance) (dBm)	18	23	7	
	P < 18	Right Cheek	0.161	0.705	0.063	0.929
		Right Tilt	0.053	0.392	0.063	0.508
		Left Cheek	0.096	0.528	0.042	0.666
		Left Tilt	0.060	0.387	0.049	0.496

Note: The highest 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.

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Table 13-26
Simultaneous Transmission Scenario with Antenna #2 - 5 GHz WLAN (Held to Ear)

Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	7	
Head SAR	P ≥ 18	Right Cheek	0.265	0.154	0.217	0.636
		Right Tilt	0.203	0.086	0.080	0.369
		Left Cheek	0.392	0.113	0.046	0.551
		Left Tilt	0.179	0.060	0.044	0.283
		Target Power (without tolerance) (dBm)	18	23	7	
	P < 18	Right Cheek	0.064	0.353	0.217	0.634
		Right Tilt	0.049	0.219	0.080	0.348
		Left Cheek	0.038	0.243	0.046	0.327
		Left Tilt	0.022	0.159	0.044	0.225

Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	7	
Head SAR	P ≥ 18	Right Cheek	0.265	0.257	0.217	0.739
		Right Tilt	0.203	0.122	0.080	0.405
		Left Cheek	0.392	0.147	0.046	0.585
		Left Tilt	0.179	0.111	0.044	0.334
		Target Power (without tolerance) (dBm)	18	23	7	
	P < 18	Right Cheek	0.064	0.705	0.217	0.986
		Right Tilt	0.049	0.392	0.080	0.521
		Left Cheek	0.038	0.528	0.046	0.612
		Left Tilt	0.022	0.387	0.044	0.453

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Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	7	
Head SAR	P ≥ 18	Right Cheek	0.369	0.154	0.217	0.740
		Right Tilt	0.141	0.086	0.080	0.307
		Left Cheek	0.232	0.113	0.046	0.391
		Left Tilt	0.179	0.060	0.044	0.283
		Target Power (without tolerance) (dBm)	18	23	7	
	P < 18	Right Cheek	0.161	0.353	0.217	0.731
		Right Tilt	0.053	0.219	0.080	0.352
		Left Cheek	0.096	0.243	0.046	0.385
		Left Tilt	0.060	0.159	0.044	0.263

Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	7	
Head SAR	P ≥ 18	Right Cheek	0.369	0.257	0.217	0.843
		Right Tilt	0.141	0.122	0.080	0.343
		Left Cheek	0.232	0.147	0.046	0.425
		Left Tilt	0.179	0.111	0.044	0.334
		Target Power (without tolerance) (dBm)	18	23	7	
	P < 18	Right Cheek	0.161	0.705	0.217	1.083
		Right Tilt	0.053	0.392	0.080	0.525
		Left Cheek	0.096	0.528	0.046	0.670
		Left Tilt	0.060	0.387	0.044	0.491

Note: 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.

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Table 13-27
Simultaneous Transmission Scenario with MIMO 5 GHz WLAN (Held to Ear)

Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	7	
Head SAR	P ≥ 18	Right Cheek	0.265	0.154	0.061	0.480
		Right Tilt	0.203	0.086	0.017	0.306
		Left Cheek	0.392	0.113	0.020	0.525
		Left Tilt	0.179	0.060	0.014	0.253
		Target Power (without tolerance) (dBm)	18	23	7	
	P < 18	Right Cheek	0.064	0.353	0.061	0.478
		Right Tilt	0.049	0.219	0.017	0.285
		Left Cheek	0.038	0.243	0.020	0.301
		Left Tilt	0.022	0.159	0.014	0.195
Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	7	
Head SAR	P ≥ 18	Right Cheek	0.265	0.257	0.061	0.583
		Right Tilt	0.203	0.122	0.017	0.342
		Left Cheek	0.392	0.147	0.020	0.559
		Left Tilt	0.179	0.111	0.014	0.304
		Target Power (without tolerance) (dBm)	18	23	7	
	P < 18	Right Cheek	0.064	0.705	0.061	0.830
		Right Tilt	0.049	0.392	0.017	0.458
		Left Cheek	0.038	0.528	0.020	0.586
		Left Tilt	0.022	0.387	0.014	0.423
Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	7	
Head SAR	P ≥ 18	Right Cheek	0.369	0.154	0.061	0.584
		Right Tilt	0.141	0.086	0.017	0.244
		Left Cheek	0.232	0.113	0.020	0.365
		Left Tilt	0.179	0.060	0.014	0.253
		Target Power (without tolerance) (dBm)	18	23	7	
	P < 18	Right Cheek	0.161	0.353	0.061	0.575
		Right Tilt	0.053	0.219	0.017	0.289
		Left Cheek	0.096	0.243	0.020	0.359
		Left Tilt	0.060	0.159	0.014	0.233

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Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	7	
Head SAR	P ≥ 18	Right Cheek	0.369	0.257	0.061	0.687
		Right Tilt	0.141	0.122	0.017	0.280
		Left Cheek	0.232	0.147	0.020	0.399
		Left Tilt	0.179	0.111	0.014	0.304
		Target Power (without tolerance) (dBm)	18	23	7	
	P < 18	Right Cheek	0.161	0.705	0.061	0.927
		Right Tilt	0.053	0.392	0.017	0.462
		Left Cheek	0.096	0.528	0.020	0.644
		Left Tilt	0.060	0.387	0.014	0.461

Note: The highest 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.

13.6.2 Body-Worn Accessory Simultaneous Transmission Assessment

Table 13-28
Simultaneous Transmission Scenario (Body-Worn at 1.5 cm)

Configuration	CDMA Target Power Level (dBm)	Mode		CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	Σ SAR (W/kg)
			Target Power (without tolerance) (dBm)	24.5	19	
Back Side	P ≥ 18	Cell. CDMA	24.5	0.501	0.141	0.642
Back Side		PCS CDMA	24.5	0.363	0.141	0.504
			Target Power (without tolerance) (dBm)	18	23	
Back Side	P < 18	Cell. CDMA	18.0	0.090	0.343	0.433
Back Side		PCS CDMA	18.0	0.135	0.343	0.478
Configuration	CDMA Target Power Level (dBm)	Mode		CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	Σ SAR (W/kg)
			Target Power (without tolerance) (dBm)	24.5	19	
Back Side	P ≥ 18	Cell. CDMA	24.5	0.501	0.194	0.695
Back Side		PCS CDMA	24.5	0.363	0.194	0.557
			Target Power (without tolerance) (dBm)	18	23	
Back Side	P < 18	Cell. CDMA	18.0	0.090	0.541	0.631
Back Side		PCS CDMA	18.0	0.135	0.541	0.676

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For SAR summations for body worn at 15 mm, WLAN SAR values for 10mm were used since the 10mm test distance for WLAN was more conservative for SAR compliance determination purposes. “<” denotes that the 10mm WLAN SAR values were used for the summation calculations.

Table 13-29
Simultaneous Transmission Scenario with Antenna 1 2.4 GHz WLAN (Body-Worn at 1.5 cm)

Configuration	CDMA Target Power Level (dBm)	Mode		CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
			Tx Antenna	1	2	3	
			Target Power (without tolerance) (dBm)		19	17	1+2+3
Back Side	P ≥ 18	Cell. CDMA	24.5	0.501	0.141	<0.261	<0.903
Back Side		PCS CDMA	22.5	0.319	0.141	<0.261	<0.721
			Target Power (without tolerance) (dBm)	18	23	17	
Back Side	P < 18	Cell. CDMA	18.0	0.090	0.343	<0.261	<0.694
Back Side		PCS CDMA	18.0	0.135	0.343	<0.261	<0.739
Configuration	CDMA Target Power Level (dBm)	Mode		CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
			Tx Antenna	1	2	3	
			Target Power (without tolerance) (dBm)		19	17	1+2+3
Back Side	P ≥ 18	Cell. CDMA	24.5	0.501	0.194	<0.261	<0.956
Back Side		PCS CDMA	22.5	0.319	0.194	<0.261	<0.774
			Target Power (without tolerance) (dBm)	18	23	17	
Back Side	P < 18	Cell. CDMA	18.0	0.090	0.541	<0.261	<0.892
Back Side		PCS CDMA	18.0	0.135	0.541	<0.261	<0.937

Table 13-30
Simultaneous Transmission Scenario with Antenna 2 2.4 GHz WLAN (Body-Worn at 1.5 cm)

Configuration	CDMA Target Power Level (dBm)	Mode		CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
			Tx Antenna	1	2	3	
			Target Power (without tolerance) (dBm)		19	17	1+2+3
Back Side	P ≥ 18	Cell. CDMA	24.5	0.501	0.141	<0.096	<0.738
Back Side		PCS CDMA	22.5	0.319	0.141	<0.096	<0.556
			Target Power (without tolerance) (dBm)	18	23	17	
Back Side	P < 18	Cell. CDMA	18.0	0.090	0.343	<0.096	<0.529
Back Side		PCS CDMA	18.0	0.135	0.343	<0.096	<0.574
Configuration	CDMA Target Power Level (dBm)	Mode		CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
			Tx Antenna	1	2	3	
			Target Power (without tolerance) (dBm)		19	17	1+2+3
Back Side	P ≥ 18	Cell. CDMA	24.5	0.501	0.194	<0.096	<0.791
Back Side		PCS CDMA	22.5	0.319	0.194	<0.096	<0.609
			Target Power (without tolerance) (dBm)	18	23	17	
Back Side	P < 18	Cell. CDMA	18.0	0.090	0.541	<0.096	<0.727
Back Side		PCS CDMA	18.0	0.135	0.541	<0.096	<0.772

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Table 13-31

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

Configuration	CDMA Target Power Level (dBm)	Mode		CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
			Tx Antenna	1	2	3	
			Target Power (without tolerance) (dBm)		19	13.5	1+2+3
Back Side	P ≥ 18	Cell. CDMA	24.5	0.501	0.141	<0.068	<0.710
Back Side		PCS CDMA	22.5	0.319	0.141	<0.068	<0.528
			Target Power (without	18	23	13.5	
Back Side	P < 18	Cell. CDMA	18.0	0.090	0.343	<0.068	<0.501
Back Side		PCS CDMA	18.0	0.135	0.343	<0.068	<0.546
Configuration	CDMA Target Power Level (dBm)	Mode		CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
			Tx Antenna	1	2	3	
			Target Power (without tolerance) (dBm)		19	13.5	1+2+3
Back Side	P ≥ 18	Cell. CDMA	24.5	0.501	0.194	<0.068	<0.763
Back Side		PCS CDMA	22.5	0.319	0.194	<0.068	<0.581
			Target Power (without	18	23	13.5	
Back Side	P < 18	Cell. CDMA	18.0	0.090	0.541	<0.068	<0.699
Back Side		PCS CDMA	18.0	0.135	0.541	<0.068	<0.744

The highest 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 13-32

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

Configuration	CDMA Target Power Level (dBm)	Mode		CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
			Tx Antenna	1	2	3	
			Target Power (without tolerance) (dBm)		19	13.5	1+2+3
Back Side	P ≥ 18	Cell. CDMA	24.5	0.501	0.141	<0.269	<0.911
Back Side		PCS CDMA	22.5	0.319	0.141	<0.269	<0.729
			Target Power (without tolerance) (dBm)	18	23	13.5	
Back Side	P < 18	Cell. CDMA	18.0	0.090	0.343	<0.269	<0.702
Back Side		PCS CDMA	18.0	0.135	0.343	<0.269	<0.747
Configuration	CDMA Target Power Level (dBm)	Mode		CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
			Tx Antenna	1	2	3	
			Target Power (without tolerance) (dBm)		19	13.5	1+2+3
Back Side	P ≥ 18	Cell. CDMA	24.5	0.501	0.194	<0.269	<0.964
Back Side		PCS CDMA	22.5	0.319	0.194	<0.269	<0.782
			Target Power (without tolerance) (dBm)	18	23	13.5	
Back Side	P < 18	Cell. CDMA	18.0	0.090	0.541	<0.269	<0.900
Back Side		PCS CDMA	18.0	0.135	0.541	<0.269	<0.945

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Table 13-33
Simultaneous Transmission Scenario with Antenna 2 5 GHz WLAN (Body-Worn at 1.5 cm)

Configuration	CDMA Target Power Level (dBm)	Mode		CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
			Tx Antenna	1	2	3	
			Target Power (without tolerance) (dBm)		19	13.5	1+2+3
Back Side	P ≥ 18	Cell. CDMA	24.5	0.501	0.141	<0.351	<0.993
Back Side		PCS CDMA	22.5	0.319	0.141	<0.351	<0.811
			Target Power (without tolerance) (dBm)	18	23	13.5	
Back Side	P < 18	Cell. CDMA	18.0	0.090	0.343	<0.351	<0.784
Back Side		PCS CDMA	18.0	0.135	0.343	<0.351	<0.829
Configuration	CDMA Target Power Level (dBm)	Mode		CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
			Tx Antenna	1	2	3	
			Target Power (without tolerance) (dBm)		19	13.5	1+2+3
Back Side	P ≥ 18	Cell. CDMA	24.5	0.501	0.194	<0.351	<1.046
Back Side		PCS CDMA	22.5	0.319	0.194	<0.351	<0.864
			Target Power (without tolerance) (dBm)	18	23	13.5	
Back Side	P < 18	Cell. CDMA	18.0	0.090	0.541	<0.351	<0.982
Back Side		PCS CDMA	18.0	0.135	0.541	<0.351	<1.027

Table 13-34
Simultaneous Transmission Scenario with MIMO 5 GHz WLAN (Body-Worn at 1.5 cm)

Configuration	CDMA Target Power Level (dBm)	Mode		CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
			Tx Antenna	1	2	3	
			Target Power (without tolerance) (dBm)		19	13	1+2+3
Back Side	P ≥ 18	Cell. CDMA	24.5	0.501	0.141	<0.222	<0.864
Back Side		PCS CDMA	22.5	0.319	0.141	<0.222	<0.682
			Target Power (without tolerance) (dBm)	18	23	13	
Back Side	P < 18	Cell. CDMA	18.0	0.090	0.343	<0.222	<0.655
Back Side		PCS CDMA	18.0	0.135	0.343	<0.222	<0.700
Configuration	CDMA Target Power Level (dBm)	Mode		CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
			Tx Antenna	1	2	3	
			Target Power (without tolerance) (dBm)		19	13	1+2+3
Back Side	P ≥ 18	Cell. CDMA	24.5	0.501	0.194	<0.222	<0.917
Back Side		PCS CDMA	22.5	0.319	0.194	<0.222	<0.735
			Target Power (without tolerance) (dBm)	18	23	13	
Back Side	P < 18	Cell. CDMA	18.0	0.090	0.541	<0.222	<0.853
Back Side		PCS CDMA	18.0	0.135	0.541	<0.222	<0.898

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Table 13-35
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.5 cm)

Configuration	CDMA Target Power Level (dBm)	Mode		CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
			Tx Antenna	1	2	3	1+2+3
			Target Power (without tolerance) (dBm)	24.5	19	9.5	
Back Side	P ≥ 18	Cell. CDMA	24.5	0.501	0.141	0.139	0.781
Back Side		PCS CDMA	24.5	0.363	0.141	0.139	0.643
			Target Power (without tolerance) (dBm)	18	23	9.5	
Back Side	P < 18	Cell. CDMA	18.0	0.090	0.343	0.139	0.572
Back Side		PCS CDMA	18.0	0.135	0.343	0.139	0.617
Configuration	CDMA Target Power Level (dBm)	Mode		CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
			Tx Antenna	1	2	3	1+2+3
			Target Power (without tolerance) (dBm)	24.5	19	9.5	
Back Side	P ≥ 18	Cell. CDMA	24.5	0.501	0.194	0.139	0.834
Back Side		PCS CDMA	24.5	0.363	0.194	0.139	0.696
			Target Power (without tolerance) (dBm)	18	23	9.5	
Back Side	P < 18	Cell. CDMA	18.0	0.090	0.541	0.139	0.770
Back Side		PCS CDMA	18.0	0.135	0.541	0.139	0.815

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.

13.6.3 Wireless Router Simultaneous Transmission Assessment

Table 13-36
Simultaneous Transmission Scenario with Antenna 1 2.4 GHz WLAN (Hotspot at 1.0 cm)

Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	17	
Body SAR	P ≥ 18	Back	0.585	0.142	0.261	0.988
		Front	0.468	0.150	0.214	0.832
		Top	-	-	0.126	0.126
		Bottom	0.181	0.124	-	0.305
		Right	-	0.193	-	0.193
		Left	0.311	-	0.123	0.434
	P < 18	Target Power (without tolerance) (dBm)	18	23	17	
		Back	0.115	0.345	0.261	0.721
		Front	0.111	0.371	0.214	0.696
		Top	-	-	0.126	0.126
		Bottom	0.100	0.318	-	0.418
		Right	-	0.422	-	0.422
		Left	0.004	-	0.123	0.127

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Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	17	
Body SAR	P ≥ 18	Back	0.585	0.404	0.261	1.250
		Front	0.468	0.400	0.214	1.082
		Top	-	-	0.126	0.126
		Bottom	0.181	0.199	-	0.380
		Right	-	0.192	-	0.192
		Left	0.311	-	0.123	0.434
		Target Power (without tolerance) (dBm)	18	23	17	
	P < 18	Back	0.115	0.858	0.261	1.234
		Front	0.111	0.753	0.214	1.078
		Top	-	-	0.126	0.126
		Bottom	0.100	0.478	-	0.578
		Right	-	0.470	-	0.470
		Left	0.004	-	0.123	0.127
Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	17	
Body SAR	P ≥ 18	Back	0.685	0.142	0.261	1.088
		Front	0.652	0.150	0.214	1.016
		Top	-	-	0.126	0.126
		Bottom	0.578	0.124	-	0.702
		Right	-	0.193	-	0.193
		Left	0.086	-	0.123	0.209
		Target Power (without tolerance) (dBm)	18	23	17	
	P < 18	Back	0.282	0.345	0.261	0.888
		Front	0.286	0.371	0.214	0.871
		Top	-	-	0.126	0.126
		Bottom	0.217	0.318	-	0.535
		Right	-	0.422	-	0.422
		Left	0.049	-	0.123	0.172
Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	17	
Body SAR	P ≥ 18	Back	0.685	0.404	0.261	1.350
		Front	0.652	0.400	0.214	1.266
		Top	-	-	0.126	0.126
		Bottom	0.578	0.199	-	0.777
		Right	-	0.192	-	0.192
		Left	0.086	-	0.123	0.209
		Target Power (without tolerance) (dBm)	18	23	17	
	P < 18	Back	0.282	0.858	0.261	1.401
		Front	0.286	0.753	0.214	1.253
		Top	-	-	0.126	0.126
		Bottom	0.217	0.478	-	0.695
		Right	-	0.470	-	0.470
		Left	0.049	-	0.123	0.172

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Table 13-37
Simultaneous Transmission Scenario with Antenna 2 2.4 GHz WLAN (Hotspot at 1.0 cm)

Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	17	
Body SAR	P ≥ 18	Back	0.585	0.142	0.096	0.823
		Front	0.468	0.150	0.059	0.677
		Top	-	-	0.024	0.024
		Bottom	0.181	0.124	-	0.305
		Right	-	0.193	-	0.193
		Left	0.311	-	0.085	0.396
		Target Power (without tolerance) (dBm)	18	23	17	
	P < 18	Back	0.115	0.345	0.096	0.556
		Front	0.111	0.371	0.059	0.541
		Top	-	-	0.024	0.024
		Bottom	0.100	0.318	-	0.418
		Right	-	0.422	-	0.422
		Left	0.004	-	0.085	0.089
Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	17	
Body SAR	P ≥ 18	Back	0.585	0.404	0.096	1.085
		Front	0.468	0.400	0.059	0.927
		Top	-	-	0.024	0.024
		Bottom	0.181	0.199	-	0.380
		Right	-	0.192	-	0.192
		Left	0.311	-	0.085	0.396
		Target Power (without tolerance) (dBm)	18	23	17	
	P < 18	Back	0.115	0.858	0.096	1.069
		Front	0.111	0.753	0.059	0.923
		Top	-	-	0.024	0.024
		Bottom	0.100	0.478	-	0.578
		Right	-	0.470	-	0.470
		Left	0.004	-	0.085	0.089
Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	17	
Body SAR	P ≥ 18	Back	0.685	0.142	0.096	0.923
		Front	0.652	0.150	0.059	0.861
		Top	-	-	0.024	0.024
		Bottom	0.578	0.124	-	0.702
		Right	-	0.193	-	0.193
		Left	0.086	-	0.085	0.171
		Target Power (without tolerance) (dBm)	18	23	17	
	P < 18	Back	0.282	0.345	0.096	0.723
		Front	0.286	0.371	0.059	0.716
		Top	-	-	0.024	0.024
		Bottom	0.217	0.318	-	0.535
		Right	-	0.422	-	0.422
		Left	0.049	-	0.085	0.134

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Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	17	
Body SAR	P ≥ 18	Back	0.685	0.404	0.096	1.185
		Front	0.652	0.400	0.059	1.111
		Top	-	-	0.024	0.024
		Bottom	0.578	0.199	-	0.777
		Right	-	0.192	-	0.192
		Left	0.086	-	0.085	0.171
		Target Power (without tolerance) (dBm)	18	23	17	
	P < 18	Back	0.282	0.858	0.096	1.236
		Front	0.286	0.753	0.059	1.098
		Top	-	-	0.024	0.024
		Bottom	0.217	0.478	-	0.695
		Right	-	0.470	-	0.470
		Left	0.049	-	0.085	0.134

Table 13-38

Simultaneous Transmission Scenario with MIMO 2.4 GHz WLAN (Hotspot at 1.0 cm)

Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	13.5	
Body SAR	P ≥ 18	Back	0.585	0.142	0.068	0.795
		Front	0.468	0.150	0.058	0.676
		Top	-	-	0.038	0.038
		Bottom	0.181	0.124	-	0.305
		Right	-	0.193	-	0.193
		Left	0.311	-	0.030	0.341
		Target Power (without tolerance) (dBm)	18	23	13.5	
	P < 18	Back	0.115	0.345	0.068	0.528
		Front	0.111	0.371	0.058	0.540
		Top	-	-	0.038	0.038
		Bottom	0.100	0.318	-	0.418
		Right	-	0.422	-	0.422
		Left	0.004	-	0.030	0.034
Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	13.5	
	P ≥ 18	Back	0.585	0.404	0.068	1.057
		Front	0.468	0.400	0.058	0.926
		Top	-	-	0.038	0.038
		Bottom	0.181	0.199	-	0.380
		Right	-	0.192	-	0.192
		Left	0.311	-	0.030	0.341
		Target Power (without tolerance) (dBm)	18	23	13.5	
	P < 18	Back	0.115	0.858	0.068	1.041
		Front	0.111	0.753	0.058	0.922
		Top	-	-	0.038	0.038
		Bottom	0.100	0.478	-	0.578
		Right	-	0.470	-	0.470
		Left	0.004	-	0.030	0.034

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Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	13.5	
Body SAR	P ≥ 18	Back	0.685	0.142	0.068	0.895
		Front	0.652	0.150	0.058	0.860
		Top	-	-	0.038	0.038
		Bottom	0.578	0.124	-	0.702
		Right	-	0.193	-	0.193
		Left	0.086	-	0.030	0.116
	P < 18	Target Power (without tolerance) (dBm)	18	23	13.5	
		Back	0.282	0.345	0.068	0.695
		Front	0.286	0.371	0.058	0.715
		Top	-	-	0.038	0.038
		Bottom	0.217	0.318	-	0.535
		Right	-	0.422	-	0.422
		Left	0.049	-	0.030	0.079
Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	13.5	
Body SAR	P ≥ 18	Back	0.685	0.404	0.068	1.157
		Front	0.652	0.400	0.058	1.110
		Top	-	-	0.038	0.038
		Bottom	0.578	0.199	-	0.777
		Right	-	0.192	-	0.192
		Left	0.086	-	0.030	0.116
	P < 18	Target Power (without tolerance) (dBm)	18	23	13.5	
		Back	0.282	0.858	0.068	1.208
		Front	0.286	0.753	0.058	1.097
		Top	-	-	0.038	0.038
		Bottom	0.217	0.478	-	0.695
		Right	-	0.470	-	0.470
		Left	0.049	-	0.030	0.079

Table 13-39

Antenna 1 Simultaneous Transmission Scenario (5.8 GHz Hotspot at 1.0 cm)

Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	13.5	
Body SAR	P ≥ 18	Back	0.585	0.142	0.162	0.889
		Front	0.468	0.150	0.104	0.722
		Top	-	-	0.305	0.305
		Bottom	0.181	0.124	-	0.305
		Right	-	0.193	-	0.193
		Left	0.311	-	0.029	0.340
	P < 18	Target Power (without tolerance) (dBm)	18	23	13.5	
		Back	0.115	0.345	0.162	0.622
		Front	0.111	0.371	0.104	0.586
		Top	-	-	0.305	0.305
		Bottom	0.100	0.318	-	0.418
		Right	-	0.422	-	0.422
		Left	0.004	-	0.029	0.033

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Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	13.5	
Body SAR	P ≥ 18	Back	0.585	0.404	0.162	1.151
		Front	0.468	0.400	0.104	0.972
		Top	-	-	0.305	0.305
		Bottom	0.181	0.199	-	0.380
		Right	-	0.192	-	0.192
		Left	0.311	-	0.029	0.340
		Target Power (without tolerance) (dBm)	18	23	13.5	
	P < 18	Back	0.115	0.858	0.162	1.135
		Front	0.111	0.753	0.104	0.968
		Top	-	-	0.305	0.305
		Bottom	0.100	0.478	-	0.578
		Right	-	0.470	-	0.470
		Left	0.004	-	0.029	0.033
Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	13.5	
Body SAR	P ≥ 18	Back	0.685	0.142	0.162	0.989
		Front	0.652	0.150	0.104	0.906
		Top	-	-	0.305	0.305
		Bottom	0.578	0.124	-	0.702
		Right	-	0.193	-	0.193
		Left	0.086	-	0.029	0.115
		Target Power (without tolerance) (dBm)	18	23	13.5	
	P < 18	Back	0.282	0.345	0.162	0.789
		Front	0.286	0.371	0.104	0.761
		Top	-	-	0.305	0.305
		Bottom	0.217	0.318	-	0.535
		Right	-	0.422	-	0.422
		Left	0.049	-	0.029	0.078
Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	13.5	
Body SAR	P ≥ 18	Back	0.685	0.404	0.162	1.251
		Front	0.652	0.400	0.104	1.156
		Top	-	-	0.305	0.305
		Bottom	0.578	0.199	-	0.777
		Right	-	0.192	-	0.192
		Left	0.086	-	0.029	0.115
		Target Power (without tolerance) (dBm)	18	23	13.5	
	P < 18	Back	0.282	0.858	0.162	1.302
		Front	0.286	0.753	0.104	1.143
		Top	-	-	0.305	0.305
		Bottom	0.217	0.478	-	0.695
		Right	-	0.470	-	0.470
		Left	0.049	-	0.029	0.078

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Table 13-40
Antenna 2 Simultaneous Transmission Scenario (5.8 GHz Hotspot at 1.0 cm)

Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	13.5	
Body SAR	P ≥ 18	Back	0.585	0.142	0.327	1.054
		Front	0.468	0.150	0.089	0.707
		Top	-	-	0.075	0.075
		Bottom	0.181	0.124	-	0.305
		Right	-	0.193	-	0.193
		Left	0.311	-	0.197	0.508
	P < 18	Target Power (without tolerance) (dBm)	18	23	13.5	
		Back	0.115	0.345	0.327	0.787
		Front	0.111	0.371	0.089	0.571
		Top	-	-	0.075	0.075
		Bottom	0.100	0.318	-	0.418
		Right	-	0.422	-	0.422
		Left	0.004	-	0.197	0.201
Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	13.5	
Body SAR	P ≥ 18	Back	0.585	0.404	0.327	1.316
		Front	0.468	0.400	0.089	0.957
		Top	-	-	0.075	0.075
		Bottom	0.181	0.199	-	0.380
		Right	-	0.192	-	0.192
		Left	0.311	-	0.197	0.508
	P < 18	Target Power (without tolerance) (dBm)	18	23	13.5	
		Back	0.115	0.858	0.327	1.300
		Front	0.111	0.753	0.089	0.953
		Top	-	-	0.075	0.075
		Bottom	0.100	0.478	-	0.578
		Right	-	0.470	-	0.470
		Left	0.004	-	0.197	0.201
Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	13.5	
Body SAR	P ≥ 18	Back	0.685	0.142	0.327	1.154
		Front	0.652	0.150	0.089	0.891
		Top	-	-	0.075	0.075
		Bottom	0.578	0.124	-	0.702
		Right	-	0.193	-	0.193
		Left	0.086	-	0.197	0.283
	P < 18	Target Power (without tolerance) (dBm)	18	23	13.5	
		Back	0.282	0.345	0.327	0.954
		Front	0.286	0.371	0.089	0.746
		Top	-	-	0.075	0.075
		Bottom	0.217	0.318	-	0.535
		Right	-	0.422	-	0.422
		Left	0.049	-	0.197	0.246

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Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	13.5	
Body SAR	P ≥ 18	Back	0.685	0.404	0.327	1.416
		Front	0.652	0.400	0.089	1.141
		Top	-	-	0.075	0.075
		Bottom	0.578	0.199	-	0.777
		Right	-	0.192	-	0.192
		Left	0.086	-	0.197	0.283
		Target Power (without tolerance) (dBm)	18	23	13.5	
	P < 18	Back	0.282	0.858	0.327	1.467
		Front	0.286	0.753	0.089	1.128
		Top	-	-	0.075	0.075
		Bottom	0.217	0.478	-	0.695
		Right	-	0.470	-	0.470
		Left	0.049	-	0.197	0.246

Table 13-41
MIMO Simultaneous Transmission Scenario (5.8 GHz Hotspot at 1.0 cm)

Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	13	
Body SAR	P ≥ 18	Back	0.585	0.142	0.222	0.949
		Front	0.468	0.150	0.032	0.650
		Top	-	-	0.098	0.098
		Bottom	0.181	0.124	-	0.305
		Right	-	0.193	-	0.193
		Left	0.311	-	0.060	0.371
		Target Power (without tolerance) (dBm)	18	23	13	
	P < 18	Back	0.115	0.345	0.222	0.682
		Front	0.111	0.371	0.032	0.514
		Top	-	-	0.098	0.098
		Bottom	0.100	0.318	-	0.418
		Right	-	0.422	-	0.422
		Left	0.004	-	0.060	0.064

Simult Tx	CDMA Target Power Level (dBm)	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	24.5	19	13	
Body SAR	P ≥ 18	Back	0.585	0.404	0.222	1.211
		Front	0.468	0.400	0.032	0.900
		Top	-	-	0.098	0.098
		Bottom	0.181	0.199	-	0.380
		Right	-	0.192	-	0.192
		Left	0.311	-	0.060	0.371
		Target Power (without tolerance) (dBm)	18	23	13	
	P < 18	Back	0.115	0.858	0.222	1.195
		Front	0.111	0.753	0.032	0.896
		Top	-	-	0.098	0.098
		Bottom	0.100	0.478	-	0.578
		Right	-	0.470	-	0.470
		Left	0.004	-	0.060	0.064

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Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 13 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	13	
Body SAR	P ≥ 18	Back	0.685	0.142	0.222	1.049
		Front	0.652	0.150	0.032	0.834
		Top	-	-	0.098	0.098
		Bottom	0.578	0.124	-	0.702
		Right	-	0.193	-	0.193
		Left	0.086	-	0.060	0.146
		Target Power (without tolerance) (dBm)	18	23	13	
	P < 18	Back	0.282	0.345	0.222	0.849
		Front	0.286	0.371	0.032	0.689
		Top	-	-	0.098	0.098
		Bottom	0.217	0.318	-	0.535
		Right	-	0.422	-	0.422
		Left	0.049	-	0.060	0.109
Simult Tx	CDMA Target Power Level (dBm)	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Antenna	1	2	3	1+2+3
		Target Power (without tolerance) (dBm)	22.5	19	13	
Body SAR	P ≥ 18	Back	0.685	0.404	0.222	1.311
		Front	0.652	0.400	0.032	1.084
		Top	-	-	0.098	0.098
		Bottom	0.578	0.199	-	0.777
		Right	-	0.192	-	0.192
		Left	0.086	-	0.060	0.146
		Target Power (without tolerance) (dBm)	18	23	13	
	P < 18	Back	0.282	0.858	0.222	1.362
		Front	0.286	0.753	0.032	1.071
		Top	-	-	0.098	0.098
		Bottom	0.217	0.478	-	0.695
		Right	-	0.470	-	0.470
		Left	0.049	-	0.060	0.109

13.7 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.

