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SAR EVALUATION REPORT

Applicant Name:
Samsung Electronics Co., Ltd.
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Gyeonggi-do, 16677, Korea

Date of Testing:
09/28/15 – 11/04/15
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
0Y1509281843-R1.A3L

FCC ID: **A3LSMJ320P**

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

DUT Type: Portable Handset
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model(s): SM-J320P

Equipment Class	Band & Mode	Tx Frequency	SAR		
			1 gm Head (W/kg)	1 gm Body-Worn (W/kg)	1 gm Hotspot (W/kg)
PCE	CDMA/EVDO BC10 (§90S)	817.90 - 823.10 MHz	0.55	0.82	0.86
PCE	CDMA/EVDO BC0 (§22H)	824.70 - 848.31 MHz	0.60	0.71	0.71
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.33	0.43	0.47
PCE	UMTS 850	826.40 - 846.60 MHz	0.31	0.46	0.46
PCE	UMTS 1750	1712.4 - 1752.5 MHz	0.66	0.78	1.08
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	0.87	0.78	1.07
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	0.49	0.28	0.72
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.73	0.63	0.95
PCE	LTE Band 12	699.7 - 715.3 MHz	0.18	0.31	0.31
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.32	0.42	0.42
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	0.76	0.84	1.07
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.75	0.56	0.70
PCE	LTE Band 41	2506 - 2680 MHz	0.11	0.60	0.60
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.34	0.10	0.10
DSS/DTS	Bluetooth	2402 - 2480 MHz		N/A	
Simultaneous SAR per KDB 690783 D01v01r03:			1.22	1.13	1.18

Note: This revised Test Report (S/N: 0Y1509281843-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.

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 1.7 of this report; for North American frequency bands only.

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

Randy Ortanez
President

The SAR Tick is an initiative of the Mobile Manufacturers Forum (MMF). While a product may be considered eligible, use of the SAR Tick logo requires an agreement with the MMF. Further details can be obtained by emailing: sartick@mmfai.info.

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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
CDMA/EVDO BC10 (§90S)	Voice/Data	817.90 - 823.10 MHz
CDMA/EVDO BC0 (§22H)	Voice/Data	824.70 - 848.31 MHz
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.5 MHz
PCS CDMA/EVDO	Voice/Data	1851.25 - 1908.75 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 12	Data	699.7 - 715.3 MHz
LTE Band 26 (Cell)	Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Data	824.7 - 848.3 MHz
LTE Band 4 (AWS)	Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Data	1850.7 - 1909.3 MHz
LTE Band 41	Data	2506 - 2680 MHz
2.4 GHz WLAN	Data	2412 - 2462 MHz
Bluetooth	Data	2402 - 2480 MHz

1.2 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.

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	**33.0**	**33.0**	**31.0**	**29.0**	**27.5**	**27.5**	**25.5**	**24.5**	**24.0**
	Nominal	**32.5**	**32.5**	**30.5**	**28.5**	**27.0**	**27.0**	**25.0**	**24.0**	**23.5**
GSM/GPRS/EDGE 1900	Maximum	**30.5**	**30.5**	**29.0**	**28.0**	**26.0**	**26.5**	**25.5**	**25.0**	**24.5**
	Nominal	**30.0**	**30.0**	**28.5**	**27.5**	**25.5**	**26.0**	**25.0**	**24.5**	**24.0**

Mode / Band		Modulated Average (dBm)		
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*
UMTS Band 5 (850 MHz)	Maximum	**23.5**	**22.0**	**22.0**
	Nominal	**23.0**	**21.5**	**21.5**
UMTS Band 4 (1750 MHz)	Maximum	**23.0**	**21.5**	**21.5**
	Nominal	**22.5**	**21.0**	**21.0**
UMTS Band 2 (1900 MHz)	Maximum	**23.5**	**23.0**	**23.0**
	Nominal	**23.0**	**22.5**	**22.5**

Mode / Band		Modulated Average (dBm)
CDMA/EVDO BC10 (§90S)	Maximum	**25.0**
	Nominal	**24.5**
CDMA/EVDO BC0 (§22H)	Maximum	**25.0**
	Nominal	**24.5**
PCS CDMA/EVDO	Maximum	**25.0**
	Nominal	**24.5**

Mode / Band		Modulated Average (dBm)
LTE Band 12	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 26 (Cell)	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 5 (Cell)	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 4 (AWS)	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 25 (PCS)	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 2 (PCS)	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 41	Maximum	**23.5**
	Nominal	**23.0**

Mode / Band		Modulated Average (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	**13.5**
	Nominal	**13.0**
IEEE 802.11g (2.4 GHz)	Maximum	**11.5**
	Nominal	**11.0**
IEEE 802.11n (2.4 GHz)	Maximum	**10.5**
	Nominal	**10.0**
Bluetooth	Maximum	**11.5**
	Nominal	**11.0**
Bluetooth LE	Maximum	**2.5**
	Nominal	**2.0**

1.3 DUT Antenna Locations

The overall dimensions of this device are > 9 x 5 cm. The overall diagonal dimension of the device is ≤160 mm and the diagonal display is ≤150 mm. A diagram showing the location of the device antennas can be found in Appendix F.

Table 1-1
Device Edges/Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
EVDO BC10 (§90S)	Yes	Yes	No	Yes	Yes	Yes
EVDO BC0 (§22H)	Yes	Yes	No	Yes	Yes	Yes
GPRS 850	Yes	Yes	No	Yes	Yes	Yes
UMTS 850	Yes	Yes	No	Yes	Yes	Yes
UMTS 1750	Yes	Yes	No	Yes	Yes	Yes
PCS EVDO	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	Yes	Yes
UMTS 1900	Yes	Yes	No	Yes	Yes	Yes
LTE Band 12	Yes	Yes	No	Yes	Yes	Yes
LTE Band 26 (Cell)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 4 (AWS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 41	Yes	Yes	No	Yes	Yes	Yes
2.4 GHz WLAN	Yes	Yes	Yes	No	Yes	No

Note: Particular DUT edges were not required to be evaluated for wireless router SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v02 guidance, page 2. The distances between the transmit antennas and the edges of the device are included in the filing.

1.4 Simultaneous Transmission Capabilities

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

Figure 1-1
Simultaneous Transmission Paths

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

Table 1-2
Simultaneous Transmission Scenarios

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

1. 2.4 GHz WLAN and 2.4 GHz Bluetooth share the same antenna path and cannot transmit simultaneously.
2. All licensed modes share the same antenna path and cannot transmit simultaneously.
3. 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.
4. 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.

1.5 Miscellaneous SAR Test Considerations

(A) WIFI/BT

Per FCC KDB 447498 D01v05, the 1g 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, body-worn Bluetooth SAR was not required; [(14/10)* √2.480] = 2.2< 3.0. Per KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mW before calculation.

(B) Licensed Transmitter(s)

CDMA 1x Advanced technology was not required for SAR since the maximum allowed output powers for 1x Advanced was not more than 0.25 dB higher than the maximum powers for 1x and the measured SAR in any 1x mode exposure conditions was not greater than 1.2 W/kg per FCC KDB Publication 941225 D01v03.

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

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

LTE SAR for the higher modulations and lower bandwidths were not tested since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth; and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05v02r03.

This device supports both LTE B26 (Cell) and LTE B5 (Cell). Since the supported frequency span for LTE B5 (Cell) falls completely within the supported frequency span for LTE B26 (Cell), both LTE bands have the same target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE B26 (Cell).

This device supports both LTE B25 (PCS) and LTE B2 (PCS). Since the supported frequency span for LTE B2 (PCS) falls completely within the supported frequency span for LTE B25 (PCS), both LTE bands have the same target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE B25 (PCS).

1.6 Power Reduction for SAR

There is no power reduction used for any band/mode implemented in this device for SAR purposes.

1.7 Guidance Applied

- IEEE 1528-2003
- FCC KDB Publication 941225 D01v03, D05v02r03, D05Av01, D06v02 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v02r01 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v05r02 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r03, D02v01r01 (SAR Measurements up to 6 GHz)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)

1.8 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.

	Head Serial Number	Body-Worn Serial Number	Hotspot Serial Number
CDMA/EVDO BC10 (§90S)	45993	45993	45993
CDMA/EVDO BC0 (§22H)	45993	45860	45860
GSM/GPRS/EDGE 850	45993	45860	45860
UMTS 850	45993	45860	45860
UMTS 1750	82734	82734	82734
PCS CDMA/EVDO	45860	45860	45860
GSM/GPRS/EDGE 1900	45860	82874	82874
UMTS 1900	82874	82874	82874
LTE Band 12	82874	82874	82874
LTE Band 26 (Cell)	45993	45860	45860
LTE Band 4 (AWS)	82874	82783	82783
LTE Band 25 (PCS)	45860	45993	45993
LTE Band 41	82734	82734	82734
2.4 GHz WLAN	82734	82874	82874

2 LTE INFORMATION

LTE Information					
FCC ID	**A3LSMJ320P**				
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 12 (699.7 - 715.3 MHz)				
	LTE Band 26 (Cell) (814.7 - 848.3 MHz)				
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)				
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 41 (2506 - 2680 MHz)				
Channel Bandwidths	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	High-Mid	High
LTE Band 12: 1.4 MHz	699.7 (23017)	N/A	707.5 (23095)	N/A	715.3 (23173)
LTE Band 12: 3 MHz	700.5 (23025)	N/A	707.5 (23095)	N/A	714.5 (23165)
LTE Band 12: 5 MHz	701.5 (23035)	N/A	707.5 (23095)	N/A	713.5 (23155)
LTE Band 12: 10 MHz	704 (23060)	N/A	707.5 (23095)	N/A	711 (23130)
LTE Band 26 (Cell): 1.4 MHz	814.7 (26697)	N/A	831.5 (26865)	N/A	848.3 (27033)
LTE Band 26 (Cell): 3 MHz	815.5 (26705)	N/A	831.5 (26865)	N/A	847.5 (27025)
LTE Band 26 (Cell): 5 MHz	816.5 (26715)	N/A	831.5 (26865)	N/A	846.5 (27015)
LTE Band 26 (Cell): 10 MHz	819 (26740)	N/A	831.5 (26865)	N/A	844 (26990)
LTE Band 26 (Cell): 15 MHz	831.5 (26865)	N/A	836.5 (26915)	N/A	841.5 (26965)
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)	N/A	836.5 (20525)	N/A	848.3 (20643)
LTE Band 5 (Cell): 3 MHz	825.5 (20415)	N/A	836.5 (20525)	N/A	847.5 (20635)
LTE Band 5 (Cell): 5 MHz	826.5 (20425)	N/A	836.5 (20525)	N/A	846.5 (20625)
LTE Band 5 (Cell): 10 MHz	829 (20450)	N/A	836.5 (20525)	N/A	844 (20600)
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)	N/A	1732.5 (20175)	N/A	1754.3 (20393)
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)	N/A	1732.5 (20175)	N/A	1753.5 (20385)
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)	N/A	1732.5 (20175)	N/A	1752.5 (20375)
LTE Band 4 (AWS): 10 MHz	1715 (20000)	N/A	1732.5 (20175)	N/A	1750 (20350)
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)	N/A	1732.5 (20175)	N/A	1747.5 (20325)
LTE Band 4 (AWS): 20 MHz	1720 (20050)	N/A	1732.5 (20175)	N/A	1745 (20300)
LTE Band 25 (PCS): 1.4 MHz	1850.7 (26047)	N/A	1882.5 (26365)	N/A	1914.3 (26683)
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)	N/A	1882.5 (26365)	N/A	1913.5 (26675)
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)	N/A	1882.5 (26365)	N/A	1912.5 (26665)
LTE Band 25 (PCS): 10 MHz	1855 (26090)	N/A	1882.5 (26365)	N/A	1910 (26640)
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)	N/A	1882.5 (26365)	N/A	1907.5 (26615)
LTE Band 25 (PCS): 20 MHz	1860 (26140)	N/A	1882.5 (26365)	N/A	1905 (26590)
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)	N/A	1880 (18900)	N/A	1909.3 (19193)
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)	N/A	1880 (18900)	N/A	1908.5 (19185)
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)	N/A	1880 (18900)	N/A	1907.5 (19175)
LTE Band 2 (PCS): 10 MHz	1855 (18650)	N/A	1880 (18900)	N/A	1905 (19150)
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)	N/A	1880 (18900)	N/A	1902.5 (19125)
LTE Band 2 (PCS): 20 MHz	1860 (18700)	N/A	1880 (18900)	N/A	1900 (19100)
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	4				
Modulations Supported in UL	QPSK, 16QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	YES				
A-MPR (Additional MPR) disabled for SAR Testing?	YES				
LTE Release 10 Additional Information	This device does not support full LTE Release 10 operations in the US. All uplink communications are identical to the Release 8 Specifications. The following LTE Release 10 Features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WIFI Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA, Carrier Aggregation.				

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:

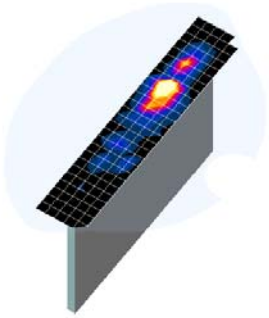

Figure 4-1
Sample SAR Area Scan

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].

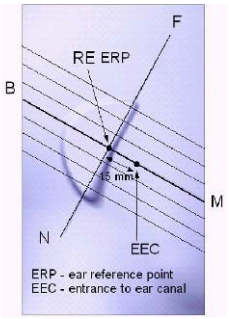

Figure 5-1
Close-Up Side view of ERP

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

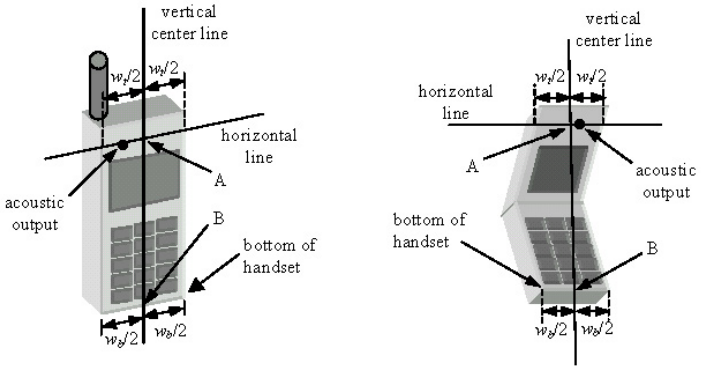

Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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.

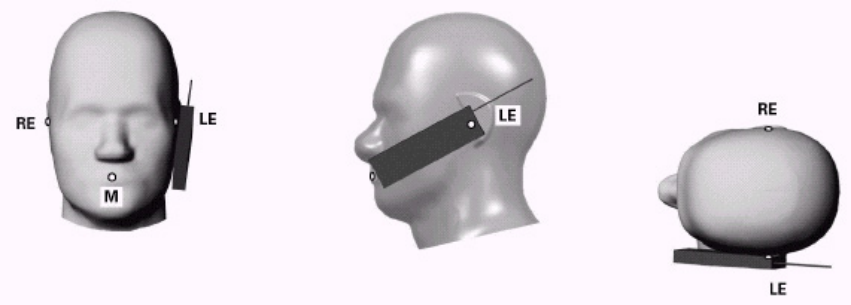

Figure 6-1 Front, Side and Top View of Cheek Position

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).

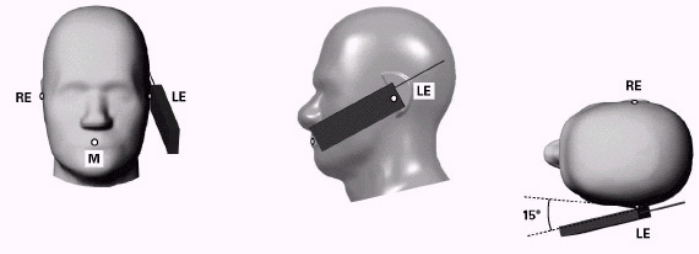

Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

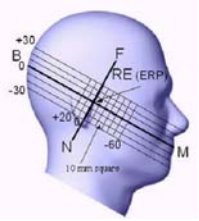

Figure 6-3
Side view w/ relevant markings

6.4 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6-4). Per FCC KDB Publication 648474 D04v01r02, 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.

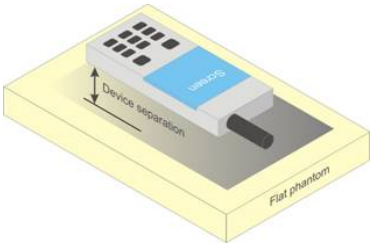

Figure 6-4
Sample Body-Worn Diagram

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

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

6.5 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions; i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also

required. The 1-g body and 10-g extremity SAR Exclusion Thresholds found in KDB Publication 447498 D01v05 should be applied to determine SAR test requirements.

Per KDB Publication 447498 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.

6.6 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06v02 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 for licensed transmitters are 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 3G SAR Test Reduction Procedure

In FCC KDB Publication 941225 D01v03, certain transmission modes within a frequency band and wireless mode evaluated for SAR are defined as primary modes. The equivalent modes considered for SAR test reduction are denoted as secondary modes. When the maximum output power including tune-up tolerance specified for production units in a secondary mode is $\leq$ 0.25 dB higher than the primary mode or when the highest reported SAR of the primary mode, scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode, is $\leq$ 1.2 W/kg, SAR measurements are not required for the secondary mode. These criteria are referred to as the 3G SAR test reduction procedure. When the 3G SAR test reduction procedure is not satisfied, SAR measurements are additionally required for the secondary mode.

8.3 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB Publication 941225 D01v03 “3G SAR Measurement Procedures.”

The device is 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 are 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 is 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 deviates by more than 5%, the SAR test and drift measurements are repeated.

8.4 SAR Measurement Conditions for CDMA2000

The following procedures were performed according to FCC KDB Publication 941225 D01v03 “3G SAR Measurement Procedures.”

8.4.1 Output Power Verification

See 3GPP2 C.S0011/TIA-98-E as recommended by FCC KDB Publication 941225 D01v03 “3G SAR Measurement Procedures.” 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.

8.4.2 Head SAR Measurements

SAR for next to the ear head exposure is measured in RC3 with the handset configured to transmit at fullrate in SO55. The 3G SAR test reduction procedure is applied to RC1 with RC3 as the primary mode; otherwise, SAR is required for the channel with maximum measured output in RC1 using the head exposure configuration that results in the highest reported SAR in RC3.

Head SAR is additionally evaluated using EVDO Rev. A to support compliance for VoIP operations. See Section 8.4.5 for EVDO Rev. A configuration parameters.

8.4.3 Body-worn SAR Measurements

SAR for body-worn 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. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCHn), with FCH only as the primary mode. Otherwise, SAR is required for multiple code channel configuration (FCH + SCHn), with FCH at full rate and SCH0 enabled at 9600 bps, using the highest reported SAR configuration for FCH only. When multiple code channels are enabled, the transmitter output can shift by more than 0.5 dB and may lead to higher SAR drifts and SCH dropouts.

The 3G SAR test reduction procedure is applied to body-worn accessory SAR in RC1 with RC3 as the primary mode. Otherwise, SAR is required for RC1, with SO55 and full rate, using the highest reported SAR configuration for body-worn accessory exposure in RC3.

8.4.4 Body-worn SAR Measurements for EVDO Devices

For handsets with Ev-Do capabilities, the 3G SAR test reduction procedure is applied to Ev-Do Rev. 0 with 1x RTT RC3 as the primary mode to determine body-worn accessory test requirements. Otherwise, body-worn accessory SAR is required for Rev. 0, at 153.6 kbps, using the highest reported SAR configuration for body-worn accessory exposure in RC3.

The 3G SAR test reduction procedure is applied to Rev. A, with Rev. 0 as the primary mode to determine body-worn accessory SAR test requirements. When SAR is not required for Rev. 0, the 3G SAR test reduction is applied with 1x RTT RC3 as the primary mode.

When SAR is required for EVDO Rev. A, SAR is measured with a Reverse Data Channel payload size of 4096 bits and a Termination Target of 16 slots defined for Subtype 2 Physical Layer configurations, using the highest reported SAR configuration for body-worn accessory exposure in Rev. 0 or 1x RTT RC3, as appropriate.

8.4.5 Body SAR Measurements for EVDO Hotspot

Hotspot Body SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0. The 3G SAR test reduction procedure is applied to Rev. A, Subtype 2 Physical layer configuration, with Rev. 0 as the primary mode; otherwise, SAR is measured for Rev. A using the highest reported SAR configuration for body-worn accessory exposure 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.

For Ev-Do data devices that also support 1x RTT voice and/or data operations, the 3G SAR test reduction procedure is applied to 1x RTT RC3 and RC1 with Ev-Do Rev. 0 and Rev. A as the respective primary modes. Otherwise, the 'Body-Worn Accessory SAR' procedures in the '3GPP2 CDMA 2000 1x Handsets' section are applied.

8.4.6 CDMA2000 1x Advanced

This device additionally supports 1x Advanced. Conducted powers are measured using SO75 with RC8 on the uplink and RC11 on the downlink per FCC KDB Publication 941225 D01v03. Smart blanking is disabled for all measurements. The EUT is configured with forward power control Mode 000 and reverse power control at 400 bps. Conducted powers are measured on an Agilent 8960 Series 10 Wireless Communications Test Set, Model E5515C using the CDMA2000 1x Advanced application, Option E1962B-410.

The 3G SAR test reduction procedure is applied to the 1x-Advanced transmission mode with 1x RTT RC3 as the primary mode. When SAR measurement is required, the 1x-Advanced power measurement configurations are used. The1x Advanced SAR procedures are applied separately to head, body-worn accessory and other exposure conditions.

8.5 SAR Measurement Conditions for UMTS

8.5.1 Output Power Verification

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, 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.

8.5.2 Head SAR Measurements

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's". The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure.

8.5.3 Body SAR Measurements

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all "1s". The 3G SAR test reduction procedure is applied to other spreading codes and multiple $DPDCH_n$ configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreading code or $DPDCH_n$, for the highest reported SAR configuration in 12.2 kbps RMC.

8.5.4 SAR Measurements with Rel 5 HSDPA

The 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, for the highest reported SAR configuration in 12.2 kbps RMC without HSDPA. Handsets with both HSDPA and HSUPA are tested according to Release 6 HSPA test procedures.

8.5.5 SAR Measurements with Rel 6 HSUPA

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

8.6 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05v02r03 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 or Anritsu MT8820C simulators are 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).

8.6.1 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.

8.6.2 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.

8.6.3 A-MPR

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

8.6.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r03:

a. Per Section 4.2.1, 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 4.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 4.2.1.
c. Per Section 4.2.3, 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 4.2.4 and 4.3, 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 4.2.1 through 4.2.3 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.

8.6.5 TDD

LTE TDD testing is performed using guidance from FCC KDB 941225 D05v02r03 and the SAR test guidance provided in April 2013 TCB workshop notes. 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 D05v02r03. SAR testing is performed using the extended cyclic prefix listed in 3GPP TS 36.211 Section 4.

8.7 SAR Testing with 802.11 Transmitters

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. 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 D01v02r01 for more details.

8.7.1 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.

A periodic duty factor is required for current generation SAR systems to measure SAR. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. The reported SAR is scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

8.7.2 Initial Test Position Procedure

For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode or UMPC mini-tablet, procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all positions in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.

8.7.3 2.4 GHz SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

2) When the reported SAR is > 0.8 W/kg, SAR is required for that position using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

2.4 GHz 802.11 g/n OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is › 1.2 W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Procedures should be followed.

8.7.4 OFDM Transmission Mode and SAR Test Channel Selection

For the 2.4 GHz and 5 GHz bands, when the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a, 802.11n and 802.11ac or 802.11g and 802.11n with the same channel bandwidth, modulation and data rate etc., the lower order 802.11 mode i.e., 802.11a, then 802.11n and 802.11ac or 802.11g then 802.11n, is used for SAR measurement. When the maximum output power are the same for multiple test channels, either according to the default or additional power

measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

8.7.5 Initial Test Configuration Procedure

For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration is determined for each frequency band and aggregated band, according to the transmission mode with the highest maximum output power specified for SAR measurements. When the same maximum output power is specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration(s) with the largest channel bandwidth, lowest order modulation, and lowest data rate. If the average RF output powers of the highest identical transmission modes are within 0.25 dB of each other, mid channel of the transmission mode with highest average RF output power is the initial test channel. Otherwise, the channel of the transmission mode with the highest average RF output conducted power will be the initial test configuration.

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is ≤ 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements (See Section 8.7.4).

8.7.6 Subsequent Test Configuration Procedures

For OFDM configurations in each frequency band and aggregated band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position procedure. When the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is ≤ 1.2 W/kg, no additional SAR tests for the subsequent test configurations are required.

9 RF CONDUCTED POWERS

9.1 CDMA Conducted Powers

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	24.28	24.13	24.17	24.12	24.15	24.02	24.06
Cellular	1013	22H	824.7	24.20	24.12	24.13	24.13	24.17	24.17	24.05
	384	22H	836.52	24.29	24.19	23.95	24.17	24.21	24.19	24.10
	777	22H	848.31	24.33	24.21	23.90	24.16	24.22	24.23	24.21
PCS	25	24E	1851.25	23.46	23.68	23.70	23.56	23.52	23.58	23.56
	600	24E	1880	23.70	23.65	23.57	23.65	23.71	23.74	23.71
	1175	24E	1908.75	23.51	23.67	23.74	23.77	23.74	23.75	23.75

Note: RC1 is only applicable for IS-95 compatibility. For FCC Rule Part 90S, per FCC KDB Publication 447498 D01v05 4.1.6, only one channel is required since the device operates within the transmission range of 817.90 – 823.10 MHz.

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	32.97	32.98	30.10	**28.35**	26.74	27.01	24.97	24.36	23.76
	190	33.00	33.00	30.29	**28.51**	26.92	27.19	25.09	24.47	23.92
	251	32.87	32.82	30.45	**28.70**	27.00	27.36	25.37	24.50	24.00
GSM 1900	512	30.26	30.30	28.47	**27.66**	25.90	26.39	25.36	24.75	24.49
	661	30.48	30.50	28.38	**27.91**	26.00	26.49	25.39	24.80	24.47
	810	30.29	30.33	28.55	**27.81**	25.92	26.50	25.45	24.87	24.50

		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	23.94	23.95	24.08	**24.09**	23.73	17.98	18.95	20.10	20.75
	190	23.97	23.97	24.27	**24.25**	23.91	18.16	19.07	20.21	20.91
	251	23.84	23.79	24.43	**24.44**	23.99	18.33	19.35	20.24	20.99
GSM 1900	512	21.23	21.27	22.45	**23.40**	22.89	17.36	19.34	20.49	21.48
	661	21.45	21.47	22.36	**23.65**	22.99	17.46	19.37	20.54	21.46
	810	21.26	21.30	22.53	**23.55**	22.91	17.47	19.43	20.61	21.49
GSM 850	**Frame Avg.Targets:**	23.47	23.47	24.48	**24.24**	23.99	17.97	18.98	19.74	20.49
GSM 1900		20.97	20.97	22.48	**23.24**	22.49	16.97	18.98	20.24	20.99

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. 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.
3. 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]			AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	1312	1412	1862	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	22.95	22.88	22.99	22.07	22.05	22.13	22.74	22.58	22.54	-
99		12.2 kbps AMR	22.87	22.85	23.00	22.14	22.01	22.13	22.64	22.47	22.55	-
6	HSDPA	Subtest 1	21.89	21.85	21.94	21.10	21.00	21.14	22.72	22.84	22.81	0
6		Subtest 2	21.90	21.88	21.99	21.19	21.01	21.18	22.78	22.81	23.00	0
6		Subtest 3	21.33	21.38	21.49	20.63	20.54	20.65	22.27	22.22	22.38	0.5
6		Subtest 4	21.34	21.43	21.42	20.64	20.54	20.67	22.28	22.26	22.39	0.5
6	HSUPA	Subtest 1	21.65	21.63	21.71	21.13	21.17	21.32	22.23	22.52	22.57	0
6		Subtest 2	21.34	21.38	21.39	19.74	19.82	19.77	21.21	21.27	21.18	2
6		Subtest 3	21.91	22.00	22.00	20.03	20.14	20.12	22.83	22.81	22.97	1
6		Subtest 4	21.29	21.18	21.43	20.13	20.15	20.20	21.64	21.53	21.43	2
6		Subtest 5	21.39	21.45	21.47	21.11	21.00	21.11	22.38	22.35	22.42	0

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 12

Table 9-1
LTE Band 12 Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	707.5	23095	10	QPSK	1	0	23.40	0	0
	707.5	23095	10	QPSK	1	25	23.43	0	0
	707.5	23095	10	QPSK	1	49	**23.49**	0	0
	707.5	23095	10	QPSK	25	0	22.20	0-1	1
	707.5	23095	10	QPSK	25	12	22.21	0-1	1
	707.5	23095	10	QPSK	25	25	**22.25**	0-1	1
	707.5	23095	10	QPSK	50	0	22.24	0-1	1
	707.5	23095	10	16QAM	1	0	22.33	0-1	1
	707.5	23095	10	16QAM	1	25	22.45	0-1	1
	707.5	23095	10	16QAM	1	49	22.49	0-1	1
	707.5	23095	10	16QAM	25	0	21.24	0-2	2
	707.5	23095	10	16QAM	25	12	21.31	0-2	2
	707.5	23095	10	16QAM	25	25	21.22	0-2	2
	707.5	23095	10	16QAM	50	0	21.15	0-2	2

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

Table 9-2
LTE Band 12 Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	701.5	23035	5	QPSK	1	0	22.99	0	0
	701.5	23035	5	QPSK	1	12	22.73	0	0
	701.5	23035	5	QPSK	1	24	22.82	0	0
	701.5	23035	5	QPSK	12	0	21.64	0-1	1
	701.5	23035	5	QPSK	12	6	21.76	0-1	1
	701.5	23035	5	QPSK	12	13	21.77	0-1	1
	701.5	23035	5	QPSK	25	0	21.83	0-1	1
	701.5	23035	5	16-QAM	1	0	21.55	0-1	1
	701.5	23035	5	16-QAM	1	12	21.53	0-1	1
	701.5	23035	5	16-QAM	1	24	21.54	0-1	1
	701.5	23035	5	16-QAM	12	0	20.50	0-2	2
	701.5	23035	5	16-QAM	12	6	20.71	0-2	2
	701.5	23035	5	16-QAM	12	13	20.71	0-2	2
	701.5	23035	5	16-QAM	25	0	20.76	0-2	2
Mid	707.5	23095	5	QPSK	1	0	22.87	0	0
	707.5	23095	5	QPSK	1	12	22.61	0	0
	707.5	23095	5	QPSK	1	24	22.91	0	0
	707.5	23095	5	QPSK	12	0	21.77	0-1	1
	707.5	23095	5	QPSK	12	6	21.72	0-1	1
	707.5	23095	5	QPSK	12	13	21.76	0-1	1
	707.5	23095	5	QPSK	25	0	21.78	0-1	1
	707.5	23095	5	16-QAM	1	0	21.53	0-1	1
	707.5	23095	5	16-QAM	1	12	21.61	0-1	1
	707.5	23095	5	16-QAM	1	24	21.54	0-1	1
	707.5	23095	5	16-QAM	12	0	20.82	0-2	2
	707.5	23095	5	16-QAM	12	6	20.81	0-2	2
	707.5	23095	5	16-QAM	12	13	20.80	0-2	2
	707.5	23095	5	16-QAM	25	0	20.71	0-2	2
High	713.5	23155	5	QPSK	1	0	22.79	0	0
	713.5	23155	5	QPSK	1	12	22.94	0	0
	713.5	23155	5	QPSK	1	24	22.68	0	0
	713.5	23155	5	QPSK	12	0	21.73	0-1	1
	713.5	23155	5	QPSK	12	6	21.82	0-1	1
	713.5	23155	5	QPSK	12	13	21.76	0-1	1
	713.5	23155	5	QPSK	25	0	21.75	0-1	1
	713.5	23155	5	16-QAM	1	0	21.52	0-1	1
	713.5	23155	5	16-QAM	1	12	21.69	0-1	1
	713.5	23155	5	16-QAM	1	24	21.63	0-1	1
	713.5	23155	5	16-QAM	12	0	20.99	0-2	2
	713.5	23155	5	16-QAM	12	6	20.68	0-2	2
	713.5	23155	5	16-QAM	12	13	20.83	0-2	2
	713.5	23155	5	16-QAM	25	0	20.96	0-2	2

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	700.5	23025	3	QPSK	1	0	22.98	0	0
	700.5	23025	3	QPSK	1	7	22.99	0	0
	700.5	23025	3	QPSK	1	14	23.02	0	0
	700.5	23025	3	QPSK	8	0	21.68	0-1	1
	700.5	23025	3	QPSK	8	4	21.80	0-1	1
	700.5	23025	3	QPSK	8	7	21.83	0-1	1
	700.5	23025	3	QPSK	15	0	21.73	0-1	1
	700.5	23025	3	16-QAM	1	0	21.78	0-1	1
	700.5	23025	3	16-QAM	1	7	22.03	0-1	1
	700.5	23025	3	16-QAM	1	14	21.83	0-1	1
	700.5	23025	3	16-QAM	8	0	20.65	0-2	2
	700.5	23025	3	16-QAM	8	4	20.75	0-2	2
	700.5	23025	3	16-QAM	8	7	20.69	0-2	2
	700.5	23025	3	16-QAM	15	0	20.88	0-2	2
Mid	707.5	23095	3	QPSK	1	0	22.98	0	0
	707.5	23095	3	QPSK	1	7	23.26	0	0
	707.5	23095	3	QPSK	1	14	23.37	0	0
	707.5	23095	3	QPSK	8	0	21.79	0-1	1
	707.5	23095	3	QPSK	8	4	21.82	0-1	1
	707.5	23095	3	QPSK	8	7	21.67	0-1	1
	707.5	23095	3	QPSK	15	0	21.82	0-1	1
	707.5	23095	3	16-QAM	1	0	22.50	0-1	1
	707.5	23095	3	16-QAM	1	7	22.08	0-1	1
	707.5	23095	3	16-QAM	1	14	21.87	0-1	1
	707.5	23095	3	16-QAM	8	0	20.71	0-2	2
	707.5	23095	3	16-QAM	8	4	20.70	0-2	2
	707.5	23095	3	16-QAM	8	7	20.71	0-2	2
	707.5	23095	3	16-QAM	15	0	20.89	0-2	2
High	714.5	23165	3	QPSK	1	0	23.32	0	0
	714.5	23165	3	QPSK	1	7	23.21	0	0
	714.5	23165	3	QPSK	1	14	22.75	0	0
	714.5	23165	3	QPSK	8	0	21.72	0-1	1
	714.5	23165	3	QPSK	8	4	21.81	0-1	1
	714.5	23165	3	QPSK	8	7	21.86	0-1	1
	714.5	23165	3	QPSK	15	0	21.78	0-1	1
	714.5	23165	3	16-QAM	1	0	21.94	0-1	1
	714.5	23165	3	16-QAM	1	7	21.78	0-1	1
	714.5	23165	3	16-QAM	1	14	21.75	0-1	1
	714.5	23165	3	16-QAM	8	0	21.06	0-2	2
	714.5	23165	3	16-QAM	8	4	20.97	0-2	2
	714.5	23165	3	16-QAM	8	7	20.94	0-2	2
	714.5	23165	3	16-QAM	15	0	20.91	0-2	2

Table 9-4
LTE Band 12 Conducted Powers -1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	699.7	23017	1.4	QPSK	1	0	22.83	0	0
	699.7	23017	1.4	QPSK	1	2	22.97	0	0
	699.7	23017	1.4	QPSK	1	5	22.76	0	0
	699.7	23017	1.4	QPSK	3	0	22.65	0	0
	699.7	23017	1.4	QPSK	3	2	22.79	0	0
	699.7	23017	1.4	QPSK	3	3	22.75	0	0
	699.7	23017	1.4	QPSK	6	0	21.63	0-1	1
	699.7	23017	1.4	16-QAM	1	0	22.14	0-1	1
	699.7	23017	1.4	16-QAM	1	2	22.27	0-1	1
	699.7	23017	1.4	16-QAM	1	5	22.22	0-1	1
	699.7	23017	1.4	16-QAM	3	0	21.75	0-1	1
	699.7	23017	1.4	16-QAM	3	2	21.95	0-1	1
	699.7	23017	1.4	16-QAM	3	3	21.72	0-1	1
	699.7	23017	1.4	16-QAM	6	0	20.76	0-2	2
Mid	707.5	23095	1.4	QPSK	1	0	22.84	0	0
	707.5	23095	1.4	QPSK	1	2	23.00	0	0
	707.5	23095	1.4	QPSK	1	5	23.05	0	0
	707.5	23095	1.4	QPSK	3	0	22.64	0	0
	707.5	23095	1.4	QPSK	3	2	22.79	0	0
	707.5	23095	1.4	QPSK	3	3	22.75	0	0
	707.5	23095	1.4	QPSK	6	0	21.69	0-1	1
	707.5	23095	1.4	16-QAM	1	0	22.48	0-1	1
	707.5	23095	1.4	16-QAM	1	2	22.50	0-1	1
	707.5	23095	1.4	16-QAM	1	5	22.49	0-1	1
	707.5	23095	1.4	16-QAM	3	0	21.83	0-1	1
	707.5	23095	1.4	16-QAM	3	2	21.73	0-1	1
	707.5	23095	1.4	16-QAM	3	3	21.58	0-1	1
	707.5	23095	1.4	16-QAM	6	0	20.89	0-2	2
High	715.3	23173	1.4	QPSK	1	0	22.69	0	0
	715.3	23173	1.4	QPSK	1	2	22.82	0	0
	715.3	23173	1.4	QPSK	1	5	22.85	0	0
	715.3	23173	1.4	QPSK	3	0	22.89	0	0
	715.3	23173	1.4	QPSK	3	2	22.82	0	0
	715.3	23173	1.4	QPSK	3	3	22.74	0	0
	715.3	23173	1.4	QPSK	6	0	21.78	0-1	1
	715.3	23173	1.4	16-QAM	1	0	22.00	0-1	1
	715.3	23173	1.4	16-QAM	1	2	22.41	0-1	1
	715.3	23173	1.4	16-QAM	1	5	22.25	0-1	1
	715.3	23173	1.4	16-QAM	3	0	22.01	0-1	1
	715.3	23173	1.4	16-QAM	3	2	22.07	0-1	1
	715.3	23173	1.4	16-QAM	3	3	22.00	0-1	1
	715.3	23173	1.4	16-QAM	6	0	21.17	0-2	2

9.4.2 LTE Band 26 (Cell)

Table 9-5
LTE Band 26 (Cell) 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]
Mid	836.5	26915	15	QPSK	1	0	**23.27**	0	0
	836.5	26915	15	QPSK	1	36	23.12	0	0
	836.5	26915	15	QPSK	1	74	23.21	0	0
	836.5	26915	15	QPSK	36	0	**22.31**	0-1	1
	836.5	26915	15	QPSK	36	18	22.25	0-1	1
	836.5	26915	15	QPSK	36	37	22.28	0-1	1
	836.5	26915	15	QPSK	75	0	22.23	0-1	1
	836.5	26915	15	16QAM	1	0	22.38	0-1	1
	836.5	26915	15	16QAM	1	36	22.34	0-1	1
	836.5	26915	15	16QAM	1	74	22.37	0-1	1
	836.5	26915	15	16QAM	36	0	21.35	0-2	2
	836.5	26915	15	16QAM	36	18	21.33	0-2	2
	836.5	26915	15	16QAM	36	37	21.34	0-2	2
	836.5	26915	15	16QAM	75	0	21.16	0-2	2

Note: LTE Band 26 (Cell) at 15 MHz bandwidth is only supported for FCC Rule Part 22H. There are not three overlapping channels within FCC Rule Part 22H. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, themiddle channel of the group of overlapping channels should be selected for testing.

