PCTEST ENGINEERING LABORATORY, INC.
7185 Oakland Mills Road, Columbia, MD 21046 USA
Tel. +1.410.290.6652 / Fax +1.410.290.6654
http://www.pctestlab.com

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 - 02/20/14
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
0Y1401280216-R1.A3L

FCC ID: **A3LSMG900P**

APPLICANT: **SAMSUNG ELECTRONICS, CO. LTD.**

DUT Type: Portable Handset
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model(s): SM-G900P

Equipment Class	Band & Mode	Tx Frequency	SAR		
			1 gm Head (W/kg)	1 gm Body-Worn (W/kg)	1 gm Hotspot (W/kg)
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.37	0.68	1.04
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	0.55	0.41	0.97
PCE	UMTS 850	826.40 - 846.60 MHz	0.37	0.52	0.52
PCE	UMTS 1900	1852.4 - 1907.6 MHz	1.06	0.72	1.09
PCE	CDMA/EVDO BC10 (§90S)	817.90 - 823.10 MHz	0.58	0.54	0.55
PCE	CDMA/EVDO BC0 (§22H)	824.70 - 848.31 MHz	0.63	1.01	1.01
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	1.06	0.67	0.64
PCE	LTE Band 26	814.7 - 848.3 MHz	0.32	0.46	0.46
PCE	LTE Band 25 (PCS)	1851.5 - 1913.5 MHz	0.76	0.73	0.98
PCE	LTE Band 41	2501 - 2685 MHz	0.25	0.29	0.45
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:			1.37		

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

Note: This revised Test Report (S/N: 0Y1401280216-R1.A3L) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

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

Randy Ortanez
President

ACCREDITED
TESTING LABORATORY
CERTIFICATE #2041.01

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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
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
CDMA/EVDO BC10 (§90S)	Voice/Data	817.90 - 823.10 MHz
CDMA/EVDO BC0 (§22H)	Voice/Data	824.70 - 848.31 MHz
PCS CDMA/EVDO	Voice/Data	1851.25 - 1908.75 MHz
LTE Band 26	Data	814.7 - 848.3 MHz
LTE Band 25 (PCS)	Data	1851.5 - 1913.5 MHz
LTE Band 41	Data	2501 - 2685 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 CDMA2000

- PCS CDMA/EVDO power is reduced when Hotspot is ON

1.2.2 WI-FI

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

1.3 Nominal and Maximum Output Power Specifications

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

1.3.1 Maximum Power

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	*1 TX 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**	**32.0**	**30.5**	**29.5**	**27.5**	**27.5**	**23.5**	**22.5**
	Nominal	**33.0**	**33.0**	**31.5**	**30.0**	**29.0**	**27.0**	**27.0**	**23.0**	**22.0**
GSM/GPRS/EDGE 1900	Maximum	**30.5**	**30.5**	**29.0**	**27.5**	**26.5**	**26.5**	**26.5**	**21.5**	**20.5**
	Nominal	**30.0**	**30.0**	**28.5**	**27.0**	**26.0**	**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**	**23.0**	**22.5**
	Nominal	**23.0**	**22.5**	**22.0**
UMTS Band 2 (1900 MHz)	Maximum	**23.0**	**22.5**	**22.0**
	Nominal	**22.5**	**22.0**	**21.5**

Mode / Band		Modulated Average (dBm)
CDMA/EVDO BC10 (§90S)	Maximum	**25.5**
	Nominal	**25.0**
CDMA/EVDO BC0 (§22H)	Maximum	**25.5**
	Nominal	**25.0**
PCS CDMA/EVDO	Maximum	**25.5**
	Nominal	**25.0**

Mode / Band		Modulated Average (dBm)
LTE Band 26	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 25 (PCS)	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 41	Maximum	**24.0**
	Nominal	**23.5**

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 20 MHz BW)	Maximum	**13.5**
	Nominal	**13.0**
IEEE 802.11n (5 GHz 40 MHz BW)	Maximum	**12.5**
	Nominal	**12.0**
IEEE 802.11ac (5 GHz 80 MHz BW)	Maximum	**11.5**
	Nominal	**11.0**
Bluetooth	Maximum	**10.0**
	Nominal	**9.5**
Bluetooth LE	Maximum	**8.5**
	Nominal	**8.0**

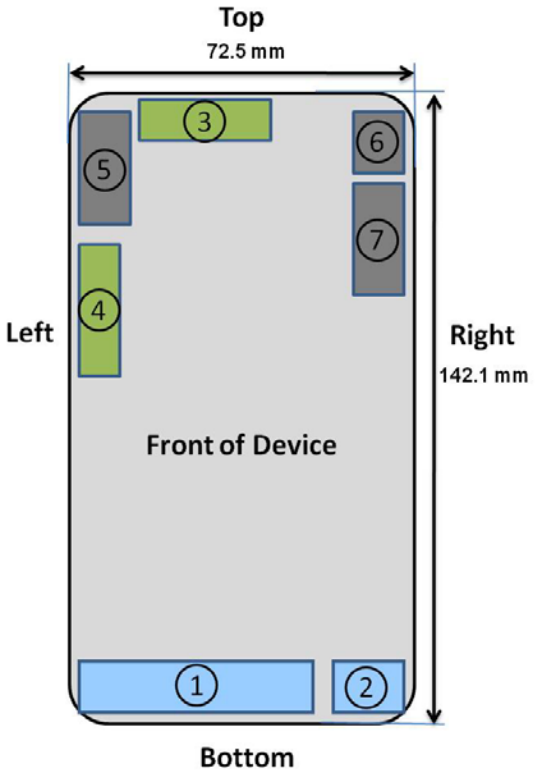
1.3.2 Reduced Power with Hotspot Mode Activated

Mode / Band		Modulated Average (dBm)
PCS CDMA/EVDO	Maximum	**22.5**
	Nominal	**22.0**

1.3.3 Reduced Power for Held-to-Ear Configuration

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 802.11n (5 GHz 20 MHz BW)	Maximum	**7.5**
	Nominal	**7.0**
IEEE 802.11n (5 GHz 40 MHz BW)	Maximum	**7.5**
	Nominal	**7.0**
IEEE 802.11ac (5 GHz 80 MHz BW)	Maximum	**7.5**
	Nominal	**7.0**
IEEE 802.11ac (5 GHz)	Maximum	**7.5**
	Nominal	**7.0**

1.4 DUT Antenna Location



1. **Main Antenna (Tx/Rx)**
   - CDMA/EVDO BC0/1/10
   - 850/1900 MHz GSM/GPRS/EDGE
   - UMTS Band 2/5
   - LTE Band 25/26
2. **LTE B41 Main Antenna (Tx/Rx)**
3. **BT/WLAN Antenna #1 (Tx/Rx)**
   - 2.4 GHz BT/WIFI
   - 5 GHz WIFI
4. **WLAN Antenna #2 (Tx/Rx)**
   - 2.4 GHz WIFI
   - 5 GHz WIFI
5. **MRD Antenna (Rx Only)**
6. **GPS Antenna (Rx Only)**
7. **LTE B41 Sub Antenna (Rx Only)**

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

Figure 1-1
DUT Antenna Locations

Table 1-1
Mobile Hotspot Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
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
EVDO BC10 (§90S)	Yes	Yes	No	Yes	No	Yes
EVDO BC0 (§22H)	Yes	Yes	No	Yes	No	Yes
PCS EVDO	Yes	Yes	No	Yes	No	Yes
LTE Band 26	Yes	Yes	No	Yes	No	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	No	Yes
LTE Band 41	Yes	Yes	No	Yes	Yes	No
2.4 GHz WLAN	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN DTS	Yes	Yes	Yes	No	No	Yes

Note:

1. 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.
2. 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 battery model: **EB-BG900BBU**.

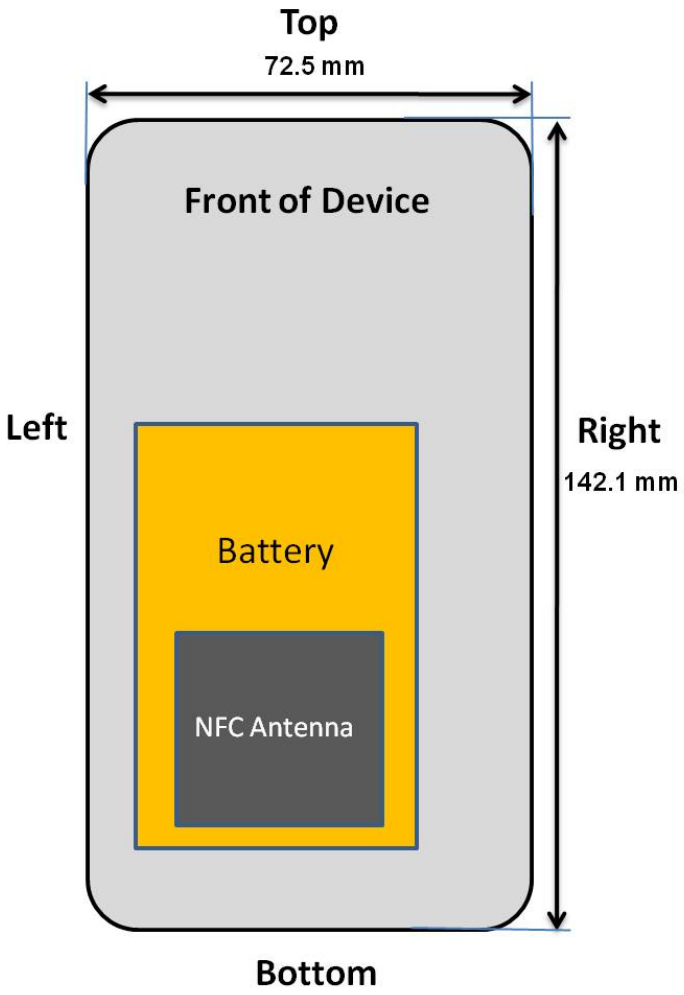


Figure 1-2
NFC Antenna Locations

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 WLAN 802.11n/ac. Each WLAN antenna can transmit independently or together when operating with MIMO.

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 + CDMA/EVDO data	N/A	N/A	N/A	Not supported by HW
19	CDMA/EVDO data + LTE	N/A	N/A	N/A	Not supported by HW
20	1x CDMA voice + LTE	N/A	N/A	N/A	Not supported by HW
21	1x CDMA voice + LTE + 2.4 GHz WI-FI	N/A	N/A	N/A	Not supported by HW
22	1x CDMA voice + LTE + 5 GHz WI-FI	N/A	N/A	N/A	Not supported by HW

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.
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 WLAN 802.11n/ac. Each WLAN antenna can transmit independently or together when operating with MIMO.
4. 2.4 GHz WLAN, 2.4 GHz Bluetooth, and 5 GHz WLAN share the same antenna path and cannot transmit simultaneously.
5. GSM/GPRS, UMTS, CDMA, and LTE share the same antenna path and cannot transmit simultaneously.
6. When the wireless router mode is enabled, all 5 GHz NII bands are disabled. Therefore 5 GHz NII WIFI is not considered in this section

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 tests with wireless charging cover were required since all reported SAR values were 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:

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

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; [(10/15)* √2.441] = 1.0 < 3.0. Per KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mW before calculation.

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

This device supports IEEE 802.11ac with the following features:

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

(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.

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.

CDMA 1X Advanced technology was not required for SAR since the maximum output powers for 1x Advanced was not more than 0.25 dB higher than the maximum measured powers for 1x and the measured SAR in any 1x mode exposure conditions was not greater than 1.2 W/kg.

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 with identical hardware were used 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	Head Serial Number (Reduced Power)	Body-Worn Serial Number	Hotspot Serial Number
GSM/GPRS/EDGE 850	32909	-	32909	32909
GSM/GPRS/EDGE 1900	32909	-	32909	32909
UMTS 850	32909	-	32909	32909
UMTS 1900	32909	-	32909	32909
CDMA/EVDO BC10 (§90S)	32906	-	32906	32906
CDMA/EVDO BC0 (§22H)	32906	-	32906	32906
PCS CDMA/EVDO	32912	328FA	32912	328FA
LTE Band 26	3290B	-	3290B	3290B
LTE Band 25 (PCS)	3290B	-	3290B	3290B
LTE Band 41	328FF	-	328FF	328FF
2.4 GHz WLAN (Ant1, Ant2, MIMO)	328C6	-	00F05	00F05
5.8 GHz DTS WLAN (Ant1)	31F35	-	32712	32712
5.8 GHz DTS WLAN (Ant2, MIMO)	31F35	-	15ECE	15ECE
5.2 - 5.7 GHz NII WLAN (Ant1)	31F35	-	32712	-
5.2 - 5.7 GHz NII WLAN (Ant2, MIMO)	31F35	-	15ECE	-

2 LTE INFORMATION

LTE Information					
FCC ID	**A3LSMG900P**				
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 26 (814.7 - 848.3 MHz)				
	LTE Band 25 (PCS) (1851.5 - 1913.5 MHz)				
	LTE Band 41 (2501 - 2685 MHz)				
Channel Bandwidths	LTE Band 26: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 25 (PCS): 3 MHz, 5 MHz, 10 MHz				
	LTE Band 41: 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 26: 1.4 MHz	814.7 (26697)		831.5 (26865)		848.3 (27033)
LTE Band 26: 3 MHz	815.5 (26705)		831.5 (26865)		847.5 (27025)
LTE Band 26: 5 MHz	816.5 (26715)		831.5 (26865)		846.5 (27015)
LTE Band 26: 10 MHz	819 (26740)		831.5 (26865)		844 (26990)
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)		1882.5 (26365)		1913.5 (26675)
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)		1882.5 (26365)		1912.5 (26665)
LTE Band 25 (PCS): 10 MHz	1855 (26090)		1882.5 (26365)		1910 (26640)
LTE Band 41: 10 MHz	2501 (39700)	2547 (40160)	2593 (40620)	2639 (41080)	2685 (41540)
LTE Band 41: 15 MHz	2503.5 (39725)	2548.3 (41073)	2593 (40620)	2637.8 (41068)	2682.5 (41515)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2636.5 (41055)
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				

3 INTRODUCTION

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

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

3.1 SAR Definition

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

Equation 3-1
SAR Mathematical Equation

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

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

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

where:

σ = conductivity of the tissue-simulating material (S/m)
ρ = mass density of the tissue-simulating material (kg/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]

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:

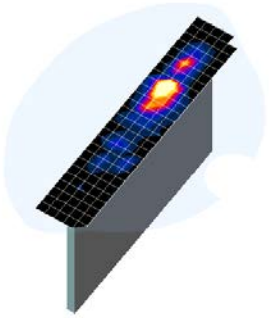


Figure 4-1
Sample SAR Area Scan

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01 (See Table 4-1) and IEEE 1528-2013.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01 (See Table 4-1) and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):

   a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 4-1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).

   b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.

   c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

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		
			$\Delta z_{zoom}(n)$	$\Delta z_{zoom}(1)$*	$\Delta z_{zoom}(n>1)$*	
≤ 2 GHz	≤ 15	≤ 8	≤ 5	≤ 4	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 30
2-3 GHz	≤ 12	≤ 5	≤ 5	≤ 4	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 30
3-4 GHz	≤ 12	≤ 5	≤ 4	≤ 3	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 28
4-5 GHz	≤ 10	≤ 4	≤ 3	≤ 2.5	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 25
5-6 GHz	≤ 10	≤ 4	≤ 2	≤ 2	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 22

*Also compliant to IEEE 1528-2013 Table 6

5 DEFINITION OF REFERENCE POINTS

5.1 EAR REFERENCE POINT

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

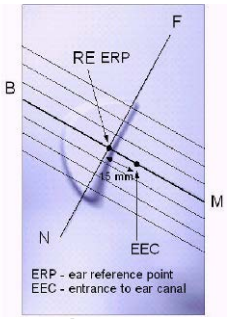


Figure 5-1
Close-Up Side view of ERP

5.2 HANDSET REFERENCE POINTS

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The test device was placed in a normal operating position with the acoustic output located along the "vertical centerline" on the front of the device aligned to the "ear reference point" (See Figure 5-3). The acoustic output was than 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

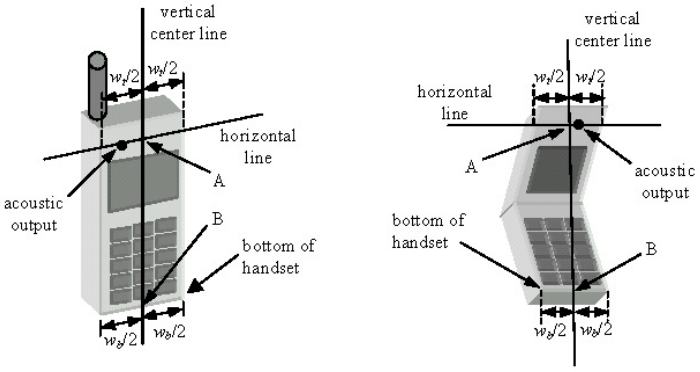


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

6 TEST CONFIGURATION POSITIONS FOR HANDSETS

6.1 Device Holder

The device holder is made out of low-loss POM material having the following dielectric parameters: relative permittivity ε = 3 and loss tangent δ = 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.

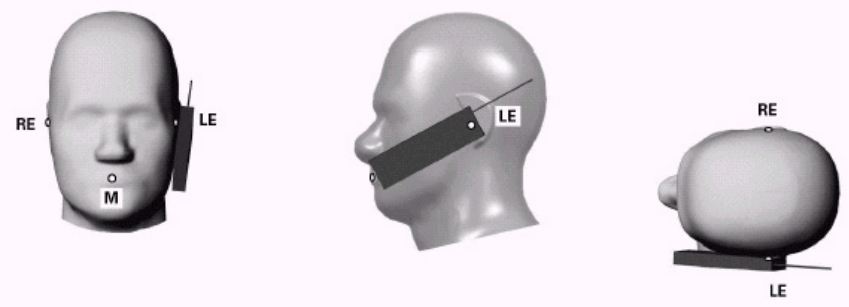


Figure 6-1 Front, Side and Top View of Cheek Position

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 was 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 / 15º 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 15degrees.
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).

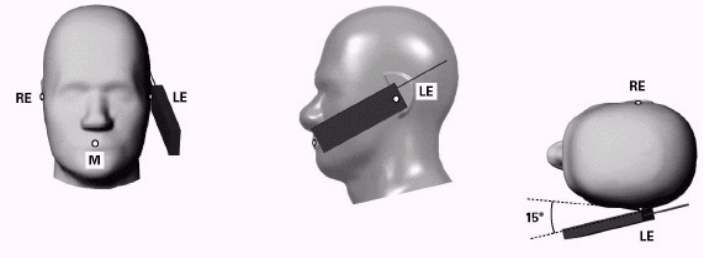


Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

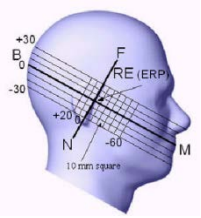


Figure 6-3
Side view w/ relevant markings

6.4 SAR Evaluations near the Mouth/Jaw Regions of the SAM Phantom

Antennas located near the bottom of a phone may require SAR measurements around the mouth and jaw regions of the SAM head phantom. This typically applies to clam-shell style phones that are generally longer in the unfolded normal use positions or to certain older style long rectangular phones. Per IEEE 1528-2013, a rotated SAM phantom is necessary to allow probe access to such regions. Both SAM heads of the TwinSAM-Chin20 are rotated 20 degrees around the NF line. Each head can be removed from the table for emptying and cleaning.

Under these circumstances, the following procedures apply, adopted from the FCC guidance on SAR handsets document FCC KDB Publication 648474 D04_v01. The SAR required in these regions of SAM should be measured using a flat phantom. The phone should be positioned with a separation distance of 4 mm between the ear reference point (ERP) and the outer surface of the flat phantom shell. While maintaining this distance at the ERP location, the low (bottom) edge of the phone should be lowered from the phantom to establish the same separation distance between the peak SAR location identified by the truncated partial SAR distribution measured with the SAM phantom. The distance from the peak SAR location to the phone is determined by the straight line passing perpendicularly through the phantom surface. When it is not feasible to maintain 4 mm separation at the ERP while also establishing the required separation at the peak SAR location, the top edge of the phone will be allowed to touch the phantom with a separation < 4 mm at the ERP. The phone should not be tilted to the left or right while placed in this inclined position to the flat phantom.

Figure 6-4 Twin SAM Chin20

6.5 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 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.

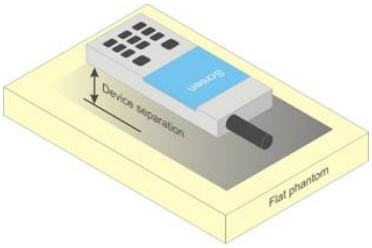


Figure 6-5
Sample Body-Worn Diagram

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.

6.6 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions; i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. The 1-g body and 10-g extremity SAR Exclusion Thresholds found in KDB Publication 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. Therefore, extremity SAR was not evaluated for this device.

6.7 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 x W ≥ 9 cm x 5 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.

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 *General Population* (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT *Occupational* (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.

8 FCC MEASUREMENT PROCEDURES

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 SCH_0 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.

Table 8-1
Parameters for Max. Power for RC1

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

Table 8-2
Parameters for Max. Power for RC3

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

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

8.3.2 CDMA2000 1x Advanced

This device additionally supports 1x Advanced. Conducted powers were measured using SO75 with RC8 on the uplink and RC11 on the downlink per Oct 2011 TCB Workshop notes. Smart blanking was disabled for all measurements. The EUT was configured with forward power control Mode 000 and reverse power control at 400 bps. Conducted powers were measured on an Agilent 8960 Series 10 Wireless Communications Test Set, Model E5515C using the CDMA2000 1x Advanced application, Option E1962B-410.

Based on the maximum output power measured for 1x Advanced, SAR would have to be evaluated for 1x advanced if the maximum output for 1x Advanced is more than 0.25 dB higher than the maximum measured for 1x. Also, if the measured SAR in any 1x mode exposure conditions (head, body etc.) is larger than 1.2 W/kg, the highest of those configurations above 1.2 W/kg for each exposure condition in 1x Advanced has to be repeated. All measured SAR in 1x mode higher than 1.5 W/kg must be repeated for 1x Advanced.

8.3.3 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.

8.3.4 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 SCH_0 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.

8.3.5 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.

8.3.6 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 ¼ 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

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 βc=9 and βd=15, and power offset parameters of ΔACK= ΔNACK =5 and ΔCQI=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} *(Note1, 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 β_c/β_d =12/15, β_{hs}/β_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 ≤ 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	β_{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	β_{ed1}: 47/15 β_{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 β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH 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-DPDCH 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.

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 ½ dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is <1.45 W/kg.

8.5.5 TDD

LTE TDD is tested at the highest duty factor using UL-DL configuration 0 with special subframe configuration 6 and applying the FDD LTE procedures in KDB 941225. SAR testing was performed using the extended cyclic prefix listed in 3GPP TS 36.211 Section 4.

8.6 SAR Testing with 802.11 Transmitters

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

8.6.1 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 SAR evaluation in 802.11b mode. 802.11g/n modes and higher data rates for 802.11b were additionally evaluated for SAR if the output power of the respective mode was 0.25 dB or higher than the powers of the SAR configurations tested in the 802.11b mode.

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

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

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. For 2.4 GHz MIMO, 802.11n was evaluated. 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.

9 RF CONDUCTED POWERS

9.1 CDMA Conducted Powers

Table 9-1
Maximum CDMA Conducted Powers with Hotspot Inactive

Band	Channel	Rule Part	Frequency	SO55 [dBm]	SO55 [dBm]	SO75 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	RC1	RC3	RC11	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	564	90S	820.1	25.18	25.08	25.16	25.07	25.09	25.10	25.07
Cellular	1013	22H	824.7	25.16	25.08	25.15	25.08	25.11	25.11	25.07
	384	22H	836.52	25.27	25.15	25.24	25.18	25.16	25.16	25.12
	777	22H	848.31	25.05	25.07	25.11	24.98	25.04	25.14	25.03
PCS	25	24E	1851.25	25.19	25.10	25.07	25.06	25.07	25.10	25.08
	600	24E	1880	25.16	25.25	25.11	25.08	25.10	25.18	25.17
	1175	24E	1908.75	25.21	25.15	25.14	25.06	25.06	25.15	25.13

Table 9-2
Reduced CDMA Conducted Powers with Hotspot Active

Band	Channel	Rule Part	Frequency	SO55 [dBm]	SO55 [dBm]	SO75 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	RC1	RC3	RC11	FCH+SCH	FCH	(RTAP)	(RETAP)
PCS	25	24E	1851.25	22.32	22.34	22.39	22.30	22.35	22.39	22.36
	600	24E	1880	22.13	22.28	22.30	22.17	22.18	22.28	22.27
	1175	24E	1908.75	22.39	22.44	22.47	22.43	22.46	22.43	22.42

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

Per 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. Head SAR was additionally evaluated with EVDO Rev. A to determine compliance for held-to-ear VoIP operations.

Per October 2011 TCB Workshop:

1. CDMA 1X Advanced technology was not required for SAR since the maximum output powers for 1x Advanced was not more than 0.25 dB higher than the maximum measured powers for 1x and the measured SAR in any 1x mode exposure conditions was not greater than 1.2 W/kg. See Section 8.3.2 for 1x Advanced test set up.

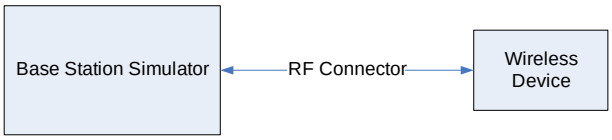


Figure 9-1
Power Measurement Setup

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	33.21	33.22	31.13	29.35	**28.60**	27.02	26.90	23.35	22.09
	190	33.14	33.18	31.08	29.55	**28.57**	26.80	26.76	23.30	22.05
	251	33.47	33.47	31.54	29.61	**28.83**	26.98	26.95	23.40	22.23
GSM 1900	512	30.26	30.25	28.37	26.81	**25.57**	26.15	26.07	21.50	20.40
	661	30.41	30.40	28.63	26.94	**25.88**	25.79	25.76	21.45	20.14
	810	30.17	30.17	28.45	26.92	**25.69**	25.75	25.63	21.34	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	24.18	24.19	25.11	25.09	**25.59**	17.99	20.88	19.09	19.08
	190	24.11	24.15	25.06	25.29	**25.56**	17.77	20.74	19.04	19.04
	251	24.44	24.44	25.52	25.35	**25.82**	17.95	20.93	19.14	19.22
GSM 1900	512	21.23	21.22	22.35	22.55	**22.56**	17.12	20.05	17.24	17.39
	661	21.38	21.37	22.61	22.68	**22.87**	16.76	19.74	17.19	17.13
	810	21.14	21.14	22.43	22.66	**22.68**	16.72	19.61	17.08	17.04
GSM 850	Frame Avg.Targets:	23.97	23.97	25.48	25.74	**25.99**	17.97	20.98	18.74	18.99
GSM 1900		20.97	20.97	22.48	22.74	**22.99**	16.97	19.98	16.74	16.99

Note:

1. Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
2. 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. 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.
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

Figure 9-2
Power Measurement Setup

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	23.17	22.96	22.95	22.95	22.91	22.93	-
99		12.2 kbps AMR	23.20	22.98	22.88	22.97	22.90	22.88	-
6	HSDPA	Subtest 1	21.75	21.64	21.69	21.58	21.82	21.71	0
6		Subtest 2	21.84	21.76	21.85	21.69	21.97	21.88	0
6		Subtest 3	21.40	21.39	21.31	21.22	21.48	21.41	0.5
6		Subtest 4	21.35	21.37	21.32	21.21	21.46	21.35	0.5
6	HSUPA	Subtest 1	21.25	21.21	20.85	21.30	21.23	21.19	0
6		Subtest 2	20.69	20.55	20.80	20.73	21.07	20.93	2
6		Subtest 3	20.54	20.49	20.24	20.56	20.61	20.53	1
6		Subtest 4	20.72	20.80	20.89	21.25	21.50	21.49	2
6		Subtest 5	20.60	20.52	20.50	20.65	20.60	20.51	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 HSPA subtests may be up to 1 dB more than specified by 3GPP, but also as low as 0 dB according to the chipset implementation in this model.

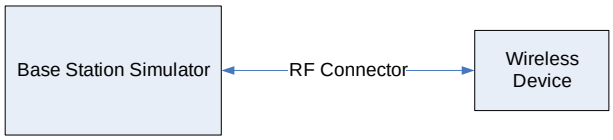


Figure 9-3
Power Measurement Setup

9.4 LTE Conducted Powers

9.4.1 LTE Band 26

Table 9-3
LTE Band 26 Conducted Powers – 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	819	26740	10	QPSK	1	0	23.15	0	0
	819	26740	10	QPSK	1	25	23.24	0	0
	819	26740	10	QPSK	1	49	23.22	0	0
	819	26740	10	QPSK	25	0	21.97	0-1	1
	819	26740	10	QPSK	25	12	21.91	0-1	1
	819	26740	10	QPSK	25	25	22.06	0-1	1
	819	26740	10	QPSK	50	0	22.04	0-1	1
	819	26740	10	16QAM	1	0	22.23	0-1	1
	819	26740	10	16QAM	1	25	21.92	0-1	1
	819	26740	10	16QAM	1	49	22.07	0-1	1
	819	26740	10	16QAM	25	0	21.02	0-2	2
	819	26740	10	16QAM	25	12	21.00	0-2	2
	819	26740	10	16QAM	25	25	21.19	0-2	2
	819	26740	10	16QAM	50	0	21.03	0-2	2
Mid	831.5	26865	10	QPSK	1	0	23.12	0	0
	831.5	26865	10	QPSK	1	25	23.09	0	0
	831.5	26865	10	QPSK	1	49	23.17	0	0
	831.5	26865	10	QPSK	25	0	21.99	0-1	1
	831.5	26865	10	QPSK	25	12	22.00	0-1	1
	831.5	26865	10	QPSK	25	25	21.95	0-1	1
	831.5	26865	10	QPSK	50	0	21.97	0-1	1
	831.5	26865	10	16QAM	1	0	22.16	0-1	1
	831.5	26865	10	16QAM	1	25	22.07	0-1	1
	831.5	26865	10	16QAM	1	49	22.13	0-1	1
	831.5	26865	10	16QAM	25	0	21.02	0-2	2
	831.5	26865	10	16QAM	25	12	21.04	0-2	2
	831.5	26865	10	16QAM	25	25	20.99	0-2	2
	831.5	26865	10	16QAM	50	0	20.95	0-2	2
High	844	26990	10	QPSK	1	0	23.26	0	0
	844	26990	10	QPSK	1	25	**23.40**	0	0
	844	26990	10	QPSK	1	49	23.00	0	0
	844	26990	10	QPSK	25	0	**22.31**	0-1	1
	844	26990	10	QPSK	25	12	22.29	0-1	1
	844	26990	10	QPSK	25	25	22.18	0-1	1
	844	26990	10	QPSK	50	0	22.23	0-1	1
	844	26990	10	16QAM	1	0	22.14	0-1	1
	844	26990	10	16QAM	1	25	22.04	0-1	1
	844	26990	10	16QAM	1	49	22.08	0-1	1
	844	26990	10	16QAM	25	0	21.28	0-2	2
	844	26990	10	16QAM	25	12	21.28	0-2	2
	844	26990	10	16QAM	25	25	21.23	0-2	2
	844	26990	10	16QAM	50	0	21.18	0-2	2

Table 9-4
LTE Band 26 Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	816.5	26715	5	QPSK	1	0	23.03	0	0
	816.5	26715	5	QPSK	1	12	22.93	0	0
	816.5	26715	5	QPSK	1	24	22.97	0	0
	816.5	26715	5	QPSK	12	0	21.96	0-1	1
	816.5	26715	5	QPSK	12	6	21.94	0-1	1
	816.5	26715	5	QPSK	12	13	21.74	0-1	1
	816.5	26715	5	QPSK	25	0	21.99	0-1	1
	816.5	26715	5	16-QAM	1	0	22.24	0-1	1
	816.5	26715	5	16-QAM	1	12	22.14	0-1	1
	816.5	26715	5	16-QAM	1	24	22.15	0-1	1
	816.5	26715	5	16-QAM	12	0	20.96	0-2	2
	816.5	26715	5	16-QAM	12	6	20.99	0-2	2
	816.5	26715	5	16-QAM	12	13	20.92	0-2	2
	816.5	26715	5	16-QAM	25	0	21.08	0-2	2
Mid	831.5	26865	5	QPSK	1	0	23.00	0	0
	831.5	26865	5	QPSK	1	12	22.90	0	0
	831.5	26865	5	QPSK	1	24	22.98	0	0
	831.5	26865	5	QPSK	12	0	21.91	0-1	1
	831.5	26865	5	QPSK	12	6	21.88	0-1	1
	831.5	26865	5	QPSK	12	13	21.85	0-1	1
	831.5	26865	5	QPSK	25	0	21.86	0-1	1
	831.5	26865	5	16-QAM	1	0	22.07	0-1	1
	831.5	26865	5	16-QAM	1	12	21.99	0-1	1
	831.5	26865	5	16-QAM	1	24	22.06	0-1	1
	831.5	26865	5	16-QAM	12	0	20.79	0-2	2
	831.5	26865	5	16-QAM	12	6	20.78	0-2	2
	831.5	26865	5	16-QAM	12	13	20.76	0-2	2
	831.5	26865	5	16-QAM	25	0	20.88	0-2	2
High	846.5	27015	5	QPSK	1	0	23.19	0	0
	846.5	27015	5	QPSK	1	12	23.04	0	0
	846.5	27015	5	QPSK	1	24	22.69	0	0
	846.5	27015	5	QPSK	12	0	22.21	0-1	1
	846.5	27015	5	QPSK	12	6	22.02	0-1	1
	846.5	27015	5	QPSK	12	13	21.89	0-1	1
	846.5	27015	5	QPSK	25	0	22.03	0-1	1
	846.5	27015	5	16-QAM	1	0	22.12	0-1	1
	846.5	27015	5	16-QAM	1	12	21.98	0-1	1
	846.5	27015	5	16-QAM	1	24	21.63	0-1	1
	846.5	27015	5	16-QAM	12	0	21.19	0-2	2
	846.5	27015	5	16-QAM	12	6	21.02	0-2	2
	846.5	27015	5	16-QAM	12	13	20.79	0-2	2
	846.5	27015	5	16-QAM	25	0	21.04	0-2	2

Table 9-5
LTE Band 26 Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	815.5	26705	3	QPSK	1	0	23.10	0	0
	815.5	26705	3	QPSK	1	7	23.01	0	0
	815.5	26705	3	QPSK	1	14	22.93	0	0
	815.5	26705	3	QPSK	8	0	21.97	0-1	1
	815.5	26705	3	QPSK	8	4	22.01	0-1	1
	815.5	26705	3	QPSK	8	7	21.93	0-1	1
	815.5	26705	3	QPSK	15	0	21.95	0-1	1
	815.5	26705	3	16-QAM	1	0	22.27	0-1	1
	815.5	26705	3	16-QAM	1	7	22.10	0-1	1
	815.5	26705	3	16-QAM	1	14	22.14	0-1	1
	815.5	26705	3	16-QAM	8	0	20.87	0-2	2
	815.5	26705	3	16-QAM	8	4	20.93	0-2	2
	815.5	26705	3	16-QAM	8	7	20.85	0-2	2
	815.5	26705	3	16-QAM	15	0	21.09	0-2	2
Mid	831.5	26865	3	QPSK	1	0	23.00	0	0
	831.5	26865	3	QPSK	1	7	22.94	0	0
	831.5	26865	3	QPSK	1	14	22.95	0	0
	831.5	26865	3	QPSK	8	0	21.87	0-1	1
	831.5	26865	3	QPSK	8	4	21.79	0-1	1
	831.5	26865	3	QPSK	8	7	21.86	0-1	1
	831.5	26865	3	QPSK	15	0	21.83	0-1	1
	831.5	26865	3	16-QAM	1	0	22.41	0-1	1
	831.5	26865	3	16-QAM	1	7	22.33	0-1	1
	831.5	26865	3	16-QAM	1	14	22.37	0-1	1
	831.5	26865	3	16-QAM	8	0	20.99	0-2	2
	831.5	26865	3	16-QAM	8	4	20.92	0-2	2
	831.5	26865	3	16-QAM	8	7	20.93	0-2	2
	831.5	26865	3	16-QAM	15	0	20.93	0-2	2
High	847.5	27025	3	QPSK	1	0	23.18	0	0
	847.5	27025	3	QPSK	1	7	22.88	0	0
	847.5	27025	3	QPSK	1	14	22.65	0	0
	847.5	27025	3	QPSK	8	0	22.04	0-1	1
	847.5	27025	3	QPSK	8	4	21.90	0-1	1
	847.5	27025	3	QPSK	8	7	21.80	0-1	1
	847.5	27025	3	QPSK	15	0	21.91	0-1	1
	847.5	27025	3	16-QAM	1	0	22.35	0-1	1
	847.5	27025	3	16-QAM	1	7	22.04	0-1	1
	847.5	27025	3	16-QAM	1	14	21.88	0-1	1
	847.5	27025	3	16-QAM	8	0	21.02	0-2	2
	847.5	27025	3	16-QAM	8	4	20.88	0-2	2
	847.5	27025	3	16-QAM	8	7	20.79	0-2	2
	847.5	27025	3	16-QAM	15	0	20.91	0-2	2

Table 9-6
LTE Band 26 Conducted Powers – 1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	814.7	26697	1.4	QPSK	1	0	22.96	0	0
	814.7	26697	1.4	QPSK	1	2	22.90	0	0
	814.7	26697	1.4	QPSK	1	5	22.92	0	0
	814.7	26697	1.4	QPSK	3	0	22.98	0	0
	814.7	26697	1.4	QPSK	3	2	23.00	0	0
	814.7	26697	1.4	QPSK	3	3	22.96	0	0
	814.7	26697	1.4	QPSK	6	0	22.04	0-1	1
	814.7	26697	1.4	16-QAM	1	0	21.93	0-1	1
	814.7	26697	1.4	16-QAM	1	2	21.81	0-1	1
	814.7	26697	1.4	16-QAM	1	5	21.85	0-1	1
	814.7	26697	1.4	16-QAM	3	0	22.00	0-1	1
	814.7	26697	1.4	16-QAM	3	2	22.03	0-1	1
	814.7	26697	1.4	16-QAM	3	3	22.01	0-1	1
	814.7	26697	1.4	16-QAM	6	0	21.26	0-2	2
Mid	831.5	26865	1.4	QPSK	1	0	22.81	0	0
	831.5	26865	1.4	QPSK	1	2	22.76	0	0
	831.5	26865	1.4	QPSK	1	5	22.82	0	0
	831.5	26865	1.4	QPSK	3	0	22.84	0	0
	831.5	26865	1.4	QPSK	3	2	22.86	0	0
	831.5	26865	1.4	QPSK	3	3	22.88	0	0
	831.5	26865	1.4	QPSK	6	0	21.87	0-1	1
	831.5	26865	1.4	16-QAM	1	0	21.68	0-1	1
	831.5	26865	1.4	16-QAM	1	2	21.67	0-1	1
	831.5	26865	1.4	16-QAM	1	5	21.71	0-1	1
	831.5	26865	1.4	16-QAM	3	0	21.85	0-1	1
	831.5	26865	1.4	16-QAM	3	2	21.93	0-1	1
	831.5	26865	1.4	16-QAM	3	3	21.94	0-1	1
	831.5	26865	1.4	16-QAM	6	0	21.13	0-2	2
High	848.3	27033	1.4	QPSK	1	0	22.73	0	0
	848.3	27033	1.4	QPSK	1	2	22.67	0	0
	848.3	27033	1.4	QPSK	1	5	22.58	0	0
	848.3	27033	1.4	QPSK	3	0	22.81	0	0
	848.3	27033	1.4	QPSK	3	2	22.67	0	0
	848.3	27033	1.4	QPSK	3	3	22.72	0	0
	848.3	27033	1.4	QPSK	6	0	21.76	0-1	1
	848.3	27033	1.4	16-QAM	1	0	21.68	0-1	1
	848.3	27033	1.4	16-QAM	1	2	21.63	0-1	1
	848.3	27033	1.4	16-QAM	1	5	21.51	0-1	1
	848.3	27033	1.4	16-QAM	3	0	21.83	0-1	1
	848.3	27033	1.4	16-QAM	3	2	21.78	0-1	1
	848.3	27033	1.4	16-QAM	3	3	21.78	0-1	1
	848.3	27033	1.4	16-QAM	6	0	20.97	0-2	2

9.4.2 LTE Band 25 (PCS)

Table 9-7
LTE Band 25 (PCS) Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1855	26090	10	QPSK	1	0	23.39	0	0
	1855	26090	10	QPSK	1	25	23.40	0	0
	1855	26090	10	QPSK	1	49	23.39	0	0
	1855	26090	10	QPSK	25	0	22.15	0-1	1
	1855	26090	10	QPSK	25	12	22.14	0-1	1
	1855	26090	10	QPSK	25	25	22.12	0-1	1
	1855	26090	10	QPSK	50	0	22.20	0-1	1
	1855	26090	10	16QAM	1	0	22.08	0-1	1
	1855	26090	10	16QAM	1	25	22.11	0-1	1
	1855	26090	10	16QAM	1	49	22.19	0-1	1
	1855	26090	10	16QAM	25	0	21.23	0-2	2
	1855	26090	10	16QAM	25	12	21.18	0-2	2
	1855	26090	10	16QAM	25	25	21.11	0-2	2
	1855	26090	10	16QAM	50	0	21.28	0-2	2
Mid	1882.5	26365	10	QPSK	1	0	23.31	0	0
	1882.5	26365	10	QPSK	1	25	23.40	0	0
	1882.5	26365	10	QPSK	1	49	**23.44**	0	0
	1882.5	26365	10	QPSK	25	0	22.32	0-1	1
	1882.5	26365	10	QPSK	25	12	22.36	0-1	1
	1882.5	26365	10	QPSK	25	25	**22.41**	0-1	1
	1882.5	26365	10	QPSK	50	0	22.39	0-1	1
	1882.5	26365	10	16QAM	1	0	22.26	0-1	1
	1882.5	26365	10	16QAM	1	25	22.16	0-1	1
	1882.5	26365	10	16QAM	1	49	22.39	0-1	1
	1882.5	26365	10	16QAM	25	0	21.27	0-2	2
	1882.5	26365	10	16QAM	25	12	21.20	0-2	2
	1882.5	26365	10	16QAM	25	25	21.29	0-2	2
	1882.5	26365	10	16QAM	50	0	21.30	0-2	2
High	1910	26640	10	QPSK	1	0	23.25	0	0
	1910	26640	10	QPSK	1	25	23.31	0	0
	1910	26640	10	QPSK	1	49	23.38	0	0
	1910	26640	10	QPSK	25	0	22.12	0-1	1
	1910	26640	10	QPSK	25	12	22.08	0-1	1
	1910	26640	10	QPSK	25	25	22.23	0-1	1
	1910	26640	10	QPSK	50	0	22.20	0-1	1
	1910	26640	10	16QAM	1	0	22.13	0-1	1
	1910	26640	10	16QAM	1	25	22.29	0-1	1
	1910	26640	10	16QAM	1	49	22.35	0-1	1
	1910	26640	10	16QAM	25	0	21.23	0-2	2
	1910	26640	10	16QAM	25	12	21.16	0-2	2
	1910	26640	10	16QAM	25	25	21.27	0-2	2
	1910	26640	10	16QAM	50	0	21.15	0-2	2

Table 9-8
LTE Band 25 (PCS) Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1852.5	26065	5	QPSK	1	0	23.08	0	0
	1852.5	26065	5	QPSK	1	12	23.13	0	0
	1852.5	26065	5	QPSK	1	24	23.14	0	0
	1852.5	26065	5	QPSK	12	0	22.05	0-1	1
	1852.5	26065	5	QPSK	12	6	22.04	0-1	1
	1852.5	26065	5	QPSK	12	13	22.07	0-1	1
	1852.5	26065	5	QPSK	25	0	22.05	0-1	1
	1852.5	26065	5	16-QAM	1	0	22.23	0-1	1
	1852.5	26065	5	16-QAM	1	12	22.35	0-1	1
	1852.5	26065	5	16-QAM	1	24	22.34	0-1	1
	1852.5	26065	5	16-QAM	12	0	21.03	0-2	2
	1852.5	26065	5	16-QAM	12	6	21.04	0-2	2
	1852.5	26065	5	16-QAM	12	13	21.06	0-2	2
	1852.5	26065	5	16-QAM	25	0	21.04	0-2	2
Mid	1882.5	26365	5	QPSK	1	0	23.03	0	0
	1882.5	26365	5	QPSK	1	12	23.04	0	0
	1882.5	26365	5	QPSK	1	24	23.09	0	0
	1882.5	26365	5	QPSK	12	0	22.11	0-1	1
	1882.5	26365	5	QPSK	12	6	22.07	0-1	1
	1882.5	26365	5	QPSK	12	13	22.17	0-1	1
	1882.5	26365	5	QPSK	25	0	22.07	0-1	1
	1882.5	26365	5	16-QAM	1	0	22.26	0-1	1
	1882.5	26365	5	16-QAM	1	12	22.28	0-1	1
	1882.5	26365	5	16-QAM	1	24	22.34	0-1	1
	1882.5	26365	5	16-QAM	12	0	21.12	0-2	2
	1882.5	26365	5	16-QAM	12	6	21.09	0-2	2
	1882.5	26365	5	16-QAM	12	13	21.19	0-2	2
	1882.5	26365	5	16-QAM	25	0	21.20	0-2	2
High	1912.5	26665	5	QPSK	1	0	23.19	0	0
	1912.5	26665	5	QPSK	1	12	23.15	0	0
	1912.5	26665	5	QPSK	1	24	23.16	0	0
	1912.5	26665	5	QPSK	12	0	22.01	0-1	1
	1912.5	26665	5	QPSK	12	6	21.98	0-1	1
	1912.5	26665	5	QPSK	12	13	22.10	0-1	1
	1912.5	26665	5	QPSK	25	0	22.01	0-1	1
	1912.5	26665	5	16-QAM	1	0	22.39	0-1	1
	1912.5	26665	5	16-QAM	1	12	22.31	0-1	1
	1912.5	26665	5	16-QAM	1	24	22.41	0-1	1
	1912.5	26665	5	16-QAM	12	0	21.15	0-2	2
	1912.5	26665	5	16-QAM	12	6	21.13	0-2	2
	1912.5	26665	5	16-QAM	12	13	21.22	0-2	2
	1912.5	26665	5	16-QAM	25	0	21.08	0-2	2