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14 SAR MEASUREMENT VARIABILITY

14.1 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

Table 14-1
Head SAR Measurement Variability Results

HEAD VARIABILITY RESULTS														
Band	FREQUENCY		Mode/Band	Service	Side	Test Position	Cover Type	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.						(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1900	1851.25	25	PCS CDMA	EVDO Rev. A	Left	Cheek	Wireless Charging Cover	0.977	0.857	1.1	N/A	N/A	N/A	N/A
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 14-2
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)	Ratio
	MHz	Ch.						(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1750	1732.50	20175	LTE Band 4 (AWS)	QPSK, 1 RB, 0 RB Offset	Standard	back	10 mm	0.858	0.850	1.01	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT							Body							
Spatial Peak							1.6 W/kg (mW/g)							
Uncontrolled Exposure/General Population							averaged over 1 gram							

14.2 Measurement Uncertainty

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

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15 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
SPEAG	D1750V2	1750 MHz SAR Dipole	4/30/2013	Annual	4/30/2014	1051
SPEAG	D1900V2	1900 MHz SAR Dipole	7/22/2013	Annual	7/22/2014	5d149
SPEAG	D2450V2	2450 MHz SAR Dipole	8/23/2013	Annual	8/23/2014	719
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/23/2013	Annual	9/23/2014	1007
SPEAG	D5GHzV2	5 GHz SAR Dipole	2/14/2013	Annual	2/14/2014	1120
SPEAG	D750V3	750 MHz Dipole	1/20/2014	Annual	1/20/2015	1003
SPEAG	D750V3	750 MHz Dipole	3/18/2013	Annual	3/18/2014	1054
SPEAG	D835V2	835 MHz SAR Dipole	7/17/2013	Annual	7/17/2014	4d133
SPEAG	D835V2	835 MHz SAR Dipole	4/25/2013	Annual	4/25/2014	4d119
SPEAG	DAE4	Dasy Data Acquisition Electronics	12/12/2013	Annual	12/12/2014	649
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/19/2013	Annual	11/19/2014	1333
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/19/2013	Annual	11/19/2014	1408
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/18/2013	Annual	11/18/2014	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/17/2013	Annual	9/17/2014	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/21/2013	Annual	8/21/2014	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/13/2013	Annual	5/13/2014	859
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/22/2013	Annual	4/22/2014	1364
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/8/2013	Annual	3/8/2014	1334
SPEAG	EX3DV4	SAR Probe	12/18/2013	Annual	12/18/2014	3920
SPEAG	ES3DV3	SAR Probe	11/25/2013	Annual	11/25/2014	3332
SPEAG	ES3DV3	SAR Probe	11/20/2013	Annual	11/20/2014	3287
SPEAG	EX3DV4	SAR Probe	10/23/2013	Annual	10/23/2014	3914
SPEAG	ES3DV3	SAR Probe	9/23/2013	Annual	9/23/2014	3288
SPEAG	ES3DV2	SAR Probe	8/22/2013	Annual	8/22/2014	3022
SPEAG	ES3DV3	SAR Probe	5/16/2013	Annual	5/16/2014	3263
SPEAG	ES3DV3	SAR Probe	4/29/2013	Annual	4/29/2014	3318
SPEAG	ES3DV3	SAR Probe	3/15/2013	Annual	3/15/2014	3209

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Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/16/2013	Annual	4/16/2014	MY45470194
Agilent	8753E	(30kHz-6GHz) Network Analyzer	7/23/2013	Annual	7/23/2014	US37390350
Agilent	8753E	(30kHz-6GHz) Network Analyzer	4/16/2013	Annual	4/16/2014	JP38020182
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	8648D	(9kHz-4GHz) Signal Generator	4/17/2013	Annual	4/17/2014	3629U00687
Agilent	N9020A	MXA Signal Analyzer	10/29/2013	Annual	10/29/2014	US46470561
Agilent	N5182A	MXG Vector Signal Generator	10/28/2013	Annual	10/28/2014	US46240505
Agilent	8753ES	S-Parameter Network Analyzer	10/29/2013	Annual	10/29/2014	US39170122
Agilent	E5515C	Wireless Communications Test Set	5/9/2013	Biennial	5/9/2015	GB43304447
Agilent	E5515C	Wireless Communications Test Set	10/18/2012	Biennial	10/18/2014	GB43193563
Amplifier Research	5S1G4	5W, 800MHz-4.2GHz	CBT	N/A	CBT	21910
Anritsu	ML2495A	Power Meter	10/31/2013	Annual	10/31/2014	1039008
Anritsu	MA2481A	Power Sensor	10/30/2013	Annual	10/30/2014	5605
Anritsu	MA2411B	Pulse Power Sensor	11/14/2013	Annual	11/14/2014	1126066
Anritsu	MT8820C	Radio Communication Analyzer	12/12/2013	Annual	12/12/2014	6200901190
Anritsu	MA24106A	USB Power Sensor	1/3/2014	Annual	1/3/2015	1349509
Anritsu	MA24106A	USB Power Sensor	1/3/2014	Annual	1/3/2015	1349511
Anritsu	MA24106A	USB Power Sensor	1/3/2014	Annual	1/3/2015	1349513
Anritsu	MA24106A	USB Power Sensor	1/3/2014	Annual	1/3/2015	1349514
Anritsu	MA24106A	USB Power Sensor	1/3/2014	Annual	1/3/2015	1344554
Anritsu	MA24106A	USB Power Sensor	1/3/2014	Annual	1/3/2015	1344557
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
COMTECH	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M155A00-009
Fisher Scientific	15-07BJ	Long Stem Thermometer	1/7/2013	Biennial	1/7/2015	130018243
Fisher Scientific	15-078J	Long Stem Thermometer	10/30/2012	Biennial	10/30/2014	122626059
Fisher Scientific	15-077-960	Thermometer	11/6/2012	Biennial	11/6/2014	122640025
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	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
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
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
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	9/23/2013	Annual	9/23/2014	109892
Rohde & Schwarz	CMU200	Base Station Simulator	5/3/2013	Annual	5/3/2014	836371/0079
Rohde & Schwarz	NRVD	Dual Channel Power Meter	10/12/2012	Biennial	10/12/2014	101695
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	12/9/2013	Annual	12/9/2014	109366
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	10/16/2013	Annual	10/16/2014	100976
Rohde & Schwarz	NRV-Z32	Peak Power Sensor	10/12/2012	Biennial	10/12/2014	836019/013
Rohde & Schwarz	SME06	Signal Generator	10/30/2013	Annual	10/30/2014	832026
Rohde & Schwarz	SMIQ03B	Signal Generator	4/17/2013	Annual	4/17/2014	DE27259
Rohde & Schwarz	NRVS	Single Channel Power Meter	10/31/2013	Annual	10/31/2014	835360/0079
Seekonk	NC-100	Torque Wrench (8" lb)	3/5/2012	Triennial	3/5/2015	N/A
Seekonk	NC-100	Torque Wrench (8" lb)	3/5/2012	Triennial	3/5/2015	N/A
SPEAG	DAK-3.5	Dielectric Assessment Kit	11/13/2013	Annual	11/13/2014	1091
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/14/2013	Annual	5/14/2014	1070
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	8/18/2013	Annual	8/18/2014	1008
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	8/18/2013	Annual	8/18/2014	1009
Tektronix	RSA6114A	Real Time Spectrum Analyzer	4/17/2013	Annual	4/17/2014	B010177
VWR	23226-658	Long Stem Thermometer	6/27/2012	Biennial	6/27/2014	122363923
VWR	23226-658	Long Stem Thermometer	5/16/2012	Biennial	5/16/2014	122295544
VWR	23226-658	Long Stem Thermometer	3/30/2012	Biennial	3/30/2014	122179874
VWR	36934-158	Wall-Mounted Thermometer	8/8/2013	Annual	8/8/2014	130477877
VWR	36934-158	Wall-Mounted Thermometer	8/8/2013	Annual	8/8/2014	130258636

Note:

1. 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.
2. All calibrated equipments are used within their calibration period.

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16 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

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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	E.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

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17 CONCLUSION

17.1 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]

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- [2] ANSI/IEEE C95.1-2005, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, 2006.
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- [4] ANSI/IEEE C95.3-2002, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave, New York: IEEE, December 2002.
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FCC ID: A3LSMG900V		SAR EVALUATION REPORT		Reviewed by: Quality Manager
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APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32723

Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Head; Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.917 \text{ S/m}$; $\epsilon_r = 42.233$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 02-13-2014; Ambient Temp: 21.9°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3332; ConvF(6.29, 6.29, 6.29); Calibrated: 11/25/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 11/18/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Mode: Cell. CDMA, Left Head, Cheek, Mid.ch, Wireless Charging Cover

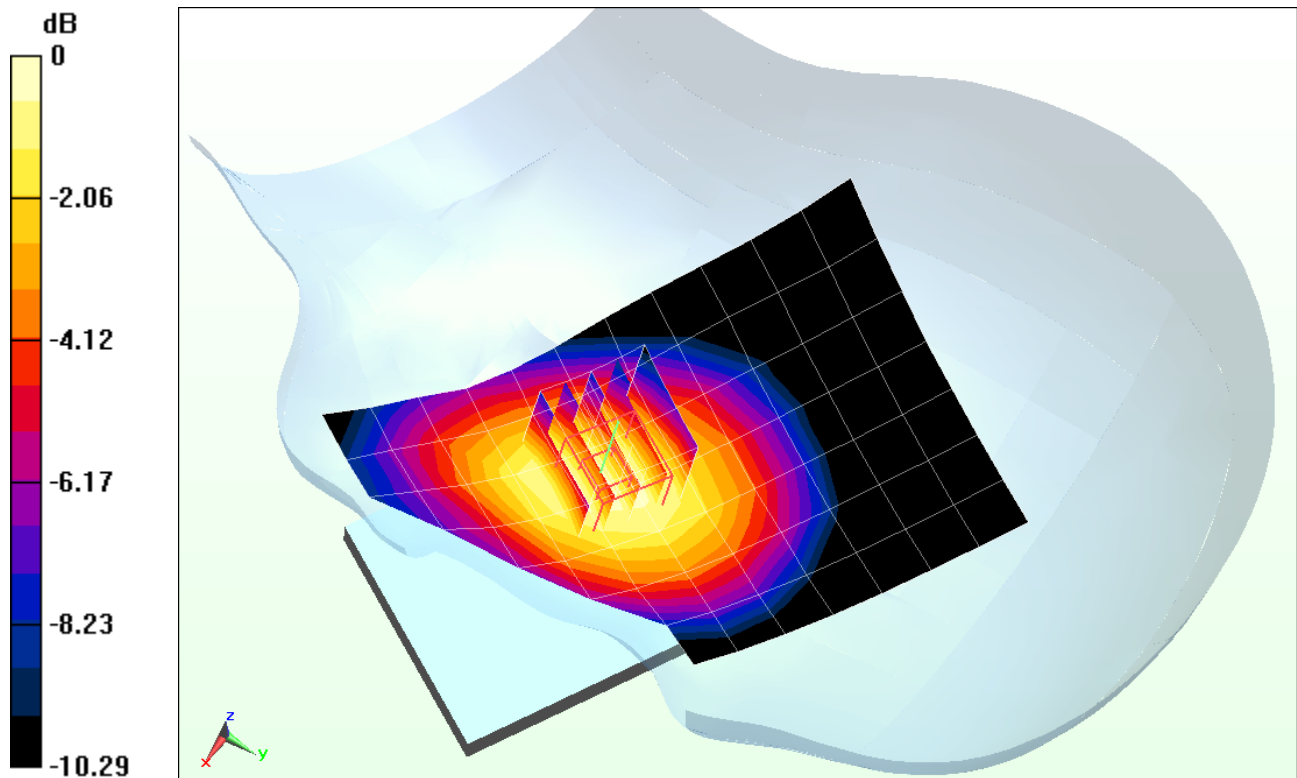
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.376 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.484 W/kg

SAR(1 g) = 0.370 W/kg



0 dB = 0.388 W/kg = -4.11 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 3272C

Communication System: UID 0, CDMA; Frequency: 1851.25 MHz; Duty Cycle: 1:1

Medium: 1900 Head; Medium parameters used (interpolated):

$f = 1851.25 \text{ MHz}$; $\sigma = 1.349 \text{ S/m}$; $\epsilon_r = 39.255$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 02-12-2014; Ambient Temp: 23.0°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3287; ConvF(5.08, 5.08, 5.08); Calibrated: 11/20/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/21/2013

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Mode: PCS EVDO RevA, Left Head, Cheek, Low.ch, Wireless Charging Cover

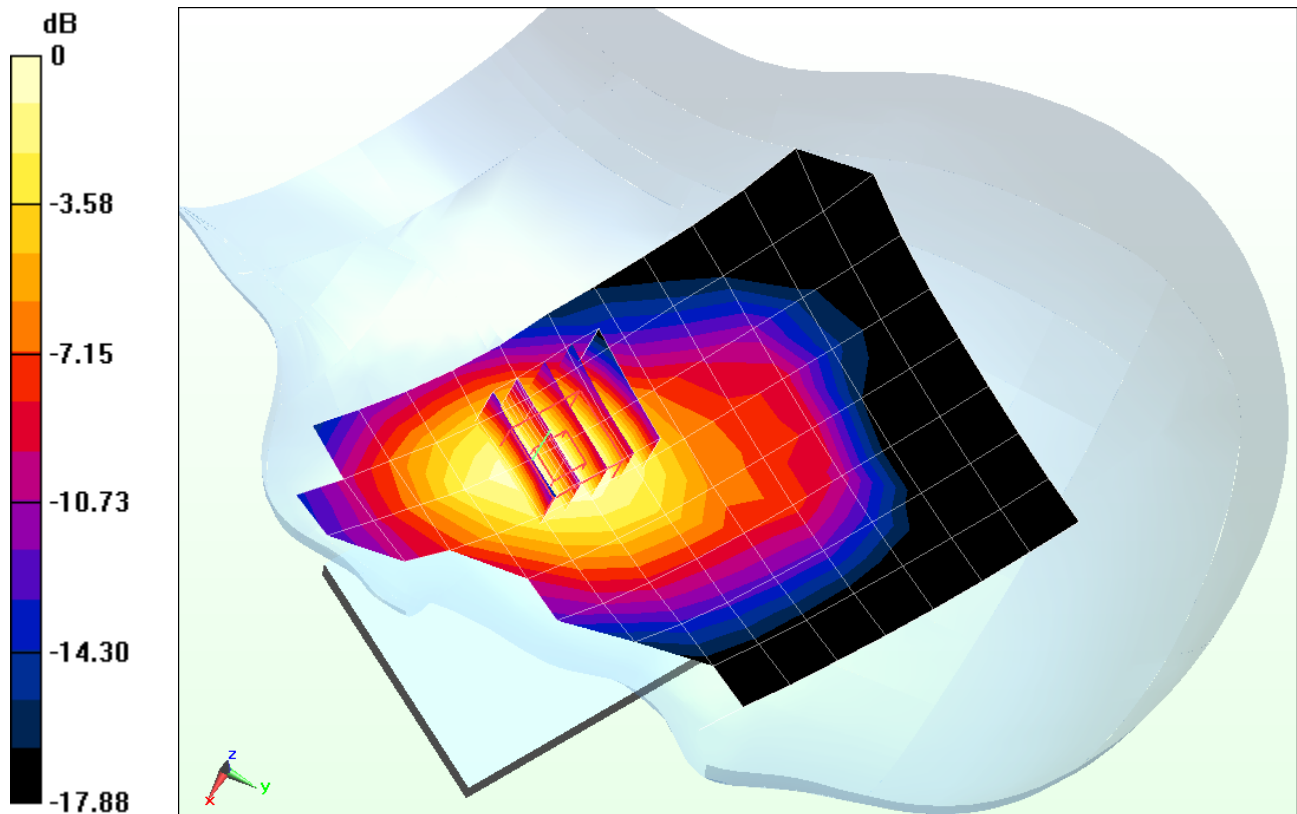
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 27.903 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 1.45 W/kg

SAR(1 g) = 0.977 W/kg



0 dB = 1.02 W/kg = 0.09 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32723

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

Medium: 835 Head; Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.917 \text{ S/m}$; $\epsilon_r = 42.233$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 02-13-2014; Ambient Temp: 21.9°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3332; ConvF(6.29, 6.29, 6.29); Calibrated: 11/25/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 11/18/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Mode: GSM 850, Left Head, Cheek, Mid.ch, Wireless Charging Cover

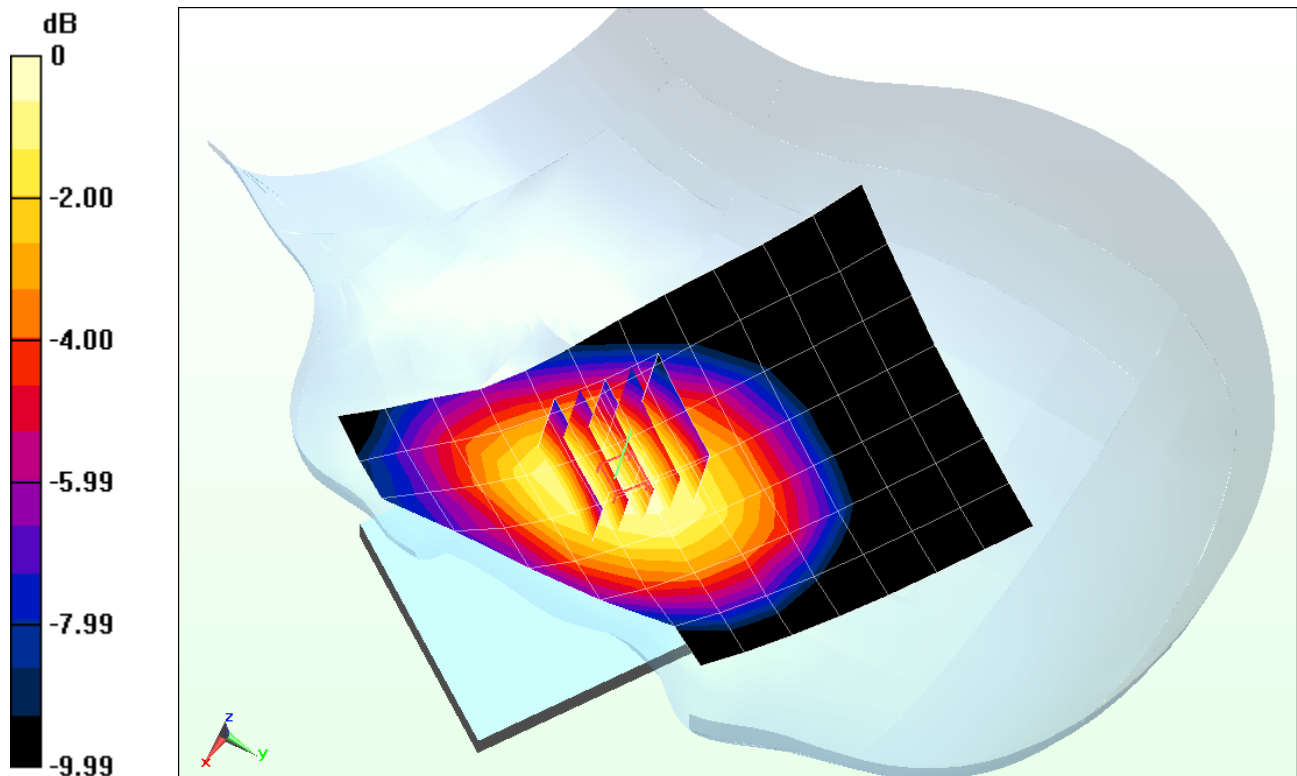
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 19.772 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.442 W/kg

SAR(1 g) = 0.342 W/kg



0 dB = 0.363 W/kg = -4.40 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32723

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

Medium: 1900 Head; Medium parameters used:

$$f = 1880 \text{ MHz}; \sigma = 1.37 \text{ S/m}; \epsilon_r = 38.396; \rho = 1000 \text{ kg/m}^3$$

Phantom section: Right Section

Test Date: 02-14-2014; Ambient Temp: 23.2°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(5.03, 5.03, 5.03); Calibrated: 8/22/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/21/2013

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Mode: GSM 1900, Right Head, Cheek, Mid.ch, Standard Back Cover

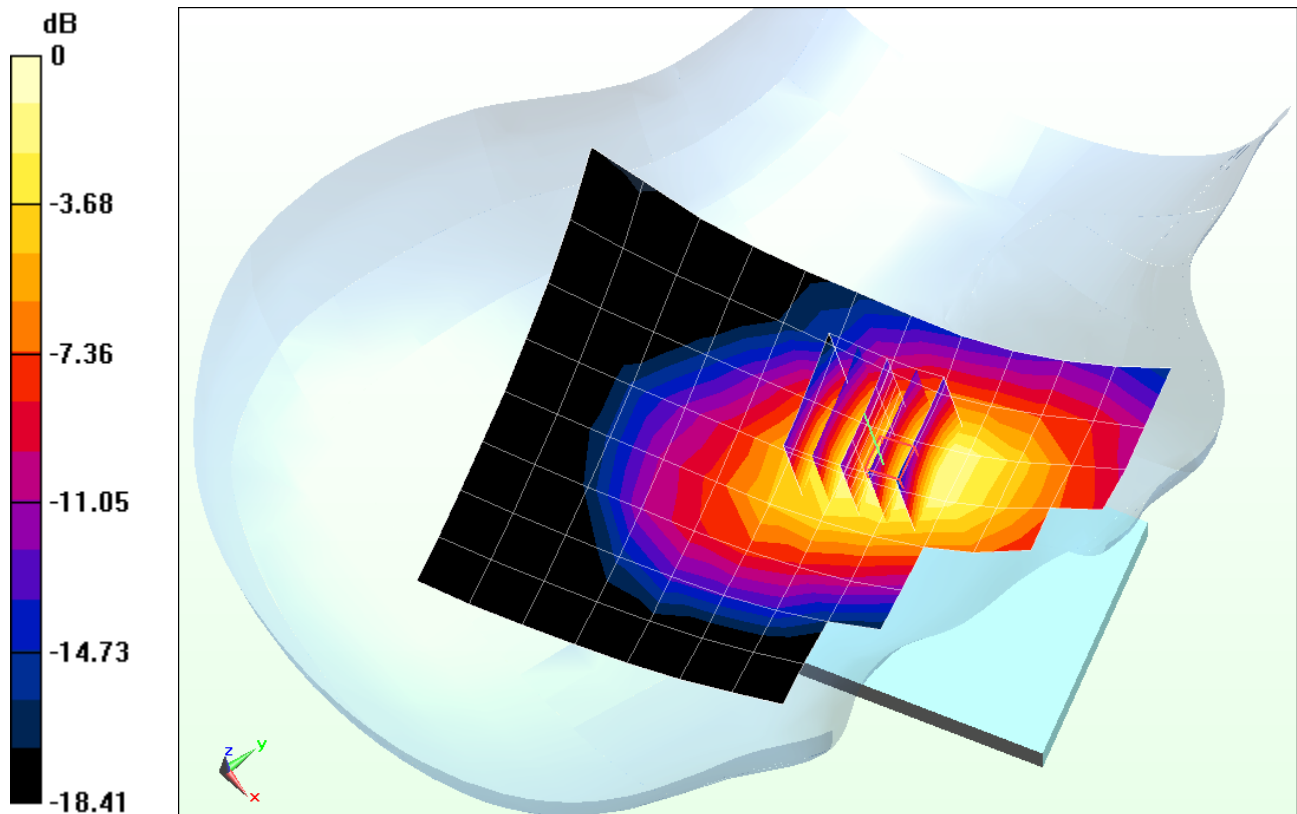
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 14.337 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.470 W/kg

SAR(1 g) = 0.294 W/kg



0 dB = 0.319 W/kg = -4.96 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32723

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

Medium: 835 Head; Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.941 \text{ S/m}$; $\epsilon_r = 42.791$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 02-19-2014; Ambient Temp: 24.2°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3332; ConvF(6.29, 6.29, 6.29); Calibrated: 11/25/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 11/18/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Mode: UMTS 850, Left Head, Cheek, Mid.ch, Wireless Charging Cover

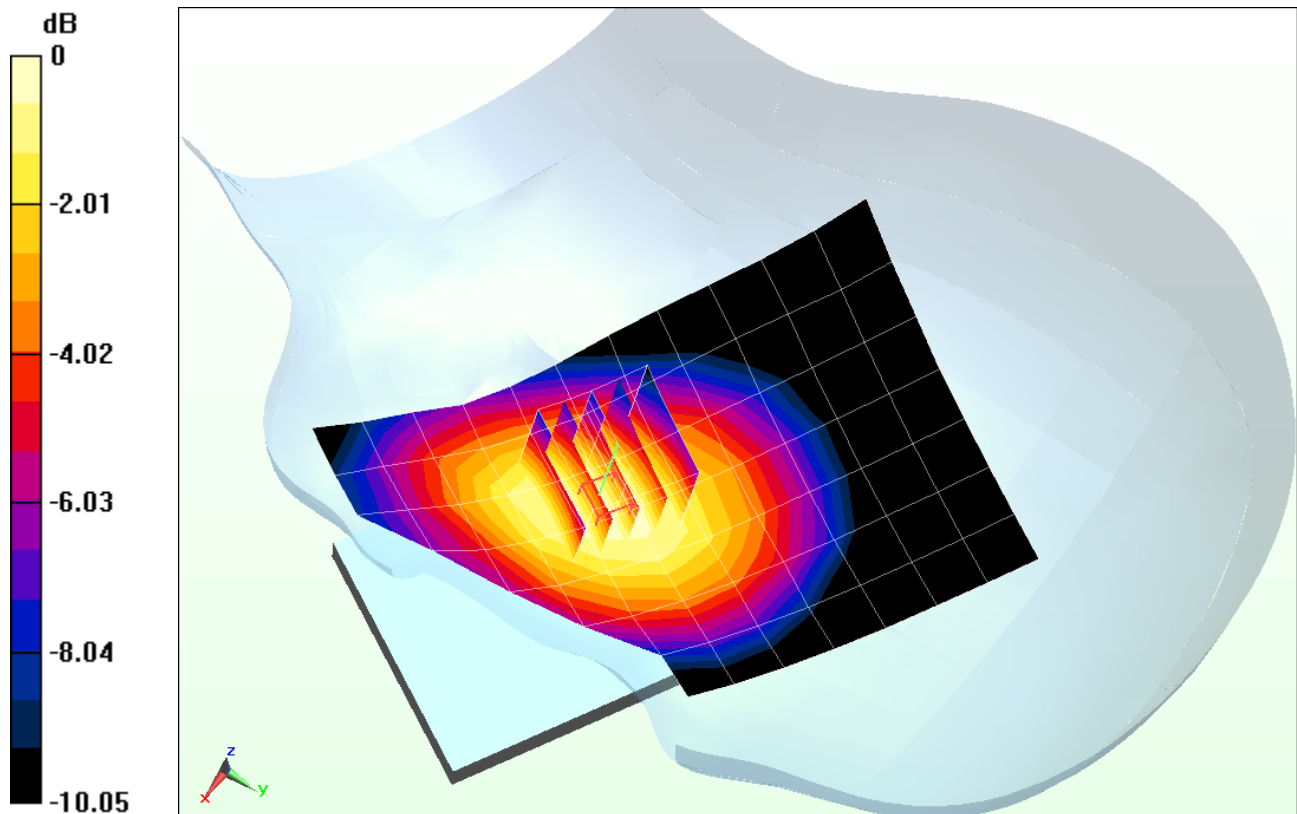
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 18.048 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.377 W/kg

SAR(1 g) = 0.291 W/kg



0 dB = 0.305 W/kg = -5.16 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 3271D

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

Medium: 1900 Head; Medium parameters used:

$$f = 1880 \text{ MHz}; \sigma = 1.37 \text{ S/m}; \epsilon_r = 38.396; \rho = 1000 \text{ kg/m}^3$$

Phantom section: Left Section

Test Date: 02-14-2014; Ambient Temp: 23.2°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(5.03, 5.03, 5.03); Calibrated: 8/22/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/21/2013

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Mode: UMTS 1900, Left Head, Cheek, Mid.ch, Standard Back Cover