Table 9-6
LTE Band 26 (Cell) Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	819	26740	10	QPSK	1	0	22.97	0	0
	819	26740	10	QPSK	1	25	22.97	0	0
	819	26740	10	QPSK	1	49	22.69	0	0
	819	26740	10	QPSK	25	0	21.88	0-1	1
	819	26740	10	QPSK	25	12	21.72	0-1	1
	819	26740	10	QPSK	25	25	21.64	0-1	1
	819	26740	10	QPSK	50	0	21.77	0-1	1
	819	26740	10	16QAM	1	0	22.33	0-1	1
	819	26740	10	16QAM	1	25	22.15	0-1	1
	819	26740	10	16QAM	1	49	22.10	0-1	1
	819	26740	10	16QAM	25	0	21.02	0-2	2
	819	26740	10	16QAM	25	12	20.88	0-2	2
	819	26740	10	16QAM	25	25	20.75	0-2	2
	819	26740	10	16QAM	50	0	20.89	0-2	2
Mid	831.5	26865	10	QPSK	1	0	23.04	0	0
	831.5	26865	10	QPSK	1	25	22.77	0	0
	831.5	26865	10	QPSK	1	49	22.72	0	0
	831.5	26865	10	QPSK	25	0	21.80	0-1	1
	831.5	26865	10	QPSK	25	12	21.97	0-1	1
	831.5	26865	10	QPSK	25	25	21.66	0-1	1
	831.5	26865	10	QPSK	50	0	21.74	0-1	1
	831.5	26865	10	16QAM	1	0	22.13	0-1	1
	831.5	26865	10	16QAM	1	25	22.10	0-1	1
	831.5	26865	10	16QAM	1	49	22.09	0-1	1
	831.5	26865	10	16QAM	25	0	20.83	0-2	2
	831.5	26865	10	16QAM	25	12	20.94	0-2	2
	831.5	26865	10	16QAM	25	25	20.83	0-2	2
	831.5	26865	10	16QAM	50	0	20.80	0-2	2
High	844	26990	10	QPSK	1	0	22.96	0	0
	844	26990	10	QPSK	1	25	23.02	0	0
	844	26990	10	QPSK	1	49	22.85	0	0
	844	26990	10	QPSK	25	0	21.79	0-1	1
	844	26990	10	QPSK	25	12	21.70	0-1	1
	844	26990	10	QPSK	25	25	21.66	0-1	1
	844	26990	10	QPSK	50	0	21.66	0-1	1
	844	26990	10	16QAM	1	0	22.06	0-1	1
	844	26990	10	16QAM	1	25	22.10	0-1	1
	844	26990	10	16QAM	1	49	22.20	0-1	1
	844	26990	10	16QAM	25	0	20.91	0-2	2
	844	26990	10	16QAM	25	12	20.96	0-2	2
	844	26990	10	16QAM	25	25	20.87	0-2	2
	844	26990	10	16QAM	50	0	20.80	0-2	2

Table 9-7
LTE Band 26 (Cell) Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	816.5	26715	5	QPSK	1	0	22.73	0	0
	816.5	26715	5	QPSK	1	12	22.76	0	0
	816.5	26715	5	QPSK	1	24	22.68	0	0
	816.5	26715	5	QPSK	12	0	21.83	0-1	1
	816.5	26715	5	QPSK	12	6	21.85	0-1	1
	816.5	26715	5	QPSK	12	13	21.76	0-1	1
	816.5	26715	5	QPSK	25	0	21.83	0-1	1
	816.5	26715	5	16-QAM	1	0	21.64	0-1	1
	816.5	26715	5	16-QAM	1	12	21.71	0-1	1
	816.5	26715	5	16-QAM	1	24	21.52	0-1	1
	816.5	26715	5	16-QAM	12	0	21.04	0-2	2
	816.5	26715	5	16-QAM	12	6	20.92	0-2	2
	816.5	26715	5	16-QAM	12	13	20.76	0-2	2
	816.5	26715	5	16-QAM	25	0	21.01	0-2	2
Mid	831.5	26865	5	QPSK	1	0	22.62	0	0
	831.5	26865	5	QPSK	1	12	22.58	0	0
	831.5	26865	5	QPSK	1	24	22.92	0	0
	831.5	26865	5	QPSK	12	0	21.75	0-1	1
	831.5	26865	5	QPSK	12	6	21.75	0-1	1
	831.5	26865	5	QPSK	12	13	21.70	0-1	1
	831.5	26865	5	QPSK	25	0	21.73	0-1	1
	831.5	26865	5	16-QAM	1	0	21.53	0-1	1
	831.5	26865	5	16-QAM	1	12	21.76	0-1	1
	831.5	26865	5	16-QAM	1	24	21.55	0-1	1
	831.5	26865	5	16-QAM	12	0	20.87	0-2	2
	831.5	26865	5	16-QAM	12	6	21.06	0-2	2
	831.5	26865	5	16-QAM	12	13	20.91	0-2	2
	831.5	26865	5	16-QAM	25	0	20.97	0-2	2
High	846.5	27015	5	QPSK	1	0	22.74	0	0
	846.5	27015	5	QPSK	1	12	22.94	0	0
	846.5	27015	5	QPSK	1	24	22.90	0	0
	846.5	27015	5	QPSK	12	0	21.73	0-1	1
	846.5	27015	5	QPSK	12	6	21.77	0-1	1
	846.5	27015	5	QPSK	12	13	21.70	0-1	1
	846.5	27015	5	QPSK	25	0	21.72	0-1	1
	846.5	27015	5	16-QAM	1	0	21.52	0-1	1
	846.5	27015	5	16-QAM	1	12	21.68	0-1	1
	846.5	27015	5	16-QAM	1	24	21.55	0-1	1
	846.5	27015	5	16-QAM	12	0	21.06	0-2	2
	846.5	27015	5	16-QAM	12	6	20.89	0-2	2
	846.5	27015	5	16-QAM	12	13	21.02	0-2	2
	846.5	27015	5	16-QAM	25	0	21.01	0-2	2

Table 9-8
LTE Band 26 (Cell) Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	815.5	26705	3	QPSK	1	0	22.83	0	0
	815.5	26705	3	QPSK	1	7	22.87	0	0
	815.5	26705	3	QPSK	1	14	23.04	0	0
	815.5	26705	3	QPSK	8	0	21.91	0-1	1
	815.5	26705	3	QPSK	8	4	21.82	0-1	1
	815.5	26705	3	QPSK	8	7	21.80	0-1	1
	815.5	26705	3	QPSK	15	0	21.83	0-1	1
	815.5	26705	3	16-QAM	1	0	21.77	0-1	1
	815.5	26705	3	16-QAM	1	7	21.94	0-1	1
	815.5	26705	3	16-QAM	1	14	21.79	0-1	1
	815.5	26705	3	16-QAM	8	0	21.28	0-2	2
	815.5	26705	3	16-QAM	8	4	21.04	0-2	2
	815.5	26705	3	16-QAM	8	7	20.94	0-2	2
	815.5	26705	3	16-QAM	15	0	20.97	0-2	2
Mid	831.5	26865	3	QPSK	1	0	23.09	0	0
	831.5	26865	3	QPSK	1	7	22.91	0	0
	831.5	26865	3	QPSK	1	14	22.87	0	0
	831.5	26865	3	QPSK	8	0	21.91	0-1	1
	831.5	26865	3	QPSK	8	4	21.74	0-1	1
	831.5	26865	3	QPSK	8	7	21.77	0-1	1
	831.5	26865	3	QPSK	15	0	21.75	0-1	1
	831.5	26865	3	16-QAM	1	0	21.79	0-1	1
	831.5	26865	3	16-QAM	1	7	21.90	0-1	1
	831.5	26865	3	16-QAM	1	14	22.19	0-1	1
	831.5	26865	3	16-QAM	8	0	21.10	0-2	2
	831.5	26865	3	16-QAM	8	4	21.14	0-2	2
	831.5	26865	3	16-QAM	8	7	21.17	0-2	2
	831.5	26865	3	16-QAM	15	0	20.92	0-2	2
High	847.5	27025	3	QPSK	1	0	22.94	0	0
	847.5	27025	3	QPSK	1	7	23.12	0	0
	847.5	27025	3	QPSK	1	14	22.84	0	0
	847.5	27025	3	QPSK	8	0	21.87	0-1	1
	847.5	27025	3	QPSK	8	4	21.67	0-1	1
	847.5	27025	3	QPSK	8	7	21.67	0-1	1
	847.5	27025	3	QPSK	15	0	21.71	0-1	1
	847.5	27025	3	16-QAM	1	0	21.96	0-1	1
	847.5	27025	3	16-QAM	1	7	21.95	0-1	1
	847.5	27025	3	16-QAM	1	14	21.91	0-1	1
	847.5	27025	3	16-QAM	8	0	21.08	0-2	2
	847.5	27025	3	16-QAM	8	4	21.03	0-2	2
	847.5	27025	3	16-QAM	8	7	21.13	0-2	2
	847.5	27025	3	16-QAM	15	0	20.99	0-2	2

Table 9-9
LTE Band 26 (Cell) Conducted Powers -1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	814.7	26697	1.4	QPSK	1	0	22.86	0	0
	814.7	26697	1.4	QPSK	1	2	22.90	0	0
	814.7	26697	1.4	QPSK	1	5	22.81	0	0
	814.7	26697	1.4	QPSK	3	0	22.78	0	0
	814.7	26697	1.4	QPSK	3	2	22.94	0	0
	814.7	26697	1.4	QPSK	3	3	22.96	0	0
	814.7	26697	1.4	QPSK	6	0	21.87	0-1	1
	814.7	26697	1.4	16-QAM	1	0	22.03	0-1	1
	814.7	26697	1.4	16-QAM	1	2	22.19	0-1	1
	814.7	26697	1.4	16-QAM	1	5	22.25	0-1	1
	814.7	26697	1.4	16-QAM	3	0	21.92	0-1	1
	814.7	26697	1.4	16-QAM	3	2	21.92	0-1	1
	814.7	26697	1.4	16-QAM	3	3	21.80	0-1	1
	814.7	26697	1.4	16-QAM	6	0	21.40	0-2	2
Mid	831.5	26865	1.4	QPSK	1	0	23.17	0	0
	831.5	26865	1.4	QPSK	1	2	23.14	0	0
	831.5	26865	1.4	QPSK	1	5	23.16	0	0
	831.5	26865	1.4	QPSK	3	0	23.10	0	0
	831.5	26865	1.4	QPSK	3	2	23.19	0	0
	831.5	26865	1.4	QPSK	3	3	22.86	0	0
	831.5	26865	1.4	QPSK	6	0	21.70	0-1	1
	831.5	26865	1.4	16-QAM	1	0	22.41	0-1	1
	831.5	26865	1.4	16-QAM	1	2	22.45	0-1	1
	831.5	26865	1.4	16-QAM	1	5	22.26	0-1	1
	831.5	26865	1.4	16-QAM	3	0	22.11	0-1	1
	831.5	26865	1.4	16-QAM	3	2	21.98	0-1	1
	831.5	26865	1.4	16-QAM	3	3	22.16	0-1	1
	831.5	26865	1.4	16-QAM	6	0	21.15	0-2	2
High	848.3	27033	1.4	QPSK	1	0	23.27	0	0
	848.3	27033	1.4	QPSK	1	2	22.98	0	0
	848.3	27033	1.4	QPSK	1	5	23.13	0	0
	848.3	27033	1.4	QPSK	3	0	23.26	0	0
	848.3	27033	1.4	QPSK	3	2	23.17	0	0
	848.3	27033	1.4	QPSK	3	3	23.22	0	0
	848.3	27033	1.4	QPSK	6	0	21.66	0-1	1
	848.3	27033	1.4	16-QAM	1	0	22.09	0-1	1
	848.3	27033	1.4	16-QAM	1	2	21.98	0-1	1
	848.3	27033	1.4	16-QAM	1	5	22.47	0-1	1
	848.3	27033	1.4	16-QAM	3	0	21.86	0-1	1
	848.3	27033	1.4	16-QAM	3	2	21.94	0-1	1
	848.3	27033	1.4	16-QAM	3	3	21.70	0-1	1
	848.3	27033	1.4	16-QAM	6	0	21.06	0-2	2

9.4.3 LTE Band 4 (AWS)

Table 9-10
LTE Band 4 (AWS) Conducted Powers - 20 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	1732.5	20175	20	QPSK	1	0	**23.32**	0	0
	1732.5	20175	20	QPSK	1	50	23.21	0	0
	1732.5	20175	20	QPSK	1	99	23.11	0	0
	1732.5	20175	20	QPSK	50	0	22.02	0-1	1
	1732.5	20175	20	QPSK	50	25	**22.14**	0-1	1
	1732.5	20175	20	QPSK	50	50	22.05	0-1	1
	1732.5	20175	20	QPSK	100	0	22.04	0-1	1
	1732.5	20175	20	16QAM	1	0	22.42	0-1	1
	1732.5	20175	20	16QAM	1	50	22.44	0-1	1
	1732.5	20175	20	16QAM	1	99	22.43	0-1	1
	1732.5	20175	20	16QAM	50	0	21.22	0-2	2
	1732.5	20175	20	16QAM	50	25	21.32	0-2	2
	1732.5	20175	20	16QAM	50	50	21.15	0-2	2
	1732.5	20175	20	16QAM	100	0	21.24	0-2	2

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

Table 9-11
LTE Band 4 (AWS) Conducted Powers - 15 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1717.5	20025	15	QPSK	1	0	23.33	0	0
	1717.5	20025	15	QPSK	1	36	23.13	0	0
	1717.5	20025	15	QPSK	1	74	23.32	0	0
	1717.5	20025	15	QPSK	36	0	22.03	0-1	1
	1717.5	20025	15	QPSK	36	18	22.02	0-1	1
	1717.5	20025	15	QPSK	36	37	21.97	0-1	1
	1717.5	20025	15	QPSK	75	0	22.03	0-1	1
	1717.5	20025	15	16QAM	1	0	22.38	0-1	1
	1717.5	20025	15	16QAM	1	36	22.24	0-1	1
	1717.5	20025	15	16QAM	1	74	22.12	0-1	1
	1717.5	20025	15	16QAM	36	0	21.13	0-2	2
	1717.5	20025	15	16QAM	36	18	21.14	0-2	2
	1717.5	20025	15	16QAM	36	37	21.01	0-2	2
	1717.5	20025	15	16QAM	75	0	21.13	0-2	2
Mid	1732.5	20175	15	QPSK	1	0	23.28	0	0
	1732.5	20175	15	QPSK	1	36	23.10	0	0
	1732.5	20175	15	QPSK	1	74	23.13	0	0
	1732.5	20175	15	QPSK	36	0	22.02	0-1	1
	1732.5	20175	15	QPSK	36	18	22.02	0-1	1
	1732.5	20175	15	QPSK	36	37	22.00	0-1	1
	1732.5	20175	15	QPSK	75	0	22.04	0-1	1
	1732.5	20175	15	16QAM	1	0	22.23	0-1	1
	1732.5	20175	15	16QAM	1	36	22.12	0-1	1
	1732.5	20175	15	16QAM	1	74	22.18	0-1	1
	1732.5	20175	15	16QAM	36	0	21.08	0-2	2
	1732.5	20175	15	16QAM	36	18	21.15	0-2	2
	1732.5	20175	15	16QAM	36	37	21.20	0-2	2
	1732.5	20175	15	16QAM	75	0	21.18	0-2	2
High	1747.5	20325	15	QPSK	1	0	23.29	0	0
	1747.5	20325	15	QPSK	1	36	23.26	0	0
	1747.5	20325	15	QPSK	1	74	23.36	0	0
	1747.5	20325	15	QPSK	36	0	22.27	0-1	1
	1747.5	20325	15	QPSK	36	18	22.16	0-1	1
	1747.5	20325	15	QPSK	36	37	22.12	0-1	1
	1747.5	20325	15	QPSK	75	0	22.16	0-1	1
	1747.5	20325	15	16QAM	1	0	21.89	0-1	1
	1747.5	20325	15	16QAM	1	36	21.54	0-1	1
	1747.5	20325	15	16QAM	1	74	21.52	0-1	1
	1747.5	20325	15	16QAM	36	0	21.29	0-2	2
	1747.5	20325	15	16QAM	36	18	21.30	0-2	2
	1747.5	20325	15	16QAM	36	37	21.25	0-2	2
	1747.5	20325	15	16QAM	75	0	21.21	0-2	2

Table 9-12
LTE Band 4 (AWS) Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1715	20000	10	QPSK	1	0	23.19	0	0
	1715	20000	10	QPSK	1	25	23.05	0	0
	1715	20000	10	QPSK	1	49	23.40	0	0
	1715	20000	10	QPSK	25	0	22.04	0-1	1
	1715	20000	10	QPSK	25	12	22.04	0-1	1
	1715	20000	10	QPSK	25	25	21.99	0-1	1
	1715	20000	10	QPSK	50	0	22.03	0-1	1
	1715	20000	10	16QAM	1	0	22.38	0-1	1
	1715	20000	10	16QAM	1	25	22.24	0-1	1
	1715	20000	10	16QAM	1	49	22.06	0-1	1
	1715	20000	10	16QAM	25	0	20.98	0-2	2
	1715	20000	10	16QAM	25	12	21.08	0-2	2
	1715	20000	10	16QAM	25	25	21.01	0-2	2
	1715	20000	10	16QAM	50	0	20.98	0-2	2
Mid	1732.5	20175	10	QPSK	1	0	23.19	0	0
	1732.5	20175	10	QPSK	1	25	23.16	0	0
	1732.5	20175	10	QPSK	1	49	23.19	0	0
	1732.5	20175	10	QPSK	25	0	22.13	0-1	1
	1732.5	20175	10	QPSK	25	12	22.12	0-1	1
	1732.5	20175	10	QPSK	25	25	22.00	0-1	1
	1732.5	20175	10	QPSK	50	0	22.04	0-1	1
	1732.5	20175	10	16QAM	1	0	22.14	0-1	1
	1732.5	20175	10	16QAM	1	25	22.12	0-1	1
	1732.5	20175	10	16QAM	1	49	22.23	0-1	1
	1732.5	20175	10	16QAM	25	0	21.09	0-2	2
	1732.5	20175	10	16QAM	25	12	21.15	0-2	2
	1732.5	20175	10	16QAM	25	25	21.22	0-2	2
	1732.5	20175	10	16QAM	50	0	21.12	0-2	2
High	1750	20350	10	QPSK	1	0	23.32	0	0
	1750	20350	10	QPSK	1	25	23.18	0	0
	1750	20350	10	QPSK	1	49	23.28	0	0
	1750	20350	10	QPSK	25	0	22.21	0-1	1
	1750	20350	10	QPSK	25	12	22.19	0-1	1
	1750	20350	10	QPSK	25	25	22.23	0-1	1
	1750	20350	10	QPSK	50	0	22.27	0-1	1
	1750	20350	10	16QAM	1	0	21.81	0-1	1
	1750	20350	10	16QAM	1	25	21.68	0-1	1
	1750	20350	10	16QAM	1	49	21.86	0-1	1
	1750	20350	10	16QAM	25	0	21.31	0-2	2
	1750	20350	10	16QAM	25	12	21.30	0-2	2
	1750	20350	10	16QAM	25	25	21.29	0-2	2
	1750	20350	10	16QAM	50	0	21.29	0-2	2

Table 9-13
LTE Band 4 (AWS) Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1712.5	19975	5	QPSK	1	0	22.86	0	0
	1712.5	19975	5	QPSK	1	12	22.71	0	0
	1712.5	19975	5	QPSK	1	24	23.09	0	0
	1712.5	19975	5	QPSK	12	0	21.97	0-1	1
	1712.5	19975	5	QPSK	12	6	21.98	0-1	1
	1712.5	19975	5	QPSK	12	13	21.97	0-1	1
	1712.5	19975	5	QPSK	25	0	21.93	0-1	1
	1712.5	19975	5	16-QAM	1	0	22.19	0-1	1
	1712.5	19975	5	16-QAM	1	12	21.95	0-1	1
	1712.5	19975	5	16-QAM	1	24	21.85	0-1	1
	1712.5	19975	5	16-QAM	12	0	20.98	0-2	2
	1712.5	19975	5	16-QAM	12	6	21.11	0-2	2
	1712.5	19975	5	16-QAM	12	13	21.25	0-2	2
	1712.5	19975	5	16-QAM	25	0	21.16	0-2	2
Mid	1732.5	20175	5	QPSK	1	0	22.96	0	0
	1732.5	20175	5	QPSK	1	12	23.12	0	0
	1732.5	20175	5	QPSK	1	24	23.01	0	0
	1732.5	20175	5	QPSK	12	0	22.09	0-1	1
	1732.5	20175	5	QPSK	12	6	22.06	0-1	1
	1732.5	20175	5	QPSK	12	13	21.95	0-1	1
	1732.5	20175	5	QPSK	25	0	22.02	0-1	1
	1732.5	20175	5	16-QAM	1	0	21.76	0-1	1
	1732.5	20175	5	16-QAM	1	12	21.89	0-1	1
	1732.5	20175	5	16-QAM	1	24	21.85	0-1	1
	1732.5	20175	5	16-QAM	12	0	21.14	0-2	2
	1732.5	20175	5	16-QAM	12	6	21.12	0-2	2
	1732.5	20175	5	16-QAM	12	13	21.24	0-2	2
	1732.5	20175	5	16-QAM	25	0	21.15	0-2	2
High	1752.5	20375	5	QPSK	1	0	22.86	0	0
	1752.5	20375	5	QPSK	1	12	22.98	0	0
	1752.5	20375	5	QPSK	1	24	23.07	0	0
	1752.5	20375	5	QPSK	12	0	21.96	0-1	1
	1752.5	20375	5	QPSK	12	6	22.02	0-1	1
	1752.5	20375	5	QPSK	12	13	21.94	0-1	1
	1752.5	20375	5	QPSK	25	0	21.97	0-1	1
	1752.5	20375	5	16-QAM	1	0	21.71	0-1	1
	1752.5	20375	5	16-QAM	1	12	21.93	0-1	1
	1752.5	20375	5	16-QAM	1	24	21.91	0-1	1
	1752.5	20375	5	16-QAM	12	0	20.86	0-2	2
	1752.5	20375	5	16-QAM	12	6	21.01	0-2	2
	1752.5	20375	5	16-QAM	12	13	21.13	0-2	2
	1752.5	20375	5	16-QAM	25	0	21.06	0-2	2

Table 9-14
LTE Band 4 (AWS) Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1711.5	19965	3	QPSK	1	0	23.09	0	0
	1711.5	19965	3	QPSK	1	7	23.33	0	0
	1711.5	19965	3	QPSK	1	14	23.34	0	0
	1711.5	19965	3	QPSK	8	0	22.03	0-1	1
	1711.5	19965	3	QPSK	8	4	21.94	0-1	1
	1711.5	19965	3	QPSK	8	7	21.87	0-1	1
	1711.5	19965	3	QPSK	15	0	21.91	0-1	1
	1711.5	19965	3	16-QAM	1	0	22.10	0-1	1
	1711.5	19965	3	16-QAM	1	7	22.03	0-1	1
	1711.5	19965	3	16-QAM	1	14	22.14	0-1	1
	1711.5	19965	3	16-QAM	8	0	20.76	0-2	2
	1711.5	19965	3	16-QAM	8	4	21.00	0-2	2
	1711.5	19965	3	16-QAM	8	7	21.04	0-2	2
	1711.5	19965	3	16-QAM	15	0	21.08	0-2	2
Mid	1732.5	20175	3	QPSK	1	0	23.15	0	0
	1732.5	20175	3	QPSK	1	7	23.39	0	0
	1732.5	20175	3	QPSK	1	14	23.14	0	0
	1732.5	20175	3	QPSK	8	0	21.91	0-1	1
	1732.5	20175	3	QPSK	8	4	22.11	0-1	1
	1732.5	20175	3	QPSK	8	7	22.10	0-1	1
	1732.5	20175	3	QPSK	15	0	22.13	0-1	1
	1732.5	20175	3	16-QAM	1	0	21.97	0-1	1
	1732.5	20175	3	16-QAM	1	7	22.06	0-1	1
	1732.5	20175	3	16-QAM	1	14	21.99	0-1	1
	1732.5	20175	3	16-QAM	8	0	21.04	0-2	2
	1732.5	20175	3	16-QAM	8	4	20.95	0-2	2
	1732.5	20175	3	16-QAM	8	7	21.15	0-2	2
	1732.5	20175	3	16-QAM	15	0	21.04	0-2	2
High	1753.5	20385	3	QPSK	1	0	23.14	0	0
	1753.5	20385	3	QPSK	1	7	22.99	0	0
	1753.5	20385	3	QPSK	1	14	23.03	0	0
	1753.5	20385	3	QPSK	8	0	22.01	0-1	1
	1753.5	20385	3	QPSK	8	4	21.99	0-1	1
	1753.5	20385	3	QPSK	8	7	21.96	0-1	1
	1753.5	20385	3	QPSK	15	0	22.03	0-1	1
	1753.5	20385	3	16-QAM	1	0	22.22	0-1	1
	1753.5	20385	3	16-QAM	1	7	22.07	0-1	1
	1753.5	20385	3	16-QAM	1	14	22.12	0-1	1
	1753.5	20385	3	16-QAM	8	0	21.18	0-2	2
	1753.5	20385	3	16-QAM	8	4	21.15	0-2	2
	1753.5	20385	3	16-QAM	8	7	20.95	0-2	2
	1753.5	20385	3	16-QAM	15	0	21.06	0-2	2

Table 9-15
LTE Band 4 (AWS) Conducted Powers -1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1710.7	19957	1.4	QPSK	1	0	23.11	0	0
	1710.7	19957	1.4	QPSK	1	2	23.24	0	0
	1710.7	19957	1.4	QPSK	1	5	23.06	0	0
	1710.7	19957	1.4	QPSK	3	0	23.00	0	0
	1710.7	19957	1.4	QPSK	3	2	22.97	0	0
	1710.7	19957	1.4	QPSK	3	3	22.90	0	0
	1710.7	19957	1.4	QPSK	6	0	21.92	0-1	1
	1710.7	19957	1.4	16-QAM	1	0	22.19	0-1	1
	1710.7	19957	1.4	16-QAM	1	2	22.24	0-1	1
	1710.7	19957	1.4	16-QAM	1	5	22.11	0-1	1
	1710.7	19957	1.4	16-QAM	3	0	22.02	0-1	1
	1710.7	19957	1.4	16-QAM	3	2	22.11	0-1	1
	1710.7	19957	1.4	16-QAM	3	3	22.10	0-1	1
	1710.7	19957	1.4	16-QAM	6	0	21.14	0-2	2
Mid	1732.5	20175	1.4	QPSK	1	0	23.45	0	0
	1732.5	20175	1.4	QPSK	1	2	23.45	0	0
	1732.5	20175	1.4	QPSK	1	5	23.12	0	0
	1732.5	20175	1.4	QPSK	3	0	23.17	0	0
	1732.5	20175	1.4	QPSK	3	2	23.08	0	0
	1732.5	20175	1.4	QPSK	3	3	23.19	0	0
	1732.5	20175	1.4	QPSK	6	0	22.26	0-1	1
	1732.5	20175	1.4	16-QAM	1	0	22.10	0-1	1
	1732.5	20175	1.4	16-QAM	1	2	22.45	0-1	1
	1732.5	20175	1.4	16-QAM	1	5	22.42	0-1	1
	1732.5	20175	1.4	16-QAM	3	0	22.15	0-1	1
	1732.5	20175	1.4	16-QAM	3	2	22.43	0-1	1
	1732.5	20175	1.4	16-QAM	3	3	22.42	0-1	1
	1732.5	20175	1.4	16-QAM	6	0	21.20	0-2	2
High	1754.3	20393	1.4	QPSK	1	0	22.90	0	0
	1754.3	20393	1.4	QPSK	1	2	22.91	0	0
	1754.3	20393	1.4	QPSK	1	5	22.75	0	0
	1754.3	20393	1.4	QPSK	3	0	23.16	0	0
	1754.3	20393	1.4	QPSK	3	2	22.94	0	0
	1754.3	20393	1.4	QPSK	3	3	23.09	0	0
	1754.3	20393	1.4	QPSK	6	0	22.06	0-1	1
	1754.3	20393	1.4	16-QAM	1	0	21.95	0-1	1
	1754.3	20393	1.4	16-QAM	1	2	21.98	0-1	1
	1754.3	20393	1.4	16-QAM	1	5	21.93	0-1	1
	1754.3	20393	1.4	16-QAM	3	0	22.00	0-1	1
	1754.3	20393	1.4	16-QAM	3	2	21.93	0-1	1
	1754.3	20393	1.4	16-QAM	3	3	22.08	0-1	1
	1754.3	20393	1.4	16-QAM	6	0	21.17	0-2	2

9.4.4 LTE Band 25 (PCS)

Table 9-16
LTE Band 25 (PCS) Conducted Powers - 20 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1860	26140	20	QPSK	1	0	23.48	0	0
	1860	26140	20	QPSK	1	50	23.41	0	0
	1860	26140	20	QPSK	1	99	23.47	0	0
	1860	26140	20	QPSK	50	0	22.39	0-1	1
	1860	26140	20	QPSK	50	25	22.28	0-1	1
	1860	26140	20	QPSK	50	50	22.11	0-1	1
	1860	26140	20	QPSK	100	0	22.09	0-1	1
	1860	26140	20	16QAM	1	0	22.41	0-1	1
	1860	26140	20	16QAM	1	50	22.29	0-1	1
	1860	26140	20	16QAM	1	99	22.12	0-1	1
	1860	26140	20	16QAM	50	0	21.40	0-2	2
	1860	26140	20	16QAM	50	25	21.33	0-2	2
	1860	26140	20	16QAM	50	50	21.24	0-2	2
	1860	26140	20	16QAM	100	0	21.46	0-2	2
Mid	1882.5	26365	20	QPSK	1	0	23.45	0	0
	1882.5	26365	20	QPSK	1	50	23.48	0	0
	1882.5	26365	20	QPSK	1	99	23.23	0	0
	1882.5	26365	20	QPSK	50	0	22.33	0-1	1
	1882.5	26365	20	QPSK	50	25	22.40	0-1	1
	1882.5	26365	20	QPSK	50	50	22.35	0-1	1
	1882.5	26365	20	QPSK	100	0	22.29	0-1	1
	1882.5	26365	20	16QAM	1	0	22.25	0-1	1
	1882.5	26365	20	16QAM	1	50	22.37	0-1	1
	1882.5	26365	20	16QAM	1	99	22.25	0-1	1
	1882.5	26365	20	16QAM	50	0	21.08	0-2	2
	1882.5	26365	20	16QAM	50	25	21.45	0-2	2
	1882.5	26365	20	16QAM	50	50	21.26	0-2	2
	1882.5	26365	20	16QAM	100	0	21.21	0-2	2
High	1905	26590	20	QPSK	1	0	23.46	0	0
	1905	26590	20	QPSK	1	50	**23.49**	0	0
	1905	26590	20	QPSK	1	99	23.46	0	0
	1905	26590	20	QPSK	50	0	22.36	0-1	1
	1905	26590	20	QPSK	50	25	**22.41**	0-1	1
	1905	26590	20	QPSK	50	50	22.24	0-1	1
	1905	26590	20	QPSK	100	0	22.24	0-1	1
	1905	26590	20	16QAM	1	0	22.36	0-1	1
	1905	26590	20	16QAM	1	50	22.44	0-1	1
	1905	26590	20	16QAM	1	99	22.23	0-1	1
	1905	26590	20	16QAM	50	0	21.28	0-2	2
	1905	26590	20	16QAM	50	25	21.41	0-2	2
	1905	26590	20	16QAM	50	50	21.21	0-2	2
	1905	26590	20	16QAM	100	0	21.33	0-2	2

Table 9-17
LTE Band 25 (PCS) Conducted Powers - 15 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1857.5	26115	15	QPSK	1	0	23.27	0	0
	1857.5	26115	15	QPSK	1	36	22.89	0	0
	1857.5	26115	15	QPSK	1	74	23.36	0	0
	1857.5	26115	15	QPSK	36	0	21.92	0-1	1
	1857.5	26115	15	QPSK	36	18	21.94	0-1	1
	1857.5	26115	15	QPSK	36	37	21.96	0-1	1
	1857.5	26115	15	QPSK	75	0	21.95	0-1	1
	1857.5	26115	15	16QAM	1	0	22.43	0-1	1
	1857.5	26115	15	16QAM	1	36	22.03	0-1	1
	1857.5	26115	15	16QAM	1	74	22.14	0-1	1
	1857.5	26115	15	16QAM	36	0	21.14	0-2	2
	1857.5	26115	15	16QAM	36	18	21.08	0-2	2
	1857.5	26115	15	16QAM	36	37	21.15	0-2	2
	1857.5	26115	15	16QAM	75	0	21.22	0-2	2
Mid	1882.5	26365	15	QPSK	1	0	23.24	0	0
	1882.5	26365	15	QPSK	1	36	23.12	0	0
	1882.5	26365	15	QPSK	1	74	23.18	0	0
	1882.5	26365	15	QPSK	36	0	22.27	0-1	1
	1882.5	26365	15	QPSK	36	18	22.19	0-1	1
	1882.5	26365	15	QPSK	36	37	22.16	0-1	1
	1882.5	26365	15	QPSK	75	0	22.21	0-1	1
	1882.5	26365	15	16QAM	1	0	22.26	0-1	1
	1882.5	26365	15	16QAM	1	36	22.19	0-1	1
	1882.5	26365	15	16QAM	1	74	22.18	0-1	1
	1882.5	26365	15	16QAM	36	0	21.34	0-2	2
	1882.5	26365	15	16QAM	36	18	21.50	0-2	2
	1882.5	26365	15	16QAM	36	37	21.24	0-2	2
	1882.5	26365	15	16QAM	75	0	21.44	0-2	2
High	1907.5	26615	15	QPSK	1	0	23.12	0	0
	1907.5	26615	15	QPSK	1	36	22.92	0	0
	1907.5	26615	15	QPSK	1	74	22.90	0	0
	1907.5	26615	15	QPSK	36	0	22.17	0-1	1
	1907.5	26615	15	QPSK	36	18	22.09	0-1	1
	1907.5	26615	15	QPSK	36	37	22.04	0-1	1
	1907.5	26615	15	QPSK	75	0	22.11	0-1	1
	1907.5	26615	15	16QAM	1	0	22.18	0-1	1
	1907.5	26615	15	16QAM	1	36	22.24	0-1	1
	1907.5	26615	15	16QAM	1	74	22.36	0-1	1
	1907.5	26615	15	16QAM	36	0	21.23	0-2	2
	1907.5	26615	15	16QAM	36	18	21.26	0-2	2
	1907.5	26615	15	16QAM	36	37	21.12	0-2	2
	1907.5	26615	15	16QAM	75	0	21.16	0-2	2

Table 9-18
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	23.24	0	0
	1855	26090	10	QPSK	1	25	22.94	0	0
	1855	26090	10	QPSK	1	49	23.06	0	0
	1855	26090	10	QPSK	25	0	21.91	0-1	1
	1855	26090	10	QPSK	25	12	21.93	0-1	1
	1855	26090	10	QPSK	25	25	21.96	0-1	1
	1855	26090	10	QPSK	50	0	21.95	0-1	1
	1855	26090	10	16QAM	1	0	22.29	0-1	1
	1855	26090	10	16QAM	1	25	22.06	0-1	1
	1855	26090	10	16QAM	1	49	22.19	0-1	1
	1855	26090	10	16QAM	25	0	21.02	0-2	2
	1855	26090	10	16QAM	25	12	21.09	0-2	2
	1855	26090	10	16QAM	25	25	21.14	0-2	2
	1855	26090	10	16QAM	50	0	21.11	0-2	2
Mid	1882.5	26365	10	QPSK	1	0	23.31	0	0
	1882.5	26365	10	QPSK	1	25	23.13	0	0
	1882.5	26365	10	QPSK	1	49	23.19	0	0
	1882.5	26365	10	QPSK	25	0	22.22	0-1	1
	1882.5	26365	10	QPSK	25	12	22.20	0-1	1
	1882.5	26365	10	QPSK	25	25	22.10	0-1	1
	1882.5	26365	10	QPSK	50	0	22.21	0-1	1
	1882.5	26365	10	16QAM	1	0	22.38	0-1	1
	1882.5	26365	10	16QAM	1	25	22.19	0-1	1
	1882.5	26365	10	16QAM	1	49	22.18	0-1	1
	1882.5	26365	10	16QAM	25	0	21.34	0-2	2
	1882.5	26365	10	16QAM	25	12	21.50	0-2	2
	1882.5	26365	10	16QAM	25	25	21.26	0-2	2
	1882.5	26365	10	16QAM	50	0	21.24	0-2	2
High	1910	26640	10	QPSK	1	0	23.08	0	0
	1910	26640	10	QPSK	1	25	23.13	0	0
	1910	26640	10	QPSK	1	49	23.03	0	0
	1910	26640	10	QPSK	25	0	22.09	0-1	1
	1910	26640	10	QPSK	25	12	22.11	0-1	1
	1910	26640	10	QPSK	25	25	22.02	0-1	1
	1910	26640	10	QPSK	50	0	22.10	0-1	1
	1910	26640	10	16QAM	1	0	22.34	0-1	1
	1910	26640	10	16QAM	1	25	22.32	0-1	1
	1910	26640	10	16QAM	1	49	22.29	0-1	1
	1910	26640	10	16QAM	25	0	21.25	0-2	2
	1910	26640	10	16QAM	25	12	21.26	0-2	2
	1910	26640	10	16QAM	25	25	21.12	0-2	2
	1910	26640	10	16QAM	50	0	21.16	0-2	2

Table 9-19
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	22.63	0	0
	1852.5	26065	5	QPSK	1	12	22.64	0	0
	1852.5	26065	5	QPSK	1	24	23.17	0	0
	1852.5	26065	5	QPSK	12	0	21.87	0-1	1
	1852.5	26065	5	QPSK	12	6	21.90	0-1	1
	1852.5	26065	5	QPSK	12	13	21.88	0-1	1
	1852.5	26065	5	QPSK	25	0	21.91	0-1	1
	1852.5	26065	5	16-QAM	1	0	21.71	0-1	1
	1852.5	26065	5	16-QAM	1	12	21.57	0-1	1
	1852.5	26065	5	16-QAM	1	24	21.86	0-1	1
	1852.5	26065	5	16-QAM	12	0	20.80	0-2	2
	1852.5	26065	5	16-QAM	12	6	20.91	0-2	2
	1852.5	26065	5	16-QAM	12	13	21.20	0-2	2
	1852.5	26065	5	16-QAM	25	0	21.12	0-2	2
Mid	1882.5	26365	5	QPSK	1	0	23.02	0	0
	1882.5	26365	5	QPSK	1	12	23.46	0	0
	1882.5	26365	5	QPSK	1	24	22.86	0	0
	1882.5	26365	5	QPSK	12	0	22.31	0-1	1
	1882.5	26365	5	QPSK	12	6	22.06	0-1	1
	1882.5	26365	5	QPSK	12	13	22.17	0-1	1
	1882.5	26365	5	QPSK	25	0	22.13	0-1	1
	1882.5	26365	5	16-QAM	1	0	21.91	0-1	1
	1882.5	26365	5	16-QAM	1	12	21.98	0-1	1
	1882.5	26365	5	16-QAM	1	24	21.83	0-1	1
	1882.5	26365	5	16-QAM	12	0	21.24	0-2	2
	1882.5	26365	5	16-QAM	12	6	21.10	0-2	2
	1882.5	26365	5	16-QAM	12	13	21.27	0-2	2
	1882.5	26365	5	16-QAM	25	0	21.40	0-2	2
High	1912.5	26665	5	QPSK	1	0	23.00	0	0
	1912.5	26665	5	QPSK	1	12	22.66	0	0
	1912.5	26665	5	QPSK	1	24	23.01	0	0
	1912.5	26665	5	QPSK	12	0	22.01	0-1	1
	1912.5	26665	5	QPSK	12	6	22.00	0-1	1
	1912.5	26665	5	QPSK	12	13	22.02	0-1	1
	1912.5	26665	5	QPSK	25	0	22.02	0-1	1
	1912.5	26665	5	16-QAM	1	0	21.68	0-1	1
	1912.5	26665	5	16-QAM	1	12	21.96	0-1	1
	1912.5	26665	5	16-QAM	1	24	21.91	0-1	1
	1912.5	26665	5	16-QAM	12	0	21.06	0-2	2
	1912.5	26665	5	16-QAM	12	6	21.08	0-2	2
	1912.5	26665	5	16-QAM	12	13	20.99	0-2	2
	1912.5	26665	5	16-QAM	25	0	21.14	0-2	2

Table 9-20
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	23.24	0	0
	1851.5	26055	3	QPSK	1	7	23.16	0	0
	1851.5	26055	3	QPSK	1	14	23.22	0	0
	1851.5	26055	3	QPSK	8	0	21.94	0-1	1
	1851.5	26055	3	QPSK	8	4	21.90	0-1	1
	1851.5	26055	3	QPSK	8	7	21.84	0-1	1
	1851.5	26055	3	QPSK	15	0	21.87	0-1	1
	1851.5	26055	3	16-QAM	1	0	21.96	0-1	1
	1851.5	26055	3	16-QAM	1	7	22.23	0-1	1
	1851.5	26055	3	16-QAM	1	14	22.21	0-1	1
	1851.5	26055	3	16-QAM	8	0	20.97	0-2	2
	1851.5	26055	3	16-QAM	8	4	21.03	0-2	2
	1851.5	26055	3	16-QAM	8	7	21.46	0-2	2
	1851.5	26055	3	16-QAM	15	0	21.14	0-2	2
Mid	1882.5	26365	3	QPSK	1	0	23.16	0	0
	1882.5	26365	3	QPSK	1	7	23.26	0	0
	1882.5	26365	3	QPSK	1	14	23.28	0	0
	1882.5	26365	3	QPSK	8	0	22.23	0-1	1
	1882.5	26365	3	QPSK	8	4	22.21	0-1	1
	1882.5	26365	3	QPSK	8	7	22.19	0-1	1
	1882.5	26365	3	QPSK	15	0	22.18	0-1	1
	1882.5	26365	3	16-QAM	1	0	22.33	0-1	1
	1882.5	26365	3	16-QAM	1	7	22.48	0-1	1
	1882.5	26365	3	16-QAM	1	14	22.10	0-1	1
	1882.5	26365	3	16-QAM	8	0	21.41	0-2	2
	1882.5	26365	3	16-QAM	8	4	21.35	0-2	2
	1882.5	26365	3	16-QAM	8	7	21.33	0-2	2
	1882.5	26365	3	16-QAM	15	0	21.41	0-2	2
High	1913.5	26675	3	QPSK	1	0	23.26	0	0
	1913.5	26675	3	QPSK	1	7	23.27	0	0
	1913.5	26675	3	QPSK	1	14	23.25	0	0
	1913.5	26675	3	QPSK	8	0	22.07	0-1	1
	1913.5	26675	3	QPSK	8	4	21.96	0-1	1
	1913.5	26675	3	QPSK	8	7	21.97	0-1	1
	1913.5	26675	3	QPSK	15	0	22.02	0-1	1
	1913.5	26675	3	16-QAM	1	0	22.39	0-1	1
	1913.5	26675	3	16-QAM	1	7	22.32	0-1	1
	1913.5	26675	3	16-QAM	1	14	22.05	0-1	1
	1913.5	26675	3	16-QAM	8	0	21.30	0-2	2
	1913.5	26675	3	16-QAM	8	4	21.33	0-2	2
	1913.5	26675	3	16-QAM	8	7	21.23	0-2	2
	1913.5	26675	3	16-QAM	15	0	21.30	0-2	2

Table 9-21
LTE Band 25 (PCS) Conducted Powers -1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1850.7	26047	1.4	QPSK	1	0	22.84	0	0
	1850.7	26047	1.4	QPSK	1	2	23.07	0	0
	1850.7	26047	1.4	QPSK	1	5	22.86	0	0
	1850.7	26047	1.4	QPSK	3	0	22.75	0	0
	1850.7	26047	1.4	QPSK	3	2	22.94	0	0
	1850.7	26047	1.4	QPSK	3	3	22.90	0	0
	1850.7	26047	1.4	QPSK	6	0	21.72	0-1	1
	1850.7	26047	1.4	16-QAM	1	0	22.28	0-1	1
	1850.7	26047	1.4	16-QAM	1	2	21.66	0-1	1
	1850.7	26047	1.4	16-QAM	1	5	22.27	0-1	1
	1850.7	26047	1.4	16-QAM	3	0	22.06	0-1	1
	1850.7	26047	1.4	16-QAM	3	2	22.23	0-1	1
	1850.7	26047	1.4	16-QAM	3	3	21.99	0-1	1
	1850.7	26047	1.4	16-QAM	6	0	20.95	0-2	2
Mid	1882.5	26365	1.4	QPSK	1	0	23.37	0	0
	1882.5	26365	1.4	QPSK	1	2	23.32	0	0
	1882.5	26365	1.4	QPSK	1	5	23.34	0	0
	1882.5	26365	1.4	QPSK	3	0	23.08	0	0
	1882.5	26365	1.4	QPSK	3	2	23.20	0	0
	1882.5	26365	1.4	QPSK	3	3	23.21	0	0
	1882.5	26365	1.4	QPSK	6	0	22.21	0-1	1
	1882.5	26365	1.4	16-QAM	1	0	22.34	0-1	1
	1882.5	26365	1.4	16-QAM	1	2	22.39	0-1	1
	1882.5	26365	1.4	16-QAM	1	5	22.17	0-1	1
	1882.5	26365	1.4	16-QAM	3	0	22.29	0-1	1
	1882.5	26365	1.4	16-QAM	3	2	22.39	0-1	1
	1882.5	26365	1.4	16-QAM	3	3	22.43	0-1	1
	1882.5	26365	1.4	16-QAM	6	0	21.49	0-2	2
High	1914.3	26683	1.4	QPSK	1	0	23.08	0	0
	1914.3	26683	1.4	QPSK	1	2	23.04	0	0
	1914.3	26683	1.4	QPSK	1	5	23.05	0	0
	1914.3	26683	1.4	QPSK	3	0	22.93	0	0
	1914.3	26683	1.4	QPSK	3	2	23.05	0	0
	1914.3	26683	1.4	QPSK	3	3	23.01	0	0
	1914.3	26683	1.4	QPSK	6	0	22.04	0-1	1
	1914.3	26683	1.4	16-QAM	1	0	22.47	0-1	1
	1914.3	26683	1.4	16-QAM	1	2	22.28	0-1	1
	1914.3	26683	1.4	16-QAM	1	5	22.34	0-1	1
	1914.3	26683	1.4	16-QAM	3	0	22.22	0-1	1
	1914.3	26683	1.4	16-QAM	3	2	22.24	0-1	1
	1914.3	26683	1.4	16-QAM	3	3	22.40	0-1	1
	1914.3	26683	1.4	16-QAM	6	0	21.03	0-2	2