Table 9-9
LTE Band 25 (PCS) Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1851.5	26055	3	QPSK	1	0	23.09	0	0
	1851.5	26055	3	QPSK	1	7	23.14	0	0
	1851.5	26055	3	QPSK	1	14	23.19	0	0
	1851.5	26055	3	QPSK	8	0	22.02	0-1	1
	1851.5	26055	3	QPSK	8	4	22.03	0-1	1
	1851.5	26055	3	QPSK	8	7	22.04	0-1	1
	1851.5	26055	3	QPSK	15	0	22.04	0-1	1
	1851.5	26055	3	16-QAM	1	0	22.22	0-1	1
	1851.5	26055	3	16-QAM	1	7	22.21	0-1	1
	1851.5	26055	3	16-QAM	1	14	22.30	0-1	1
	1851.5	26055	3	16-QAM	8	0	21.01	0-2	2
	1851.5	26055	3	16-QAM	8	4	21.01	0-2	2
	1851.5	26055	3	16-QAM	8	7	21.04	0-2	2
	1851.5	26055	3	16-QAM	15	0	21.12	0-2	2
Mid	1882.5	26365	3	QPSK	1	0	23.16	0	0
	1882.5	26365	3	QPSK	1	7	23.22	0	0
	1882.5	26365	3	QPSK	1	14	23.24	0	0
	1882.5	26365	3	QPSK	8	0	22.10	0-1	1
	1882.5	26365	3	QPSK	8	4	22.07	0-1	1
	1882.5	26365	3	QPSK	8	7	22.13	0-1	1
	1882.5	26365	3	QPSK	15	0	22.09	0-1	1
	1882.5	26365	3	16-QAM	1	0	22.41	0-1	1
	1882.5	26365	3	16-QAM	1	7	22.34	0-1	1
	1882.5	26365	3	16-QAM	1	14	22.42	0-1	1
	1882.5	26365	3	16-QAM	8	0	21.09	0-2	2
	1882.5	26365	3	16-QAM	8	4	21.08	0-2	2
	1882.5	26365	3	16-QAM	8	7	21.16	0-2	2
	1882.5	26365	3	16-QAM	15	0	21.22	0-2	2
High	1913.5	26675	3	QPSK	1	0	23.14	0	0
	1913.5	26675	3	QPSK	1	7	23.08	0	0
	1913.5	26675	3	QPSK	1	14	23.11	0	0
	1913.5	26675	3	QPSK	8	0	22.04	0-1	1
	1913.5	26675	3	QPSK	8	4	21.97	0-1	1
	1913.5	26675	3	QPSK	8	7	22.03	0-1	1
	1913.5	26675	3	QPSK	15	0	22.12	0-1	1
	1913.5	26675	3	16-QAM	1	0	22.26	0-1	1
	1913.5	26675	3	16-QAM	1	7	22.14	0-1	1
	1913.5	26675	3	16-QAM	1	14	22.20	0-1	1
	1913.5	26675	3	16-QAM	8	0	21.09	0-2	2
	1913.5	26675	3	16-QAM	8	4	21.03	0-2	2
	1913.5	26675	3	16-QAM	8	7	21.06	0-2	2
	1913.5	26675	3	16-QAM	15	0	21.17	0-2	2

9.4.3 LTE Band 41

Table 9-10
LTE Band 41 Conducted Powers - 20 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	2506	39750	20	QPSK	1	0	23.76	0	0
	2506	39750	20	QPSK	1	50	23.75	0	0
	2506	39750	20	QPSK	1	99	23.78	0	0
	2506	39750	20	QPSK	50	0	22.61	0-1	1
	2506	39750	20	QPSK	50	25	22.74	0-1	1
	2506	39750	20	QPSK	50	50	22.59	0-1	1
	2506	39750	20	QPSK	100	0	22.71	0-1	1
	2506	39750	20	16QAM	1	0	22.67	0-1	1
	2506	39750	20	16QAM	1	50	22.59	0-1	1
	2506	39750	20	16QAM	1	99	22.72	0-1	1
	2506	39750	20	16QAM	50	0	21.54	0-2	2
	2506	39750	20	16QAM	50	25	21.54	0-2	2
	2506	39750	20	16QAM	50	50	21.63	0-2	2
	2506	39750	20	16QAM	100	0	21.55	0-2	2
Low Mid	2550	40185	20	QPSK	1	0	23.77	0	0
	2550	40185	20	QPSK	1	50	23.84	0	0
	2550	40185	20	QPSK	1	99	23.75	0	0
	2550	40185	20	QPSK	50	0	22.62	0-1	1
	2550	40185	20	QPSK	50	25	22.76	0-1	1
	2550	40185	20	QPSK	50	50	22.61	0-1	1
	2550	40185	20	QPSK	100	0	22.65	0-1	1
	2550	40185	20	16-QAM	1	0	22.71	0-1	1
	2550	40185	20	16-QAM	1	50	22.54	0-1	1
	2550	40185	20	16-QAM	1	99	22.64	0-1	1
	2550	40185	20	16-QAM	50	0	21.53	0-2	2
	2550	40185	20	16-QAM	50	25	21.53	0-2	2
	2550	40185	20	16-QAM	50	50	21.55	0-2	2
	2550	40185	20	16-QAM	100	0	21.56	0-2	2
Mid	2593	40620	20	QPSK	1	0	23.58	0	0
	2593	40620	20	QPSK	1	50	23.67	0	0
	2593	40620	20	QPSK	1	99	23.72	0	0
	2593	40620	20	QPSK	50	0	22.65	0-1	1
	2593	40620	20	QPSK	50	25	22.62	0-1	1
	2593	40620	20	QPSK	50	50	22.67	0-1	1
	2593	40620	20	QPSK	100	0	22.54	0-1	1
	2593	40620	20	16-QAM	1	0	22.55	0-1	1
	2593	40620	20	16-QAM	1	50	22.60	0-1	1
	2593	40620	20	16-QAM	1	99	22.71	0-1	1
	2593	40620	20	16-QAM	50	0	21.68	0-2	2
	2593	40620	20	16-QAM	50	25	21.57	0-2	2
	2593	40620	20	16-QAM	50	50	21.72	0-2	2
	2593	40620	20	16-QAM	100	0	21.50	0-2	2
Mid High	2637	41055	20	QPSK	1	0	23.74	0	0
	2637	41055	20	QPSK	1	50	**23.92**	0	0
	2637	41055	20	QPSK	1	99	23.84	0	0
	2637	41055	20	QPSK	50	0	**22.89**	0-1	1
	2637	41055	20	QPSK	50	25	22.82	0-1	1
	2637	41055	20	QPSK	50	50	22.86	0-1	1
	2637	41055	20	QPSK	100	0	22.73	0-1	1
	2637	41055	20	16-QAM	1	0	22.81	0-1	1
	2637	41055	20	16-QAM	1	50	22.86	0-1	1
	2637	41055	20	16-QAM	1	99	22.89	0-1	1
	2637	41055	20	16-QAM	50	0	21.62	0-2	2
	2637	41055	20	16-QAM	50	25	21.64	0-2	2
	2637	41055	20	16-QAM	50	50	21.69	0-2	2
	2637	41055	20	16-QAM	100	0	21.75	0-2	2
High	2680	41490	20	QPSK	1	0	23.80	0	0
	2680	41490	20	QPSK	1	50	23.71	0	0
	2680	41490	20	QPSK	1	99	23.69	0	0
	2680	41490	20	QPSK	50	0	22.72	0-1	1
	2680	41490	20	QPSK	50	25	22.81	0-1	1
	2680	41490	20	QPSK	50	50	22.70	0-1	1
	2680	41490	20	QPSK	100	0	22.77	0-1	1
	2680	41490	20	16-QAM	1	0	22.75	0-1	1
	2680	41490	20	16-QAM	1	50	22.71	0-1	1
	2680	41490	20	16-QAM	1	99	22.69	0-1	1
	2680	41490	20	16-QAM	50	0	21.77	0-2	2
	2680	41490	20	16-QAM	50	25	21.69	0-2	2
	2680	41490	20	16-QAM	50	50	21.76	0-2	2
	2680	41490	20	16-QAM	100	0	21.79	0-2	2

Table 9-11
LTE Band 41 Conducted Powers - 15 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	2503.5	39725	15	QPSK	1	0	23.67	0	0
	2503.5	39725	15	QPSK	1	36	23.77	0	0
	2503.5	39725	15	QPSK	1	74	23.71	0	0
	2503.5	39725	15	QPSK	36	0	22.64	0-1	1
	2503.5	39725	15	QPSK	36	18	22.82	0-1	1
	2503.5	39725	15	QPSK	36	37	22.54	0-1	1
	2503.5	39725	15	QPSK	75	0	22.76	0-1	1
	2503.5	39725	15	16QAM	1	0	22.73	0-1	1
	2503.5	39725	15	16QAM	1	36	22.69	0-1	1
	2503.5	39725	15	16QAM	1	74	22.68	0-1	1
	2503.5	39725	15	16QAM	36	0	21.63	0-2	2
	2503.5	39725	15	16QAM	36	18	21.62	0-2	2
	2503.5	39725	15	16QAM	36	37	21.71	0-2	2
	2503.5	39725	15	16QAM	75	0	21.53	0-2	2
Low Mid	2548	40173	15	QPSK	1	0	23.77	0	0
	2548	40173	15	QPSK	1	36	23.76	0	0
	2548	40173	15	QPSK	1	74	23.79	0	0
	2548	40173	15	QPSK	36	0	22.56	0-1	1
	2548	40173	15	QPSK	36	18	22.74	0-1	1
	2548	40173	15	QPSK	36	37	22.63	0-1	1
	2548	40173	15	QPSK	75	0	22.69	0-1	1
	2548	40173	15	16-QAM	1	0	22.69	0-1	1
	2548	40173	15	16-QAM	1	36	22.62	0-1	1
	2548	40173	15	16-QAM	1	74	22.73	0-1	1
	2548	40173	15	16-QAM	36	0	21.53	0-2	2
	2548	40173	15	16-QAM	36	18	21.52	0-2	2
	2548	40173	15	16-QAM	36	37	21.54	0-2	2
	2548	40173	15	16-QAM	75	0	21.51	0-2	2
Mid	2593	40620	15	QPSK	1	0	23.65	0	0
	2593	40620	15	QPSK	1	36	23.69	0	0
	2593	40620	15	QPSK	1	74	23.66	0	0
	2593	40620	15	QPSK	36	0	22.67	0-1	1
	2593	40620	15	QPSK	36	18	22.72	0-1	1
	2593	40620	15	QPSK	36	37	22.69	0-1	1
	2593	40620	15	QPSK	75	0	22.60	0-1	1
	2593	40620	15	16-QAM	1	0	22.51	0-1	1
	2593	40620	15	16-QAM	1	36	22.70	0-1	1
	2593	40620	15	16-QAM	1	74	22.71	0-1	1
	2593	40620	15	16-QAM	36	0	21.77	0-2	2
	2593	40620	15	16-QAM	36	18	21.58	0-2	2
	2593	40620	15	16-QAM	36	37	21.69	0-2	2
	2593	40620	15	16-QAM	75	0	21.50	0-2	2
Mid High	2638	41068	15	QPSK	1	0	23.80	0	0
	2638	41068	15	QPSK	1	36	23.92	0	0
	2638	41068	15	QPSK	1	74	23.75	0	0
	2638	41068	15	QPSK	36	0	22.87	0-1	1
	2638	41068	15	QPSK	36	18	22.80	0-1	1
	2638	41068	15	QPSK	36	37	22.91	0-1	1
	2638	41068	15	QPSK	75	0	22.69	0-1	1
	2638	41068	15	16-QAM	1	0	22.88	0-1	1
	2638	41068	15	16-QAM	1	36	22.79	0-1	1
	2638	41068	15	16-QAM	1	74	22.94	0-1	1
	2638	41068	15	16-QAM	36	0	21.57	0-2	2
	2638	41068	15	16-QAM	36	18	21.58	0-2	2
	2638	41068	15	16-QAM	36	37	21.70	0-2	2
	2638	41068	15	16-QAM	75	0	21.70	0-2	2
High	2682.5	41515	15	QPSK	1	0	23.82	0	0
	2682.5	41515	15	QPSK	1	36	23.80	0	0
	2682.5	41515	15	QPSK	1	74	23.77	0	0
	2682.5	41515	15	QPSK	36	0	22.72	0-1	1
	2682.5	41515	15	QPSK	36	18	22.85	0-1	1
	2682.5	41515	15	QPSK	36	37	22.64	0-1	1
	2682.5	41515	15	QPSK	75	0	22.84	0-1	1
	2682.5	41515	15	16-QAM	1	0	22.66	0-1	1
	2682.5	41515	15	16-QAM	1	36	22.62	0-1	1
	2682.5	41515	15	16-QAM	1	74	22.67	0-1	1
	2682.5	41515	15	16-QAM	36	0	21.80	0-2	2
	2682.5	41515	15	16-QAM	36	18	21.75	0-2	2
	2682.5	41515	15	16-QAM	36	37	21.84	0-2	2
	2682.5	41515	15	16-QAM	75	0	21.79	0-2	2

Table 9-12
LTE Band 41 Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	2501	39700	10	QPSK	1	0	23.72	0	0
	2501	39700	10	QPSK	1	25	23.79	0	0
	2501	39700	10	QPSK	1	49	23.80	0	0
	2501	39700	10	QPSK	25	0	22.63	0-1	1
	2501	39700	10	QPSK	25	12	22.65	0-1	1
	2501	39700	10	QPSK	25	25	22.59	0-1	1
	2501	39700	10	QPSK	50	0	22.73	0-1	1
	2501	39700	10	16QAM	1	0	22.72	0-1	1
	2501	39700	10	16QAM	1	25	22.54	0-1	1
	2501	39700	10	16QAM	1	49	22.76	0-1	1
	2501	39700	10	16QAM	25	0	21.59	0-2	2
	2501	39700	10	16QAM	25	12	21.61	0-2	2
	2501	39700	10	16QAM	25	25	21.70	0-2	2
	2501	39700	10	16QAM	50	0	21.60	0-2	2
Low Mid	2547	40160	10	QPSK	1	0	23.78	0	0
	2547	40160	10	QPSK	1	25	23.93	0	0
	2547	40160	10	QPSK	1	49	23.78	0	0
	2547	40160	10	QPSK	25	0	22.64	0-1	1
	2547	40160	10	QPSK	25	12	22.84	0-1	1
	2547	40160	10	QPSK	25	25	22.54	0-1	1
	2547	40160	10	QPSK	50	0	22.75	0-1	1
	2547	40160	10	16-QAM	1	0	22.63	0-1	1
	2547	40160	10	16-QAM	1	25	22.57	0-1	1
	2547	40160	10	16-QAM	1	49	22.63	0-1	1
	2547	40160	10	16-QAM	25	0	21.53	0-2	2
	2547	40160	10	16-QAM	25	12	21.56	0-2	2
	2547	40160	10	16-QAM	25	25	21.54	0-2	2
	2547	40160	10	16-QAM	50	0	21.51	0-2	2
Mid	2593	40620	10	QPSK	1	0	23.58	0	0
	2593	40620	10	QPSK	1	25	23.74	0	0
	2593	40620	10	QPSK	1	49	23.62	0	0
	2593	40620	10	QPSK	25	0	22.63	0-1	1
	2593	40620	10	QPSK	25	12	22.65	0-1	1
	2593	40620	10	QPSK	25	25	22.69	0-1	1
	2593	40620	10	QPSK	50	0	22.63	0-1	1
	2593	40620	10	16-QAM	1	0	22.55	0-1	1
	2593	40620	10	16-QAM	1	25	22.70	0-1	1
	2593	40620	10	16-QAM	1	49	22.65	0-1	1
	2593	40620	10	16-QAM	25	0	21.69	0-2	2
	2593	40620	10	16-QAM	25	12	21.63	0-2	2
	2593	40620	10	16-QAM	25	25	21.62	0-2	2
	2593	40620	10	16-QAM	50	0	21.60	0-2	2
Mid High	2639	41080	10	QPSK	1	0	23.82	0	0
	2639	41080	10	QPSK	1	25	23.85	0	0
	2639	41080	10	QPSK	1	49	23.79	0	0
	2639	41080	10	QPSK	25	0	22.83	0-1	1
	2639	41080	10	QPSK	25	12	22.81	0-1	1
	2639	41080	10	QPSK	25	25	22.87	0-1	1
	2639	41080	10	QPSK	50	0	22.73	0-1	1
	2639	41080	10	16-QAM	1	0	22.76	0-1	1
	2639	41080	10	16-QAM	1	25	22.92	0-1	1
	2639	41080	10	16-QAM	1	49	22.88	0-1	1
	2639	41080	10	16-QAM	25	0	21.60	0-2	2
	2639	41080	10	16-QAM	25	12	21.60	0-2	2
	2639	41080	10	16-QAM	25	25	21.61	0-2	2
	2639	41080	10	16-QAM	50	0	21.73	0-2	2
High	2685	41540	10	QPSK	1	0	23.73	0	0
	2685	41540	10	QPSK	1	25	23.72	0	0
	2685	41540	10	QPSK	1	49	23.74	0	0
	2685	41540	10	QPSK	25	0	22.79	0-1	1
	2685	41540	10	QPSK	25	12	22.90	0-1	1
	2685	41540	10	QPSK	25	25	22.75	0-1	1
	2685	41540	10	QPSK	50	0	22.74	0-1	1
	2685	41540	10	16-QAM	1	0	22.71	0-1	1
	2685	41540	10	16-QAM	1	25	22.61	0-1	1
	2685	41540	10	16-QAM	1	49	22.69	0-1	1
	2685	41540	10	16-QAM	25	0	21.71	0-2	2
	2685	41540	10	16-QAM	25	12	21.75	0-2	2
	2685	41540	10	16-QAM	25	25	21.82	0-2	2
	2685	41540	10	16-QAM	50	0	21.84	0-2	2

9.5 WLAN Conducted Powers

9.5.1 Maximum WLAN Conducted Powers

Table 9-13
IEEE 802.11b Average RF Power

	Antenna	Freq [MHz]	Channel	802.11b Conducted Power [dBm]			
				Data Rate [Mbps]			
				1	2	5.5	11
802.11b	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 9-14
IEEE 802.11g Average RF Power

	Antenna	Freq [MHz]	Channel	802.11g Conducted Power [dBm]							
				Data Rate [Mbps]							
				6	9	12	18	24	36	48	54
802.11g	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 9-15
IEEE 802.11n Average RF Power

	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
802.11n (2.4GHz)	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 9-16
MIMO IEEE 802.11n Average RF Power

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

Table 9-17
IEEE 802.11a Average RF Power

	Antenna	Freq [MHz]	Channel	802.11a Conducted Power [dBm]							
				Data Rate [Mbps]							
				6	9	12	18	24	36	48	54
802.11a	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.

Table 9-18
IEEE 802.11n Average RF Power – 20 MHz Bandwidth

	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
20MHz 802.11n (5GHz)	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 9-19
MIMO IEEE 802.11n Average RF Power – 20 MHz Bandwidth

	Antenna	Freq [MHz]	Channel	20MHz BW 802.11n (5GHz) Conducted Power [dBm]
				Data Rate [Mbps]
				13
20MHz 802.11n (5GHz)	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 9-20
IEEE 802.11n Average RF Power – 40 MHz Bandwidth

	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
40MHz 802.11n (5GHz)	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
		5795	159	11.29	11.09	11.28	11.34	11.38	11.32	11.18	11.33
	Antenna 2	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

Table 9-21
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 9-22
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 9-23
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 9-24
IEEE 802.11b Average RF Power

	Antenna	Freq [MHz]	Channel	802.11b Conducted Power [dBm]			
				Data Rate [Mbps]			
				1	2	5.5	11
802.11b	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 9-25
IEEE 802.11g Average RF Power

	Antenna	Freq [MHz]	Channel	802.11g Conducted Power [dBm]							
				Data Rate [Mbps]							
				6	9	12	18	24	36	48	54
802.11g	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 9-26
IEEE 802.11n Average RF Power

	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
802.11n (2.4GHz)	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 9-27
MIMO IEEE 802.11n Average RF Power

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

Table 9-28
IEEE 802.11a Average RF Power

	Antenna	Freq [MHz]	Channel	802.11a Conducted Power [dBm]							
				Data Rate [Mbps]							
				6	9	12	18	24	36	48	54
802.11a	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.

Table 9-29
IEEE 802.11n Average RF Power – 20 MHz Bandwidth

	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
20MHz 802.11n (5GHz)	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 9-30
MIMO IEEE 802.11n Average RF Power – 20 MHz Bandwidth

	Antenna	Freq [MHz]	Channel	20MHz BW 802.11n (5GHz) Conducted Power [dBm]
				Data Rate [Mbps]
				13
20MHz 802.11n (5GHz)	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 9-31
IEEE 802.11n Average RF Power – 40 MHz Bandwidth

	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
40MHz 802.11n (5GHz)	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
	Antenna 2	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
		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

Table 9-32
MIMO IEEE 802.11n Average RF Power – 40 MHz Bandwidth

	Antenna	Freq [MHz]	Channel	40MHz BW 802.11n (5GHz) Conducted Power [dBm]
				Data Rate [Mbps]
40MHz 802.11n (5GHz)				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 9-33
IEEE 802.11ac Average RF Power – 80 MHz Bandwidth

	Antenna	Freq [MHz]	Channel	80MHz BW 802.11ac (5GHz) Conducted Power [dBm]									
				Data Rate [Mbps]									
80MHz 802.11ac (5GHz)				29.3	58.5	87.8	117	175.5	234	263.3	292.5	351	390
	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 9-34
MIMO IEEE 802.11ac Average RF Power – 80 MHz Bandwidth

	Antenna	Freq [MHz]	Channel	80MHz BW 802.11ac (5GHz)
				Data Rate [Mbps]
80MHz 802.11ac (5GHz)				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 were 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. IEEE 802.11ac was evaluated for the highest IEEE 802.11a position in each 5 GHz band and exposure condition.
- When the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the reported 1g averaged SAR is <0.8 W/kg, SAR testing on other channels is not required. Otherwise, the other default (or corresponding required) test channels were additionally tested using the lowest data rate.
- The individual spectra for each 2x2 MIMO WIFI Antenna were summed mathematically in linear power units for the MIMO output power measurements per KDB 662911 D01v02r01.
- The bolded data rate and channel above were tested for SAR.

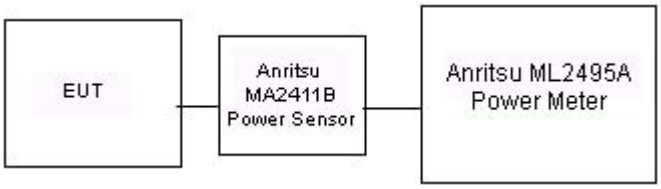


Figure 9-4
Power Measurement Setup for Bandwidths < 50 MHz

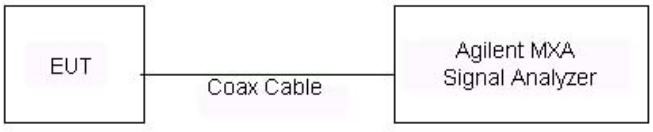


Figure 9-5
Power Measurement Setup for Bandwidths > 50 MHz

10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Head Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (C°)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	%dev σ	%dev ε
02/17/2014	835H	22.8	820	0.892	41.437	0.899	41.578	-0.78%	-0.34%
			835	0.906	41.195	0.900	41.500	0.67%	-0.73%
			850	0.919	40.975	0.916	41.500	0.33%	-1.27%
02/19/2014	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%
02/17/2014	1900H	22.8	1850	1.345	39.455	1.400	40.000	-3.93%	-1.36%
			1880	1.378	39.328	1.400	40.000	-1.57%	-1.68%
			1910	1.408	39.204	1.400	40.000	0.57%	-1.99%
02/18/2014	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%
02/06/2014	2600H	21.4	2600	2.005	37.471	1.964	39.009	2.09%	-3.94%
			2650	2.057	37.251	2.018	38.945	1.93%	-4.35%
			2700	2.119	37.097	2.073	38.882	2.22%	-4.59%
02/03/2014	5200H-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%
			5745	5.065	35.509	5.214	35.363	-2.86%	0.41%
			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%

Table 10-2
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
02/05/2014	835B	23.1	820	0.999	53.826	0.969	55.258	3.10%	-2.59%
			835	1.014	53.696	0.970	55.200	4.54%	-2.72%
			850	1.027	53.534	0.988	55.154	3.95%	-2.94%
02/20/2014	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%
02/19/2014	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%
02/12/2014	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%
02/07/2014	2600B	23.0	2600	2.240	52.063	2.163	52.509	3.56%	-0.85%
			2650	2.307	51.869	2.234	52.445	3.27%	-1.10%
			2700	2.378	51.687	2.305	52.382	3.17%	-1.33%
02/06/2014	5200B-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.

10.2 Test System Verification

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

Table 10-3
System Verification Results

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR_{1g} (W/kg)	1 W Target SAR_{1g} (W/kg)	1 W Normalized SAR_{1g} (W/kg)	$Deviation_{1g}$ (%)
H	835	HEAD	02/17/2014	24.5	22.9	0.100	4d119	3318	0.935	9.680	9.350	-3.41%
J	835	HEAD	02/19/2014	24.2	23.4	0.100	4d119	3332	0.956	9.680	9.560	-1.24%
D	1900	HEAD	02/17/2014	24.2	22.8	0.100	5d149	3022	3.800	40.400	38.000	-5.94%
K	2450	HEAD	02/18/2014	23.5	23.0	0.100	719	3287	5.180	53.200	51.800	-2.63%
K	2600	HEAD	02/06/2014	24.3	21.4	0.100	1004	3333	5.840	58.200	58.400	0.34%
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%
G	835	BODY	02/05/2014	22.9	21.4	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%
E	1900	BODY	02/19/2014	24.1	22.0	0.100	5d149	3914	4.270	40.500	42.700	5.43%
H	2450	BODY	02/12/2014	24.6	24.0	0.100	719	3318	5.410	51.700	54.100	4.64%
G	2600	BODY	02/07/2014	24.0	23.0	0.100	1004	3209	5.650	57.500	56.500	-1.74%
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%

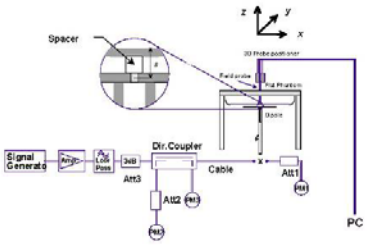


Figure 10-1
System Verification Setup Diagram

Figure 10-2
System Verification Setup Photo

11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
GSM 850 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	33.5	33.14	0.05	Right	Cheek	Standard	32909	1:8.3	0.209	1.086	0.227	
836.60	190	GSM 850	GSM	33.5	33.14	0.11	Right	Tilt	Standard	32909	1:8.3	0.106	1.086	0.115	
836.60	190	GSM 850	GSM	33.5	33.14	-0.01	Left	Cheek	Standard	32909	1:8.3	0.289	1.086	0.314	
836.60	190	GSM 850	GSM	33.5	33.14	0.05	Left	Cheek	Wireless Charging	32909	1:8.3	0.341	1.086	0.370	A1
836.60	190	GSM 850	GSM	33.5	33.14	0.08	Left	Tilt	Standard	32909	1:8.3	0.131	1.086	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 11-2
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	30.41	0.02	Right	Cheek	Standard	32909	1:8.3	0.258	1.021	0.263	
1880.00	661	GSM 1900	GSM	30.5	30.41	0.03	Right	Tilt	Standard	32909	1:8.3	0.167	1.021	0.171	
1880.00	661	GSM 1900	GSM	30.5	30.41	0.03	Left	Cheek	Standard	32909	1:8.3	0.535	1.021	0.546	A2
1880.00	661	GSM 1900	GSM	30.5	30.41	0.08	Left	Cheek	Wireless Charging	32909	1:8.3	0.483	1.021	0.493	
1880.00	661	GSM 1900	GSM	30.5	30.41	-0.06	Left	Tilt	Standard	32909	1:8.3	0.136	1.021	0.139	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-3
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	22.96	-0.05	Right	Cheek	Standard	32909	1:1	0.209	1.132	0.237	
836.60	4183	UMTS 850	RMC	23.5	22.96	-0.03	Right	Tilt	Standard	32909	1:1	0.128	1.132	0.145	
836.60	4183	UMTS 850	RMC	23.5	22.96	0.02	Left	Cheek	Standard	32909	1:1	0.289	1.132	0.327	
836.60	4183	UMTS 850	RMC	23.5	22.96	0.02	Left	Cheek	Wireless Charging	32909	1:1	0.322	1.132	0.365	A3
836.60	4183	UMTS 850	RMC	23.5	22.96	0.05	Left	Tilt	Standard	32909	1:1	0.145	1.132	0.164	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-4
UMTS 1900 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	23.0	22.91	-0.09	Right	Cheek	Standard	32909	1:1	0.540	1.021	0.551	
1880.00	9400	UMTS 1900	RMC	23.0	22.91	0.17	Right	Tilt	Standard	32909	1:1	0.306	1.021	0.312	
1852.40	9262	UMTS 1900	RMC	23.0	22.95	-0.03	Left	Cheek	Standard	32909	1:1	0.912	1.012	0.923	
1880.00	9400	UMTS 1900	RMC	23.0	22.91	0.00	Left	Cheek	Standard	32909	1:1	0.983	1.021	1.004	
1907.60	9538	UMTS 1900	RMC	23.0	22.93	0.08	Left	Cheek	Standard	32909	1:1	1.040	1.016	**1.057**	A4
1907.60	9538	UMTS 1900	RMC	23.0	22.93	-0.05	Left	Cheek	Wireless Charging	32909	1:1	0.975	1.016	0.991	
1880.00	9400	UMTS 1900	RMC	23.0	22.91	-0.01	Left	Tilt	Standard	32909	1:1	0.244	1.021	0.249	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**							**Head** **1.6 W/kg (mW/g)** averaged over 1 gram								

Table 11-5
Cell. CDMA BC10 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)	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.5	25.08	0.08	Right	Cheek	Standard	32906	1:1	0.461	1.102	0.508	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.5	25.08	0.07	Right	Tilt	Standard	32906	1:1	0.274	1.102	0.302	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.5	25.08	0.03	Left	Cheek	Standard	32906	1:1	0.484	1.102	0.533	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.5	25.08	0.09	Left	Cheek	Wireless Charging	32906	1:1	0.504	1.102	0.555	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.5	25.08	0.21	Left	Tilt	Standard	32906	1:1	0.273	1.102	0.301	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.07	-0.13	Right	Cheek	Standard	32906	1:1	0.425	1.104	0.469	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.07	0.06	Right	Tilt	Standard	32906	1:1	0.158	1.104	0.174	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.07	-0.15	Left	Cheek	Standard	32906	1:1	0.456	1.104	0.503	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.07	0.16	Left	Cheek	Wireless Charging	32906	1:1	0.521	1.104	0.575	A5
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.07	0.06	Left	Tilt	Standard	32906	1:1	0.311	1.104	0.343	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**							**Head** **1.6 W/kg (mW/g)** averaged over 1 gram								

Table 11-6
Cell. CDMA BC0 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	CDMA BC0 (§22H)	RC3 / SO55	25.5	25.15	0.08	Right	Cheek	Standard	32906	1:1	0.486	1.084	0.527	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.5	25.15	-0.15	Right	Tilt	Standard	32906	1:1	0.376	1.084	0.408	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.5	25.15	0.04	Left	Cheek	Standard	32906	1:1	0.561	1.084	0.608	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.5	25.15	0.05	Left	Cheek	Wireless Charging	32906	1:1	0.521	1.084	0.565	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.5	25.15	0.05	Left	Tilt	Standard	32906	1:1	0.346	1.084	0.375	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.12	-0.11	Right	Cheek	Standard	32906	1:1	0.457	1.091	0.499	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.12	-0.15	Right	Tilt	Standard	32906	1:1	0.195	1.091	0.213	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.12	0.19	Left	Cheek	Standard	32906	1:1	0.513	1.091	0.560	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.12	0.01	Left	Cheek	Wireless Charging	32906	1:1	0.579	1.091	0.632	A6
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.12	0.06	Left	Tilt	Standard	32906	1:1	0.297	1.091	0.324	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**							**Head** **1.6 W/kg (mW/g)** averaged over 1 gram								

Table 11-7
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	25.5	25.25	-0.02	Right	Cheek	Standard	32912	1:1	0.503	1.059	0.533	
1880.00	600	PCS CDMA	RC3 / SO55	25.5	25.25	0.07	Right	Tilt	Standard	32912	1:1	0.281	1.059	0.298	
1851.25	25	PCS CDMA	RC3 / SO55	25.5	25.10	-0.01	Left	Cheek	Standard	32912	1:1	0.743	1.096	0.814	
1880.00	600	PCS CDMA	RC3 / SO55	25.5	25.25	0.02	Left	Cheek	Standard	32912	1:1	0.996	1.059	1.055	A7
1880.00	600	PCS CDMA	RC3 / SO55	25.5	25.25	0.05	Left	Cheek	Wireless Charging	32912	1:1	0.917	1.059	0.971	
1908.75	1175	PCS CDMA	RC3 / SO55	25.5	25.15	0.02	Left	Cheek	Standard	32912	1:1	0.889	1.084	0.964	
1880.00	600	PCS CDMA	RC3 / SO55	25.5	25.25	-0.04	Left	Tilt	Standard	32912	1:1	0.238	1.059	0.252	
1880.00	600	PCS CDMA	EVDO Rev. A	25.5	25.17	0.06	Right	Cheek	Standard	32912	1:1	0.512	1.079	0.552	
1880.00	600	PCS CDMA	EVDO Rev. A	25.5	25.17	-0.04	Right	Tilt	Standard	32912	1:1	0.301	1.079	0.325	
1851.25	25	PCS CDMA	EVDO Rev. A	25.5	25.08	0.04	Left	Cheek	Standard	32912	1:1	0.789	1.102	0.869	
1880.00	600	PCS CDMA	EVDO Rev. A	25.5	25.17	0.06	Left	Cheek	Standard	32912	1:1	0.986	1.079	**1.064**	
1880.00	600	PCS CDMA	EVDO Rev. A	25.5	25.17	-0.14	Left	Cheek	Wireless Charging	32912	1:1	0.835	1.079	0.901	
1908.75	1175	PCS CDMA	EVDO Rev. A	25.5	25.13	-0.01	Left	Cheek	Standard	32912	1:1	0.941	1.089	1.025	
1880.00	600	PCS CDMA	EVDO Rev. A	25.5	25.17	0.10	Left	Tilt	Standard	32912	1:1	0.263	1.079	0.284	
1880.00	600	PCS CDMA	EVDO Rev. A	22.5	22.27	0.03	Right	Cheek	Standard	328FA	1:1	0.270	1.054	0.285	
1880.00	600	PCS CDMA	EVDO Rev. A	22.5	22.27	0.05	Right	Tilt	Standard	328FA	1:1	0.149	1.054	0.157	
1880.00	600	PCS CDMA	EVDO Rev. A	22.5	22.27	0.07	Left	Cheek	Standard	328FA	1:1	0.545	1.054	0.574	
1880.00	600	PCS CDMA	EVDO Rev. A	22.5	22.27	0.02	Left	Tilt	Standard	328FA	1:1	0.124	1.054	0.131	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-8
LTE Band 26 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.40	-0.04	0	Right	Cheek	QPSK	1	25	3290B	1:1	0.213	1.023	0.218	
844.00	26990	High	LTE Band 26	10	Standard	22.5	22.31	0.08	1	Right	Cheek	QPSK	25	0	3290B	1:1	0.154	1.045	0.161	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.40	0.13	0	Right	Tilt	QPSK	1	25	3290B	1:1	0.094	1.023	0.096	
844.00	26990	High	LTE Band 26	10	Standard	22.5	22.31	0.21	1	Right	Tilt	QPSK	25	0	3290B	1:1	0.069	1.045	0.072	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.40	-0.05	0	Left	Cheek	QPSK	1	25	3290B	1:1	0.258	1.023	0.264	
844.00	26990	High	LTE Band 26	10	Wireless Charging	23.5	23.40	0.01	0	Left	Cheek	QPSK	1	25	3290B	1:1	0.317	1.023	0.324	A8
844.00	26990	High	LTE Band 26	10	Standard	22.5	22.31	0.09	1	Left	Cheek	QPSK	25	0	3290B	1:1	0.205	1.045	0.214	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.40	0.07	0	Left	Tilt	QPSK	1	25	3290B	1:1	0.131	1.023	0.134	
844.00	26990	High	LTE Band 26	10	Standard	22.5	22.31	0.13	1	Left	Tilt	QPSK	25	0	3290B	1:1	0.096	1.045	0.100	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-9
LTE Band 25 (PCS) Head SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	23.5	23.44	-0.05	0	Right	Cheek	QPSK	1	49	3290B	1:1	0.373	1.014	0.378	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	22.5	22.41	-0.03	1	Right	Cheek	QPSK	25	25	3290B	1:1	0.308	1.021	0.314	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	23.5	23.44	-0.07	0	Right	Tilt	QPSK	1	49	3290B	1:1	0.264	1.014	0.268	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	22.5	22.41	0.05	1	Right	Tilt	QPSK	25	25	3290B	1:1	0.201	1.021	0.205	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	23.5	23.44	-0.01	0	Left	Cheek	QPSK	1	49	3290B	1:1	0.719	1.014	0.729	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Wireless Charging	23.5	23.44	0.10	0	Left	Cheek	QPSK	1	49	3290B	1:1	0.753	1.014	0.764	A9
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	22.5	22.41	0.08	1	Left	Cheek	QPSK	25	25	3290B	1:1	0.551	1.021	0.563	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	23.5	23.44	0.07	0	Left	Tilt	QPSK	1	49	3290B	1:1	0.233	1.014	0.236	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	22.5	22.41	-0.03	1	Left	Tilt	QPSK	25	25	3290B	1:1	0.179	1.021	0.183	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-10
LTE Band 41 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	24.0	23.92	-0.18	0	Right	Cheek	QPSK	1	50	328FF	1:1.58	0.240	1.019	0.245	A10
2636.50	41055	Mid-High	LTE Band 41	20	Wireless Charging	24.0	23.92	-0.01	0	Right	Cheek	QPSK	1	50	328FF	1:1.58	0.212	1.019	0.216	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	23.0	22.89	0.11	1	Right	Cheek	QPSK	50	0	328FF	1:1.58	0.184	1.026	0.189	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	24.0	23.92	0.03	0	Right	Tilt	QPSK	1	50	328FF	1:1.58	0.092	1.019	0.094	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	23.0	22.89	0.19	1	Right	Tilt	QPSK	50	0	328FF	1:1.58	0.087	1.026	0.089	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	24.0	23.92	0.08	0	Left	Cheek	QPSK	1	50	328FF	1:1.58	0.154	1.019	0.157	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	23.0	22.89	0.12	1	Left	Cheek	QPSK	50	0	328FF	1:1.58	0.136	1.026	0.140	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	24.0	23.92	0.19	0	Left	Tilt	QPSK	1	50	328FF	1:1.58	0.148	1.019	0.151	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	23.0	22.89	0.15	1	Left	Tilt	QPSK	50	0	328FF	1:1.58	0.136	1.026	0.140	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-11
DTS Head SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Antenna	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	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	Antenna 1	DSSS	12.5	11.94	0.20	Right	Cheek	Standard	328C6	1	1:1	0.163	1.138	**0.185**	A11
2412	1	IEEE 802.11b	Antenna 1	DSSS	12.5	11.94	0.02	Right	Cheek	Wireless Charging	328C6	1	1:1	0.156	1.138	0.178	
2412	1	IEEE 802.11b	Antenna 1	DSSS	12.5	11.94	-0.04	Right	Tilt	Standard	328C6	1	1:1	0.158	1.138	0.180	
2412	1	IEEE 802.11b	Antenna 1	DSSS	12.5	11.94	0.02	Left	Cheek	Standard	328C6	1	1:1	0.129	1.138	0.147	
2412	1	IEEE 802.11b	Antenna 1	DSSS	12.5	11.94	0.03	Left	Tilt	Standard	328C6	1	1:1	0.128	1.138	0.146	
2412	1	IEEE 802.11b	Antenna 2	DSSS	12.5	11.74	0.10	Right	Cheek	Standard	328C6	1	1:1	0.033	1.191	0.039	
2412	1	IEEE 802.11b	Antenna 2	DSSS	12.5	11.74	0.12	Right	Tilt	Standard	328C6	1	1:1	0.007	1.191	0.008	
2412	1	IEEE 802.11b	Antenna 2	DSSS	12.5	11.74	0.06	Left	Cheek	Standard	328C6	1	1:1	0.009	1.191	0.011	
2412	1	IEEE 802.11b	Antenna 2	DSSS	12.5	11.74	0.20	Left	Tilt	Standard	328C6	1	1:1	0.004	1.191	0.005	
2412	1	IEEE 802.11n	MIMO	OFDM	12.5	11.85	-0.08	Right	Cheek	Standard	328C6	13	1:1	0.089	1.161	0.103	
2412	1	IEEE 802.11n	MIMO	OFDM	12.5	11.85	-0.10	Right	Tilt	Standard	328C6	13	1:1	0.078	1.161	0.091	
2412	1	IEEE 802.11n	MIMO	OFDM	12.5	11.85	0.03	Left	Cheek	Standard	328C6	13	1:1	0.104	1.161	0.121	
2412	1	IEEE 802.11n	MIMO	OFDM	12.5	11.85	0.03	Left	Tilt	Standard	328C6	13	1:1	0.107	1.161	0.124	
2412	1	IEEE 802.11n	MIMO	OFDM	12.5	11.85	-0.02	Left	Tilt	Wireless Charging	328C6	13	1:1	0.098	1.161	0.114	
5785	157	IEEE 802.11a	Antenna 1	OFDM	7.5	6.87	0.06	Right	Cheek	Standard	31F35	6	1:1	0.014	1.156	0.016	
5785	157	IEEE 802.11a	Antenna 1	OFDM	7.5	6.87	0.10	Right	Tilt	Standard	31F35	6	1:1	0.022	1.156	0.025	
5775	155	IEEE 802.11ac	Antenna 1	OFDM	7.5	6.38	0.04	Right	Tilt	Standard	31F35	29.3	1:1	0.013	1.294	0.017	
5785	157	IEEE 802.11a	Antenna 1	OFDM	7.5	6.87	0.16	Left	Cheek	Standard	31F35	6	1:1	0.011	1.156	0.013	
5785	157	IEEE 802.11a	Antenna 1	OFDM	7.5	6.87	0.04	Left	Tilt	Standard	31F35	6	1:1	0.014	1.156	0.016	
5765	153	IEEE 802.11a	Antenna 2	OFDM	7.5	6.58	0.06	Right	Cheek	Standard	31F35	6	1:1	0.134	1.236	0.166	A12
5775	155	IEEE 802.11ac	Antenna 2	OFDM	7.5	6.25	0.06	Right	Cheek	Standard	31F35	29.3	1:1	0.112	1.334	0.149	
5765	153	IEEE 802.11a	Antenna 2	OFDM	7.5	6.58	0.06	Right	Tilt	Standard	31F35	6	1:1	0.060	1.236	0.074	
5765	153	IEEE 802.11a	Antenna 2	OFDM	7.5	6.58	0.04	Left	Cheek	Standard	31F35	6	1:1	0.037	1.236	0.046	
5765	153	IEEE 802.11a	Antenna 2	OFDM	7.5	6.58	-0.07	Left	Tilt	Standard	31F35	6	1:1	0.034	1.236	0.042	
5765	153	IEEE 802.11n	MIMO	OFDM	7.5	6.57	-0.05	Right	Cheek	Standard	31F35	13	1:1	0.019	1.239	0.024	
5765	153	IEEE 802.11n	MIMO	OFDM	7.5	6.57	0.03	Right	Tilt	Standard	31F35	13	1:1	0.014	1.239	0.017	
5765	153	IEEE 802.11n	MIMO	OFDM	7.5	6.57	0.07	Left	Cheek	Standard	31F35	13	1:1	0.016	1.239	0.020	
5765	153	IEEE 802.11n	MIMO	OFDM	7.5	6.57	0.05	Left	Tilt	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							