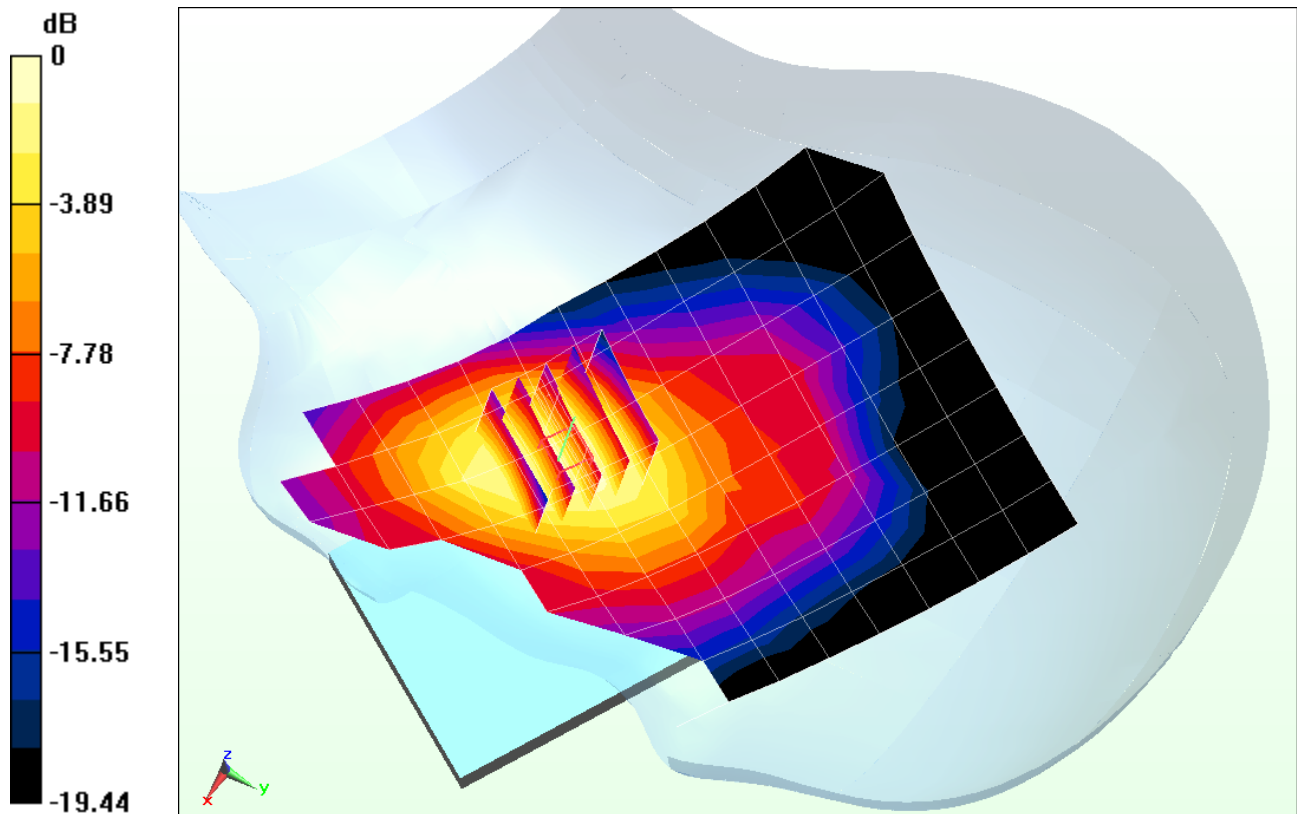
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.557 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 0.812 W/kg

SAR(1 g) = 0.532 W/kg



0 dB = 0.575 W/kg = -2.40 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32725

Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 740 Head; Medium parameters used (interpolated):

$$f = 782 \text{ MHz}; \sigma = 0.929 \text{ S/m}; \epsilon_r = 40.072; \rho = 1000 \text{ kg/m}^3$$

Phantom section: Right Section

Test Date: 02-20-2014; Ambient Temp: 23.9°C; Tissue Temp: 22.0°C

Probe: ES3DV2 - SN3022; ConvF(6.21, 6.21, 6.21); Calibrated: 8/22/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/21/2013

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

Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

**Mode: LTE Band 13, Right Head, Cheek, Mid.ch, 10 MHz Bandwidth,
QPSK, 1 RB, 49 RB Offset, Standard Back Cover**

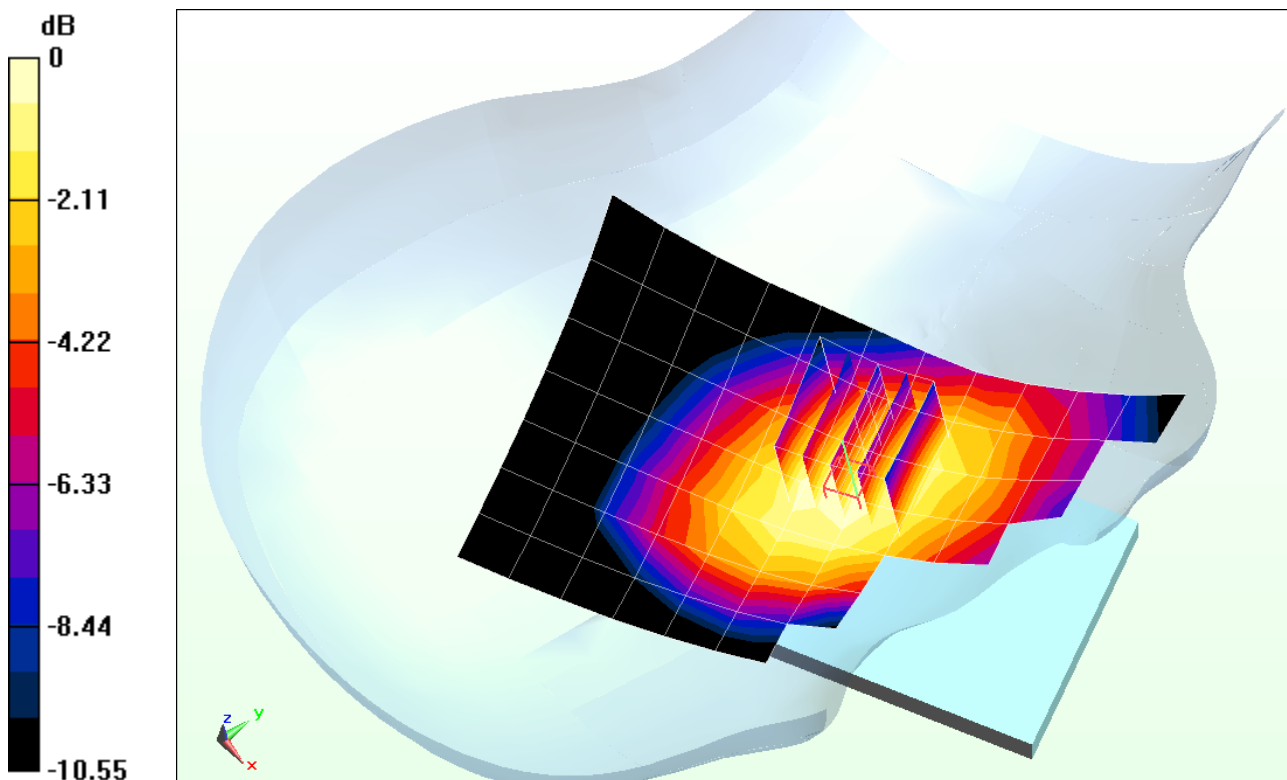
Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.907 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.416 W/kg

SAR(1 g) = 0.335 W/kg



0 dB = 0.348 W/kg = -4.58 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32725

Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Head; Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.39 \text{ S/m}$; $\epsilon_r = 40.182$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 02-21-2014; Ambient Temp: 24.5°C; Tissue Temp: 23.6°C

Probe: ES3DV3 - SN3209; ConvF(5.39, 5.39, 5.39); Calibrated: 3/15/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/8/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**Mode: LTE Band 4 (AWS), Right Head, Cheek, Mid.ch, 20 MHz Bandwidth,
QPSK, 1 RB, 0 RB Offset, Standard Back Cover**

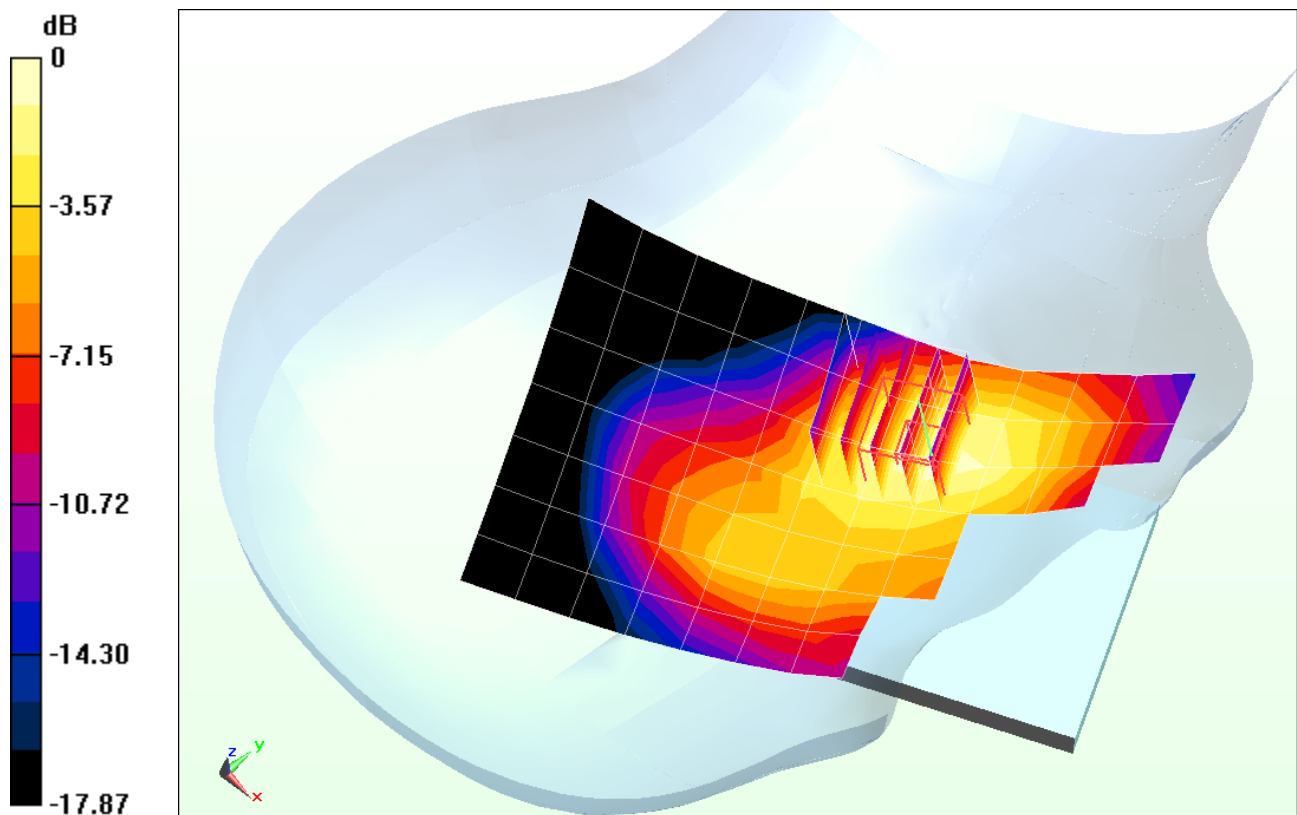
Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 24.490 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.705 W/kg



0 dB = 0.757 W/kg = -1.21 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 328C6

Communication System: UID 0, IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1

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

$f = 2412 \text{ MHz}$; $\sigma = 1.835 \text{ S/m}$; $\epsilon_r = 38.952$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 02-18-2014; Ambient Temp: 23.5°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3287; ConvF(4.43, 4.43, 4.43); Calibrated: 11/20/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1408; Calibrated: 11/19/2013

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

Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

**Mode: IEEE 802.11b, Right Head, Cheek, Ch 01, 1 Mbps,
Antenna 1, Standard Back Cover**

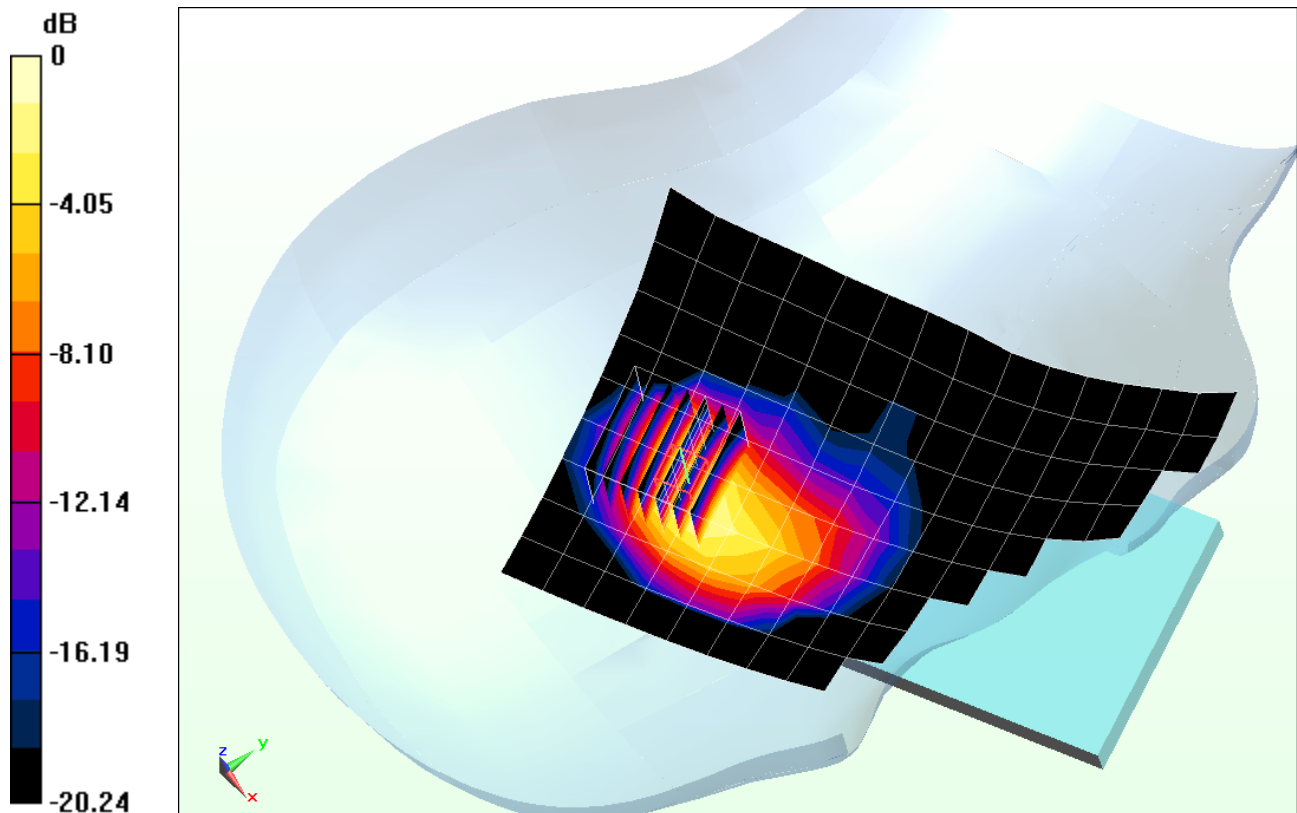
Area Scan (10x16x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.492 V/m; Power Drift = 0.20 dB

Peak SAR (extrapolated) = 0.349 W/kg

SAR(1 g) = 0.163 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 31F35

Communication System: UID 0, IEEE 802.11a; Frequency: 5765 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head; Medium parameters used:

$f = 5765 \text{ MHz}$; $\sigma = 5.088 \text{ S/m}$; $\epsilon_r = 35.493$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 02-03-2014; Ambient Temp: 24.3°C; Tissue Temp: 23.3°C

Probe: EX3DV4 - SN3920; ConvF(4.11, 4.11, 4.11); Calibrated: 12/18/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 12/12/2013

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

**Mode: IEEE 802.11a 5.8 GHz, Right Head, Cheek, Ch 153, 6 Mbps,
Antenna 2, Standard Back Cover**

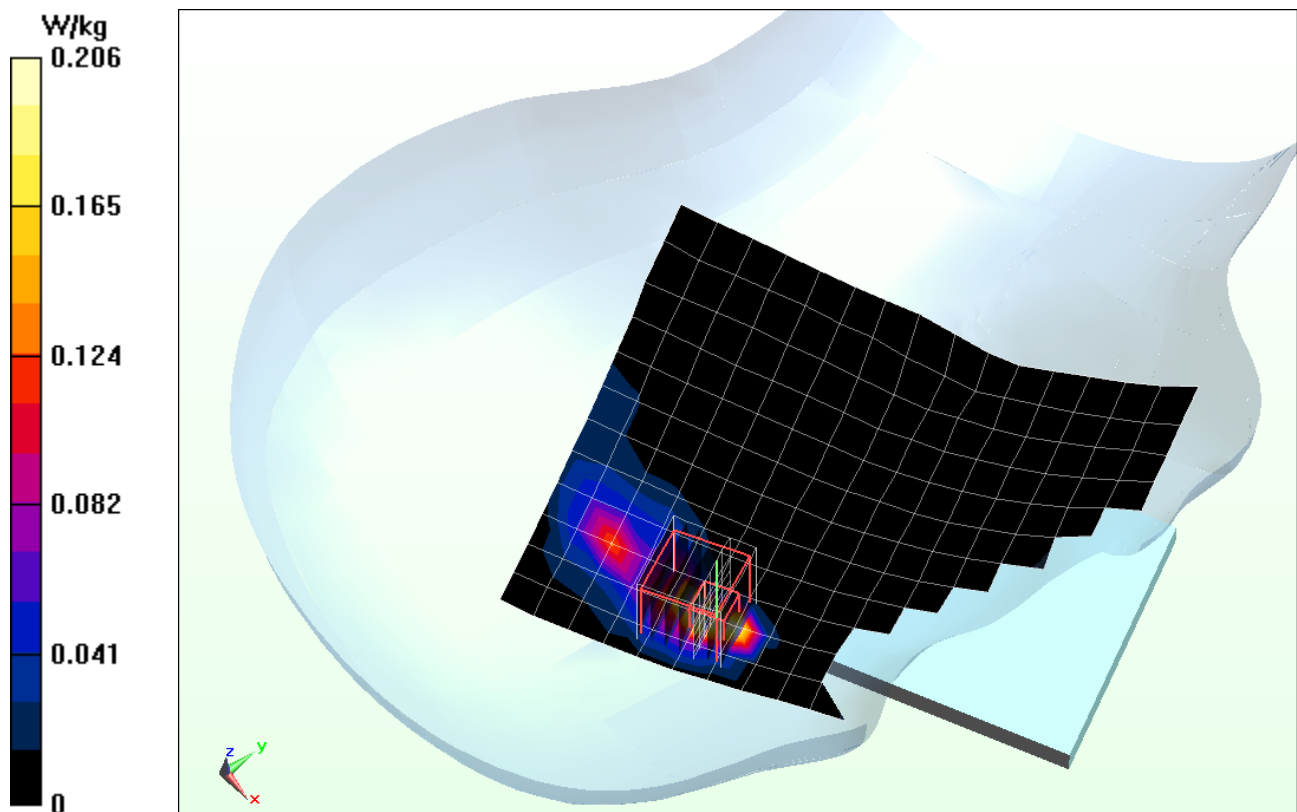
Area Scan (13x16x1): Measurement grid: dx=10mm, dy=10mm

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

Reference Value = 5.548 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.650 W/kg

SAR(1 g) = 0.134 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 31F35

Communication System: UID 0, IEEE 802.11a; Frequency: 5680 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head; Medium parameters used:

$f = 5680 \text{ MHz}$; $\sigma = 5.006 \text{ S/m}$; $\epsilon_r = 35.596$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 02-03-2014; Ambient Temp: 24.5°C; Tissue Temp: 23.3°C

Probe: EX3DV4 - SN3920; ConvF(4.37, 4.37, 4.37); Calibrated: 12/18/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 12/12/2013

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

**Mode: IEEE 802.11a 5.5 - 5.7 GHz, Right Head, Cheek, Ch 136, 6 Mbps,
Antenna 2, Standard Back Cover**

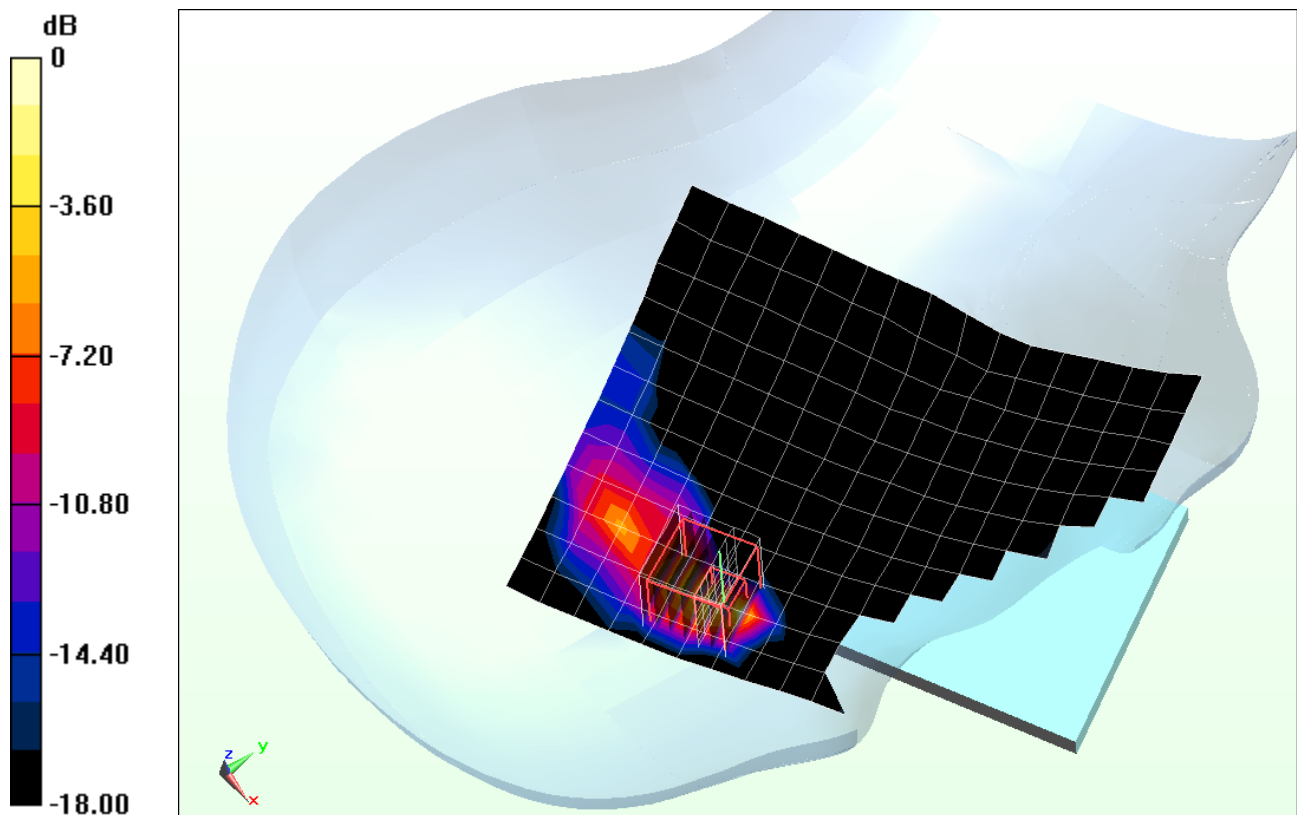
Area Scan (13x16x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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 = 5.743 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.55 W/kg

SAR(1 g) = 0.154 W/kg



0 dB = 0.437 W/kg = -3.60 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32723

Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 1.014 \text{ S/m}$; $\epsilon_r = 54.157$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-20-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.8°C

Probe: ES3DV3 - SN3209; ConvF(6.28, 6.28, 6.28); Calibrated: 3/15/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/8/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Mode: Cell. CDMA, Body SAR, Back side, Mid.ch, Standard Back Cover

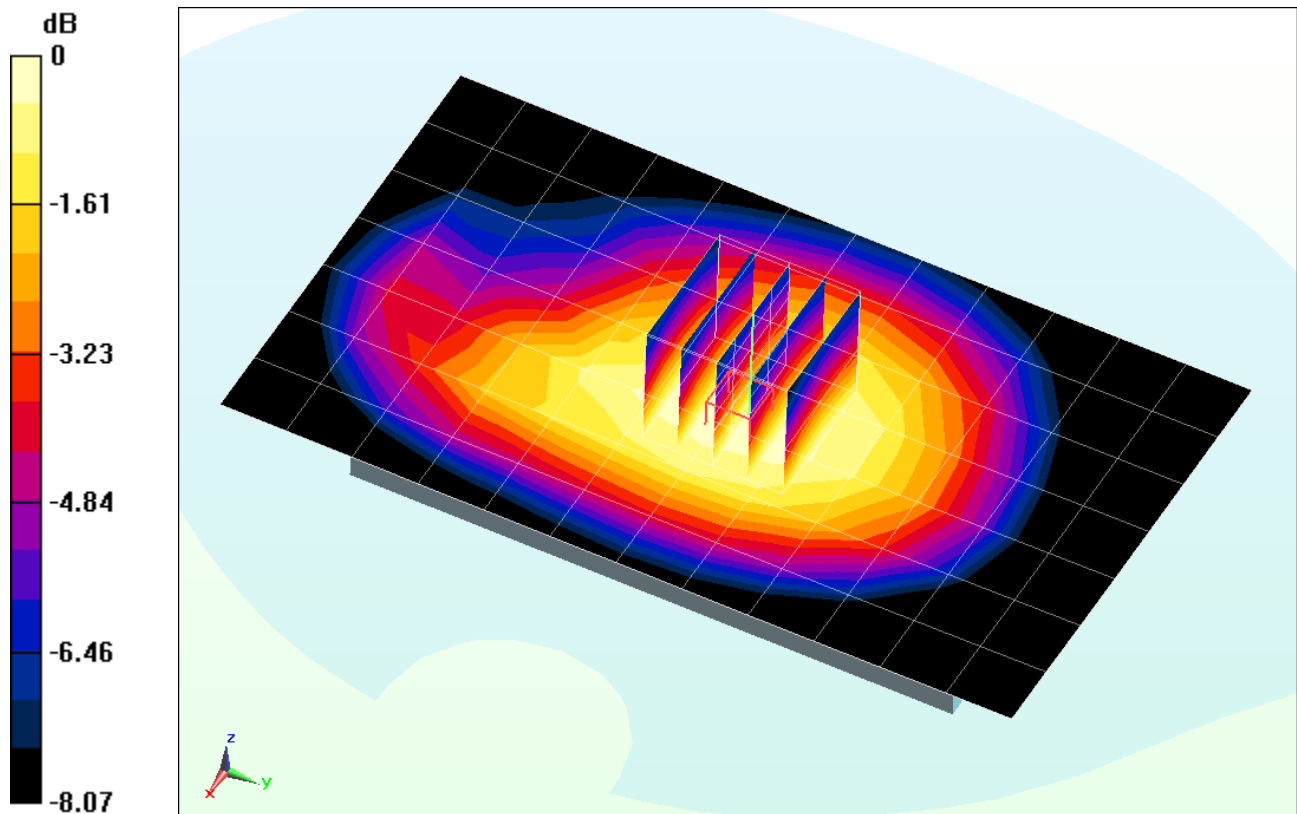
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 22.420 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.602 W/kg

SAR(1 g) = 0.472 W/kg



0 dB = 0.496 W/kg = -3.05 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32723

Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 1.016 \text{ S/m}$; $\epsilon_r = 54.418$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-14-2014; Ambient Temp: 21.3°C; Tissue Temp: 23.1°C

Probe: ES3DV3 - SN3209; ConvF(6.28, 6.28, 6.28); Calibrated: 3/15/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/8/2013

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

Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Mode: Cell. CDMA, Body SAR, Back side, Mid.ch, Standard Back Cover

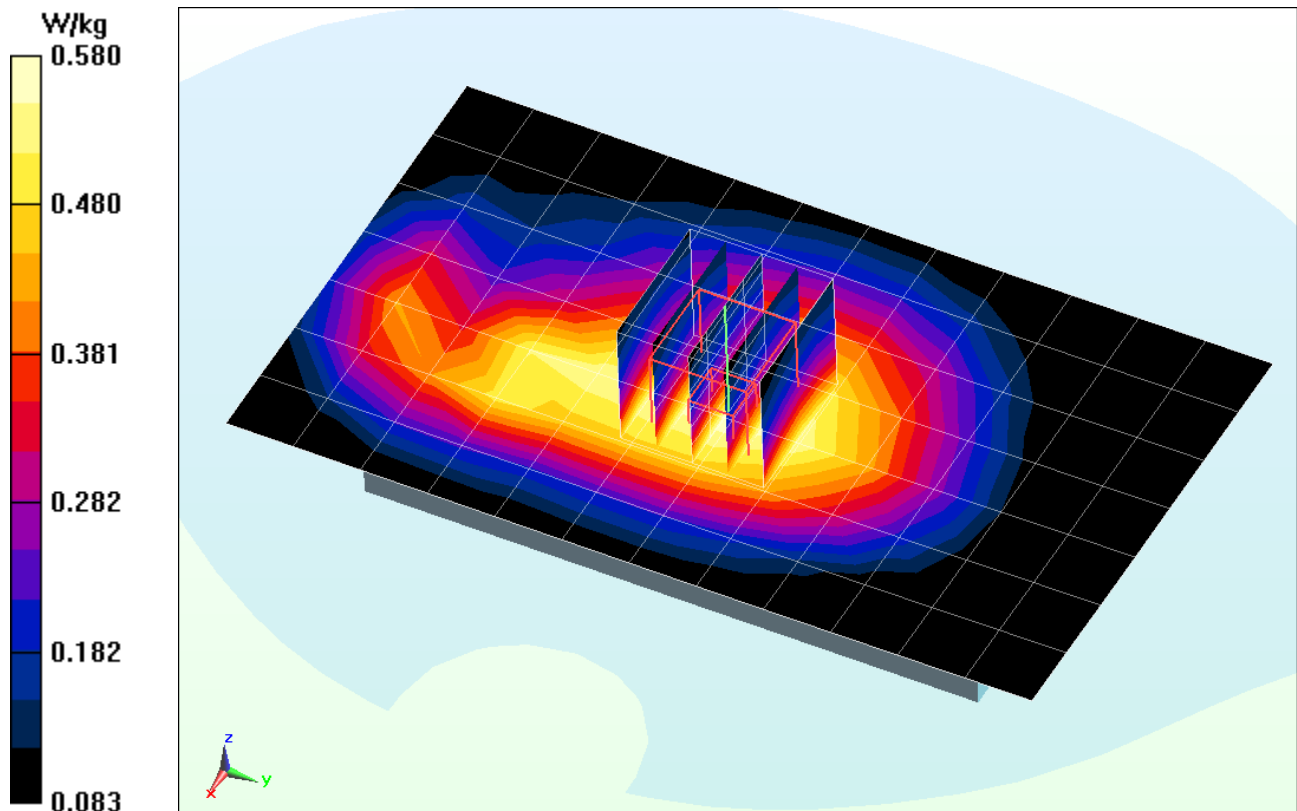
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 24.242 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.692 W/kg

SAR(1 g) = 0.551 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 3272C

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

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.551 \text{ S/m}$; $\epsilon_r = 52.184$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-19-2014; Ambient Temp: 24.1°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN3914; ConvF(7.51, 7.51, 7.51); Calibrated: 10/23/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Mode: PCS CDMA, Body SAR, Back side, Mid.ch, Standard Back Cover

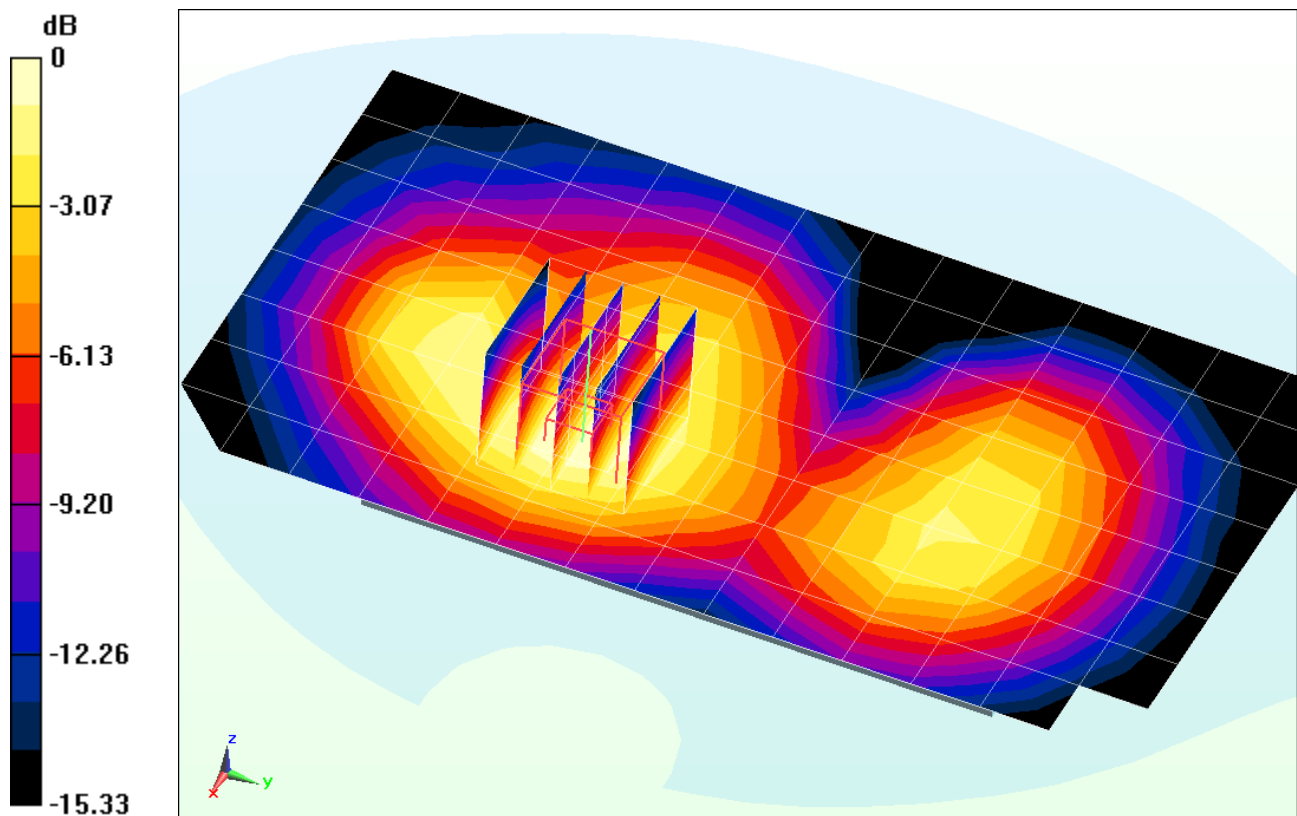
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 14.240 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.480 W/kg

SAR(1 g) = 0.315 W/kg



0 dB = 0.337 W/kg = -4.72 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 3271E

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

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.515 \text{ S/m}$; $\epsilon_r = 51.631$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-24-2014; Ambient Temp: 24.4°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3209; ConvF(4.77, 4.77, 4.77); Calibrated: 3/15/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/8/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Mode: PCS EVDO, Body SAR, Back side, Mid.ch, Standard Back Cover

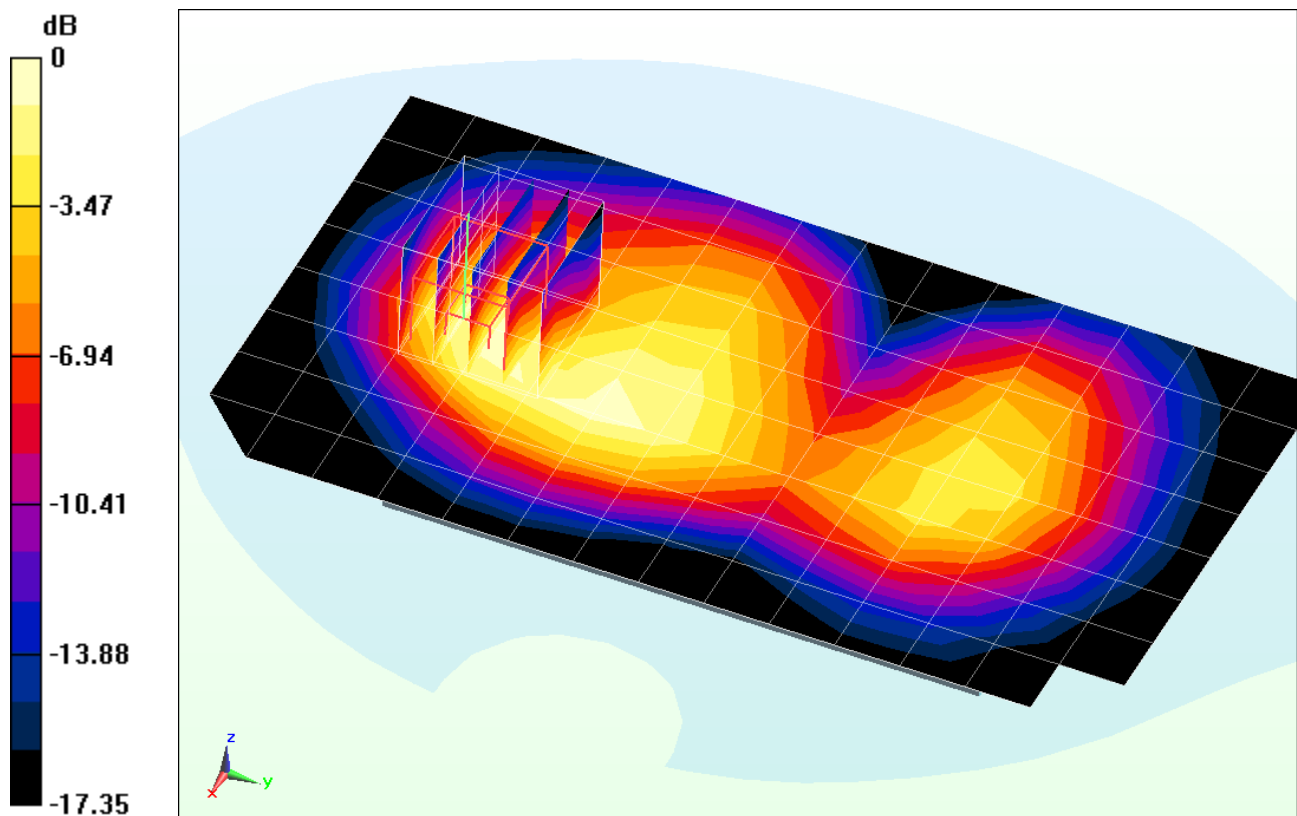
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.731 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.06 W/kg

SAR(1 g) = 0.595 W/kg



0 dB = 0.633 W/kg = -1.99 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32723

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

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.014 \text{ S/m}$; $\epsilon_r = 54.157$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-20-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.8°C

Probe: ES3DV3 - SN3209; ConvF(6.28, 6.28, 6.28); Calibrated: 3/15/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/8/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

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

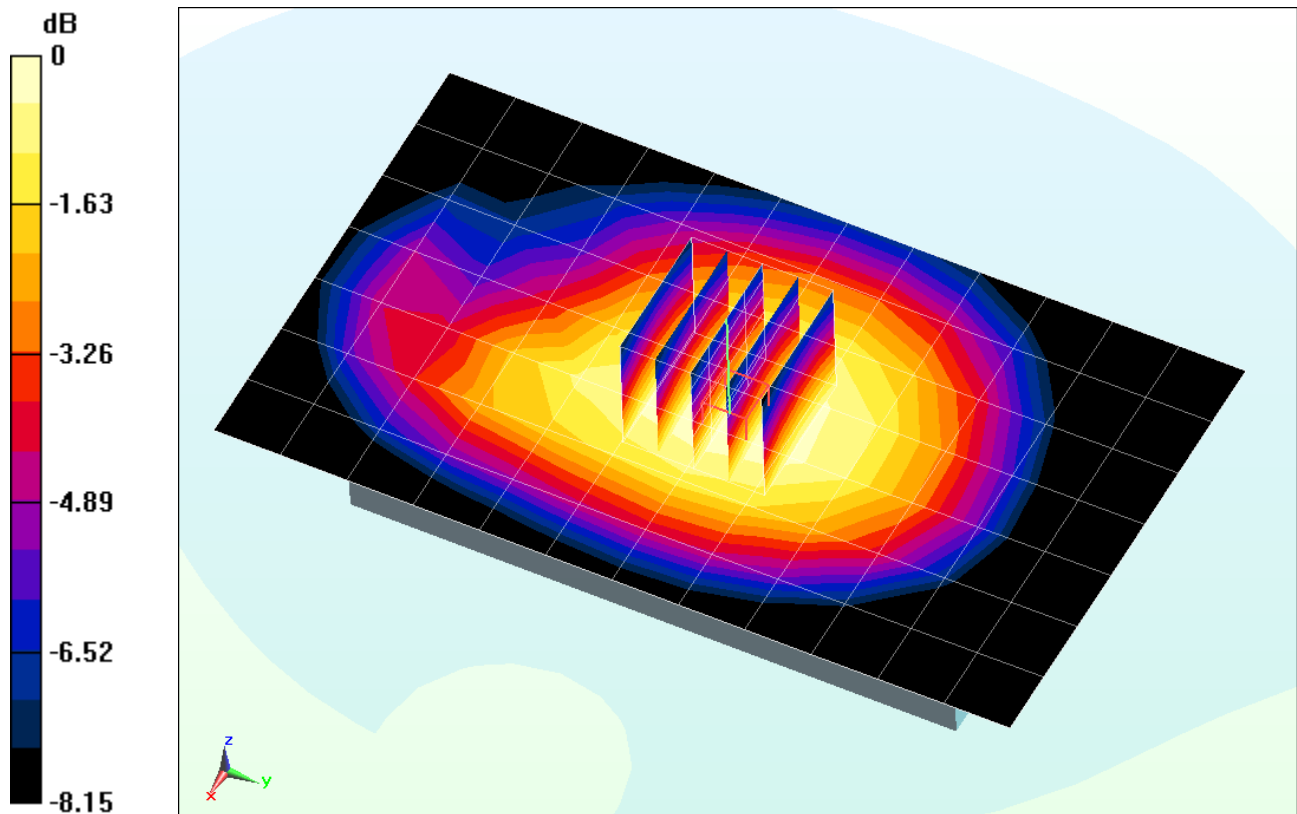
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 22.585 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.607 W/kg

SAR(1 g) = 0.483 W/kg



0 dB = 0.509 W/kg = -2.93 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32723

Communication System: UID 0, GSM850 GPRS 3 Tx Slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.956 \text{ S/m}$; $\epsilon_r = 54.61$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-10-2014; Ambient Temp: 23.4°C; Tissue Temp: 20.1°C

Probe: ES3DV3 - SN3263; ConvF(6.29, 6.29, 6.29); Calibrated: 5/16/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/13/2013

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

Mode: GPRS 850, Body SAR, Back side, Mid.ch, 3 Tx Slots, Standard Back Cover

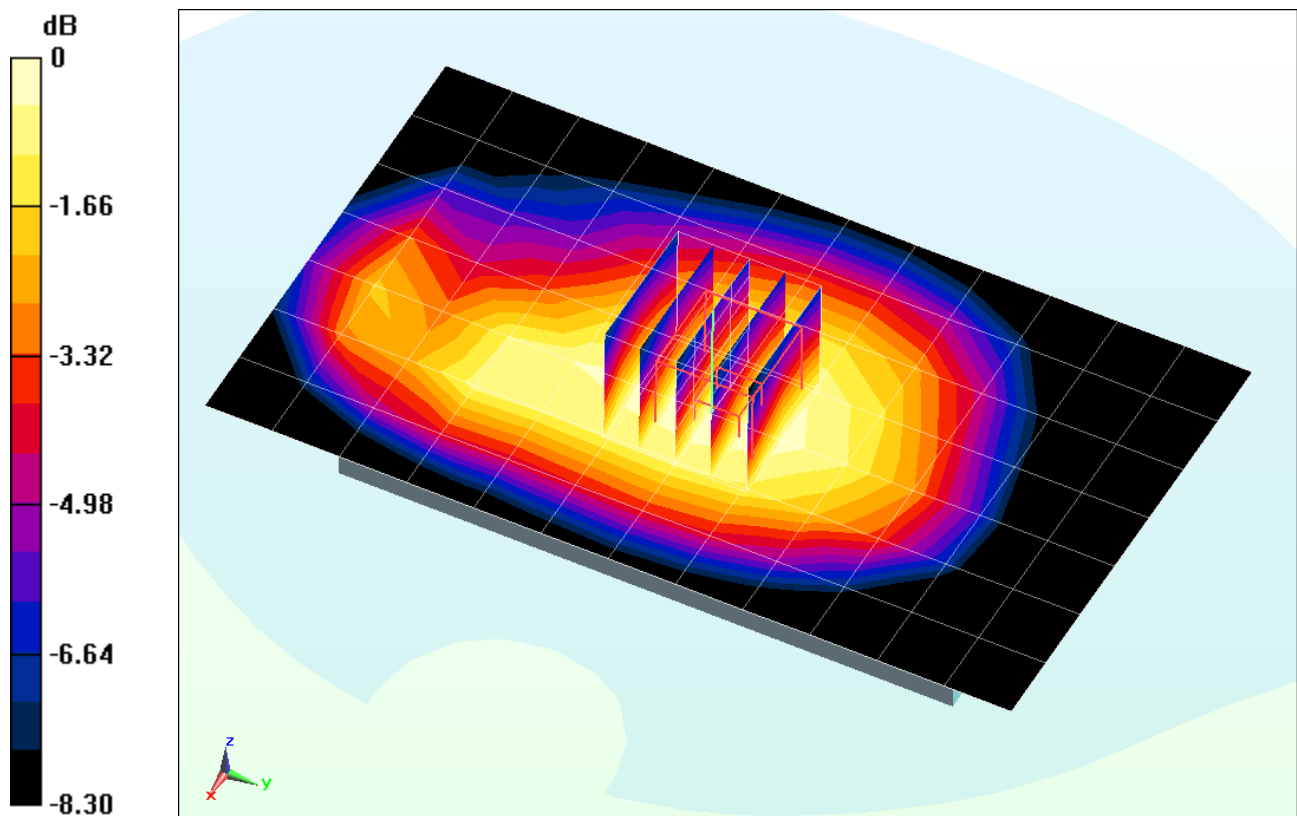
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 27.900 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.842 W/kg

SAR(1 g) = 0.680 W/kg



0 dB = 0.714 W/kg = -1.46 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32723

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

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.515 \text{ S/m}$; $\epsilon_r = 51.631$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-24-2014; Ambient Temp: 24.4°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3209; ConvF(4.77, 4.77, 4.77); Calibrated: 3/15/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/8/2013

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

Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

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

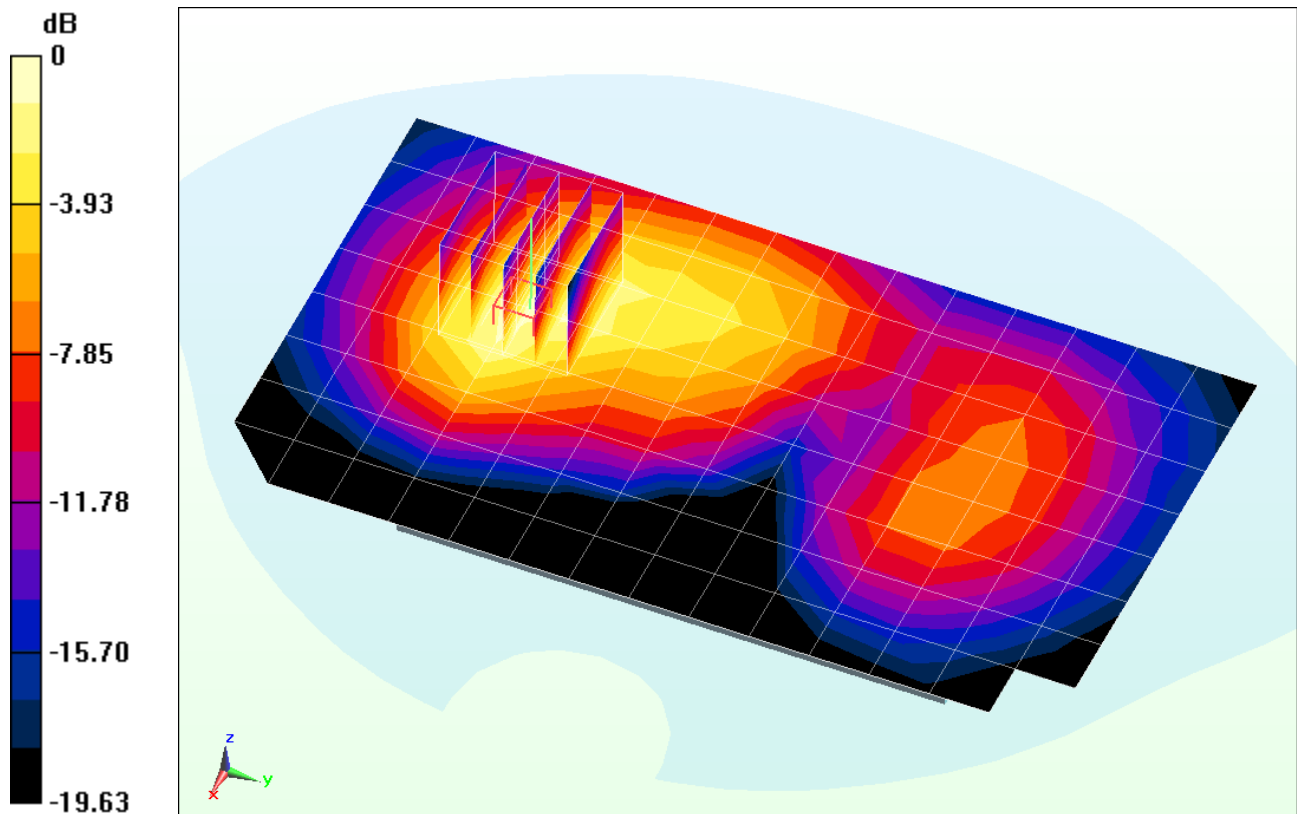
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 14.534 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.505 W/kg

SAR(1 g) = 0.301 W/kg



0 dB = 0.326 W/kg = -4.87 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32723

Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 1909.8 MHz; Duty Cycle: 1:2.76

Medium: 1900 Body; Medium parameters used:

$f = 1910 \text{ MHz}$; $\sigma = 1.558 \text{ S/m}$; $\epsilon_r = 52.505$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-13-2014; Ambient Temp: 23.5°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3209; ConvF(4.77, 4.77, 4.77); Calibrated: 3/15/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/8/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Mode: GPRS 1900, Body SAR, Back side, High.ch, 3 Tx Slots, Standard Back Cover

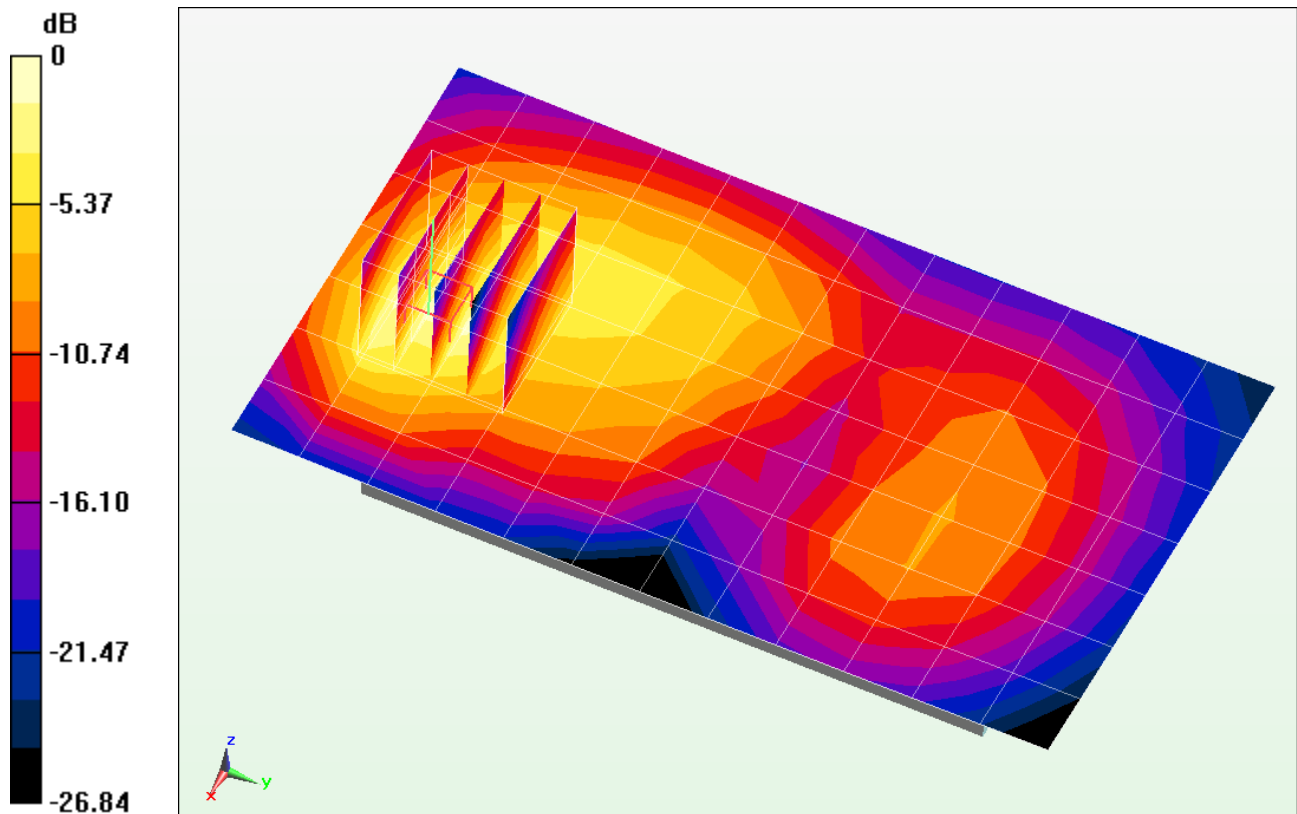
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 24.524 V/m; Power Drift = -0.20 dB

Peak SAR (extrapolated) = 1.71 W/kg

SAR(1 g) = 0.915 W/kg



0 dB = 1.04 W/kg = 0.17 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32723

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

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.014 \text{ S/m}$; $\epsilon_r = 54.157$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-20-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.8°C

Probe: ES3DV3 - SN3209; ConvF(6.28, 6.28, 6.28); Calibrated: 3/15/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/8/2013

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

Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

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

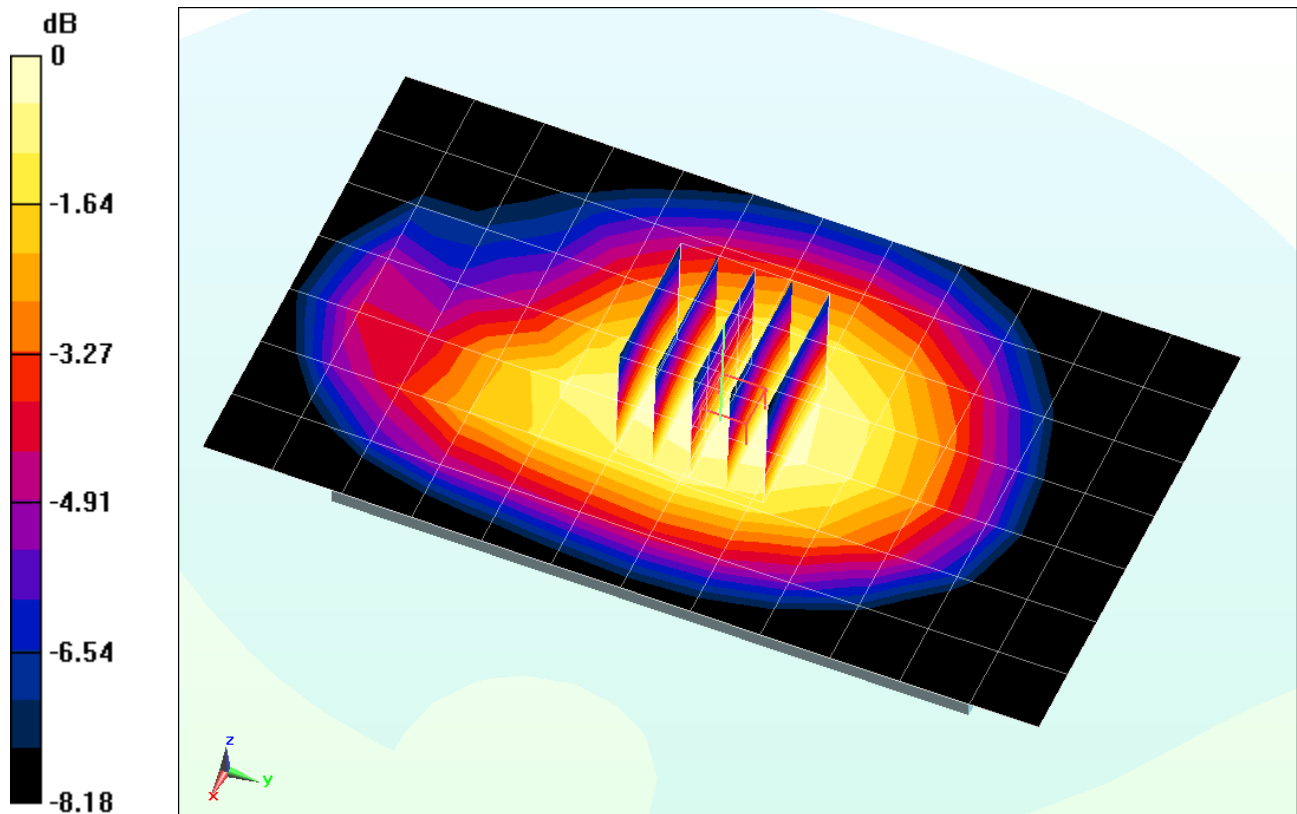
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 18.327 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.395 W/kg

SAR(1 g) = 0.316 W/kg



0 dB = 0.332 W/kg = -4.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32723

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

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.016 \text{ S/m}$; $\epsilon_r = 54.417$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-14-2014; Ambient Temp: 21.3°C; Tissue Temp: 23.1°C

Probe: ES3DV3 - SN3209; ConvF(6.28, 6.28, 6.28); Calibrated: 3/15/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/8/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

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

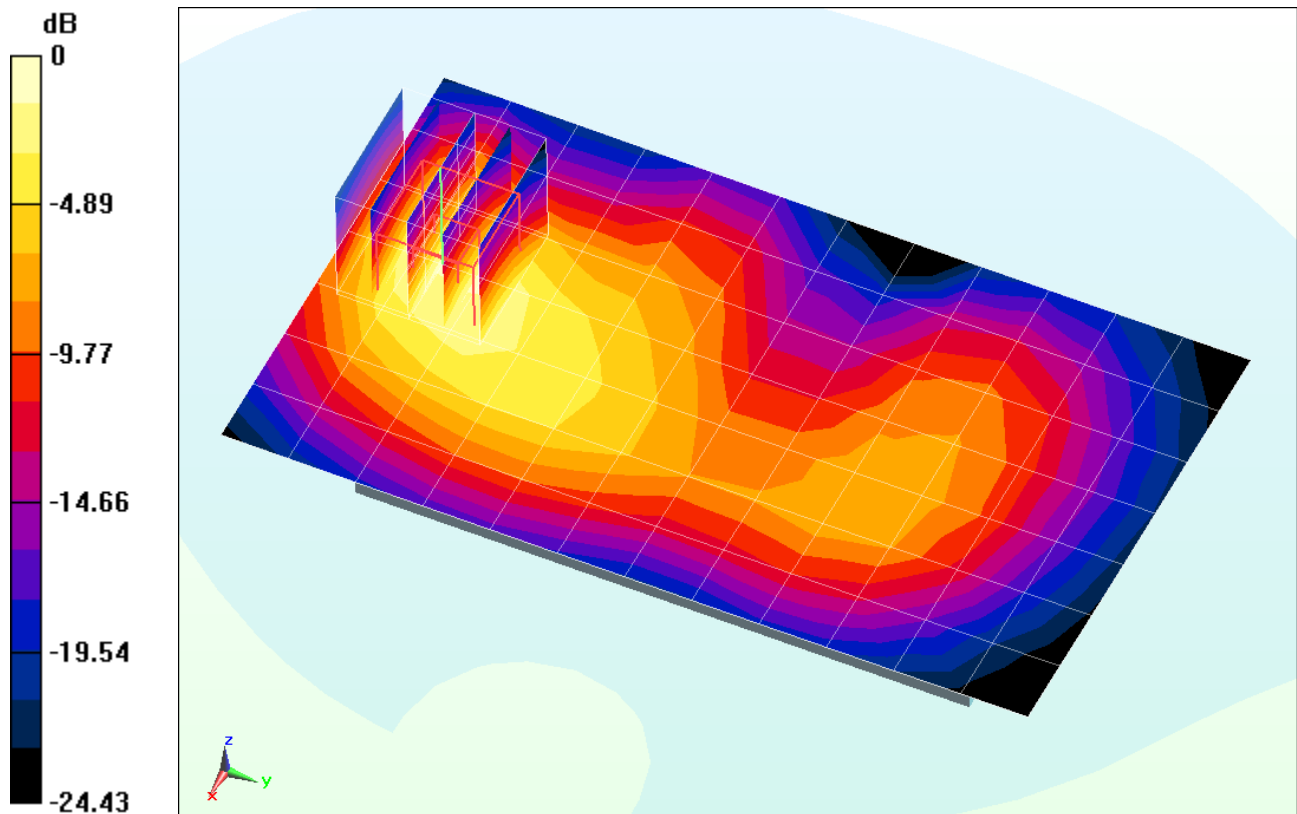
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 22.295 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.23 W/kg