9.4.5 LTE Band 41

Table 9-22
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	2506.0	39750	20	QPSK	1	0	**22.99**	0	0
	2506.0	39750	20	QPSK	1	50	22.75	0	0
	2506.0	39750	20	QPSK	1	99	22.59	0	0
	2506.0	39750	20	QPSK	50	0	21.88	0-1	1
	2506.0	39750	20	QPSK	50	25	**21.97**	0-1	1
	2506.0	39750	20	QPSK	50	50	21.83	0-1	1
	2506.0	39750	20	QPSK	100	0	21.90	0-1	1
	2506.0	39750	20	16QAM	1	0	21.97	0-1	1
	2506.0	39750	20	16QAM	1	50	21.73	0-1	1
	2506.0	39750	20	16QAM	1	99	21.94	0-1	1
	2506.0	39750	20	16QAM	50	0	21.00	0-2	2
	2506.0	39750	20	16QAM	50	25	20.99	0-2	2
	2506.0	39750	20	16QAM	50	50	20.87	0-2	2
	2506.0	39750	20	16QAM	100	0	20.85	0-2	2
Low Mid	2549.5	40185	20	QPSK	1	0	22.70	0	0
	2549.5	40185	20	QPSK	1	50	22.84	0	0
	2549.5	40185	20	QPSK	1	99	22.81	0	0
	2549.5	40185	20	QPSK	50	0	21.75	0-1	1
	2549.5	40185	20	QPSK	50	25	21.91	0-1	1
	2549.5	40185	20	QPSK	50	50	21.79	0-1	1
	2549.5	40185	20	QPSK	100	0	21.81	0-1	1
	2549.5	40185	20	16-QAM	1	0	21.43	0-1	1
	2549.5	40185	20	16-QAM	1	50	21.41	0-1	1
	2549.5	40185	20	16-QAM	1	99	21.43	0-1	1
	2549.5	40185	20	16-QAM	50	0	20.92	0-2	2
	2549.5	40185	20	16-QAM	50	25	20.98	0-2	2
	2549.5	40185	20	16-QAM	50	50	20.96	0-2	2
	2549.5	40185	20	16-QAM	100	0	20.84	0-2	2
Mid	2593.0	40620	20	QPSK	1	0	22.78	0	0
	2593.0	40620	20	QPSK	1	50	22.45	0	0
	2593.0	40620	20	QPSK	1	99	22.51	0	0
	2593.0	40620	20	QPSK	50	0	21.94	0-1	1
	2593.0	40620	20	QPSK	50	25	21.73	0-1	1
	2593.0	40620	20	QPSK	50	50	21.51	0-1	1
	2593.0	40620	20	QPSK	100	0	21.73	0-1	1
	2593.0	40620	20	16-QAM	1	0	21.87	0-1	1
	2593.0	40620	20	16-QAM	1	50	21.42	0-1	1
	2593.0	40620	20	16-QAM	1	99	21.51	0-1	1
	2593.0	40620	20	16-QAM	50	0	21.00	0-2	2
	2593.0	40620	20	16-QAM	50	25	20.75	0-2	2
	2593.0	40620	20	16-QAM	50	50	20.60	0-2	2
	2593.0	40620	20	16-QAM	100	0	20.71	0-2	2
Mid High	2636.5	41055	20	QPSK	1	0	22.71	0	0
	2636.5	41055	20	QPSK	1	50	22.59	0	0
	2636.5	41055	20	QPSK	1	99	22.62	0	0
	2636.5	41055	20	QPSK	50	0	21.96	0-1	1
	2636.5	41055	20	QPSK	50	25	21.83	0-1	1
	2636.5	41055	20	QPSK	50	50	21.86	0-1	1
	2636.5	41055	20	QPSK	100	0	21.92	0-1	1
	2636.5	41055	20	16-QAM	1	0	21.99	0-1	1
	2636.5	41055	20	16-QAM	1	50	21.76	0-1	1
	2636.5	41055	20	16-QAM	1	99	21.72	0-1	1
	2636.5	41055	20	16-QAM	50	0	21.00	0-2	2
	2636.5	41055	20	16-QAM	50	25	20.87	0-2	2
	2636.5	41055	20	16-QAM	50	50	20.79	0-2	2
	2636.5	41055	20	16-QAM	100	0	20.86	0-2	2
High	2680.0	41490	20	QPSK	1	0	22.83	0	0
	2680.0	41490	20	QPSK	1	50	22.57	0	0
	2680.0	41490	20	QPSK	1	99	22.44	0	0
	2680.0	41490	20	QPSK	50	0	21.93	0-1	1
	2680.0	41490	20	QPSK	50	25	21.74	0-1	1
	2680.0	41490	20	QPSK	50	50	21.60	0-1	1
	2680.0	41490	20	QPSK	100	0	21.74	0-1	1
	2680.0	41490	20	16-QAM	1	0	21.96	0-1	1
	2680.0	41490	20	16-QAM	1	50	21.59	0-1	1
	2680.0	41490	20	16-QAM	1	99	21.53	0-1	1
	2680.0	41490	20	16-QAM	50	0	20.93	0-2	2
	2680.0	41490	20	16-QAM	50	25	20.77	0-2	2
	2680.0	41490	20	16-QAM	50	50	20.73	0-2	2
	2680.0	41490	20	16-QAM	100	0	20.73	0-2	2

Table 9-23
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	2506.0	39750	15	QPSK	1	0	23.38	0	0
	2506.0	39750	15	QPSK	1	36	23.07	0	0
	2506.0	39750	15	QPSK	1	74	22.93	0	0
	2506.0	39750	15	QPSK	36	0	22.12	0-1	1
	2506.0	39750	15	QPSK	36	18	22.03	0-1	1
	2506.0	39750	15	QPSK	36	37	22.02	0-1	1
	2506.0	39750	15	QPSK	75	0	22.06	0-1	1
	2506.0	39750	15	16QAM	1	0	22.01	0-1	1
	2506.0	39750	15	16QAM	1	36	21.51	0-1	1
	2506.0	39750	15	16QAM	1	74	21.79	0-1	1
	2506.0	39750	15	16QAM	36	0	21.22	0-2	2
	2506.0	39750	15	16QAM	36	18	21.08	0-2	2
	2506.0	39750	15	16QAM	36	37	21.02	0-2	2
	2506.0	39750	15	16QAM	75	0	20.96	0-2	2
Low Mid	2549.5	40185	15	QPSK	1	0	23.06	0	0
	2549.5	40185	15	QPSK	1	36	22.87	0	0
	2549.5	40185	15	QPSK	1	74	22.91	0	0
	2549.5	40185	15	QPSK	36	0	21.97	0-1	1
	2549.5	40185	15	QPSK	36	18	22.04	0-1	1
	2549.5	40185	15	QPSK	36	37	21.92	0-1	1
	2549.5	40185	15	QPSK	75	0	21.90	0-1	1
	2549.5	40185	15	16-QAM	1	0	22.36	0-1	1
	2549.5	40185	15	16-QAM	1	36	22.25	0-1	1
	2549.5	40185	15	16-QAM	1	74	22.36	0-1	1
	2549.5	40185	15	16-QAM	36	0	20.99	0-2	2
	2549.5	40185	15	16-QAM	36	18	20.98	0-2	2
	2549.5	40185	15	16-QAM	36	37	20.96	0-2	2
	2549.5	40185	15	16-QAM	75	0	20.79	0-2	2
Mid	2593.0	40620	15	QPSK	1	0	23.02	0	0
	2593.0	40620	15	QPSK	1	36	22.70	0	0
	2593.0	40620	15	QPSK	1	74	22.67	0	0
	2593.0	40620	15	QPSK	36	0	22.04	0-1	1
	2593.0	40620	15	QPSK	36	18	21.75	0-1	1
	2593.0	40620	15	QPSK	36	37	21.74	0-1	1
	2593.0	40620	15	QPSK	75	0	21.77	0-1	1
	2593.0	40620	15	16-QAM	1	0	21.68	0-1	1
	2593.0	40620	15	16-QAM	1	36	21.41	0-1	1
	2593.0	40620	15	16-QAM	1	74	21.46	0-1	1
	2593.0	40620	15	16-QAM	36	0	21.06	0-2	2
	2593.0	40620	15	16-QAM	36	18	20.84	0-2	2
	2593.0	40620	15	16-QAM	36	37	20.71	0-2	2
	2593.0	40620	15	16-QAM	75	0	20.76	0-2	2
Mid High	2636.5	41055	15	QPSK	1	0	22.97	0	0
	2636.5	41055	15	QPSK	1	36	22.75	0	0
	2636.5	41055	15	QPSK	1	74	22.71	0	0
	2636.5	41055	15	QPSK	36	0	22.00	0-1	1
	2636.5	41055	15	QPSK	36	18	21.87	0-1	1
	2636.5	41055	15	QPSK	36	37	21.80	0-1	1
	2636.5	41055	15	QPSK	75	0	21.91	0-1	1
	2636.5	41055	15	16-QAM	1	0	21.58	0-1	1
	2636.5	41055	15	16-QAM	1	36	21.47	0-1	1
	2636.5	41055	15	16-QAM	1	74	21.42	0-1	1
	2636.5	41055	15	16-QAM	36	0	21.03	0-2	2
	2636.5	41055	15	16-QAM	36	18	21.01	0-2	2
	2636.5	41055	15	16-QAM	36	37	20.79	0-2	2
	2636.5	41055	15	16-QAM	75	0	20.88	0-2	2
High	2680.0	41490	15	QPSK	1	0	23.14	0	0
	2680.0	41490	15	QPSK	1	36	22.68	0	0
	2680.0	41490	15	QPSK	1	74	22.59	0	0
	2680.0	41490	15	QPSK	36	0	21.83	0-1	1
	2680.0	41490	15	QPSK	36	18	21.77	0-1	1
	2680.0	41490	15	QPSK	36	37	21.71	0-1	1
	2680.0	41490	15	QPSK	75	0	21.81	0-1	1
	2680.0	41490	15	16-QAM	1	0	21.61	0-1	1
	2680.0	41490	15	16-QAM	1	36	21.44	0-1	1
	2680.0	41490	15	16-QAM	1	74	21.41	0-1	1
	2680.0	41490	15	16-QAM	36	0	20.91	0-2	2
	2680.0	41490	15	16-QAM	36	18	20.90	0-2	2
	2680.0	41490	15	16-QAM	36	37	20.69	0-2	2
	2680.0	41490	15	16-QAM	75	0	20.82	0-2	2

Table 9-24
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	2506.0	39750	10	QPSK	1	0	23.16	0	0
	2506.0	39750	10	QPSK	1	25	23.07	0	0
	2506.0	39750	10	QPSK	1	49	23.04	0	0
	2506.0	39750	10	QPSK	25	0	22.00	0-1	1
	2506.0	39750	10	QPSK	25	12	21.88	0-1	1
	2506.0	39750	10	QPSK	25	25	21.98	0-1	1
	2506.0	39750	10	QPSK	50	0	22.05	0-1	1
	2506.0	39750	10	16QAM	1	0	21.64	0-1	1
	2506.0	39750	10	16QAM	1	25	21.51	0-1	1
	2506.0	39750	10	16QAM	1	49	21.57	0-1	1
	2506.0	39750	10	16QAM	25	0	21.14	0-2	2
	2506.0	39750	10	16QAM	25	12	20.91	0-2	2
	2506.0	39750	10	16QAM	25	25	21.05	0-2	2
	2506.0	39750	10	16QAM	50	0	20.95	0-2	2
Low Mid	2549.5	40185	10	QPSK	1	0	23.16	0	0
	2549.5	40185	10	QPSK	1	25	23.14	0	0
	2549.5	40185	10	QPSK	1	49	23.17	0	0
	2549.5	40185	10	QPSK	25	0	22.04	0-1	1
	2549.5	40185	10	QPSK	25	12	21.98	0-1	1
	2549.5	40185	10	QPSK	25	25	21.94	0-1	1
	2549.5	40185	10	QPSK	50	0	22.02	0-1	1
	2549.5	40185	10	16-QAM	1	0	21.80	0-1	1
	2549.5	40185	10	16-QAM	1	25	21.83	0-1	1
	2549.5	40185	10	16-QAM	1	49	21.82	0-1	1
	2549.5	40185	10	16-QAM	25	0	20.98	0-2	2
	2549.5	40185	10	16-QAM	25	12	20.96	0-2	2
	2549.5	40185	10	16-QAM	25	25	20.89	0-2	2
	2549.5	40185	10	16-QAM	50	0	21.03	0-2	2
Mid	2593.0	40620	10	QPSK	1	0	23.00	0	0
	2593.0	40620	10	QPSK	1	25	22.78	0	0
	2593.0	40620	10	QPSK	1	49	22.82	0	0
	2593.0	40620	10	QPSK	25	0	21.85	0-1	1
	2593.0	40620	10	QPSK	25	12	21.80	0-1	1
	2593.0	40620	10	QPSK	25	25	21.74	0-1	1
	2593.0	40620	10	QPSK	50	0	21.72	0-1	1
	2593.0	40620	10	16-QAM	1	0	21.43	0-1	1
	2593.0	40620	10	16-QAM	1	25	21.41	0-1	1
	2593.0	40620	10	16-QAM	1	49	21.42	0-1	1
	2593.0	40620	10	16-QAM	25	0	20.89	0-2	2
	2593.0	40620	10	16-QAM	25	12	20.82	0-2	2
	2593.0	40620	10	16-QAM	25	25	20.81	0-2	2
	2593.0	40620	10	16-QAM	50	0	20.75	0-2	2
Mid High	2636.5	41055	10	QPSK	1	0	23.08	0	0
	2636.5	41055	10	QPSK	1	25	22.92	0	0
	2636.5	41055	10	QPSK	1	49	22.85	0	0
	2636.5	41055	10	QPSK	25	0	22.00	0-1	1
	2636.5	41055	10	QPSK	25	12	21.92	0-1	1
	2636.5	41055	10	QPSK	25	25	21.92	0-1	1
	2636.5	41055	10	QPSK	50	0	22.03	0-1	1
	2636.5	41055	10	16-QAM	1	0	21.64	0-1	1
	2636.5	41055	10	16-QAM	1	25	21.50	0-1	1
	2636.5	41055	10	16-QAM	1	49	21.52	0-1	1
	2636.5	41055	10	16-QAM	25	0	20.91	0-2	2
	2636.5	41055	10	16-QAM	25	12	20.95	0-2	2
	2636.5	41055	10	16-QAM	25	25	20.76	0-2	2
	2636.5	41055	10	16-QAM	50	0	20.76	0-2	2
High	2680.0	41490	10	QPSK	1	0	22.94	0	0
	2680.0	41490	10	QPSK	1	25	22.73	0	0
	2680.0	41490	10	QPSK	1	49	22.67	0	0
	2680.0	41490	10	QPSK	25	0	21.91	0-1	1
	2680.0	41490	10	QPSK	25	12	21.82	0-1	1
	2680.0	41490	10	QPSK	25	25	21.74	0-1	1
	2680.0	41490	10	QPSK	50	0	21.84	0-1	1
	2680.0	41490	10	16-QAM	1	0	21.73	0-1	1
	2680.0	41490	10	16-QAM	1	25	21.51	0-1	1
	2680.0	41490	10	16-QAM	1	49	21.46	0-1	1
	2680.0	41490	10	16-QAM	25	0	20.82	0-2	2
	2680.0	41490	10	16-QAM	25	12	20.79	0-2	2
	2680.0	41490	10	16-QAM	25	25	20.73	0-2	2
	2680.0	41490	10	16-QAM	50	0	20.87	0-2	2

Table 9-25
LTE Band 41 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	2506.0	39750	5	QPSK	1	0	23.03	0	0
	2506.0	39750	5	QPSK	1	12	23.01	0	0
	2506.0	39750	5	QPSK	1	24	22.96	0	0
	2506.0	39750	5	QPSK	12	0	21.94	0-1	1
	2506.0	39750	5	QPSK	12	6	21.89	0-1	1
	2506.0	39750	5	QPSK	12	13	21.83	0-1	1
	2506.0	39750	5	QPSK	25	0	21.98	0-1	1
	2506.0	39750	5	16-QAM	1	0	22.08	0-1	1
	2506.0	39750	5	16-QAM	1	12	22.28	0-1	1
	2506.0	39750	5	16-QAM	1	24	22.00	0-1	1
	2506.0	39750	5	16-QAM	12	0	21.14	0-2	2
	2506.0	39750	5	16-QAM	12	6	21.21	0-2	2
	2506.0	39750	5	16-QAM	12	13	21.05	0-2	2
	2506.0	39750	5	16-QAM	25	0	20.91	0-2	2
Low Mid	2549.5	40185	5	QPSK	1	0	23.00	0	0
	2549.5	40185	5	QPSK	1	12	23.08	0	0
	2549.5	40185	5	QPSK	1	24	22.98	0	0
	2549.5	40185	5	QPSK	12	0	21.97	0-1	1
	2549.5	40185	5	QPSK	12	6	21.98	0-1	1
	2549.5	40185	5	QPSK	12	13	22.06	0-1	1
	2549.5	40185	5	QPSK	25	0	22.03	0-1	1
	2549.5	40185	5	16-QAM	1	0	21.96	0-1	1
	2549.5	40185	5	16-QAM	1	12	22.24	0-1	1
	2549.5	40185	5	16-QAM	1	24	21.86	0-1	1
	2549.5	40185	5	16-QAM	12	0	20.91	0-2	2
	2549.5	40185	5	16-QAM	12	6	20.87	0-2	2
	2549.5	40185	5	16-QAM	12	13	20.82	0-2	2
	2549.5	40185	5	16-QAM	25	0	21.00	0-2	2
Mid	2593.0	40620	5	QPSK	1	0	22.79	0	0
	2593.0	40620	5	QPSK	1	12	22.99	0	0
	2593.0	40620	5	QPSK	1	24	22.66	0	0
	2593.0	40620	5	QPSK	12	0	21.83	0-1	1
	2593.0	40620	5	QPSK	12	6	21.84	0-1	1
	2593.0	40620	5	QPSK	12	13	21.76	0-1	1
	2593.0	40620	5	QPSK	25	0	21.78	0-1	1
	2593.0	40620	5	16-QAM	1	0	21.72	0-1	1
	2593.0	40620	5	16-QAM	1	12	21.97	0-1	1
	2593.0	40620	5	16-QAM	1	24	21.68	0-1	1
	2593.0	40620	5	16-QAM	12	0	20.98	0-2	2
	2593.0	40620	5	16-QAM	12	6	20.91	0-2	2
	2593.0	40620	5	16-QAM	12	13	20.87	0-2	2
	2593.0	40620	5	16-QAM	25	0	20.78	0-2	2
Mid High	2636.5	41055	5	QPSK	1	0	22.90	0	0
	2636.5	41055	5	QPSK	1	12	22.86	0	0
	2636.5	41055	5	QPSK	1	24	22.78	0	0
	2636.5	41055	5	QPSK	12	0	22.00	0-1	1
	2636.5	41055	5	QPSK	12	6	21.93	0-1	1
	2636.5	41055	5	QPSK	12	13	21.96	0-1	1
	2636.5	41055	5	QPSK	25	0	21.97	0-1	1
	2636.5	41055	5	16-QAM	1	0	21.84	0-1	1
	2636.5	41055	5	16-QAM	1	12	22.00	0-1	1
	2636.5	41055	5	16-QAM	1	24	21.72	0-1	1
	2636.5	41055	5	16-QAM	12	0	20.90	0-2	2
	2636.5	41055	5	16-QAM	12	6	20.82	0-2	2
	2636.5	41055	5	16-QAM	12	13	20.72	0-2	2
	2636.5	41055	5	16-QAM	25	0	20.88	0-2	2
High	2680.0	41490	5	QPSK	1	0	22.69	0	0
	2680.0	41490	5	QPSK	1	12	22.83	0	0
	2680.0	41490	5	QPSK	1	24	22.62	0	0
	2680.0	41490	5	QPSK	12	0	21.79	0-1	1
	2680.0	41490	5	QPSK	12	6	21.73	0-1	1
	2680.0	41490	5	QPSK	12	13	21.69	0-1	1
	2680.0	41490	5	QPSK	25	0	21.71	0-1	1
	2680.0	41490	5	16-QAM	1	0	21.64	0-1	1
	2680.0	41490	5	16-QAM	1	12	21.78	0-1	1
	2680.0	41490	5	16-QAM	1	24	21.53	0-1	1
	2680.0	41490	5	16-QAM	12	0	20.67	0-2	2
	2680.0	41490	5	16-QAM	12	6	20.61	0-2	2
	2680.0	41490	5	16-QAM	12	13	20.54	0-2	2
	2680.0	41490	5	16-QAM	25	0	20.74	0-2	2

9.5 WLAN Conducted Powers

Table 9-26
2.4 GHz WLAN Average RF Power

Freq [MHz]	Channel	2.4GHz Conducted Power [dBm]	
		IEEE Transmission Mode	
		802.11b	802.11g
2412	1	**13.41**	10.52
2437	6	12.66	10.72
2462	11	12.79	11.03

Justification for test configurations for WLAN per KDB Publication 248227 D01v02r01:

- Power measurements were performed for the transmission mode configuration with the highest maximum output power specified for production units.
- For transmission modes with the same maximum output power specification, powers were measured for the largest channel bandwidth, lowest order modulation and lowest data rate.
- For transmission modes with identical maximum specified output power, channel bandwidth, modulation and data rates, power measurements were required for all identical configurations.
- For each transmission mode configuration, powers were measured for the highest and lowest channels; and at the mid-band channel(s) when there were at least 3 channels supported. For configurations with multiple mid-band channels, due to an even number of channels, both channels were measured.
- The bolded data rate and channel above were tested for SAR.

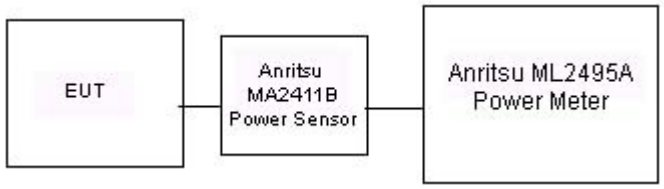

Figure 9-4
Power Measurement Setup

10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured 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
9/30/2015	750H	21.6	700	0.850	42.413	0.889	42.201	-4.39%	0.50%
			710	0.858	42.267	0.890	42.149	-3.60%	0.28%
			740	0.884	41.909	0.893	41.994	-1.01%	-0.20%
			755	0.897	41.734	0.894	41.916	0.34%	-0.43%
11/2/2015	835H	22.7	820	0.903	43.310	0.899	41.578	0.44%	4.17%
			835	0.918	43.145	0.900	41.500	2.00%	3.96%
			850	0.933	42.975	0.916	41.500	1.86%	3.55%
9/29/2015	1750H	22.0	1710	1.317	39.017	1.348	40.142	-2.30%	-2.80%
			1750	1.358	38.854	1.371	40.079	-0.95%	-3.06%
			1790	1.397	38.673	1.394	40.016	0.22%	-3.36%
10/12/2015	1750H	21.2	1710	1.329	39.347	1.348	40.142	-1.41%	-1.98%
			1750	1.371	39.130	1.371	40.079	0.00%	-2.37%
			1790	1.408	38.957	1.394	40.016	1.00%	-2.65%
9/30/2015	1900H	22.0	1850	1.384	38.509	1.400	40.000	-1.14%	-3.73%
			1880	1.415	38.372	1.400	40.000	1.07%	-4.07%
			1910	1.444	38.239	1.400	40.000	3.14%	-4.40%
11/2/2015	1900H	22.2	1850	1.355	39.193	1.400	40.000	-3.21%	-2.02%
			1880	1.385	39.061	1.400	40.000	-1.07%	-2.35%
			1910	1.416	38.932	1.400	40.000	1.14%	-2.67%
9/30/2015	2450H	23.5	2400	1.811	39.225	1.756	39.289	3.13%	-0.16%
			2450	1.874	39.039	1.800	39.200	4.11%	-0.41%
			2500	1.931	38.866	1.855	39.136	4.10%	-0.69%
			2550	1.988	38.647	1.909	39.073	4.14%	-1.09%
10/22/2015	2450H	21.9	2400	1.772	39.142	1.756	39.289	0.91%	-0.37%
			2450	1.828	38.935	1.800	39.200	1.56%	-0.68%
			2500	1.883	38.736	1.855	39.136	1.51%	-1.02%
9/28/2015	750B	22.2	700	0.921	54.650	0.959	55.726	-3.96%	-1.93%
			710	0.934	54.581	0.960	55.687	-2.71%	-1.99%
			740	0.957	54.184	0.963	55.570	-0.62%	-2.49%
			755	0.975	54.028	0.964	55.512	1.14%	-2.67%
11/2/2015	835B	21.5	820	0.979	53.872	0.969	55.258	1.03%	-2.51%
			835	0.993	53.740	0.970	55.200	2.37%	-2.64%
			850	1.008	53.593	0.988	55.154	2.02%	-2.83%
9/28/2015	1750B	22.0	1710	1.434	52.694	1.463	53.537	-1.98%	-1.57%
			1750	1.483	52.583	1.488	53.432	-0.34%	-1.59%
			1790	1.529	52.399	1.514	53.326	0.99%	-1.74%
10/12/2015	1750B	21.2	1710	1.463	51.768	1.463	53.537	0.00%	-3.30%
			1750	1.506	51.667	1.488	53.432	1.21%	-3.30%
			1790	1.547	51.470	1.514	53.326	2.18%	-3.48%
9/29/2015	1900B	22.2	1850	1.516	51.093	1.520	53.300	-0.26%	-4.14%
			1880	1.546	50.950	1.520	53.300	1.71%	-4.41%
			1910	1.587	50.888	1.520	53.300	4.41%	-4.53%
11/2/2015	1900B	21.5	1850	1.479	52.801	1.520	53.300	-2.70%	-0.94%
			1880	1.513	52.710	1.520	53.300	-0.46%	-1.11%
			1910	1.549	52.604	1.520	53.300	1.91%	-1.31%
11/4/2015	1900B	22.1	1850	1.525	52.754	1.520	53.300	0.33%	-1.02%
			1880	1.560	52.648	1.520	53.300	2.63%	-1.22%
			1910	1.595	52.549	1.520	53.300	4.93%	-1.41%
9/28/2015	2450B	22.0	2400	1.935	51.098	1.902	52.767	1.74%	-3.16%
			2450	1.996	50.911	1.950	52.700	2.36%	-3.39%
			2500	2.067	50.736	2.021	52.636	2.28%	-3.61%
			2550	2.132	50.505	2.092	52.573	1.91%	-3.93%

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

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 10-2
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)	$Deviation_{1g}$ (%)
G	750	HEAD	09/30/2015	23.1	22.0	0.200	1003	3318	1.690	8.090	8.450	4.45%
J	835	HEAD	11/02/2015	23.4	22.7	0.200	4d119	3319	1.750	9.380	8.750	-6.72%
G	1750	HEAD	09/29/2015	22.7	22.1	0.100	1051	3318	3.780	36.200	37.800	4.42%
J	1750	HEAD	10/12/2015	19.8	21.2	0.100	1051	3319	3.440	36.200	34.400	-4.97%
G	1900	HEAD	09/30/2015	21.7	22.0	0.100	5d149	3318	4.280	40.700	42.800	5.16%
G	1900	HEAD	11/02/2015	22.2	22.0	0.100	5d141	3318	4.010	39.900	40.100	0.50%
B	2450	HEAD	09/30/2015	24.5	23.5	0.100	797	3334	5.440	52.100	54.400	4.41%
G	2450	HEAD	10/22/2015	23.3	22.4	0.100	719	3318	5.720	54.200	57.200	5.54%
I	750	BODY	09/28/2015	23.3	22.2	0.200	1054	3213	1.710	8.530	8.550	0.23%
E	835	BODY	11/02/2015	22.3	21.0	0.200	4d119	3351	1.920	9.200	9.600	4.35%
G	1750	BODY	09/28/2015	21.3	22.3	0.100	1051	3318	3.640	37.100	36.400	-1.89%
J	1750	BODY	10/12/2015	22.3	21.2	0.100	1051	3319	3.690	37.100	36.900	-0.54%
J	1900	BODY	09/29/2015	23.4	22.2	0.100	5d149	3319	4.190	40.400	41.900	3.71%
K	1900	BODY	11/02/2015	22.5	21.5	0.100	5d149	3022	3.920	40.400	39.200	-2.97%
K	1900	BODY	11/04/2015	22.9	22.1	0.100	5d149	3022	4.110	40.400	41.100	1.73%
J	2450	BODY	09/28/2015	22.3	22.0	0.100	719	3319	5.420	51.900	54.200	4.43%

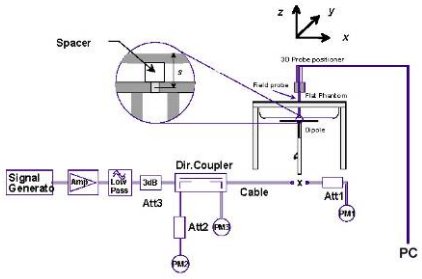

Figure 10-1
System Verification Setup Diagram

Figure 10-2
System Verification Setup Photo

11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
CDMA BC10 (§90S) Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	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	25.0	24.13	0.16	Right	Cheek	45993	1:1	0.406	1.222	0.496	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.0	24.13	-0.05	Right	Tilt	45993	1:1	0.272	1.222	0.332	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.0	24.13	0.05	Left	Cheek	45993	1:1	0.425	1.222	0.519	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.0	24.13	0.00	Left	Tilt	45993	1:1	0.273	1.222	0.334	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.0	24.06	0.18	Right	Cheek	45993	1:1	0.398	1.242	0.494	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.0	24.06	0.11	Right	Tilt	45993	1:1	0.251	1.242	0.312	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.0	24.06	0.18	Left	Cheek	45993	1:1	0.439	1.242	0.545	A1
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.0	24.06	-0.05	Left	Tilt	45993	1:1	0.261	1.242	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 11-2
CDMA BC0 (§22H) Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	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	25.0	24.19	0.02	Right	Cheek	45993	1:1	0.395	1.205	0.476	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.0	24.19	-0.01	Right	Tilt	45993	1:1	0.219	1.205	0.264	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.0	24.19	-0.05	Left	Cheek	45993	1:1	0.466	1.205	0.562	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.0	24.19	0.02	Left	Tilt	45993	1:1	0.249	1.205	0.300	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.0	24.10	-0.07	Right	Cheek	45993	1:1	0.366	1.230	0.450	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.0	24.10	-0.26	Right	Tilt	45993	1:1	0.195	1.230	0.240	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.0	24.10	0.05	Left	Cheek	45993	1:1	0.484	1.230	0.595	A2
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.0	24.10	-0.02	Left	Tilt	45993	1:1	0.235	1.230	0.289	
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
GSM 850 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	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	33.0	33.00	-0.07	Right	Cheek	45993	1:8.3	0.263	1.000	0.263	
836.60	190	GSM 850	GSM	33.0	33.00	0.02	Right	Tilt	45993	1:8.3	0.133	1.000	0.133	
836.60	190	GSM 850	GSM	33.0	33.00	0.13	Left	Cheek	45993	1:8.3	0.330	1.000	0.330	A3
836.60	190	GSM 850	GSM	33.0	33.00	0.10	Left	Tilt	45993	1:8.3	0.172	1.000	0.172	
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 850 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	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	22.88	0.05	Right	Cheek	45993	1:1	0.239	1.153	0.276	
836.60	4183	UMTS 850	RMC	23.5	22.88	-0.04	Right	Tilt	45993	1:1	0.129	1.153	0.149	
836.60	4183	UMTS 850	RMC	23.5	22.88	-0.04	Left	Cheek	45993	1:1	0.270	1.153	0.311	A4
836.60	4183	UMTS 850	RMC	23.5	22.88	0.11	Left	Tilt	45993	1:1	0.149	1.153	0.172	
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
UMTS 1750 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	23.0	22.05	0.02	Right	Cheek	82734	1:1	0.264	1.245	0.329	
1732.40	1412	UMTS 1750	RMC	23.0	22.05	0.03	Right	Tilt	82734	1:1	0.135	1.245	0.168	
1732.40	1412	UMTS 1750	RMC	23.0	22.05	0.10	Left	Cheek	82734	1:1	0.527	1.245	0.656	A5
1732.40	1412	UMTS 1750	RMC	23.0	22.05	0.02	Left	Tilt	82734	1:1	0.165	1.245	0.205	
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
PCS CDMA Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	600	PCS CDMA	RC3 / SO55	25.0	23.65	-0.08	Right	Cheek	45860	1:1	0.425	1.365	0.580	
1880.00	600	PCS CDMA	RC3 / SO55	25.0	23.65	-0.07	Right	Tilt	45860	1:1	0.109	1.365	0.149	
1851.25	25	PCS CDMA	RC3 / SO55	25.0	23.68	0.07	Left	Cheek	45860	1:1	0.608	1.355	0.824	
1880.00	600	PCS CDMA	RC3 / SO55	25.0	23.65	0.15	Left	Cheek	45860	1:1	0.639	1.365	**0.872**	A6
1908.75	1175	PCS CDMA	RC3 / SO55	25.0	23.67	-0.15	Left	Cheek	45860	1:1	0.568	1.358	0.771	
1880.00	600	PCS CDMA	RC3 / SO55	25.0	23.65	-0.05	Left	Tilt	45860	1:1	0.200	1.365	0.273	
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	23.71	-0.12	Right	Cheek	45860	1:1	0.411	1.346	0.553	
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	23.71	-0.14	Right	Tilt	45860	1:1	0.174	1.346	0.234	
1851.25	25	PCS CDMA	EVDO Rev. A	25.0	23.56	0.02	Left	Cheek	45860	1:1	0.599	1.393	0.834	
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	23.71	0.10	Left	Cheek	45860	1:1	0.634	1.346	0.853	
1908.75	1175	PCS CDMA	EVDO Rev. A	25.0	23.75	-0.04	Left	Cheek	45860	1:1	0.544	1.334	0.726	
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	23.71	-0.06	Left	Tilt	45860	1:1	0.241	1.346	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
GSM 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	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	30.48	-0.03	Right	Cheek	45860	1:8.3	0.310	1.005	0.312	
1880.00	661	GSM 1900	GSM	30.5	30.48	-0.11	Right	Tilt	45860	1:8.3	0.086	1.005	0.086	
1880.00	661	GSM 1900	GSM	30.5	30.48	-0.12	Left	Cheek	45860	1:8.3	0.484	1.005	0.486	A7
1880.00	661	GSM 1900	GSM	30.5	30.48	0.00	Left	Tilt	45860	1:8.3	0.159	1.005	0.160	
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
UMTS 1900 Head SAR

MEASUREMENT RESULTS													
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	23.5	22.58	-0.02	Right	Cheek	82874	1:1	0.340	1.236	0.420	
1880.00	9400	UMTS 1900	RMC	23.5	22.58	-0.05	Right	Tilt	82874	1:1	0.195	1.236	0.241	
1880.00	9400	UMTS 1900	RMC	23.5	22.58	-0.08	Left	Cheek	82874	1:1	0.593	1.236	0.733	A8
1880.00	9400	UMTS 1900	RMC	23.5	22.58	0.14	Left	Tilt	82874	1:1	0.112	1.236	0.138	
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 12 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	23.5	23.49	-0.19	0	Right	Cheek	QPSK	1	49	82874	1:1	0.173	1.002	0.173	
707.50	23095	Mid	LTE Band 12	10	22.5	22.25	-0.02	1	Right	Cheek	QPSK	25	25	82874	1:1	0.117	1.059	0.124	
707.50	23095	Mid	LTE Band 12	10	23.5	23.49	-0.03	0	Right	Tilt	QPSK	1	49	82874	1:1	0.116	1.002	0.116	
707.50	23095	Mid	LTE Band 12	10	22.5	22.25	-0.12	1	Right	Tilt	QPSK	25	25	82874	1:1	0.072	1.059	0.076	
707.50	23095	Mid	LTE Band 12	10	23.5	23.49	0.11	0	Left	Cheek	QPSK	1	49	82874	1:1	0.182	1.002	0.182	A9
707.50	23095	Mid	LTE Band 12	10	22.5	22.25	0.14	1	Left	Cheek	QPSK	25	25	82874	1:1	0.125	1.059	0.132	
707.50	23095	Mid	LTE Band 12	10	23.5	23.49	0.17	0	Left	Tilt	QPSK	1	49	82874	1:1	0.108	1.002	0.108	
707.50	23095	Mid	LTE Band 12	10	22.5	22.25	-0.18	1	Left	Tilt	QPSK	25	25	82874	1:1	0.077	1.059	0.082	
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 26 (Cell) Head SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.27	0.16	0	Right	Cheek	QPSK	1	0	45993	1:1	0.271	1.054	0.286	
836.50	26915	Mid	LTE Band 26 (Cell)	15	22.5	22.31	0.12	1	Right	Cheek	QPSK	36	0	45993	1:1	0.198	1.045	0.207	
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.27	-0.11	0	Right	Tilt	QPSK	1	0	45993	1:1	0.162	1.054	0.171	
836.50	26915	Mid	LTE Band 26 (Cell)	15	22.5	22.31	-0.05	1	Right	Tilt	QPSK	36	0	45993	1:1	0.117	1.045	0.122	
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.27	-0.12	0	Left	Cheek	QPSK	1	0	45993	1:1	0.307	1.054	0.324	A10
836.50	26915	Mid	LTE Band 26 (Cell)	15	22.5	22.31	-0.06	1	Left	Cheek	QPSK	36	0	45993	1:1	0.221	1.045	0.231	
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.27	-0.14	0	Left	Tilt	QPSK	1	0	45993	1:1	0.166	1.054	0.175	
836.50	26915	Mid	LTE Band 26 (Cell)	15	22.5	22.31	0.05	1	Left	Tilt	QPSK	36	0	45993	1:1	0.122	1.045	0.127	
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
LTE Band 4 (AWS) Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	23.32	-0.17	0	Right	Cheek	QPSK	1	0	82874	1:1	0.459	1.042	0.478	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.14	-0.14	1	Right	Cheek	QPSK	50	25	82874	1:1	0.307	1.086	0.333	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	23.32	-0.07	0	Right	Tilt	QPSK	1	0	82874	1:1	0.177	1.042	0.184	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.14	-0.07	1	Right	Tilt	QPSK	50	25	82874	1:1	0.127	1.086	0.138	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	23.32	0.17	0	Left	Cheek	QPSK	1	0	82874	1:1	0.727	1.042	0.758	A11
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.14	-0.08	1	Left	Cheek	QPSK	50	25	82874	1:1	0.499	1.086	0.542	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	23.32	0.08	0	Left	Tilt	QPSK	1	0	82874	1:1	0.213	1.042	0.222	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.14	0.01	1	Left	Tilt	QPSK	50	25	82874	1:1	0.124	1.086	0.135	
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
LTE Band 25 (PCS) Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	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)	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	23.49	-0.16	0	Right	Cheek	QPSK	1	50	45860	1:1	0.440	1.002	0.441	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.5	22.41	0.04	1	Right	Cheek	QPSK	50	25	45860	1:1	0.297	1.021	0.303	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	23.49	-0.13	0	Right	Tilt	QPSK	1	50	45860	1:1	0.258	1.002	0.259	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.5	22.41	-0.01	1	Right	Tilt	QPSK	50	25	45860	1:1	0.187	1.021	0.191	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	23.49	0.03	0	Left	Cheek	QPSK	1	50	45860	1:1	0.747	1.002	0.748	A12
1905.00	26590	High	LTE Band 25 (PCS)	20	22.5	22.41	0.00	1	Left	Cheek	QPSK	50	25	45860	1:1	0.568	1.021	0.580	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	23.49	0.16	0	Left	Tilt	QPSK	1	50	45860	1:1	0.256	1.002	0.257	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.5	22.41	-0.13	1	Left	Tilt	QPSK	50	25	45860	1:1	0.204	1.021	0.208	
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 11-13
LTE Band 41 Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	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)	
2506.00	39750	Low	LTE Band 41	20	23.5	22.99	0.18	0	Right	Cheek	QPSK	1	0	82734	1:1.58	0.076	1.125	0.086	
2506.00	39750	Low	LTE Band 41	20	22.5	21.97	0.17	1	Right	Cheek	QPSK	50	25	82734	1:1.58	0.062	1.130	0.070	
2506.00	39750	Low	LTE Band 41	20	23.5	22.99	0.10	0	Right	Tilt	QPSK	1	0	82734	1:1.58	0.040	1.125	0.045	
2506.00	39750	Low	LTE Band 41	20	22.5	21.97	0.10	1	Right	Tilt	QPSK	50	25	82734	1:1.58	0.029	1.130	0.033	
2506.00	39750	Low	LTE Band 41	20	23.5	22.99	0.15	0	Left	Cheek	QPSK	1	0	82734	1:1.58	0.099	1.125	0.111	A13
2506.00	39750	Low	LTE Band 41	20	22.5	21.97	0.08	1	Left	Cheek	QPSK	50	25	82734	1:1.58	0.069	1.130	0.078	
2506.00	39750	Low	LTE Band 41	20	23.5	22.99	-0.14	0	Left	Tilt	QPSK	1	0	82734	1:1.58	0.037	1.125	0.042	
2506.00	39750	Low	LTE Band 41	20	22.5	21.97	0.19	1	Left	Tilt	QPSK	50	25	82734	1:1.58	0.028	1.130	0.032	
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 11-14
WLAN Head SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Scaled SAR (1g)	Plot #
MHz	Ch.												W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	13.5	13.41	-	Right	Cheek	82734	1	99.9	0.408	-	1.021	1.001	-	
2412	1	802.11b	DSSS	22	13.5	13.41	-	Right	Tilt	82734	1	99.9	0.315	-	1.021	1.001	-	
2412	1	802.11b	DSSS	22	13.5	13.41	-0.12	Left	Cheek	82734	1	99.9	0.484	0.337	1.021	1.001	0.344	A14
2412	1	802.11b	DSSS	22	13.5	13.41	-	Left	Tilt	82734	1	99.9	0.432	-	1.021	1.001	-	
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 11-15
GSM/UMTS/CDMA Body-Worn SAR Data