Table 11-12
NII Head SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Antenna	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	Data Rate (Mbps)	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.													(W/kg)		(W/kg)	
5180	36	IEEE 802.11a	Antenna 1	OFDM	7.5	6.74	0.08	Right	Cheek	Standard	31F35	6	1:1	0.053	1.191	0.063	
5210	42	IEEE 802.11ac	Antenna 1	OFDM	7.5	6.56	0.02	Right	Cheek	Standard	31F35	29.3	1:1	0.039	1.242	0.048	
5180	36	IEEE 802.11a	Antenna 1	OFDM	7.5	6.74	0.12	Right	Tilt	Standard	31F35	6	1:1	0.052	1.191	0.062	
5180	36	IEEE 802.11a	Antenna 1	OFDM	7.5	6.74	-0.10	Left	Cheek	Standard	31F35	6	1:1	0.035	1.191	0.042	
5180	36	IEEE 802.11a	Antenna 1	OFDM	7.5	6.74	-0.10	Left	Tilt	Standard	31F35	6	1:1	0.038	1.191	0.045	
5220	44	IEEE 802.11a	Antenna 2	OFDM	7.5	6.86	0.07	Right	Cheek	Standard	31F35	6	1:1	0.022	1.159	0.025	
5210	42	IEEE 802.11ac	Antenna 2	OFDM	7.5	6.63	0.04	Right	Cheek	Standard	31F35	29.3	1:1	0.021	1.222	0.026	
5220	44	IEEE 802.11a	Antenna 2	OFDM	7.5	6.86	0.09	Right	Tilt	Standard	31F35	6	1:1	0.011	1.159	0.013	
5220	44	IEEE 802.11a	Antenna 2	OFDM	7.5	6.86	0.00	Left	Cheek	Standard	31F35	6	1:1	0.000	1.159	0.000	
5220	44	IEEE 802.11a	Antenna 2	OFDM	7.5	6.86	0.00	Left	Tilt	Standard	31F35	6	1:1	0.000	1.159	0.000	
5240	48	IEEE 802.11n	MIMO	OFDM	7.5	6.06	0.08	Right	Cheek	Standard	31F35	13	1:1	0.032	1.392	0.045	
5240	48	IEEE 802.11n	MIMO	OFDM	7.5	6.06	0.07	Right	Cheek	Wireless Charging	31F35	13	1:1	0.044	1.392	0.061	
5240	48	IEEE 802.11n	MIMO	OFDM	7.5	6.06	0.11	Right	Tilt	Standard	31F35	13	1:1	0.012	1.392	0.017	
5240	48	IEEE 802.11n	MIMO	OFDM	7.5	6.06	0.21	Left	Cheek	Standard	31F35	13	1:1	0.009	1.392	0.013	
5240	48	IEEE 802.11n	MIMO	OFDM	7.5	6.06	0.06	Left	Tilt	Standard	31F35	13	1:1	0.009	1.392	0.013	
5260	52	IEEE 802.11a	Antenna 1	OFDM	7.5	6.69	0.08	Right	Cheek	Standard	31F35	6	1:1	0.047	1.205	0.057	
5260	52	IEEE 802.11a	Antenna 1	OFDM	7.5	6.69	0.12	Right	Tilt	Standard	31F35	6	1:1	0.052	1.205	0.063	
5290	58	IEEE 802.11ac	Antenna 1	OFDM	7.5	6.48	0.07	Right	Tilt	Standard	31F35	29.3	1:1	0.035	1.265	0.044	
5260	52	IEEE 802.11a	Antenna 1	OFDM	7.5	6.69	0.06	Left	Cheek	Standard	31F35	6	1:1	0.032	1.205	0.039	
5260	52	IEEE 802.11a	Antenna 1	OFDM	7.5	6.69	0.06	Left	Tilt	Standard	31F35	6	1:1	0.041	1.205	0.049	
5260	52	IEEE 802.11a	Antenna 2	OFDM	7.5	6.95	0.07	Right	Cheek	Standard	31F35	6	1:1	0.047	1.135	0.053	
5290	58	IEEE 802.11ac	Antenna 2	OFDM	7.5	6.55	0.11	Right	Cheek	Standard	31F35	29.3	1:1	0.036	1.245	0.045	
5260	52	IEEE 802.11a	Antenna 2	OFDM	7.5	6.95	-0.07	Right	Tilt	Standard	31F35	6	1:1	0.013	1.135	0.015	
5260	52	IEEE 802.11a	Antenna 2	OFDM	7.5	6.95	0.08	Left	Cheek	Standard	31F35	6	1:1	0.007	1.135	0.008	
5260	52	IEEE 802.11a	Antenna 2	OFDM	7.5	6.95	-0.12	Left	Tilt	Standard	31F35	6	1:1	0.006	1.135	0.007	
5300	60	IEEE 802.11n	MIMO	OFDM	7.5	5.67	0.00	Right	Cheek	Standard	31F35	13	1:1	0.009	1.524	0.014	
5300	60	IEEE 802.11n	MIMO	OFDM	7.5	5.67	0.15	Right	Tilt	Standard	31F35	13	1:1	0.010	1.524	0.015	
5300	60	IEEE 802.11n	MIMO	OFDM	7.5	5.67	0.08	Left	Cheek	Standard	31F35	13	1:1	0.009	1.524	0.014	
5300	60	IEEE 802.11n	MIMO	OFDM	7.5	5.67	0.03	Left	Tilt	Standard	31F35	13	1:1	0.009	1.524	0.014	
5580	116	IEEE 802.11a	Antenna 1	OFDM	7.5	6.83	0.08	Right	Cheek	Standard	31F35	6	1:1	0.022	1.167	0.026	
5580	116	IEEE 802.11a	Antenna 1	OFDM	7.5	6.83	0.09	Right	Tilt	Standard	31F35	6	1:1	0.029	1.167	0.034	
5530	106	IEEE 802.11ac	Antenna 1	OFDM	7.5	6.51	0.05	Right	Tilt	Standard	31F35	29.3	1:1	0.044	1.256	0.055	
5580	116	IEEE 802.11a	Antenna 1	OFDM	7.5	6.83	0.02	Left	Cheek	Standard	31F35	6	1:1	0.016	1.167	0.019	
5580	116	IEEE 802.11a	Antenna 1	OFDM	7.5	6.83	0.16	Left	Tilt	Standard	31F35	6	1:1	0.019	1.167	0.022	
5680	136	IEEE 802.11a	Antenna 2	OFDM	7.5	6.01	0.02	Right	Cheek	Standard	31F35	6	1:1	0.154	1.409	**0.217**	A13
5680	136	IEEE 802.11a	Antenna 2	OFDM	7.5	6.01	0.02	Right	Cheek	Wireless Charging	31F35	6	1:1	0.133	1.409	0.187	
5530	106	IEEE 802.11ac	Antenna 2	OFDM	7.5	5.57	0.02	Right	Cheek	Standard	31F35	29.3	1:1	0.045	1.560	0.070	
5680	136	IEEE 802.11a	Antenna 2	OFDM	7.5	6.01	0.06	Right	Tilt	Standard	31F35	6	1:1	0.057	1.409	0.080	
5680	136	IEEE 802.11a	Antenna 2	OFDM	7.5	6.01	0.14	Left	Cheek	Standard	31F35	6	1:1	0.032	1.409	0.045	
5680	136	IEEE 802.11a	Antenna 2	OFDM	7.5	6.01	-0.08	Left	Tilt	Standard	31F35	6	1:1	0.031	1.409	0.044	
5500	100	IEEE 802.11n	MIMO	OFDM	7.5	7.38	0.18	Right	Cheek	Standard	31F35	13	1:1	0.010	1.028	0.010	
5500	100	IEEE 802.11n	MIMO	OFDM	7.5	7.38	0.07	Right	Tilt	Standard	31F35	13	1:1	0.014	1.028	0.014	
5500	100	IEEE 802.11n	MIMO	OFDM	7.5	7.38	-0.20	Left	Cheek	Standard	31F35	13	1:1	0.012	1.028	0.012	
5500	100	IEEE 802.11n	MIMO	OFDM	7.5	7.38	0.19	Left	Tilt	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									

11.2 Standalone Body-Worn SAR Data

Table 11-13
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)	
836.60	190	GSM 850	GSM	33.5	33.14	-0.02	10 mm	Standard	32909	1	1:8.3	back	0.623	1.086	0.677	A14
836.60	190	GSM 850	GSM	33.5	33.14	-0.06	10 mm	Wireless Charging	32909	1	1:8.3	back	0.384	1.086	0.417	
1880.00	661	GSM 1900	GSM	30.5	30.41	0.00	10 mm	Standard	32909	1	1:8.3	back	0.400	1.021	0.408	A16
1880.00	661	GSM 1900	GSM	30.5	30.41	-0.06	10 mm	Wireless Charging	32909	1	1:8.3	back	0.399	1.021	0.407	
836.60	4183	UMTS 850	RMC	23.5	22.96	-0.07	10 mm	Standard	32909	N/A	1:1	back	0.463	1.132	0.524	A18
836.60	4183	UMTS 850	RMC	23.5	22.96	-0.01	10 mm	Wireless Charging	32909	N/A	1:1	back	0.388	1.132	0.439	
1880.00	9400	UMTS 1900	RMC	23.0	22.91	-0.11	10 mm	Standard	32909	N/A	1:1	back	0.685	1.021	0.699	
1880.00	9400	UMTS 1900	RMC	23.0	22.91	-0.01	10 mm	Wireless Charging	32909	N/A	1:1	back	0.704	1.021	0.719	A19
820.10	564	CDMA BC10 (§90S)	TDSO / SO32	25.5	25.09	0.03	10 mm	Standard	32906	N/A	1:1	back	0.488	1.099	0.536	A21
820.10	564	CDMA BC10 (§90S)	TDSO / SO32	25.5	25.09	0.01	10 mm	Wireless Charging	32906	N/A	1:1	back	0.441	1.099	0.485	
824.70	1013	CDMA BC0 (§22H)	TDSO / SO32	25.5	25.11	-0.04	10 mm	Standard	32906	N/A	1:1	back	0.767	1.094	0.839	
836.52	384	CDMA BC0 (§22H)	TDSO / SO32	25.5	25.16	0.02	10 mm	Standard	32906	N/A	1:1	back	0.774	1.081	0.837	
848.31	777	CDMA BC0 (§22H)	TDSO / SO32	25.5	25.04	0.09	10 mm	Standard	32906	N/A	1:1	back	0.906	1.112	**1.007**	A23
848.31	777	CDMA BC0 (§22H)	TDSO / SO32	25.5	25.04	-0.02	10 mm	Wireless Charging	32906	N/A	1:1	back	0.601	1.112	0.668	
1880.00	600	PCS CDMA	TDSO / SO32	25.5	25.10	-0.04	15 mm	Standard	32912	N/A	1:1	back	0.610	1.096	0.669	A25
1880.00	600	PCS CDMA	TDSO / SO32	25.5	25.10	-0.02	15 mm	Wireless Charging	32912	N/A	1:1	back	0.515	1.096	0.564	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram			

Table 11-14
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)	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.40	0.03	0	3290B	QPSK	1	25	10 mm	back	1:1	0.453	1.023	0.463	A27
844.00	26990	High	LTE Band 26	10	Wireless Charging	23.5	23.40	0.02	0	3290B	QPSK	1	25	10 mm	back	1:1	0.410	1.023	0.419	
844.00	26990	High	LTE Band 26	10	Standard	22.5	22.31	-0.03	1	3290B	QPSK	25	0	10 mm	back	1:1	0.352	1.045	0.368	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	23.5	23.44	-0.05	0	3290B	QPSK	1	49	10 mm	back	1:1	0.718	1.014	0.728	A28
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Wireless Charging	23.5	23.44	-0.03	0	3290B	QPSK	1	49	10 mm	back	1:1	0.574	1.014	0.582	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	22.5	22.41	-0.04	1	3290B	QPSK	25	25	10 mm	back	1:1	0.562	1.021	0.574	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	24.0	23.92	0.00	0	328FF	QPSK	1	50	10 mm	back	1:1.58	0.280	1.019	0.285	A30
2636.50	41055	Mid-High	LTE Band 41	20	Wireless Charging	24.0	23.92	0.15	0	328FF	QPSK	1	50	10 mm	back	1:1.58	0.205	1.019	0.209	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	23.0	22.89	-0.01	1	328FF	QPSK	50	0	10 mm	back	1:1.58	0.249	1.026	0.255	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram				

Table 11-15
DTS Body-Worn SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Antenna	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	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	Antenna 1	DSSS	17.5	17.05	-0.08	10 mm	Standard	00F05	1	back	1:1	0.235	1.109	0.261	A32
2437	6	IEEE 802.11b	Antenna 1	DSSS	17.5	17.05	0.16	10 mm	Wireless Charging	00F05	1	back	1:1	0.103	1.109	0.114	
2412	1	IEEE 802.11b	Antenna 2	DSSS	17.5	17.07	0.04	10 mm	Standard	00F05	1	back	1:1	0.087	1.104	0.096	
2412	1	IEEE 802.11n	MIMO	OFDM	14.0	13.87	0.11	10 mm	Standard	00F05	13	back	1:1	0.066	1.030	0.068	
2412	1	IEEE 802.11n	MIMO	OFDM	14.0	13.87	0.10	10 mm	Wireless Charging	00F05	13	back	1:1	0.053	1.030	0.055	
5745	149	IEEE 802.11a	Antenna 1	OFDM	14.0	13.31	0.06	10 mm	Standard	32712	6	back	1:1	0.138	1.172	0.162	
5775	155	IEEE 802.11ac	Antenna 1	OFDM	11.5	11.25	0.09	10 mm	Standard	32712	29.3	back	1:1	0.041	1.059	0.043	
5765	153	IEEE 802.11a	Antenna 2	OFDM	14.0	13.44	0.10	10 mm	Standard	15ECE	6	back	1:1	0.287	1.138	**0.327**	A33
5775	155	IEEE 802.11ac	Antenna 2	OFDM	11.5	11.26	0.16	10 mm	Standard	15ECE	29.3	back	1:1	0.128	1.057	0.135	
5765	153	IEEE 802.11n	MIMO	OFDM	13.5	13.47	0.00	10 mm	Standard	15ECE	13	back	1:1	0.220	1.007	0.222	
5765	153	IEEE 802.11n	MIMO	OFDM	13.5	13.47	0.00	10 mm	Wireless Charging	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**									

Table 11-16
NII Body-Worn SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Antenna	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	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	Antenna 1	OFDM	14.0	13.12	0.06	10 mm	Standard	32712	6	back	1:1	0.196	1.225	0.240	
5210	42	IEEE 802.11ac	Antenna 1	OFDM	11.5	10.71	0.09	10 mm	Standard	32712	29.3	back	1:1	0.079	1.199	0.095	
5180	36	IEEE 802.11a	Antenna 2	OFDM	14.0	13.94	-0.12	10 mm	Standard	15ECE	6	back	1:1	0.104	1.014	0.105	
5210	42	IEEE 802.11ac	Antenna 2	OFDM	11.5	10.78	0.18	10 mm	Standard	15ECE	29.3	back	1:1	0.056	1.180	0.066	
5180	36	IEEE 802.11n	MIMO	OFDM	13.5	12.63	0.07	10 mm	Standard	15ECE	13	back	1:1	0.065	1.222	0.079	
5280	56	IEEE 802.11a	Antenna 1	OFDM	14.0	12.97	0.10	10 mm	Standard	32712	6	back	1:1	0.162	1.268	0.205	
5290	58	IEEE 802.11ac	Antenna 1	OFDM	11.5	10.77	0.04	10 mm	Standard	32712	29.3	back	1:1	0.080	1.183	0.095	
5260	52	IEEE 802.11a	Antenna 2	OFDM	14.0	13.21	-0.04	10 mm	Standard	15ECE	6	back	1:1	0.195	1.199	0.234	
5290	58	IEEE 802.11ac	Antenna 2	OFDM	11.5	10.94	0.08	10 mm	Standard	15ECE	29.3	back	1:1	0.074	1.138	0.084	
5300	60	IEEE 802.11n	MIMO	OFDM	13.5	12.77	0.09	10 mm	Standard	15ECE	13	back	1:1	0.060	1.184	0.071	
5540	108	IEEE 802.11a	Antenna 1	OFDM	14.0	13.41	0.05	10 mm	Standard	32712	6	back	1:1	0.235	1.146	0.269	
5530	106	IEEE 802.11ac	Antenna 1	OFDM	11.5	11.15	0.03	10 mm	Standard	32712	29.3	back	1:1	0.119	1.084	0.129	
5500	100	IEEE 802.11a	Antenna 2	OFDM	14.0	13.26	0.03	10 mm	Standard	15ECE	6	back	1:1	0.296	1.186	**0.351**	A34
5500	100	IEEE 802.11a	Antenna 2	OFDM	14.0	13.26	0.03	10 mm	Wireless Charging	15ECE	6	back	1:1	0.167	1.186	0.198	
5530	106	IEEE 802.11ac	Antenna 2	OFDM	11.5	10.98	-0.03	10 mm	Standard	15ECE	29.3	back	1:1	0.099	1.127	0.112	
5500	100	IEEE 802.11n	MIMO	OFDM	13.5	12.30	0.06	10 mm	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**									

11.3 Standalone Wireless Router SAR Data

Table 11-17
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)	
824.20	128	GSM 850	GPRS	29.5	28.60	-0.04	10 mm	Standard	32909	4	1:2.076	back	0.762	1.230	0.937	
836.60	190	GSM 850	GPRS	29.5	28.57	-0.13	10 mm	Standard	32909	4	1:2.076	back	0.835	1.239	1.035	
848.80	251	GSM 850	GPRS	29.5	28.83	-0.06	10 mm	Standard	32909	4	1:2.076	back	0.890	1.167	1.039	A15
848.80	251	GSM 850	GPRS	29.5	28.83	-0.08	10 mm	Wireless Charging	32909	4	1:2.076	back	0.693	1.167	0.809	
836.60	190	GSM 850	GPRS	29.5	28.57	-0.05	10 mm	Standard	32909	4	1:2.076	front	0.574	1.239	0.711	
836.60	190	GSM 850	GPRS	29.5	28.57	-0.03	10 mm	Standard	32909	4	1:2.076	bottom	0.104	1.239	0.129	
836.60	190	GSM 850	GPRS	29.5	28.57	0.04	10 mm	Standard	32909	4	1:2.076	right	0.476	1.239	0.590	
836.60	190	GSM 850	GPRS	29.5	28.57	-0.04	10 mm	Standard	32909	4	1:2.076	left	0.466	1.239	0.577	
1880.00	661	GSM 1900	GPRS	26.5	25.88	0.02	10 mm	Standard	32909	4	1:2.076	back	0.459	1.153	0.529	
1850.20	512	GSM 1900	GPRS	26.5	25.57	-0.01	10 mm	Standard	32909	4	1:2.076	front	0.693	1.239	0.859	
1880.00	661	GSM 1900	GPRS	26.5	25.88	0.05	10 mm	Standard	32909	4	1:2.076	front	0.744	1.153	0.858	
1909.80	810	GSM 1900	GPRS	26.5	25.69	0.09	10 mm	Standard	32909	4	1:2.076	front	0.803	1.205	0.968	A17
1909.80	810	GSM 1900	GPRS	26.5	25.69	0.05	10 mm	Wireless Charging	32909	4	1:2.076	front	0.795	1.205	0.958	
1880.00	661	GSM 1900	GPRS	26.5	25.88	-0.08	10 mm	Standard	32909	4	1:2.076	bottom	0.248	1.153	0.286	
1880.00	661	GSM 1900	GPRS	26.5	25.88	0.18	10 mm	Standard	32909	4	1:2.076	right	0.050	1.153	0.058	
1880.00	661	GSM 1900	GPRS	26.5	25.88	0.00	10 mm	Standard	32909	4	1:2.076	left	0.391	1.153	0.451	
836.60	4183	UMTS 850	RMC	23.5	22.96	-0.07	10 mm	Standard	32909	N/A	1:1	back	0.463	1.132	0.524	A18
836.60	4183	UMTS 850	RMC	23.5	22.96	-0.01	10 mm	Wireless Charging	32909	N/A	1:1	back	0.388	1.132	0.439	
836.60	4183	UMTS 850	RMC	23.5	22.96	-0.06	10 mm	Standard	32909	N/A	1:1	front	0.330	1.132	0.374	
836.60	4183	UMTS 850	RMC	23.5	22.96	-0.01	10 mm	Standard	32909	N/A	1:1	bottom	0.075	1.132	0.085	
836.60	4183	UMTS 850	RMC	23.5	22.96	-0.01	10 mm	Standard	32909	N/A	1:1	right	0.206	1.132	0.233	
836.60	4183	UMTS 850	RMC	23.5	22.96	0.00	10 mm	Standard	32909	N/A	1:1	left	0.225	1.132	0.255	
1880.00	9400	UMTS 1900	RMC	23.0	22.91	-0.11	10 mm	Standard	32909	N/A	1:1	back	0.685	1.021	0.699	
1880.00	9400	UMTS 1900	RMC	23.0	22.91	-0.01	10 mm	Wireless Charging	32909	N/A	1:1	back	0.704	1.021	0.719	
1852.40	9262	UMTS 1900	RMC	23.0	22.95	0.02	10 mm	Standard	32909	N/A	1:1	front	0.879	1.012	0.890	
1880.00	9400	UMTS 1900	RMC	23.0	22.91	0.03	10 mm	Standard	32909	N/A	1:1	front	1.070	1.021	**1.092**	A20
1880.00	9400	UMTS 1900	RMC	23.0	22.91	-0.04	10 mm	Wireless Charging	32909	N/A	1:1	front	0.915	1.021	0.934	
1907.60	9538	UMTS 1900	RMC	23.0	22.93	0.08	10 mm	Standard	32909	N/A	1:1	front	0.997	1.016	1.013	
1880.00	9400	UMTS 1900	RMC	23.0	22.91	-0.02	10 mm	Standard	32909	N/A	1:1	bottom	0.289	1.021	0.295	
1880.00	9400	UMTS 1900	RMC	23.0	22.91	0.13	10 mm	Standard	32909	N/A	1:1	right	0.028	1.021	0.029	
1880.00	9400	UMTS 1900	RMC	23.0	22.91	-0.01	10 mm	Standard	32909	N/A	1:1	left	0.509	1.021	0.520	
1880.00	9400	UMTS 1900	RMC	23.0	22.91	0.10	10 mm	Standard	32909	N/A	1:1	front	1.010	1.021	1.031	
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: Blue highlighted entry represents variability measurement data.

Table 11-18
CDMA Hotspot SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Cover Type	Device Serial Number	Duty Cycle	Side	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.5	25.10	-0.03	10 mm	Standard	32906	1:1	back	0.503	1.096	0.551	A22
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.5	25.10	-0.01	10 mm	Wireless Charging	32906	1:1	back	0.449	1.096	0.492	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.5	25.10	0.02	10 mm	Standard	32906	1:1	front	0.362	1.096	0.397	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.5	25.10	0.19	10 mm	Standard	32906	1:1	bottom	0.085	1.096	0.093	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.5	25.10	-0.01	10 mm	Standard	32906	1:1	right	0.139	1.096	0.152	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.5	25.10	-0.04	10 mm	Standard	32906	1:1	left	0.119	1.096	0.130	
824.70	1013	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.11	0.01	10 mm	Standard	32906	1:1	back	0.692	1.094	0.757	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.16	-0.06	10 mm	Standard	32906	1:1	back	0.749	1.081	0.810	
848.31	777	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.14	-0.02	10 mm	Standard	32906	1:1	back	0.932	1.086	1.012	A24
848.31	777	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.14	0.02	10 mm	Wireless Charging	32906	1:1	back	0.601	1.086	0.653	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.16	0.02	10 mm	Standard	32906	1:1	front	0.550	1.081	0.595	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.16	0.13	10 mm	Standard	32906	1:1	bottom	0.107	1.081	0.116	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.16	0.06	10 mm	Standard	32906	1:1	right	0.350	1.081	0.378	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.16	0.01	10 mm	Standard	32906	1:1	left	0.400	1.081	0.432	
848.31	777	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.14	0.03	10 mm	Standard	32906	1:1	back	0.917	1.086	0.996	
1880.00	600	PCS CDMA	EVDO Rev. 0	22.5	22.28	-0.02	10 mm	Standard	328FA	1:1	back	0.522	1.052	0.549	
1880.00	600	PCS CDMA	EVDO Rev. 0	22.5	22.28	-0.03	10 mm	Standard	328FA	1:1	front	0.553	1.052	0.582	
1880.00	600	PCS CDMA	EVDO Rev. 0	22.5	22.28	0.10	10 mm	Wireless Charging	328FA	1:1	front	0.612	1.052	0.644	A26
1880.00	600	PCS CDMA	EVDO Rev. 0	22.5	22.28	0.10	10 mm	Standard	328FA	1:1	bottom	0.094	1.052	0.099	
1880.00	600	PCS CDMA	EVDO Rev. 0	22.5	22.28	-0.16	10 mm	Standard	328FA	1:1	right	0.013	1.052	0.014	
1880.00	600	PCS CDMA	EVDO Rev. 0	22.5	22.28	-0.04	10 mm	Standard	328FA	1:1	left	0.324	1.052	0.341	
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: Blue highlighted entry represents variability measurement data.

Table 11-19
LTE Band 26 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)	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.40	0.03	0	3290B	QPSK	1	25	10 mm	back	1:1	0.453	1.023	0.463	A27
844.00	26990	High	LTE Band 26	10	Wireless Charging	23.5	23.40	0.02	0	3290B	QPSK	1	25	10 mm	back	1:1	0.410	1.023	0.419	
844.00	26990	High	LTE Band 26	10	Standard	22.5	22.31	-0.03	1	3290B	QPSK	25	0	10 mm	back	1:1	0.352	1.045	0.368	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.40	-0.03	0	3290B	QPSK	1	25	10 mm	front	1:1	0.300	1.023	0.307	
844.00	26990	High	LTE Band 26	10	Standard	22.5	22.31	-0.05	1	3290B	QPSK	25	0	10 mm	front	1:1	0.237	1.045	0.248	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.40	-0.08	0	3290B	QPSK	1	25	10 mm	bottom	1:1	0.044	1.023	0.045	
844.00	26990	High	LTE Band 26	10	Standard	22.5	22.31	0.03	1	3290B	QPSK	25	0	10 mm	bottom	1:1	0.062	1.045	0.065	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.40	-0.02	0	3290B	QPSK	1	25	10 mm	right	1:1	0.184	1.023	0.188	
844.00	26990	High	LTE Band 26	10	Standard	22.5	22.31	-0.10	1	3290B	QPSK	25	0	10 mm	right	1:1	0.169	1.045	0.177	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.40	-0.04	0	3290B	QPSK	1	25	10 mm	left	1:1	0.182	1.023	0.186	
844.00	26990	High	LTE Band 26	10	Standard	22.5	22.31	0.13	1	3290B	QPSK	25	0	10 mm	left	1:1	0.150	1.045	0.157	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram					

Table 11-20
LTE Band 25 (PCS) Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #
MHz	Ch.																			
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	23.5	23.44	-0.05	0	3290B	QPSK	1	49	10 mm	back	1:1	0.718	1.014	0.728	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	22.5	22.41	-0.04	1	3290B	QPSK	25	25	10 mm	back	1:1	0.562	1.021	0.574	
1855.00	26090	Low	LTE Band 25 (PCS)	10	Standard	23.5	23.40	0.12	0	3290B	QPSK	1	25	10 mm	front	1:1	0.863	1.023	0.883	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	23.5	23.44	0.12	0	3290B	QPSK	1	49	10 mm	front	1:1	0.959	1.014	0.972	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Wireless Charging	23.5	23.44	0.08	0	3290B	QPSK	1	49	10 mm	front	1:1	0.965	1.014	0.979	A29
1910.00	26640	High	LTE Band 25 (PCS)	10	Standard	23.5	23.38	0.14	0	3290B	QPSK	1	49	10 mm	front	1:1	0.879	1.028	0.904	
1855.00	26090	Low	LTE Band 25 (PCS)	10	Standard	22.5	22.15	-0.06	1	3290B	QPSK	25	0	10 mm	front	1:1	0.689	1.084	0.747	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	22.5	22.41	-0.14	1	3290B	QPSK	25	25	10 mm	front	1:1	0.816	1.021	0.833	
1910.00	26640	High	LTE Band 25 (PCS)	10	Standard	22.5	22.23	-0.08	1	3290B	QPSK	25	25	10 mm	front	1:1	0.740	1.064	0.787	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	22.5	22.39	-0.09	1	3290B	QPSK	50	0	10 mm	front	1:1	0.796	1.026	0.817	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	23.5	23.44	0.01	0	3290B	QPSK	1	49	10 mm	bottom	1:1	0.325	1.014	0.330	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	22.5	22.41	0.06	1	3290B	QPSK	25	25	10 mm	bottom	1:1	0.256	1.021	0.261	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	23.5	23.44	0.19	0	3290B	QPSK	1	49	10 mm	right	1:1	0.057	1.014	0.058	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	22.5	22.41	0.06	1	3290B	QPSK	25	25	10 mm	right	1:1	0.040	1.021	0.041	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	23.5	23.44	-0.06	0	3290B	QPSK	1	49	10 mm	left	1:1	0.070	1.014	0.071	
1882.50	26365	Mid	LTE Band 25 (PCS)	10	Standard	22.5	22.41	0.19	1	3290B	QPSK	25	25	10 mm	left	1:1	0.051	1.021	0.052	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-21
LTE Band 41 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.																			
2636.50	41055	Mid-High	LTE Band 41	20	Standard	24.0	23.92	0.00	0	328FF	QPSK	1	50	10 mm	back	1:1.58	0.280	1.019	0.285	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	23.0	22.89	-0.01	1	328FF	QPSK	50	0	10 mm	back	1:1.58	0.249	1.026	0.255	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	24.0	23.92	0.09	0	328FF	QPSK	1	50	10 mm	front	1:1.58	0.440	1.019	0.448	A31
2636.50	41055	Mid-High	LTE Band 41	20	Wireless Charging	24.0	23.92	0.04	0	328FF	QPSK	1	50	10 mm	front	1:1.58	0.294	1.019	0.300	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	23.0	22.89	-0.15	1	328FF	QPSK	50	0	10 mm	front	1:1.58	0.361	1.026	0.370	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	24.0	23.92	-0.08	0	328FF	QPSK	1	50	10 mm	bottom	1:1.58	0.179	1.019	0.182	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	23.0	22.89	0.03	1	328FF	QPSK	50	0	10 mm	bottom	1:1.58	0.158	1.026	0.162	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	24.0	23.92	-0.02	0	328FF	QPSK	1	50	10 mm	right	1:1.58	0.192	1.019	0.196	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	23.0	22.89	-0.10	1	328FF	QPSK	50	0	10 mm	right	1:1.58	0.169	1.026	0.173	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	24.0	23.92	0.13	0	328FF	QPSK	1	50	10 mm	left	1:1.58	0.049	1.019	0.050	
2636.50	41055	Mid-High	LTE Band 41	20	Standard	23.0	22.89	0.12	1	328FF	QPSK	50	0	10 mm	left	1:1.58	0.043	1.026	0.044	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-22
WLAN Hotspot SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Antenna	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	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	Antenna 1	DSSS	17.5	17.05	-0.08	10 mm	Standard	00F05	1	back	1:1	0.235	1.109	0.261	A32
2437	6	IEEE 802.11b	Antenna 1	DSSS	17.5	17.05	0.16	10 mm	Wireless Charging	00F05	1	back	1:1	0.103	1.109	0.114	
2437	6	IEEE 802.11b	Antenna 1	DSSS	17.5	17.05	0.06	10 mm	Standard	00F05	1	front	1:1	0.193	1.109	0.214	
2437	6	IEEE 802.11b	Antenna 1	DSSS	17.5	17.05	0.04	10 mm	Standard	00F05	1	top	1:1	0.114	1.109	0.126	
2437	6	IEEE 802.11b	Antenna 1	DSSS	17.5	17.05	0.04	10 mm	Standard	00F05	1	left	1:1	0.111	1.109	0.123	
2412	1	IEEE 802.11b	Antenna 2	DSSS	17.5	17.07	0.04	10 mm	Standard	00F05	1	back	1:1	0.087	1.104	0.096	
2412	1	IEEE 802.11b	Antenna 2	DSSS	17.5	17.07	0.09	10 mm	Standard	00F05	1	front	1:1	0.053	1.104	0.059	
2412	1	IEEE 802.11b	Antenna 2	DSSS	17.5	17.07	0.06	10 mm	Standard	00F05	1	top	1:1	0.022	1.104	0.024	
2412	1	IEEE 802.11b	Antenna 2	DSSS	17.5	17.07	0.05	10 mm	Standard	00F05	1	left	1:1	0.077	1.104	0.085	
2412	1	IEEE 802.11n	MIMO	OFDM	14.0	13.87	0.11	10 mm	Standard	00F05	13	back	1:1	0.066	1.030	0.068	
2412	1	IEEE 802.11n	MIMO	OFDM	14.0	13.87	0.10	10 mm	Wireless Charging	00F05	13	back	1:1	0.053	1.030	0.055	
2412	1	IEEE 802.11n	MIMO	OFDM	14.0	13.87	0.04	10 mm	Standard	00F05	13	front	1:1	0.056	1.030	0.058	
2412	1	IEEE 802.11n	MIMO	OFDM	14.0	13.87	0.04	10 mm	Standard	00F05	13	top	1:1	0.037	1.030	0.038	
2412	1	IEEE 802.11n	MIMO	OFDM	14.0	13.87	0.15	10 mm	Standard	00F05	13	left	1:1	0.029	1.030	0.067	
5745	149	IEEE 802.11a	Antenna 1	OFDM	14.0	13.31	0.06	10 mm	Standard	32712	6	back	1:1	0.138	1.172	0.162	
5745	149	IEEE 802.11a	Antenna 1	OFDM	14.0	13.31	0.12	10 mm	Standard	32712	6	front	1:1	0.089	1.172	0.104	
5745	149	IEEE 802.11a	Antenna 1	OFDM	14.0	13.31	-0.02	10 mm	Standard	32712	6	top	1:1	0.260	1.172	0.305	
5775	155	IEEE 802.11ac	Antenna 1	OFDM	11.5	11.25	0.02	10 mm	Standard	32712	29.3	top	1:1	0.104	1.059	0.110	
5745	149	IEEE 802.11a	Antenna 1	OFDM	14.0	13.31	0.05	10 mm	Standard	32712	6	left	1:1	0.025	1.172	0.029	
5765	153	IEEE 802.11a	Antenna 2	OFDM	14.0	13.44	0.10	10 mm	Standard	15ECE	6	back	1:1	0.287	1.138	**0.327**	A33
5765	153	IEEE 802.11a	Antenna 2	OFDM	14.0	13.44	0.17	10 mm	Wireless Charging	15ECE	6	back	1:1	0.204	1.138	0.232	
5775	155	IEEE 802.11ac	Antenna 2	OFDM	11.5	11.26	0.03	10 mm	Standard	15ECE	29.3	back	1:1	0.128	1.057	0.135	
5765	153	IEEE 802.11a	Antenna 2	OFDM	14.0	13.44	0.04	10 mm	Standard	15ECE	6	front	1:1	0.078	1.138	0.089	
5765	153	IEEE 802.11a	Antenna 2	OFDM	14.0	13.44	0.04	10 mm	Standard	15ECE	6	top	1:1	0.066	1.138	0.075	
5765	153	IEEE 802.11a	Antenna 2	OFDM	14.0	13.44	0.02	10 mm	Standard	15ECE	6	left	1:1	0.173	1.138	0.197	
5765	153	IEEE 802.11n	MIMO	OFDM	13.5	13.47	0.16	10 mm	Standard	15ECE	13	back	1:1	0.220	1.007	0.222	
5765	153	IEEE 802.11n	MIMO	OFDM	13.5	13.47	0.00	10 mm	Wireless Charging	15ECE	13	back	1:1	0.121	1.007	0.122	
5765	153	IEEE 802.11n	MIMO	OFDM	13.5	13.47	-0.01	10 mm	Standard	15ECE	13	front	1:1	0.032	1.007	0.032	
5765	153	IEEE 802.11n	MIMO	OFDM	13.5	13.47	0.06	10 mm	Standard	15ECE	13	top	1:1	0.097	1.007	0.098	
5765	153	IEEE 802.11n	MIMO	OFDM	13.5	13.47	0.03	10 mm	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								

11.4 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. A test separation distance of 10 mm for body-worn SAR was also used for GSM850/1900, UMTS Bands 5/2, CDMA BC0/10, LTE Bands 26/25/41, and 2.4/5 GHz WLAN as it is more conservative.
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 13 for variability analysis.
9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.7 for more details).
10. This device utilizes power reduction for PCS CDMA/EVDO under some portable hotspot conditions for SAR compliance. Therefore, hotspot was tested for PCS EVDO at reduced power levels.
11. This DUT may be used with a wireless charging cover. Per FCC KDB Publication 648474 D04, SAR was measured using the standard battery cover and then repeated with the wireless charging cover for the highest reported SAR for each wireless technology, frequency band, operating mode, and exposure condition. No other additional testing with the wireless charging battery cover was required since all reported SAR was under 1.2 W/kg

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 > ½ dB, instead of the middle channel, the highest output power channel was used.

CDMA 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 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 ¼ 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 > ½ 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. 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 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 > ½ dB, instead of the middle channel, the highest output power channel was used.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r01. The general test procedures used for testing can be found in Section 8.5.4.
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).
4. Per FCC KDB Publication 447498 D01v05r01, since the reported (scaled) LTE Band 41 SAR measured at the highest output power channel for each test configuration is ≤ 0.6 W/kg, testing at the other channels is not required for such test configuration(s).
5. TDD LTE was tested using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.

WLAN 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 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. WLAN Body-Worn tests were performed at distance of 10 mm to represent a more conservative test configuration.

12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

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

12.2 Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 D01v05 IV.C.1.iii and IEEE 1528-2013 Section 6.3.4.1.2, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific 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.

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

Table 12-1
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.

12.3 Head SAR Simultaneous Transmission Analysis

Table 12-2
Simultaneous Transmission Scenario with Antenna 1 2.4 GHz WLAN (Held to Ear)

Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.227	0.185	0.412
	Right Tilt	0.115	0.180	0.295
	Left Cheek	0.370	0.147	**0.517**
	Left Tilt	0.142	0.146	0.288

Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.263	0.185	0.448
	Right Tilt	0.171	0.180	0.351
	Left Cheek	0.546	0.147	**0.693**
	Left Tilt	0.139	0.146	0.285

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.237	0.185	0.422
	Right Tilt	0.145	0.180	0.325
	Left Cheek	0.365	0.147	**0.512**
	Left Tilt	0.164	0.146	0.310

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.551	0.185	0.736
	Right Tilt	0.312	0.180	0.492
	Left Cheek	1.057	0.147	**1.204**
	Left Tilt	0.249	0.146	0.395

Simult Tx	Configuration	CDMA BC10 (§90S) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.508	0.185	0.693
	Right Tilt	0.302	0.180	0.482
	Left Cheek	0.555	0.147	**0.702**
	Left Tilt	0.301	0.146	0.447

Simult Tx	Configuration	EVDO BC10 (§90S) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.469	0.185	0.654
	Right Tilt	0.174	0.180	0.354
	Left Cheek	0.575	0.147	**0.722**
	Left Tilt	0.343	0.146	0.489

Simult Tx	Configuration	CDMA BC0 (§22H) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.527	0.185	0.712
	Right Tilt	0.408	0.180	0.588
	Left Cheek	0.608	0.147	**0.755**
	Left Tilt	0.375	0.146	0.521

Simult Tx	Configuration	EVDO BC0 (§22H) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.499	0.185	0.684
	Right Tilt	0.213	0.180	0.393
	Left Cheek	0.632	0.147	**0.779**
	Left Tilt	0.324	0.146	0.470

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.533	0.185	0.718
	Right Tilt	0.298	0.180	0.478
	Left Cheek	1.055	0.147	**1.202**
	Left Tilt	0.252	0.146	0.398

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.285	0.185	0.470
	Right Tilt	0.157	0.180	0.337
	Left Cheek	0.574	0.147	**0.721**
	Left Tilt	0.131	0.146	0.277

Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.218	0.185	0.403
	Right Tilt	0.096	0.180	0.276
	Left Cheek	0.324	0.147	**0.471**
	Left Tilt	0.134	0.146	0.280

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.378	0.185	0.563
	Right Tilt	0.268	0.180	0.448
	Left Cheek	0.764	0.147	**0.911**
	Left Tilt	0.236	0.146	0.382

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.245	0.185	**0.430**
	Right Tilt	0.094	0.180	0.274
	Left Cheek	0.157	0.147	0.304
	Left Tilt	0.151	0.146	0.297

Table 12-3
Simultaneous Transmission Scenario with Antenna 2 2.4 GHz WLAN (Held to Ear)

Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.227	0.039	0.266
	Right Tilt	0.115	0.008	0.123
	Left Cheek	0.370	0.011	**0.381**
	Left Tilt	0.142	0.005	0.147

Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.263	0.039	0.302
	Right Tilt	0.171	0.008	0.179
	Left Cheek	0.546	0.011	**0.557**
	Left Tilt	0.139	0.005	0.144

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.237	0.039	0.276
	Right Tilt	0.145	0.008	0.153
	Left Cheek	0.365	0.011	**0.376**
	Left Tilt	0.164	0.005	0.169

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.551	0.039	0.590
	Right Tilt	0.312	0.008	0.320
	Left Cheek	1.057	0.011	**1.068**
	Left Tilt	0.249	0.005	0.254

Simult Tx	Configuration	CDMA BC10 (§90S) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.508	0.039	0.547
	Right Tilt	0.302	0.008	0.310
	Left Cheek	0.555	0.011	**0.566**
	Left Tilt	0.301	0.005	0.306

Simult Tx	Configuration	EVDO BC10 (§90S) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.469	0.039	0.508
	Right Tilt	0.174	0.008	0.182
	Left Cheek	0.575	0.011	**0.586**
	Left Tilt	0.343	0.005	0.348

Simult Tx	Configuration	CDMA BC0 (§22H) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.527	0.039	0.566
	Right Tilt	0.408	0.008	0.416
	Left Cheek	0.608	0.011	**0.619**
	Left Tilt	0.375	0.005	0.380

Simult Tx	Configuration	EVDO BC0 (§22H) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.499	0.039	0.538
	Right Tilt	0.213	0.008	0.221
	Left Cheek	0.632	0.011	**0.643**
	Left Tilt	0.324	0.005	0.329

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.533	0.039	0.572
	Right Tilt	0.298	0.008	0.306
	Left Cheek	1.055	0.011	**1.066**
	Left Tilt	0.252	0.005	0.257

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.285	0.039	0.324
	Right Tilt	0.157	0.008	0.165
	Left Cheek	0.574	0.011	**0.585**
	Left Tilt	0.131	0.005	0.136

Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.218	0.039	0.257
	Right Tilt	0.096	0.008	0.104
	Left Cheek	0.324	0.011	**0.335**
	Left Tilt	0.134	0.005	0.139

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.378	0.039	0.417
	Right Tilt	0.268	0.008	0.276
	Left Cheek	0.764	0.011	**0.775**
	Left Tilt	0.236	0.005	0.241

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.245	0.039	**0.284**
	Right Tilt	0.094	0.008	0.102
	Left Cheek	0.157	0.011	0.168
	Left Tilt	0.151	0.005	0.156

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

Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.227	0.103	0.330
	Right Tilt	0.115	0.091	0.206
	Left Cheek	0.370	0.121	**0.491**
	Left Tilt	0.142	0.124	0.266

Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.263	0.103	0.366
	Right Tilt	0.171	0.091	0.262
	Left Cheek	0.546	0.121	**0.667**
	Left Tilt	0.139	0.124	0.263

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.237	0.103	0.340
	Right Tilt	0.145	0.091	0.236
	Left Cheek	0.365	0.121	**0.486**
	Left Tilt	0.164	0.124	0.288

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.551	0.103	0.654
	Right Tilt	0.312	0.091	0.403
	Left Cheek	1.057	0.121	**1.178**
	Left Tilt	0.249	0.124	0.373

Simult Tx	Configuration	CDMA BC10 (§90S) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.508	0.103	0.611
	Right Tilt	0.302	0.091	0.393
	Left Cheek	0.555	0.121	**0.676**
	Left Tilt	0.301	0.124	0.425

Simult Tx	Configuration	EVDO BC10 (§90S) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.469	0.103	0.572
	Right Tilt	0.174	0.091	0.265
	Left Cheek	0.575	0.121	**0.696**
	Left Tilt	0.343	0.124	0.467

Simult Tx	Configuration	CDMA BC0 (§22H) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.527	0.103	0.630
	Right Tilt	0.408	0.091	0.499
	Left Cheek	0.608	0.121	**0.729**
	Left Tilt	0.375	0.124	0.499

Simult Tx	Configuration	EVDO BC0 (§22H) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.499	0.103	0.602
	Right Tilt	0.213	0.091	0.304
	Left Cheek	0.632	0.121	**0.753**
	Left Tilt	0.324	0.124	0.448

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.533	0.103	0.636
	Right Tilt	0.298	0.091	0.389
	Left Cheek	1.055	0.121	**1.176**
	Left Tilt	0.252	0.124	0.376

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.285	0.103	0.388
	Right Tilt	0.157	0.091	0.248
	Left Cheek	0.574	0.121	**0.695**
	Left Tilt	0.131	0.124	0.255

Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.218	0.103	0.321
	Right Tilt	0.096	0.091	0.187
	Left Cheek	0.324	0.121	**0.445**
	Left Tilt	0.134	0.124	0.258

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.378	0.103	0.481
	Right Tilt	0.268	0.091	0.359
	Left Cheek	0.764	0.121	**0.885**
	Left Tilt	0.236	0.124	0.360

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.245	0.103	**0.348**
	Right Tilt	0.094	0.091	0.185
	Left Cheek	0.157	0.121	0.278
	Left Tilt	0.151	0.124	0.275

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

Simult Tx	Configuration	GSM 850 SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.227	0.063	0.290
	Right Tilt	0.115	0.063	0.178
	Left Cheek	0.370	0.042	**0.412**
	Left Tilt	0.142	0.049	0.191

Simult Tx	Configuration	GSM 1900 SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.263	0.063	0.326
	Right Tilt	0.171	0.063	0.234
	Left Cheek	0.546	0.042	**0.588**
	Left Tilt	0.139	0.049	0.188

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.237	0.063	0.300
	Right Tilt	0.145	0.063	0.208
	Left Cheek	0.365	0.042	**0.407**
	Left Tilt	0.164	0.049	0.213

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.551	0.063	0.614
	Right Tilt	0.312	0.063	0.375
	Left Cheek	1.057	0.042	**1.099**
	Left Tilt	0.249	0.049	0.298

Simult Tx	Configuration	CDMA BC10 (§90S) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.508	0.063	0.571
	Right Tilt	0.302	0.063	0.365
	Left Cheek	0.555	0.042	**0.597**
	Left Tilt	0.301	0.049	0.350

Simult Tx	Configuration	EVDO BC10 (§90S) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.469	0.063	0.532
	Right Tilt	0.174	0.063	0.237
	Left Cheek	0.575	0.042	**0.617**
	Left Tilt	0.343	0.049	0.392

Simult Tx	Configuration	CDMA BC0 (§22H) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.527	0.063	0.590
	Right Tilt	0.408	0.063	0.471
	Left Cheek	0.608	0.042	**0.650**
	Left Tilt	0.375	0.049	0.424

Simult Tx	Configuration	EVDO BC0 (§22H) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.499	0.063	0.562
	Right Tilt	0.213	0.063	0.276
	Left Cheek	0.632	0.042	**0.674**
	Left Tilt	0.324	0.049	0.373

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.533	0.063	0.596
	Right Tilt	0.298	0.063	0.361
	Left Cheek	1.055	0.042	**1.097**
	Left Tilt	0.252	0.049	0.301

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.285	0.063	0.348
	Right Tilt	0.157	0.063	0.220
	Left Cheek	0.574	0.042	**0.616**
	Left Tilt	0.131	0.049	0.180

Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.218	0.063	0.281
	Right Tilt	0.096	0.063	0.159
	Left Cheek	0.324	0.042	**0.366**
	Left Tilt	0.134	0.049	0.183

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.378	0.063	0.441
	Right Tilt	0.268	0.063	0.331
	Left Cheek	0.764	0.042	**0.806**
	Left Tilt	0.236	0.049	0.285

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.245	0.063	**0.308**
	Right Tilt	0.094	0.063	0.157
	Left Cheek	0.157	0.042	0.199
	Left Tilt	0.151	0.049	0.200

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.

Table 12-6
Simultaneous Transmission Scenario with Antenna 2 5 GHz WLAN (Held to Ear)

Simult Tx	Configuration	GSM 850 SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.227	0.217	**0.444**
	Right Tilt	0.115	0.080	0.195
	Left Cheek	0.370	0.046	0.416
	Left Tilt	0.142	0.044	0.186

Simult Tx	Configuration	GSM 1900 SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.263	0.217	0.480
	Right Tilt	0.171	0.080	0.251
	Left Cheek	0.546	0.046	**0.592**
	Left Tilt	0.139	0.044	0.183

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.237	0.217	**0.454**
	Right Tilt	0.145	0.080	0.225
	Left Cheek	0.365	0.046	0.411
	Left Tilt	0.164	0.044	0.208

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.551	0.217	0.768
	Right Tilt	0.312	0.080	0.392
	Left Cheek	1.057	0.046	**1.103**
	Left Tilt	0.249	0.044	0.293

Simult Tx	Configuration	CDMA BC10 (§90S) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.508	0.217	**0.725**
	Right Tilt	0.302	0.080	0.382
	Left Cheek	0.555	0.046	0.601
	Left Tilt	0.301	0.044	0.345

Simult Tx	Configuration	EVDO BC10 (§90S) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.469	0.217	**0.686**
	Right Tilt	0.174	0.080	0.254
	Left Cheek	0.575	0.046	0.621
	Left Tilt	0.343	0.044	0.387

Simult Tx	Configuration	CDMA BC0 (§22H) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.527	0.217	**0.744**
	Right Tilt	0.408	0.080	0.488
	Left Cheek	0.608	0.046	0.654
	Left Tilt	0.375	0.044	0.419

Simult Tx	Configuration	EVDO BC0 (§22H) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.499	0.217	**0.716**
	Right Tilt	0.213	0.080	0.293
	Left Cheek	0.632	0.046	0.678
	Left Tilt	0.324	0.044	0.368

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.533	0.217	0.750
	Right Tilt	0.298	0.080	0.378
	Left Cheek	1.055	0.046	**1.101**
	Left Tilt	0.252	0.044	0.296

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.285	0.217	0.502
	Right Tilt	0.157	0.080	0.237
	Left Cheek	0.574	0.046	**0.620**
	Left Tilt	0.131	0.044	0.175

Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.218	0.217	**0.435**
	Right Tilt	0.096	0.080	0.176
	Left Cheek	0.324	0.046	0.370
	Left Tilt	0.134	0.044	0.178

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.378	0.217	0.595
	Right Tilt	0.268	0.080	0.348
	Left Cheek	0.764	0.046	**0.810**
	Left Tilt	0.236	0.044	0.280

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.245	0.217	**0.462**
	Right Tilt	0.094	0.080	0.174
	Left Cheek	0.157	0.046	0.203
	Left Tilt	0.151	0.044	0.195

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.