SAR(1 g) = 0.585 W/kg



0 dB = 0.651 W/kg = -1.86 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 3271D

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

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.515 \text{ S/m}$; $\epsilon_r = 51.631$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-24-2014; Ambient Temp: 24.4°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3209; ConvF(4.77, 4.77, 4.77); Calibrated: 3/15/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/8/2013

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

Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

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

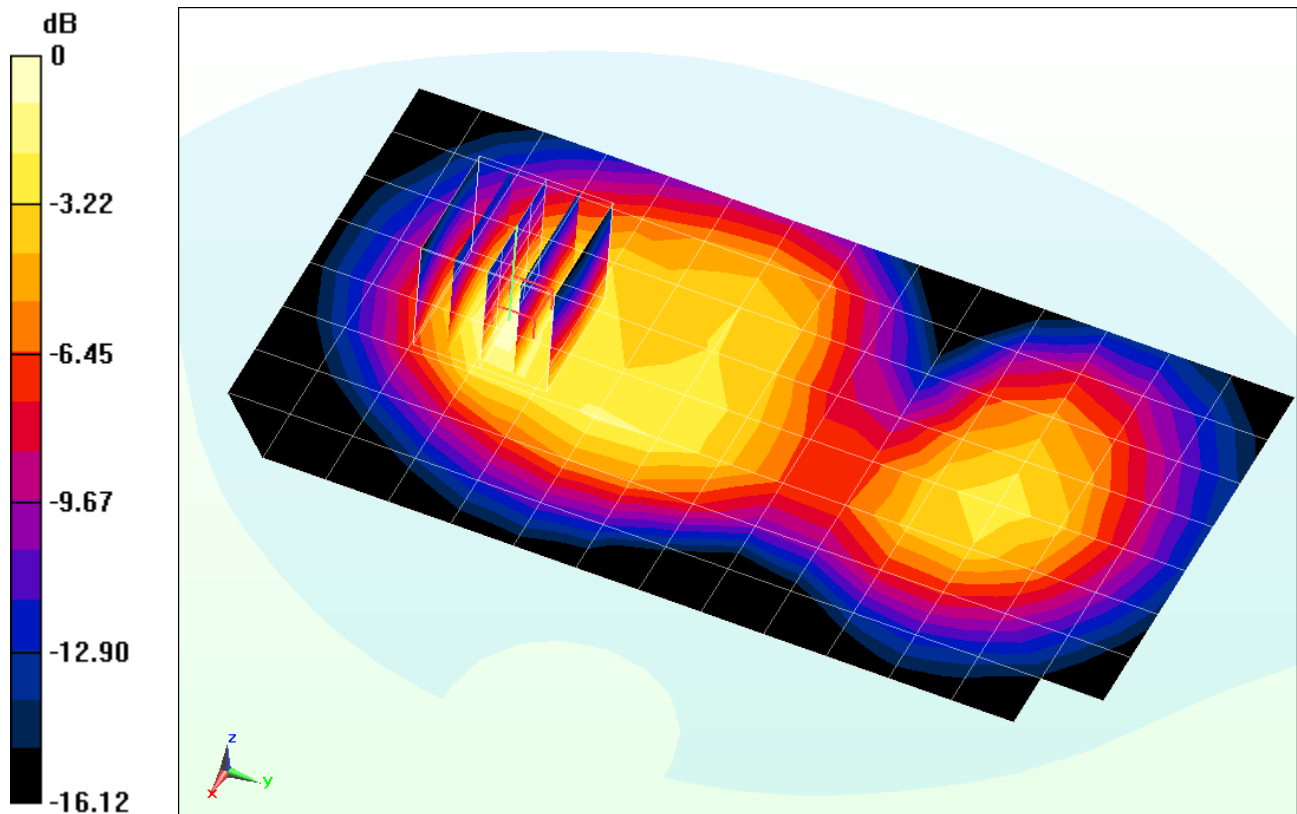
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 16.244 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.631 W/kg

SAR(1 g) = 0.368 W/kg



0 dB = 0.401 W/kg = -3.97 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 3271D

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

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.551 \text{ S/m}$; $\epsilon_r = 52.184$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-19-2014; Ambient Temp: 24.1°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN3914; ConvF(7.51, 7.51, 7.51); Calibrated: 10/23/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Mode: UMTS 1900, Body SAR, Front Side, Mid.ch, Wireless Charging Cover

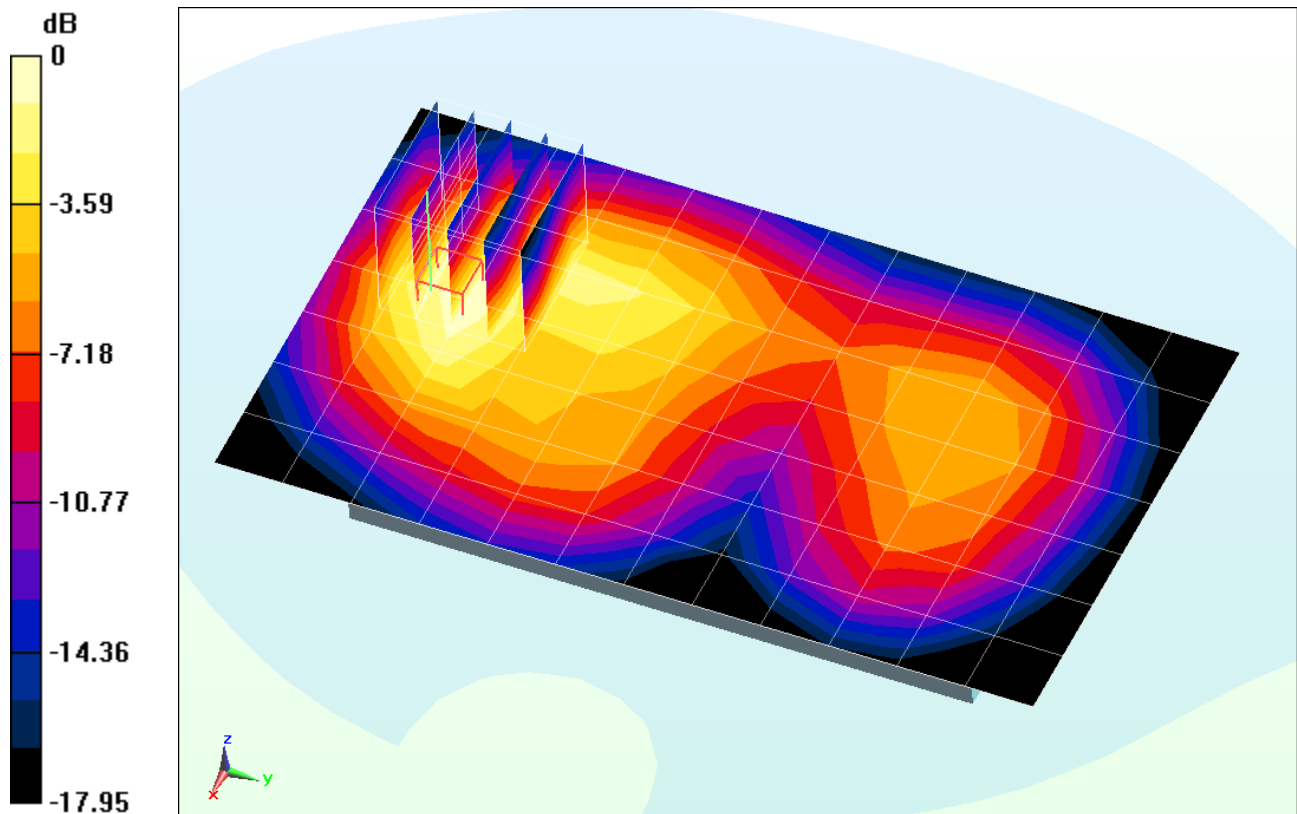
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 22.857 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 1.46 W/kg

SAR(1 g) = 0.805 W/kg



0 dB = 0.833 W/kg = -0.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32725

Communication System: UID 0, LTE RF; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 770 Body; Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 1.011 \text{ S/m}$; $\epsilon_r = 54.304$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-20-2014; Ambient Temp: 23.3°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3288; ConvF(6.25, 6.25, 6.25); Calibrated: 9/23/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/17/2013

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

**Mode: LTE Band 13, Body SAR, Back side, Mid.ch, 10 MHz Bandwidth,
QPSK, 1 RB, 49 RB Offset, Standard Back Cover**

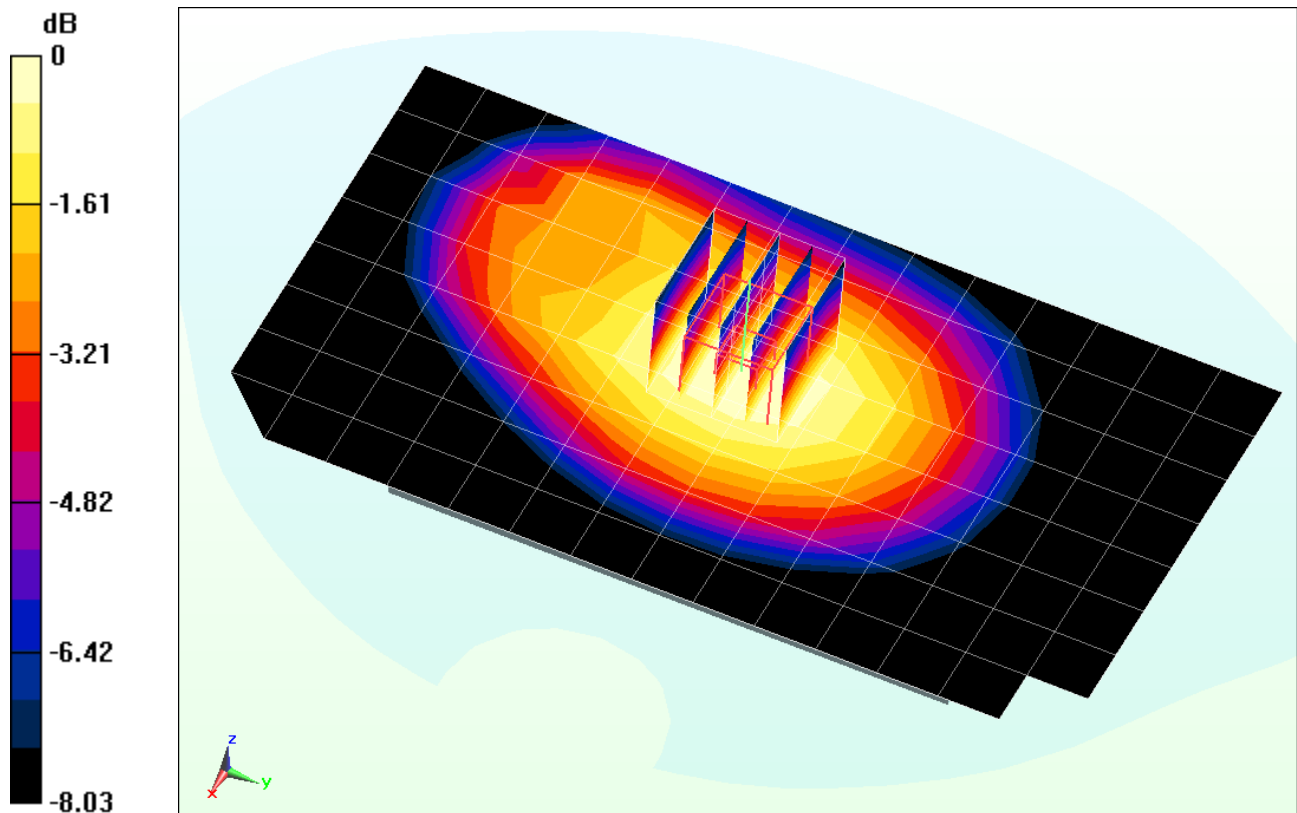
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.397 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.405 W/kg

SAR(1 g) = 0.325 W/kg



0 dB = 0.342 W/kg = -4.66 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32725

Communication System: UID 0, LTE RF; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 750 Body; Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 0.996 \text{ S/m}$; $\epsilon_r = 54.641$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-14-2014; Ambient Temp: 21.7°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3263; ConvF(6.37, 6.37, 6.37); Calibrated: 5/16/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/13/2013

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

**Mode: LTE Band 13, Body SAR, Right Edge, Mid.ch, 10 MHz Bandwidth,
QPSK, 1 RB, 49 RB Offset, Wireless Charging Cover**

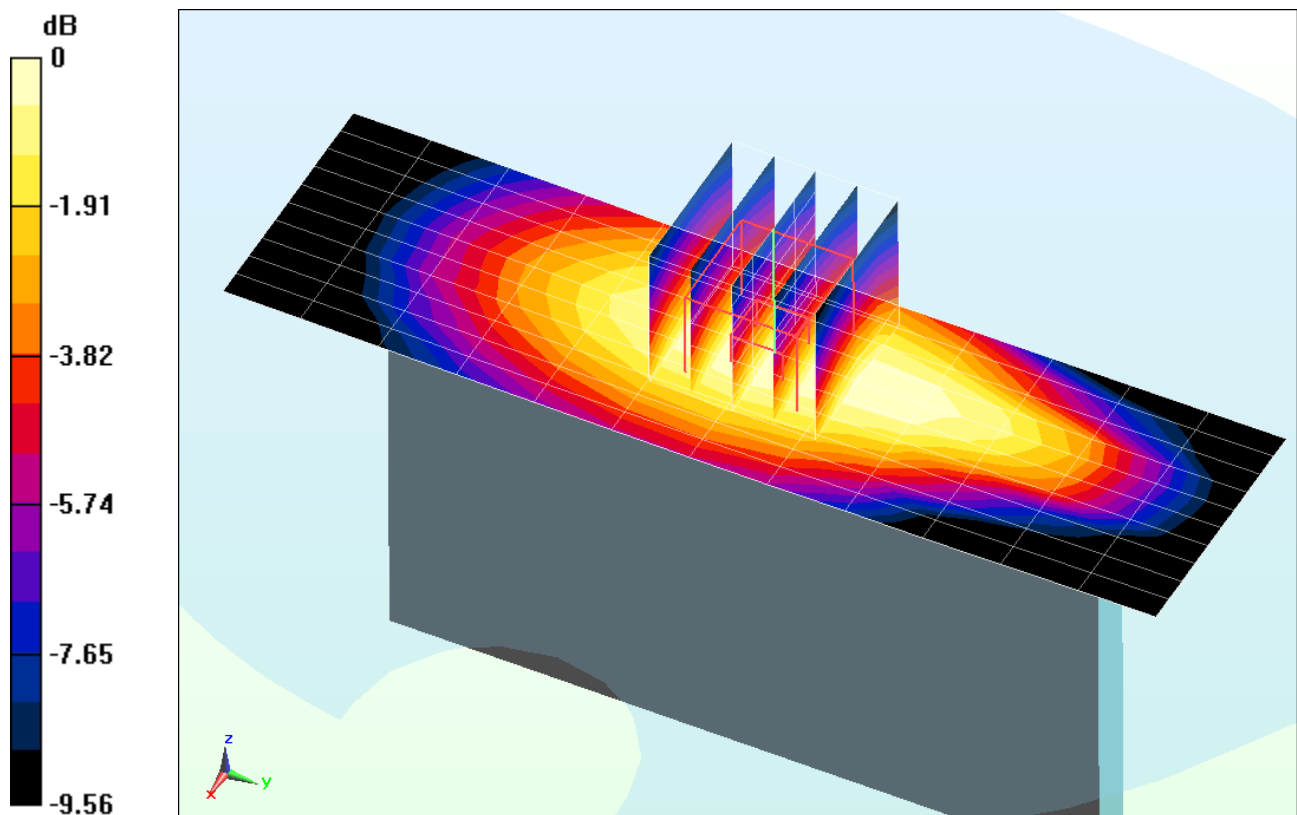
Area Scan (11x13x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.146 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.542 W/kg

SAR(1 g) = 0.400 W/kg



0 dB = 0.429 W/kg = -3.68 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32725

Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used (interpolated):

$$f = 1732.5 \text{ MHz}; \sigma = 1.417 \text{ S/m}; \epsilon_r = 52.562; \rho = 1000 \text{ kg/m}^3$$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-20-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3209; ConvF(5.03, 5.03, 5.03); Calibrated: 3/15/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/8/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**Mode: LTE Band 4 (AWS), Body SAR, Back side, Mid.ch, 20 MHz Bandwidth,
QPSK, 1 RB, 0 RB Offset, Standard Back Cover**

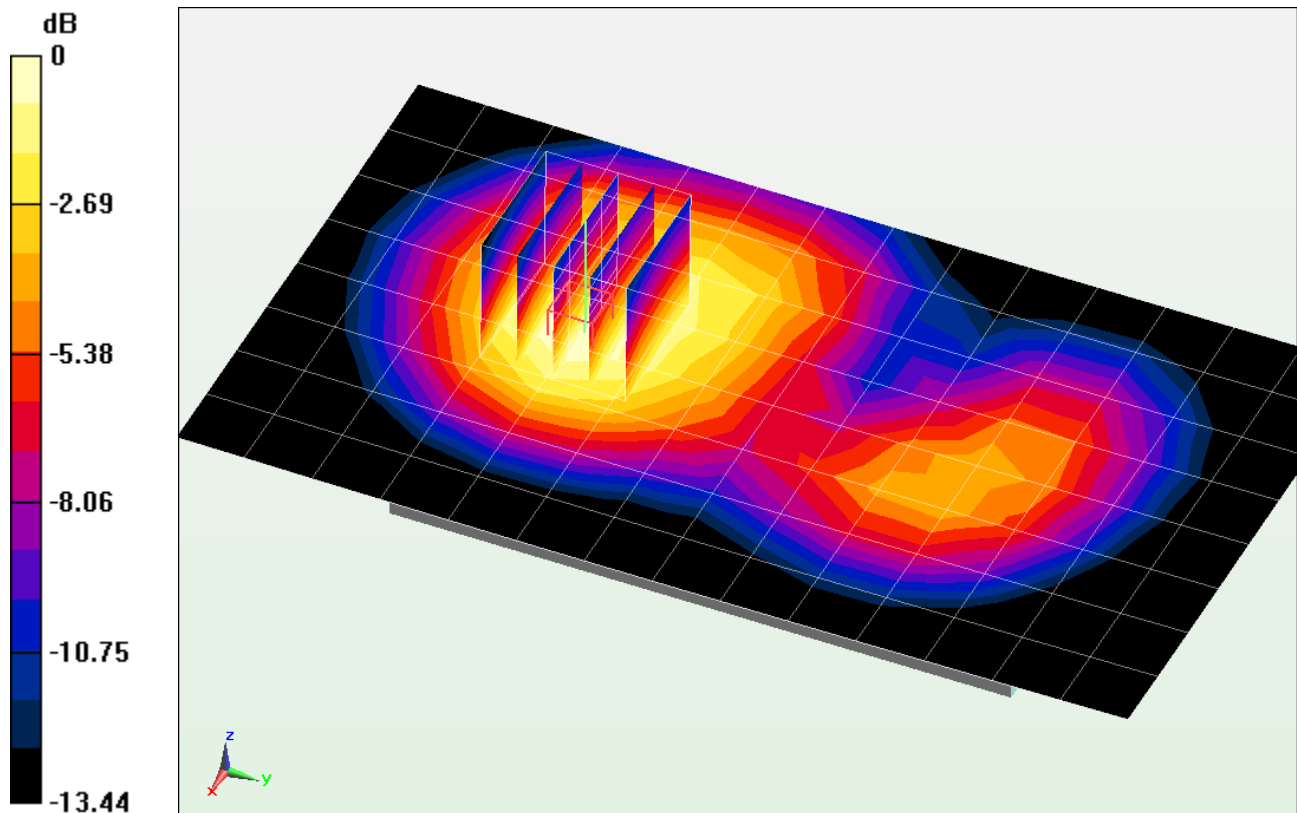
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.504 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.791 W/kg

SAR(1 g) = 0.541 W/kg



0 dB = 0.579 W/kg = -2.37 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 32725

Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.417 \text{ S/m}$; $\epsilon_r = 52.562$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-20-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3209; ConvF(5.03, 5.03, 5.03); Calibrated: 3/15/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/8/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**Mode: LTE Band 4 (AWS), Body SAR, Back side, Mid.ch, 20 MHz Bandwidth,
QPSK, 1 RB, 0 RB Offset, Standard Back Cover**

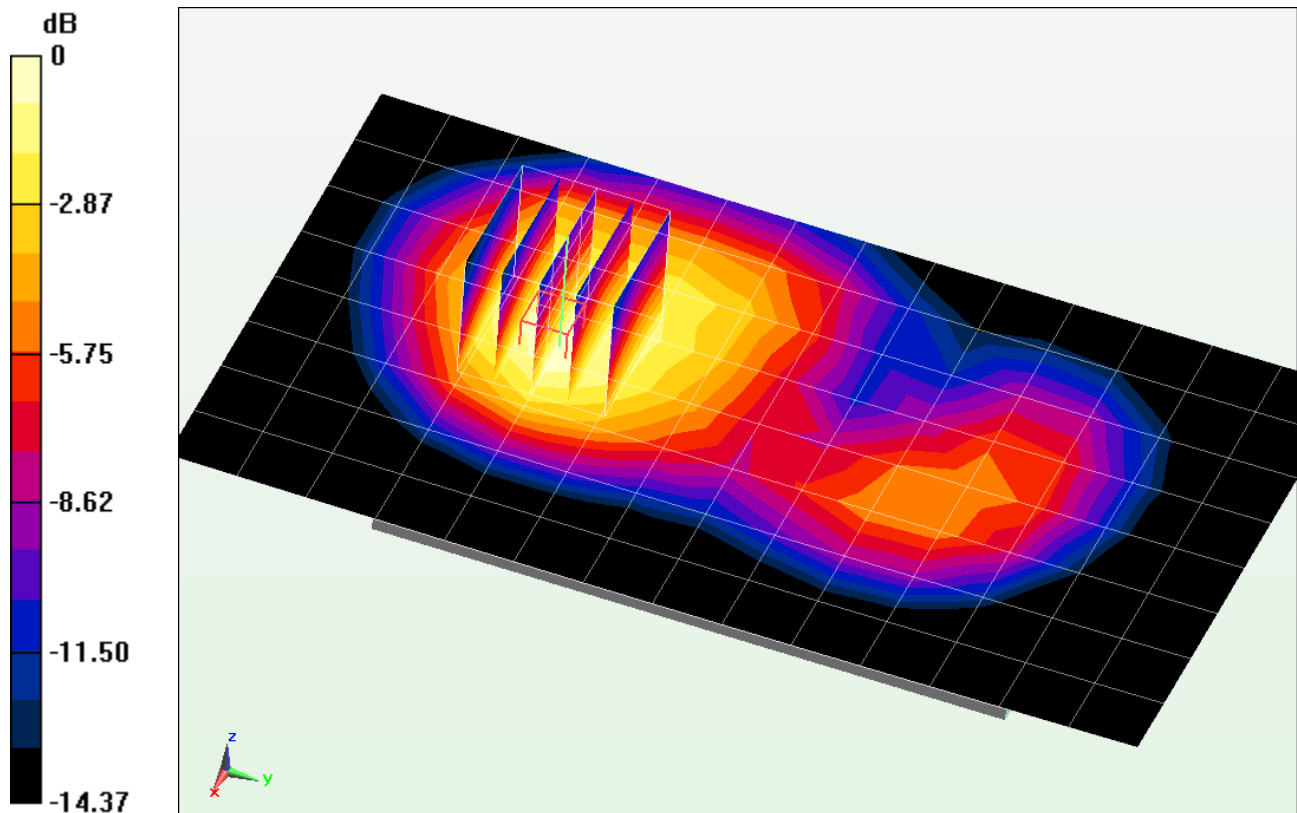
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 25.855 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 1.27 W/kg

SAR(1 g) = 0.858 W/kg



0 dB = 0.913 W/kg = -0.40 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 00F05

Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 1.92 \text{ S/m}$; $\epsilon_r = 51.381$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-12-2014; Ambient Temp: 24.6°C; Tissue Temp: 24.0°C

Probe: ES3DV3 - SN3318; ConvF(4.31, 4.31, 4.31); Calibrated: 4/29/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1364; Calibrated: 4/22/2013

Phantom: ELI left; Type: QDOVA002AA; Serial: TP:1202

Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

**Mode: IEEE 802.11b, Body SAR, Ch 06, 1 Mbps, Back Side,
Antenna 1, Standard Back Cover**

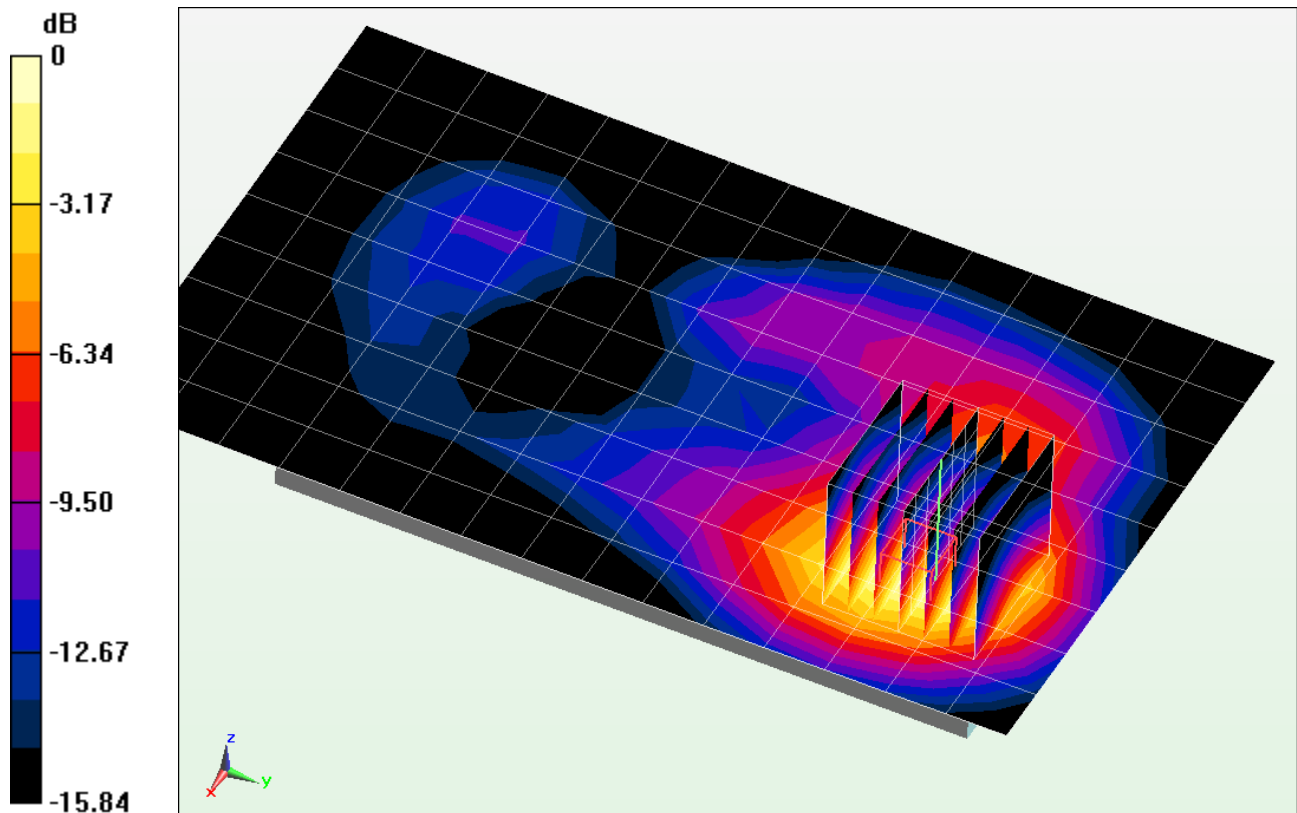
Area Scan (10x16x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.646 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.434 W/kg

SAR(1 g) = 0.235 W/kg



0 dB = 0.289 W/kg = -5.39 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 15ECE

Communication System: UID 0, IEEE 802.11a; Frequency: 5765 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body; Medium parameters used:

$f = 5765 \text{ MHz}$; $\sigma = 6.028 \text{ S/m}$; $\epsilon_r = 45.89$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-06-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.8°C

Probe: EX3DV4 - SN3914; ConvF(4.14, 4.14, 4.14); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**Mode: IEEE 802.11a, 5.8 GHz, Body SAR, Ch 153, 6 Mbps, Back Side,
Antenna 2, Standard Back Cover**

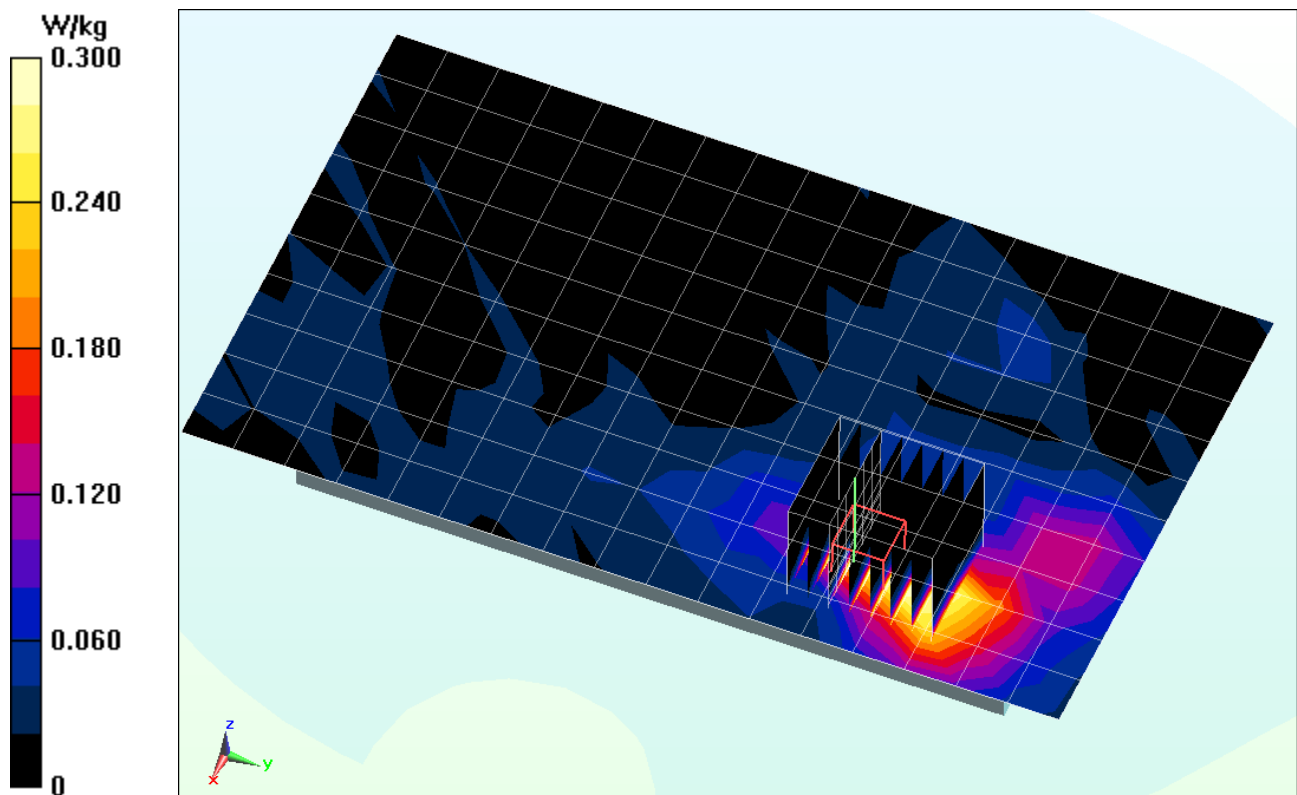
Area Scan (11x18x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 6.488 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 1.47 W/kg

SAR(1 g) = 0.287 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900V; Type: Portable Handset; Serial: 15ECE

Communication System: UID 0, IEEE 802.11a; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body; Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 5.6 \text{ S/m}$; $\epsilon_r = 46.464$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-06-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.8°C

Probe: EX3DV4 - SN3914; ConvF(4.07, 4.07, 4.07); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

**Mode: IEEE 802.11a, 5.5 - 5.7 GHz, Body SAR, Ch 100, 6 Mbps, Back Side,
Antenna 2, Standard Back Cover**

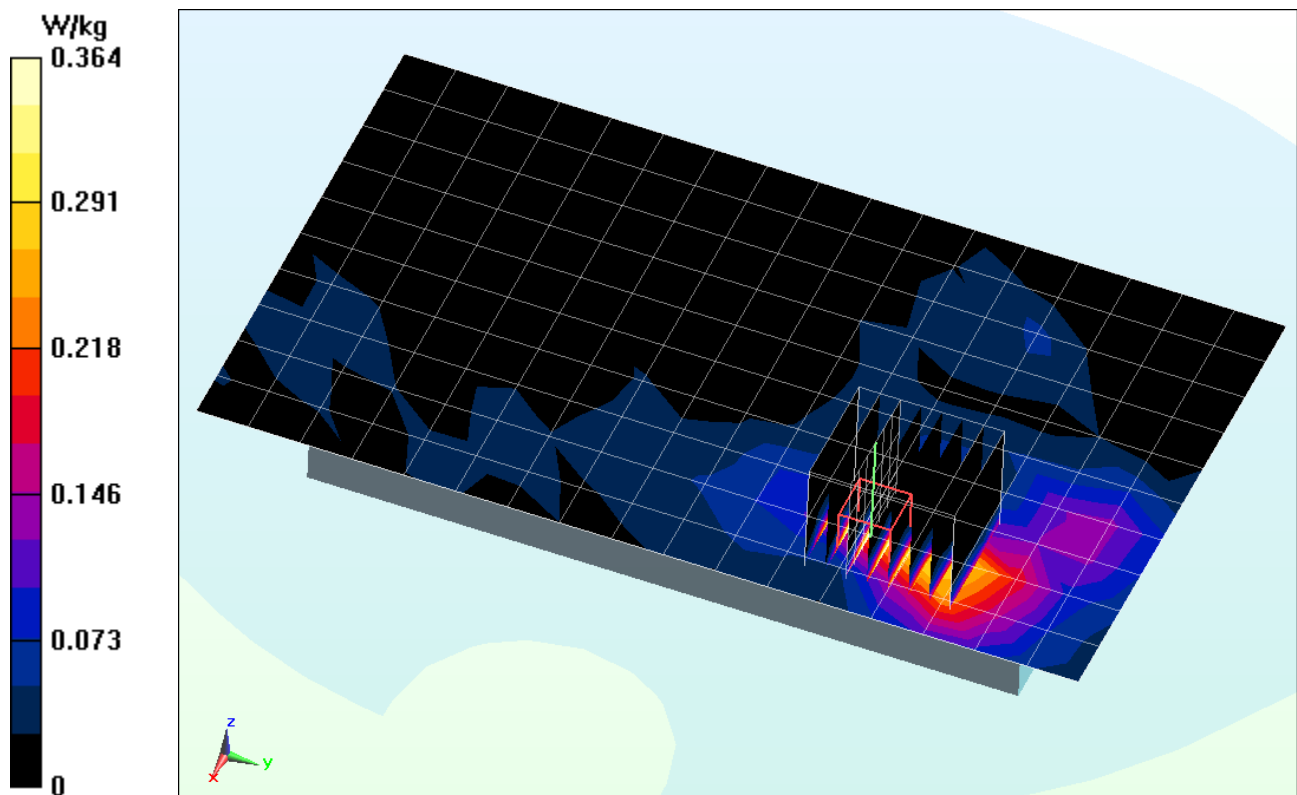
Area Scan (11x18x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 6.249 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 1.49 W/kg

SAR(1 g) = 0.296 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):

$$f = 750 \text{ MHz}; \sigma = 0.9 \text{ S/m}; \epsilon_r = 40.497; \rho = 1000 \text{ kg/m}^3$$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-20-2014; Ambient Temp: 23.9°C; Tissue Temp: 22.0°C

Probe: ES3DV2 - SN3022; ConvF(6.21, 6.21, 6.21); Calibrated: 8/22/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/21/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

750 MHz System Verification

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm

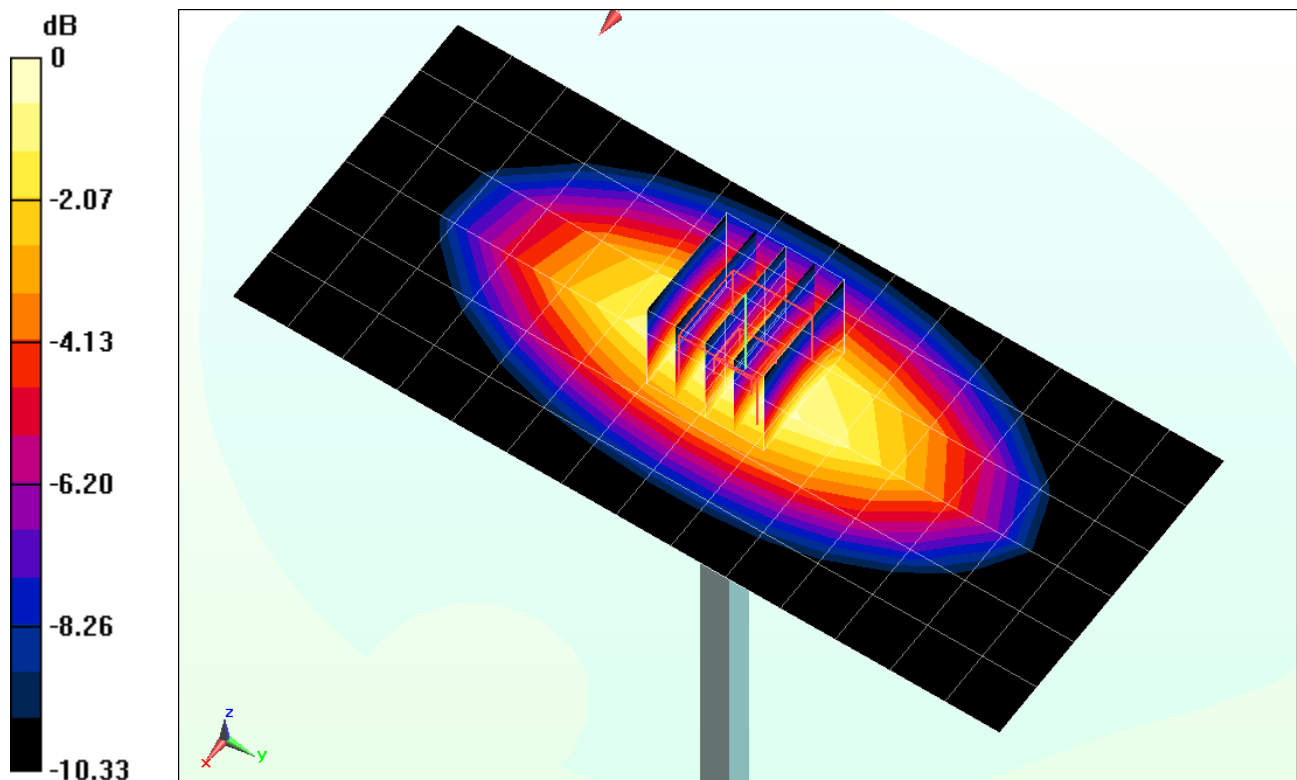
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 1.20 W/kg

SAR(1 g) = 0.818 W/kg

Deviation = -2.27%



0 dB = 0.887 W/kg = -0.52 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: 835MHz Dipole; Type: D835V2; Serial: 4d119

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Head; Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.916 \text{ S/m}$; $\epsilon_r = 42.25$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-13-2014; Ambient Temp: 21.9°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3332; ConvF(6.29, 6.29, 6.29); Calibrated: 11/25/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 11/18/2013

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

Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

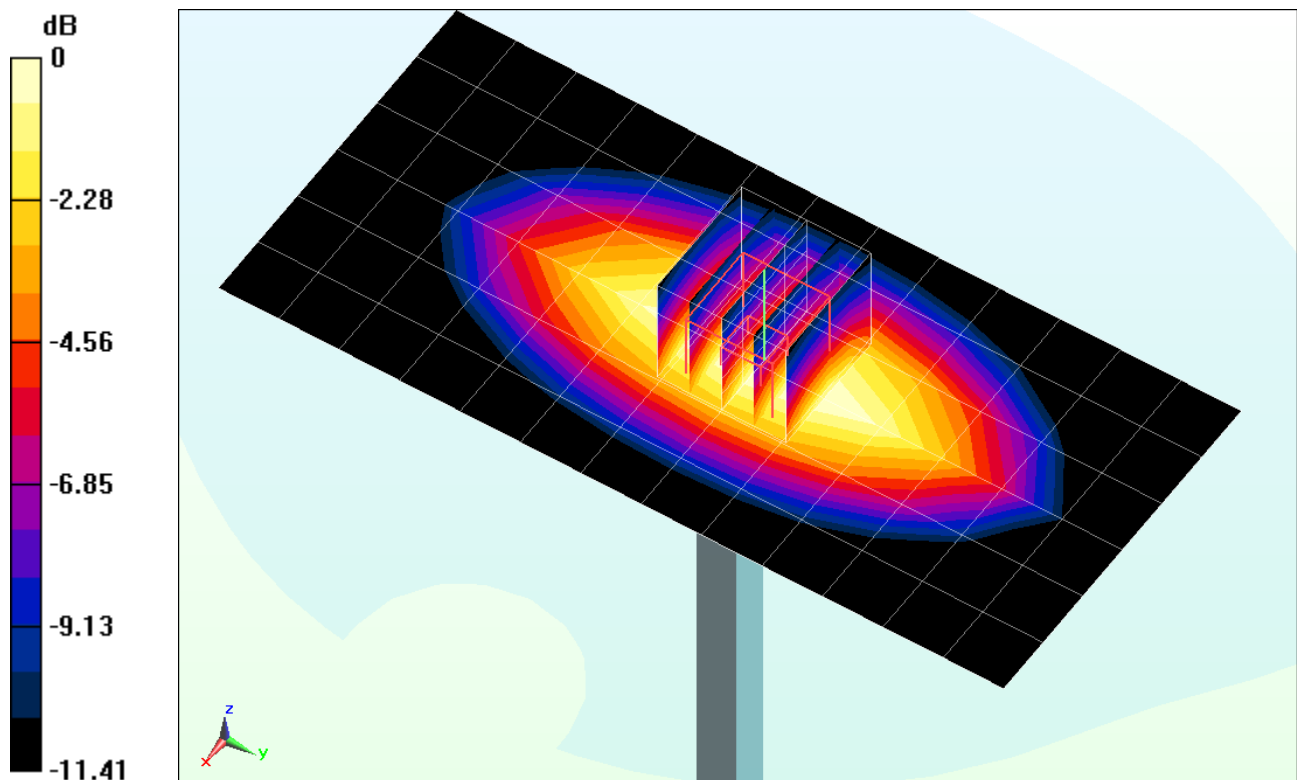
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 1.51 W/kg

SAR(1 g) = 0.943 W/kg

Deviation = -2.58%



0 dB = 1.03 W/kg = 0.13 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1051

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Head; Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.407 \text{ S/m}$; $\epsilon_r = 40.108$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-21-2014; Ambient Temp: 24.5°C; Tissue Temp: 23.6°C

Probe: ES3DV3 - SN3209; ConvF(5.39, 5.39, 5.39); Calibrated: 3/15/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/8/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

1750 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

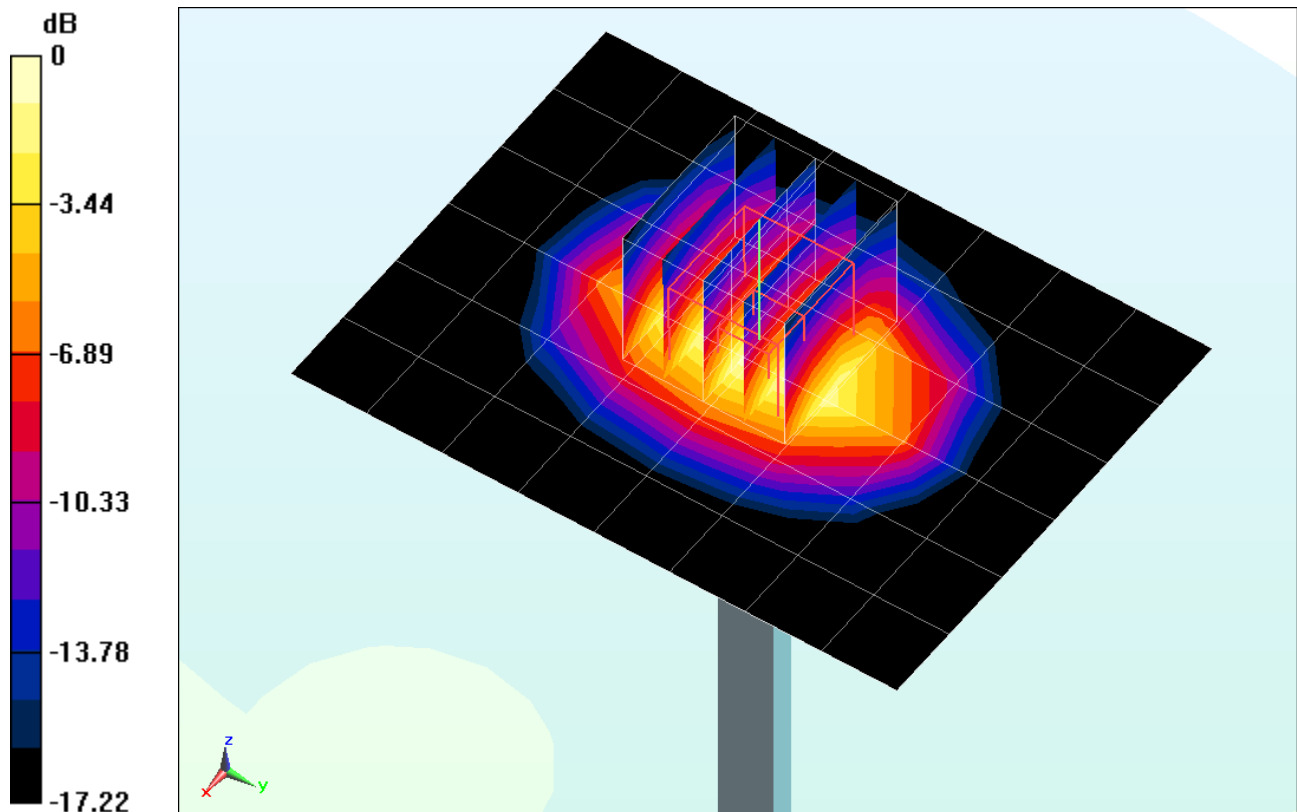
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 6.78 W/kg

SAR(1 g) = 3.69 W/kg

Deviation = 1.10%



0 dB = 4.11 W/kg = 6.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: 1900MHz SAR Dipole; Type: D1900V2; Serial: 5d149

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Head; Medium parameters used (interpolated):

$$f = 1900 \text{ MHz}; \sigma = 1.4 \text{ S/m}; \epsilon_r = 39.057; \rho = 1000 \text{ kg/m}^3$$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-12-2014; Ambient Temp: 23.0°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3287; ConvF(5.08, 5.08, 5.08); Calibrated: 11/20/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/21/2013

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP: TP-1646

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm

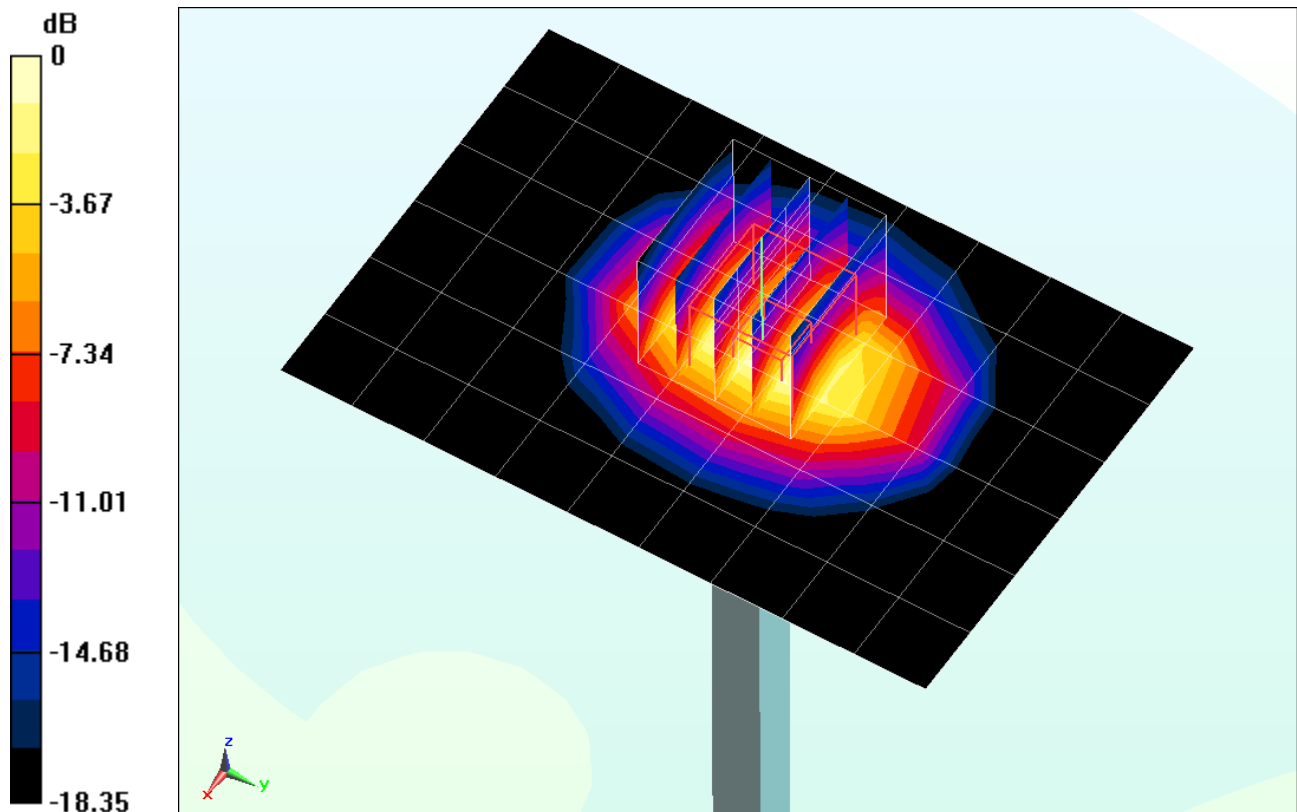
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 7.14 W/kg

SAR(1 g) = 3.87 W/kg

Deviation = -4.21%



PCTEST ENGINEERING LABORATORY, INC.

DUT: 1900MHz SAR Dipole; Type: D1900V2; Serial: 5d149

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Head; Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.391 \text{ S/m}$; $\epsilon_r = 38.319$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-14-2014; Ambient Temp: 23.2°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(5.03, 5.03, 5.03); Calibrated: 8/22/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/21/2013

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

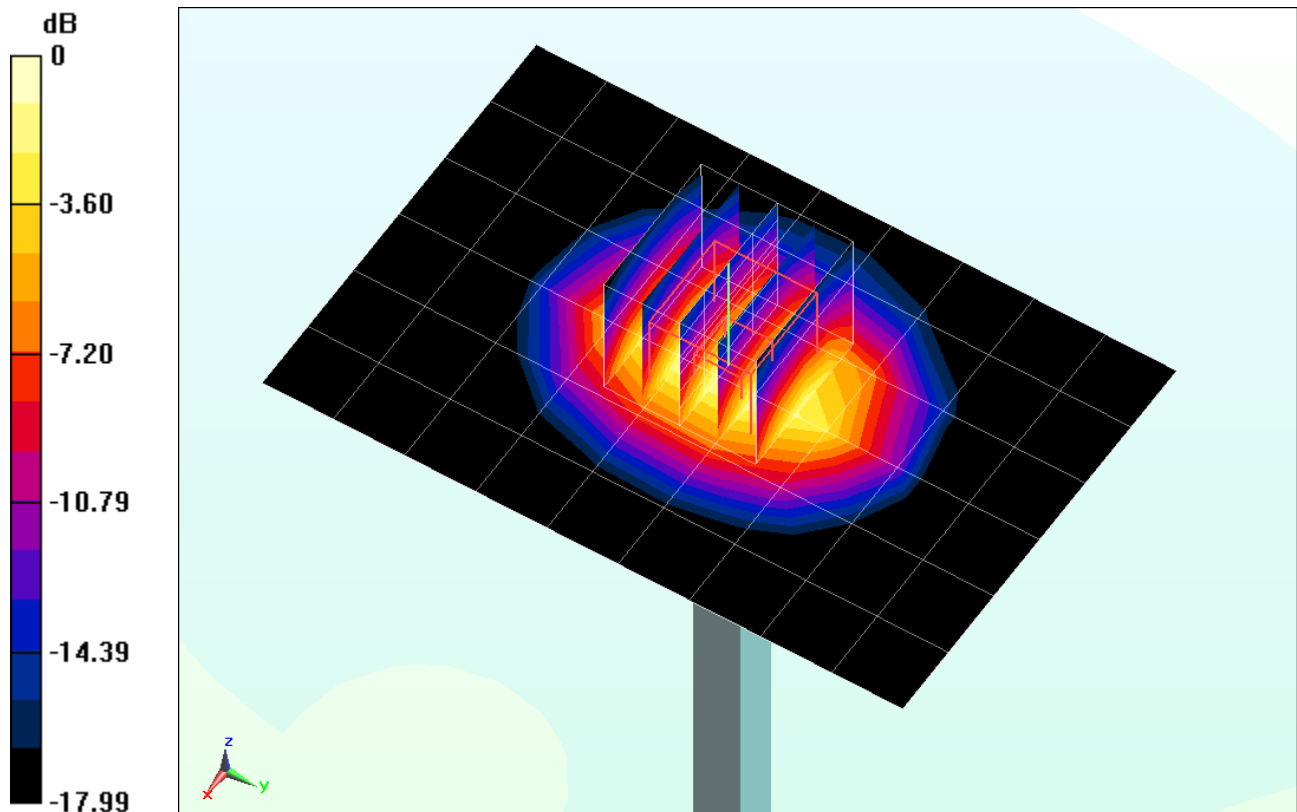
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 6.94 W/kg

SAR(1 g) = 3.75 W/kg

Deviation = -7.18%



0 dB = 4.21 W/kg = 6.24 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 719

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Head; Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.879 \text{ S/m}$; $\epsilon_r = 38.816$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-18-2014; Ambient Temp: 23.5°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3287; ConvF(4.43, 4.43, 4.43); Calibrated: 11/20/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1408; Calibrated: 11/19/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

2450 MHz System Verification

Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

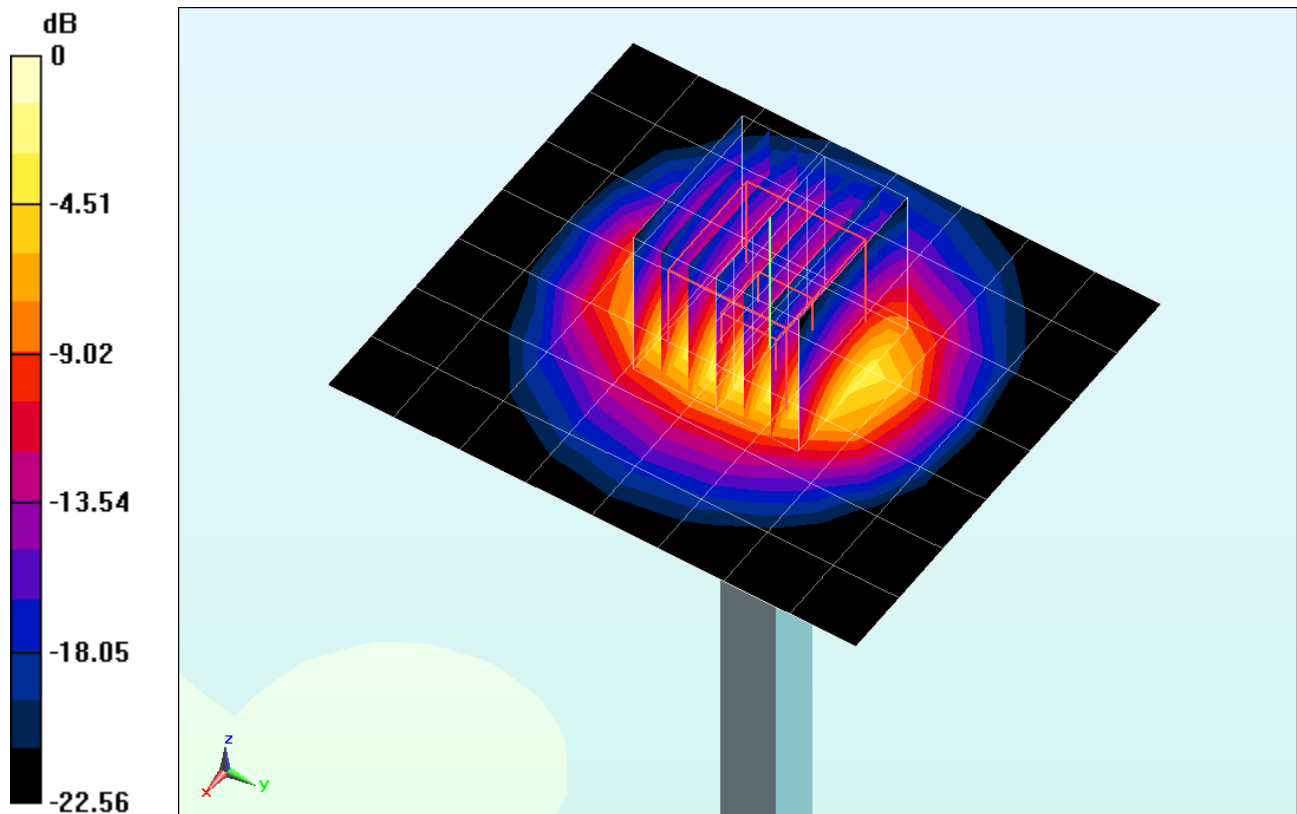
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 10.7 W/kg

SAR(1 g) = 5.18 W/kg

Deviation = -2.63%



0 dB = 6.70 W/kg = 8.26 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5200 MHz; Type: D5GHzV2; Serial: 1007

Communication System: UID 0, CW; Frequency: 5200 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head; Medium parameters used:

$f = 5200 \text{ MHz}$; $\sigma = 4.508 \text{ S/m}$; $\epsilon_r = 36.214$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-03-2014; Ambient Temp: 24.4°C; Tissue Temp: 23.0°C

Probe: EX3DV4 - SN3920; ConvF(4.87, 4.87, 4.87); Calibrated: 12/18/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 12/12/2013

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

5200MHz System Verification

Area Scan (7x9x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

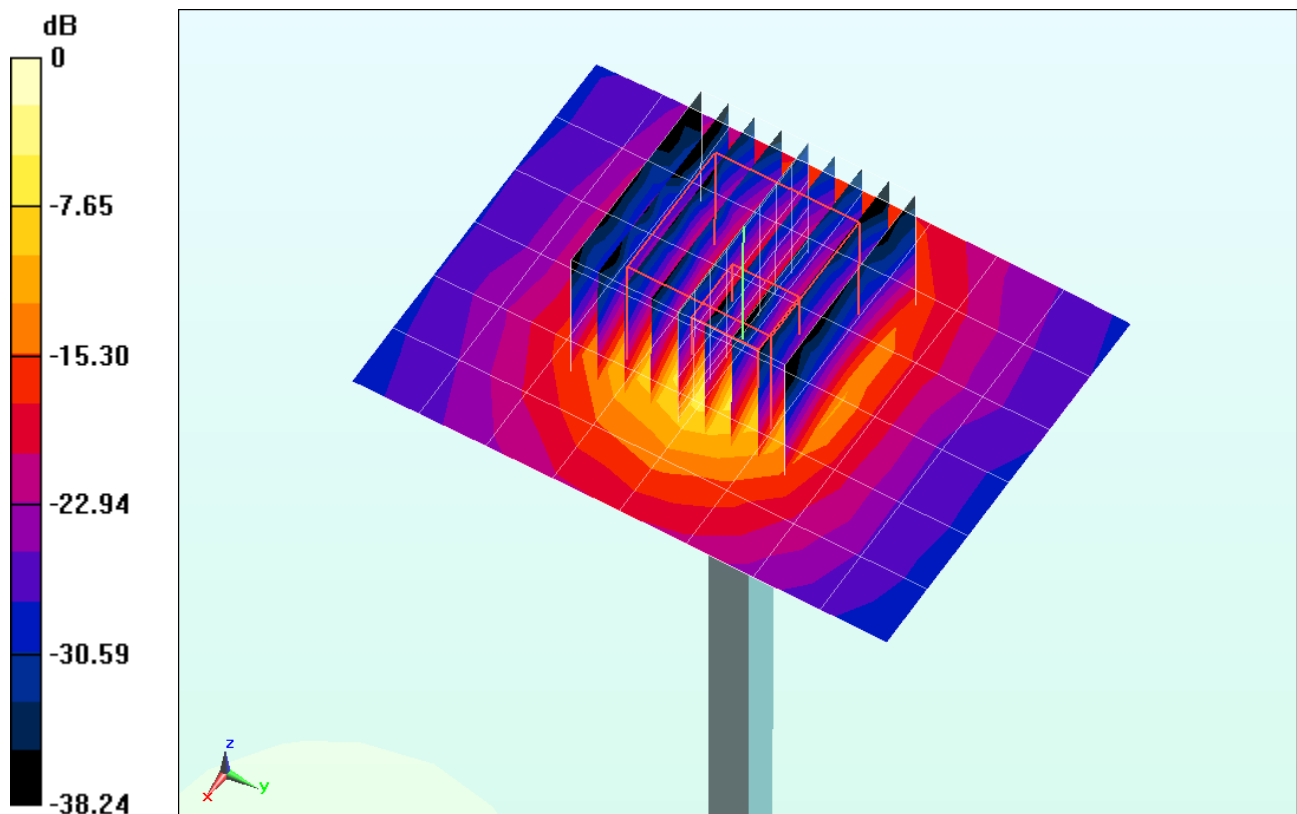
Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 31.7 W/kg

SAR(1 g) = 7.72 W/kg

Deviation = -0.39%



0 dB = 18.1 W/kg = 12.58 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5300 MHz; Type: D5GHzV2; Serial: 1007

Communication System: UID 0, CW; Frequency: 5300 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head; Medium parameters used:

$f = 5300 \text{ MHz}$; $\sigma = 4.605 \text{ S/m}$; $\epsilon_r = 36.076$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-03-2014; Ambient Temp: 24.4°C; Tissue Temp: 23.1°C

Probe: EX3DV4 - SN3920; ConvF(4.66, 4.66, 4.66); Calibrated: 12/18/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 12/12/2013

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

5300MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

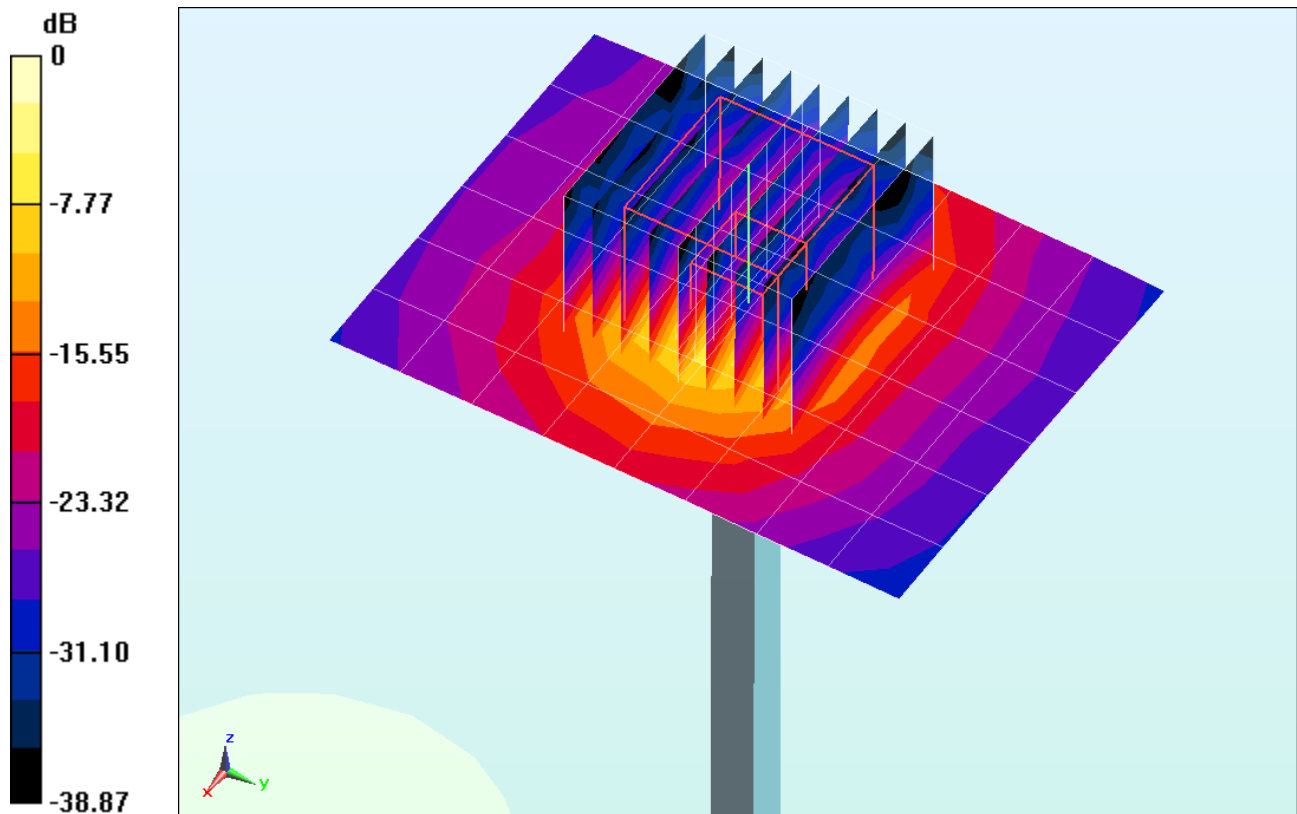
Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 33.5 W/kg

SAR(1 g) = 7.90 W/kg

Deviation = -1.50%



0 dB = 19.0 W/kg = 12.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1007

Communication System: UID 0, CW; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head; Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 4.822 \text{ S/m}$; $\epsilon_r = 35.798$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-03-2014; Ambient Temp: 24.2°C; Tissue Temp: 23.2°C

Probe: EX3DV4 - SN3920; ConvF(4.54, 4.54, 4.54); Calibrated: 12/18/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 12/12/2013

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

5500MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

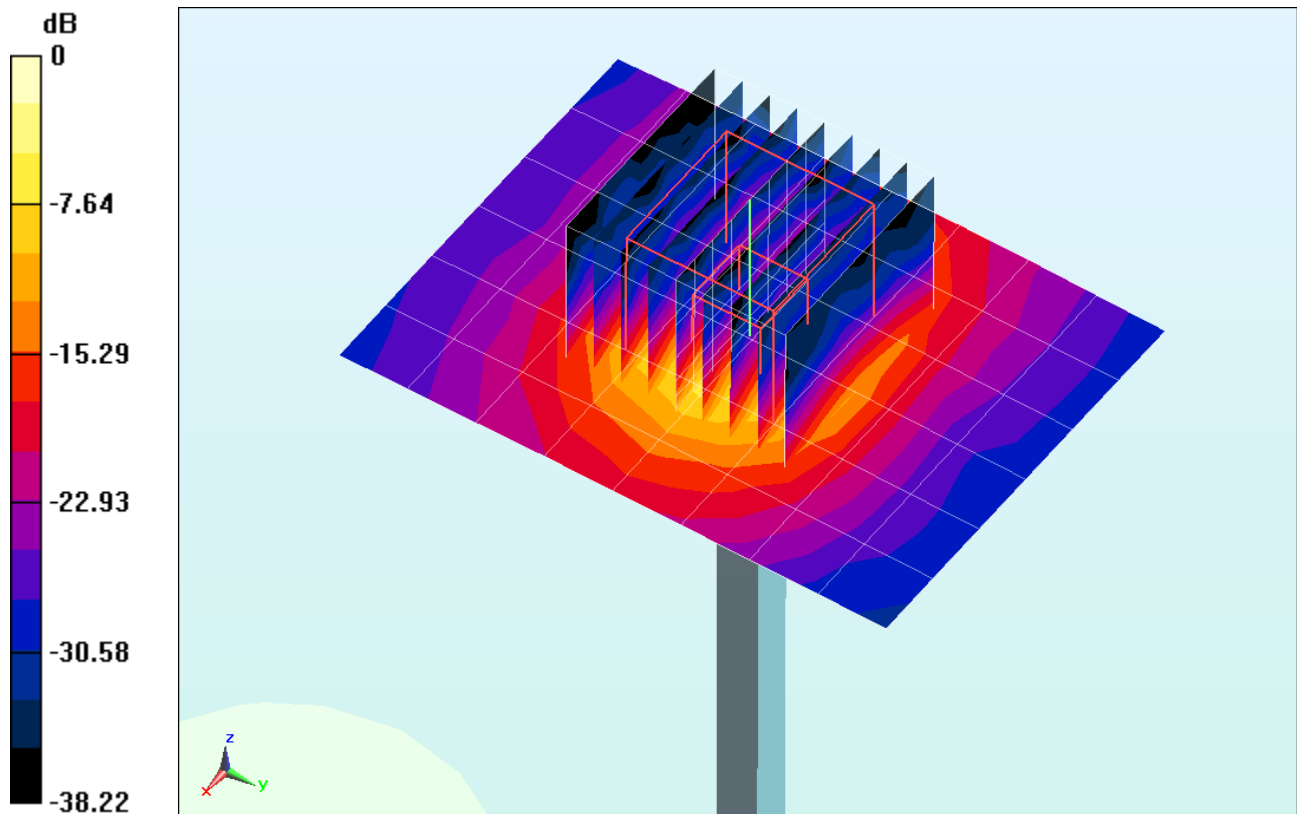
Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 36.7 W/kg

SAR(1 g) = 7.74 W/kg

Deviation = -4.91%



0 dB = 18.3 W/kg = 12.62 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5600 MHz; Type: D5GHzV2; Serial: 1007

Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head; Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 4.925 \text{ S/m}$; $\epsilon_r = 35.697$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-03-2014; Ambient Temp: 24.5°C; Tissue Temp: 23.3°C

Probe: EX3DV4 - SN3920; ConvF(4.37, 4.37, 4.37); Calibrated: 12/18/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 12/12/2013

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

5600MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

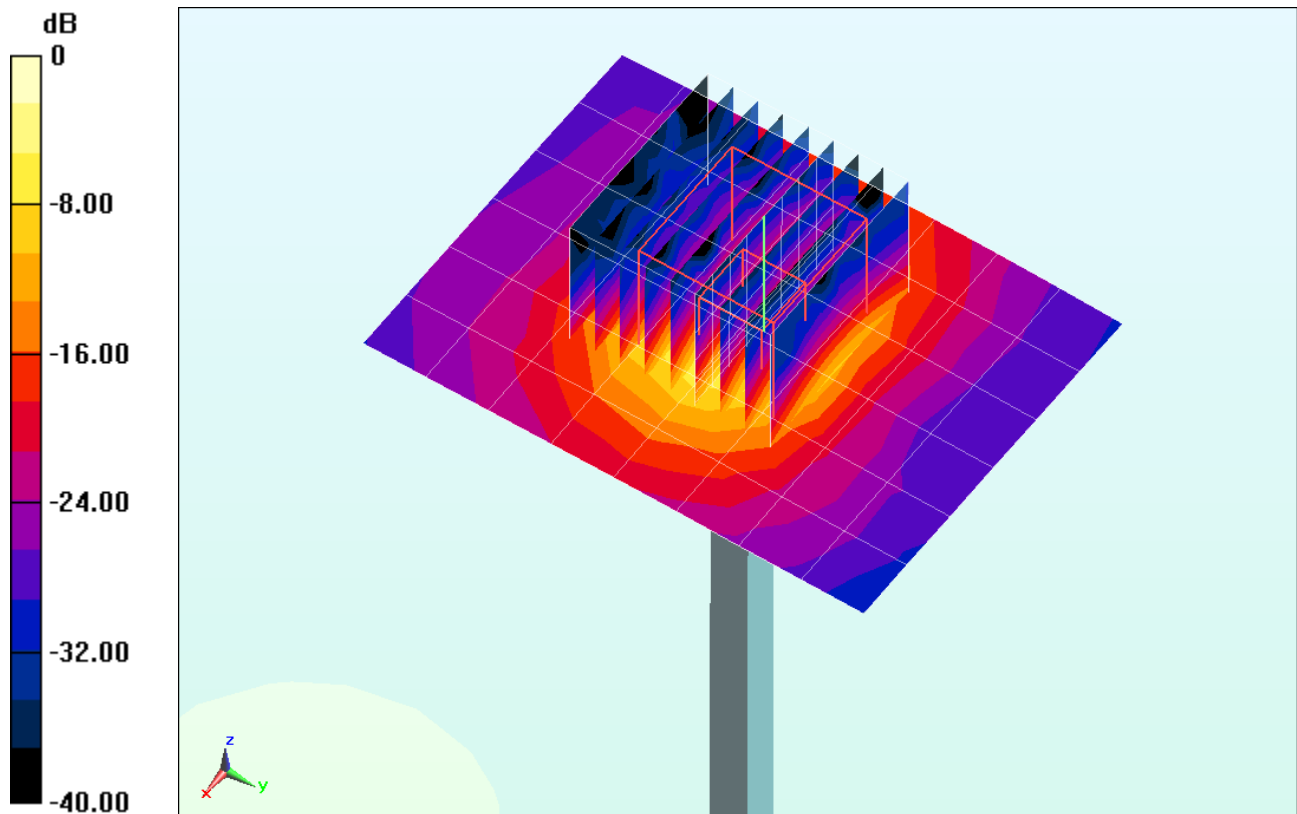
Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 34.8 W/kg

SAR(1 g) = 7.90 W/kg

Deviation = -1.25%



0 dB = 18.1 W/kg = 12.58 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1007

Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head; Medium parameters used:

$f = 5800 \text{ MHz}$; $\sigma = 5.112 \text{ S/m}$; $\epsilon_r = 35.479$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-03-2014; Ambient Temp: 24.3°C; Tissue Temp: 23.3°C

Probe: EX3DV4 - SN3920; ConvF(4.11, 4.11, 4.11); Calibrated: 12/18/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 12/12/2013

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

5800MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

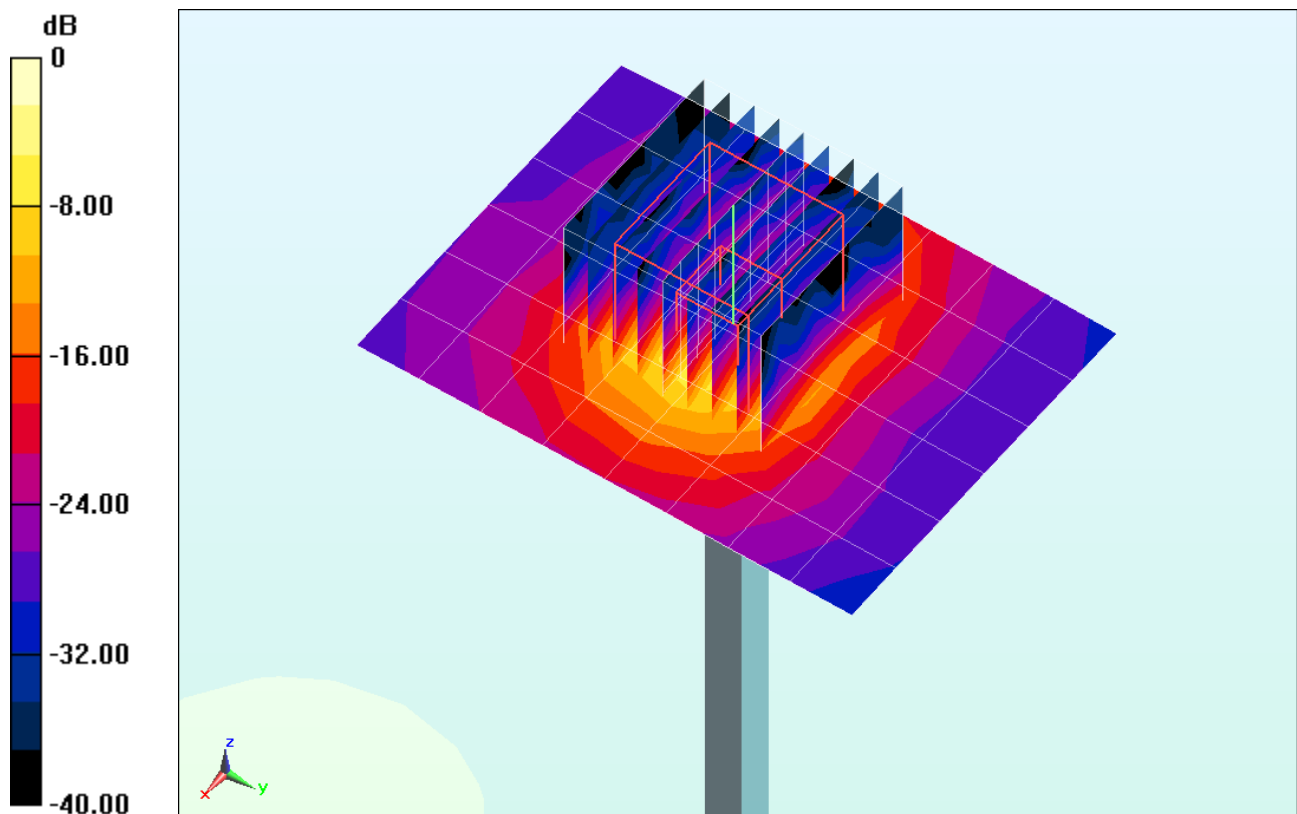
Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 34.7 W/kg

SAR(1 g) = 7.68 W/kg

Deviation = -0.90%



0 dB = 19.2 W/kg = 12.83 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 750 Body; Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.964 \text{ S/m}$; $\epsilon_r = 54.889$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-14-2014; Ambient Temp: 21.7°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3263; ConvF(6.37, 6.37, 6.37); Calibrated: 5/16/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/13/2013

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

750MHz System Verification

Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

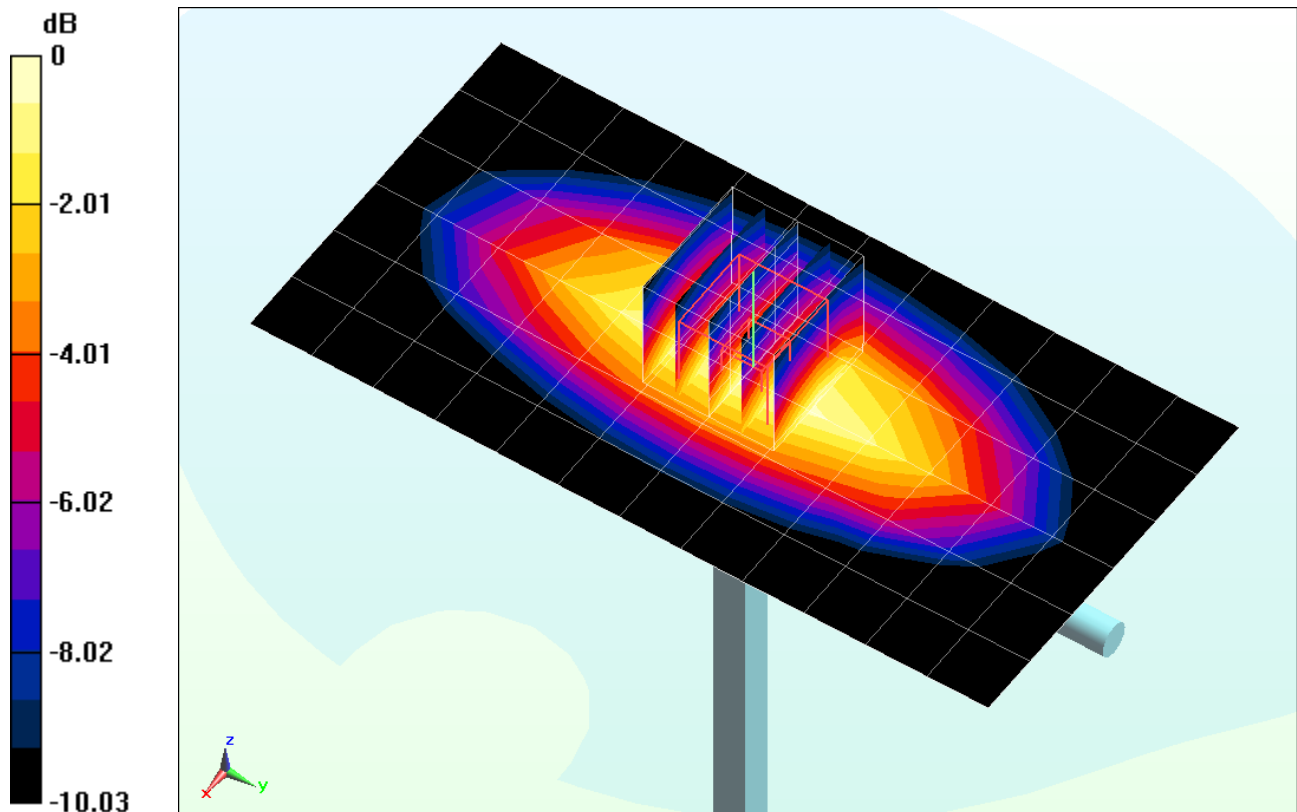
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 1.22 W/kg

SAR(1 g) = 0.852 W/kg

Deviation = -2.29%



0 dB = 0.924 W/kg = -0.34 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 740 Body; Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.981 \text{ S/m}$; $\epsilon_r = 54.604$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-20-2014; Ambient Temp: 23.3°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3288; ConvF(6.25, 6.25, 6.25); Calibrated: 9/23/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/17/2013

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

750MHz System Verification

Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

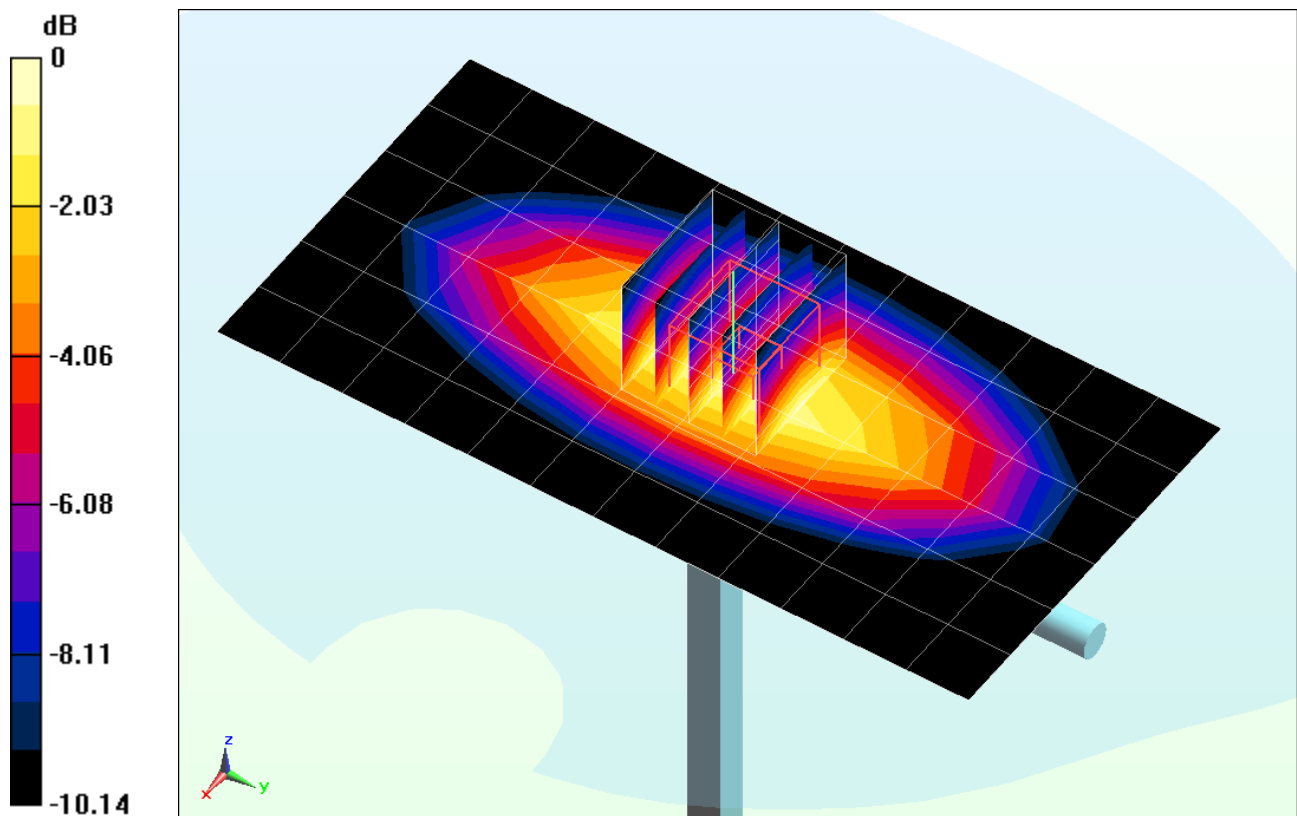
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 1.34 W/kg

SAR(1 g) = 0.927 W/kg

Deviation = 6.31%



0 dB = 0.995 W/kg = -0.02 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d133

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body; Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.954 \text{ S/m}$; $\epsilon_r = 54.628$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-10-2014; Ambient Temp: 23.4°C; Tissue Temp: 20.1°C

Probe: ES3DV3 - SN3263; ConvF(6.29, 6.29, 6.29); Calibrated: 5/16/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/13/2013

Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

835MHz System Verification

Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

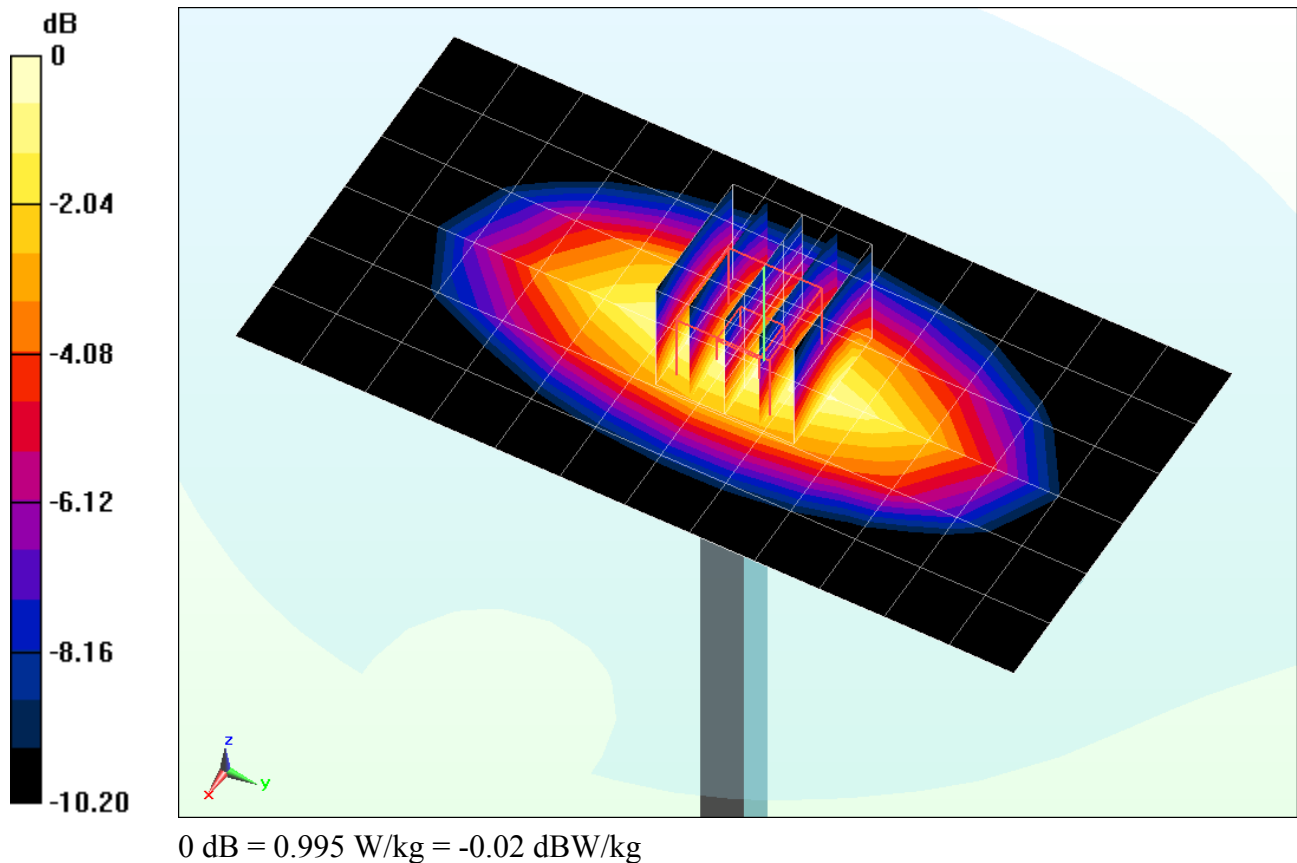
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 1.33 W/kg

SAR(1 g) = 0.956 W/kg

Deviation = -0.52%



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:

$f = 835 \text{ MHz}$; $\sigma = 1.015 \text{ S/m}$; $\epsilon_r = 54.431$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-14-2014; Ambient Temp: 21.3°C; Tissue Temp: 23.1°C

Probe: ES3DV3 - SN3209; ConvF(6.28, 6.28, 6.28); Calibrated: 3/15/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/8/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

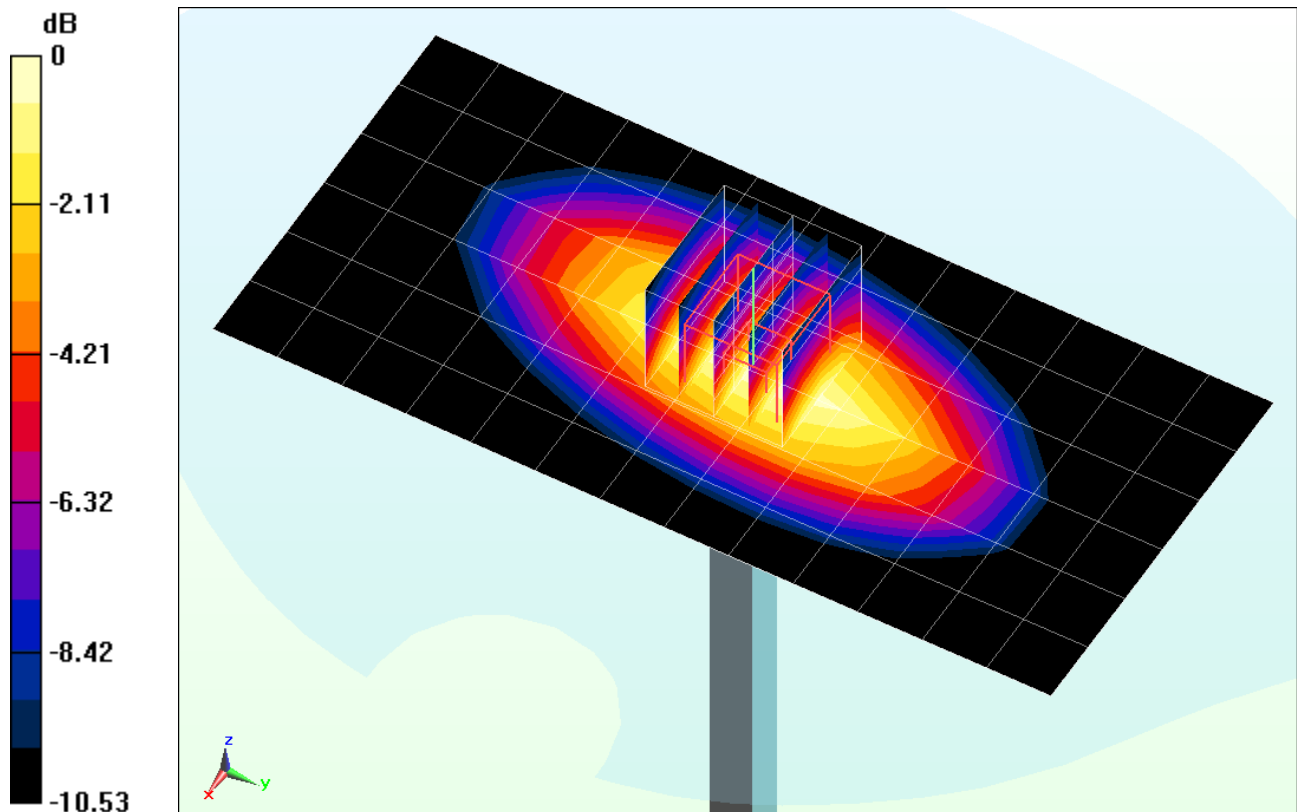
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 1.48 W/kg

SAR(1 g) = 1.02 W/kg

Deviation = 6.92%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1051

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.435 \text{ S/m}$; $\epsilon_r = 52.492$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-20-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3209; ConvF(5.03, 5.03, 5.03); Calibrated: 3/15/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/8/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

1750 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

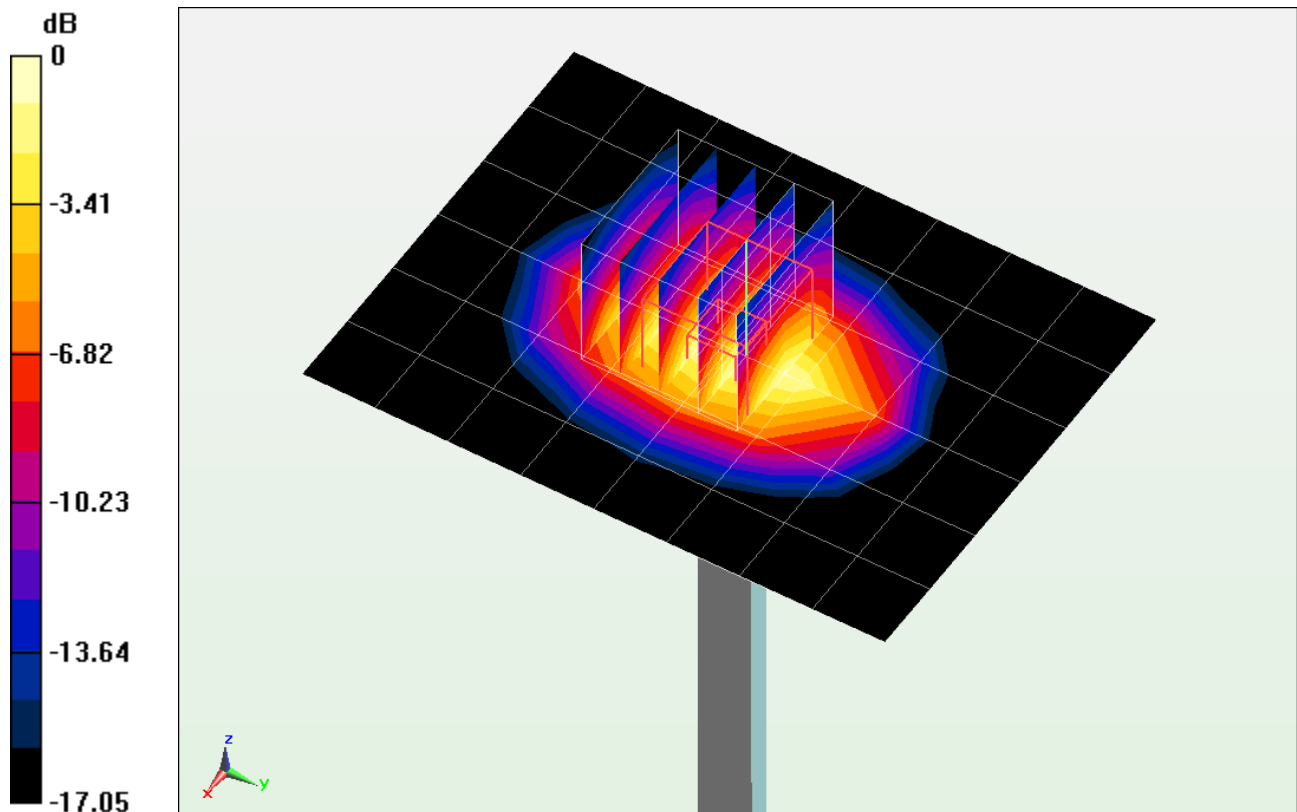
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 6.53 W/kg

SAR(1 g) = 3.69 W/kg

Deviation = -2.38%



0 dB = 4.05 W/kg = 6.07 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.546 \text{ S/m}$; $\epsilon_r = 52.536$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-13-2014; Ambient Temp: 23.5°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3209; ConvF(4.77, 4.77, 4.77); Calibrated: 3/15/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/8/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

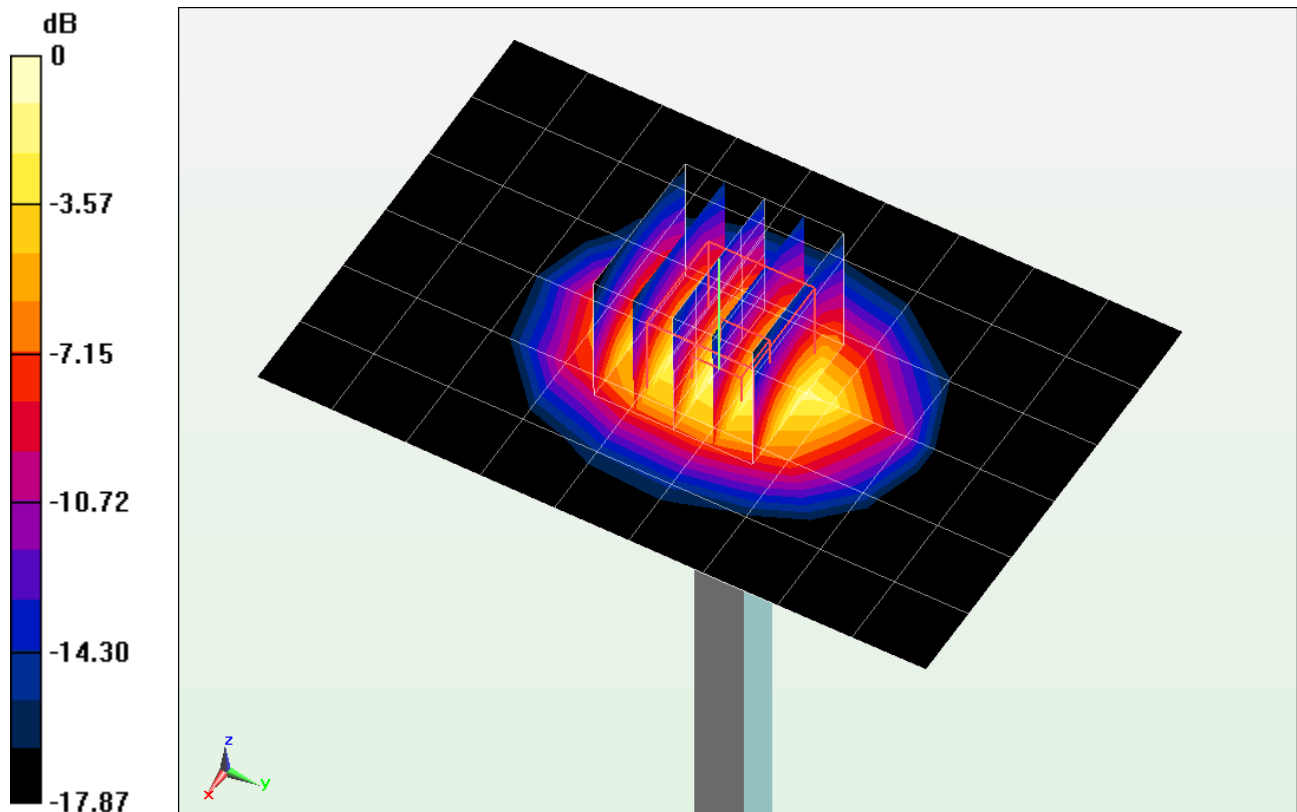
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 7.10 W/kg

SAR(1 g) = 3.89 W/kg

Deviation = -3.95%



0 dB = 4.35 W/kg = 6.38 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.576 \text{ S/m}$; $\epsilon_r = 52.111$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-19-2014; Ambient Temp: 24.1°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN3914; ConvF(7.51, 7.51, 7.51); Calibrated: 10/23/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

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

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

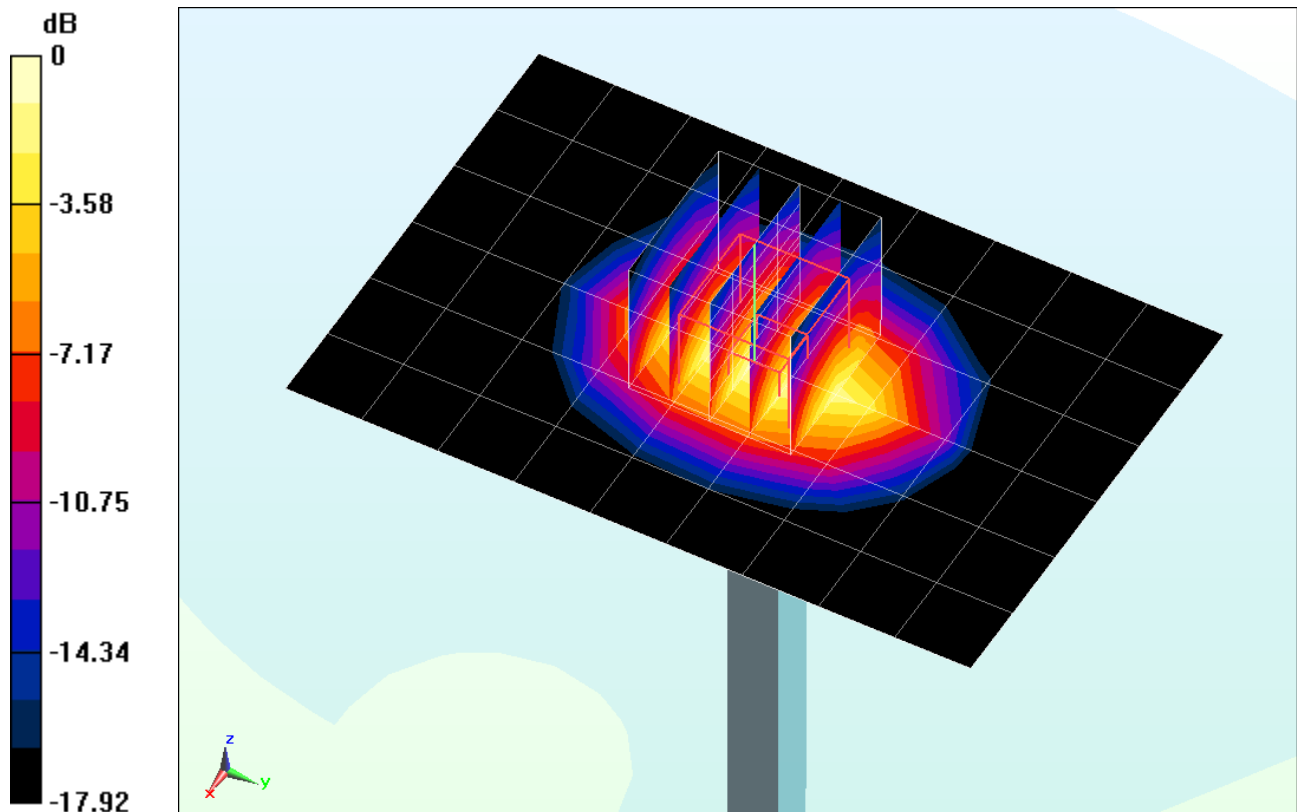
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 7.85 W/kg

SAR(1 g) = 4.27 W/kg

Deviation = 5.43%



0 dB = 4.78 W/kg = 6.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 719

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.937 \text{ S/m}$; $\epsilon_r = 51.331$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-12-2014; Ambient Temp: 24.6°C; Tissue Temp: 24.0°C

Probe: ES3DV3 - SN3318; ConvF(4.31, 4.31, 4.31); Calibrated: 4/29/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1364; Calibrated: 4/22/2013

Phantom: ELI left; Type: QDOVA002AA; Serial: TP:1202

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

2450 MHz System Verification

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

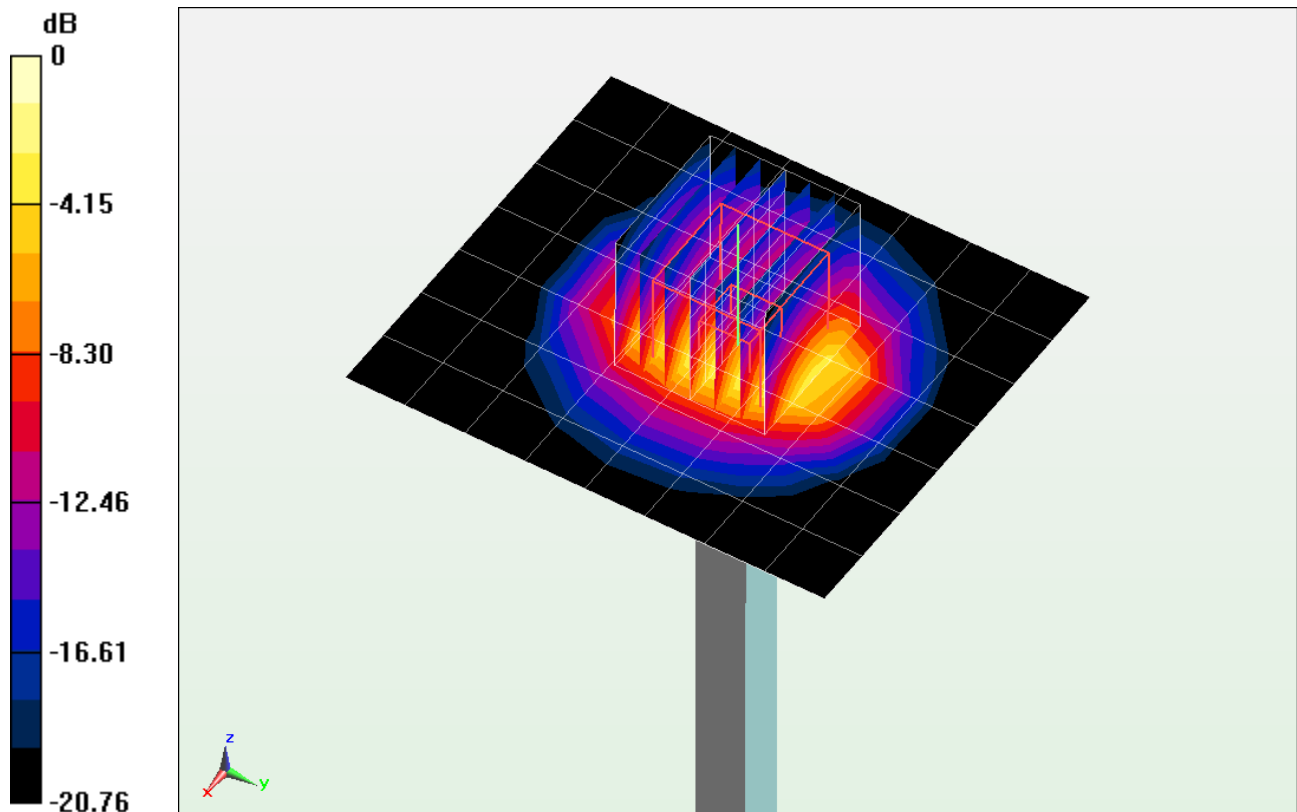
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 11.1 W/kg

SAR(1 g) = 5.41 W/kg

Deviation = 4.64%



0 dB = 7.09 W/kg = 8.51 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 5200 MHz; Type: D5GHzV2; Serial: 1120

Communication System: UID 0, CW; Frequency: 5200 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body; Medium parameters used:

$f = 5200 \text{ MHz}$; $\sigma = 5.147 \text{ S/m}$; $\epsilon_r = 47.331$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-06-2014; Ambient Temp: 24.0°C; Tissue Temp: 23.7°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 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

5200 MHz System Verification

Area Scan (7x8x1): Measurement grid: dx=10mm, dy=10mm

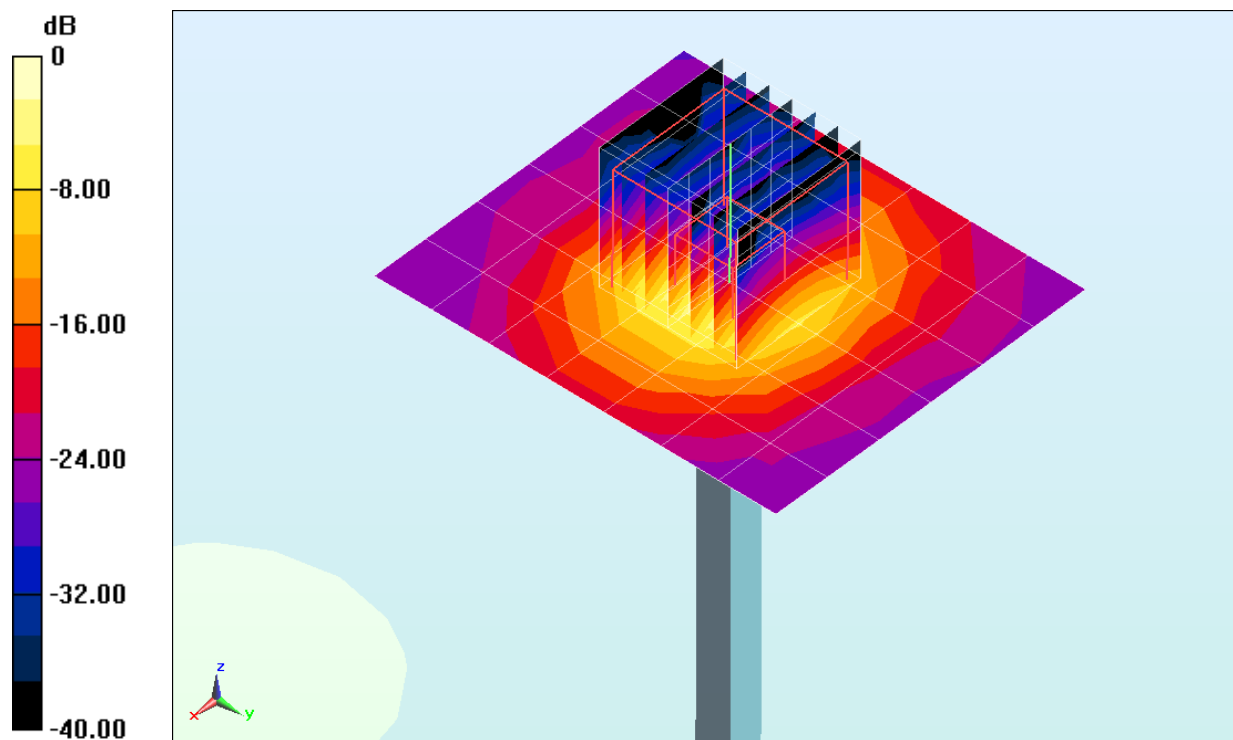
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 32.9 W/kg

SAR(1 g) = 7.7 W/kg

Deviation = 0.52%



0 dB = 19.7 W/kg = 12.94 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 5300 MHz; Type: D5GHzV2; Serial: 1120

Communication System: UID 0, CW; Frequency: 5300 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body; Medium parameters used:

$f = 5300 \text{ MHz}$; $\sigma = 5.298 \text{ S/m}$; $\epsilon_r = 47.17$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-06-2014; Ambient Temp: 24.0°C; Tissue Temp: 23.8°C

Probe: EX3DV4 - SN3914; ConvF(4.32, 4.32, 4.32); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

5300 MHz System Verification

Area Scan (7x8x1): Measurement grid: dx=10mm, dy=10mm

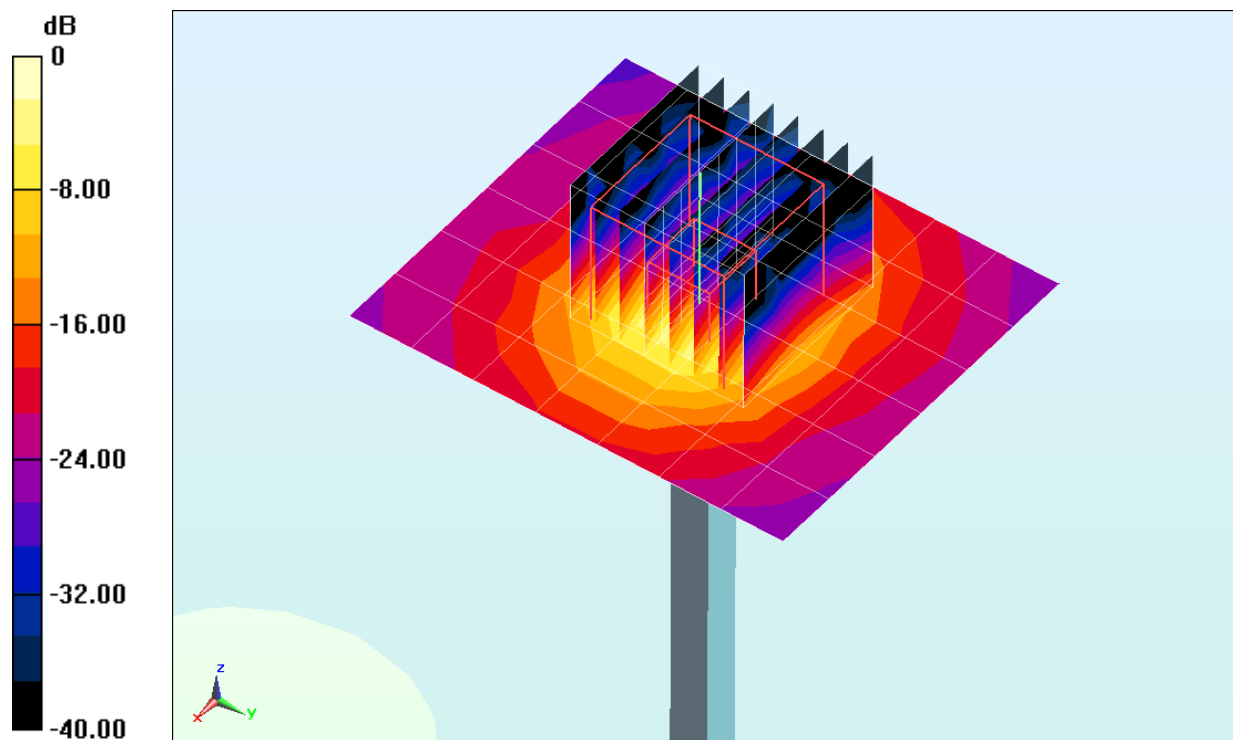
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 34.0 W/kg

SAR(1 g) = 7.65 W/kg

Deviation = -0.39%



0 dB = 19.7 W/kg = 12.94 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 5500 MHz; Type: D5GHzV2; Serial: 1120

Communication System: UID 0, CW; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body; Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 5.6 \text{ S/m}$; $\epsilon_r = 46.464$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-06-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.8°C

Probe: EX3DV4 - SN3914; ConvF(4.07, 4.07, 4.07); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

5500 MHz System Verification

Area Scan (7x8x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

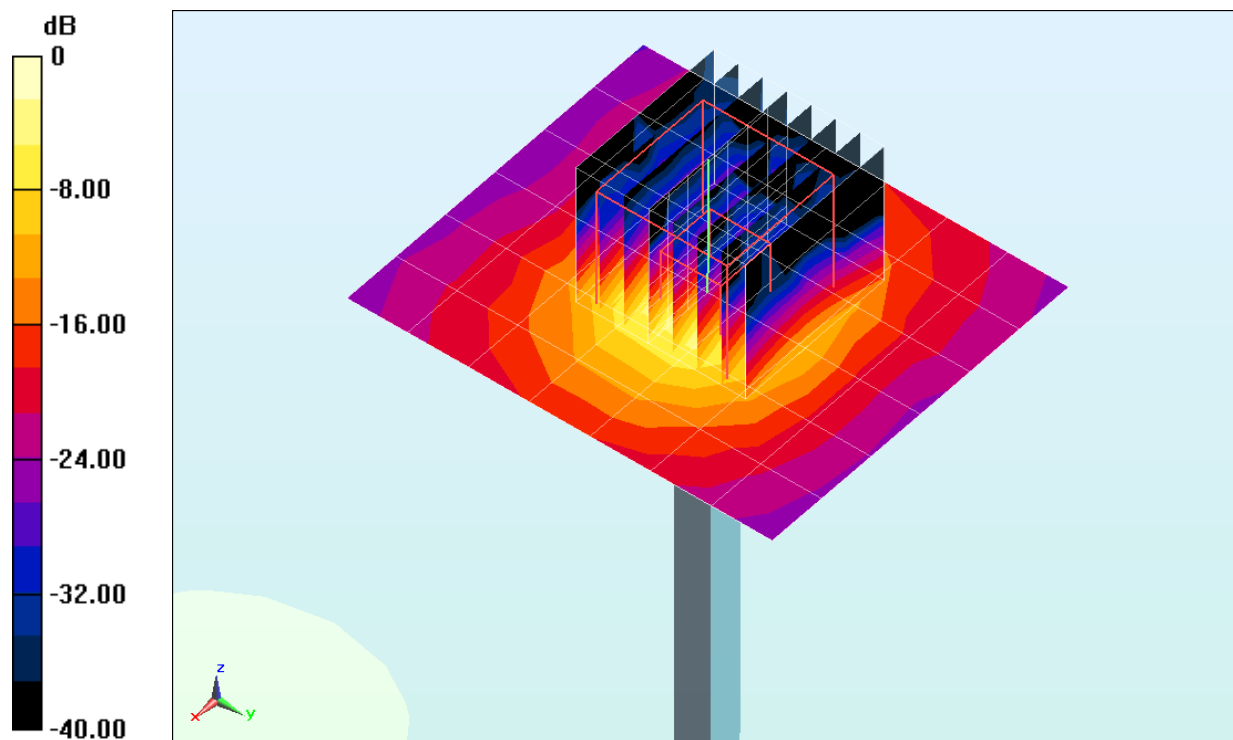
Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power = 20.0 dBm (100mW)

Peak SAR (extrapolated) = 36.5 W/kg

SAR(1 g) = 7.84 W/kg

Deviation = -1.75%



0 dB = 20.6 W/kg = 13.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 5800 MHz; Type: D5GHzV2; Serial: 1120

Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body; Medium parameters used:

$f = 5800 \text{ MHz}$; $\sigma = 6.062 \text{ S/m}$; $\epsilon_r = 45.987$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-06-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.8°C

Probe: EX3DV4 - SN3914; ConvF(4.14, 4.14, 4.14); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

5800 MHz System Verification

Area Scan (7x8x1): Measurement grid: dx=10mm, dy=10mm

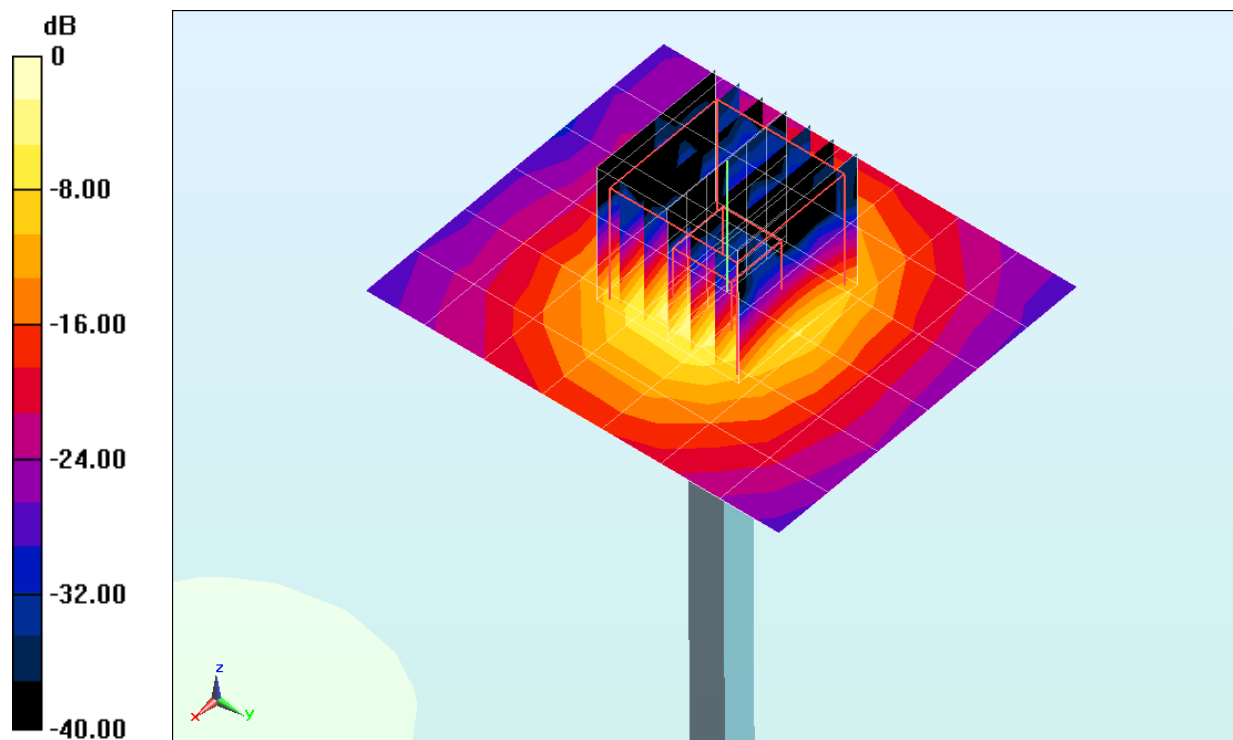
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 35.3 W/kg

SAR(1 g) = 7.17 W/kg

Deviation = -5.03%



0 dB = 19.2 W/kg = 12.83 dBW/kg