MEASUREMENT RESULTS														
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
820.10	564	CDMA BC10 (§90S)	TDSO / SO32	25.0	24.15	0.05	10 mm	45993	N/A	1:1	back	0.676	1.216	0.822	A15
836.52	384	CDMA BC0 (§22H)	TDSO / SO32	25.0	24.21	-0.06	10 mm	45860	N/A	1:1	back	0.589	1.199	0.706	A17
836.60	190	GSM 850	GSM	33.0	33.00	-0.03	10 mm	45860	1	1:8.3	back	0.425	1.000	0.425	A19
836.60	4183	UMTS 850	RMC	23.5	22.88	-0.07	10 mm	45860	N/A	1:1	back	0.395	1.153	0.455	A21
1732.40	1412	UMTS 1750	RMC	23.0	22.05	0.00	10 mm	82734	N/A	1:1	back	0.628	1.245	0.782	A22
1880.00	600	PCS CDMA	TDSO / SO32	25.0	23.71	-0.10	10 mm	45860	N/A	1:1	back	0.581	1.346	0.782	A24
1880.00	661	GSM 1900	GSM	30.5	30.48	0.02	10 mm	82874	1	1:8.3	back	0.283	1.005	0.284	A26
1880.00	9400	UMTS 1900	RMC	23.5	22.58	0.02	10 mm	82874	N/A	1:1	back	0.512	1.236	0.633	A28
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
LTE Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	23.5	23.49	0.04	0	82874	QPSK	1	49	10 mm	back	1:1	0.309	1.002	0.310	A30
707.50	23095	Mid	LTE Band 12	10	22.5	22.25	-0.07	1	82874	QPSK	25	25	10 mm	back	1:1	0.232	1.059	0.246	
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.27	-0.12	0	45860	QPSK	1	0	10 mm	back	1:1	0.395	1.054	0.416	A31
836.50	26915	Mid	LTE Band 26 (Cell)	15	22.5	22.31	-0.11	1	45860	QPSK	36	0	10 mm	back	1:1	0.297	1.045	0.310	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	23.32	0.21	0	82783	QPSK	1	0	10 mm	back	1:1	0.806	1.042	**0.840**	A32
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.14	-0.03	1	82783	QPSK	50	25	10 mm	back	1:1	0.577	1.086	0.627	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.04	0.02	1	82783	QPSK	100	0	10 mm	back	1:1	0.575	1.112	0.639	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	23.49	-0.13	0	45993	QPSK	1	50	10 mm	back	1:1	0.555	1.002	0.556	A34
1905.00	26590	High	LTE Band 25 (PCS)	20	22.5	22.41	0.02	1	45993	QPSK	50	25	10 mm	back	1:1	0.454	1.021	0.464	
2506.00	39750	Low	LTE Band 41	20	23.5	22.99	-0.05	0	82734	QPSK	1	0	10 mm	back	1:1.58	0.530	1.125	0.596	A36
2506.00	39750	Low	LTE Band 41	20	22.5	21.97	-0.07	1	82734	QPSK	50	25	10 mm	back	1:1.58	0.422	1.130	0.477	
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 11-17
DTS Body-Worn SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Scaled SAR (1g)	Plot #
MHz	Ch.												W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	13.5	13.41	-0.04	10 mm	82874	1	back	99.9	0.122	0.101	1.021	1.001	**0.103**	A37
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 11-18
GPRS/UMTS/EVDO Hotspot SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of GPRS Slots	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	25.0	24.02	0.04	10 mm	45993	N/A	1:1	back	0.684	1.253	0.857	A16
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.0	24.02	-0.03	10 mm	45993	N/A	1:1	front	0.611	1.253	0.766	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.0	24.02	-0.01	10 mm	45993	N/A	1:1	bottom	0.051	1.253	0.064	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.0	24.02	-0.07	10 mm	45993	N/A	1:1	right	0.375	1.253	0.470	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.0	24.02	0.04	10 mm	45993	N/A	1:1	left	0.510	1.253	0.639	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.0	24.19	-0.01	10 mm	45860	N/A	1:1	back	0.588	1.205	0.709	A18
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.0	24.19	0.00	10 mm	45860	N/A	1:1	front	0.543	1.205	0.654	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.0	24.19	-0.08	10 mm	45860	N/A	1:1	bottom	0.057	1.205	0.069	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.0	24.19	-0.11	10 mm	45860	N/A	1:1	right	0.409	1.205	0.493	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.0	24.19	0.03	10 mm	45860	N/A	1:1	left	0.476	1.205	0.574	
836.60	190	GSM 850	GPRS	29.0	28.51	-0.05	10 mm	45860	3	1:2.76	back	0.418	1.119	0.468	A20
836.60	190	GSM 850	GPRS	29.0	28.51	0.04	10 mm	45860	3	1:2.76	front	0.379	1.119	0.424	
836.60	190	GSM 850	GPRS	29.0	28.51	0.16	10 mm	45860	3	1:2.76	bottom	0.036	1.119	0.040	
836.60	190	GSM 850	GPRS	29.0	28.51	-0.06	10 mm	45860	3	1:2.76	right	0.272	1.119	0.304	
836.60	190	GSM 850	GPRS	29.0	28.51	0.04	10 mm	45860	3	1:2.76	left	0.313	1.119	0.350	
836.60	4183	UMTS 850	RMC	23.5	22.88	-0.07	10 mm	45860	N/A	1:1	back	0.395	1.153	0.455	A21
836.60	4183	UMTS 850	RMC	23.5	22.88	-0.01	10 mm	45860	N/A	1:1	front	0.357	1.153	0.412	
836.60	4183	UMTS 850	RMC	23.5	22.88	0.07	10 mm	45860	N/A	1:1	bottom	0.035	1.153	0.040	
836.60	4183	UMTS 850	RMC	23.5	22.88	-0.04	10 mm	45860	N/A	1:1	right	0.267	1.153	0.308	
836.60	4183	UMTS 850	RMC	23.5	22.88	0.10	10 mm	45860	N/A	1:1	left	0.312	1.153	0.360	
1732.40	1412	UMTS 1750	RMC	23.0	22.05	0.00	10 mm	82734	N/A	1:1	back	0.628	1.245	0.782	
1712.40	1312	UMTS 1750	RMC	23.0	22.07	-0.01	10 mm	82734	N/A	1:1	front	0.868	1.239	**1.075**	A23
1732.40	1412	UMTS 1750	RMC	23.0	22.05	-0.05	10 mm	82734	N/A	1:1	front	0.792	1.245	0.986	
1752.50	1862	UMTS 1750	RMC	23.0	22.13	0.02	10 mm	82734	N/A	1:1	front	0.722	1.222	0.882	
1732.40	1412	UMTS 1750	RMC	23.0	22.05	-0.02	10 mm	82734	N/A	1:1	bottom	0.119	1.245	0.148	
1732.40	1412	UMTS 1750	RMC	23.0	22.05	0.01	10 mm	82734	N/A	1:1	right	0.105	1.245	0.131	
1732.40	1412	UMTS 1750	RMC	23.0	22.05	-0.03	10 mm	82734	N/A	1:1	left	0.486	1.245	0.605	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.0	23.74	-0.04	10 mm	45860	N/A	1:1	back	0.561	1.337	0.750	
1851.25	25	PCS CDMA	EVDO Rev. 0	25.0	23.58	0.09	10 mm	45860	N/A	1:1	front	0.769	1.387	1.067	A25
1880.00	600	PCS CDMA	EVDO Rev. 0	25.0	23.74	0.04	10 mm	45860	N/A	1:1	front	0.652	1.337	0.872	
1908.75	1175	PCS CDMA	EVDO Rev. 0	25.0	23.75	-0.03	10 mm	45860	N/A	1:1	front	0.534	1.334	0.712	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.0	23.74	0.02	10 mm	45860	N/A	1:1	bottom	0.253	1.337	0.338	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.0	23.74	0.10	10 mm	45860	N/A	1:1	right	0.140	1.337	0.187	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.0	23.74	-0.05	10 mm	45860	N/A	1:1	left	0.541	1.337	0.723	
1880.00	661	GSM 1900	GPRS	28.0	27.91	0.00	10 mm	82874	3	1:2.76	back	0.481	1.021	0.491	
1880.00	661	GSM 1900	GPRS	28.0	27.91	-0.17	10 mm	82874	3	1:2.76	front	0.702	1.021	0.717	A27
1880.00	661	GSM 1900	GPRS	28.0	27.91	-0.02	10 mm	82874	3	1:2.76	bottom	0.286	1.021	0.292	
1880.00	661	GSM 1900	GPRS	28.0	27.91	-0.12	10 mm	82874	3	1:2.76	right	0.038	1.021	0.039	
1880.00	661	GSM 1900	GPRS	28.0	27.91	-0.11	10 mm	82874	3	1:2.76	left	0.405	1.021	0.414	
1880.00	9400	UMTS 1900	RMC	23.5	22.58	0.02	10 mm	82874	N/A	1:1	back	0.512	1.236	0.633	
1852.40	9262	UMTS 1900	RMC	23.5	22.74	0.06	10 mm	82874	N/A	1:1	front	0.699	1.191	0.833	
1880.00	9400	UMTS 1900	RMC	23.5	22.58	0.15	10 mm	82874	N/A	1:1	front	0.739	1.236	0.913	
1907.60	9538	UMTS 1900	RMC	23.5	22.54	0.07	10 mm	82874	N/A	1:1	front	0.763	1.247	0.951	A29
1880.00	9400	UMTS 1900	RMC	23.5	22.58	-0.02	10 mm	82874	N/A	1:1	bottom	0.306	1.236	0.378	
1880.00	9400	UMTS 1900	RMC	23.5	22.58	0.03	10 mm	82874	N/A	1:1	right	0.044	1.236	0.054	
1880.00	9400	UMTS 1900	RMC	23.5	22.58	0.03	10 mm	82874	N/A	1:1	left	0.454	1.236	0.561	
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 11-19
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	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.																		
707.50	23095	Mid	LTE Band 12	10	23.5	23.49	0.04	0	82874	QPSK	1	49	10 mm	back	1:1	0.309	1.002	0.310	A30
707.50	23095	Mid	LTE Band 12	10	22.5	22.25	-0.07	1	82874	QPSK	25	25	10 mm	back	1:1	0.232	1.059	0.246	
707.50	23095	Mid	LTE Band 12	10	23.5	23.49	0.07	0	82874	QPSK	1	49	10 mm	front	1:1	0.227	1.002	0.227	
707.50	23095	Mid	LTE Band 12	10	22.5	22.25	0.03	1	82874	QPSK	25	25	10 mm	front	1:1	0.174	1.059	0.184	
707.50	23095	Mid	LTE Band 12	10	23.5	23.49	0.12	0	82874	QPSK	1	49	10 mm	bottom	1:1	0.027	1.002	0.027	
707.50	23095	Mid	LTE Band 12	10	22.5	22.25	0.08	1	82874	QPSK	25	25	10 mm	bottom	1:1	0.018	1.059	0.019	
707.50	23095	Mid	LTE Band 12	10	23.5	23.49	0.11	0	82874	QPSK	1	49	10 mm	right	1:1	0.140	1.002	0.140	
707.50	23095	Mid	LTE Band 12	10	22.5	22.25	0.18	1	82874	QPSK	25	25	10 mm	right	1:1	0.111	1.059	0.118	
707.50	23095	Mid	LTE Band 12	10	23.5	23.49	-0.07	0	82874	QPSK	1	49	10 mm	left	1:1	0.200	1.002	0.200	
707.50	23095	Mid	LTE Band 12	10	22.5	22.25	0.03	1	82874	QPSK	25	25	10 mm	left	1:1	0.167	1.059	0.177	
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 26 (Cell) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	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.																		
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.27	-0.12	0	45860	QPSK	1	0	10 mm	back	1:1	0.395	1.054	0.416	A31
836.50	26915	Mid	LTE Band 26 (Cell)	15	22.5	22.31	-0.11	1	45860	QPSK	36	0	10 mm	back	1:1	0.297	1.045	0.310	
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.27	0.18	0	45860	QPSK	1	0	10 mm	front	1:1	0.374	1.054	0.394	
836.50	26915	Mid	LTE Band 26 (Cell)	15	22.5	22.31	0.00	1	45860	QPSK	36	0	10 mm	front	1:1	0.268	1.045	0.280	
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.27	0.11	0	45860	QPSK	1	0	10 mm	bottom	1:1	0.040	1.054	0.042	
836.50	26915	Mid	LTE Band 26 (Cell)	15	22.5	22.31	0.10	1	45860	QPSK	36	0	10 mm	bottom	1:1	0.030	1.045	0.031	
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.27	-0.04	0	45860	QPSK	1	0	10 mm	right	1:1	0.258	1.054	0.272	
836.50	26915	Mid	LTE Band 26 (Cell)	15	22.5	22.31	0.00	1	45860	QPSK	36	0	10 mm	right	1:1	0.215	1.045	0.225	
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.27	0.00	0	45860	QPSK	1	0	10 mm	left	1:1	0.303	1.054	0.319	
836.50	26915	Mid	LTE Band 26 (Cell)	15	22.5	22.31	-0.11	1	45860	QPSK	36	0	10 mm	left	1:1	0.237	1.045	0.248	
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 4 (AWS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	23.32	0.21	0	82783	QPSK	1	0	10 mm	back	1:1	0.806	1.042	0.840	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.14	-0.03	1	82783	QPSK	50	25	10 mm	back	1:1	0.577	1.086	0.627	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.04	0.02	1	82783	QPSK	100	0	10 mm	back	1:1	0.575	1.112	0.639	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	23.32	0.11	0	82783	QPSK	1	0	10 mm	front	1:1	0.989	1.042	1.031	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.14	0.00	1	82783	QPSK	50	25	10 mm	front	1:1	0.716	1.086	0.778	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.04	0.01	1	82783	QPSK	100	0	10 mm	front	1:1	0.723	1.112	0.804	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	23.32	-0.02	0	82783	QPSK	1	0	10 mm	bottom	1:1	0.197	1.042	0.205	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.14	-0.05	1	82783	QPSK	50	25	10 mm	bottom	1:1	0.145	1.086	0.157	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	23.32	0.18	0	82783	QPSK	1	0	10 mm	right	1:1	0.148	1.042	0.154	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.14	-0.01	1	82783	QPSK	50	25	10 mm	right	1:1	0.101	1.086	0.110	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	23.32	0.14	0	82783	QPSK	1	0	10 mm	left	1:1	0.550	1.042	0.573	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.14	-0.04	1	82783	QPSK	50	25	10 mm	left	1:1	0.404	1.086	0.439	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	23.32	-0.12	0	82783	QPSK	1	0	10 mm	front	1:1	1.030	1.042	1.073	A33
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: Variability data is highlighted blue in the table above.

Table 11-22
LTE Band 25 (PCS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	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)	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	23.49	-0.13	0	45993	QPSK	1	50	10 mm	back	1:1	0.555	1.002	0.556	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.5	22.41	0.02	1	45993	QPSK	50	25	10 mm	back	1:1	0.454	1.021	0.464	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	23.49	0.21	0	45993	QPSK	1	50	10 mm	front	1:1	0.699	1.002	0.700	A35
1905.00	26590	High	LTE Band 25 (PCS)	20	22.5	22.41	0.08	1	45993	QPSK	50	25	10 mm	front	1:1	0.573	1.021	0.585	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	23.49	-0.13	0	45993	QPSK	1	50	10 mm	bottom	1:1	0.239	1.002	0.239	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.5	22.41	-0.03	1	45993	QPSK	50	25	10 mm	bottom	1:1	0.193	1.021	0.197	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	23.49	-0.10	0	45993	QPSK	1	50	10 mm	right	1:1	0.175	1.002	0.175	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.5	22.41	-0.05	1	45993	QPSK	50	25	10 mm	right	1:1	0.127	1.021	0.130	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	23.49	0.01	0	45993	QPSK	1	50	10 mm	left	1:1	0.592	1.002	0.593	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.5	22.41	0.05	1	45993	QPSK	50	25	10 mm	left	1:1	0.483	1.021	0.493	
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 11-23
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	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)	
2506.00	39750	Low	LTE Band 41	20	23.5	22.99	-0.05	0	82734	QPSK	1	0	10 mm	back	1:1.58	0.530	1.125	0.596	A36
2506.00	39750	Low	LTE Band 41	20	22.5	21.97	-0.07	1	82734	QPSK	50	25	10 mm	back	1:1.58	0.422	1.130	0.477	
2506.00	39750	Low	LTE Band 41	20	23.5	22.99	0.06	0	82734	QPSK	1	0	10 mm	front	1:1.58	0.152	1.125	0.171	
2506.00	39750	Low	LTE Band 41	20	22.5	21.97	0.20	1	82734	QPSK	50	25	10 mm	front	1:1.58	0.115	1.130	0.130	
2506.00	39750	Low	LTE Band 41	20	23.5	22.99	-0.05	0	82734	QPSK	1	0	10 mm	bottom	1:1.58	0.487	1.125	0.548	
2506.00	39750	Low	LTE Band 41	20	22.5	21.97	0.11	1	82734	QPSK	50	25	10 mm	bottom	1:1.58	0.380	1.130	0.429	
2506.00	39750	Low	LTE Band 41	20	23.5	22.99	0.01	0	82734	QPSK	1	0	10 mm	right	1:1.58	0.038	1.125	0.043	
2506.00	39750	Low	LTE Band 41	20	22.5	21.97	0.06	1	82734	QPSK	50	25	10 mm	right	1:1.58	0.031	1.130	0.035	
2506.00	39750	Low	LTE Band 41	20	23.5	22.99	-0.10	0	82734	QPSK	1	0	10 mm	left	1:1.58	0.106	1.125	0.119	
2506.00	39750	Low	LTE Band 41	20	22.5	21.97	0.13	1	82734	QPSK	50	25	10 mm	left	1:1.58	0.085	1.130	0.096	

ANSI / IEEE C95.1 1992 - SAFETY LIMIT	Body
Spatial Peak	1.6 W/kg (mW/g)
Uncontrolled Exposure/General Population	averaged over 1 gram

Table 11-24
WLAN Hotspot SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Scaled SAR (1g)	Plot #
MHz	Ch.												W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	13.5	13.41	-0.04	10 mm	82874	1	back	99.9	0.122	0.101	1.021	1.001	**0.103**	A37
2412	1	802.11b	DSSS	22	13.5	13.41	-	10 mm	82874	1	front	99.9	0.113	-	1.021	1.001	-	
2412	1	802.11b	DSSS	22	13.5	13.41	-	10 mm	82874	1	top	99.9	0.114	-	1.021	1.001	-	
2412	1	802.11b	DSSS	22	13.5	13.41	-	10 mm	82874	1	right	99.9	0.029	-	1.021	1.001	-	

ANSI / IEEE C95.1 1992 - SAFETY LIMIT	Body
Spatial Peak	1.6 W/kg (mW/g)
Uncontrolled Exposure/General Population	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 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB Publication 648474 D04v01r02, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.

8. Per FCC KDB 865664 D01 v01, variability SAR tests were performed when the measured SAR results for a frequency band were greater than 0.8 W/kg. 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 D06v02, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.6 for more details).

CDMA Notes:

1. Head SAR for CDMA2000 mode was tested under RC3/SO55 per FCC KDB Publication 941225 D01v03.
2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. EVDO Rev. 0 and Rev. A and TDSO / SO32 FCH+SCH SAR tests were not required per the 3G SAR Test Reduction Procedure in FCC KDB Publication 941225 D01v03.
3. CDMA Wireless Router SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 according to KDB 941225 D01v03 procedures for data devices. Wireless Router SAR tests for Subtype 2 of Rev.A and 1x RTT configurations were not required per the 3G SAR Test Reduction Policy in KDB Publication 941225 D01v03.
4. Head SAR was additionally evaluated using EVDO Rev. A to determine compliance for VoIP operations.
5. 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.

GSM Test Notes:

1. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
2. Justification for reduced test configurations per KDB Publication 941225 D01v03 and October 2013 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all GPRS/EDGE slot configurations. The configuration with the highest target frame averaged output power was evaluated for hotspot 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.

UMTS Notes:

1. UMTS mode was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03. AMR and HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03.
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 D05v02r03. The general test procedures used for testing can be found in Section 8.6.4.
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) for LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was < 0.6 W/kg, testing at the other channels was not required.
5. TDD LTE was tested per FCC KDB 941225 D05v02r03 and using the guidance provided in April 2013 TCB workshop notes. Testing was performed 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. For held-to-ear and hotspot operations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r01 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.7.3 for more information.
3. When the maximum reported 1g averaged SAR is ≤0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg or all test channels were measured.
4. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated EMC test reports.

12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

The following procedures adopted from FCC KDB Publication 447498 D01v05r02 are applicable to devices with built-in unlicensed transmitters such as 802.11 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. The different test positions in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1-g or 10-g SAR.

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	2480	11.50	10	0.294

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 2.4 GHz WLAN (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	CDMA/EVDO BC10 (§90S)	0.545	0.344	0.889
	CDMA/EVDO BC0 (§22H)	0.595	0.344	0.939
	GSM 850	0.330	0.344	0.674
	UMTS 850	0.311	0.344	0.655
	UMTS 1750	0.656	0.344	1.000
	PCS CDMA/EVDO	0.872	0.344	**1.216**
	GSM 1900	0.486	0.344	0.830
	UMTS 1900	0.733	0.344	1.077
	LTE Band 12	0.182	0.344	0.526
	LTE Band 26 (Cell)	0.324	0.344	0.668
	LTE Band 4 (AWS)	0.758	0.344	1.102
	LTE Band 25 (PCS)	0.748	0.344	1.092
	LTE Band 41	0.111	0.344	0.455

12.4 Body-Worn Simultaneous Transmission Analysis

Table 12-3
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body-Worn	CDMA BC10 (§90S)	0.822	0.103	**0.925**
	CDMA BC0 (§22H)	0.706	0.103	0.809
	GSM 850	0.425	0.103	0.528
	UMTS 850	0.455	0.103	0.558
	UMTS 1750	0.782	0.103	0.885
	PCS CDMA	0.782	0.103	0.885
	GSM 1900	0.284	0.103	0.387
	UMTS 1900	0.633	0.103	0.736
	LTE Band 12	0.310	0.103	0.413
	LTE Band 26 (Cell)	0.416	0.103	0.519
	LTE Band 4 (AWS)	0.840	0.103	0.943
	LTE Band 25 (PCS)	0.556	0.103	0.659
	LTE Band 41	0.596	0.103	0.699

Table 12-4
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
Body-Worn	CDMA BC10 (§90S)	0.822	0.294	1.116
	CDMA BC0 (§22H)	0.706	0.294	1.000
	GSM 850	0.425	0.294	0.719
	UMTS 850	0.455	0.294	0.749
	UMTS 1750	0.782	0.294	1.076
	PCS CDMA	0.782	0.294	1.076
	GSM 1900	0.284	0.294	0.578
	UMTS 1900	0.633	0.294	0.927
	LTE Band 12	0.310	0.294	0.604
	LTE Band 26 (Cell)	0.416	0.294	0.710
	LTE Band 4 (AWS)	0.840	0.294	**1.134**
	LTE Band 25 (PCS)	0.556	0.294	0.850
	LTE Band 41	0.596	0.294	0.890

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 D06v02, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR ("-").

Table 12-5
Simultaneous Transmission Scenario (2.4 GHz Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Hotspot SAR	EVDO BC10 (§90S)	0.857	0.103	0.960
	EVDO BC0 (§22H)	0.709	0.103	0.812
	GPRS 850	0.468	0.103	0.571
	UMTS 850	0.455	0.103	0.558
	UMTS 1750	1.075	0.103	**1.178**
	PCS EVDO	1.067	0.103	1.170
	GPRS 1900	0.717	0.103	0.820
	UMTS 1900	0.951	0.103	1.054
	LTE Band 12	0.310	0.103	0.413
	LTE Band 26 (Cell)	0.416	0.103	0.519
	LTE Band 4 (AWS)	1.073	0.103	1.176
	LTE Band 25 (PCS)	0.700	0.103	0.803
	LTE Band 41	0.596	0.103	0.699

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)	
1750	1732.50	20175	LTE Band 4 (AWS)	QPSK, 1 RB, 0 RB Offset	front	10 mm	0.989	1.030	1.04	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	DAK-3.5	Dielectric Assessment Kit	5/12/2015	Annual	5/12/2016	1070
SPEAG	ES3DV3	SAR Probe	1/23/2015	Annual	1/23/2016	3318
SPEAG	ES3DV2	SAR Probe	8/26/2015	Annual	8/26/2016	3022
SPEAG	ES3DV3	SAR Probe	3/19/2015	Annual	3/19/2016	3319
SPEAG	ES3DV3	SAR Probe	6/22/2015	Annual	6/22/2016	3351
SPEAG	ES3DV3	SAR Probe	12/16/2014	Annual	12/16/2015	3334
SPEAG	ES3DV3	SAR Probe	1/20/2015	Annual	1/20/2016	3213
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/14/2015	Annual	1/14/2016	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/18/2015	Annual	2/18/2016	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/13/2015	Annual	3/13/2016	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/24/2015	Annual	8/24/2016	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	12/12/2014	Annual	12/12/2015	1415
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/20/2015	Annual	4/20/2016	1407
SPEAG	D750V3	750 MHz SAR Dipole	1/16/2015	Annual	1/16/2016	1003
SPEAG	D835V2	835 MHz SAR Dipole	4/13/2015	Annual	4/13/2016	4d119
SPEAG	D1750V2	1750 MHz SAR Dipole	4/15/2015	Annual	4/15/2016	1051
SPEAG	D1900V2	1900 MHz SAR Dipole	7/14/2015	Annual	7/14/2016	5d149
SPEAG	D1900V2	1900 MHz SAR Dipole	4/14/2015	Annual	4/14/2016	5d141
SPEAG	D2450V2	2450 MHz SAR Dipole	1/15/2015	Annual	1/15/2016	797
SPEAG	D2450V2	2450 MHz SAR Dipole	8/20/2015	Annual	8/20/2016	719
SPEAG	D750V3	750 MHz Dipole	3/11/2015	Annual	3/11/2016	1054
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	N5182A	MXG Vector Signal Generator	3/16/2015	Annual	3/16/2016	MY47420651
Agilent	E4438C	ESG Vector Signal Generator	3/13/2015	Annual	3/13/2016	MY42082659
Agilent	8753ES	S-Parameter Network Analyzer	1/20/2015	Annual	1/20/2016	US39170122
Agilent	8753ES	Network Analyzer	3/20/2015	Annual	3/20/2016	MY40001472
Agilent	E5515C	Wireless Communications Test Set	11/5/2013	Biennial	11/5/2015	GB46310798
Agilent	8753E	(30kHz-6GHz) Network Analyzer	12/30/2014	Annual	12/30/2015	JP38020182
Agilent	E8257D	(250kHz-20GHz) Signal Generator	3/15/2015	Annual	3/15/2016	MY45470194
Agilent	8753ES	S-Parameter Network Analyzer	3/12/2015	Annual	3/12/2016	MY40000670
Agilent	8648D	(9kHz-4GHz) Signal Generator	3/15/2015	Annual	3/15/2016	3629U00687
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433974
Anritsu	MA24106A	USB Power Sensor	5/29/2015	Annual	5/29/2016	1231538
Anritsu	MA24106A	USB Power Sensor	5/29/2015	Annual	5/29/2016	1248508
Anritsu	MA2411B	Pulse Power Sensor	8/3/2015	Annual	8/3/2016	1126066
Anritsu	MA2411B	Pulse Power Sensor	11/17/2014	Annual	11/17/2015	1207364
Anritsu	ML2495A	Power Meter	10/31/2013	Biennial	10/31/2015	1039008
Anritsu	ML2495A	Power Meter	10/16/2015	Biennial	10/16/2017	1328004
Anritsu	ML2496A	Power Meter	3/13/2015	Annual	3/13/2016	1306009
Anritsu	MT8820C	Radio Communication Analyzer	9/1/2015	Annual	9/1/2016	6201144419
COMTech	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M1S5A00-009
Control Company	4040	Digital Thermometer	3/15/2015	Biennial	3/15/2017	150195005
Control Company	4353	Long Stem Thermometer	1/22/2015	Biennial	1/22/2017	150053036
Control Company	4353	Long Stem Thermometer	3/5/2015	Biennial	3/5/2017	150149534
Control Company	4040	Digital Thermometer	3/18/2015	Biennial	3/18/2017	150194979
Intelligent Weigh	PD-3000	Electronic Balance	CBT	N/A	CBT	11081534
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	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	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mitutoyo	CD-6"CSX	Digital Caliper	5/8/2014	Biennial	5/8/2016	13264165
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	3/23/2015	Annual	3/23/2016	836371/0079
Rohde & Schwarz	CMW500	Radio Communication Tester	6/1/2015	Annual	6/1/2016	108843
Rohde & Schwarz	CMW500	Radio Communication Tester	3/18/2015	Annual	3/18/2016	128633
Rohde & Schwarz	CMW500	Radio Communication Tester	4/22/2015	Annual	4/22/2016	101699
Seekonk	NC-100	Torque Wrench	3/18/2014	Biennial	3/18/2016	N/A

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. Each equipment item was used solely within its valid calibration period.

15 MEASUREMENT UNCERTAINTIES

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

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]

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APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45993

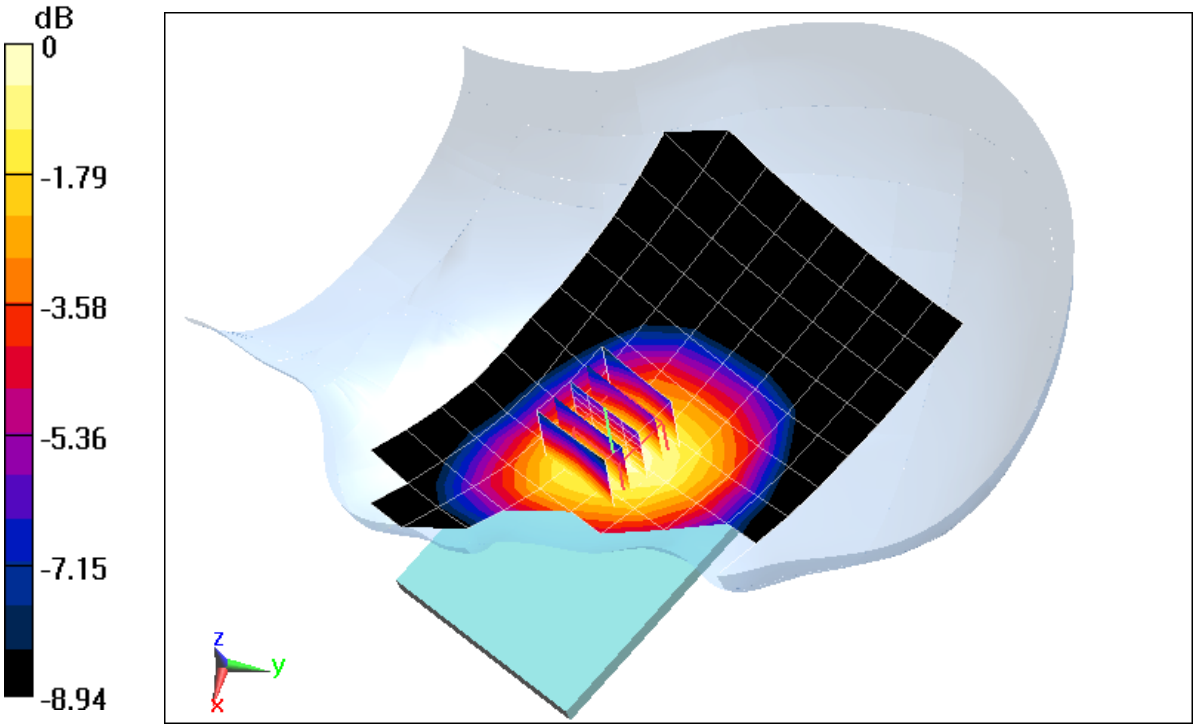
Communication System: UID 0, Cellular CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Head, Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.903 S/m; ε_r = 43.309; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 11-02-2015; Ambient Temp: 23.4°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3319; ConvF(6.41, 6.41, 6.41); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: Cell. EVDO Rev. A, Rule Part 90S, Left Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.42 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.555 W/kg
SAR(1 g) = 0.439 W/kg



0 dB = 0.487 W/kg = -3.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45993

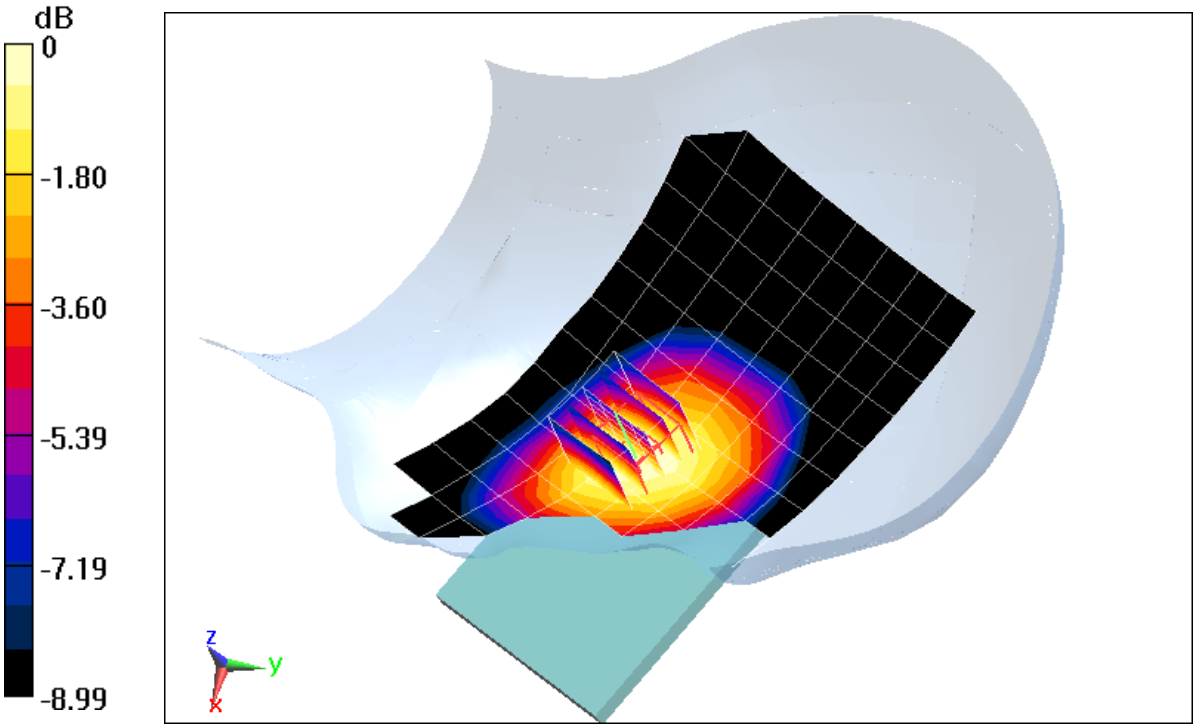
Communication System: UID 0, Cellular CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Head, Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.92 S/m; ε_r = 43.128; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 11-02-2015; Ambient Temp: 23.4°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3319; ConvF(6.41, 6.41, 6.41); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: Cell. EVDO Rev. A, Rule Part 22H, Left Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.33 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.617 W/kg
SAR(1 g) = 0.484 W/kg



0 dB = 0.531 W/kg = -2.75 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45993

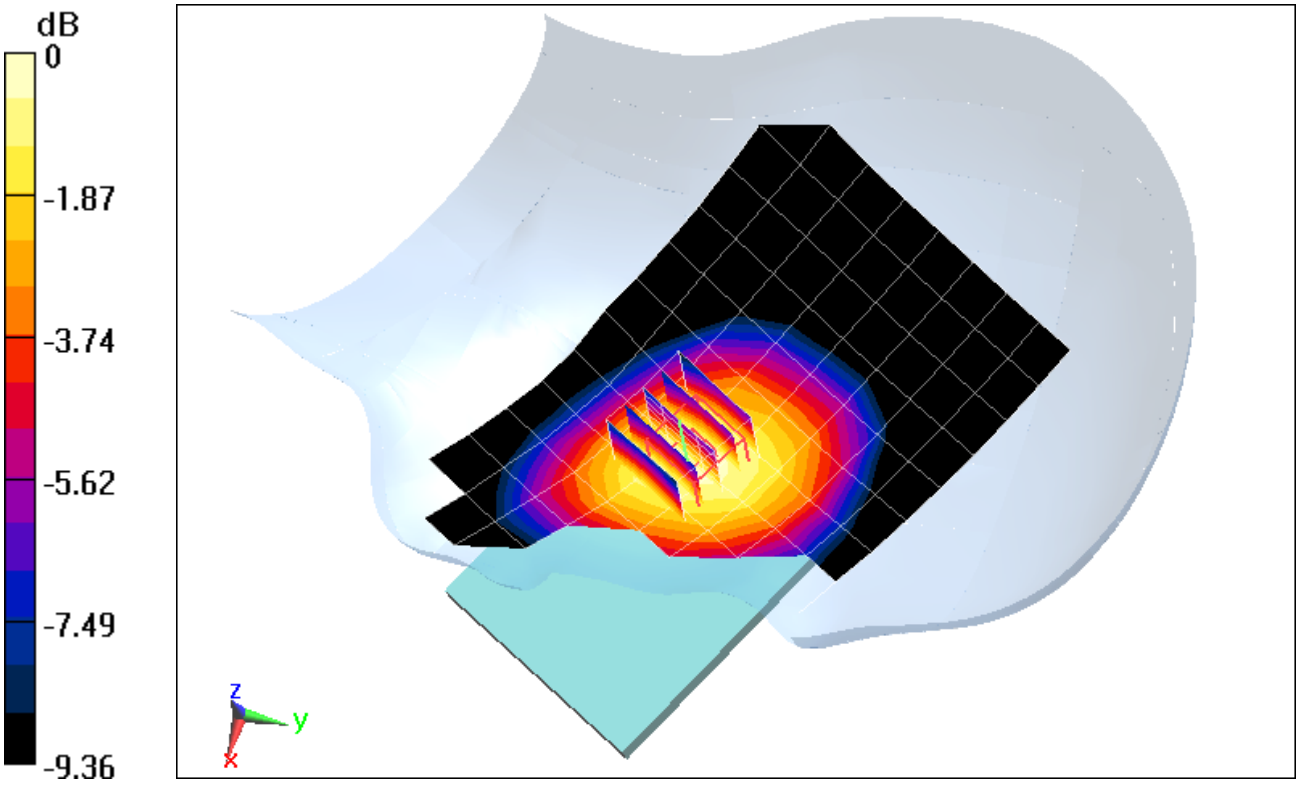
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Head, Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.92 S/m; ε_r = 43.127; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 11-02-2015; Ambient Temp: 23.4°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3319; ConvF(6.41, 6.41, 6.41); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GSM 850, Left Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.11 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.418 W/kg
SAR(1 g) = 0.330 W/kg



0 dB = 0.365 W/kg = -4.38 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45993

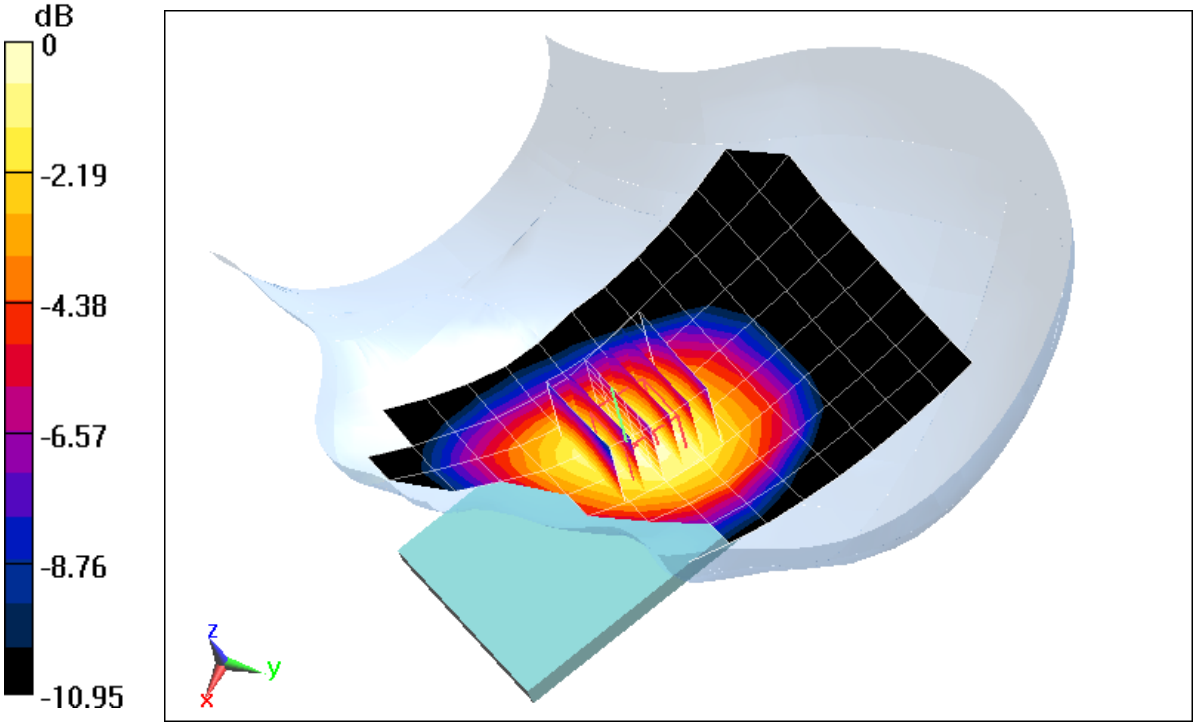
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Head, Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.92 S/m; ε_r = 43.127; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 11-02-2015; Ambient Temp: 23.4°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3319; ConvF(6.41, 6.41, 6.41); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 850, Left Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.41 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.338 W/kg
SAR(1 g) = 0.270 W/kg



0 dB = 0.295 W/kg = -5.30 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82734

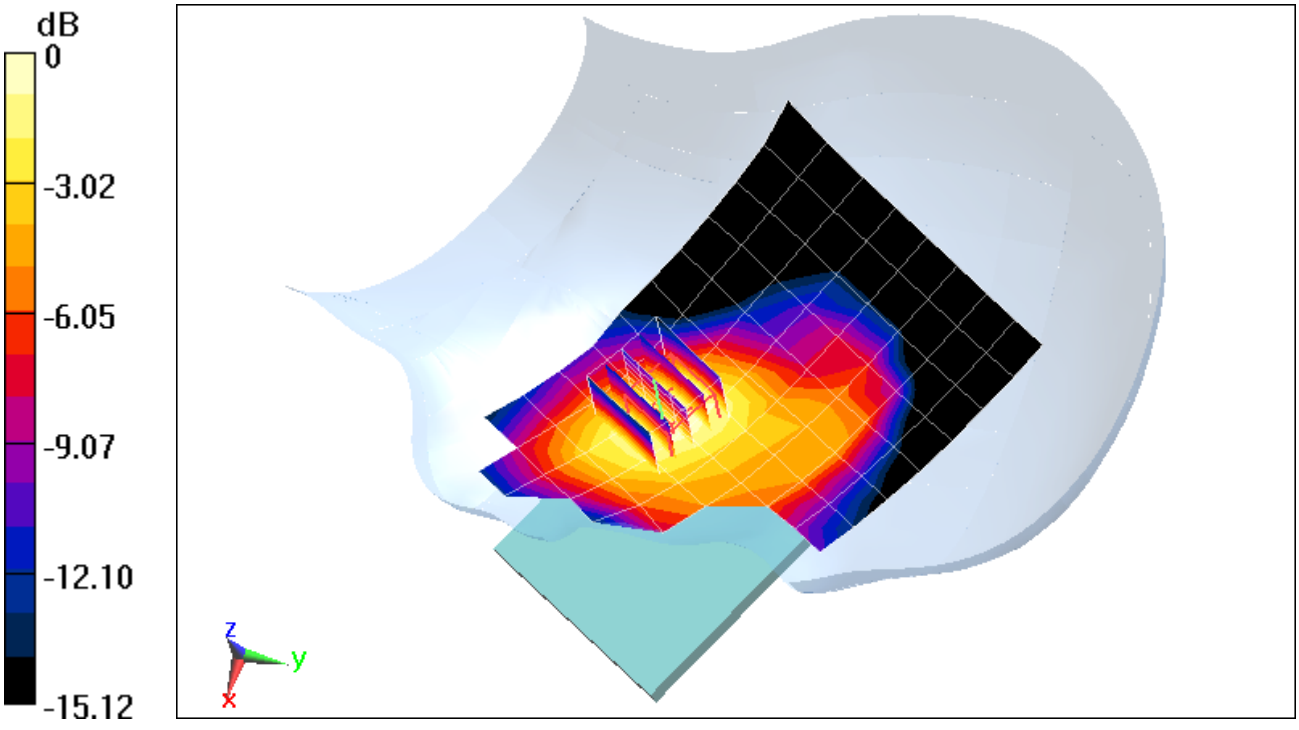
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Head, Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.353 S/m; ε_r = 39.225; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 10-12-2015; Ambient Temp: 19.8°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3319; ConvF(5.29, 5.29, 5.29); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 1750, Left Head, Cheek, Mid.ch

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.40 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.813 W/kg
SAR(1 g) = 0.527 W/kg



0 dB = 0.613 W/kg = -2.13 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45860

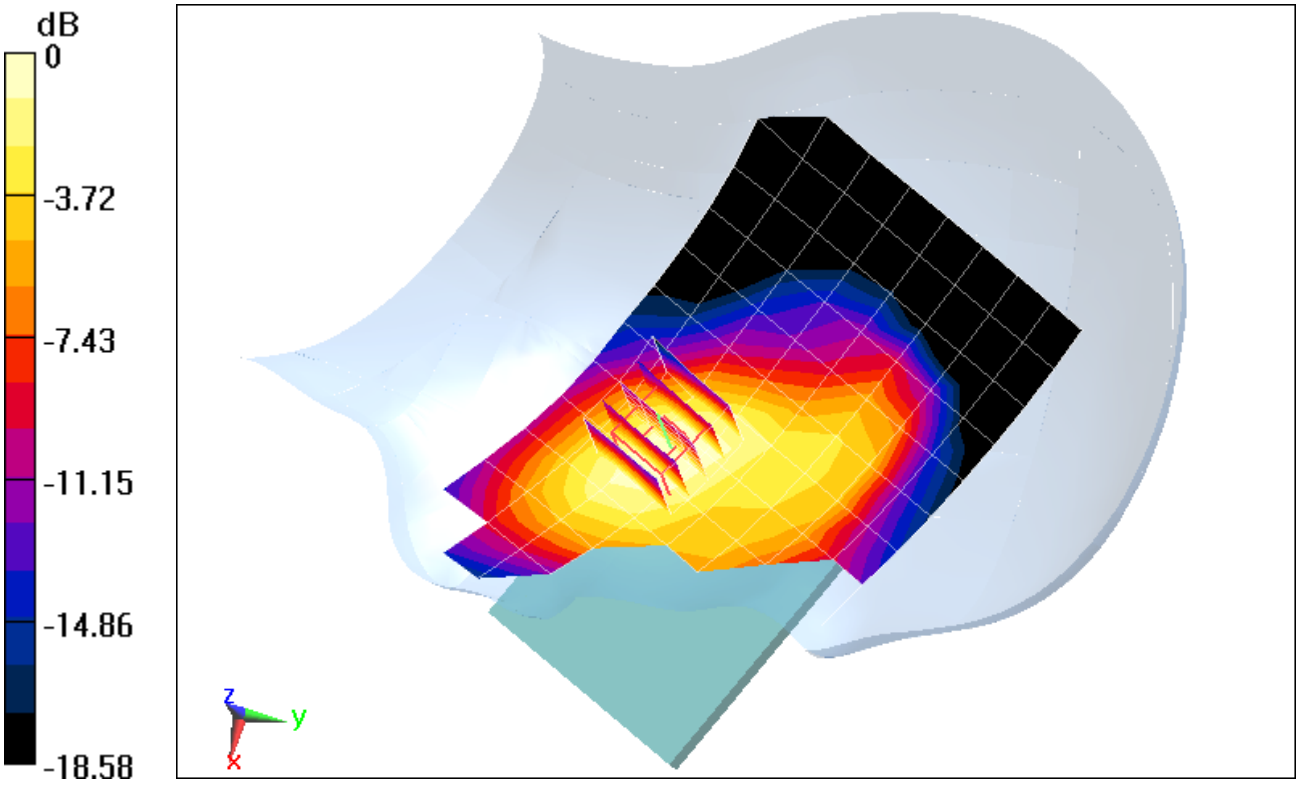
Communication System: UID 0, PCS CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head, Medium parameters used:
f = 1880 MHz; σ = 1.385 S/m; ε_r = 39.061; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 11-02-2015; Ambient Temp: 22.2°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3318; ConvF(5.05, 5.05, 5.05); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: PCS CDMA, Left Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.14 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 1.00 W/kg
SAR(1 g) = 0.639 W/kg



0 dB = 0.740 W/kg = -1.31 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45860