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

Simult Tx	Configuration	GSM 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.227	0.061	0.288
	Right Tilt	0.115	0.017	0.132
	Left Cheek	0.370	0.020	**0.390**
	Left Tilt	0.142	0.014	0.156

Simult Tx	Configuration	GSM 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.263	0.061	0.324
	Right Tilt	0.171	0.017	0.188
	Left Cheek	0.546	0.020	**0.566**
	Left Tilt	0.139	0.014	0.153

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.237	0.061	0.298
	Right Tilt	0.145	0.017	0.162
	Left Cheek	0.365	0.020	**0.385**
	Left Tilt	0.164	0.014	0.178

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.551	0.061	0.612
	Right Tilt	0.312	0.017	0.329
	Left Cheek	1.057	0.020	**1.077**
	Left Tilt	0.249	0.014	0.263

Simult Tx	Configuration	CDMA BC10 (§90S) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.508	0.061	0.569
	Right Tilt	0.302	0.017	0.319
	Left Cheek	0.555	0.020	**0.575**
	Left Tilt	0.301	0.014	0.315

Simult Tx	Configuration	EVDO BC10 (§90S) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.469	0.061	0.530
	Right Tilt	0.174	0.017	0.191
	Left Cheek	0.575	0.020	**0.595**
	Left Tilt	0.343	0.014	0.357

Simult Tx	Configuration	CDMA BC0 (§22H) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.527	0.061	0.588
	Right Tilt	0.408	0.017	0.425
	Left Cheek	0.608	0.020	**0.628**
	Left Tilt	0.375	0.014	0.389

Simult Tx	Configuration	EVDO BC0 (§22H) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.499	0.061	0.560
	Right Tilt	0.213	0.017	0.230
	Left Cheek	0.632	0.020	**0.652**
	Left Tilt	0.324	0.014	0.338

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.533	0.061	0.594
	Right Tilt	0.298	0.017	0.315
	Left Cheek	1.055	0.020	**1.075**
	Left Tilt	0.252	0.014	0.266

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.285	0.061	0.346
	Right Tilt	0.157	0.017	0.174
	Left Cheek	0.574	0.020	**0.594**
	Left Tilt	0.131	0.014	0.145

Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.218	0.061	0.279
	Right Tilt	0.096	0.017	0.113
	Left Cheek	0.324	0.020	**0.344**
	Left Tilt	0.134	0.014	0.148

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.378	0.061	0.439
	Right Tilt	0.268	0.017	0.285
	Left Cheek	0.764	0.020	**0.784**
	Left Tilt	0.236	0.014	0.250

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.245	0.061	**0.306**
	Right Tilt	0.094	0.017	0.111
	Left Cheek	0.157	0.020	0.177
	Left Tilt	0.151	0.014	0.165

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.

12.4 Body-Worn Simultaneous Transmission Analysis

Note:

1. For SAR summation for body back at 15 mm GSM850/1900, UMTS 850/1900, CDMA BC10/0, and LTE Band 26/25/41 SAR values for 1.0 cm were used since the 1.0 cm test distance for GSM850/1900, UMTS 850/1900, CDMA BC10/0, and LTE Band 26/25/41 was more conservative. "<" denotes that the 1.0 cm GSM850/1900, UMTS 850/1900, CDMA BC10/0, and LTE Band 26/25/41 SAR values were used for summation purposes.
2. For SAR summations for body back at 15 mm, WLAN SAR values for 1.0 cm were used since the 1.0 cm test distance for WLAN was more conservative. "<" denotes that the 1.0 cm WLAN SAR values were used for summation purposes.

Table 12-8
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 Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.677	< 0.261	< 0.938
Back Side	GSM 1900	< 0.408	< 0.261	< 0.669
Back Side	UMTS 850	< 0.524	< 0.261	< 0.785
Back Side	UMTS 1900	< 0.719	< 0.261	< 0.980
Back Side	CDMA BC10 (§90S)	< 0.536	< 0.261	< 0.797
Back Side	CDMA BC0 (§22H)	< 1.007	< 0.261	**< 1.268**
Back Side	PCS CDMA	0.669	< 0.261	< 0.930
Back Side	LTE Band 26	< 0.463	< 0.261	< 0.724
Back Side	LTE Band 25 (PCS)	< 0.728	< 0.261	< 0.989
Back Side	LTE Band 41	< 0.285	< 0.261	< 0.546

Table 12-9
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 Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.677	< 0.096	< 0.773
Back Side	GSM 1900	< 0.408	< 0.096	< 0.504
Back Side	UMTS 850	< 0.524	< 0.096	< 0.620
Back Side	UMTS 1900	< 0.719	< 0.096	< 0.815
Back Side	CDMA BC10 (§90S)	< 0.536	< 0.096	< 0.632
Back Side	CDMA BC0 (§22H)	< 1.007	< 0.096	**< 1.103**
Back Side	PCS CDMA	0.669	< 0.096	< 0.765
Back Side	LTE Band 26	< 0.463	< 0.096	< 0.559
Back Side	LTE Band 25 (PCS)	< 0.728	< 0.096	< 0.824
Back Side	LTE Band 41	< 0.285	< 0.096	< 0.381

Table 12-10
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 MIMO SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.677	< 0.068	< 0.745
Back Side	GSM 1900	< 0.408	< 0.068	< 0.476
Back Side	UMTS 850	< 0.524	< 0.068	< 0.592
Back Side	UMTS 1900	< 0.719	< 0.068	< 0.787
Back Side	CDMA BC10 (§90S)	< 0.536	< 0.068	< 0.604
Back Side	CDMA BC0 (§22H)	< 1.007	< 0.068	**< 1.075**
Back Side	PCS CDMA	0.669	< 0.068	< 0.737
Back Side	LTE Band 26	< 0.463	< 0.068	< 0.531
Back Side	LTE Band 25 (PCS)	< 0.728	< 0.068	< 0.796
Back Side	LTE Band 41	< 0.285	< 0.068	< 0.353

Table 12-11
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 Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.677	< 0.269	< 0.946
Back Side	GSM 1900	< 0.408	< 0.269	< 0.677
Back Side	UMTS 850	< 0.524	< 0.269	< 0.793
Back Side	UMTS 1900	< 0.719	< 0.269	< 0.988
Back Side	CDMA BC10 (§90S)	< 0.536	< 0.269	< 0.805
Back Side	CDMA BC0 (§22H)	< 1.007	< 0.269	**< 1.276**
Back Side	PCS CDMA	0.669	< 0.269	< 0.938
Back Side	LTE Band 26	< 0.463	< 0.269	< 0.732
Back Side	LTE Band 25 (PCS)	< 0.728	< 0.269	< 0.997
Back Side	LTE Band 41	< 0.285	< 0.269	< 0.554

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

Table 12-12
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 Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.677	< 0.351	< 1.028
Back Side	GSM 1900	< 0.408	< 0.351	< 0.759
Back Side	UMTS 850	< 0.524	< 0.351	< 0.875
Back Side	UMTS 1900	< 0.719	< 0.351	< 1.070
Back Side	CDMA BC10 (§90S)	< 0.536	< 0.351	< 0.887
Back Side	CDMA BC0 (§22H)	< 1.007	< 0.351	**< 1.358**
Back Side	PCS CDMA	0.669	< 0.351	< 1.020
Back Side	LTE Band 26	< 0.463	< 0.351	< 0.814
Back Side	LTE Band 25 (PCS)	< 0.728	< 0.351	< 1.079
Back Side	LTE Band 41	< 0.285	< 0.351	< 0.636

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

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.677	< 0.222	< 0.899
Back Side	GSM 1900	< 0.408	< 0.222	< 0.630
Back Side	UMTS 850	< 0.524	< 0.222	< 0.746
Back Side	UMTS 1900	< 0.719	< 0.222	< 0.941
Back Side	CDMA BC10 (§90S)	< 0.536	< 0.222	< 0.758
Back Side	CDMA BC0 (§22H)	< 1.007	< 0.222	**< 1.229**
Back Side	PCS CDMA	0.669	< 0.222	< 0.891
Back Side	LTE Band 26	< 0.463	< 0.222	< 0.685
Back Side	LTE Band 25 (PCS)	< 0.728	< 0.222	< 0.950
Back Side	LTE Band 41	< 0.285	< 0.222	< 0.507

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

Table 12-14
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.677	0.139	< 0.816
Back Side	GSM 1900	< 0.408	0.139	< 0.547
Back Side	UMTS 850	< 0.524	0.139	< 0.663
Back Side	UMTS 1900	< 0.719	0.139	< 0.858
Back Side	CDMA BC10 (§90S)	< 0.536	0.139	< 0.675
Back Side	CDMA BC0 (§22H)	< 1.007	0.139	**< 1.146**
Back Side	PCS CDMA	0.669	0.139	0.808
Back Side	LTE Band 26	< 0.463	0.139	< 0.602
Back Side	LTE Band 25 (PCS)	< 0.728	0.139	< 0.867
Back Side	LTE Band 41	< 0.285	0.139	< 0.424

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

12.5 Hotspot SAR Simultaneous Transmission Analysis

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

Table 12-15
Antenna 1 Simultaneous Transmission Scenario (2.4 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	1.039	0.261	**1.300**
	Front	0.711	0.214	0.925
	Top	-	0.126	0.126
	Bottom	0.129	-	0.129
	Right	0.590	-	0.590
	Left	0.577	0.123	0.700

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.529	0.261	0.790
	Front	0.968	0.214	**1.182**
	Top	-	0.126	0.126
	Bottom	0.286	-	0.286
	Right	0.058	-	0.058
	Left	0.451	0.123	0.574

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.524	0.261	**0.785**
	Front	0.374	0.214	0.588
	Top	-	0.126	0.126
	Bottom	0.085	-	0.085
	Right	0.233	-	0.233
	Left	0.255	0.123	0.378

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.719	0.261	0.980
	Front	1.092	0.214	**1.306**
	Top	-	0.126	0.126
	Bottom	0.295	-	0.295
	Right	0.029	-	0.029
	Left	0.520	0.123	0.643

Simult Tx	Configuration	EVDO BC10 (§90S) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.551	0.261	**0.812**
	Front	0.397	0.214	0.611
	Top	-	0.126	0.126
	Bottom	0.093	-	0.093
	Right	0.152	-	0.152
	Left	0.130	0.123	0.253

Simult Tx	Configuration	EVDO BC0 (§22H) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	1.012	0.261	**1.273**
	Front	0.595	0.214	0.809
	Top	-	0.126	0.126
	Bottom	0.116	-	0.116
	Right	0.378	-	0.378
	Left	0.432	0.123	0.555

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.549	0.261	0.810
	Front	0.644	0.214	**0.858**
	Top	-	0.126	0.126
	Bottom	0.099	-	0.099
	Right	0.014	-	0.014
	Left	0.341	0.123	0.464

Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.463	0.261	**0.724**
	Front	0.307	0.214	0.521
	Top	-	0.126	0.126
	Bottom	0.065	-	0.065
	Right	0.188	-	0.188
	Left	0.186	0.123	0.309

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.728	0.261	0.989
	Front	0.979	0.214	**1.193**
	Top	-	0.126	0.126
	Bottom	0.330	-	0.330
	Right	0.058	-	0.058
	Left	0.071	0.123	0.194

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.285	0.261	0.546
	Front	0.448	0.214	**0.662**
	Top	-	0.126	0.126
	Bottom	0.182	-	0.182
	Right	0.196	-	0.196
	Left	0.050	0.123	0.173

Table 12-16
Antenna 2 Simultaneous Transmission Scenario (2.4 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	1.039	0.096	**1.135**
	Front	0.711	0.059	0.770
	Top	-	0.024	0.024
	Bottom	0.129	-	0.129
	Right	0.590	-	0.590
	Left	0.577	0.085	0.662

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.529	0.096	0.625
	Front	0.968	0.059	**1.027**
	Top	-	0.024	0.024
	Bottom	0.286	-	0.286
	Right	0.058	-	0.058
	Left	0.451	0.085	0.536

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.524	0.096	**0.620**
	Front	0.374	0.059	0.433
	Top	-	0.024	0.024
	Bottom	0.085	-	0.085
	Right	0.233	-	0.233
	Left	0.255	0.085	0.340

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.719	0.096	0.815
	Front	1.092	0.059	**1.151**
	Top	-	0.024	0.024
	Bottom	0.295	-	0.295
	Right	0.029	-	0.029
	Left	0.520	0.085	0.605

Simult Tx	Configuration	EVDO BC10 (§90S) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.551	0.096	**0.647**
	Front	0.397	0.059	0.456
	Top	-	0.024	0.024
	Bottom	0.093	-	0.093
	Right	0.152	-	0.152
	Left	0.130	0.085	0.215

Simult Tx	Configuration	EVDO BC0 (§22H) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	1.012	0.096	**1.108**
	Front	0.595	0.059	0.654
	Top	-	0.024	0.024
	Bottom	0.116	-	0.116
	Right	0.378	-	0.378
	Left	0.432	0.085	0.517

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.549	0.096	0.645
	Front	0.644	0.059	**0.703**
	Top	-	0.024	0.024
	Bottom	0.099	-	0.099
	Right	0.014	-	0.014
	Left	0.341	0.085	0.426

Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.463	0.096	**0.559**
	Front	0.307	0.059	0.366
	Top	-	0.024	0.024
	Bottom	0.065	-	0.065
	Right	0.188	-	0.188
	Left	0.186	0.085	0.271

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.728	0.096	0.824
	Front	0.979	0.059	**1.038**
	Top	-	0.024	0.024
	Bottom	0.330	-	0.330
	Right	0.058	-	0.058
	Left	0.071	0.085	0.156

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.285	0.096	0.381
	Front	0.448	0.059	**0.507**
	Top	-	0.024	0.024
	Bottom	0.182	-	0.182
	Right	0.196	-	0.196
	Left	0.050	0.085	0.135

Table 12-17
MIMO Simultaneous Transmission Scenario (2.4 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	1.039	0.068	**1.107**
	Front	0.711	0.058	0.769
	Top	-	0.038	0.038
	Bottom	0.129	-	0.129
	Right	0.590	-	0.590
	Left	0.577	0.067	0.644

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.529	0.068	0.597
	Front	0.968	0.058	**1.026**
	Top	-	0.038	0.038
	Bottom	0.286	-	0.286
	Right	0.058	-	0.058
	Left	0.451	0.067	0.518

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.524	0.068	**0.592**
	Front	0.374	0.058	0.432
	Top	-	0.038	0.038
	Bottom	0.085	-	0.085
	Right	0.233	-	0.233
	Left	0.255	0.067	0.322

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.719	0.068	0.787
	Front	1.092	0.058	**1.150**
	Top	-	0.038	0.038
	Bottom	0.295	-	0.295
	Right	0.029	-	0.029
	Left	0.520	0.067	0.587

Simult Tx	Configuration	EVDO BC10 (§90S) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.551	0.068	**0.619**
	Front	0.397	0.058	0.455
	Top	-	0.038	0.038
	Bottom	0.093	-	0.093
	Right	0.152	-	0.152
	Left	0.130	0.067	0.197

Simult Tx	Configuration	EVDO BC0 (§22H) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	1.012	0.068	**1.080**
	Front	0.595	0.058	0.653
	Top	-	0.038	0.038
	Bottom	0.116	-	0.116
	Right	0.378	-	0.378
	Left	0.432	0.067	0.499

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.549	0.068	0.617
	Front	0.644	0.058	**0.702**
	Top	-	0.038	0.038
	Bottom	0.099	-	0.099
	Right	0.014	-	0.014
	Left	0.341	0.067	0.408

Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.463	0.068	**0.531**
	Front	0.307	0.058	0.365
	Top	-	0.038	0.038
	Bottom	0.065	-	0.065
	Right	0.188	-	0.188
	Left	0.186	0.067	0.253

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.728	0.068	0.796
	Front	0.979	0.058	**1.037**
	Top	-	0.038	0.038
	Bottom	0.330	-	0.330
	Right	0.058	-	0.058
	Left	0.071	0.067	0.138

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.285	0.068	0.353
	Front	0.448	0.058	**0.506**
	Top	-	0.038	0.038
	Bottom	0.182	-	0.182
	Right	0.196	-	0.196
	Left	0.050	0.067	0.117

Table 12-18
Antenna 1 Simultaneous Transmission Scenario (5.8 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	1.039	0.162	**1.201**
	Front	0.711	0.104	0.815
	Top	-	0.305	0.305
	Bottom	0.129	-	0.129
	Right	0.590	-	0.590
	Left	0.577	0.029	0.606

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.529	0.162	0.691
	Front	0.968	0.104	**1.072**
	Top	-	0.305	0.305
	Bottom	0.286	-	0.286
	Right	0.058	-	0.058
	Left	0.451	0.029	0.480

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.524	0.162	**0.686**
	Front	0.374	0.104	0.478
	Top	-	0.305	0.305
	Bottom	0.085	-	0.085
	Right	0.233	-	0.233
	Left	0.255	0.029	0.284

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.719	0.162	0.881
	Front	1.092	0.104	**1.196**
	Top	-	0.305	0.305
	Bottom	0.295	-	0.295
	Right	0.029	-	0.029
	Left	0.520	0.029	0.549

Simult Tx	Configuration	EVDO BC10 (§90S) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.551	0.162	**0.713**
	Front	0.397	0.104	0.501
	Top	-	0.305	0.305
	Bottom	0.093	-	0.093
	Right	0.152	-	0.152
	Left	0.130	0.029	0.159

Simult Tx	Configuration	EVDO BC0 (§22H) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	1.012	0.162	**1.174**
	Front	0.595	0.104	0.699
	Top	-	0.305	0.305
	Bottom	0.116	-	0.116
	Right	0.378	-	0.378
	Left	0.432	0.029	0.461

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.549	0.162	0.711
	Front	0.644	0.104	**0.748**
	Top	-	0.305	0.305
	Bottom	0.099	-	0.099
	Right	0.014	-	0.014
	Left	0.341	0.029	0.370

Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.463	0.162	**0.625**
	Front	0.307	0.104	0.411
	Top	-	0.305	0.305
	Bottom	0.065	-	0.065
	Right	0.188	-	0.188
	Left	0.186	0.029	0.215

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.728	0.162	0.890
	Front	0.979	0.104	**1.083**
	Top	-	0.305	0.305
	Bottom	0.330	-	0.330
	Right	0.058	-	0.058
	Left	0.071	0.029	0.100

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.285	0.162	0.447
	Front	0.448	0.104	**0.552**
	Top	-	0.305	0.305
	Bottom	0.182	-	0.182
	Right	0.196	-	0.196
	Left	0.050	0.029	0.079

Table 12-19
Antenna 2 Simultaneous Transmission Scenario (5.8 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	1.039	0.327	**1.366**
	Front	0.711	0.089	0.800
	Top	-	0.075	0.075
	Bottom	0.129	-	0.129
	Right	0.590	-	0.590
	Left	0.577	0.197	0.774

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.529	0.327	0.856
	Front	0.968	0.089	**1.057**
	Top	-	0.075	0.075
	Bottom	0.286	-	0.286
	Right	0.058	-	0.058
	Left	0.451	0.197	0.648

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.524	0.327	**0.851**
	Front	0.374	0.089	0.463
	Top	-	0.075	0.075
	Bottom	0.085	-	0.085
	Right	0.233	-	0.233
	Left	0.255	0.197	0.452

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.719	0.327	1.046
	Front	1.092	0.089	**1.181**
	Top	-	0.075	0.075
	Bottom	0.295	-	0.295
	Right	0.029	-	0.029
	Left	0.520	0.197	0.717

Simult Tx	Configuration	EVDO BC10 (§90S) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.551	0.327	**0.878**
	Front	0.397	0.089	0.486
	Top	-	0.075	0.075
	Bottom	0.093	-	0.093
	Right	0.152	-	0.152
	Left	0.130	0.197	0.327

Simult Tx	Configuration	EVDO BC0 (§22H) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	1.012	0.327	**1.339**
	Front	0.595	0.089	0.684
	Top	-	0.075	0.075
	Bottom	0.116	-	0.116
	Right	0.378	-	0.378
	Left	0.432	0.197	0.629

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.549	0.327	**0.876**
	Front	0.644	0.089	0.733
	Top	-	0.075	0.075
	Bottom	0.099	-	0.099
	Right	0.014	-	0.014
	Left	0.341	0.197	0.538

Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.463	0.327	**0.790**
	Front	0.307	0.089	0.396
	Top	-	0.075	0.075
	Bottom	0.065	-	0.065
	Right	0.188	-	0.188
	Left	0.186	0.197	0.383

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.728	0.327	1.055
	Front	0.979	0.089	**1.068**
	Top	-	0.075	0.075
	Bottom	0.330	-	0.330
	Right	0.058	-	0.058
	Left	0.071	0.197	0.268

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.285	0.327	**0.612**
	Front	0.448	0.089	0.537
	Top	-	0.075	0.075
	Bottom	0.182	-	0.182
	Right	0.196	-	0.196
	Left	0.050	0.197	0.247

Table 12-20
MIMO Simultaneous Transmission Scenario (5.8 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	1.039	0.222	**1.261**
	Front	0.711	0.032	0.743
	Top	-	0.098	0.098
	Bottom	0.129	-	0.129
	Right	0.590	-	0.590
	Left	0.577	0.060	0.637

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.529	0.222	0.751
	Front	0.968	0.032	**1.000**
	Top	-	0.098	0.098
	Bottom	0.286	-	0.286
	Right	0.058	-	0.058
	Left	0.451	0.060	0.511

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.524	0.222	**0.746**
	Front	0.374	0.032	0.406
	Top	-	0.098	0.098
	Bottom	0.085	-	0.085
	Right	0.233	-	0.233
	Left	0.255	0.060	0.315

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.719	0.222	0.941
	Front	1.092	0.032	**1.124**
	Top	-	0.098	0.098
	Bottom	0.295	-	0.295
	Right	0.029	-	0.029
	Left	0.520	0.060	0.580

Simult Tx	Configuration	EVDO BC10 (§90S) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.551	0.222	**0.773**
	Front	0.397	0.032	0.429
	Top	-	0.098	0.098
	Bottom	0.093	-	0.093
	Right	0.152	-	0.152
	Left	0.130	0.060	0.190

Simult Tx	Configuration	EVDO BC0 (§22H) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	1.012	0.222	**1.234**
	Front	0.595	0.032	0.627
	Top	-	0.098	0.098
	Bottom	0.116	-	0.116
	Right	0.378	-	0.378
	Left	0.432	0.060	0.492

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.549	0.222	**0.771**
	Front	0.644	0.032	0.676
	Top	-	0.098	0.098
	Bottom	0.099	-	0.099
	Right	0.014	-	0.014
	Left	0.341	0.060	0.401

Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.463	0.222	**0.685**
	Front	0.307	0.032	0.339
	Top	-	0.098	0.098
	Bottom	0.065	-	0.065
	Right	0.188	-	0.188
	Left	0.186	0.060	0.246

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.728	0.222	0.950
	Front	0.979	0.032	**1.011**
	Top	-	0.098	0.098
	Bottom	0.330	-	0.330
	Right	0.058	-	0.058
	Left	0.071	0.060	0.131

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.285	0.222	**0.507**
	Front	0.448	0.032	0.480
	Top	-	0.098	0.098
	Bottom	0.182	-	0.182
	Right	0.196	-	0.196
	Left	0.050	0.060	0.110

12.6 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.

13 SAR MEASUREMENT VARIABILITY

13.1 Measurement Variability

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

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

1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
2) A second repeated measurement was preformed 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 (~ 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 13-1
Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS													
Band	FREQUENCY		Mode	Service	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)	
835	848.31	777	CDMA BC0 (§22H)	EVDO Rev. 0	back	10 mm	0.932	0.917	1.02	N/A	N/A	N/A	N/A
1900	1880.00	9400	UMTS 1900	RMC	front	10 mm	1.070	1.010	1.06	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Body 1.6 W/kg (mW/g) averaged over 1 gram							

13.2 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.

14 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
SPEAG	D835V2	835 MHz SAR Dipole	4/25/2013	Annual	4/25/2014	4d119
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	D2600V2	2600 MHz SAR Dipole	5/2/2013	Annual	5/2/2014	1004
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	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	8/21/2013	Annual	8/21/2014	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/8/2013	Annual	3/8/2014	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/22/2013	Annual	4/22/2014	1364
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/18/2013	Annual	11/18/2014	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/19/2013	Annual	11/19/2014	1408
SPEAG	ES3DV2	SAR Probe	8/22/2013	Annual	8/22/2014	3022
SPEAG	ES3DV3	SAR Probe	3/15/2013	Annual	3/15/2014	3209
SPEAG	ES3DV3	SAR Probe	11/20/2013	Annual	11/20/2014	3287
SPEAG	ES3DV3	SAR Probe	4/29/2013	Annual	4/29/2014	3318
SPEAG	ES3DV3	SAR Probe	11/25/2013	Annual	11/25/2014	3332
SPEAG	ES3DV3	SAR Probe	11/22/2013	Annual	11/22/2014	3333
SPEAG	EX3DV4	SAR Probe	12/18/2013	Annual	12/18/2014	3920
SPEAG	EX3DV4	SAR Probe	10/23/2013	Annual	10/23/2014	3914

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	M1S5A00-009
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.

15 MEASUREMENT UNCERTAINTIES

Applicable for frequencies less than 3000 MHz.

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	**IEEE 1528 Sec.**	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i 1gm**	**c_i 10 gms**	**1gm u_i (± %)**	**10gms u_i (± %)**	**v_i**
Measurement System									
Probe Calibration	E.2.1	6.0	N	1	1.0	1.0	6.0	6.0	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	1.0	1.0	1.3	1.3	∞
Boundary Effect	E.2.3	0.4	N	1	1.0	1.0	0.4	0.4	∞
Linearity	E.2.4	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	E.2.5	5.1	N	1	1.0	1.0	5.1	5.1	∞
Readout Electronics	E.2.6	1.0	N	1	1.0	1.0	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	E.6.3	2.9	R	1.73	1.0	1.0	1.7	1.7	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	1.0	R	1.73	1.0	1.0	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	E.4.2	6.0	N	1	1.0	1.0	6.0	6.0	287
Device Holder Uncertainty	E.4.1	3.32	R	1.73	1.0	1.0	1.9	1.9	∞
Output Power Variation - SAR drift measurement	6.6.2	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity - measurement uncertainty	E.3.3	3.8	N	1	0.64	0.43	2.4	1.6	6
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Liquid Permittivity - measurement uncertainty	E.3.3	4.5	N	1	0.60	0.49	2.7	2.2	6
Combined Standard Uncertainty (k=1)			RSS				12.1	11.7	299
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				24.2	23.5	

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

Applicable for frequencies up to 6 GHz.

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	**IEEE 1528 Sec.**	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i 1gm**	**c_i 10 gms**	**1gm u_i (± %)**	**10gms u_i (± %)**	**v_i**
Measurement System									
Probe Calibration	E.2.1	6.55	N	1	1.0	1.0	6.6	6.6	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	1.0	1.0	1.3	1.3	∞
Boundary Effect	E.2.3	0.4	N	1	1.0	1.0	0.4	0.4	∞
Linearity	E.2.4	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	E.2.5	5.1	N	1	1.0	1.0	5.1	5.1	∞
Readout Electronics	E.2.6	1.0	N	1	1.0	1.0	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	E.6.3	2.9	R	1.73	1.0	1.0	1.7	1.7	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	1.0	R	1.73	1.0	1.0	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	E.4.2	6.0	N	1	1.0	1.0	6.0	6.0	287
Device Holder Uncertainty	E.4.1	3.32	R	1.73	1.0	1.0	1.9	1.9	∞
Output Power Variation - SAR drift measurement	6.6.2	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity - measurement uncertainty	E.3.3	3.8	N	1	0.64	0.43	2.4	1.6	6
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Liquid Permittivity - measurement uncertainty	E.3.3	4.5	N	1	0.60	0.49	2.7	2.2	6
Combined Standard Uncertainty (k=1)			RSS				12.4	12.0	299
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				24.7	24.0	

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

16 CONCLUSION

16.1 Measurement Conclusion

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

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

17 REFERENCES

[1] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, Aug. 1996.

[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.

[3] ANSI/IEEE C95.1-1992, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, Sept. 1992.

[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.

[5] IEEE Standards Coordinating Committee 39 –Standards Coordinating Committee 34 – IEEE Std. 1528-2003, Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices.

[6] NCRP, National Council on Radiation Protection and Measurements, Biological Effects and Exposure Criteria for RadioFrequency Electromagnetic Fields, NCRP Report No. 86, 1986. Reprinted Feb. 1995.

[7] T. Schmid, O. Egger, N. Kuster, Automated E-field scanning system for dosimetric assessments, IEEE Transaction on Microwave Theory and Techniques, vol. 44, Jan. 1996, pp. 105-113.

[8] K. Pokovic, T. Schmid, N. Kuster, Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequencies, ICECOM97, Oct. 1997, pp. -124.

[9] K. Pokovic, T. Schmid, and N. Kuster, E-field Probe with improved isotropy in brain simulating liquids, Proceedings of the ELMAR, Zadar, Croatia, June 23-25, 1996, pp. 172-175.

[10] Schmid & Partner Engineering AG, Application Note: Data Storage and Evaluation, June 1998, p2.

[11] V. Hombach, K. Meier, M. Burkhardt, E. Kuhn, N. Kuster, The Dependence of EM Energy Absorption upon Human Modeling at 900 MHz, IEEE Transaction on Microwave Theory and Techniques, vol. 44 no. 10, Oct. 1996, pp. 1865-1873.

[12] N. Kuster and Q. Balzano, Energy absorption mechanism by biological bodies in the near field of dipole antennas above 300MHz, IEEE Transaction on Vehicular Technology, vol. 41, no. 1, Feb. 1992, pp. 17-23.

[13] G. Hartsgrove, A. Kraszewski, A. Surowiec, Simulated Biological Materials for Electromagnetic Radiation Absorption Studies, University of Ottawa, Bioelectromagnetics, Canada: 1987, pp. 29-36.

[14] Q. Balzano, O. Garay, T. Manning Jr., Electromagnetic Energy Exposure of Simulated Users of Portable Cellular Telephones, IEEE Transactions on Vehicular Technology, vol. 44, no.3, Aug. 1995.

[15] W. Gander, Computermathematick, Birkhaeuser, Basel, 1992.

[16] W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, Numerical Recipes in C, The Art of Scientific Computing, Second edition, Cambridge University Press, 1992.

[17] N. Kuster, R. Kastle, T. Schmid, Dosimetric evaluation of mobile communications equipment with known precision, IEEE Transaction on Communications, vol. E80-B, no. 5, May 1997, pp. 645-652.

[18] CENELEC CLC/SC111B, European Prestandard (prENV 50166-2), Human Exposure to Electromagnetic Fields High-frequency: 10kHz-300GHz, Jan. 1995.

[19] Prof. Dr. Niels Kuster, ETH, Eidgenössische Technische Hoschschule Zürich, Dosimetric Evaluation of the Cellular Phone.

[20] IEC 62209-1, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz), Feb. 2005.

[21] Industry Canada RSS-102 Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) Issue 4, March 2010.

[22] Health Canada Safety Code 6 Limits of Human Exposure to Radio Frequency Electromagnetic Fields in the Frequency Range from 3 kHz – 300 GHz, 2009

[23] FCC SAR Test Procedures for 2G-3G Devices, Mobile Hotspot and UMPC Devices KDB Publications 941225, D01-D07

[24] SAR Measurement procedures for IEEE 802.11a/b/g KDB Publication 248227 D01v01r02

[25] FCC SAR Considerations for Handsets with Multiple Transmitters and Antennas, KDB Publications 648474 D02-D04

[26] FCC SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers, FCC KDB Publication 616217 D04

[27] FCC SAR Measurement and Reporting Requirements for 100MHz – 6 GHz, KDB Publications 865664 D01-D02

[28] FCC General RF Exposure Guidance and SAR Procedures for Dongles, KDB Publication 447498, D01-D02

[29] Anexo à Resolução No. 533, de 10 de Septembro de 2009.

[30] IEC 62209-2, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz), Mar. 2010.

APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32909

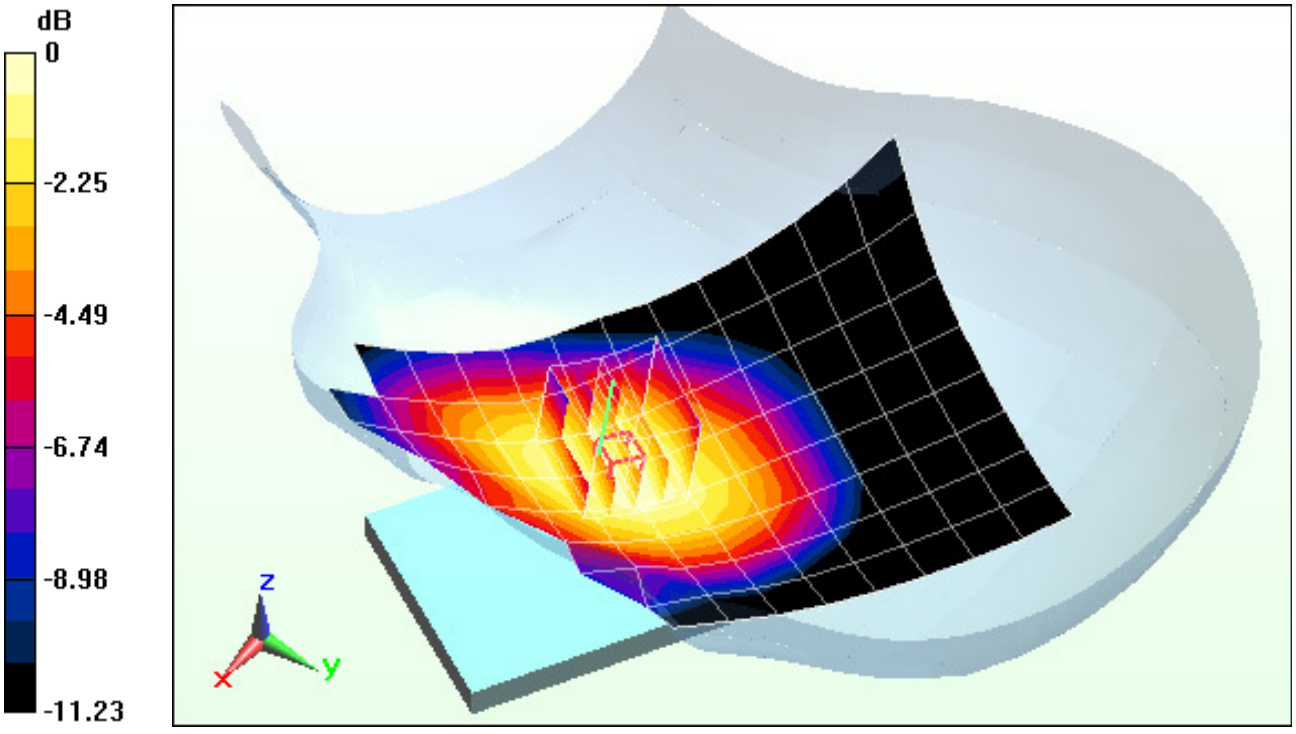
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Head, Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.907 S/m; ε_r = 41.172; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 02-17-2014; Ambient Temp: 24.5°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3318; ConvF(6.33, 6.33, 6.33); Calibrated: 4/29/2013;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 4/22/2013
Phantom: SAM; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Mode: GSM 850, Left Head, Cheek, Mid.ch,
with Wireless Charging 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 = 19.973 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.431 W/kg
SAR(1 g) = 0.341 W/kg



0 dB = 0.352 W/kg = -4.53 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32909

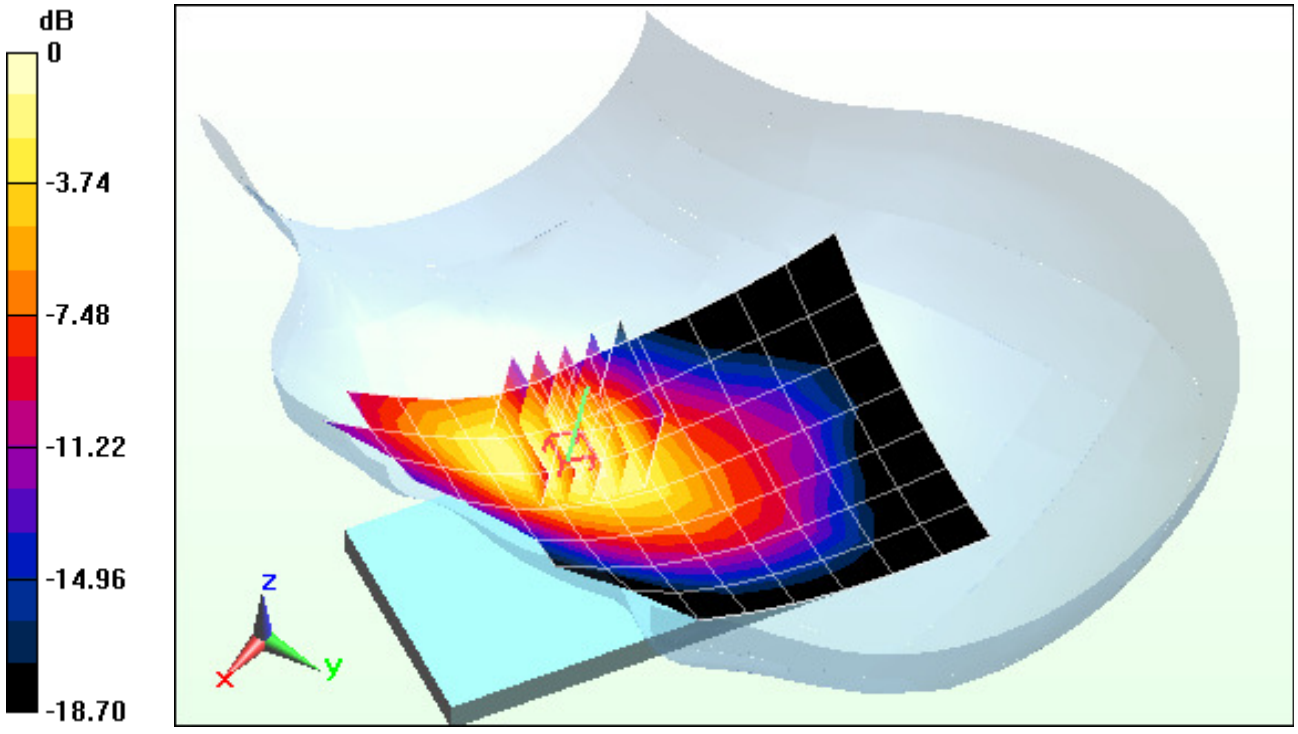
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Head, Medium parameters used:
f = 1880 MHz; σ = 1.378 S/m; ε_r = 39.328; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 02-17-2014; Ambient Temp: 24.2°C; Tissue Temp: 22.8°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, Left Head, Cheek, Mid.ch, with Standard Back Cover

Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.365 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.814 W/kg
SAR(1 g) = 0.535 W/kg



0 dB = 0.581 W/kg = -2.36 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32909

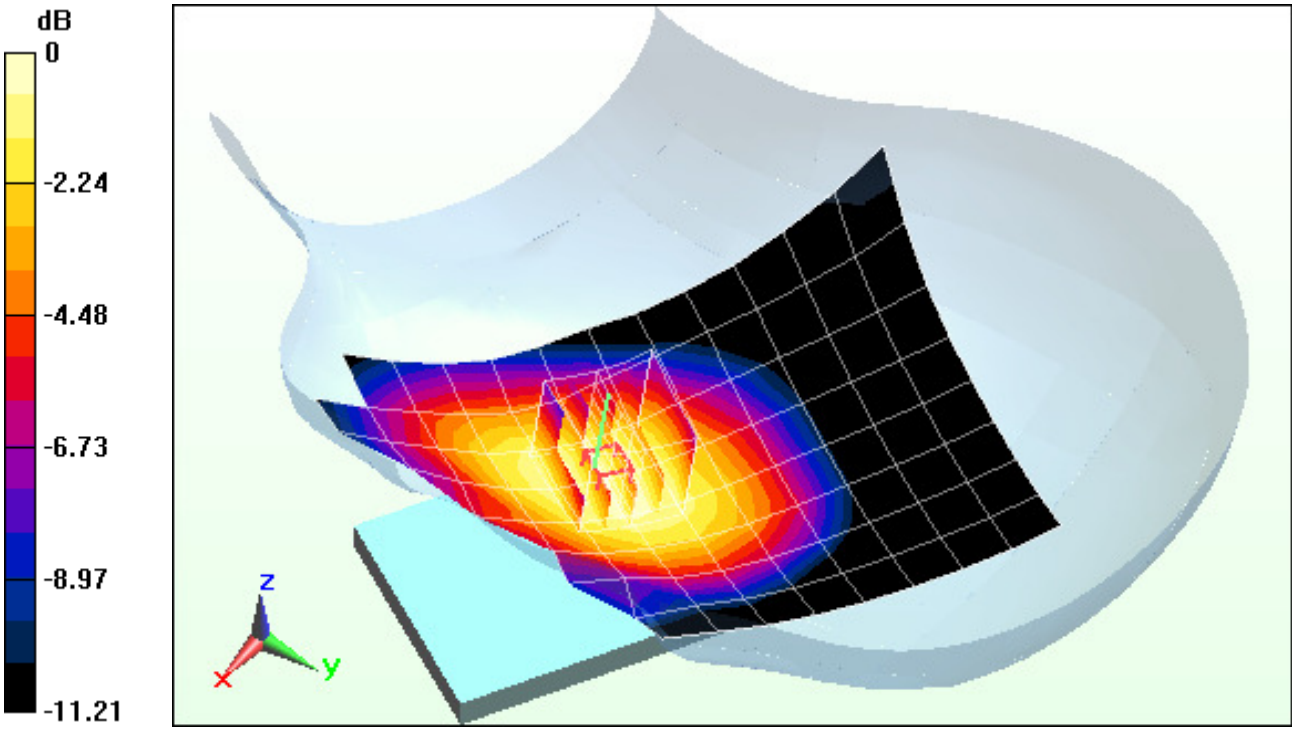
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Head, Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.907 S/m; ε_r = 41.172; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 02-17-2014; Ambient Temp: 24.5°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3318; ConvF(6.33, 6.33, 6.33); Calibrated: 4/29/2013;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 4/22/2013
Phantom: SAM; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Mode: UMTS 850, Left Head, Cheek, Mid.ch,
with Wireless Charging 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 = 19.454 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.406 W/kg
SAR(1 g) = 0.322 W/kg



0 dB = 0.336 W/kg = -4.74 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32909

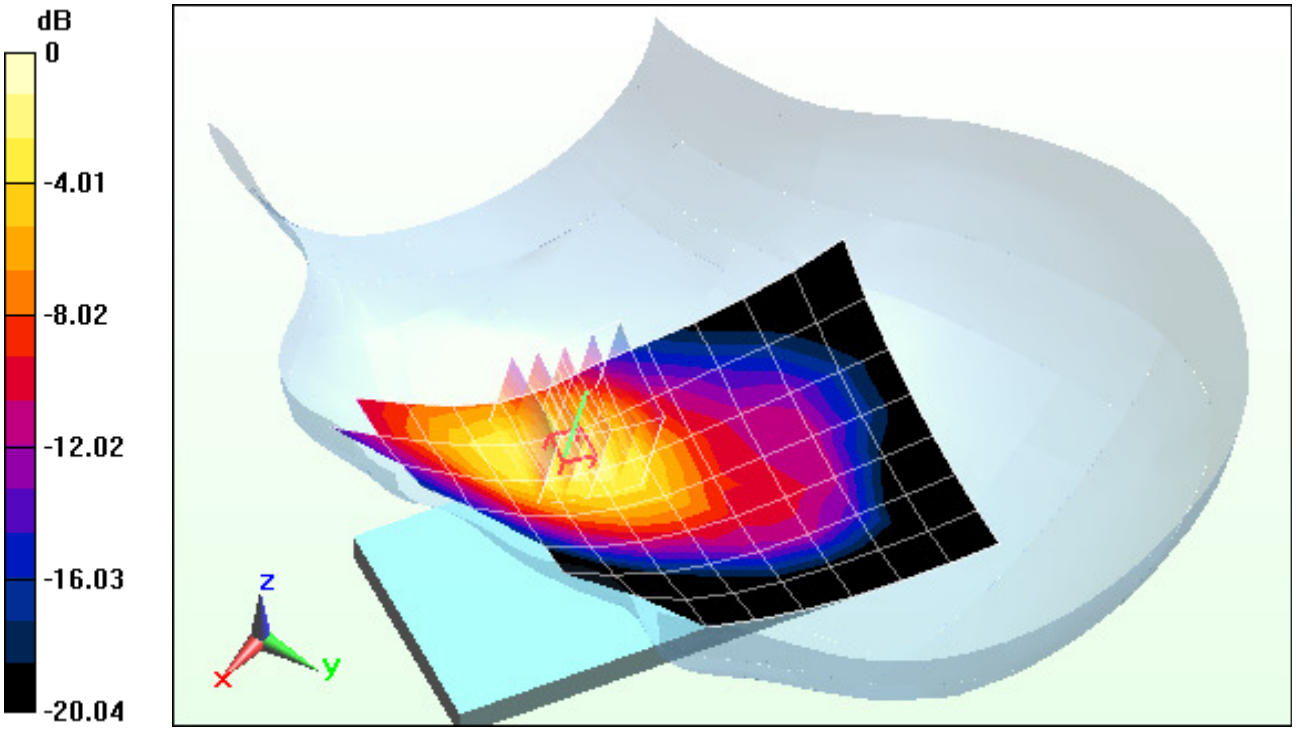
Communication System: UID 0, UMTS; Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: 1900 Head, Medium parameters used (interpolated):
f = 1907.6 MHz; σ = 1.406 S/m; ε_r = 39.214; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 02-17-2014; Ambient Temp: 24.2°C; Tissue Temp: 22.8°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, High.ch,
with Standard Back Cover

Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.536 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.60 W/kg
SAR(1 g) = 1.04 W/kg



0 dB = 1.14 W/kg = 0.57 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32906

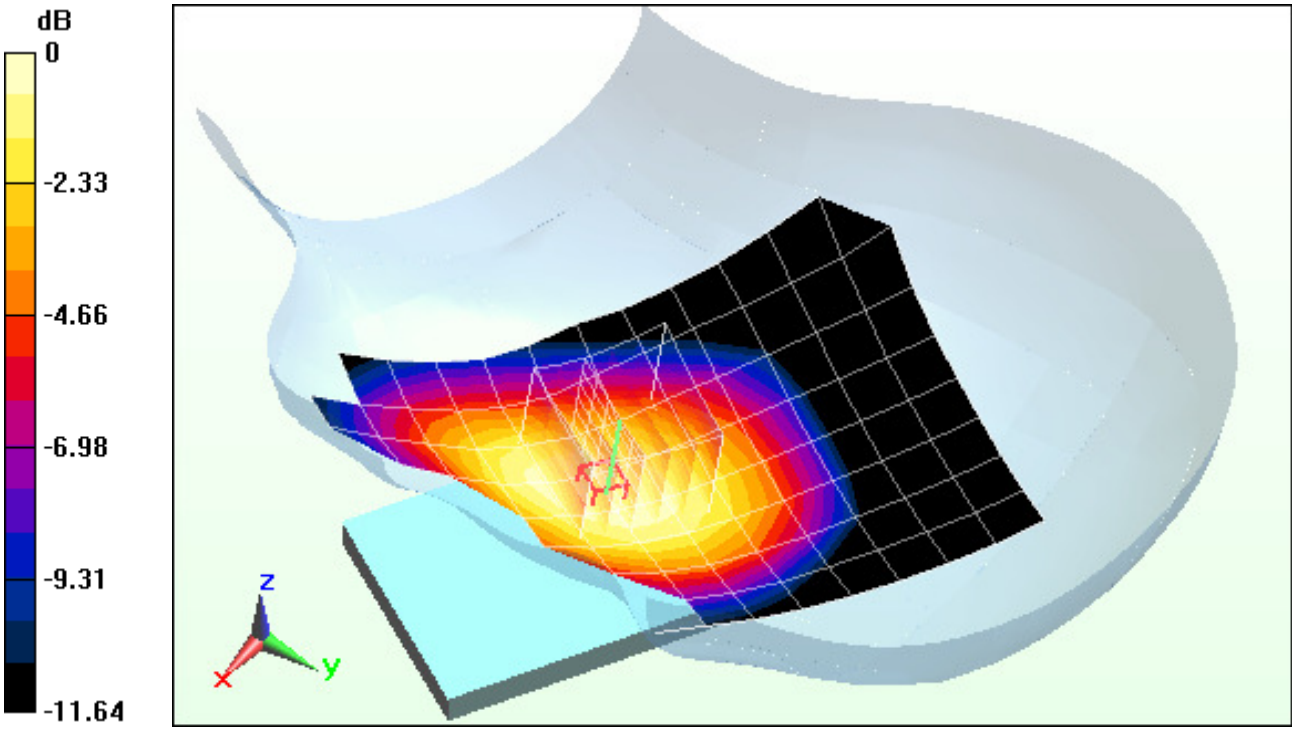
Communication System: UID 0, CDMA, Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Head, Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.925 S/m; ε_r = 43.017; ρ = 1000 kg/m^3
Phantom section: Left Section

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: Cell. EVDO Rev. A (§90S), Left Head, Cheek, Mid.ch, with Wireless Charging Cover

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.358 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.638 W/kg
SAR(1 g) = 0.521 W/kg



0 dB = 0.554 W/kg = -2.56 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32906

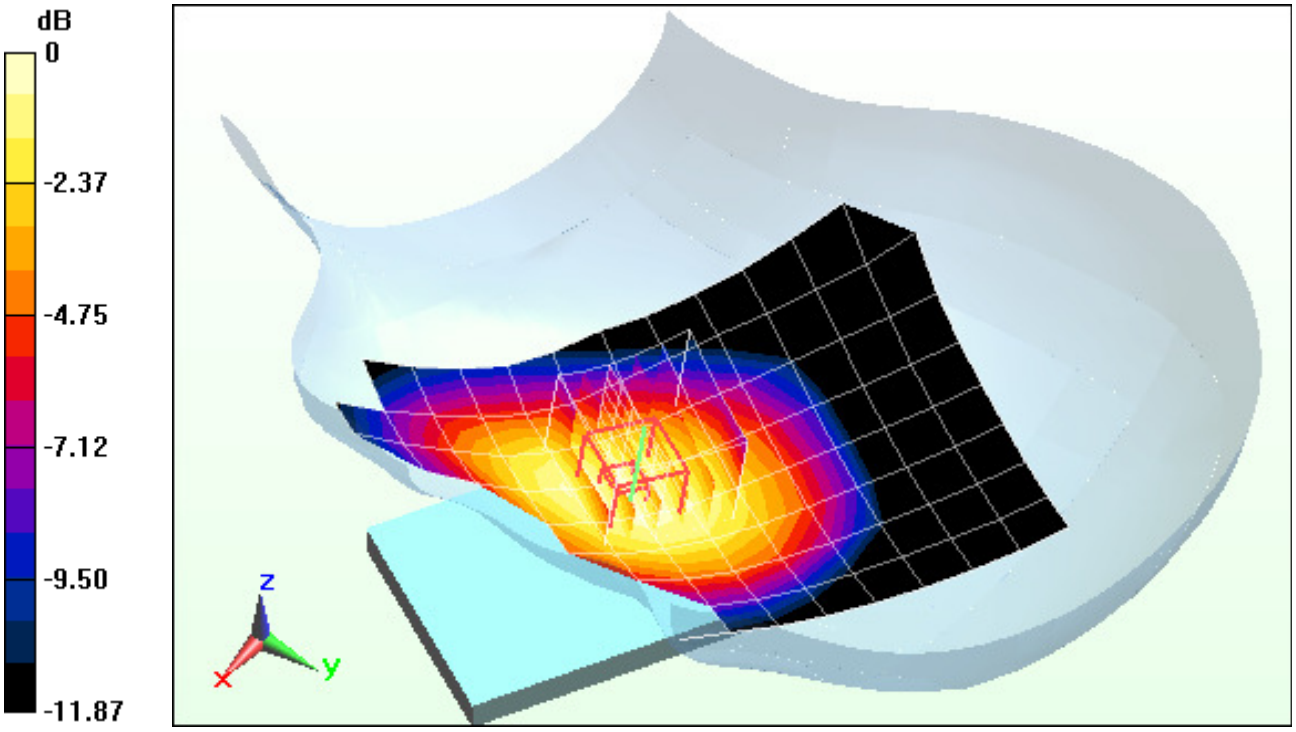
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Head, Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.941 S/m; ε_r = 42.792; ρ = 1000 kg/m^3
Phantom section: Left Section

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: Cell. EVDO Rev. A (§22H), Left Head, Cheek, Mid.ch, with Wireless Charging Cover

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.719 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.726 W/kg
SAR(1 g) = 0.579 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32912

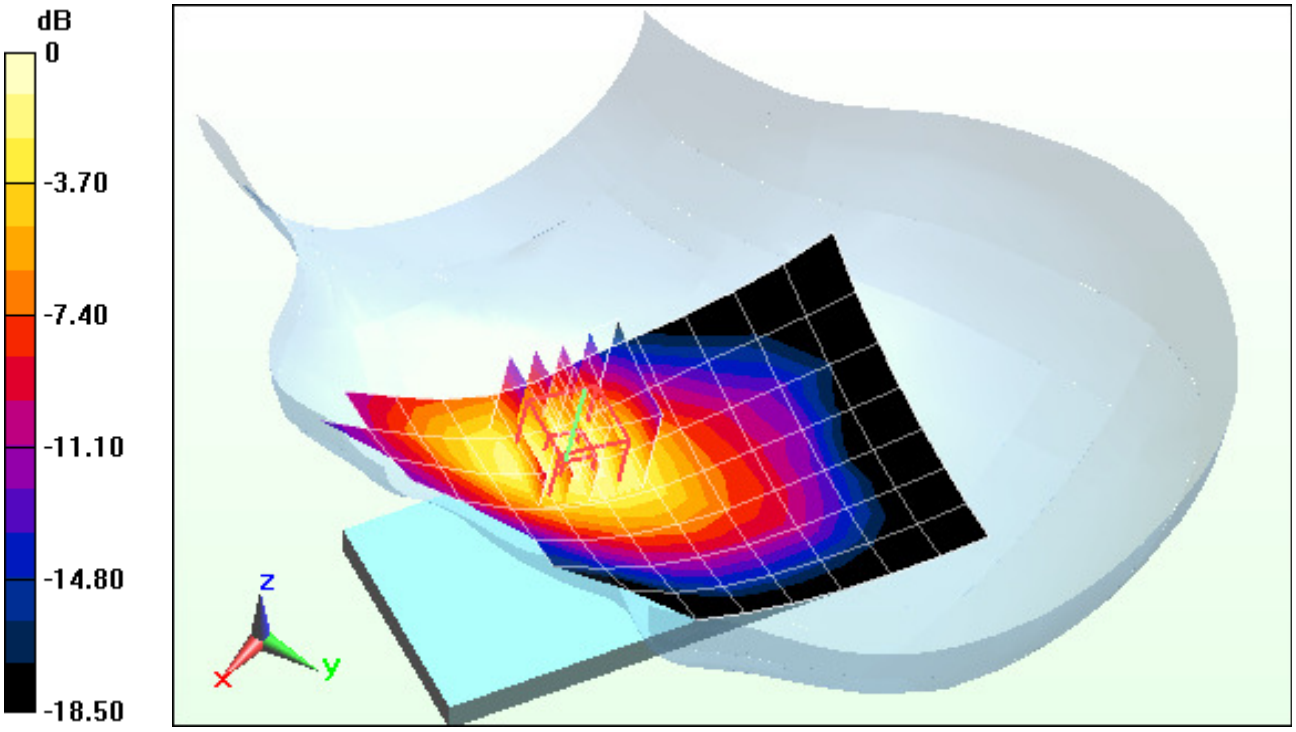
Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head, Medium parameters used:
f = 1880 MHz; σ = 1.378 S/m; ε_r = 39.328; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 02-17-2014; Ambient Temp: 24.2°C; Tissue Temp: 22.8°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: PCS CDMA, Left Head, Cheek, Mid.ch,
with Standard Back Cover

Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.958 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.52 W/kg
SAR(1 g) = 0.996 W/kg



0 dB = 1.08 W/kg = 0.33 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 3290B

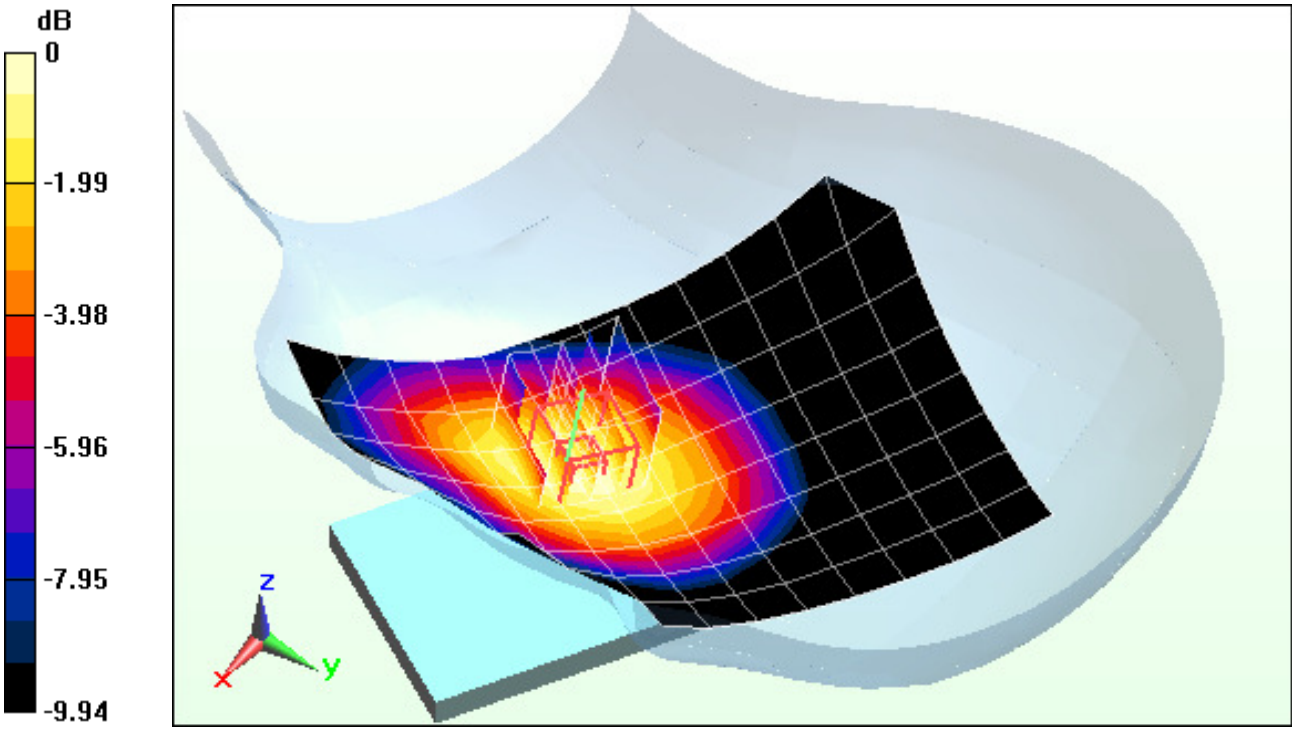
Communication System: UID 0, LTE Band 26; Frequency: 844 MHz; Duty Cycle: 1:1
Medium: 835 Head, Medium parameters used (interpolated):
f = 844 MHz; σ = 0.914 S/m; ε_r = 41.063; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 02-17-2014; Ambient Temp: 24.5°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3318; ConvF(6.33, 6.33, 6.33); Calibrated: 4/29/2013;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 4/22/2013
Phantom: SAM; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Mode: LTE Band 26, Left Head, Cheek, High.ch, 10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset, with Wireless Charging 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 = 19.739 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.399 W/kg
SAR(1 g) = 0.317 W/kg



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

DUT: A3LSMG900P; Type: Portable Handset; Serial: 3290B

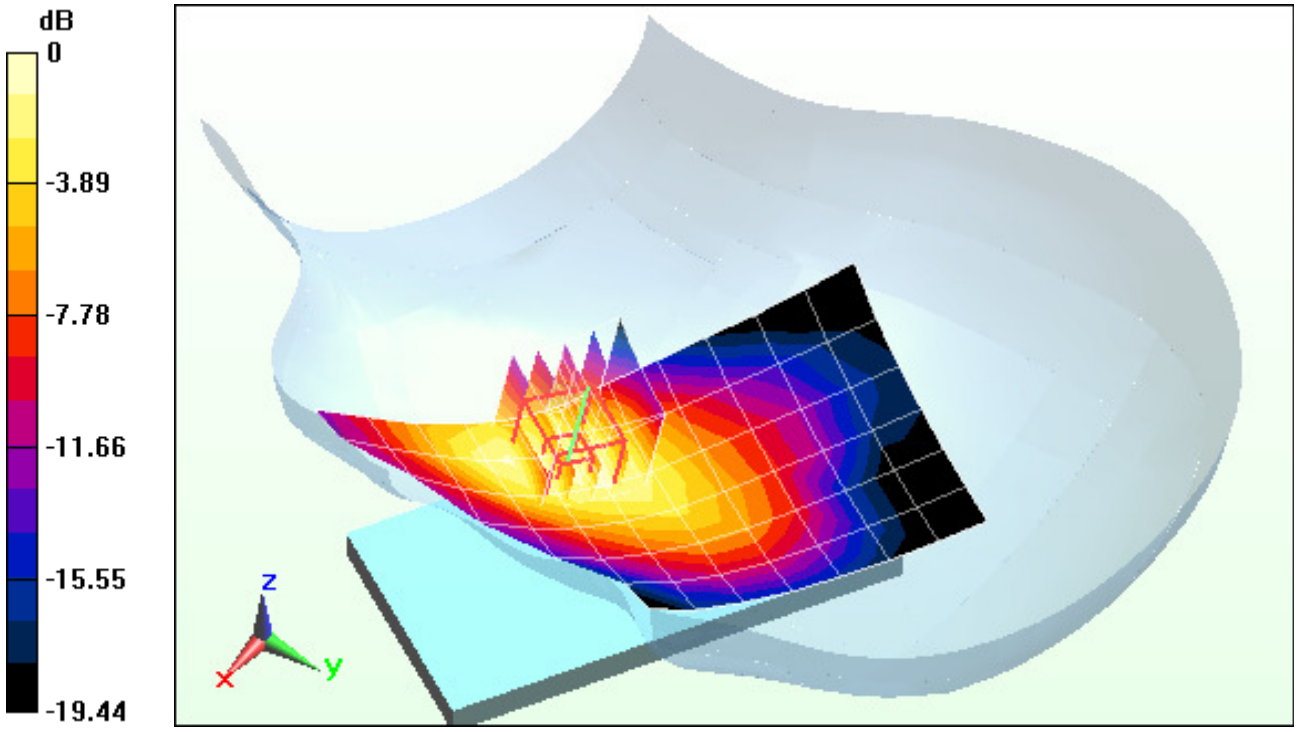
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium: 1900 Head, Medium parameters used (interpolated):
f = 1882.5 MHz; σ = 1.38 S/m; ε_r = 39.318; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 02-17-2014; Ambient Temp: 24.2°C; Tissue Temp: 22.8°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: LTE Band 25 (PCS), Left Head, Cheek, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset, with Wireless Charging Cover

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.152 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 1.14 W/kg
SAR(1 g) = 0.753 W/kg



0 dB = 0.818 W/kg = -0.87 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900P; Type: Portable Handset; Serial: 328FF

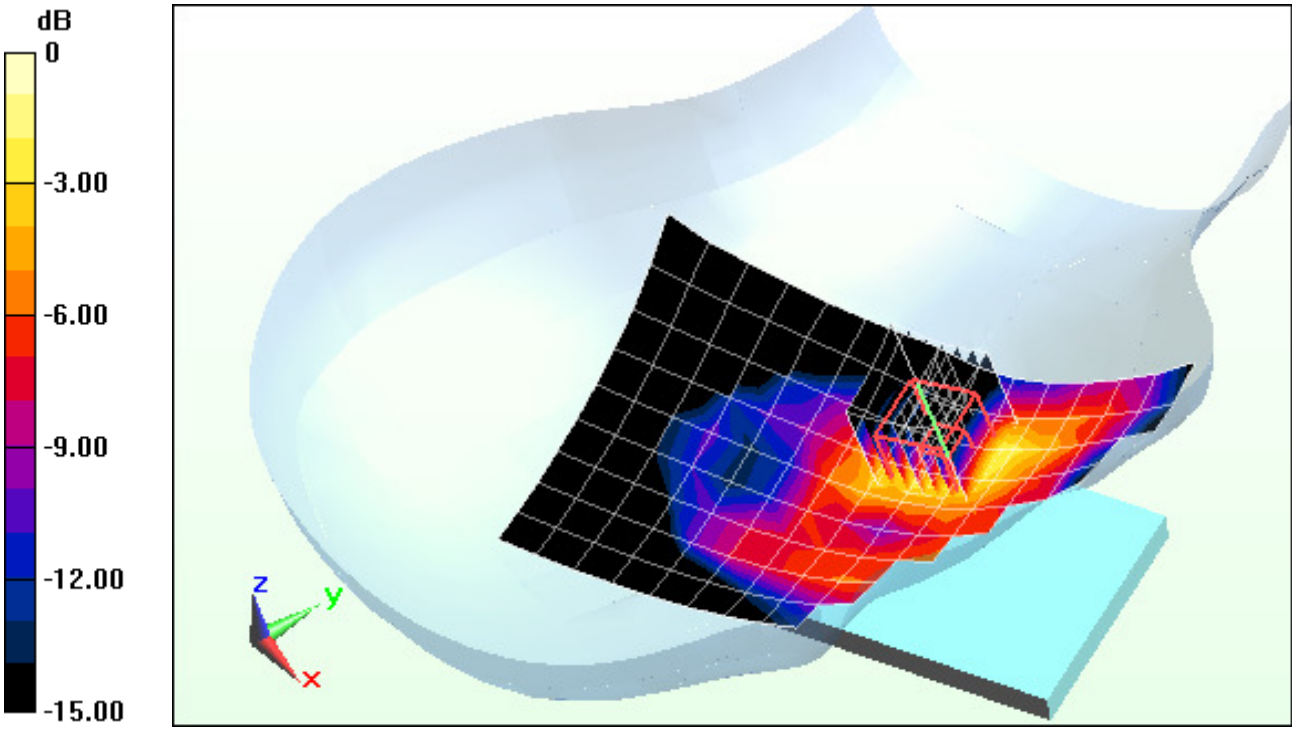
Communication System: UID 0, LTE Band 41; Frequency: 2636.5 MHz; Duty Cycle: 1:1.58
Medium: 2600 Head, Medium parameters used (interpolated):
f = 2636.5 MHz; σ = 2.043 S/m; ε_r = 37.31; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 02-06-2014; Ambient Temp: 24.3°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3333; ConvF(4.28, 4.28, 4.28); Calibrated: 11/22/2013;
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: LTE Band 41, Right Head, Cheek, Mid-High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset, with 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 = 11.789 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 0.451 W/kg
SAR(1 g) = 0.240 W/kg



0 dB = 0.304 W/kg = -5.17 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 328C6

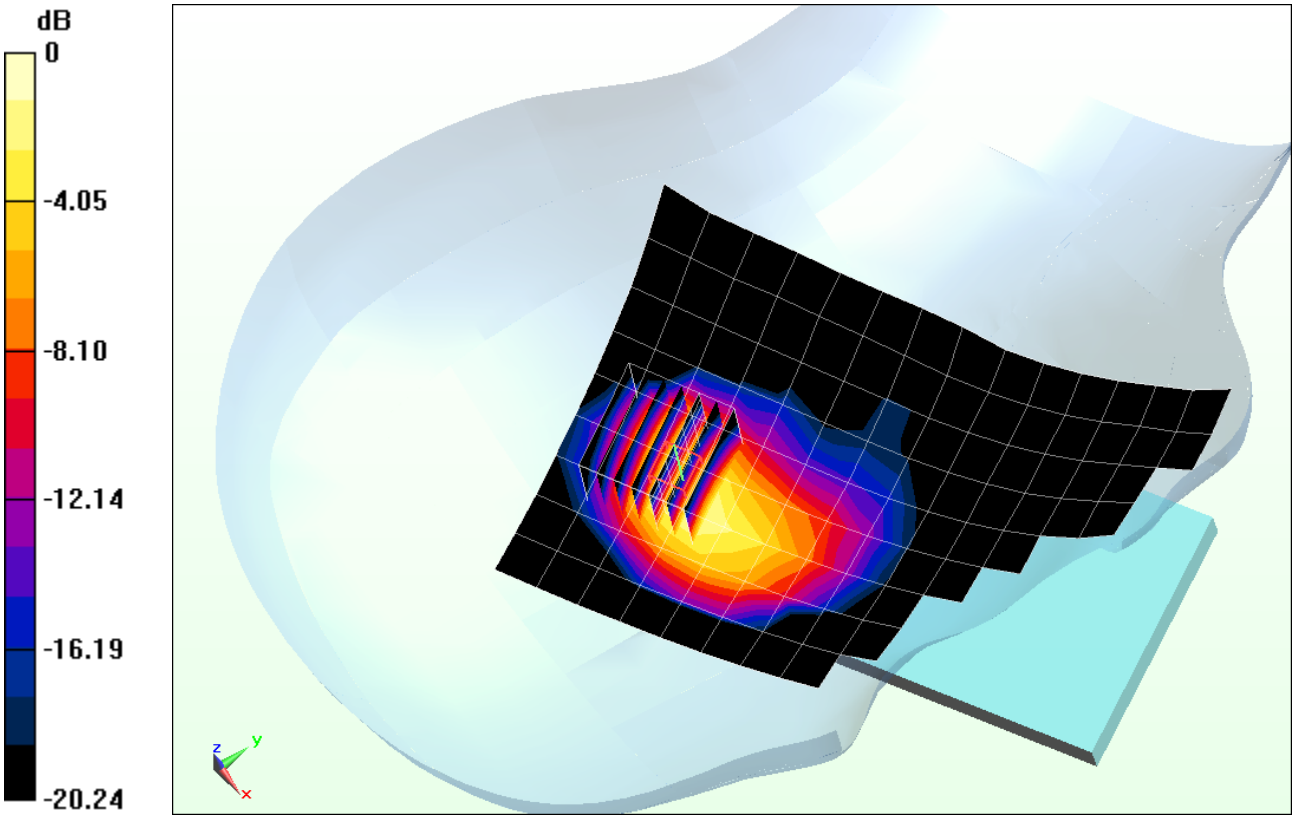
Communication System: UID 0, IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1
Medium: 2450 Head; Medium parameters used (interpolated):
$f = 2412$ MHz; $\sigma = 1.835$ S/m; $\varepsilon_r = 38.952$; $\rho = 1000$ kg/m^3
Phantom section: Right Section

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



0 dB = 0.214 W/kg = -6.70 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 31F35

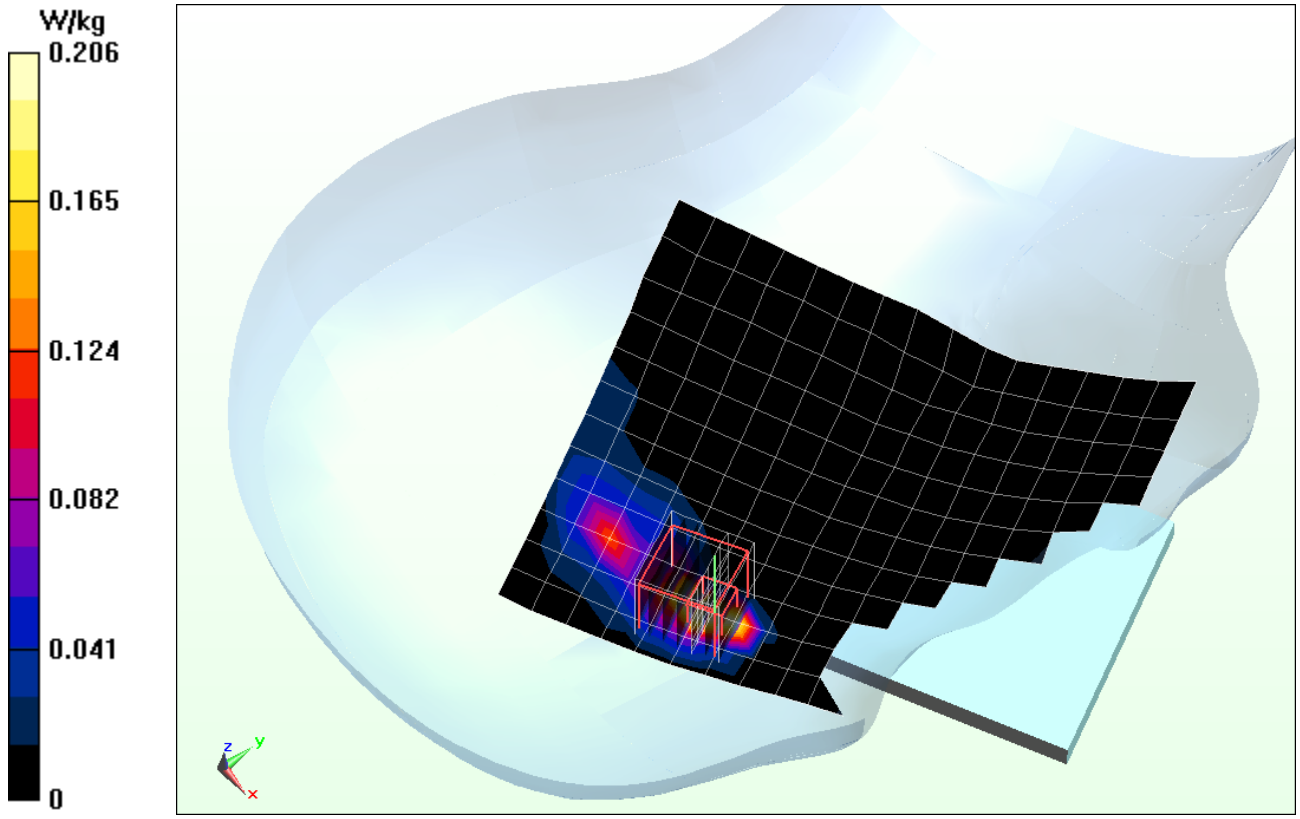
Communication System: UID 0, IEEE 802.11a; Frequency: 5765 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used:
f = 5765 MHz; σ = 5.088 S/m; ε_r = 35.493; ρ = 1000 kg/m^3
Phantom section: Right Section

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



DUT: A3LSMG900P; Type: Portable Handset; Serial: 31F35

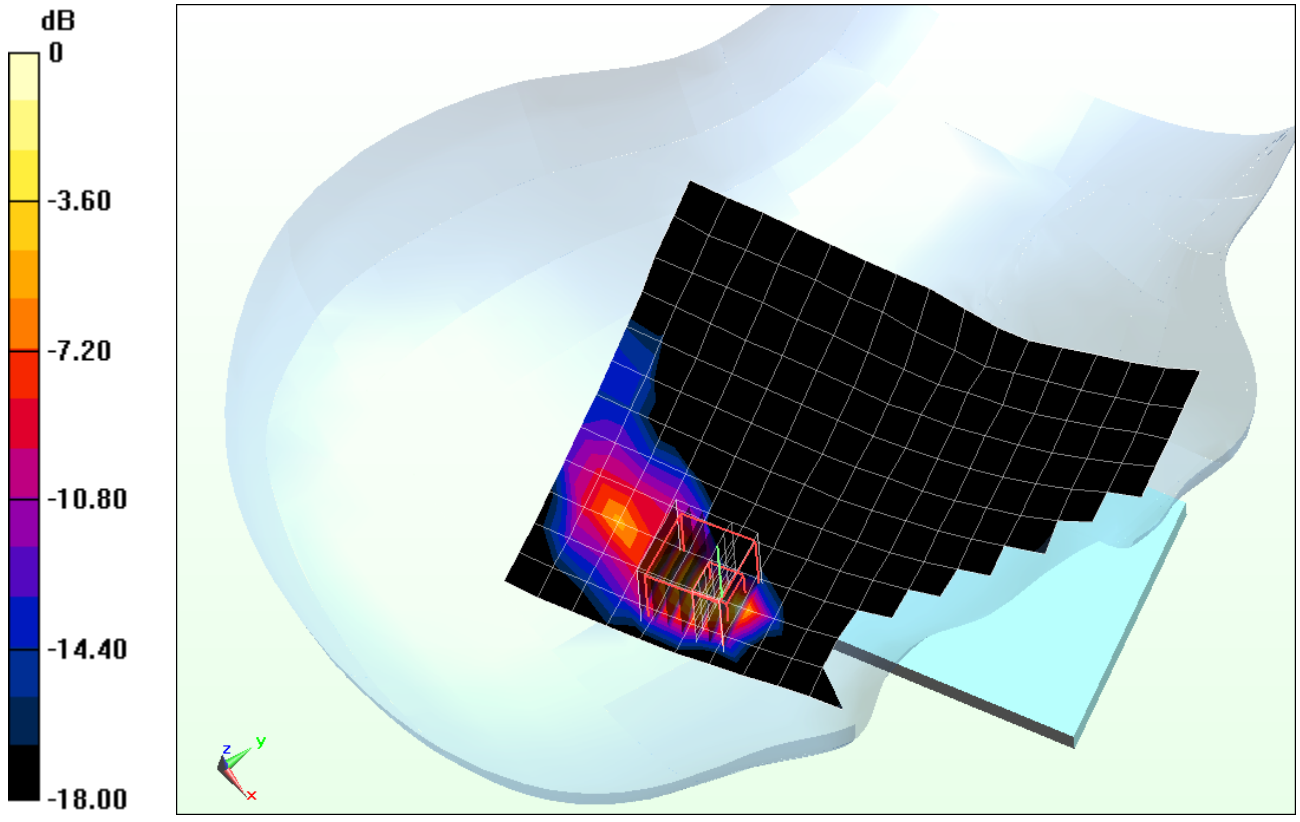
Communication System: UID 0, IEEE 802.11a; Frequency: 5680 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used:
f = 5680 MHz; σ = 5.006 S/m; ε_r = 35.596; ρ = 1000 kg/m^3
Phantom section: Right Section

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=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; 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

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32909

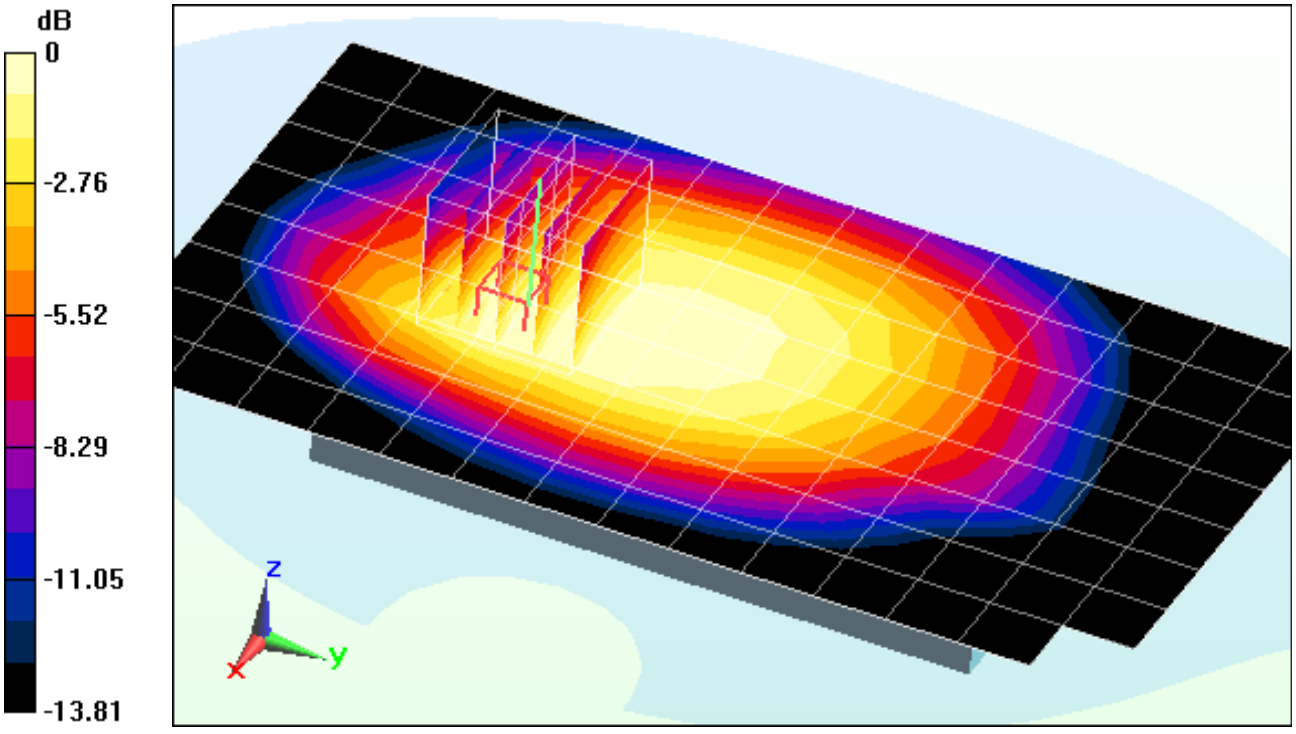
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Body, Medium parameters used (interpolated):
f = 836.6 MHz; σ = 1.015 S/m; ε_r = 53.679; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-05-2014; Ambient Temp: 22.9°C; Tissue Temp: 21.4°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,
with 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 = 25.853 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.919 W/kg
SAR(1 g) = 0.623 W/kg



0 dB = 0.652 W/kg = -1.86 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32909

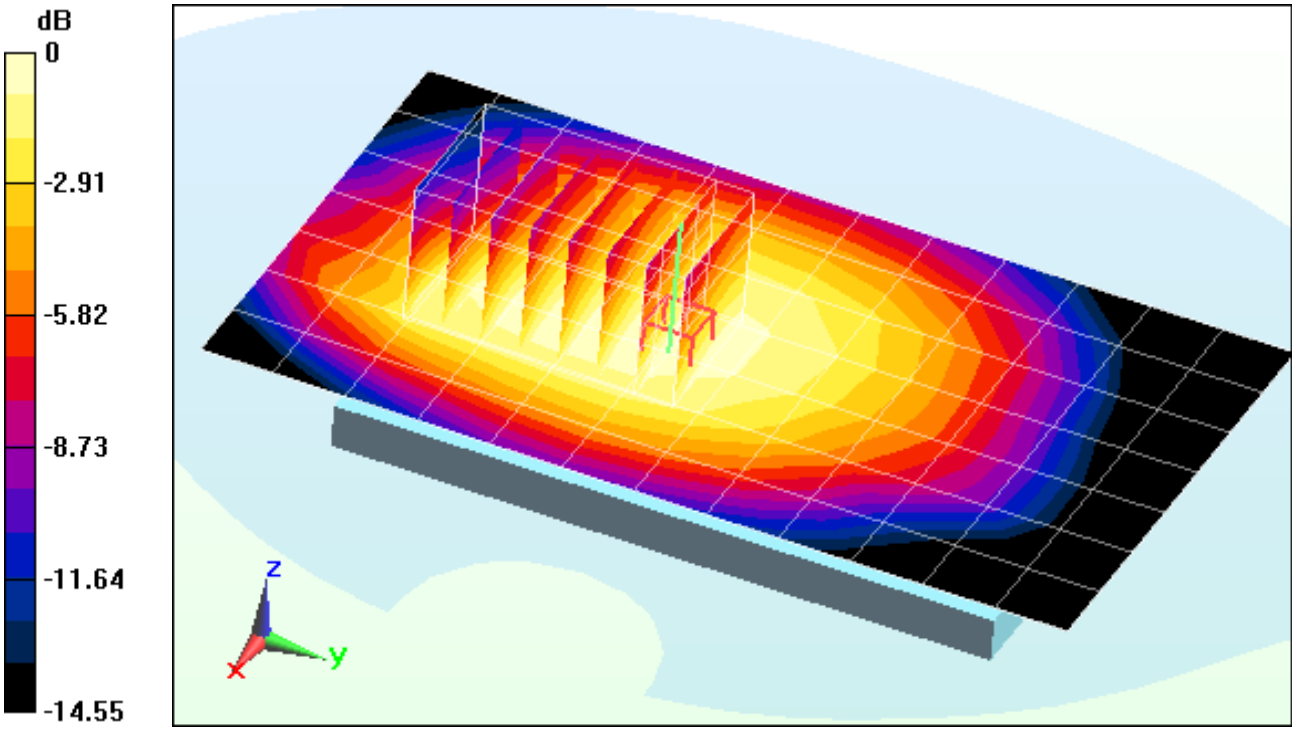
Communication System: UID 0, GSM GPRS; 4 Tx slots, Frequency: 848.8 MHz; Duty Cycle: 1:2.076
Medium: 835 Body, Medium parameters used (interpolated):
f = 848.8 MHz; σ = 1.026 S/m; ε_r = 53.547; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-05-2014; Ambient Temp: 22.9°C; Tissue Temp: 21.4°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: GPRS 850, Body SAR, Back Side, High.ch, 4 Tx Slots, with Standard Back Cover

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x8x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.887 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.890 W/kg



0 dB = 0.927 W/kg = -0.33 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32909

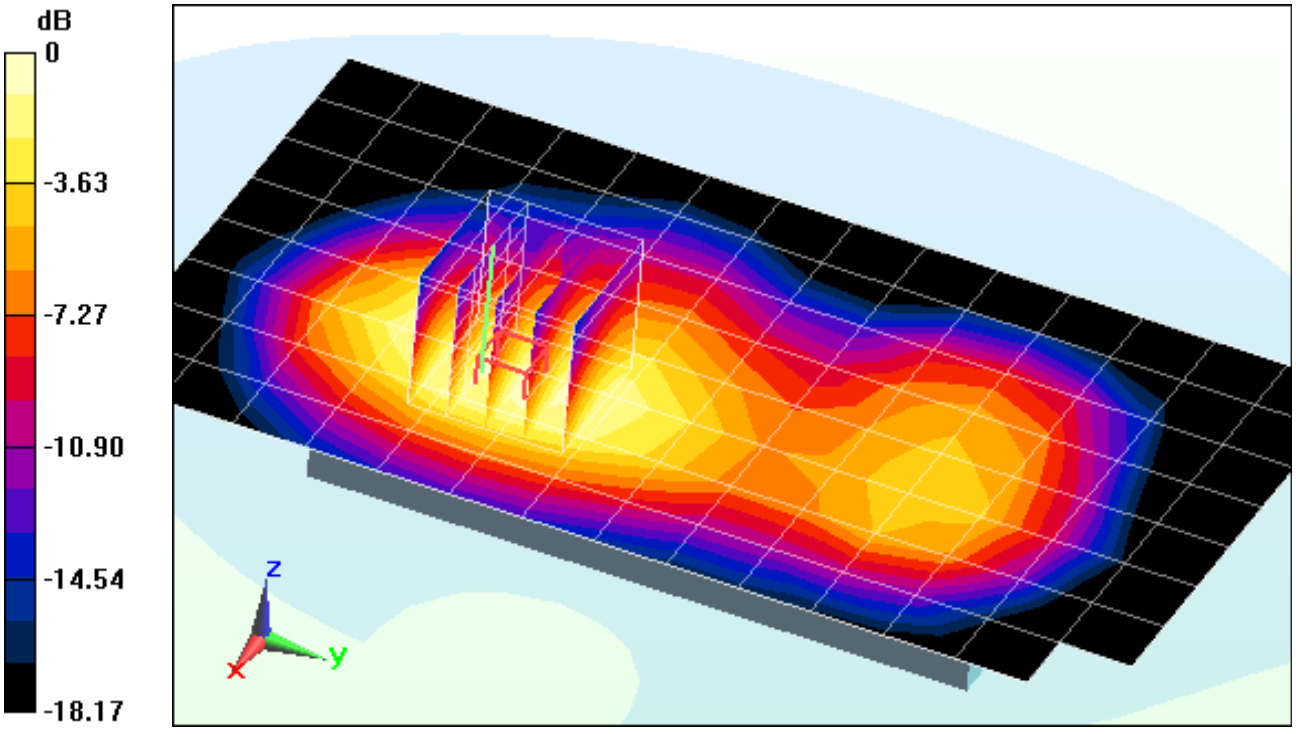
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Body, Medium parameters used:
f = 1880 MHz; σ = 1.551 S/m; ε_r = 52.184; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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: GSM 1900, Body SAR, Back Side, Mid.ch, with 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 = 15.936 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.621 W/kg
SAR(1 g) = 0.400 W/kg



0 dB = 0.426 W/kg = -3.71 dBW/kg

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DUT: A3LSMG900P; Type: Portable Handset; Serial: 32909

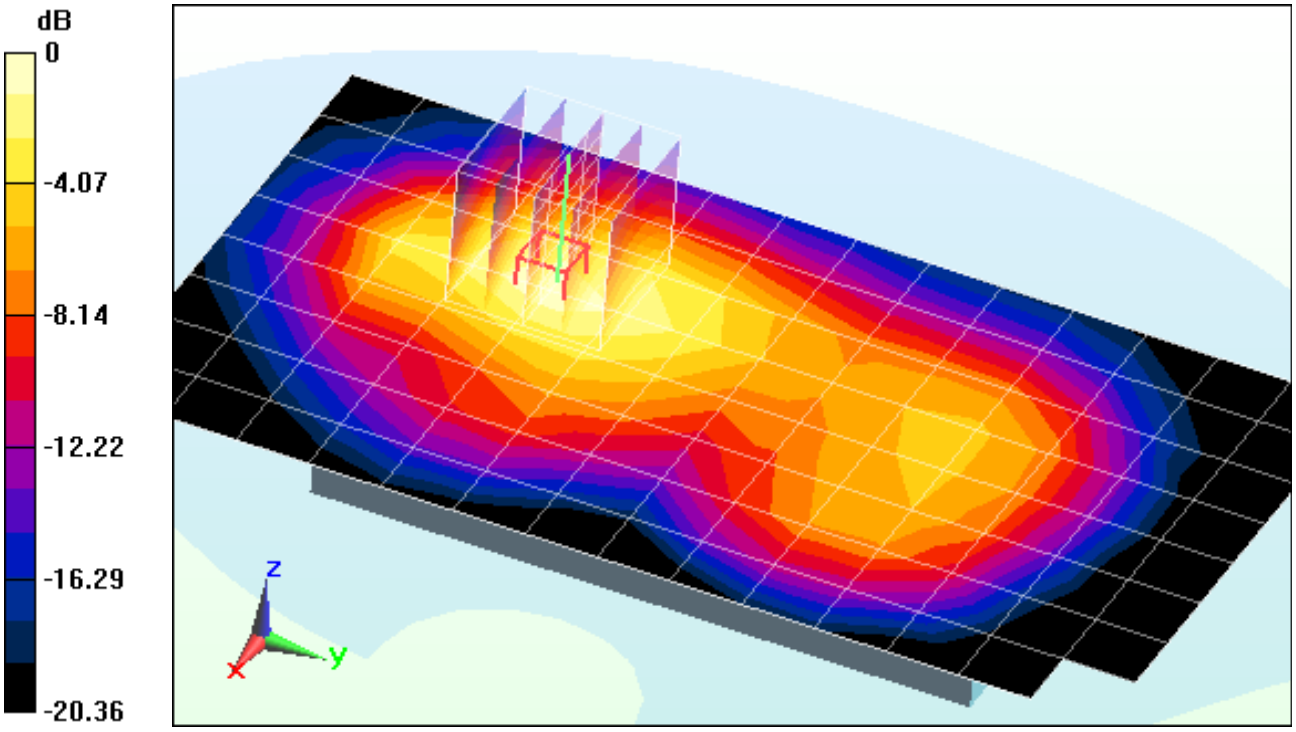
Communication System: UID 0, GSM GPRS; 4 Tx slots; Frequency: 1909.8 MHz; Duty Cycle: 1:2.076
Medium: 1900 Body, Medium parameters used:
f = 1910 MHz; σ = 1.589 S/m; ε_r = 52.074; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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: GPRS 1900, Body SAR, Front Side, High.ch, 4 Tx Slots, with 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 = 23.139 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.29 W/kg
SAR(1 g) = 0.803 W/kg



