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SAR EVALUATION REPORT

Applicant Name:
Samsung Electronics, Co. Ltd.
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Gyeonggi-do 443-742, Korea

Date of Testing:
01/19/15 - 02/10/15
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
0Y1502030351.A3L

FCC ID: A3LSMG925R4

APPLICANT: SAMSUNG ELECTRONICS, CO. LTD.

DUT Type: Portable Handset
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model(s): SM-G925R4

Equipment Class	Band & Mode	Tx Frequency	SAR		
			1 gm Head (W/kg)	1 gm Body-Worn (W/kg)	1 gm Hotspot (W/kg)
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.33	0.49	0.56
PCE	UMTS 850	826.40 - 846.60 MHz	0.27	0.38	0.48
PCE	Cell. CDMA/EVDO	824.70 - 848.31 MHz	0.40	0.55	0.62
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	< 0.1	0.36	0.54
PCE	UMTS 1900	1852.4 - 1907.6 MHz	< 0.1	0.40	0.65
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	0.17	0.45	0.96
PCE	LTE Band 12	699.7 - 715.3 MHz	0.14	0.25	0.27
PCE	LTE Band 13	779.5 - 784.5 MHz	0.25	0.32	0.32
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	0.32	0.17	0.34
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	0.16	0.54	0.54
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.21	0.67	0.90
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.27	0.14	0.14
NII	U-NII-1	5180 - 5240 MHz	N/A		
NII	U-NII-2A	5260 - 5320 MHz	0.22	0.10	
NII	U-NII-2C < 5.65 GHz	5500 - 5580 MHz	0.31	< 0.1	
NII	U-NII-2C > 5.65 GHz + U-NII-3	5660 - 5825 MHz	0.29	< 0.1	0.15
DSS/DTS	Bluetooth	2402 - 2480 MHz	N/A		
Simultaneous SAR per KDB 690783 D01v01r03:			0.88	0.89	1.17

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

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

Randy Ortanez
President

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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
Cell. CDMA/EVDO	Voice/Data	824.70 - 848.31 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
PCS CDMA/EVDO	Voice/Data	1851.25 - 1908.75 MHz
LTE Band 12	Data	699.7 - 715.3 MHz
LTE Band 17	Data	706.5 - 713.5 MHz
LTE Band 13	Data	779.5 - 784.5 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
2.4 GHz WLAN	Data	2412 - 2462 MHz
U-NII-1	Data	5180 - 5240 MHz
U-NII-2A	Data	5260 - 5320 MHz
U-NII-2C < 5.65 GHz	Data	5500 - 5580 MHz
U-NII-2C > 5.65 GHz + U-NII-3	Data	5660 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
ANT+	Data	2402 - 2480 MHz
MST	Data	1 - 8.3 kHz

1.2 Power Reduction for SAR

This device utilizes two single step independent power reduction mechanisms for SAR compliance. For the main transmitter, the device utilizes power reduction under portable hotspot conditions for GPRS/EDGE 1900, UMTS B2, PCS CDMA/EVDO, and LTE B4/2/25. All hotspot SAR evaluations for this device were performed with the maximum allowed output power in hotspot mode. Additional evaluations at reduced output power conditions were considered for simultaneous transmission purposes. Additionally for the unlicensed transmitter, this device utilizes a proximity sensor to reduce the output power for 2.4 and 5 GHz WLAN during voice or VoIP held to ear scenarios. Per FCC Guidance, the held-to-ear exposure conditions were evaluated at reduced power according to the head SAR positions described in IEEE 1528. The reduced powers for both mechanisms were confirmed via conducted power measurements at the RF port (See Section 9). Detailed descriptions of the hotspot power reduction and proximity sensor mechanisms are included in the operational description.

1.3 Nominal and Maximum Output Power Specifications

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

1.3.1 Maximum Powers

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	*1 TX Slot*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*	*1 TX Slot*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*
GSM/GPRS/EDGE 850	Maximum	**33.5**	**33.5**	**31.5**	**30.0**	**28.5**	**27.5**	**26.5**	**25.0**	**24.0**
	Nominal	**33.0**	**33.0**	**31.0**	**29.5**	**28.0**	**27.0**	**26.0**	**24.5**	**23.5**
GSM/GPRS/EDGE 1900	Maximum	**30.5**	**30.5**	**29.5**	**27.5**	**26.5**	**26.0**	**25.0**	**23.5**	**22.5**
	Nominal	**30.0**	**30.0**	**29.0**	**27.0**	**26.0**	**25.5**	**24.5**	**23.0**	**22.0**

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

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

Mode / Band		Modulated Average (dBm)
LTE Band 12	Maximum	**24.5**
	Nominal	**24.0**
LTE Band 17	Maximum	**24.5**
	Nominal	**24.0**
LTE Band 13	Maximum	**24.0**
	Nominal	**23.5**
LTE Band 5 (Cell)	Maximum	**24.5**
	Nominal	**24.0**
LTE Band 4 (AWS)	Maximum	**24.5**
	Nominal	**24.0**
LTE Band 25 (PCS)	Maximum	**24.5**
	Nominal	**24.0**
LTE Band 2 (PCS)	Maximum	**24.5**
	Nominal	**24.0**

Single Transmission Chain WLAN and Bluetooth

Mode / Band		Modulated Average (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	**17.5**
	Nominal	**17.0**
IEEE 802.11g (2.4 GHz)	Maximum	**14.5**
	Nominal	**14.0**
IEEE 802.11n (2.4 GHz)	Maximum	**13.5**
	Nominal	**13.0**
Bluetooth	Maximum	**10.0**
	Nominal	**9.5**
Bluetooth LE	Maximum	**4.0**
	Nominal	**3.5**

Mode / Band		Modulated Average (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11a (5 GHz)	Maximum	**14.5**		
	Nominal	**14.0**		
IEEE 802.11n (5 GHz)	Maximum	**13.5**	**12.5**	
	Nominal	**13.0**	**12.0**	
IEEE 802.11ac (5 GHz)	Maximum	**13.5**	**12.5**	**11.5**
	Nominal	**13.0**	**12.0**	**11.0**

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MIMO WLAN

Mode / Band		Modulated Average (dBm)
IEEE 802.11n (2.4 GHz)	Maximum	**16.5**
	Nominal	**16.0**

Mode / Band		Modulated Average (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11n (5 GHz)	Maximum	**16.5**	**15.5**	
	Nominal	**16.0**	**15.0**	
IEEE 802.11ac (5 GHz)	Maximum	**16.5**	**15.5**	**14.5**
	Nominal	**16.0**	**15.0**	**14.0**

1.3.2 Reduced Powers – Hotspot Active

Mode / Band		Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*	*1 TX Slot*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*
GPRS/EDGE 1900	Maximum	**28.5**	**27.5**	**25.5**	**24.5**	**24.0**	**23.0**	**21.5**	**20.5**
	Nominal	**28.0**	**27.0**	**25.0**	**24.0**	**23.5**	**22.5**	**21.0**	**20.0**

Mode / Band		Modulated Average (dBm)		
		3GPP WCDMA Rel 99	*3GPP HSDPA Rel 5*	*3GPP HSUPA Rel 6*
UMTS Band 2 (1900 MHz)	Maximum	**21.5**	**20.5**	**20.5**
	Nominal	**21.0**	**20.0**	**20.0**

Mode / Band		Modulated Average (dBm)
PCS CDMA/EVDO	Maximum	**20.5**
	Nominal	**20.0**

Mode / Band		Modulated Average (dBm)
LTE Band 4 (AWS)	Maximum	**20.5**
	Nominal	**20.0**
LTE Band 25 (PCS)	Maximum	**22.5**
	Nominal	**22.0**
LTE Band 2 (PCS)	Maximum	**21.5**
	Nominal	**21.0**

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1.3.3 Reduced Powers – Held-to-Ear

Single Transmission Chain WLAN

Mode / Band		Modulated Average (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	**12.5**
	Nominal	**12.0**
IEEE 802.11g (2.4 GHz)	Maximum	**12.5**
	Nominal	**12.0**
IEEE 802.11n (2.4 GHz)	Maximum	**12.5**
	Nominal	**12.0**

Mode / Band		Modulated Average (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11a (5 GHz)	Maximum	**8.5**		
	Nominal	**8.0**		
IEEE 802.11n (5 GHz)	Maximum	**8.5**	**8.5**	
	Nominal	**8.0**	**8.0**	
IEEE 802.11ac (5 GHz)	Maximum	**8.5**	**8.5**	**8.5**
	Nominal	**8.0**	**8.0**	**8.0**

MIMO WLAN

Mode / Band		Modulated Average (dBm)
IEEE 802.11n (2.4 GHz)	Maximum	**15.5**
	Nominal	**15.0**

Mode / Band		Modulated Average (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11n (5 GHz)	Maximum	**11.5**	**11.5**	
	Nominal	**11.0**	**11.0**	
IEEE 802.11ac (5 GHz)	Maximum	**11.5**	**11.5**	**11.5**
	Nominal	**11.0**	**11.0**	**11.0**

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1.4 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
Mobile Hotspot Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
GPRS 850	Yes	Yes	No	Yes	Yes	Yes
UMTS 850	Yes	Yes	No	Yes	Yes	Yes
Cell. EVDO	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	Yes	Yes
UMTS 1900	Yes	Yes	No	Yes	Yes	Yes
PCS EVDO	Yes	Yes	No	Yes	Yes	Yes
LTE Band 12	Yes	Yes	No	Yes	Yes	Yes
LTE Band 13	Yes	Yes	No	Yes	Yes	Yes
LTE Band 5 (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
2.4 GHz WLAN	Yes	Yes	Yes	No	No	Yes
U-NII-3	Yes	Yes	Yes	No	No	Yes

Note: Particular DUT edges were not required to be evaluated for Wireless Router SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v01 guidance, page 2. The distances between the transmit antennas and the edges of the device are included in the filing. When wireless router mode is enabled, U-NII-1, U-NII-2A & U-NII-2C WLAN operations are disabled. Therefore U-NII-1, U-NII-2A & U-NII-2C WLAN operations are not considered in this section.

1.5 Near Field Communications (NFC) Antenna

This DUT has NFC Operations. The NFC antenna is integrated into the device for this model. Therefore, all SAR tests were performed with the device which already incorporates the NFC antenna. A diagram showing the location of the NFC antenna can be found in Appendix F.

1.6 Simultaneous Transmission Capabilities

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

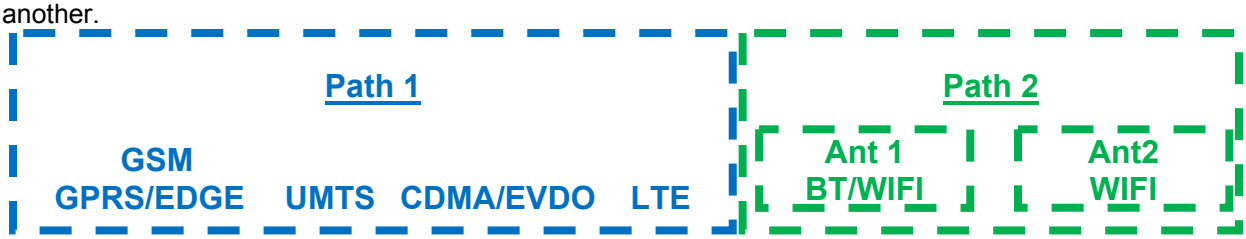

Figure 1-1
Simultaneous Transmission Paths

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

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Table 1-2
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Notes
1	1x CDMA voice + 2.4 GHz WI-FI	Yes	Yes	N/A	
2	1x CDMA voice + 5 GHz WI-FI	Yes	Yes	N/A	
3	1x CDMA voice + 2.4 GHz Bluetooth	N/A	Yes	N/A	
4	GSM voice + 2.4 GHz WI-FI	Yes	Yes	N/A	
5	GSM voice + 5 GHz WI-FI	Yes	Yes	N/A	
6	GSM voice + 2.4 GHz Bluetooth	N/A	Yes	N/A	
7	UMTS + 2.4 GHz WI-FI	Yes	Yes	Yes	
8	UMTS + 5 GHz WI-FI	Yes	Yes	Yes	
9	UMTS + 2.4 GHz Bluetooth	N/A	Yes	N/A	
10	LTE + 2.4 GHz WI-FI	Yes*	Yes*	Yes	*-Pre-installed VOIP applications are considered.
11	LTE + 5 GHz WI-FI	Yes*	Yes*	Yes	*-Pre-installed VOIP applications are considered.
12	LTE + 2.4 GHz Bluetooth	N/A	Yes*	N/A	*-Pre-installed VOIP applications are considered.
13	CDMA/EVDO data + 2.4 GHz WI-FI	Yes*	Yes*	Yes	*-Pre-installed VOIP applications are considered.
14	CDMA/EVDO data + 5 GHz WI-FI	Yes*	Yes*	Yes	*-Pre-installed VOIP applications are considered.
15	CDMA/EVDO data + 2.4 GHz Bluetooth	N/A	Yes*	N/A	*-Pre-installed VOIP applications are considered.
16	GPRS/EDGE + 2.4 GHz WI-FI	N/A	N/A	Yes	
17	GPRS/EDGE + 5 GHz WI-FI	N/A	N/A	Yes	
18	1x CDMA voice + LTE + 2.4 GHz WI-FI	N/A	N/A	N/A	Not supported by HW
19	1x CDMA voice + LTE + 5 GHz WI-FI	N/A	N/A	N/A	Not supported by HW
20	1x CDMA voice + CDMA/EVDO data	N/A	N/A	N/A	Not supported by HW
21	1x CDMA voice + LTE	N/A	N/A	N/A	Not supported by HW
22	CDMA/EVDO data + LTE	N/A	N/A	N/A	Not supported by HW

1. 2.4 GHz WLAN, 5 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.
5. 5 GHz Wireless Router is only supported for the U-NII-3 by S/W, therefore U-NII-1, U-NII2A, and U-NII2C were not evaluated for wireless router conditions.
6. This device supports 2x2 MIMO Tx for WLAN 802.11n/ac. Each WLAN antenna can transmit independently or together when operating with MIMO.

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1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

Since Wireless Router operations are not allowed by the chipset firmware using U-NII-1, U-NII-2A & U-NII-2C WIFI, only 2.4 GHz and U-NII-3 WIFI Hotspot SAR tests and combinations are considered for SAR with respect to Wireless Router configurations according to FCC KDB 941225 D06v02.

Since U-NII-1 and U-NII-2A bands have the same maximum output power and the highest reported SAR for U-NII-2A is less than 1.2 W/kg, SAR is not required for U-NII-1 band according to FCC KDB 248227 D01 DR02-41929.

Since this device supports the band gap channels, the channels in the U-NII-2C band above 5.65 GHz were grouped with the channels in the U-NII-3 as a single aggregate band. The channels in U-NII-2C below 5.65 GHz were considered separately for SAR evaluation.

This device supports IEEE 802.11ac with the following features:

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

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; [(10/15)* √2.480] = 1.0< 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)

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 inter-band LTE Carrier Aggregation (CA) in the downlink only. All uplink communications are identical to Release 8 specifications. Per FCC KDB Publication 941225 D05A v01r01, SAR for LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.

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This device supports both LTE Band 12 and LTE Band 17. Since the supported frequency span for LTE Band 17 falls completely within the supported frequency span for LTE Band 12, both LTE bands have the same target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE Band 12.

This device supports both LTE Band 25 (PCS) and LTE Band 2 (PCS). Since the supported frequency span for LTE Band 2 (PCS) falls completely within the supported frequency span for LTE Band 25 (PCS), LTE Band 25 (PCS) has the same max target power and higher reduced target power comparing to LTE Band 2 (PCS), and both LTE bands share the same transmission path, SAR was only assessed for LTE Band 25 (PCS).

1.8 Guidance Applied

- IEEE 1528-2003
- FCC KDB Publication 941225 D01v03, D05v02r03, D05Av01r01, D06v02 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01 DR02-41929 (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)

1.9 Device Serial Numbers

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

	Head Serial Number	Body-Worn Serial Number	Hotspot Serial Number
GSM/GPRS/EDGE 850	234DC	234DC	234DC
UMTS 850	234DC	234DC	234DC
Cell. CDMA/EVDO	234F1	23503	23503
GSM/GRPS/EDGE 1900 Max	234DC	234DC	-
GRPS/EDGE 1900 Reduced	-	-	234C8
UMTS 1900 Max	234DC	234DC	-
UMTS 1900 Reduced	-	-	234C8
PCS CDMA/EVDO Max	234F1	234F1	-
PCS CDMA/EVDO Reduced	234C8	-	234C8
LTE Band 12	155B7	155B7	155B7
LTE Band 13	08FC4	23503	23503
LTE Band 5 (Cell)	234C9	23503	23503
LTE Band 4 (AWS) Max	23503	23503	-
LTE Band 4 (AWS) Reduced	234EB	-	234EB
LTE Band 25 (PCS) Max	1C5D6	1C5D6	-
LTE Band 25 (PCS) Reduced	1C5BA	-	1C5BA
2.4 GHz WLAN	234B0	234B0	234B0
5 GHz WLAN	234B0	236B4	236B4

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2 LTE INFORMATION

LTE Information			
FCC ID	**A3LSMG925R4**		
Form Factor	Portable Handset		
Frequency Range of each LTE transmission band	LTE Band 12 (699.7 - 715.3 MHz)		
	LTE Band 17 (706.5 - 713.5 MHz)		
	LTE Band 13 (779.5 - 784.5 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)		
Channel Bandwidths	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz		
	LTE Band 17: 5 MHz, 10 MHz		
	LTE Band 13: 5 MHz, 10 MHz		
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz		
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz		
	LTE Band 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		
Channel Numbers and Frequencies (MHz)	Low	Mid	High
LTE Band 12: 1.4 MHz	699.7 (23017)	707.5 (23095)	715.3 (23173)
LTE Band 12: 3 MHz	700.5 (23025)	707.5 (23095)	714.5 (23165)
LTE Band 12: 5 MHz	701.5 (23035)	707.5 (23095)	713.5 (23155)
LTE Band 12: 10 MHz	704 (23060)	707.5 (23095)	711 (23130)
LTE Band 17: 5 MHz	706.5 (23085)	710 (23790)	713.5 (23825)
LTE Band 17: 10 MHz	709 (23780)	710 (23790)	711 (23800)
LTE Band 13: 5 MHz	779.5 (23205)	782 (23230)	784.5 (23255)
LTE Band 13: 10 MHz	782 (23230)	782 (23230)	782 (23230)
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)	836.5 (20525)	848.3 (20643)
LTE Band 5 (Cell): 3 MHz	825.5 (20415)	836.5 (20525)	847.5 (20635)
LTE Band 5 (Cell): 5 MHz	826.5 (20425)	836.5 (20525)	846.5 (20625)
LTE Band 5 (Cell): 10 MHz	829 (20450)	836.5 (20525)	844 (20600)
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)	1732.5 (20175)	1754.3 (20393)
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)	1732.5 (20175)	1753.5 (20385)
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)	1732.5 (20175)	1752.5 (20375)
LTE Band 4 (AWS): 10 MHz	1715 (20000)	1732.5 (20175)	1750 (20350)
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)	1732.5 (20175)	1747.5 (20325)
LTE Band 4 (AWS): 20 MHz	1720 (20050)	1732.5 (20175)	1745 (20300)
LTE Band 25 (PCS): 1.4 MHz	1850.7 (26047)	1882.5 (26365)	1914.3 (26683)
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)	1882.5 (26365)	1913.5 (26675)
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)	1882.5 (26365)	1912.5 (26665)
LTE Band 25 (PCS): 10 MHz	1855 (26090)	1882.5 (26365)	1910 (26640)
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)	1882.5 (26365)	1907.5 (26615)
LTE Band 25 (PCS): 20 MHz	1860 (26140)	1882.5 (26365)	1905 (26590)
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)	1880 (18900)	1909.3 (19193)
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)	1880 (18900)	1908.5 (19185)
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)	1880 (18900)	1907.5 (19175)
LTE Band 2 (PCS): 10 MHz	1855 (18650)	1880 (18900)	1905 (19150)
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)	1880 (18900)	1902.5 (19125)
LTE Band 2 (PCS): 20 MHz	1860 (18700)	1880 (18900)	1900 (19100)
UE Category	6		
Modulations Supported in UL	QPSK, 16QAM		
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	YES		
A-MPR (Additional MPR) disabled for SAR Testing?	YES		
LTE Carrier Aggregation Possible Combinations	LTE B12 (PCC) + LTE B2 (SCC)	LTE B4 (PCC) + LTE B12 (SCC)	LTE B2 (PCC) + LTE B12 (SCC)
	5MHz (B12) + 5MHz (B2)	5MHz (B4) + 5MHz (B12)	5MHz (B2) + 5MHz (B12)
	5MHz (B12) + 10MHz (B2)	5MHz (B4) + 10MHz (B12)	5MHz (B2) + 10MHz (B12)
	5MHz (B12) + 15MHz (B2)	10MHz (B4) + 5MHz (B12)	10MHz (B2) + 5MHz (B12)
	5MHz (B12) + 20MHz (B2)	10MHz (B4) + 10MHz (B12)	10MHz (B2) + 10MHz (B12)
	10MHz (B12) + 5MHz (B2)	15MHz (B4) + 5MHz (B12)	15MHz (B2) + 5MHz (B12)
	10MHz (B12) + 10MHz (B2)	15MHz (B4) + 10MHz (B12)	15MHz (B2) + 10MHz (B12)
	10MHz (B12) + 15MHz (B2)	20MHz (B4) + 5MHz (B12)	20MHz (B2) + 5MHz (B12)
	10MHz (B12) + 20MHz (B2)	20MHz (B4) + 10MHz (B12)	20MHz (B2) + 10MHz (B12)
LTE Carrier Aggregation Additional Information	This device does not support full CA features on 3GPP Release 10. It supports a maximum of 2 carriers in the downlink. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. Due to carrier capability, only the combinations listed above are supported. The following LTE Release 10 Features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WIFI Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.		

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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]

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4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

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

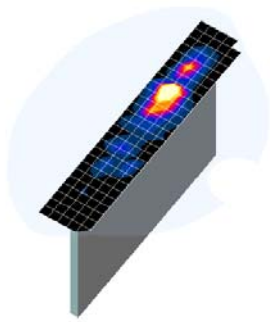

Figure 4-1
Sample SAR Area Scan

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

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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].

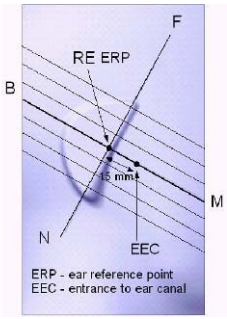

Figure 5-1
Close-Up Side view of ERP

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

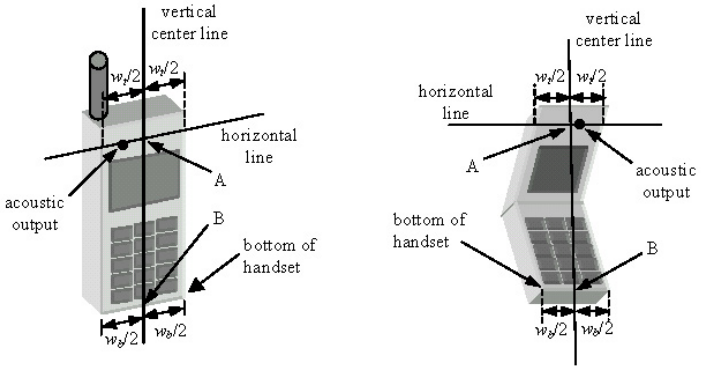

Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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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).

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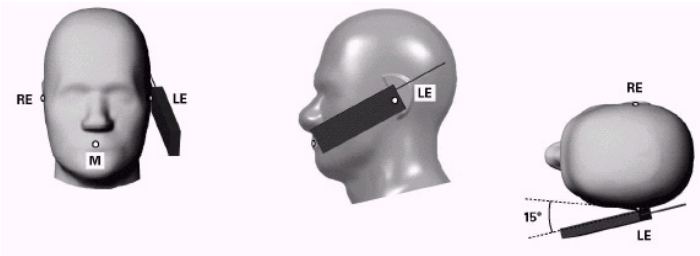

Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

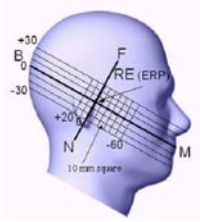

Figure 6-3
Side view w/ relevant markings

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 D04v01, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01v05 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

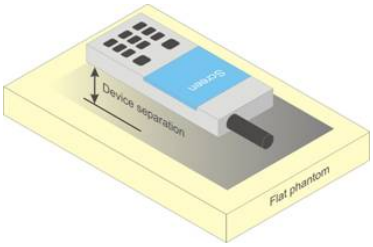

Figure 6-4
Sample Body-Worn Diagram

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.

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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 44798 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.

There is power reduction for GPRS/EDGE 1900, UMTS Band 2, PCS CDMA/EVDO, and LTE Band 4/25/2 in hotspot scenarios. There is no power reduction for GSM/GPRS/EDGE 850, GSM 1900, UMTS 850, Cell. CDMA/EVDO, and LTE Band 12/17/13/5. The reduced powers were confirmed via conducted power measurements at the RF port (See Section 9). Detailed descriptions of the hotspot power reduction mechanism are included in the operational description

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7 RF EXPOSURE LIMITS

7.1 Uncontrolled Environment

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

7.2 Controlled Environment

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

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

HUMAN EXPOSURE LIMITS		
	UNCONTROLLED ENVIRONMENT *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.

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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 ≤ 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 ≤ 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.

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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.

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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.

8.5 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.

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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.

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8.6.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r03:

a. Per Section 5.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
   i. The required channel and offset combination with the highest maximum output power is required for SAR.
   ii. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
   iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
b. Per Section 5.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 5.2.1.
c. Per Section 5.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 0.8 W/kg.
d. Per Section 5.2.4 and 5.3, SAR tests for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sections 5.2.1 through 5.2.3 is less than or equal to ½ dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is <1.45 W/kg.

8.6.5 Downlink Carrier Aggregation

LTE Carrier Aggregation (CA) measurements are made in accordance to 3GPP TS 36.521-1 V10.4.0 (2012-12). The RRC connection is only handled by one cell, the Primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds the Secondary component carrier (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to release 8 specifications on the PCC. Additional output powers are measured using two carriers in the downlink for the release 8 configurations with the highest output power among all channels, RB configurations and bandwidths for each uplink band. Per FCC KDB Publication 941225 D05A v01r01, no SAR measurements are required when the average output power with downlink carrier aggregation active is not more than 0.25 dB higher than the average output power with downlink carrier aggregation inactive.

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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 D01 DR02-41929 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 U-NII-1 and U-NII-2A

For devices that operate in both U-NII-1 and U-NII-2A bands, when the same maximum output power is specified for both bands, SAR measurement using OFDM SAR test procedures is not required for U-NII-1 unless the highest reported SAR for U-NII-2A is > 1.2 W/kg. When different maximum output powers are specified for the bands, SAR measurement for the U-NII band with the lower maximum output power is not required unless the highest reported SAR for the U-NII band with the higher maximum output power, adjusted by the ratio of lower to higher specified maximum output power for the two bands, is > 1.2 W/kg.

8.7.3 U-NII-2C and U-NII-3

The frequency range covered by U-NII-2C and U-NII-3 is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, the channels at 5.60 – 5.65 GHz in U-NII-2C band must be disabled with acceptable mechanisms and documented in the equipment certification.

Unless band gap channels are permanently disabled, SAR must be considered for these channels. To maintain SAR measurement accuracy and to facilitate test reduction, the channels in U-NII-2C band above 5.65 GHz are grouped with the 5.8 GHz channels in U-NII-3 band or §15.247 5.8 GHz band to enable two SAR probe calibration frequency points to cover the bands, including the band gap channels. When band gap channels are disabled, each band is tested independently according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

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8.7.4 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.

8.7.5 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.

8.7.6 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.

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8.7.7 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 8.7.6).

8.7.8 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.

8.7.9 MIMO SAR considerations

Per KDB 248227 D01 DR02-41929, the simultaneous SAR provisions in KDB Publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WIFI MIMO. If the sum of 1g single transmission chain SAR measurements is <1.6 W/kg, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation.

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9 RF CONDUCTED POWERS

9.1 CDMA Conducted Powers

Table 9-1
Maximum Average RF Output Powers

Band	Channel	Frequency	SO55 [dBm]	SO55 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC	MHz	RC1	RC3	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	1013	824.7	24.99	24.97	24.98	24.99	24.98	24.89
	384	836.52	24.98	25.00	24.97	25.00	25.00	24.90
	777	848.31	24.80	24.75	24.63	24.74	24.75	24.58
PCS	25	1851.25	24.65	24.58	24.57	24.66	24.66	24.45
	600	1880	24.20	24.18	24.21	24.26	24.25	24.16
	1175	1908.75	23.99	23.98	24.02	23.94	23.96	23.83

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

Table 9-2
Reduced Average RF Output Powers – Representing Hotspot Mode Active

Band	Channel	Frequency	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC	MHz	FCH+SCH	FCH	(RTAP)	(RETAP)
PCS	25	1851.25	20.49	20.50	20.50	20.31
	600	1880	20.03	20.08	20.20	20.00
	1175	1908.75	20.08	20.03	20.23	20.18

Figure 9-1
Power Measurement Setup

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9.2 GSM Conducted Powers

Table 9-3
Maximum Average RF Output Powers

		Maximum Burst-Averaged Output Power								
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 850	128	33.19	32.74	31.41	**29.60**	28.02	27.40	26.08	24.06	23.84
	190	33.28	32.82	31.48	**29.71**	28.21	27.20	25.86	23.85	23.80
	251	33.20	32.77	31.50	**29.72**	27.63	26.93	25.50	23.46	23.21
GSM 1900	512	30.16	30.12	29.50	27.01	26.35	26.00	24.87	22.75	21.15
	661	30.25	30.22	29.18	26.97	25.64	25.95	24.50	22.35	20.73
	810	29.76	29.62	28.56	26.33	25.74	25.67	24.50	22.05	20.58
		Calculated Maximum Frame-Averaged Output Power								
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 850	128	24.16	23.71	25.39	**25.34**	25.01	18.37	20.06	19.80	20.83
	190	24.25	23.79	25.46	**25.45**	25.20	18.17	19.84	19.59	20.79
	251	24.17	23.74	25.48	**25.46**	24.62	17.90	19.48	19.20	20.20
GSM 1900	512	21.13	21.09	23.48	22.75	23.34	16.97	18.85	18.49	18.14
	661	21.22	21.19	23.16	22.71	22.63	16.92	18.48	18.09	17.72
	810	20.73	20.59	22.54	22.07	22.73	16.64	18.48	17.79	17.57
GSM 850	**Frame Avg.Targets:**	23.97	23.97	24.98	**25.24**	24.99	17.97	19.98	20.24	20.49
GSM 1900		20.97	20.97	22.98	22.74	22.99	16.47	18.48	18.74	18.99

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Table 9-4
Reduced Average RF Output Powers – Representing Hotspot Mode Active

		Maximum Burst-Averaged Output Power							
		GPRS/EDGE Data (GMSK)				*EDGE Data (8-PSK)*			
Band	**Channel**	**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 1900	512	28.44	27.38	25.49	**24.26**	23.98	22.94	21.48	20.50
	661	28.25	27.50	25.31	**23.85**	23.19	22.16	20.97	20.38
	810	27.58	27.22	24.70	**23.91**	23.00	21.81	20.59	20.20
		Calculated Maximum Frame-Averaged Output Power							
		GPRS/EDGE Data (GMSK)				*EDGE Data (8-PSK)*			
Band	**Channel**	**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 1900	512	19.41	21.36	21.23	**21.25**	14.95	16.92	17.22	17.49
	661	19.22	21.48	21.05	**20.84**	14.16	16.14	16.71	17.37
	810	18.55	21.20	20.44	**20.90**	13.97	15.79	16.33	17.19
GSM 1900	**Frame Avg.Targets:**	18.97	20.98	20.74	**20.99**	14.47	16.48	16.74	16.99

Note:

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

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9.3 UMTS Conducted Powers

Table 9-5
Maximum Average RF Output Powers

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	23.26	23.49	23.20	23.50	23.44	23.46	-
99		12.2 kbps AMR	23.20	23.11	23.01	23.36	23.20	23.44	-
6	HSDPA	Subtest 1	22.14	22.32	22.11	22.00	22.03	22.10	0
6		Subtest 2	22.30	22.41	22.39	22.04	22.10	22.28	0
6		Subtest 3	21.79	21.80	21.89	21.53	21.61	21.73	0.5
6		Subtest 4	21.71	21.80	21.93	21.53	21.76	21.79	0.5
6	HSUPA	Subtest 1	22.44	22.42	22.50	22.22	22.38	22.43	0
6		Subtest 2	20.72	21.00	21.51	20.34	20.69	21.22	2
6		Subtest 3	21.14	20.59	20.68	20.70	20.61	20.63	1
6		Subtest 4	21.70	21.59	21.67	21.21	21.36	21.60	2
6		Subtest 5	21.84	21.67	21.80	21.98	21.95	22.16	0

Table 9-6
Reduced Average RF Output Powers – Representing Hotspot Mode Active

3GPP Release Version	Mode	3GPP 34.121 Subtest	PCS Band [dBm]			3GPP MPR [dB]
			9262	9400	9538	
99	WCDMA	12.2 kbps RMC	20.94	20.65	20.29	-
99		12.2 kbps AMR	20.80	20.56	20.25	-
6	HSDPA	Subtest 1	19.79	19.69	19.25	0
6		Subtest 2	19.71	19.69	19.20	0
6		Subtest 3	19.19	19.06	18.81	0.5
6		Subtest 4	19.28	19.05	18.79	0.5
6	HSUPA	Subtest 1	19.25	19.02	19.23	0
6		Subtest 2	18.61	18.66	18.23	2
6		Subtest 3	18.44	18.51	18.15	1
6		Subtest 4	19.08	18.95	18.48	2
6		Subtest 5	19.35	19.56	19.22	0

This device does not support DC-HSDPA.

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

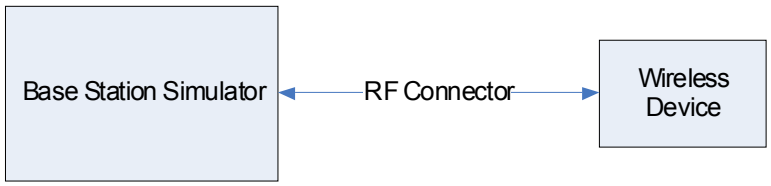

Figure 9-3
Power Measurement Setup

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9.4 LTE Conducted Powers

9.4.1 LTE Band 12 – Maximum Output Power

Table 9-7
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	24.31	0	0
	707.5	23095	10	QPSK	1	25	24.29	0	0
	707.5	23095	10	QPSK	1	49	**24.33**	0	0
	707.5	23095	10	QPSK	25	0	23.26	0-1	1
	707.5	23095	10	QPSK	25	12	**23.28**	0-1	1
	707.5	23095	10	QPSK	25	25	23.20	0-1	1
	707.5	23095	10	QPSK	50	0	23.16	0-1	1
	707.5	23095	10	16QAM	1	0	23.40	0-1	1
	707.5	23095	10	16QAM	1	25	23.49	0-1	1
	707.5	23095	10	16QAM	1	49	23.42	0-1	1
	707.5	23095	10	16QAM	25	0	22.42	0-2	2
	707.5	23095	10	16QAM	25	12	22.44	0-2	2
	707.5	23095	10	16QAM	25	25	22.36	0-2	2
	707.5	23095	10	16QAM	50	0	22.29	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 9-8
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	24.32	0	0
	701.5	23035	5	QPSK	1	12	24.28	0	0
	701.5	23035	5	QPSK	1	24	24.32	0	0
	701.5	23035	5	QPSK	12	0	23.39	0-1	1
	701.5	23035	5	QPSK	12	6	23.41	0-1	1
	701.5	23035	5	QPSK	12	13	23.35	0-1	1
	701.5	23035	5	QPSK	25	0	23.40	0-1	1
	701.5	23035	5	16-QAM	1	0	23.32	0-1	1
	701.5	23035	5	16-QAM	1	12	23.32	0-1	1
	701.5	23035	5	16-QAM	1	24	23.31	0-1	1
	701.5	23035	5	16-QAM	12	0	22.30	0-2	2
	701.5	23035	5	16-QAM	12	6	22.31	0-2	2
	701.5	23035	5	16-QAM	12	13	22.29	0-2	2
	701.5	23035	5	16-QAM	25	0	22.39	0-2	2
Mid	707.5	23095	5	QPSK	1	0	24.30	0	0
	707.5	23095	5	QPSK	1	12	24.12	0	0
	707.5	23095	5	QPSK	1	24	24.32	0	0
	707.5	23095	5	QPSK	12	0	23.37	0-1	1
	707.5	23095	5	QPSK	12	6	23.38	0-1	1
	707.5	23095	5	QPSK	12	13	23.32	0-1	1
	707.5	23095	5	QPSK	25	0	23.35	0-1	1
	707.5	23095	5	16-QAM	1	0	23.32	0-1	1
	707.5	23095	5	16-QAM	1	12	23.30	0-1	1
	707.5	23095	5	16-QAM	1	24	23.32	0-1	1
	707.5	23095	5	16-QAM	12	0	22.30	0-2	2
	707.5	23095	5	16-QAM	12	6	22.31	0-2	2
	707.5	23095	5	16-QAM	12	13	22.29	0-2	2
	707.5	23095	5	16-QAM	25	0	22.28	0-2	2
High	713.5	23155	5	QPSK	1	0	24.32	0	0
	713.5	23155	5	QPSK	1	12	24.31	0	0
	713.5	23155	5	QPSK	1	24	24.32	0	0
	713.5	23155	5	QPSK	12	0	23.28	0-1	1
	713.5	23155	5	QPSK	12	6	23.45	0-1	1
	713.5	23155	5	QPSK	12	13	23.35	0-1	1
	713.5	23155	5	QPSK	25	0	23.41	0-1	1
	713.5	23155	5	16-QAM	1	0	23.46	0-1	1
	713.5	23155	5	16-QAM	1	12	23.36	0-1	1
	713.5	23155	5	16-QAM	1	24	23.46	0-1	1
	713.5	23155	5	16-QAM	12	0	22.35	0-2	2
	713.5	23155	5	16-QAM	12	6	22.48	0-2	2
	713.5	23155	5	16-QAM	12	13	22.37	0-2	2
	713.5	23155	5	16-QAM	25	0	22.41	0-2	2

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Table 9-9
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	24.30	0	0
	700.5	23025	3	QPSK	1	7	24.40	0	0
	700.5	23025	3	QPSK	1	14	24.41	0	0
	700.5	23025	3	QPSK	8	0	23.26	0-1	1
	700.5	23025	3	QPSK	8	4	23.30	0-1	1
	700.5	23025	3	QPSK	8	7	23.32	0-1	1
	700.5	23025	3	QPSK	15	0	23.29	0-1	1
	700.5	23025	3	16-QAM	1	0	23.48	0-1	1
	700.5	23025	3	16-QAM	1	7	23.50	0-1	1
	700.5	23025	3	16-QAM	1	14	23.47	0-1	1
	700.5	23025	3	16-QAM	8	0	22.30	0-2	2
	700.5	23025	3	16-QAM	8	4	22.32	0-2	2
	700.5	23025	3	16-QAM	8	7	22.38	0-2	2
	700.5	23025	3	16-QAM	15	0	22.26	0-2	2
Mid	707.5	23095	3	QPSK	1	0	24.32	0	0
	707.5	23095	3	QPSK	1	7	24.45	0	0
	707.5	23095	3	QPSK	1	14	24.26	0	0
	707.5	23095	3	QPSK	8	0	23.28	0-1	1
	707.5	23095	3	QPSK	8	4	23.29	0-1	1
	707.5	23095	3	QPSK	8	7	23.23	0-1	1
	707.5	23095	3	QPSK	15	0	23.23	0-1	1
	707.5	23095	3	16-QAM	1	0	23.46	0-1	1
	707.5	23095	3	16-QAM	1	7	23.40	0-1	1
	707.5	23095	3	16-QAM	1	14	23.46	0-1	1
	707.5	23095	3	16-QAM	8	0	22.24	0-2	2
	707.5	23095	3	16-QAM	8	4	22.29	0-2	2
	707.5	23095	3	16-QAM	8	7	22.24	0-2	2
	707.5	23095	3	16-QAM	15	0	22.21	0-2	2
High	714.5	23165	3	QPSK	1	0	24.30	0	0
	714.5	23165	3	QPSK	1	7	24.47	0	0
	714.5	23165	3	QPSK	1	14	24.46	0	0
	714.5	23165	3	QPSK	8	0	23.28	0-1	1
	714.5	23165	3	QPSK	8	4	23.35	0-1	1
	714.5	23165	3	QPSK	8	7	23.36	0-1	1
	714.5	23165	3	QPSK	15	0	23.33	0-1	1
	714.5	23165	3	16-QAM	1	0	23.48	0-1	1
	714.5	23165	3	16-QAM	1	7	23.50	0-1	1
	714.5	23165	3	16-QAM	1	14	23.47	0-1	1
	714.5	23165	3	16-QAM	8	0	22.30	0-2	2
	714.5	23165	3	16-QAM	8	4	22.34	0-2	2
	714.5	23165	3	16-QAM	8	7	22.40	0-2	2
	714.5	23165	3	16-QAM	15	0	22.26	0-2	2

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Table 9-10
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	24.50	0	0
	699.7	23017	1.4	QPSK	1	2	24.50	0	0
	699.7	23017	1.4	QPSK	1	5	24.49	0	0
	699.7	23017	1.4	QPSK	3	0	24.19	0	0
	699.7	23017	1.4	QPSK	3	2	24.22	0	0
	699.7	23017	1.4	QPSK	3	3	24.13	0	0
	699.7	23017	1.4	QPSK	6	0	23.14	0-1	1
	699.7	23017	1.4	16-QAM	1	0	23.48	0-1	1
	699.7	23017	1.4	16-QAM	1	2	23.50	0-1	1
	699.7	23017	1.4	16-QAM	1	5	23.48	0-1	1
	699.7	23017	1.4	16-QAM	3	0	23.50	0-1	1
	699.7	23017	1.4	16-QAM	3	2	23.49	0-1	1
	699.7	23017	1.4	16-QAM	3	3	23.47	0-1	1
	699.7	23017	1.4	16-QAM	6	0	22.49	0-2	2
Mid	707.5	23095	1.4	QPSK	1	0	24.45	0	0
	707.5	23095	1.4	QPSK	1	2	24.26	0	0
	707.5	23095	1.4	QPSK	1	5	24.35	0	0
	707.5	23095	1.4	QPSK	3	0	24.13	0	0
	707.5	23095	1.4	QPSK	3	2	24.20	0	0
	707.5	23095	1.4	QPSK	3	3	24.11	0	0
	707.5	23095	1.4	QPSK	6	0	23.15	0-1	1
	707.5	23095	1.4	16-QAM	1	0	23.49	0-1	1
	707.5	23095	1.4	16-QAM	1	2	23.50	0-1	1
	707.5	23095	1.4	16-QAM	1	5	23.50	0-1	1
	707.5	23095	1.4	16-QAM	3	0	23.27	0-1	1
	707.5	23095	1.4	16-QAM	3	2	23.41	0-1	1
	707.5	23095	1.4	16-QAM	3	3	23.28	0-1	1
	707.5	23095	1.4	16-QAM	6	0	22.22	0-2	2
High	715.3	23173	1.4	QPSK	1	0	24.50	0	0
	715.3	23173	1.4	QPSK	1	2	24.50	0	0
	715.3	23173	1.4	QPSK	1	5	24.49	0	0
	715.3	23173	1.4	QPSK	3	0	24.11	0	0
	715.3	23173	1.4	QPSK	3	2	24.21	0	0
	715.3	23173	1.4	QPSK	3	3	24.10	0	0
	715.3	23173	1.4	QPSK	6	0	23.18	0-1	1
	715.3	23173	1.4	16-QAM	1	0	23.45	0-1	1
	715.3	23173	1.4	16-QAM	1	2	23.48	0-1	1
	715.3	23173	1.4	16-QAM	1	5	23.47	0-1	1
	715.3	23173	1.4	16-QAM	3	0	23.40	0-1	1
	715.3	23173	1.4	16-QAM	3	2	23.48	0-1	1
	715.3	23173	1.4	16-QAM	3	3	23.45	0-1	1
	715.3	23173	1.4	16-QAM	6	0	22.31	0-2	2

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9.4.2 LTE Band 13 – Maximum Output Power

Table 9-11
LTE Band 13 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	782.0	23230	10	QPSK	1	0	23.00	0	0
	782.0	23230	10	QPSK	1	25	**23.48**	0	0
	782.0	23230	10	QPSK	1	49	23.03	0	0
	782.0	23230	10	QPSK	25	0	22.11	0-1	1
	782.0	23230	10	QPSK	25	12	22.39	0-1	1
	782.0	23230	10	QPSK	25	25	**22.78**	0-1	1
	782.0	23230	10	QPSK	50	0	22.13	0-1	1
	782.0	23230	10	16QAM	1	0	22.81	0-1	1
	782.0	23230	10	16QAM	1	25	22.95	0-1	1
	782.0	23230	10	16QAM	1	49	22.83	0-1	1
	782.0	23230	10	16QAM	25	0	21.84	0-2	2
	782.0	23230	10	16QAM	25	12	21.92	0-2	2
	782.0	23230	10	16QAM	25	25	21.82	0-2	2
	782.0	23230	10	16QAM	50	0	21.95	0-2	2

Table 9-12
LTE Band 13 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]
Mid	782.0	23230	5	QPSK	1	0	23.36	0	0
	782.0	23230	5	QPSK	1	12	23.47	0	0
	782.0	23230	5	QPSK	1	24	23.33	0	0
	782.0	23230	5	QPSK	12	0	22.59	0-1	1
	782.0	23230	5	QPSK	12	6	22.50	0-1	1
	782.0	23230	5	QPSK	12	13	22.32	0-1	1
	782.0	23230	5	QPSK	25	0	22.39	0-1	1
	782.0	23230	5	16-QAM	1	0	22.28	0-1	1
	782.0	23230	5	16-QAM	1	12	22.52	0-1	1
	782.0	23230	5	16-QAM	1	24	22.37	0-1	1
	782.0	23230	5	16-QAM	12	0	21.44	0-2	2
	782.0	23230	5	16-QAM	12	6	21.52	0-2	2
	782.0	23230	5	16-QAM	12	13	21.46	0-2	2
	782.0	23230	5	16-QAM	25	0	21.50	0-2	2

Note: LTE Band 13 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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9.4.3 LTE Band 5 (Cell) – Maximum Output Power

Table 9-13
LTE Band 5 (Cell) Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	836.5	20525	10	QPSK	1	0	24.08	0	0
	836.5	20525	10	QPSK	1	25	**24.25**	0	0
	836.5	20525	10	QPSK	1	49	23.81	0	0
	836.5	20525	10	QPSK	25	0	**23.25**	0-1	1
	836.5	20525	10	QPSK	25	12	23.07	0-1	1
	836.5	20525	10	QPSK	25	25	23.11	0-1	1
	836.5	20525	10	QPSK	50	0	22.92	0-1	1
	836.5	20525	10	16QAM	1	0	23.43	0-1	1
	836.5	20525	10	16QAM	1	25	23.33	0-1	1
	836.5	20525	10	16QAM	1	49	23.38	0-1	1
	836.5	20525	10	16QAM	25	0	22.27	0-2	2
	836.5	20525	10	16QAM	25	12	22.16	0-2	2
	836.5	20525	10	16QAM	25	25	22.12	0-2	2
	836.5	20525	10	16QAM	50	0	22.19	0-2	2

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

Table 9-14
LTE Band 5 (Cell) Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	826.5	20425	5	QPSK	1	0	23.88	0	0
	826.5	20425	5	QPSK	1	12	24.22	0	0
	826.5	20425	5	QPSK	1	24	23.94	0	0
	826.5	20425	5	QPSK	12	0	23.05	0-1	1
	826.5	20425	5	QPSK	12	6	23.08	0-1	1
	826.5	20425	5	QPSK	12	13	22.95	0-1	1
	826.5	20425	5	QPSK	25	0	22.87	0-1	1
	826.5	20425	5	16-QAM	1	0	23.47	0-1	1
	826.5	20425	5	16-QAM	1	12	23.15	0-1	1
	826.5	20425	5	16-QAM	1	24	23.30	0-1	1
	826.5	20425	5	16-QAM	12	0	22.29	0-2	2
	826.5	20425	5	16-QAM	12	6	22.28	0-2	2
	826.5	20425	5	16-QAM	12	13	21.97	0-2	2
	826.5	20425	5	16-QAM	25	0	22.01	0-2	2
Mid	836.5	20525	5	QPSK	1	0	24.08	0	0
	836.5	20525	5	QPSK	1	12	24.24	0	0
	836.5	20525	5	QPSK	1	24	24.18	0	0
	836.5	20525	5	QPSK	12	0	23.00	0-1	1
	836.5	20525	5	QPSK	12	6	23.29	0-1	1
	836.5	20525	5	QPSK	12	13	23.02	0-1	1
	836.5	20525	5	QPSK	25	0	22.99	0-1	1
	836.5	20525	5	16-QAM	1	0	23.18	0-1	1
	836.5	20525	5	16-QAM	1	12	23.21	0-1	1
	836.5	20525	5	16-QAM	1	24	23.25	0-1	1
	836.5	20525	5	16-QAM	12	0	22.38	0-2	2
	836.5	20525	5	16-QAM	12	6	22.44	0-2	2
	836.5	20525	5	16-QAM	12	13	21.77	0-2	2
	836.5	20525	5	16-QAM	25	0	21.83	0-2	2
High	846.5	20625	5	QPSK	1	0	24.15	0	0
	846.5	20625	5	QPSK	1	12	24.24	0	0
	846.5	20625	5	QPSK	1	24	24.20	0	0
	846.5	20625	5	QPSK	12	0	23.09	0-1	1
	846.5	20625	5	QPSK	12	6	23.23	0-1	1
	846.5	20625	5	QPSK	12	13	23.21	0-1	1
	846.5	20625	5	QPSK	25	0	23.00	0-1	1
	846.5	20625	5	16-QAM	1	0	23.25	0-1	1
	846.5	20625	5	16-QAM	1	12	23.32	0-1	1
	846.5	20625	5	16-QAM	1	24	23.17	0-1	1
	846.5	20625	5	16-QAM	12	0	22.35	0-2	2
	846.5	20625	5	16-QAM	12	6	22.47	0-2	2
	846.5	20625	5	16-QAM	12	13	21.69	0-2	2
	846.5	20625	5	16-QAM	25	0	21.99	0-2	2

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Table 9-15
LTE Band 5 (Cell) Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	825.5	20415	3	QPSK	1	0	23.94	0	0
	825.5	20415	3	QPSK	1	7	24.09	0	0
	825.5	20415	3	QPSK	1	14	24.09	0	0
	825.5	20415	3	QPSK	8	0	23.22	0-1	1
	825.5	20415	3	QPSK	8	4	23.07	0-1	1
	825.5	20415	3	QPSK	8	7	23.03	0-1	1
	825.5	20415	3	QPSK	15	0	22.75	0-1	1
	825.5	20415	3	16-QAM	1	0	23.30	0-1	1
	825.5	20415	3	16-QAM	1	7	23.30	0-1	1
	825.5	20415	3	16-QAM	1	14	23.26	0-1	1
	825.5	20415	3	16-QAM	8	0	22.42	0-2	2
	825.5	20415	3	16-QAM	8	4	22.19	0-2	2
	825.5	20415	3	16-QAM	8	7	22.17	0-2	2
	825.5	20415	3	16-QAM	15	0	21.93	0-2	2
Mid	836.5	20525	3	QPSK	1	0	24.08	0	0
	836.5	20525	3	QPSK	1	7	24.28	0	0
	836.5	20525	3	QPSK	1	14	24.24	0	0
	836.5	20525	3	QPSK	8	0	22.95	0-1	1
	836.5	20525	3	QPSK	8	4	23.09	0-1	1
	836.5	20525	3	QPSK	8	7	22.82	0-1	1
	836.5	20525	3	QPSK	15	0	22.92	0-1	1
	836.5	20525	3	16-QAM	1	0	23.26	0-1	1
	836.5	20525	3	16-QAM	1	7	23.22	0-1	1
	836.5	20525	3	16-QAM	1	14	23.15	0-1	1
	836.5	20525	3	16-QAM	8	0	22.18	0-2	2
	836.5	20525	3	16-QAM	8	4	22.28	0-2	2
	836.5	20525	3	16-QAM	8	7	21.89	0-2	2
	836.5	20525	3	16-QAM	15	0	21.99	0-2	2
High	847.5	20635	3	QPSK	1	0	24.38	0	0
	847.5	20635	3	QPSK	1	7	24.38	0	0
	847.5	20635	3	QPSK	1	14	24.48	0	0
	847.5	20635	3	QPSK	8	0	23.26	0-1	1
	847.5	20635	3	QPSK	8	4	23.23	0-1	1
	847.5	20635	3	QPSK	8	7	23.06	0-1	1
	847.5	20635	3	QPSK	15	0	23.03	0-1	1
	847.5	20635	3	16-QAM	1	0	23.20	0-1	1
	847.5	20635	3	16-QAM	1	7	23.22	0-1	1
	847.5	20635	3	16-QAM	1	14	23.26	0-1	1
	847.5	20635	3	16-QAM	8	0	22.43	0-2	2
	847.5	20635	3	16-QAM	8	4	22.38	0-2	2
	847.5	20635	3	16-QAM	8	7	21.75	0-2	2
	847.5	20635	3	16-QAM	15	0	21.93	0-2	2

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Table 9-16
LTE Band 5 (Cell) Conducted Powers -1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	824.7	20407	1.4	QPSK	1	0	23.93	0	0
	824.7	20407	1.4	QPSK	1	2	24.23	0	0
	824.7	20407	1.4	QPSK	1	5	24.22	0	0
	824.7	20407	1.4	QPSK	3	0	24.24	0	0
	824.7	20407	1.4	QPSK	3	2	24.01	0	0
	824.7	20407	1.4	QPSK	3	3	24.11	0	0
	824.7	20407	1.4	QPSK	6	0	22.71	0-1	1
	824.7	20407	1.4	16-QAM	1	0	23.21	0-1	1
	824.7	20407	1.4	16-QAM	1	2	23.29	0-1	1
	824.7	20407	1.4	16-QAM	1	5	23.22	0-1	1
	824.7	20407	1.4	16-QAM	3	0	23.45	0-1	1
	824.7	20407	1.4	16-QAM	3	2	23.09	0-1	1
	824.7	20407	1.4	16-QAM	3	3	23.15	0-1	1
	824.7	20407	1.4	16-QAM	6	0	21.98	0-2	2
Mid	836.5	20525	1.4	QPSK	1	0	23.98	0	0
	836.5	20525	1.4	QPSK	1	2	24.17	0	0
	836.5	20525	1.4	QPSK	1	5	24.19	0	0
	836.5	20525	1.4	QPSK	3	0	24.12	0	0
	836.5	20525	1.4	QPSK	3	2	24.24	0	0
	836.5	20525	1.4	QPSK	3	3	23.90	0	0
	836.5	20525	1.4	QPSK	6	0	22.86	0-1	1
	836.5	20525	1.4	16-QAM	1	0	23.43	0-1	1
	836.5	20525	1.4	16-QAM	1	2	23.09	0-1	1
	836.5	20525	1.4	16-QAM	1	5	22.99	0-1	1
	836.5	20525	1.4	16-QAM	3	0	22.99	0-1	1
	836.5	20525	1.4	16-QAM	3	2	23.14	0-1	1
	836.5	20525	1.4	16-QAM	3	3	22.86	0-1	1
	836.5	20525	1.4	16-QAM	6	0	22.08	0-2	2
High	848.3	20643	1.4	QPSK	1	0	24.23	0	0
	848.3	20643	1.4	QPSK	1	2	24.22	0	0
	848.3	20643	1.4	QPSK	1	5	24.23	0	0
	848.3	20643	1.4	QPSK	3	0	24.09	0	0
	848.3	20643	1.4	QPSK	3	2	24.24	0	0
	848.3	20643	1.4	QPSK	3	3	24.09	0	0
	848.3	20643	1.4	QPSK	6	0	22.90	0-1	1
	848.3	20643	1.4	16-QAM	1	0	23.03	0-1	1
	848.3	20643	1.4	16-QAM	1	2	23.14	0-1	1
	848.3	20643	1.4	16-QAM	1	5	23.33	0-1	1
	848.3	20643	1.4	16-QAM	3	0	23.36	0-1	1
	848.3	20643	1.4	16-QAM	3	2	23.22	0-1	1
	848.3	20643	1.4	16-QAM	3	3	22.73	0-1	1
	848.3	20643	1.4	16-QAM	6	0	21.83	0-2	2

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9.4.4 LTE Band 4 (AWS)

9.4.4.1 Maximum Output Power

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	1732.5	20175	20	QPSK	1	0	**24.40**	0	0
	1732.5	20175	20	QPSK	1	50	23.83	0	0
	1732.5	20175	20	QPSK	1	99	23.77	0	0
	1732.5	20175	20	QPSK	50	0	23.16	0-1	1
	1732.5	20175	20	QPSK	50	25	**23.21**	0-1	1
	1732.5	20175	20	QPSK	50	50	22.95	0-1	1
	1732.5	20175	20	QPSK	100	0	23.19	0-1	1
	1732.5	20175	20	16QAM	1	0	23.50	0-1	1
	1732.5	20175	20	16QAM	1	50	23.24	0-1	1
	1732.5	20175	20	16QAM	1	99	23.47	0-1	1
	1732.5	20175	20	16QAM	50	0	22.36	0-2	2
	1732.5	20175	20	16QAM	50	25	22.00	0-2	2
	1732.5	20175	20	16QAM	50	50	22.03	0-2	2
	1732.5	20175	20	16QAM	100	0	22.19	0-2	2

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

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1717.5	20025	15	QPSK	1	0	24.02	0	0
	1717.5	20025	15	QPSK	1	36	23.91	0	0
	1717.5	20025	15	QPSK	1	74	23.55	0	0
	1717.5	20025	15	QPSK	36	0	23.42	0-1	1
	1717.5	20025	15	QPSK	36	18	22.96	0-1	1
	1717.5	20025	15	QPSK	36	37	22.94	0-1	1
	1717.5	20025	15	QPSK	75	0	23.35	0-1	1
	1717.5	20025	15	16QAM	1	0	23.27	0-1	1
	1717.5	20025	15	16QAM	1	36	23.30	0-1	1
	1717.5	20025	15	16QAM	1	74	23.30	0-1	1
	1717.5	20025	15	16QAM	36	0	22.21	0-2	2
	1717.5	20025	15	16QAM	36	18	21.71	0-2	2
	1717.5	20025	15	16QAM	36	37	21.92	0-2	2
	1717.5	20025	15	16QAM	75	0	22.30	0-2	2
Mid	1732.5	20175	15	QPSK	1	0	24.22	0	0
	1732.5	20175	15	QPSK	1	36	23.65	0	0
	1732.5	20175	15	QPSK	1	74	23.56	0	0
	1732.5	20175	15	QPSK	36	0	23.32	0-1	1
	1732.5	20175	15	QPSK	36	18	23.06	0-1	1
	1732.5	20175	15	QPSK	36	37	22.89	0-1	1
	1732.5	20175	15	QPSK	75	0	23.09	0-1	1
	1732.5	20175	15	16QAM	1	0	23.30	0-1	1
	1732.5	20175	15	16QAM	1	36	23.28	0-1	1
	1732.5	20175	15	16QAM	1	74	23.23	0-1	1
	1732.5	20175	15	16QAM	36	0	22.35	0-2	2
	1732.5	20175	15	16QAM	36	18	21.82	0-2	2
	1732.5	20175	15	16QAM	36	37	22.21	0-2	2
	1732.5	20175	15	16QAM	75	0	22.24	0-2	2
High	1747.5	20325	15	QPSK	1	0	24.03	0	0
	1747.5	20325	15	QPSK	1	36	23.80	0	0
	1747.5	20325	15	QPSK	1	74	23.73	0	0
	1747.5	20325	15	QPSK	36	0	23.37	0-1	1
	1747.5	20325	15	QPSK	36	18	23.16	0-1	1
	1747.5	20325	15	QPSK	36	37	22.80	0-1	1
	1747.5	20325	15	QPSK	75	0	23.23	0-1	1
	1747.5	20325	15	16QAM	1	0	23.42	0-1	1
	1747.5	20325	15	16QAM	1	36	23.33	0-1	1
	1747.5	20325	15	16QAM	1	74	23.11	0-1	1
	1747.5	20325	15	16QAM	36	0	22.32	0-2	2
	1747.5	20325	15	16QAM	36	18	21.78	0-2	2
	1747.5	20325	15	16QAM	36	37	22.21	0-2	2
	1747.5	20325	15	16QAM	75	0	22.07	0-2	2

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1715	20000	10	QPSK	1	0	23.89	0	0
	1715	20000	10	QPSK	1	25	23.97	0	0
	1715	20000	10	QPSK	1	49	23.56	0	0
	1715	20000	10	QPSK	25	0	23.40	0-1	1
	1715	20000	10	QPSK	25	12	22.85	0-1	1
	1715	20000	10	QPSK	25	25	22.96	0-1	1
	1715	20000	10	QPSK	50	0	23.32	0-1	1
	1715	20000	10	16QAM	1	0	23.16	0-1	1
	1715	20000	10	16QAM	1	25	23.11	0-1	1
	1715	20000	10	16QAM	1	49	23.12	0-1	1
	1715	20000	10	16QAM	25	0	22.35	0-2	2
	1715	20000	10	16QAM	25	12	21.90	0-2	2
	1715	20000	10	16QAM	25	25	21.74	0-2	2
	1715	20000	10	16QAM	50	0	22.21	0-2	2
Mid	1732.5	20175	10	QPSK	1	0	24.35	0	0
	1732.5	20175	10	QPSK	1	25	23.69	0	0
	1732.5	20175	10	QPSK	1	49	23.50	0	0
	1732.5	20175	10	QPSK	25	0	23.34	0-1	1
	1732.5	20175	10	QPSK	25	12	23.04	0-1	1
	1732.5	20175	10	QPSK	25	25	22.82	0-1	1
	1732.5	20175	10	QPSK	50	0	23.13	0-1	1
	1732.5	20175	10	16QAM	1	0	23.35	0-1	1
	1732.5	20175	10	16QAM	1	25	23.27	0-1	1
	1732.5	20175	10	16QAM	1	49	23.04	0-1	1
	1732.5	20175	10	16QAM	25	0	22.33	0-2	2
	1732.5	20175	10	16QAM	25	12	21.68	0-2	2
	1732.5	20175	10	16QAM	25	25	22.36	0-2	2
	1732.5	20175	10	16QAM	50	0	22.23	0-2	2
High	1750	20350	10	QPSK	1	0	24.00	0	0
	1750	20350	10	QPSK	1	25	23.83	0	0
	1750	20350	10	QPSK	1	49	23.75	0	0
	1750	20350	10	QPSK	25	0	23.42	0-1	1
	1750	20350	10	QPSK	25	12	23.17	0-1	1
	1750	20350	10	QPSK	25	25	22.91	0-1	1
	1750	20350	10	QPSK	50	0	23.40	0-1	1
	1750	20350	10	16QAM	1	0	23.46	0-1	1
	1750	20350	10	16QAM	1	25	23.22	0-1	1
	1750	20350	10	16QAM	1	49	23.29	0-1	1
	1750	20350	10	16QAM	25	0	22.13	0-2	2
	1750	20350	10	16QAM	25	12	21.83	0-2	2
	1750	20350	10	16QAM	25	25	22.26	0-2	2
	1750	20350	10	16QAM	50	0	21.99	0-2	2

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1712.5	19975	5	QPSK	1	0	23.97	0	0
	1712.5	19975	5	QPSK	1	12	23.86	0	0
	1712.5	19975	5	QPSK	1	24	23.70	0	0
	1712.5	19975	5	QPSK	12	0	23.34	0-1	1
	1712.5	19975	5	QPSK	12	6	22.95	0-1	1
	1712.5	19975	5	QPSK	12	13	22.87	0-1	1
	1712.5	19975	5	QPSK	25	0	23.39	0-1	1
	1712.5	19975	5	16-QAM	1	0	23.35	0-1	1
	1712.5	19975	5	16-QAM	1	12	22.99	0-1	1
	1712.5	19975	5	16-QAM	1	24	23.03	0-1	1
	1712.5	19975	5	16-QAM	12	0	22.42	0-2	2
	1712.5	19975	5	16-QAM	12	6	21.72	0-2	2
	1712.5	19975	5	16-QAM	12	13	21.57	0-2	2
	1712.5	19975	5	16-QAM	25	0	22.06	0-2	2
Mid	1732.5	20175	5	QPSK	1	0	24.30	0	0
	1732.5	20175	5	QPSK	1	12	23.88	0	0
	1732.5	20175	5	QPSK	1	24	23.64	0	0
	1732.5	20175	5	QPSK	12	0	23.16	0-1	1
	1732.5	20175	5	QPSK	12	6	22.87	0-1	1
	1732.5	20175	5	QPSK	12	13	22.86	0-1	1
	1732.5	20175	5	QPSK	25	0	23.28	0-1	1
	1732.5	20175	5	16-QAM	1	0	23.15	0-1	1
	1732.5	20175	5	16-QAM	1	12	23.26	0-1	1
	1732.5	20175	5	16-QAM	1	24	23.00	0-1	1
	1732.5	20175	5	16-QAM	12	0	22.18	0-2	2
	1732.5	20175	5	16-QAM	12	6	21.86	0-2	2
	1732.5	20175	5	16-QAM	12	13	22.45	0-2	2
	1732.5	20175	5	16-QAM	25	0	22.14	0-2	2
High	1752.5	20375	5	QPSK	1	0	23.92	0	0
	1752.5	20375	5	QPSK	1	12	23.64	0	0
	1752.5	20375	5	QPSK	1	24	23.63	0	0
	1752.5	20375	5	QPSK	12	0	23.26	0-1	1
	1752.5	20375	5	QPSK	12	6	23.23	0-1	1
	1752.5	20375	5	QPSK	12	13	23.01	0-1	1
	1752.5	20375	5	QPSK	25	0	23.45	0-1	1
	1752.5	20375	5	16-QAM	1	0	23.50	0-1	1
	1752.5	20375	5	16-QAM	1	12	23.28	0-1	1
	1752.5	20375	5	16-QAM	1	24	23.14	0-1	1
	1752.5	20375	5	16-QAM	12	0	22.02	0-2	2
	1752.5	20375	5	16-QAM	12	6	21.95	0-2	2
	1752.5	20375	5	16-QAM	12	13	22.45	0-2	2
	1752.5	20375	5	16-QAM	25	0	22.15	0-2	2

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1711.5	19965	3	QPSK	1	0	23.91	0	0
	1711.5	19965	3	QPSK	1	7	23.87	0	0
	1711.5	19965	3	QPSK	1	14	23.71	0	0
	1711.5	19965	3	QPSK	8	0	23.46	0-1	1
	1711.5	19965	3	QPSK	8	4	23.13	0-1	1
	1711.5	19965	3	QPSK	8	7	22.99	0-1	1
	1711.5	19965	3	QPSK	15	0	23.20	0-1	1
	1711.5	19965	3	16-QAM	1	0	23.25	0-1	1
	1711.5	19965	3	16-QAM	1	7	22.80	0-1	1
	1711.5	19965	3	16-QAM	1	14	22.87	0-1	1
	1711.5	19965	3	16-QAM	8	0	22.15	0-2	2
	1711.5	19965	3	16-QAM	8	4	21.82	0-2	2
	1711.5	19965	3	16-QAM	8	7	22.22	0-2	2
	1711.5	19965	3	16-QAM	15	0	22.08	0-2	2
Mid	1732.5	20175	3	QPSK	1	0	24.16	0	0
	1732.5	20175	3	QPSK	1	7	23.86	0	0
	1732.5	20175	3	QPSK	1	14	23.73	0	0
	1732.5	20175	3	QPSK	8	0	23.30	0-1	1
	1732.5	20175	3	QPSK	8	4	22.93	0-1	1
	1732.5	20175	3	QPSK	8	7	22.69	0-1	1
	1732.5	20175	3	QPSK	15	0	23.46	0-1	1
	1732.5	20175	3	16-QAM	1	0	23.33	0-1	1
	1732.5	20175	3	16-QAM	1	7	23.11	0-1	1
	1732.5	20175	3	16-QAM	1	14	23.01	0-1	1
	1732.5	20175	3	16-QAM	8	0	22.28	0-2	2
	1732.5	20175	3	16-QAM	8	4	21.89	0-2	2
	1732.5	20175	3	16-QAM	8	7	22.44	0-2	2
	1732.5	20175	3	16-QAM	15	0	21.98	0-2	2
High	1753.5	20385	3	QPSK	1	0	23.83	0	0
	1753.5	20385	3	QPSK	1	7	23.80	0	0
	1753.5	20385	3	QPSK	1	14	23.75	0	0
	1753.5	20385	3	QPSK	8	0	23.38	0-1	1
	1753.5	20385	3	QPSK	8	4	23.35	0-1	1
	1753.5	20385	3	QPSK	8	7	23.05	0-1	1
	1753.5	20385	3	QPSK	15	0	23.30	0-1	1
	1753.5	20385	3	16-QAM	1	0	23.45	0-1	1
	1753.5	20385	3	16-QAM	1	7	23.27	0-1	1
	1753.5	20385	3	16-QAM	1	14	23.33	0-1	1
	1753.5	20385	3	16-QAM	8	0	21.94	0-2	2
	1753.5	20385	3	16-QAM	8	4	22.15	0-2	2
	1753.5	20385	3	16-QAM	8	7	22.41	0-2	2
	1753.5	20385	3	16-QAM	15	0	22.01	0-2	2

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1710.7	19957	1.4	QPSK	1	0	23.87	0	0
	1710.7	19957	1.4	QPSK	1	2	24.00	0	0
	1710.7	19957	1.4	QPSK	1	5	23.58	0	0
	1710.7	19957	1.4	QPSK	3	0	24.20	0	0
	1710.7	19957	1.4	QPSK	3	2	24.28	0	0
	1710.7	19957	1.4	QPSK	3	3	24.05	0	0
	1710.7	19957	1.4	QPSK	6	0	23.46	0-1	1
	1710.7	19957	1.4	16-QAM	1	0	23.28	0-1	1
	1710.7	19957	1.4	16-QAM	1	2	22.65	0-1	1
	1710.7	19957	1.4	16-QAM	1	5	23.05	0-1	1
	1710.7	19957	1.4	16-QAM	3	0	23.38	0-1	1
	1710.7	19957	1.4	16-QAM	3	2	22.75	0-1	1
	1710.7	19957	1.4	16-QAM	3	3	22.54	0-1	1
	1710.7	19957	1.4	16-QAM	6	0	22.25	0-2	2
Mid	1732.5	20175	1.4	QPSK	1	0	24.07	0	0
	1732.5	20175	1.4	QPSK	1	2	23.87	0	0
	1732.5	20175	1.4	QPSK	1	5	23.92	0	0
	1732.5	20175	1.4	QPSK	3	0	24.25	0	0
	1732.5	20175	1.4	QPSK	3	2	24.11	0	0
	1732.5	20175	1.4	QPSK	3	3	23.96	0	0
	1732.5	20175	1.4	QPSK	6	0	23.33	0-1	1
	1732.5	20175	1.4	16-QAM	1	0	23.14	0-1	1
	1732.5	20175	1.4	16-QAM	1	2	23.20	0-1	1
	1732.5	20175	1.4	16-QAM	1	5	22.89	0-1	1
	1732.5	20175	1.4	16-QAM	3	0	23.29	0-1	1
	1732.5	20175	1.4	16-QAM	3	2	22.90	0-1	1
	1732.5	20175	1.4	16-QAM	3	3	23.37	0-1	1
	1732.5	20175	1.4	16-QAM	6	0	22.03	0-2	2
High	1754.3	20393	1.4	QPSK	1	0	23.88	0	0
	1754.3	20393	1.4	QPSK	1	2	23.80	0	0
	1754.3	20393	1.4	QPSK	1	5	23.74	0	0
	1754.3	20393	1.4	QPSK	3	0	23.71	0	0
	1754.3	20393	1.4	QPSK	3	2	24.26	0	0
	1754.3	20393	1.4	QPSK	3	3	24.00	0	0
	1754.3	20393	1.4	QPSK	6	0	23.48	0-1	1
	1754.3	20393	1.4	16-QAM	1	0	23.48	0-1	1
	1754.3	20393	1.4	16-QAM	1	2	23.17	0-1	1
	1754.3	20393	1.4	16-QAM	1	5	23.21	0-1	1
	1754.3	20393	1.4	16-QAM	3	0	23.11	0-1	1
	1754.3	20393	1.4	16-QAM	3	2	23.13	0-1	1
	1754.3	20393	1.4	16-QAM	3	3	23.35	0-1	1
	1754.3	20393	1.4	16-QAM	6	0	22.10	0-2	2

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9.4.4.2 Reduced Output Power – Representing Hotspot Mode Active

Table 9-23
Reduced LTE Band 4 (AWS) Conducted Powers - 20 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	1732.5	20175	20	QPSK	1	0	**20.43**	0	0
	1732.5	20175	20	QPSK	1	50	19.62	0	0
	1732.5	20175	20	QPSK	1	99	19.99	0	0
	1732.5	20175	20	QPSK	50	0	**19.97**	0-1	0
	1732.5	20175	20	QPSK	50	25	19.74	0-1	0
	1732.5	20175	20	QPSK	50	50	19.68	0-1	0
	1732.5	20175	20	QPSK	100	0	19.84	0-1	0
	1732.5	20175	20	16QAM	1	0	20.00	0-1	0
	1732.5	20175	20	16QAM	1	50	20.50	0-1	0
	1732.5	20175	20	16QAM	1	99	20.25	0-1	0
	1732.5	20175	20	16QAM	50	0	19.98	0-2	0
	1732.5	20175	20	16QAM	50	25	19.75	0-2	0
	1732.5	20175	20	16QAM	50	50	19.65	0-2	0
	1732.5	20175	20	16QAM	100	0	19.84	0-2	0

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 9-24
Reduced LTE Band 4 (AWS) Conducted Powers - 15 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1717.5	20025	15	QPSK	1	0	20.39	0	0
	1717.5	20025	15	QPSK	1	36	20.08	0	0
	1717.5	20025	15	QPSK	1	74	19.94	0	0
	1717.5	20025	15	QPSK	36	0	19.61	0-1	0
	1717.5	20025	15	QPSK	36	18	19.57	0-1	0
	1717.5	20025	15	QPSK	36	37	19.77	0-1	0
	1717.5	20025	15	QPSK	75	0	19.65	0-1	0
	1717.5	20025	15	16QAM	1	0	20.22	0-1	0
	1717.5	20025	15	16QAM	1	36	20.40	0-1	0
	1717.5	20025	15	16QAM	1	74	20.14	0-1	0
	1717.5	20025	15	16QAM	36	0	19.80	0-2	0
	1717.5	20025	15	16QAM	36	18	19.88	0-2	0
	1717.5	20025	15	16QAM	36	37	19.88	0-2	0
	1717.5	20025	15	16QAM	75	0	19.72	0-2	0
Mid	1732.5	20175	15	QPSK	1	0	20.22	0	0
	1732.5	20175	15	QPSK	1	36	20.17	0	0
	1732.5	20175	15	QPSK	1	74	20.09	0	0
	1732.5	20175	15	QPSK	36	0	19.79	0-1	0
	1732.5	20175	15	QPSK	36	18	19.72	0-1	0
	1732.5	20175	15	QPSK	36	37	19.75	0-1	0
	1732.5	20175	15	QPSK	75	0	19.81	0-1	0
	1732.5	20175	15	16QAM	1	0	20.14	0-1	0
	1732.5	20175	15	16QAM	1	36	20.22	0-1	0
	1732.5	20175	15	16QAM	1	74	20.31	0-1	0
	1732.5	20175	15	16QAM	36	0	19.94	0-2	0
	1732.5	20175	15	16QAM	36	18	19.72	0-2	0
	1732.5	20175	15	16QAM	36	37	19.75	0-2	0
	1732.5	20175	15	16QAM	75	0	19.81	0-2	0
High	1747.5	20325	15	QPSK	1	0	20.26	0	0
	1747.5	20325	15	QPSK	1	36	20.34	0	0
	1747.5	20325	15	QPSK	1	74	20.09	0	0
	1747.5	20325	15	QPSK	36	0	19.84	0-1	0
	1747.5	20325	15	QPSK	36	18	19.84	0-1	0
	1747.5	20325	15	QPSK	36	37	19.63	0-1	0
	1747.5	20325	15	QPSK	75	0	19.97	0-1	0
	1747.5	20325	15	16QAM	1	0	20.15	0-1	0
	1747.5	20325	15	16QAM	1	36	20.33	0-1	0
	1747.5	20325	15	16QAM	1	74	20.42	0-1	0
	1747.5	20325	15	16QAM	36	0	20.02	0-2	0
	1747.5	20325	15	16QAM	36	18	19.84	0-2	0
	1747.5	20325	15	16QAM	36	37	19.92	0-2	0
	1747.5	20325	15	16QAM	75	0	19.77	0-2	0

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Table 9-25
Reduced LTE Band 4 (AWS) Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1715	20000	10	QPSK	1	0	20.19	0	0
	1715	20000	10	QPSK	1	25	19.99	0	0
	1715	20000	10	QPSK	1	49	20.07	0	0
	1715	20000	10	QPSK	25	0	19.50	0-1	0
	1715	20000	10	QPSK	25	12	19.67	0-1	0
	1715	20000	10	QPSK	25	25	19.77	0-1	0
	1715	20000	10	QPSK	50	0	19.75	0-1	0
	1715	20000	10	16QAM	1	0	20.38	0-1	0
	1715	20000	10	16QAM	1	25	20.32	0-1	0
	1715	20000	10	16QAM	1	49	20.18	0-1	0
	1715	20000	10	16QAM	25	0	19.80	0-2	0
	1715	20000	10	16QAM	25	12	20.10	0-2	0
	1715	20000	10	16QAM	25	25	19.73	0-2	0
	1715	20000	10	16QAM	50	0	19.67	0-2	0
Mid	1732.5	20175	10	QPSK	1	0	20.27	0	0
	1732.5	20175	10	QPSK	1	25	20.00	0	0
	1732.5	20175	10	QPSK	1	49	20.37	0	0
	1732.5	20175	10	QPSK	25	0	19.68	0-1	0
	1732.5	20175	10	QPSK	25	12	19.91	0-1	0
	1732.5	20175	10	QPSK	25	25	19.59	0-1	0
	1732.5	20175	10	QPSK	50	0	19.94	0-1	0
	1732.5	20175	10	16QAM	1	0	20.31	0-1	0
	1732.5	20175	10	16QAM	1	25	19.93	0-1	0
	1732.5	20175	10	16QAM	1	49	20.04	0-1	0
	1732.5	20175	10	16QAM	25	0	20.13	0-2	0
	1732.5	20175	10	16QAM	25	12	19.76	0-2	0
	1732.5	20175	10	16QAM	25	25	19.80	0-2	0
	1732.5	20175	10	16QAM	50	0	19.97	0-2	0
High	1750	20350	10	QPSK	1	0	20.00	0	0
	1750	20350	10	QPSK	1	25	20.27	0	0
	1750	20350	10	QPSK	1	49	20.09	0	0
	1750	20350	10	QPSK	25	0	19.72	0-1	0
	1750	20350	10	QPSK	25	12	19.81	0-1	0
	1750	20350	10	QPSK	25	25	19.75	0-1	0
	1750	20350	10	QPSK	50	0	19.77	0-1	0
	1750	20350	10	16QAM	1	0	20.42	0-1	0
	1750	20350	10	16QAM	1	25	20.17	0-1	0
	1750	20350	10	16QAM	1	49	20.22	0-1	0
	1750	20350	10	16QAM	25	0	19.94	0-2	0
	1750	20350	10	16QAM	25	12	20.07	0-2	0
	1750	20350	10	16QAM	25	25	19.79	0-2	0
	1750	20350	10	16QAM	50	0	19.93	0-2	0

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Table 9-26
Reduced LTE Band 4 (AWS) Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1712.5	19975	5	QPSK	1	0	19.91	0	0
	1712.5	19975	5	QPSK	1	12	20.01	0	0
	1712.5	19975	5	QPSK	1	24	20.18	0	0
	1712.5	19975	5	QPSK	12	0	19.78	0-1	0
	1712.5	19975	5	QPSK	12	6	19.56	0-1	0
	1712.5	19975	5	QPSK	12	13	19.57	0-1	0
	1712.5	19975	5	QPSK	25	0	19.73	0-1	0
	1712.5	19975	5	16-QAM	1	0	20.42	0-1	0
	1712.5	19975	5	16-QAM	1	12	20.20	0-1	0
	1712.5	19975	5	16-QAM	1	24	20.12	0-1	0
	1712.5	19975	5	16-QAM	12	0	19.93	0-2	0
	1712.5	19975	5	16-QAM	12	6	20.39	0-2	0
	1712.5	19975	5	16-QAM	12	13	19.57	0-2	0
	1712.5	19975	5	16-QAM	25	0	19.84	0-2	0
Mid	1732.5	20175	5	QPSK	1	0	20.42	0	0
	1732.5	20175	5	QPSK	1	12	20.03	0	0
	1732.5	20175	5	QPSK	1	24	20.40	0	0
	1732.5	20175	5	QPSK	12	0	19.53	0-1	0
	1732.5	20175	5	QPSK	12	6	19.61	0-1	0
	1732.5	20175	5	QPSK	12	13	19.64	0-1	0
	1732.5	20175	5	QPSK	25	0	19.93	0-1	0
	1732.5	20175	5	16-QAM	1	0	20.06	0-1	0
	1732.5	20175	5	16-QAM	1	12	19.99	0-1	0
	1732.5	20175	5	16-QAM	1	24	20.29	0-1	0
	1732.5	20175	5	16-QAM	12	0	20.03	0-2	0
	1732.5	20175	5	16-QAM	12	6	19.80	0-2	0
	1732.5	20175	5	16-QAM	12	13	20.03	0-2	0
	1732.5	20175	5	16-QAM	25	0	19.71	0-2	0
High	1752.5	20375	5	QPSK	1	0	20.29	0	0
	1752.5	20375	5	QPSK	1	12	20.38	0	0
	1752.5	20375	5	QPSK	1	24	19.92	0	0
	1752.5	20375	5	QPSK	12	0	19.58	0-1	0
	1752.5	20375	5	QPSK	12	6	20.09	0-1	0
	1752.5	20375	5	QPSK	12	13	19.72	0-1	0
	1752.5	20375	5	QPSK	25	0	19.68	0-1	0
	1752.5	20375	5	16-QAM	1	0	20.22	0-1	0
	1752.5	20375	5	16-QAM	1	12	20.16	0-1	0
	1752.5	20375	5	16-QAM	1	24	20.31	0-1	0
	1752.5	20375	5	16-QAM	12	0	20.15	0-2	0
	1752.5	20375	5	16-QAM	12	6	20.28	0-2	0
	1752.5	20375	5	16-QAM	12	13	19.75	0-2	0
	1752.5	20375	5	16-QAM	25	0	20.07	0-2	0

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Table 9-27
Reduced LTE Band 4 (AWS) Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1711.5	19965	3	QPSK	1	0	20.04	0	0
	1711.5	19965	3	QPSK	1	7	20.21	0	0
	1711.5	19965	3	QPSK	1	14	20.25	0	0
	1711.5	19965	3	QPSK	8	0	19.97	0-1	0
	1711.5	19965	3	QPSK	8	4	19.65	0-1	0
	1711.5	19965	3	QPSK	8	7	19.51	0-1	0
	1711.5	19965	3	QPSK	15	0	19.79	0-1	0
	1711.5	19965	3	16-QAM	1	0	20.32	0-1	0
	1711.5	19965	3	16-QAM	1	7	20.21	0-1	0
	1711.5	19965	3	16-QAM	1	14	20.25	0-1	0
	1711.5	19965	3	16-QAM	8	0	20.02	0-2	0
	1711.5	19965	3	16-QAM	8	4	20.27	0-2	0
	1711.5	19965	3	16-QAM	8	7	19.94	0-2	0
	1711.5	19965	3	16-QAM	15	0	19.82	0-2	0
Mid	1732.5	20175	3	QPSK	1	0	20.33	0	0
	1732.5	20175	3	QPSK	1	7	19.84	0	0
	1732.5	20175	3	QPSK	1	14	20.21	0	0
	1732.5	20175	3	QPSK	8	0	19.67	0-1	0
	1732.5	20175	3	QPSK	8	4	19.73	0-1	0
	1732.5	20175	3	QPSK	8	7	19.69	0-1	0
	1732.5	20175	3	QPSK	15	0	19.93	0-1	0
	1732.5	20175	3	16-QAM	1	0	20.25	0-1	0
	1732.5	20175	3	16-QAM	1	7	19.84	0-1	0
	1732.5	20175	3	16-QAM	1	14	20.32	0-1	0
	1732.5	20175	3	16-QAM	8	0	20.01	0-2	0
	1732.5	20175	3	16-QAM	8	4	19.80	0-2	0
	1732.5	20175	3	16-QAM	8	7	20.23	0-2	0
	1732.5	20175	3	16-QAM	15	0	19.85	0-2	0
High	1753.5	20385	3	QPSK	1	0	20.35	0	0
	1753.5	20385	3	QPSK	1	7	20.42	0	0
	1753.5	20385	3	QPSK	1	14	19.94	0	0
	1753.5	20385	3	QPSK	8	0	19.70	0-1	0
	1753.5	20385	3	QPSK	8	4	20.05	0-1	0
	1753.5	20385	3	QPSK	8	7	19.54	0-1	0
	1753.5	20385	3	QPSK	15	0	19.91	0-1	0
	1753.5	20385	3	16-QAM	1	0	20.27	0-1	0
	1753.5	20385	3	16-QAM	1	7	20.01	0-1	0
	1753.5	20385	3	16-QAM	1	14	20.19	0-1	0
	1753.5	20385	3	16-QAM	8	0	20.10	0-2	0
	1753.5	20385	3	16-QAM	8	4	20.20	0-2	0
	1753.5	20385	3	16-QAM	8	7	19.51	0-2	0
	1753.5	20385	3	16-QAM	15	0	20.21	0-2	0

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Table 9-28
Reduced LTE Band 4 (AWS) Conducted Powers – 1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1710.7	19957	1.4	QPSK	1	0	20.22	0	0
	1710.7	19957	1.4	QPSK	1	2	20.07	0	0
	1710.7	19957	1.4	QPSK	1	5	20.27	0	0
	1710.7	19957	1.4	QPSK	3	0	19.77	0	0
	1710.7	19957	1.4	QPSK	3	2	19.84	0	0
	1710.7	19957	1.4	QPSK	3	3	19.55	0	0
	1710.7	19957	1.4	QPSK	6	0	19.98	0-1	0
	1710.7	19957	1.4	16-QAM	1	0	20.42	0-1	0
	1710.7	19957	1.4	16-QAM	1	2	20.42	0-1	0
	1710.7	19957	1.4	16-QAM	1	5	20.04	0-1	0
	1710.7	19957	1.4	16-QAM	3	0	20.25	0-1	0
	1710.7	19957	1.4	16-QAM	3	2	20.41	0-1	0
	1710.7	19957	1.4	16-QAM	3	3	19.74	0-1	0
	1710.7	19957	1.4	16-QAM	6	0	19.57	0-2	0
Mid	1732.5	20175	1.4	QPSK	1	0	20.18	0	0
	1732.5	20175	1.4	QPSK	1	2	20.06	0	0
	1732.5	20175	1.4	QPSK	1	5	20.37	0	0
	1732.5	20175	1.4	QPSK	3	0	19.68	0	0
	1732.5	20175	1.4	QPSK	3	2	19.99	0	0
	1732.5	20175	1.4	QPSK	3	3	19.80	0	0
	1732.5	20175	1.4	QPSK	6	0	20.15	0-1	0
	1732.5	20175	1.4	16-QAM	1	0	20.42	0-1	0
	1732.5	20175	1.4	16-QAM	1	2	19.70	0-1	0
	1732.5	20175	1.4	16-QAM	1	5	20.26	0-1	0
	1732.5	20175	1.4	16-QAM	3	0	20.08	0-1	0
	1732.5	20175	1.4	16-QAM	3	2	19.64	0-1	0
	1732.5	20175	1.4	16-QAM	3	3	20.29	0-1	0
	1732.5	20175	1.4	16-QAM	6	0	19.79	0-2	0
High	1754.3	20393	1.4	QPSK	1	0	20.35	0	0
	1754.3	20393	1.4	QPSK	1	2	20.19	0	0
	1754.3	20393	1.4	QPSK	1	5	19.77	0	0
	1754.3	20393	1.4	QPSK	3	0	19.74	0	0
	1754.3	20393	1.4	QPSK	3	2	20.08	0	0
	1754.3	20393	1.4	QPSK	3	3	19.73	0	0
	1754.3	20393	1.4	QPSK	6	0	19.78	0-1	0
	1754.3	20393	1.4	16-QAM	1	0	20.37	0-1	0
	1754.3	20393	1.4	16-QAM	1	2	19.88	0-1	0
	1754.3	20393	1.4	16-QAM	1	5	20.00	0-1	0
	1754.3	20393	1.4	16-QAM	3	0	20.27	0-1	0
	1754.3	20393	1.4	16-QAM	3	2	19.95	0-1	0
	1754.3	20393	1.4	16-QAM	3	3	19.60	0-1	0
	1754.3	20393	1.4	16-QAM	6	0	20.03	0-2	0

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9.4.5 LTE Band 25 (PCS)

9.4.5.1 Maximum Output Power

Table 9-29
Maximum 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	**24.37**	0	0
	1860	26140	20	QPSK	1	50	24.12	0	0
	1860	26140	20	QPSK	1	99	23.78	0	0
	1860	26140	20	QPSK	50	0	**23.50**	0-1	1
	1860	26140	20	QPSK	50	25	23.26	0-1	1
	1860	26140	20	QPSK	50	50	23.19	0-1	1
	1860	26140	20	QPSK	100	0	23.42	0-1	1
	1860	26140	20	16QAM	1	0	23.50	0-1	1
	1860	26140	20	16QAM	1	50	23.24	0-1	1
	1860	26140	20	16QAM	1	99	23.14	0-1	1
	1860	26140	20	16QAM	50	0	22.48	0-2	2
	1860	26140	20	16QAM	50	25	22.16	0-2	2
	1860	26140	20	16QAM	50	50	22.15	0-2	2
	1860	26140	20	16QAM	100	0	22.34	0-2	2
Mid	1882.5	26365	20	QPSK	1	0	23.57	0	0
	1882.5	26365	20	QPSK	1	50	24.00	0	0
	1882.5	26365	20	QPSK	1	99	24.24	0	0
	1882.5	26365	20	QPSK	50	0	23.37	0-1	1
	1882.5	26365	20	QPSK	50	25	23.25	0-1	1
	1882.5	26365	20	QPSK	50	50	23.26	0-1	1
	1882.5	26365	20	QPSK	100	0	23.33	0-1	1
	1882.5	26365	20	16QAM	1	0	22.88	0-1	1
	1882.5	26365	20	16QAM	1	50	23.26	0-1	1
	1882.5	26365	20	16QAM	1	99	23.37	0-1	1
	1882.5	26365	20	16QAM	50	0	22.36	0-2	2
	1882.5	26365	20	16QAM	50	25	22.22	0-2	2
	1882.5	26365	20	16QAM	50	50	22.21	0-2	2
	1882.5	26365	20	16QAM	100	0	22.32	0-2	2
High	1905	26590	20	QPSK	1	0	24.02	0	0
	1905	26590	20	QPSK	1	50	24.28	0	0
	1905	26590	20	QPSK	1	99	23.50	0	0
	1905	26590	20	QPSK	50	0	23.07	0-1	1
	1905	26590	20	QPSK	50	25	23.47	0-1	1
	1905	26590	20	QPSK	50	50	23.44	0-1	1
	1905	26590	20	QPSK	100	0	23.49	0-1	1
	1905	26590	20	16QAM	1	0	23.39	0-1	1
	1905	26590	20	16QAM	1	50	23.45	0-1	1
	1905	26590	20	16QAM	1	99	22.65	0-1	1
	1905	26590	20	16QAM	50	0	22.13	0-2	2
	1905	26590	20	16QAM	50	25	22.40	0-2	2
	1905	26590	20	16QAM	50	50	22.42	0-2	2
	1905	26590	20	16QAM	100	0	22.50	0-2	2

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Table 9-30
Maximum 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	24.23	0	0
	1857.5	26115	15	QPSK	1	36	24.35	0	0
	1857.5	26115	15	QPSK	1	74	23.95	0	0
	1857.5	26115	15	QPSK	36	0	23.50	0-1	1
	1857.5	26115	15	QPSK	36	18	23.35	0-1	1
	1857.5	26115	15	QPSK	36	37	22.61	0-1	1
	1857.5	26115	15	QPSK	75	0	23.50	0-1	1
	1857.5	26115	15	16QAM	1	0	23.42	0-1	1
	1857.5	26115	15	16QAM	1	36	22.55	0-1	1
	1857.5	26115	15	16QAM	1	74	23.15	0-1	1
	1857.5	26115	15	16QAM	36	0	22.50	0-2	2
	1857.5	26115	15	16QAM	36	18	22.47	0-2	2
	1857.5	26115	15	16QAM	36	37	21.63	0-2	2
	1857.5	26115	15	16QAM	75	0	22.35	0-2	2
Mid	1882.5	26365	15	QPSK	1	0	24.02	0	0
	1882.5	26365	15	QPSK	1	36	23.65	0	0
	1882.5	26365	15	QPSK	1	74	23.73	0	0
	1882.5	26365	15	QPSK	36	0	22.89	0-1	1
	1882.5	26365	15	QPSK	36	18	22.71	0-1	1
	1882.5	26365	15	QPSK	36	37	22.66	0-1	1
	1882.5	26365	15	QPSK	75	0	22.65	0-1	1
	1882.5	26365	15	16QAM	1	0	23.48	0-1	1
	1882.5	26365	15	16QAM	1	36	23.13	0-1	1
	1882.5	26365	15	16QAM	1	74	23.37	0-1	1
	1882.5	26365	15	16QAM	36	0	21.81	0-2	2
	1882.5	26365	15	16QAM	36	18	21.69	0-2	2
	1882.5	26365	15	16QAM	36	37	21.65	0-2	2
	1882.5	26365	15	16QAM	75	0	21.68	0-2	2
High	1907.5	26615	15	QPSK	1	0	24.32	0	0
	1907.5	26615	15	QPSK	1	36	23.70	0	0
	1907.5	26615	15	QPSK	1	74	23.78	0	0
	1907.5	26615	15	QPSK	36	0	22.92	0-1	1
	1907.5	26615	15	QPSK	36	18	22.64	0-1	1
	1907.5	26615	15	QPSK	36	37	22.80	0-1	1
	1907.5	26615	15	QPSK	75	0	22.80	0-1	1
	1907.5	26615	15	16QAM	1	0	23.45	0-1	1
	1907.5	26615	15	16QAM	1	36	22.94	0-1	1
	1907.5	26615	15	16QAM	1	74	23.04	0-1	1
	1907.5	26615	15	16QAM	36	0	22.12	0-2	2
	1907.5	26615	15	16QAM	36	18	21.73	0-2	2
	1907.5	26615	15	16QAM	36	37	21.68	0-2	2
	1907.5	26615	15	16QAM	75	0	21.73	0-2	2

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Table 9-31
Maximum 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	24.28	0	0
	1855	26090	10	QPSK	1	25	23.92	0	0
	1855	26090	10	QPSK	1	49	24.06	0	0
	1855	26090	10	QPSK	25	0	22.88	0-1	1
	1855	26090	10	QPSK	25	12	22.83	0-1	1
	1855	26090	10	QPSK	25	25	22.76	0-1	1
	1855	26090	10	QPSK	50	0	22.78	0-1	1
	1855	26090	10	16QAM	1	0	23.43	0-1	1
	1855	26090	10	16QAM	1	25	23.42	0-1	1
	1855	26090	10	16QAM	1	49	23.22	0-1	1
	1855	26090	10	16QAM	25	0	21.94	0-2	2
	1855	26090	10	16QAM	25	12	21.85	0-2	2
	1855	26090	10	16QAM	25	25	21.78	0-2	2
	1855	26090	10	16QAM	50	0	21.79	0-2	2
Mid	1882.5	26365	10	QPSK	1	0	23.90	0	0
	1882.5	26365	10	QPSK	1	25	23.52	0	0
	1882.5	26365	10	QPSK	1	49	23.50	0	0
	1882.5	26365	10	QPSK	25	0	22.69	0-1	1
	1882.5	26365	10	QPSK	25	12	22.51	0-1	1
	1882.5	26365	10	QPSK	25	25	22.59	0-1	1
	1882.5	26365	10	QPSK	50	0	22.53	0-1	1
	1882.5	26365	10	16QAM	1	0	23.50	0-1	1
	1882.5	26365	10	16QAM	1	25	23.36	0-1	1
	1882.5	26365	10	16QAM	1	49	23.10	0-1	1
	1882.5	26365	10	16QAM	25	0	21.83	0-2	2
	1882.5	26365	10	16QAM	25	12	21.66	0-2	2
	1882.5	26365	10	16QAM	25	25	21.56	0-2	2
	1882.5	26365	10	16QAM	50	0	21.52	0-2	2
High	1910	26640	10	QPSK	1	0	23.79	0	0
	1910	26640	10	QPSK	1	25	23.64	0	0
	1910	26640	10	QPSK	1	49	23.53	0	0
	1910	26640	10	QPSK	25	0	22.52	0-1	1
	1910	26640	10	QPSK	25	12	22.62	0-1	1
	1910	26640	10	QPSK	25	25	22.55	0-1	1
	1910	26640	10	QPSK	50	0	22.54	0-1	1
	1910	26640	10	16QAM	1	0	23.02	0-1	1
	1910	26640	10	16QAM	1	25	22.72	0-1	1
	1910	26640	10	16QAM	1	49	22.78	0-1	1
	1910	26640	10	16QAM	25	0	21.71	0-2	2
	1910	26640	10	16QAM	25	12	21.73	0-2	2
	1910	26640	10	16QAM	25	25	21.61	0-2	2
	1910	26640	10	16QAM	50	0	21.66	0-2	2

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Table 9-32
Maximum 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	24.30	0	0
	1852.5	26065	5	QPSK	1	12	24.06	0	0
	1852.5	26065	5	QPSK	1	24	24.05	0	0
	1852.5	26065	5	QPSK	12	0	22.89	0-1	1
	1852.5	26065	5	QPSK	12	6	22.93	0-1	1
	1852.5	26065	5	QPSK	12	13	22.79	0-1	1
	1852.5	26065	5	QPSK	25	0	22.75	0-1	1
	1852.5	26065	5	16-QAM	1	0	23.45	0-1	1
	1852.5	26065	5	16-QAM	1	12	23.38	0-1	1
	1852.5	26065	5	16-QAM	1	24	23.35	0-1	1
	1852.5	26065	5	16-QAM	12	0	21.94	0-2	2
	1852.5	26065	5	16-QAM	12	6	21.94	0-2	2
	1852.5	26065	5	16-QAM	12	13	21.81	0-2	2
	1852.5	26065	5	16-QAM	25	0	21.82	0-2	2
Mid	1882.5	26365	5	QPSK	1	0	23.92	0	0
	1882.5	26365	5	QPSK	1	12	24.15	0	0
	1882.5	26365	5	QPSK	1	24	23.68	0	0
	1882.5	26365	5	QPSK	12	0	22.63	0-1	1
	1882.5	26365	5	QPSK	12	6	22.58	0-1	1
	1882.5	26365	5	QPSK	12	13	22.51	0-1	1
	1882.5	26365	5	QPSK	25	0	22.62	0-1	1
	1882.5	26365	5	16-QAM	1	0	23.18	0-1	1
	1882.5	26365	5	16-QAM	1	12	22.83	0-1	1
	1882.5	26365	5	16-QAM	1	24	23.05	0-1	1
	1882.5	26365	5	16-QAM	12	0	21.74	0-2	2
	1882.5	26365	5	16-QAM	12	6	21.70	0-2	2
	1882.5	26365	5	16-QAM	12	13	21.66	0-2	2
	1882.5	26365	5	16-QAM	25	0	21.75	0-2	2
High	1912.5	26665	5	QPSK	1	0	23.92	0	0
	1912.5	26665	5	QPSK	1	12	23.75	0	0
	1912.5	26665	5	QPSK	1	24	23.77	0	0
	1912.5	26665	5	QPSK	12	0	22.76	0-1	1
	1912.5	26665	5	QPSK	12	6	22.73	0-1	1
	1912.5	26665	5	QPSK	12	13	22.61	0-1	1
	1912.5	26665	5	QPSK	25	0	22.56	0-1	1
	1912.5	26665	5	16-QAM	1	0	23.29	0-1	1
	1912.5	26665	5	16-QAM	1	12	23.13	0-1	1
	1912.5	26665	5	16-QAM	1	24	23.03	0-1	1
	1912.5	26665	5	16-QAM	12	0	21.77	0-2	2
	1912.5	26665	5	16-QAM	12	6	21.78	0-2	2
	1912.5	26665	5	16-QAM	12	13	21.65	0-2	2
	1912.5	26665	5	16-QAM	25	0	21.59	0-2	2

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Table 9-33
Maximum 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	24.04	0	0
	1851.5	26055	3	QPSK	1	7	24.38	0	0
	1851.5	26055	3	QPSK	1	14	24.05	0	0
	1851.5	26055	3	QPSK	8	0	22.94	0-1	1
	1851.5	26055	3	QPSK	8	4	22.82	0-1	1
	1851.5	26055	3	QPSK	8	7	22.79	0-1	1
	1851.5	26055	3	QPSK	15	0	22.94	0-1	1
	1851.5	26055	3	16-QAM	1	0	23.39	0-1	1
	1851.5	26055	3	16-QAM	1	7	23.24	0-1	1
	1851.5	26055	3	16-QAM	1	14	23.11	0-1	1
	1851.5	26055	3	16-QAM	8	0	21.97	0-2	2
	1851.5	26055	3	16-QAM	8	4	22.03	0-2	2
	1851.5	26055	3	16-QAM	8	7	21.96	0-2	2
	1851.5	26055	3	16-QAM	15	0	21.90	0-2	2
Mid	1882.5	26365	3	QPSK	1	0	23.60	0	0
	1882.5	26365	3	QPSK	1	7	24.16	0	0
	1882.5	26365	3	QPSK	1	14	23.51	0	0
	1882.5	26365	3	QPSK	8	0	22.58	0-1	1
	1882.5	26365	3	QPSK	8	4	22.71	0-1	1
	1882.5	26365	3	QPSK	8	7	22.64	0-1	1
	1882.5	26365	3	QPSK	15	0	22.63	0-1	1
	1882.5	26365	3	16-QAM	1	0	23.14	0-1	1
	1882.5	26365	3	16-QAM	1	7	23.47	0-1	1
	1882.5	26365	3	16-QAM	1	14	23.13	0-1	1
	1882.5	26365	3	16-QAM	8	0	21.73	0-2	2
	1882.5	26365	3	16-QAM	8	4	21.79	0-2	2
	1882.5	26365	3	16-QAM	8	7	21.75	0-2	2
	1882.5	26365	3	16-QAM	15	0	21.72	0-2	2
High	1913.5	26675	3	QPSK	1	0	24.25	0	0
	1913.5	26675	3	QPSK	1	7	24.12	0	0
	1913.5	26675	3	QPSK	1	14	24.45	0	0
	1913.5	26675	3	QPSK	8	0	23.26	0-1	1
	1913.5	26675	3	QPSK	8	4	23.25	0-1	1
	1913.5	26675	3	QPSK	8	7	23.36	0-1	1
	1913.5	26675	3	QPSK	15	0	23.30	0-1	1
	1913.5	26675	3	16-QAM	1	0	23.50	0-1	1
	1913.5	26675	3	16-QAM	1	7	23.44	0-1	1
	1913.5	26675	3	16-QAM	1	14	23.50	0-1	1
	1913.5	26675	3	16-QAM	8	0	22.41	0-2	2
	1913.5	26675	3	16-QAM	8	4	22.34	0-2	2
	1913.5	26675	3	16-QAM	8	7	22.38	0-2	2
	1913.5	26675	3	16-QAM	15	0	22.38	0-2	2

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Table 9-34
Maximum 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	24.15	0	0
	1850.7	26047	1.4	QPSK	1	2	24.05	0	0
	1850.7	26047	1.4	QPSK	1	5	23.95	0	0
	1850.7	26047	1.4	QPSK	3	0	23.86	0	0
	1850.7	26047	1.4	QPSK	3	2	23.97	0	0
	1850.7	26047	1.4	QPSK	3	3	23.89	0	0
	1850.7	26047	1.4	QPSK	6	0	22.86	0-1	1
	1850.7	26047	1.4	16-QAM	1	0	23.27	0-1	1
	1850.7	26047	1.4	16-QAM	1	2	23.14	0-1	1
	1850.7	26047	1.4	16-QAM	1	5	23.13	0-1	1
	1850.7	26047	1.4	16-QAM	3	0	23.12	0-1	1
	1850.7	26047	1.4	16-QAM	3	2	23.13	0-1	1
	1850.7	26047	1.4	16-QAM	3	3	23.10	0-1	1
	1850.7	26047	1.4	16-QAM	6	0	21.93	0-2	2
Mid	1882.5	26365	1.4	QPSK	1	0	23.60	0	0
	1882.5	26365	1.4	QPSK	1	2	23.73	0	0
	1882.5	26365	1.4	QPSK	1	5	23.76	0	0
	1882.5	26365	1.4	QPSK	3	0	23.64	0	0
	1882.5	26365	1.4	QPSK	3	2	23.99	0	0
	1882.5	26365	1.4	QPSK	3	3	23.92	0	0
	1882.5	26365	1.4	QPSK	6	0	22.93	0-1	1
	1882.5	26365	1.4	16-QAM	1	0	22.89	0-1	1
	1882.5	26365	1.4	16-QAM	1	2	23.00	0-1	1
	1882.5	26365	1.4	16-QAM	1	5	23.04	0-1	1
	1882.5	26365	1.4	16-QAM	3	0	23.01	0-1	1
	1882.5	26365	1.4	16-QAM	3	2	23.07	0-1	1
	1882.5	26365	1.4	16-QAM	3	3	22.97	0-1	1
	1882.5	26365	1.4	16-QAM	6	0	21.88	0-2	2
High	1914.3	26683	1.4	QPSK	1	0	23.93	0	0
	1914.3	26683	1.4	QPSK	1	2	24.13	0	0
	1914.3	26683	1.4	QPSK	1	5	24.37	0	0
	1914.3	26683	1.4	QPSK	3	0	24.12	0	0
	1914.3	26683	1.4	QPSK	3	2	24.32	0	0
	1914.3	26683	1.4	QPSK	3	3	24.35	0	0
	1914.3	26683	1.4	QPSK	6	0	23.22	0-1	1
	1914.3	26683	1.4	16-QAM	1	0	23.23	0-1	1
	1914.3	26683	1.4	16-QAM	1	2	23.41	0-1	1
	1914.3	26683	1.4	16-QAM	1	5	23.42	0-1	1
	1914.3	26683	1.4	16-QAM	3	0	23.08	0-1	1
	1914.3	26683	1.4	16-QAM	3	2	23.23	0-1	1
	1914.3	26683	1.4	16-QAM	3	3	23.24	0-1	1
	1914.3	26683	1.4	16-QAM	6	0	22.10	0-2	2

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9.4.5.2 Reduced Output Power – Representing Hotspot Mode Active

Table 9-35
Reduced 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	**22.50**	0	0
	1860	26140	20	QPSK	1	50	22.31	0	0
	1860	26140	20	QPSK	1	99	22.42	0	0
	1860	26140	20	QPSK	50	0	**22.50**	0-1	0
	1860	26140	20	QPSK	50	25	22.31	0-1	0
	1860	26140	20	QPSK	50	50	22.30	0-1	0
	1860	26140	20	QPSK	100	0	22.42	0-1	0
	1860	26140	20	16QAM	1	0	22.45	0-1	0
	1860	26140	20	16QAM	1	50	22.31	0-1	0
	1860	26140	20	16QAM	1	99	22.50	0-1	0
	1860	26140	20	16QAM	50	0	22.48	0-2	0
	1860	26140	20	16QAM	50	25	22.36	0-2	0
	1860	26140	20	16QAM	50	50	22.32	0-2	0
	1860	26140	20	16QAM	100	0	22.39	0-2	0
Mid	1882.5	26365	20	QPSK	1	0	22.42	0	0
	1882.5	26365	20	QPSK	1	50	22.19	0	0
	1882.5	26365	20	QPSK	1	99	22.49	0	0
	1882.5	26365	20	QPSK	50	0	21.68	0-1	0
	1882.5	26365	20	QPSK	50	25	22.06	0-1	0
	1882.5	26365	20	QPSK	50	50	22.13	0-1	0
	1882.5	26365	20	QPSK	100	0	21.84	0-1	0
	1882.5	26365	20	16QAM	1	0	22.50	0-1	0
	1882.5	26365	20	16QAM	1	50	22.17	0-1	0
	1882.5	26365	20	16QAM	1	99	22.49	0-1	0
	1882.5	26365	20	16QAM	50	0	21.71	0-2	0
	1882.5	26365	20	16QAM	50	25	21.98	0-2	0
	1882.5	26365	20	16QAM	50	50	22.00	0-2	0
	1882.5	26365	20	16QAM	100	0	21.90	0-2	0
High	1905	26590	20	QPSK	1	0	22.23	0	0
	1905	26590	20	QPSK	1	50	21.82	0	0
	1905	26590	20	QPSK	1	99	22.44	0	0
	1905	26590	20	QPSK	50	0	21.50	0-1	0
	1905	26590	20	QPSK	50	25	21.79	0-1	0
	1905	26590	20	QPSK	50	50	22.09	0-1	0
	1905	26590	20	QPSK	100	0	21.86	0-1	0
	1905	26590	20	16QAM	1	0	22.50	0-1	0
	1905	26590	20	16QAM	1	50	22.24	0-1	0
	1905	26590	20	16QAM	1	99	22.50	0-1	0
	1905	26590	20	16QAM	50	0	21.50	0-2	0
	1905	26590	20	16QAM	50	25	21.84	0-2	0
	1905	26590	20	16QAM	50	50	22.10	0-2	0
	1905	26590	20	16QAM	100	0	21.89	0-2	0

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Table 9-36
Reduced 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	22.49	0	0
	1857.5	26115	15	QPSK	1	36	22.35	0	0
	1857.5	26115	15	QPSK	1	74	22.41	0	0
	1857.5	26115	15	QPSK	36	0	22.29	0-1	0
	1857.5	26115	15	QPSK	36	18	22.20	0-1	0
	1857.5	26115	15	QPSK	36	37	22.17	0-1	0
	1857.5	26115	15	QPSK	75	0	22.16	0-1	0
	1857.5	26115	15	16QAM	1	0	22.41	0-1	0
	1857.5	26115	15	16QAM	1	36	22.43	0-1	0
	1857.5	26115	15	16QAM	1	74	22.49	0-1	0
	1857.5	26115	15	16QAM	36	0	22.27	0-2	0
	1857.5	26115	15	16QAM	36	18	22.19	0-2	0
	1857.5	26115	15	16QAM	36	37	22.15	0-2	0
	1857.5	26115	15	16QAM	75	0	22.19	0-2	0
Mid	1882.5	26365	15	QPSK	1	0	21.61	0	0
	1882.5	26365	15	QPSK	1	36	21.99	0	0
	1882.5	26365	15	QPSK	1	74	22.05	0	0
	1882.5	26365	15	QPSK	36	0	21.87	0-1	0
	1882.5	26365	15	QPSK	36	18	22.05	0-1	0
	1882.5	26365	15	QPSK	36	37	22.01	0-1	0
	1882.5	26365	15	QPSK	75	0	21.90	0-1	0
	1882.5	26365	15	16QAM	1	0	21.86	0-1	0
	1882.5	26365	15	16QAM	1	36	22.41	0-1	0
	1882.5	26365	15	16QAM	1	74	22.44	0-1	0
	1882.5	26365	15	16QAM	36	0	21.80	0-2	0
	1882.5	26365	15	16QAM	36	18	22.04	0-2	0
	1882.5	26365	15	16QAM	36	37	21.96	0-2	0
	1882.5	26365	15	16QAM	75	0	21.86	0-2	0
High	1907.5	26615	15	QPSK	1	0	21.54	0	0
	1907.5	26615	15	QPSK	1	36	21.85	0	0
	1907.5	26615	15	QPSK	1	74	22.15	0	0
	1907.5	26615	15	QPSK	36	0	21.63	0-1	0
	1907.5	26615	15	QPSK	36	18	21.91	0-1	0
	1907.5	26615	15	QPSK	36	37	21.94	0-1	0
	1907.5	26615	15	QPSK	75	0	21.92	0-1	0
	1907.5	26615	15	16QAM	1	0	22.04	0-1	0
	1907.5	26615	15	16QAM	1	36	22.37	0-1	0
	1907.5	26615	15	16QAM	1	74	22.48	0-1	0
	1907.5	26615	15	16QAM	36	0	21.71	0-2	0
	1907.5	26615	15	16QAM	36	18	21.84	0-2	0
	1907.5	26615	15	16QAM	36	37	21.88	0-2	0
	1907.5	26615	15	16QAM	75	0	21.95	0-2	0

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Table 9-37
Reduced 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	22.44	0	0
	1855	26090	10	QPSK	1	25	22.37	0	0
	1855	26090	10	QPSK	1	49	22.04	0	0
	1855	26090	10	QPSK	25	0	22.24	0-1	0
	1855	26090	10	QPSK	25	12	22.27	0-1	0
	1855	26090	10	QPSK	25	25	22.08	0-1	0
	1855	26090	10	QPSK	50	0	22.19	0-1	0
	1855	26090	10	16QAM	1	0	22.16	0-1	0
	1855	26090	10	16QAM	1	25	21.87	0-1	0
	1855	26090	10	16QAM	1	49	21.70	0-1	0
	1855	26090	10	16QAM	25	0	22.28	0-2	0
	1855	26090	10	16QAM	25	12	22.27	0-2	0
	1855	26090	10	16QAM	25	25	22.10	0-2	0
	1855	26090	10	16QAM	50	0	22.15	0-2	0
Mid	1882.5	26365	10	QPSK	1	0	22.18	0	0
	1882.5	26365	10	QPSK	1	25	22.10	0	0
	1882.5	26365	10	QPSK	1	49	21.91	0	0
	1882.5	26365	10	QPSK	25	0	21.93	0-1	0
	1882.5	26365	10	QPSK	25	12	21.89	0-1	0
	1882.5	26365	10	QPSK	25	25	21.81	0-1	0
	1882.5	26365	10	QPSK	50	0	21.87	0-1	0
	1882.5	26365	10	16QAM	1	0	22.49	0-1	0
	1882.5	26365	10	16QAM	1	25	22.31	0-1	0
	1882.5	26365	10	16QAM	1	49	22.44	0-1	0
	1882.5	26365	10	16QAM	25	0	22.00	0-2	0
	1882.5	26365	10	16QAM	25	12	21.95	0-2	0
	1882.5	26365	10	16QAM	25	25	21.86	0-2	0
	1882.5	26365	10	16QAM	50	0	21.85	0-2	0
High	1910	26640	10	QPSK	1	0	22.25	0	0
	1910	26640	10	QPSK	1	25	22.09	0	0
	1910	26640	10	QPSK	1	49	22.13	0	0
	1910	26640	10	QPSK	25	0	22.00	0-1	0
	1910	26640	10	QPSK	25	12	21.97	0-1	0
	1910	26640	10	QPSK	25	25	21.93	0-1	0
	1910	26640	10	QPSK	50	0	22.05	0-1	0
	1910	26640	10	16QAM	1	0	22.43	0-1	0
	1910	26640	10	16QAM	1	25	22.35	0-1	0
	1910	26640	10	16QAM	1	49	22.25	0-1	0
	1910	26640	10	16QAM	25	0	22.04	0-2	0
	1910	26640	10	16QAM	25	12	22.02	0-2	0
	1910	26640	10	16QAM	25	25	21.97	0-2	0
	1910	26640	10	16QAM	50	0	22.01	0-2	0

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Table 9-38
Reduced 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	22.44	0	0
	1852.5	26065	5	QPSK	1	12	22.03	0	0
	1852.5	26065	5	QPSK	1	24	22.48	0	0
	1852.5	26065	5	QPSK	12	0	22.28	0-1	0
	1852.5	26065	5	QPSK	12	6	22.30	0-1	0
	1852.5	26065	5	QPSK	12	13	22.20	0-1	0
	1852.5	26065	5	QPSK	25	0	22.14	0-1	0
	1852.5	26065	5	16-QAM	1	0	22.42	0-1	0
	1852.5	26065	5	16-QAM	1	12	22.21	0-1	0
	1852.5	26065	5	16-QAM	1	24	22.25	0-1	0
	1852.5	26065	5	16-QAM	12	0	22.23	0-2	0
	1852.5	26065	5	16-QAM	12	6	22.29	0-2	0
	1852.5	26065	5	16-QAM	12	13	22.21	0-2	0
	1852.5	26065	5	16-QAM	25	0	22.23	0-2	0
Mid	1882.5	26365	5	QPSK	1	0	21.99	0	0
	1882.5	26365	5	QPSK	1	12	21.78	0	0
	1882.5	26365	5	QPSK	1	24	22.06	0	0
	1882.5	26365	5	QPSK	12	0	21.88	0-1	0
	1882.5	26365	5	QPSK	12	6	21.91	0-1	0
	1882.5	26365	5	QPSK	12	13	21.89	0-1	0
	1882.5	26365	5	QPSK	25	0	21.92	0-1	0
	1882.5	26365	5	16-QAM	1	0	22.50	0-1	0
	1882.5	26365	5	16-QAM	1	12	22.23	0-1	0
	1882.5	26365	5	16-QAM	1	24	22.43	0-1	0
	1882.5	26365	5	16-QAM	12	0	22.06	0-2	0
	1882.5	26365	5	16-QAM	12	6	22.04	0-2	0
	1882.5	26365	5	16-QAM	12	13	22.07	0-2	0
	1882.5	26365	5	16-QAM	25	0	22.02	0-2	0
High	1912.5	26665	5	QPSK	1	0	22.03	0	0
	1912.5	26665	5	QPSK	1	12	21.74	0	0
	1912.5	26665	5	QPSK	1	24	22.01	0	0
	1912.5	26665	5	QPSK	12	0	21.91	0-1	0
	1912.5	26665	5	QPSK	12	6	21.89	0-1	0
	1912.5	26665	5	QPSK	12	13	21.92	0-1	0
	1912.5	26665	5	QPSK	25	0	21.91	0-1	0
	1912.5	26665	5	16-QAM	1	0	22.39	0-1	0
	1912.5	26665	5	16-QAM	1	12	21.99	0-1	0
	1912.5	26665	5	16-QAM	1	24	22.48	0-1	0
	1912.5	26665	5	16-QAM	12	0	22.11	0-2	0
	1912.5	26665	5	16-QAM	12	6	22.08	0-2	0
	1912.5	26665	5	16-QAM	12	13	22.08	0-2	0
	1912.5	26665	5	16-QAM	25	0	21.99	0-2	0

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Table 9-39
Reduced 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	22.25	0	0
	1851.5	26055	3	QPSK	1	7	22.50	0	0
	1851.5	26055	3	QPSK	1	14	22.26	0	0
	1851.5	26055	3	QPSK	8	0	22.32	0-1	0
	1851.5	26055	3	QPSK	8	4	22.31	0-1	0
	1851.5	26055	3	QPSK	8	7	22.26	0-1	0
	1851.5	26055	3	QPSK	15	0	22.24	0-1	0
	1851.5	26055	3	16-QAM	1	0	22.07	0-1	0
	1851.5	26055	3	16-QAM	1	7	22.47	0-1	0
	1851.5	26055	3	16-QAM	1	14	22.39	0-1	0
	1851.5	26055	3	16-QAM	8	0	22.42	0-2	0
	1851.5	26055	3	16-QAM	8	4	22.36	0-2	0
	1851.5	26055	3	16-QAM	8	7	22.36	0-2	0
	1851.5	26055	3	16-QAM	15	0	22.30	0-2	0
Mid	1882.5	26365	3	QPSK	1	0	21.97	0	0
	1882.5	26365	3	QPSK	1	7	22.22	0	0
	1882.5	26365	3	QPSK	1	14	21.90	0	0
	1882.5	26365	3	QPSK	8	0	21.97	0-1	0
	1882.5	26365	3	QPSK	8	4	21.97	0-1	0
	1882.5	26365	3	QPSK	8	7	21.89	0-1	0
	1882.5	26365	3	QPSK	15	0	21.93	0-1	0
	1882.5	26365	3	16-QAM	1	0	22.43	0-1	0
	1882.5	26365	3	16-QAM	1	7	22.46	0-1	0
	1882.5	26365	3	16-QAM	1	14	22.40	0-1	0
	1882.5	26365	3	16-QAM	8	0	22.03	0-2	0
	1882.5	26365	3	16-QAM	8	4	22.04	0-2	0
	1882.5	26365	3	16-QAM	8	7	22.02	0-2	0
	1882.5	26365	3	16-QAM	15	0	21.97	0-2	0
High	1913.5	26675	3	QPSK	1	0	22.07	0	0
	1913.5	26675	3	QPSK	1	7	22.48	0	0
	1913.5	26675	3	QPSK	1	14	22.20	0	0
	1913.5	26675	3	QPSK	8	0	21.98	0-1	0
	1913.5	26675	3	QPSK	8	4	21.96	0-1	0
	1913.5	26675	3	QPSK	8	7	21.98	0-1	0
	1913.5	26675	3	QPSK	15	0	21.97	0-1	0
	1913.5	26675	3	16-QAM	1	0	22.34	0-1	0
	1913.5	26675	3	16-QAM	1	7	22.21	0-1	0
	1913.5	26675	3	16-QAM	1	14	22.27	0-1	0
	1913.5	26675	3	16-QAM	8	0	22.06	0-2	0
	1913.5	26675	3	16-QAM	8	4	21.99	0-2	0
	1913.5	26675	3	16-QAM	8	7	21.99	0-2	0
	1913.5	26675	3	16-QAM	15	0	21.90	0-2	0

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Table 9-40
Reduced 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	22.09	0	0
	1850.7	26047	1.4	QPSK	1	2	22.21	0	0
	1850.7	26047	1.4	QPSK	1	5	22.32	0	0
	1850.7	26047	1.4	QPSK	3	0	22.21	0	0
	1850.7	26047	1.4	QPSK	3	2	22.27	0	0
	1850.7	26047	1.4	QPSK	3	3	22.21	0	0
	1850.7	26047	1.4	QPSK	6	0	22.21	0-1	0
	1850.7	26047	1.4	16-QAM	1	0	22.48	0-1	0
	1850.7	26047	1.4	16-QAM	1	2	22.44	0-1	0
	1850.7	26047	1.4	16-QAM	1	5	22.46	0-1	0
	1850.7	26047	1.4	16-QAM	3	0	22.39	0-1	0
	1850.7	26047	1.4	16-QAM	3	2	22.46	0-1	0
	1850.7	26047	1.4	16-QAM	3	3	22.32	0-1	0
	1850.7	26047	1.4	16-QAM	6	0	22.17	0-2	0
Mid	1882.5	26365	1.4	QPSK	1	0	22.00	0	0
	1882.5	26365	1.4	QPSK	1	2	22.01	0	0
	1882.5	26365	1.4	QPSK	1	5	22.01	0	0
	1882.5	26365	1.4	QPSK	3	0	21.85	0	0
	1882.5	26365	1.4	QPSK	3	2	21.88	0	0
	1882.5	26365	1.4	QPSK	3	3	21.83	0	0
	1882.5	26365	1.4	QPSK	6	0	21.81	0-1	0
	1882.5	26365	1.4	16-QAM	1	0	22.30	0-1	0
	1882.5	26365	1.4	16-QAM	1	2	22.21	0-1	0
	1882.5	26365	1.4	16-QAM	1	5	22.24	0-1	0
	1882.5	26365	1.4	16-QAM	3	0	22.04	0-1	0
	1882.5	26365	1.4	16-QAM	3	2	22.11	0-1	0
	1882.5	26365	1.4	16-QAM	3	3	22.08	0-1	0
	1882.5	26365	1.4	16-QAM	6	0	21.97	0-2	0
High	1914.3	26683	1.4	QPSK	1	0	21.89	0	0
	1914.3	26683	1.4	QPSK	1	2	21.91	0	0
	1914.3	26683	1.4	QPSK	1	5	21.93	0	0
	1914.3	26683	1.4	QPSK	3	0	21.79	0	0
	1914.3	26683	1.4	QPSK	3	2	21.85	0	0
	1914.3	26683	1.4	QPSK	3	3	21.85	0	0
	1914.3	26683	1.4	QPSK	6	0	21.83	0-1	0
	1914.3	26683	1.4	16-QAM	1	0	22.23	0-1	0
	1914.3	26683	1.4	16-QAM	1	2	22.36	0-1	0
	1914.3	26683	1.4	16-QAM	1	5	22.39	0-1	0
	1914.3	26683	1.4	16-QAM	3	0	22.11	0-1	0
	1914.3	26683	1.4	16-QAM	3	2	22.23	0-1	0
	1914.3	26683	1.4	16-QAM	3	3	22.10	0-1	0
	1914.3	26683	1.4	16-QAM	6	0	21.96	0-2	0

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9.4.6 LTE Carrier Aggregation Conducted Powers

Table 9-41
Maximum LTE Carrier Aggregation Conducted Powers - Band 12 (PCC) 10MHz BW + Band 2 (SCC) 20MHz BW

Band 12 (PCC) 10 MHz BW + Band 2 (SCC) 20 MHz BW					
707.5 MHz / ch.23095 + 1960.0 MHz / ch. 900	Modulation	PCC UL# RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	Rel. 8 Tx.Power (dBm)
	QPSK	1	49	24.34	24.33

Table 9-42
Maximum LTE Carrier Aggregation Conducted Powers - Band 4 (PCC) 20MHz BW + Band 12 (SCC) 10MHz BW

Band 4 (PCC) 20 MHz BW + Band 12 (SCC) 10 MHz BW					
1732.5 MHz / ch.20175 + 737.5 MHz / ch. 5095	Modulation	PCC UL# RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	Rel. 8 Tx.Power (dBm)
	QPSK	1	0	24.05	24.40

Table 9-43
Reduced LTE Carrier Aggregation Conducted Powers - Band 4 (PCC) 20MHz BW + Band 12 (SCC) 10MHz BW Representing Hotspot Mode Active

Band 4 (PCC) 20 MHz BW + Band 12 (SCC) 10 MHz BW					
1732.5 MHz / ch.20175 + 737.5 MHz / ch. 5095	Modulation	PCC UL# RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	Rel. 8 Tx.Power (dBm)
	16QAM	1	50	20.30	20.50

Table 9-44
Maximum LTE Carrier Aggregation Conducted Powers - Band 2 (PCC) 20MHz BW + Band 12 (SCC) 10MHz BW

Band 2 (PCC) 20 MHz BW + Band 12 (SCC) 10 MHz BW					
1860 MHz / ch.18700 + 737.5 MHz / ch. 5095	Modulation	PCC UL# RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	Rel. 8 Tx.Power (dBm)
	QPSK	1	0	24.50	24.37

Table 9-45
Reduced LTE Carrier Aggregation Conducted Powers - Band 2 (PCC) 20MHz BW + Band 12 (SCC) 10MHz BW Representing Hotspot Mode Active

Band 2 (PCC) 20 MHz BW + Band 12 (SCC) 10 MHz BW					
1860 MHz / ch.18700 + 737.5 MHz / ch. 5095	Modulation	PCC UL# RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	Rel. 8 Tx.Power (dBm)
	QPSK	1	0	21.28	21.50

Notes:

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

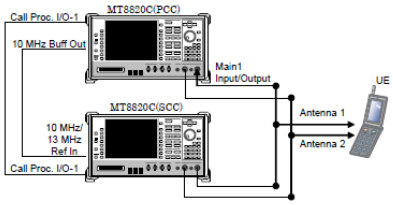

Figure 9-4
Power Measurement Setup

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9.5 WLAN Conducted Powers

9.5.1 Maximum Conducted Powers

Table 9-46
2.4 GHz Average RF Power – Antenna 1

Freq [MHz]	Channel	2.4GHz Conducted Power [dBm]
		IEEE Transmission Mode
		802.11b
2412	1	**17.31**
2437	6	17.07
2462	11	16.60

Table 9-47
2.4 GHz Average RF Power – Antenna 2

Freq [MHz]	Channel	2.4GHz Conducted Power [dBm]
		IEEE Transmission Mode
		802.11b
2412	1	17.16
2437	6	**17.37**
2462	11	17.15

Table 9-48
5 GHz (20 MHz Bandwidth) Average RF Power – Antenna 1

Freq [MHz]	Channel	5GHz (20MHz) Conducted Power [dBm]
		IEEE Transmission Mode
		802.11a
5180	36	14.01
5200	40	13.96
5220	44	13.95
5240	48	13.94
5260	52	14.15
5280	56	**14.25**
5300	60	14.08
5320	64	14.21
5500	100	13.81
5540	108	13.52
5580	116	**13.94**
5660	132	14.09
5745	149	**14.45**
5825	165	14.24

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Table 9-49
5 GHz (20 MHz Bandwidth) Average RF Power – Antenna 2

Freq [MHz]	Channel	5GHz (20MHz) Conducted Power [dBm]
		IEEE Transmission Mode
		802.11a
5180	36	14.31
5200	40	14.27
5220	44	14.31
5240	48	14.25
5260	52	14.01
5280	56	13.97
5300	60	**13.98**
5320	64	13.92
5500	100	**14.45**
5540	108	13.75
5580	116	14.17
5660	132	14.01
5745	149	**14.43**
5825	165	14.38

9.5.2 Reduced Conducted Powers – Held-to-Ear

Table 9-50
2.4 GHz Average RF Power – Antenna 1

Freq [MHz]	Channel	2.4GHz Conducted Power [dBm]
		IEEE Transmission Mode
		802.11b
2412	1	11.74
2437	6	11.80
2462	11	**12.17**

Table 9-51
2.4 GHz Average RF Power – Antenna 2

Freq [MHz]	Channel	2.4GHz Conducted Power [dBm]
		IEEE Transmission Mode
		802.11b
2412	1	11.75
2437	6	11.60
2462	11	**11.99**

Table 9-52
5 GHz (80 MHz Bandwidth) Average RF Power – Antenna 1

5GHz (80MHz) Conducted Power		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
5210	42	6.52
5290	58	**6.55**
5530	106	**6.51**
5690	138	6.45
5775	155	**6.66**

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Table 9-53
5 GHz (80 MHz Bandwidth) Average RF Power – Antenna 2

5GHz (80MHz) Conducted Power		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
5210	42	7.35
5290	58	**7.27**
5530	106	**7.30**
5690	138	5.83
5775	155	**6.51**

Justification for test configurations for WLAN per KDB Publication 248227 D01DR02-41929:

- 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.

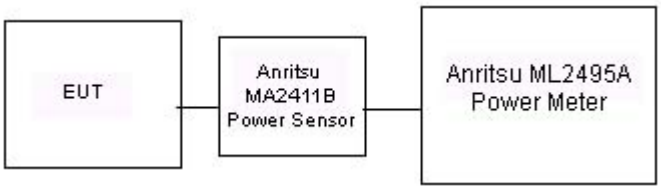

Figure 9-5
Power Measurement Setup for Bandwidths < 50 MHz

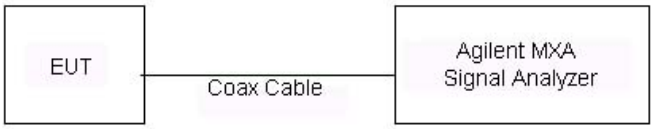

Figure 9-6
Power Measurement Setup for Bandwidths > 50 MHz

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10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Head Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (C°)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
01/22/2015	750H	19.5	725	0.881	41.203	0.891	42.071	-1.12%	-2.06%
			740	0.895	41.012	0.893	41.994	0.22%	-2.34%
			755	0.911	40.814	0.894	41.916	1.90%	-2.63%
			770	0.925	40.579	0.895	41.838	3.35%	-3.01%
			785	0.939	40.365	0.896	41.760	4.80%	-3.34%
02/03/2015	750H	22.1	695	0.870	42.296	0.889	42.227	-2.14%	0.16%
			710	0.881	42.038	0.890	42.149	-1.01%	-0.26%
			725	0.894	41.895	0.891	42.071	0.34%	-0.42%
			740	0.910	41.684	0.893	41.994	1.90%	-0.74%
			755	0.923	41.442	0.894	41.916	3.24%	-1.13%
01/19/2015	835H	22.0	820	0.917	43.652	0.899	41.578	2.00%	4.99%
			835	0.933	43.439	0.900	41.500	3.67%	4.67%
			850	0.944	43.224	0.916	41.500	3.06%	4.15%
01/22/2015	1750H	22.0	1710	1.305	38.634	1.348	40.142	-3.19%	-3.76%
			1750	1.344	38.466	1.371	40.079	-1.97%	-4.02%
			1790	1.385	38.286	1.394	40.016	-0.65%	-4.32%
01/19/2015	1900H	22.3	1850	1.363	39.524	1.400	40.000	-2.64%	-1.19%
			1880	1.390	39.392	1.400	40.000	-0.71%	-1.52%
			1910	1.419	39.232	1.400	40.000	1.36%	-1.92%
02/02/2015	1900H	23.0	1850	1.356	38.884	1.400	40.000	-3.14%	-2.79%
			1880	1.384	38.724	1.400	40.000	-1.14%	-3.19%
			1910	1.421	38.608	1.400	40.000	1.50%	-3.48%
01/23/2015	2450H	22.6	2401	1.737	38.727	1.756	39.287	-1.08%	-1.43%
			2450	1.794	38.552	1.800	39.200	-0.33%	-1.65%
			2499	1.842	38.370	1.853	39.138	-0.59%	-1.96%
01/23/2015	5200H-5800H	20.1	5280	4.530	35.583	4.737	35.894	-4.37%	-0.87%
			5300	4.549	35.571	4.758	35.871	-4.39%	-0.84%
			5500	4.748	35.287	4.963	35.643	-4.33%	-1.00%
			5520	4.772	35.275	4.983	35.620	-4.23%	-0.97%
			5540	4.785	35.258	5.004	35.597	-4.38%	-0.95%
			5765	5.026	34.989	5.234	35.340	-3.97%	-0.99%
			5785	5.039	34.914	5.255	35.317	-4.11%	-1.14%
			5800	5.054	34.890	5.270	35.300	-4.10%	-1.16%

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Table 10-2
Measured Body Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (C°)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
01/22/2015	750B	24.3	725	0.940	53.555	0.961	55.629	-2.19%	-3.73%
			740	0.955	53.372	0.963	55.570	-0.83%	-3.96%
			755	0.968	53.254	0.964	55.512	0.41%	-4.07%
			770	0.983	53.100	0.965	55.453	1.87%	-4.24%
			785	0.998	52.910	0.966	55.395	3.31%	-4.49%
01/29/2015	750B	21.7	695	0.919	54.331	0.959	55.745	-4.17%	-2.54%
			710	0.935	54.216	0.960	55.687	-2.60%	-2.64%
			725	0.949	54.050	0.961	55.629	-1.25%	-2.84%
			740	0.961	53.909	0.963	55.570	-0.21%	-2.99%
			755	0.975	53.734	0.964	55.512	1.14%	-3.20%
01/22/2015	835B	22.4	820	0.998	55.428	0.969	55.258	2.99%	0.31%
			835	1.010	55.292	0.970	55.200	4.12%	0.17%
			850	1.023	55.175	0.988	55.154	3.54%	0.04%
01/19/2015	1750B	23.0	1710	1.418	51.678	1.463	53.537	-3.08%	-3.47%
			1750	1.461	51.563	1.488	53.432	-1.81%	-3.50%
			1790	1.498	51.358	1.514	53.326	-1.06%	-3.69%
02/04/2015	1750B	22.0	1710	1.418	51.754	1.463	53.537	-3.08%	-3.33%
			1750	1.462	51.586	1.488	53.432	-1.75%	-3.45%
			1790	1.498	51.414	1.514	53.326	-1.06%	-3.59%
01/22/2015	1900B	23.0	1850	1.488	51.809	1.520	53.300	-2.11%	-2.80%
			1880	1.522	51.716	1.520	53.300	0.13%	-2.97%
			1910	1.552	51.592	1.520	53.300	2.11%	-3.20%
01/29/2015	1900B	22.9	1850	1.494	52.412	1.520	53.300	-1.71%	-1.67%
			1880	1.527	52.312	1.520	53.300	0.46%	-1.85%
			1910	1.563	52.220	1.520	53.300	2.83%	-2.03%
02/04/2015	1900B	22.4	1850	1.482	51.757	1.520	53.300	-2.50%	-2.89%
			1880	1.511	51.678	1.520	53.300	-0.59%	-3.04%
			1910	1.546	51.572	1.520	53.300	1.71%	-3.24%
02/06/2015	1900B	22.1	1850	1.525	52.464	1.520	53.300	0.33%	-1.57%
			1880	1.555	52.357	1.520	53.300	2.30%	-1.77%
			1910	1.591	52.250	1.520	53.300	4.67%	-1.97%
02/10/2015	1900B	22.9	1850	1.498	51.902	1.520	53.300	-1.45%	-2.62%
			1880	1.532	51.814	1.520	53.300	0.79%	-2.79%
			1910	1.564	51.698	1.520	53.300	2.89%	-3.01%
01/22/2015	2450B	23.8	2401	1.858	51.158	1.903	52.765	-2.36%	-3.05%
			2450	1.925	50.991	1.950	52.700	-1.28%	-3.24%
			2499	1.987	50.821	2.019	52.638	-1.58%	-3.45%
01/19/2015	5200B-5800B	22.6	5280	5.500	48.179	5.393	48.906	1.98%	-1.49%
			5300	5.542	48.230	5.416	48.879	2.33%	-1.33%
			5500	5.845	47.908	5.650	48.607	3.45%	-1.44%
			5580	5.899	47.646	5.743	48.499	2.72%	-1.76%
			5600	5.977	47.642	5.766	48.471	3.66%	-1.71%
			5745	6.176	47.389	5.936	48.275	4.04%	-1.84%
			5800	6.183	47.296	6.000	48.200	3.05%	-1.88%

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.

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10.2 Test System Verification

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

Table 10-3
System Verification Results

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR_{1g} (W/kg)	1 W Target SAR_{1g} (W/kg)	1 W Normalized SAR_{1g} (W/kg)	$Deviation_{1g}$ (%)
K	750	HEAD	01/22/2015	24.0	21.2	0.100	1054	3288	0.826	8.330	8.260	-0.84%
K	750	HEAD	02/03/2015	24.5	22.5	0.100	1054	3288	0.800	8.330	8.000	-3.96%
D	835	HEAD	01/19/2015	23.1	23.0	0.100	4d133	3263	0.971	9.200	9.710	5.54%
D	1750	HEAD	01/22/2015	23.0	22.9	0.100	1008	3263	3.450	36.900	34.500	-6.50%
G	1900	HEAD	01/19/2015	24.4	22.5	0.100	5d149	3258	4.150	40.200	41.500	3.23%
D	1900	HEAD	02/02/2015	22.3	23.0	0.100	5d149	3263	3.920	40.200	39.200	-2.49%
G	2450	HEAD	01/23/2015	21.3	22.2	0.100	719	3258	4.990	52.100	49.900	-4.22%
H	5300	HEAD	01/23/2015	23.4	21.5	0.100	1120	3920	7.740	83.400	77.400	-7.19%
H	5500	HEAD	01/23/2015	23.5	21.6	0.100	1120	3920	7.880	84.900	78.800	-7.18%
H	5800	HEAD	01/23/2015	23.5	21.6	0.100	1120	3920	7.800	79.100	78.000	-1.39%
E	750	BODY	01/22/2015	23.2	23.4	0.100	1054	3332	0.855	8.640	8.550	-1.04%
D	750	BODY	01/29/2015	24.0	22.1	0.100	1054	3263	0.867	8.640	8.670	0.35%
K	835	BODY	01/22/2015	24.2	22.4	0.100	4d133	3288	1.020	9.350	10.200	9.09%
D	1750	BODY	01/19/2015	23.0	23.0	0.100	1008	3263	3.690	37.600	36.900	-1.86%
G	1750	BODY	02/04/2015	23.9	22.0	0.100	1008	3213	3.750	37.600	37.500	-0.27%
G	1900	BODY	01/22/2015	23.9	23.0	0.100	5d149	3258	4.120	40.400	41.200	1.98%
G	1900	BODY	01/29/2015	24.0	22.9	0.100	5d141	3258	4.080	40.600	40.800	0.49%
J	1900	BODY	02/04/2015	23.4	22.8	0.100	5d149	3022	3.830	40.400	38.300	-5.20%
E	1900	BODY	02/06/2015	23.8	22.1	0.100	5d149	3332	4.130	40.400	41.300	2.23%
J	1900	BODY	02/10/2015	23.5	22.9	0.100	5d149	3022	3.920	40.400	39.200	-2.97%
I	2450	BODY	01/22/2015	23.5	23.8	0.100	719	3209	5.200	51.800	52.000	0.39%
H	5300	BODY	01/19/2015	24.1	23.2	0.100	1191	3920	7.950	79.900	79.500	-0.50%
H	5500	BODY	01/19/2015	24.1	23.1	0.100	1191	3920	7.600	83.100	76.000	-8.54%
H	5600	BODY	01/19/2015	24.0	23.0	0.100	1191	3920	7.630	84.100	76.300	-9.27%
H	5800	BODY	01/19/2015	23.9	23.1	0.100	1191	3920	7.090	78.000	70.900	-9.10%

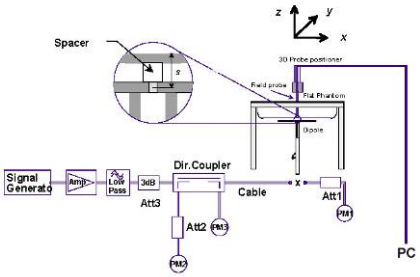

Figure 10-1
System Verification Setup Diagram

Figure 10-2
System Verification Setup Photo

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11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
GSM 850 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	33.5	33.28	-0.01	Right	Cheek	234DC	1	1:8.3	0.262	1.052	0.276	
836.60	190	GSM 850	GSM	33.5	33.28	0.05	Right	Tilt	234DC	1	1:8.3	0.174	1.052	0.183	
836.60	190	GSM 850	GSM	33.5	33.28	-0.05	Left	Cheek	234DC	1	1:8.3	0.311	1.052	0.327	A1
836.60	190	GSM 850	GSM	33.5	33.28	0.01	Left	Tilt	234DC	1	1:8.3	0.164	1.052	0.173	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-2
UMTS 850 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #	
MHz	Ch.										(W/kg)		(W/kg)		
836.60	4183	UMTS 850	RMC	23.5	23.49	0.05	Right	Cheek	234DC	1:1	0.243	1.002	0.243		
836.60	4183	UMTS 850	RMC	23.5	23.49	0.07	Right	Tilt	234DC	1:1	0.164	1.002	0.164		
836.60	4183	UMTS 850	RMC	23.5	23.49	0.05	Left	Cheek	234DC	1:1	0.265	1.002	0.266	A2	
836.60	4183	UMTS 850	RMC	23.5	23.49	0.02	Left	Tilt	234DC	1:1	0.146	1.002	0.146		
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
Cell. 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)		
836.52	384	Cell. CDMA	RC3 / SO55	25.0	25.00	0.01	Right	Cheek	234F1	1:1	0.363	1.000	0.363		
836.52	384	Cell. CDMA	RC3 / SO55	25.0	25.00	-0.05	Right	Tilt	234F1	1:1	0.281	1.000	0.281		
836.52	384	Cell. CDMA	RC3 / SO55	25.0	25.00	0.05	Left	Cheek	234F1	1:1	0.402	1.000	0.402	A3	
836.52	384	Cell. CDMA	RC3 / SO55	25.0	25.00	0.06	Left	Tilt	234F1	1:1	0.302	1.000	0.302		
836.52	384	Cell. CDMA	EVDO Rev. A	25.0	24.90	0.02	Right	Cheek	234F1	1:1	0.357	1.023	0.365		
836.52	384	Cell. CDMA	EVDO Rev. A	25.0	24.90	0.04	Right	Tilt	234F1	1:1	0.254	1.023	0.260		
836.52	384	Cell. CDMA	EVDO Rev. A	25.0	24.90	0.14	Left	Cheek	234F1	1:1	0.395	1.023	0.404		
836.52	384	Cell. CDMA	EVDO Rev. A	25.0	24.90	-0.01	Left	Tilt	234F1	1:1	0.298	1.023	0.305		
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

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Table 11-4
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	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	30.5	30.25	0.06	Right	Cheek	234DC	1	1:8.3	0.076	1.059	0.080	A4
1880.00	661	GSM 1900	GSM	30.5	30.25	0.03	Right	Tilt	234DC	1	1:8.3	0.026	1.059	0.028	
1880.00	661	GSM 1900	GSM	30.5	30.25	-0.03	Left	Cheek	234DC	1	1:8.3	0.055	1.059	0.058	
1880.00	661	GSM 1900	GSM	30.5	30.25	0.05	Left	Tilt	234DC	1	1:8.3	0.017	1.059	0.018	
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 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	23.44	-0.20	Right	Cheek	234DC	1:1	0.080	1.014	0.081	A5
1880.00	9400	UMTS 1900	RMC	23.5	23.44	0.20	Right	Tilt	234DC	1:1	0.034	1.014	0.034	
1880.00	9400	UMTS 1900	RMC	23.5	23.44	0.02	Left	Cheek	234DC	1:1	0.065	1.014	0.066	
1880.00	9400	UMTS 1900	RMC	23.5	23.44	0.06	Left	Tilt	234DC	1:1	0.024	1.014	0.024	
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)	
1851.25	25	PCS CDMA	RC3 / SO55	25.0	24.58	0.17	Right	Cheek	234F1	1:1	0.139	1.102	0.153	
1851.25	25	PCS CDMA	RC3 / SO55	25.0	24.58	0.11	Right	Tilt	234F1	1:1	0.055	1.102	0.061	
1851.25	25	PCS CDMA	RC3 / SO55	25.0	24.58	0.04	Left	Cheek	234F1	1:1	0.120	1.102	0.132	
1851.25	25	PCS CDMA	RC3 / SO55	25.0	24.58	-0.14	Left	Tilt	234F1	1:1	0.031	1.102	0.034	
1851.25	25	PCS CDMA	EVDO Rev. A	25.0	24.45	-0.14	Right	Cheek	234F1	1:1	0.152	1.135	0.173	A6
1851.25	25	PCS CDMA	EVDO Rev. A	25.0	24.45	-0.02	Right	Tilt	234F1	1:1	0.067	1.135	0.076	
1851.25	25	PCS CDMA	EVDO Rev. A	25.0	24.45	0.10	Left	Cheek	234F1	1:1	0.140	1.135	0.159	
1851.25	25	PCS CDMA	EVDO Rev. A	25.0	24.45	0.01	Left	Tilt	234F1	1:1	0.051	1.135	0.058	
1880.00	600	PCS CDMA	EVDO Rev. A	20.5	20.00	0.03	Right	Cheek	234C8	1:1	0.093	1.122	0.104	
1880.00	600	PCS CDMA	EVDO Rev. A	20.5	20.00	-0.05	Right	Tilt	234C8	1:1	0.030	1.122	0.034	
1880.00	600	PCS CDMA	EVDO Rev. A	20.5	20.00	0.04	Left	Cheek	234C8	1:1	0.082	1.122	0.092	
1880.00	600	PCS CDMA	EVDO Rev. A	20.5	20.00	-0.06	Left	Tilt	234C8	1:1	0.024	1.122	0.027	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

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Table 11-7
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	24.5	24.33	0.20	0	Right	Cheek	QPSK	1	49	155B7	1:1	0.099	1.040	0.103	
707.50	23095	Mid	LTE Band 12	10	23.5	23.28	0.11	1	Right	Cheek	QPSK	25	12	155B7	1:1	0.076	1.052	0.080	
707.50	23095	Mid	LTE Band 12	10	24.5	24.33	0.02	0	Right	Tilt	QPSK	1	49	155B7	1:1	0.039	1.040	0.041	
707.50	23095	Mid	LTE Band 12	10	23.5	23.28	0.13	1	Right	Tilt	QPSK	25	12	155B7	1:1	0.030	1.052	0.032	
707.50	23095	Mid	LTE Band 12	10	24.5	24.33	0.11	0	Left	Cheek	QPSK	1	49	155B7	1:1	0.134	1.040	0.139	A7
707.50	23095	Mid	LTE Band 12	10	23.5	23.28	0.10	1	Left	Cheek	QPSK	25	12	155B7	1:1	0.088	1.052	0.093	
707.50	23095	Mid	LTE Band 12	10	24.5	24.33	0.03	0	Left	Tilt	QPSK	1	49	155B7	1:1	0.062	1.040	0.064	
707.50	23095	Mid	LTE Band 12	10	23.5	23.28	0.09	1	Left	Tilt	QPSK	25	12	155B7	1:1	0.049	1.052	0.052	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-8
LTE Band 13 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)	
782.00	23230	Mid	LTE Band 13	10	24.0	23.48	0.02	0	Right	Cheek	QPSK	1	25	08FC4	1:1	0.217	1.127	0.245	A8
782.00	23230	Mid	LTE Band 13	10	23.0	22.78	-0.04	1	Right	Cheek	QPSK	25	25	08FC4	1:1	0.153	1.052	0.161	
782.00	23230	Mid	LTE Band 13	10	24.0	23.48	0.11	0	Right	Tilt	QPSK	1	25	08FC4	1:1	0.108	1.127	0.122	
782.00	23230	Mid	LTE Band 13	10	23.0	22.78	0.06	1	Right	Tilt	QPSK	25	25	08FC4	1:1	0.070	1.052	0.074	
782.00	23230	Mid	LTE Band 13	10	24.0	23.48	0.20	0	Left	Cheek	QPSK	1	25	08FC4	1:1	0.167	1.127	0.188	
782.00	23230	Mid	LTE Band 13	10	23.0	22.78	0.11	1	Left	Cheek	QPSK	25	25	08FC4	1:1	0.127	1.052	0.134	
782.00	23230	Mid	LTE Band 13	10	24.0	23.48	-0.18	0	Left	Tilt	QPSK	1	25	08FC4	1:1	0.094	1.127	0.106	
782.00	23230	Mid	LTE Band 13	10	23.0	22.78	-0.01	1	Left	Tilt	QPSK	25	25	08FC4	1:1	0.075	1.052	0.079	
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 5 (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	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.25	-0.10	0	Right	Cheek	QPSK	1	25	234C9	1:1	0.292	1.059	0.309	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	23.25	0.03	1	Right	Cheek	QPSK	25	0	234C9	1:1	0.232	1.059	0.246	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.25	0.00	0	Right	Tilt	QPSK	1	25	234C9	1:1	0.188	1.059	0.199	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	23.25	0.00	1	Right	Tilt	QPSK	25	0	234C9	1:1	0.152	1.059	0.161	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.25	0.02	0	Left	Cheek	QPSK	1	25	234C9	1:1	0.298	1.059	0.316	A9
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	23.25	0.03	1	Left	Cheek	QPSK	25	0	234C9	1:1	0.235	1.059	0.249	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.25	0.05	0	Left	Tilt	QPSK	1	25	234C9	1:1	0.174	1.059	0.184	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	23.25	0.05	1	Left	Tilt	QPSK	25	0	234C9	1:1	0.134	1.059	0.142	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

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Table 11-10
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	24.5	24.40	0.11	0	Right	Cheek	QPSK	1	0	23503	1:1	0.155	1.023	0.159	A10
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	23.21	-0.12	1	Right	Cheek	QPSK	50	25	23503	1:1	0.120	1.069	0.128	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	24.40	-0.09	0	Right	Tilt	QPSK	1	0	23503	1:1	0.121	1.023	0.124	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	23.21	0.07	1	Right	Tilt	QPSK	50	25	23503	1:1	0.120	1.069	0.128	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	24.40	-0.15	0	Left	Cheek	QPSK	1	0	23503	1:1	0.150	1.023	0.153	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	23.21	0.00	1	Left	Cheek	QPSK	50	25	23503	1:1	0.115	1.069	0.123	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	24.40	-0.08	0	Left	Tilt	QPSK	1	0	23503	1:1	0.103	1.023	0.105	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	23.21	0.15	1	Left	Tilt	QPSK	50	25	23503	1:1	0.074	1.069	0.079	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	20.43	0.03	0	Right	Cheek	QPSK	1	0	234EB	1:1	0.061	1.016	0.062	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	19.97	0.07	0	Right	Cheek	QPSK	50	0	234EB	1:1	0.049	1.130	0.055	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	20.43	0.13	0	Right	Tilt	QPSK	1	0	234EB	1:1	0.036	1.016	0.037	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	19.97	0.11	0	Right	Tilt	QPSK	50	0	234EB	1:1	0.032	1.130	0.036	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	20.43	0.11	0	Left	Cheek	QPSK	1	0	234EB	1:1	0.068	1.016	0.069	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	19.97	0.05	0	Left	Cheek	QPSK	50	0	234EB	1:1	0.056	1.130	0.063	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	20.43	-0.07	0	Left	Tilt	QPSK	1	0	234EB	1:1	0.035	1.016	0.036	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	19.97	0.07	0	Left	Tilt	QPSK	50	0	234EB	1:1	0.029	1.130	0.033	
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 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)	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.5	24.37	-0.16	0	Right	Cheek	QPSK	1	0	1C5D6	1:1	0.199	1.030	0.205	A11
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	23.50	-0.10	1	Right	Cheek	QPSK	50	0	1C5D6	1:1	0.169	1.000	0.169	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.5	24.37	-0.08	0	Right	Tilt	QPSK	1	0	1C5D6	1:1	0.086	1.030	0.089	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	23.50	0.13	1	Right	Tilt	QPSK	50	0	1C5D6	1:1	0.065	1.000	0.065	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.5	24.37	-0.05	0	Left	Cheek	QPSK	1	0	1C5D6	1:1	0.188	1.030	0.194	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	23.50	0.01	1	Left	Cheek	QPSK	50	0	1C5D6	1:1	0.139	1.000	0.139	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.5	24.37	0.17	0	Left	Tilt	QPSK	1	0	1C5D6	1:1	0.069	1.030	0.071	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	23.50	0.18	1	Left	Tilt	QPSK	50	0	1C5D6	1:1	0.058	1.000	0.058	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	0.02	0	Right	Cheek	QPSK	1	0	1C5BA	1:1	0.131	1.000	0.131	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	0.02	0	Right	Cheek	QPSK	50	0	1C5BA	1:1	0.136	1.000	0.136	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	0.03	0	Right	Tilt	QPSK	1	0	1C5BA	1:1	0.054	1.000	0.054	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	-0.06	0	Right	Tilt	QPSK	50	0	1C5BA	1:1	0.060	1.000	0.060	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	0.13	0	Left	Cheek	QPSK	1	0	1C5BA	1:1	0.081	1.000	0.081	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	0.13	0	Left	Cheek	QPSK	50	0	1C5BA	1:1	0.077	1.000	0.077	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	0.03	0	Left	Tilt	QPSK	1	0	1C5BA	1:1	0.045	1.000	0.045	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	-0.05	0	Left	Tilt	QPSK	50	0	1C5BA	1:1	0.043	1.000	0.043	
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
DTS Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	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)	
2462	11	802.11b	DSSS	22	12.5	12.17	0.02	Right	Cheek	1	234B0	1	99.58	0.345	0.250	1.079	1.004	**0.271**	A12
2462	11	802.11b	DSSS	22	12.5	12.17	-	Right	Tilt	1	234B0	1	99.58	0.215	-	1.079	1.004	-	
2462	11	802.11b	DSSS	22	12.5	12.17	-	Left	Cheek	1	234B0	1	99.58	0.131	-	1.079	1.004	-	
2462	11	802.11b	DSSS	22	12.5	12.17	-	Left	Tilt	1	234B0	1	99.58	0.098	-	1.079	1.004	-	
2462	11	802.11b	DSSS	22	12.5	11.99	0.11	Right	Cheek	2	234B0	1	99.26	0.149	0.130	1.125	1.007	0.147	
2462	11	802.11b	DSSS	22	12.5	11.99	-	Right	Tilt	2	234B0	1	99.26	0.118	-	1.125	1.007	-	
2462	11	802.11b	DSSS	22	12.5	11.99	-	Left	Cheek	2	234B0	1	99.26	0.093	-	1.125	1.007	-	
2462	11	802.11b	DSSS	22	12.5	11.99	-	Left	Tilt	2	234B0	1	99.26	0.062	-	1.125	1.007	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram											

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Table 11-13
NII Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	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)	
5290	58	802.11ac	OFDM	80	8.5	6.55	0.08	Right	Cheek	1	234B0	29.3	98.18	0.268	0.136	1.567	1.019	0.217	
5290	58	802.11ac	OFDM	80	8.5	6.55	-	Right	Tilt	1	234B0	29.3	98.18	0.138	-	1.567	1.019	-	
5290	58	802.11ac	OFDM	80	8.5	6.55	-	Left	Cheek	1	234B0	29.3	98.18	0.104	-	1.567	1.019	-	
5290	58	802.11ac	OFDM	80	8.5	6.55	-	Left	Tilt	1	234B0	29.3	98.18	0.057	-	1.567	1.019	-	
5290	58	802.11ac	OFDM	80	8.5	7.27	0.07	Right	Cheek	2	234B0	29.3	98.11	0.198	0.089	1.327	1.019	0.120	
5290	58	802.11ac	OFDM	80	8.5	7.27	-	Right	Tilt	2	234B0	29.3	98.11	0.107	-	1.327	1.019	-	
5290	58	802.11ac	OFDM	80	8.5	7.27	-	Left	Cheek	2	234B0	29.3	98.11	0.108	-	1.327	1.019	-	
5290	58	802.11ac	OFDM	80	8.5	7.27	-	Left	Tilt	2	234B0	29.3	98.11	0.063	-	1.327	1.019	-	
5530	106	802.11ac	OFDM	80	8.5	6.51	0.03	Right	Cheek	1	234B0	29.3	98.18	0.275	0.190	1.581	1.019	**0.306**	A13
5530	106	802.11ac	OFDM	80	8.5	6.51	-	Right	Tilt	1	234B0	29.3	98.18	0.158	-	1.581	1.019	-	
5530	106	802.11ac	OFDM	80	8.5	6.51	-	Left	Cheek	1	234B0	29.3	98.18	0.151	-	1.581	1.019	-	
5530	106	802.11ac	OFDM	80	8.5	6.51	-	Left	Tilt	1	234B0	29.3	98.18	0.118	-	1.581	1.019	-	
5530	106	802.11ac	OFDM	80	8.5	7.30	0.02	Right	Cheek	2	234B0	29.3	98.11	0.160	0.075	1.318	1.019	0.101	
5530	106	802.11ac	OFDM	80	8.5	7.30	-	Right	Tilt	2	234B0	29.3	98.11	0.155	-	1.318	1.019	-	
5530	106	802.11ac	OFDM	80	8.5	7.30	-	Left	Cheek	2	234B0	29.3	98.11	0.096	-	1.318	1.019	-	
5530	106	802.11ac	OFDM	80	8.5	7.30	-	Left	Tilt	2	234B0	29.3	98.11	0.066	-	1.318	1.019	-	
5775	155	802.11ac	OFDM	80	8.5	6.66	0.07	Right	Cheek	1	234B0	29.3	98.18	0.440	0.184	1.528	1.019	0.286	
5775	155	802.11ac	OFDM	80	8.5	6.66	-	Right	Tilt	1	234B0	29.3	98.18	0.287	-	1.528	1.019	-	
5775	155	802.11ac	OFDM	80	8.5	6.66	-	Left	Cheek	1	234B0	29.3	98.18	0.207	-	1.528	1.019	-	
5775	155	802.11ac	OFDM	80	8.5	6.66	-	Left	Tilt	1	234B0	29.3	98.18	0.151	-	1.528	1.019	-	
5775	155	802.11ac	OFDM	80	8.5	6.51	0.04	Right	Cheek	2	234B0	29.3	98.11	0.121	0.105	1.581	1.019	0.169	
5775	155	802.11ac	OFDM	80	8.5	6.51	-	Right	Tilt	2	234B0	29.3	98.11	0.088	-	1.581	1.019	-	
5775	155	802.11ac	OFDM	80	8.5	6.51	-	Left	Cheek	2	234B0	29.3	98.11	0.052	-	1.581	1.019	-	
5775	155	802.11ac	OFDM	80	8.5	6.51	-	Left	Tilt	2	234B0	29.3	98.11	0.044	-	1.581	1.019	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram											

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11.2 Standalone Body-Worn SAR Data

Table 11-14
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)	
836.60	190	GSM 850	GSM	33.5	33.28	0.04	10 mm	234DC	1	1:8.3	back	0.467	1.052	0.491	A14
836.60	4183	UMTS 850	RMC	23.5	23.49	0.01	10 mm	234DC	N/A	1:1	back	0.377	1.002	0.378	A16
836.52	384	Cell. CDMA	TDSO / SO32	25.0	25.00	-0.03	10 mm	23503	N/A	1:1	back	0.549	1.000	0.549	A18
1880.00	661	GSM 1900	GSM	30.5	30.25	-0.02	15 mm	234DC	1	1:8.3	back	0.341	1.059	0.361	A20
1880.00	9400	UMTS 1900	RMC	23.5	23.44	-0.05	15 mm	234DC	N/A	1:1	back	0.395	1.014	0.401	A22
1851.25	25	PCS CDMA	TDSO / SO32	25.0	24.66	0.02	15 mm	234F1	N/A	1:1	back	0.419	1.081	0.453	A24
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-15
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	24.5	24.33	-0.10	0	155B7	QPSK	1	49	10 mm	back	1:1	0.241	1.040	0.251	A26
707.50	23095	Mid	LTE Band 12	10	23.5	23.28	0.02	1	155B7	QPSK	25	12	10 mm	back	1:1	0.175	1.052	0.184	
782.00	23230	Mid	LTE Band 13	10	24.0	23.48	-0.08	0	23503	QPSK	1	25	10 mm	back	1:1	0.286	1.127	0.322	A28
782.00	23230	Mid	LTE Band 13	10	23.0	22.78	0.06	1	23503	QPSK	25	25	10 mm	back	1:1	0.159	1.052	0.167	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.25	0.03	0	23503	QPSK	1	25	10 mm	back	1:1	0.161	1.059	0.170	A29
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	23.25	0.02	1	23503	QPSK	25	0	10 mm	back	1:1	0.137	1.059	0.145	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	24.40	0.01	0	23503	QPSK	1	0	15 mm	back	1:1	0.531	1.023	0.543	A31
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	23.21	-0.04	1	23503	QPSK	50	25	15 mm	back	1:1	0.379	1.069	0.405	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.5	24.37	0.01	0	1C5D6	QPSK	1	0	15 mm	back	1:1	0.652	1.030	0.672	A33
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	23.50	0.09	1	1C5D6	QPSK	50	0	15 mm	back	1:1	0.512	1.000	0.512	
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
DTS Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	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	17.5	17.31	-0.17	10 mm	1	234B0	1	back	99.58	0.159	0.131	1.045	1.004	0.138	A35
2437	6	802.11b	DSSS	22	17.5	17.37	-0.02	10 mm	2	234B0	1	back	99.26	0.089	0.075	1.030	1.007	0.078	
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
NII Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	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)	
5280	56	802.11a	OFDM	20	14.5	14.25	0.08	10 mm	1	236B4	6	back	98.75	0.203	0.089	1.059	1.013	0.095	A36
5300	60	802.11a	OFDM	20	14.5	13.98	0.03	10 mm	2	236B4	6	back	98.81	0.155	0.072	1.127	1.012	0.082	
5580	116	802.11a	OFDM	20	14.5	13.94	0.20	10 mm	1	236B4	6	back	98.75	0.147	0.062	1.138	1.013	0.072	
5500	100	802.11a	OFDM	20	14.5	14.45	0.04	10 mm	2	236B4	6	back	98.81	0.159	0.064	1.012	1.012	0.066	
5745	149	802.11a	OFDM	20	14.5	14.45	-0.07	10 mm	1	236B4	6	back	98.75	0.142	0.054	1.012	1.013	0.056	
5745	149	802.11a	OFDM	20	14.5	14.43	0.04	10 mm	2	236B4	6	back	98.81	0.088	0.028	1.016	1.012	0.028	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

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11.3 Standalone Wireless Router SAR Data

Table 11-18
GPRS/UMTS/CDMA 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)	
836.60	190	GSM 850	GPRS	30.0	29.71	-0.19	10 mm	234DC	3	1:2.76	back	0.523	1.069	0.559	A15
836.60	190	GSM 850	GPRS	30.0	29.71	-0.15	10 mm	234DC	3	1:2.76	front	0.446	1.069	0.477	
836.60	190	GSM 850	GPRS	30.0	29.71	0.00	10 mm	234DC	3	1:2.76	bottom	0.101	1.069	0.108	
836.60	190	GSM 850	GPRS	30.0	29.71	0.08	10 mm	234DC	3	1:2.76	right	0.338	1.069	0.361	
836.60	190	GSM 850	GPRS	30.0	29.71	-0.02	10 mm	234DC	3	1:2.76	left	0.491	1.069	0.525	
836.60	4183	UMTS 850	RMC	23.5	23.49	0.01	10 mm	234DC	N/A	1:1	back	0.377	1.002	0.378	
836.60	4183	UMTS 850	RMC	23.5	23.49	0.01	10 mm	234DC	N/A	1:1	front	0.360	1.002	0.361	
836.60	4183	UMTS 850	RMC	23.5	23.49	0.00	10 mm	234DC	N/A	1:1	bottom	0.080	1.002	0.080	
836.60	4183	UMTS 850	RMC	23.5	23.49	-0.02	10 mm	234DC	N/A	1:1	right	0.349	1.002	0.350	
836.60	4183	UMTS 850	RMC	23.5	23.49	-0.02	10 mm	234DC	N/A	1:1	left	0.474	1.002	0.475	A17
836.52	384	Cell. CDMA	EVDO Rev. 0	25.0	25.00	0.02	10 mm	23503	N/A	1:1	back	0.521	1.000	0.521	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.0	25.00	-0.01	10 mm	23503	N/A	1:1	front	0.515	1.000	0.515	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.0	25.00	-0.09	10 mm	23503	N/A	1:1	bottom	0.097	1.000	0.097	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.0	25.00	0.03	10 mm	23503	N/A	1:1	right	0.473	1.000	0.473	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.0	25.00	0.00	10 mm	23503	N/A	1:1	left	0.619	1.000	0.619	A19
1880.00	661	GSM 1900	GPRS	24.5	23.85	-0.05	10 mm	234C8	4	1:2.076	back	0.324	1.161	0.376	
1880.00	661	GSM 1900	GPRS	24.5	23.85	-0.04	10 mm	234C8	4	1:2.076	front	0.281	1.161	0.326	
1880.00	661	GSM 1900	GPRS	24.5	23.85	0.08	10 mm	234C8	4	1:2.076	bottom	0.467	1.161	0.542	A21
1880.00	661	GSM 1900	GPRS	24.5	23.85	0.06	10 mm	234C8	4	1:2.076	right	0.062	1.161	0.072	
1880.00	661	GSM 1900	GPRS	24.5	23.85	0.06	10 mm	234C8	4	1:2.076	left	0.146	1.161	0.170	
1852.40	9262	UMTS 1900	RMC	21.5	20.94	0.00	10 mm	234C8	N/A	1:1	back	0.350	1.138	0.398	
1852.40	9262	UMTS 1900	RMC	21.5	20.94	-0.01	10 mm	234C8	N/A	1:1	front	0.292	1.138	0.332	
1852.40	9262	UMTS 1900	RMC	21.5	20.94	-0.05	10 mm	234C8	N/A	1:1	bottom	0.569	1.138	0.648	A23
1852.40	9262	UMTS 1900	RMC	21.5	20.94	0.09	10 mm	234C8	N/A	1:1	right	0.025	1.138	0.028	
1852.40	9262	UMTS 1900	RMC	21.5	20.94	0.09	10 mm	234C8	N/A	1:1	left	0.091	1.138	0.104	
1880.00	600	PCS CDMA	EVDO Rev. 0	20.5	20.20	0.03	10 mm	234C8	N/A	1:1	back	0.583	1.072	0.625	
1880.00	600	PCS CDMA	EVDO Rev. 0	20.5	20.20	-0.01	10 mm	234C8	N/A	1:1	front	0.450	1.072	0.482	
1851.25	25	PCS CDMA	EVDO Rev. 0	20.5	20.50	-0.02	10 mm	234C8	N/A	1:1	bottom	0.775	1.000	0.775	
1880.00	600	PCS CDMA	EVDO Rev. 0	20.5	20.20	-0.02	10 mm	234C8	N/A	1:1	bottom	0.837	1.072	0.897	
1908.75	1175	PCS CDMA	EVDO Rev. 0	20.5	20.23	-0.08	10 mm	234C8	N/A	1:1	bottom	0.899	1.064	**0.957**	A25
1880.00	600	PCS CDMA	EVDO Rev. 0	20.5	20.20	0.15	10 mm	234C8	N/A	1:1	right	0.060	1.072	0.064	
1880.00	600	PCS CDMA	EVDO Rev. 0	20.5	20.20	0.07	10 mm	234C8	N/A	1:1	left	0.118	1.072	0.126	
1908.75	1175	PCS CDMA	EVDO Rev. 0	20.5	20.23	-0.08	10 mm	234C8	N/A	1:1	bottom	0.894	1.064	0.951	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							**Body 1.6 W/kg (mW/g) averaged over 1 gram**								

Blue Entry represents Variability measurement.

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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)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	24.5	24.33	-0.10	0	155B7	QPSK	1	49	10 mm	back	1:1	0.241	1.040	0.251	
707.50	23095	Mid	LTE Band 12	10	23.5	23.28	0.02	1	155B7	QPSK	25	12	10 mm	back	1:1	0.175	1.052	0.184	
707.50	23095	Mid	LTE Band 12	10	24.5	24.33	-0.03	0	155B7	QPSK	1	49	10 mm	front	1:1	0.259	1.040	0.269	A27
707.50	23095	Mid	LTE Band 12	10	23.5	23.28	0.02	1	155B7	QPSK	25	12	10 mm	front	1:1	0.189	1.052	0.199	
707.50	23095	Mid	LTE Band 12	10	24.5	24.33	0.12	0	155B7	QPSK	1	49	10 mm	bottom	1:1	0.046	1.040	0.048	
707.50	23095	Mid	LTE Band 12	10	23.5	23.28	0.10	1	155B7	QPSK	25	12	10 mm	bottom	1:1	0.034	1.052	0.036	
707.50	23095	Mid	LTE Band 12	10	24.5	24.33	0.06	0	155B7	QPSK	1	49	10 mm	right	1:1	0.181	1.040	0.188	
707.50	23095	Mid	LTE Band 12	10	23.5	23.28	0.02	1	155B7	QPSK	25	12	10 mm	right	1:1	0.142	1.052	0.149	
707.50	23095	Mid	LTE Band 12	10	24.5	24.33	0.00	0	155B7	QPSK	1	49	10 mm	left	1:1	0.077	1.040	0.080	
707.50	23095	Mid	LTE Band 12	10	23.5	23.28	0.03	1	155B7	QPSK	25	12	10 mm	left	1:1	0.071	1.052	0.075	
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 13 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)	
782.00	23230	Mid	LTE Band 13	10	24.0	23.48	-0.08	0	23503	QPSK	1	25	10 mm	back	1:1	0.286	1.127	0.322	A28
782.00	23230	Mid	LTE Band 13	10	23.0	22.78	0.06	1	23503	QPSK	25	25	10 mm	back	1:1	0.159	1.052	0.167	
782.00	23230	Mid	LTE Band 13	10	24.0	23.48	-0.01	0	23503	QPSK	1	25	10 mm	front	1:1	0.248	1.127	0.279	
782.00	23230	Mid	LTE Band 13	10	23.0	22.78	0.07	1	23503	QPSK	25	25	10 mm	front	1:1	0.142	1.052	0.149	
782.00	23230	Mid	LTE Band 13	10	24.0	23.48	-0.01	0	23503	QPSK	1	25	10 mm	bottom	1:1	0.069	1.127	0.078	
782.00	23230	Mid	LTE Band 13	10	23.0	22.78	0.02	1	23503	QPSK	25	25	10 mm	bottom	1:1	0.042	1.052	0.044	
782.00	23230	Mid	LTE Band 13	10	24.0	23.48	-0.02	0	23503	QPSK	1	25	10 mm	right	1:1	0.170	1.127	0.192	
782.00	23230	Mid	LTE Band 13	10	23.0	22.78	0.06	1	23503	QPSK	25	25	10 mm	right	1:1	0.095	1.052	0.100	
782.00	23230	Mid	LTE Band 13	10	24.0	23.48	0.03	0	23503	QPSK	1	25	10 mm	left	1:1	0.150	1.127	0.169	
782.00	23230	Mid	LTE Band 13	10	23.0	22.78	0.08	1	23503	QPSK	25	25	10 mm	left	1:1	0.082	1.052	0.086	
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 5 (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)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.25	0.03	0	23503	QPSK	1	25	10 mm	back	1:1	0.161	1.059	0.170	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	23.25	0.02	1	23503	QPSK	25	0	10 mm	back	1:1	0.137	1.059	0.145	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.25	0.01	0	23503	QPSK	1	25	10 mm	front	1:1	0.148	1.059	0.157	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	23.25	0.03	1	23503	QPSK	25	0	10 mm	front	1:1	0.134	1.059	0.142	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.25	0.04	0	23503	QPSK	1	25	10 mm	bottom	1:1	0.083	1.059	0.088	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	23.25	0.04	1	23503	QPSK	25	0	10 mm	bottom	1:1	0.064	1.059	0.068	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.25	0.03	0	23503	QPSK	1	25	10 mm	right	1:1	0.318	1.059	0.337	A30
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	23.25	0.13	1	23503	QPSK	25	0	10 mm	right	1:1	0.268	1.059	0.284	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.25	0.11	0	23503	QPSK	1	25	10 mm	left	1:1	0.081	1.059	0.086	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	23.25	0.00	1	23503	QPSK	25	0	10 mm	left	1:1	0.075	1.059	0.079	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

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Table 11-22
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	20.5	20.43	-0.09	0	234EB	QPSK	1	0	10 mm	back	1:1	0.400	1.016	0.406	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	19.97	-0.02	0	234EB	QPSK	50	0	10 mm	back	1:1	0.356	1.130	0.402	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	20.43	0.03	0	234EB	QPSK	1	0	10 mm	front	1:1	0.337	1.016	0.342	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	19.97	-0.02	0	234EB	QPSK	50	0	10 mm	front	1:1	0.296	1.130	0.334	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	20.43	-0.01	0	234EB	QPSK	1	0	10 mm	bottom	1:1	0.533	1.016	0.542	A32
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	19.97	-0.04	0	234EB	QPSK	50	0	10 mm	bottom	1:1	0.445	1.130	0.503	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	20.43	0.11	0	234EB	QPSK	1	0	10 mm	right	1:1	0.035	1.016	0.036	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	19.97	-0.06	0	234EB	QPSK	50	0	10 mm	right	1:1	0.030	1.130	0.034	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	20.43	-0.02	0	234EB	QPSK	1	0	10 mm	left	1:1	0.080	1.016	0.081	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	20.5	19.97	-0.04	0	234EB	QPSK	50	0	10 mm	left	1:1	0.069	1.130	0.078	
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 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)	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	0.06	0	1C5BA	QPSK	1	0	10 mm	back	1:1	0.720	1.000	0.720	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	0.06	0	1C5BA	QPSK	50	0	10 mm	back	1:1	0.714	1.000	0.714	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	0.08	0	1C5BA	QPSK	1	0	10 mm	front	1:1	0.627	1.000	0.627	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	0.12	0	1C5BA	QPSK	50	0	10 mm	front	1:1	0.598	1.000	0.598	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	-0.07	0	1C5BA	QPSK	1	0	10 mm	bottom	1:1	0.896	1.000	0.896	A34
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	22.49	-0.04	0	1C5BA	QPSK	1	99	10 mm	bottom	1:1	0.800	1.002	0.802	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.5	22.44	0.03	0	1C5BA	QPSK	1	99	10 mm	bottom	1:1	0.777	1.014	0.788	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	0.06	0	1C5BA	QPSK	50	0	10 mm	bottom	1:1	0.887	1.000	0.887	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	22.13	-0.03	0	1C5BA	QPSK	50	50	10 mm	bottom	1:1	0.754	1.089	0.821	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.5	22.09	0.03	0	1C5BA	QPSK	50	50	10 mm	bottom	1:1	0.748	1.099	0.822	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.42	-0.01	0	1C5BA	QPSK	100	0	10 mm	bottom	1:1	0.843	1.019	0.859	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	0.20	0	1C5BA	QPSK	1	0	10 mm	right	1:1	0.076	1.000	0.076	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	0.04	0	1C5BA	QPSK	50	0	10 mm	right	1:1	0.076	1.000	0.076	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	0.08	0	1C5BA	QPSK	1	0	10 mm	left	1:1	0.116	1.000	0.116	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.50	0.06	0	1C5BA	QPSK	50	0	10 mm	left	1:1	0.114	1.000	0.114	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

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Table 11-24
WLAN Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan W/kg	SAR (1g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Scaled SAR (1g) (W/kg)	Plot #
MHz	Ch.																		
2412	1	802.11b	DSSS	22	17.5	17.31	-0.17	10 mm	1	234B0	1	back	99.58	0.159	0.131	1.045	1.004	**0.138**	A35
2412	1	802.11b	DSSS	22	17.5	17.31	-	10 mm	1	234B0	1	front	99.58	0.137	-	1.045	1.004	-	
2412	1	802.11b	DSSS	22	17.5	17.31	-	10 mm	1	234B0	1	top	99.58	0.073	-	1.045	1.004	-	
2412	1	802.11b	DSSS	22	17.5	17.31	-	10 mm	1	234B0	1	left	99.58	0.086	-	1.045	1.004	-	
2437	6	802.11b	DSSS	22	17.5	17.37	-0.02	10 mm	2	234B0	1	back	99.26	0.089	0.075	1.030	1.007	0.078	
2437	6	802.11b	DSSS	22	17.5	17.37	-	10 mm	2	234B0	1	front	99.26	0.060	-	1.030	1.007	-	
2437	6	802.11b	DSSS	22	17.5	17.37	-	10 mm	2	234B0	1	top	99.26	0.061	-	1.030	1.007	-	
2437	6	802.11b	DSSS	22	17.5	17.37	-	10 mm	2	234B0	1	left	99.26	0.006	-	1.030	1.007	-	
5745	149	802.11a	OFDM	20	14.5	14.45	-	10 mm	1	236B4	6	back	98.75	0.142	-	1.012	1.013	-	
5745	149	802.11a	OFDM	20	14.5	14.45	0.03	10 mm	1	236B4	6	front	98.75	0.320	0.149	1.012	1.013	**0.153**	A37
5745	149	802.11a	OFDM	20	14.5	14.45	-	10 mm	1	236B4	6	top	98.75	0.158	-	1.012	1.013	-	
5745	149	802.11a	OFDM	20	14.5	14.45	-	10 mm	1	236B4	6	left	98.75	0.082	-	1.012	1.013	-	
5745	149	802.11a	OFDM	20	14.5	14.43	0.04	10 mm	2	236B4	6	back	98.81	0.088	0.028	1.016	1.012	0.028	
5745	149	802.11a	OFDM	20	14.5	14.43	-	10 mm	2	236B4	6	front	98.81	0.060	-	1.016	1.012	-	
5745	149	802.11a	OFDM	20	14.5	14.43	-	10 mm	2	236B4	6	top	98.81	0.068	-	1.016	1.012	-	
5745	149	802.11a	OFDM	20	14.5	14.43	-	10 mm	2	236B4	6	left	98.81	0.004	-	1.016	1.012	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

11.4 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2003, and FCC KDB Publication 447498 D01v05.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v05.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 15 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance. A test separation distance of 10 mm for Body-worn SAR were also used for GSM 850, UMTS 850, Cell CDMA, LTE Band 12/13/5 and 2.4/5GHz WLAN as it is more conservative.
7. Per FCC KDB Publication 648474 D04v01, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. Per FCC KDB 865664 D01 v01, variability SAR tests were performed when the measured SAR results for a frequency band were greater than 0.8 W/kg. 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).
10. This device utilizes power reduction for GPRS/EDGE 1900, UMTS Band 2, PCS CDMA/EVDO, and LTE Band 4/25 under portable hotspot conditions for SAR compliance. Therefore, these wireless router configurations were tested at reduced output power levels

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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 D01v01 and October 2013 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all GPRS/EDGE slot configurations. The configuration with the highest target frame averaged output power was evaluated for hotspot SAR. When the maximum frame-averaged powers are equivalent across two or more slots (within 0.25 dB), the configuration with the most number of time slots was tested.
3. Per FCC KDB Publication 447498 D01v05, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel was used.

CDMA Notes:

1. Head SAR for CDMA2000 mode was tested under RC3/SO55 per FCC KDB Publication 941225 D01v03.
2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. EVDO and TDSO / SO32 FCH+SCH SAR tests were not required since the average output power was not more than 0.25 dB higher than the TDSO / SO32 FCH only powers, per FCC KDB Publication 941225 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. Since the average output power of Subtype 2 for Rev. A is less than the Rev. 0 power levels, EVDO Rev. A SAR is not required. SAR is not required for 1x RTT for Ev-Do hotspot devices when the maximum average output of each channel is less than 1⁄4 dB higher than that measured in Subtype 0/1 Physical Layer configurations for Rev. 0.
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.

UMTS Notes:

1. UMTS mode in was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.
2. Per FCC KDB Publication 447498 D01v05, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel was used.

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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 KDB Publication 941225 D05Av01r01, SAR for LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.

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 D01DR02-41929 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 8.7.5 for more information.
3. Justification for test configurations for WLAN per KDB Publication 248227 D01DR02-41929 for 5 GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg. See Section 8.7.6 for more information.
4. Per KDB Publication 248227 D01DR02-41929, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498. Please see Section 12 for complete analysis.
5. 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.
6. 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.
7. Only channels in the U-NII-2C (> 5.65 GHz WIFI) & U-NII-3 aggregate band that support wireless router were considered for hotspot SAR tests.
8. For SAR compliance, this device always uses power reduction when the device is in a held-to-ear RF exposure condition with WIFI data modes. Therefore, WIFI Head SAR was evaluated at reduced power levels.

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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	10.00	15	0.140

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.
- Since the sum of 1g single transmission chain SAR measurements is <1.6 W/kg, MIMO SAR is determined by the sum of 1g single transmission chain SAR values because the summation represents higher output power and yields more conservative result per KDB 248227 D01 DR02-41929.
- The highest Reported SAR for each exposure condition is used for SAR summation purpose.

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12.3 Head SAR Simultaneous Transmission Analysis

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	GSM 850	0.327	0.271	0.598
	UMTS 850	0.266	0.271	0.537
	Cell. CDMA/EVDO	0.404	0.271	**0.675**
	GSM 1900	0.080	0.271	0.351
	UMTS 1900	0.081	0.271	0.352
	PCS CDMA/EVDO	0.153	0.271	0.424
	LTE Band 12	0.139	0.271	0.410
	LTE Band 13	0.245	0.271	0.516
	LTE Band 5 (Cell)	0.316	0.271	0.587
	LTE Band 4 (AWS)	0.069	0.271	0.340
	LTE Band 25 (PCS)	0.136	0.271	0.407

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	GSM 850	0.327	0.147	0.474
	UMTS 850	0.266	0.147	0.413
	Cell. CDMA/EVDO	0.404	0.147	**0.551**
	GSM 1900	0.080	0.147	0.227
	UMTS 1900	0.081	0.147	0.228
	PCS CDMA/EVDO	0.153	0.147	0.300
	LTE Band 12	0.139	0.147	0.286
	LTE Band 13	0.245	0.147	0.392
	LTE Band 5 (Cell)	0.316	0.147	0.463
	LTE Band 4 (AWS)	0.069	0.147	0.216
	LTE Band 25 (PCS)	0.136	0.147	0.283

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	GSM 850	0.327	0.271	0.147	0.745
	UMTS 850	0.266	0.271	0.147	0.684
	Cell. CDMA/EVDO	0.404	0.271	0.147	**0.822**
	GSM 1900	0.080	0.271	0.147	0.498
	UMTS 1900	0.081	0.271	0.147	0.499
	PCS CDMA/EVDO	0.153	0.271	0.147	0.571
	LTE Band 12	0.139	0.271	0.147	0.557
	LTE Band 13	0.245	0.271	0.147	0.663
	LTE Band 5 (Cell)	0.316	0.271	0.147	0.734
	LTE Band 4 (AWS)	0.069	0.271	0.147	0.487
	LTE Band 25 (PCS)	0.136	0.271	0.147	0.554

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	GSM 850	0.327	0.306	0.633
	UMTS 850	0.266	0.306	0.572
	Cell. CDMA/EVDO	0.404	0.306	**0.710**
	GSM 1900	0.080	0.306	0.386
	UMTS 1900	0.081	0.306	0.387
	PCS CDMA/EVDO	0.153	0.306	0.459
	LTE Band 12	0.139	0.306	0.445
	LTE Band 13	0.245	0.306	0.551
	LTE Band 5 (Cell)	0.316	0.306	0.622
	LTE Band 4 (AWS)	0.069	0.306	0.375
	LTE Band 25 (PCS)	0.136	0.306	0.442

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

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	GSM 850	0.327	0.169	0.496
	UMTS 850	0.266	0.169	0.435
	Cell. CDMA/EVDO	0.404	0.169	**0.573**
	GSM 1900	0.080	0.169	0.249
	UMTS 1900	0.081	0.169	0.250
	PCS CDMA/EVDO	0.153	0.169	0.322
	LTE Band 12	0.139	0.169	0.308
	LTE Band 13	0.245	0.169	0.414
	LTE Band 5 (Cell)	0.316	0.169	0.485
	LTE Band 4 (AWS)	0.069	0.169	0.238
	LTE Band 25 (PCS)	0.136	0.169	0.305

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

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	GSM 850	0.327	0.306	0.169	0.802
	UMTS 850	0.266	0.306	0.169	0.741
	Cell. CDMA/EVDO	0.404	0.306	0.169	**0.879**
	GSM 1900	0.080	0.306	0.169	0.555
	UMTS 1900	0.081	0.306	0.169	0.556
	PCS CDMA/EVDO	0.153	0.306	0.169	0.628
	LTE Band 12	0.139	0.306	0.169	0.614
	LTE Band 13	0.245	0.306	0.169	0.720
	LTE Band 5 (Cell)	0.316	0.306	0.169	0.791
	LTE Band 4 (AWS)	0.069	0.306	0.169	0.544
	LTE Band 25 (PCS)	0.136	0.306	0.169	0.611

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

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12.4 Body-Worn Simultaneous Transmission Analysis

Notes:

1. For SAR summation for body-worn back side at 15mm, the SAR values at 10mm for some transmission modes were used since the 10mm test distance was more conservative. "<" denotes that the 10mm SAR values were used for summation purposes.
2. For SAR summation for body-worn back side at 15mm with 2.4/5GHz WLAN, LTE Band 4 and Band 25 values at maximum output power level were used since the SAR values at maximum power level were more conservative than SAR values at reduced power level. "<" denotes that the LTE Band 4/25 SAR values at maximum output power level were used for summation purposes.
3. Bluetooth SAR was not required to be measured per FCC KDB 447498. Estimated SAR results were used for SAR summation for body-worn back side at 15mm to determine simultaneous transmission SAR test exclusion.

Table 12-8
Simultaneous Transmission Scenario with 2.4 GHz WLAN – Ant 1 (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body-Worn	GSM 850	<0.491	<0.138	<0.629
	UMTS 850	<0.378	<0.138	<0.516
	Cell. CDMA	<0.549	<0.138	<0.687
	GSM 1900	0.361	<0.138	<0.499
	UMTS 1900	0.401	<0.138	<0.539
	PCS CDMA	0.453	<0.138	<0.591
	LTE Band 12	<0.251	<0.138	<0.389
	LTE Band 13	<0.322	<0.138	<0.460
	LTE Band 5 (Cell)	<0.170	<0.138	<0.308
	LTE Band 4 (AWS)	<0.543	<0.138	<0.681
	LTE Band 25 (PCS)	<0.672	<0.138	**<0.810**

Table 12-9
Simultaneous Transmission Scenario with 2.4 GHz WLAN - Ant 2 (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body-Worn	GSM 850	<0.491	<0.078	<0.569
	UMTS 850	<0.378	<0.078	<0.456
	Cell. CDMA	<0.549	<0.078	<0.627
	GSM 1900	0.361	<0.078	<0.439
	UMTS 1900	0.401	<0.078	<0.479
	PCS CDMA	0.453	<0.078	<0.531
	LTE Band 12	<0.251	<0.078	<0.329
	LTE Band 13	<0.322	<0.078	<0.400
	LTE Band 5 (Cell)	<0.170	<0.078	<0.248
	LTE Band 4 (AWS)	<0.543	<0.078	<0.621
	LTE Band 25 (PCS)	<0.672	<0.078	**<0.750**

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body-Worn	GSM 850	<0.491	<0.138	<0.078	<0.707
	UMTS 850	<0.378	<0.138	<0.078	<0.594
	Cell. CDMA	<0.549	<0.138	<0.078	<0.765
	GSM 1900	0.361	<0.138	<0.078	<0.577
	UMTS 1900	0.401	<0.138	<0.078	<0.617
	PCS CDMA	0.453	<0.138	<0.078	<0.669
	LTE Band 12	<0.251	<0.138	<0.078	<0.467
	LTE Band 13	<0.322	<0.138	<0.078	<0.538
	LTE Band 5 (Cell)	<0.170	<0.138	<0.078	<0.386
	LTE Band 4 (AWS)	<0.543	<0.138	<0.078	<0.759
	LTE Band 25 (PCS)	<0.672	<0.138	<0.078	**<0.888**

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Table 12-11
Simultaneous Transmission Scenario with 5 GHz WLAN Ant 1 (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body-Worn	GSM 850	<0.491	<0.095	<0.586
	UMTS 850	<0.378	<0.095	<0.473
	Cell. CDMA	<0.549	<0.095	<0.644
	GSM 1900	0.361	<0.095	<0.456
	UMTS 1900	0.401	<0.095	<0.496
	PCS CDMA	0.453	<0.095	<0.548
	LTE Band 12	<0.251	<0.095	<0.346
	LTE Band 13	<0.322	<0.095	<0.417
	LTE Band 5 (Cell)	<0.170	<0.095	<0.265
	LTE Band 4 (AWS)	<0.543	<0.095	<0.638
	LTE Band 25 (PCS)	<0.672	<0.095	**<0.767**

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

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body-Worn	GSM 850	<0.491	<0.082	<0.573
	UMTS 850	<0.378	<0.082	<0.460
	Cell. CDMA	<0.549	<0.082	<0.631
	GSM 1900	0.361	<0.082	<0.443
	UMTS 1900	0.401	<0.082	<0.483
	PCS CDMA	0.453	<0.082	<0.535
	LTE Band 12	<0.251	<0.082	<0.333
	LTE Band 13	<0.322	<0.082	<0.404
	LTE Band 5 (Cell)	<0.170	<0.082	<0.252
	LTE Band 4 (AWS)	<0.543	<0.082	<0.625
	LTE Band 25 (PCS)	<0.672	<0.082	**<0.754**

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

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body-Worn	GSM 850	<0.491	<0.095	<0.082	<0.668
	UMTS 850	<0.378	<0.095	<0.082	<0.555
	Cell. CDMA	<0.549	<0.095	<0.082	<0.726
	GSM 1900	0.361	<0.095	<0.082	<0.538
	UMTS 1900	0.401	<0.095	<0.082	<0.578
	PCS CDMA	0.453	<0.095	<0.082	<0.630
	LTE Band 12	<0.251	<0.095	<0.082	<0.428
	LTE Band 13	<0.322	<0.095	<0.082	<0.499
	LTE Band 5 (Cell)	<0.170	<0.095	<0.082	<0.347
	LTE Band 4 (AWS)	<0.543	<0.095	<0.082	<0.720
	LTE Band 25 (PCS)	<0.672	<0.095	<0.082	**<0.849**

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

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
Body-Worn	GSM 850	<0.491	0.140	<0.631
	UMTS 850	<0.378	0.140	<0.518
	Cell. CDMA	<0.549	0.140	<0.689
	GSM 1900	0.361	0.140	0.501
	UMTS 1900	0.401	0.140	0.541
	PCS CDMA	0.453	0.140	0.593
	LTE Band 12	<0.251	0.140	<0.391
	LTE Band 13	<0.322	0.140	<0.462
	LTE Band 5 (Cell)	<0.170	0.140	<0.310
	LTE Band 4 (AWS)	0.543	0.140	0.683
	LTE Band 25 (PCS)	0.672	0.140	**0.812**

12.5 Hotspot SAR Simultaneous Transmission Analysis

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Hotspot SAR	GPRS 850	0.559	0.138	0.697
	UMTS 850	0.475	0.138	0.613
	Cell. EVDO	0.619	0.138	0.757
	GPRS 1900	0.542	0.138	0.680
	UMTS 1900	0.648	0.138	0.786
	PCS EVDO	0.957	0.138	**1.095**
	LTE Band 12	0.269	0.138	0.407
	LTE Band 13	0.322	0.138	0.460
	LTE Band 5 (Cell)	0.337	0.138	0.475
	LTE Band 4 (AWS)	0.542	0.138	0.680
	LTE Band 25 (PCS)	0.896	0.138	1.034

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Hotspot SAR	GPRS 850	0.559	0.078	0.637
	UMTS 850	0.475	0.078	0.553
	Cell. EVDO	0.619	0.078	0.697
	GPRS 1900	0.542	0.078	0.620
	UMTS 1900	0.648	0.078	0.726
	PCS EVDO	0.957	0.078	**1.035**
	LTE Band 12	0.269	0.078	0.347
	LTE Band 13	0.322	0.078	0.400
	LTE Band 5 (Cell)	0.337	0.078	0.415
	LTE Band 4 (AWS)	0.542	0.078	0.620
	LTE Band 25 (PCS)	0.896	0.078	0.974

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Hotspot SAR	GPRS 850	0.559	0.138	0.078	0.775
	UMTS 850	0.475	0.138	0.078	0.691
	Cell. EVDO	0.619	0.138	0.078	0.835
	GPRS 1900	0.542	0.138	0.078	0.758
	UMTS 1900	0.648	0.138	0.078	0.864
	PCS EVDO	0.957	0.138	0.078	**1.173**
	LTE Band 12	0.269	0.138	0.078	0.485
	LTE Band 13	0.322	0.138	0.078	0.538
	LTE Band 5 (Cell)	0.337	0.138	0.078	0.553
	LTE Band 4 (AWS)	0.542	0.138	0.078	0.758
	LTE Band 25 (PCS)	0.896	0.138	0.078	1.112

Table 12-18
Simultaneous Transmission Scenario with 5 GHz WLAN - Ant 1 (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Hotspot SAR	GPRS 850	0.559	0.153	0.712
	UMTS 850	0.475	0.153	0.628
	Cell. EVDO	0.619	0.153	0.772
	GPRS 1900	0.542	0.153	0.695
	UMTS 1900	0.648	0.153	0.801
	PCS EVDO	0.957	0.153	**1.110**
	LTE Band 12	0.269	0.153	0.422
	LTE Band 13	0.322	0.153	0.475
	LTE Band 5 (Cell)	0.337	0.153	0.490
	LTE Band 4 (AWS)	0.542	0.153	0.695
	LTE Band 25 (PCS)	0.896	0.153	1.049

Table 12-19
Simultaneous Transmission Scenario with 5 GHz WLAN - Ant 2 (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Hotspot SAR	GPRS 850	0.559	0.028	0.587
	UMTS 850	0.475	0.028	0.503
	Cell. EVDO	0.619	0.028	0.647
	GPRS 1900	0.542	0.028	0.570
	UMTS 1900	0.648	0.028	0.676
	PCS EVDO	0.957	0.028	**0.985**
	LTE Band 12	0.269	0.028	0.297
	LTE Band 13	0.322	0.028	0.350
	LTE Band 5 (Cell)	0.337	0.028	0.365
	LTE Band 4 (AWS)	0.542	0.028	0.570
	LTE Band 25 (PCS)	0.896	0.028	0.924

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Hotspot SAR	GPRS 850	0.559	0.153	0.028	0.740
	UMTS 850	0.475	0.153	0.028	0.656
	Cell. EVDO	0.619	0.153	0.028	0.800
	GPRS 1900	0.542	0.153	0.028	0.723
	UMTS 1900	0.648	0.153	0.028	0.829
	PCS EVDO	0.957	0.153	0.028	**1.138**
	LTE Band 12	0.269	0.153	0.028	0.450
	LTE Band 13	0.322	0.153	0.028	0.503
	LTE Band 5 (Cell)	0.337	0.153	0.028	0.518
	LTE Band 4 (AWS)	0.542	0.153	0.028	0.723
	LTE Band 25 (PCS)	0.896	0.153	0.028	1.077

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.

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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)	
1900	1908.75	1175	PCS CDMA	EVDO Rev. 0	bottom	10 mm	0.899	0.894	1.01	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.

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14 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/15/2014	Annual	4/15/2015	MY45470194
Agilent	8753E	(30kHz-6GHz) Network Analyzer	12/30/2014	Annual	12/30/2015	JP38020182
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	8648D	(9kHz-4GHz) Signal Generator	4/15/2014	Annual	4/15/2015	3629U00687
Agilent	N9020A	MXA Signal Analyzer	10/27/2014	Annual	10/27/2015	US46470561
Agilent	E5515C	Wireless Communications Test Set	3/18/2014	Annual	3/18/2015	GB46110872
Anritsu	MA2411B	Pulse Power Sensor	11/17/2014	Annual	11/17/2015	1207364
Anritsu	ML2495A	Power Meter	10/31/2013	Biennial	10/31/2015	941001
Anritsu	MT8820C	Radio Communication Analyzer	8/28/2014	Annual	8/28/2015	6201240328
Anritsu	MT8820C	Radio Communication Analyzer	11/18/2014	Annual	11/18/2015	6201300731
Anritsu	MA24106A	USB Power Sensor	5/14/2014	Annual	5/14/2015	1231538
Anritsu	MA24106A	USB Power Sensor	5/14/2014	Annual	5/14/2015	1231535
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
COMTech	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M1S5A00-009
Control Company	61220-416	Long-Stem Thermometer	4/29/2014	Biennial	4/29/2016	111331323
Control Company	36934-158	Wall-Mounted Thermometer	4/29/2014	Biennial	4/29/2016	122014488
Gigatronics	80701A	(0.05-18GHz) Power Sensor	10/30/2014	Annual	10/30/2015	1833460
Gigatronics	8651A	Universal Power Meter	10/30/2014	Annual	10/30/2015	8650319
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMW500	Radio Communication Tester	4/17/2014	Annual	4/17/2015	101699
Seekonk	NC-100	Torque Wrench 5/16", 8" lbs	3/18/2014	Biennial	3/18/2016	N/A
SPEAG	D1765V2	1765 MHz SAR Dipole	5/7/2014	Annual	5/7/2015	1008
SPEAG	D1900V2	1900 MHz SAR Dipole	4/9/2014	Annual	4/9/2015	5d141
SPEAG	D1900V2	1900 MHz SAR Dipole	7/23/2014	Annual	7/23/2015	5d149
SPEAG	D2450V2	2450 MHz SAR Dipole	8/11/2014	Annual	8/11/2015	719
SPEAG	D5GHzV2	5 GHz SAR Dipole	2/26/2014	Annual	2/26/2015	1120
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/25/2014	Annual	9/25/2015	1191
SPEAG	D750V3	750 MHz Dipole	3/17/2014	Annual	3/17/2015	1054
SPEAG	D835V2	835 MHz SAR Dipole	7/24/2014	Annual	7/24/2015	4d133
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/26/2014	Annual	2/26/2015	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/17/2014	Annual	3/17/2015	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/11/2014	Annual	4/11/2015	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/14/2014	Annual	5/14/2015	859
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/12/2014	Annual	8/12/2015	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/17/2014	Annual	9/17/2015	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/18/2014	Annual	9/18/2015	1364
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/19/2015	Annual	1/19/2016	1407
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/6/2014	Annual	5/6/2015	1070
SPEAG	ES3DV3	SAR Probe	2/25/2014	Annual	2/25/2015	3258
SPEAG	ES3DV3	SAR Probe	3/19/2014	Annual	3/19/2015	3209
SPEAG	ES3DV3	SAR Probe	9/18/2014	Annual	9/18/2015	3332
SPEAG	ES3DV3	SAR Probe	5/15/2014	Annual	5/15/2015	3263
SPEAG	ES3DV2	SAR Probe	8/19/2014	Annual	8/19/2015	3022
SPEAG	ES3DV3	SAR Probe	9/24/2014	Annual	9/24/2015	3288
SPEAG	EX3DV4	SAR Probe	12/12/2014	Annual	12/12/2015	3920
SPEAG	ES3DV3	SAR Probe	1/20/2015	Annual	1/20/2016	3213
Tektronix	RSA6114A	Real Time Spectrum Analyzer	4/16/2014	Annual	4/16/2015	B010177

Note:

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

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15 MEASUREMENT UNCERTAINTIES

Applicable for frequencies less than 3000 MHz.

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

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

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Applicable for frequencies up to 6 GHz.

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

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

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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

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PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234DC

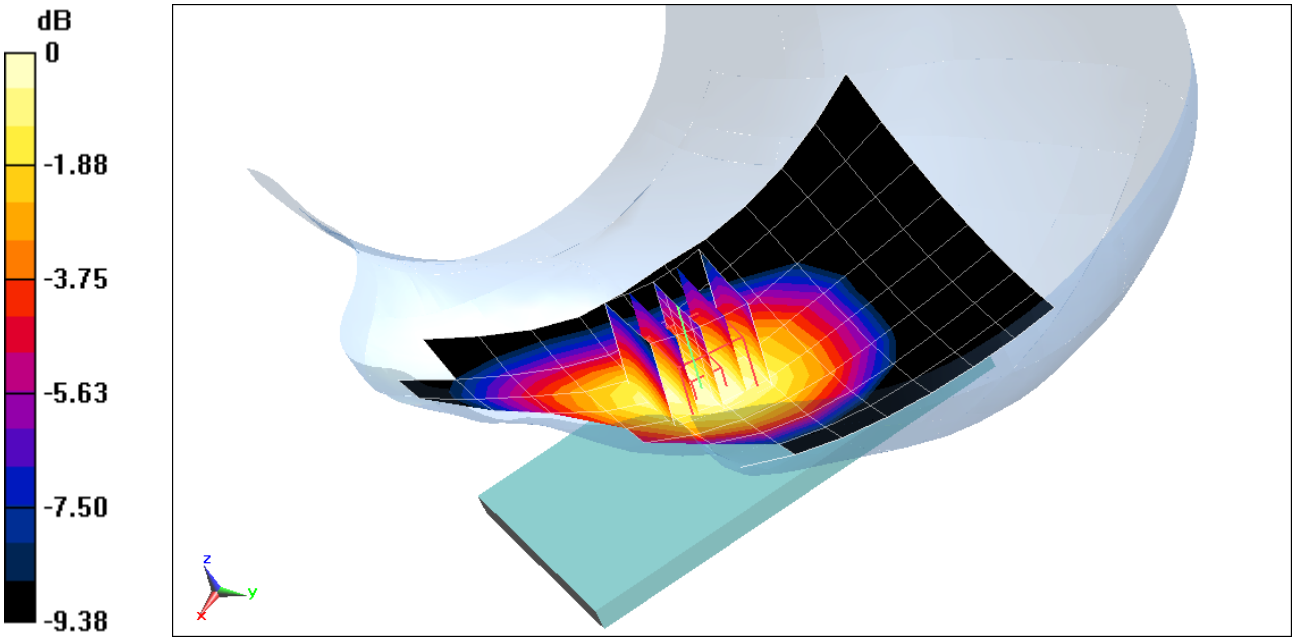
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.934 S/m; ε_r = 43.416; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 01-19-2015; Ambient Temp: 23.1°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(6.23, 6.23, 6.23); Calibrated: 5/15/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/14/2014
Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.99 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.398 W/kg
SAR(1 g) = 0.311 W/kg



0 dB = 0.345 W/kg = -4.62 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234DC

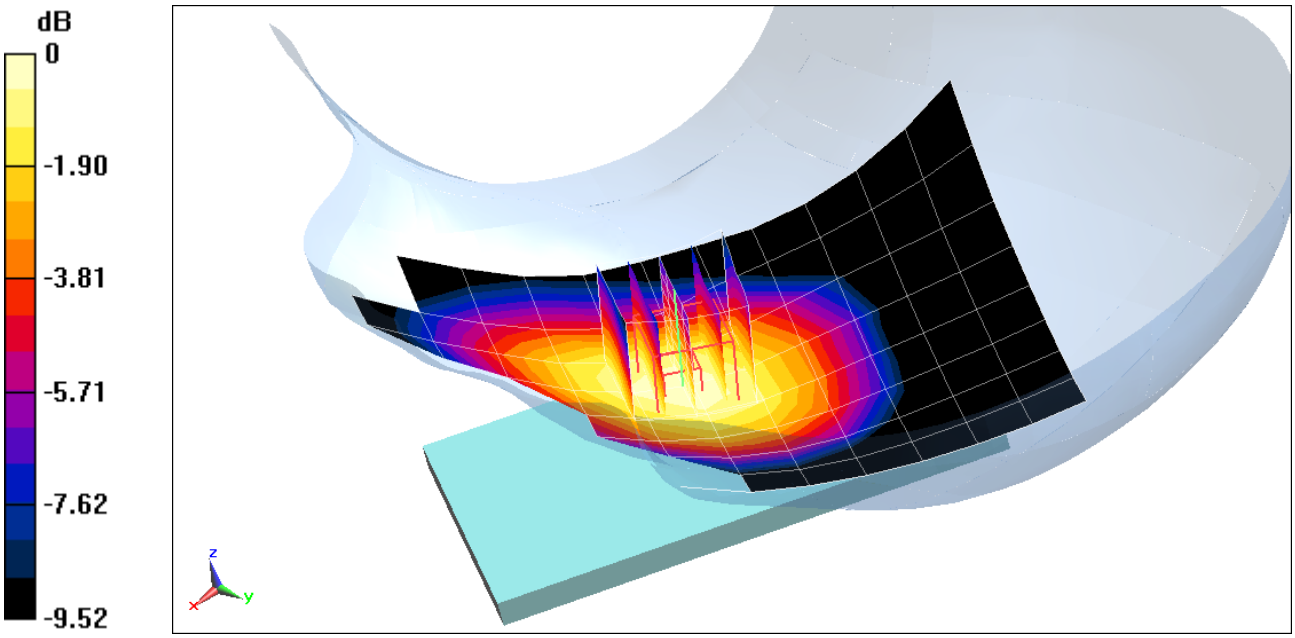
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.934 S/m; ε_r = 43.416; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 01-19-2015; Ambient Temp: 23.1°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(6.23, 6.23, 6.23); Calibrated: 5/15/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/14/2014
Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.51 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.341 W/kg
SAR(1 g) = 0.265 W/kg



0 dB = 0.293 W/kg = -5.33 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234F1

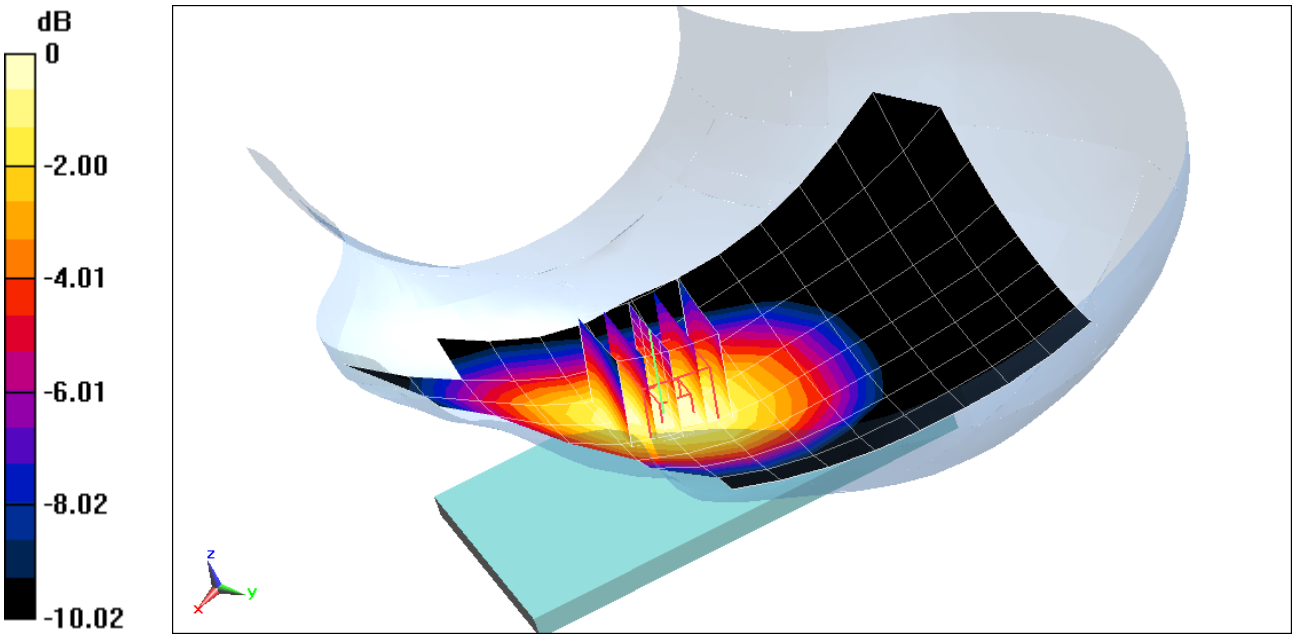
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.934 S/m; ε_r = 43.417; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 01-19-2015; Ambient Temp: 23.1°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(6.23, 6.23, 6.23); Calibrated: 5/15/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/14/2014
Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: Cell. 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 = 21.36 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.525 W/kg
SAR(1 g) = 0.402 W/kg



0 dB = 0.442 W/kg = -3.55 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234DC

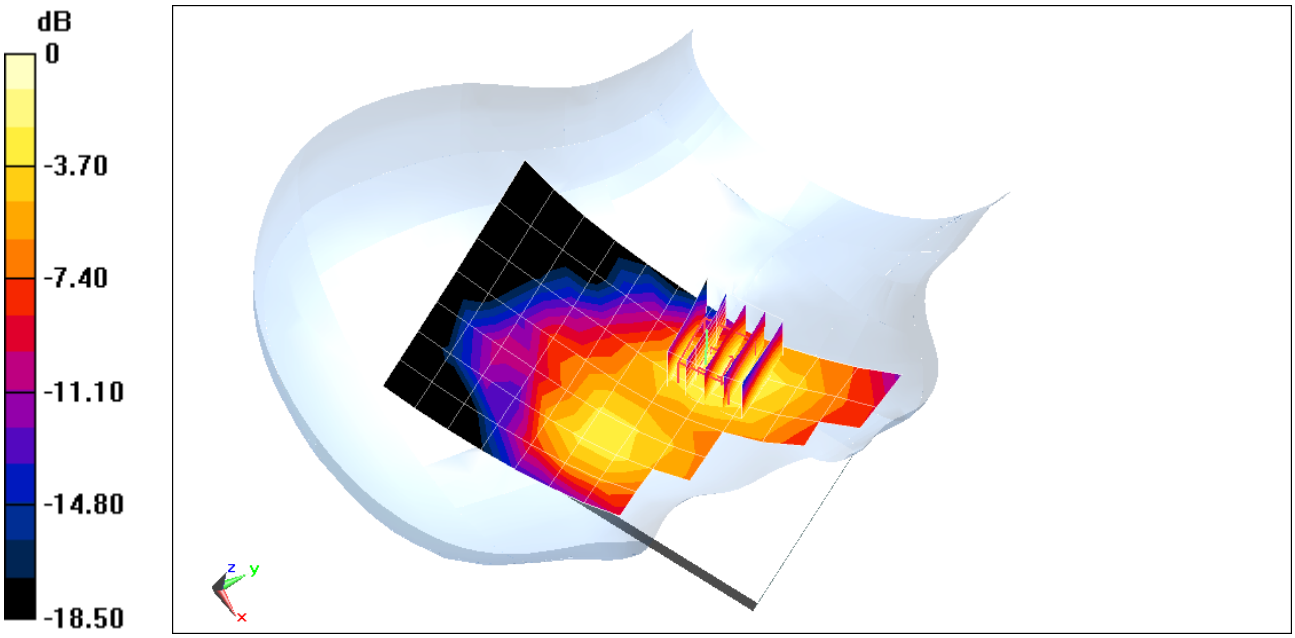
Communication System: UID 0, GSM1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.390 S/m; ε_r = 39.392; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 01-19-2015; Ambient Temp: 24.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3258; ConvF(5.04, 5.04, 5.04); Calibrated: 2/25/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/26/2014
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.788 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.117 W/kg
SAR(1 g) = 0.076 W/kg



0 dB = 0.0878 W/kg = -10.57 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234DC

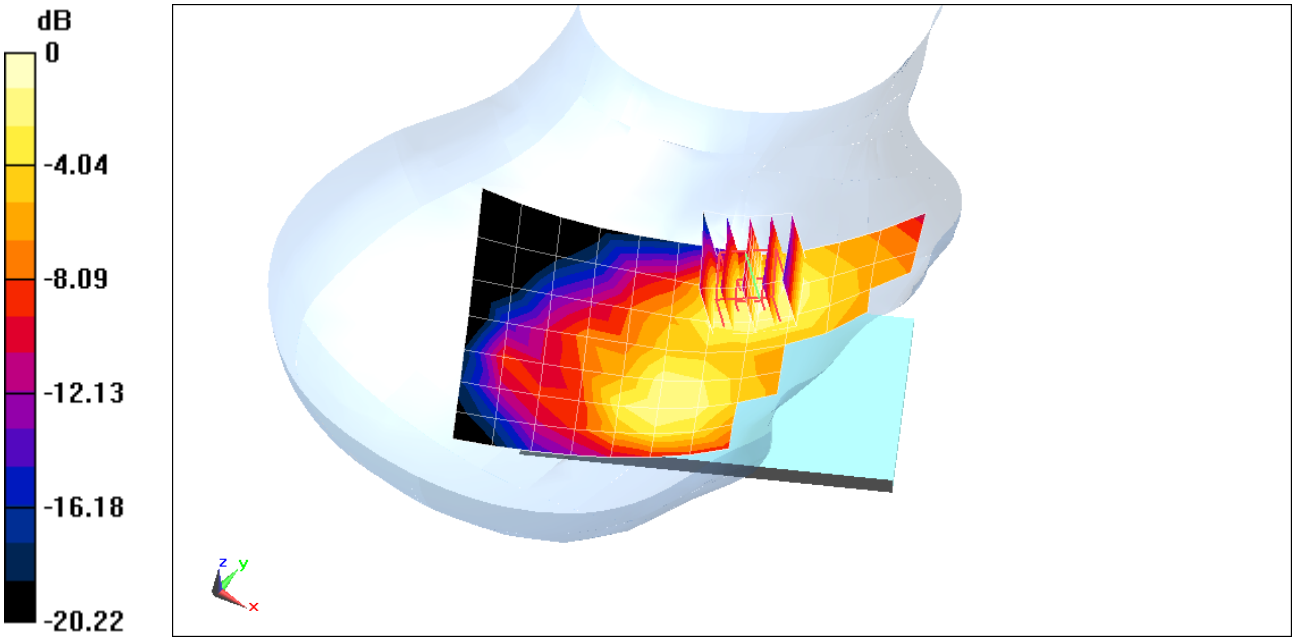
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.390 S/m; ε_r = 39.392; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 01-19-2015; Ambient Temp: 24.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3258; ConvF(5.04, 5.04, 5.04); Calibrated: 2/25/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/26/2014
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.030 V/m; Power Drift = -0.20 dB
Peak SAR (extrapolated) = 0.124 W/kg
SAR(1 g) = 0.080 W/kg



0 dB = 0.0940 W/kg = -10.27 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234F1

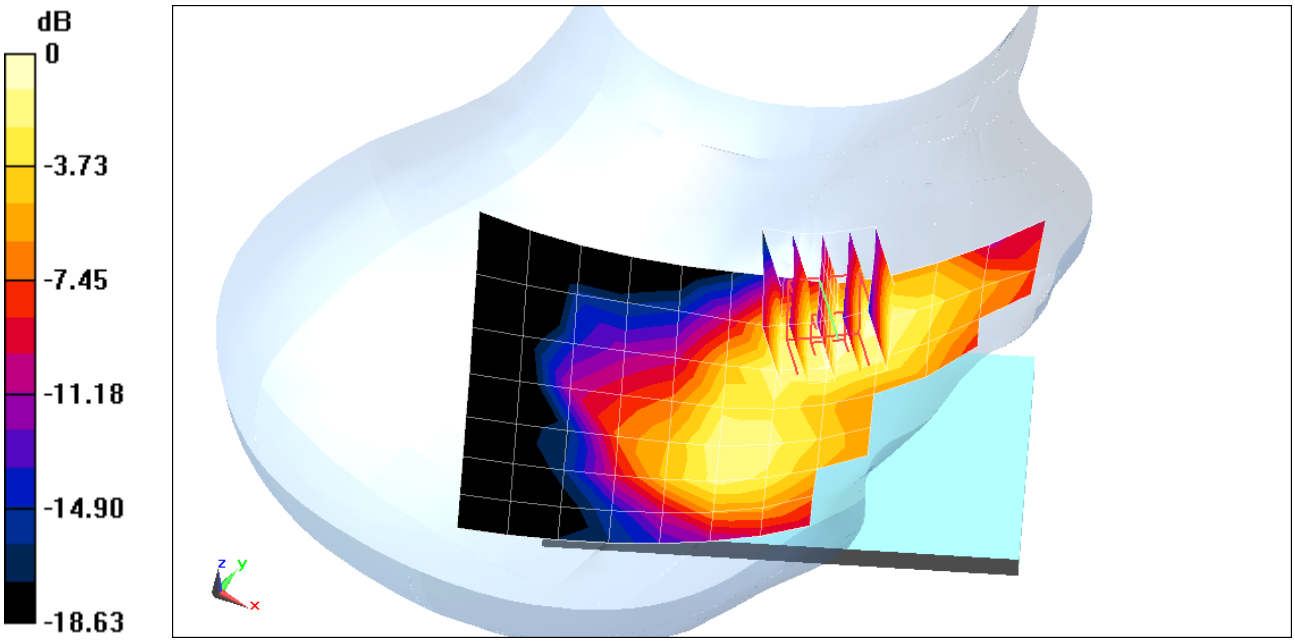
Communication System: UID 0, CDMA; Frequency: 1851.25 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1851.25 MHz; σ = 1.364 S/m; ε_r = 39.519; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 01-19-2015; Ambient Temp: 24.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3258; ConvF(5.04, 5.04, 5.04); Calibrated: 2/25/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/26/2014
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: PCS EVDO, Right Head, Cheek, Low.ch

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.79 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.239 W/kg
SAR(1 g) = 0.152 W/kg



0 dB = 0.181 W/kg = -7.42 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 155B7

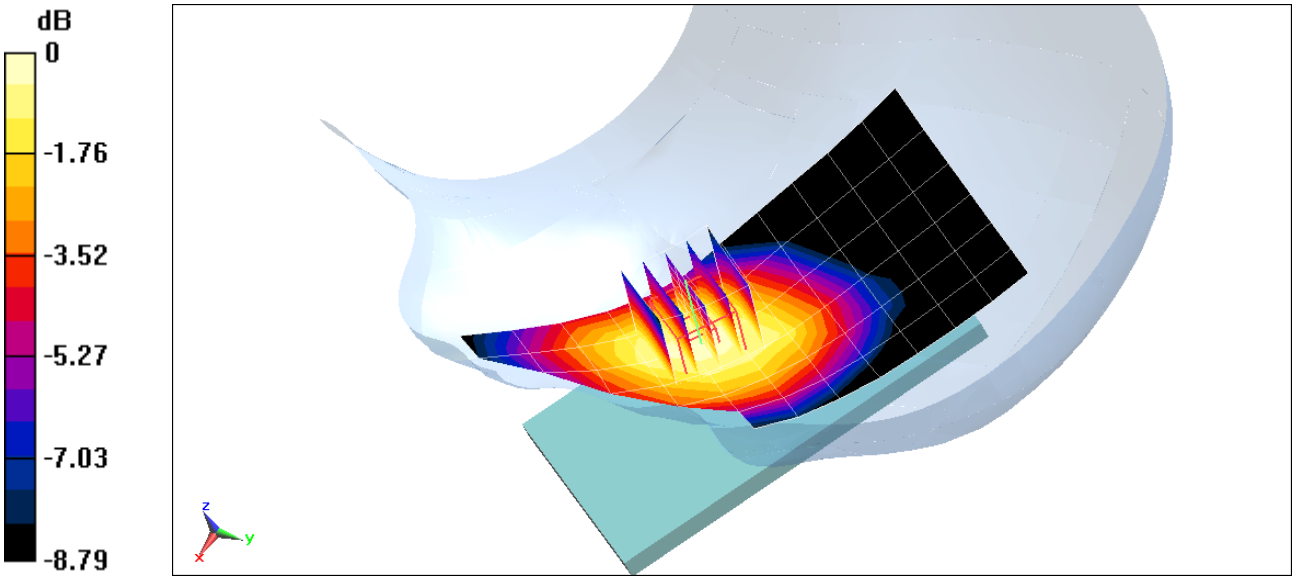
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.879 S/m; ε_r = 42.081; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 02-03-2015; Ambient Temp: 24.5°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3288; ConvF(6.81, 6.81, 6.81); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.07 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.169 W/kg
SAR(1 g) = 0.134 W/kg



0 dB = 0.146 W/kg = -8.36 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 08FC4

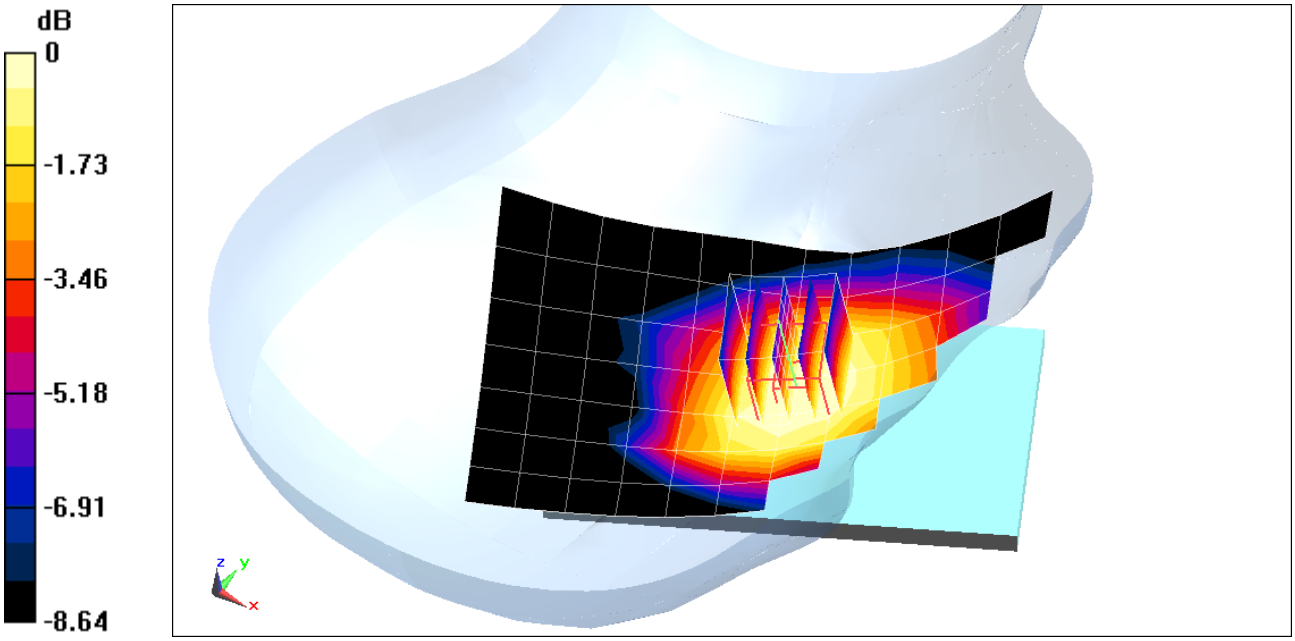
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 782 MHz; σ = 0.936 S/m; ε_r = 40.408; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 01-22-2015; Ambient Temp: 24.0°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3288; ConvF(6.81, 6.81, 6.81); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 13, Right Head, Cheek, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, 25 RB Offset

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.46 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.271 W/kg
SAR(1 g) = 0.217 W/kg



0 dB = 0.240 W/kg = -6.20 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234C9

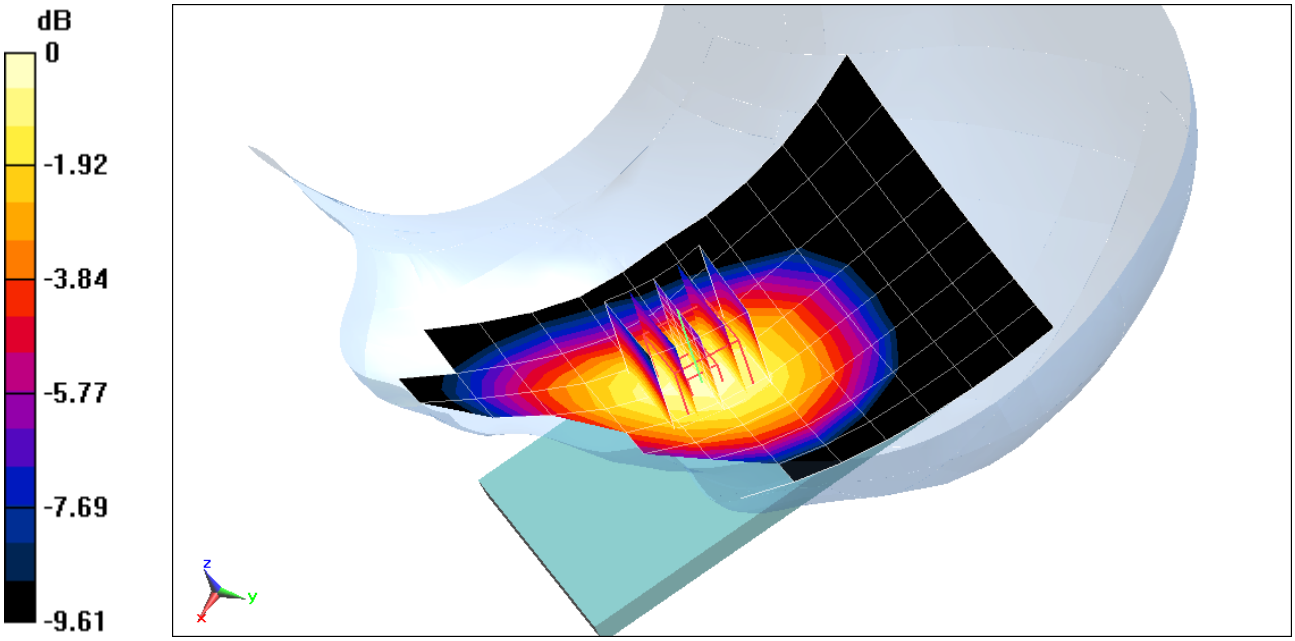
Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.934 S/m; ε_r = 43.418; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 01-19-2015; Ambient Temp: 23.1°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(6.23, 6.23, 6.23); Calibrated: 5/15/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/14/2014
Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 5 (Cell), Left Head, Cheek, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, 25 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.46 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.386 W/kg
SAR(1 g) = 0.298 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 23503

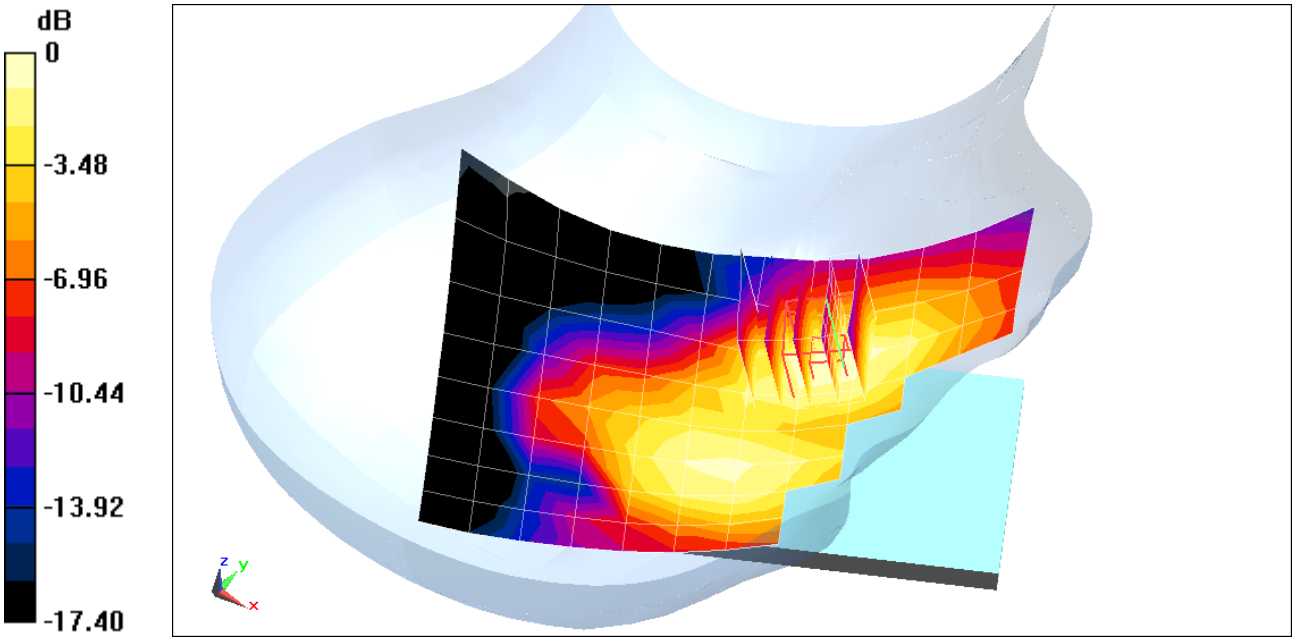
Communication System: UID 0, LTE Band 4; Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1732.5 MHz; σ = 1.327 S/m; ε_r = 38.539; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 01-22-2015; Ambient Temp: 23.0°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3263; ConvF(5.41, 5.41, 5.41); Calibrated: 5/15/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/14/2014
Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.00 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.231 W/kg
SAR(1 g) = 0.155 W/kg



0 dB = 0.181 W/kg = -7.42 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 1C5D6

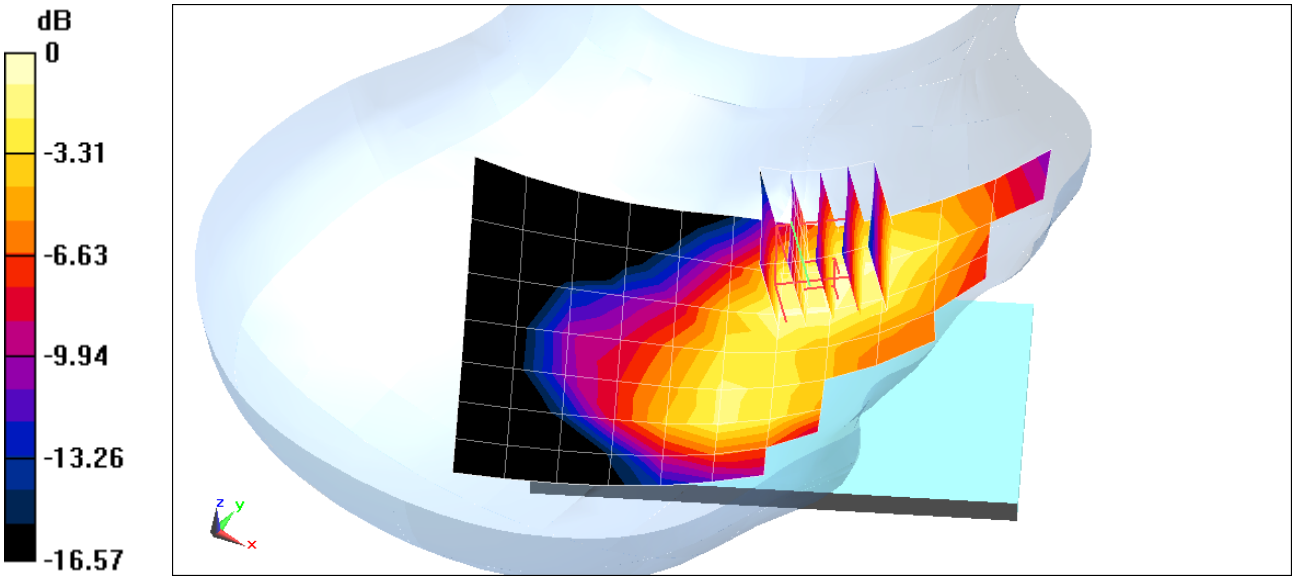
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.365 S/m; ε_r = 38.831; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 02-02-2015; Ambient Temp: 22.3°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(5.08, 5.08, 5.08); Calibrated: 5/15/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/14/2014
Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 25 (PCS), Right Head, Cheek, Low.ch
QPSK, 20 MHz Bandwidth, 1 RB, 0 RB Offset

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.92 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.311 W/kg
SAR(1 g) = 0.199 W/kg



0 dB = 0.232 W/kg = -6.35 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234B0

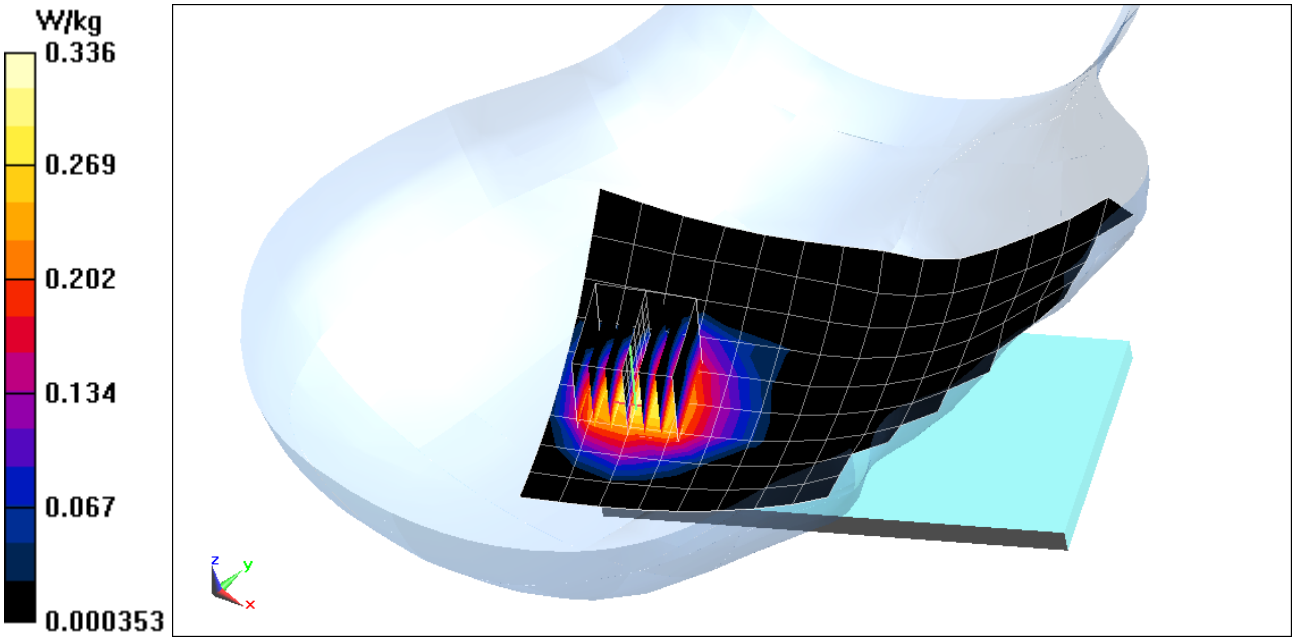
Communication System: UID 0, IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2462 MHz; σ = 1.806 S/m; ε_r = 38.507; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 01-23-2015; Ambient Temp: 21.3°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3258; ConvF(4.52, 4.52, 4.52); Calibrated: 2/25/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/26/2014
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11b, 22 MHz Bandwidth, Ant 1
Right Head, Cheek, Ch 11, 1 Mbps

Area Scan (10x16x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.22 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.585 W/kg
SAR(1 g) = 0.250 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234B0

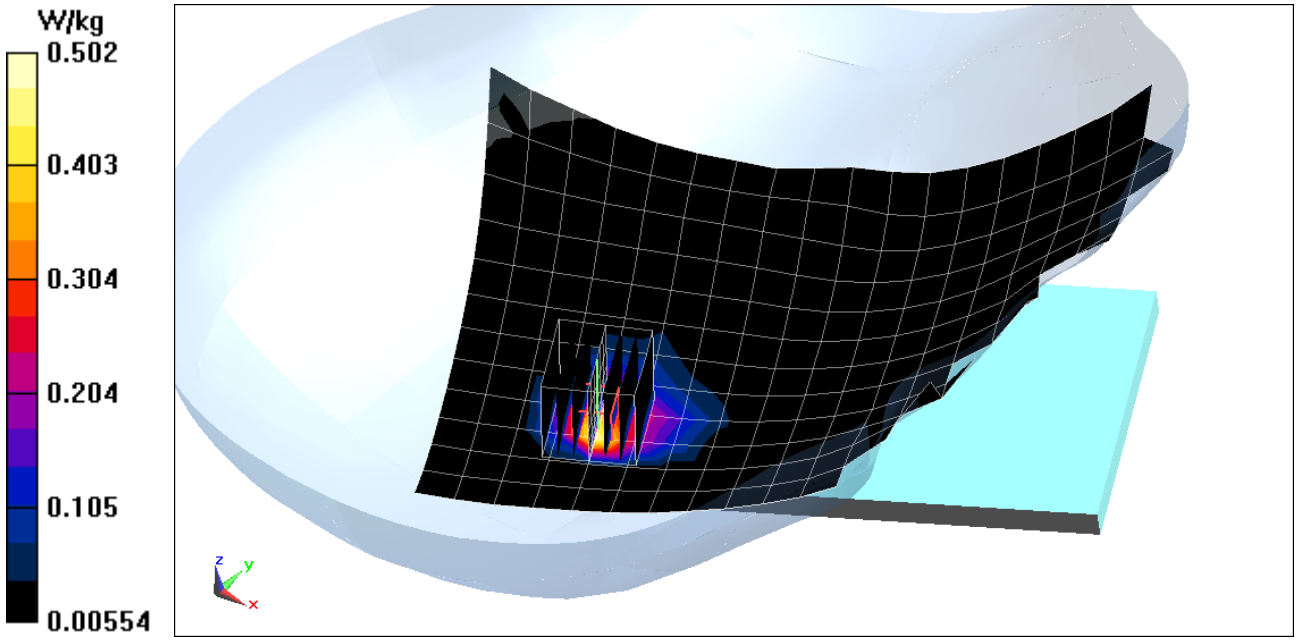
Communication System: UID 0, IEEE 802.11ac; Frequency: 5530 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used (interpolated):
f = 5530 MHz; σ = 4.778 S/m; ε_r = 35.267; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 01-23-2015; Ambient Temp: 23.5°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN3920; ConvF(4.44, 4.44, 4.44); Calibrated: 12/12/2014;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 4/11/2014
Phantom: SAM, Left; Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11ac, 80 MHz Bandwidth, Ant 1
Right Head, Cheek, Ch 106, 29.3 Mbps

Area Scan (13x21x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 6.146 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.931 W/kg
SAR(1 g) = 0.190 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234DC

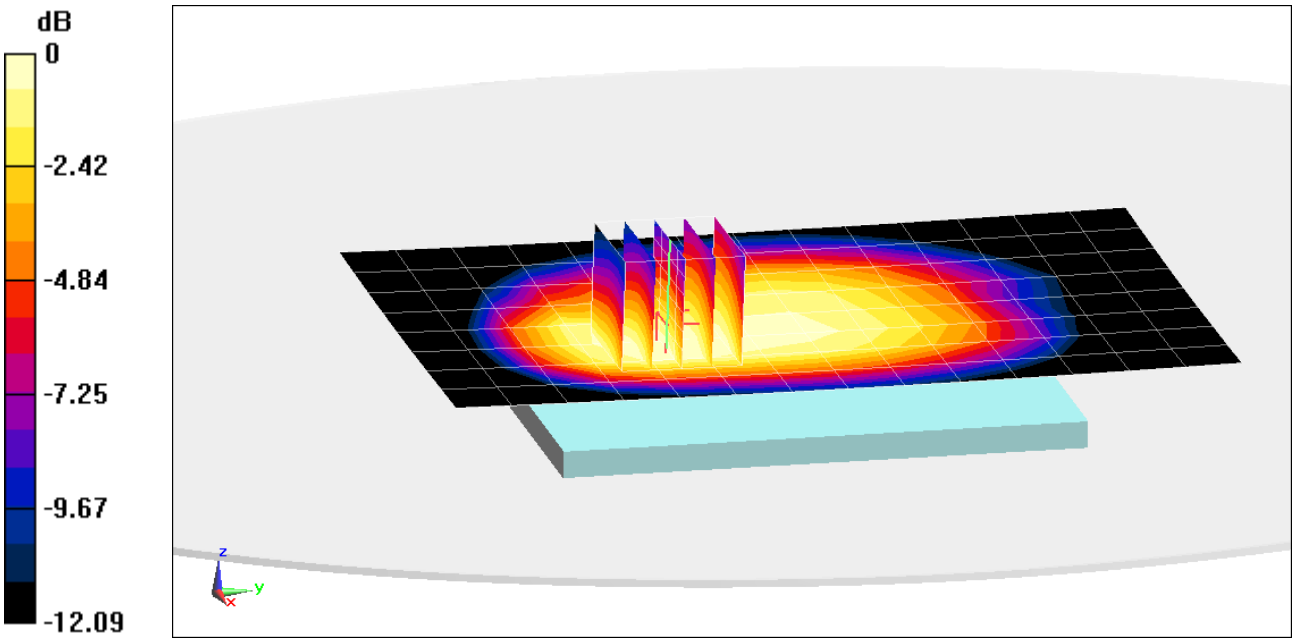
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 1.011 S/m; ε_r = 55.280; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-22-2015; Ambient Temp: 24.2°C; Tissue Temp: 22.4°C

Probe: ES3DV3 - SN3288; ConvF(6.32, 6.32, 6.32); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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 = 22.25 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.619 W/kg
SAR(1 g) = 0.467 W/kg



0 dB = 0.520 W/kg = -2.84 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234DC

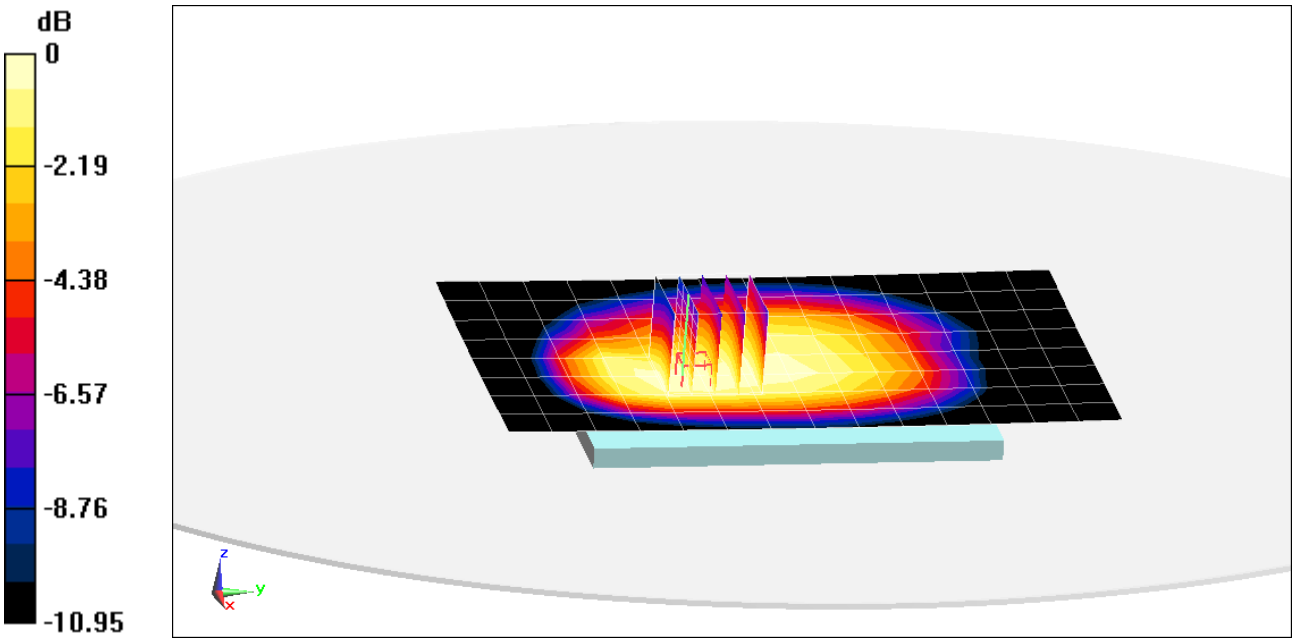
Communication System: UID 0, GSM GPRS; Frequency: 836.6 MHz; Duty Cycle: 1:2.76
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 1.011 S/m; ε_r = 55.280; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-22-2015; Ambient Temp: 24.2°C; Tissue Temp: 22.4°C

Probe: ES3DV3 - SN3288; ConvF(6.32, 6.32, 6.32); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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 = 23.68 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.693 W/kg
SAR(1 g) = 0.523 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234DC

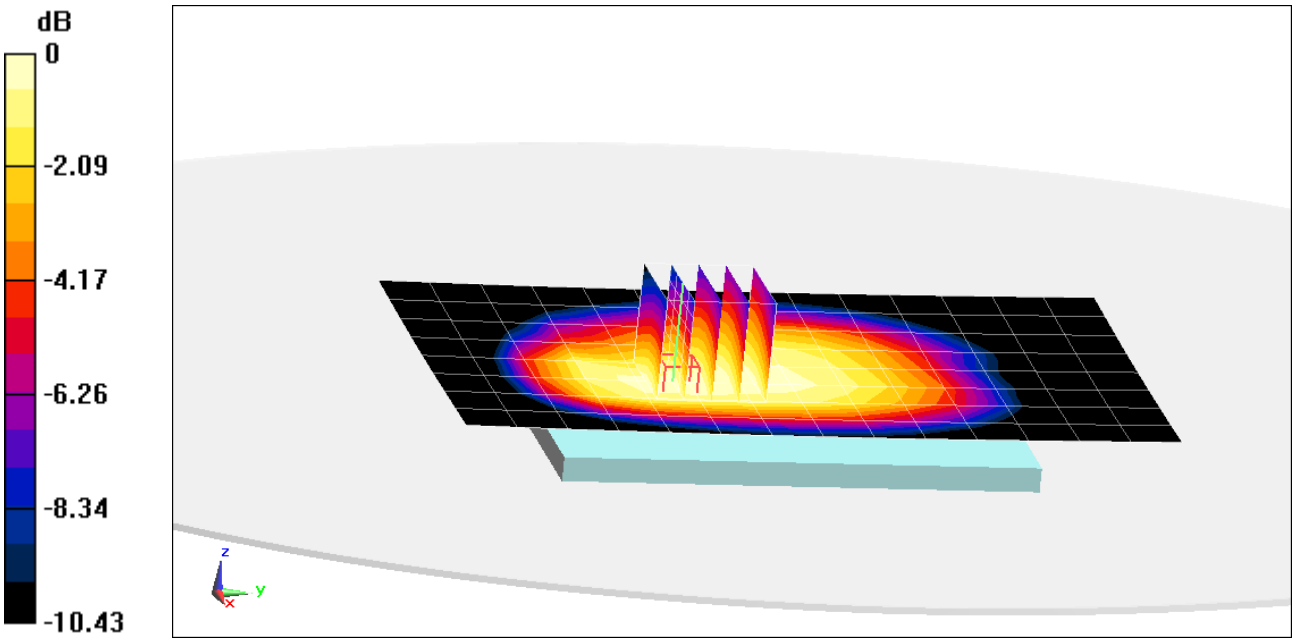
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 1.011 S/m; ε_r = 55.280; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-22-2015; Ambient Temp: 24.2°C; Tissue Temp: 22.4°C

Probe: ES3DV3 - SN3288; ConvF(6.32, 6.32, 6.32); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 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 = 19.89 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.495 W/kg
SAR(1 g) = 0.377 W/kg



0 dB = 0.419 W/kg = -3.78 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234DC

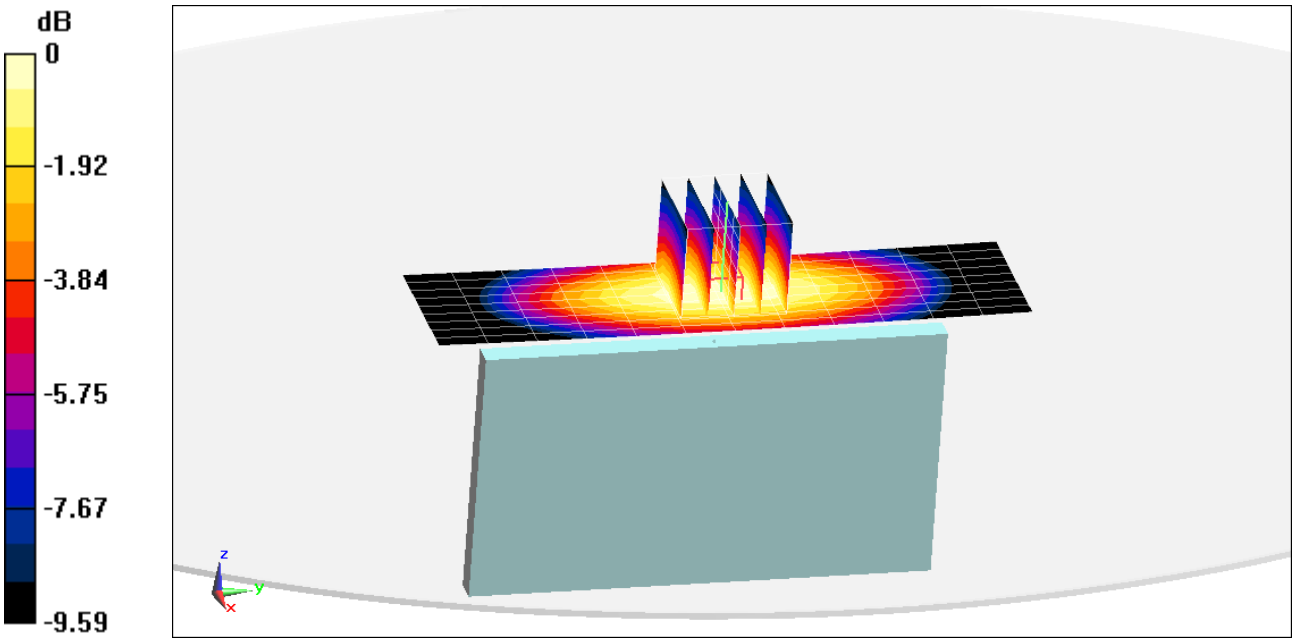
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 1.011 S/m; ε_r = 55.280; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-22-2015; Ambient Temp: 24.2°C; Tissue Temp: 22.4°C

Probe: ES3DV3 - SN3288; ConvF(6.32, 6.32, 6.32); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 850, Body SAR, Left Edge, Mid.ch

Area Scan (10x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.70 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.678 W/kg
SAR(1 g) = 0.474 W/kg



0 dB = 0.547 W/kg = -2.62 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 23503

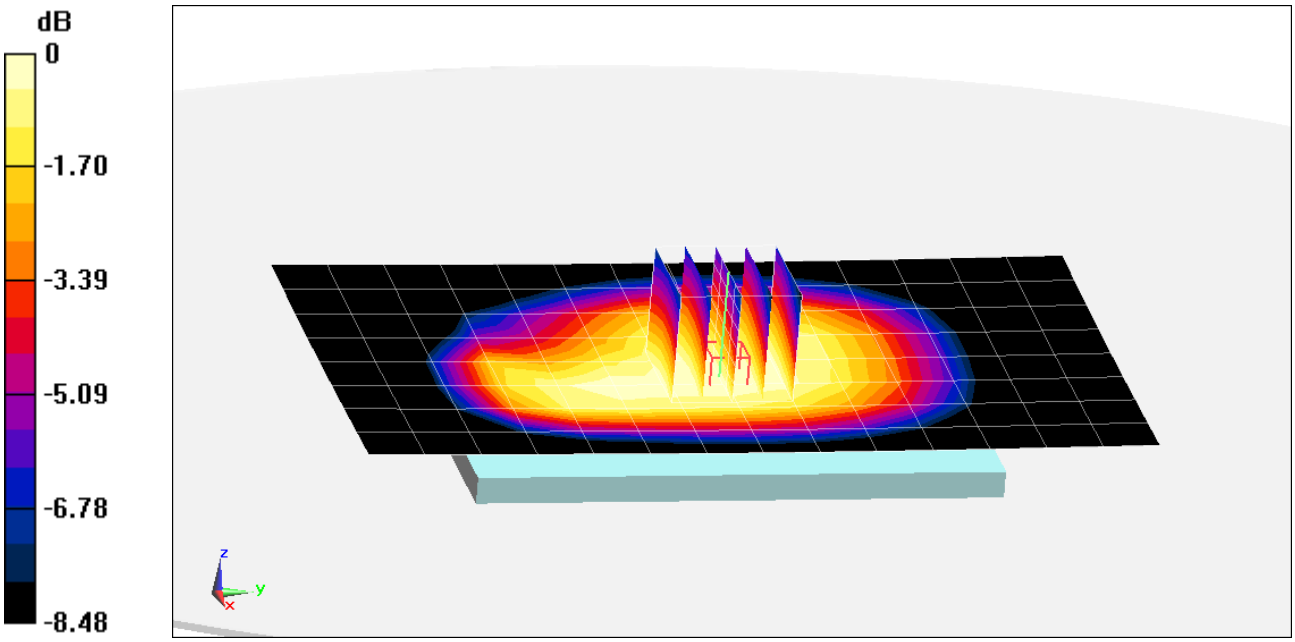
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 1.011 S/m; ε_r = 55.280; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-22-2015; Ambient Temp: 24.2°C; Tissue Temp: 22.4°C

Probe: ES3DV3 - SN3288; ConvF(6.32, 6.32, 6.32); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: Cell. CDMA, 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 = 24.07 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.699 W/kg
SAR(1 g) = 0.549 W/kg



0 dB = 0.601 W/kg = -2.21 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 23503

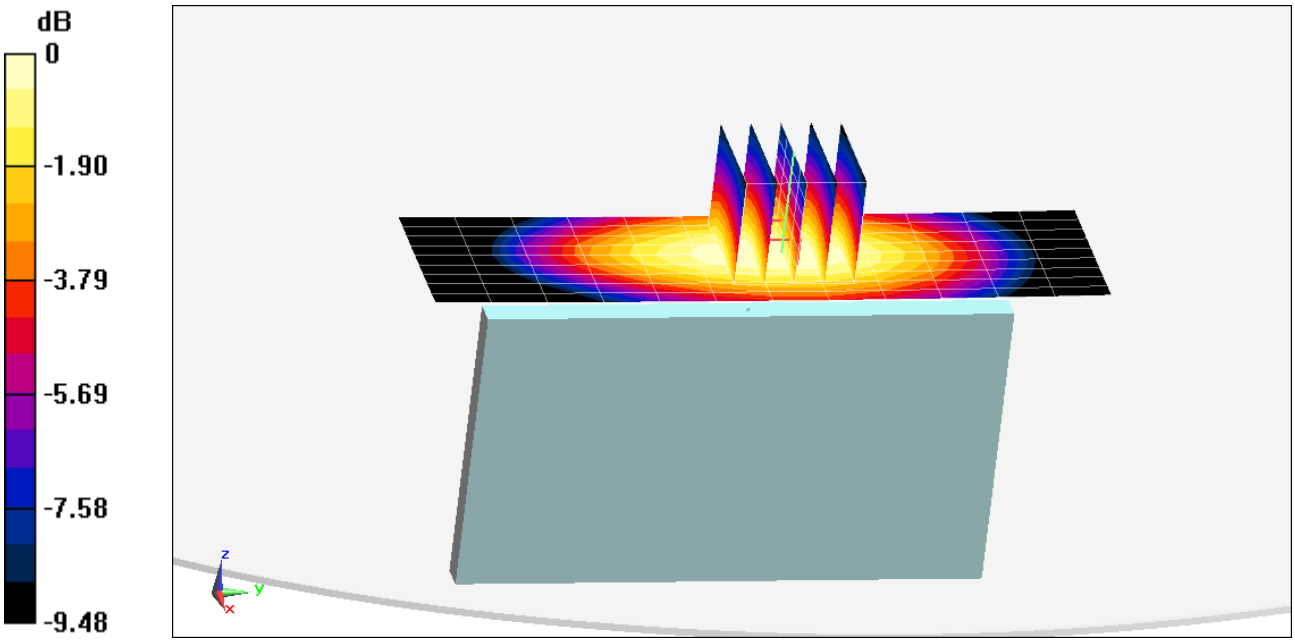
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 1.011 S/m; ε_r = 55.280; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-22-2015; Ambient Temp: 24.2°C; Tissue Temp: 22.4°C

Probe: ES3DV3 - SN3288; ConvF(6.32, 6.32, 6.32); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: Cell. EVDO, Body SAR, Left Edge, Mid.ch

Area Scan (10x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.94 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.872 W/kg
SAR(1 g) = 0.619 W/kg



0 dB = 0.708 W/kg = -1.50 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234DC

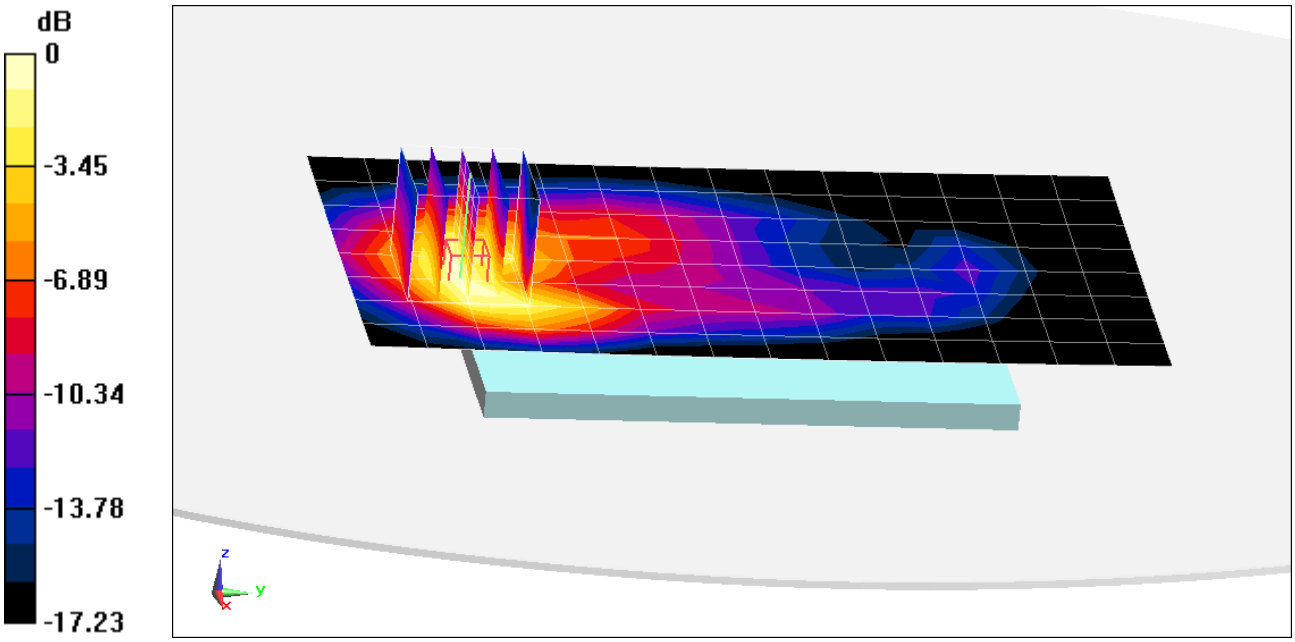
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.522 S/m; ε_r = 51.716; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 01-22-2015; Ambient Temp: 23.9°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3258; ConvF(4.61, 4.61, 4.61); Calibrated: 2/25/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/26/2014
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.00 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.575 W/kg
SAR(1 g) = 0.341 W/kg



0 dB = 0.408 W/kg = -3.89 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234C8

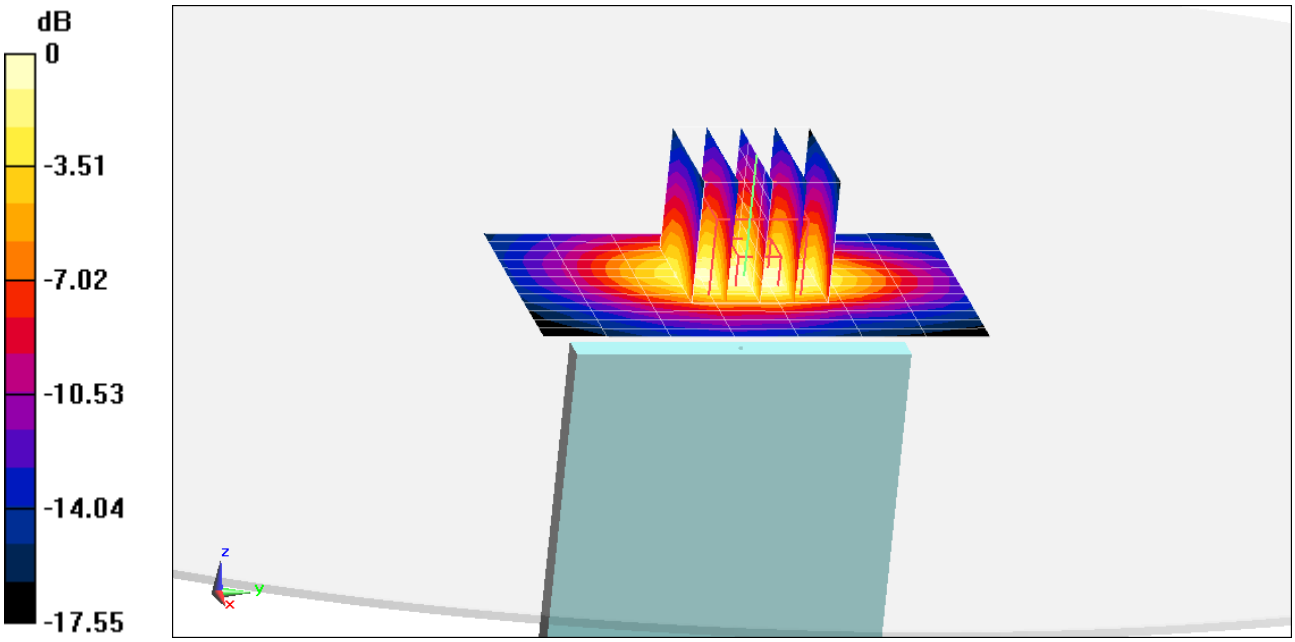
Communication System: UID 0, GSM GPRS; Frequency: 1880 MHz; Duty Cycle: 1:2.076
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.527 S/m; ε_r = 52.312; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-29-2015; Ambient Temp: 24.0°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3258; ConvF(4.61, 4.61, 4.61); Calibrated: 2/25/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/26/2014
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GPRS 1900, Body SAR, Bottom Edge, Mid.ch, 4 Tx Slots

Area Scan (13x8x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.78 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.766 W/kg
SAR(1 g) = 0.467 W/kg



0 dB = 0.568 W/kg = -2.46 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234DC

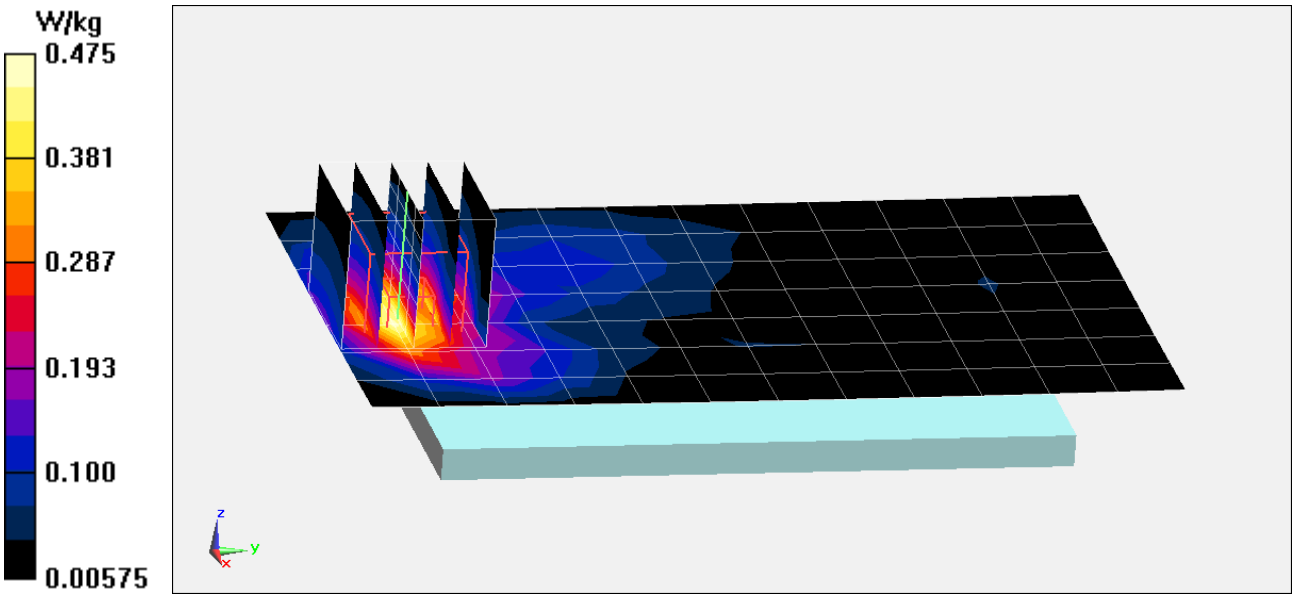
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.527 S/m; ε_r = 52.312; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 01-29-2015; Ambient Temp: 24.0°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3258; ConvF(4.61, 4.61, 4.61); Calibrated: 2/25/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/26/2014
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.96 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.644 W/kg
SAR(1 g) = 0.395 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234C8

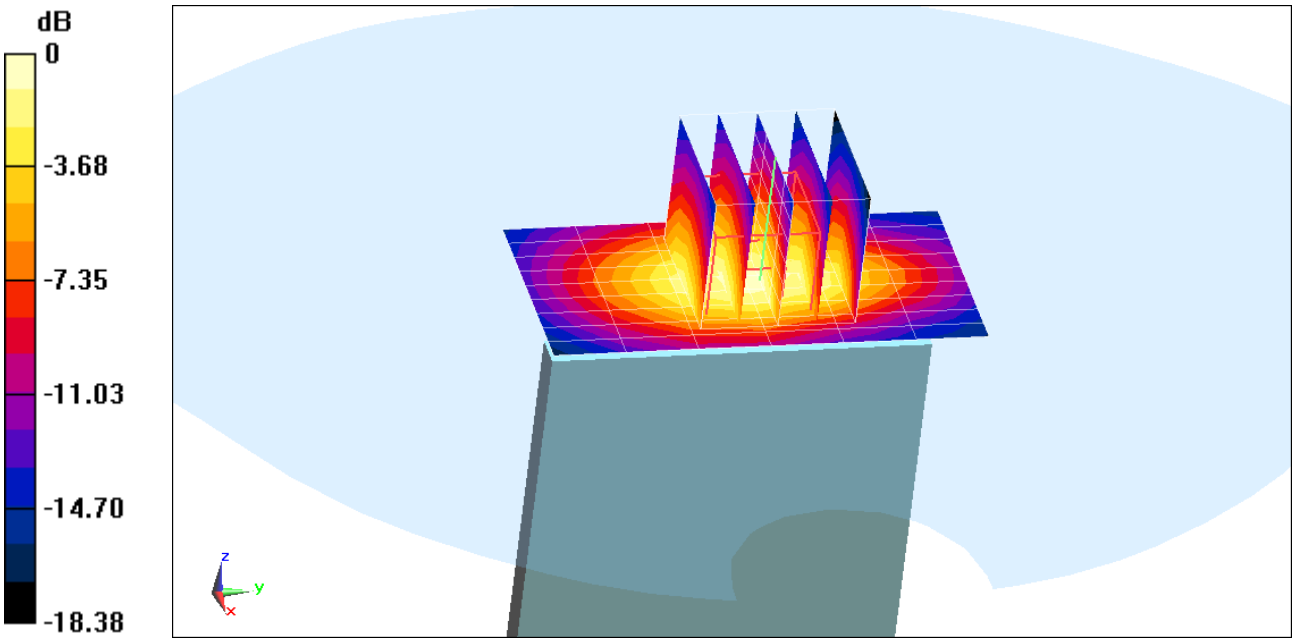
Communication System: UID 0, UMTS; Frequency: 1852.4 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1852.4 MHz; σ = 1.527 S/m; ε_r = 52.455; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-06-2015; Ambient Temp: 23.8°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3332; ConvF(4.64, 4.64, 4.64); Calibrated: 9/18/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/17/2014
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 1900, Body SAR, Bottom Edge, Low.ch

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.55 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.940 W/kg
SAR(1 g) = 0.569 W/kg



0 dB = 0.700 W/kg = -1.55 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234F1

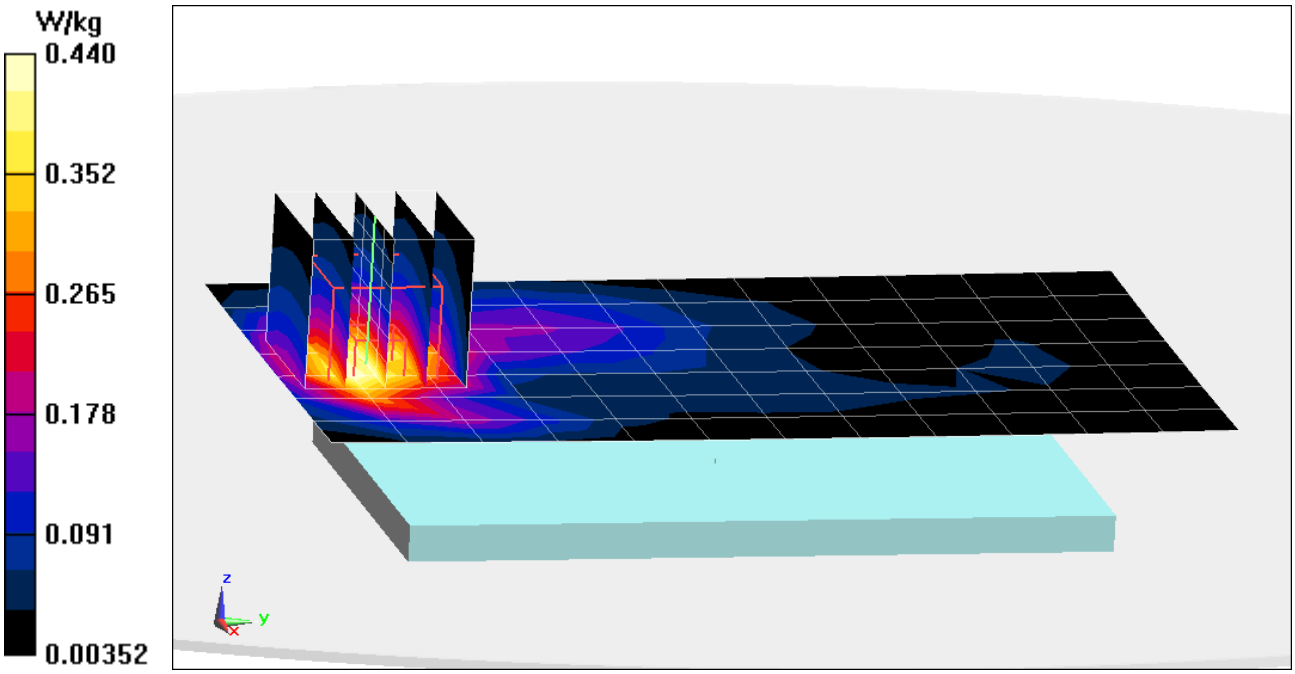
Communication System: UID 0, CDMA; Frequency: 1851.25 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1851.25 MHz; σ = 1.489 S/m; ε_r = 51.805; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 01-22-2015; Ambient Temp: 23.9°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3258; ConvF(4.61, 4.61, 4.61); Calibrated: 2/25/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/26/2014
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.92 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.652 W/kg
SAR(1 g) = 0.419 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234C8

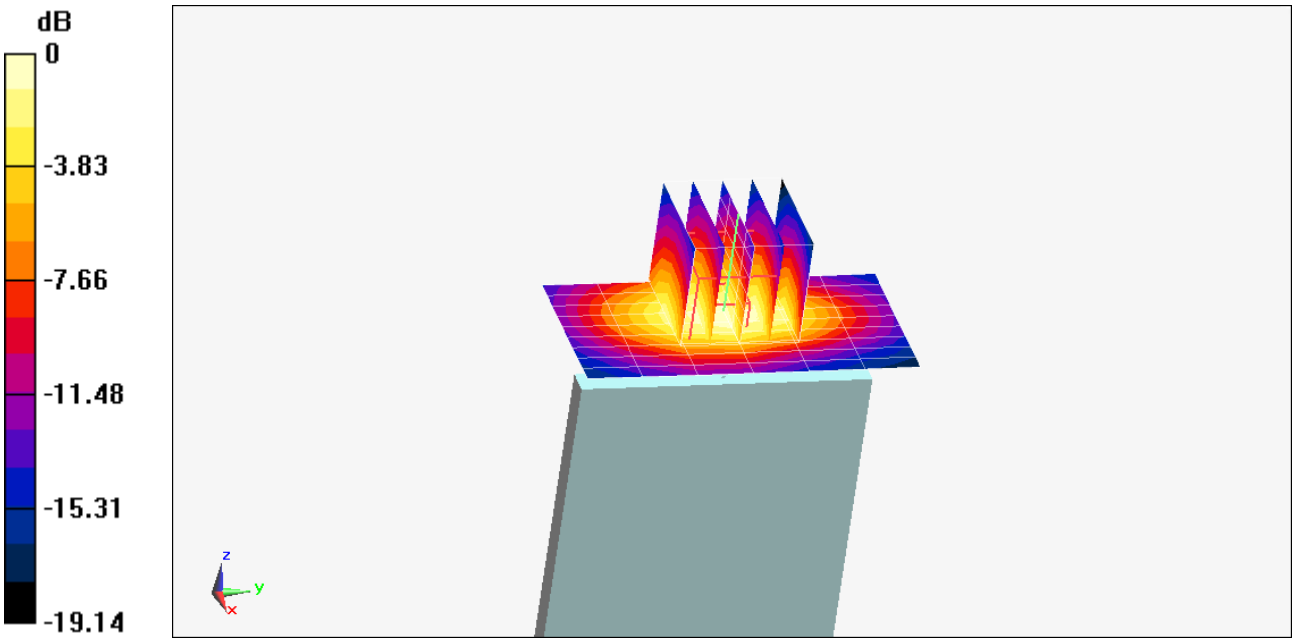
Communication System: UID 0, CDMA; Frequency: 1908.75 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1908.75 MHz; σ = 1.563 S/m; ε_r = 51.703; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-10-2015; Ambient Temp: 23.5°C; Tissue Temp: 22.9°C

Probe: ES3DV2 - SN3022; ConvF(4.49, 4.49, 4.49); Calibrated: 8/19/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/12/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1226
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: PCS EVDO, Body SAR, Bottom Edge, High.ch

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.68 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.48 W/kg
SAR(1 g) = 0.899 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 155B7

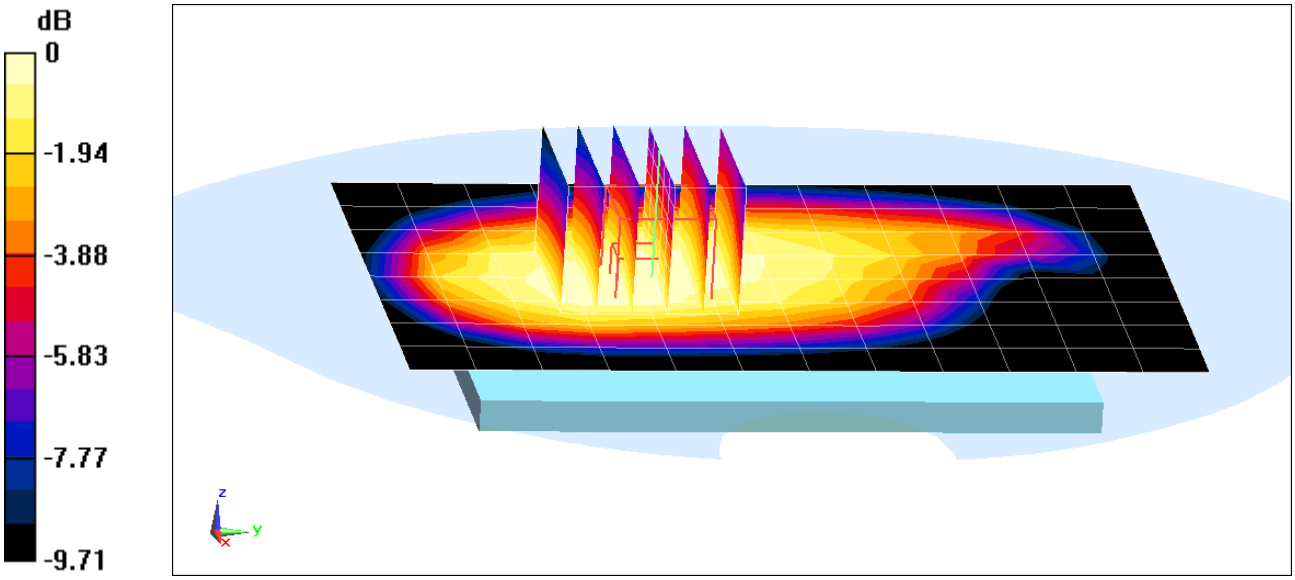
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.932 S/m; ε_r = 54.235; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-29-2015; Ambient Temp: 24.0°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3263; ConvF(6.19, 6.19, 6.19); Calibrated: 5/15/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/14/2014
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
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 = 16.71 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.311 W/kg
SAR(1 g) = 0.241 W/kg



0 dB = 0.264 W/kg = -5.78 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 155B7

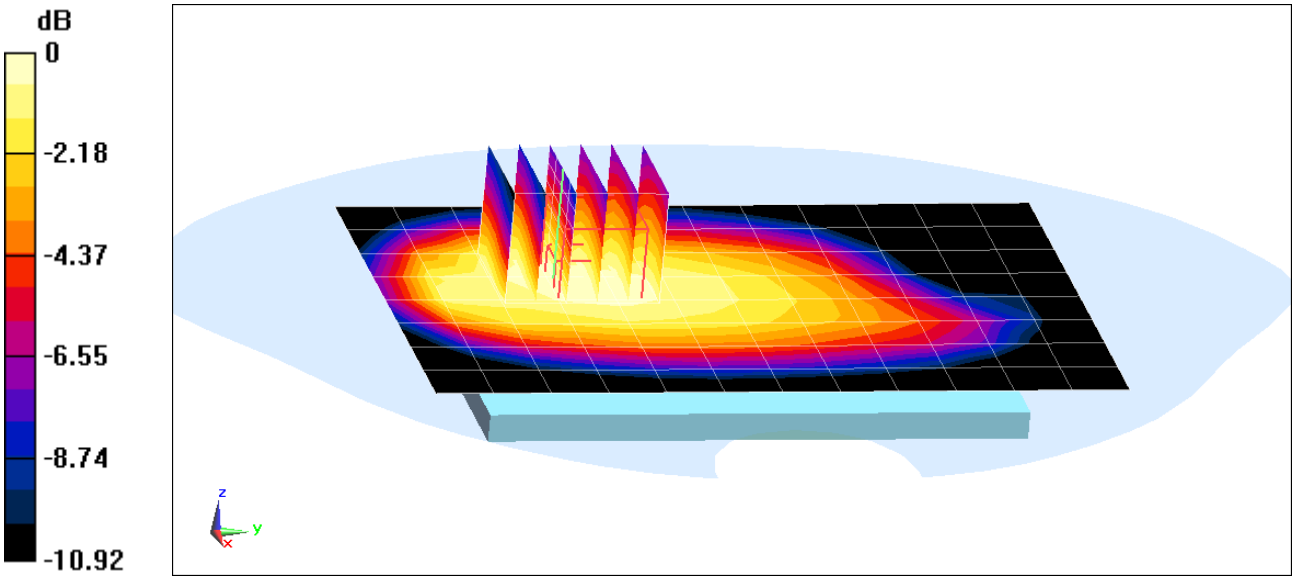
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.932 S/m; ε_r = 54.235; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-29-2015; Ambient Temp: 24.0°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3263; ConvF(6.19, 6.19, 6.19); Calibrated: 5/15/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/14/2014
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.25 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.336 W/kg
SAR(1 g) = 0.259 W/kg



0 dB = 0.286 W/kg = -5.44 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 23503

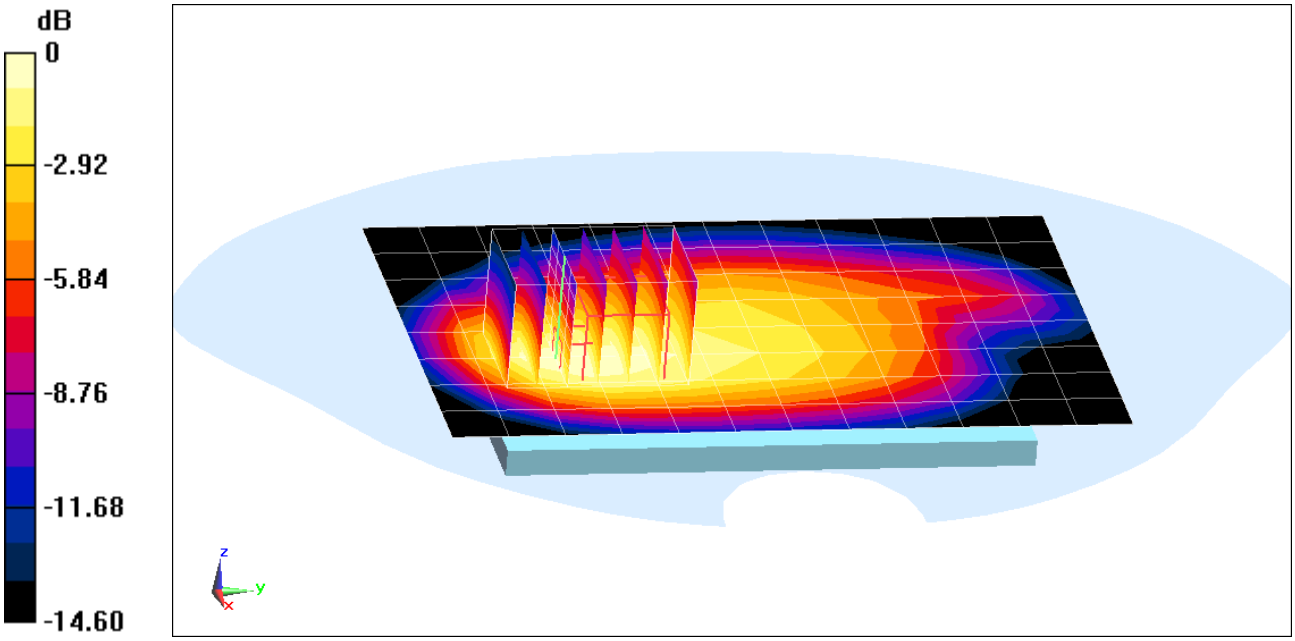
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 782 MHz; σ = 0.995 S/m; ε_r = 52.948; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-22-2015; Ambient Temp: 23.2°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3332; ConvF(6.24, 6.24, 6.24); Calibrated: 9/18/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/17/2014
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 13, Body SAR, Back side, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, 25 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.22 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.453 W/kg
SAR(1 g) = 0.286 W/kg



0 dB = 0.334 W/kg = -4.76 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 23503

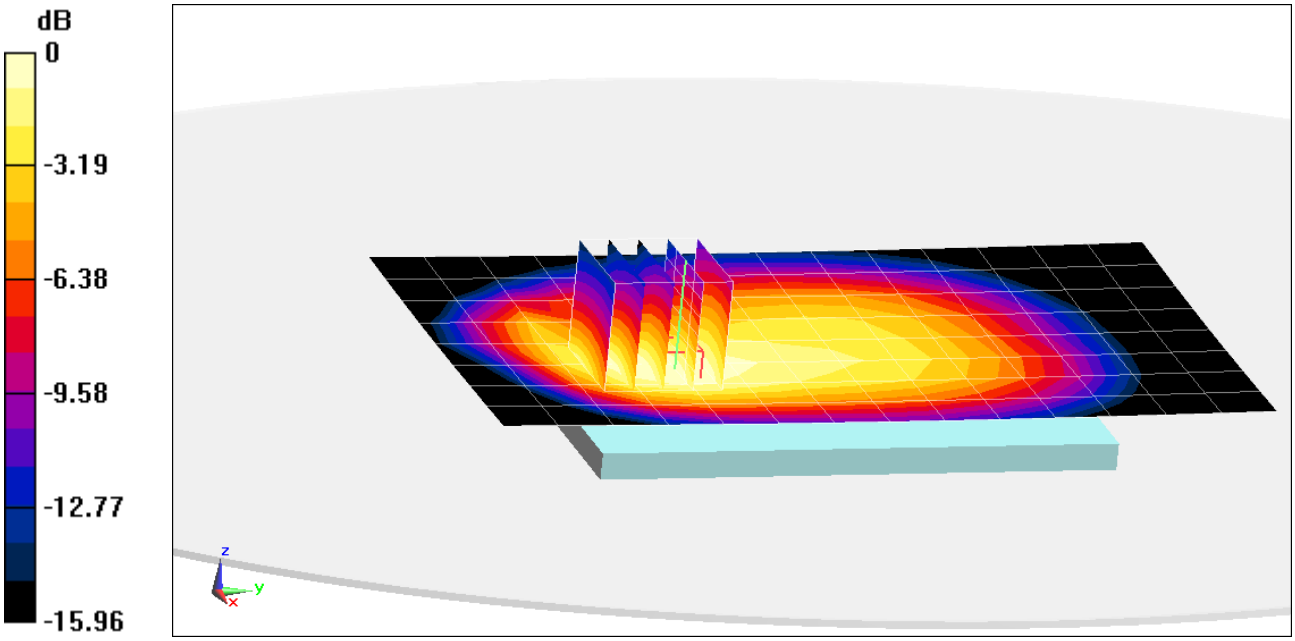
Communication System: UID 0, LTE Band 5; Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.5 MHz; σ = 1.011 S/m; ε_r = 55.280; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-22-2015; Ambient Temp: 24.2°C; Tissue Temp: 22.4°C

Probe: ES3DV3 - SN3288; ConvF(6.32, 6.32, 6.32); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 5 (Cell.), Body SAR, Back Side, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, 25 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 = 13.10 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.277 W/kg
SAR(1 g) = 0.161 W/kg



0 dB = 0.187 W/kg = -7.28 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 23503

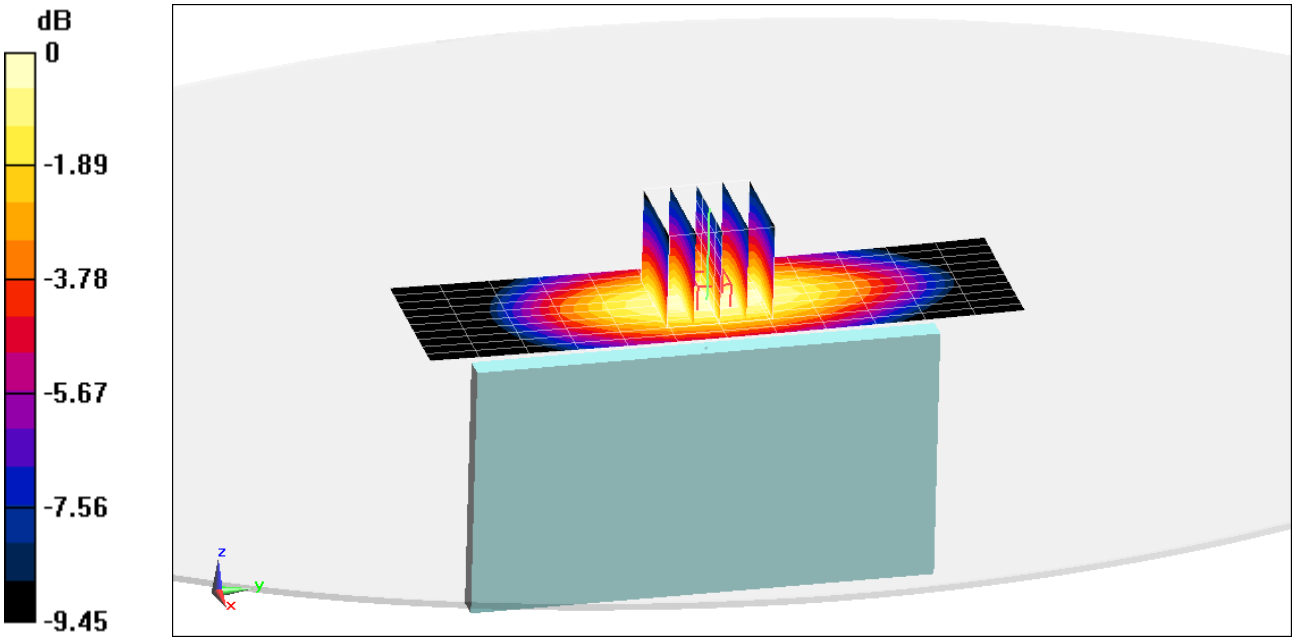
Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.5 MHz; σ = 1.011 S/m; ε_r = 55.280; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-22-2015; Ambient Temp: 24.2°C; Tissue Temp: 22.4°C

Probe: ES3DV3 - SN3288; ConvF(6.32, 6.32, 6.32); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 5 (Cell.), Body SAR, Right Edge, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, 25 RB Offset

Area Scan (11x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.55 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.452 W/kg
SAR(1 g) = 0.318 W/kg



0 dB = 0.364 W/kg = -4.39 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 23503

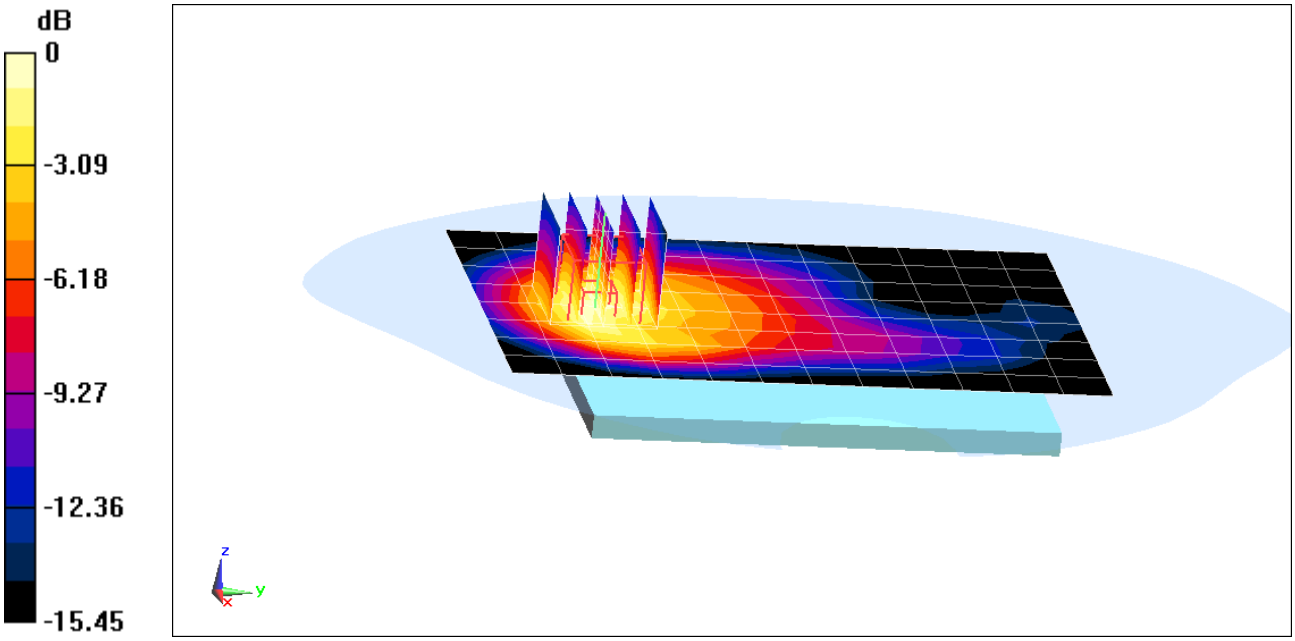
Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.5 MHz; σ = 1.442 S/m; ε_r = 51.613; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 01-19-2015; Ambient Temp: 23.0°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(4.98, 4.98, 4.98); Calibrated: 5/15/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/14/2014
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
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 (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.75 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.811 W/kg
SAR(1 g) = 0.531 W/kg



0 dB = 0.627 W/kg = -2.03 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234EB

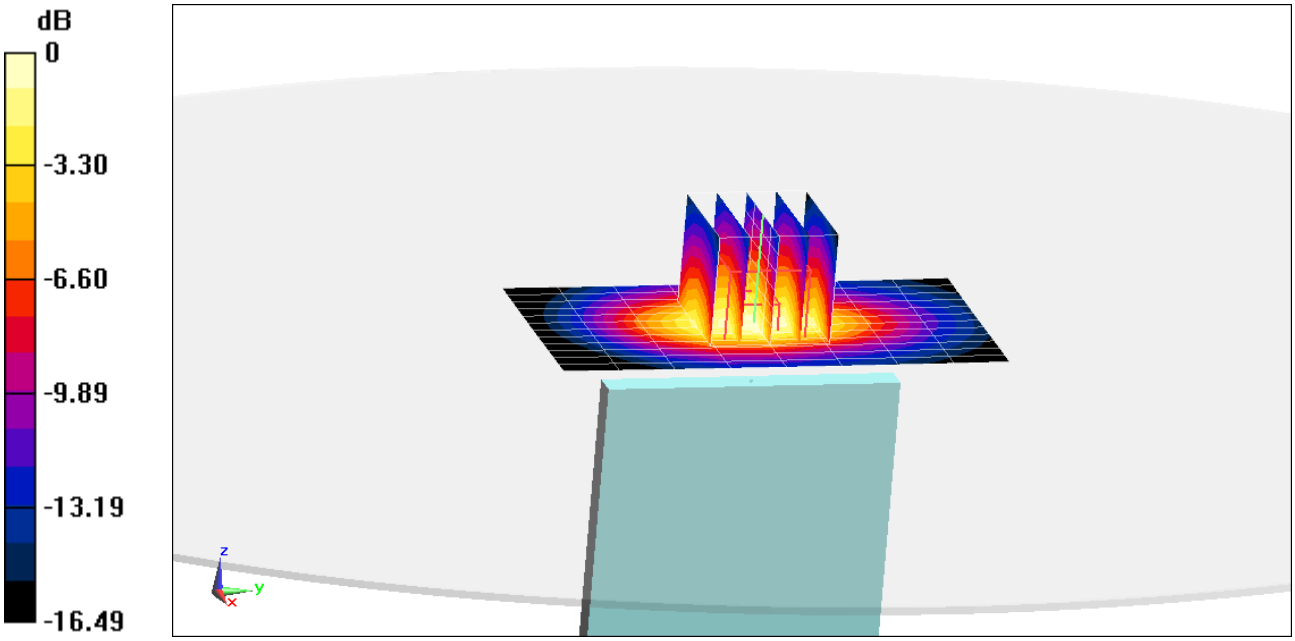
Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.5 MHz; σ = 1.443 S/m; ε_r = 51.660; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-04-2015; Ambient Temp: 23.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3213; ConvF(4.93, 4.93, 4.93); Calibrated: 1/20/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 1/19/2015
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (13x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.63 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.873 W/kg
SAR(1 g) = 0.533 W/kg



0 dB = 0.653 W/kg = -1.85 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 1C5D6

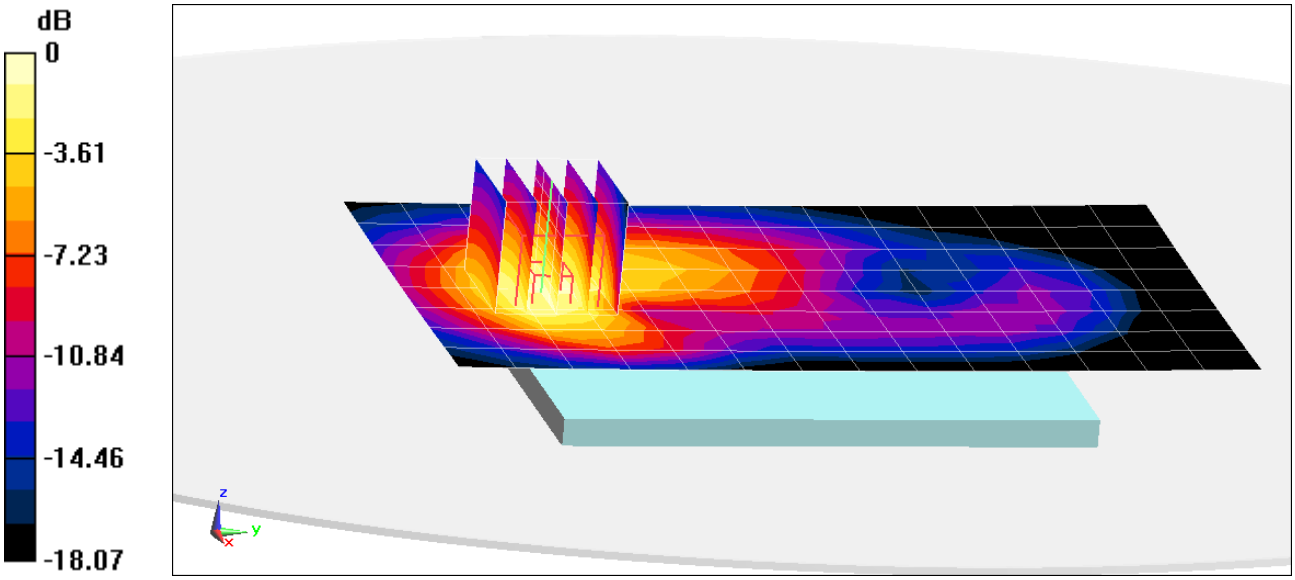
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.492 S/m; ε_r = 51.731; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-04-2015; Ambient Temp: 23.4°C; Tissue Temp: 22.8°C

Probe: ES3DV2 - SN3022; ConvF(4.49, 4.49, 4.49); Calibrated: 8/19/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/12/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1226
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 25 (PCS), Body SAR, Back side, Low.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 = 22.33 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.02 W/kg
SAR(1 g) = 0.652 W/kg



0 dB = 0.773 W/kg = -1.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 1C5BA

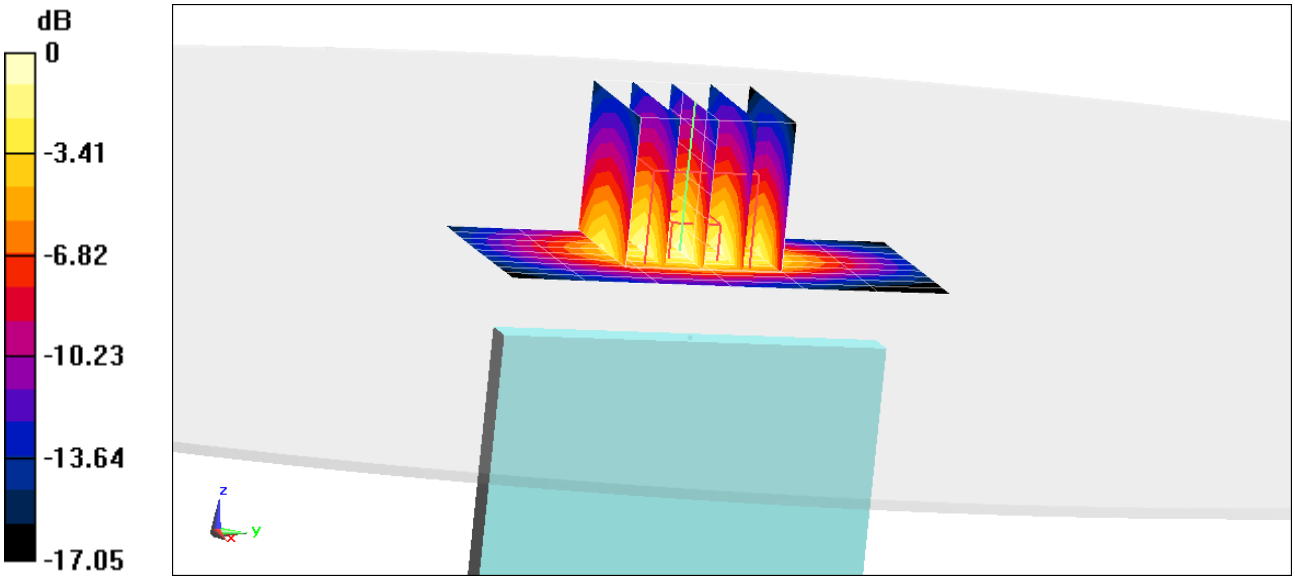
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.492 S/m; ε_r = 51.731; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-04-2015; Ambient Temp: 23.4°C; Tissue Temp: 22.8°C

Probe: ES3DV2 - SN3022; ConvF(4.49, 4.49, 4.49); Calibrated: 8/19/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/12/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1226
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 25 (PCS), Body SAR, Bottom Edge, Low.ch
QPSK, 20 MHz Bandwidth, 1 RB, 0 RB Offset

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.48 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.45 W/kg
SAR(1 g) = 0.896 W/kg



0 dB = 1.09 W/kg = 0.37 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 234B0

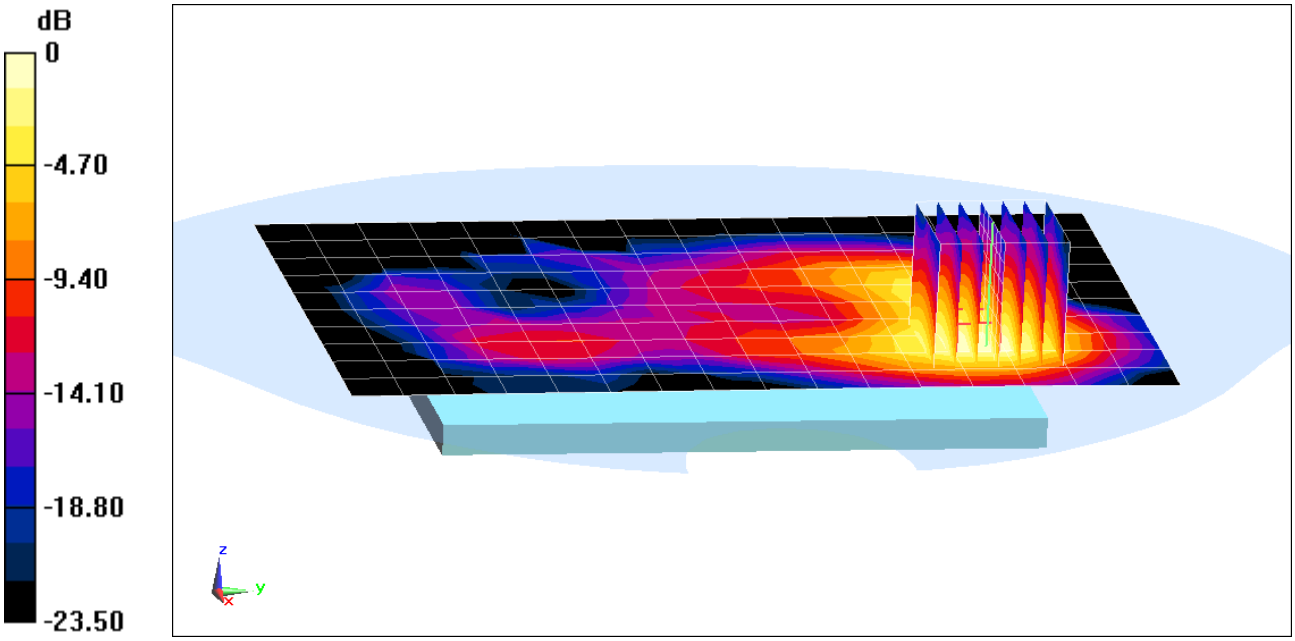
Communication System: UID 0, IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2412 MHz; σ = 1.873 S/m; ε_r = 51.121; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-22-2015; Ambient Temp: 23.5°C; Tissue Temp: 23.8°C

Probe: ES3DV3 - SN3209; ConvF(4.2, 4.2, 4.2); Calibrated: 3/19/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 3/17/2014
Phantom: SAM left; Type: QD000P40CD; Serial: TP:1715
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11b, 22 MHz Bandwidth, Ant 1
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 = 7.769 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 0.269 W/kg
SAR(1 g) = 0.131 W/kg



0 dB = 0.166 W/kg = -7.80 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 236B4

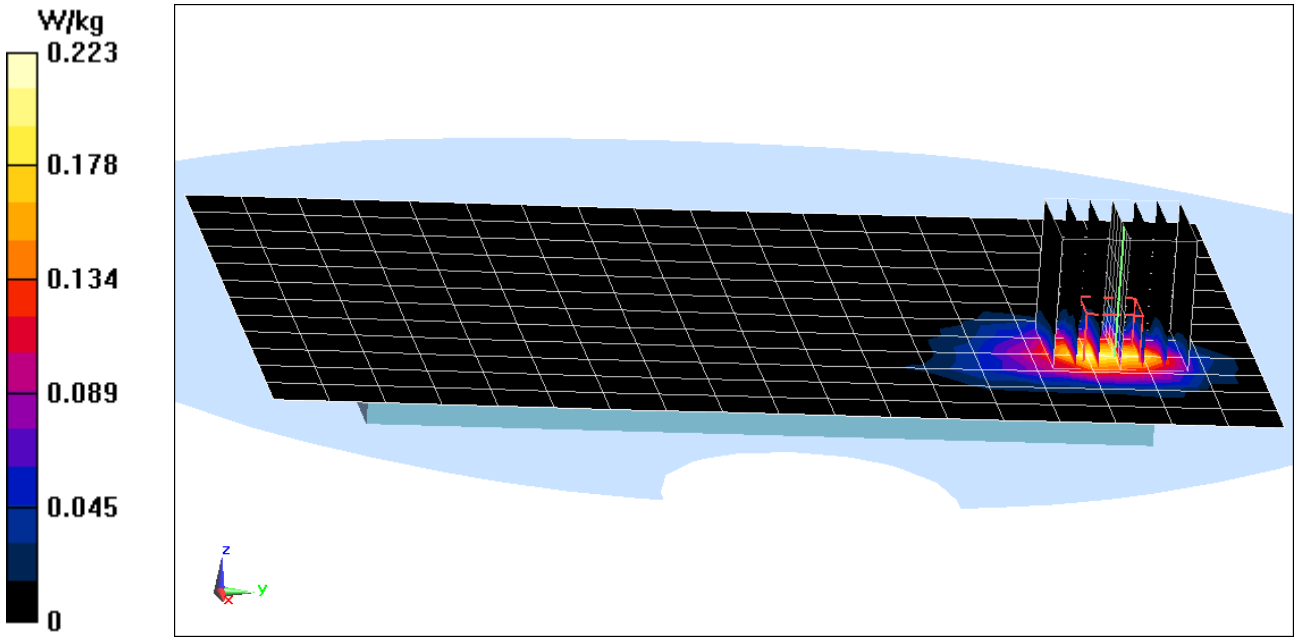
Communication System: UID 0, 802.11a; Frequency: 5280 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5280 MHz; σ = 5.500 S/m; ε_r = 48.179; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-19-2015; Ambient Temp: 24.1°C; Tissue Temp: 23.2°C

Probe: EX3DV4 - SN3920; ConvF(4.16, 4.16, 4.16); Calibrated: 12/12/2014;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 4/11/2014
Phantom: SAM; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11a, 20 MHz Bandwidth, Ant 1
Body SAR, Ch 56, 6 Mbps, Back Side

Area Scan (13x19x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 4.071 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.532 W/kg
SAR(1 g) = 0.089 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG925R4; Type: Portable Handset; Serial: 236B4

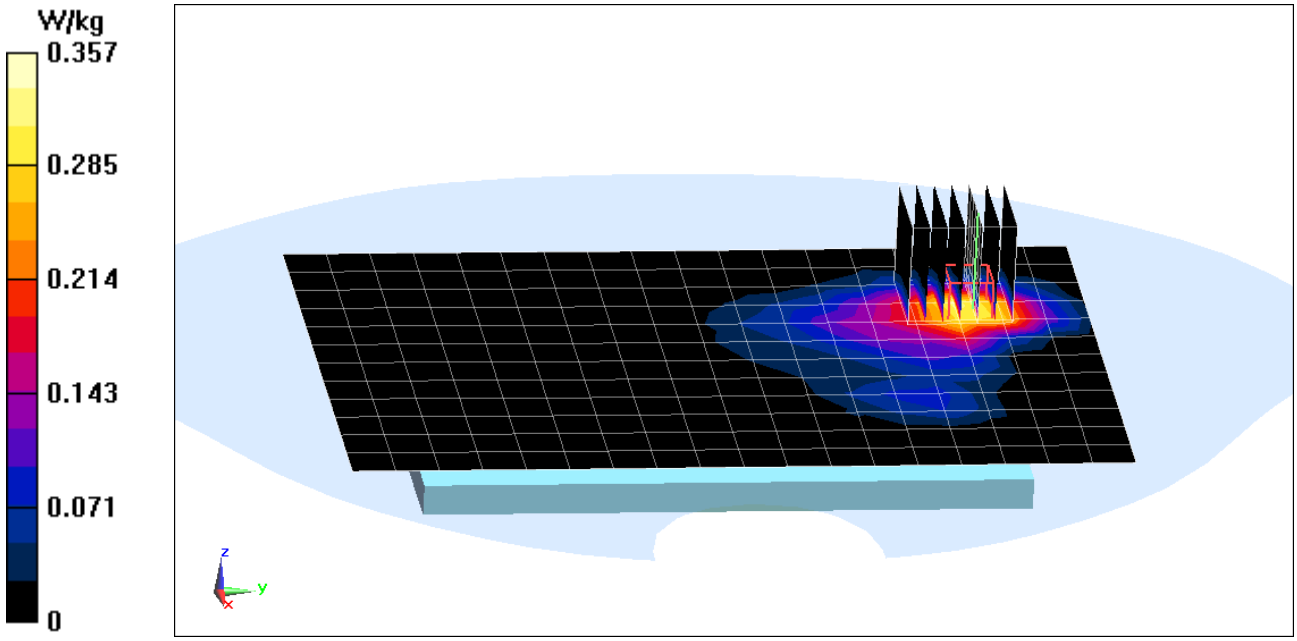
Communication System: UID 0, IEEE 802.11a; Frequency: 5745 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5745 MHz; σ = 6.176 S/m; ε_r = 47.389; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-19-2015; Ambient Temp: 23.9°C; Tissue Temp: 23.1°C

Probe: EX3DV4 - SN3920; ConvF(3.93, 3.93, 3.93); Calibrated: 12/12/2014;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 4/11/2014
Phantom: SAM; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11a, 20 MHz Bandwidth, Ant 1
Body SAR, Ch 149, 6 Mbps, Front Side

Area Scan (13x19x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 4.722 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.621 W/kg
SAR(1 g) = 0.149 W/kg



APPENDIX B: SYSTEM VERIFICATION

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PCTEST ENGINEERING LABORATORY, INC.

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

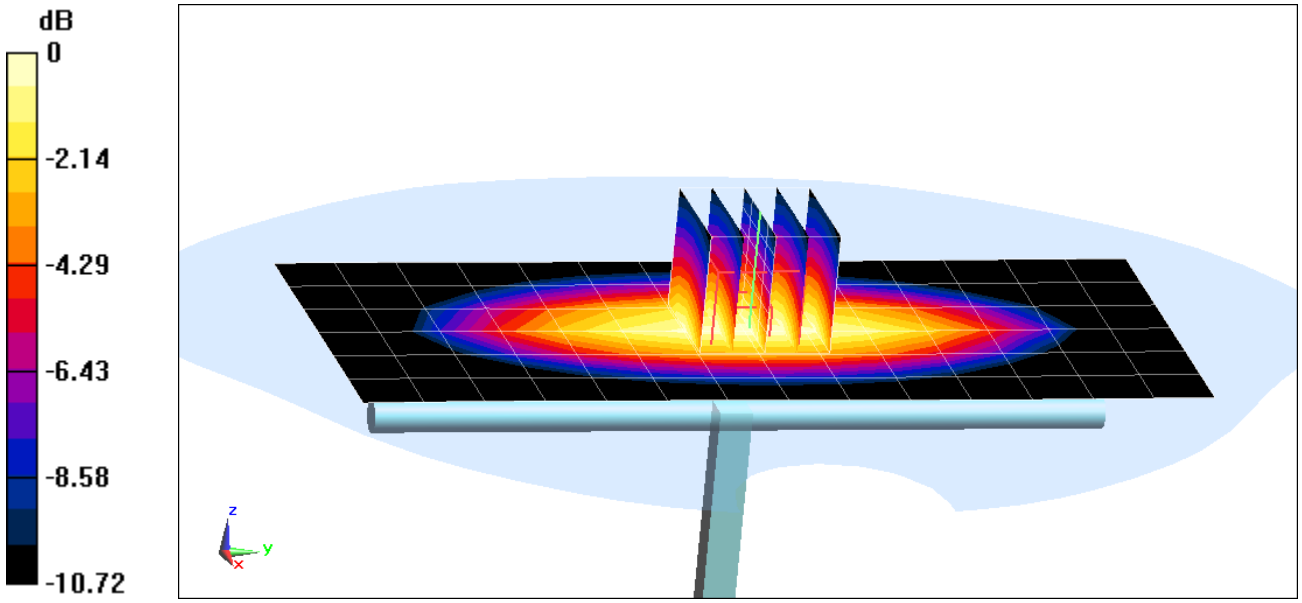
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 750 MHz; σ = 0.919 S/m; ε_r = 41.523; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 02-03-2015; Ambient Temp: 24.5°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3288; ConvF(6.81, 6.81, 6.81); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

750 MHz System Verification

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 1.21 W/kg
SAR(1 g) = 0.800 W/kg
Deviation = -3.96%



0 dB = 0.937 W/kg = -0.28 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d133

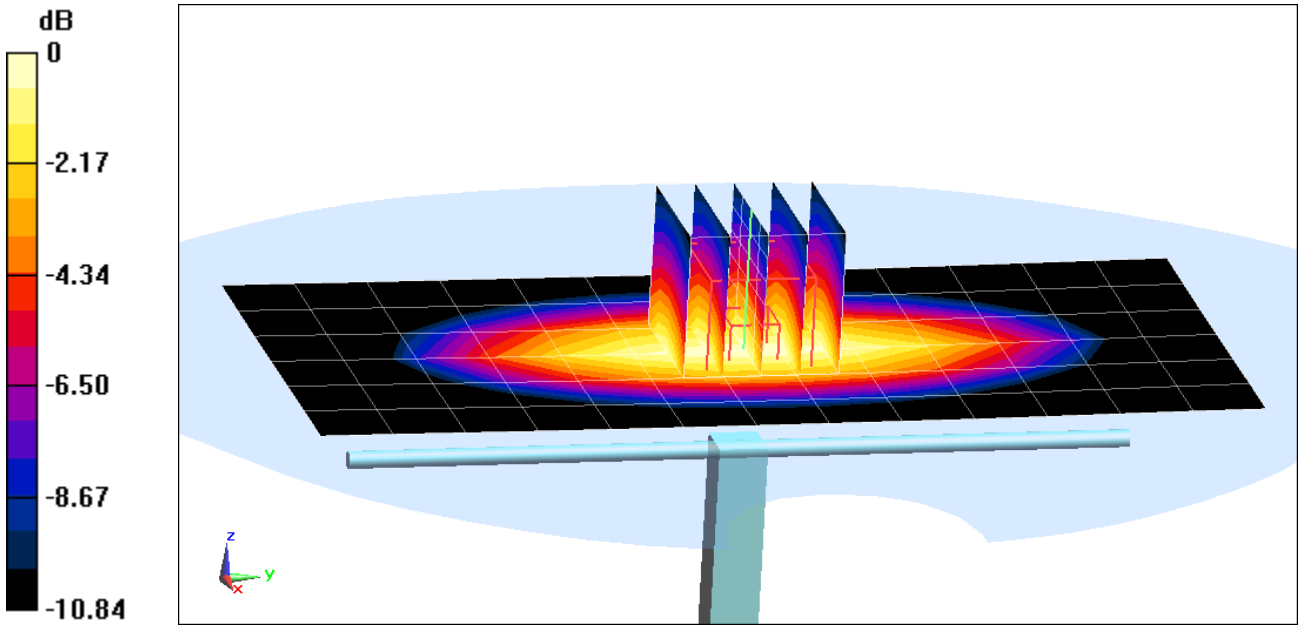
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.933 S/m; ε_r = 43.439; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 01-19-2015; Ambient Temp: 23.1°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(6.23, 6.23, 6.23); Calibrated: 5/15/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/14/2014
Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 1.47 W/kg
SAR(1 g) = 0.971 W/kg
Deviation = 5.54%



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1765V2; Serial: 1008

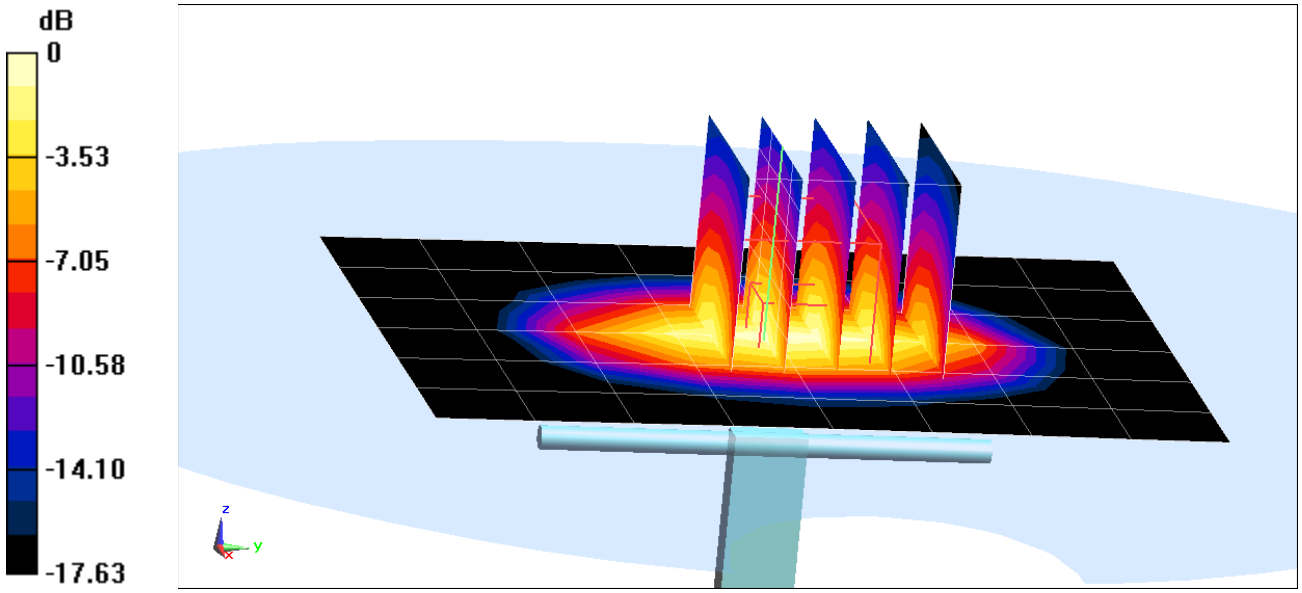
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used:
f = 1750 MHz; σ = 1.344 S/m; ε_r = 38.466; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-22-2015; Ambient Temp: 23.0°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3263; ConvF(5.41, 5.41, 5.41); Calibrated: 5/15/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/14/2014
Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1750 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 6.16 W/kg
SAR(1 g) = 3.45 W/kg
Deviation = -6.50%



0 dB = 4.28 W/kg = 6.31 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

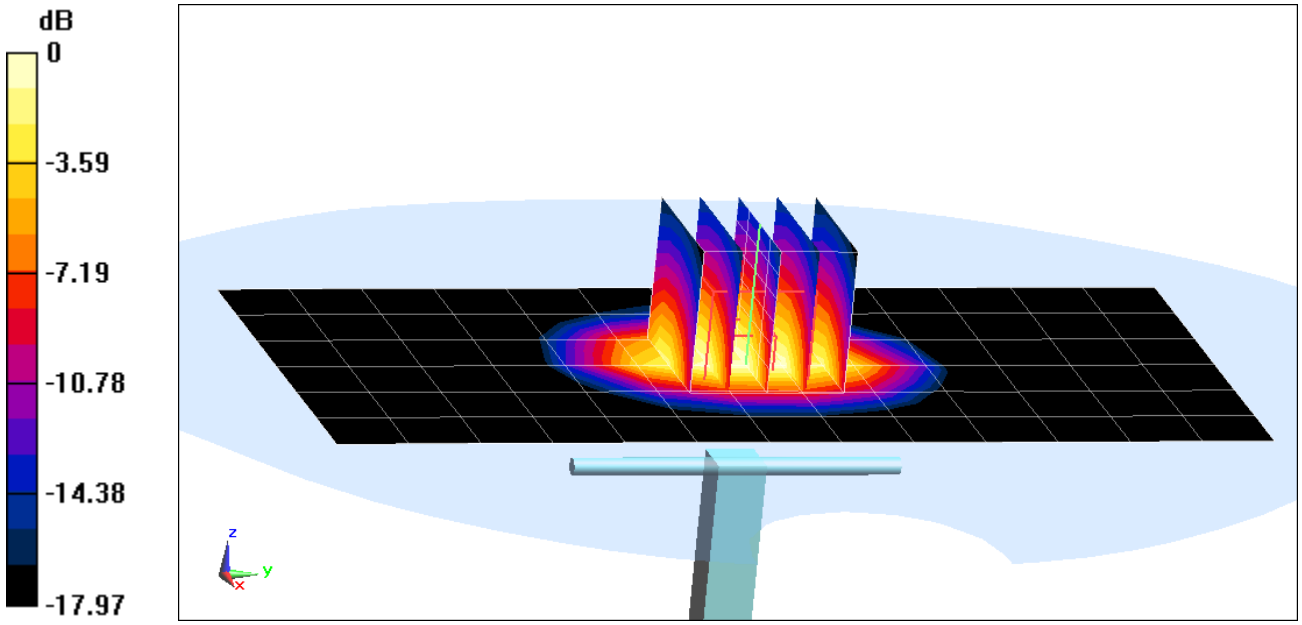
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.409 S/m; ε_r = 39.285; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-19-2015; Ambient Temp: 24.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3258; ConvF(5.04, 5.04, 5.04); Calibrated: 2/25/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/26/2014
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 7.59 W/kg
SAR(1 g) = 4.15 W/kg
Deviation = 3.23%



0 dB = 5.01 W/kg = 7.00 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

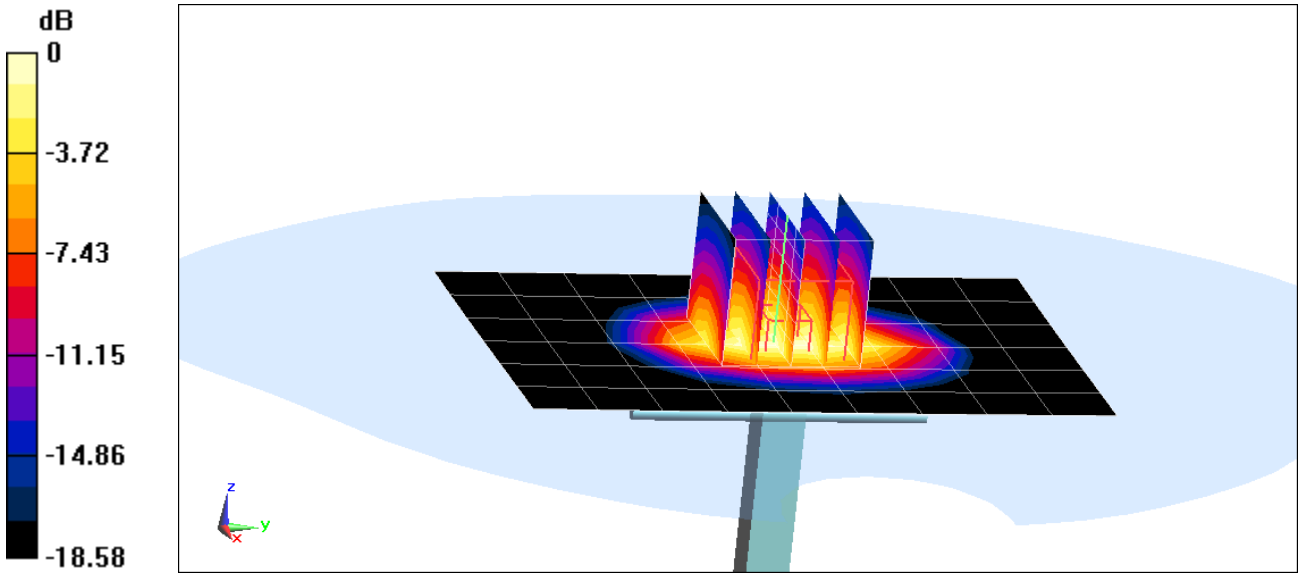
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.409 S/m; ε_r = 38.647; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-02-2015; Ambient Temp: 22.3°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(5.08, 5.08, 5.08); Calibrated: 5/15/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/14/2014
Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 7.28 W/kg
SAR(1 g) = 3.92 W/kg
Deviation = -2.49%



0 dB = 4.97 W/kg = 6.96 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

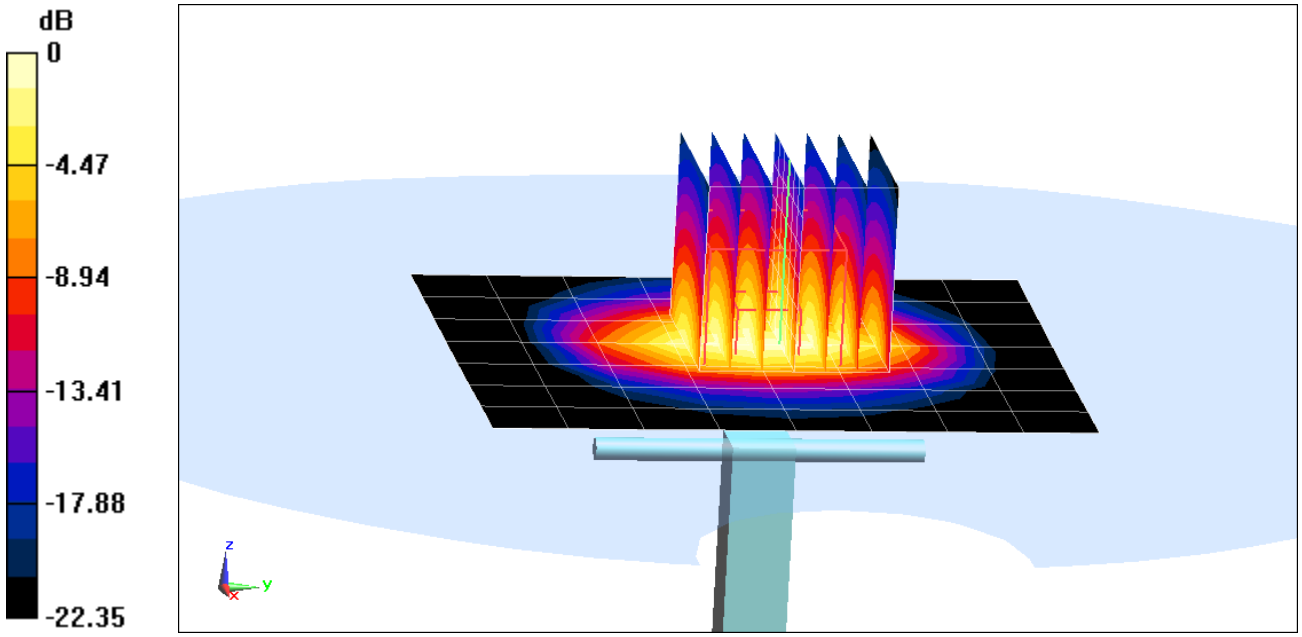
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.794 S/m; ε_r = 38.552; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-23-2015; Ambient Temp: 21.3°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3258; ConvF(4.52, 4.52, 4.52); Calibrated: 2/25/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/26/2014
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2450 MHz System Verification

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 10.2 W/kg
SAR(1 g) = 4.99 W/kg
Deviation = -4.22%



0 dB = 6.52 W/kg = 8.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

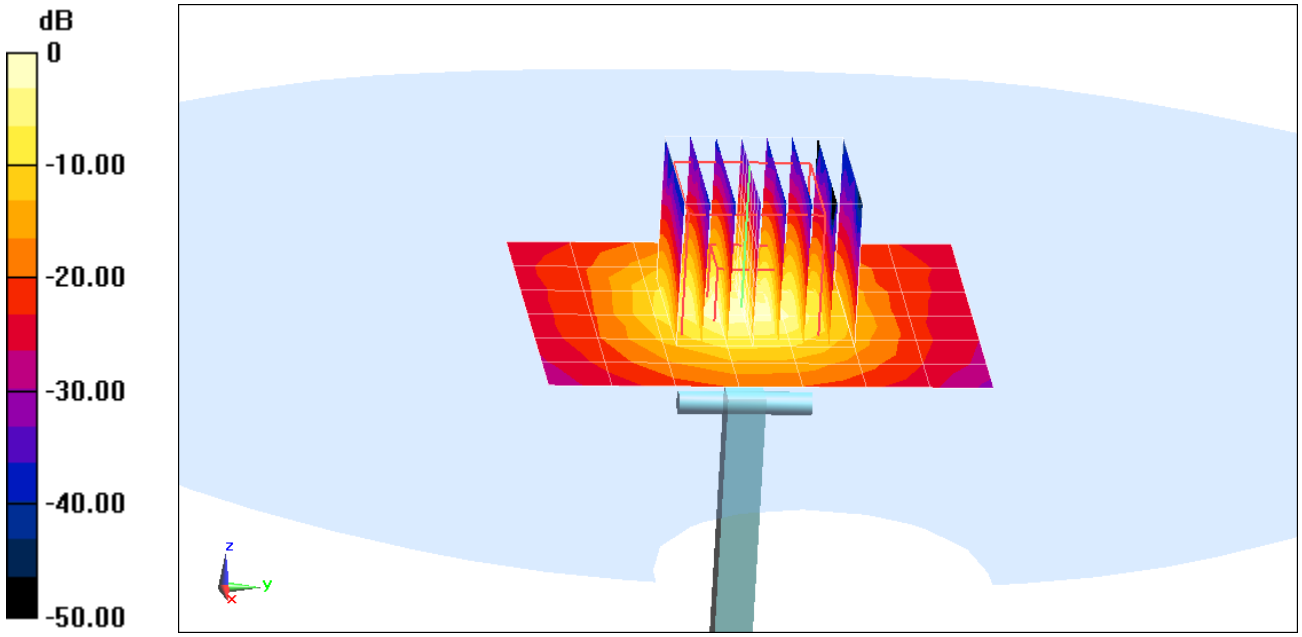
Communication System: UID 0, CW; Frequency: 5300 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used:
f = 5300 MHz; σ = 4.549 S/m; ε_r = 35.571; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-23-2015; Ambient Temp: 23.4°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN3920; ConvF(4.69, 4.69, 4.69); Calibrated: 12/12/2014;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 4/11/2014
Phantom: SAM, Left; Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5300 MHz System Verification

Area Scan (7x8x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 32.2 W/kg
SAR(1 g) = 7.74 W/kg
Deviation = -7.19%



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

PCTEST ENGINEERING LABORATORY, INC.

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

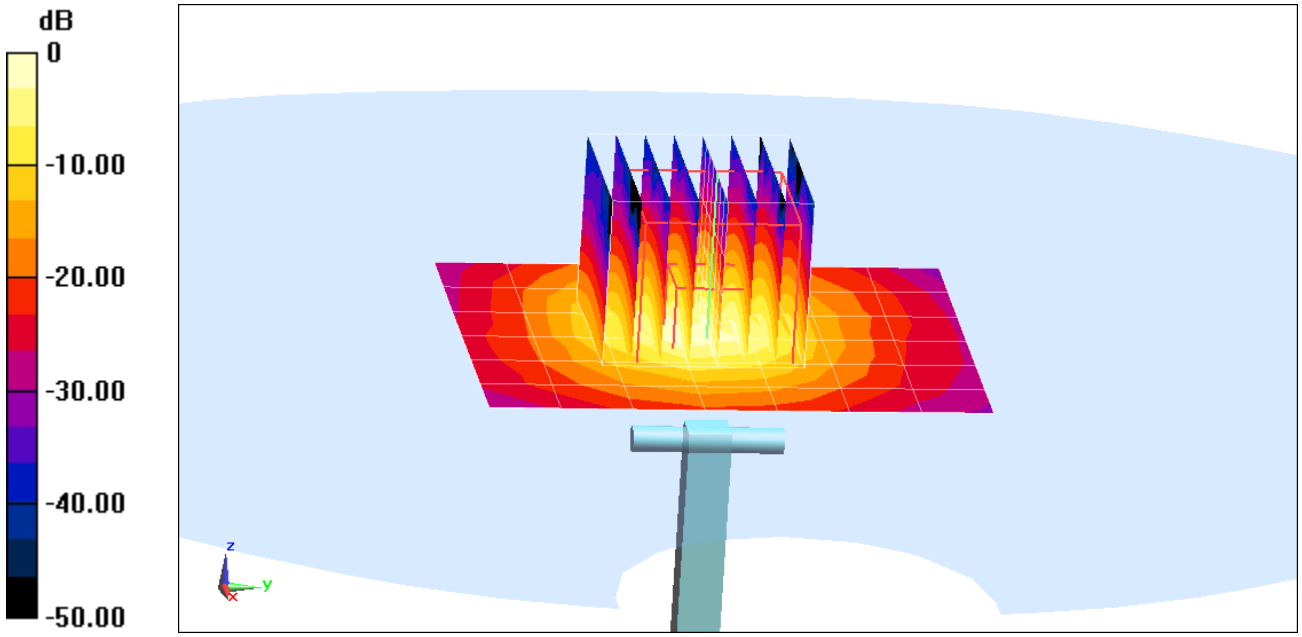
Communication System: UID 0, CW; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used:
f = 5500 MHz; σ = 4.748 S/m; ε_r = 35.287; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-23-2015; Ambient Temp: 23.5°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN3920; ConvF(4.44, 4.44, 4.44); Calibrated: 12/12/2014;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 4/11/2014
Phantom: SAM, Left; Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5500 MHz System Verification

Area Scan (7x8x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 34.0 W/kg
SAR(1 g) = 7.88 W/kg
Deviation = -7.18%



0 dB = 20.1 W/kg = 13.03 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1120

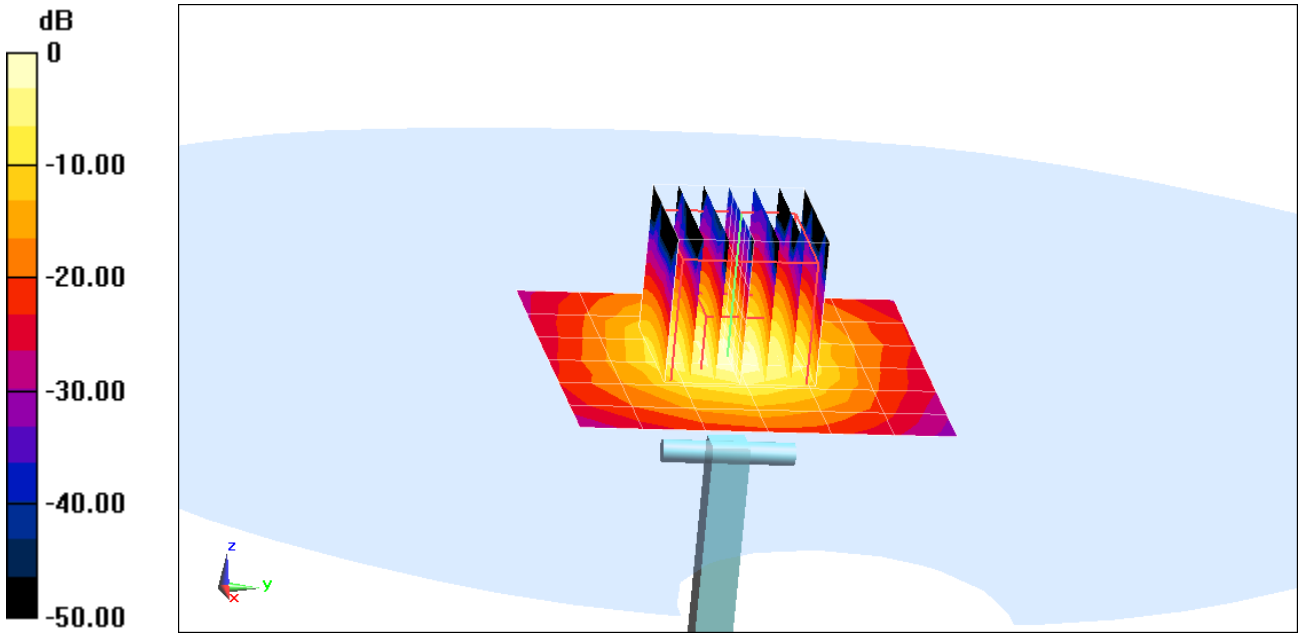
Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used:
f = 5800 MHz; σ = 5.054 S/m; ε_r = 34.890; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-23-2015; Ambient Temp: 23.5°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN3920; ConvF(4.27, 4.27, 4.27); Calibrated: 12/12/2014;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 4/11/2014
Phantom: SAM, Left; Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5800 MHz System Verification

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 34.3 W/kg
SAR(1 g) = 7.80 W/kg
Deviation = -1.39%



0 dB = 20.4 W/kg = 13.10 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

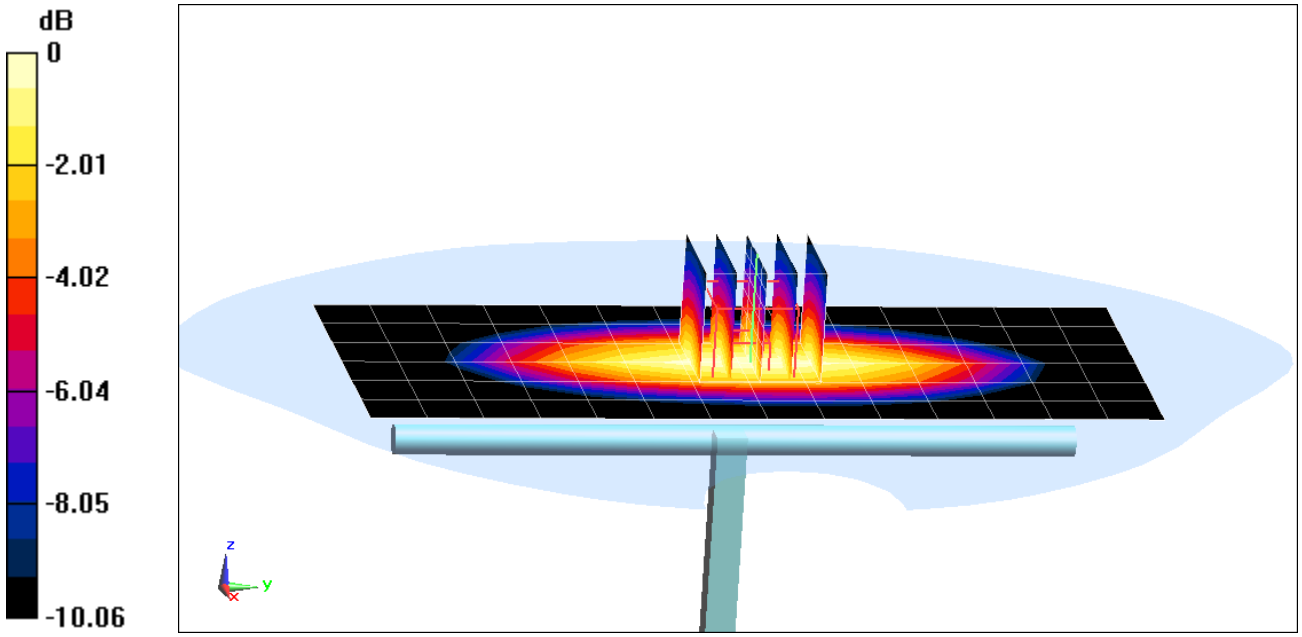
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 750 MHz; σ = 0.964 S/m; ε_r = 53.293; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 01-22-2015; Ambient Temp: 23.2°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3332; ConvF(6.24, 6.24, 6.24); Calibrated: 9/18/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/17/2014
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

750 MHz System Verification

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 1.24 W/kg
SAR(1 g) = 0.855 W/kg
Deviation = -1.04%



0 dB = 0.996 W/kg = -0.02 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

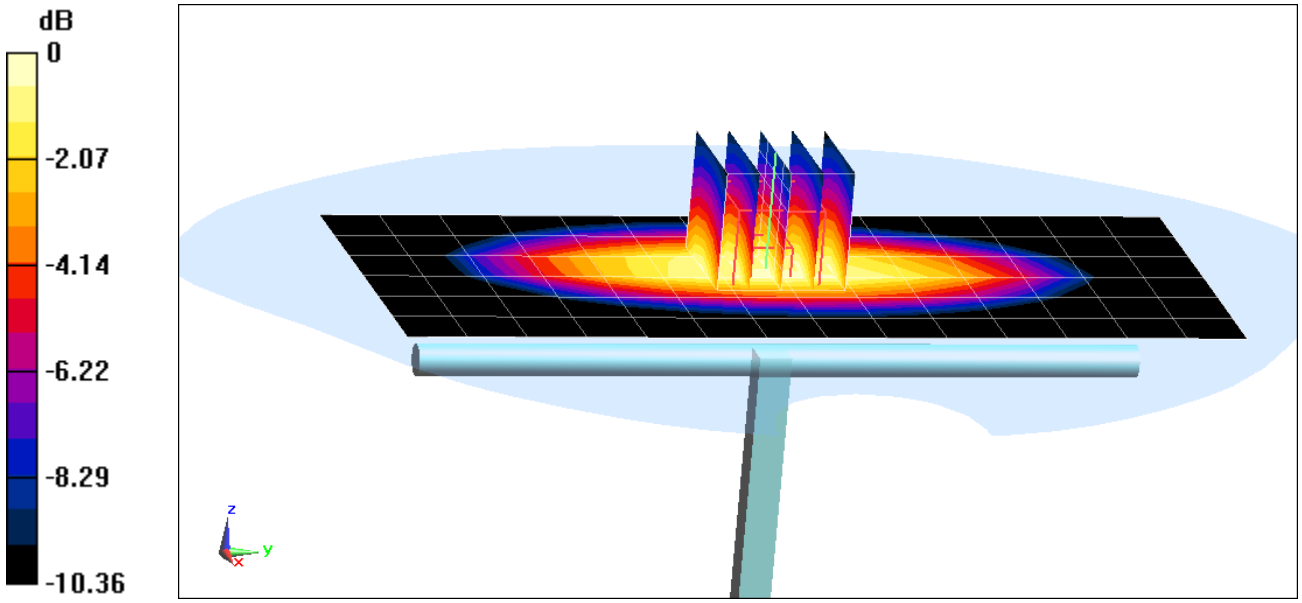
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 750 MHz; σ = 0.970 S/m; ε_r = 53.792; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 01-29-2015; Ambient Temp: 24.0°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3263; ConvF(6.19, 6.19, 6.19); Calibrated: 5/15/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/14/2014
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

750 MHz System Verification

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.867 W/kg
Deviation = 0.35 %



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d133

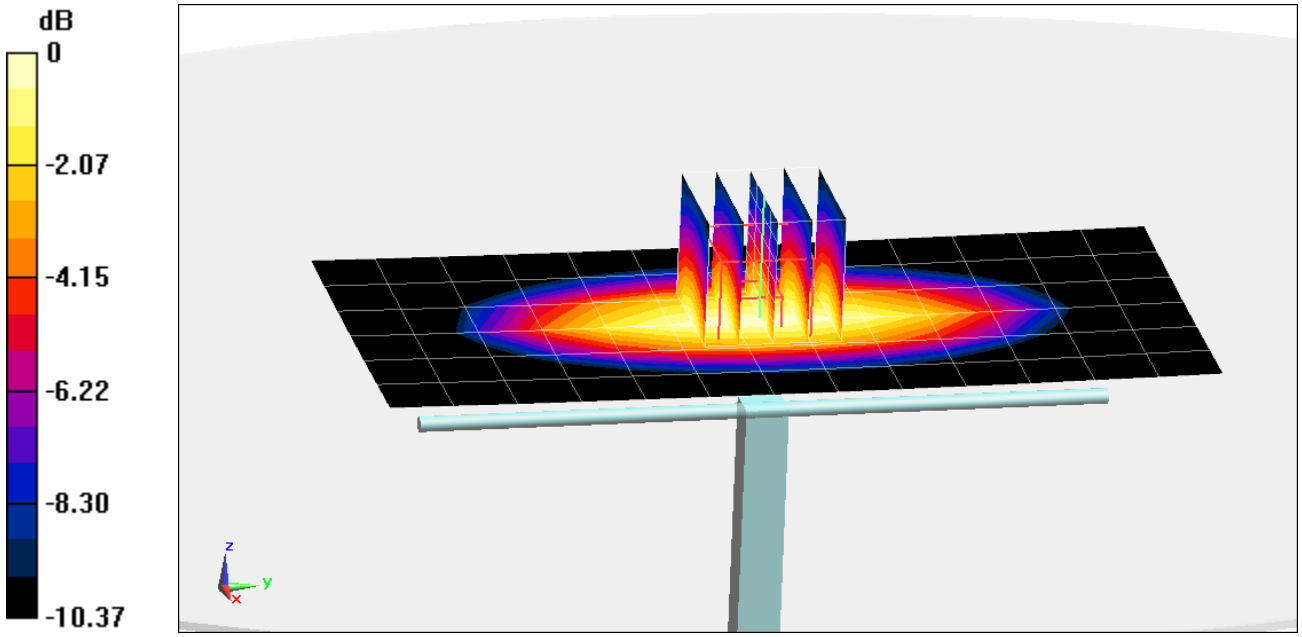
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 1.010 S/m; ε_r = 55.292; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 01-22-2015; Ambient Temp: 24.2°C; Tissue Temp: 22.4°C

Probe: ES3DV3 - SN3288; ConvF(6.32, 6.32, 6.32); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 1.50 W/kg
SAR(1 g) = 1.02 W/kg
Deviation = 9.09%



0 dB = 1.19 W/kg = 0.76 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1765V2; Serial: 1008

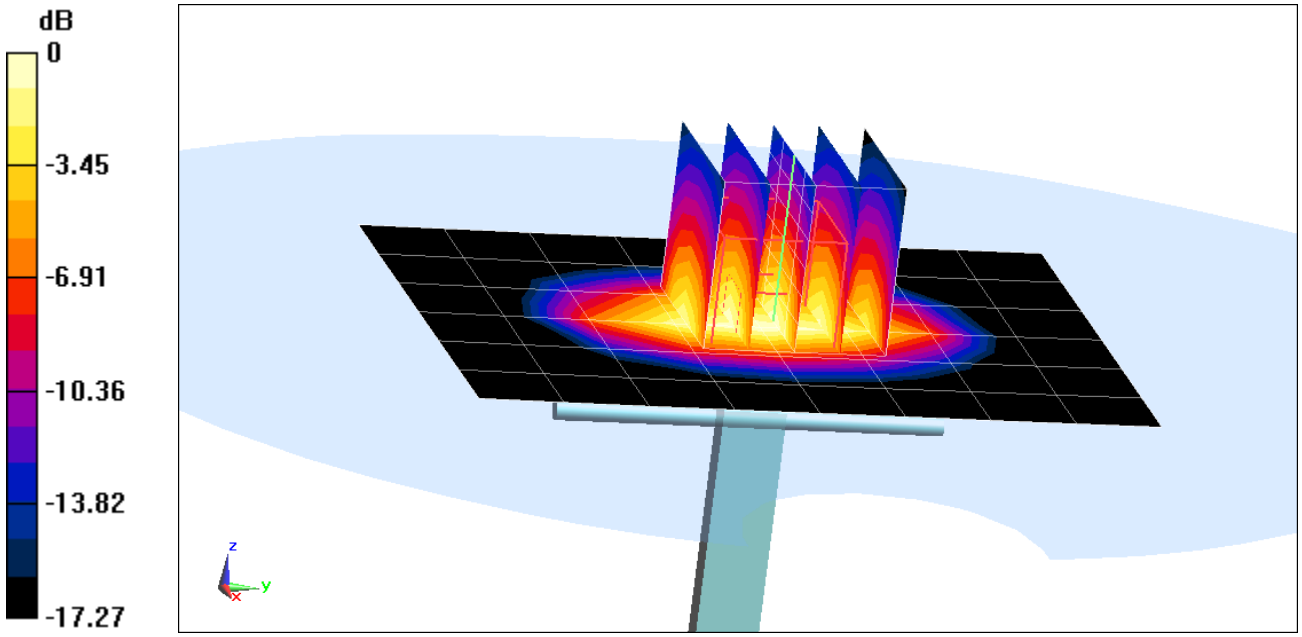
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.461 S/m; ε_r = 51.563; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-19-2015; Ambient Temp: 23.0°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(4.98, 4.98, 4.98); Calibrated: 5/15/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/14/2014
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1750 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 6.40 W/kg
SAR(1 g) = 3.69 W/kg
Deviation = -1.86%



0 dB = 4.57 W/kg = 6.60 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1765V2; Serial: 1008

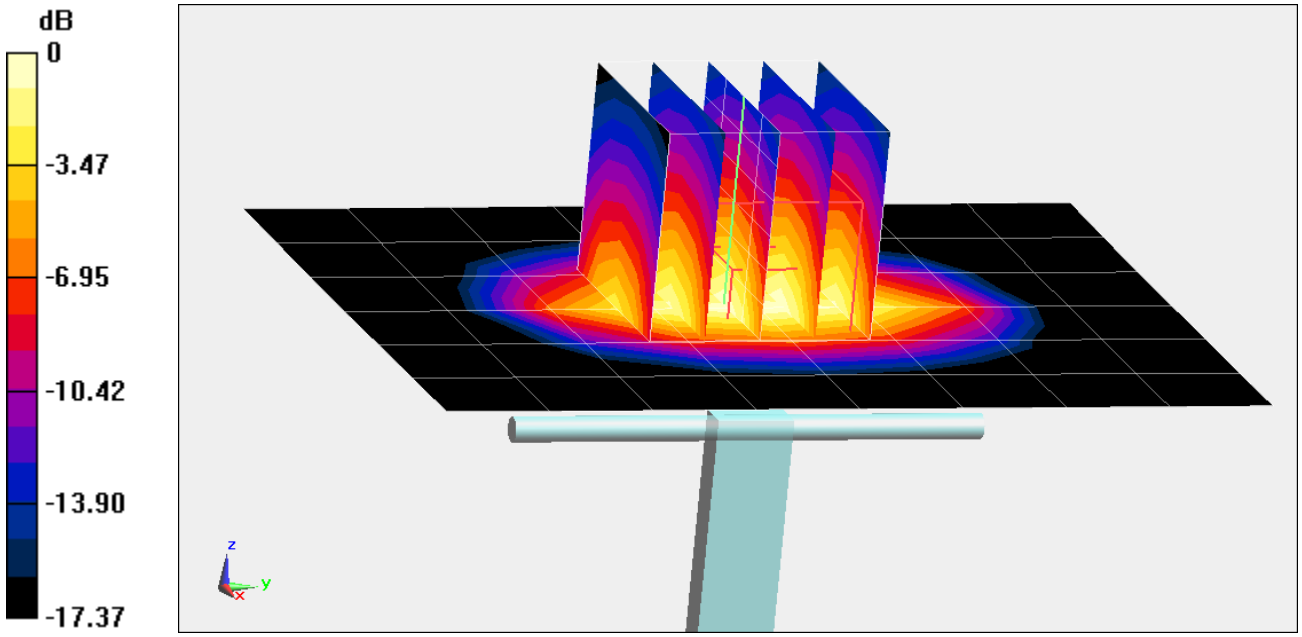
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.462 S/m; ε_r = 51.586; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-04-2015; Ambient Temp: 23.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3213; ConvF(4.93, 4.93, 4.93); Calibrated: 1/20/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 1/19/2015
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1750 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 6.59 W/kg
SAR(1 g) = 3.75 W/kg
Deviation = -0.27%



0 dB = 4.63 W/kg = 6.66 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

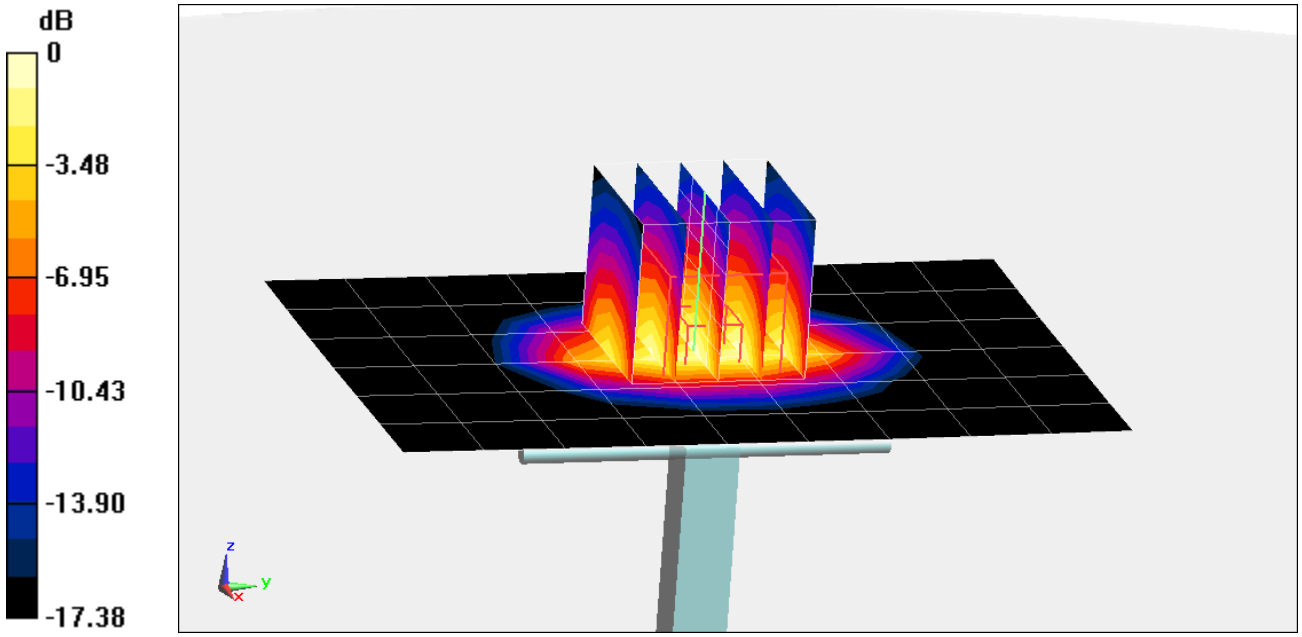
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.542 S/m; ε_r = 51.633; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-22-2015; Ambient Temp: 23.9°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3258; ConvF(4.61, 4.61, 4.61); Calibrated: 2/25/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/26/2014
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 7.02 W/kg
SAR(1 g) = 4.12 W/kg
Deviation = 1.98%



0 dB = 5.10 W/kg = 7.08 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

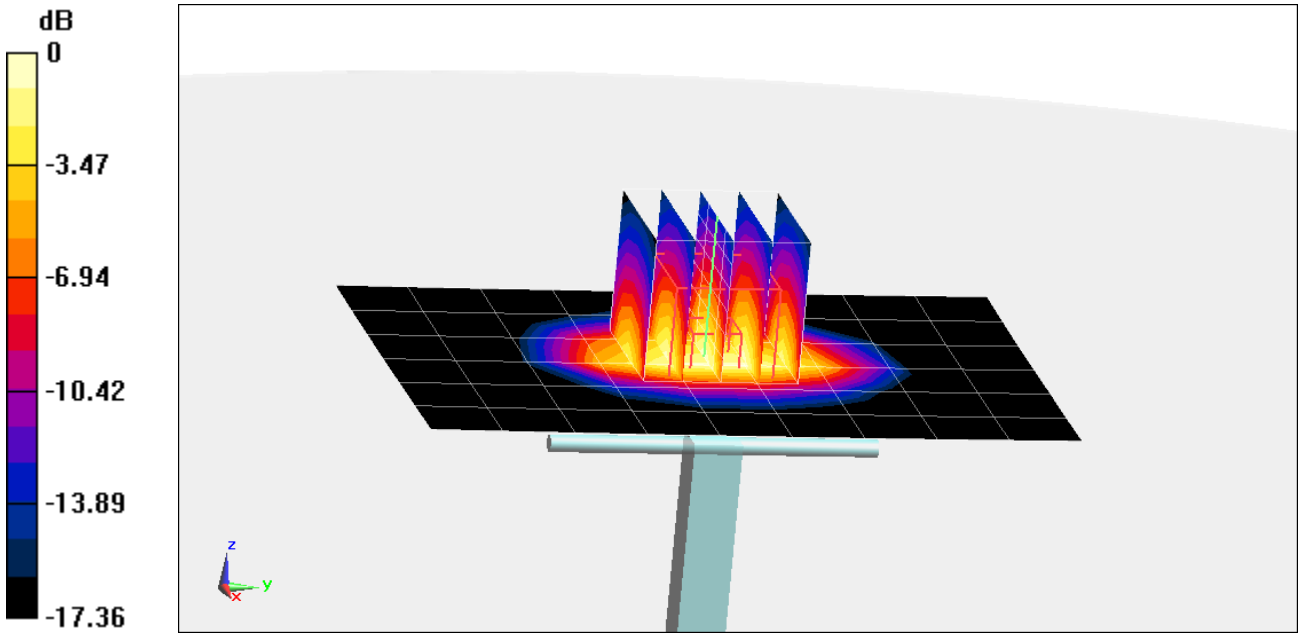
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.551 S/m; ε_r = 52.251; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-29-2015; Ambient Temp: 24.0°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3258; ConvF(4.61, 4.61, 4.61); Calibrated: 2/25/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/26/2014
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 7.05 W/kg
SAR(1 g) = 4.08 W/kg
Deviation = 0.49%



0 dB = 5.12 W/kg = 7.09 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

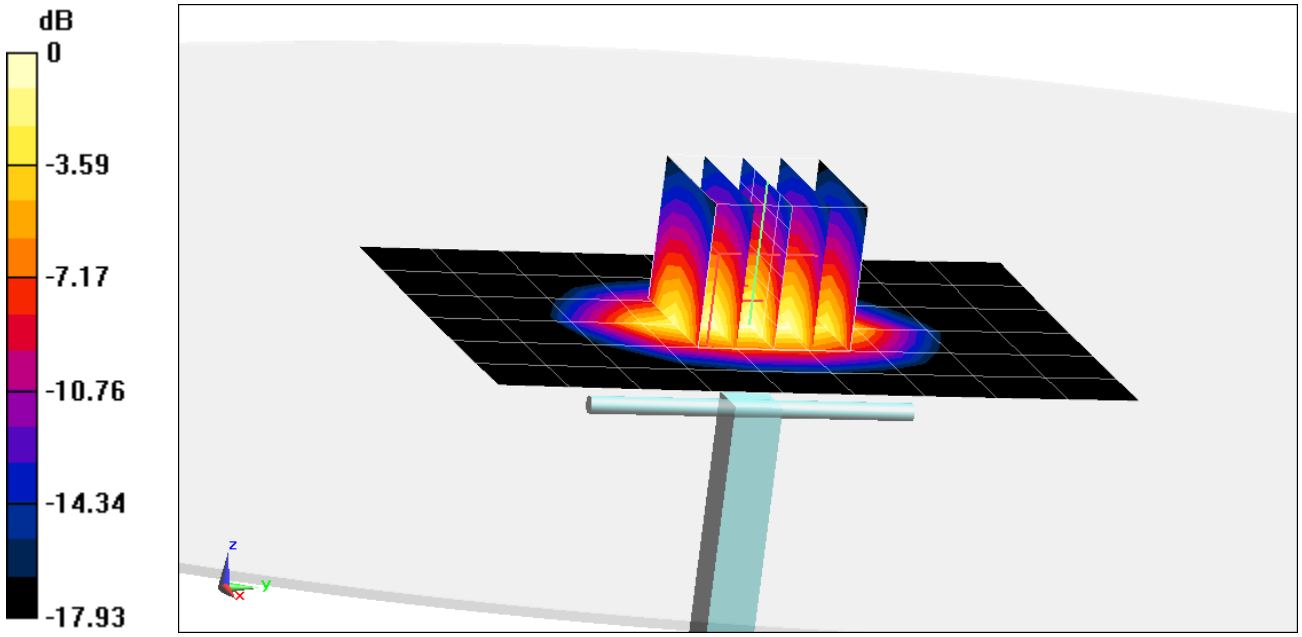
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.534 S/m; ε_r = 51.607; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-04-2015; Ambient Temp: 23.4°C; Tissue Temp: 22.8°C

Probe: ES3DV2 - SN3022; ConvF(4.49, 4.49, 4.49); Calibrated: 8/19/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/12/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1226
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 6.74 W/kg
SAR(1 g) = 3.83 W/kg
Deviation = -5.20%



0 dB = 4.82 W/kg = 6.83 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

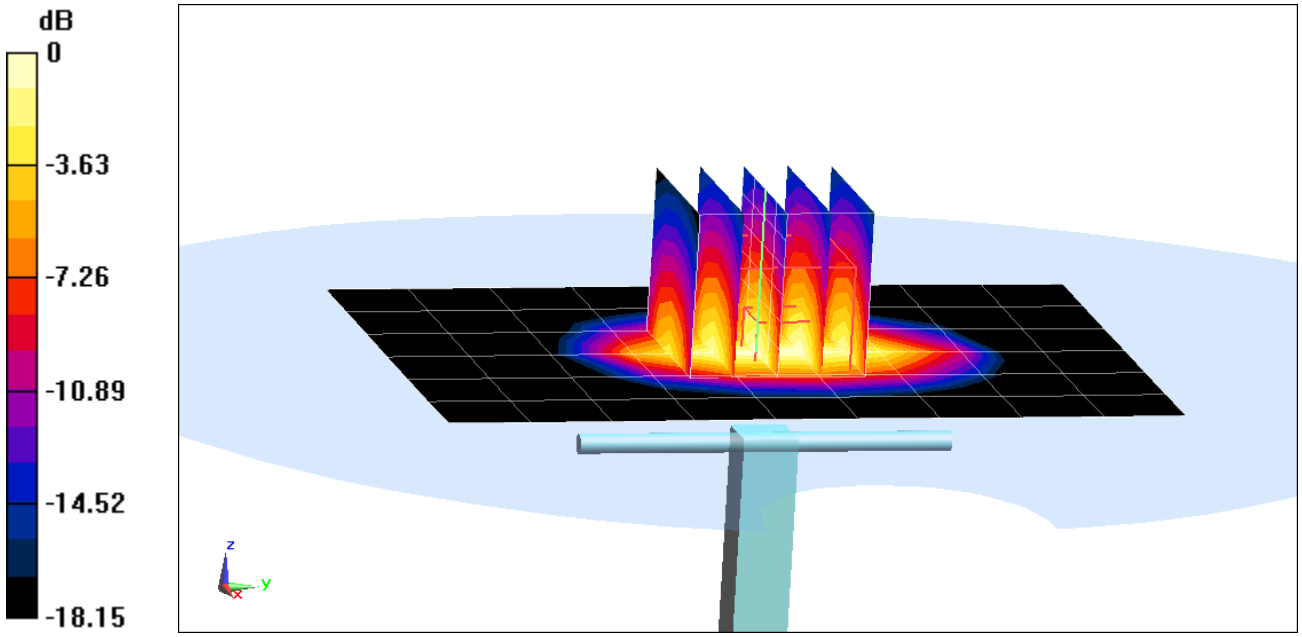
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.579 S/m; ε_r = 52.286; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-06-2015; Ambient Temp: 23.8°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3332; ConvF(4.64, 4.64, 4.64); Calibrated: 9/18/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/17/2014
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 7.29 W/kg
SAR(1 g) = 4.13 W/kg
Deviation = 2.23%



0 dB = 5.14 W/kg = 7.11 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

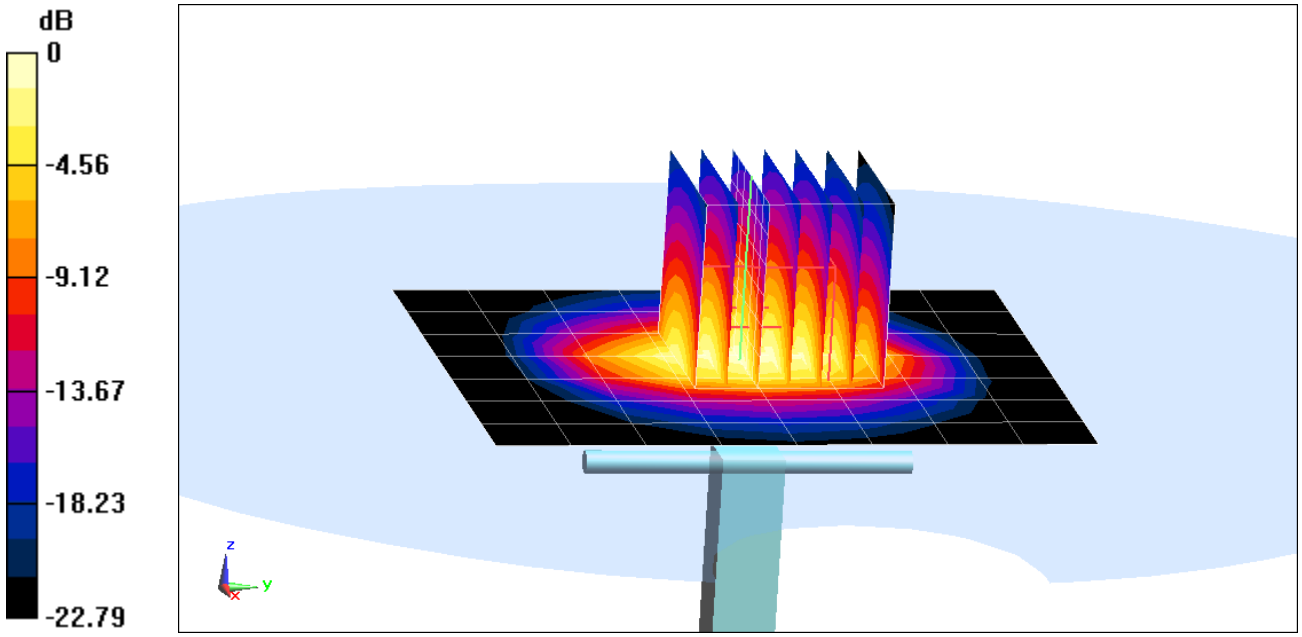
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 1.925 S/m; ε_r = 50.991; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-22-2015; Ambient Temp: 23.5°C; Tissue Temp: 23.8°C

Probe: ES3DV3 - SN3209; ConvF(4.2, 4.2, 4.2); Calibrated: 3/19/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 3/17/2014
Phantom: SAM left; Type: QD000P40CD; Serial: TP:1715
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

2450 MHz System Verification

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 11.2 W/kg
SAR(1 g) = 5.20 W/kg
Deviation = 0.39%



0 dB = 6.86 W/kg = 8.36 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5300 MHz; Type: D5GHzV2; Serial: 1191

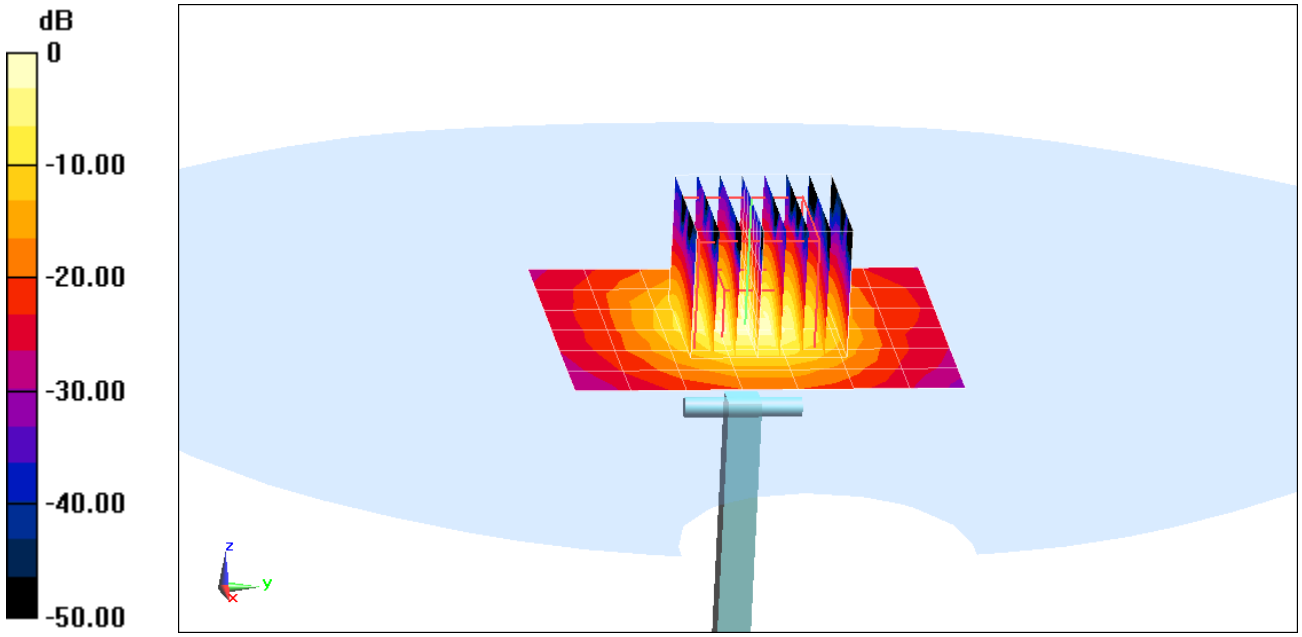
Communication System: UID 0, CW; Frequency: 5300 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5300 MHz; σ = 5.542 S/m; ε_r = 48.230; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-19-2015; Ambient Temp: 24.1°C; Tissue Temp: 23.2°C

Probe: EX3DV4 - SN3920; ConvF(4.16, 4.16, 4.16); Calibrated: 12/12/2014;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 4/11/2014
Phantom: SAM; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5300 MHz System Verification

Area Scan (7x8x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 32.4 W/kg
SAR(1 g) = 7.95 W/kg
Deviation = -0.50%



0 dB = 20.3 W/kg = 13.07 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1191

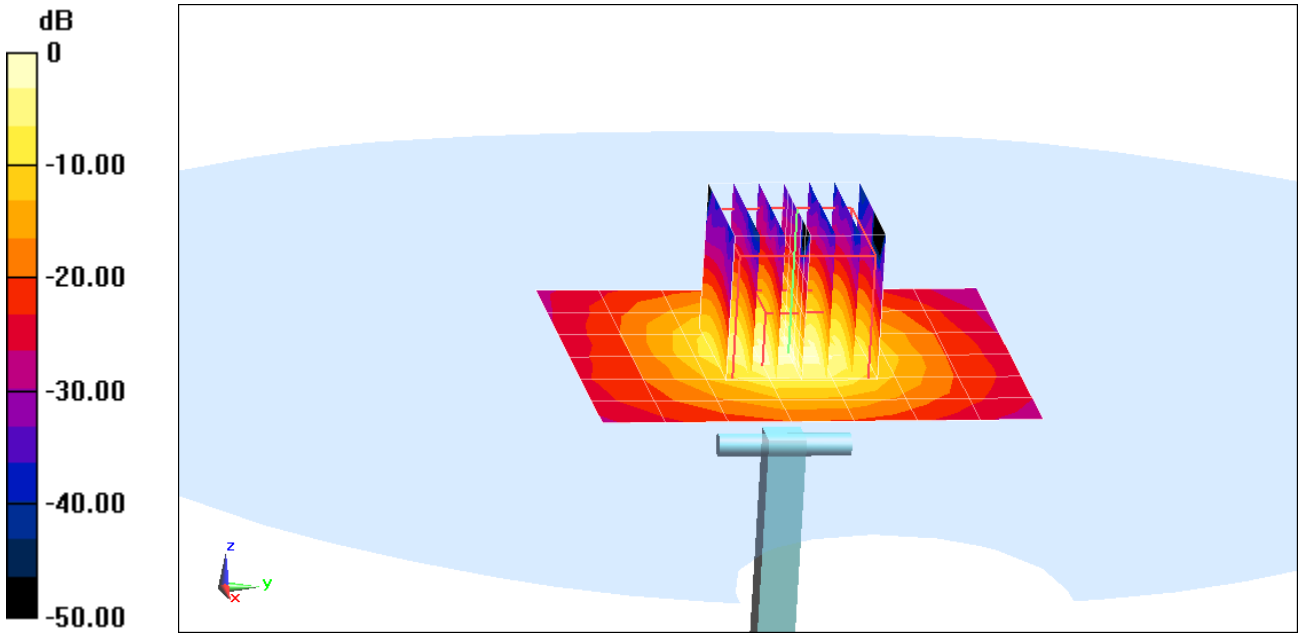
Communication System: UID 0, CW; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5500 MHz; σ = 5.845 S/m; ε_r = 47.908; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-19-2015; Ambient Temp: 24.1°C; Tissue Temp: 23.1°C

Probe: EX3DV4 - SN3920; ConvF(3.79, 3.79, 3.79); Calibrated: 12/12/2014;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 4/11/2014
Phantom: SAM; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5500 MHz System Verification

Area Scan (7x8x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 32.3 W/kg
SAR(1 g) = 7.60 W/kg
Deviation = -8.54%



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5600 MHz; Type: D5GHzV2; Serial: 1191

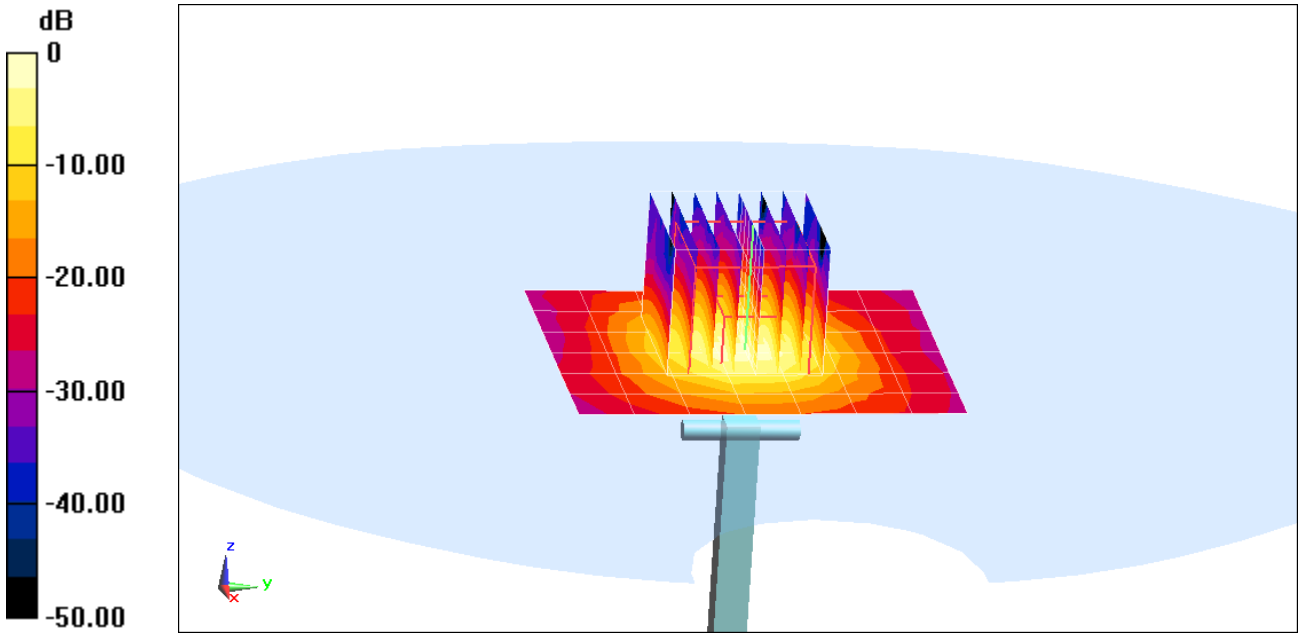
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5600 MHz; σ = 5.977 S/m; ε_r = 47.642; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-19-2015; Ambient Temp: 24.0°C; Tissue Temp: 23.0°C

Probe: EX3DV4 - SN3920; ConvF(3.66, 3.66, 3.66); Calibrated: 12/12/2014;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 4/11/2014
Phantom: SAM; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5600 MHz System Verification

Area Scan (7x8x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 32.4 W/kg
SAR(1 g) = 7.63 W/kg
Deviation = -9.27%



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1191

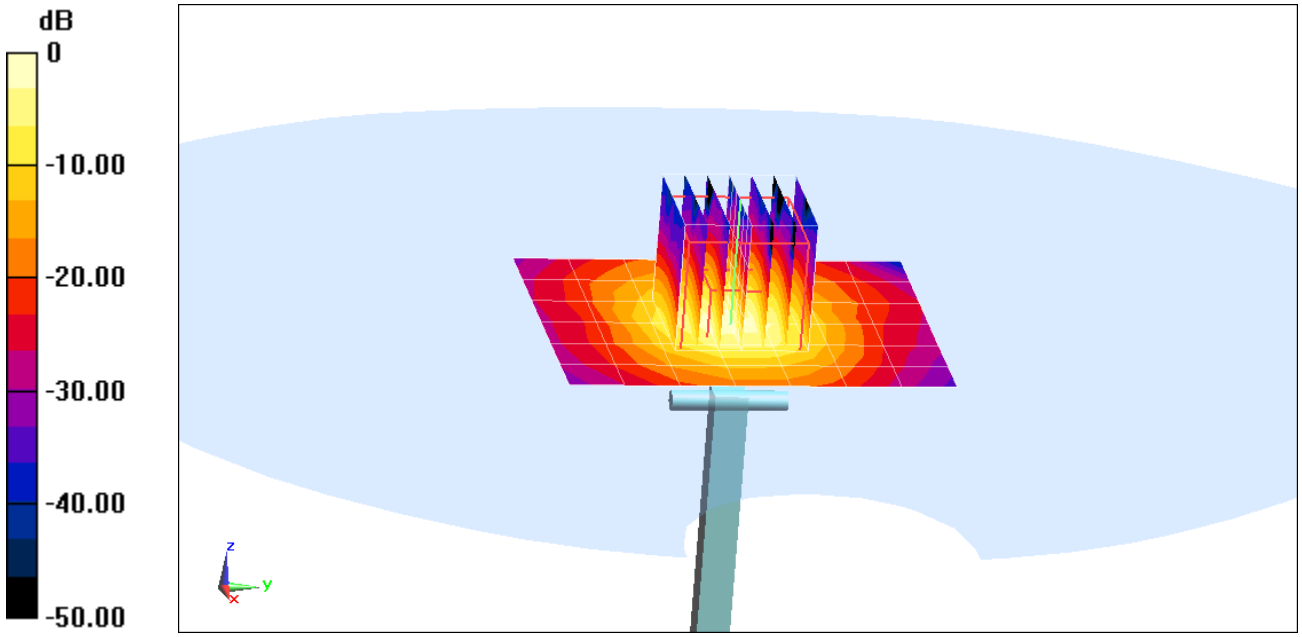
Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5800 MHz; σ = 6.183 S/m; ε_r = 47.296; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-19-2015; Ambient Temp: 23.9°C; Tissue Temp: 23.1°C

Probe: EX3DV4 - SN3920; ConvF(3.93, 3.93, 3.93); Calibrated: 12/12/2014;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 4/11/2014
Phantom: SAM; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5800 MHz System Verification

Area Scan (7x8x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Power Input = 20 dBm (100 mW)
Peak SAR (extrapolated) = 32.9 W/kg
SAR(1 g) = 7.09 W/kg
Deviation = -9.10%



0 dB = 19.1 W/kg = 12.81 dBW/kg