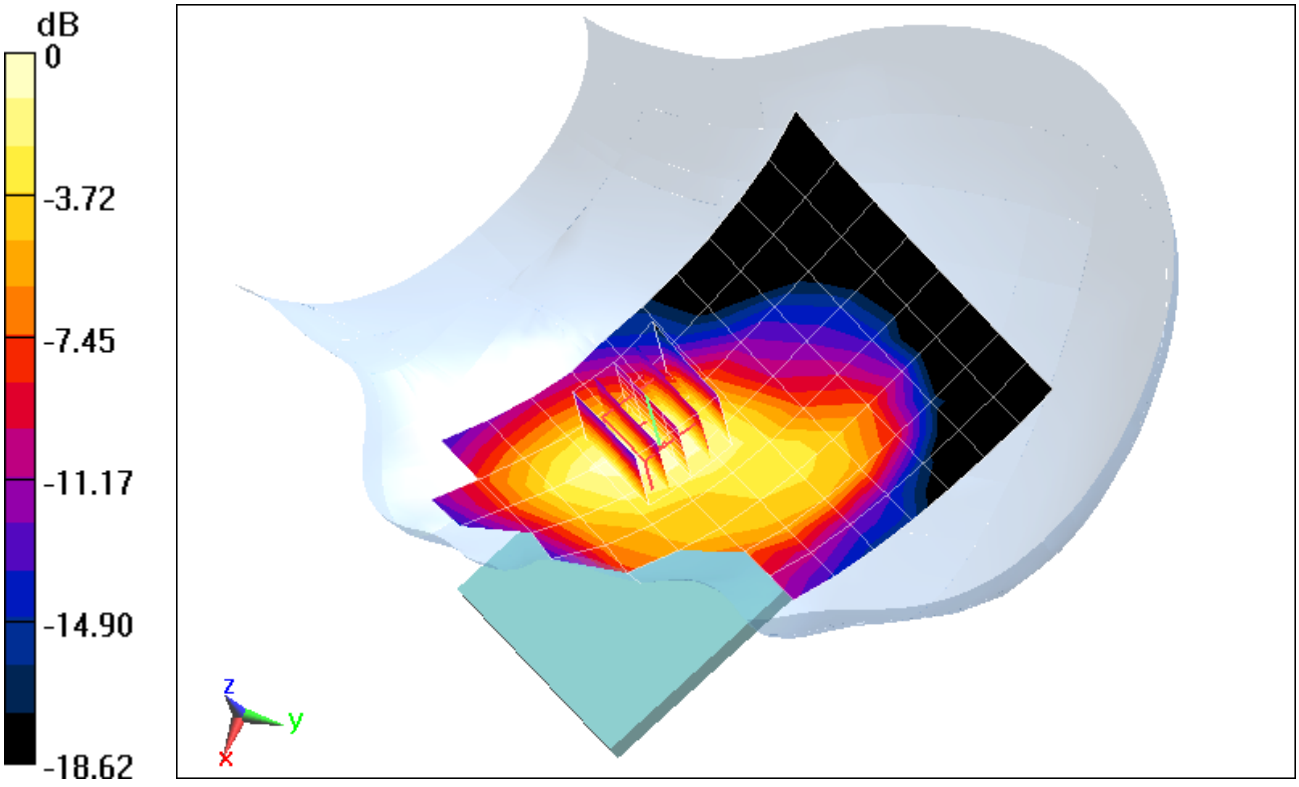
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Head, Medium parameters used:
f = 1880 MHz; σ = 1.385 S/m; ε_r = 39.061; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 11-02-2015; Ambient Temp: 22.2°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3318; ConvF(5.05, 5.05, 5.05); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GSM 1900, Left Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.18 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.767 W/kg
SAR(1 g) = 0.484 W/kg



0 dB = 0.576 W/kg = -2.40 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82874

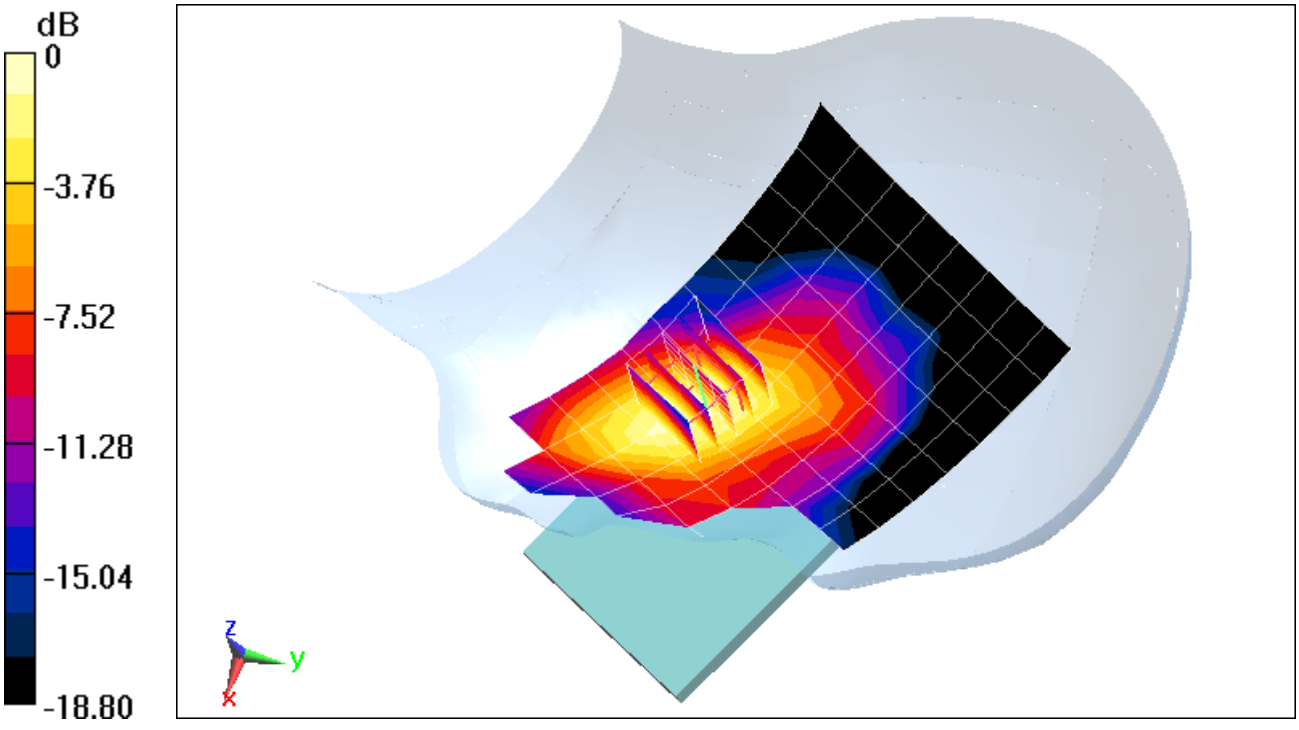
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head, Medium parameters used:
f = 1880 MHz; σ = 1.415 S/m; ε_r = 38.372; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 09-30-2015; Ambient Temp: 21.7°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3318; ConvF(5.05, 5.05, 5.05); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 1900, Left Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.33 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.934 W/kg
SAR(1 g) = 0.593 W/kg



0 dB = 0.706 W/kg = -1.51 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82874

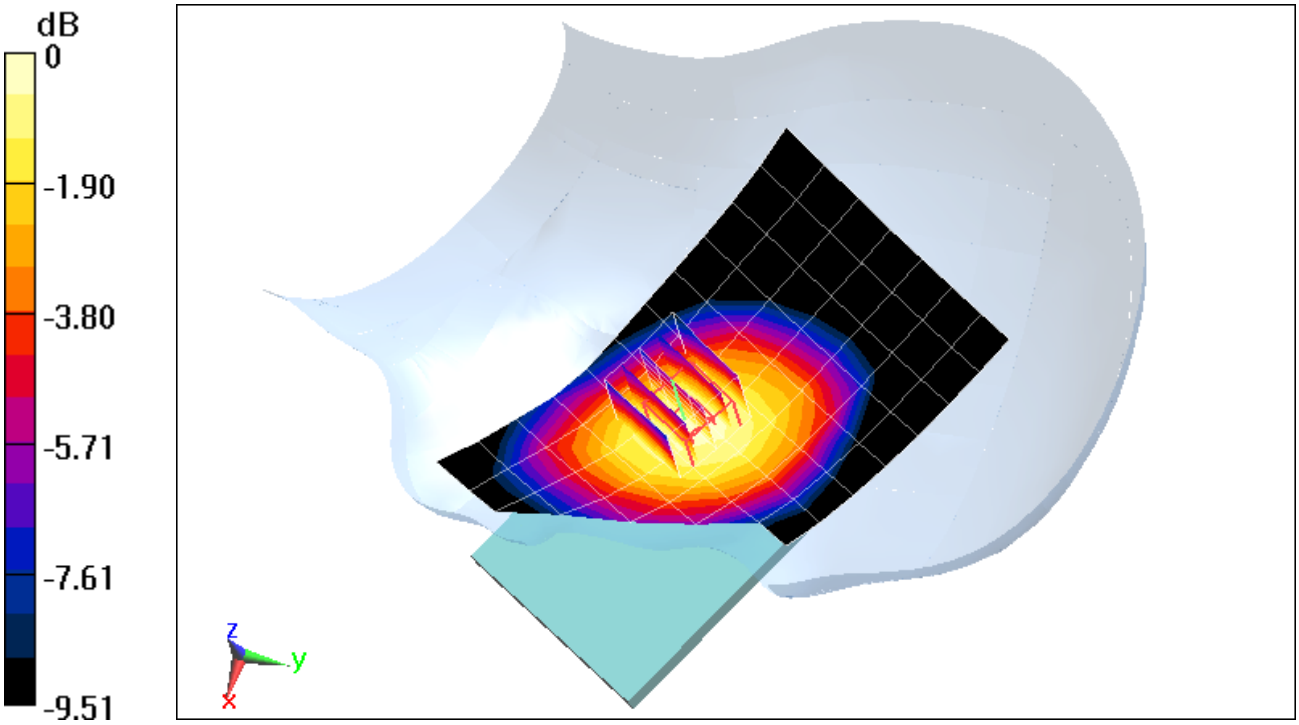
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Head, Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.856 S/m; ε_r = 42.304; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 09-30-2015; Ambient Temp: 23.1°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3318; ConvF(6.58, 6.58, 6.58); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 12, Left Head, Cheek, Mid.ch,
QPSK, 10 MHz Bandwidth, 1 RB, 49 RB Offset

Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.30 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.229 W/kg
SAR(1 g) = 0.182 W/kg



0 dB = 0.202 W/kg = -6.95 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45993

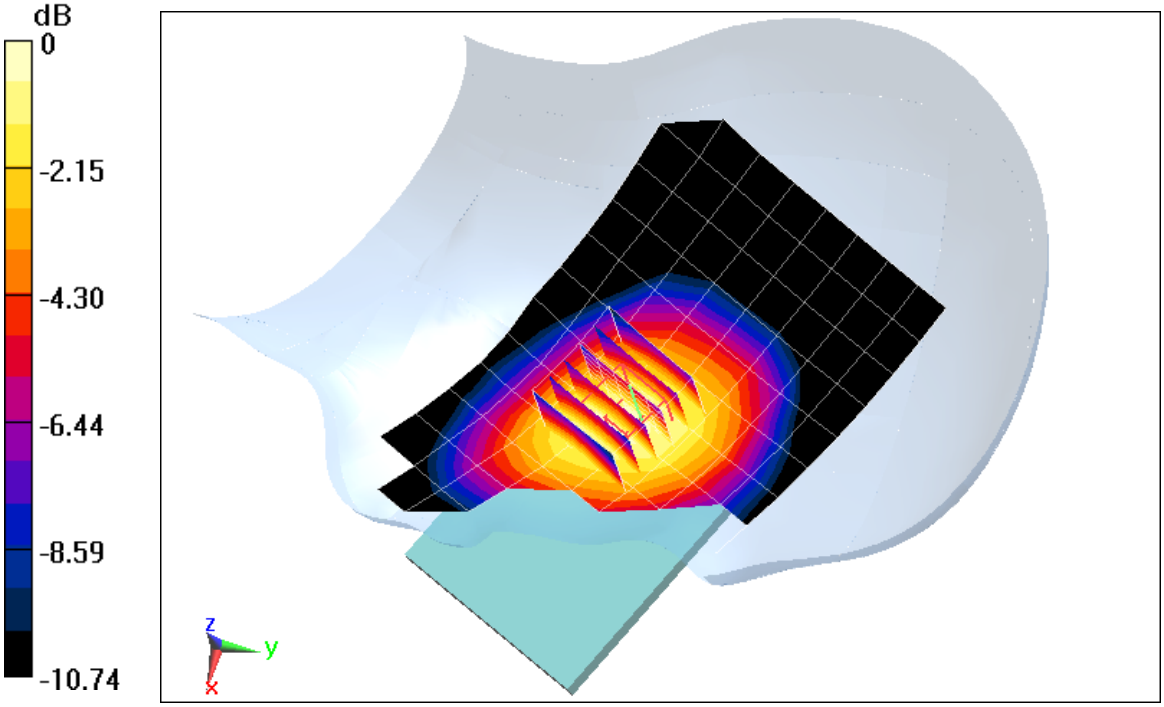
Communication System: UID 0, LTE Band 26; Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Head, Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.919 S/m; ε_r = 43.128; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 11-02-2015; Ambient Temp: 23.4°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3319; ConvF(6.41, 6.41, 6.41); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 26 (Cell.), Left Head, Cheek, Mid.ch,
QPSK, 15 MHz Bandwidth, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.52 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.380 W/kg
SAR(1 g) = 0.307 W/kg



0 dB = 0.333 W/kg = -4.78 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82874

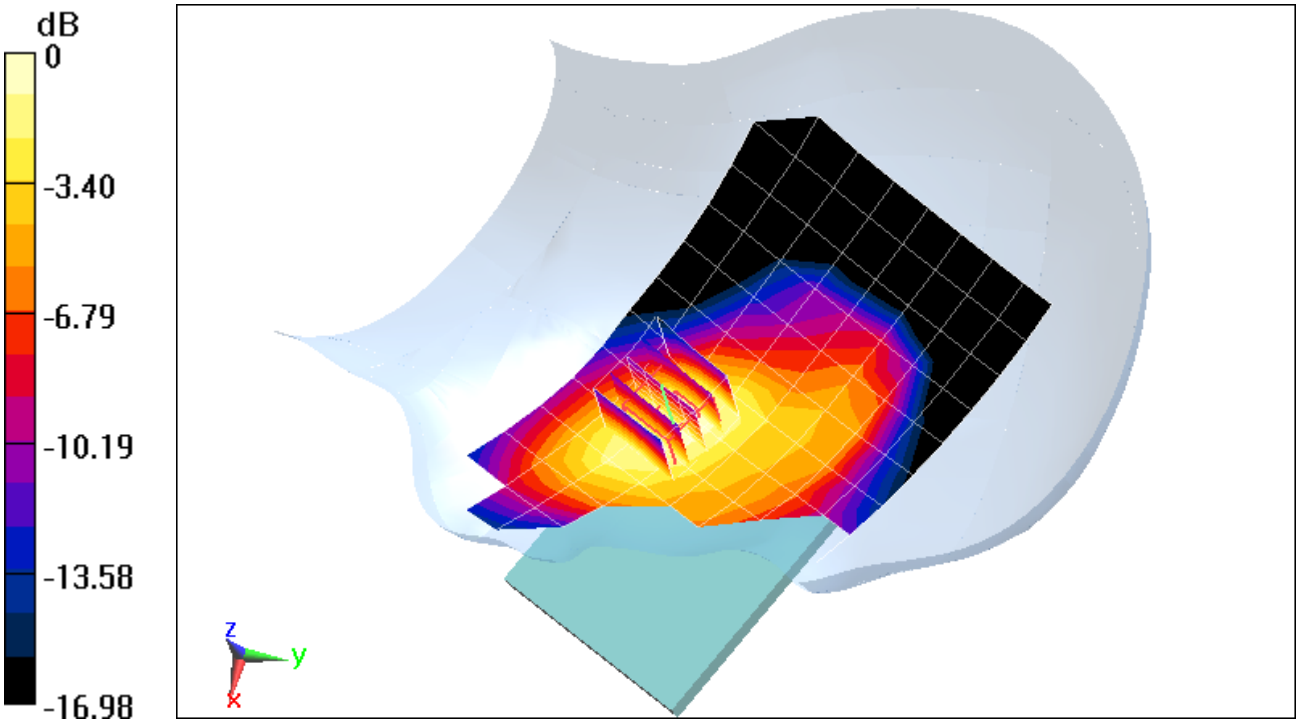
Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium: 1750 Head, Medium parameters used (interpolated):
f = 1732.5 MHz; σ = 1.34 S/m; ε_r = 38.925; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 09-29-2015; Ambient Temp: 22.7°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3318; ConvF(5.27, 5.27, 5.27); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 4 (AWS), Left Head, Cheek, Mid.ch,
QPSK, 20 MHz Bandwidth, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.95 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 1.14 W/kg
SAR(1 g) = 0.727 W/kg



0 dB = 0.857 W/kg = -0.67 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45860

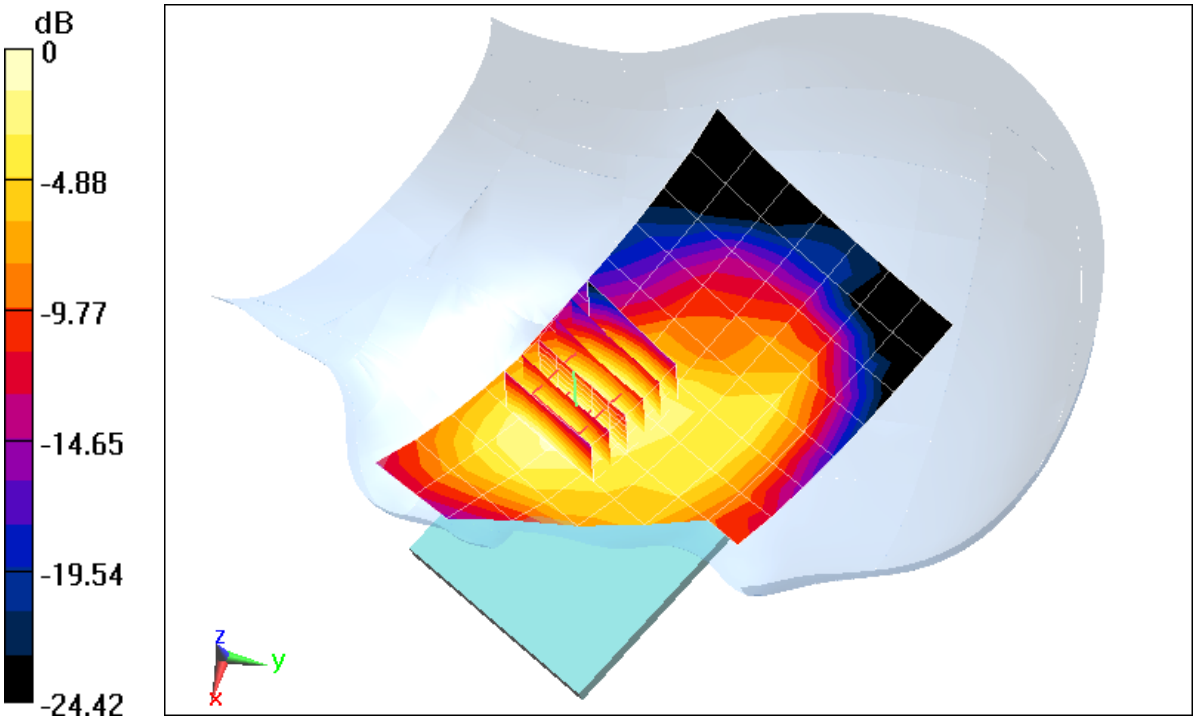
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Head, Medium parameters used (interpolated):
f = 1905 MHz; σ = 1.411 S/m; ε_r = 38.953; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 11-02-2015; Ambient Temp: 22.2°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3318; ConvF(5.05, 5.05, 5.05); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 25 (PCS), Left Head, Cheek, High.ch,
QPSK, 20 MHz Bandwidth, 1 RB, 50 RB Offset

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.23 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.747 W/kg



0 dB = 0.898 W/kg = -0.47 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82734

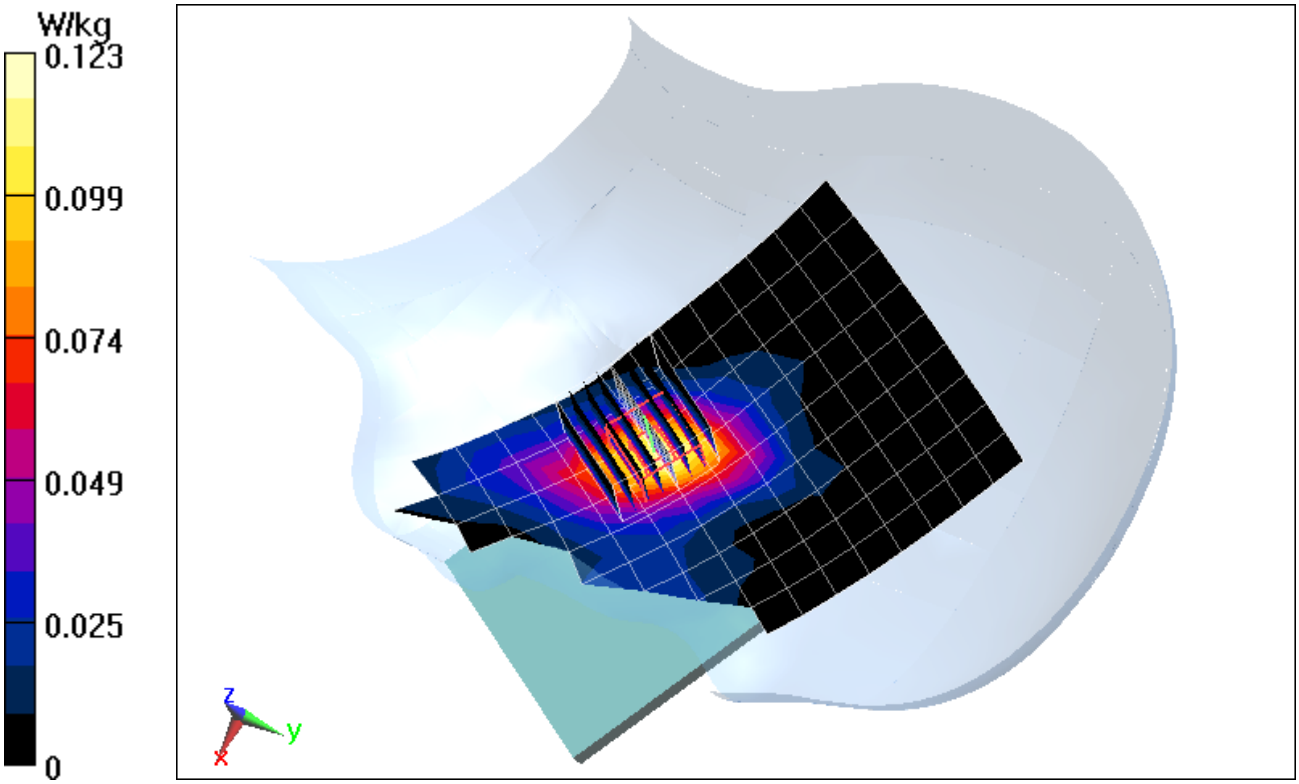
Communication System: UID 0, LTE Band 41; Frequency: 2506 MHz; Duty Cycle: 1:1.58
Medium: 2450 Head, Medium parameters used (interpolated):
f = 2506 MHz; σ = 1.938 S/m; ε_r = 38.84; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 09-30-2015; Ambient Temp: 24.5°C; Tissue Temp: 23.5°C

Probe: ES3DV3 - SN3334; ConvF(4.51, 4.51, 4.51); Calibrated: 12/16/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 12/12/2014
Phantom: Sub Twin Sam v5.0; Type: QD000P40CD; Serial: TP:1626
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 41, Left Head, Cheek, Low.ch,
QPSK, 20 MHz Bandwidth, 1 RB, 0 RB Offset

Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.816 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.181 W/kg
SAR(1 g) = 0.099 W/kg



DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82734

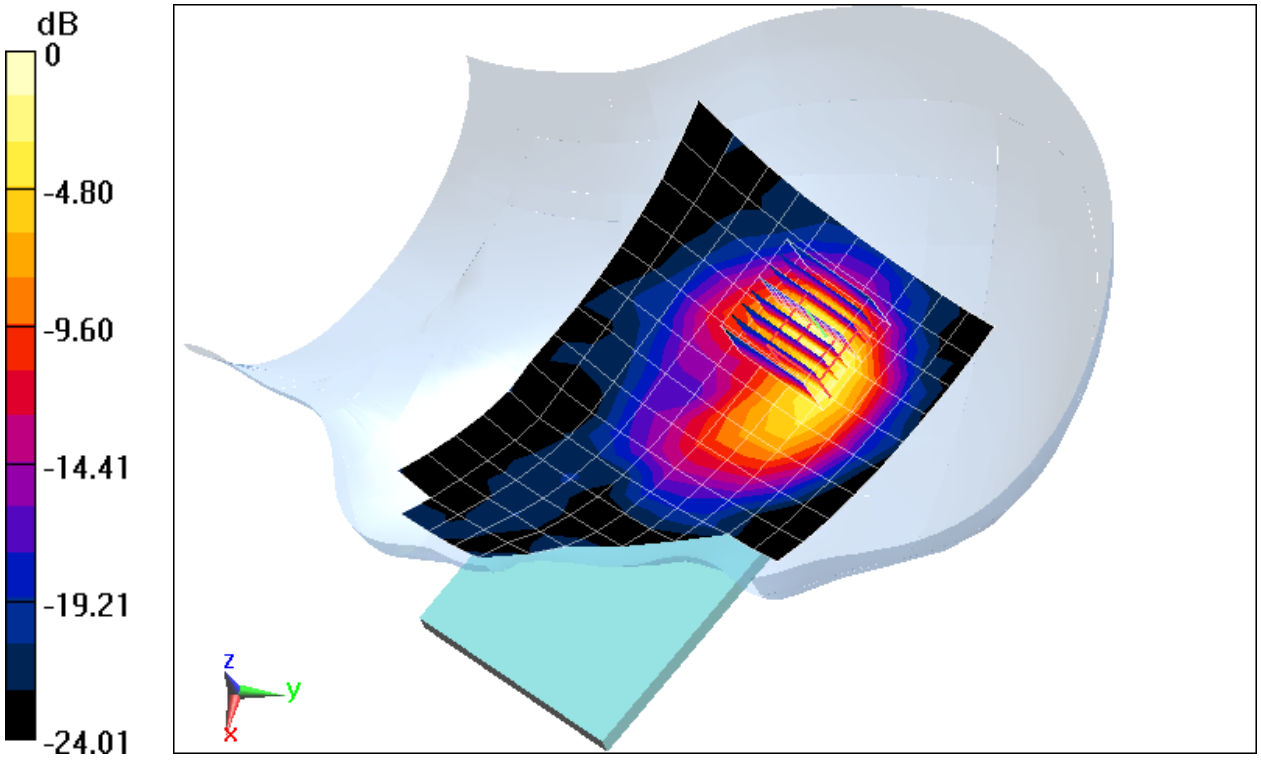
Communication System: UID 0, IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1
Medium: 2450 Head, Medium parameters used (interpolated):
f = 2412 MHz; σ = 1.785 S/m; ε_r = 39.092; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 10-22-2015; Ambient Temp: 23.3°C; Tissue Temp: 22.4°C

Probe: ES3DV3 - SN3318; ConvF(4.5, 4.5, 4.5); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11b, 22 MHz Bandwidth,
Left Head, Cheek, Ch 01, 1 Mbps

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.56 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.861 W/kg
SAR(1 g) = 0.337 W/kg



0 dB = 0.259 W/kg = -5.87 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45993

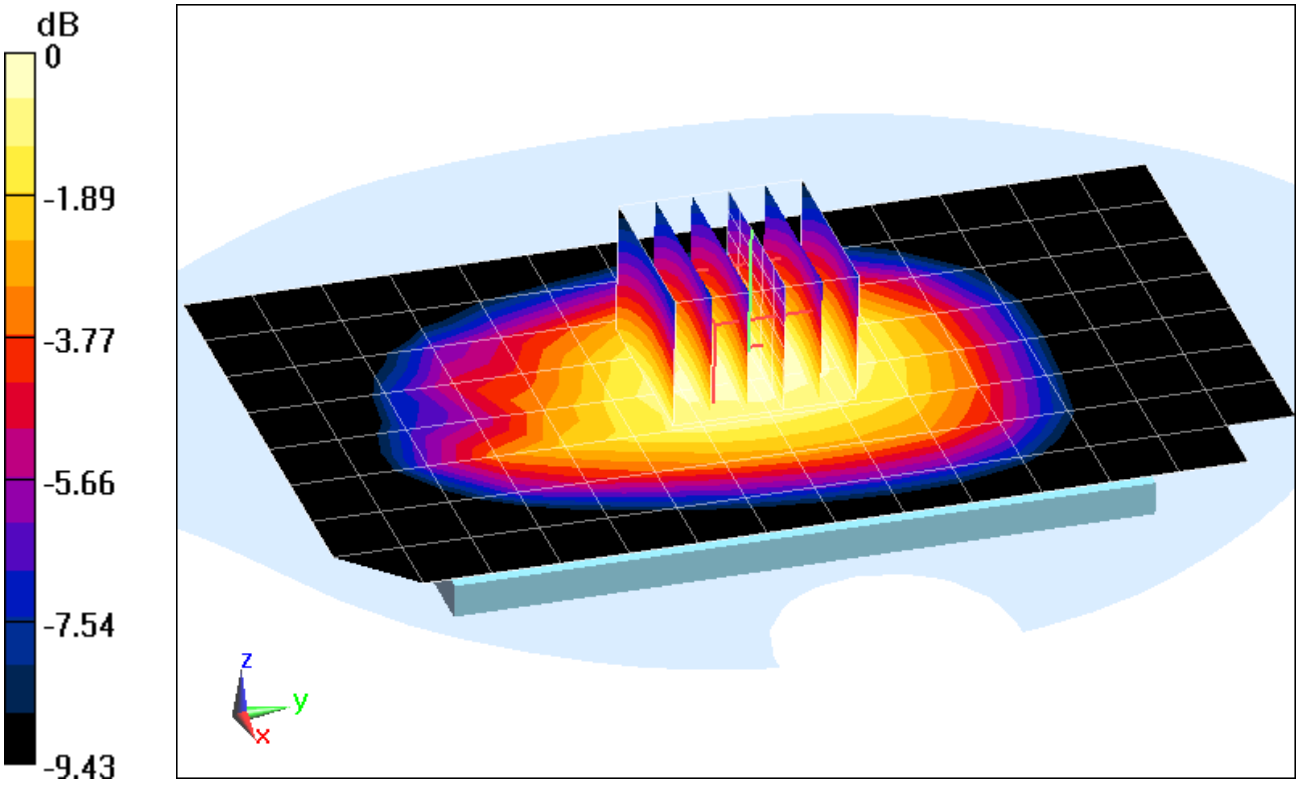
Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Body, Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.979 S/m; ε_r = 53.871; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-02-2015; Ambient Temp: 22.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3351; ConvF(6.11, 6.11, 6.11); Calibrated: 6/22/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2015
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: Cell. CDMA, Rule Part 90S, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.79 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.861 W/kg
SAR(1 g) = 0.676 W/kg



0 dB = 0.742 W/kg = -1.30 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45993

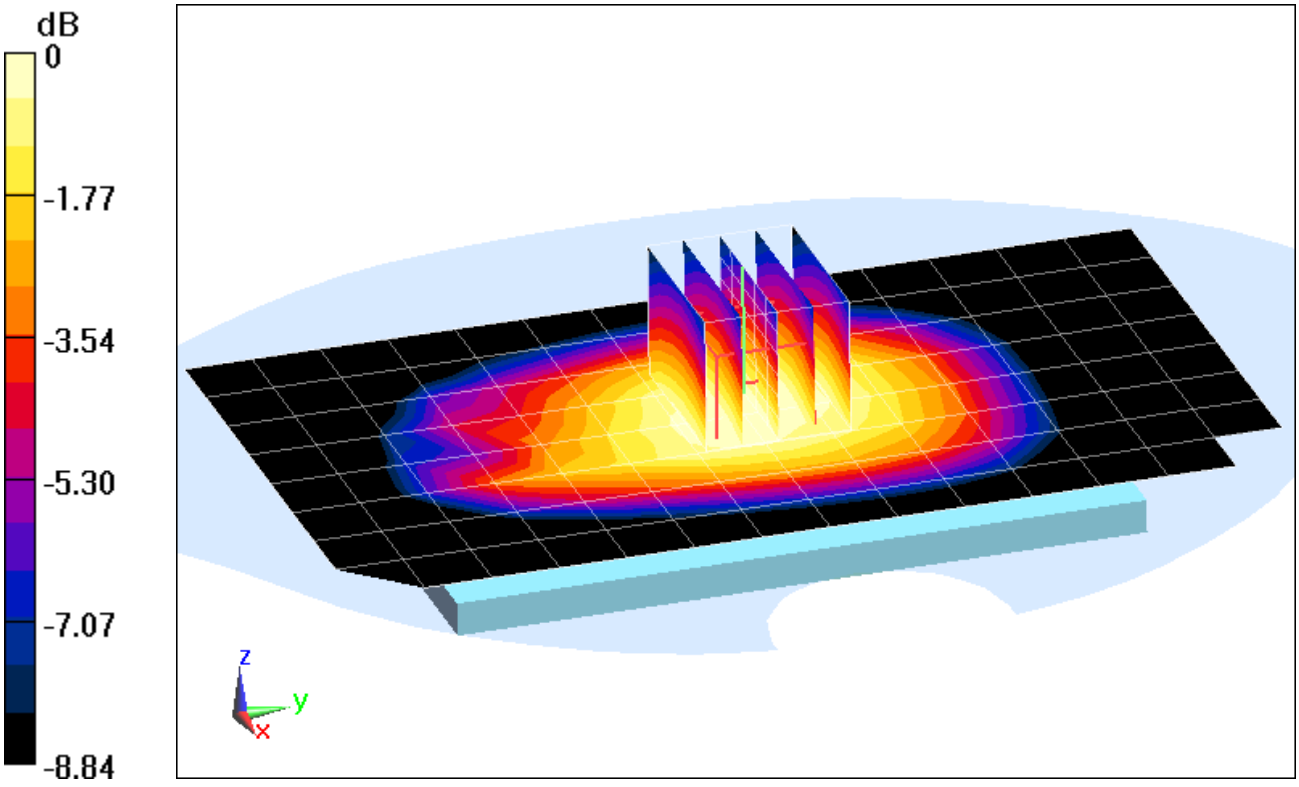
Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Body, Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.979 S/m; ε_r = 53.871; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-02-2015; Ambient Temp: 22.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3351; ConvF(6.11, 6.11, 6.11); Calibrated: 6/22/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2015
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: Cell. EVDO Rev. 0, Rule Part 90S, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.31 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.859 W/kg
SAR(1 g) = 0.684 W/kg



0 dB = 0.749 W/kg = -1.26 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45860

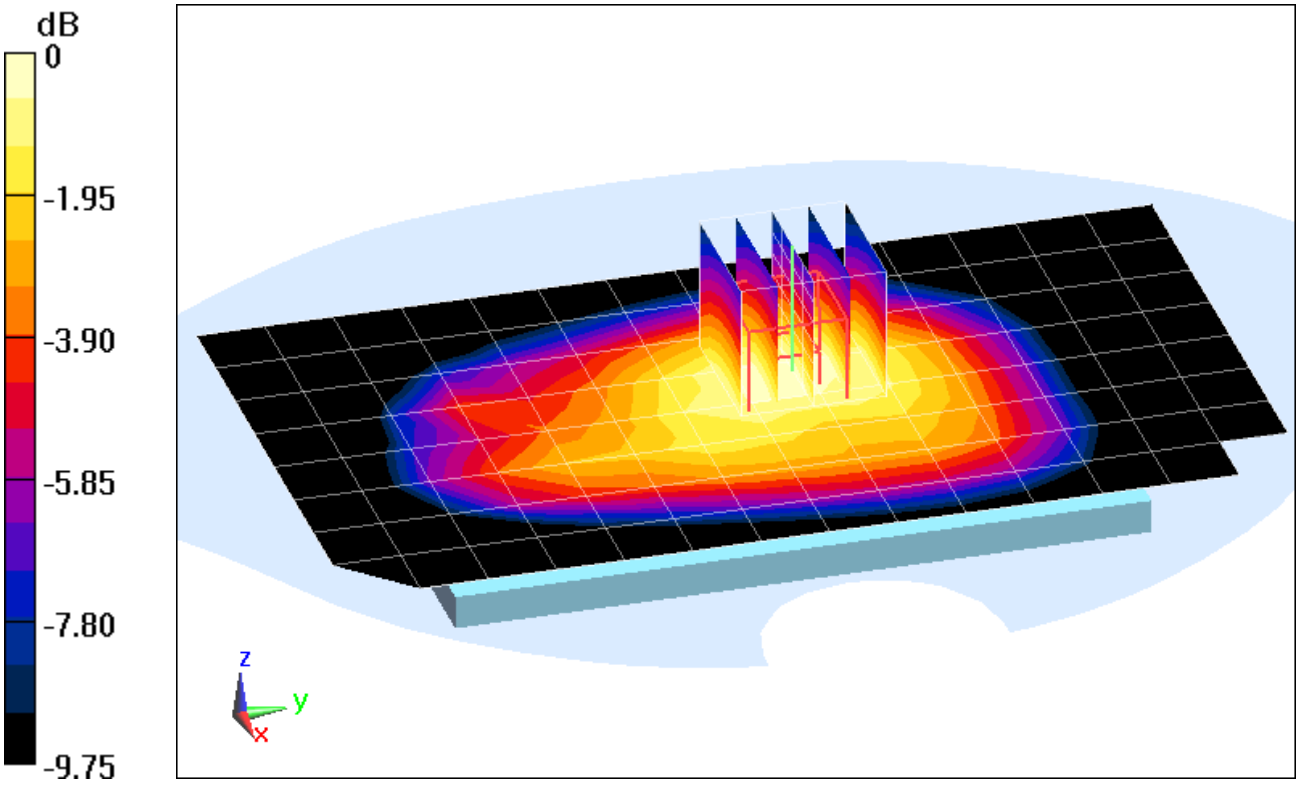
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body, Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.995 S/m; ε_r = 53.725; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-02-2015; Ambient Temp: 22.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3351; ConvF(6.11, 6.11, 6.11); Calibrated: 6/22/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2015
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: Cell. CDMA, Rule Part 22H, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.97 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.785 W/kg
SAR(1 g) = 0.589 W/kg



0 dB = 0.663 W/kg = -1.78 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45860

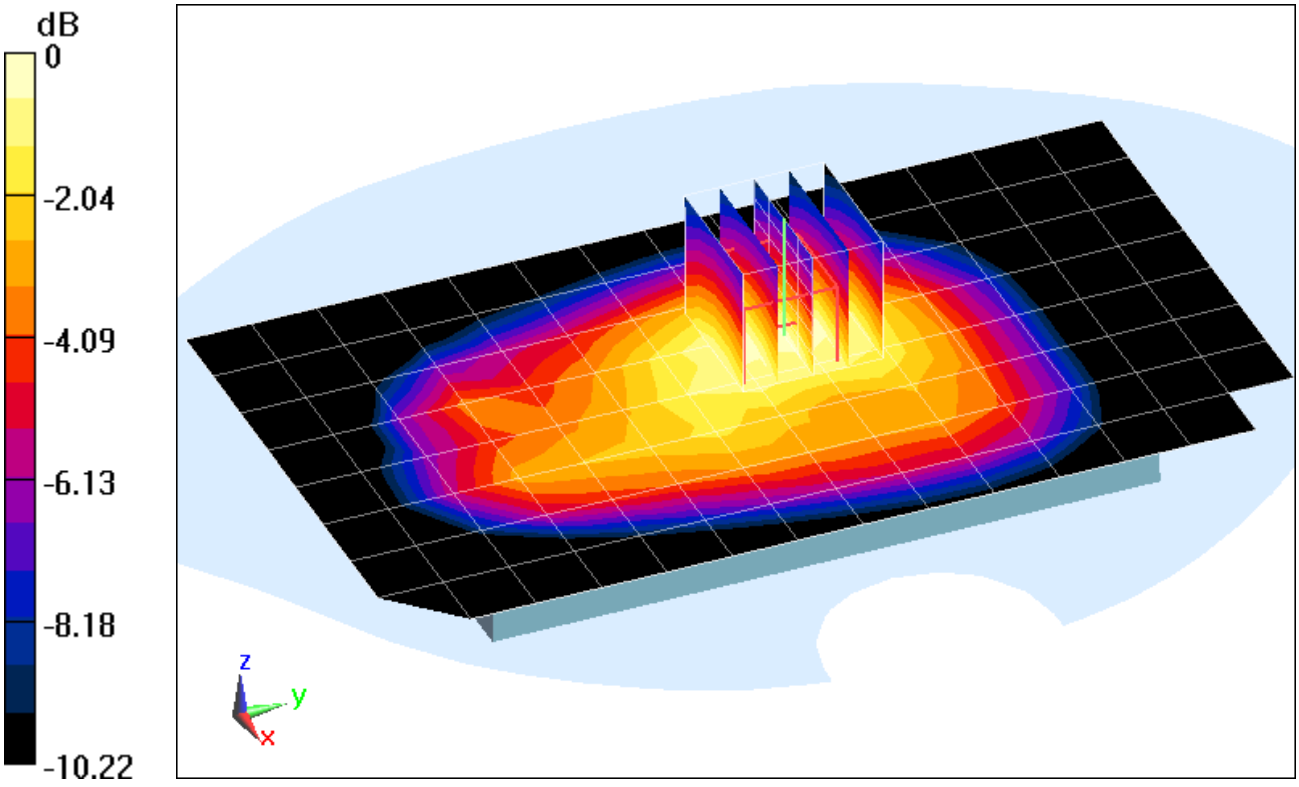
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body, Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.995 S/m; ε_r = 53.725; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-02-2015; Ambient Temp: 22.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3351; ConvF(6.11, 6.11, 6.11); Calibrated: 6/22/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2015
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: Cell. EVDO Rev. 0, Rule Part 22H, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.88 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.799 W/kg
SAR(1 g) = 0.588 W/kg



0 dB = 0.666 W/kg = -1.77 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45860

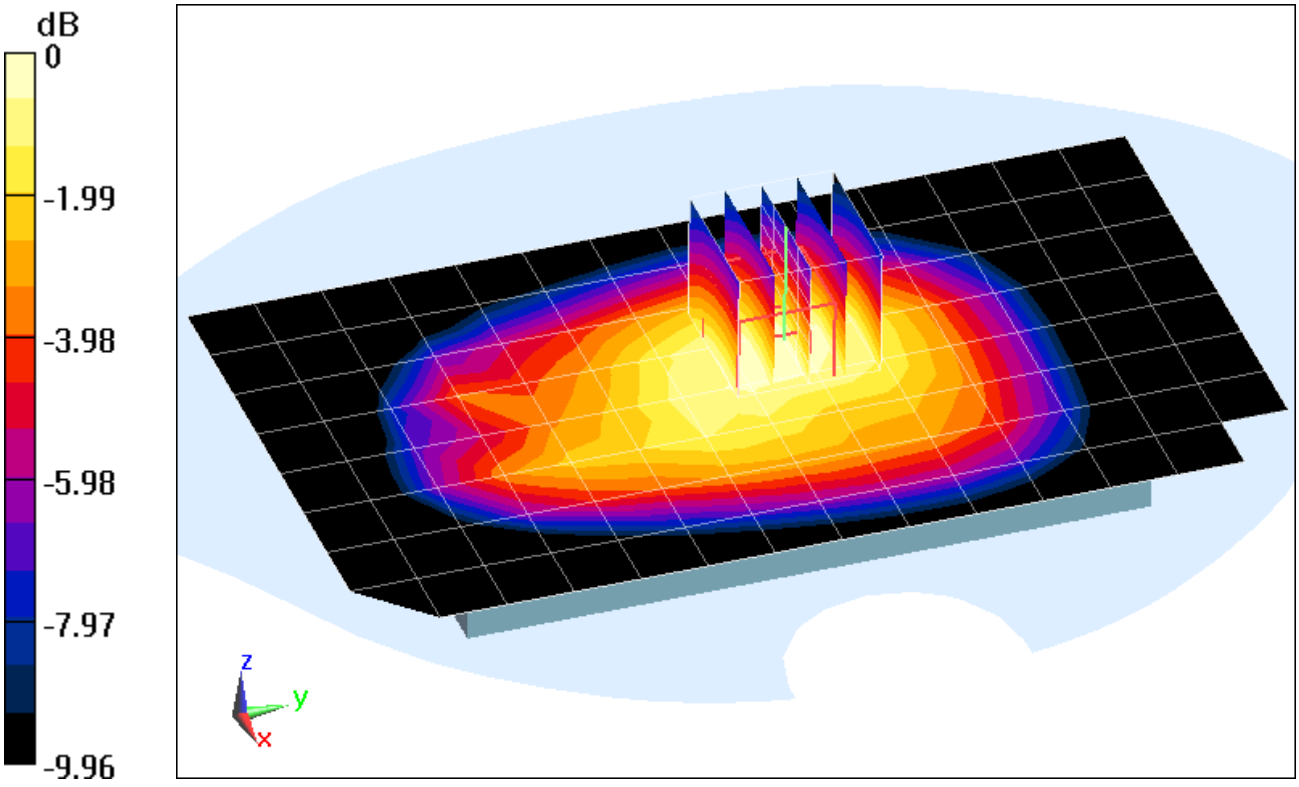
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Body, Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.995 S/m; ε_r = 53.724; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-02-2015; Ambient Temp: 22.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3351; ConvF(6.11, 6.11, 6.11); Calibrated: 6/22/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2015
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.06 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.568 W/kg
SAR(1 g) = 0.425 W/kg