0 dB = 0.882 W/kg = -0.55 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32909

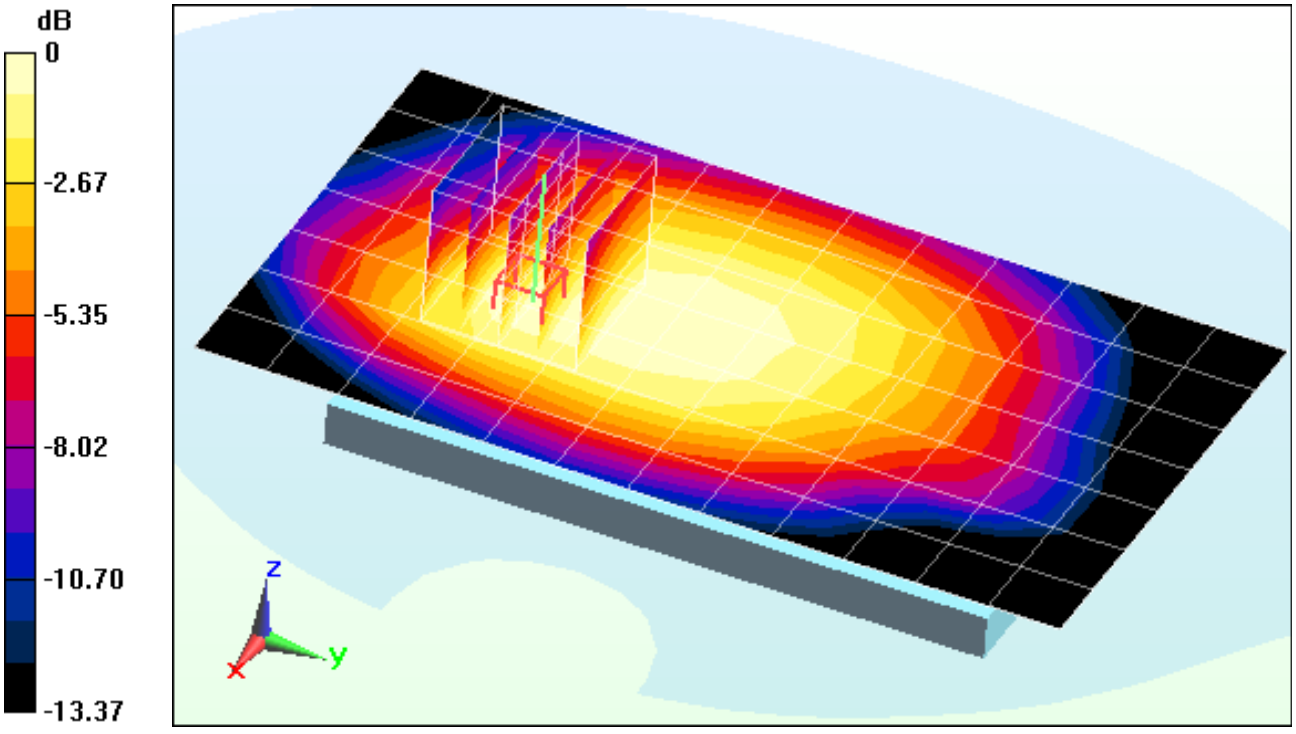
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body, Medium parameters used (interpolated):
f = 836.6 MHz; σ = 1.015 S/m; ε_r = 53.679; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-05-2014; Ambient Temp: 22.9°C; Tissue Temp: 21.4°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, with 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 = 22.448 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.655 W/kg
SAR(1 g) = 0.463 W/kg



0 dB = 0.489 W/kg = -3.11 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32909

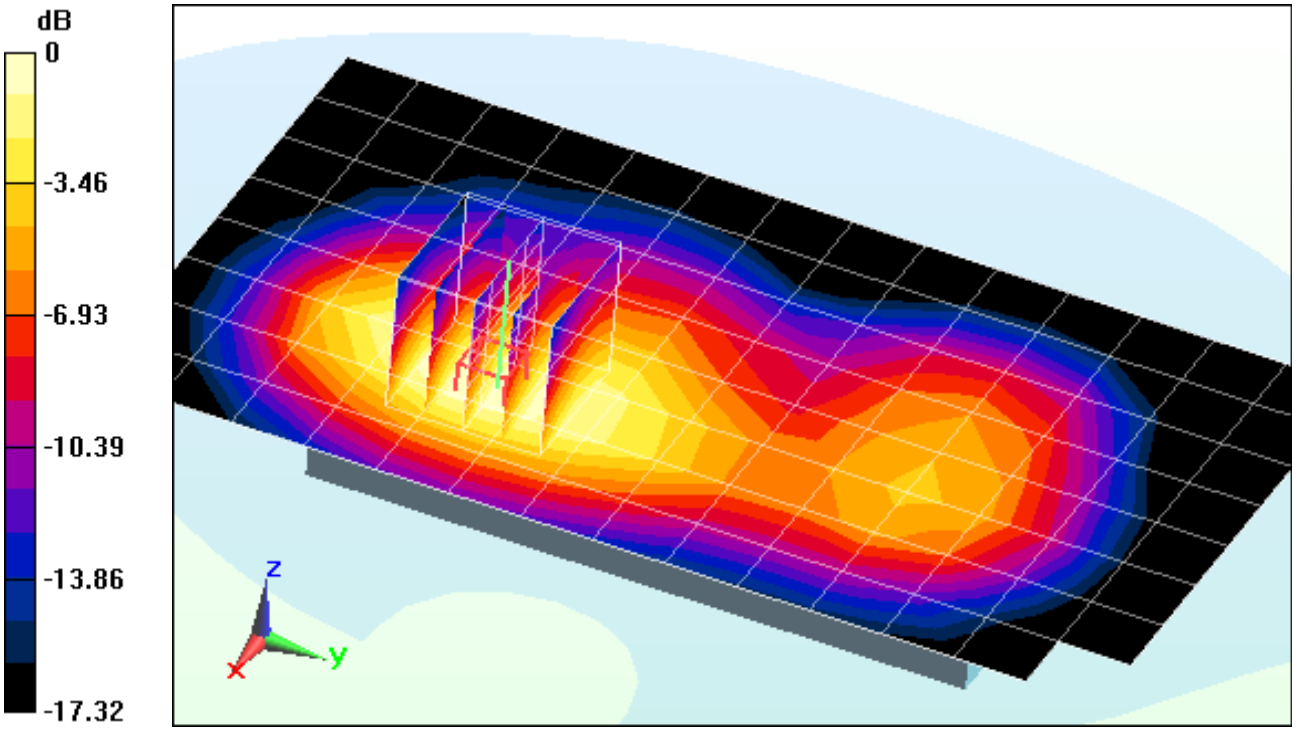
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body, Medium parameters used:
f = 1880 MHz; σ = 1.551 S/m; ε_r = 52.184; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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, Back Side, Mid.ch, with Wireless Charging 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 = 20.298 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.704 W/kg



0 dB = 0.759 W/kg = -1.20 dBW/kg

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DUT: A3LSMG900P; Type: Portable Handset; Serial: 32909

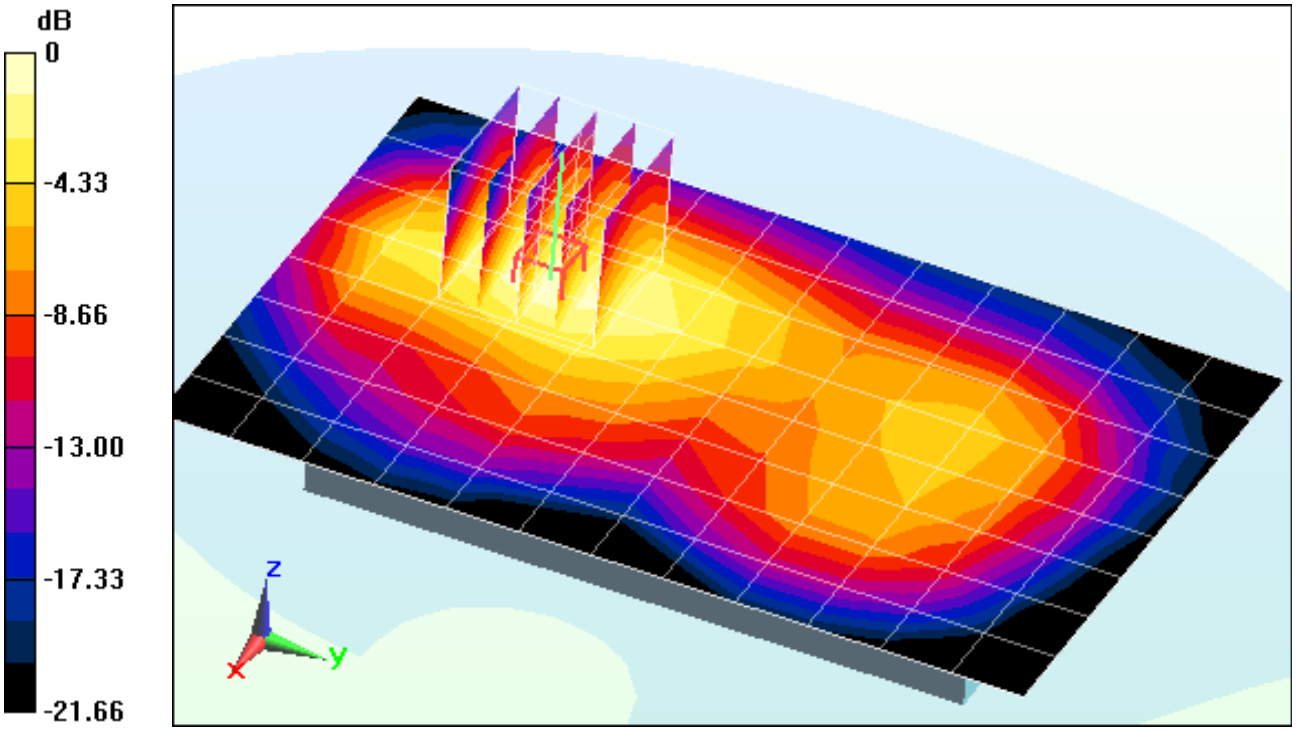
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body, Medium parameters used:
f = 1880 MHz; σ = 1.551 S/m; ε_r = 52.184; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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,
with Standard Back Cover**

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.759 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.69 W/kg
SAR(1 g) = 1.07 W/kg



0 dB = 1.18 W/kg = 0.72 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32906

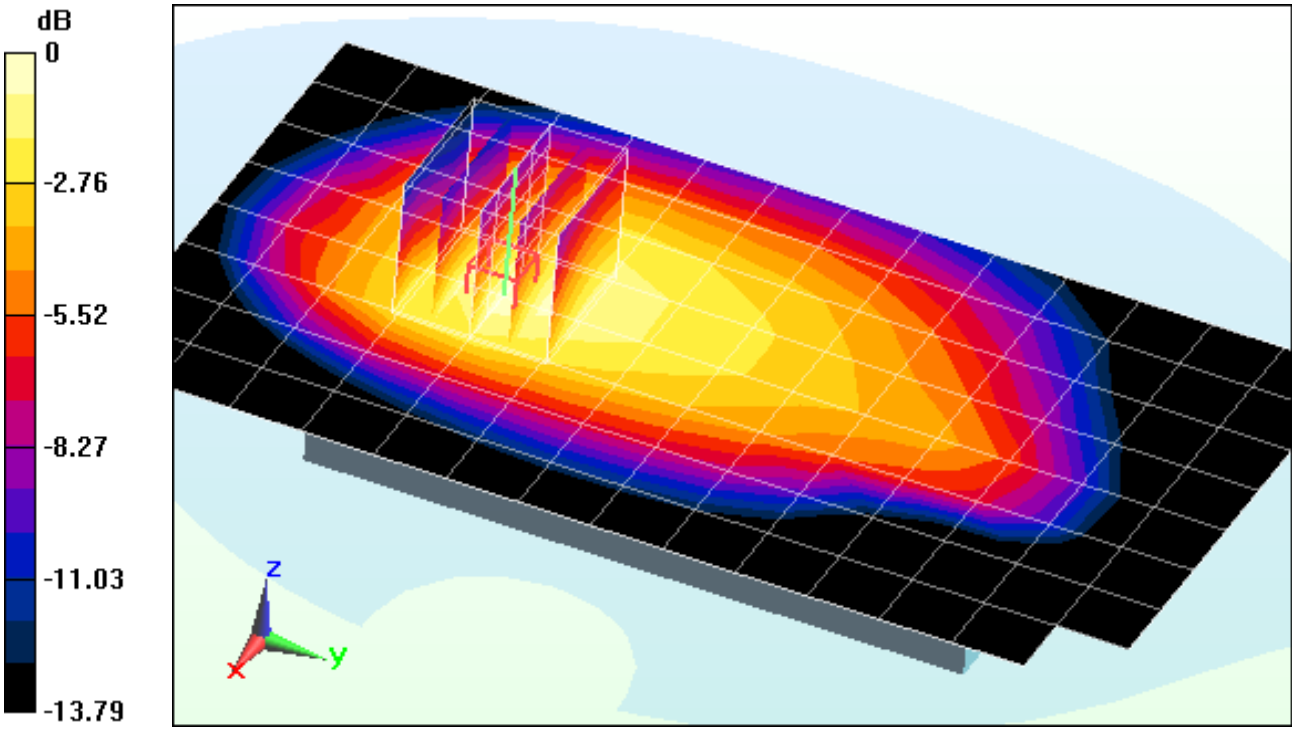
Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Body, Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.999 S/m; ε_r = 53.825; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-05-2014; Ambient Temp: 22.9°C; Tissue Temp: 21.4°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 (§90S), Body SAR, Back Side, Mid.ch, with 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 = 23.118 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.730 W/kg
SAR(1 g) = 0.488 W/kg



0 dB = 0.516 W/kg = -2.87 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32906

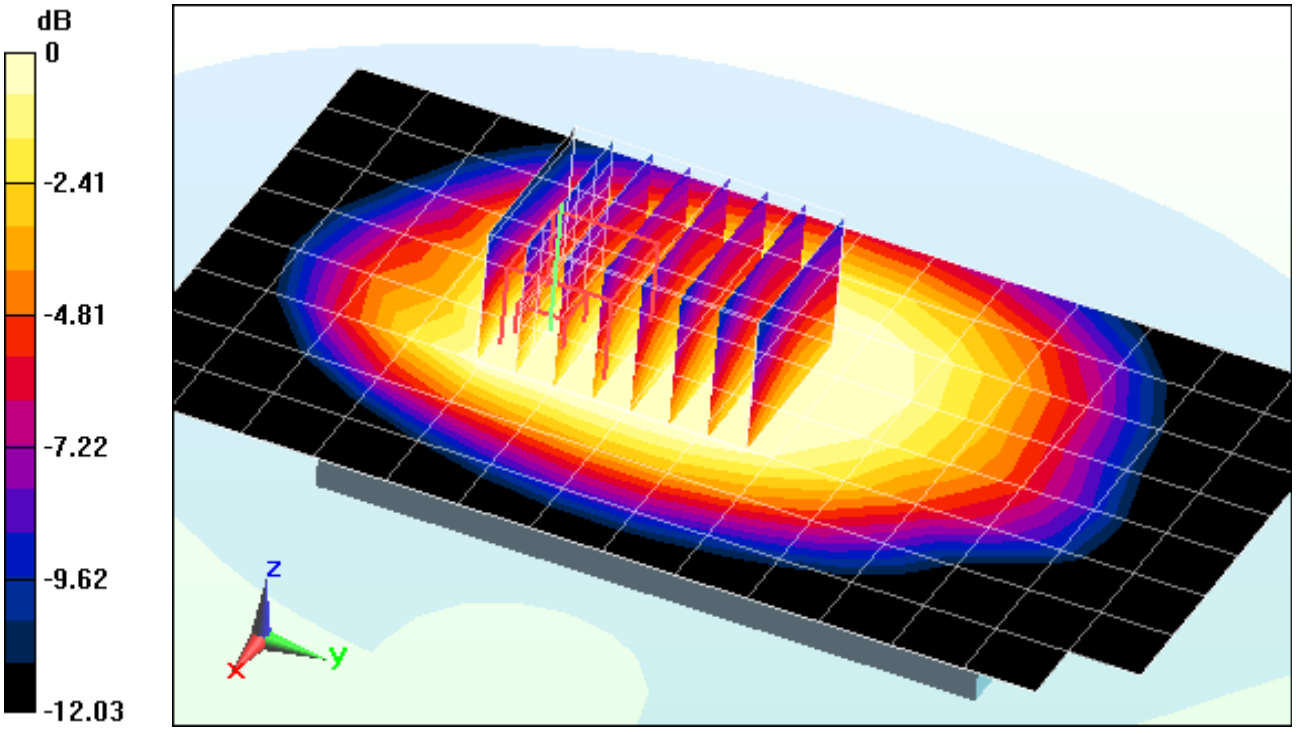
Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Body, Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.999 S/m; ε_r = 53.825; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-05-2014; Ambient Temp: 22.9°C; Tissue Temp: 21.4°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. EVDO Rev. 0 (§90S), Body SAR, Back Side, Mid.ch, with Standard Back Cover

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x8x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.375 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.729 W/kg
SAR(1 g) = 0.503 W/kg



0 dB = 0.539 W/kg = -2.68 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32906

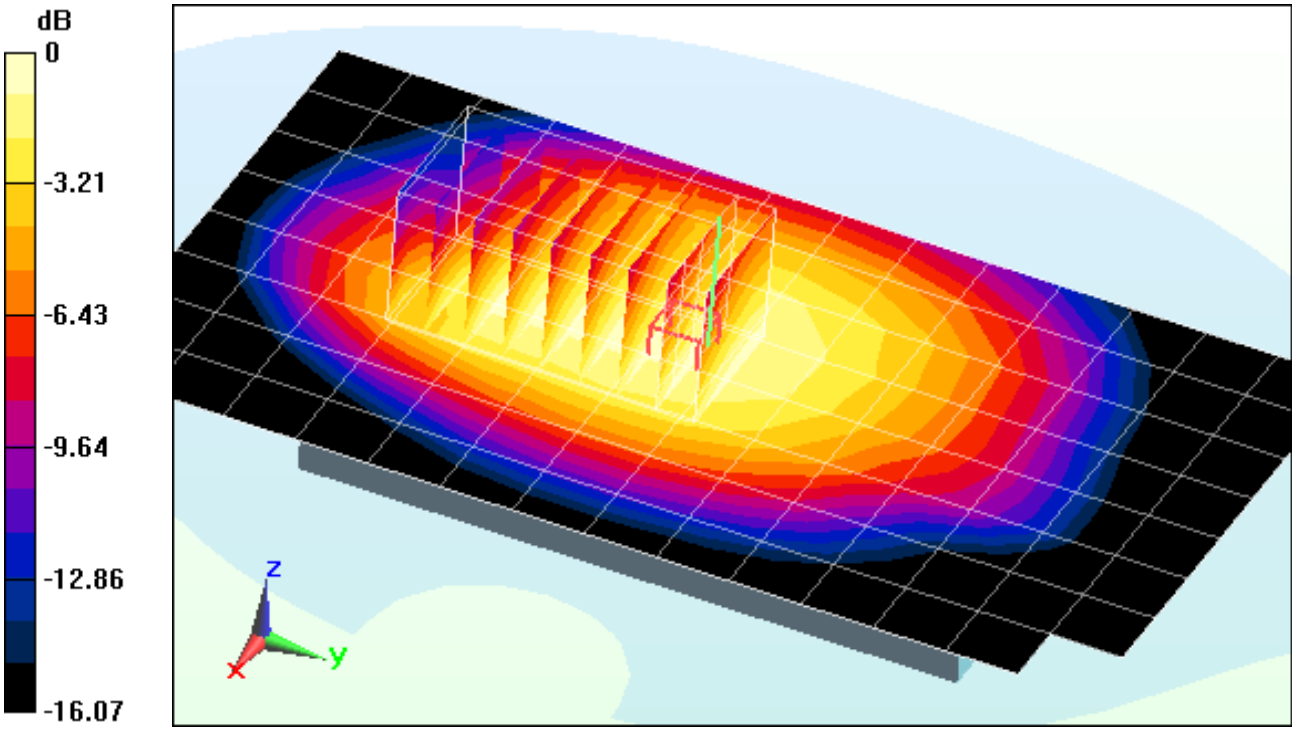
Communication System: UID 0, CDMA; Frequency: 848.31 MHz; Duty Cycle: 1:1
Medium: 835 Body, Medium parameters used (interpolated):
f = 848.31 MHz; σ = 1.026 S/m; ε_r = 53.552; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-05-2014; Ambient Temp: 22.9°C; Tissue Temp: 21.4°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 (§22H), Body SAR, Back Side, High.ch, with Standard Back Cover

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x9x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.859 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.16 W/kg
SAR(1 g) = 0.906 W/kg



0 dB = 0.940 W/kg = -0.27 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32906

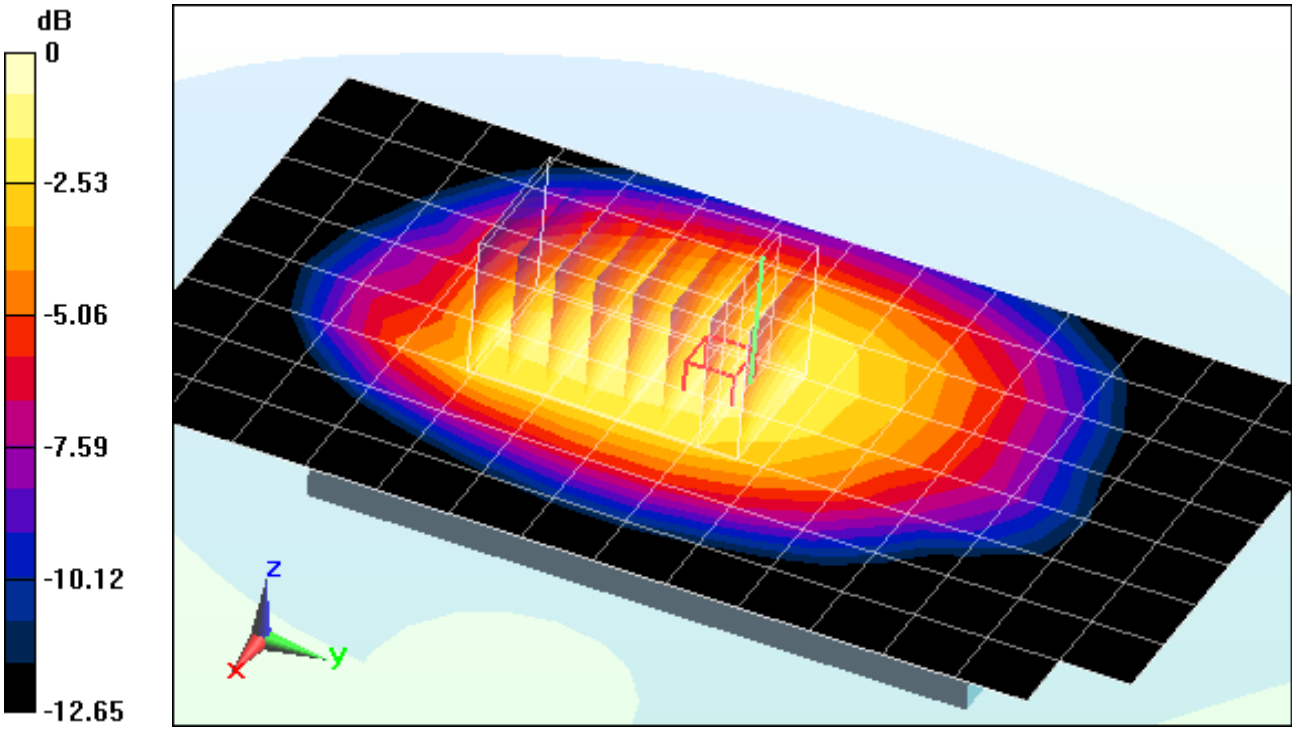
Communication System: UID 0, CDMA; Frequency: 848.31 MHz; Duty Cycle: 1:1
Medium: 835 Body, Medium parameters used (interpolated):
f = 848.31 MHz; σ = 1.026 S/m; ε_r = 53.552; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-05-2014; Ambient Temp: 22.9°C; Tissue Temp: 21.4°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. EVDO Rev. 0 (§22H), Body SAR, Back Side, Mid.ch, with Standard Back Cover

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x8x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.564 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.20 W/kg
SAR(1 g) = 0.932 W/kg



0 dB = 0.969 W/kg = -0.14 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 32912

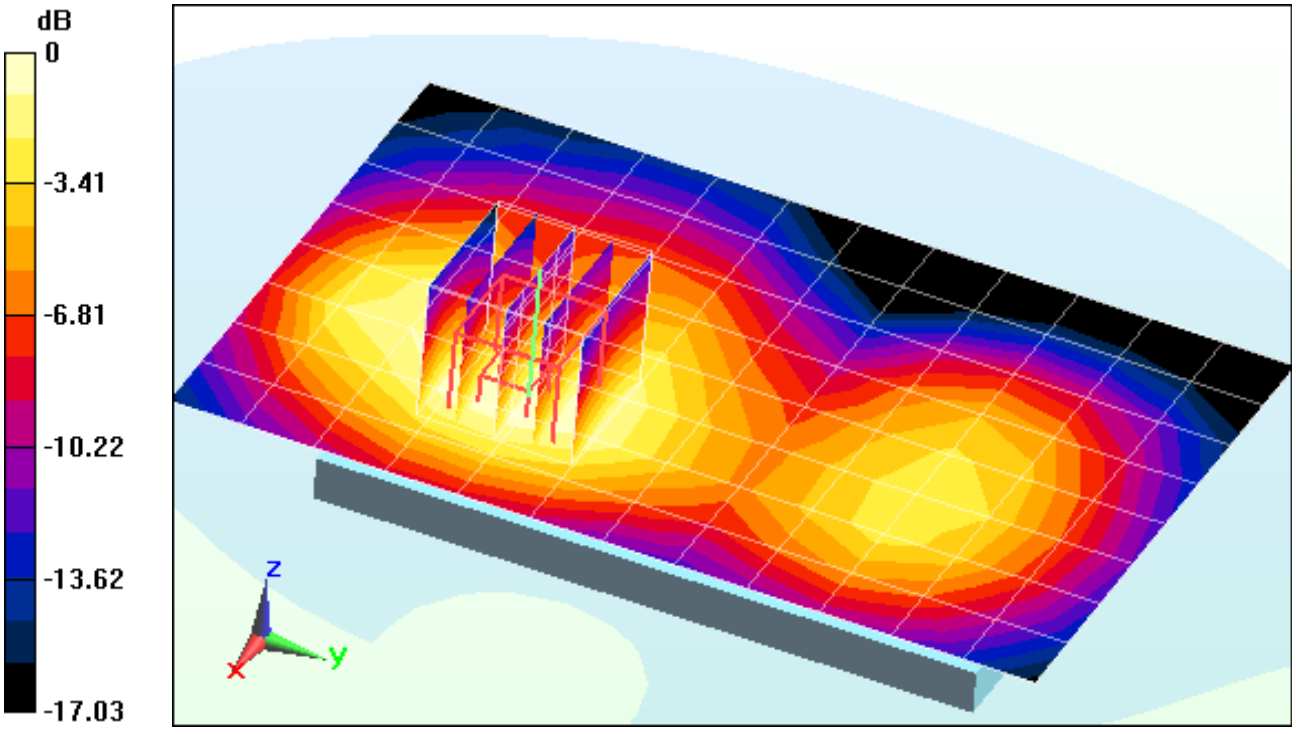
Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body, Medium parameters used:
f = 1880 MHz; σ = 1.551 S/m; ε_r = 52.184; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

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, with Standard Back Cover

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.775 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.937 W/kg
SAR(1 g) = 0.610 W/kg



0 dB = 0.652 W/kg = -1.86 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 328FA

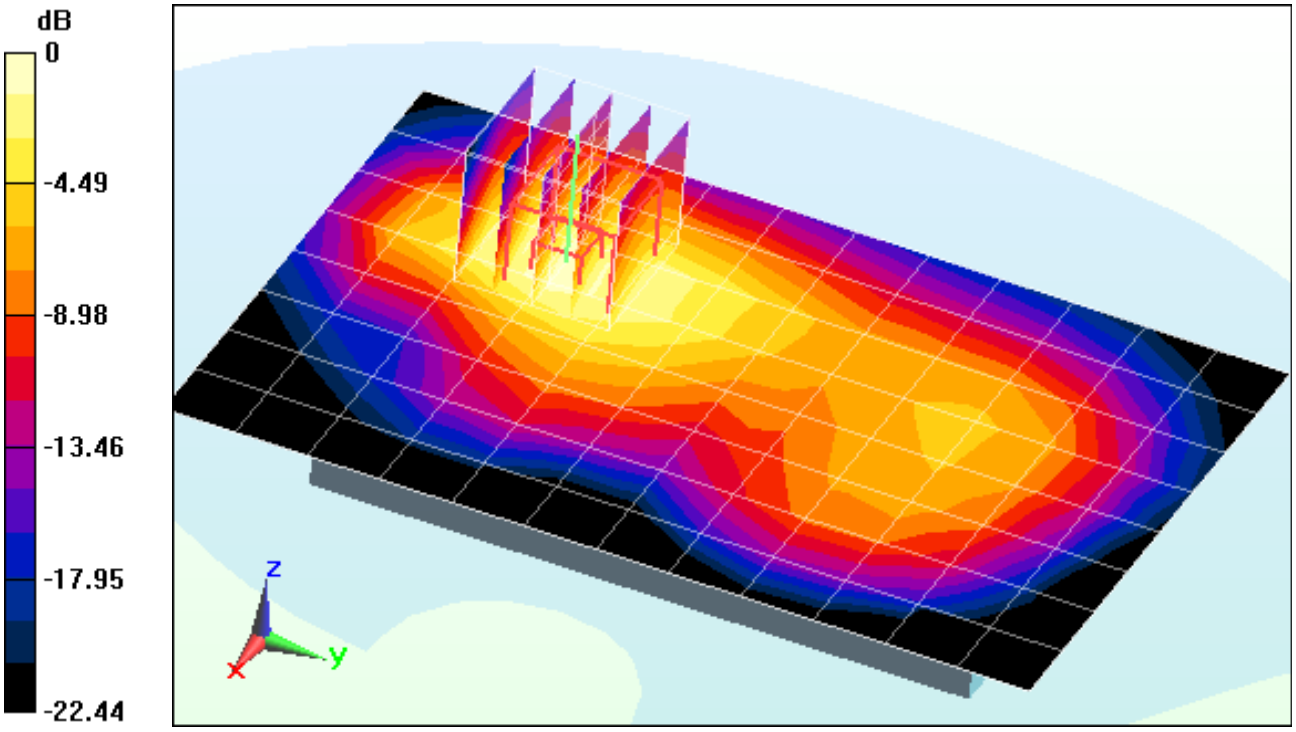
Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body, Medium parameters used:
f = 1880 MHz; σ = 1.551 S/m; ε_r = 52.184; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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: PCS EVDO Rev. 0, Body SAR, Front Side, Mid.ch, with Wireless Charging Cover

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.985 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.993 W/kg
SAR(1 g) = 0.612 W/kg



0 dB = 0.682 W/kg = -1.66 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 3290B

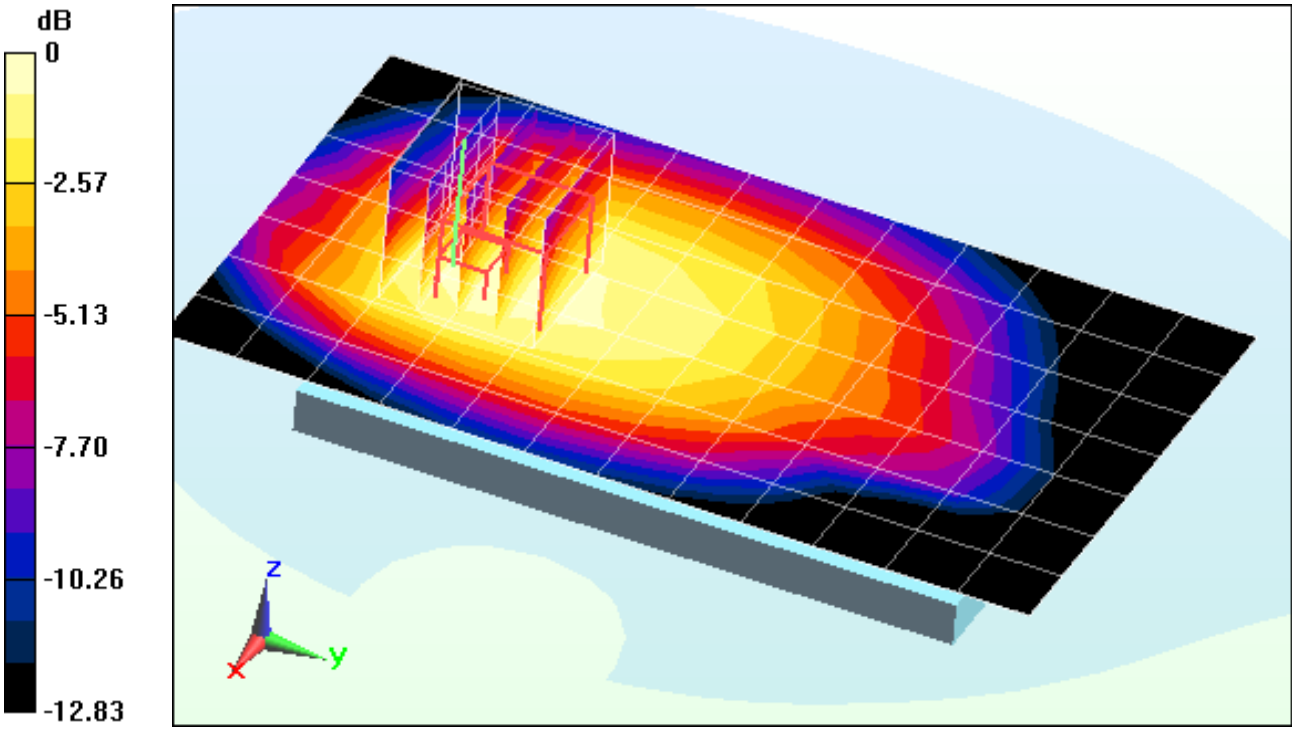
Communication System: UID 0, LTE Band 26; Frequency: 844 MHz; Duty Cycle: 1:1
Medium: 835 Body, Medium parameters used (interpolated):
f = 844 MHz; σ = 1.022 S/m; ε_r = 53.599; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-05-2014; Ambient Temp: 22.9°C; Tissue Temp: 21.4°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: LTE Band 26, Body SAR, Back Side, High.ch, 10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset, with 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 = 21.945 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.647 W/kg
SAR(1 g) = 0.453 W/kg



0 dB = 0.476 W/kg = -3.22 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 3290B

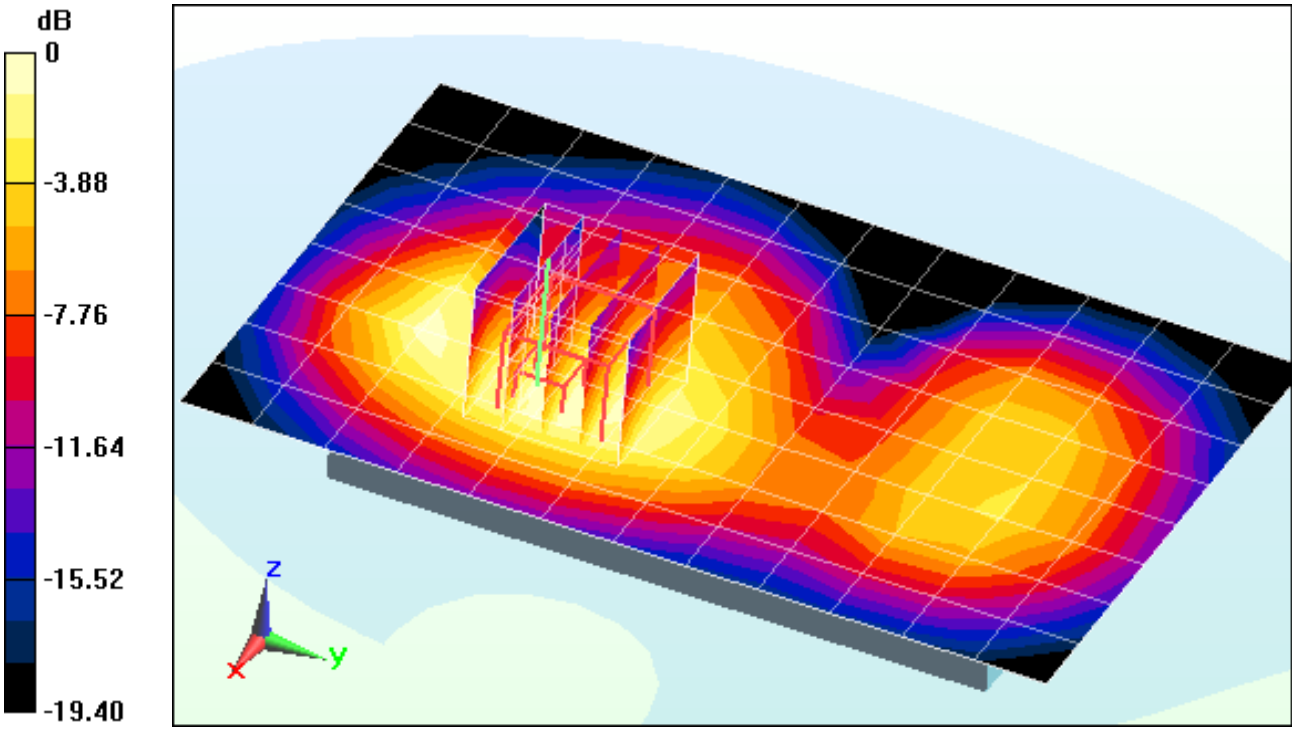
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium: 1900 Body, Medium parameters used (interpolated):
f = 1882.5 MHz; σ = 1.554 S/m; ε_r = 52.175; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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: LTE Band 25 (PCS), Body SAR, Back Side, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset, with Standard Battery Cover

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.503 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.11 W/kg
SAR(1 g) = 0.718 W/kg



0 dB = 0.782 W/kg = -1.07 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 3290B

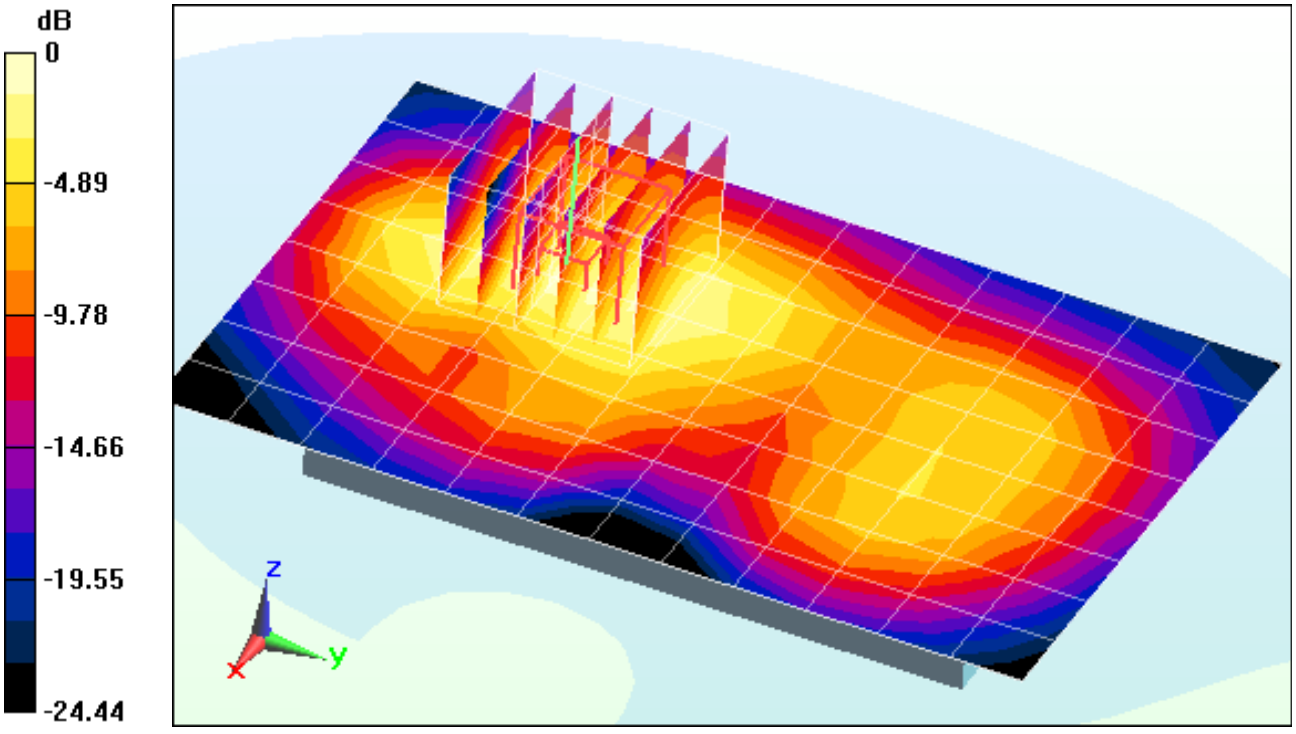
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium: 1900 Body, Medium parameters used (interpolated):
f = 1882.5 MHz; σ = 1.554 S/m; ε_r = 52.175; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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: LTE Band 25 (PCS), Body SAR, Front Side, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset, with Wireless Charging Cover

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.630 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.55 W/kg
SAR(1 g) = 0.965 W/kg



0 dB = 1.07 W/kg = 0.29 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 328FF

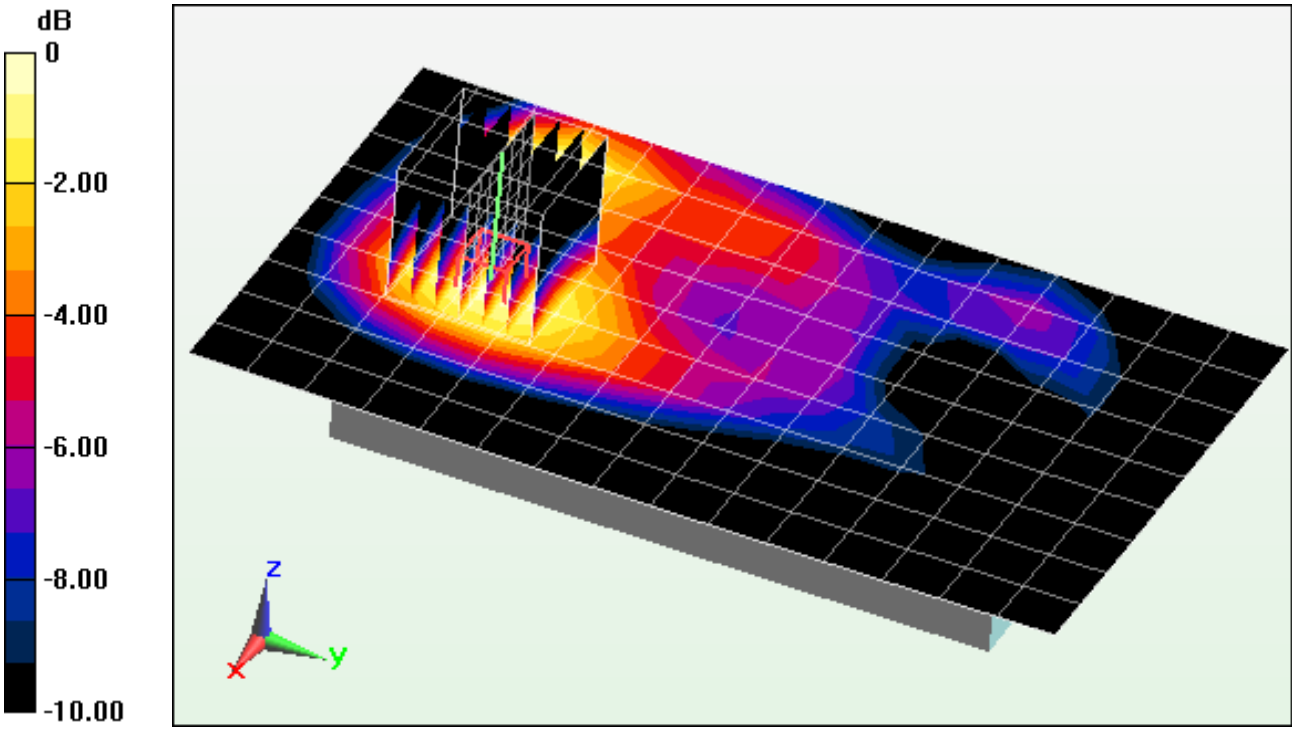
Communication System: UID 0, LTE Band 41; Frequency: 2636.5 MHz; Duty Cycle: 1:1.58
Medium: 2600 Body, Medium parameters used (interpolated):
f = 2636.5 MHz; σ = 2.289 S/m; ε_r = 51.921; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-07-2014; Ambient Temp: 24.0°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3209; ConvF(4.11, 4.11, 4.11); Calibrated: 3/15/2013;
Sensor-Surface: 3mm (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 41, Body SAR, Back Side, Mid-High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset, with 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 = 11.517 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.533 W/kg
SAR(1 g) = 0.280 W/kg



0 dB = 0.344 W/kg = -4.63 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 328FF