0 dB = 0.475 W/kg = -3.23 dBW/kg

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DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45860

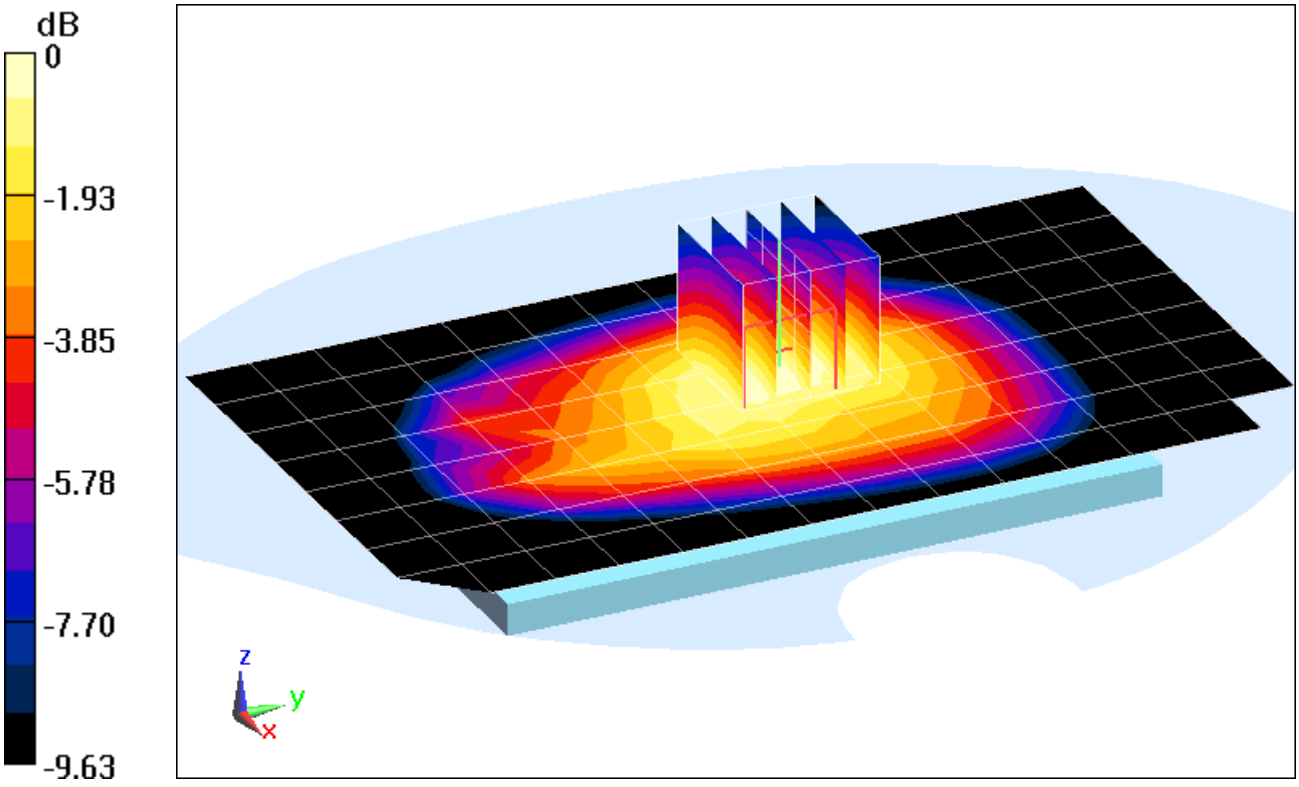
Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76
Medium: 835 Body, Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.995 S/m; ε_r = 53.724; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-02-2015; Ambient Temp: 22.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3351; ConvF(6.11, 6.11, 6.11); Calibrated: 6/22/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2015
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.97 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.555 W/kg
SAR(1 g) = 0.418 W/kg



0 dB = 0.470 W/kg = -3.28 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45860

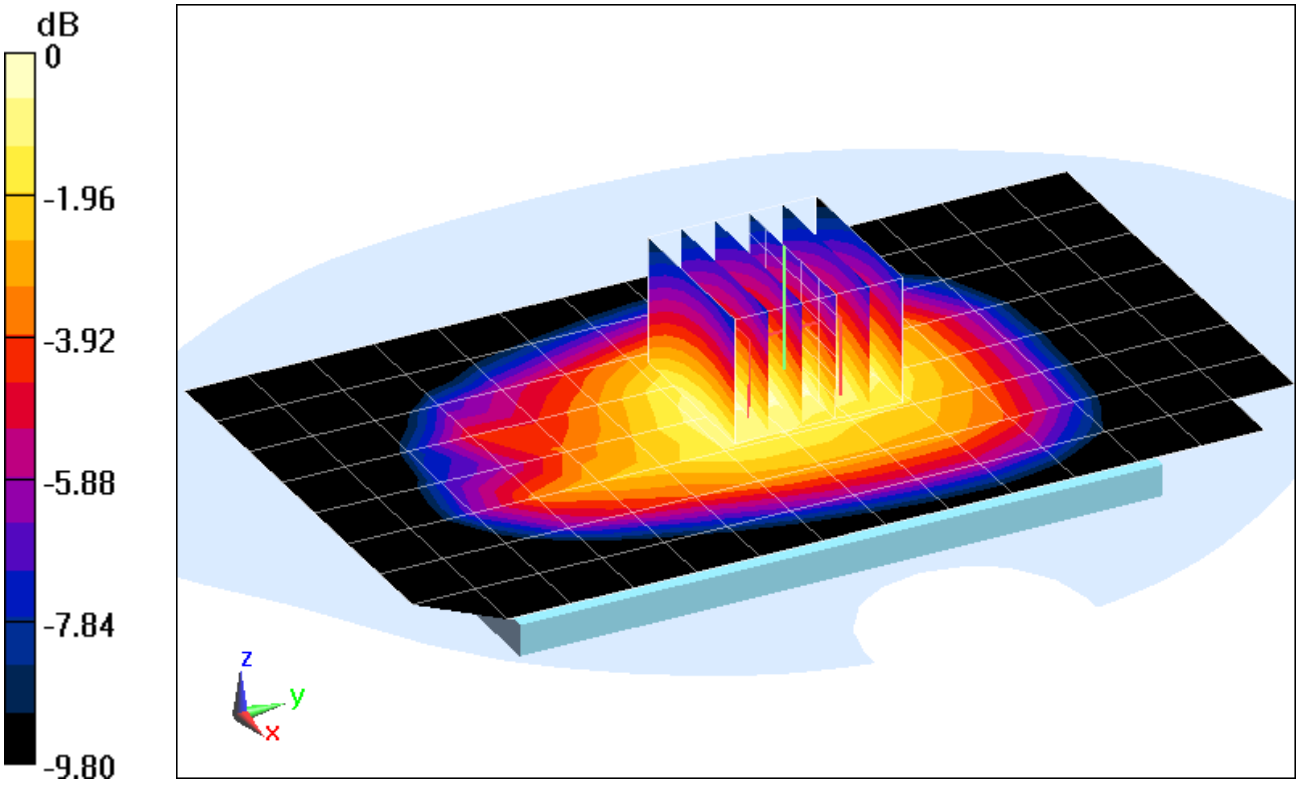
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body, Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.995 S/m; ε_r = 53.724; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-02-2015; Ambient Temp: 22.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3351; ConvF(6.11, 6.11, 6.11); Calibrated: 6/22/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2015
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.27 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.523 W/kg
SAR(1 g) = 0.395 W/kg



0 dB = 0.440 W/kg = -3.57 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82734

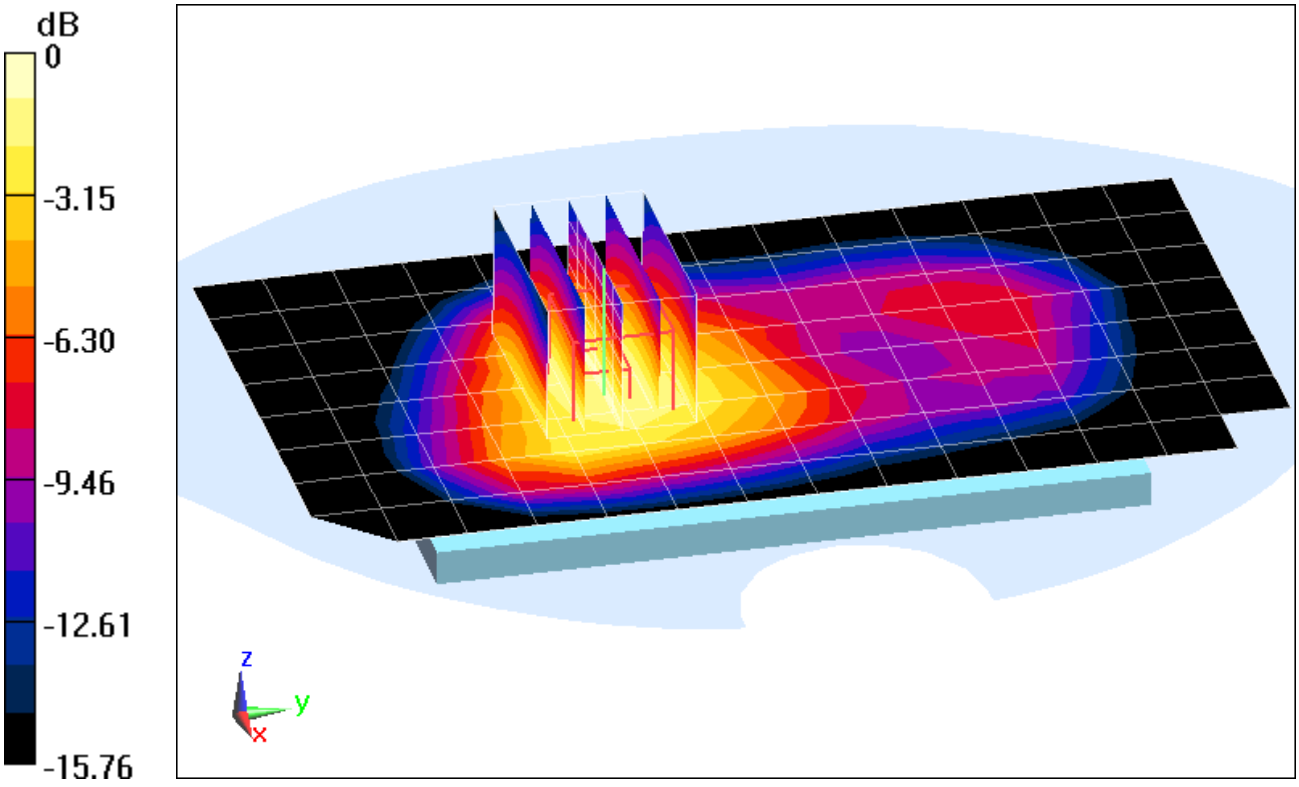
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body, Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.487 S/m; ε_r = 51.711; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-12-2015; Ambient Temp: 22.3°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3319; ConvF(4.83, 4.83, 4.83); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 1750, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (7x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.38 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.939 W/kg
SAR(1 g) = 0.628 W/kg



0 dB = 0.871 W/kg = -0.60 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82734

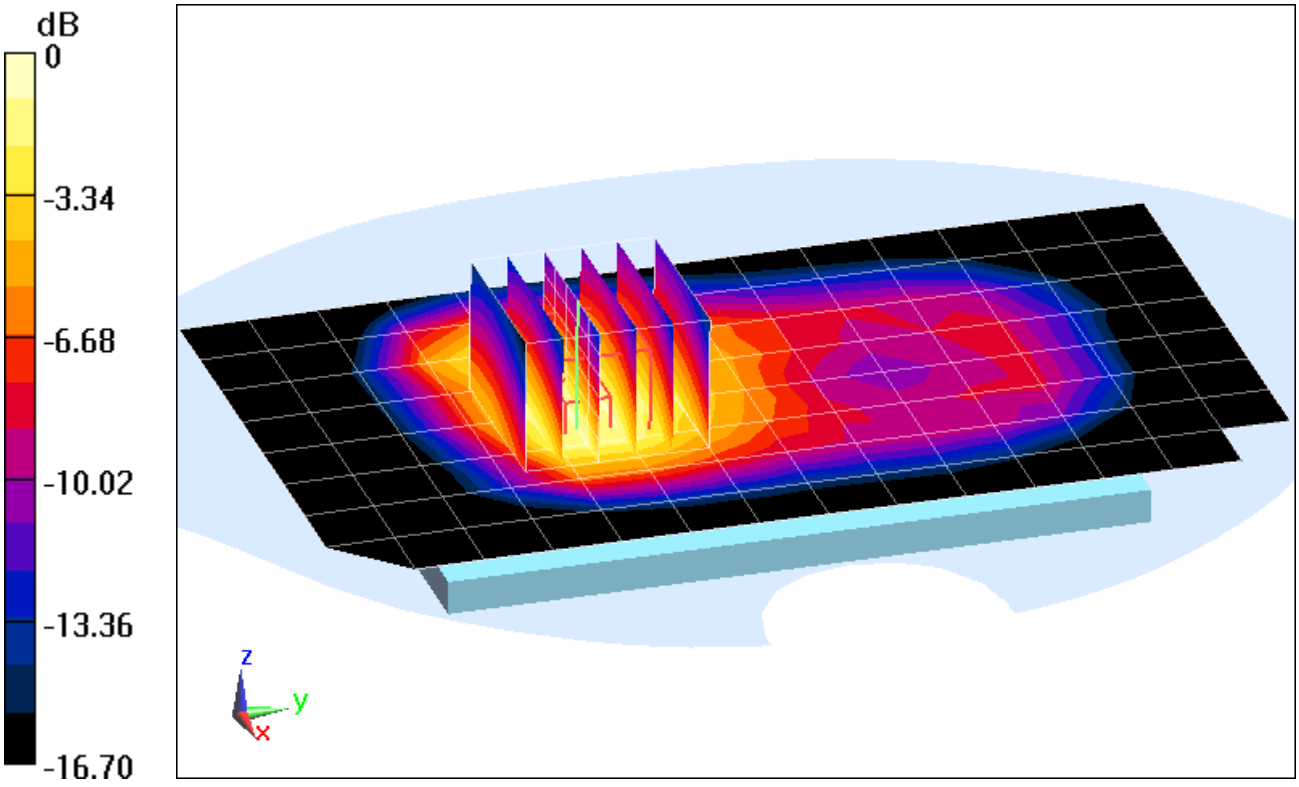
Communication System: UID 0, UMTS; Frequency: 1712.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body, Medium parameters used (interpolated):
f = 1712.4 MHz; σ = 1.466 S/m; ε_r = 51.762; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-12-2015; Ambient Temp: 22.3°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3319; ConvF(4.83, 4.83, 4.83); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 1750, Body SAR, Front side, Low.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.46 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.33 W/kg
SAR(1 g) = 0.868 W/kg



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

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45860

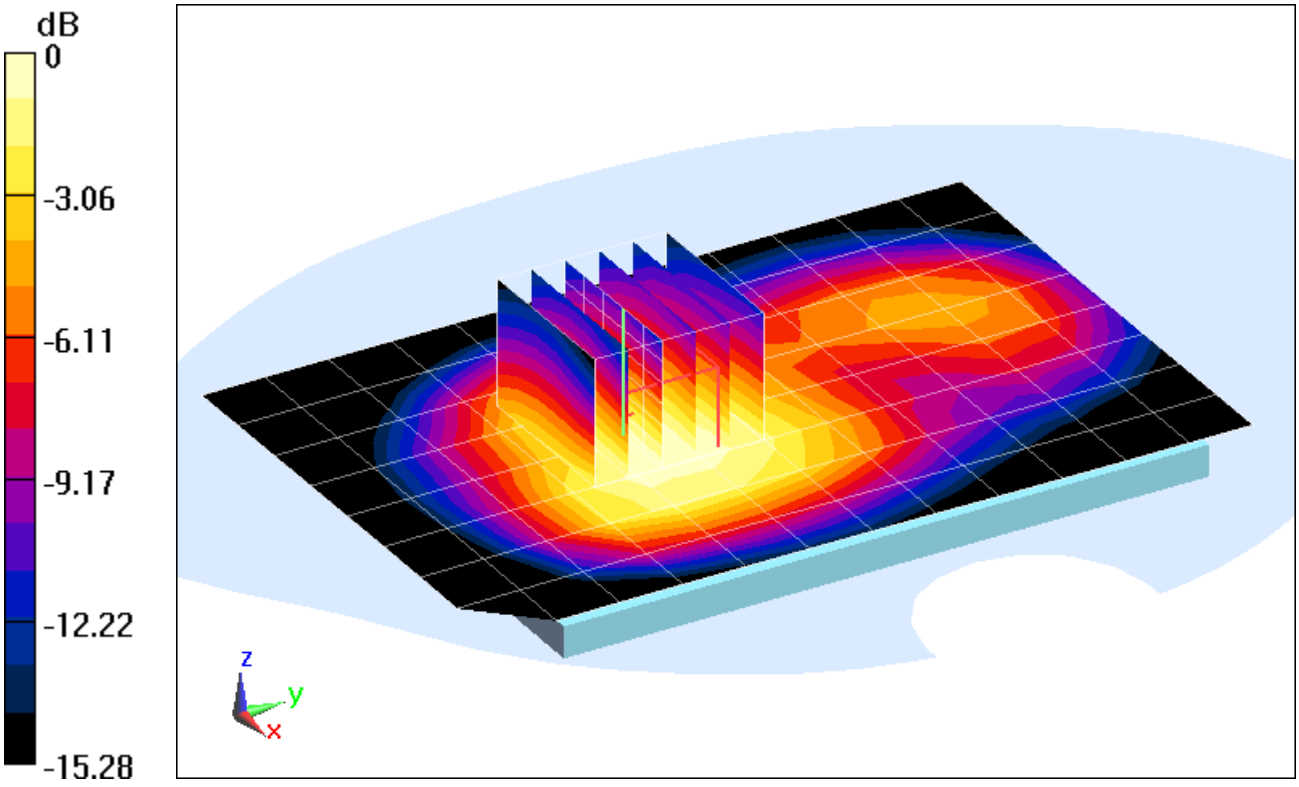
Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body, Medium parameters used (interpolated):
f = 1880 MHz; σ = 1.513 S/m; ε_r = 52.71; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-02-2015; Ambient Temp: 22.5°C; Tissue Temp: 21.5°C

Probe: ES3DV2 - SN3022; ConvF(4.56, 4.56, 4.56); Calibrated: 8/26/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/18/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.31 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.878 W/kg
SAR(1 g) = 0.581 W/kg



0 dB = 0.749 W/kg = -1.26 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45860

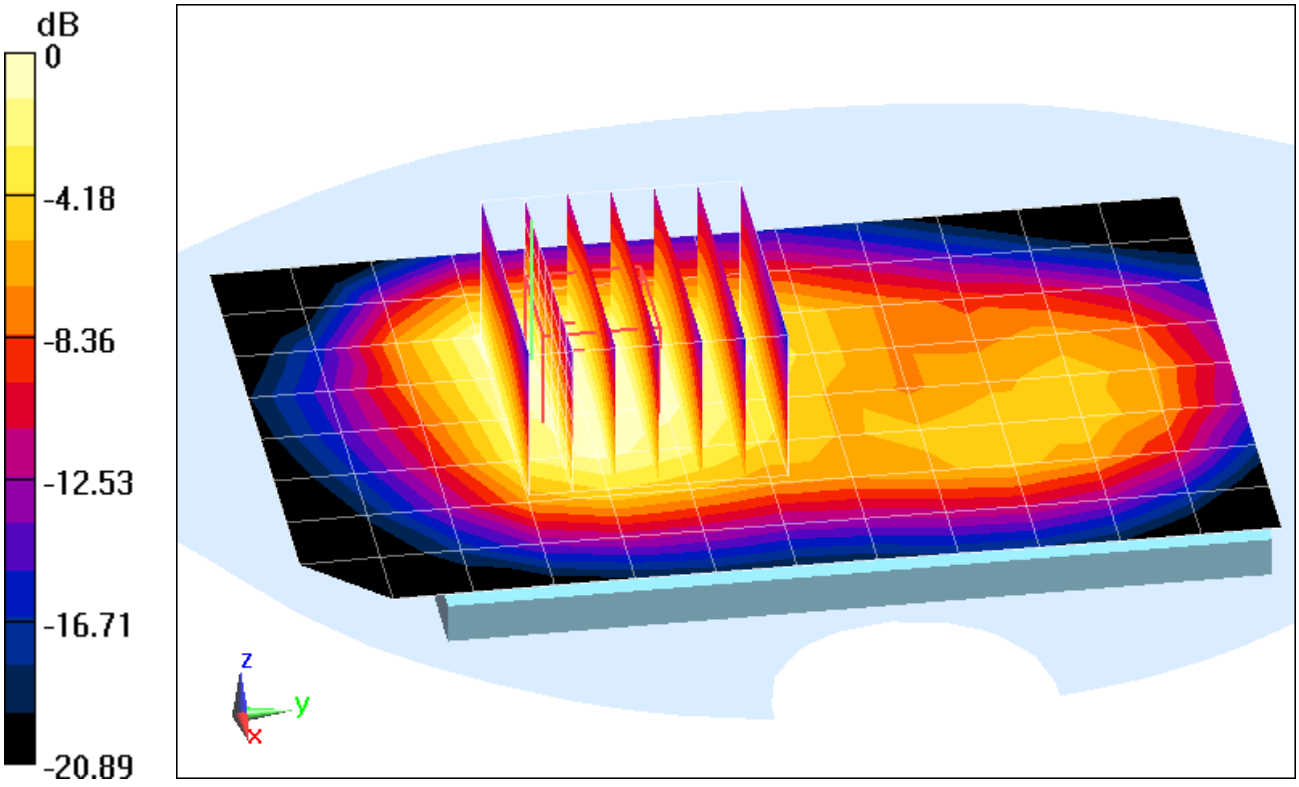
Communication System: UID 0, CDMA; Frequency: 1851.25 MHz; Duty Cycle: 1:1
Medium: 1900 Body, Medium parameters used (interpolated):
f = 1851.25 MHz; σ = 1.48 S/m; ε_r = 52.797; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-02-2015; Ambient Temp: 22.5°C; Tissue Temp: 21.5°C

Probe: ES3DV2 - SN3022; ConvF(4.56, 4.56, 4.56); Calibrated: 8/26/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/18/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: PCS EVDO Rev. 0, Body SAR, Front side, Low.ch

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.88 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.769 W/kg



0 dB = 0.888 W/kg = -0.52 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82874

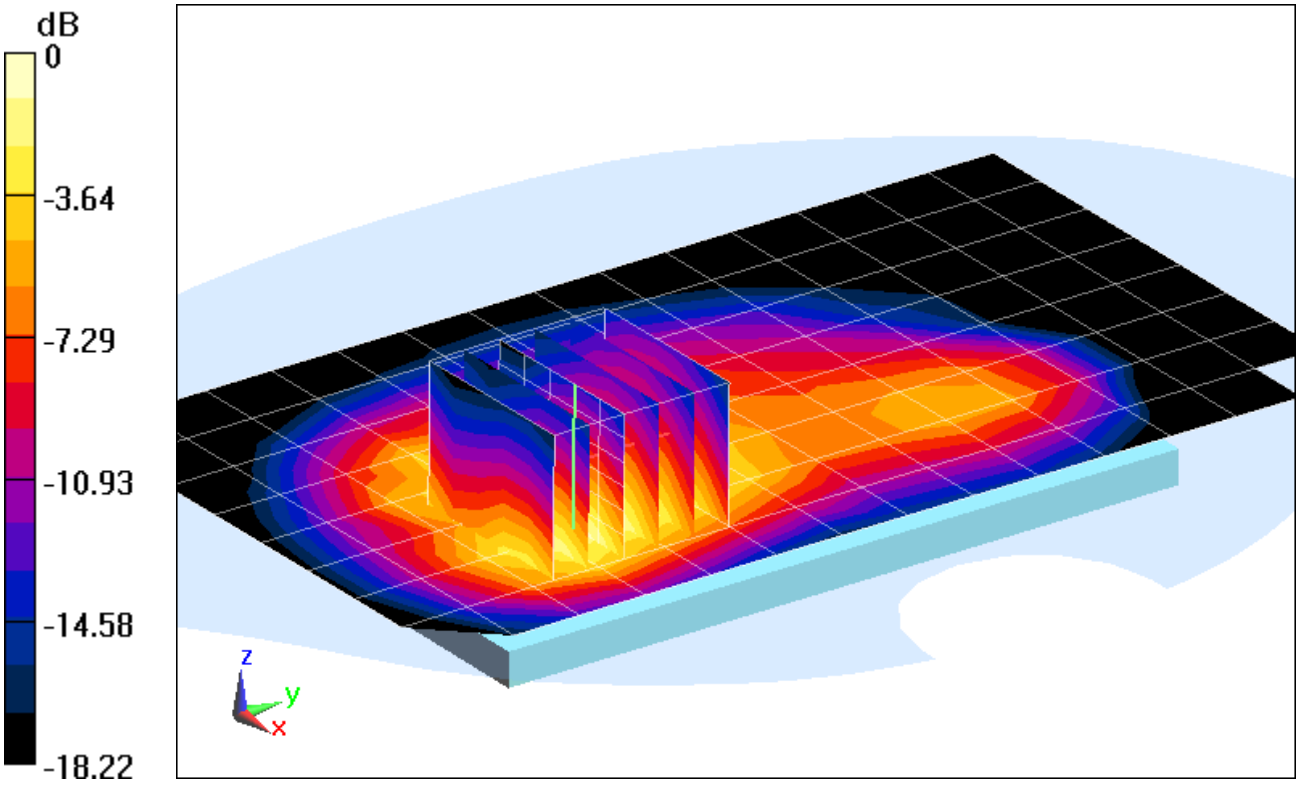
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Body, Medium parameters used:
f = 1880 MHz; σ = 1.546 S/m; ε_r = 50.95; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-29-2015; Ambient Temp: 23.4°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3319; ConvF(4.53, 4.53, 4.53); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.48 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.472 W/kg
SAR(1 g) = 0.283 W/kg



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

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82874

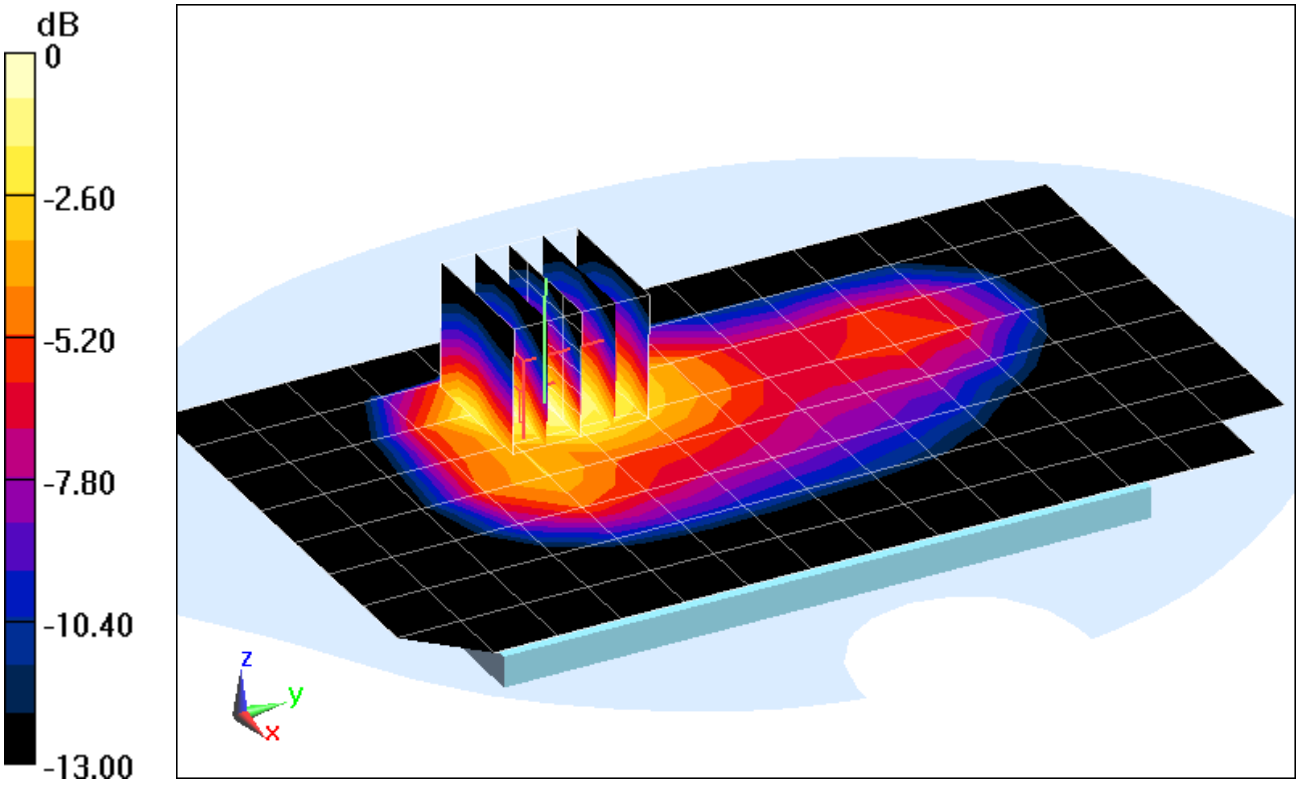
Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.76
Medium: 1900 Body, Medium parameters used:
f = 1880 MHz; σ = 1.546 S/m; ε_r = 50.95; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-29-2015; Ambient Temp: 23.4°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3319; ConvF(4.53, 4.53, 4.53); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GPRS 1900, Body SAR, Front side, Mid.ch, 3 Tx Slots

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.30 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.702 W/kg



0 dB = 0.838 W/kg = -0.77 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82874

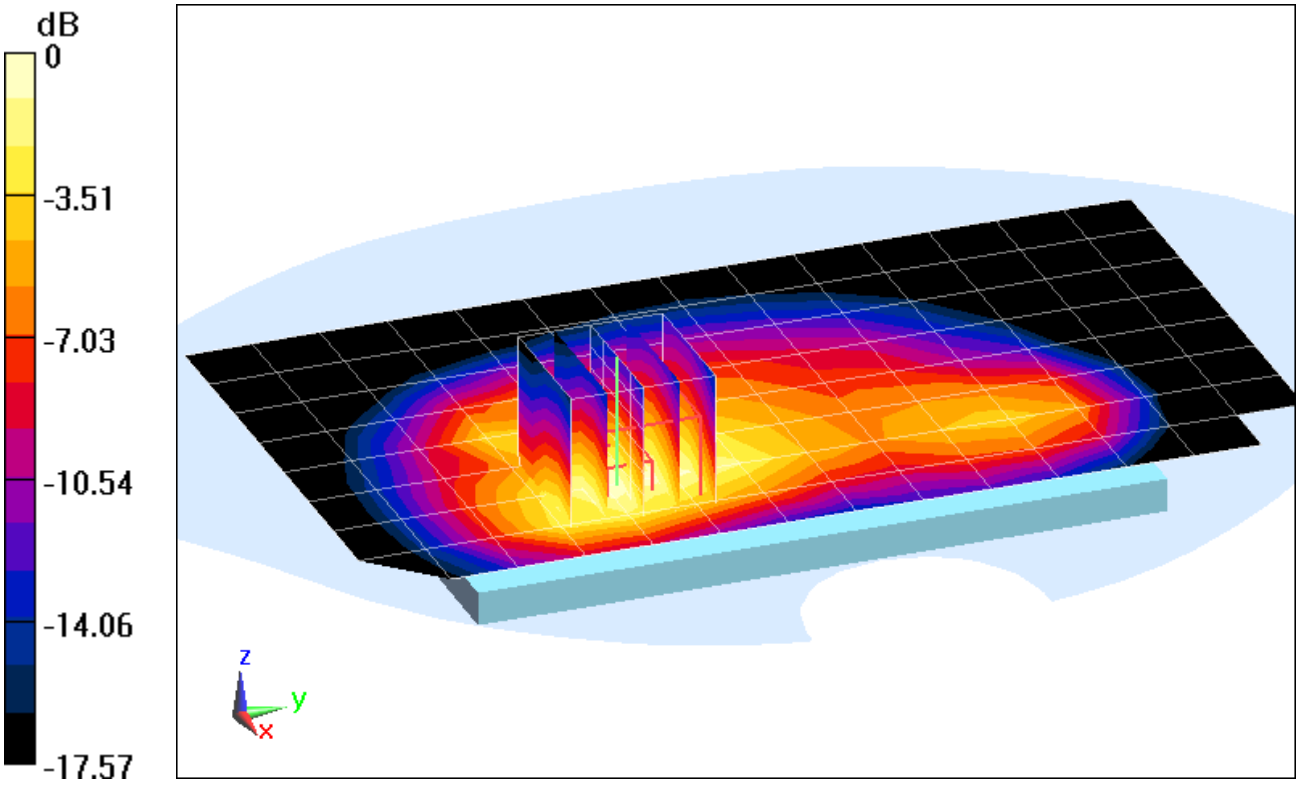
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body, Medium parameters used:
f = 1880 MHz; σ = 1.546 S/m; ε_r = 50.95; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-29-2015; Ambient Temp: 23.4°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3319; ConvF(4.53, 4.53, 4.53); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.06 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.831 W/kg
SAR(1 g) = 0.512 W/kg



0 dB = 0.614 W/kg = -2.12 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82874

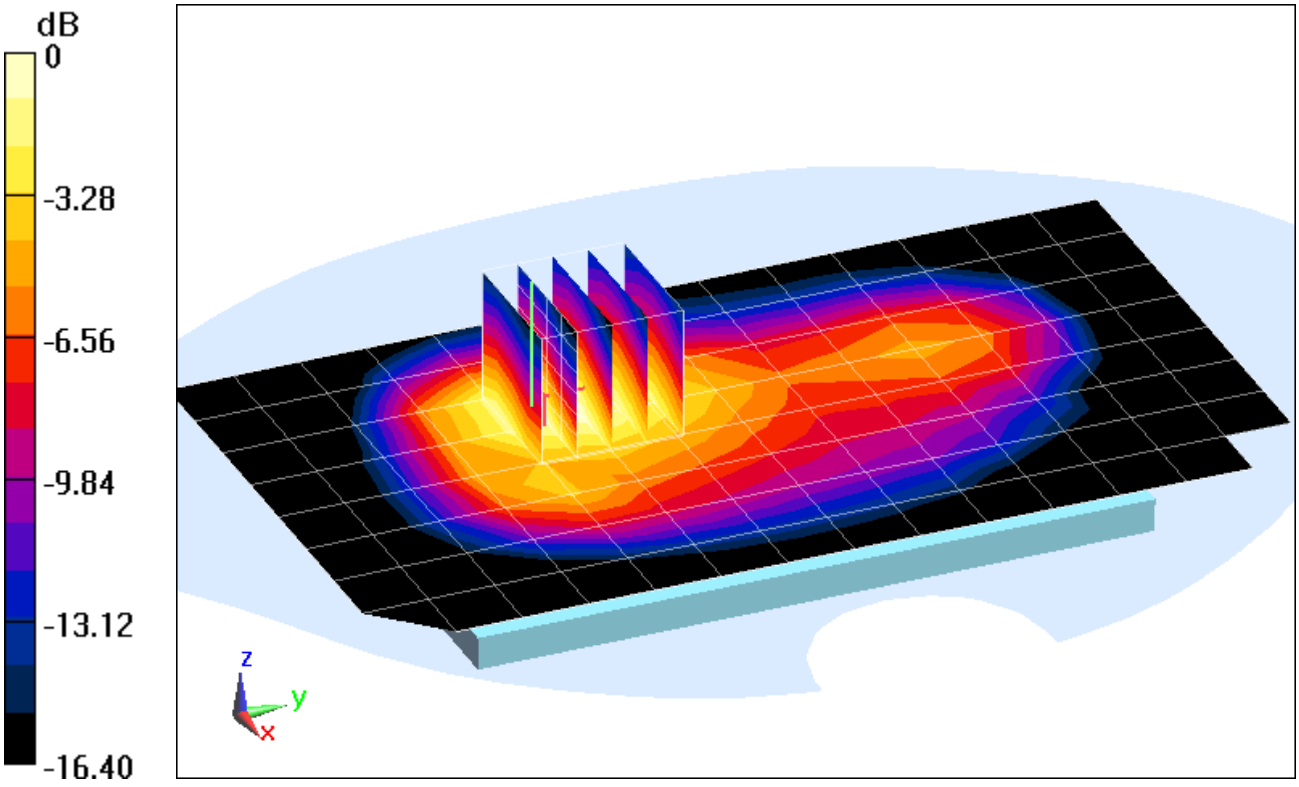
Communication System: UID 0, UMTS; Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: 1900 Body, Medium parameters used (interpolated):
f = 1907.6 MHz; σ = 1.584 S/m; ε_r = 50.893; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-29-2015; Ambient Temp: 23.4°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3319; ConvF(4.53, 4.53, 4.53); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 1900, Body SAR, Front side, High.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.70 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.26 W/kg
SAR(1 g) = 0.763 W/kg



0 dB = 0.885 W/kg = -0.53 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82874

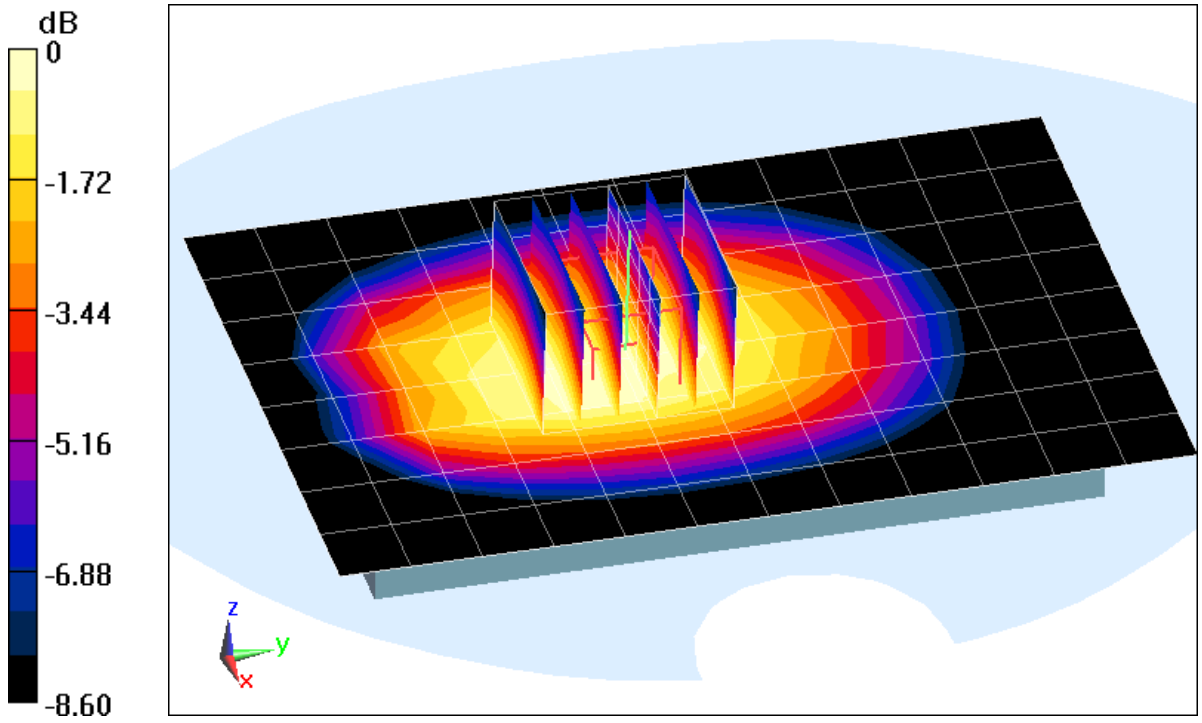
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body, Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.931 S/m; ε_r = 54.598; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-28-2015; Ambient Temp: 23.3°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3213; ConvF(6.11, 6.11, 6.11); Calibrated: 1/20/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/20/2015
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 12, Body SAR, Back side, Mid.ch,
QPSK, 10 MHz Bandwidth, 1 RB, 49 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.66 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.380 W/kg
SAR(1 g) = 0.309 W/kg



0 dB = 0.335 W/kg = -4.75 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45860

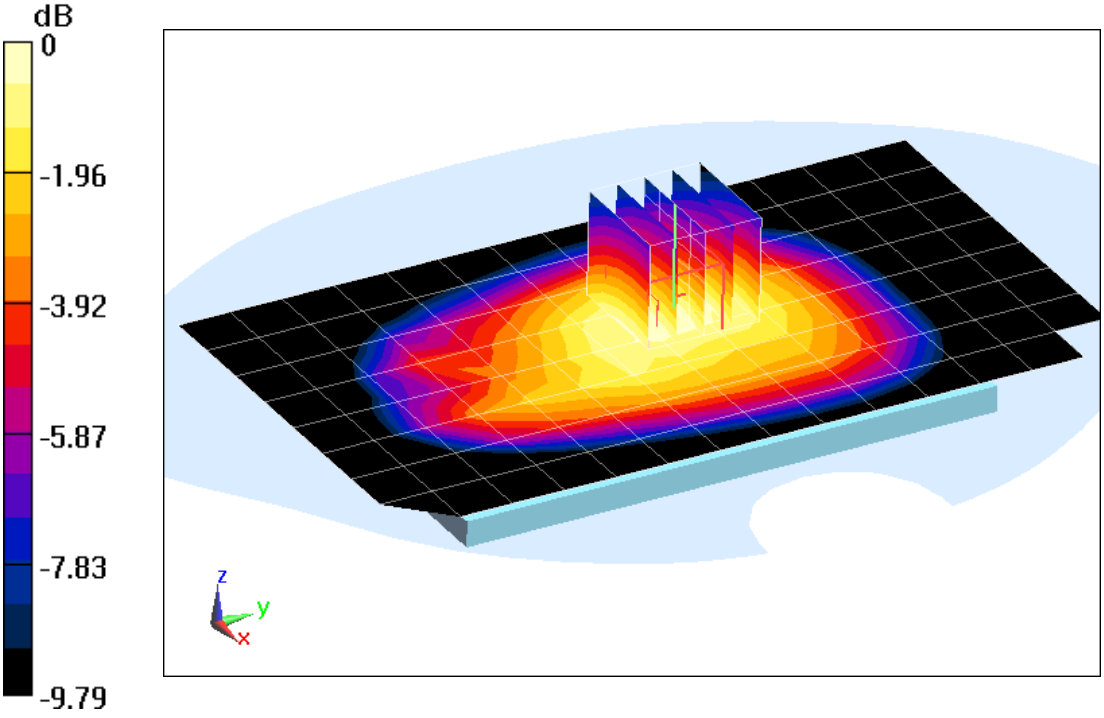
Communication System: UID 0, LTE Band 26; Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Body, Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.995 S/m; ε_r = 53.725; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-02-2015; Ambient Temp: 22.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3351; ConvF(6.11, 6.11, 6.11); Calibrated: 6/22/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2015
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 26 (Cell.), Body SAR, Back side, Mid.ch, QPSK, 15 MHz Bandwidth, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.30 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.525 W/kg
SAR(1 g) = 0.395 W/kg



0 dB = 0.441 W/kg = -3.56 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82783

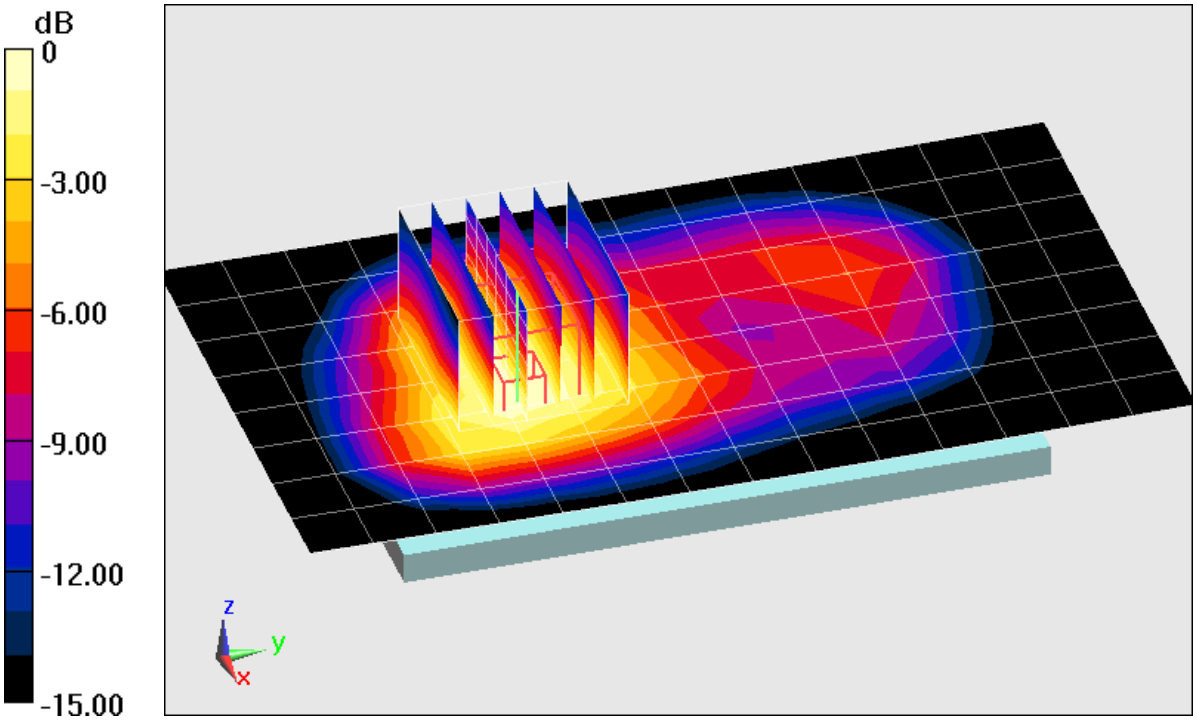
Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium: 1750 Body, Medium parameters used (interpolated):
f = 1732.5 MHz; σ = 1.462 S/m; ε_r = 52.632; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-28-2015; Ambient Temp: 21.3°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3318; ConvF(4.95, 4.95, 4.95); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: ELI v6.0; Type: QDOVA003AA; Serial: TP:2027
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (7x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.11 V/m; Power Drift = 0.21 dB
Peak SAR (extrapolated) = 1.23 W/kg
SAR(1 g) = 0.806 W/kg



0 dB = 0.942 W/kg = -0.26 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82783

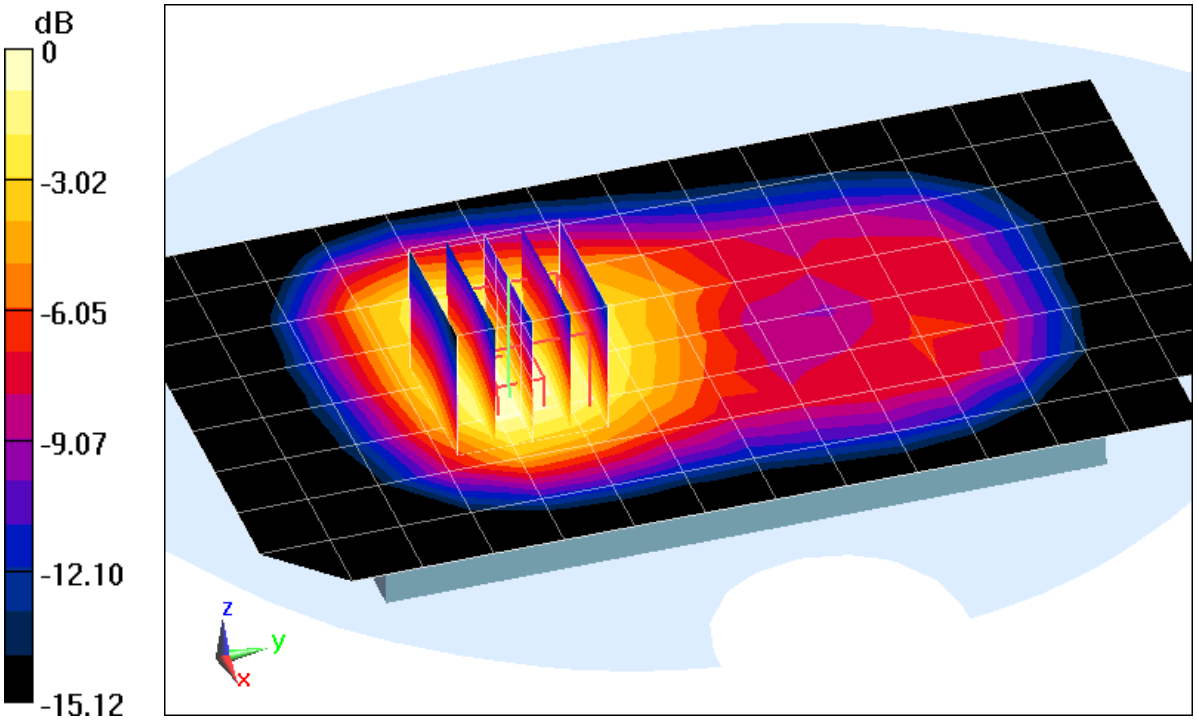
Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium: 1750 Body, Medium parameters used (interpolated):
f = 1732.5 MHz; σ = 1.487 S/m; ε_r = 51.711; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-12-2015; Ambient Temp: 22.3°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3319; ConvF(4.83, 4.83, 4.83); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.07 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 1.56 W/kg
SAR(1 g) = 1.03 W/kg



0 dB = 1.22 W/kg = 0.86 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45993

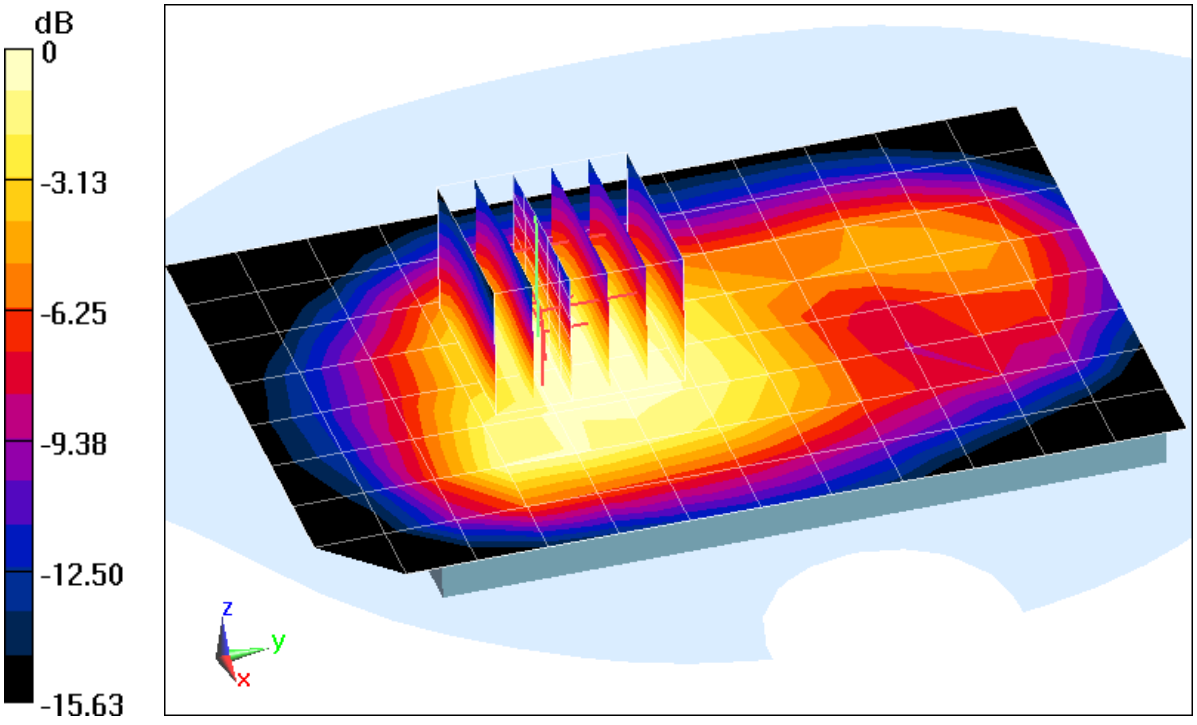
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Body, Medium parameters used (interpolated):
f = 1905 MHz; σ = 1.589 S/m; ε_r = 52.566; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-04-2015; Ambient Temp: 22.9°C; Tissue Temp: 22.1°C

Probe: ES3DV2 - SN3022; ConvF(4.56, 4.56, 4.56); Calibrated: 8/26/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/18/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 25 (PCS), Body SAR, Back side, High.ch, QPSK, 20 MHz Bandwidth, 1 RB, 50 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.11 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.835 W/kg
SAR(1 g) = 0.555 W/kg



0 dB = 0.644 W/kg = -1.91 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 45993

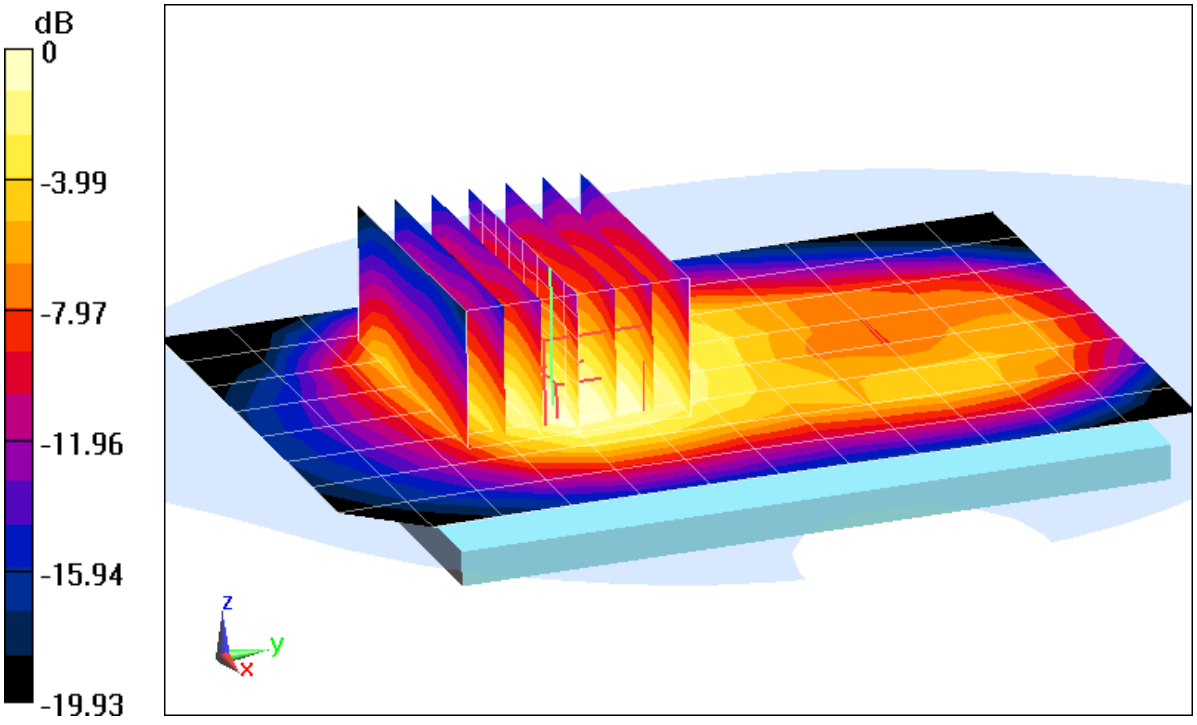
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Body, Medium parameters used (interpolated):
f = 1905 MHz; σ = 1.589 S/m; ε_r = 52.566; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-04-2015; Ambient Temp: 22.9°C; Tissue Temp: 22.1°C

Probe: ES3DV2 - SN3022; ConvF(4.56, 4.56, 4.56); Calibrated: 8/26/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/18/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 25 (PCS), Body SAR, Front side, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (9x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.05 V/m; Power Drift = 0.21 dB
Peak SAR (extrapolated) = 1.14 W/kg
SAR(1 g) = 0.699 W/kg



0 dB = 0.811 W/kg = -0.91 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82734

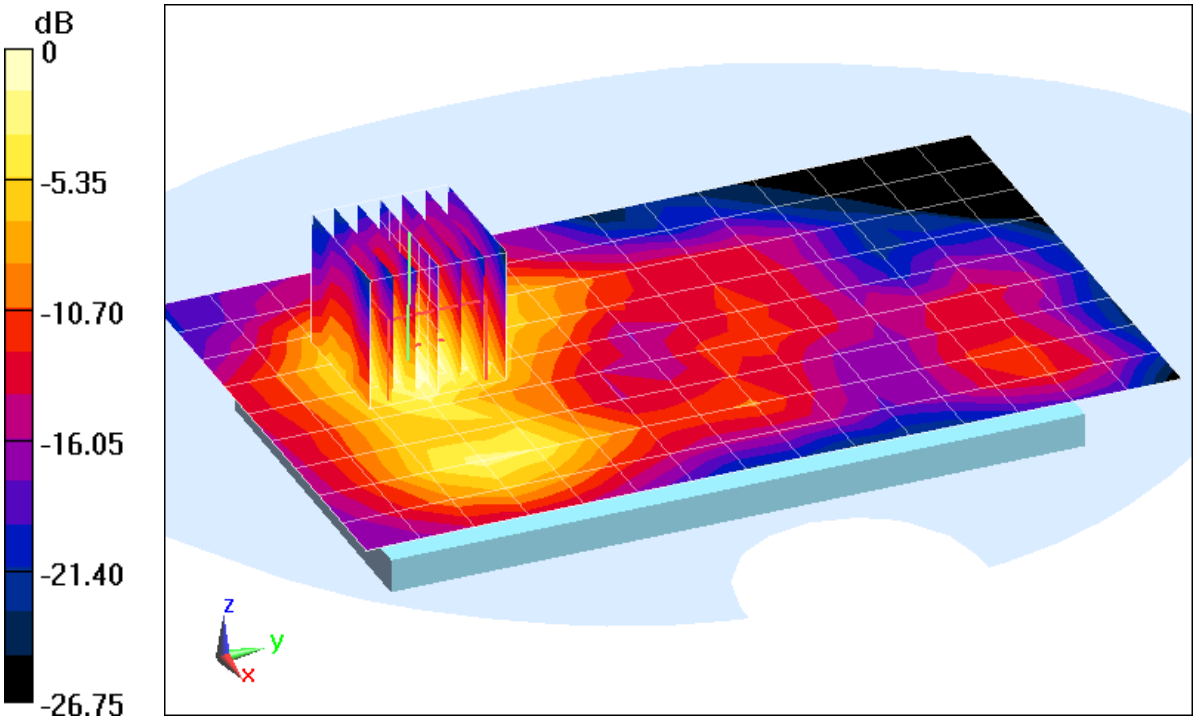
Communication System: UID 0, LTE Band 41; Frequency: 2506 MHz; Duty Cycle: 1:1.58
Medium: 2450 Body, Medium parameters used (interpolated):
f = 2506 MHz; σ = 2.075 S/m; ε_r = 50.708; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-28-2015; Ambient Temp: 22.3°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.11, 4.11, 4.11); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 41, Body SAR, Back side, Low.ch,
QPSK, 20 MHz Bandwidth, 1 RB, 0 RB Offset

Area Scan (10x16x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.96 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.13 W/kg
SAR(1 g) = 0.530 W/kg



0 dB = 0.660 W/kg = -1.80 dBW/kg

DUT: A3LSMJ320P; Type: Portable Handset; Serial: 82874

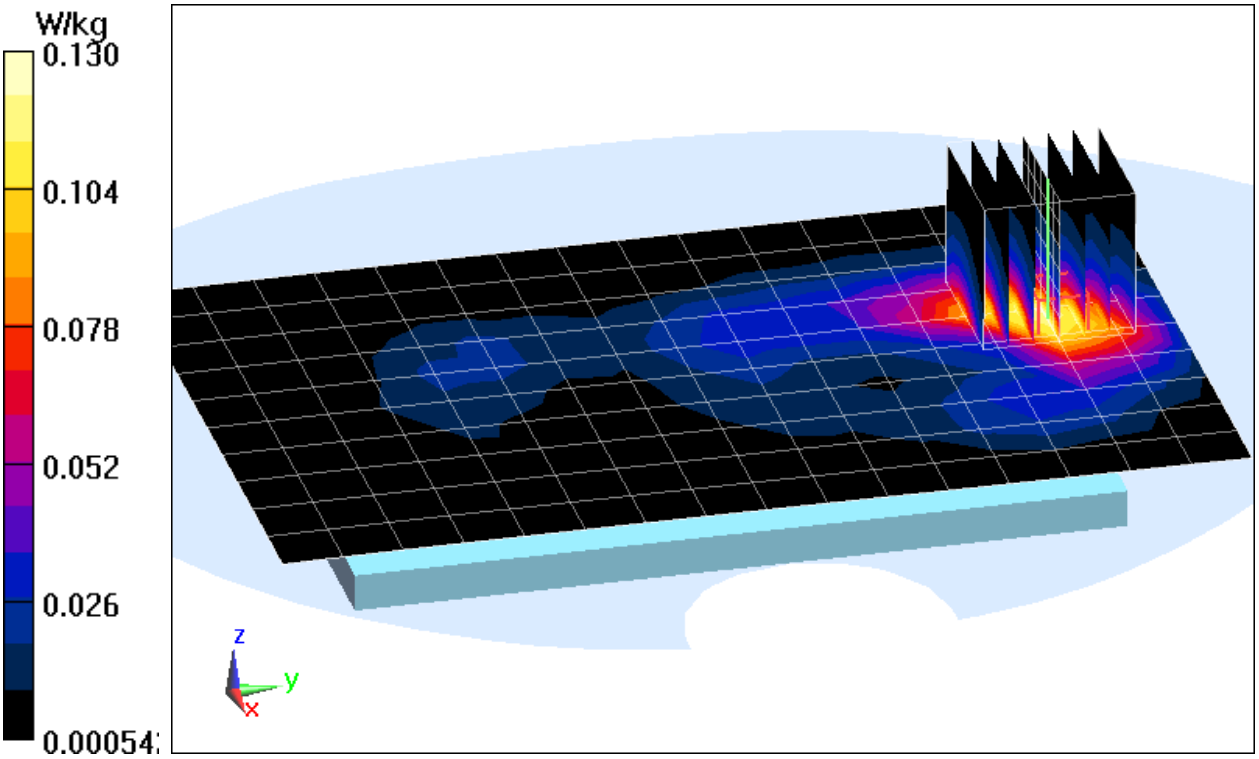
Communication System: UID 0, IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1
Medium: 2450 Body, Medium parameters used (interpolated):
f = 2412 MHz; σ = 1.95 S/m; ε_r = 51.053; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-28-2015; Ambient Temp: 22.3°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.11, 4.11, 4.11); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11b, 22 MHz Bandwidth,
Body SAR, Ch 01, 1 Mbps, Back Side

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.478 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.197 W/kg
SAR(1 g) = 0.101 W/kg



APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1003

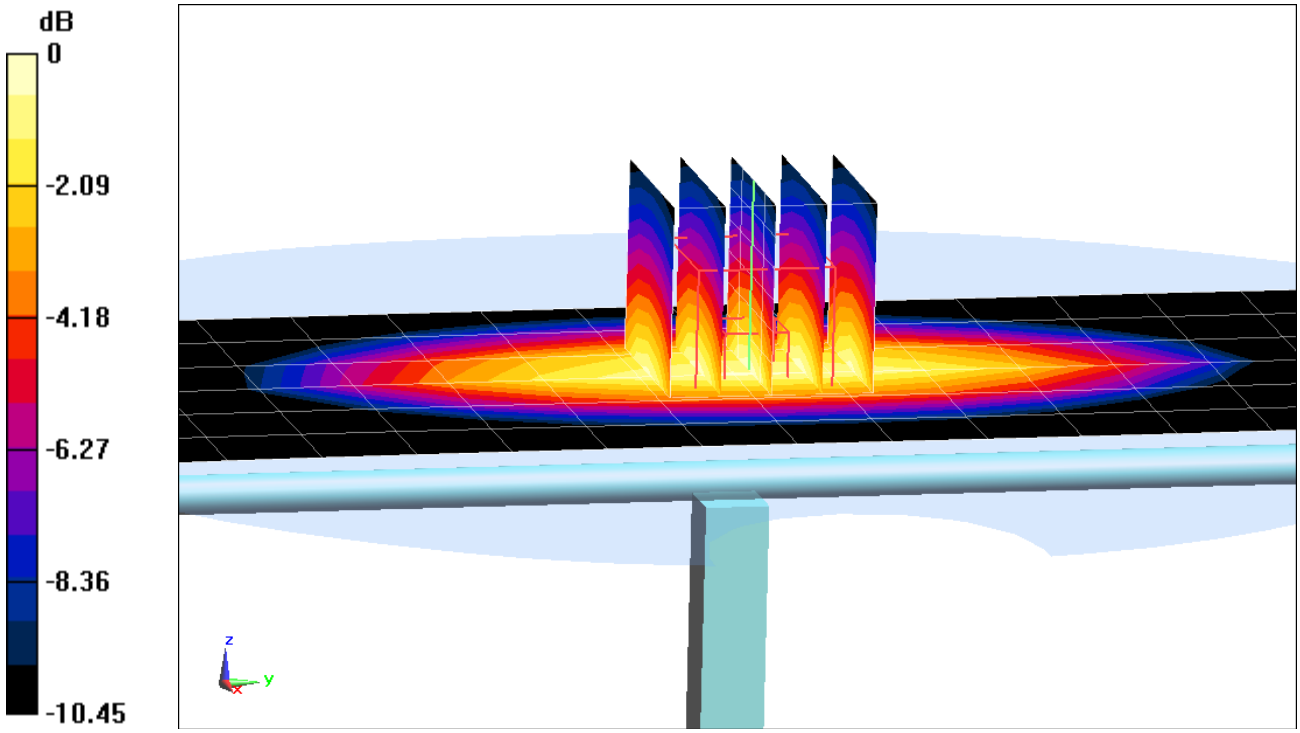
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 750 MHz; σ = 0.893 S/m; ε_r = 41.792; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 09-30-2015; Ambient Temp: 23.1°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3318; ConvF(6.58, 6.58, 6.58); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.54 W/kg
SAR(1 g) = 1.69 W/kg
Deviation(1 g) = 4.45%



0 dB = 1.98 W/kg = 2.97 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

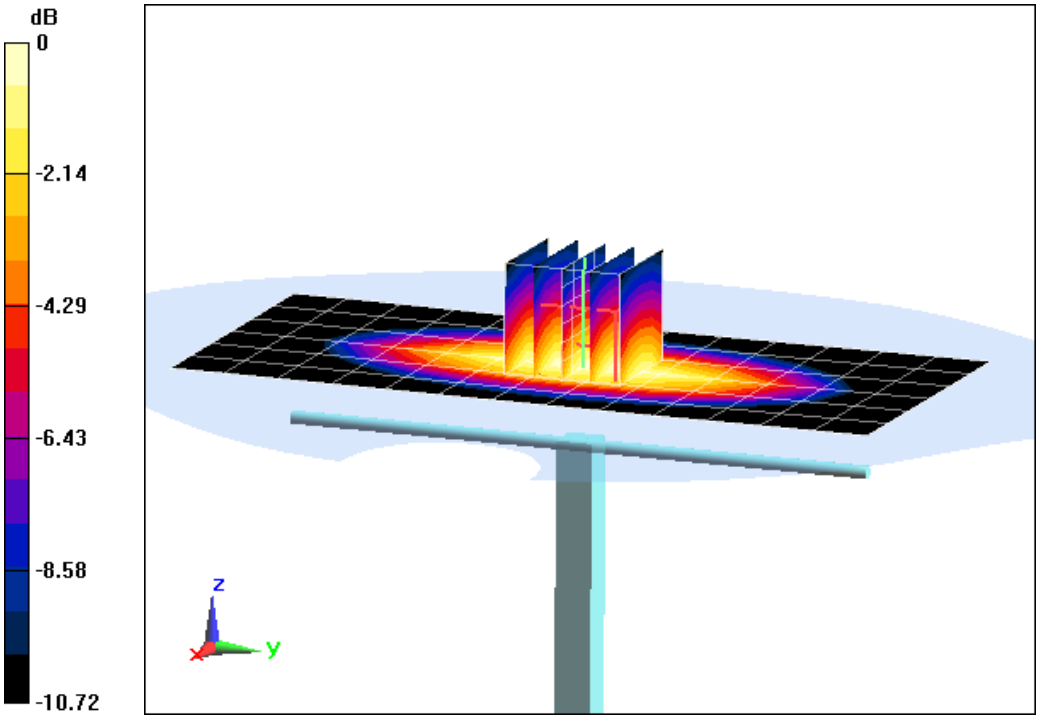
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head, Medium parameters used:
f = 835 MHz; σ = 0.918 S/m; ε_r = 43.145; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-02-2015; Ambient Temp: 23.4°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3319; ConvF(6.41, 6.41, 6.41); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.55 W/kg
SAR(1 g) = 1.75 W/kg
Deviation(1 g) = -6.72%



0 dB = 2.04 W/kg = 3.10 dBW/kg

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

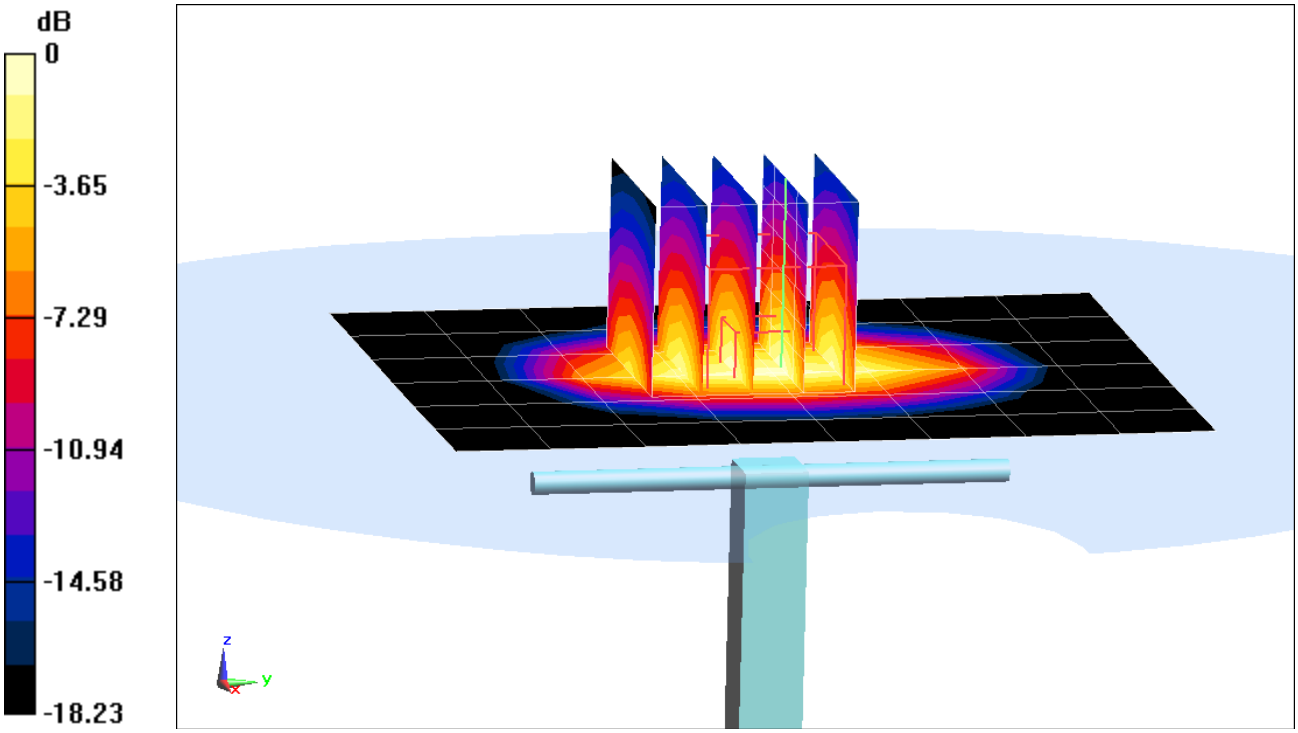
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used:
f = 1750 MHz; σ = 1.358 S/m; ε_r = 38.854; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-29-2015; Ambient Temp: 22.7°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3318; ConvF(5.27, 5.27, 5.27); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.88 W/kg
SAR(1 g) = 3.78 W/kg
Deviation(1 g) = 4.42%



0 dB = 4.73 W/kg = 6.75 dBW/kg

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

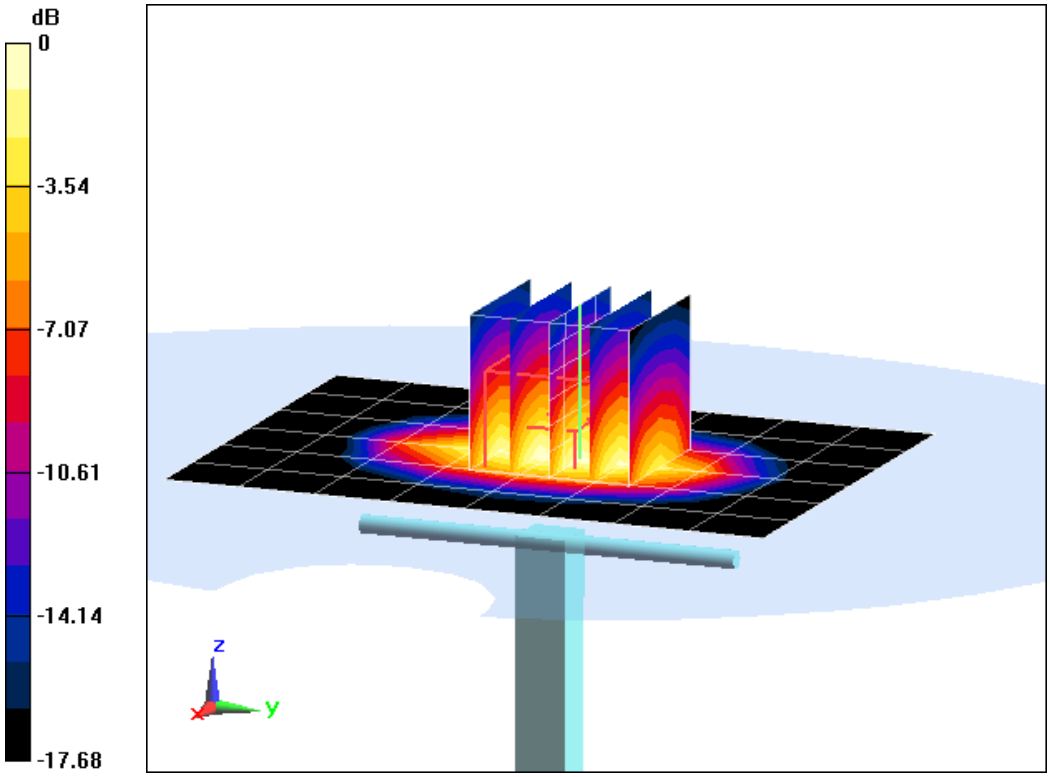
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Head, Medium parameters used:
f = 1750 MHz; σ = 1.371 S/m; ε_r = 39.13; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-12-2015; Ambient Temp: 19.8°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3319; ConvF(5.29, 5.29, 5.29); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.20 W/kg
SAR(1 g) = 3.44 W/kg
Deviation(1 g) = -4.97%



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

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

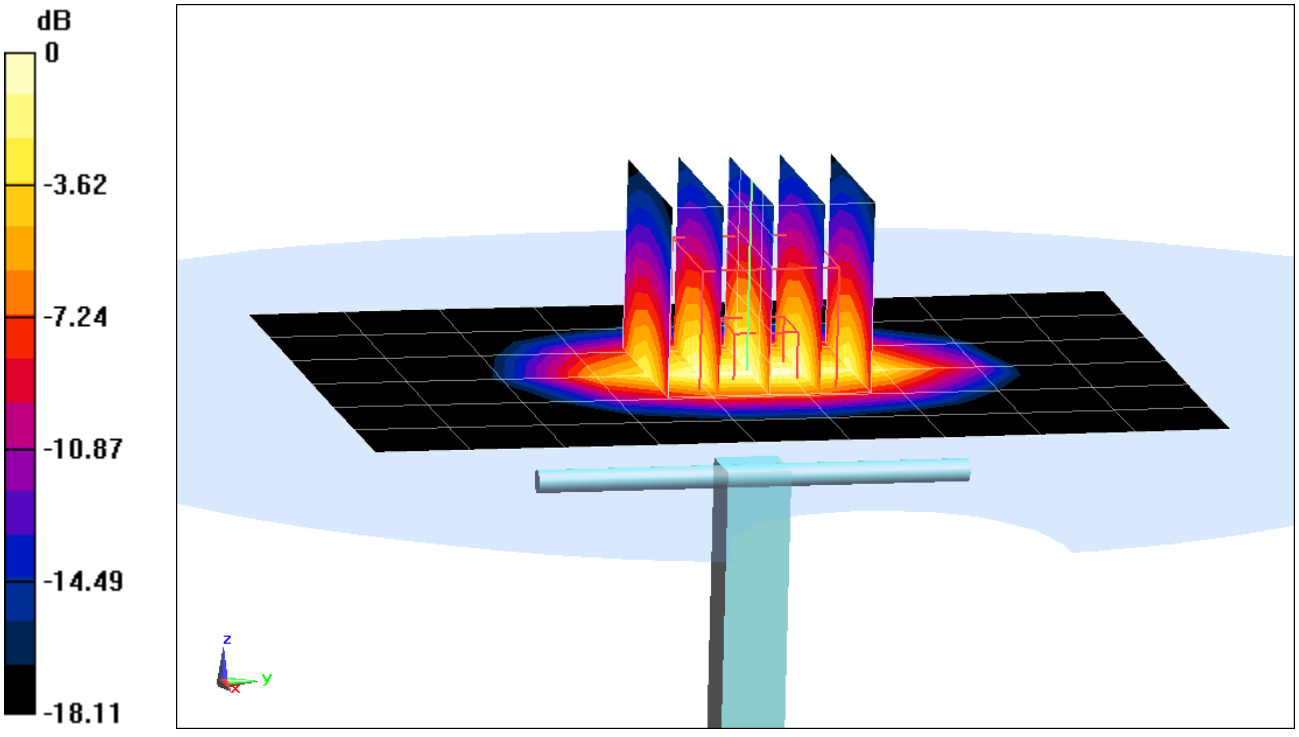
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.434 S/m; ε_r = 38.283; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 09-30-2015; Ambient Temp: 21.7°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3318; ConvF(5.05, 5.05, 5.05); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.95 W/kg
SAR(1 g) = 4.28 W/kg
Deviation(1 g) = 5.16%



0 dB = 5.47 W/kg = 7.38 dBW/kg

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d141

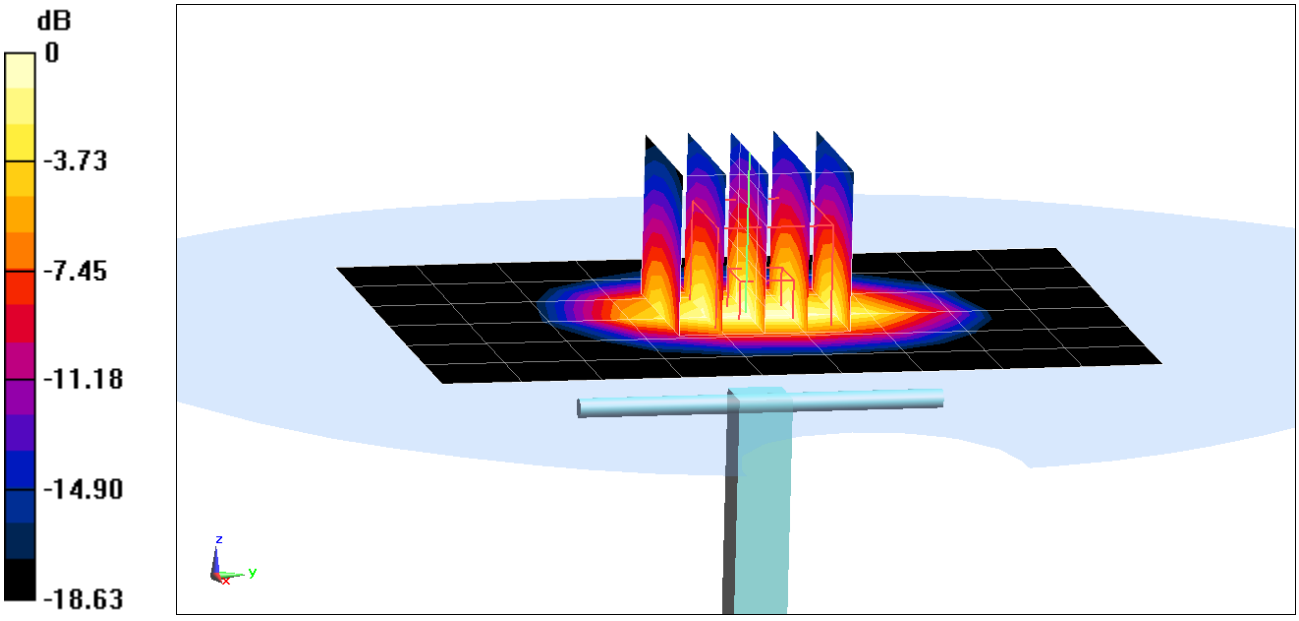
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.406 S/m; ε_r = 38.975; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-02-2015; Ambient Temp: 22.2°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3318; ConvF(5.05, 5.05, 5.05); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.41 W/kg
SAR(1 g) = 4.01 W/kg
Deviation(1 g) = 0.50%



0 dB = 5.07 W/kg = 7.05 dBW/kg

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

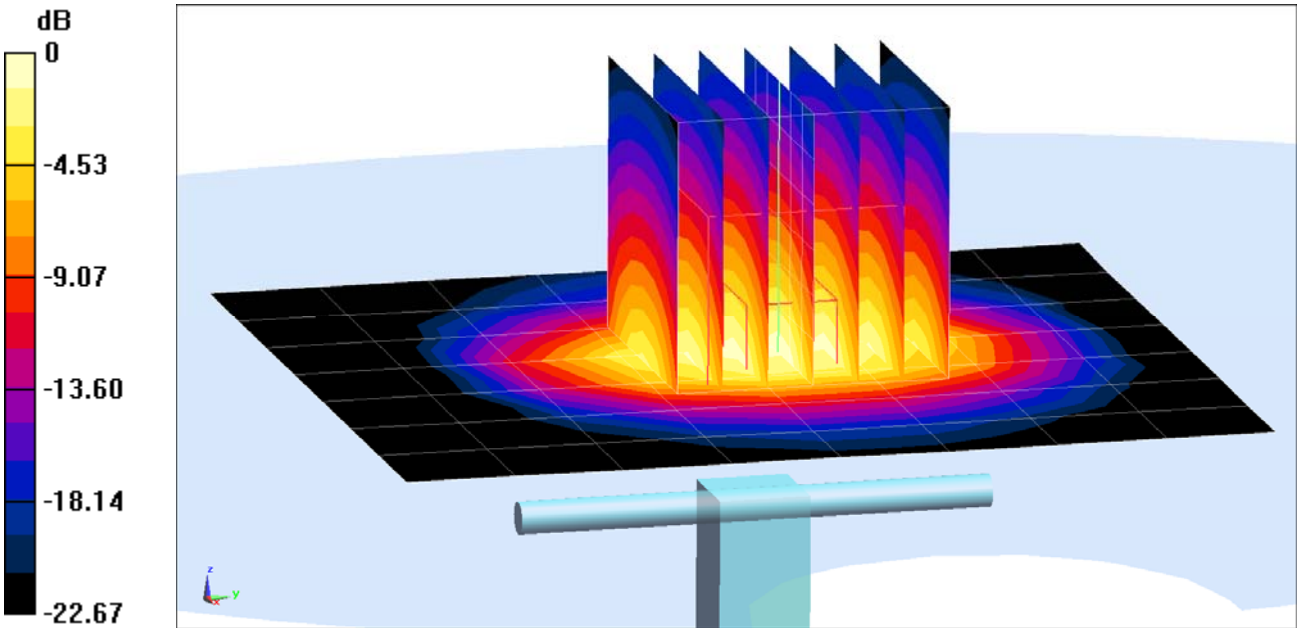
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.874 S/m; ε_r = 39.039; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-30-2015; Ambient Temp: 24.5°C; Tissue Temp: 23.5°C

Probe: ES3DV3 - SN3334; ConvF(4.51, 4.51, 4.51); Calibrated: 12/16/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 12/12/2014
Phantom: Sub Twin Sam v5.0; Type: QD000P40CD; Serial: TP:1626
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.5 W/kg
SAR(1 g) = 5.44 W/kg
Deviation(1 g) = 4.41%



0 dB = 7.15 W/kg = 8.54 dBW/kg

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

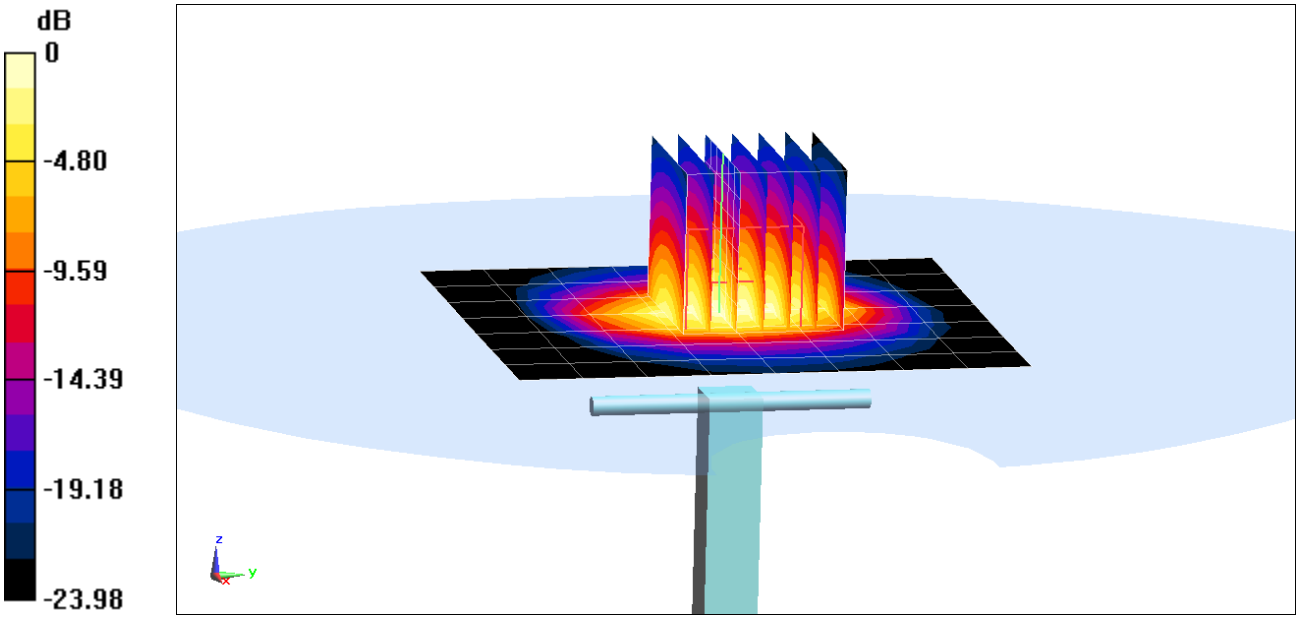
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.828 S/m; ε_r = 38.935; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-22-2015; Ambient Temp: 23.3°C; Tissue Temp: 22.4°C

Probe: ES3DV3 - SN3318; ConvF(4.5, 4.5, 4.5); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 12.2 W/kg
SAR(1 g) = 5.72 W/kg
Deviation(1 g) = 5.54%