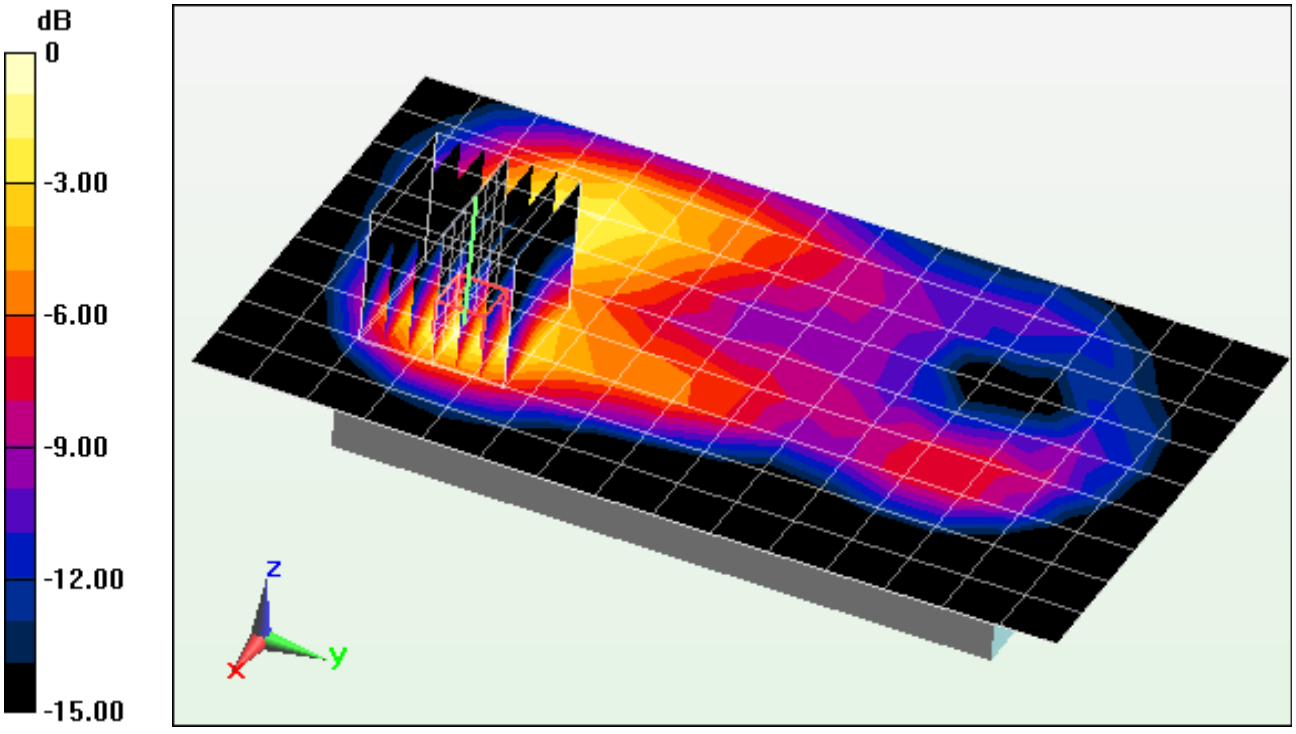
Communication System: UID 0, LTE Band 41; Frequency: 2636.5 MHz; Duty Cycle: 1:1.58
Medium: 2600 Body, Medium parameters used (interpolated):
f = 2636.5 MHz; σ = 2.289 S/m; ε_r = 51.921; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-07-2014; Ambient Temp: 24.0°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3209; ConvF(4.11, 4.11, 4.11); Calibrated: 3/15/2013;
Sensor-Surface: 3mm (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 41, Body SAR, Front Side, Mid-High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset, with 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 = 14.802 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.981 W/kg
SAR(1 g) = 0.440 W/kg



0 dB = 0.582 W/kg = -2.35 dBW/kg

DUT: A3LSMG900P; Type: Portable Handset; Serial: 00F05

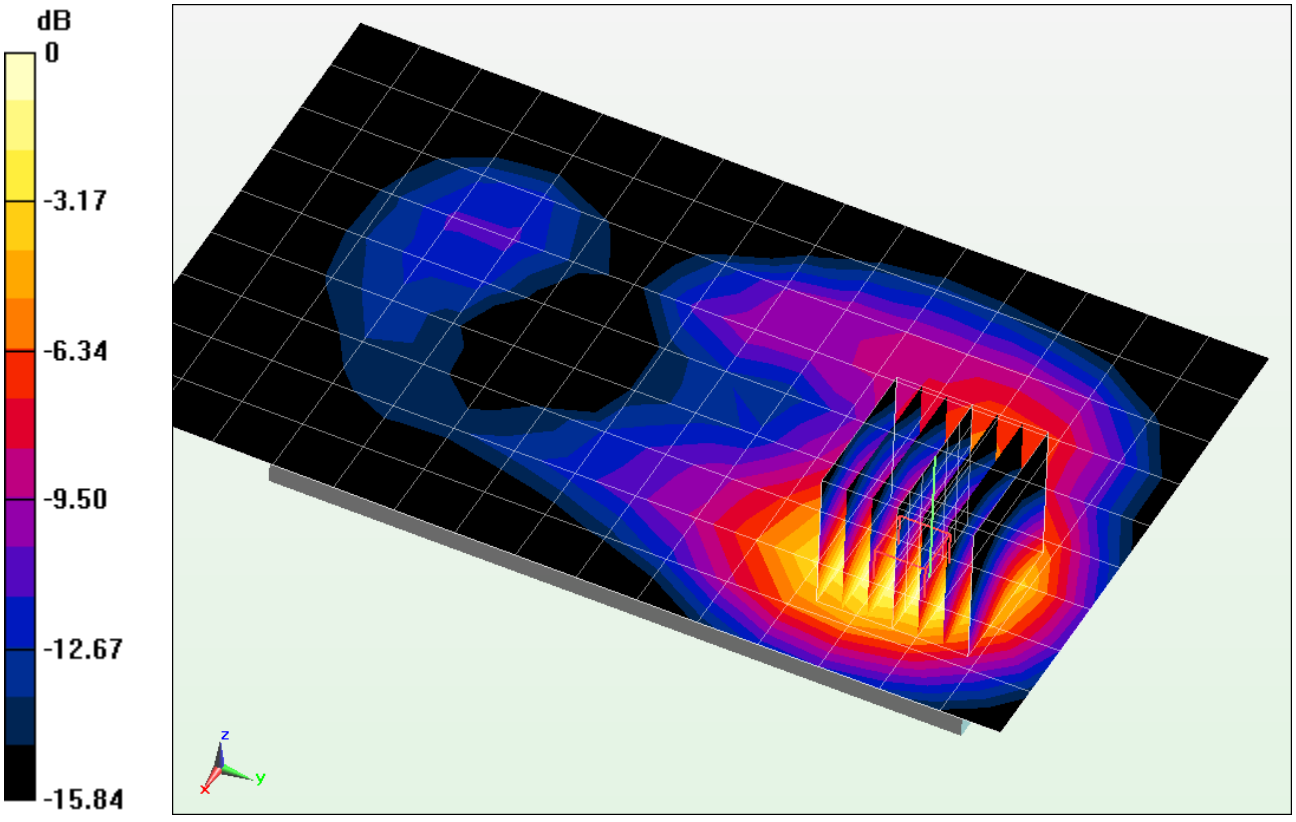
Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2437 MHz; σ = 1.92 S/m; ε_r = 51.381; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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

DUT: A3LSMG900P; Type: Portable Handset; Serial: 15ECE

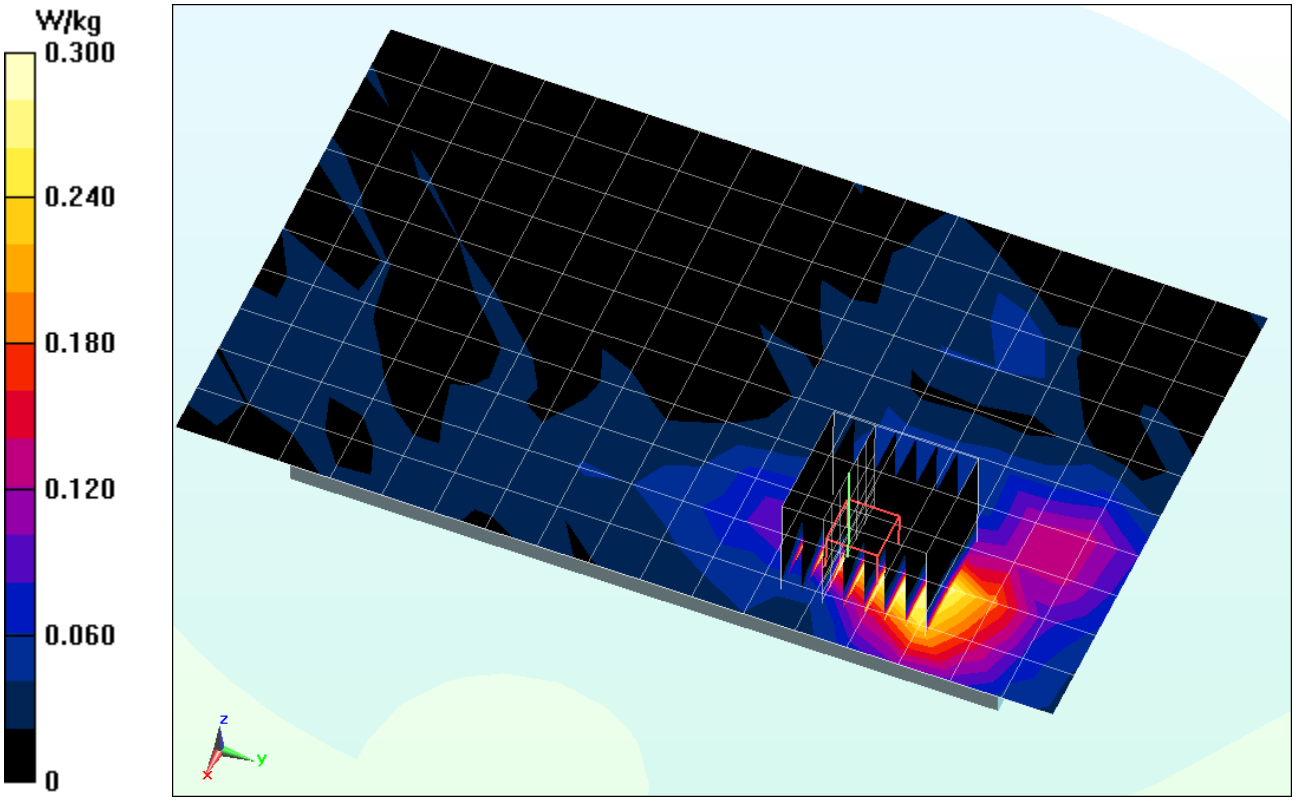
Communication System: UID 0, IEEE 802.11a; Frequency: 5765 MHz;Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used:
f = 5765 MHz; σ = 6.028 S/m; ε_r = 45.89; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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



DUT: A3LSMG900P; Type: Portable Handset; Serial: 15ECE

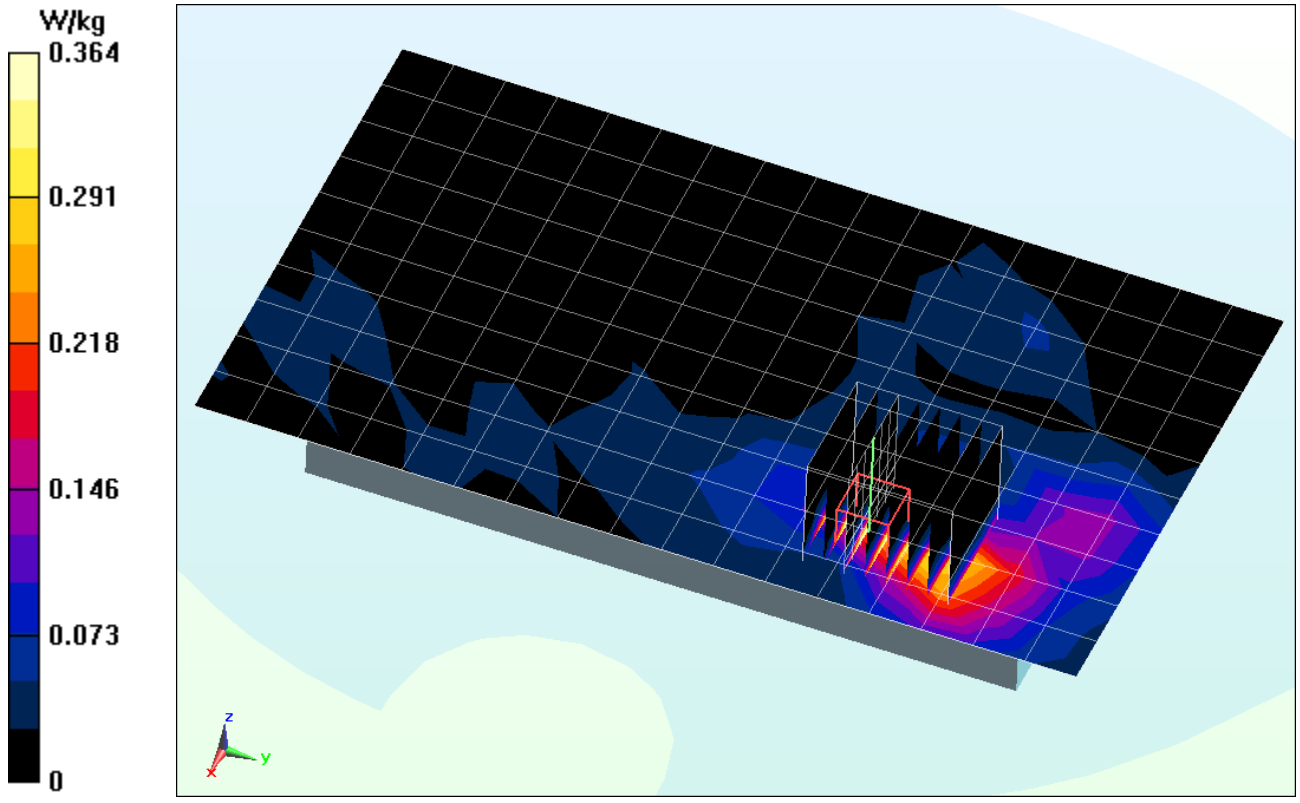
Communication System: UID 0, IEEE 802.11a; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used:
f = 5500 MHz; σ = 5.6 S/m; ε_r = 46.464; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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 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 835 MHz; Type: D835V2; Serial: 4d119

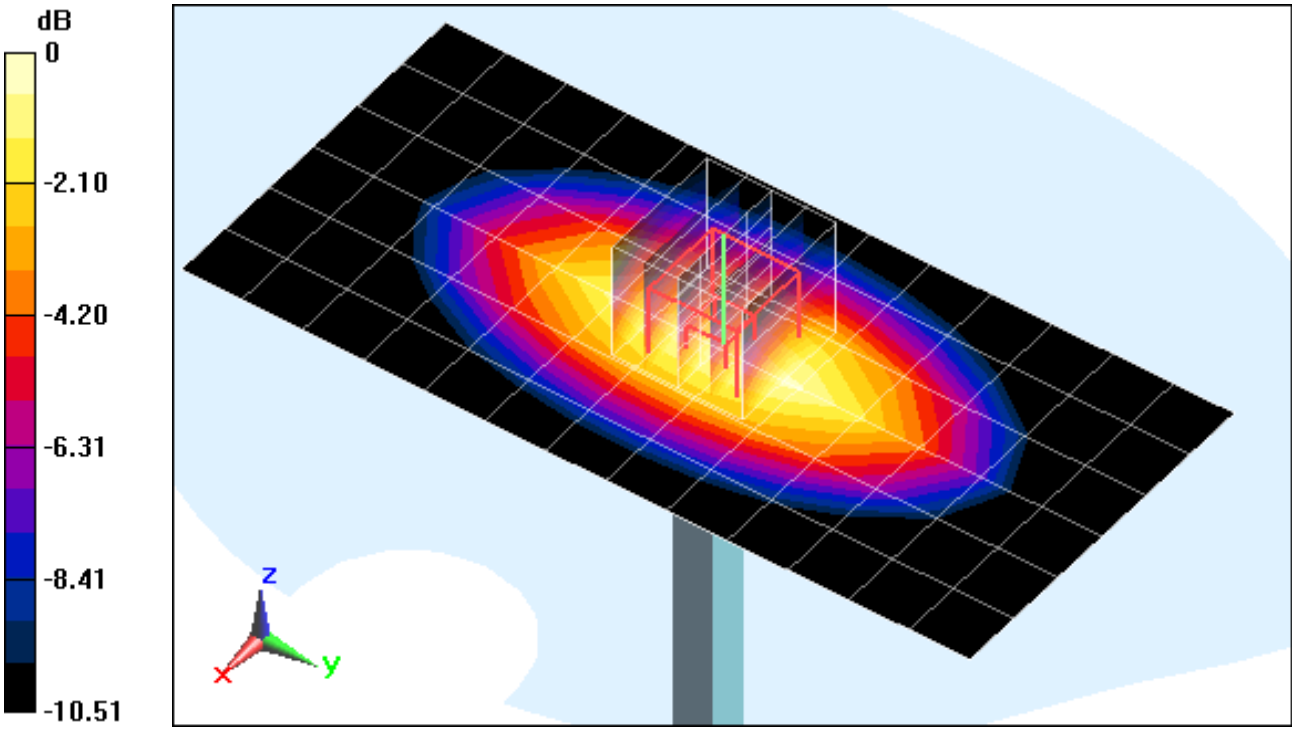
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head, Medium parameters used:
f = 835 MHz; σ = 0.906 S/m; ε_r = 41.195; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-17-2014; Ambient Temp: 24.5°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3318; ConvF(6.33, 6.33, 6.33); Calibrated: 4/29/2013;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 4/22/2013
Phantom: SAM; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

835 MHz System Verification

Area Scan (7x14x1): 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) = 1.40 W/kg
SAR(1 g) = 0.935 W/kg
Deviation = -3.41%



0 dB = 1.01 W/kg = 0.04 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

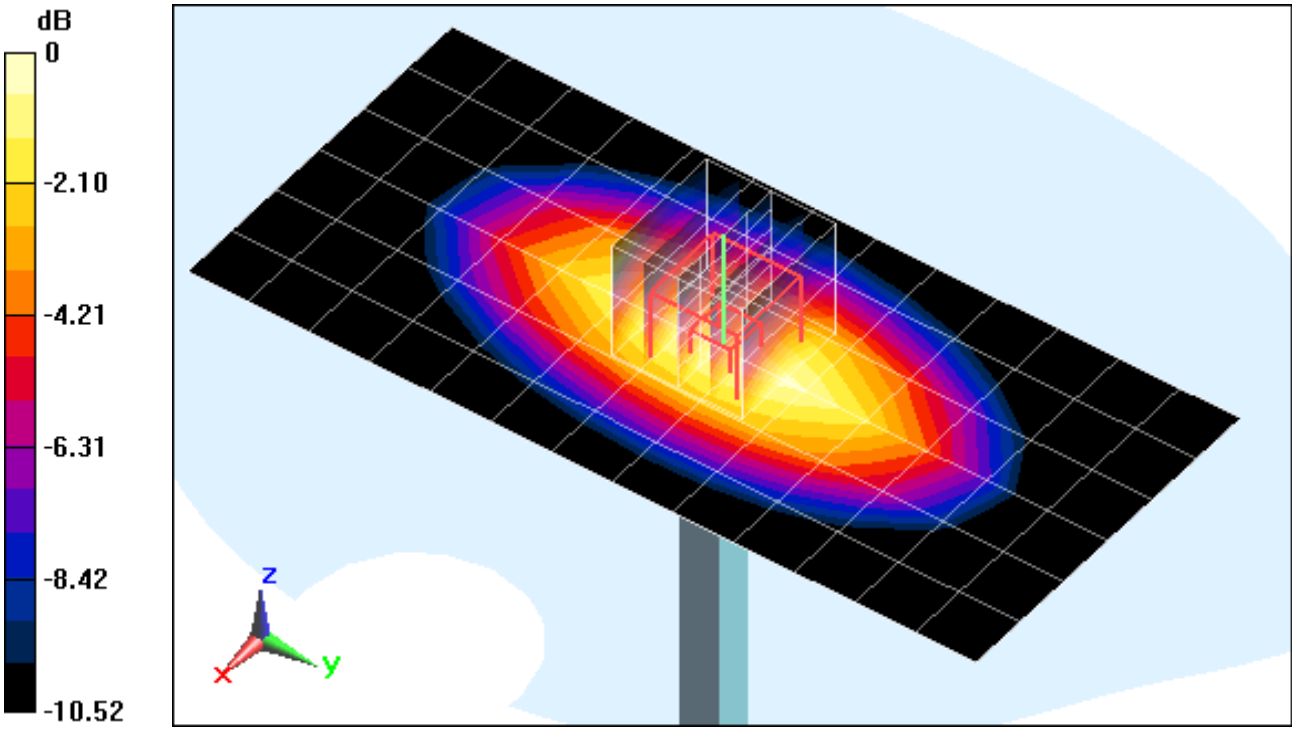
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head, Medium parameters used:
f = 835 MHz; σ = 0.939 S/m; ε_r = 42.81; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

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)

835 MHz System Verification

Area Scan (7x14x1): 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) = 1.41 W/kg
SAR(1 g) = 0.956 W/kg
Deviation = -1.24%



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

PCTEST ENGINEERING LABORATORY, INC.

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

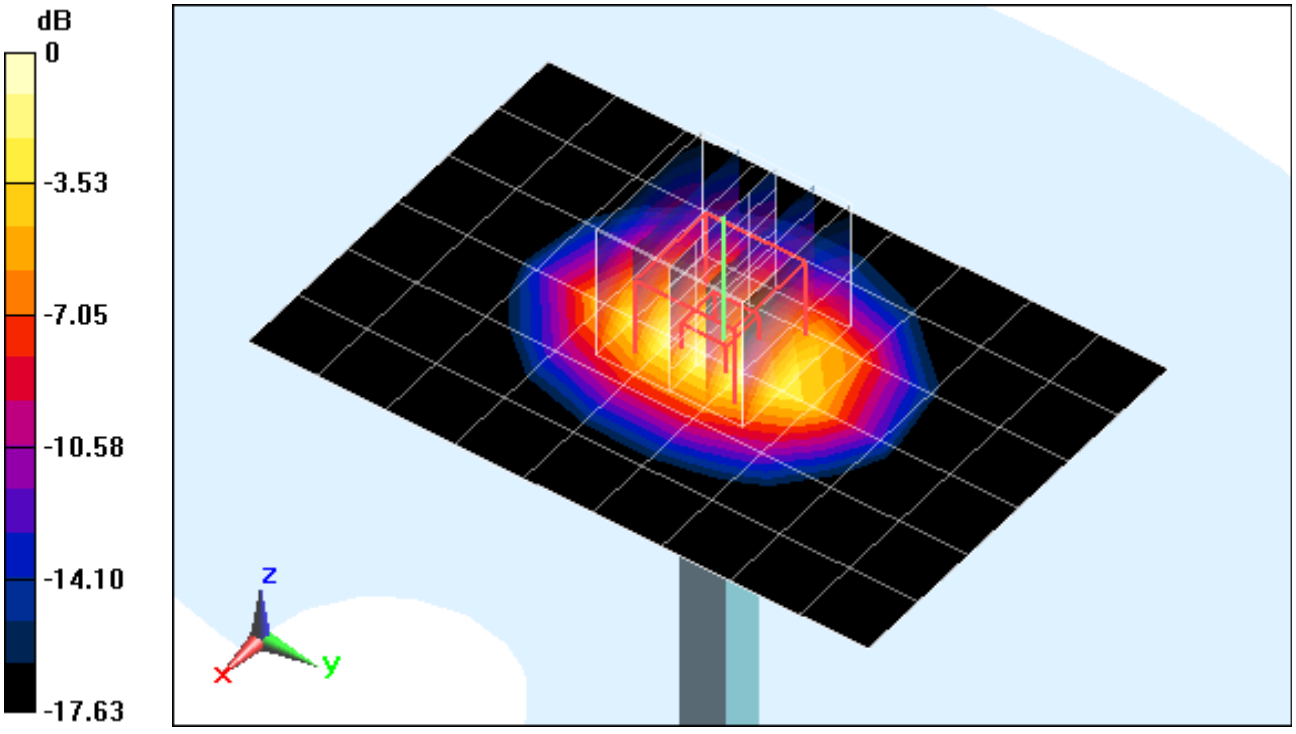
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head, Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.398 S/m; ε_r = 39.245; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-17-2014; Ambient Temp: 24.2°C; Tissue Temp: 22.8°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=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) = 6.94 W/kg
SAR(1 g) = 3.80 W/kg
Deviation = -5.94%



0 dB = 4.27 W/kg = 6.30 dBW/kg

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

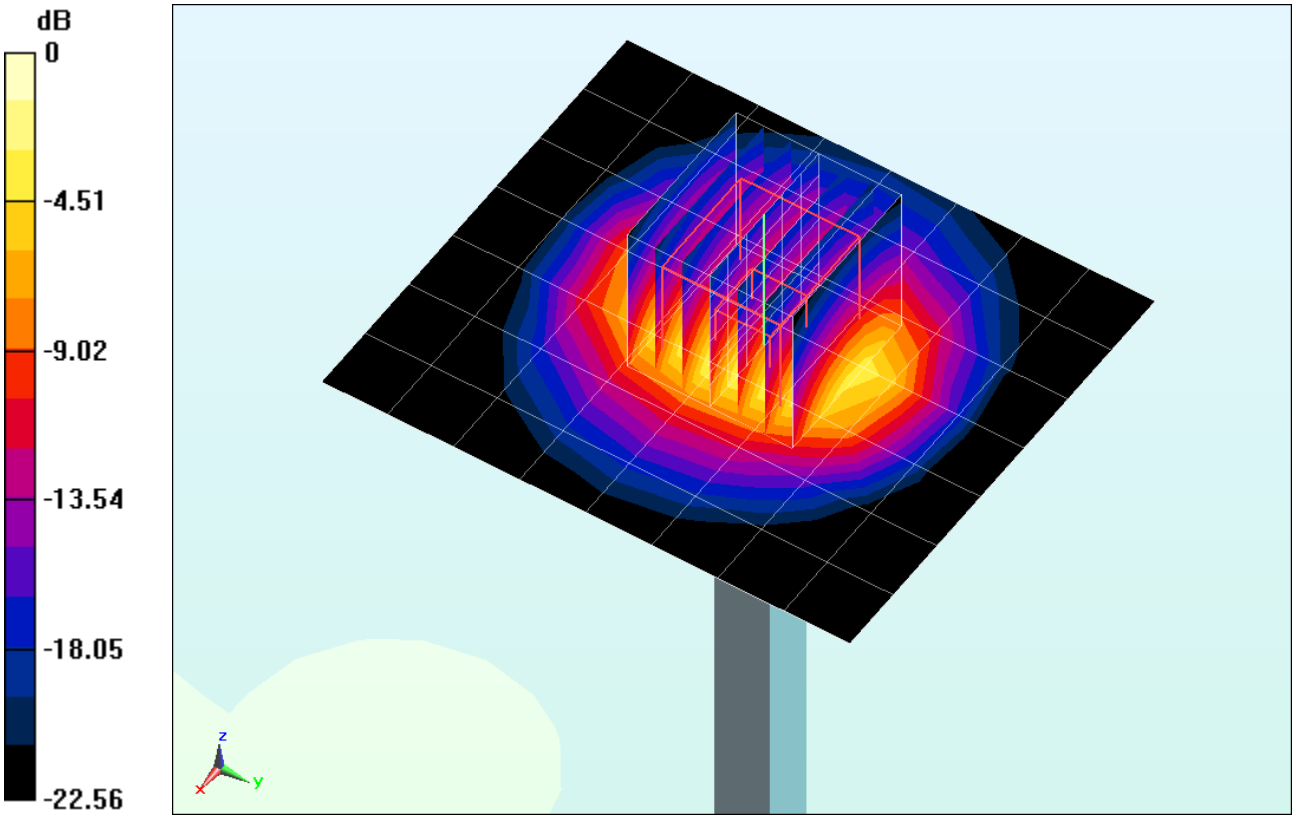
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head; Medium parameters used:
f = 2450 MHz; σ = 1.879 S/m; ε_r = 38.816; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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=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) = 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 2600 MHz; Type: D2600V2; Serial: 1004

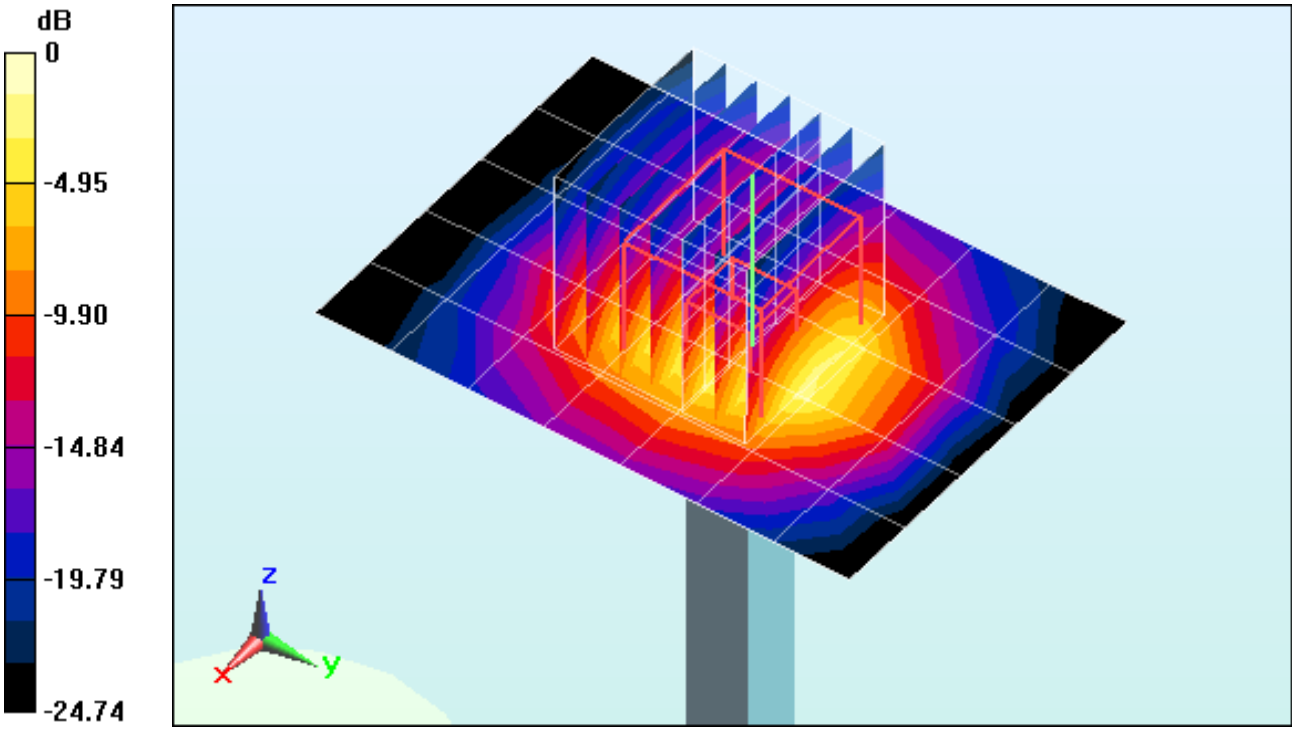
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2600 Head, Medium parameters used:
f = 2600 MHz; σ = 2.005 S/m; ε_r = 37.471; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-06-2014; Ambient Temp: 24.3°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3333; ConvF(4.28, 4.28, 4.28); Calibrated: 11/22/2013;
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)

2600 MHz System Verification

Area Scan (6x8x1): 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) = 12.7 W/kg
SAR(1 g) = 5.84 W/kg
Deviation = 0.34%



0 dB = 7.63 W/kg = 8.83 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

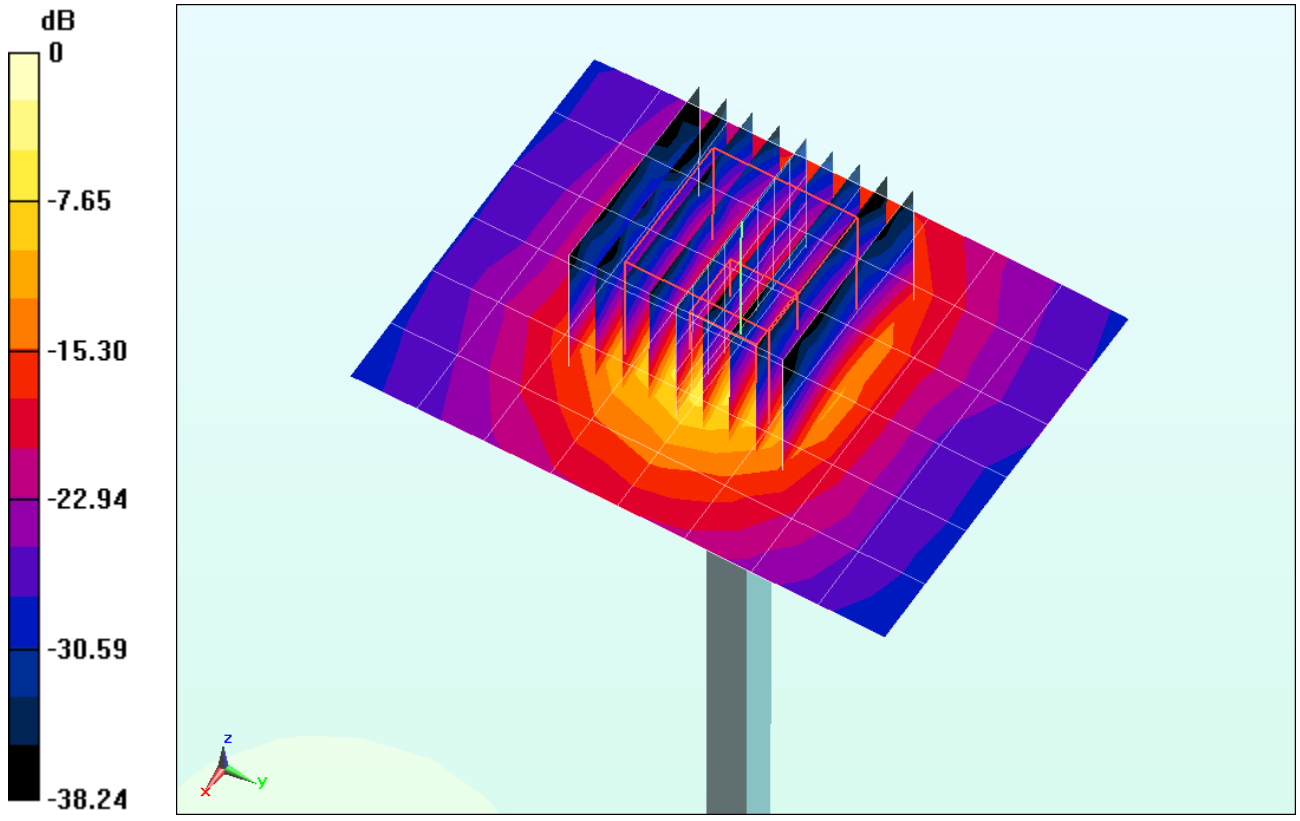
Communication System: UID 0, CW; Frequency: 5200 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used:
f = 5200 MHz; σ = 4.508 S/m; ε_r = 36.214; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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)

5200 MHz 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) = 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

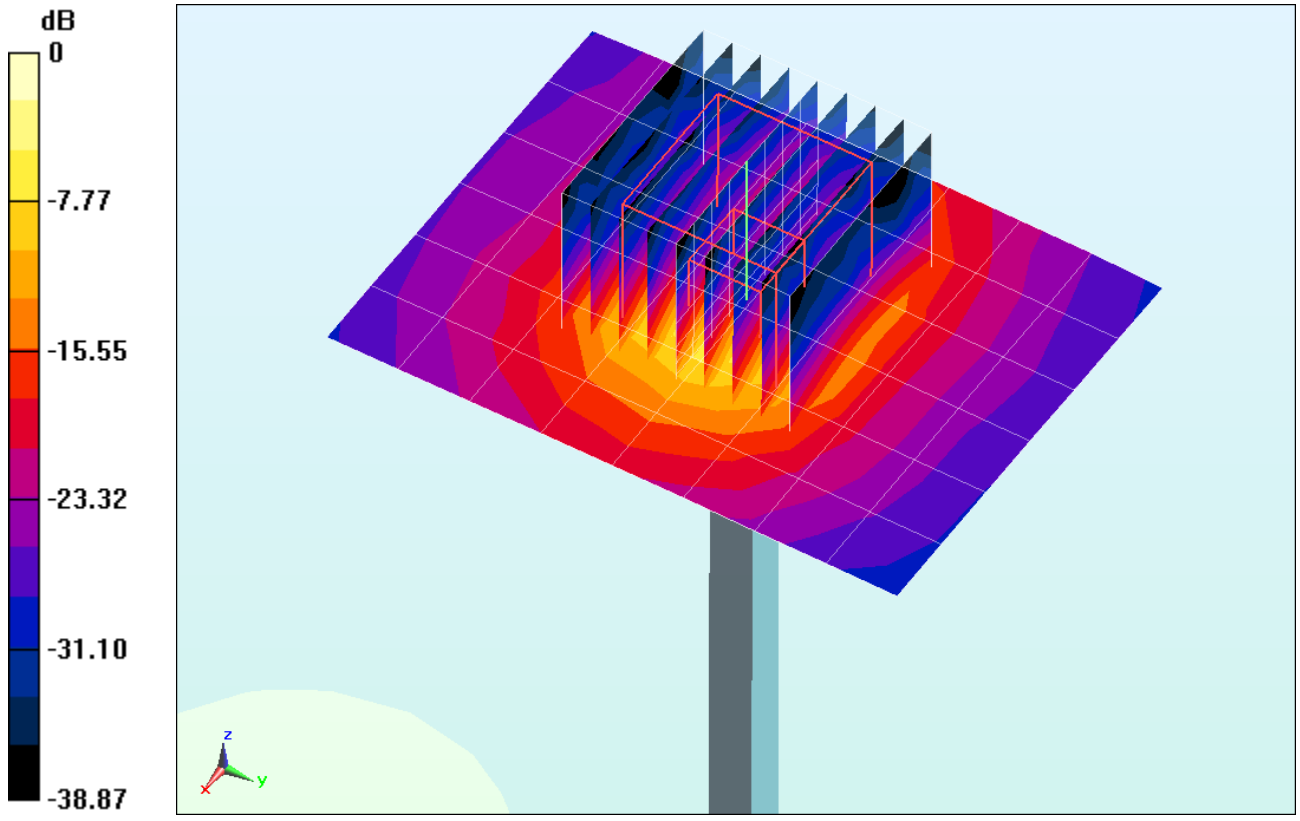
Communication System: UID 0, CW; Frequency: 5300 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used:
f = 5300 MHz; σ = 4.605 S/m; ε_r = 36.076; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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)

5300 MHz 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

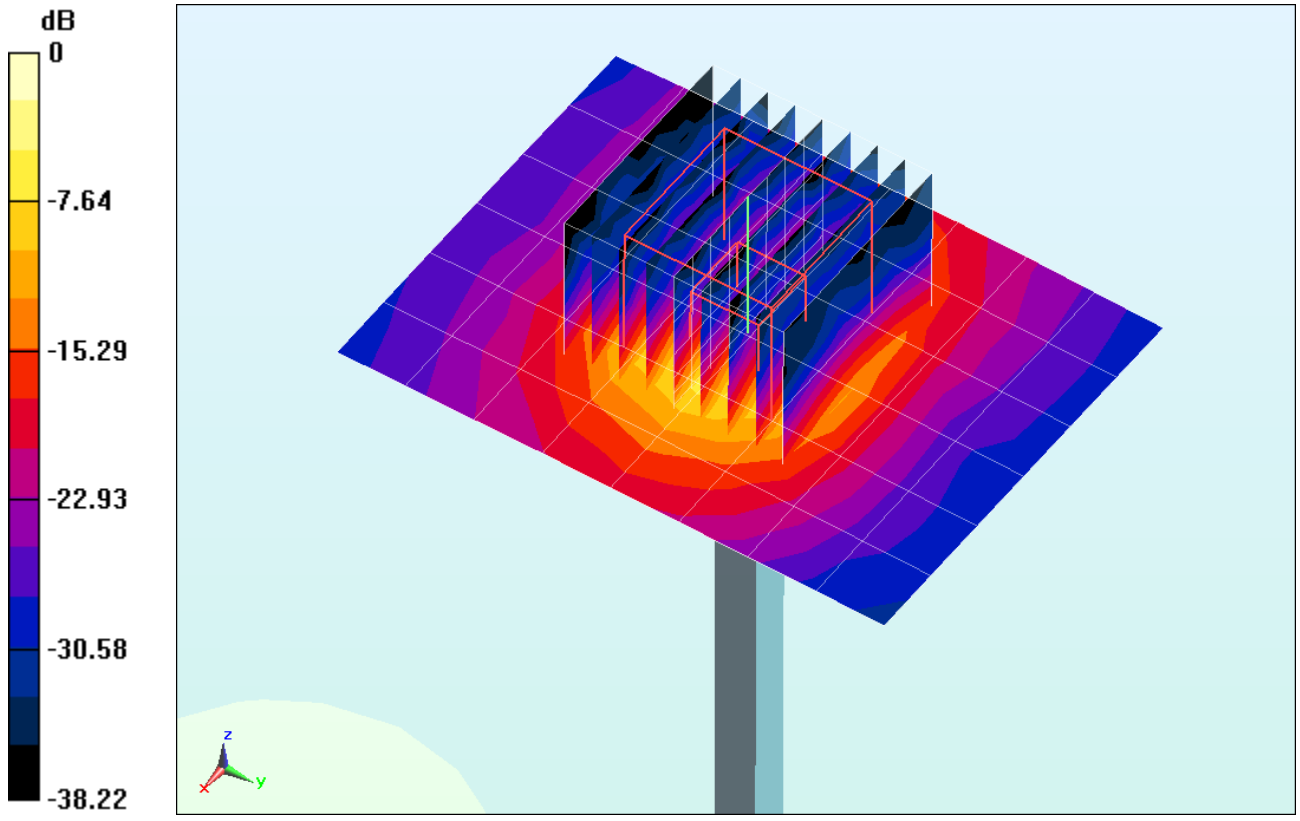
Communication System: UID 0, CW; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used:
f = 5500 MHz; σ = 4.822 S/m; ε_r = 35.798; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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)

5500 MHz 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

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

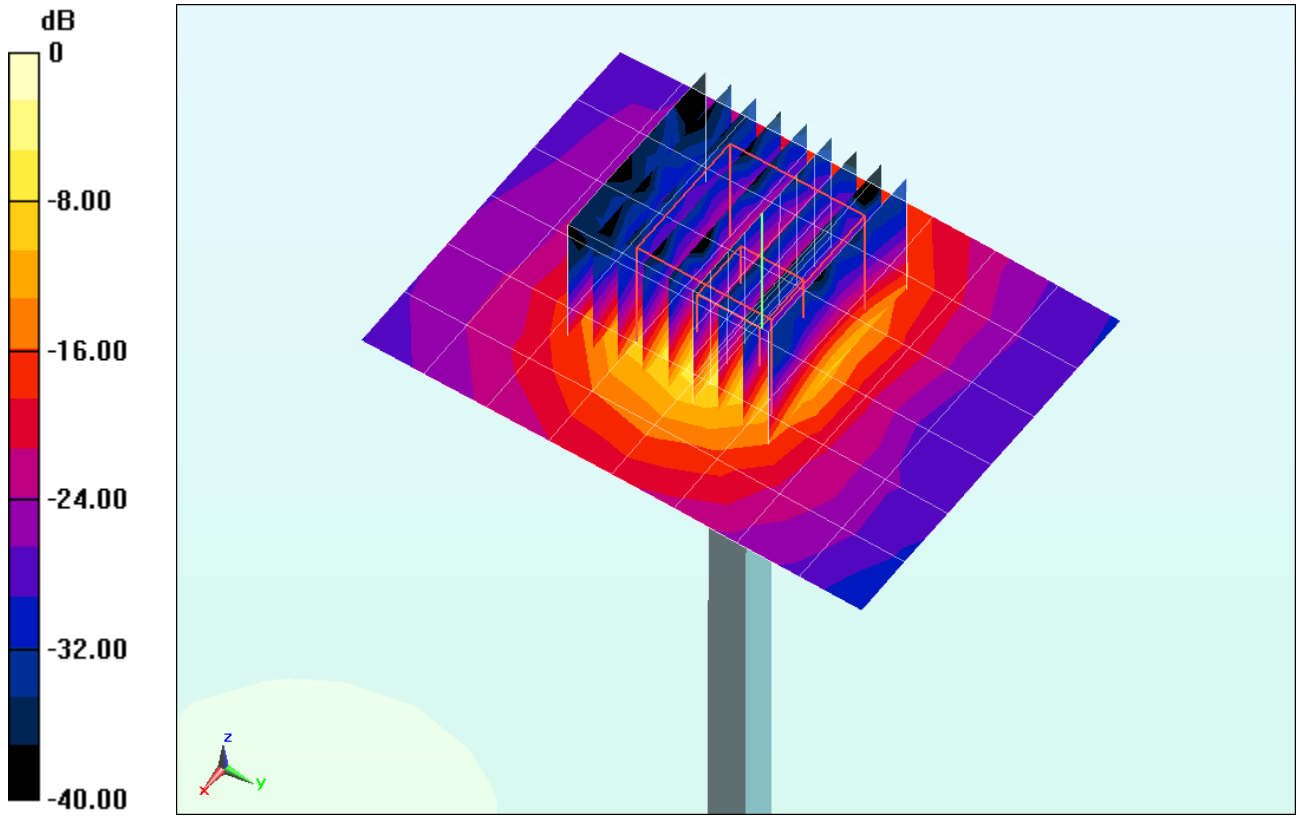
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used:
f = 5600 MHz; σ = 4.925 S/m; ε_r = 35.697; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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)

5600 MHz 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

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1007

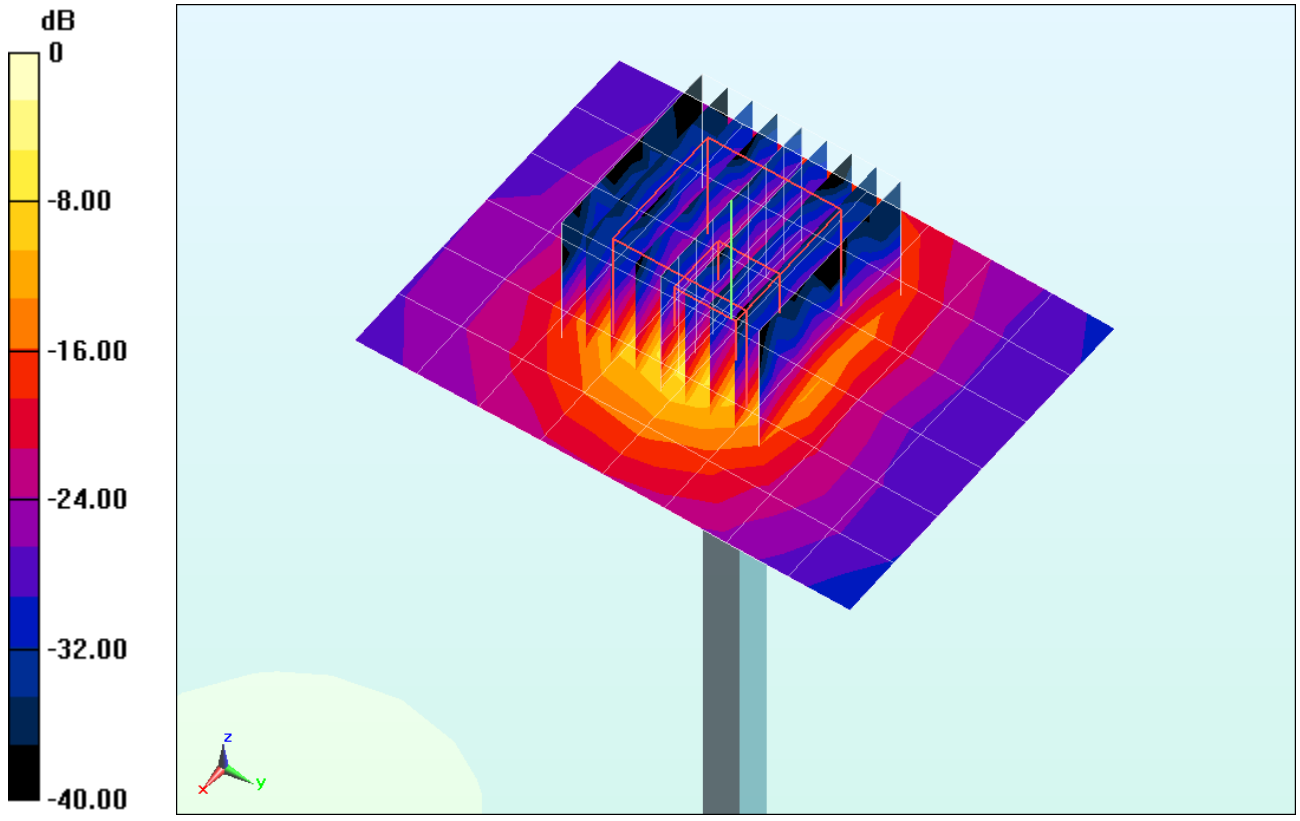
Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used:
f = 5800 MHz; σ = 5.112 S/m; ε_r = 35.479; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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)

5800 MHz 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 835 MHz; Type: D835V2; Serial: 4d119

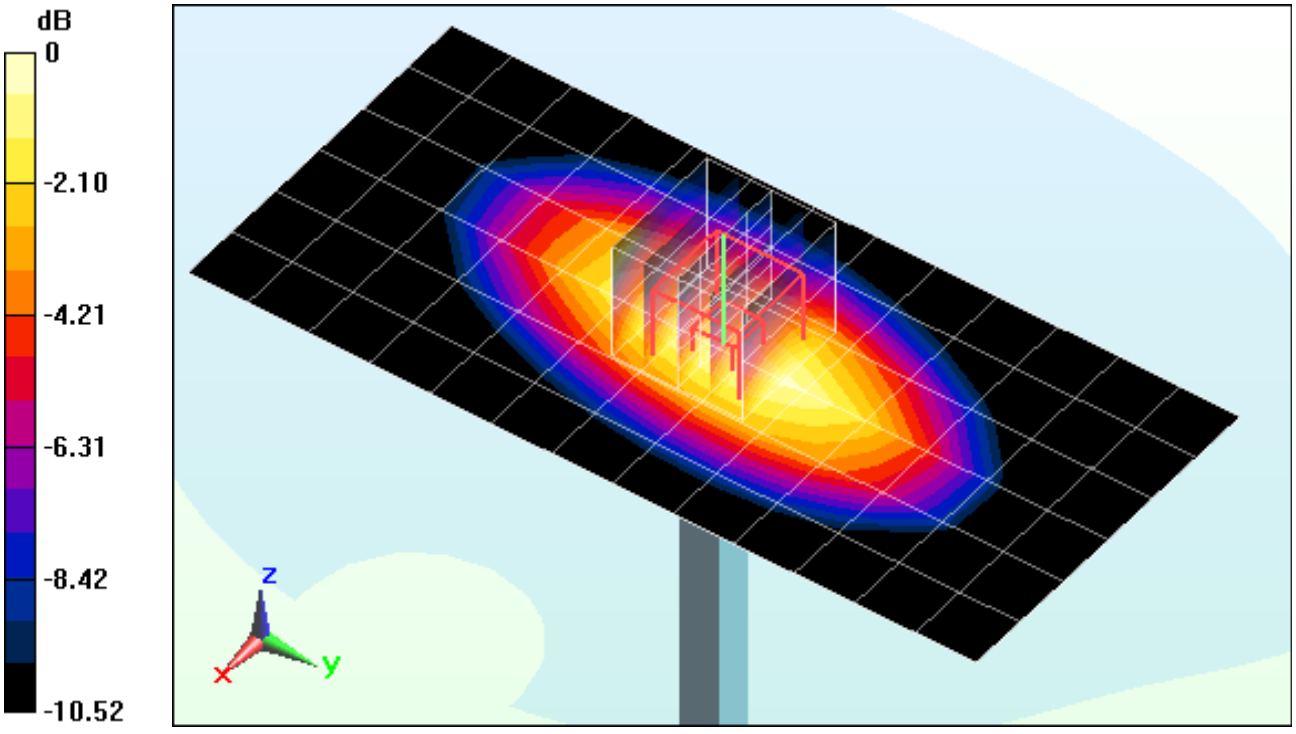
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body, Medium parameters used:
f = 835 MHz; σ = 1.014 S/m; ε_r = 53.696; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-05-2014; Ambient Temp: 22.9°C; Tissue Temp: 21.4°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=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) = 1.48 W/kg
SAR(1 g) = 1.02 W/kg
Deviation = 6.92%



0 dB = 1.10 W/kg = 0.41 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

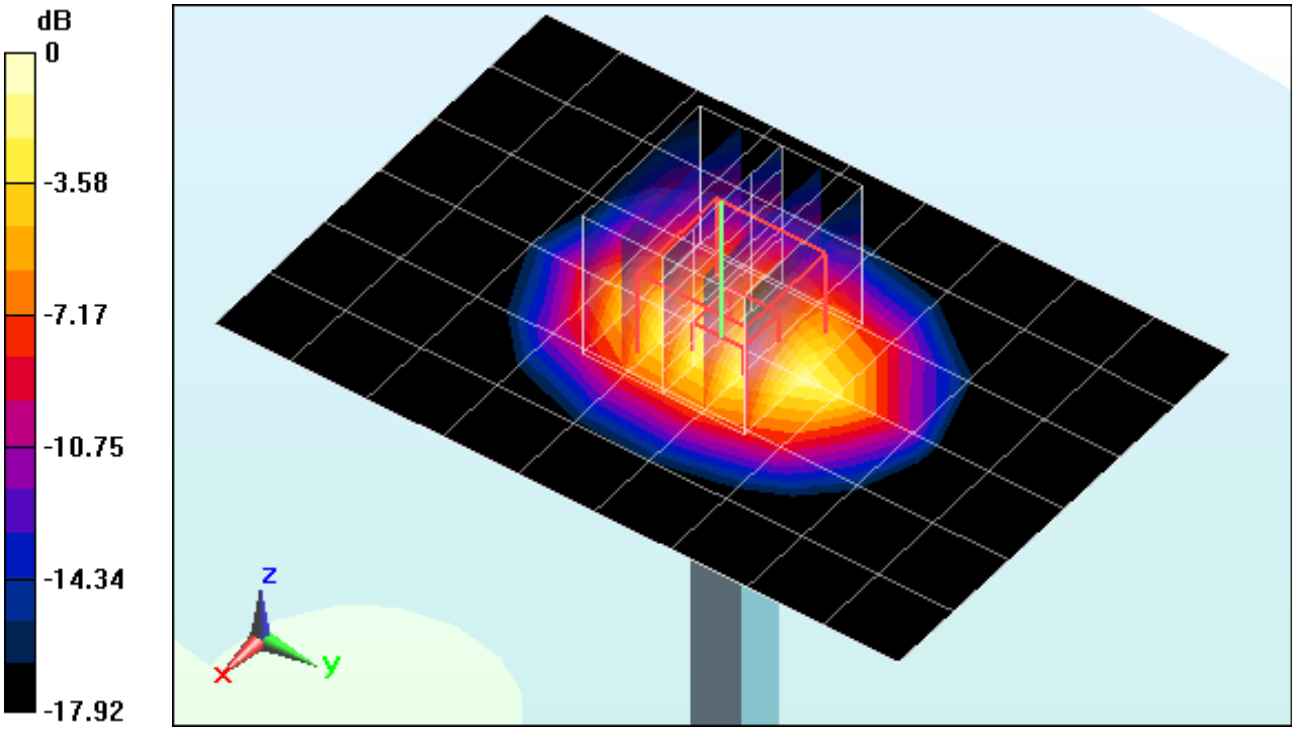
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body, Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.576 S/m; ε_r = 52.111; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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=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) = 7.85 W/kg
SAR(1 g) = 4.27 W/kg
Deviation = 5.43%



0 dB = 4.78 W/kg = 6.79 dBW/kg

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

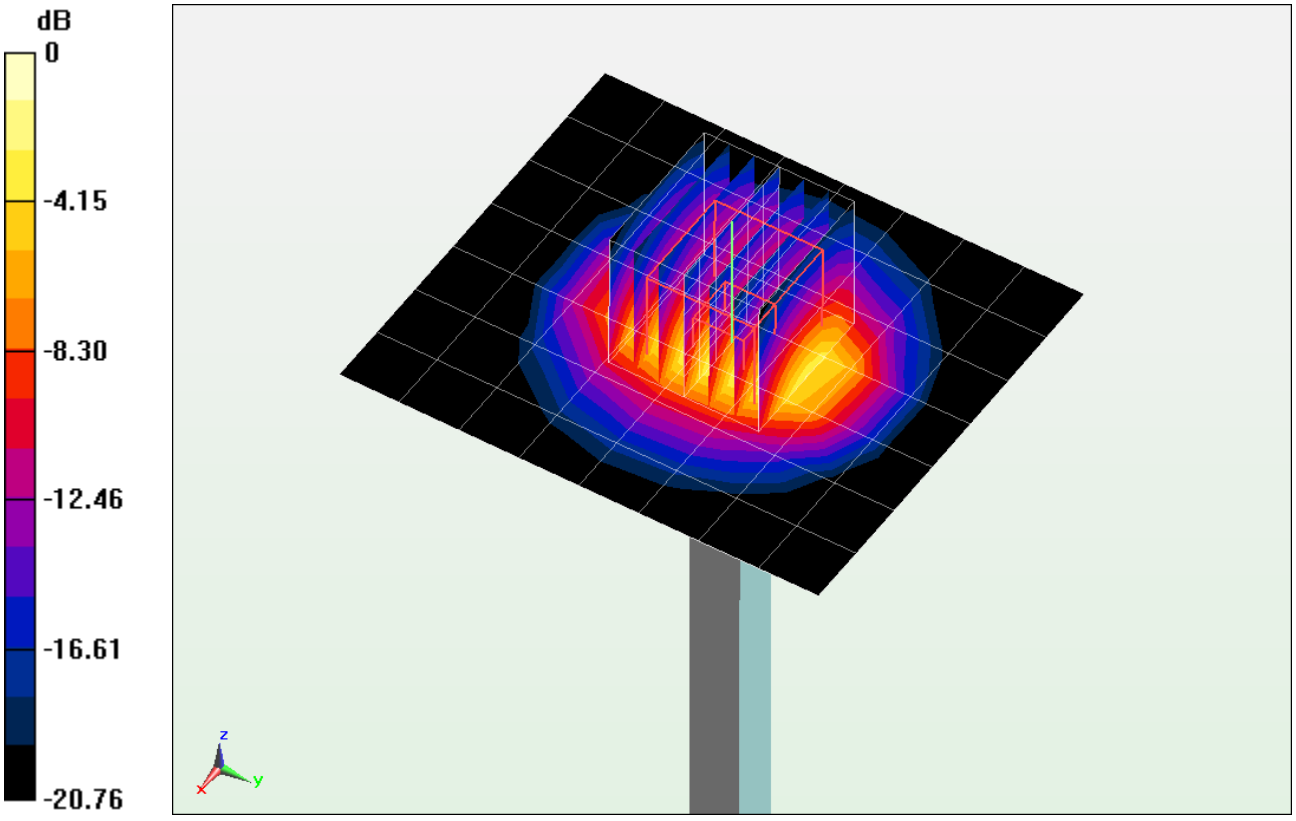
Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used:
f = 2450 MHz; σ = 1.937 S/m; ε_r = 51.331; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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: Dipole 2600 MHz; Type: D2600V2; Serial: 1004

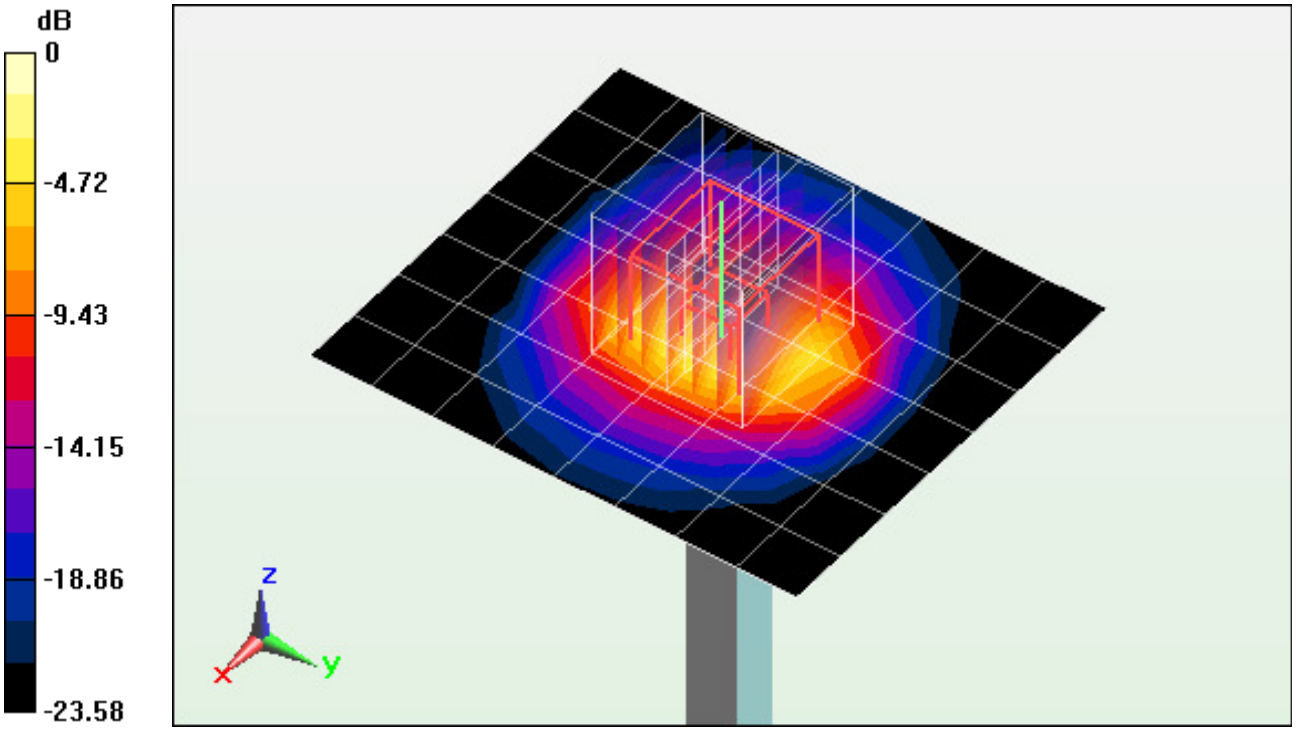
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2600 Body, Medium parameters used:
f = 2600 MHz; σ = 2.24 S/m; ε_r = 52.063; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-07-2014; Ambient Temp: 24.0°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3209; ConvF(4.11, 4.11, 4.11); Calibrated: 3/15/2013;
Sensor-Surface: 3mm (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)

2600 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) = 12.7 W/kg
SAR(1 g) = 5.65 W/kg
Deviation = -1.74%



0 dB = 7.47 W/kg = 8.73 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5200 MHz; Type: D5GHzV2; Serial: 1120

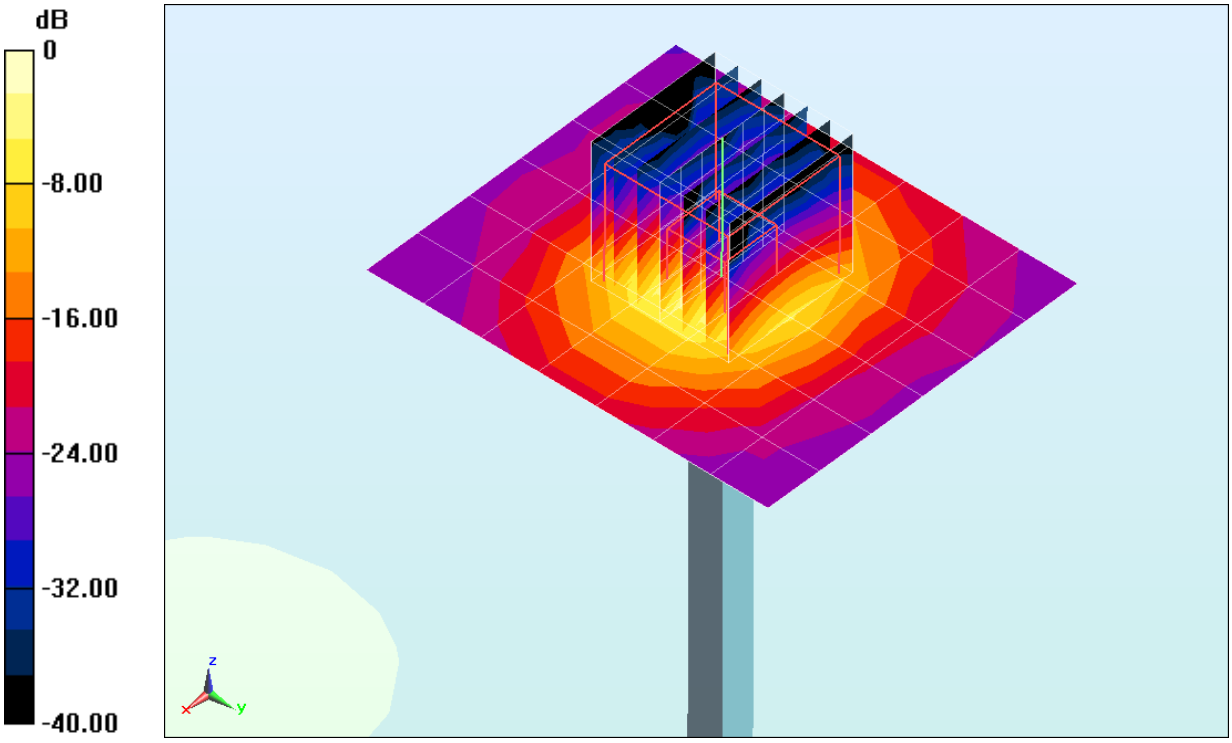
Communication System: UID 0, CW; Frequency: 5200 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used:
f = 5200 MHz; σ = 5.147 S/m; ε_r = 47.331; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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) = 7.70 W/kg
Deviation = 0.52%



0 dB = 19.7 W/kg = 12.94 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5300 MHz; Type: D5GHzV2; Serial: 1120

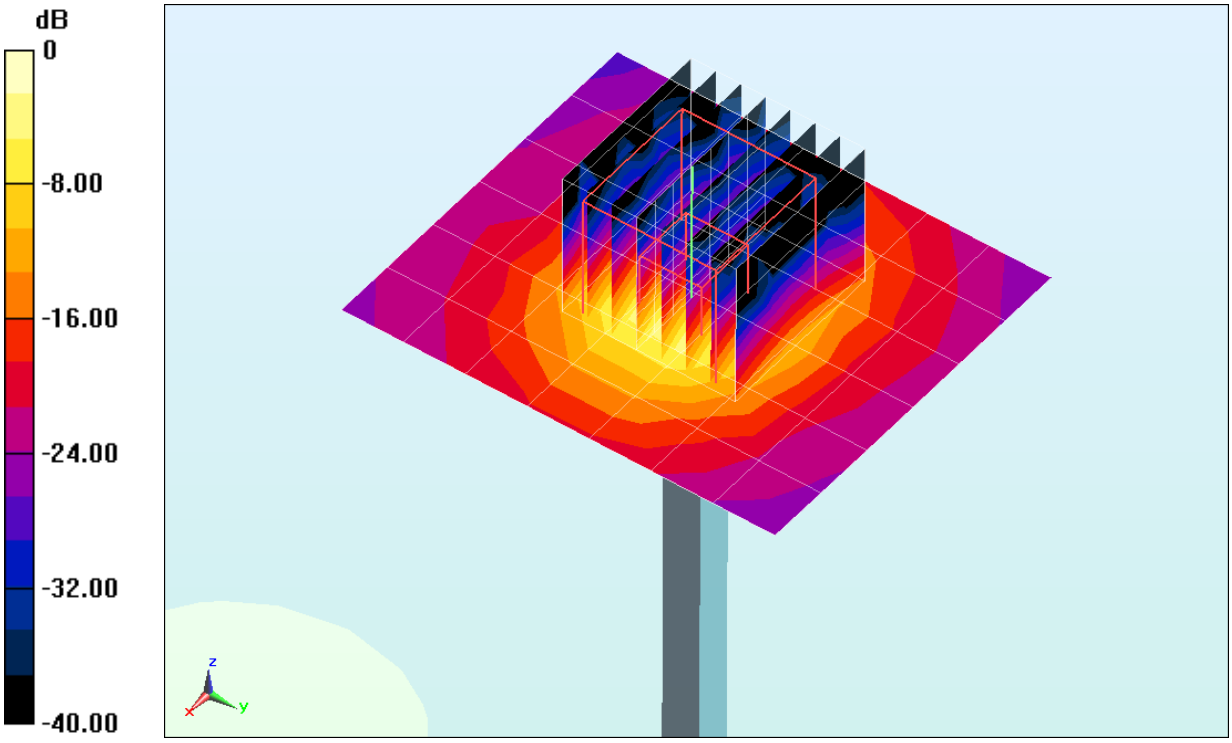
Communication System: UID 0, CW; Frequency: 5300 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used:
f = 5300 MHz; σ = 5.298 S/m; ε_r = 47.17; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1120

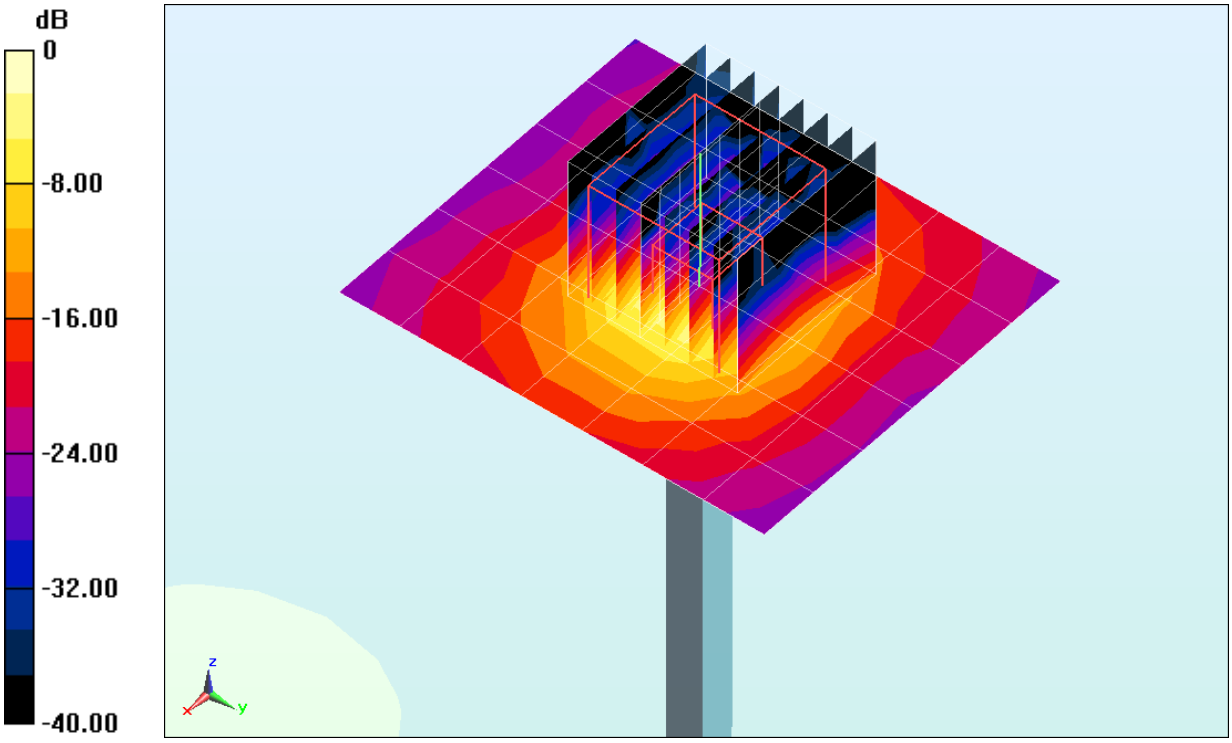
Communication System: UID 0, CW; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used:
f = 5500 MHz; σ = 5.6 S/m; ε_r = 46.464; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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=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) = 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: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1120

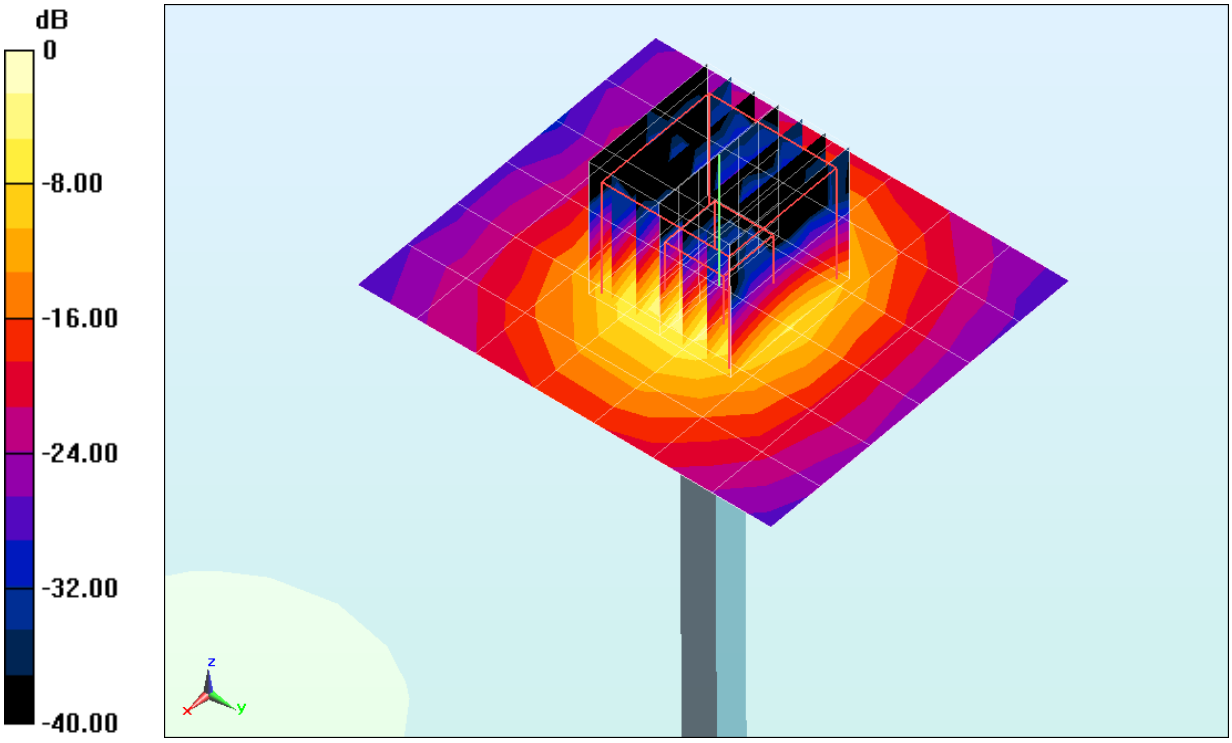
Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used:
f = 5800 MHz; σ = 6.062 S/m; ε_r = 45.987; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

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

APPENDIX C: PROBE CALIBRATION

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **PC Test**

Certificate No: D835V2-4d119_Apr13

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 4d119
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	April 25, 2013

✓ KOK 5/8/13

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	01-Nov-12 (No. 217-01640)	Oct-13
Power sensor HP 8481A	US37292783	01-Nov-12 (No. 217-01640)	Oct-13
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-13 (No. 217-01736)	Apr-14
Type-N mismatch combination	SN: 5047.3 / 06327	04-Apr-13 (No. 217-01739)	Apr-14
Reference Probe ES3DV3	SN: 3205	28-Dec-12 (No. ES3-3205_Dec12)	Dec-13
DAE4	SN: 909	11-Sep-12 (No. DAE4-909_Sep12)	Sep-13

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 26, 2013

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.6
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.8 ± 6 %	0.94 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.51 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.68 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.62 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.30 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.0 ± 6 %	1.01 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.47 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.54 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.62 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.31 W/kg ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.1 Ω - 4.7 jΩ
Return Loss	- 26.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	45.8 Ω - 6.3 jΩ
Return Loss	- 22.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.385 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	June 29, 2010

DASY5 Validation Report for Head TSL

Date: 25.04.2013

Test Laboratory: SPEAG, Zurich, Switzerland

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

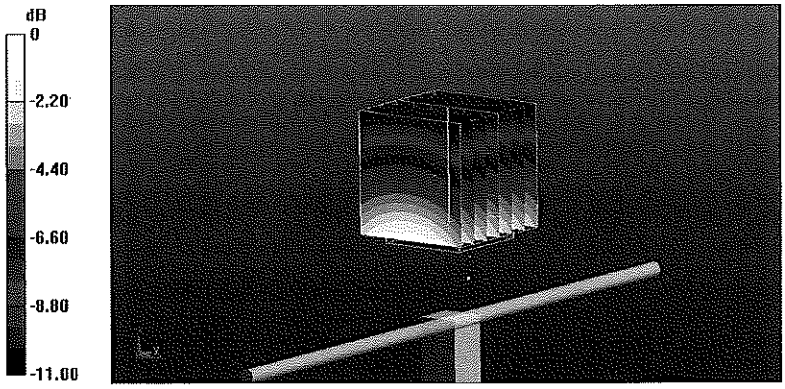
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.94 S/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.05, 6.05, 6.05); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn909; Calibrated: 11.09.2012
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.6(1115); SEMCAD X 14.6.9(7117)

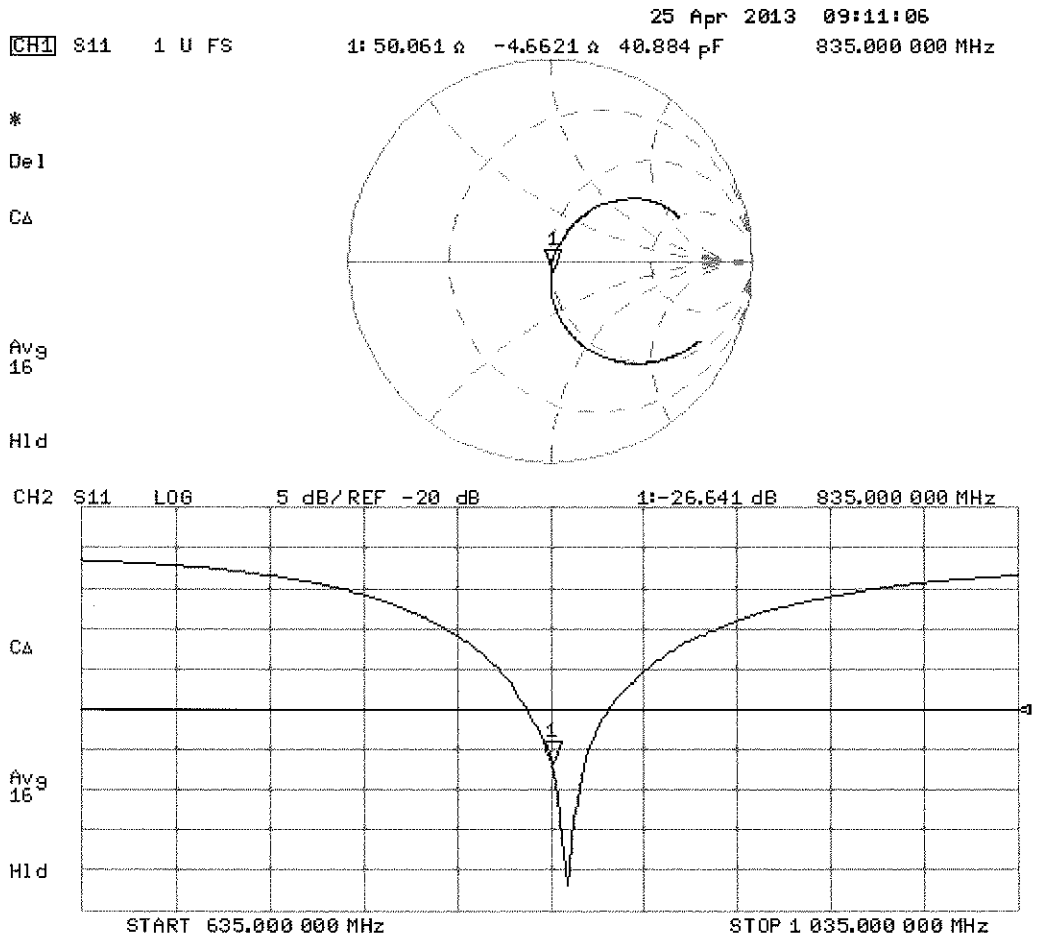
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.387 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.86 W/kg
SAR(1 g) = 2.51 W/kg; SAR(10 g) = 1.62 W/kg
Maximum value of SAR (measured) = 2.93 W/kg



0 dB = 2.93 W/kg = 4.67 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 24.04.2013

Test Laboratory: SPEAG, Zurich, Switzerland

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

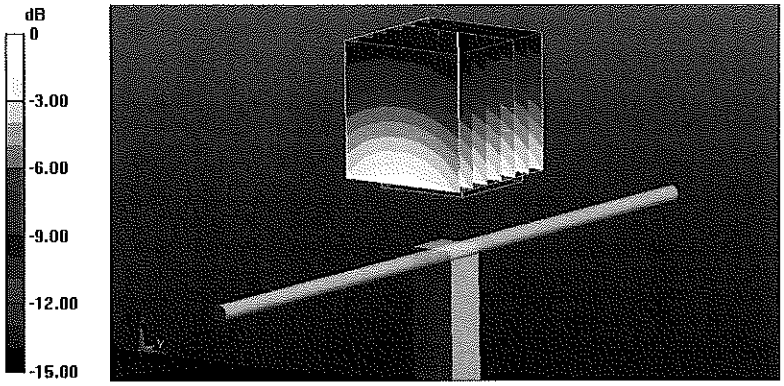
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1.01 S/m; ε_r = 54; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.04, 6.04, 6.04); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn909; Calibrated: 11.09.2012
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.6(1115); SEMCAD X 14.6.9(7117)

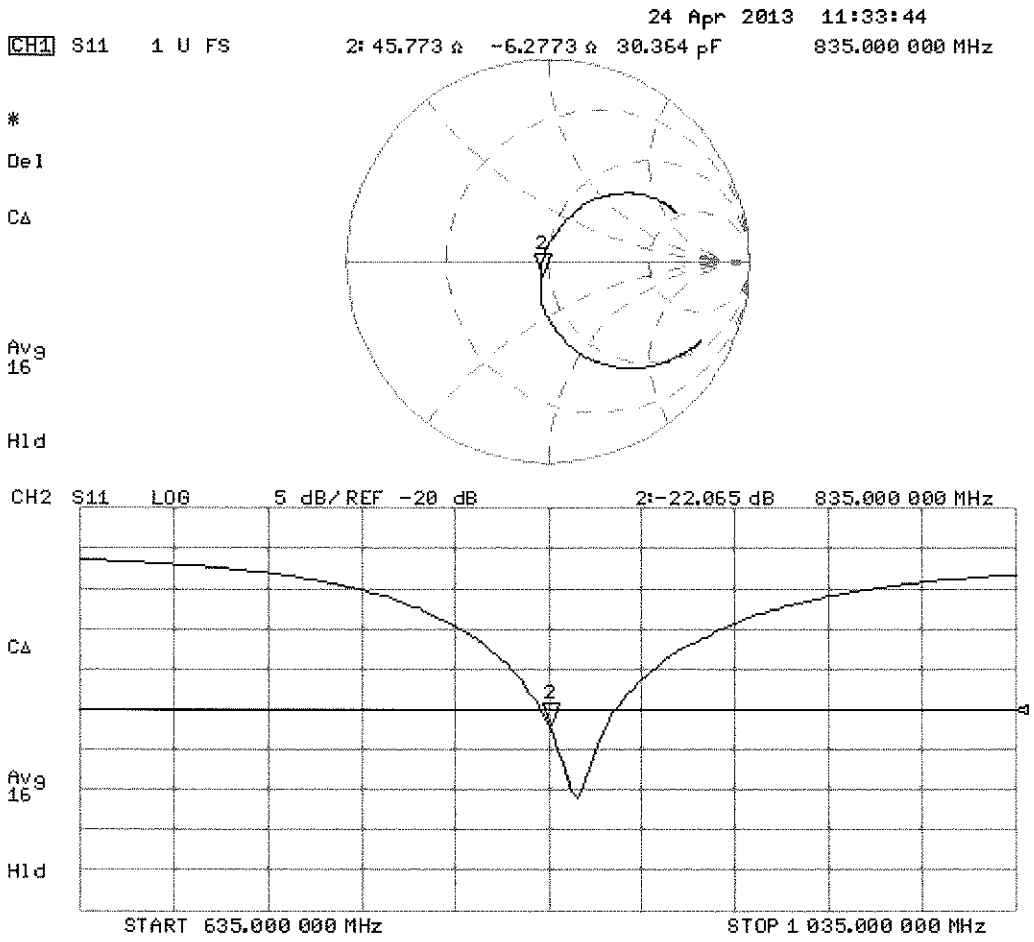
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.178 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.68 W/kg
SAR(1 g) = 2.47 W/kg; SAR(10 g) = 1.62 W/kg
Maximum value of SAR (measured) = 2.89 W/kg



0 dB = 2.89 W/kg = 4.61 dBW/kg

Impedance Measurement Plot for Body TSL



Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client PC Test

Certificate No: D1900V2-5d149_Jul13

CALIBRATION CERTIFICATE

Object: D1900V2 - SN: 5d149

Calibration procedure(s): QA CAL-05.v9
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: July 22, 2013

✓ JCK 8/19/13

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	01-Nov-12 (No. 217-01640)	Oct-13
Power sensor HP 8481A	US37292783	01-Nov-12 (No. 217-01640)	Oct-13
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-13 (No. 217-01736)	Apr-14
Type-N mismatch combination	SN: 5047.3 / 06327	04-Apr-13 (No. 217-01739)	Apr-14
Reference Probe ES3DV3	SN: 3205	28-Dec-12 (No. ES3-3205_Dec12)	Dec-13
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: July 22, 2013

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.9 ± 6 %	1.36 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.99 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**40.4 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.28 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**21.3 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.4 ± 6 %	1.49 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.0 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**40.5 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.36 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.6 W/kg ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.9 Ω + 6.0 jΩ
Return Loss	- 23.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.5 Ω + 6.4 jΩ
Return Loss	- 23.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.196 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 11, 2011

DASY5 Validation Report for Head TSL

Date: 22.07.2013

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d149

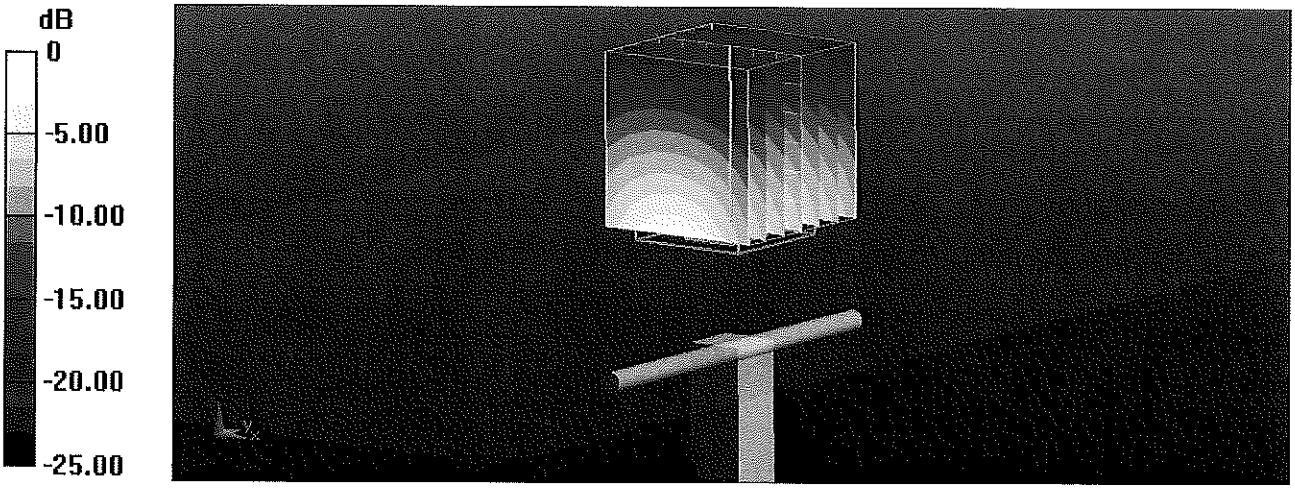
Communication System: UID 0 - CW ; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.36 S/m; ε_r = 38.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.98, 4.98, 4.98); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

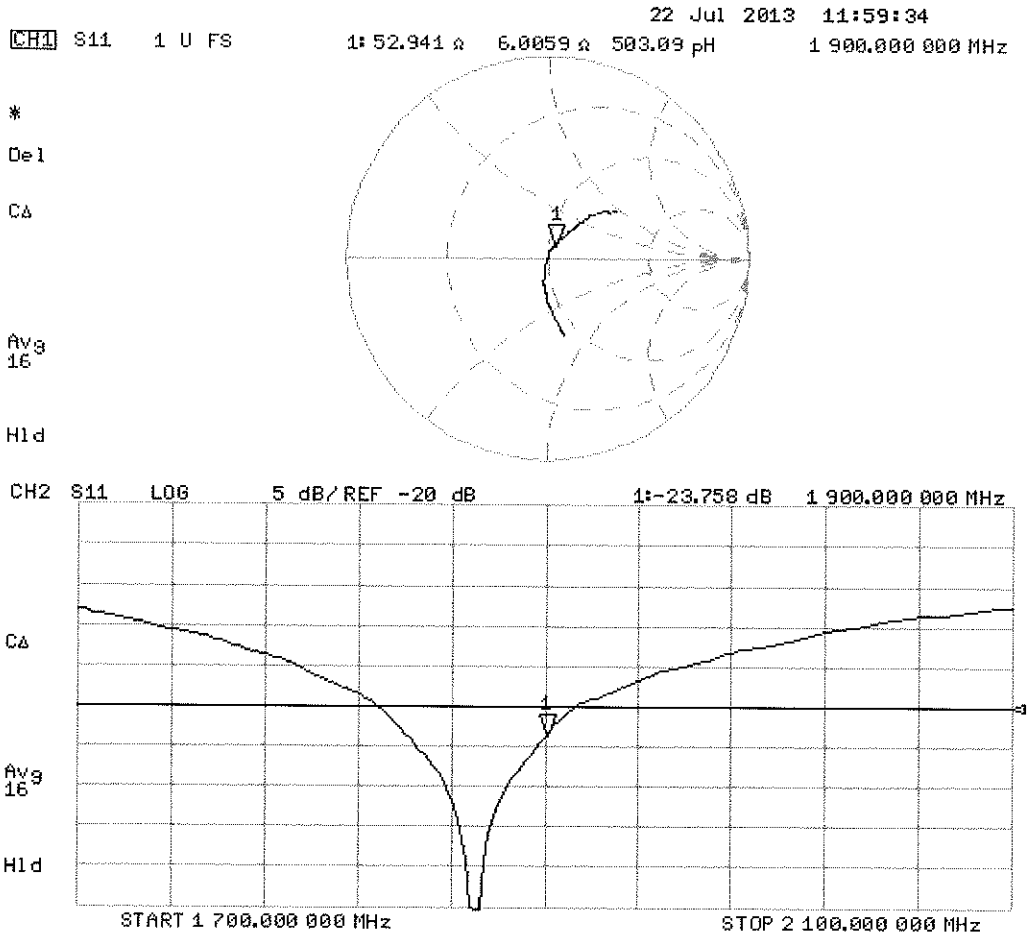
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.173 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 18.0 W/kg
SAR(1 g) = 9.99 W/kg; SAR(10 g) = 5.28 W/kg
Maximum value of SAR (measured) = 12.4 W/kg



0 dB = 12.4 W/kg = 10.93 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 22.07.2013

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d149

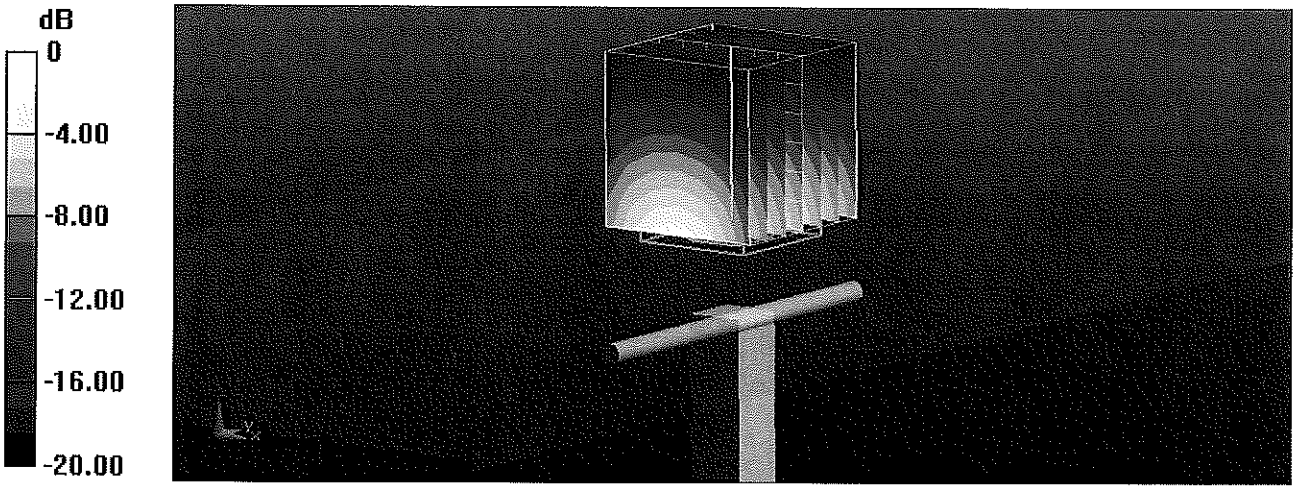
Communication System: UID 0 - CW ; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.49 S/m; ε_r = 53.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.6, 4.6, 4.6); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.173 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 17.0 W/kg
SAR(1 g) = 10 W/kg; SAR(10 g) = 5.36 W/kg
Maximum value of SAR (measured) = 12.6 W/kg



0 dB = 12.6 W/kg = 11.00 dBW/kg

Impedance Measurement Plot for Body TSL