0 dB = 7.54 W/kg = 8.77 dBW/kg

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054

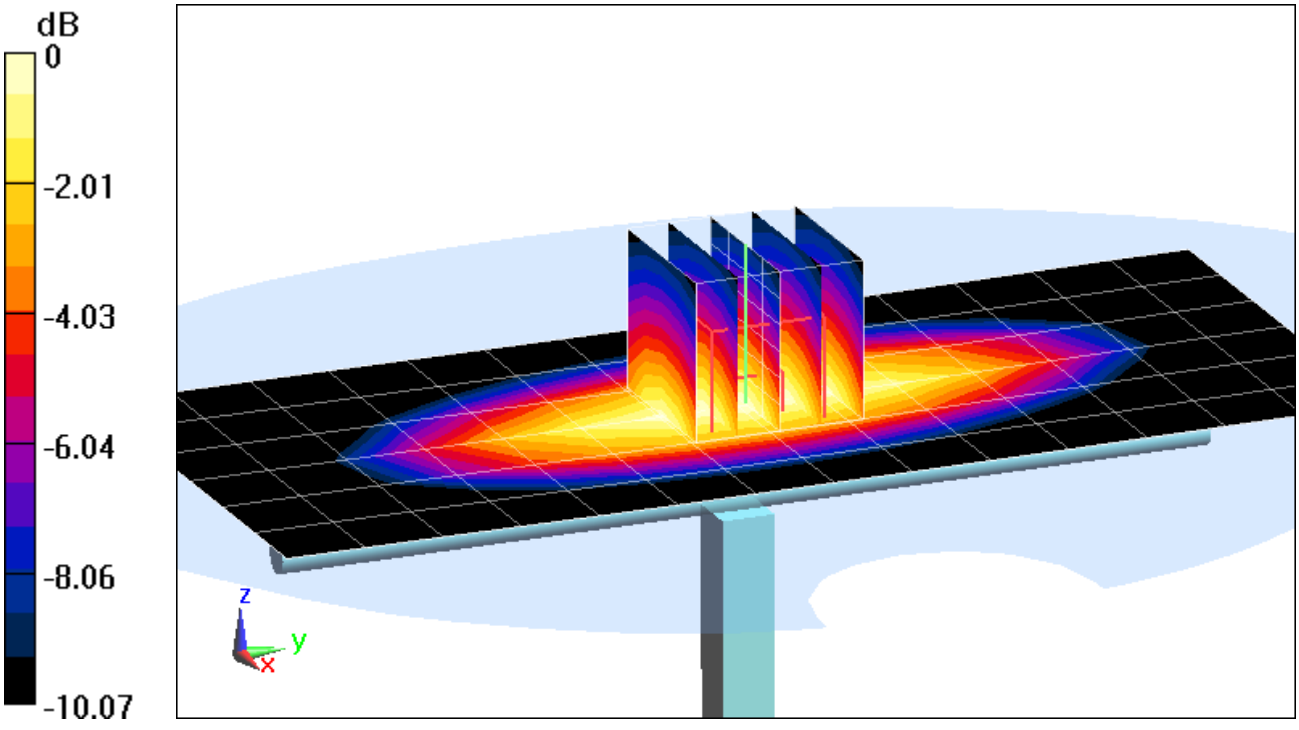
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 750 MHz; σ = 0.969 S/m; ε_r = 54.08; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 09-28-2015; Ambient Temp: 23.3°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3213; ConvF(6.11, 6.11, 6.11); Calibrated: 1/20/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/20/2015
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.50 W/kg
SAR(1 g) = 1.71 W/kg
Deviation(1 g) = 0.23%



0 dB = 2.00 W/kg = 3.01 dBW/kg

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

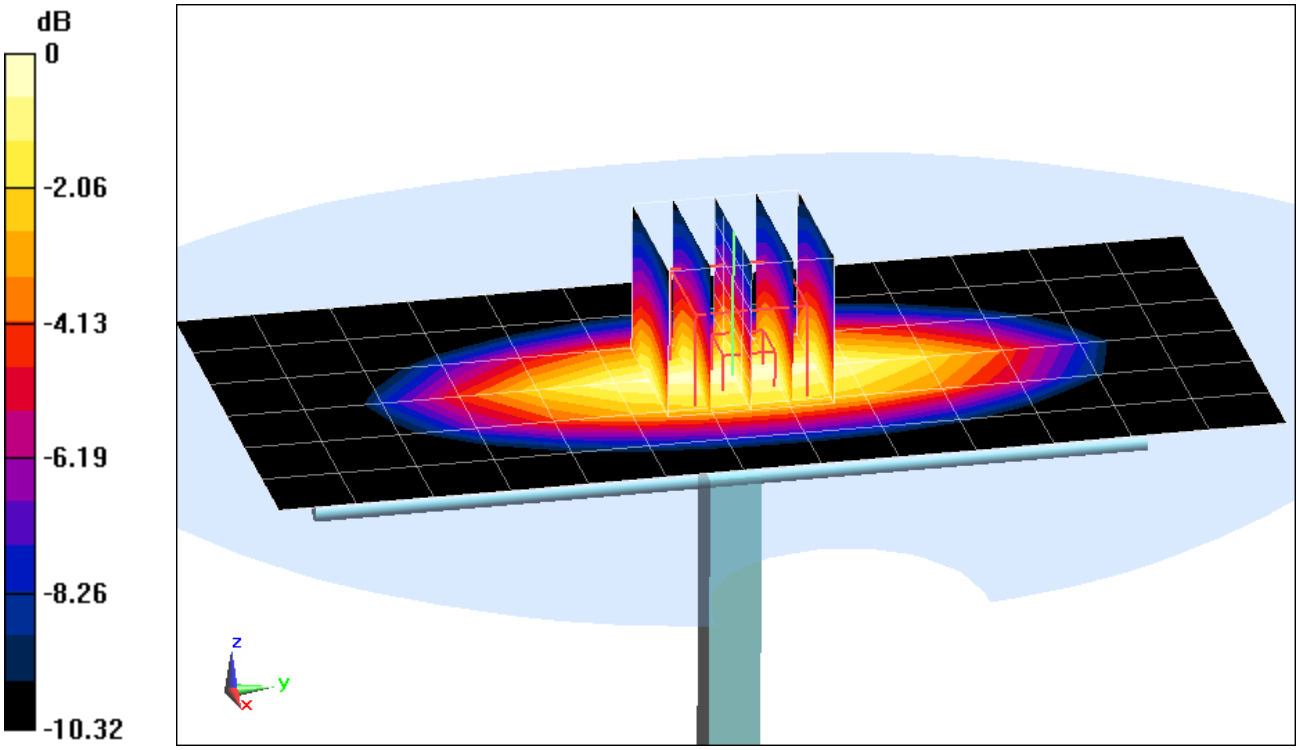
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.993 S/m; ε_r = 53.74; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-02-2015; Ambient Temp: 22.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3351; ConvF(6.11, 6.11, 6.11); Calibrated: 6/22/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/24/2015
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.77 W/kg
SAR(1 g) = 1.92 W/kg
Deviation(1 g) = 4.35%



0 dB = 2.23 W/kg = 3.48 dBW/kg

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

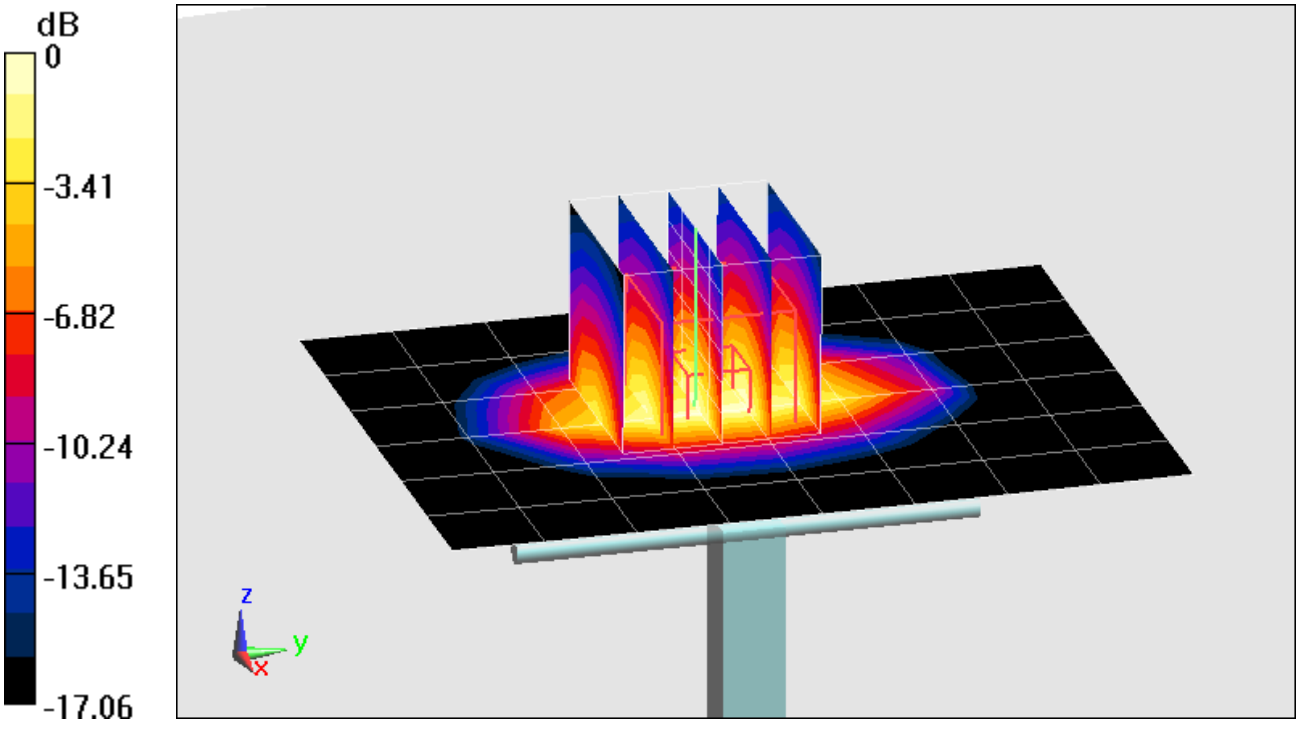
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.483 S/m; ε_r = 52.583; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-28-2015; Ambient Temp: 21.3°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3318; ConvF(4.95, 4.95, 4.95); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: ELI v6.0; Type: QDOVA003AA; Serial: TP:2027
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.35 W/kg
SAR(1 g) = 3.64 W/kg
Deviation(1 g) = -1.89%



0 dB = 4.52 W/kg = 6.55 dBW/kg

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

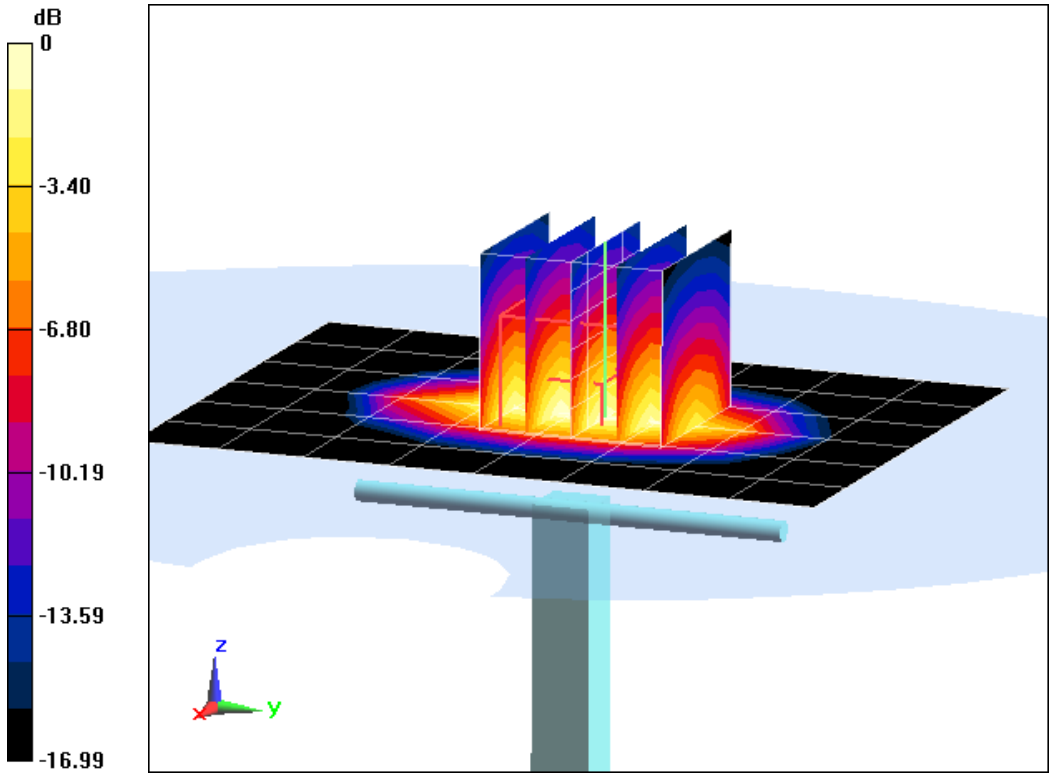
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body, Medium parameters used:
f = 1750 MHz; σ = 1.506 S/m; ε_r = 51.667; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-12-2015; Ambient Temp: 22.3°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3319; ConvF(4.83, 4.83, 4.83); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.37 W/kg
SAR(1 g) = 3.69 W/kg
Deviation(1 g) = -0.54%



0 dB = 4.55 W/kg = 6.58 dBW/kg

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

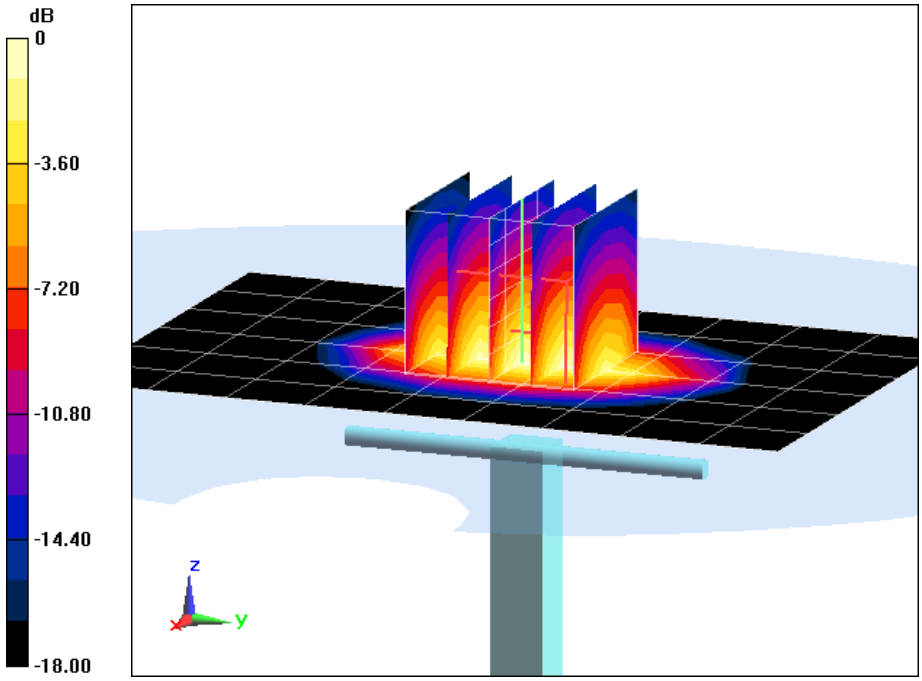
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body, Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.573 S/m; ε_r = 50.909; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-29-2015; Ambient Temp: 23.4°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3319; ConvF(4.53, 4.53, 4.53); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.39 W/kg
SAR(1 g) = 4.19 W/kg
Deviation(1 g) = 3.71%



0 dB = 5.29 W/kg = 7.23 dBW/kg

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

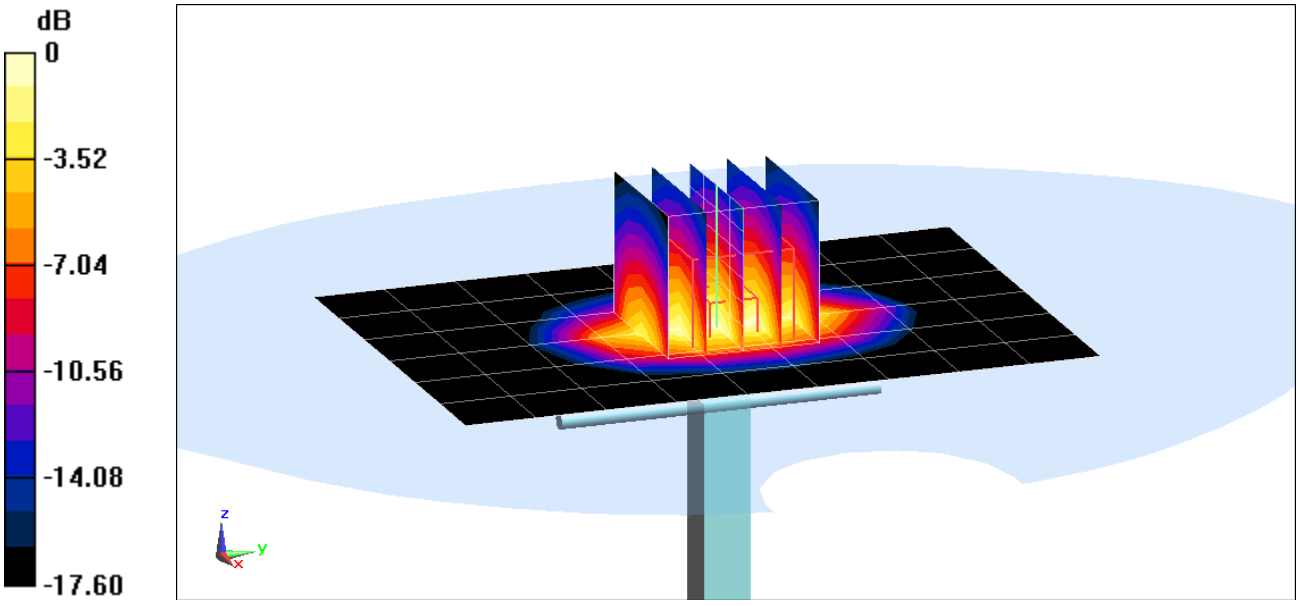
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.537 S/m; ε_r = 52.639; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 11-02-2015; Ambient Temp: 22.5°C; Tissue Temp: 21.5°C

Probe: ES3DV2 - SN3022; ConvF(4.56, 4.56, 4.56); Calibrated: 8/26/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/18/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.99 W/kg
SAR(1 g) = 3.92 W/kg
Deviation(1 g) = -2.97%



0 dB = 4.95 W/kg = 6.95 dBW/kg

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

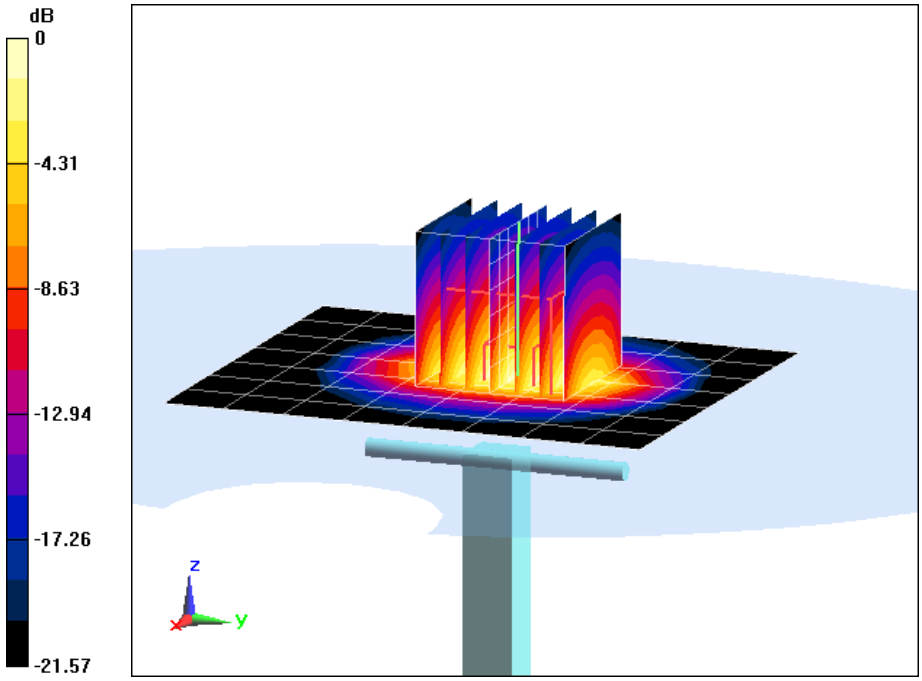
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body, Medium parameters used:
f = 2450 MHz; σ = 1.996 S/m; ε_r = 50.911; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-28-2015; Ambient Temp: 22.3°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.11, 4.11, 4.11); Calibrated: 3/19/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/13/2015
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.5 W/kg
SAR(1 g) = 5.42 W/kg
Deviation(1 g) = 4.43%



0 dB = 7.18 W/kg = 8.56 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 0108

Client PC Test

Certificate No: ES3-3318_Jan15

CALIBRATION CERTIFICATE

Object: ES3DV3 - SN:3318

Calibration procedure(s): QA CAL-01.v9, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes

CC 1/30/15

Calibration date: January 23, 2015

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 E4419B	GB41293874	03-Apr-14 (No. 217-01911)	Apr-15
Power sensor E4412A	MY41498087	03-Apr-14 (No. 217-01911)	Apr-15
Reference 3 dB Attenuator	SN: S5054 (3c)	03-Apr-14 (No. 217-01915)	Apr-15
Reference 20 dB Attenuator	SN: S5277 (20x)	03-Apr-14 (No. 217-01919)	Apr-15
Reference 30 dB Attenuator	SN: S5129 (30b)	03-Apr-14 (No. 217-01920)	Apr-15
Reference Probe ES3DV2	SN: 3013	30-Dec-14 (No. ES3-3013_Dec14)	Dec-15
DAE4	SN: 660	14-Jan-15 (No. DAE4-660_Jan15)	Jan-16
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Israe Elnaouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 26, 2015

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)
Accreditation No.: SCS 0108

The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
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

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

Probe ES3DV3

SN:3318

Manufactured: January 10, 2012
Calibrated: January 23, 2015

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3318

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	1.15	0.92	1.28	± 10.1 %
DCP (mV)[B]	106.4	109.2	103.4	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	200.6	±3.5 %
		Y	0.0	0.0	1.0		185.3	
		Z	0.0	0.0	1.0		207.7	
10010-CAA	SAR Validation (Square, 100ms, 10ms)	X	3.26	66.4	14.0	10.00	41.4	±1.2 %
		Y	1.76	59.6	9.8		36.1	
		Z	1.82	57.7	9.6		43.6	
10011-CAB	UMTS-FDD (WCDMA)	X	3.48	68.9	19.9	2.91	120.2	±0.5 %
		Y	3.76	70.1	19.9		146.0	
		Z	3.11	66.0	17.9		124.4	
10012-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	3.71	74.2	21.7	1.87	121.7	±0.7 %
		Y	3.65	73.3	20.7		147.5	
		Z	2.77	67.4	17.8		126.6	
10013-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	10.68	69.5	22.7	9.46	114.7	±2.5 %
		Y	10.82	70.4	23.0		139.8	
		Z	11.22	71.1	23.7		122.2	
10021-DAB	GSM-FDD (TDMA, GMSK)	X	16.13	95.0	26.6	9.39	122.7	±2.2 %
		Y	4.61	73.1	17.2		130.8	
		Z	15.10	92.0	25.4		135.9	
10023-DAB	GPRS-FDD (TDMA, GMSK, TN 0)	X	17.03	96.8	27.5	9.57	113.0	±1.9 %
		Y	4.15	71.7	16.8		119.9	
		Z	21.50	98.0	27.5		130.9	
10024-DAB	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	35.51	99.5	24.5	6.56	147.6	±2.7 %
		Y	6.12	77.2	17.1		118.1	
		Z	38.50	99.7	24.7		114.0	
10027-DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	45.57	99.9	23.2	4.80	113.3	±1.7 %
		Y	2.73	68.4	12.6		133.3	
		Z	54.59	99.9	22.9		131.0	
10028-DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	53.68	99.5	21.9	3.55	123.0	±3.0 %
		Y	60.05	99.8	21.1		144.9	
		Z	66.60	99.6	21.6		140.7	
10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	20.92	99.4	21.8	1.16	136.6	±2.2 %
		Y	95.40	88.3	13.8		117.6	
		Z	100.00	99.5	18.7		110.1	
10100-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	6.50	68.1	20.2	5.67	130.5	±1.2 %
		Y	6.11	66.7	19.2		107.2	
		Z	6.55	68.2	20.1		142.7	

10103-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	9.76	74.8	25.9	9.29	116.0	±2.5 %
		Y	8.85	72.2	24.1		134.9	
		Z	10.83	77.4	27.2		131.5	
10108-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.36	67.7	20.1	5.80	128.7	±1.2 %
		Y	5.92	66.1	19.0		106.6	
		Z	6.42	67.7	20.0		140.4	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	10.20	69.1	21.6	8.07	118.1	±2.5 %
		Y	10.27	69.3	21.4		143.9	
		Z	10.43	69.7	21.8		131.0	
10151-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	9.09	73.7	25.5	9.28	112.0	±2.7 %
		Y	8.35	71.5	23.9		131.1	
		Z	9.58	74.4	25.6		126.8	
10154-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	6.01	67.0	19.8	5.75	126.4	±1.2 %
		Y	6.17	67.7	19.9		148.9	
		Z	6.07	67.1	19.7		137.2	
10160-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	6.41	67.4	19.9	5.82	130.9	±0.9 %
		Y	6.06	66.2	19.0		109.1	
		Z	6.54	67.7	20.0		142.6	
10169-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	4.79	66.5	19.8	5.73	109.4	±0.9 %
		Y	4.82	67.1	19.8		128.8	
		Z	4.85	66.4	19.5		119.0	
10172-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	8.44	79.3	28.7	9.21	125.1	±2.5 %
		Y	7.15	75.0	26.0		144.0	
		Z	10.13	83.8	30.8		141.9	
10175-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	5.13	68.2	20.8	5.72	146.5	±0.9 %
		Y	4.77	66.8	19.6		125.2	
		Z	4.81	66.2	19.4		118.5	
10181-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	5.11	68.1	20.7	5.72	146.4	±0.9 %
		Y	4.79	67.0	19.7		126.0	
		Z	4.88	66.6	19.7		118.9	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	9.63	68.3	21.2	8.10	108.2	±2.5 %
		Y	9.84	68.9	21.3		135.5	
		Z	9.99	69.2	21.7		124.0	
10225-CAB	UMTS-FDD (HSPA+)	X	6.99	67.3	19.7	5.97	134.8	±0.9 %
		Y	6.73	66.8	19.2		115.9	
		Z	6.71	66.2	19.0		106.3	
10237-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	7.79	76.4	27.0	9.21	126.4	±2.5 %
		Y	7.19	75.1	26.1		144.7	
		Z	10.12	83.9	30.9		142.0	
10252-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	8.19	71.9	24.7	9.24	103.3	±2.2 %
		Y	7.76	70.8	23.6		122.0	
		Z	9.31	75.2	26.4		119.1	
10267-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	8.90	73.0	25.1	9.30	108.7	±2.2 %
		Y	8.38	71.6	24.0		129.7	
		Z	10.15	76.5	26.9		126.1	

10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	4.42	67.2	19.2	3.96	119.1	±0.7 %
		Y	4.71	68.5	19.5		143.8	
		Z	4.39	66.7	18.6		131.7	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	3.65	67.5	19.3	3.46	111.3	±0.5 %
		Y	3.89	69.0	19.6		130.9	
		Z	3.49	66.1	18.2		122.4	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	3.60	67.6	19.3	3.39	114.4	±0.5 %
		Y	3.85	69.1	19.7		133.4	
		Z	3.45	66.2	18.2		123.7	
10297-AAA	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.36	67.6	20.1	5.81	128.7	±1.2 %
		Y	5.95	66.1	19.0		106.5	
		Z	6.39	67.6	19.9		140.7	
10311-AAA	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	6.98	68.4	20.6	6.06	134.9	±1.2 %
		Y	6.52	66.7	19.3		111.3	
		Z	7.06	68.6	20.5		146.2	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	4.97	69.7	19.7	3.76	122.2	±0.5 %
		Y	5.31	71.6	20.2		143.6	
		Z	4.54	67.3	18.2		133.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	4.77	69.4	19.6	3.77	120.8	±0.5 %
		Y	5.40	72.4	20.6		141.3	
		Z	4.71	68.5	18.9		131.5	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	3.07	71.7	20.7	1.54	120.5	±0.7 %
		Y	3.52	73.8	21.0		142.0	
		Z	2.38	66.1	17.4		129.6	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	9.73	68.3	21.2	8.23	114.7	±2.5 %
		Y	9.99	69.2	21.5		138.0	
		Z	10.10	69.4	21.9		125.3	

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%.

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 7 and 8).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3318

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unct. (k=2)
750	41.9	0.89	6.58	6.58	6.58	0.36	1.73	± 12.0 %
835	41.5	0.90	6.39	6.39	6.39	0.80	1.14	± 12.0 %
1750	40.1	1.37	5.27	5.27	5.27	0.76	1.19	± 12.0 %
1900	40.0	1.40	5.05	5.05	5.05	0.44	1.55	± 12.0 %
2300	39.5	1.67	4.78	4.78	4.78	0.80	1.23	± 12.0 %
2450	39.2	1.80	4.50	4.50	4.50	0.55	1.49	± 12.0 %
2600	39.0	1.96	4.34	4.34	4.34	0.76	1.32	± 12.0 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3318

Calibration Parameter Determined in Body Tissue Simulating Media

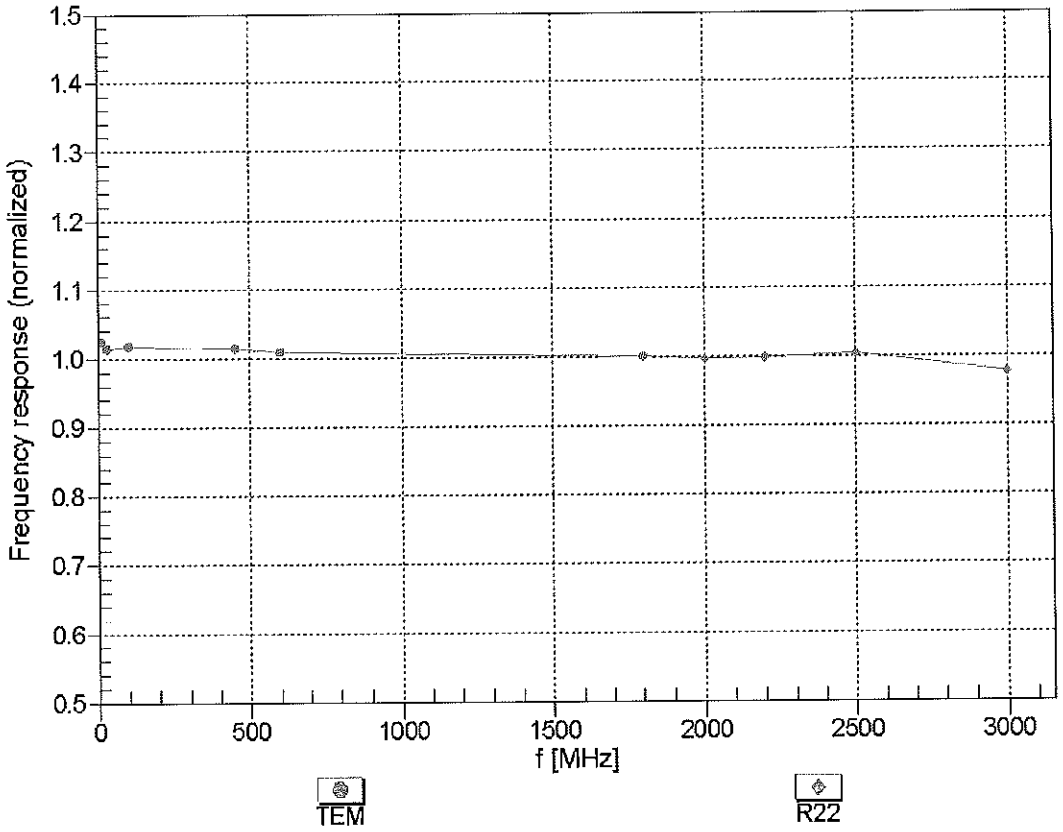
f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unct. (k=2)
750	55.5	0.96	6.22	6.22	6.22	0.67	1.28	± 12.0 %
835	55.2	0.97	6.23	6.23	6.23	0.80	1.19	± 12.0 %
1750	53.4	1.49	4.95	4.95	4.95	0.40	1.77	± 12.0 %
1900	53.3	1.52	4.76	4.76	4.76	0.60	1.48	± 12.0 %
2300	52.9	1.81	4.52	4.52	4.52	0.80	1.19	± 12.0 %
2450	52.7	1.95	4.37	4.37	4.37	0.72	1.23	± 12.0 %
2600	52.5	2.16	4.17	4.17	4.17	0.80	1.00	± 12.0 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

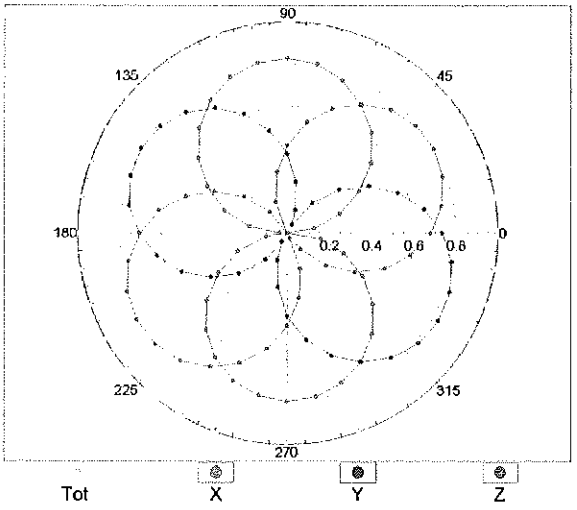
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



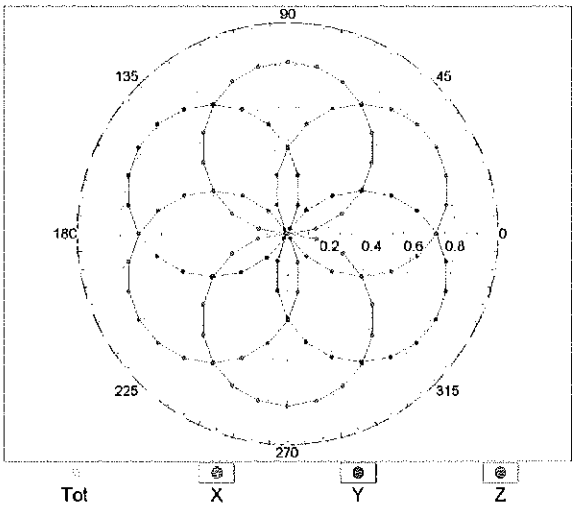
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

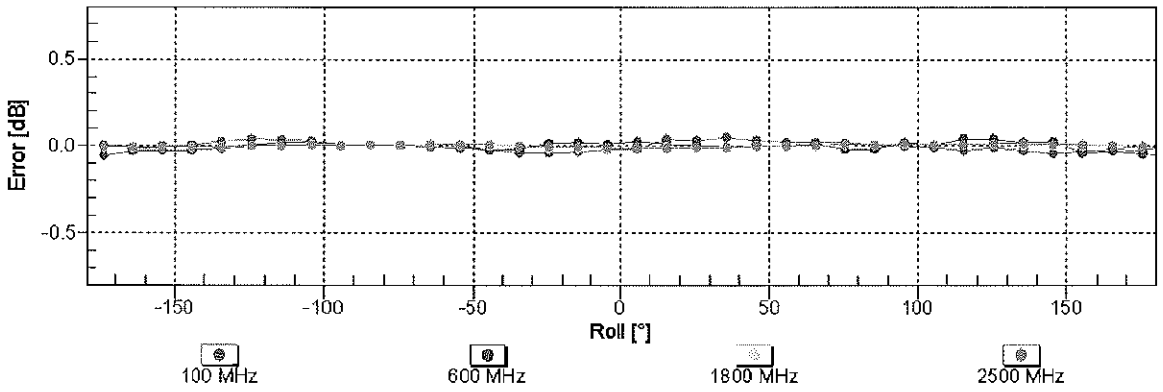
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



f=1800 MHz,R22

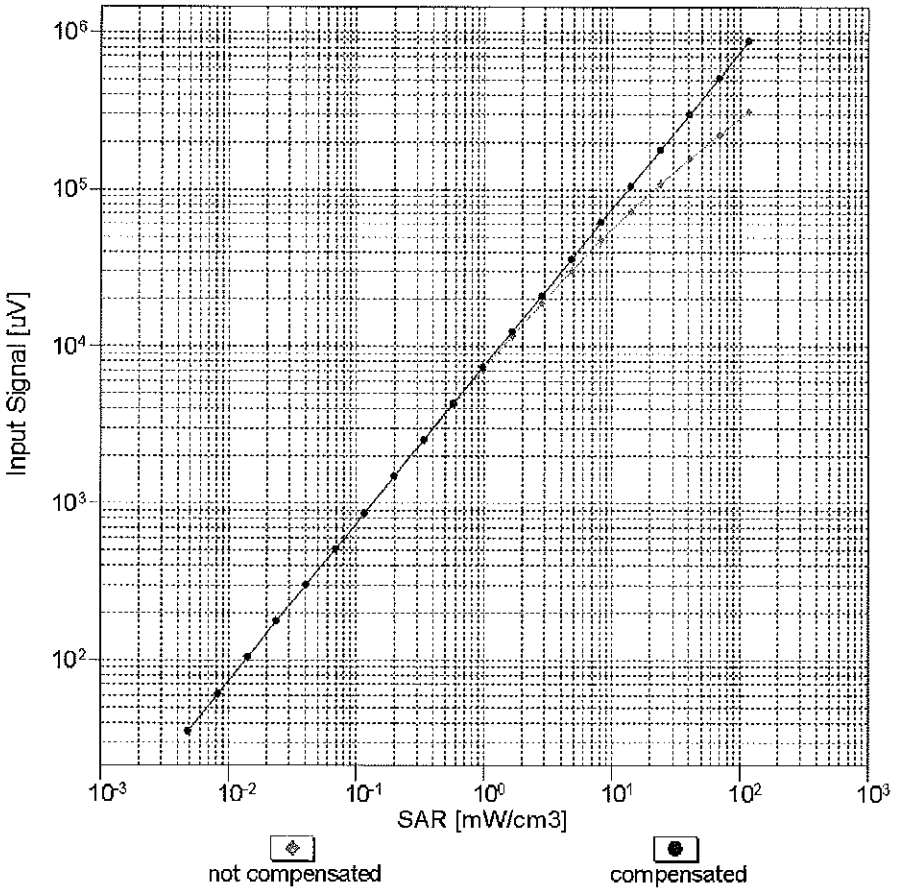


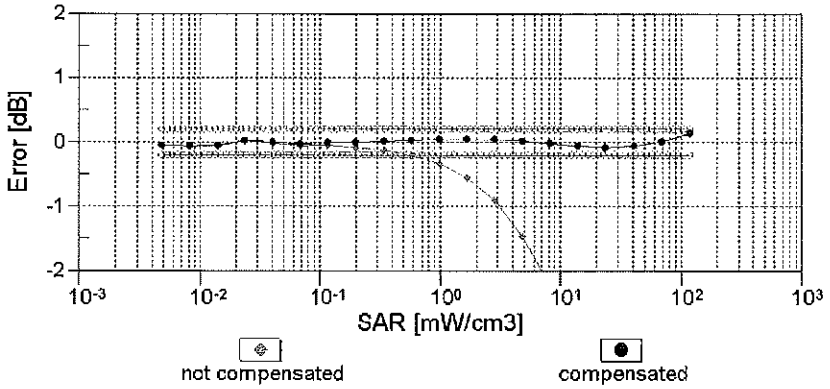


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR$_{head}$)

(TEM cell , f_{eval}= 1900 MHz)

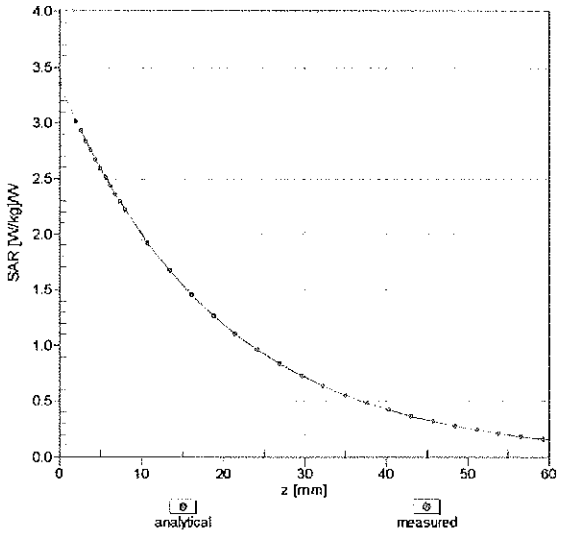




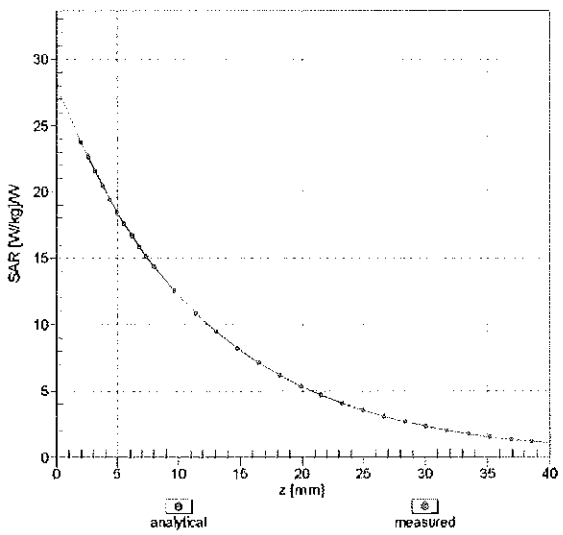
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

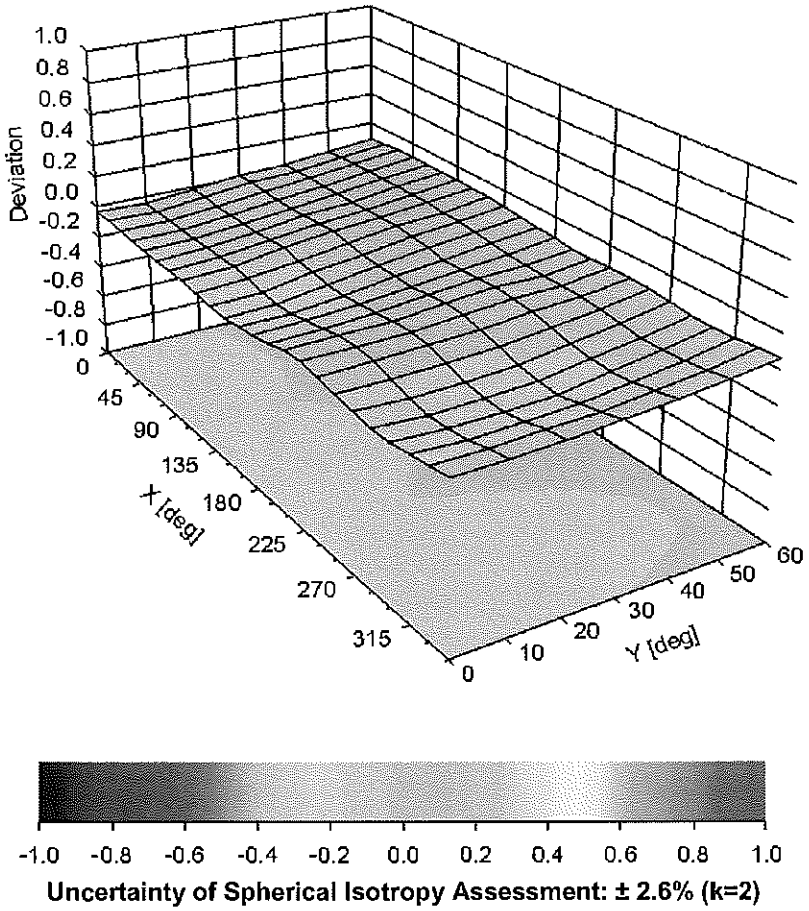


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3318

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-104.4
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm