



SAR EVALUATION REPORT

Applicant Name:

Samsung Electronics, Co. Ltd.
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Yongtong-gu, Suwon-si
Gyeonggi-do 443-742, Korea

Date of Testing:

07/28/14 - 09/01/14

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Document Serial No.:

OY1407281560.A3L

FCC ID:

A3LSMN910T

APPLICANT:

SAMSUNG ELECTRONICS, CO. LTD.

DUT Type:

Portable Handset

Application Type:

Certification

FCC Rule Part(s):

CFR §2.1093

Model(s):

SM-N910T, SM-N910W8

Equipment Class	Band & Mode	Tx Frequency	SAR			
			1 gm Head (W/kg)	1 gm Body-Worn (W/kg)	1 gm Hotspot (W/kg)	10 gm Extremity (W/kg)
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.14	0.52	0.80	
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	< 0.1	0.36	0.77	
PCE	UMTS 850	826.40 - 846.60 MHz	0.13	0.47	0.55	
PCE	UMTS 1750	1712.4 - 1752.5 MHz	0.18	0.46	0.67	
PCE	UMTS 1900	1852.4 - 1907.6 MHz	< 0.1	0.25	0.60	
PCE	LTE Band 12	699.7 - 715.3 MHz	0.17	0.31	0.38	
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	0.15	0.54	0.74	
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	0.33	0.56	0.65	
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	0.11	0.30	0.55	
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.67	0.14	0.14	
DTS	Bluetooth LE	2402 - 2480 MHz		N/A		
DTS	5.8 GHz WLAN	5745 - 5825 MHz	0.11	0.22	0.46	
NII	5.2 GHz WLAN	5180 - 5240 MHz	0.16	0.11		0.35
NII	5.3 GHz WLAN	5260 - 5320 MHz	0.14	0.12		0.37
NII	5.5 GHz WLAN	5500 - 5700 MHz	0.18	0.37		0.68
DSS	Bluetooth	2402 - 2480 MHz	N/A	< 0.1	N/A	< 0.1
Simultaneous SAR per KDB 690783 D01v01r03:			0.85	1.09	1.17	0.68

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

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


Randy Ortanez
President



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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.5 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 17	Data	706.5 - 713.5 MHz
LTE Band 12	Voice/Data	699.7 - 715.3 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2462 MHz
Bluetooth LE	Data	2402 - 2480 MHz
5.8 GHz WLAN	Voice/Data	5745 - 5825 MHz
5.2 GHz WLAN	Voice/Data	5180 - 5240 MHz
5.3 GHz WLAN	Voice/Data	5260 - 5320 MHz
5.5 GHz WLAN	Voice/Data	5500 - 5700 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
ANT+	Data	2402 - 2480 MHz

1.2 Power Reduction for SAR

The device utilizes power reduction under some portable hotspot conditions for SAR compliance. There is power reduction for UMTS Band4, UMTS Band 2, LTE Band 4, and LTE Band 2. There is no power reduction for GSM/GPRS/EDGE 850, GSM/GPRS/EDGE 1900, UMTS Band 5, LTE Band 12/17, LTE Band 5, and BT/WLAN modes. The reduced powers were confirmed via conducted power measurements at the RF port (See Section 9). Detailed description of the hotspot power reduction mechanism is included in the operational description.

1.3 Nominal and Maximum Output Power Specifications

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

1.3.1 Maximum Power

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
GSM/GPRS/EDGE 850	Maximum	33.5	33.5	31.0	29.0	28.0	26.5	25.0	23.0	22.0
	Nominal	33.0	33.0	30.5	28.5	27.5	26.0	24.5	22.5	21.5
GSM/GPRS/EDGE 1900	Maximum	31.0	31.0	28.0	26.5	26.0	25.0	24.0	21.0	20.0
	Nominal	30.5	30.5	27.5	26.0	25.5	24.5	23.5	20.5	19.5

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Mode / Band		Modulated Average (dBm)			
		3GPP Rel. 99	3GPP Rel. 5	3GPP Rel. 6	3GPP Rel. 8
		WCDMA	HSDPA	HSUPA	DC-HSDPA
UMTS Band 5 (850 MHz)	Maximum	24.5	23.0	22.5	23.0
	Nominal	24.0	22.5	22.0	22.5
UMTS Band 4 (1750 MHz)	Maximum	24.0	23.5	23.0	23.5
	Nominal	23.5	23.0	22.5	23.0
UMTS Band 2 (1900 MHz)	Maximum	23.5	22.5	22.5	23.0
	Nominal	23.0	22.0	22.0	22.5

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 5 (Cell)	Maximum	24.5
	Nominal	24.0
LTE Band 4 (AWS)	Maximum	24.0
	Nominal	23.5
LTE Band 2 (PCS)	Maximum	24.0
	Nominal	23.5

Mode / Band		Modulated Average (dBm)
SISO IEEE 802.11b (2.4 GHz)	Maximum	15.5
	Nominal	15.0
SISO IEEE 802.11g (2.4 GHz)	Maximum	14.5
	Nominal	14.0
SISO IEEE 802.11n (2.4 GHz)	Maximum	13.5
	Nominal	13.0
MIMO IEEE 802.11n (2.4 GHz)	Maximum	15.5
	Nominal	15.0
SISO IEEE 802.11a (5 GHz)	Maximum	12.5
	Nominal	12.0
SISO IEEE 802.11n (5 GHz - 20 MHz Bandwidth)	Maximum	12.5
	Nominal	12.0
MIMO IEEE 802.11n (5 GHz - 20 MHz Bandwidth)	Maximum	15.5
	Nominal	15.0
SISO IEEE 802.11n (5 GHz - 40 MHz Bandwidth)	Maximum	9.5
	Nominal	9.0
MIMO IEEE 802.11n (5 GHz - 40 MHz Bandwidth)	Maximum	12.5
	Nominal	12.0
SISO IEEE 802.11ac (5 GHz - 20 MHz Bandwidth)	Maximum	12.5
	Nominal	12.0
MIMO IEEE 802.11ac (5 GHz - 20 MHz Bandwidth)	Maximum	15.5
	Nominal	15.0
SISO IEEE 802.11ac (5 GHz - 40 MHz Bandwidth)	Maximum	9.5
	Nominal	9.0
MIMO IEEE 802.11ac (5 GHz - 40 MHz Bandwidth)	Maximum	12.5
	Nominal	12.0
SISO IEEE 802.11ac (5 GHz - 80 MHz Bandwidth)	Maximum	10.5
	Nominal	10.0
MIMO IEEE 802.11ac (5 GHz - 80 MHz Bandwidth)	Maximum	13.5
	Nominal	13.0
Bluetooth	Maximum	12.0
	Nominal	11.5
Bluetooth LE	Maximum	8.0
	Nominal	7.5

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1.3.2 Reduced Power

Mode / Band		Modulated Average (dBm)			
		3GPP Rel. 99	3GPP Rel. 5	3GPP Rel. 6	3GPP Rel. 8
		WCDMA	HSDPA	HSUPA	DC-HSDPA
UMTS Band 4 (1750 MHz)	Maximum	21.5	21.0	20.5	21.0
	Nominal	21.0	20.5	20.0	20.5
UMTS Band 2 (1900 MHz)	Maximum	21.5	20.5	20.5	21.0
	Nominal	21.0	20.0	20.0	20.5

Mode / Band		Modulated Average (dBm)
LTE Band 4 (AWS)	Maximum	21.5
	Nominal	21.0
LTE Band 2 (PCS)	Maximum	21.5
	Nominal	21.0

1.4 DUT Antenna Locations

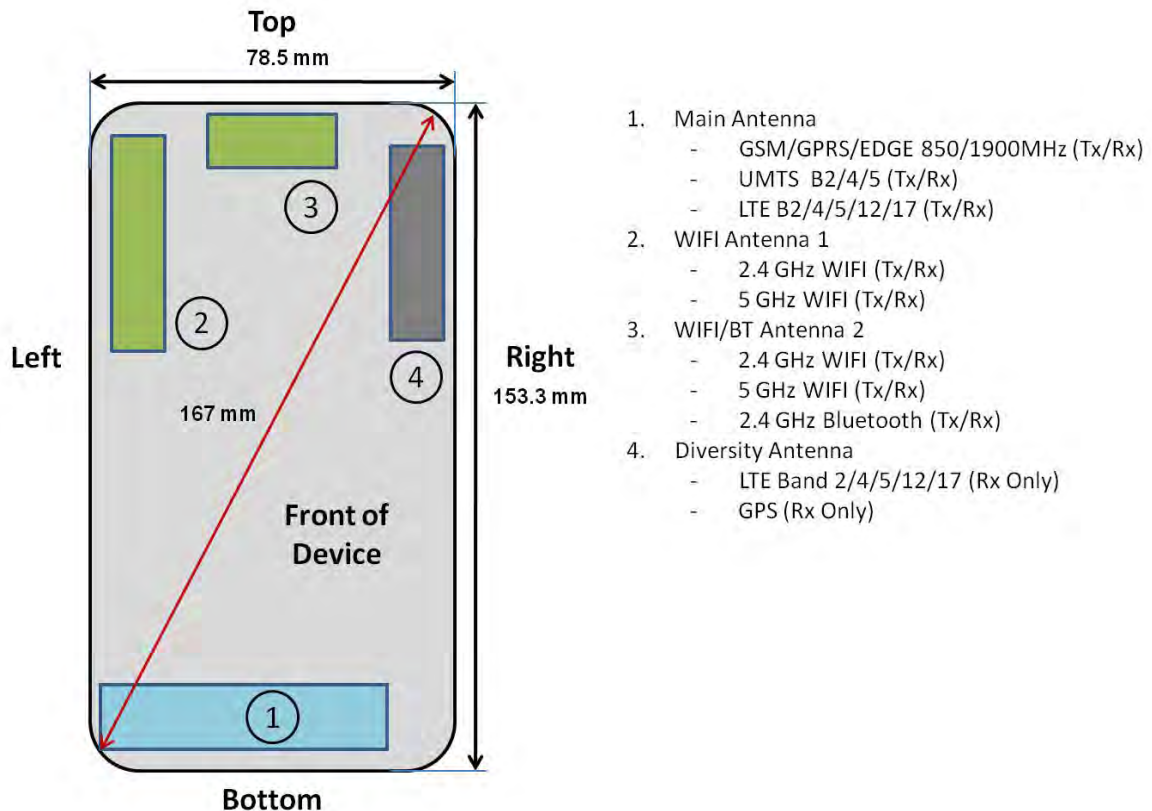


Figure 1-1
DUT Antenna Locations

Note:

- Exact antenna dimensions and separation distances are shown in the Technical Descriptions in the FCC Filing.
- Since the diagonal dimension of this device is > 160 mm and <200 mm, it is considered a "phablet."

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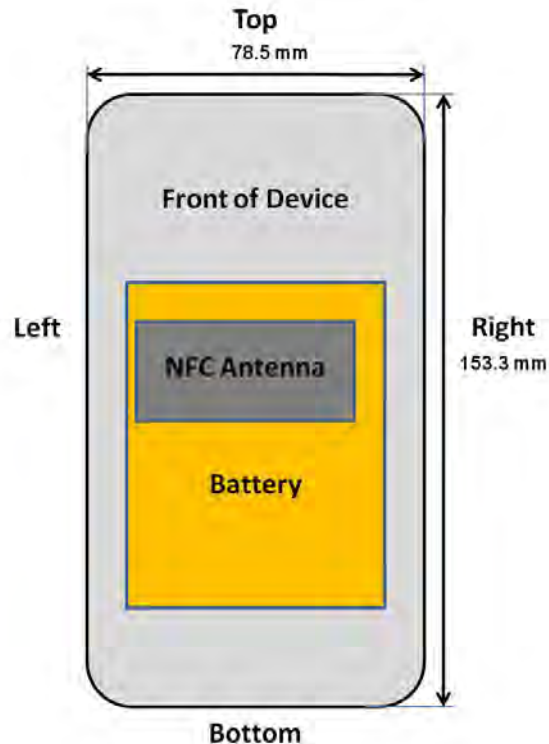
**Table 1-1
Sides for SAR Testing**

Mode	Exposure Condition	Back	Front	Top	Bottom	Right	Left
GPRS 850	Hotspot	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Hotspot	Yes	Yes	No	Yes	Yes	Yes
UMTS 850	Hotspot	Yes	Yes	No	Yes	Yes	Yes
UMTS 1750	Hotspot	Yes	Yes	No	Yes	Yes	Yes
UMTS 1900	Hotspot	Yes	Yes	No	Yes	Yes	Yes
LTE Band 12	Hotspot	Yes	Yes	No	Yes	Yes	Yes
LTE Band 5 (Cell)	Hotspot	Yes	Yes	No	Yes	Yes	Yes
LTE Band 4 (AWS)	Hotspot	Yes	Yes	No	Yes	Yes	Yes
LTE Band 2 (PCS)	Hotspot	Yes	Yes	No	Yes	Yes	Yes
2.4 GHz WLAN (Ant. 1 & MIMO)	Hotspot	Yes	Yes	Yes	No	No	Yes
2.4 GHz WLAN (Ant. 2)	Hotspot	Yes	Yes	Yes	No	No	No
5.8 GHz WLAN (Ant. 1 & MIMO)	Hotspot	Yes	Yes	Yes	No	No	Yes
5.8 GHz WLAN (Ant. 2)	Hotspot	Yes	Yes	Yes	No	No	No
5.2 - 5.7 GHz WLAN (Ant. 1 & MIMO)	Extremity	Yes	Yes	Yes	No	No	Yes
5.2 - 5.7 GHz WLAN (Ant. 2)	Extremity	Yes	Yes	Yes	No	No	No
Bluetooth	Extremity	Yes	Yes	Yes	No	No	No

Note: Particular DUT edges were not required to be evaluated for Wireless Router SAR or Extremity SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v01 guidance, page 2 and FCC KDB 648474 D04v01r01. The distances between the transmit antennas and the edges of the device are included in the filing.

1.5 Near Field Communications (NFC) Antenna

This DUT has NFC operations. The NFC antenna is integrated into the specialized battery. The SAR tests were performed with the specialized battery (model: EB-BN910BBU).



**Figure 1-2
NFC Antenna Locations**

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1.6 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D05v01, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. Possible transmission paths for the DUT are shown in Figure 1-3 and are color-coded to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.

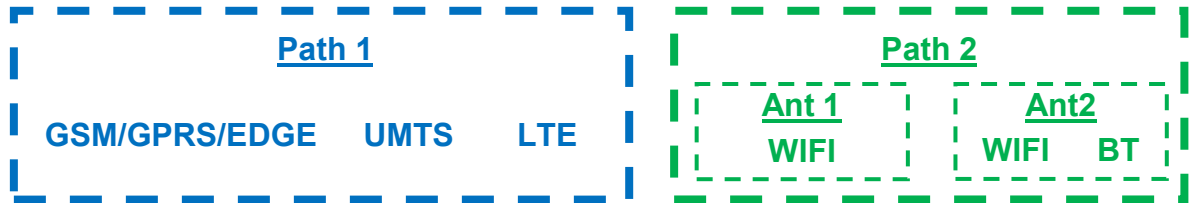


Figure 1-3
Simultaneous Transmission Paths

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

Table 1-2
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Extremity
1	GSM voice + 2.4 GHz WI-FI	Yes	Yes	N/A	Yes
2	GSM voice + 5 GHz WI-FI	Yes	Yes	N/A	Yes
3	GSM voice + 2.4 GHz Bluetooth	N/A	Yes	N/A	Yes
4	UMTS + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes
5	UMTS + 5 GHz WI-FI	Yes	Yes	Yes	Yes
6	UMTS + 2.4 GHz Bluetooth	N/A	Yes	N/A	Yes
7	LTE + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes
8	LTE + 5 GHz WI-FI	Yes	Yes	Yes	Yes
9	LTE + 2.4 GHz Bluetooth	N/A	Yes	N/A	Yes
10	GPRS/EDGE + 2.4 GHz WI-FI	N/A	N/A	Yes	Yes
11	GPRS/EDGE + 5 GHz WI-FI	N/A	N/A	Yes	Yes

Note:

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

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1.7 SAR Test Exclusions Applied

(A) WIFI/BT

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

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

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

Based on the maximum conducted power of Bluetooth LE (rounded to the nearest mW) and the antenna to user separation distance, body-worn Bluetooth LE SAR was not required; $[(6/15) * \sqrt{2.480}] = 0.6 < 3.0$. Per KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mW before calculation.

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

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

Based on the maximum conducted power of Bluetooth LE (rounded to the nearest mW) and the antenna to user separation distance, extremity Bluetooth LE SAR was not required; $[(6/5) * \sqrt{2.480}] = 1.9 < 7.5$. Per KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mW before calculation.

This device supports 20 MHz and 40 MHz Bandwidths for IEEE 802.11n for 5 GHz WIFI only.

This device supports IEEE 802.11ac with the following features:

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

Per April 2013 TCB Workshop notes, full SAR tests for all SISO IEEE 802.11ac configurations were not required because the average output power was not more than 0.25 dB higher than SISO IEEE 802.11a mode. SISO IEEE 802.11ac was evaluated for the highest SISO IEEE 802.11a position in each 5 GHz band and exposure condition.

Per FCC KDB Publication 648474 D04v01r01, this device is considered a "phablet" since the diagonal dimension is greater than 160mm and less than 200mm. Extremity SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Because wireless router operations are not supported for 5.2 – 5.7 GHz WLAN and 2.4 GHz Bluetooth, extremity SAR tests were performed. Extremity SAR was not evaluated for 2.4 GHz and 5.8 GHz WLAN operations since wireless router 1g SAR was < 1.2 W/kg.

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(B) Licensed Transmitter(s)

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

This device is only capable of QPSK HSUPA in the uplink. Therefore, no additional SAR tests are required beyond that described for devices with HSUPA in KDB 941225 D01v02.

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

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

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

Per FCC KDB Publication 648474 D04v01r01, this device is considered a "phablet" since the diagonal dimension is greater than 160mm and less than 200mm. Therefore, extremity SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR scales to > 1.2 W/kg when scaled to the maximum allowed output power tolerance. Extremity SAR was not evaluated for licensed technologies since wireless router 1g SAR was < 1.2 W/kg for these modes.

1.8 Wireless Charging Battery Cover

This DUT may be used with a standard battery cover or with an optional wireless charging battery cover. Per FCC KDB Publication 648474 D03, SAR was measured using the standard battery cover and then repeated with the wireless charging battery cover for the configuration with the highest measured SAR for each wireless technology, frequency band, operating mode, and exposure condition. Since reported SAR did not exceed 1.2 W/kg, additional testing with the wireless charging battery cover was not required.

1.9 Guidance Applied

- IEEE 1528-2003
- FCC KDB Publication 941225 D01v02, D02v02r02, D03v01, D05v02r03, D05Av01, D06v01r01 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v01r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v05r02 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r03, D02v01r01 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D03-D04 (Phablet Procedures, Wireless Charging Cover)
- April 2013 TCB Workshop Notes (IEEE 802.11ac)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)

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1.10 Device Serial Numbers

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

Band/Mode	Head Serial Number	Body-Worn Serial Number	Hotspot Serial Number	Extremity Serial Number
GSM/GPRS/EDGE 850	20AD5	20AD5	20AD5	-
GSM/GPRS/EDGE 1900	20AC2	20AC2	221A5	-
UMTS 850	20AD5	20AD5	20AD5	-
UMTS 1750	20AD4	221F2	221F2	-
UMTS 1900	209AF	221A9	221A9	-
LTE Band 12	221F0	20A9B	20A9B	-
LTE Band 5 (Cell)	20AD5	20AD5	20AD5	-
LTE Band 4 (AWS)	20ACC	221AA	221AA	-
LTE Band 2 (PCS)	20ACC	221A5	221A5	-
2.4 GHz WLAN	01FC3	015D8	015D8	-
5.8 GHz WLAN	015D8	015D8	015D8	-
5.2 - 5.7 GHz WLAN	015D8	015D8	-	015D7
Bluetooth	-	015D8	-	015D8

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LTE INFORMATION

LTE Information				
FCC ID	A3LSMN910T			
Form Factor	Portable Handset			
Frequency Range of each LTE transmission band	LTE Band 17 (706.5 - 713.5 MHz)			
	LTE Band 12 (699.7 - 715.3 MHz)			
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)			
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)			
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)			
Channel Bandwidths	LTE Band 17: 5 MHz, 10 MHz			
	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz			
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz			
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz			
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz			
Channel Numbers and Frequencies (MHz)	Low	Mid	High	
LTE Band 17: 5 MHz	706.5 (23755)	710 (23790)	713.5 (23825)	
LTE Band 17: 10 MHz	709 (23780)	710 (23790)	711 (23800)	
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 5 (Cell): 1.4 MHz	824.7 (20407)	836.5 (20525)	848.3 (20643)	
LTE Band 5 (Cell): 3 MHz	825.5 (20415)	836.5 (20525)	847.5 (20635)	
LTE Band 5 (Cell): 5 MHz	826.5 (20425)	836.5 (20525)	846.5 (20625)	
LTE Band 5 (Cell): 10 MHz	829 (20450)	836.5 (20525)	844 (20600)	
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)	1732.5 (20175)	1754.3 (20393)	
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)	1732.5 (20175)	1753.5 (20385)	
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)	1732.5 (20175)	1752.5 (20375)	
LTE Band 4 (AWS): 10 MHz	1715 (20000)	1732.5 (20175)	1750 (20350)	
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)	1732.5 (20175)	1747.5 (20325)	
LTE Band 4 (AWS): 20 MHz	1720 (20050)	1732.5 (20175)	1745 (20300)	
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)	1880 (18900)	1909.3 (19193)	
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)	1880 (18900)	1908.5 (19185)	
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)	1880 (18900)	1907.5 (19175)	
LTE Band 2 (PCS): 10 MHz	1855 (18650)	1880 (18900)	1905 (19150)	
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)	1880 (18900)	1902.5 (19125)	
LTE Band 2 (PCS): 20 MHz	1860 (18700)	1880 (18900)	1900 (19100)	
UE Category	4			
Modulations Supported in UL	QPSK, 16QAM			
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	YES			
A-MPR (Additional MPR) disabled for SAR Testing?	YES			
LTE Carrier Aggregation Possible Combinations	<u>LTE B2 (PCC) + LTE B4 (SCC)</u>	<u>LTE B4 (PCC) + LTE B2 (SCC)</u>	<u>LTE B12 (PCC) + LTE B4 (SCC)</u>	<u>LTE B4 (PCC) + LTE B12 (SCC)</u>
	5MHz (B2) + 5MHz (B4)	5MHz (B4) + 5MHz (B2)	5MHz (B12) + 5MHz (B4)	5MHz (B4) + 5MHz (B12)
	5MHz (B2) + 10MHz (B4)	5MHz (B4) + 10MHz (B2)	5MHz (B12) + 10MHz (B4)	5MHz (B4) + 10MHz (B12)
	10MHz (B2) + 5MHz (B4)	10MHz (B4) + 5MHz (B2)	10MHz (B12) + 5MHz (B4)	10MHz (B4) + 5MHz (B12)
	10MHz (B2) + 10MHz (B4)	10MHz (B4) + 10MHz (B2)	10MHz (B12) + 10MHz (B4)	10MHz (B4) + 10MHz (B12)
	<u>LTE B4 (PCC) +LTE B17 (SCC)</u>	<u>LTE B2 (PCC) +LTE B17 (SCC)</u>	<u>LTE B17 (PCC) +LTE B2 (SCC)</u>	
	5MHz (B4) +5MHz (B17)	5MHz (B2) +5MHz (B17)	5MHz (B17) +5MHz (B2)	
	5MHz (B4) +10MHz (B17)	5MHz (B2) +10MHz (B17)	5MHz (B17) +10MHz (B2)	
	10MHz (B4) +5MHz (B17)	10MHz (B2) +5MHz (B17)	10MHz (B17) +5MHz (B2)	
	10MHz (B4) +10MHz (B17)	10MHz (B2) +10MHz (B17)	10MHz (B17) +10MHz (B2)	
LTE Carrier Aggregation Additional Information	This device does not support full CA features on 3GPP Release 10. It supports a maximum of 2 carriers in the downlink with a total maximum bandwidth of 10 MHz of the spectrum. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. Due to carrier capability, only the combinations listed above are supported. The following LTE Release 10 Features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.			

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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/m³)
- E = Total RMS electric field strength (V/m)

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

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4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

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

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

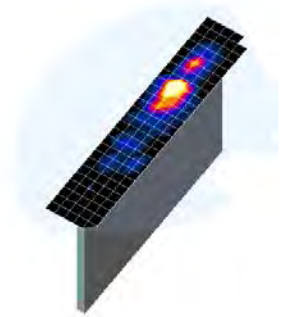


Figure 4-1
Sample SAR Area
Scan

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

Frequency	Maximum Area Scan Resolution (mm) (Δx_{area} , Δy_{area})	Maximum Zoom Scan Resolution (mm) (Δx_{zoom} , Δy_{zoom})	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid $\Delta z_{zoom}(n)$	Graded Grid		
				$\Delta z_{zoom}(1)^*$	$\Delta z_{zoom}(n>1)^*$	
≤ 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].

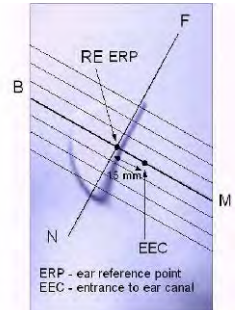


Figure 5-1
Close-Up Side view
of ERP

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 then located at the same level as the center of the ear reference point. The test device was positioned so that the “vertical centerline” was bisecting the front surface of the handset at its top and bottom edges, positioning the “ear reference point” on the outer surface of the both the left and right head phantoms on the ear reference point.



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

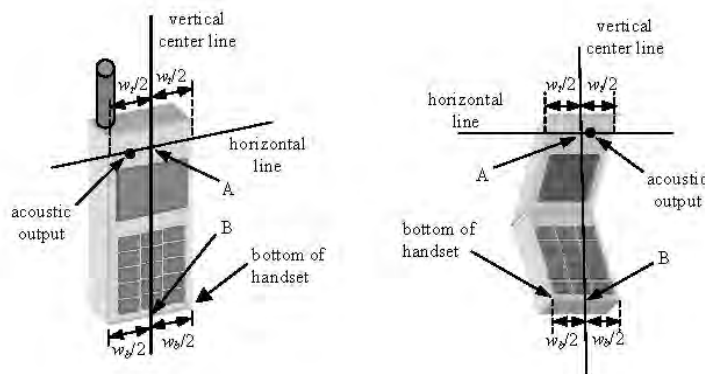


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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6 TEST CONFIGURATION POSITIONS FOR HANDSETS

6.1 Device Holder

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

6.2 Positioning for Cheek

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

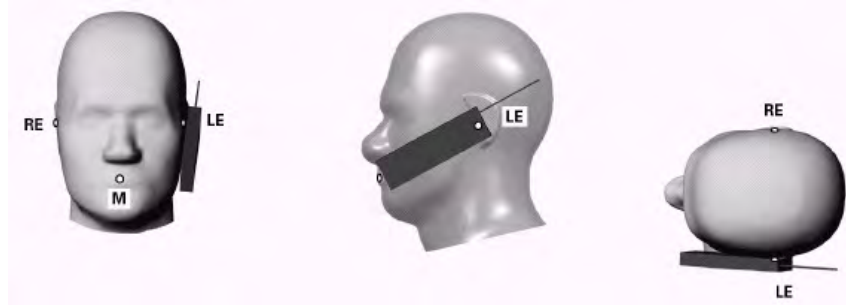


Figure 6-1 Front, Side and Top View of Cheek Position

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

6.3 Positioning for Ear / 15° Tilt

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

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

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

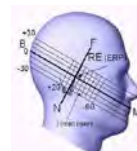


Figure 6-3 Side view w/ relevant markings

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

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

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

6.5 Body-Worn Accessory Configurations

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

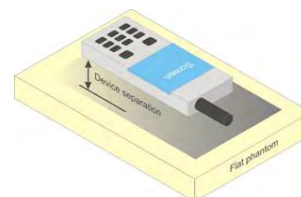


Figure 6-4 Sample Body-Worn Diagram

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.

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

6.6 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions; i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. The 1-g body and 10-g extremity SAR Exclusion Thresholds found in KDB Publication 44798 D01v05 should be applied to determine SAR test requirements.

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC minitables that support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04 v01r01DR04 should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. In addition to the normally required head and body-worn accessory SAR test procedures required for handsets, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna ≤ 25 mm from that surface or edge, in direct contact with the phantom, for 10-g SAR. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g SAR is required only for the surfaces and edges with hotspot SAR > 1.2 W/kg when scaled to the maximum allowed output power including tolerance.

6.7 Wireless Router Configurations

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

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

There is mobile hotspot power reduction for UMTS Bands 4/2, LTE Bands 4/2. There is no power reduction for GSM/GPRS/EDGE 850/1900, UMTS Band 5, LTE Bands 12/17/5 and BT/WLAN modes. The reduced powers were confirmed via conducted power measurements at the RF port (See Section 9). Detailed description of the hotspot power reduction mechanism is 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 <i>General Population</i> (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT <i>Occupational</i> (W/kg) or (mW/g)
Peak Spatial Average SAR Head	1.6	8.0
Whole Body SAR	0.08	0.4
Peak Spatial Average SAR Hands, Feet, Ankle, Wrists, etc.	4.0	20

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

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

8.1 Measured and Reported SAR

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

8.2 Procedures Used to Establish RF Signal for SAR

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

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

8.3 SAR Measurement Conditions for UMTS

8.3.1 Output Power Verification

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

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

8.3.2 Head SAR Measurements for Handsets

SAR for head exposure configurations is measured using the 12.2 kbps RMC with TPC bits configured to all "1s". SAR in AMR configurations is not required when the maximum average output of each RF channel for 12.2 kbps AMR is less than 0.25 dB higher than that measured in 12.2 kbps RMC. Otherwise, SAR is measured on the maximum output channel in 12.2 AMR with a 3.4 kbps SRB (signaling radio bearer) using the exposure configuration that resulted in the highest SAR for that RF channel in the 12.2 kbps RMC mode.

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8.3.3 Body SAR Measurements

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

8.3.4 SAR Measurements for Handsets with Rel 5 HSDPA

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

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

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

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 8 \Rightarrow A_{th} = \beta_{th}/\beta_c = 30/15 \Rightarrow \beta_{th} = 30/15 * \beta_c$
Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 8$ ($A_{th} = 30/15$) with $\beta_{th} = 30/15 * \beta_c$ and $\Delta_{CQI} = 7$ ($A_{th} = 24/15$) with $\beta_{th} = 24/15 * \beta_c$
Note 3: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{th}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

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

8.3.5 SAR Measurements for Handsets with Rel 6 HSUPA

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

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

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

8.4.5 Carrier Aggregation

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

8.5 SAR Testing with 802.11 Transmitters

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

8.5.1 General Device Setup

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

8.5.2 Frequency Channel Configurations [24]

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

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

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evaluated for highest 802.11a configuration in each 5 GHz band and each exposure condition. 802.11ac modes were additionally evaluated for SAR if the output power for the respective mode was more than 0.25 dB higher than powers of 802.11a modes.

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

8.5.3 MIMO SAR Considerations

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

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9 RF CONDUCTED POWERS

9.1 GSM Conducted Powers

		Maximum Burst-Averaged Output Power								
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	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	33.15	33.25	30.78	28.32	27.35	26.21	24.78	22.68	21.74
	190	33.20	33.24	30.89	28.58	27.55	26.36	24.90	22.63	21.68
	251	33.08	33.26	31.00	28.95	27.49	26.35	24.89	22.89	21.77
GSM 1900	512	29.75	29.70	27.28	25.93	25.40	24.49	23.10	20.64	19.25
	661	29.61	29.68	27.22	25.75	25.50	24.38	23.03	20.64	19.29
	810	29.79	29.77	27.45	26.04	25.64	24.50	23.28	20.72	19.19

		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	24.12	24.22	24.76	24.06	24.34	17.18	18.76	18.42	18.73
	190	24.17	24.21	24.87	24.32	24.54	17.33	18.88	18.37	18.67
	251	24.05	24.23	24.98	24.69	24.48	17.32	18.87	18.63	18.76
GSM 1900	512	20.72	20.67	21.26	21.67	22.39	15.46	17.08	16.38	16.24
	661	20.58	20.65	21.20	21.49	22.49	15.35	17.01	16.38	16.28
	810	20.76	20.74	21.43	21.78	22.63	15.47	17.26	16.46	16.18
GSM 850	Frame Avg.	23.97	23.97	24.48	24.24	24.49	16.97	18.48	18.24	18.49
GSM 1900	Targets:	21.47	21.47	21.48	21.74	22.49	15.47	17.48	16.24	16.49

Note:

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

GSM Class: B
GPRS Multislot class: 12 (Max 4 Tx uplink slots)
EDGE Multislot class: 12 (Max 4 Tx uplink slots)
DTM Multislot Class: N/A



Figure 9-1
Power Measurement Setup

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9.2 UMTS Conducted Powers

Table 9-1
Maximum UMTS Average RF Conducted Powers

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	1312	1412	1862	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	24.41	24.26	24.20	23.73	23.60	23.75	23.38	23.45	23.10	-
99		12.2 kbps AMR	24.19	24.03	24.00	23.79	23.43	23.70	23.30	23.32	23.07	-
6	HSDPA	Subtest 1	22.58	22.50	22.51	22.69	22.66	22.61	21.80	21.50	21.74	0
6		Subtest 2	22.60	22.53	22.52	22.73	22.65	22.71	21.78	21.50	21.75	0
6		Subtest 3	22.12	22.03	21.94	22.24	22.16	22.21	21.78	21.38	21.84	0.5
6		Subtest 4	22.08	22.03	22.01	22.27	22.17	22.20	21.77	21.40	21.75	0.5
6	HSUPA	Subtest 1	21.54	21.40	21.41	22.30	22.41	21.98	22.16	21.85	22.46	0
6		Subtest 2	19.36	19.40	19.54	21.76	21.21	21.56	21.63	21.31	21.51	2
6		Subtest 3	21.24	21.01	20.88	21.48	21.47	21.81	21.43	21.37	21.47	1
6		Subtest 4	21.70	21.99	22.00	22.08	22.12	21.91	21.74	21.32	21.53	2
6		Subtest 5	22.47	22.46	22.47	22.75	22.65	22.66	21.75	21.57	21.71	0
8	DC-HSDPA	Subtest 1	22.59	22.60	22.62	23.38	23.36	23.32	22.62	22.36	22.66	0
8		Subtest 2	22.58	22.67	22.64	23.42	23.36	23.30	22.69	22.40	22.65	0
8		Subtest 3	22.05	22.09	22.10	22.99	22.87	22.79	22.68	22.38	22.60	0.5
8		Subtest 4	22.03	22.04	22.11	22.99	22.88	22.78	22.66	22.36	22.67	0.5

Table 9-2
Reduced UMTS Average RF Conducted Powers
(Representing Hotspot Mode)

3GPP Release Version	Mode	3GPP 34.121 Subtest	AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			1312	1412	1862	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	21.00	21.10	21.15	21.34	21.20	21.11	-
99		12.2 kbps AMR	20.99	21.00	21.08	21.17	21.08	21.00	-
6	HSDPA	Subtest 1	19.85	19.82	19.87	19.34	19.13	19.33	0
6		Subtest 2	19.97	19.83	19.85	19.27	19.11	19.21	0
6		Subtest 3	19.44	19.45	19.34	18.54	18.80	18.88	0.5
6		Subtest 4	19.46	19.41	19.43	18.89	18.50	18.76	0.5
6	HSUPA	Subtest 1	19.50	19.11	19.32	19.17	19.01	19.27	0
6		Subtest 2	18.17	18.23	18.13	17.99	17.78	17.98	2
6		Subtest 3	18.92	18.78	18.90	19.16	18.92	19.19	1
6		Subtest 4	19.09	19.02	19.08	18.50	18.26	18.37	2
6		Subtest 5	19.46	19.35	19.35	19.32	19.13	19.22	0
8	DC-HSDPA	Subtest 1	19.96	19.82	19.81	19.36	19.10	19.31	0
8		Subtest 2	19.93	19.83	19.85	19.35	19.09	19.31	0
8		Subtest 3	19.44	19.33	19.36	18.91	18.85	18.98	0.5
8		Subtest 4	19.35	19.31	19.44	18.91	18.91	18.89	0.5

UMTS SAR was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v02. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.

DC-HSDPA considerations

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- 3GPP Specification 34.121-1 Release 8 Ver 8.10.0 was used for DC-HSDPA guidance
- H-Set 12 (QPSK) was confirmed to be used during DC-HSDPA measurements
- Measured maximum output powers for DC-HSDPA were not greater than 1/4 dB higher than the WCDMA 12.2 kbps RMC maximum output, as a result, SAR is not required for DC-HSDPA
- The DUT supports UE category 24 for HSDPA

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



Figure 9-2
Power Measurement Setup

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9.3 LTE Conducted Powers

9.3.1 LTE Band 12

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	707.5	23095	10	QPSK	1	0	23.76	0	0
	707.5	23095	10	QPSK	1	25	24.30	0	0
	707.5	23095	10	QPSK	1	49	24.23	0	0
	707.5	23095	10	QPSK	25	0	23.15	0-1	1
	707.5	23095	10	QPSK	25	12	22.91	0-1	1
	707.5	23095	10	QPSK	25	25	23.02	0-1	1
	707.5	23095	10	QPSK	50	0	23.03	0-1	1
	707.5	23095	10	16QAM	1	0	22.89	0-1	1
	707.5	23095	10	16QAM	1	25	22.99	0-1	1
	707.5	23095	10	16QAM	1	49	23.04	0-1	1
	707.5	23095	10	16QAM	25	0	22.07	0-2	2
	707.5	23095	10	16QAM	25	12	22.02	0-2	2
	707.5	23095	10	16QAM	25	25	22.20	0-2	2
	707.5	23095	10	16QAM	50	0	22.19	0-2	2

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

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]	Deviation [dB]
Low	701.5	23035	5	QPSK	1	0	24.15	0	0	0.15
	701.5	23035	5	QPSK	1	12	24.16	0	0	0.16
	701.5	23035	5	QPSK	1	24	23.97	0	0	-0.03
	701.5	23035	5	QPSK	12	0	23.38	0-1	1	0.38
	701.5	23035	5	QPSK	12	6	23.37	0-1	1	0.37
	701.5	23035	5	QPSK	12	13	23.25	0-1	1	0.25
	701.5	23035	5	QPSK	25	0	23.25	0-1	1	0.25
	701.5	23035	5	16-QAM	1	0	23.23	0-1	1	0.23
	701.5	23035	5	16-QAM	1	12	23.26	0-1	1	0.26
	701.5	23035	5	16-QAM	1	24	23.12	0-1	1	0.12
	701.5	23035	5	16-QAM	12	0	22.39	0-2	2	0.39
	701.5	23035	5	16-QAM	12	6	22.33	0-2	2	0.33
	701.5	23035	5	16-QAM	12	13	22.25	0-2	2	0.25
	701.5	23035	5	16-QAM	25	0	22.36	0-2	2	0.36
Mid	707.5	23095	5	QPSK	1	0	24.10	0	0	0.10
	707.5	23095	5	QPSK	1	12	24.28	0	0	0.28
	707.5	23095	5	QPSK	1	24	24.29	0	0	0.29
	707.5	23095	5	QPSK	12	0	23.17	0-1	1	0.17
	707.5	23095	5	QPSK	12	6	23.14	0-1	1	0.14
	707.5	23095	5	QPSK	12	13	23.21	0-1	1	0.21
	707.5	23095	5	QPSK	25	0	23.17	0-1	1	0.17
	707.5	23095	5	16-QAM	1	0	23.32	0-1	1	0.32
	707.5	23095	5	16-QAM	1	12	23.27	0-1	1	0.27
	707.5	23095	5	16-QAM	1	24	23.32	0-1	1	0.32
	707.5	23095	5	16-QAM	12	0	22.31	0-2	2	0.31
	707.5	23095	5	16-QAM	12	6	22.34	0-2	2	0.34
	707.5	23095	5	16-QAM	12	13	22.34	0-2	2	0.34
	707.5	23095	5	16-QAM	25	0	22.32	0-2	2	0.32
High	713.5	23155	5	QPSK	1	0	24.27	0	0	0.27
	713.5	23155	5	QPSK	1	12	23.65	0	0	-0.35
	713.5	23155	5	QPSK	1	24	23.51	0	0	-0.49
	713.5	23155	5	QPSK	12	0	23.35	0-1	1	0.35
	713.5	23155	5	QPSK	12	6	22.89	0-1	1	-0.11
	713.5	23155	5	QPSK	12	13	22.56	0-1	1	-0.44
	713.5	23155	5	QPSK	25	0	22.96	0-1	1	-0.04
	713.5	23155	5	16-QAM	1	0	23.30	0-1	1	0.30
	713.5	23155	5	16-QAM	1	12	22.90	0-1	1	-0.10
	713.5	23155	5	16-QAM	1	24	22.62	0-1	1	-0.38
	713.5	23155	5	16-QAM	12	0	22.46	0-2	2	0.46
	713.5	23155	5	16-QAM	12	6	21.96	0-2	2	-0.04
	713.5	23155	5	16-QAM	12	13	21.64	0-2	2	-0.36
	713.5	23155	5	16-QAM	25	0	21.94	0-2	2	-0.06

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	700.5	23025	3	QPSK	1	0	24.35	0	0
	700.5	23025	3	QPSK	1	7	24.32	0	0
	700.5	23025	3	QPSK	1	14	24.31	0	0
	700.5	23025	3	QPSK	8	0	23.32	0-1	1
	700.5	23025	3	QPSK	8	4	23.36	0-1	1
	700.5	23025	3	QPSK	8	7	23.34	0-1	1
	700.5	23025	3	QPSK	15	0	23.35	0-1	1
	700.5	23025	3	16-QAM	1	0	23.50	0-1	1
	700.5	23025	3	16-QAM	1	7	23.49	0-1	1
	700.5	23025	3	16-QAM	1	14	23.50	0-1	1
	700.5	23025	3	16-QAM	8	0	22.30	0-2	2
	700.5	23025	3	16-QAM	8	4	22.33	0-2	2
	700.5	23025	3	16-QAM	8	7	22.36	0-2	2
	700.5	23025	3	16-QAM	15	0	22.44	0-2	2
Mid	707.5	23095	3	QPSK	1	0	24.32	0	0
	707.5	23095	3	QPSK	1	7	24.27	0	0
	707.5	23095	3	QPSK	1	14	24.31	0	0
	707.5	23095	3	QPSK	8	0	23.24	0-1	1
	707.5	23095	3	QPSK	8	4	23.22	0-1	1
	707.5	23095	3	QPSK	8	7	23.20	0-1	1
	707.5	23095	3	QPSK	15	0	23.30	0-1	1
	707.5	23095	3	16-QAM	1	0	23.50	0-1	1
	707.5	23095	3	16-QAM	1	7	23.50	0-1	1
	707.5	23095	3	16-QAM	1	14	23.49	0-1	1
	707.5	23095	3	16-QAM	8	0	22.22	0-2	2
	707.5	23095	3	16-QAM	8	4	22.20	0-2	2
	707.5	23095	3	16-QAM	8	7	22.23	0-2	2
	707.5	23095	3	16-QAM	15	0	22.30	0-2	2
High	714.5	23165	3	QPSK	1	0	23.83	0	0
	714.5	23165	3	QPSK	1	7	23.53	0	0
	714.5	23165	3	QPSK	1	14	23.50	0	0
	714.5	23165	3	QPSK	8	0	22.63	0-1	1
	714.5	23165	3	QPSK	8	4	22.55	0-1	1
	714.5	23165	3	QPSK	8	7	22.51	0-1	1
	714.5	23165	3	QPSK	15	0	22.57	0-1	1
	714.5	23165	3	16-QAM	1	0	23.00	0-1	1
	714.5	23165	3	16-QAM	1	7	22.66	0-1	1
	714.5	23165	3	16-QAM	1	14	22.56	0-1	1
	714.5	23165	3	16-QAM	8	0	21.56	0-2	2
	714.5	23165	3	16-QAM	8	4	21.50	0-2	2
	714.5	23165	3	16-QAM	8	7	21.50	0-2	2
	714.5	23165	3	16-QAM	15	0	21.54	0-2	2

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	699.7	23017	1.4	QPSK	1	0	24.27	0	0
	699.7	23017	1.4	QPSK	1	2	24.28	0	0
	699.7	23017	1.4	QPSK	1	5	24.27	0	0
	699.7	23017	1.4	QPSK	3	0	24.26	0	0
	699.7	23017	1.4	QPSK	3	2	24.25	0	0
	699.7	23017	1.4	QPSK	3	3	24.26	0	0
	699.7	23017	1.4	QPSK	6	0	23.32	0-1	1
	699.7	23017	1.4	16-QAM	1	0	23.20	0-1	1
	699.7	23017	1.4	16-QAM	1	2	23.06	0-1	1
	699.7	23017	1.4	16-QAM	1	5	23.18	0-1	1
	699.7	23017	1.4	16-QAM	3	0	23.28	0-1	1
	699.7	23017	1.4	16-QAM	3	2	23.23	0-1	1
	699.7	23017	1.4	16-QAM	3	3	23.26	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	24.28	0	0
	707.5	23095	1.4	QPSK	1	2	24.27	0	0
	707.5	23095	1.4	QPSK	1	5	24.27	0	0
	707.5	23095	1.4	QPSK	3	0	24.26	0	0
	707.5	23095	1.4	QPSK	3	2	24.26	0	0
	707.5	23095	1.4	QPSK	3	3	24.25	0	0
	707.5	23095	1.4	QPSK	6	0	23.26	0-1	1
	707.5	23095	1.4	16-QAM	1	0	23.14	0-1	1
	707.5	23095	1.4	16-QAM	1	2	23.03	0-1	1
	707.5	23095	1.4	16-QAM	1	5	23.12	0-1	1
	707.5	23095	1.4	16-QAM	3	0	23.21	0-1	1
	707.5	23095	1.4	16-QAM	3	2	23.22	0-1	1
	707.5	23095	1.4	16-QAM	3	3	23.23	0-1	1
	707.5	23095	1.4	16-QAM	6	0	22.48	0-2	2
High	715.3	23173	1.4	QPSK	1	0	23.51	0	0
	715.3	23173	1.4	QPSK	1	2	23.56	0	0
	715.3	23173	1.4	QPSK	1	5	23.52	0	0
	715.3	23173	1.4	QPSK	3	0	23.51	0	0
	715.3	23173	1.4	QPSK	3	2	23.51	0	0
	715.3	23173	1.4	QPSK	3	3	23.50	0	0
	715.3	23173	1.4	QPSK	6	0	22.50	0-1	1
	715.3	23173	1.4	16-QAM	1	0	22.51	0-1	1
	715.3	23173	1.4	16-QAM	1	2	22.52	0-1	1
	715.3	23173	1.4	16-QAM	1	5	22.55	0-1	1
	715.3	23173	1.4	16-QAM	3	0	22.52	0-1	1
	715.3	23173	1.4	16-QAM	3	2	22.50	0-1	1
	715.3	23173	1.4	16-QAM	3	3	22.51	0-1	1
	715.3	23173	1.4	16-QAM	6	0	21.52	0-2	2

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9.3.2 LTE Band 5 (Cell)

Table 9-7
LTE Band 5 (Cell) Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	836.5	20525	10	QPSK	1	0	24.01	0	0
	836.5	20525	10	QPSK	1	25	23.90	0	0
	836.5	20525	10	QPSK	1	49	24.00	0	0
	836.5	20525	10	QPSK	25	0	22.90	0-1	1
	836.5	20525	10	QPSK	25	12	22.79	0-1	1
	836.5	20525	10	QPSK	25	25	22.81	0-1	1
	836.5	20525	10	QPSK	50	0	22.85	0-1	1
	836.5	20525	10	16QAM	1	0	22.80	0-1	1
	836.5	20525	10	16QAM	1	25	22.71	0-1	1
	836.5	20525	10	16QAM	1	49	22.81	0-1	1
	836.5	20525	10	16QAM	25	0	21.90	0-2	2
	836.5	20525	10	16QAM	25	12	21.92	0-2	2
	836.5	20525	10	16QAM	25	25	21.92	0-2	2
	836.5	20525	10	16QAM	50	0	21.94	0-2	2

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

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	826.5	20425	5	QPSK	1	0	24.00	0	0
	826.5	20425	5	QPSK	1	12	23.94	0	0
	826.5	20425	5	QPSK	1	24	24.20	0	0
	826.5	20425	5	QPSK	12	0	22.74	0-1	1
	826.5	20425	5	QPSK	12	6	22.72	0-1	1
	826.5	20425	5	QPSK	12	13	22.77	0-1	1
	826.5	20425	5	QPSK	25	0	23.05	0-1	1
	826.5	20425	5	16-QAM	1	0	22.91	0-1	1
	826.5	20425	5	16-QAM	1	12	22.79	0-1	1
	826.5	20425	5	16-QAM	1	24	22.98	0-1	1
	826.5	20425	5	16-QAM	12	0	22.03	0-2	2
	826.5	20425	5	16-QAM	12	6	21.95	0-2	2
	826.5	20425	5	16-QAM	12	13	21.96	0-2	2
	826.5	20425	5	16-QAM	25	0	21.95	0-2	2
Mid	836.5	20525	5	QPSK	1	0	24.01	0	0
	836.5	20525	5	QPSK	1	12	23.86	0	0
	836.5	20525	5	QPSK	1	24	24.10	0	0
	836.5	20525	5	QPSK	12	0	22.83	0-1	1
	836.5	20525	5	QPSK	12	6	22.78	0-1	1
	836.5	20525	5	QPSK	12	13	22.71	0-1	1
	836.5	20525	5	QPSK	25	0	22.97	0-1	1
	836.5	20525	5	16-QAM	1	0	22.89	0-1	1
	836.5	20525	5	16-QAM	1	12	22.73	0-1	1
	836.5	20525	5	16-QAM	1	24	22.90	0-1	1
	836.5	20525	5	16-QAM	12	0	21.99	0-2	2
	836.5	20525	5	16-QAM	12	6	22.00	0-2	2
	836.5	20525	5	16-QAM	12	13	21.97	0-2	2
	836.5	20525	5	16-QAM	25	0	21.90	0-2	2
High	846.5	20625	5	QPSK	1	0	23.95	0	0
	846.5	20625	5	QPSK	1	12	23.81	0	0
	846.5	20625	5	QPSK	1	24	24.15	0	0
	846.5	20625	5	QPSK	12	0	22.91	0-1	1
	846.5	20625	5	QPSK	12	6	22.71	0-1	1
	846.5	20625	5	QPSK	12	13	22.66	0-1	1
	846.5	20625	5	QPSK	25	0	23.07	0-1	1
	846.5	20625	5	16-QAM	1	0	22.98	0-1	1
	846.5	20625	5	16-QAM	1	12	22.74	0-1	1
	846.5	20625	5	16-QAM	1	24	22.84	0-1	1
	846.5	20625	5	16-QAM	12	0	22.07	0-2	2
	846.5	20625	5	16-QAM	12	6	21.90	0-2	2
	846.5	20625	5	16-QAM	12	13	21.92	0-2	2
	846.5	20625	5	16-QAM	25	0	21.93	0-2	2

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	825.5	20415	3	QPSK	1	0	24.06	0	0
	825.5	20415	3	QPSK	1	7	23.85	0	0
	825.5	20415	3	QPSK	1	14	24.14	0	0
	825.5	20415	3	QPSK	8	0	22.65	0-1	1
	825.5	20415	3	QPSK	8	4	22.69	0-1	1
	825.5	20415	3	QPSK	8	7	22.81	0-1	1
	825.5	20415	3	QPSK	15	0	23.15	0-1	1
	825.5	20415	3	16-QAM	1	0	22.99	0-1	1
	825.5	20415	3	16-QAM	1	7	22.73	0-1	1
	825.5	20415	3	16-QAM	1	14	22.95	0-1	1
	825.5	20415	3	16-QAM	8	0	21.93	0-2	2
	825.5	20415	3	16-QAM	8	4	22.04	0-2	2
	825.5	20415	3	16-QAM	8	7	22.04	0-2	2
	825.5	20415	3	16-QAM	15	0	22.02	0-2	2
Mid	836.5	20525	3	QPSK	1	0	24.03	0	0
	836.5	20525	3	QPSK	1	7	23.78	0	0
	836.5	20525	3	QPSK	1	14	24.09	0	0
	836.5	20525	3	QPSK	8	0	22.78	0-1	1
	836.5	20525	3	QPSK	8	4	22.87	0-1	1
	836.5	20525	3	QPSK	8	7	22.63	0-1	1
	836.5	20525	3	QPSK	15	0	22.89	0-1	1
	836.5	20525	3	16-QAM	1	0	22.81	0-1	1
	836.5	20525	3	16-QAM	1	7	22.67	0-1	1
	836.5	20525	3	16-QAM	1	14	22.84	0-1	1
	836.5	20525	3	16-QAM	8	0	21.91	0-2	2
	836.5	20525	3	16-QAM	8	4	21.91	0-2	2
	836.5	20525	3	16-QAM	8	7	22.06	0-2	2
	836.5	20525	3	16-QAM	15	0	21.83	0-2	2
High	847.5	20635	3	QPSK	1	0	23.97	0	0
	847.5	20635	3	QPSK	1	7	23.79	0	0
	847.5	20635	3	QPSK	1	14	24.08	0	0
	847.5	20635	3	QPSK	8	0	22.98	0-1	1
	847.5	20635	3	QPSK	8	4	22.69	0-1	1
	847.5	20635	3	QPSK	8	7	22.66	0-1	1
	847.5	20635	3	QPSK	15	0	23.09	0-1	1
	847.5	20635	3	16-QAM	1	0	22.94	0-1	1
	847.5	20635	3	16-QAM	1	7	22.71	0-1	1
	847.5	20635	3	16-QAM	1	14	22.90	0-1	1
	847.5	20635	3	16-QAM	8	0	22.06	0-2	2
	847.5	20635	3	16-QAM	8	4	21.83	0-2	2
	847.5	20635	3	16-QAM	8	7	22.00	0-2	2
	847.5	20635	3	16-QAM	15	0	21.86	0-2	2

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	824.7	20407	1.4	QPSK	1	0	23.88	0	0
	824.7	20407	1.4	QPSK	1	2	23.93	0	0
	824.7	20407	1.4	QPSK	1	5	23.94	0	0
	824.7	20407	1.4	QPSK	3	0	23.82	0	0
	824.7	20407	1.4	QPSK	3	2	23.85	0	0
	824.7	20407	1.4	QPSK	3	3	23.86	0	0
	824.7	20407	1.4	QPSK	6	0	22.80	0-1	1
	824.7	20407	1.4	16-QAM	1	0	22.85	0-1	1
	824.7	20407	1.4	16-QAM	1	2	22.79	0-1	1
	824.7	20407	1.4	16-QAM	1	5	22.81	0-1	1
	824.7	20407	1.4	16-QAM	3	0	22.83	0-1	1
	824.7	20407	1.4	16-QAM	3	2	22.88	0-1	1
	824.7	20407	1.4	16-QAM	3	3	22.81	0-1	1
	824.7	20407	1.4	16-QAM	6	0	21.89	0-2	2
Mid	836.5	20525	1.4	QPSK	1	0	23.87	0	0
	836.5	20525	1.4	QPSK	1	2	23.90	0	0
	836.5	20525	1.4	QPSK	1	5	23.89	0	0
	836.5	20525	1.4	QPSK	3	0	23.82	0	0
	836.5	20525	1.4	QPSK	3	2	23.77	0	0
	836.5	20525	1.4	QPSK	3	3	23.83	0	0
	836.5	20525	1.4	QPSK	6	0	22.76	0-1	1
	836.5	20525	1.4	16-QAM	1	0	22.77	0-1	1
	836.5	20525	1.4	16-QAM	1	2	22.71	0-1	1
	836.5	20525	1.4	16-QAM	1	5	22.73	0-1	1
	836.5	20525	1.4	16-QAM	3	0	22.78	0-1	1
	836.5	20525	1.4	16-QAM	3	2	22.80	0-1	1
	836.5	20525	1.4	16-QAM	3	3	22.80	0-1	1
	836.5	20525	1.4	16-QAM	6	0	21.85	0-2	2
High	848.3	20643	1.4	QPSK	1	0	23.92	0	0
	848.3	20643	1.4	QPSK	1	2	23.93	0	0
	848.3	20643	1.4	QPSK	1	5	23.92	0	0
	848.3	20643	1.4	QPSK	3	0	23.90	0	0
	848.3	20643	1.4	QPSK	3	2	23.83	0	0
	848.3	20643	1.4	QPSK	3	3	23.92	0	0
	848.3	20643	1.4	QPSK	6	0	22.81	0-1	1
	848.3	20643	1.4	16-QAM	1	0	22.86	0-1	1
	848.3	20643	1.4	16-QAM	1	2	22.77	0-1	1
	848.3	20643	1.4	16-QAM	1	5	22.77	0-1	1
	848.3	20643	1.4	16-QAM	3	0	22.79	0-1	1
	848.3	20643	1.4	16-QAM	3	2	22.88	0-1	1
	848.3	20643	1.4	16-QAM	3	3	22.82	0-1	1
	848.3	20643	1.4	16-QAM	6	0	21.87	0-2	2

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9.3.3 LTE Band 4 (AWS)

Table 9-11

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	1732.5	20175	20	QPSK	1	0	23.80	0	0
	1732.5	20175	20	QPSK	1	50	23.58	0	0
	1732.5	20175	20	QPSK	1	99	23.53	0	0
	1732.5	20175	20	QPSK	50	0	22.56	0-1	1
	1732.5	20175	20	QPSK	50	25	22.52	0-1	1
	1732.5	20175	20	QPSK	50	50	22.50	0-1	1
	1732.5	20175	20	QPSK	100	0	22.53	0-1	1
	1732.5	20175	20	16QAM	1	0	22.70	0-1	1
	1732.5	20175	20	16QAM	1	50	22.52	0-1	1
	1732.5	20175	20	16QAM	1	99	22.51	0-1	1
	1732.5	20175	20	16QAM	50	0	21.52	0-2	2
	1732.5	20175	20	16QAM	50	25	21.50	0-2	2
	1732.5	20175	20	16QAM	50	50	21.51	0-2	2
	1732.5	20175	20	16QAM	100	0	21.53	0-2	2

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

Table 9-12

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1717.5	20025	15	QPSK	1	0	23.91	0	0
	1717.5	20025	15	QPSK	1	36	23.65	0	0
	1717.5	20025	15	QPSK	1	74	23.50	0	0
	1717.5	20025	15	QPSK	36	0	22.62	0-1	1
	1717.5	20025	15	QPSK	36	18	22.50	0-1	1
	1717.5	20025	15	QPSK	36	37	22.73	0-1	1
	1717.5	20025	15	QPSK	75	0	22.86	0-1	1
	1717.5	20025	15	16QAM	1	0	23.00	0-1	1
	1717.5	20025	15	16QAM	1	36	22.93	0-1	1
	1717.5	20025	15	16QAM	1	74	22.75	0-1	1
	1717.5	20025	15	16QAM	36	0	21.81	0-2	2
	1717.5	20025	15	16QAM	36	18	21.64	0-2	2
	1717.5	20025	15	16QAM	36	37	21.55	0-2	2
	1717.5	20025	15	16QAM	75	0	21.68	0-2	2
Mid	1732.5	20175	15	QPSK	1	0	23.91	0	0
	1732.5	20175	15	QPSK	1	36	23.74	0	0
	1732.5	20175	15	QPSK	1	74	23.63	0	0
	1732.5	20175	15	QPSK	36	0	22.61	0-1	1
	1732.5	20175	15	QPSK	36	18	22.58	0-1	1
	1732.5	20175	15	QPSK	36	37	22.58	0-1	1
	1732.5	20175	15	QPSK	75	0	22.63	0-1	1
	1732.5	20175	15	16QAM	1	0	22.76	0-1	1
	1732.5	20175	15	16QAM	1	36	22.62	0-1	1
	1732.5	20175	15	16QAM	1	74	22.63	0-1	1
	1732.5	20175	15	16QAM	36	0	21.45	0-2	2
	1732.5	20175	15	16QAM	36	18	21.43	0-2	2
	1732.5	20175	15	16QAM	36	37	21.49	0-2	2
	1732.5	20175	15	16QAM	75	0	21.51	0-2	2
High	1747.5	20325	15	QPSK	1	0	23.75	0	0
	1747.5	20325	15	QPSK	1	36	23.72	0	0
	1747.5	20325	15	QPSK	1	74	23.63	0	0
	1747.5	20325	15	QPSK	36	0	22.58	0-1	1
	1747.5	20325	15	QPSK	36	18	22.62	0-1	1
	1747.5	20325	15	QPSK	36	37	22.58	0-1	1
	1747.5	20325	15	QPSK	75	0	22.63	0-1	1
	1747.5	20325	15	16QAM	1	0	22.62	0-1	1
	1747.5	20325	15	16QAM	1	36	22.51	0-1	1
	1747.5	20325	15	16QAM	1	74	22.55	0-1	1
	1747.5	20325	15	16QAM	36	0	21.43	0-2	2
	1747.5	20325	15	16QAM	36	18	21.37	0-2	2
	1747.5	20325	15	16QAM	36	37	21.41	0-2	2
	1747.5	20325	15	16QAM	75	0	21.46	0-2	2

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Table 9-13
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	24.00	0	0
	1715	20000	10	QPSK	1	25	23.99	0	0
	1715	20000	10	QPSK	1	49	23.97	0	0
	1715	20000	10	QPSK	25	0	22.92	0-1	1
	1715	20000	10	QPSK	25	12	22.86	0-1	1
	1715	20000	10	QPSK	25	25	22.76	0-1	1
	1715	20000	10	QPSK	50	0	22.94	0-1	1
	1715	20000	10	16QAM	1	0	23.00	0-1	1
	1715	20000	10	16QAM	1	25	22.79	0-1	1
	1715	20000	10	16QAM	1	49	22.83	0-1	1
	1715	20000	10	16QAM	25	0	21.81	0-2	2
	1715	20000	10	16QAM	25	12	21.80	0-2	2
	1715	20000	10	16QAM	25	25	21.67	0-2	2
	1715	20000	10	16QAM	50	0	21.81	0-2	2
Mid	1732.5	20175	10	QPSK	1	0	23.86	0	0
	1732.5	20175	10	QPSK	1	25	23.70	0	0
	1732.5	20175	10	QPSK	1	49	23.67	0	0
	1732.5	20175	10	QPSK	25	0	22.51	0-1	1
	1732.5	20175	10	QPSK	25	12	22.46	0-1	1
	1732.5	20175	10	QPSK	25	25	22.47	0-1	1
	1732.5	20175	10	QPSK	50	0	22.55	0-1	1
	1732.5	20175	10	16QAM	1	0	22.70	0-1	1
	1732.5	20175	10	16QAM	1	25	22.49	0-1	1
	1732.5	20175	10	16QAM	1	49	22.52	0-1	1
	1732.5	20175	10	16QAM	25	0	21.41	0-2	2
	1732.5	20175	10	16QAM	25	12	21.38	0-2	2
	1732.5	20175	10	16QAM	25	25	21.42	0-2	2
	1732.5	20175	10	16QAM	50	0	21.38	0-2	2
High	1750	20350	10	QPSK	1	0	23.73	0	0
	1750	20350	10	QPSK	1	25	23.62	0	0
	1750	20350	10	QPSK	1	49	23.94	0	0
	1750	20350	10	QPSK	25	0	22.59	0-1	1
	1750	20350	10	QPSK	25	12	22.58	0-1	1
	1750	20350	10	QPSK	25	25	22.45	0-1	1
	1750	20350	10	QPSK	50	0	22.61	0-1	1
	1750	20350	10	16QAM	1	0	22.54	0-1	1
	1750	20350	10	16QAM	1	25	22.44	0-1	1
	1750	20350	10	16QAM	1	49	22.54	0-1	1
	1750	20350	10	16QAM	25	0	21.47	0-2	2
	1750	20350	10	16QAM	25	12	21.46	0-2	2
	1750	20350	10	16QAM	25	25	21.42	0-2	2
	1750	20350	10	16QAM	50	0	21.49	0-2	2

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Table 9-14
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	23.99	0	0
	1712.5	19975	5	QPSK	1	12	23.98	0	0
	1712.5	19975	5	QPSK	1	24	23.98	0	0
	1712.5	19975	5	QPSK	12	0	23.00	0-1	1
	1712.5	19975	5	QPSK	12	6	22.80	0-1	1
	1712.5	19975	5	QPSK	12	13	22.94	0-1	1
	1712.5	19975	5	QPSK	25	0	22.95	0-1	1
	1712.5	19975	5	16-QAM	1	0	23.00	0-1	1
	1712.5	19975	5	16-QAM	1	12	22.92	0-1	1
	1712.5	19975	5	16-QAM	1	24	22.92	0-1	1
	1712.5	19975	5	16-QAM	12	0	21.91	0-2	2
	1712.5	19975	5	16-QAM	12	6	21.80	0-2	2
Mid	1712.5	19975	5	16-QAM	12	13	21.72	0-2	2
	1712.5	19975	5	16-QAM	25	0	21.82	0-2	2
	1732.5	20175	5	QPSK	1	0	23.69	0	0
	1732.5	20175	5	QPSK	1	12	23.71	0	0
	1732.5	20175	5	QPSK	1	24	23.72	0	0
	1732.5	20175	5	QPSK	12	0	22.55	0-1	1
	1732.5	20175	5	QPSK	12	6	22.52	0-1	1
	1732.5	20175	5	QPSK	12	13	22.50	0-1	1
	1732.5	20175	5	QPSK	25	0	22.51	0-1	1
	1732.5	20175	5	16-QAM	1	0	22.55	0-1	1
	1732.5	20175	5	16-QAM	1	12	22.49	0-1	1
	1732.5	20175	5	16-QAM	1	24	22.50	0-1	1
High	1732.5	20175	5	16-QAM	12	0	21.36	0-2	2
	1732.5	20175	5	16-QAM	12	6	21.37	0-2	2
	1732.5	20175	5	16-QAM	12	13	21.36	0-2	2
	1732.5	20175	5	16-QAM	25	0	21.41	0-2	2
	1752.5	20375	5	QPSK	1	0	23.68	0	0
	1752.5	20375	5	QPSK	1	12	23.63	0	0
	1752.5	20375	5	QPSK	1	24	23.70	0	0
	1752.5	20375	5	QPSK	12	0	22.54	0-1	1
	1752.5	20375	5	QPSK	12	6	22.45	0-1	1
	1752.5	20375	5	QPSK	12	13	22.49	0-1	1
	1752.5	20375	5	QPSK	25	0	22.49	0-1	1
	1752.5	20375	5	16-QAM	1	0	22.52	0-1	1
	1752.5	20375	5	16-QAM	1	12	22.48	0-1	1
	1752.5	20375	5	16-QAM	1	24	22.51	0-1	1
	1752.5	20375	5	16-QAM	12	0	21.37	0-2	2
	1752.5	20375	5	16-QAM	12	6	21.37	0-2	2
	1752.5	20375	5	16-QAM	12	13	21.33	0-2	2
	1752.5	20375	5	16-QAM	25	0	21.40	0-2	2

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Table 9-15
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	23.99	0	0
	1711.5	19965	3	QPSK	1	7	23.97	0	0
	1711.5	19965	3	QPSK	1	14	23.98	0	0
	1711.5	19965	3	QPSK	8	0	23.00	0-1	1
	1711.5	19965	3	QPSK	8	4	22.92	0-1	1
	1711.5	19965	3	QPSK	8	7	22.90	0-1	1
	1711.5	19965	3	QPSK	15	0	22.94	0-1	1
	1711.5	19965	3	16-QAM	1	0	23.00	0-1	1
	1711.5	19965	3	16-QAM	1	7	22.86	0-1	1
	1711.5	19965	3	16-QAM	1	14	22.90	0-1	1
	1711.5	19965	3	16-QAM	8	0	21.78	0-2	2
	1711.5	19965	3	16-QAM	8	4	21.87	0-2	2
Mid	1732.5	20175	3	QPSK	1	0	23.68	0	0
	1732.5	20175	3	QPSK	1	7	23.68	0	0
	1732.5	20175	3	QPSK	1	14	23.66	0	0
	1732.5	20175	3	QPSK	8	0	22.53	0-1	1
	1732.5	20175	3	QPSK	8	4	22.53	0-1	1
	1732.5	20175	3	QPSK	8	7	22.50	0-1	1
	1732.5	20175	3	QPSK	15	0	22.51	0-1	1
	1732.5	20175	3	16-QAM	1	0	22.61	0-1	1
	1732.5	20175	3	16-QAM	1	7	22.54	0-1	1
	1732.5	20175	3	16-QAM	1	14	22.57	0-1	1
	1732.5	20175	3	16-QAM	8	0	21.34	0-2	2
	1732.5	20175	3	16-QAM	8	4	21.34	0-2	2
High	1753.5	20385	3	QPSK	1	0	23.63	0	0
	1753.5	20385	3	QPSK	1	7	23.65	0	0
	1753.5	20385	3	QPSK	1	14	23.63	0	0
	1753.5	20385	3	QPSK	8	0	22.47	0-1	1
	1753.5	20385	3	QPSK	8	4	22.48	0-1	1
	1753.5	20385	3	QPSK	8	7	22.46	0-1	1
	1753.5	20385	3	QPSK	15	0	22.53	0-1	1
	1753.5	20385	3	16-QAM	1	0	22.53	0-1	1
	1753.5	20385	3	16-QAM	1	7	22.45	0-1	1
	1753.5	20385	3	16-QAM	1	14	22.53	0-1	1
	1753.5	20385	3	16-QAM	8	0	21.32	0-2	2
	1753.5	20385	3	16-QAM	8	4	21.33	0-2	2
	1753.5	20385	3	16-QAM	8	7	21.30	0-2	2
	1753.5	20385	3	16-QAM	15	0	21.40	0-2	2

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Table 9-16
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	23.99	0	0
	1710.7	19957	1.4	QPSK	1	2	23.99	0	0
	1710.7	19957	1.4	QPSK	1	5	23.98	0	0
	1710.7	19957	1.4	QPSK	3	0	23.99	0	0
	1710.7	19957	1.4	QPSK	3	2	23.97	0	0
	1710.7	19957	1.4	QPSK	3	3	23.96	0	0
	1710.7	19957	1.4	QPSK	6	0	23.00	0-1	1
	1710.7	19957	1.4	16-QAM	1	0	22.99	0-1	1
	1710.7	19957	1.4	16-QAM	1	2	22.98	0-1	1
	1710.7	19957	1.4	16-QAM	1	5	23.00	0-1	1
	1710.7	19957	1.4	16-QAM	3	0	22.96	0-1	1
	1710.7	19957	1.4	16-QAM	3	2	22.93	0-1	1
	1710.7	19957	1.4	16-QAM	3	3	22.91	0-1	1
	1710.7	19957	1.4	16-QAM	6	0	21.95	0-2	2
Mid	1732.5	20175	1.4	QPSK	1	0	23.64	0	0
	1732.5	20175	1.4	QPSK	1	2	23.63	0	0
	1732.5	20175	1.4	QPSK	1	5	23.62	0	0
	1732.5	20175	1.4	QPSK	3	0	23.57	0	0
	1732.5	20175	1.4	QPSK	3	2	23.56	0	0
	1732.5	20175	1.4	QPSK	3	3	23.48	0	0
	1732.5	20175	1.4	QPSK	6	0	22.55	0-1	1
	1732.5	20175	1.4	16-QAM	1	0	22.57	0-1	1
	1732.5	20175	1.4	16-QAM	1	2	22.58	0-1	1
	1732.5	20175	1.4	16-QAM	1	5	22.55	0-1	1
	1732.5	20175	1.4	16-QAM	3	0	22.49	0-1	1
	1732.5	20175	1.4	16-QAM	3	2	22.50	0-1	1
	1732.5	20175	1.4	16-QAM	3	3	22.51	0-1	1
	1732.5	20175	1.4	16-QAM	6	0	21.38	0-2	2
High	1754.3	20393	1.4	QPSK	1	0	23.66	0	0
	1754.3	20393	1.4	QPSK	1	2	23.66	0	0
	1754.3	20393	1.4	QPSK	1	5	23.60	0	0
	1754.3	20393	1.4	QPSK	3	0	23.58	0	0
	1754.3	20393	1.4	QPSK	3	2	23.56	0	0
	1754.3	20393	1.4	QPSK	3	3	23.51	0	0
	1754.3	20393	1.4	QPSK	6	0	22.52	0-1	1
	1754.3	20393	1.4	16-QAM	1	0	22.64	0-1	1
	1754.3	20393	1.4	16-QAM	1	2	22.62	0-1	1
	1754.3	20393	1.4	16-QAM	1	5	22.59	0-1	1
	1754.3	20393	1.4	16-QAM	3	0	22.51	0-1	1
	1754.3	20393	1.4	16-QAM	3	2	22.49	0-1	1
	1754.3	20393	1.4	16-QAM	3	3	22.55	0-1	1
	1754.3	20393	1.4	16-QAM	6	0	21.43	0-2	2

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Table 9-17
LTE Band 4 (AWS) Conducted Powers -20 MHz Bandwidth
(Representing Hotspot Mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	1732.5	20175	20	QPSK	1	0	21.15	0	0
	1732.5	20175	20	QPSK	1	50	21.33	0	0
	1732.5	20175	20	QPSK	1	99	21.10	0	0
	1732.5	20175	20	QPSK	50	0	21.12	0-1	0
	1732.5	20175	20	QPSK	50	25	21.24	0-1	0
	1732.5	20175	20	QPSK	50	50	21.10	0-1	0
	1732.5	20175	20	QPSK	100	0	21.08	0-1	0
	1732.5	20175	20	16QAM	1	0	21.15	0-1	0
	1732.5	20175	20	16QAM	1	50	21.22	0-1	0
	1732.5	20175	20	16QAM	1	99	21.10	0-1	0
	1732.5	20175	20	16QAM	50	0	21.16	0-2	0
	1732.5	20175	20	16QAM	50	25	21.15	0-2	0
	1732.5	20175	20	16QAM	50	50	21.23	0-2	0
	1732.5	20175	20	16QAM	100	0	21.02	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 9-18
LTE Band 4 (AWS) Conducted Powers -15 MHz Bandwidth
(Representing Hotspot Mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1717.5	20025	15	QPSK	1	0	21.17	0	0
	1717.5	20025	15	QPSK	1	36	21.25	0	0
	1717.5	20025	15	QPSK	1	74	21.12	0	0
	1717.5	20025	15	QPSK	36	0	21.01	0-1	0
	1717.5	20025	15	QPSK	36	18	21.06	0-1	0
	1717.5	20025	15	QPSK	36	37	21.10	0-1	0
	1717.5	20025	15	QPSK	75	0	21.00	0-1	0
	1717.5	20025	15	16QAM	1	0	20.95	0-1	0
	1717.5	20025	15	16QAM	1	36	20.96	0-1	0
	1717.5	20025	15	16QAM	1	74	21.06	0-1	0
	1717.5	20025	15	16QAM	36	0	21.16	0-2	0
	1717.5	20025	15	16QAM	36	18	21.16	0-2	0
	1717.5	20025	15	16QAM	36	37	21.00	0-2	0
	1717.5	20025	15	16QAM	75	0	21.04	0-2	0
Mid	1732.5	20175	15	QPSK	1	0	21.10	0	0
	1732.5	20175	15	QPSK	1	36	21.19	0	0
	1732.5	20175	15	QPSK	1	74	21.22	0	0
	1732.5	20175	15	QPSK	36	0	20.98	0-1	0
	1732.5	20175	15	QPSK	36	18	21.14	0-1	0
	1732.5	20175	15	QPSK	36	37	21.13	0-1	0
	1732.5	20175	15	QPSK	75	0	21.10	0-1	0
	1732.5	20175	15	16QAM	1	0	20.92	0-1	0
	1732.5	20175	15	16QAM	1	36	20.99	0-1	0
	1732.5	20175	15	16QAM	1	74	21.01	0-1	0
	1732.5	20175	15	16QAM	36	0	21.12	0-2	0
	1732.5	20175	15	16QAM	36	18	21.09	0-2	0
	1732.5	20175	15	16QAM	36	37	21.05	0-2	0
	1732.5	20175	15	16QAM	75	0	21.08	0-2	0
High	1747.5	20325	15	QPSK	1	0	21.14	0	0
	1747.5	20325	15	QPSK	1	36	21.29	0	0
	1747.5	20325	15	QPSK	1	74	21.10	0	0
	1747.5	20325	15	QPSK	36	0	20.94	0-1	0
	1747.5	20325	15	QPSK	36	18	21.19	0-1	0
	1747.5	20325	15	QPSK	36	37	21.03	0-1	0
	1747.5	20325	15	QPSK	75	0	20.88	0-1	0
	1747.5	20325	15	16QAM	1	0	21.01	0-1	0
	1747.5	20325	15	16QAM	1	36	21.22	0-1	0
	1747.5	20325	15	16QAM	1	74	20.92	0-1	0
	1747.5	20325	15	16QAM	36	0	21.01	0-2	0
	1747.5	20325	15	16QAM	36	18	21.09	0-2	0
	1747.5	20325	15	16QAM	36	37	21.06	0-2	0
	1747.5	20325	15	16QAM	75	0	20.85	0-2	0

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Table 9-19
LTE Band 4 (AWS) Conducted Powers -10 MHz Bandwidth
(Representing Hotspot Mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1715	20000	10	QPSK	1	0	21.20	0	0
	1715	20000	10	QPSK	1	25	21.31	0	0
	1715	20000	10	QPSK	1	49	21.19	0	0
	1715	20000	10	QPSK	25	0	21.03	0-1	0
	1715	20000	10	QPSK	25	12	21.08	0-1	0
	1715	20000	10	QPSK	25	25	21.07	0-1	0
	1715	20000	10	QPSK	50	0	21.06	0-1	0
	1715	20000	10	16QAM	1	0	20.94	0-1	0
	1715	20000	10	16QAM	1	25	21.05	0-1	0
	1715	20000	10	16QAM	1	49	21.03	0-1	0
	1715	20000	10	16QAM	25	0	21.06	0-2	0
	1715	20000	10	16QAM	25	12	21.11	0-2	0
	1715	20000	10	16QAM	25	25	21.09	0-2	0
	1715	20000	10	16QAM	50	0	20.95	0-2	0
Mid	1732.5	20175	10	QPSK	1	0	21.20	0	0
	1732.5	20175	10	QPSK	1	25	21.21	0	0
	1732.5	20175	10	QPSK	1	49	21.30	0	0
	1732.5	20175	10	QPSK	25	0	20.97	0-1	0
	1732.5	20175	10	QPSK	25	12	21.20	0-1	0
	1732.5	20175	10	QPSK	25	25	21.14	0-1	0
	1732.5	20175	10	QPSK	50	0	21.17	0-1	0
	1732.5	20175	10	16QAM	1	0	20.86	0-1	0
	1732.5	20175	10	16QAM	1	25	20.92	0-1	0
	1732.5	20175	10	16QAM	1	49	20.92	0-1	0
	1732.5	20175	10	16QAM	25	0	21.16	0-2	0
	1732.5	20175	10	16QAM	25	12	21.03	0-2	0
	1732.5	20175	10	16QAM	25	25	20.99	0-2	0
	1732.5	20175	10	16QAM	50	0	21.16	0-2	0
High	1750	20350	10	QPSK	1	0	21.17	0	0
	1750	20350	10	QPSK	1	25	21.27	0	0
	1750	20350	10	QPSK	1	49	21.08	0	0
	1750	20350	10	QPSK	25	0	20.90	0-1	0
	1750	20350	10	QPSK	25	12	21.21	0-1	0
	1750	20350	10	QPSK	25	25	21.11	0-1	0
	1750	20350	10	QPSK	50	0	20.78	0-1	0
	1750	20350	10	16QAM	1	0	21.00	0-1	0
	1750	20350	10	16QAM	1	25	21.25	0-1	0
	1750	20350	10	16QAM	1	49	20.92	0-1	0
	1750	20350	10	16QAM	25	0	21.04	0-2	0
	1750	20350	10	16QAM	25	12	21.19	0-2	0
	1750	20350	10	16QAM	25	25	20.99	0-2	0
	1750	20350	10	16QAM	50	0	20.83	0-2	0

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Table 9-20
LTE Band 4 (AWS) Conducted Powers -5 MHz Bandwidth
(Representing Hotspot Mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1712.5	19975	5	QPSK	1	0	21.15	0	0
	1712.5	19975	5	QPSK	1	12	21.26	0	0
	1712.5	19975	5	QPSK	1	24	20.99	0	0
	1712.5	19975	5	QPSK	12	0	20.96	0-1	0
	1712.5	19975	5	QPSK	12	6	20.94	0-1	0
	1712.5	19975	5	QPSK	12	13	21.06	0-1	0
	1712.5	19975	5	QPSK	25	0	20.93	0-1	0
	1712.5	19975	5	16-QAM	1	0	20.94	0-1	0
	1712.5	19975	5	16-QAM	1	12	20.90	0-1	0
	1712.5	19975	5	16-QAM	1	24	21.08	0-1	0
	1712.5	19975	5	16-QAM	12	0	21.27	0-2	0
	1712.5	19975	5	16-QAM	12	6	21.17	0-2	0
	1712.5	19975	5	16-QAM	12	13	20.93	0-2	0
	1712.5	19975	5	16-QAM	25	0	20.96	0-2	0
Mid	1732.5	20175	5	QPSK	1	0	20.96	0	0
	1732.5	20175	5	QPSK	1	12	21.02	0	0
	1732.5	20175	5	QPSK	1	24	21.07	0	0
	1732.5	20175	5	QPSK	12	0	21.11	0-1	0
	1732.5	20175	5	QPSK	12	6	21.15	0-1	0
	1732.5	20175	5	QPSK	12	13	21.21	0-1	0
	1732.5	20175	5	QPSK	25	0	21.08	0-1	0
	1732.5	20175	5	16-QAM	1	0	20.82	0-1	0
	1732.5	20175	5	16-QAM	1	12	21.00	0-1	0
	1732.5	20175	5	16-QAM	1	24	21.04	0-1	0
	1732.5	20175	5	16-QAM	12	0	21.30	0-2	0
	1732.5	20175	5	16-QAM	12	6	21.09	0-2	0
	1732.5	20175	5	16-QAM	12	13	21.15	0-2	0
	1732.5	20175	5	16-QAM	25	0	21.15	0-2	0
High	1752.5	20375	5	QPSK	1	0	21.02	0	0
	1752.5	20375	5	QPSK	1	12	21.28	0	0
	1752.5	20375	5	QPSK	1	24	21.08	0	0
	1752.5	20375	5	QPSK	12	0	20.94	0-1	0
	1752.5	20375	5	QPSK	12	6	21.23	0-1	0
	1752.5	20375	5	QPSK	12	13	21.12	0-1	0
	1752.5	20375	5	QPSK	25	0	20.86	0-1	0
	1752.5	20375	5	16-QAM	1	0	21.06	0-1	0
	1752.5	20375	5	16-QAM	1	12	21.17	0-1	0
	1752.5	20375	5	16-QAM	1	24	20.82	0-1	0
	1752.5	20375	5	16-QAM	12	0	20.91	0-2	0
	1752.5	20375	5	16-QAM	12	6	21.19	0-2	0
	1752.5	20375	5	16-QAM	12	13	20.90	0-2	0
	1752.5	20375	5	16-QAM	25	0	20.86	0-2	0

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Table 9-21
LTE Band 4 (AWS) Conducted Powers -3 MHz Bandwidth
(Representing Hotspot Mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1711.5	19965	3	QPSK	1	0	21.30	0	0
	1711.5	19965	3	QPSK	1	7	21.21	0	0
	1711.5	19965	3	QPSK	1	14	21.05	0	0
	1711.5	19965	3	QPSK	8	0	21.05	0-1	0
	1711.5	19965	3	QPSK	8	4	20.86	0-1	0
	1711.5	19965	3	QPSK	8	7	21.00	0-1	0
	1711.5	19965	3	QPSK	15	0	20.91	0-1	0
	1711.5	19965	3	16-QAM	1	0	21.06	0-1	0
	1711.5	19965	3	16-QAM	1	7	21.07	0-1	0
	1711.5	19965	3	16-QAM	1	14	21.23	0-1	0
	1711.5	19965	3	16-QAM	8	0	20.98	0-2	0
	1711.5	19965	3	16-QAM	8	4	21.14	0-2	0
Mid	1732.5	20175	3	QPSK	8	7	21.09	0-2	0
	1711.5	19965	3	16-QAM	15	0	21.24	0-2	0
	1732.5	20175	3	QPSK	1	0	21.06	0	0
	1732.5	20175	3	QPSK	1	7	21.26	0	0
	1732.5	20175	3	QPSK	1	14	21.19	0	0
	1732.5	20175	3	QPSK	8	0	21.12	0-1	0
	1732.5	20175	3	QPSK	8	4	21.24	0-1	0
	1732.5	20175	3	QPSK	8	7	21.31	0-1	0
	1732.5	20175	3	QPSK	15	0	21.09	0-1	0
	1732.5	20175	3	16-QAM	1	0	20.81	0-1	0
	1732.5	20175	3	16-QAM	1	7	20.85	0-1	0
	1732.5	20175	3	16-QAM	1	14	21.17	0-1	0
High	1732.5	20175	3	16-QAM	8	0	21.29	0-2	0
	1732.5	20175	3	16-QAM	8	4	21.05	0-2	0
	1732.5	20175	3	16-QAM	8	7	21.23	0-2	0
	1732.5	20175	3	16-QAM	15	0	21.26	0-2	0
	1753.5	20385	3	QPSK	1	0	21.29	0	0
	1753.5	20385	3	QPSK	1	7	21.30	0	0
	1753.5	20385	3	QPSK	1	14	20.91	0	0
	1753.5	20385	3	QPSK	8	0	20.96	0-1	0
	1753.5	20385	3	QPSK	8	4	21.28	0-1	0
	1753.5	20385	3	QPSK	8	7	20.98	0-1	0
	1753.5	20385	3	QPSK	15	0	21.03	0-1	0
	1753.5	20385	3	16-QAM	1	0	21.09	0-1	0
	1753.5	20385	3	16-QAM	1	7	21.14	0-1	0
	1753.5	20385	3	16-QAM	1	14	20.73	0-1	0
	1753.5	20385	3	16-QAM	8	0	21.01	0-2	0
	1753.5	20385	3	16-QAM	8	4	21.06	0-2	0
	1753.5	20385	3	16-QAM	8	7	21.25	0-2	0
	1753.5	20385	3	16-QAM	15	0	20.99	0-2	0

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Table 9-22
LTE Band 4 (AWS) Conducted Powers -1.4 MHz Bandwidth
(Representing Hotspot Mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1710.7	19957	1.4	QPSK	1	0	21.22	0	0
	1710.7	19957	1.4	QPSK	1	2	21.29	0	0
	1710.7	19957	1.4	QPSK	1	5	21.15	0	0
	1710.7	19957	1.4	QPSK	3	0	21.09	0	0
	1710.7	19957	1.4	QPSK	3	2	20.81	0	0
	1710.7	19957	1.4	QPSK	3	3	20.89	0	0
	1710.7	19957	1.4	QPSK	6	0	20.99	0-1	0
	1710.7	19957	1.4	16-QAM	1	0	21.10	0-1	0
	1710.7	19957	1.4	16-QAM	1	2	21.03	0-1	0
	1710.7	19957	1.4	16-QAM	1	5	21.26	0-1	0
	1710.7	19957	1.4	16-QAM	3	0	21.17	0-1	0
	1710.7	19957	1.4	16-QAM	3	2	21.07	0-1	0
Mid	1710.7	19957	1.4	16-QAM	3	3	21.10	0-1	0
	1710.7	19957	1.4	16-QAM	6	0	21.24	0-2	0
	1732.5	20175	1.4	QPSK	1	0	20.95	0	0
	1732.5	20175	1.4	QPSK	1	2	21.30	0	0
	1732.5	20175	1.4	QPSK	1	5	21.28	0	0
	1732.5	20175	1.4	QPSK	3	0	21.23	0	0
	1732.5	20175	1.4	QPSK	3	2	21.14	0	0
	1732.5	20175	1.4	QPSK	3	3	21.21	0	0
	1732.5	20175	1.4	QPSK	6	0	21.04	0-1	0
	1732.5	20175	1.4	16-QAM	1	0	20.85	0-1	0
	1732.5	20175	1.4	16-QAM	1	2	20.96	0-1	0
	1732.5	20175	1.4	16-QAM	1	5	21.30	0-1	0
High	1732.5	20175	1.4	16-QAM	3	0	21.16	0-1	0
	1732.5	20175	1.4	16-QAM	3	2	21.19	0-1	0
	1732.5	20175	1.4	16-QAM	3	3	21.25	0-1	0
	1732.5	20175	1.4	16-QAM	6	0	21.28	0-2	0
	1754.3	20393	1.4	QPSK	1	0	21.29	0	0
	1754.3	20393	1.4	QPSK	1	2	21.27	0	0
	1754.3	20393	1.4	QPSK	1	5	20.76	0	0
	1754.3	20393	1.4	QPSK	3	0	20.96	0	0
	1754.3	20393	1.4	QPSK	3	2	21.30	0	0
	1754.3	20393	1.4	QPSK	3	3	20.94	0	0
	1754.3	20393	1.4	QPSK	6	0	20.96	0-1	0
	1754.3	20393	1.4	16-QAM	1	0	21.00	0-1	0
	1754.3	20393	1.4	16-QAM	1	2	21.30	0-1	0
	1754.3	20393	1.4	16-QAM	1	5	20.58	0-1	0
	1754.3	20393	1.4	16-QAM	3	0	21.14	0-1	0
	1754.3	20393	1.4	16-QAM	3	2	21.25	0-1	0
	1754.3	20393	1.4	16-QAM	3	3	21.11	0-1	0
	1754.3	20393	1.4	16-QAM	6	0	20.97	0-2	0

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9.3.4 LTE Band 2 (PCS)

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1860	18700	20	QPSK	1	0	23.87	0	0
	1860	18700	20	QPSK	1	50	23.75	0	0
	1860	18700	20	QPSK	1	99	23.65	0	0
	1860	18700	20	QPSK	50	0	22.77	0-1	1
	1860	18700	20	QPSK	50	25	22.78	0-1	1
	1860	18700	20	QPSK	50	50	22.76	0-1	1
	1860	18700	20	QPSK	100	0	22.77	0-1	1
	1860	18700	20	16QAM	1	0	22.90	0-1	1
	1860	18700	20	16QAM	1	50	22.81	0-1	1
	1860	18700	20	16QAM	1	99	22.81	0-1	1
	1860	18700	20	16QAM	50	0	21.68	0-2	2
	1860	18700	20	16QAM	50	25	21.66	0-2	2
	1860	18700	20	16QAM	50	50	21.64	0-2	2
	1860	18700	20	16QAM	100	0	21.62	0-2	2
Mid	1880.0	18900	20	QPSK	1	0	23.87	0	0
	1880.0	18900	20	QPSK	1	50	23.88	0	0
	1880.0	18900	20	QPSK	1	99	23.81	0	0
	1880.0	18900	20	QPSK	50	0	22.78	0-1	1
	1880.0	18900	20	QPSK	50	25	22.79	0-1	1
	1880.0	18900	20	QPSK	50	50	22.84	0-1	1
	1880.0	18900	20	QPSK	100	0	22.83	0-1	1
	1880.0	18900	20	16QAM	1	0	22.81	0-1	1
	1880.0	18900	20	16QAM	1	50	22.84	0-1	1
	1880.0	18900	20	16QAM	1	99	22.78	0-1	1
	1880.0	18900	20	16QAM	50	0	21.70	0-2	2
	1880.0	18900	20	16QAM	50	25	21.71	0-2	2
	1880.0	18900	20	16QAM	50	50	21.79	0-2	2
	1880.0	18900	20	16QAM	100	0	21.68	0-2	2
High	1900	19100	20	QPSK	1	0	23.77	0	0
	1900	19100	20	QPSK	1	50	23.76	0	0
	1900	19100	20	QPSK	1	99	23.82	0	0
	1900	19100	20	QPSK	50	0	22.68	0-1	1
	1900	19100	20	QPSK	50	25	22.67	0-1	1
	1900	19100	20	QPSK	50	50	22.59	0-1	1
	1900	19100	20	QPSK	100	0	22.62	0-1	1
	1900	19100	20	16QAM	1	0	22.66	0-1	1
	1900	19100	20	16QAM	1	50	22.68	0-1	1
	1900	19100	20	16QAM	1	99	22.78	0-1	1
	1900	19100	20	16QAM	50	0	21.72	0-2	2
	1900	19100	20	16QAM	50	25	21.65	0-2	2
	1900	19100	20	16QAM	50	50	21.62	0-2	2
	1900	19100	20	16QAM	100	0	21.68	0-2	2

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1857.5	18675	15	QPSK	1	0	23.83	0	0
	1857.5	18675	15	QPSK	1	36	23.73	0	0
	1857.5	18675	15	QPSK	1	74	23.60	0	0
	1857.5	18675	15	QPSK	36	0	22.76	0-1	1
	1857.5	18675	15	QPSK	36	18	22.76	0-1	1
	1857.5	18675	15	QPSK	36	37	22.71	0-1	1
	1857.5	18675	15	QPSK	75	0	22.72	0-1	1
	1857.5	18675	15	16QAM	1	0	22.87	0-1	1
	1857.5	18675	15	16QAM	1	36	22.76	0-1	1
	1857.5	18675	15	16QAM	1	74	22.77	0-1	1
	1857.5	18675	15	16QAM	36	0	21.64	0-2	2
	1857.5	18675	15	16QAM	36	18	21.63	0-2	2
	1857.5	18675	15	16QAM	36	37	21.63	0-2	2
	1857.5	18675	15	16QAM	75	0	21.60	0-2	2
Mid	1880.0	18900	15	QPSK	1	0	23.84	0	0
	1880.0	18900	15	QPSK	1	36	23.83	0	0
	1880.0	18900	15	QPSK	1	74	23.78	0	0
	1880.0	18900	15	QPSK	36	0	22.74	0-1	1
	1880.0	18900	15	QPSK	36	18	22.77	0-1	1
	1880.0	18900	15	QPSK	36	37	22.81	0-1	1
	1880.0	18900	15	QPSK	75	0	22.79	0-1	1
	1880.0	18900	15	16QAM	1	0	22.76	0-1	1
	1880.0	18900	15	16QAM	1	36	22.81	0-1	1
	1880.0	18900	15	16QAM	1	74	22.77	0-1	1
	1880.0	18900	15	16QAM	36	0	21.69	0-2	2
	1880.0	18900	15	16QAM	36	18	21.70	0-2	2
	1880.0	18900	15	16QAM	36	37	21.76	0-2	2
	1880.0	18900	15	16QAM	75	0	21.63	0-2	2
High	1902.5	19125	15	QPSK	1	0	23.72	0	0
	1902.5	19125	15	QPSK	1	36	23.73	0	0
	1902.5	19125	15	QPSK	1	74	23.78	0	0
	1902.5	19125	15	QPSK	36	0	22.67	0-1	1
	1902.5	19125	15	QPSK	36	18	22.63	0-1	1
	1902.5	19125	15	QPSK	36	37	22.57	0-1	1
	1902.5	19125	15	QPSK	75	0	22.58	0-1	1
	1902.5	19125	15	16QAM	1	0	22.64	0-1	1
	1902.5	19125	15	16QAM	1	36	22.67	0-1	1
	1902.5	19125	15	16QAM	1	74	22.74	0-1	1
	1902.5	19125	15	16QAM	36	0	21.70	0-2	2
	1902.5	19125	15	16QAM	36	18	21.62	0-2	2
	1902.5	19125	15	16QAM	36	37	21.58	0-2	2
	1902.5	19125	15	16QAM	75	0	21.65	0-2	2

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1855	18650	10	QPSK	1	0	23.78	0	0
	1855	18650	10	QPSK	1	25	23.73	0	0
	1855	18650	10	QPSK	1	49	23.61	0	0
	1855	18650	10	QPSK	25	0	22.80	0-1	1
	1855	18650	10	QPSK	25	12	22.79	0-1	1
	1855	18650	10	QPSK	25	25	22.71	0-1	1
	1855	18650	10	QPSK	50	0	22.67	0-1	1
	1855	18650	10	16QAM	1	0	22.82	0-1	1
	1855	18650	10	16QAM	1	25	22.77	0-1	1
	1855	18650	10	16QAM	1	49	22.80	0-1	1
	1855	18650	10	16QAM	25	0	21.65	0-2	2
	1855	18650	10	16QAM	25	12	21.63	0-2	2
	1855	18650	10	16QAM	25	25	21.62	0-2	2
	1855	18650	10	16QAM	50	0	21.56	0-2	2
Mid	1880.0	18900	10	QPSK	1	0	23.82	0	0
	1880.0	18900	10	QPSK	1	25	23.87	0	0
	1880.0	18900	10	QPSK	1	49	23.83	0	0
	1880.0	18900	10	QPSK	25	0	22.75	0-1	1
	1880.0	18900	10	QPSK	25	12	22.76	0-1	1
	1880.0	18900	10	QPSK	25	25	22.80	0-1	1
	1880.0	18900	10	QPSK	50	0	22.82	0-1	1
	1880.0	18900	10	16QAM	1	0	22.78	0-1	1
	1880.0	18900	10	16QAM	1	25	22.85	0-1	1
	1880.0	18900	10	16QAM	1	49	22.77	0-1	1
	1880.0	18900	10	16QAM	25	0	21.69	0-2	2
	1880.0	18900	10	16QAM	25	12	21.72	0-2	2
	1880.0	18900	10	16QAM	25	25	21.74	0-2	2
	1880.0	18900	10	16QAM	50	0	21.62	0-2	2
High	1905	19150	10	QPSK	1	0	23.69	0	0
	1905	19150	10	QPSK	1	25	23.71	0	0
	1905	19150	10	QPSK	1	49	23.73	0	0
	1905	19150	10	QPSK	25	0	22.68	0-1	1
	1905	19150	10	QPSK	25	12	22.59	0-1	1
	1905	19150	10	QPSK	25	25	22.56	0-1	1
	1905	19150	10	QPSK	50	0	22.61	0-1	1
	1905	19150	10	16QAM	1	0	22.69	0-1	1
	1905	19150	10	16QAM	1	25	22.69	0-1	1
	1905	19150	10	16QAM	1	49	22.75	0-1	1
	1905	19150	10	16QAM	25	0	21.68	0-2	2
	1905	19150	10	16QAM	25	12	21.66	0-2	2
	1905	19150	10	16QAM	25	25	21.60	0-2	2
	1905	19150	10	16QAM	50	0	21.67	0-2	2

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1852.5	18625	5	QPSK	1	0	23.77	0	0
	1852.5	18625	5	QPSK	1	12	23.73	0	0
	1852.5	18625	5	QPSK	1	24	23.58	0	0
	1852.5	18625	5	QPSK	12	0	22.81	0-1	1
	1852.5	18625	5	QPSK	12	6	22.76	0-1	1
	1852.5	18625	5	QPSK	12	13	22.75	0-1	1
	1852.5	18625	5	QPSK	25	0	22.71	0-1	1
	1852.5	18625	5	16-QAM	1	0	22.83	0-1	1
	1852.5	18625	5	16-QAM	1	12	22.73	0-1	1
	1852.5	18625	5	16-QAM	1	24	22.80	0-1	1
	1852.5	18625	5	16-QAM	12	0	21.65	0-2	2
	1852.5	18625	5	16-QAM	12	6	21.64	0-2	2
	1852.5	18625	5	16-QAM	12	13	21.58	0-2	2
	1852.5	18625	5	16-QAM	25	0	21.57	0-2	2
Mid	1880.0	18900	5	QPSK	1	0	23.81	0	0
	1880.0	18900	5	QPSK	1	12	23.86	0	0
	1880.0	18900	5	QPSK	1	24	23.84	0	0
	1880.0	18900	5	QPSK	12	0	22.80	0-1	1
	1880.0	18900	5	QPSK	12	6	22.81	0-1	1
	1880.0	18900	5	QPSK	12	13	22.84	0-1	1
	1880.0	18900	5	QPSK	25	0	22.85	0-1	1
	1880.0	18900	5	16-QAM	1	0	22.79	0-1	1
	1880.0	18900	5	16-QAM	1	12	22.82	0-1	1
	1880.0	18900	5	16-QAM	1	24	22.74	0-1	1
	1880.0	18900	5	16-QAM	12	0	21.66	0-2	2
	1880.0	18900	5	16-QAM	12	6	21.73	0-2	2
	1880.0	18900	5	16-QAM	12	13	21.79	0-2	2
	1880.0	18900	5	16-QAM	25	0	21.62	0-2	2
High	1907.5	19175	5	QPSK	1	0	23.72	0	0
	1907.5	19175	5	QPSK	1	12	23.67	0	0
	1907.5	19175	5	QPSK	1	24	23.70	0	0
	1907.5	19175	5	QPSK	12	0	22.64	0-1	1
	1907.5	19175	5	QPSK	12	6	22.59	0-1	1
	1907.5	19175	5	QPSK	12	13	22.58	0-1	1
	1907.5	19175	5	QPSK	25	0	22.59	0-1	1
	1907.5	19175	5	16-QAM	1	0	22.68	0-1	1
	1907.5	19175	5	16-QAM	1	12	22.65	0-1	1
	1907.5	19175	5	16-QAM	1	24	22.78	0-1	1
	1907.5	19175	5	16-QAM	12	0	21.65	0-2	2
	1907.5	19175	5	16-QAM	12	6	21.62	0-2	2
	1907.5	19175	5	16-QAM	12	13	21.55	0-2	2
	1907.5	19175	5	16-QAM	25	0	21.69	0-2	2

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1851.5	18615	3	QPSK	1	0	23.72	0	0
	1851.5	18615	3	QPSK	1	7	23.70	0	0
	1851.5	18615	3	QPSK	1	14	23.63	0	0
	1851.5	18615	3	QPSK	8	0	22.83	0-1	1
	1851.5	18615	3	QPSK	8	4	22.74	0-1	1
	1851.5	18615	3	QPSK	8	7	22.73	0-1	1
	1851.5	18615	3	QPSK	15	0	22.71	0-1	1
	1851.5	18615	3	16-QAM	1	0	22.80	0-1	1
	1851.5	18615	3	16-QAM	1	7	22.72	0-1	1
	1851.5	18615	3	16-QAM	1	14	22.80	0-1	1
	1851.5	18615	3	16-QAM	8	0	21.66	0-2	2
	1851.5	18615	3	16-QAM	8	4	21.61	0-2	2
	1851.5	18615	3	16-QAM	8	7	21.59	0-2	2
	1851.5	18615	3	16-QAM	15	0	21.57	0-2	2
Mid	1880.0	18900	3	QPSK	1	0	23.83	0	0
	1880.0	18900	3	QPSK	1	7	23.83	0	0
	1880.0	18900	3	QPSK	1	14	23.82	0	0
	1880.0	18900	3	QPSK	8	0	22.81	0-1	1
	1880.0	18900	3	QPSK	8	4	22.77	0-1	1
	1880.0	18900	3	QPSK	8	7	22.88	0-1	1
	1880.0	18900	3	QPSK	15	0	22.86	0-1	1
	1880.0	18900	3	16-QAM	1	0	22.78	0-1	1
	1880.0	18900	3	16-QAM	1	7	22.86	0-1	1
	1880.0	18900	3	16-QAM	1	14	22.75	0-1	1
	1880.0	18900	3	16-QAM	8	0	21.67	0-2	2
	1880.0	18900	3	16-QAM	8	4	21.71	0-2	2
	1880.0	18900	3	16-QAM	8	7	21.76	0-2	2
	1880.0	18900	3	16-QAM	15	0	21.63	0-2	2
High	1908.5	19185	3	QPSK	1	0	23.76	0	0
	1908.5	19185	3	QPSK	1	7	23.72	0	0
	1908.5	19185	3	QPSK	1	14	23.72	0	0
	1908.5	19185	3	QPSK	8	0	22.65	0-1	1
	1908.5	19185	3	QPSK	8	4	22.62	0-1	1
	1908.5	19185	3	QPSK	8	7	22.60	0-1	1
	1908.5	19185	3	QPSK	15	0	22.57	0-1	1
	1908.5	19185	3	16-QAM	1	0	22.68	0-1	1
	1908.5	19185	3	16-QAM	1	7	22.61	0-1	1
	1908.5	19185	3	16-QAM	1	14	22.73	0-1	1
	1908.5	19185	3	16-QAM	8	0	21.61	0-2	2
	1908.5	19185	3	16-QAM	8	4	21.67	0-2	2
	1908.5	19185	3	16-QAM	8	7	21.58	0-2	2
	1908.5	19185	3	16-QAM	15	0	21.73	0-2	2

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1850.7	18607	1.4	QPSK	1	0	23.74	0	0
	1850.7	18607	1.4	QPSK	1	2	23.68	0	0
	1850.7	18607	1.4	QPSK	1	5	23.62	0	0
	1850.7	18607	1.4	QPSK	3	0	23.48	0	0
	1850.7	18607	1.4	QPSK	3	2	23.40	0	0
	1850.7	18607	1.4	QPSK	3	3	23.43	0	0
	1850.7	18607	1.4	QPSK	6	0	22.72	0-1	1
	1850.7	18607	1.4	16-QAM	1	0	22.80	0-1	1
	1850.7	18607	1.4	16-QAM	1	2	22.73	0-1	1
	1850.7	18607	1.4	16-QAM	1	5	22.76	0-1	1
	1850.7	18607	1.4	16-QAM	3	0	22.40	0-1	1
	1850.7	18607	1.4	16-QAM	3	2	22.43	0-1	1
	1850.7	18607	1.4	16-QAM	3	3	22.44	0-1	1
	1850.7	18607	1.4	16-QAM	6	0	21.62	0-2	2
Mid	1880.0	18900	1.4	QPSK	1	0	23.85	0	0
	1880.0	18900	1.4	QPSK	1	2	23.85	0	0
	1880.0	18900	1.4	QPSK	1	5	23.77	0	0
	1880.0	18900	1.4	QPSK	3	0	23.40	0	0
	1880.0	18900	1.4	QPSK	3	2	23.45	0	0
	1880.0	18900	1.4	QPSK	3	3	23.50	0	0
	1880.0	18900	1.4	QPSK	6	0	22.90	0-1	1
	1880.0	18900	1.4	16-QAM	1	0	22.73	0-1	1
	1880.0	18900	1.4	16-QAM	1	2	22.91	0-1	1
	1880.0	18900	1.4	16-QAM	1	5	22.72	0-1	1
	1880.0	18900	1.4	16-QAM	3	0	22.47	0-1	1
	1880.0	18900	1.4	16-QAM	3	2	22.41	0-1	1
	1880.0	18900	1.4	16-QAM	3	3	22.43	0-1	1
	1880.0	18900	1.4	16-QAM	6	0	21.60	0-2	2
High	1909.3	19193	1.4	QPSK	1	0	23.76	0	0
	1909.3	19193	1.4	QPSK	1	2	23.70	0	0
	1909.3	19193	1.4	QPSK	1	5	23.75	0	0
	1909.3	19193	1.4	QPSK	3	0	23.18	0	0
	1909.3	19193	1.4	QPSK	3	2	23.07	0	0
	1909.3	19193	1.4	QPSK	3	3	23.05	0	0
	1909.3	19193	1.4	QPSK	6	0	22.60	0-1	1
	1909.3	19193	1.4	16-QAM	1	0	22.66	0-1	1
	1909.3	19193	1.4	16-QAM	1	2	22.60	0-1	1
	1909.3	19193	1.4	16-QAM	1	5	22.76	0-1	1
	1909.3	19193	1.4	16-QAM	3	0	22.31	0-1	1
	1909.3	19193	1.4	16-QAM	3	2	22.33	0-1	1
	1909.3	19193	1.4	16-QAM	3	3	22.34	0-1	1
	1909.3	19193	1.4	16-QAM	6	0	21.68	0-2	2

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Table 9-29
LTE Band 2 (PCS) Conducted Powers -20 MHz Bandwidth
(Representing Hotspot Mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1860	18700	20	QPSK	1	0	21.37	0	0
	1860	18700	20	QPSK	1	50	21.25	0	0
	1860	18700	20	QPSK	1	99	21.15	0	0
	1860	18700	20	QPSK	50	0	21.29	0-1	0
	1860	18700	20	QPSK	50	25	21.30	0-1	0
	1860	18700	20	QPSK	50	50	21.28	0-1	0
	1860	18700	20	QPSK	100	0	21.29	0-1	0
	1860	18700	20	16QAM	1	0	21.42	0-1	0
	1860	18700	20	16QAM	1	50	21.33	0-1	0
	1860	18700	20	16QAM	1	99	21.33	0-1	0
	1860	18700	20	16QAM	50	0	21.21	0-2	0
	1860	18700	20	16QAM	50	25	21.19	0-2	0
	1860	18700	20	16QAM	50	50	21.17	0-2	0
	1860	18700	20	16QAM	100	0	21.15	0-2	0
	1880.0	18900	20	QPSK	1	0	21.37	0	0
	1880.0	18900	20	QPSK	1	50	21.38	0	0
Mid	1880.0	18900	20	QPSK	1	99	21.31	0	0
	1880.0	18900	20	QPSK	50	0	21.29	0-1	0
	1880.0	18900	20	QPSK	50	25	21.30	0-1	0
	1880.0	18900	20	QPSK	50	50	21.36	0-1	0
	1880.0	18900	20	QPSK	100	0	21.34	0-1	0
	1880.0	18900	20	16QAM	1	0	21.32	0-1	0
	1880.0	18900	20	16QAM	1	50	21.35	0-1	0
	1880.0	18900	20	16QAM	1	99	21.29	0-1	0
	1880.0	18900	20	16QAM	50	0	21.12	0-2	0
	1880.0	18900	20	16QAM	50	25	21.22	0-2	0
	1880.0	18900	20	16QAM	50	50	21.48	0-2	0
	1880.0	18900	20	16QAM	100	0	21.10	0-2	0
High	1900	19100	20	QPSK	1	0	21.27	0	0
	1900	19100	20	QPSK	1	50	21.26	0	0
	1900	19100	20	QPSK	1	99	21.32	0	0
	1900	19100	20	QPSK	50	0	21.08	0-1	0
	1900	19100	20	QPSK	50	25	21.07	0-1	0
	1900	19100	20	QPSK	50	50	21.15	0-1	0
	1900	19100	20	QPSK	100	0	21.02	0-1	0
	1900	19100	20	16QAM	1	0	21.06	0-1	0
	1900	19100	20	16QAM	1	50	21.08	0-1	0
	1900	19100	20	16QAM	1	99	21.18	0-1	0
	1900	19100	20	16QAM	50	0	21.09	0-2	0
	1900	19100	20	16QAM	50	25	21.18	0-2	0
	1900	19100	20	16QAM	50	50	21.22	0-2	0
	1900	19100	20	16QAM	100	0	21.04	0-2	0

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Table 9-30
LTE Band 2 (PCS) Conducted Powers -15 MHz Bandwidth
(Representing Hotspot Mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1857.5	18675	15	QPSK	1	0	21.19	0	0
	1857.5	18675	15	QPSK	1	36	21.37	0	0
	1857.5	18675	15	QPSK	1	74	21.12	0	0
	1857.5	18675	15	QPSK	36	0	21.26	0-1	0
	1857.5	18675	15	QPSK	36	18	21.22	0-1	0
	1857.5	18675	15	QPSK	36	37	21.13	0-1	0
	1857.5	18675	15	QPSK	75	0	21.23	0-1	0
	1857.5	18675	15	16QAM	1	0	21.33	0-1	0
	1857.5	18675	15	16QAM	1	36	21.30	0-1	0
	1857.5	18675	15	16QAM	1	74	21.38	0-1	0
	1857.5	18675	15	16QAM	36	0	21.01	0-2	0
	1857.5	18675	15	16QAM	36	18	21.21	0-2	0
Mid	1857.5	18675	15	16QAM	36	37	21.29	0-2	0
	1857.5	18675	15	16QAM	75	0	20.96	0-2	0
	1880.0	18900	15	QPSK	1	0	21.27	0	0
	1880.0	18900	15	QPSK	1	36	21.35	0	0
	1880.0	18900	15	QPSK	1	74	21.18	0	0
	1880.0	18900	15	QPSK	36	0	21.27	0-1	0
	1880.0	18900	15	QPSK	36	18	21.19	0-1	0
	1880.0	18900	15	QPSK	36	37	21.17	0-1	0
	1880.0	18900	15	QPSK	75	0	21.42	0-1	0
	1880.0	18900	15	16QAM	1	0	21.05	0-1	0
	1880.0	18900	15	16QAM	1	36	21.16	0-1	0
	1880.0	18900	15	16QAM	1	74	21.21	0-1	0
High	1880.0	18900	15	16QAM	36	0	20.89	0-2	0
	1880.0	18900	15	16QAM	36	18	21.02	0-2	0
	1880.0	18900	15	16QAM	36	37	21.39	0-2	0
	1880.0	18900	15	16QAM	75	0	20.95	0-2	0
	1902.5	19125	15	QPSK	1	0	21.11	0	0
	1902.5	19125	15	QPSK	1	36	21.35	0	0
	1902.5	19125	15	QPSK	1	74	21.39	0	0
	1902.5	19125	15	QPSK	36	0	20.95	0-1	0
	1902.5	19125	15	QPSK	36	18	21.01	0-1	0
	1902.5	19125	15	QPSK	36	37	21.22	0-1	0
	1902.5	19125	15	QPSK	75	0	20.79	0-1	0
	1902.5	19125	15	16QAM	1	0	20.84	0-1	0
	1902.5	19125	15	16QAM	1	36	20.97	0-1	0
	1902.5	19125	15	16QAM	1	74	21.23	0-1	0
	1902.5	19125	15	16QAM	36	0	21.17	0-2	0
	1902.5	19125	15	16QAM	36	18	21.17	0-2	0
	1902.5	19125	15	16QAM	36	37	21.25	0-2	0
	1902.5	19125	15	16QAM	75	0	21.03	0-2	0
	1902.5	19125	15	16QAM	75	0	21.03	0-2	0

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Table 9-31
LTE Band 2 (PCS) Conducted Powers -10 MHz Bandwidth
(Representing Hotspot Mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1855	18650	10	QPSK	1	0	21.25	0	0
	1855	18650	10	QPSK	1	25	21.30	0	0
	1855	18650	10	QPSK	1	49	21.14	0	0
	1855	18650	10	QPSK	25	0	21.32	0-1	0
	1855	18650	10	QPSK	25	12	21.23	0-1	0
	1855	18650	10	QPSK	25	25	21.19	0-1	0
	1855	18650	10	QPSK	50	0	21.14	0-1	0
	1855	18650	10	16QAM	1	0	21.28	0-1	0
	1855	18650	10	16QAM	1	25	21.31	0-1	0
	1855	18650	10	16QAM	1	49	21.34	0-1	0
	1855	18650	10	16QAM	25	0	21.04	0-2	0
	1855	18650	10	16QAM	25	12	21.23	0-2	0
	1855	18650	10	16QAM	25	25	21.22	0-2	0
	1855	18650	10	16QAM	50	0	20.95	0-2	0
Mid	1880.0	18900	10	QPSK	1	0	21.27	0	0
	1880.0	18900	10	QPSK	1	25	21.34	0	0
	1880.0	18900	10	QPSK	1	49	21.27	0	0
	1880.0	18900	10	QPSK	25	0	21.17	0-1	0
	1880.0	18900	10	QPSK	25	12	21.20	0-1	0
	1880.0	18900	10	QPSK	25	25	21.18	0-1	0
	1880.0	18900	10	QPSK	50	0	21.33	0-1	0
	1880.0	18900	10	16QAM	1	0	21.12	0-1	0
	1880.0	18900	10	16QAM	1	25	21.17	0-1	0
	1880.0	18900	10	16QAM	1	49	21.31	0-1	0
	1880.0	18900	10	16QAM	25	0	20.92	0-2	0
	1880.0	18900	10	16QAM	25	12	21.02	0-2	0
	1880.0	18900	10	16QAM	25	25	21.29	0-2	0
	1880.0	18900	10	16QAM	50	0	20.91	0-2	0
High	1905	19150	10	QPSK	1	0	21.15	0	0
	1905	19150	10	QPSK	1	25	21.25	0	0
	1905	19150	10	QPSK	1	49	21.32	0	0
	1905	19150	10	QPSK	25	0	21.02	0-1	0
	1905	19150	10	QPSK	25	12	21.09	0-1	0
	1905	19150	10	QPSK	25	25	21.14	0-1	0
	1905	19150	10	QPSK	50	0	20.88	0-1	0
	1905	19150	10	16QAM	1	0	20.89	0-1	0
	1905	19150	10	16QAM	1	25	21.07	0-1	0
	1905	19150	10	16QAM	1	49	21.13	0-1	0
	1905	19150	10	16QAM	25	0	21.13	0-2	0
	1905	19150	10	16QAM	25	12	21.21	0-2	0
	1905	19150	10	16QAM	25	25	21.19	0-2	0
	1905	19150	10	16QAM	50	0	21.03	0-2	0

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Table 9-32
LTE Band 2 (PCS) Conducted Powers -5 MHz Bandwidth
(Representing Hotspot Mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1852.5	18625	5	QPSK	1	0	21.23	0	0
	1852.5	18625	5	QPSK	1	12	21.27	0	0
	1852.5	18625	5	QPSK	1	24	21.08	0	0
	1852.5	18625	5	QPSK	12	0	21.28	0-1	0
	1852.5	18625	5	QPSK	12	6	21.25	0-1	0
	1852.5	18625	5	QPSK	12	13	21.24	0-1	0
	1852.5	18625	5	QPSK	25	0	21.22	0-1	0
	1852.5	18625	5	16-QAM	1	0	21.29	0-1	0
	1852.5	18625	5	16-QAM	1	12	21.30	0-1	0
	1852.5	18625	5	16-QAM	1	24	21.27	0-1	0
	1852.5	18625	5	16-QAM	12	0	21.01	0-2	0
	1852.5	18625	5	16-QAM	12	6	21.31	0-2	0
	1852.5	18625	5	16-QAM	12	13	21.18	0-2	0
	1852.5	18625	5	16-QAM	25	0	20.96	0-2	0
Mid	1880.0	18900	5	QPSK	1	0	21.25	0	0
	1880.0	18900	5	QPSK	1	12	21.31	0	0
	1880.0	18900	5	QPSK	1	24	21.27	0	0
	1880.0	18900	5	QPSK	12	0	21.17	0-1	0
	1880.0	18900	5	QPSK	12	6	21.14	0-1	0
	1880.0	18900	5	QPSK	12	13	21.13	0-1	0
	1880.0	18900	5	QPSK	25	0	21.26	0-1	0
	1880.0	18900	5	16-QAM	1	0	21.17	0-1	0
	1880.0	18900	5	16-QAM	1	12	21.16	0-1	0
	1880.0	18900	5	16-QAM	1	24	21.30	0-1	0
	1880.0	18900	5	16-QAM	12	0	20.90	0-2	0
	1880.0	18900	5	16-QAM	12	6	21.03	0-2	0
	1880.0	18900	5	16-QAM	12	13	21.21	0-2	0
	1880.0	18900	5	16-QAM	25	0	20.92	0-2	0
High	1907.5	19175	5	QPSK	1	0	21.07	0	0
	1907.5	19175	5	QPSK	1	12	21.27	0	0
	1907.5	19175	5	QPSK	1	24	21.29	0	0
	1907.5	19175	5	QPSK	12	0	21.08	0-1	0
	1907.5	19175	5	QPSK	12	6	21.10	0-1	0
	1907.5	19175	5	QPSK	12	13	21.18	0-1	0
	1907.5	19175	5	QPSK	25	0	20.94	0-1	0
	1907.5	19175	5	16-QAM	1	0	20.89	0-1	0
	1907.5	19175	5	16-QAM	1	12	20.98	0-1	0
	1907.5	19175	5	16-QAM	1	24	21.21	0-1	0
	1907.5	19175	5	16-QAM	12	0	21.22	0-2	0
	1907.5	19175	5	16-QAM	12	6	21.16	0-2	0
	1907.5	19175	5	16-QAM	12	13	21.28	0-2	0
	1907.5	19175	5	16-QAM	25	0	21.05	0-2	0

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Table 9-33
LTE Band 2 (PCS) Conducted Powers -3 MHz Bandwidth
(Representing Hotspot Mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1851.5	18615	3	QPSK	1	0	21.23	0	0
	1851.5	18615	3	QPSK	1	7	21.30	0	0
	1851.5	18615	3	QPSK	1	14	21.09	0	0
	1851.5	18615	3	QPSK	8	0	21.32	0-1	0
	1851.5	18615	3	QPSK	8	4	21.25	0-1	0
	1851.5	18615	3	QPSK	8	7	21.14	0-1	0
	1851.5	18615	3	QPSK	15	0	21.23	0-1	0
	1851.5	18615	3	16-QAM	1	0	21.30	0-1	0
	1851.5	18615	3	16-QAM	1	7	21.27	0-1	0
	1851.5	18615	3	16-QAM	1	14	21.26	0-1	0
	1851.5	18615	3	16-QAM	8	0	21.09	0-2	0
	1851.5	18615	3	16-QAM	8	4	21.32	0-2	0
Mid	1851.5	18615	3	16-QAM	8	7	21.25	0-2	0
	1851.5	18615	3	16-QAM	15	0	21.01	0-2	0
	1880.0	18900	3	QPSK	1	0	21.29	0	0
	1880.0	18900	3	QPSK	1	7	21.32	0	0
	1880.0	18900	3	QPSK	1	14	21.33	0	0
	1880.0	18900	3	QPSK	8	0	21.18	0-1	0
	1880.0	18900	3	QPSK	8	4	21.05	0-1	0
	1880.0	18900	3	QPSK	8	7	21.23	0-1	0
	1880.0	18900	3	QPSK	15	0	21.29	0-1	0
	1880.0	18900	3	16-QAM	1	0	21.12	0-1	0
	1880.0	18900	3	16-QAM	1	7	21.22	0-1	0
	1880.0	18900	3	16-QAM	1	14	21.21	0-1	0
High	1880.0	18900	3	16-QAM	8	0	20.99	0-2	0
	1880.0	18900	3	16-QAM	8	4	21.03	0-2	0
	1880.0	18900	3	16-QAM	8	7	21.31	0-2	0
	1880.0	18900	3	16-QAM	15	0	20.88	0-2	0
	1908.5	19185	3	QPSK	1	0	20.99	0	0
	1908.5	19185	3	QPSK	1	7	21.32	0	0
	1908.5	19185	3	QPSK	1	14	21.28	0	0
	1908.5	19185	3	QPSK	8	0	21.10	0-1	0
	1908.5	19185	3	QPSK	8	4	21.14	0-1	0
	1908.5	19185	3	QPSK	8	7	21.20	0-1	0
	1908.5	19185	3	QPSK	15	0	20.85	0-1	0
	1908.5	19185	3	16-QAM	1	0	20.85	0-1	0
	1908.5	19185	3	16-QAM	1	7	21.06	0-1	0
	1908.5	19185	3	16-QAM	1	14	21.16	0-1	0
	1908.5	19185	3	16-QAM	8	0	21.30	0-2	0
	1908.5	19185	3	16-QAM	8	4	21.26	0-2	0
	1908.5	19185	3	16-QAM	8	7	21.33	0-2	0
	1908.5	19185	3	16-QAM	15	0	21.06	0-2	0

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Table 9-34
LTE Band 2 (PCS) Conducted Powers -1.4 MHz Bandwidth
(Representing Hotspot Mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1850.7	18607	1.4	QPSK	1	0	21.24	0	0
	1850.7	18607	1.4	QPSK	1	2	21.32	0	0
	1850.7	18607	1.4	QPSK	1	5	21.04	0	0
	1850.7	18607	1.4	QPSK	3	0	21.28	0	0
	1850.7	18607	1.4	QPSK	3	2	21.26	0	0
	1850.7	18607	1.4	QPSK	3	3	21.05	0	0
	1850.7	18607	1.4	QPSK	6	0	21.25	0-1	0
	1850.7	18607	1.4	16-QAM	1	0	21.29	0-1	0
	1850.7	18607	1.4	16-QAM	1	2	21.27	0-1	0
	1850.7	18607	1.4	16-QAM	1	5	21.32	0-1	0
	1850.7	18607	1.4	16-QAM	3	0	21.01	0-1	0
	1850.7	18607	1.4	16-QAM	3	2	21.33	0-1	0
	1850.7	18607	1.4	16-QAM	3	3	21.21	0-1	0
	1850.7	18607	1.4	16-QAM	6	0	20.95	0-2	0
Mid	1880.0	18900	1.4	QPSK	1	0	21.20	0	0
	1880.0	18900	1.4	QPSK	1	2	21.31	0	0
	1880.0	18900	1.4	QPSK	1	5	21.33	0	0
	1880.0	18900	1.4	QPSK	3	0	21.14	0	0
	1880.0	18900	1.4	QPSK	3	2	21.05	0	0
	1880.0	18900	1.4	QPSK	3	3	21.16	0	0
	1880.0	18900	1.4	QPSK	6	0	21.30	0-1	0
	1880.0	18900	1.4	16-QAM	1	0	21.04	0-1	0
	1880.0	18900	1.4	16-QAM	1	2	21.23	0-1	0
	1880.0	18900	1.4	16-QAM	1	5	21.21	0-1	0
	1880.0	18900	1.4	16-QAM	3	0	21.01	0-1	0
	1880.0	18900	1.4	16-QAM	3	2	21.07	0-1	0
	1880.0	18900	1.4	16-QAM	3	3	21.26	0-1	0
	1880.0	18900	1.4	16-QAM	6	0	20.93	0-2	0
High	1909.3	19193	1.4	QPSK	1	0	20.92	0	0
	1909.3	19193	1.4	QPSK	1	2	21.30	0	0
	1909.3	19193	1.4	QPSK	1	5	21.31	0	0
	1909.3	19193	1.4	QPSK	3	0	21.04	0	0
	1909.3	19193	1.4	QPSK	3	2	21.04	0	0
	1909.3	19193	1.4	QPSK	3	3	21.23	0	0
	1909.3	19193	1.4	QPSK	6	0	20.78	0-1	0
	1909.3	19193	1.4	16-QAM	1	0	20.79	0-1	0
	1909.3	19193	1.4	16-QAM	1	2	21.07	0-1	0
	1909.3	19193	1.4	16-QAM	1	5	21.20	0-1	0
	1909.3	19193	1.4	16-QAM	3	0	21.21	0-1	0
	1909.3	19193	1.4	16-QAM	3	2	21.17	0-1	0
	1909.3	19193	1.4	16-QAM	3	3	21.25	0-1	0
	1909.3	19193	1.4	16-QAM	6	0	21.05	0-2	0

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9.3.5 LTE Carrier Aggregation Conducted Powers

Table 9-35

Maximum LTE Carrier Aggregation Conducted Powers: Band 2 (PCC) + Band 4 (SCC) 10 MHz BW

Band 2 (PCC) + Band 4 (SCC), 10 MHz				
1880 MHz / ch.18900 + 2132.5 MHz / ch. 2175	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	25	24.00	23.87

Table 9-36

Reduced LTE Carrier Aggregation Conducted Powers: Band 2 (PCC) + Band 4 (SCC) 10 MHz BW

Band 2 (PCC) + Band 4 (SCC), 10 MHz				
1880 MHz / ch.18900 + 2132.5 MHz / ch. 2175	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	25	20.92	21.34

Table 9-37

Maximum LTE Carrier Aggregation Conducted Powers: Band 4 (PCC) + Band 2 (SCC) 10 MHz BW

Band 4 (PCC) + Band 2 (SCC), 10 MHz				
1715 MHz / ch.20000 + 1960 MHz / ch. 900	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	0	23.92	24.00

Table 9-38

Reduced LTE Carrier Aggregation Conducted Powers: Band 4 (PCC) + Band 2 (SCC) 10 MHz BW

Band 4 (PCC) + Band 2 (SCC), 10 MHz				
1715 MHz / ch.20000 + 1960 MHz / ch. 900	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	25	20.86	21.31

Table 9-39

Maximum LTE Carrier Aggregation Conducted Powers: Band 4 (PCC) + Band 12 (SCC) 10 MHz BW

Band 4 (PCC) + Band 12 (SCC), 10 MHz				
1715 MHz / ch.20000 + 737.5 MHz / ch. 5095	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	0	23.96	24.00

Table 9-40

Reduced LTE Carrier Aggregation Conducted Powers: Band 4 (PCC) + Band 12 (SCC) 10 MHz BW

Band 4 (PCC) + Band 12 (SCC), 10 MHz				
1715 MHz / ch.20000 + 737.5 MHz / ch. 5095	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	25	20.89	21.31

Table 9-41

Maximum LTE Carrier Aggregation Conducted Powers: Band 12 (PCC) + Band 4 (SCC) 10 MHz BW

Band 12 (PCC) + Band 4 (SCC), 10 MHz				
707.5 MHz / ch.23095 + 2123.5 MHz / ch. 2175	PCC UL# RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	25	24.38	24.30

Table 9-42

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Maximum LTE Carrier Aggregation Conducted Powers: Band 4 (PCC) + Band 17 (SCC) 10 MHz BW

Band 4 (PCC) + Band 17 (SCC), 10 MHz				
1715 MHz / ch.20000 + 740 MHz / ch. 5790	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	0	23.94	24.00

Table 9-43

Reduced LTE Carrier Aggregation Conducted Powers: Band 4 (PCC) + Band 17 (SCC) 10 MHz BW

Band 4 (PCC) + Band 17 (SCC), 10 MHz				
1715 MHz / ch.20000 + 740 MHz / ch. 5790	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	25	20.85	21.31

Table 9-44

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

Band 2 (PCC) + Band 17 (SCC), 10 MHz				
1880 MHz / ch.18900 + 740 MHz / ch. 5790	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	25	24.00	23.87

Table 9-45

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

Band 2 (PCC) + Band 17 (SCC), 10 MHz				
1880 MHz / ch.18900 + 740 MHz / ch. 5790	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	25	20.90	21.34

Table 9-46

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

Band 17 (PCC) + Band 2 (SCC), 10 MHz				
710 MHz / ch.23790 + 1960 MHz / ch. 900	PCC UL # RB	PCC UL RB Offset	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)
	1	25	24.45	24.30

Note:

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

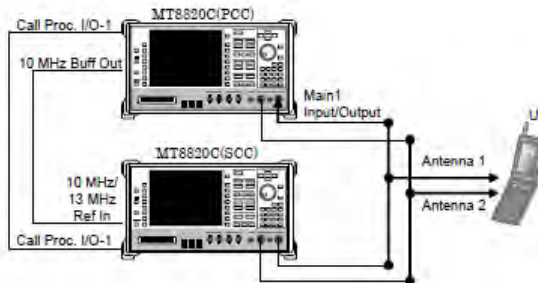


Figure 9-3
Power Measurement Setup

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9.4 WLAN/Bluetooth Conducted Powers

9.4.1 Antenna 1 WLAN Conducted Powers

Table 9-47
IEEE 802.11b Average RF Power

Mode	Freq [MHz]	Channel	802.11b Conducted Power [dBm]			
			Data Rate [Mbps]			
			1	2	5.5	11
802.11b	2412	1*	15.28	15.38	14.36	15.03
802.11b	2437	6*	15.10	15.15	14.85	15.36
802.11b	2462	11*	15.30	15.26	15.36	15.18

Table 9-48
IEEE 802.11g Average RF Power

Mode	Freq [MHz]	Channel	802.11g Conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11g	2412	1	13.53	13.45	13.52	13.57	14.12	13.74	13.66	14.02
802.11g	2437	6	13.22	13.17	13.16	13.26	13.84	13.41	13.32	13.71
802.11g	2462	11	13.45	13.37	13.47	13.56	14.03	13.62	13.56	13.98

Table 9-49
IEEE 802.11n Average RF Power

Mode	Freq [MHz]	Channel	802.11n (2.4GHz) Conducted Power [dBm]							
			Data Rate [Mbps]							
			6.5	13	19.5	26	39	52	58.5	65
802.11n	2412	1	12.20	12.25	12.20	12.24	12.45	12.47	12.30	12.45
802.11n	2437	6	12.27	12.27	12.26	12.31	12.46	12.47	12.36	12.41
802.11n	2462	11	12.34	12.29	12.43	12.37	12.49	12.41	12.49	12.47

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Table 9-50
IEEE 802.11a Average RF Power

Mode	Freq [MHz]	Channel	802.11a Conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11a	5180	36*	11.50	11.75	11.63	11.61	11.70	11.67	11.65	11.82
802.11a	5200	40	11.50	11.67	11.60	11.53	11.69	11.67	11.63	11.80
802.11a	5220	44	11.51	11.72	11.52	11.52	11.76	11.75	11.64	11.77
802.11a	5240	48*	11.59	11.69	11.58	11.76	11.75	11.68	11.75	11.80
802.11a	5260	52*	11.71	11.92	11.81	11.83	11.92	12.03	11.84	12.05
802.11a	5280	56	11.87	11.86	11.85	11.84	11.97	12.07	12.03	12.13
802.11a	5300	60	11.91	11.88	11.80	11.86	11.98	11.97	11.96	12.11
802.11a	5320	64*	11.94	12.03	11.87	11.76	12.07	12.00	12.02	12.15
802.11a	5500	100	11.86	11.91	11.85	11.88	12.03	12.02	12.10	12.10
802.11a	5520	104*	11.92	11.96	11.90	11.92	12.14	12.02	12.11	12.07
802.11a	5540	108	11.89	12.11	11.99	11.88	12.10	12.03	12.17	12.14
802.11a	5560	112	11.99	12.06	12.02	11.86	12.18	12.07	12.20	12.11
802.11a	5580	116*	12.00	12.09	11.98	11.98	12.23	12.08	12.23	12.18
802.11a	5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5660	132	11.91	12.02	12.03	11.98	12.07	12.09	12.16	12.23
802.11a	5680	136*	11.98	12.16	11.98	11.91	12.12	12.04	12.22	12.16
802.11a	5700	140	11.82	12.03	11.98	11.96	12.12	12.05	11.94	12.10
802.11a	5745	149*	11.82	11.81	11.70	11.75	11.94	11.82	11.95	11.83
802.11a	5765	153	11.81	11.77	11.71	11.64	11.87	11.82	12.01	11.90
802.11a	5785	157*	11.85	11.68	11.54	11.59	11.79	11.67	12.05	11.78
802.11a	5805	161	11.73	11.62	11.63	11.56	11.75	11.62	12.08	11.70
802.11a	5825	165*	11.88	11.49	11.50	11.49	11.74	11.67	12.03	11.68

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

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

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Table 9-51
IEEE 802.11n Average RF Power – 20 MHz Bandwidth

Mode	Freq [MHz]	Channel	20MHz BW 802.11n (5GHz) Conducted Power [dBm]							
			Data Rate [Mbps]							
			6.5	13	19.5	26	39	52	58.5	65
802.11n	5180	36	11.57	11.53	11.52	11.69	11.82	11.72	11.83	11.82
802.11n	5200	40	11.47	11.59	11.58	11.61	11.71	11.73	11.79	11.80
802.11n	5220	44	11.43	11.51	11.47	11.49	11.58	11.56	11.83	11.71
802.11n	5240	48	11.51	11.62	11.48	11.83	11.73	11.65	11.75	11.76
802.11n	5260	52	11.61	11.69	11.69	12.11	12.05	11.76	12.14	11.83
802.11n	5280	56	11.66	11.69	11.67	12.04	12.15	11.77	12.17	12.05
802.11n	5300	60	11.76	11.70	11.74	12.18	12.08	11.93	12.02	12.01
802.11n	5320	64	11.69	11.79	11.72	12.14	12.15	11.87	12.17	12.11
802.11n	5500	100	11.78	11.68	11.68	12.13	12.07	12.10	12.17	12.07
802.11n	5520	104	11.79	11.87	11.83	12.04	12.15	12.12	12.22	12.10
802.11n	5540	108	11.82	11.78	11.78	12.13	12.11	12.13	12.21	12.18
802.11n	5560	112	11.86	11.87	11.82	12.18	12.17	12.20	12.14	12.14
802.11n	5580	116	11.93	11.93	11.81	12.13	12.08	12.22	12.21	12.15
802.11n	5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5660	132	11.96	11.94	11.89	12.04	12.19	12.19	12.23	12.17
802.11n	5680	136	11.87	11.86	11.79	12.23	12.15	12.21	12.19	12.16
802.11n	5700	140	11.85	11.86	11.90	12.17	12.18	12.23	12.22	12.18
802.11n	5745	149	11.92	11.58	11.63	11.87	11.89	11.94	11.88	11.92
802.11n	5765	153	11.58	11.58	11.59	11.89	11.88	11.91	11.82	11.85
802.11n	5785	157	11.50	11.50	11.51	11.91	11.77	11.83	11.80	11.83
802.11n	5805	161	11.47	11.50	11.46	11.71	11.86	11.76	11.78	11.83
802.11n	5825	165	11.33	11.37	11.40	11.78	11.70	11.81	11.72	11.72

Table 9-52
IEEE 802.11ac Average RF Power – 20 MHz Bandwidth

20MHz BW 802.11ac (5GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate
			6.5 Mbps
802.11ac	5180	36	11.62
802.11ac	5200	40	11.52
802.11ac	5240	48	11.52
802.11ac	5260	52	11.77
802.11ac	5280	56	11.73
802.11ac	5320	64	11.77
802.11ac	5500	100	11.86
802.11ac	5580	116	11.97
802.11ac	5600	120	N/A
802.11ac	5620	124	N/A
802.11ac	5640	128	N/A
802.11ac	5700	140	11.98
802.11ac	5745	149	11.71
802.11ac	5785	157	11.64
802.11ac	5825	165	11.48

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Table 9-53
IEEE 802.11n Average RF Power – 40 MHz Bandwidth

Mode	Freq [MHz]	Channel	40MHz BW 802.11n (5GHz) Conducted Power [dBm]							
			Data Rate [Mbps]							
			13.5	27	40.5	54	81	108	121.5	135
802.11n	5190	38	9.19	8.95	9.14	9.48	9.38	9.25	9.34	9.41
802.11n	5230	46	9.09	9.20	9.21	9.44	9.14	9.32	9.43	9.18
802.11n	5270	54	9.07	9.30	9.07	9.22	9.31	9.38	9.40	9.36
802.11n	5310	62	9.03	9.09	9.32	9.45	9.46	9.46	9.42	9.42
802.11n	5510	102	9.47	9.30	9.27	9.37	9.37	9.37	9.49	9.19
802.11n	5550	110	9.35	9.45	9.49	9.49	9.47	9.43	9.30	9.36
802.11n	5590	118	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5630	126	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5670	134	9.48	9.20	9.32	9.47	9.41	9.45	9.48	9.22
802.11n	5755	151	9.25	9.21	9.17	9.24	9.16	9.21	9.15	9.16
802.11n	5795	159	9.06	9.02	9.14	9.21	9.30	9.28	9.27	9.19

Table 9-54
IEEE 802.11ac Average RF Power – 40 MHz Bandwidth

40MHz BW 802.11ac (5GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate
			13.5 Mbps
802.11ac	5190	38	9.13
802.11ac	5230	46	9.02
802.11ac	5270	54	9.01
802.11ac	5310	62	9.09
802.11ac	5510	102	9.18
802.11ac	5550	110	9.32
802.11ac	5590	118	N/A
802.11ac	5630	126	N/A
802.11ac	5670	134	9.34
802.11ac	5755	151	9.05
802.11ac	5795	159	8.88

Table 9-55
IEEE 802.11ac Average RF Power – 80 MHz Bandwidth

Mode	Freq [MHz]	Channel	80MHz BW 802.11ac (5GHz) Conducted Power [dBm]									
			Data Rate [Mbps]									
			29.3	58.5	87.8	117	175.5	234	263.3	292.5	351	390
802.11ac	5210	42	9.88	9.71	9.61	9.99	10.07	9.94	9.89	9.95	10.04	10.02
802.11ac	5290	58	9.96	9.71	9.65	10.10	10.10	10.01	9.92	10.04	10.13	10.15
802.11ac	5530	106	9.92	9.98	9.95	10.01	10.13	9.93	9.87	9.97	10.06	10.05
802.11ac	5775	155	9.62	9.71	9.58	9.74	9.85	9.70	9.65	9.76	9.74	9.75

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

- For 2.4 GHz SISO operations, highest average RF output power channel for the lowest data rate for IEEE 802.11b were selected for SAR evaluation. Other IEEE 802.11 SISO modes (including 802.11g/n) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11b mode.
- For 5 GHz SISO operations, highest average RF output power channel for the lowest data rate for IEEE 802.11a were selected for SAR evaluation. Other IEEE 802.11 SISO modes (including 802.11n 20 MHz and 40 MHz) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11a mode.
- Full SAR tests for all SISO IEEE 802.11ac configurations were not required because the average output power was not more than 0.25 dB higher than IEEE 802.11a mode. IEEE 802.11ac in SISO mode was evaluated for the highest IEEE 802.11a position in each 5 GHz band and exposure condition.
- When the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the reported 1g averaged SAR is <0.8 W/kg, SAR testing on other channels is not required. Otherwise, the other default (or corresponding required) test channels were additionally tested using the lowest data rate.
- The bolded data rate and channel above were tested for SAR.

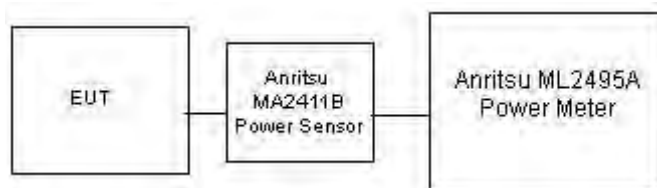


Figure 9-4
Power Measurement Setup for Bandwidths < 50 MHz

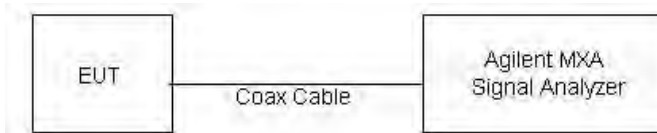


Figure 9-5
Power Measurement Setup for Bandwidths > 50 MHz

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9.4.2 Antenna 2 WLAN Conducted Powers

Table 9-56
IEEE 802.11b Average RF Power

Mode	Freq [MHz]	Channel	802.11b Conducted Power [dBm]			
			Data Rate [Mbps]			
			1	2	5.5	11
802.11b	2412	1*	14.44	14.81	14.79	14.94
802.11b	2437	6*	14.30	14.58	14.63	14.58
802.11b	2462	11*	14.80	14.84	14.86	14.78

Table 9-57
IEEE 802.11g Average RF Power

Mode	Freq [MHz]	Channel	802.11g Conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11g	2412	1	13.18	12.95	13.05	13.16	13.66	13.25	13.35	13.60
802.11g	2437	6	12.97	12.90	13.00	13.09	13.47	13.24	13.17	13.50
802.11g	2462	11	13.38	13.32	13.36	13.32	13.83	13.46	13.58	13.92

Table 9-58
IEEE 802.11n Average RF Power

Mode	Freq [MHz]	Channel	802.11n (2.4GHz) Conducted Power [dBm]							
			Data Rate [Mbps]							
			6.5	13	19.5	26	39	52	58.5	65
802.11n	2412	1	12.26	12.28	12.30	12.45	12.37	12.44	12.54	12.47
802.11n	2437	6	12.09	12.20	12.16	12.42	12.24	12.53	12.45	12.57
802.11n	2462	11	12.32	12.36	12.41	12.56	12.69	12.66	12.72	12.63

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Table 9-59
IEEE 802.11a Average RF Power

Mode	Freq [MHz]	Channel	802.11a Conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11a	5180	36*	11.75	11.79	11.83	11.87	11.91	12.02	12.01	12.10
802.11a	5200	40	11.92	11.75	11.71	11.84	12.11	12.13	12.12	12.12
802.11a	5220	44	11.75	11.81	11.76	11.75	11.92	12.06	11.88	12.07
802.11a	5240	48*	11.59	11.54	11.63	11.63	11.72	12.02	11.97	11.92
802.11a	5260	52*	11.54	11.55	11.34	11.44	11.68	11.73	11.74	11.74
802.11a	5280	56	11.37	11.33	11.36	11.36	11.52	11.53	11.68	11.72
802.11a	5300	60	11.24	11.38	11.23	11.29	11.31	11.50	11.59	11.55
802.11a	5320	64*	11.23	11.07	11.18	11.18	11.44	11.56	11.36	11.51
802.11a	5500	100	11.40	11.38	11.30	11.25	11.90	11.64	11.74	11.84
802.11a	5520	104*	11.45	11.48	11.45	11.56	11.91	11.71	11.64	12.06
802.11a	5540	108	11.53	11.15	11.19	11.41	11.96	11.66	11.58	11.98
802.11a	5560	112	11.49	11.37	11.22	11.38	11.80	11.55	11.63	11.93
802.11a	5580	116*	11.41	11.25	11.25	11.47	11.95	11.72	11.39	11.94
802.11a	5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11a	5660	132	11.54	11.35	11.32	11.62	11.95	11.54	11.71	11.91
802.11a	5680	136*	11.68	11.33	11.54	11.40	12.09	11.49	11.77	12.10
802.11a	5700	140	11.92	11.49	11.43	11.49	12.02	11.86	11.89	12.12
802.11a	5745	149*	12.24	12.05	12.25	12.22	12.45	12.33	12.44	12.46
802.11a	5765	153	12.41	12.14	12.11	12.26	12.37	12.49	12.37	12.37
802.11a	5785	157*	12.31	12.09	12.04	12.21	12.46	12.48	12.49	12.37
802.11a	5805	161	12.14	12.06	12.13	12.31	12.26	12.40	12.41	12.44
802.11a	5825	165*	12.18	12.05	12.07	12.22	12.33	12.46	12.46	12.48

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

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

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

Mode	Freq [MHz]	Channel	20MHz BW 802.11n (5GHz) Conducted Power [dBm]							
			Data Rate [Mbps]							
			6.5	13	19.5	26	39	52	58.5	65
802.11n	5180	36	11.96	11.94	11.87	12.02	12.07	12.05	12.08	12.07
802.11n	5200	40	11.96	11.78	11.99	12.06	12.13	12.00	12.06	12.11
802.11n	5220	44	11.86	11.86	11.97	12.03	12.09	12.04	12.10	12.15
802.11n	5240	48	11.83	11.83	11.92	11.94	12.11	11.91	12.10	12.13
802.11n	5260	52	11.56	11.50	11.53	11.68	11.76	11.74	11.69	11.71
802.11n	5280	56	11.67	11.63	11.57	11.69	11.76	11.72	11.72	11.71
802.11n	5300	60	11.55	11.54	11.51	11.76	11.74	11.70	11.67	11.71
802.11n	5320	64	11.47	11.51	11.42	11.66	11.61	11.62	11.56	11.59
802.11n	5500	100	11.24	11.28	11.29	11.81	11.56	11.59	11.44	11.65
802.11n	5520	104	11.38	11.30	11.31	11.68	11.55	11.63	11.72	11.63
802.11n	5540	108	11.38	11.41	11.39	11.59	11.63	11.66	11.73	11.56
802.11n	5560	112	11.32	11.51	11.20	11.68	11.63	11.52	11.57	11.63
802.11n	5580	116	11.54	11.42	11.45	11.54	11.71	11.54	11.57	11.48
802.11n	5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5660	132	11.52	11.45	11.46	11.79	11.78	11.79	11.86	11.73
802.11n	5680	136	11.70	11.61	11.63	11.74	11.88	11.87	11.78	11.74
802.11n	5700	140	11.51	11.40	11.49	11.77	11.82	11.73	11.67	11.61
802.11n	5745	149	11.75	11.30	11.12	11.61	11.66	11.71	11.50	11.58
802.11n	5765	153	11.32	11.32	11.15	11.67	11.61	11.52	11.57	11.56
802.11n	5785	157	11.22	11.30	11.11	11.59	11.52	11.53	11.48	11.55
802.11n	5805	161	11.29	11.22	11.18	11.51	11.49	11.49	11.52	11.66
802.11n	5825	165	11.23	11.28	11.17	11.54	11.51	11.50	11.47	11.60

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

20MHz BW 802.11ac (5GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate
			6.5 Mbps
802.11ac	5180	36	12.00
802.11ac	5200	40	11.90
802.11ac	5240	48	11.66
802.11ac	5260	52	11.55
802.11ac	5280	56	11.44
802.11ac	5320	64	11.53
802.11ac	5500	100	11.51
802.11ac	5580	116	11.47
802.11ac	5600	120	N/A
802.11ac	5620	124	N/A
802.11ac	5640	128	N/A
802.11ac	5700	140	11.70
802.11ac	5745	149	11.49
802.11ac	5785	157	11.37
802.11ac	5825	165	11.24

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Table 9-62
IEEE 802.11n Average RF Power – 40 MHz Bandwidth

Mode	Freq [MHz]	Channel	40MHz BW 802.11n (5GHz) Conducted Power [dBm]							
			Data Rate [Mbps]							
			13.5	27	40.5	54	81	108	121.5	135
802.11n	5190	38	9.29	9.26	9.41	9.40	9.41	9.26	9.35	9.24
802.11n	5230	46	9.27	9.34	9.15	9.49	9.32	9.40	9.19	9.27
802.11n	5270	54	8.94	8.96	8.93	9.34	9.19	9.17	9.31	9.22
802.11n	5310	62	8.73	8.99	8.82	8.90	9.11	9.10	9.21	9.22
802.11n	5510	102	8.80	8.93	8.75	8.99	9.27	9.14	9.43	9.21
802.11n	5550	110	8.80	9.02	8.88	8.95	9.06	9.02	9.30	9.26
802.11n	5590	118	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5630	126	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
802.11n	5670	134	8.77	9.04	9.05	9.17	9.25	9.22	9.35	9.28
802.11n	5755	151	8.58	8.81	8.64	8.63	8.88	9.07	9.14	8.83
802.11n	5795	159	8.72	8.56	8.52	8.92	8.74	8.88	8.82	9.08

Table 9-63
IEEE 802.11ac Average RF Power – 40 MHz Bandwidth

40MHz BW 802.11ac (5GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate
			13.5 Mbps
802.11ac	5190	38	9.00
802.11ac	5230	46	9.12
802.11ac	5270	54	8.61
802.11ac	5310	62	8.45
802.11ac	5510	102	8.54
802.11ac	5550	110	8.64
802.11ac	5590	118	N/A
802.11ac	5630	126	N/A
802.11ac	5670	134	8.67
802.11ac	5755	151	8.68
802.11ac	5795	159	8.54

Table 9-64
IEEE 802.11ac Average RF Power – 80 MHz Bandwidth

Mode	Freq [MHz]	Channel	80MHz BW 802.11ac (5GHz) Conducted Power [dBm]									
			Data Rate [Mbps]									
			29.3	58.5	87.8	117	175.5	234	263.3	292.5	351	390
802.11ac	5210	42	10.04	9.95	9.98	10.17	10.24	10.15	10.26	10.12	10.21	10.19
802.11ac	5290	58	9.59	9.54	9.60	9.77	9.76	9.64	9.80	9.61	9.79	9.71
802.11ac	5530	106	9.50	9.43	9.55	9.59	9.72	9.72	9.68	9.71	9.66	9.62
802.11ac	5775	155	10.31	10.42	10.33	10.40	10.49	10.40	10.49	10.31	10.46	10.41

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

- For 2.4 GHz SISO operations, highest average RF output power channel for the lowest data rate for IEEE 802.11b were selected for SAR evaluation. Other IEEE 802.11 SISO modes (including 802.11g/n) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11b mode.
- For 5 GHz SISO operations, highest average RF output power channel for the lowest data rate for IEEE 802.11a were selected for SAR evaluation. Other IEEE 802.11 SISO modes (including 802.11n 20 MHz and 40 MHz) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11a mode.
- Full SAR tests for all SISO IEEE 802.11ac configurations were not required because the average output power was not more than 0.25 dB higher than IEEE 802.11a mode. IEEE 802.11ac in SISO mode was evaluated for the highest IEEE 802.11a position in each 5 GHz band and exposure condition.
- When the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the reported 1g averaged SAR is <0.8 W/kg, SAR testing on other channels is not required. Otherwise, the other default (or corresponding required) test channels were additionally tested using the lowest data rate.
- The bolded data rate and channel above were tested for SAR.

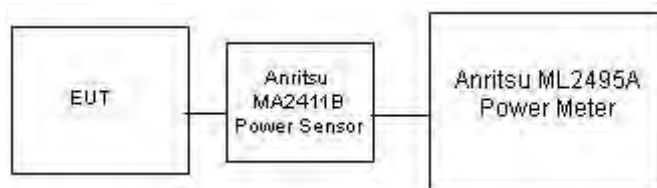


Figure 9-6
Power Measurement Setup for Bandwidths < 50 MHz

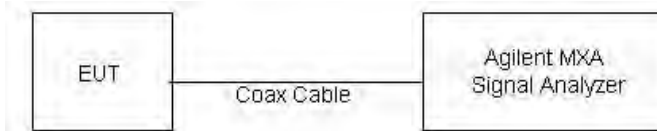


Figure 9-7
Power Measurement Setup for Bandwidths > 50 MHz

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9.4.3 MIMO Conducted Powers

Table 9-65
IEEE 802.11n Average RF Power MIMO

802.11n (2.4 GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			13
802.11n	2412	1	15.24
802.11n	2437	6	15.19
802.11n	2462	11	15.34

Table 9-66
IEEE 802.11n Average RF Power – 20 MHz Bandwidth MIMO

802.11n (5 GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			13
802.11n	5180	36	14.78
802.11n	5200	40	14.73
802.11n	5220	44	14.66
802.11n	5240	48	14.68
802.11n	5260	52	14.60
802.11n	5280	56	14.67
802.11n	5300	60	14.67
802.11n	5320	64	14.59
802.11n	5500	100	14.53
802.11n	5520	104	14.60
802.11n	5540	108	14.62
802.11n	5560	112	14.61
802.11n	5580	116	14.75
802.11n	5600	120	N/A
802.11n	5620	124	N/A
802.11n	5640	128	N/A
802.11n	5660	132	14.75
802.11n	5680	136	14.80
802.11n	5700	140	14.69
802.11n	5745	149	14.85
802.11n	5765	153	14.46
802.11n	5785	157	14.38
802.11n	5805	161	14.39
802.11n	5825	165	14.29

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Table 9-67
IEEE 802.11ac Average RF Power – 20 MHz Bandwidth MIMO

802.11n (5 GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			13
802.11ac	5180	36	14.82
802.11ac	5200	40	14.72
802.11ac	5240	48	14.60
802.11ac	5260	52	14.67
802.11ac	5280	56	14.60
802.11ac	5320	64	14.66
802.11ac	5500	100	14.70
802.11ac	5580	116	14.73
802.11ac	5600	120	N/A
802.11ac	5620	124	N/A
802.11ac	5640	128	N/A
802.11ac	5700	140	14.85
802.11ac	5745	149	14.61
802.11ac	5785	157	14.52
802.11ac	5825	165	14.37

Table 9-68
IEEE 802.11n Average RF Power – 40 MHz Bandwidth MIMO

802.11n (5 GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			27
802.11n	5190	38	12.25
802.11n	5230	46	12.19
802.11n	5270	54	12.02
802.11n	5310	62	11.89
802.11n	5510	102	12.16
802.11n	5550	110	12.09
802.11n	5590	118	N/A
802.11n	5630	126	N/A
802.11n	5670	134	12.15
802.11n	5755	151	11.94
802.11n	5795	159	11.90

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

802.11ac (5 GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			27
802.11ac	5190	38	12.08
802.11ac	5230	46	12.08
802.11ac	5270	54	11.82
802.11ac	5310	62	11.80
802.11ac	5510	102	11.88
802.11ac	5550	110	12.00
802.11ac	5590	118	N/A
802.11ac	5630	126	N/A
802.11ac	5670	134	12.03
802.11ac	5755	151	11.88
802.11ac	5795	159	11.73

Table 9-70
IEEE 802.11ac Average RF Power – 80 MHz Bandwidth MIMO

802.11ac (5 GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			58.5
802.11ac	5210	42	12.97
802.11ac	5290	58	12.79
802.11ac	5530	106	12.72
802.11ac	5775	155	12.99

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

- Per KDB 662911 D01v02r01, the individual spectra for each 2x2 MIMO WIFI Antenna were summed mathematically in linear power units for the MIMO output power measurements.
- For 2.4 GHz MIMO, 802.11n was evaluated.
- For 5 GHz MIMO, 20 MHz BW 802.11n was evaluated. Additional evaluations for 40 MHz bandwidth 802.11n and 802.11ac were not required since the maximum allowed output power was not higher than 802.11n 20 MHz Bandwidth.
- When the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the reported 1g averaged SAR is <0.8 W/kg, SAR testing on other channels is not required. Otherwise, the other default (or corresponding required) test channels were additionally tested using the lowest data rate.
- The bolded data rate and channel above were tested for SAR.

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9.4.4 Bluetooth Conducted Powers

Table 9-71
Bluetooth RF Conducted Powers

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	10.33	10.782
2441	1.0	39	11.54	14.266
2480	1.0	78	10.16	10.374
2402	2.0	0	6.00	3.980
2441	2.0	39	7.51	5.638
2480	2.0	78	5.44	3.498
2402	3.0	0	6.05	4.030
2441	3.0	39	7.58	5.731
2480	3.0	78	5.50	3.552

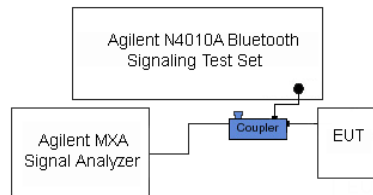


Figure 9-8
Power Measurement Setup

Note: The bolded data rate and channel above were tested for SAR.

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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
09/01/2014	750H	22.0	695	0.865	41.822	0.889	42.227	-2.70%	-0.96%
			710	0.879	41.593	0.890	42.149	-1.24%	-1.32%
			725	0.892	41.353	0.891	42.071	0.11%	-1.71%
			740	0.904	41.151	0.893	41.994	1.23%	-2.01%
			755	0.917	40.938	0.894	41.916	2.57%	-2.33%
08/19/2014	835H	21.9	820	0.881	40.113	0.899	41.578	-2.00%	-3.52%
			835	0.894	39.934	0.900	41.500	-0.67%	-3.77%
			850	0.910	39.808	0.916	41.500	-0.66%	-4.08%
08/06/2014	1750H	23.2	1710	1.324	39.852	1.348	40.142	-1.78%	-0.72%
			1750	1.369	39.677	1.371	40.079	-0.15%	-1.00%
			1790	1.410	39.488	1.394	40.016	1.15%	-1.32%
07/29/2014	1900H	22.9	1850	1.348	39.198	1.400	40.000	-3.71%	-2.01%
			1880	1.376	39.077	1.400	40.000	-1.71%	-2.31%
			1910	1.407	38.963	1.400	40.000	0.50%	-2.59%
08/04/2014	1900H	22.9	1850	1.353	39.481	1.400	40.000	-3.36%	-1.30%
			1880	1.382	39.348	1.400	40.000	-1.29%	-1.63%
			1910	1.416	39.218	1.400	40.000	1.14%	-1.95%
08/28/2014	2450H	22.2	2401	1.795	38.318	1.756	39.287	2.22%	-2.47%
			2450	1.861	38.157	1.800	39.200	3.39%	-2.66%
			2499	1.906	37.915	1.853	39.138	2.86%	-3.12%
08/12/2014	5200H-5800H	22.8	5180	4.700	35.571	4.635	36.009	1.40%	-1.22%
			5200	4.724	35.490	4.655	35.986	1.48%	-1.38%
			5220	4.766	35.472	4.676	35.963	1.92%	-1.37%
			5240	4.800	35.467	4.696	35.940	2.21%	-1.32%
			5260	4.825	35.471	4.717	35.917	2.29%	-1.24%
			5280	4.830	35.454	4.737	35.894	1.96%	-1.23%
			5300	4.826	35.388	4.758	35.871	1.43%	-1.35%
			5320	4.850	35.358	4.778	35.849	1.51%	-1.37%
			5500	5.059	35.124	4.963	35.643	1.93%	-1.46%
			5520	5.078	35.101	4.983	35.620	1.91%	-1.46%
			5540	5.076	35.089	5.004	35.597	1.44%	-1.43%
			5580	5.090	34.981	5.045	35.551	0.89%	-1.60%
			5600	5.129	34.965	5.065	35.529	1.26%	-1.59%
			5660	5.218	34.911	5.127	35.460	1.77%	-1.55%
			5680	5.205	34.890	5.147	35.437	1.13%	-1.54%
			5700	5.219	34.819	5.168	35.414	0.99%	-1.68%
			5745	5.306	34.780	5.214	35.363	1.76%	-1.65%
			5765	5.335	34.765	5.234	35.340	1.93%	-1.63%
			5785	5.340	34.778	5.255	35.317	1.62%	-1.53%
			5800	5.343	34.693	5.270	35.300	1.39%	-1.72%
			5825	5.358	34.622	5.296	35.271	1.17%	-1.84%

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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
07/30/2014	750B	23.6	695	0.913	54.010	0.959	55.745	-4.80%	-3.11%
			710	0.928	53.864	0.960	55.687	-3.33%	-3.27%
			725	0.941	53.674	0.961	55.629	-2.08%	-3.51%
			740	0.954	53.537	0.963	55.570	-0.93%	-3.66%
			755	0.969	53.396	0.964	55.512	0.52%	-3.81%
08/19/2014	835B	23.0	820	0.988	53.746	0.969	55.258	1.96%	-2.74%
			835	1.003	53.663	0.970	55.200	3.40%	-2.78%
			850	1.019	53.542	0.988	55.154	3.14%	-2.92%
08/29/2014	1750B	21.7	1710	1.421	51.878	1.463	53.537	-2.87%	-3.10%
			1750	1.462	51.676	1.488	53.432	-1.75%	-3.29%
			1790	1.507	51.549	1.514	53.326	-0.46%	-3.33%
07/28/2014	1900B	22.4	1850	1.462	54.088	1.520	53.300	-3.82%	1.48%
			1880	1.497	53.978	1.520	53.300	-1.51%	1.27%
			1910	1.533	53.882	1.520	53.300	0.86%	1.09%
08/28/2014	1900B	22.1	1850	1.466	52.100	1.520	53.300	-3.55%	-2.25%
			1880	1.502	52.007	1.520	53.300	-1.18%	-2.43%
			1910	1.536	51.906	1.520	53.300	1.05%	-2.62%
09/01/2014	1900B	22.0	1850	1.454	52.229	1.520	53.300	-4.34%	-2.01%
			1880	1.488	52.130	1.520	53.300	-2.11%	-2.20%
			1910	1.520	52.028	1.520	53.300	0.00%	-2.39%
08/07/2014	2450B	22.9	2401	1.839	51.034	1.903	52.765	-3.36%	-3.28%
			2450	1.903	50.849	1.950	52.700	-2.41%	-3.51%
			2499	1.969	50.697	2.019	52.638	-2.48%	-3.69%
08/15/2014	2450B	23.5	2401	1.844	52.875	1.903	52.765	-3.10%	0.21%
			2450	1.910	52.778	1.950	52.700	-2.05%	0.15%
			2499	1.962	52.533	2.019	52.638	-2.82%	-0.20%
08/11/2014	5200B-5800B	20.7	5180	5.353	47.869	5.276	49.041	1.46%	-2.39%
			5200	5.365	47.684	5.299	49.014	1.25%	-2.71%
			5220	5.415	47.736	5.323	48.987	1.73%	-2.55%
			5240	5.425	47.793	5.346	48.960	1.48%	-2.38%
			5260	5.447	47.871	5.369	48.933	1.45%	-2.17%
			5280	5.478	47.828	5.393	48.906	1.58%	-2.20%
			5300	5.483	47.707	5.416	48.879	1.24%	-2.40%
			5320	5.524	47.617	5.439	48.851	1.56%	-2.53%
			5500	5.726	47.237	5.650	48.607	1.35%	-2.82%
			5520	5.732	47.156	5.673	48.580	1.04%	-2.93%
			5540	5.755	46.979	5.696	48.553	1.04%	-3.24%
			5580	5.838	46.840	5.743	48.499	1.65%	-3.42%
			5600	5.861	46.839	5.766	48.471	1.65%	-3.37%
			5660	5.878	46.462	5.837	48.390	0.70%	-3.98%
			5680	5.917	46.318	5.860	48.363	0.97%	-4.23%
			5700	5.978	46.386	5.883	48.336	1.61%	-4.03%
			5745	5.988	46.411	5.936	48.275	0.88%	-3.86%
			5765	5.997	46.229	5.959	48.248	0.64%	-4.18%
			5785	6.021	45.999	5.982	48.220	0.65%	-4.61%
			5800	6.062	45.948	6.000	48.200	1.03%	-4.67%
			5825	6.138	46.091	6.029	48.166	1.81%	-4.31%

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Table 10-3
Measured Body Tissue Properties (Cont.)

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
08/13/2014	5200B-5800B	24.0	5180	5.237	48.386	5.276	49.041	-0.74%	-1.34%
			5200	5.262	48.246	5.299	49.014	-0.70%	-1.57%
			5220	5.299	48.228	5.323	48.987	-0.45%	-1.55%
			5240	5.344	48.146	5.346	48.960	-0.04%	-1.66%
			5260	5.397	48.132	5.369	48.933	0.52%	-1.64%
			5280	5.416	48.124	5.393	48.906	0.43%	-1.60%
			5300	5.427	48.087	5.416	48.879	0.20%	-1.62%
			5320	5.450	47.979	5.439	48.851	0.20%	-1.79%
			5500	5.733	47.550	5.650	48.607	1.47%	-2.17%
			5520	5.773	47.507	5.673	48.580	1.76%	-2.21%
			5540	5.795	47.517	5.696	48.553	1.74%	-2.13%
			5580	5.835	47.398	5.743	48.499	1.60%	-2.27%
			5600	5.871	47.349	5.766	48.471	1.82%	-2.31%
			5660	5.987	47.206	5.837	48.390	2.57%	-2.45%
			5680	5.999	47.173	5.860	48.363	2.37%	-2.46%
			5700	6.018	47.133	5.883	48.336	2.29%	-2.49%
			5745	6.114	47.032	5.936	48.275	3.00%	-2.57%
			5765	6.139	46.974	5.959	48.248	3.02%	-2.64%
			5785	6.170	46.967	5.982	48.220	3.14%	-2.60%
			5800	6.186	46.881	6.000	48.200	3.10%	-2.74%
			5825	6.212	46.820	6.029	48.166	3.04%	-2.79%

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

Table 10-4
System Verification Results – 1g SAR

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR _{1g} (W/kg)	1 W Target SAR _{1g} (W/kg)	1 W Normalized SAR _{1g} (W/kg)	Deviation _{1g} (%)
D	750	HEAD	09/01/2014	24.0	22.1	0.100	1003	3263	0.831	8.370	8.310	-0.72%
K	835	HEAD	08/19/2014	23.5	22.0	0.100	4d119	3287	0.968	9.220	9.680	4.99%
D	1750	HEAD	08/06/2014	23.9	23.2	0.100	1008	3263	3.580	36.900	35.800	-2.98%
I	1900	HEAD	07/29/2014	23.4	22.9	0.100	5d141	3209	4.030	40.100	40.300	0.50%
K	1900	HEAD	08/04/2014	24.0	22.9	0.100	5d141	3287	3.910	40.100	39.100	-2.49%
G	2450	HEAD	08/28/2014	24.1	22.2	0.100	797	3258	4.820	51.800	48.200	-6.95%
E	5200	HEAD	08/12/2014	24.2	22.8	0.100	1057	3914	7.570	78.000	75.700	-2.95%
E	5300	HEAD	08/12/2014	24.2	22.9	0.100	1057	3914	8.180	83.000	81.800	-1.45%
E	5500	HEAD	08/12/2014	24.3	22.9	0.100	1057	3914	7.920	84.300	79.200	-6.05%
E	5600	HEAD	08/12/2014	24.2	22.9	0.100	1057	3914	8.500	83.500	85.000	1.80%
E	5800	HEAD	08/12/2014	24.2	22.9	0.100	1057	3914	7.700	79.300	77.000	-2.90%
K	750	BODY	07/30/2014	24.1	23.6	0.100	1003	3287	0.887	8.770	8.870	1.14%
D	835	BODY	08/19/2014	23.7	23.0	0.100	4d119	3263	0.897	9.340	8.970	-3.96%
K	1750	BODY	08/29/2014	23.8	21.7	0.100	1008	3287	3.790	37.600	37.900	0.80%
K	1900	BODY	07/28/2014	24.3	23.2	0.100	5d141	3287	4.160	40.600	41.600	2.46%
H	1900	BODY	08/28/2014	23.5	22.1	0.100	5d141	3319	3.920	40.600	39.200	-3.45%
H	1900	BODY	09/01/2014	23.0	22.1	0.100	5d141	3319	3.920	40.600	39.200	-3.45%
H	2450	BODY	08/07/2014	23.9	23.0	0.100	797	3319	5.240	49.400	52.400	6.07%
H	2450	BODY	08/15/2014	23.2	22.5	0.100	797	3319	4.780	49.400	47.800	-3.24%
A	5200	BODY	08/11/2014	22.4	21.3	0.100	1007	3920	7.510	72.600	75.100	3.44%
A	5300	BODY	08/11/2014	22.4	21.3	0.100	1007	3920	7.720	74.700	77.200	3.35%
A	5500	BODY	08/11/2014	22.4	21.3	0.100	1007	3920	7.810	75.900	78.100	2.90%
A	5600	BODY	08/11/2014	22.4	21.3	0.100	1007	3920	7.660	77.300	76.600	-0.91%
A	5800	BODY	08/11/2014	22.4	21.3	0.100	1007	3920	7.230	72.900	72.300	-0.82%
I	5800	BODY	08/13/2014	24.4	24.0	0.100	1057	3589	7.350	74.300	73.500	-1.08%

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Table 10-5
System Verification Results – 10g SAR

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR _{10g} (W/kg)	1 W Target SAR _{10g} (W/kg)	1 W Normalized SAR _{10g} (W/kg)	Deviation _{10g} (%)
H	2450	BODY	08/15/2014	23.2	22.5	0.100	797	3319	2.180	23.100	21.800	-5.63%
I	5200	BODY	08/13/2014	24.4	24.0	0.100	1057	3589	2.250	21.000	22.500	7.14%
I	5300	BODY	08/13/2014	24.4	24.1	0.100	1057	3589	2.360	21.500	23.600	9.77%
I	5500	BODY	08/13/2014	24.3	23.9	0.100	1057	3589	2.300	22.000	23.000	4.55%
I	5600	BODY	08/13/2014	24.2	23.9	0.100	1057	3589	2.240	22.200	22.400	0.90%

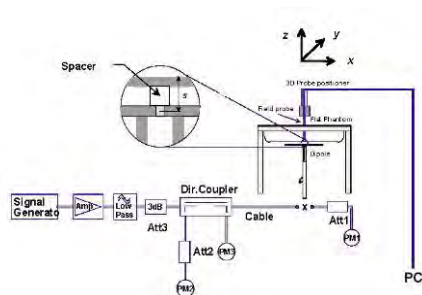


Figure 10-1
System Verification Setup Diagram



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	Maxim um Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	Duty Cycle	SAR(1g)	Scaling Factor	Scaled SAR(1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	33.5	33.20	-0.01	Right	Cheek	Standard	20AD5	1:8.3	0.053	1.072	0.057	
836.60	190	GSM 850	GSM	33.5	33.20	0.00	Right	Tilt	Standard	20AD5	1:8.3	0.028	1.072	0.030	
836.60	190	GSM 850	GSM	33.5	33.20	0.13	Left	Cheek	Standard	20AD5	1:8.3	0.103	1.072	0.110	
836.60	190	GSM 850	GSM	33.5	33.20	0.00	Left	Cheek	Wireless Charging	20AD5	1:8.3	0.134	1.072	0.144	A1
836.60	190	GSM 850	GSM	33.5	33.20	0.01	Left	Tilt	Standard	20AD5	1:8.3	0.042	1.072	0.045	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-2
GSM 1900 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	31.0	29.61	0.21	Right	Cheek	Standard	20AC2	1:8.3	0.032	1.377	0.044	
1880.00	661	GSM 1900	GSM	31.0	29.61	0.00	Right	Tilt	Standard	20AC2	1:8.3	0.019	1.377	0.026	
1880.00	661	GSM 1900	GSM	31.0	29.61	0.07	Left	Cheek	Standard	20AC2	1:8.3	0.043	1.377	0.059	A2
1880.00	661	GSM 1900	GSM	31.0	29.61	-0.05	Left	Cheek	Wireless Charging	20AC2	1:8.3	0.039	1.377	0.054	
1880.00	661	GSM 1900	GSM	31.0	29.61	0.13	Left	Tilt	Standard	20AC2	1:8.3	0.018	1.377	0.025	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-3
UMTS 850 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	Duty Cycle	SAR(1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	4183	UMTS 850	RMC	24.5	24.26	0.10	Right	Cheek	Standard	20AD5	1:1	0.043	1.057	0.045	
836.60	4183	UMTS 850	RMC	24.5	24.26	0.14	Right	Tilt	Standard	20AD5	1:1	0.022	1.057	0.023	
836.60	4183	UMTS 850	RMC	24.5	24.26	0.14	Left	Cheek	Standard	20AD5	1:1	0.084	1.057	0.089	
836.60	4183	UMTS 850	RMC	24.5	24.26	0.06	Left	Cheek	Wireless Charging	20AD5	1:1	0.119	1.057	0.126	A3
836.60	4183	UMTS 850	RMC	24.5	24.26	0.09	Left	Tilt	Standard	20AD5	1:1	0.031	1.057	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							

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Table 11-4
UMTS 1750 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	Duty Cycle	SAR(1g)	Scaling Factor	Scaled SAR(1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	24.0	23.60	-0.05	Right	Cheek	Standard	20AD4	1:1	0.135	1.096	0.148	
1732.40	1412	UMTS 1750	RMC	24.0	23.60	-0.10	Right	Tilt	Standard	20AD4	1:1	0.081	1.096	0.089	
1732.40	1412	UMTS 1750	RMC	24.0	23.60	0.04	Left	Cheek	Standard	20AD4	1:1	0.166	1.096	0.182	A4
1732.40	1412	UMTS 1750	RMC	24.0	23.60	-0.06	Left	Cheek	Wireless Charging	20AD4	1:1	0.160	1.096	0.175	
1732.40	1412	UMTS 1750	RMC	24.0	23.60	0.03	Left	Tilt	Standard	20AD4	1:1	0.064	1.096	0.070	
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	Cover Type	Device Serial Number	Duty Cycle	SAR(1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	23.5	23.45	0.05	Right	Cheek	Standard	209AF	1:1	0.075	1.012	0.076	
1880.00	9400	UMTS 1900	RMC	23.5	23.45	0.02	Right	Tilt	Standard	209AF	1:1	0.026	1.012	0.026	
1880.00	9400	UMTS 1900	RMC	23.5	23.45	-0.01	Left	Cheek	Standard	209AF	1:1	0.090	1.012	0.091	A5
1880.00	9400	UMTS 1900	RMC	23.5	23.45	-0.20	Left	Cheek	Wireless Charging	209AF	1:1	0.083	1.012	0.084	
1880.00	9400	UMTS 1900	RMC	23.5	23.45	0.20	Left	Tilt	Standard	209AF	1:1	0.025	1.012	0.025	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Head							
Spatial Peak								1.6 W/kg (mW/g)							
Uncontrolled Exposure/General Population								averaged over 1 gram							

Table 11-6
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	Cover Type	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	24.30	-0.08	0	Right	Cheek	QPSK	1	25	Standard	221F0	1:1	0.160	1.047	0.168	A6
707.50	23095	Mid	LTE Band 12	10	24.5	24.30	0.06	0	Right	Cheek	QPSK	1	25	Wireless Charging	221F0	1:1	0.151	1.047	0.158	
707.50	23095	Mid	LTE Band 12	10	23.5	23.15	0.10	1	Right	Cheek	QPSK	25	0	Standard	221F0	1:1	0.113	1.084	0.122	
707.50	23095	Mid	LTE Band 12	10	24.5	24.30	0.11	0	Right	Tilt	QPSK	1	25	Standard	221F0	1:1	0.058	1.047	0.061	
707.50	23095	Mid	LTE Band 12	10	23.5	23.15	0.20	1	Right	Tilt	QPSK	25	0	Standard	221F0	1:1	0.039	1.084	0.042	
707.50	23095	Mid	LTE Band 12	10	24.5	24.30	0.00	0	Left	Cheek	QPSK	1	25	Standard	221F0	1:1	0.131	1.047	0.137	
707.50	23095	Mid	LTE Band 12	10	23.5	23.15	0.01	1	Left	Cheek	QPSK	25	0	Standard	221F0	1:1	0.094	1.084	0.102	
707.50	23095	Mid	LTE Band 12	10	24.5	24.30	0.15	0	Left	Tilt	QPSK	1	25	Standard	221F0	1:1	0.058	1.047	0.061	
707.50	23095	Mid	LTE Band 12	10	23.5	23.15	0.11	1	Left	Tilt	QPSK	25	0	Standard	221F0	1:1	0.039	1.084	0.042	
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 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	Cover Type	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	24.01	0.04	0	Right	Cheek	QPSK	1	0	Standard	20AD5	1:1	0.058	1.119	0.065	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	22.90	0.10	1	Right	Cheek	QPSK	25	0	Standard	20AD5	1:1	0.040	1.148	0.046	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.01	0.11	0	Right	Tilt	QPSK	1	0	Standard	20AD5	1:1	0.034	1.119	0.038	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	22.90	0.02	1	Right	Tilt	QPSK	25	0	Standard	20AD5	1:1	0.022	1.148	0.025	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.01	-0.02	0	Left	Cheek	QPSK	1	0	Standard	20AD5	1:1	0.092	1.119	0.103	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.01	0.01	0	Left	Cheek	QPSK	1	0	Wireless Charging	20AD5	1:1	0.135	1.119	0.151	A7
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	22.90	0.18	1	Left	Cheek	QPSK	25	0	Standard	20AD5	1:1	0.065	1.148	0.075	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.01	0.13	0	Left	Tilt	QPSK	1	0	Standard	20AD5	1:1	0.042	1.119	0.047	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	22.90	0.13	1	Left	Tilt	QPSK	25	0	Standard	20AD5	1:1	0.028	1.148	0.032	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-8
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	Cover Type	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	24.0	23.80	0.19	0	Right	Cheek	QPSK	1	0	Standard	20ACC	1:1	0.157	1.047	0.164	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.0	22.56	0.17	1	Right	Cheek	QPSK	50	0	Standard	20ACC	1:1	0.121	1.107	0.134	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.0	23.80	0.07	0	Right	Tilt	QPSK	1	0	Standard	20ACC	1:1	0.051	1.047	0.053	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.0	22.56	0.14	1	Right	Tilt	QPSK	50	0	Standard	20ACC	1:1	0.046	1.107	0.051	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.0	23.80	0.15	0	Left	Cheek	QPSK	1	0	Standard	20ACC	1:1	0.312	1.047	0.327	A8
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.0	23.80	0.09	0	Left	Cheek	QPSK	1	0	Wireless Charging	20ACC	1:1	0.275	1.047	0.288	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.0	22.56	0.03	1	Left	Cheek	QPSK	50	0	Standard	20ACC	1:1	0.249	1.107	0.276	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.0	23.80	0.21	0	Left	Tilt	QPSK	1	0	Standard	20ACC	1:1	0.035	1.047	0.037	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.0	22.56	0.18	1	Left	Tilt	QPSK	50	0	Standard	20ACC	1:1	0.030	1.107	0.033	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Head										
Spatial Peak										1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population										averaged over 1 gram										

Table 11-9
LTE Band 2 (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	Cover Type	Device Serial Number	Duty Cycle	SAR(1g)	Scaling Factor	Scaled SAR(1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
1880.00	18900	Mid	LTE Band 2 (PCS)	20	24.0	23.88	0.19	0	Right	Cheek	QPSK	1	50	Standard	20ACC	1:1	0.079	1.028	0.081	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.0	22.84	0.05	1	Right	Cheek	QPSK	50	50	Standard	20ACC	1:1	0.059	1.038	0.061	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	24.0	23.88	-0.14	0	Right	Tilt	QPSK	1	50	Standard	20ACC	1:1	0.041	1.028	0.042	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.0	22.84	0.21	1	Right	Tilt	QPSK	50	50	Standard	20ACC	1:1	0.026	1.038	0.027	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	24.0	23.88	0.14	0	Left	Cheek	QPSK	1	50	Standard	20ACC	1:1	0.087	1.028	0.089	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	24.0	23.88	0.16	0	Left	Cheek	QPSK	1	50	Wireless Charging	20ACC	1:1	0.106	1.028	0.109	A9
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.0	22.84	0.20	1	Left	Cheek	QPSK	50	50	Standard	20ACC	1:1	0.074	1.038	0.077	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	24.0	23.88	0.05	0	Left	Tilt	QPSK	1	50	Standard	20ACC	1:1	0.037	1.028	0.038	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.0	22.84	0.19	1	Left	Tilt	QPSK	50	50	Standard	20ACC	1:1	0.035	1.038	0.036	
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
DTS Head SAR**

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Bandwidth [MHz]	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Duty Cycle	SAR(1g)	Scaling Factor	Scaled SAR(1g)	Plot #
MHz	Ch.														(W/kg)		(W/kg)	
2462	11	IEEE 802.11b	20	DSSS	15.5	15.30	0.16	Right	Cheek	1	Standard	01FC3	1	1:1	0.314	1.047	0.329	
2462	11	IEEE 802.11n	20	OFDM	13.5	12.34	0.08	Right	Cheek	1	Standard	01FC3	6.5	1:1	0.106	1.306	0.138	
2462	11	IEEE 802.11b	20	DSSS	15.5	15.30	0.06	Right	Tilt	1	Standard	01FC3	1	1:1	0.206	1.047	0.216	
2462	11	IEEE 802.11b	20	DSSS	15.5	15.30	0.12	Left	Cheek	1	Standard	01FC3	1	1:1	0.166	1.047	0.174	
2462	11	IEEE 802.11b	20	DSSS	15.5	15.30	0.12	Left	Tilt	1	Standard	01FC3	1	1:1	0.090	1.047	0.094	
2462	11	IEEE 802.11b	20	DSSS	15.5	14.80	-0.05	Right	Cheek	2	Standard	01FC3	1	1:1	0.573	1.175	0.673	A10
2462	11	IEEE 802.11b	20	DSSS	15.5	14.80	0.02	Right	Cheek	2	Wireless Charging	01FC3	1	1:1	0.544	1.175	0.639	
2462	11	IEEE 802.11n	20	OFDM	13.5	12.32	0.02	Right	Cheek	2	Standard	01FC3	6.5	1:1	0.423	1.312	0.555	
2462	11	IEEE 802.11b	20	DSSS	15.5	14.80	0.07	Right	Tilt	2	Standard	01FC3	1	1:1	0.330	1.175	0.388	
2462	11	IEEE 802.11b	20	DSSS	15.5	14.80	0.05	Left	Cheek	2	Standard	01FC3	1	1:1	0.442	1.175	0.519	
2462	11	IEEE 802.11n	20	OFDM	13.5	12.32	0.06	Left	Cheek	2	Standard	01FC3	6.5	1:1	0.287	1.312	0.377	
2462	11	IEEE 802.11b	20	DSSS	15.5	14.80	0.08	Left	Tilt	2	Standard	01FC3	1	1:1	0.312	1.175	0.367	
2462	11	IEEE 802.11n	20	OFDM	15.5	15.34	-0.10	Right	Cheek	MIMO	Standard	01FC3	13	1:1	0.405	1.038	0.420	
2462	11	IEEE 802.11n	20	OFDM	15.5	15.34	-0.21	Right	Cheek	MIMO	Wireless Charging	01FC3	13	1:1	0.400	1.038	0.415	
2462	11	IEEE 802.11n	20	OFDM	15.5	15.34	0.09	Right	Tilt	MIMO	Standard	01FC3	13	1:1	0.301	1.038	0.312	
2462	11	IEEE 802.11n	20	OFDM	15.5	15.34	0.04	Left	Cheek	MIMO	Standard	01FC3	13	1:1	0.280	1.038	0.291	
2462	11	IEEE 802.11n	20	OFDM	15.5	15.34	0.16	Left	Tilt	MIMO	Standard	01FC3	13	1:1	0.183	1.038	0.190	
5825	165	IEEE 802.11a	20	OFDM	12.5	11.88	0.11	Right	Cheek	1	Standard	015D8	6	1:1	0.074	1.153	0.085	
5775	155	IEEE 802.11ac	80	OFDM	10.5	9.62	0.16	Right	Cheek	1	Standard	015D8	29.3	1:1	0.045	1.225	0.055	
5745	149	IEEE 802.11ac	20	OFDM	12.5	11.71	0.21	Right	Cheek	1	Standard	015D8	6.5	1:1	0.089	1.199	0.107	
5755	151	IEEE 802.11n	40	OFDM	9.5	9.25	0.17	Right	Cheek	1	Standard	015D8	13.5	1:1	0.048	1.059	0.051	
5745	149	IEEE 802.11n	20	OFDM	12.5	11.92	0.15	Right	Cheek	1	Standard	015D8	6.5	1:1	0.099	1.143	0.113	
5825	165	IEEE 802.11a	20	OFDM	12.5	11.88	0.17	Right	Tilt	1	Standard	015D8	6	1:1	0.038	1.153	0.044	
5825	165	IEEE 802.11a	20	OFDM	12.5	11.88	-0.15	Left	Cheek	1	Standard	015D8	6	1:1	0.035	1.153	0.040	
5825	165	IEEE 802.11a	20	OFDM	12.5	11.88	0.19	Left	Tilt	1	Standard	015D8	6	1:1	0.000	1.153	0.000	
5765	153	IEEE 802.11a	20	OFDM	12.5	12.41	-0.08	Right	Cheek	2	Standard	015D8	6	1:1	0.025	1.021	0.026	
5765	153	IEEE 802.11a	20	OFDM	12.5	12.41	0.16	Right	Tilt	2	Standard	015D8	6	1:1	0.034	1.021	0.035	
5765	153	IEEE 802.11a	20	OFDM	12.5	12.41	0.13	Left	Cheek	2	Standard	015D8	6	1:1	0.039	1.021	0.040	
5775	155	IEEE 802.11ac	80	OFDM	10.5	10.31	-0.12	Left	Cheek	2	Standard	015D8	29.3	1:1	0.012	1.045	0.013	
5745	149	IEEE 802.11ac	20	OFDM	12.5	11.49	0.16	Left	Cheek	2	Standard	015D8	6.5	1:1	0.024	1.262	0.030	
5795	159	IEEE 802.11n	40	OFDM	9.5	8.72	-0.17	Left	Cheek	2	Standard	015D8	13.5	1:1	0.006	1.197	0.007	
5745	149	IEEE 802.11n	20	OFDM	12.5	11.75	-0.11	Left	Cheek	2	Standard	015D8	6.5	1:1	0.034	1.189	0.040	
5765	153	IEEE 802.11a	20	OFDM	12.5	12.41	0.07	Left	Tilt	2	Standard	015D8	6	1:1	0.035	1.021	0.036	
5745	149	IEEE 802.11n	20	OFDM	15.5	14.85	0.12	Right	Cheek	MIMO	Standard	015D8	13	1:1	0.169	1.161	0.196	A11
5745	149	IEEE 802.11n	20	OFDM	15.5	14.85	0.14	Right	Tilt	MIMO	Standard	015D8	13	1:1	0.080	1.161	0.093	
5745	149	IEEE 802.11n	20	OFDM	15.5	14.85	-0.16	Left	Cheek	MIMO	Standard	015D8	13	1:1	0.029	1.161	0.034	
5745	149	IEEE 802.11n	20	OFDM	15.5	14.85	0.12	Left	Tilt	MIMO	Standard	015D8	13	1:1	0.029	1.161	0.034	
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 11-11
NII Head SAR**

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Bandwidth [MHz]	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.														(W/kg)		(W/kg)	
5240	48	IEEE 802.11a	20	OFDM	12.5	11.59	-0.12	Right	Cheek	1	Standard	015D8	6	1:1	0.019	1.233	0.023	
5210	42	IEEE 802.11ac	80	OFDM	10.5	9.88	0.10	Right	Cheek	1	Standard	015D8	29.3	1:1	0.010	1.153	0.012	
5240	48	IEEE 802.11a	20	OFDM	12.5	11.59	0.16	Right	Tilt	1	Standard	015D8	6	1:1	0.007	1.233	0.009	
5240	48	IEEE 802.11a	20	OFDM	12.5	11.59	0.19	Left	Cheek	1	Standard	015D8	6	1:1	0.000	1.233	0.000	
5240	48	IEEE 802.11a	20	OFDM	12.5	11.59	0.10	Left	Tilt	1	Standard	015D8	6	1:1	0.000	1.233	0.000	
5320	64	IEEE 802.11a	20	OFDM	12.5	11.94	-0.14	Right	Cheek	1	Standard	015D8	6	1:1	0.015	1.138	0.017	
5290	58	IEEE 802.11ac	80	OFDM	10.5	9.96	-0.12	Right	Cheek	1	Standard	015D8	29.3	1:1	0.016	1.132	0.018	
5260	52	IEEE 802.11ac	20	OFDM	12.5	11.77	-0.13	Right	Cheek	1	Standard	015D8	6.5	1:1	0.042	1.183	0.050	
5270	54	IEEE 802.11n	40	OFDM	9.5	9.07	0.13	Right	Cheek	1	Standard	015D8	13.5	1:1	0.017	1.104	0.019	
5300	60	IEEE 802.11n	20	OFDM	12.5	11.76	0.18	Right	Cheek	1	Standard	015D8	6.5	1:1	0.049	1.186	0.058	
5320	64	IEEE 802.11a	20	OFDM	12.5	11.94	0.14	Right	Tilt	1	Standard	015D8	6	1:1	0.011	1.138	0.013	
5320	64	IEEE 802.11a	20	OFDM	12.5	11.94	0.10	Left	Cheek	1	Standard	015D8	6	1:1	0.000	1.138	0.000	
5320	64	IEEE 802.11a	20	OFDM	12.5	11.94	0.19	Left	Tilt	1	Standard	015D8	6	1:1	0.000	1.138	0.000	
5580	116	IEEE 802.11a	20	OFDM	12.5	12.00	-0.03	Right	Cheek	1	Standard	015D8	6	1:1	0.086	1.122	0.096	
5530	106	IEEE 802.11ac	80	OFDM	10.5	9.92	0.13	Right	Cheek	1	Standard	015D8	29.3	1:1	0.033	1.143	0.038	
5700	140	IEEE 802.11ac	20	OFDM	12.5	11.98	0.14	Right	Cheek	1	Standard	015D8	6.5	1:1	0.124	1.127	0.140	
5670	134	IEEE 802.11n	40	OFDM	9.5	9.48	0.13	Right	Cheek	1	Standard	015D8	13.5	1:1	0.083	1.005	0.083	
5660	132	IEEE 802.11n	20	OFDM	12.5	11.96	0.16	Right	Cheek	1	Standard	015D8	6.5	1:1	0.159	1.132	0.180	
5580	116	IEEE 802.11a	20	OFDM	12.5	12.00	0.11	Right	Tilt	1	Standard	015D8	6	1:1	0.043	1.122	0.048	
5580	116	IEEE 802.11a	20	OFDM	12.5	12.00	0.12	Left	Cheek	1	Standard	015D8	6	1:1	0.035	1.122	0.039	
5580	116	IEEE 802.11a	20	OFDM	12.5	12.00	0.10	Left	Tilt	1	Standard	015D8	6	1:1	0.000	1.122	0.000	
5200	40	IEEE 802.11a	20	OFDM	12.5	11.92	0.16	Right	Cheek	2	Standard	015D8	6	1:1	0.096	1.143	0.110	
5200	40	IEEE 802.11a	20	OFDM	12.5	11.92	0.11	Right	Tilt	2	Standard	015D8	6	1:1	0.073	1.143	0.083	
5200	40	IEEE 802.11a	20	OFDM	12.5	11.92	0.13	Left	Cheek	2	Standard	015D8	6	1:1	0.139	1.143	0.159	
5200	40	IEEE 802.11a	20	OFDM	12.5	11.92	0.12	Left	Cheek	2	Wireless Charging	015D8	6	1:1	0.140	1.143	0.160	
5210	42	IEEE 802.11ac	80	OFDM	10.5	10.04	0.14	Left	Cheek	2	Standard	015D8	29.3	1:1	0.058	1.112	0.064	
5200	40	IEEE 802.11a	20	OFDM	12.5	11.92	0.13	Left	Tilt	2	Standard	015D8	6	1:1	0.118	1.143	0.135	
5260	52	IEEE 802.11a	20	OFDM	12.5	11.54	0.18	Right	Cheek	2	Standard	015D8	6	1:1	0.075	1.247	0.094	
5260	52	IEEE 802.11a	20	OFDM	12.5	11.54	0.14	Right	Tilt	2	Standard	015D8	6	1:1	0.062	1.247	0.077	
5260	52	IEEE 802.11a	20	OFDM	12.5	11.54	0.12	Left	Cheek	2	Standard	015D8	6	1:1	0.115	1.247	0.143	
5290	58	IEEE 802.11ac	80	OFDM	10.5	9.59	0.14	Left	Cheek	2	Standard	015D8	29.3	1:1	0.046	1.233	0.057	
5260	52	IEEE 802.11ac	20	OFDM	12.5	11.55	0.13	Left	Cheek	2	Standard	015D8	6.5	1:1	0.093	1.245	0.116	
5270	54	IEEE 802.11n	40	OFDM	9.5	8.94	0.21	Left	Cheek	2	Standard	015D8	13.5	1:1	0.044	1.138	0.050	
5280	56	IEEE 802.11n	20	OFDM	12.5	11.67	0.01	Left	Cheek	2	Standard	015D8	6.5	1:1	0.085	1.211	0.103	
5260	52	IEEE 802.11a	20	OFDM	12.5	11.54	-0.02	Left	Tilt	2	Standard	015D8	6	1:1	0.097	1.247	0.121	
5700	140	IEEE 802.11a	20	OFDM	12.5	11.92	-0.15	Right	Cheek	2	Standard	015D8	6	1:1	0.026	1.143	0.030	
5700	140	IEEE 802.11a	20	OFDM	12.5	11.92	0.15	Right	Tilt	2	Standard	015D8	6	1:1	0.037	1.143	0.042	
5700	140	IEEE 802.11a	20	OFDM	12.5	11.92	0.13	Left	Cheek	2	Standard	015D8	6	1:1	0.050	1.143	0.057	
5530	106	IEEE 802.11ac	80	OFDM	10.5	9.50	0.14	Left	Cheek	2	Standard	015D8	29.3	1:1	0.032	1.259	0.040	
5700	140	IEEE 802.11ac	20	OFDM	12.5	11.70	-0.13	Left	Cheek	2	Standard	015D8	6.5	1:1	0.036	1.202	0.043	
5510	102	IEEE 802.11n	40	OFDM	9.5	8.80	-0.12	Left	Cheek	2	Standard	015D8	13.5	1:1	0.032	1.175	0.038	
5680	136	IEEE 802.11n	20	OFDM	12.5	11.70	0.19	Left	Cheek	2	Standard	015D8	6.5	1:1	0.038	1.202	0.046	
5700	140	IEEE 802.11a	20	OFDM	12.5	11.92	0.16	Left	Tilt	2	Standard	015D8	6	1:1	0.046	1.143	0.053	
5180	36	IEEE 802.11n	20	OFDM	15.5	14.78	0.12	Right	Cheek	MIMO	Standard	015D8	13	1:1	0.011	1.180	0.013	
5180	36	IEEE 802.11n	20	OFDM	15.5	14.78	0.16	Right	Tilt	MIMO	Standard	015D8	13	1:1	0.005	1.180	0.006	
5180	36	IEEE 802.11n	20	OFDM	15.5	14.78	-0.19	Left	Cheek	MIMO	Standard	015D8	13	1:1	0.106	1.180	0.125	
5180	36	IEEE 802.11n	20	OFDM	15.5	14.78	0.17	Left	Tilt	MIMO	Standard	015D8	13	1:1	0.085	1.180	0.100	
5280	56	IEEE 802.11n	20	OFDM	15.5	14.67	0.21	Right	Cheek	MIMO	Standard	015D8	13	1:1	0.039	1.211	0.047	
5280	56	IEEE 802.11n	20	OFDM	15.5	14.67	0.12	Right	Tilt	MIMO	Standard	015D8	13	1:1	0.018	1.211	0.022	
5280	56	IEEE 802.11n	20	OFDM	15.5	14.67	0.10	Left	Cheek	MIMO	Standard	015D8	13	1:1	0.076	1.211	0.092	
5280	56	IEEE 802.11n	20	OFDM	15.5	14.67	0.10	Left	Tilt	MIMO	Standard	015D8	13	1:1	0.061	1.211	0.074	
5680	136	IEEE 802.11n	20	OFDM	15.5	14.80	0.13	Right	Cheek	MIMO	Standard	015D8	13	1:1	0.187	1.175	0.220	
5680	136	IEEE 802.11n	20	OFDM	15.5	14.80	0.08	Right	Cheek	MIMO	Wireless Charging	015D8	13	1:1	0.212	1.175	0.249	A12
5680	136	IEEE 802.11n	20	OFDM	15.5	14.80	0.16	Right	Tilt	MIMO	Standard	015D8	13	1:1	0.122	1.175	0.143	
5680	136	IEEE 802.11n	20	OFDM	15.5	14.80	-0.13	Left	Cheek	MIMO	Standard	015D8	13	1:1	0.035	1.175	0.041	
5680	136	IEEE 802.11n	20	OFDM	15.5	14.80	0.12	Left	Tilt	MIMO	Standard	015D8	13	1:1	0.037	1.175	0.043	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT												Head						
Spatial Peak												1.6 W/kg (mW/g)						
Uncontrolled Exposure/General Population												averaged over 1 gram						

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11.2 Standalone Body-Worn SAR Data

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

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	# of Time Slots	Duty Cycle	Cover Type	Device Serial Number	Spacing	Side	SAR(1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	33.5	33.20	-0.06	1	1:8.3	Standard	20AD5	10 mm	back	0.396	1.072	0.425	
836.60	190	GSM 850	GSM	33.5	33.20	-0.15	1	1:8.3	Wireless Charging	20AD5	10 mm	back	0.486	1.072	0.521	A13
1880.00	661	GSM 1900	GSM	31.0	29.61	-0.04	1	1:8.3	Standard	20AC2	10 mm	back	0.264	1.377	0.364	A15
1880.00	661	GSM 1900	GSM	31.0	29.61	0.08	1	1:8.3	Wireless Charging	20AC2	10 mm	back	0.258	1.377	0.355	
836.60	4183	UMTS 850	RMC	24.5	24.26	-0.05	N/A	1:1	Standard	20AD5	10 mm	back	0.401	1.057	0.424	
836.60	4183	UMTS 850	RMC	24.5	24.26	-0.12	N/A	1:1	Wireless Charging	20AD5	10 mm	back	0.444	1.057	0.469	A17
1732.40	1412	UMTS 1750	RMC	24.0	23.60	-0.03	N/A	1:1	Standard	221F2	15 mm	back	0.415	1.096	0.455	A19
1732.40	1412	UMTS 1750	RMC	24.0	23.60	0.00	N/A	1:1	Wireless Charging	221F2	15 mm	back	0.363	1.096	0.398	
1880.00	9400	UMTS 1900	RMC	23.5	23.45	0.01	N/A	1:1	Standard	221A9	15 mm	back	0.247	1.012	0.250	A21
1880.00	9400	UMTS 1900	RMC	23.5	23.45	0.03	N/A	1:1	Wireless Charging	221A9	15 mm	back	0.240	1.012	0.243	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT									Body							
Spatial Peak									1.6 W/kg (mW/g)							
Uncontrolled Exposure/General Population									averaged over 1 gram							

Table 11-13
LTE Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Modulation	RB Size	RB Offset	Spacing	Side	Cover Type	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	24.30	0.05	0	QPSK	1	25	10 mm	back	Standard	20A9B	1:1	0.300	1.047	0.314	A23
707.50	23095	Mid	LTE Band 12	10	24.5	24.30	0.13	0	QPSK	1	25	10 mm	back	Wireless Charging	20A9B	1:1	0.147	1.047	0.154	
707.50	23095	Mid	LTE Band 12	10	23.5	23.15	-0.02	1	QPSK	25	0	10 mm	back	Standard	20A9B	1:1	0.224	1.084	0.243	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.01	0.03	0	QPSK	1	0	10 mm	back	Standard	20AD5	1:1	0.471	1.119	0.527	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.01	0.08	0	QPSK	1	0	10 mm	back	Wireless Charging	20AD5	1:1	0.485	1.119	0.543	A25
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	22.90	0.04	1	QPSK	25	0	10 mm	back	Standard	20AD5	1:1	0.346	1.148	0.397	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.0	23.80	-0.02	0	QPSK	1	0	15 mm	back	Standard	221AA	1:1	0.535	1.047	0.560	A27
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.0	23.80	-0.01	0	QPSK	1	0	15 mm	back	Wireless Charging	221AA	1:1	0.446	1.047	0.467	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.0	22.56	0.01	1	QPSK	50	0	15 mm	back	Standard	221AA	1:1	0.434	1.107	0.480	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	24.0	23.88	-0.06	0	QPSK	1	50	15 mm	back	Standard	221A5	1:1	0.295	1.028	0.303	A29
1880.00	18900	Mid	LTE Band 2 (PCS)	20	24.0	23.88	0.02	0	QPSK	1	50	15 mm	back	Wireless Charging	221A5	1:1	0.254	1.028	0.261	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.0	22.84	0.04	1	QPSK	50	50	15 mm	back	Standard	221A5	1:1	0.245	1.038	0.254	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Body										
Spatial Peak										1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population										averaged over 1 gram										

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Table 11-14
DTS Body-Worn SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Bandwidth [MHz]	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Spacing	Side	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #
MHz	Ch.																	
2462	11	IEEE 802.11b	20	DSSS	15.5	15.30	0.06	1	Standard	015D8	1	10 mm	back	1:1	0.128	1.047	0.134	A31
2462	11	IEEE 802.11b	20	DSSS	15.5	15.30	0.18	1	Wireless Charging	015D8	1	10 mm	back	1:1	0.086	1.047	0.090	
2462	11	IEEE 802.11n	20	OFDM	13.5	12.34	0.14	1	Standard	015D8	6.5	10 mm	back	1:1	0.034	1.306	0.044	
2462	11	IEEE 802.11b	20	DSSS	15.5	14.80	0.08	2	Standard	015D8	1	10 mm	back	1:1	0.118	1.175	0.139	
2462	11	IEEE 802.11n	20	OFDM	13.5	12.32	0.09	2	Standard	015D8	6.5	10 mm	back	1:1	0.022	1.312	0.029	
2462	11	IEEE 802.11n	20	OFDM	15.5	15.34	0.19	MIMO	Standard	015D8	13	10 mm	back	1:1	0.060	1.038	0.062	
2462	11	IEEE 802.11n	20	OFDM	15.5	15.34	0.12	MIMO	Wireless Charging	015D8	13	10 mm	back	1:1	0.045	1.038	0.047	
5825	165	IEEE 802.11a	20	OFDM	12.5	11.88	0.15	1	Standard	015D8	6	10 mm	back	1:1	0.048	1.153	0.055	
5775	155	IEEE 802.11ac	80	OFDM	10.5	9.62	0.12	1	Standard	015D8	29.3	10 mm	back	1:1	0.030	1.225	0.037	
5745	149	IEEE 802.11ac	20	OFDM	12.5	11.71	-0.09	1	Standard	015D8	6.5	10 mm	back	1:1	0.092	1.199	0.110	
5755	151	IEEE 802.11n	40	OFDM	9.5	9.25	0.14	1	Standard	015D8	13.5	10 mm	back	1:1	0.023	1.059	0.024	
5745	149	IEEE 802.11n	20	OFDM	12.5	11.92	-0.08	1	Standard	015D8	6.5	10 mm	back	1:1	0.101	1.143	0.115	
5765	153	IEEE 802.11a	20	OFDM	12.5	12.41	-0.13	2	Standard	015D8	6	10 mm	back	1:1	0.214	1.021	0.218	
5775	155	IEEE 802.11ac	80	OFDM	10.5	10.31	-0.12	2	Standard	015D8	29.3	10 mm	back	1:1	0.092	1.045	0.096	
5745	149	IEEE 802.11ac	20	OFDM	12.5	11.49	-0.16	2	Standard	015D8	6.5	10 mm	back	1:1	0.129	1.262	0.163	
5795	159	IEEE 802.11n	40	OFDM	9.5	8.72	0.14	2	Standard	015D8	13.5	10 mm	back	1:1	0.043	1.197	0.051	
5745	149	IEEE 802.11n	20	OFDM	12.5	11.75	-0.11	2	Standard	015D8	6.5	10 mm	back	1:1	0.151	1.189	0.180	
5745	149	IEEE 802.11n	20	OFDM	15.5	14.85	-0.13	MIMO	Standard	015D8	13	10 mm	back	1:1	0.292	1.161	0.339	A32
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 11-15
NII Body-Worn SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Bandwidth [MHz]	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.														(W/kg)		(W/kg)	
5240	48	IEEE 802.11a	20	OFDM	12.5	11.59	0.16	1	Standard	015D8	6	10 mm	back	1:1	0.022	1.233	0.027	
5210	42	IEEE 802.11ac	80	OFDM	10.5	9.88	0.15	1	Standard	015D8	29.3	10 mm	back	1:1	0.019	1.153	0.022	
5320	64	IEEE 802.11a	20	OFDM	12.5	11.94	0.10	1	Standard	015D8	6	10 mm	back	1:1	0.026	1.138	0.030	
5290	58	IEEE 802.11ac	80	OFDM	10.5	9.96	0.12	1	Standard	015D8	29.3	10 mm	back	1:1	0.018	1.132	0.020	
5260	52	IEEE 802.11ac	20	OFDM	12.5	11.77	-0.14	1	Standard	015D8	6.5	10 mm	back	1:1	0.034	1.183	0.040	
5270	54	IEEE 802.11n	40	OFDM	9.5	9.07	0.11	1	Standard	015D8	13.5	10 mm	back	1:1	0.001	1.104	0.001	
5300	60	IEEE 802.11n	20	OFDM	12.5	11.76	0.19	1	Standard	015D8	6.5	10 mm	back	1:1	0.035	1.186	0.042	
5580	116	IEEE 802.11a	20	OFDM	12.5	12.00	0.17	1	Standard	015D8	6	10 mm	back	1:1	0.046	1.122	0.052	
5530	106	IEEE 802.11ac	80	OFDM	10.5	9.92	0.16	1	Standard	015D8	29.3	10 mm	back	1:1	0.025	1.143	0.029	
5700	140	IEEE 802.11ac	20	OFDM	12.5	11.98	-0.17	1	Standard	015D8	6.5	10 mm	back	1:1	0.181	1.127	0.204	
5670	134	IEEE 802.11n	40	OFDM	9.5	9.48	0.14	1	Standard	015D8	13.5	10 mm	back	1:1	0.045	1.005	0.045	
5660	132	IEEE 802.11n	20	OFDM	12.5	11.96	-0.19	1	Standard	015D8	6.5	10 mm	back	1:1	0.149	1.132	0.169	
5200	40	IEEE 802.11a	20	OFDM	12.5	11.92	-0.14	2	Standard	015D8	6	10 mm	back	1:1	0.092	1.143	0.105	
5210	42	IEEE 802.11ac	80	OFDM	10.5	10.04	-0.16	2	Standard	015D8	29.3	10 mm	back	1:1	0.059	1.112	0.066	
5260	52	IEEE 802.11a	20	OFDM	12.5	11.54	-0.04	2	Standard	015D8	6	10 mm	back	1:1	0.092	1.247	0.115	
5290	58	IEEE 802.11ac	80	OFDM	10.5	9.59	-0.13	2	Standard	015D8	29.3	10 mm	back	1:1	0.063	1.233	0.078	
5260	52	IEEE 802.11ac	20	OFDM	12.5	11.55	-0.17	2	Standard	015D8	6.5	10 mm	back	1:1	0.090	1.245	0.112	
5270	54	IEEE 802.11n	40	OFDM	9.5	8.94	0.19	2	Standard	015D8	13.5	10 mm	back	1:1	0.057	1.138	0.065	
5280	56	IEEE 802.11n	20	OFDM	12.5	11.67	-0.17	2	Standard	015D8	6.5	10 mm	back	1:1	0.091	1.211	0.110	
5700	140	IEEE 802.11a	20	OFDM	12.5	11.92	-0.10	2	Standard	015D8	6	10 mm	back	1:1	0.272	1.143	0.311	
5700	140	IEEE 802.11a	20	OFDM	12.5	11.92	-0.12	2	Wireless Charging	015D8	6	10 mm	back	1:1	0.321	1.143	0.367	
5530	106	IEEE 802.11ac	80	OFDM	10.5	9.50	-0.19	2	Standard	015D8	29.3	10 mm	back	1:1	0.157	1.259	0.198	
5700	140	IEEE 802.11ac	20	OFDM	12.5	11.70	-0.18	2	Standard	015D8	6.5	10 mm	back	1:1	0.228	1.202	0.274	
5510	102	IEEE 802.11n	40	OFDM	9.5	8.80	0.17	2	Standard	015D8	13.5	10 mm	back	1:1	0.105	1.175	0.123	
5680	136	IEEE 802.11n	20	OFDM	12.5	11.70	-0.11	2	Standard	015D8	6.5	10 mm	back	1:1	0.203	1.202	0.244	
5180	36	IEEE 802.11n	20	OFDM	15.5	14.78	-0.14	MIMO	Standard	015D8	13	10 mm	back	1:1	0.127	1.180	0.150	
5280	56	IEEE 802.11n	20	OFDM	15.5	14.67	-0.17	MIMO	Standard	015D8	13	10 mm	back	1:1	0.147	1.211	0.178	
5540	108	IEEE 802.11n	20	OFDM	15.5	14.62	-0.12	MIMO	Standard	015D8	13	10 mm	back	1:1	0.385	1.225	0.472	
5580	116	IEEE 802.11n	20	OFDM	15.5	14.75	-0.15	MIMO	Standard	015D8	13	10 mm	back	1:1	0.428	1.189	0.509	
5680	136	IEEE 802.11n	20	OFDM	15.5	14.80	-0.12	MIMO	Standard	015D8	13	10 mm	back	1:1	0.454	1.175	0.533	A34
5680	136	IEEE 802.11n	20	OFDM	15.5	14.80	-0.10	MIMO	Wireless Charging	015D8	13	10 mm	back	1:1	0.325	1.175	0.382	
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
DSS Body-Worn SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Cover Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR(1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
2441	39	Bluetooth	FHSS	12.0	11.54	0.13	10 mm	Standard	015D8	1	back	1:1	0.006	1.112	0.007	A35
2441	39	Bluetooth	FHSS	12.0	11.54	0.19	10 mm	Wireless Charging	015D8	1	back	1:1	0.000	1.112	0.000	
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 11-17
GPRS/UMTS Hotspot SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Cover Type	Device Serial Number	# of GPRS Slots	Duty Cycle	Spacing	Side	SAR(1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.60	190	GSM 850	GPRS	28.0	27.55	0.13	Standard	20AD5	4	1:2.076	10 mm	back	0.546	1.109	0.606	
836.60	190	GSM 850	GPRS	28.0	27.55	-0.03	Standard	20AD5	4	1:2.076	10 mm	front	0.611	1.109	0.678	
836.60	190	GSM 850	GPRS	28.0	27.55	-0.19	Wireless Charging	20AD5	4	1:2.076	10 mm	front	0.720	1.109	0.798	A14
836.60	190	GSM 850	GPRS	28.0	27.55	-0.03	Standard	20AD5	4	1:2.076	10 mm	bottom	0.205	1.109	0.227	
836.60	190	GSM 850	GPRS	28.0	27.55	0.17	Standard	20AD5	4	1:2.076	10 mm	right	0.025	1.109	0.028	
836.60	190	GSM 850	GPRS	28.0	27.55	0.13	Standard	20AD5	4	1:2.076	10 mm	left	0.241	1.109	0.267	
1880.00	661	GSM 1900	GPRS	26.0	25.50	-0.07	Standard	221A5	4	1:2.076	10 mm	back	0.326	1.122	0.366	
1880.00	661	GSM 1900	GPRS	26.0	25.50	-0.09	Standard	221A5	4	1:2.076	10 mm	front	0.443	1.122	0.497	
1880.00	661	GSM 1900	GPRS	26.0	25.50	-0.08	Standard	221A5	4	1:2.076	10 mm	bottom	0.654	1.122	0.734	
1880.00	661	GSM 1900	GPRS	26.0	25.50	-0.01	Wireless Charging	221A5	4	1:2.076	10 mm	bottom	0.684	1.122	0.767	A16
1880.00	661	GSM 1900	GPRS	26.0	25.50	0.18	Standard	221A5	4	1:2.076	10 mm	right	0.119	1.122	0.134	
1880.00	661	GSM 1900	GPRS	26.0	25.50	0.13	Standard	221A5	4	1:2.076	10 mm	left	0.088	1.122	0.099	
836.60	4183	UMTS 850	RMC	24.5	24.26	-0.05	Standard	20AD5	N/A	1:1	10 mm	back	0.401	1.057	0.424	
836.60	4183	UMTS 850	RMC	24.5	24.26	0.02	Standard	20AD5	N/A	1:1	10 mm	front	0.465	1.057	0.492	
836.60	4183	UMTS 850	RMC	24.5	24.26	-0.02	Wireless Charging	20AD5	N/A	1:1	10 mm	front	0.520	1.057	0.550	A18
836.60	4183	UMTS 850	RMC	24.5	24.26	-0.08	Standard	20AD5	N/A	1:1	10 mm	bottom	0.156	1.057	0.165	
836.60	4183	UMTS 850	RMC	24.5	24.26	-0.01	Standard	20AD5	N/A	1:1	10 mm	right	0.215	1.057	0.227	
836.60	4183	UMTS 850	RMC	24.5	24.26	-0.03	Standard	20AD5	N/A	1:1	10 mm	left	0.175	1.057	0.185	
1732.40	1412	UMTS 1750	RMC	21.5	21.10	-0.06	Standard	221F2	N/A	1:1	10 mm	back	0.378	1.096	0.414	
1732.40	1412	UMTS 1750	RMC	21.5	21.10	0.02	Standard	221F2	N/A	1:1	10 mm	front	0.505	1.096	0.553	
1732.40	1412	UMTS 1750	RMC	21.5	21.10	0.01	Standard	221F2	N/A	1:1	10 mm	bottom	0.591	1.096	0.648	
1732.40	1412	UMTS 1750	RMC	21.5	21.10	0.01	Wireless Charging	221F2	N/A	1:1	10 mm	bottom	0.614	1.096	0.673	A20
1732.40	1412	UMTS 1750	RMC	21.5	21.10	-0.07	Standard	221F2	N/A	1:1	10 mm	right	0.108	1.096	0.118	
1732.40	1412	UMTS 1750	RMC	21.5	21.10	-0.19	Standard	221F2	N/A	1:1	10 mm	left	0.127	1.096	0.139	
1880.00	9400	UMTS 1900	RMC	21.5	21.20	-0.01	Standard	221A9	N/A	1:1	10 mm	back	0.244	1.072	0.262	
1880.00	9400	UMTS 1900	RMC	21.5	21.20	-0.01	Standard	221A9	N/A	1:1	10 mm	front	0.368	1.072	0.394	
1880.00	9400	UMTS 1900	RMC	21.5	21.20	0.02	Standard	221A9	N/A	1:1	10 mm	bottom	0.558	1.072	0.598	
1880.00	9400	UMTS 1900	RMC	21.5	21.20	0.00	Wireless Charging	221A9	N/A	1:1	10 mm	bottom	0.559	1.072	0.599	A22
1880.00	9400	UMTS 1900	RMC	21.5	21.20	0.06	Standard	221A9	N/A	1:1	10 mm	right	0.098	1.072	0.105	
1880.00	9400	UMTS 1900	RMC	21.5	21.20	-0.01	Standard	221A9	N/A	1:1	10 mm	left	0.056	1.072	0.060	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-18
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Modulation	RBSize	RBOffset	Cover Type	Device Serial Number	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	24.30	0.05	0	QPSK	1	25	Standard	20A9B	10 mm	back	1:1	0.300	1.047	0.314	
707.50	23095	Mid	LTE Band 12	10	23.5	23.15	-0.02	1	QPSK	25	0	Standard	20A9B	10 mm	back	1:1	0.224	1.084	0.243	
707.50	23095	Mid	LTE Band 12	10	24.5	24.30	0.08	0	QPSK	1	25	Standard	20A9B	10 mm	front	1:1	0.360	1.047	0.377	A24
707.50	23095	Mid	LTE Band 12	10	24.5	24.30	-0.06	0	QPSK	1	25	Wireless Charging	20A9B	10 mm	front	1:1	0.314	1.047	0.329	
707.50	23095	Mid	LTE Band 12	10	23.5	23.15	-0.04	1	QPSK	25	0	Standard	20A9B	10 mm	front	1:1	0.270	1.084	0.293	
707.50	23095	Mid	LTE Band 12	10	24.5	24.30	0.06	0	QPSK	1	25	Standard	20A9B	10 mm	bottom	1:1	0.204	1.047	0.214	
707.50	23095	Mid	LTE Band 12	10	23.5	23.15	-0.11	1	QPSK	25	0	Standard	20A9B	10 mm	bottom	1:1	0.148	1.084	0.160	
707.50	23095	Mid	LTE Band 12	10	24.5	24.30	-0.06	0	QPSK	1	25	Standard	20A9B	10 mm	right	1:1	0.193	1.047	0.202	
707.50	23095	Mid	LTE Band 12	10	23.5	23.15	-0.04	1	QPSK	25	0	Standard	20A9B	10 mm	right	1:1	0.167	1.084	0.181	
707.50	23095	Mid	LTE Band 12	10	24.5	24.30	0.06	0	QPSK	1	25	Standard	20A9B	10 mm	left	1:1	0.130	1.047	0.136	
707.50	23095	Mid	LTE Band 12	10	23.5	23.15	-0.10	1	QPSK	25	0	Standard	20A9B	10 mm	left	1:1	0.091	1.084	0.099	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Body 1.6 W/kg (mW/g) averaged over 1 gram									

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Table 11-19
LTE Band 5 (Cell) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Modulation	RB Size	RB Offset	Cover Type	Device Serial Number	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
836.50	20525	Md	LTE Band 5 (Cell)	10	24.5	24.01	0.03	0	QPSK	1	0	Standard	20AD5	10 mm	back	1:1	0.471	1.119	0.527	
836.50	20525	Md	LTE Band 5 (Cell)	10	23.5	22.90	0.04	1	QPSK	25	0	Standard	20AD5	10 mm	back	1:1	0.346	1.148	0.397	
836.50	20525	Md	LTE Band 5 (Cell)	10	24.5	24.01	0.01	0	QPSK	1	0	Standard	20AD5	10 mm	front	1:1	0.479	1.119	0.536	
836.50	20525	Md	LTE Band 5 (Cell)	10	24.5	24.01	-0.02	0	QPSK	1	0	Wireless Charging	20AD5	10 mm	front	1:1	0.657	1.119	0.735	A26
836.50	20525	Md	LTE Band 5 (Cell)	10	23.5	22.90	0.03	1	QPSK	25	0	Standard	20AD5	10 mm	front	1:1	0.347	1.148	0.398	
836.50	20525	Md	LTE Band 5 (Cell)	10	24.5	24.01	0.00	0	QPSK	1	0	Standard	20AD5	10 mm	bottom	1:1	0.188	1.119	0.210	
836.50	20525	Md	LTE Band 5 (Cell)	10	23.5	22.90	0.03	1	QPSK	25	0	Standard	20AD5	10 mm	bottom	1:1	0.129	1.148	0.148	
836.50	20525	Md	LTE Band 5 (Cell)	10	24.5	24.01	0.02	0	QPSK	1	0	Standard	20AD5	10 mm	right	1:1	0.233	1.119	0.261	
836.50	20525	Md	LTE Band 5 (Cell)	10	23.5	22.90	-0.07	1	QPSK	25	0	Standard	20AD5	10 mm	right	1:1	0.195	1.148	0.224	
836.50	20525	Md	LTE Band 5 (Cell)	10	24.5	24.01	-0.03	0	QPSK	1	0	Standard	20AD5	10 mm	left	1:1	0.203	1.119	0.227	
836.50	20525	Md	LTE Band 5 (Cell)	10	23.5	22.90	-0.04	1	QPSK	25	0	Standard	20AD5	10 mm	left	1:1	0.152	1.148	0.174	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT											Body									
Spatial Peak											1.6 W/kg (mW/g)									
Uncontrolled Exposure/General Population											averaged over 1 gram									

Table 11-20
LTE Band 4 (AWS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Modulation	RBSize	RBOffset	Cover Type	Device Serial Number	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	21.5	21.33	0.02	0	QPSK	1	50	Standard	221AA	10 mm	back	1:1	0.458	1.040	0.476	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.5	21.24	0.00	0	QPSK	50	25	Standard	221AA	10 mm	back	1:1	0.468	1.062	0.497	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.5	21.33	0.01	0	QPSK	1	50	Standard	221AA	10 mm	front	1:1	0.574	1.040	0.597	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.5	21.24	-0.06	0	QPSK	50	25	Standard	221AA	10 mm	front	1:1	0.585	1.062	0.621	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.5	21.33	-0.09	0	QPSK	1	50	Standard	221AA	10 mm	bottom	1:1	0.586	1.040	0.609	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.5	21.24	0.01	0	QPSK	50	25	Standard	221AA	10 mm	bottom	1:1	0.595	1.062	0.632	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.5	21.24	-0.08	0	QPSK	50	25	Wireless Charging	221AA	10 mm	bottom	1:1	0.616	1.062	0.654	A28
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.5	21.33	0.01	0	QPSK	1	50	Standard	221AA	10 mm	right	1:1	0.108	1.040	0.112	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.5	21.24	0.02	0	QPSK	50	25	Standard	221AA	10 mm	right	1:1	0.113	1.062	0.120	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.5	21.33	-0.05	0	QPSK	1	50	Standard	221AA	10 mm	left	1:1	0.147	1.040	0.153	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.5	21.24	-0.05	0	QPSK	50	25	Standard	221AA	10 mm	left	1:1	0.151	1.062	0.160	
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 2 (PCS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Modulation	RB Size	RB Offset	Cover Type	Device Serial Number	Spacing	Side	Duty Cycle	SAR(1g)	Scaling Factor	Scaled SAR(1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
1880.00	18900	Mid	LTE Band 2 (PCS)	20	21.5	21.38	0.01	0	QPSK	1	50	Standard	221A5	10 mm	back	1:1	0.278	1.028	0.286	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	21.5	21.36	-0.03	0	QPSK	50	50	Standard	221A5	10 mm	back	1:1	0.281	1.033	0.290	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	21.5	21.38	-0.02	0	QPSK	1	50	Standard	221A5	10 mm	front	1:1	0.369	1.028	0.379	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	21.5	21.36	-0.01	0	QPSK	50	50	Standard	221A5	10 mm	front	1:1	0.375	1.033	0.387	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	21.5	21.38	0.00	0	QPSK	1	50	Standard	221A5	10 mm	bottom	1:1	0.521	1.028	0.536	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	21.5	21.38	0.13	0	QPSK	1	50	Wireless Charging	221A5	10 mm	bottom	1:1	0.539	1.028	0.554	A30
1880.00	18900	Mid	LTE Band 2 (PCS)	20	21.5	21.36	0.00	0	QPSK	50	50	Standard	221A5	10 mm	bottom	1:1	0.505	1.033	0.522	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	21.5	21.38	0.02	0	QPSK	1	50	Standard	221A5	10 mm	right	1:1	0.118	1.028	0.121	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	21.5	21.36	-0.07	0	QPSK	50	50	Standard	221A5	10 mm	right	1:1	0.112	1.033	0.116	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	21.5	21.38	-0.06	0	QPSK	1	50	Standard	221A5	10 mm	left	1:1	0.064	1.028	0.066	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	21.5	21.36	0.02	0	QPSK	50	50	Standard	221A5	10 mm	left	1:1	0.063	1.033	0.065	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Body										
Spatial Peak										1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population										averaged over 1 gram										

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**Table 11-22
WLAN Hotspot SAR**

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Bandwidth [MHz]	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.														(W/kg)		(W/kg)	
2462	11	IEEE 802.11b	20	DSSS	15.5	15.30	0.06	1	Standard	015D8	1	10 mm	back	1:1	0.128	1.047	0.134	A31
2462	11	IEEE 802.11b	20	DSSS	15.5	15.30	0.18	1	Wireless Charging	015D8	1	10 mm	back	1:1	0.086	1.047	0.090	
2462	11	IEEE 802.11n	20	OFDM	13.5	12.34	0.14	1	Standard	015D8	6.5	10 mm	back	1:1	0.034	1.306	0.044	
2462	11	IEEE 802.11b	20	DSSS	15.5	15.30	-0.09	1	Standard	015D8	1	10 mm	front	1:1	0.067	1.047	0.070	
2462	11	IEEE 802.11b	20	DSSS	15.5	15.30	0.10	1	Standard	015D8	1	10 mm	top	1:1	0.025	1.047	0.026	
2462	11	IEEE 802.11b	20	DSSS	15.5	15.30	0.12	1	Standard	015D8	1	10 mm	left	1:1	0.046	1.047	0.048	
2462	11	IEEE 802.11b	20	DSSS	15.5	14.80	0.08	2	Standard	015D8	1	10 mm	back	1:1	0.118	1.175	0.139	
2462	11	IEEE 802.11n	20	OFDM	13.5	12.32	0.09	2	Standard	015D8	6.5	10 mm	back	1:1	0.022	1.312	0.029	
2462	11	IEEE 802.11b	20	DSSS	15.5	14.80	-0.15	2	Standard	015D8	1	10 mm	front	1:1	0.064	1.175	0.075	
2462	11	IEEE 802.11b	20	DSSS	15.5	14.80	-0.12	2	Standard	015D8	1	10 mm	top	1:1	0.052	1.175	0.061	
2462	11	IEEE 802.11n	20	OFDM	15.5	15.34	0.19	MIMO	Standard	015D8	13	10 mm	back	1:1	0.060	1.038	0.062	
2462	11	IEEE 802.11n	20	OFDM	15.5	15.34	0.12	MIMO	Wireless Charging	015D8	13	10 mm	back	1:1	0.045	1.038	0.047	
2462	11	IEEE 802.11n	20	OFDM	15.5	15.34	0.12	MIMO	Standard	015D8	13	10 mm	front	1:1	0.038	1.038	0.039	
2462	11	IEEE 802.11n	20	OFDM	15.5	15.34	0.18	MIMO	Standard	015D8	13	10 mm	top	1:1	0.018	1.038	0.019	
2462	11	IEEE 802.11n	20	OFDM	15.5	15.34	0.13	MIMO	Standard	015D8	13	10 mm	left	1:1	0.017	1.038	0.018	
5825	165	IEEE 802.11a	20	OFDM	12.5	11.88	0.15	1	Standard	015D8	6	10 mm	back	1:1	0.048	1.153	0.055	
5775	155	IEEE 802.11ac	80	OFDM	10.5	9.62	0.12	1	Standard	015D8	29.3	10 mm	back	1:1	0.030	1.225	0.037	
5745	149	IEEE 802.11ac	20	OFDM	12.5	11.71	-0.09	1	Standard	015D8	6.5	10 mm	back	1:1	0.092	1.199	0.110	
5755	151	IEEE 802.11n	40	OFDM	9.5	9.25	0.14	1	Standard	015D8	13.5	10 mm	back	1:1	0.023	1.059	0.024	
5745	149	IEEE 802.11n	20	OFDM	12.5	11.92	-0.08	1	Standard	015D8	6.5	10 mm	back	1:1	0.101	1.143	0.115	
5825	165	IEEE 802.11a	20	OFDM	12.5	11.88	0.18	1	Standard	015D8	6	10 mm	front	1:1	0.011	1.153	0.013	
5825	165	IEEE 802.11a	20	OFDM	12.5	11.88	0.13	1	Standard	015D8	6	10 mm	top	1:1	0.020	1.153	0.023	
5825	165	IEEE 802.11a	20	OFDM	12.5	11.88	0.14	1	Standard	015D8	6	10 mm	left	1:1	0.022	1.153	0.025	
5765	153	IEEE 802.11a	20	OFDM	12.5	12.41	-0.13	2	Standard	015D8	6	10 mm	back	1:1	0.214	1.021	0.218	
5765	153	IEEE 802.11a	20	OFDM	12.5	12.41	-0.13	2	Wireless Charging	015D8	6	10 mm	back	1:1	0.453	1.021	0.463	
5775	155	IEEE 802.11ac	80	OFDM	10.5	10.31	-0.12	2	Standard	015D8	29.3	10 mm	back	1:1	0.092	1.045	0.096	
5745	149	IEEE 802.11ac	20	OFDM	12.5	11.49	-0.16	2	Standard	015D8	6.5	10 mm	back	1:1	0.129	1.262	0.163	
5795	159	IEEE 802.11n	40	OFDM	9.5	8.72	0.14	2	Standard	015D8	13.5	10 mm	back	1:1	0.043	1.197	0.051	
5765	153	IEEE 802.11n	20	OFDM	12.5	11.75	-0.11	2	Standard	015D8	6.5	10 mm	back	1:1	0.151	1.189	0.180	
5765	153	IEEE 802.11a	20	OFDM	12.5	12.41	-0.15	2	Standard	015D8	6	10 mm	front	1:1	0.030	1.021	0.031	
5765	153	IEEE 802.11a	20	OFDM	12.5	12.41	0.12	2	Standard	015D8	6	10 mm	top	1:1	0.058	1.021	0.059	
5745	149	IEEE 802.11n	20	OFDM	15.5	14.85	-0.13	MIMO	Standard	015D8	13	10 mm	back	1:1	0.292	1.161	0.339	
5745	149	IEEE 802.11n	20	OFDM	15.5	14.85	0.05	MIMO	Wireless Charging	015D8	13	10 mm	back	1:1	0.482	1.161	0.560	A33
5745	149	IEEE 802.11n	20	OFDM	15.5	14.85	-0.15	MIMO	Standard	015D8	13	10 mm	front	1:1	0.023	1.161	0.027	
5745	149	IEEE 802.11n	20	OFDM	15.5	14.85	-0.13	MIMO	Standard	015D8	13	10 mm	top	1:1	0.136	1.161	0.158	
5745	149	IEEE 802.11n	20	OFDM	15.5	14.85	0.19	MIMO	Standard	015D8	13	10 mm	left	1:1	0.076	1.161	0.088	
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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11.4 Standalone Extremity SAR Data

Table 11-23
NII Extremity SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Bandwidth [MHz]	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (10g)	Scaling Factor	Scaled SAR (10g) (W/kg)	Plot #
MHz	Ch.														(W/kg)		(W/kg)	
5240	48	IEEE 802.11a	20	OFDM	12.5	11.59	0.12	0 mm	1	Standard	015D7	6	back	1:1	0.100	1.233	0.123	
5210	42	IEEE 802.11ac	80	OFDM	10.5	9.88	0.12	0 mm	1	Standard	015D7	29.3	back	1:1	0.069	1.153	0.080	
5240	48	IEEE 802.11a	20	OFDM	12.5	11.59	0.12	0 mm	1	Standard	015D7	6	front	1:1	0.042	1.233	0.052	
5240	48	IEEE 802.11a	20	OFDM	12.5	11.59	0.19	0 mm	1	Standard	015D7	6	top	1:1	0.003	1.233	0.004	
5240	48	IEEE 802.11a	20	OFDM	12.5	11.59	-0.17	0 mm	1	Standard	015D7	6	left	1:1	0.058	1.233	0.072	
5320	64	IEEE 802.11a	20	OFDM	12.5	11.94	0.06	0 mm	1	Standard	015D7	6	back	1:1	0.105	1.138	0.119	
5290	58	IEEE 802.11ac	80	OFDM	10.5	9.96	0.13	0 mm	1	Standard	015D7	29.3	back	1:1	0.057	1.132	0.065	
5260	52	IEEE 802.11ac	20	OFDM	12.5	11.77	0.10	0 mm	1	Standard	015D7	6.5	back	1:1	0.101	1.183	0.119	
5270	54	IEEE 802.11n	40	OFDM	9.5	9.07	0.14	0 mm	1	Standard	015D7	13.5	back	1:1	0.054	1.104	0.060	
5300	60	IEEE 802.11n	20	OFDM	12.5	11.76	0.11	0 mm	1	Standard	015D7	6.5	back	1:1	0.106	1.186	0.126	
5320	64	IEEE 802.11a	20	OFDM	12.5	11.94	0.16	0 mm	1	Standard	015D7	6	front	1:1	0.046	1.138	0.052	
5320	64	IEEE 802.11a	20	OFDM	12.5	11.94	0.14	0 mm	1	Standard	015D7	6	top	1:1	0.005	1.138	0.006	
5320	64	IEEE 802.11a	20	OFDM	12.5	11.94	-0.03	0 mm	1	Standard	015D7	6	left	1:1	0.099	1.138	0.113	
5580	116	IEEE 802.11a	20	OFDM	12.5	12.00	0.04	0 mm	1	Standard	015D7	6	back	1:1	0.136	1.122	0.153	
5580	116	IEEE 802.11a	20	OFDM	12.5	12.00	0.16	0 mm	1	Standard	015D7	6	front	1:1	0.046	1.122	0.052	
5580	116	IEEE 802.11a	20	OFDM	12.5	12.00	0.10	0 mm	1	Standard	015D7	6	top	1:1	0.004	1.122	0.004	
5580	116	IEEE 802.11a	20	OFDM	12.5	12.00	-0.13	0 mm	1	Standard	015D7	6	left	1:1	0.194	1.122	0.218	
5530	106	IEEE 802.11ac	80	OFDM	10.5	9.92	0.14	0 mm	1	Standard	015D7	29.3	left	1:1	0.191	1.143	0.218	
5700	140	IEEE 802.11ac	20	OFDM	12.5	11.98	0.13	0 mm	1	Standard	015D7	6.5	left	1:1	0.117	1.127	0.132	
5670	134	IEEE 802.11n	40	OFDM	9.5	9.48	0.15	0 mm	1	Standard	015D7	13.5	left	1:1	0.082	1.005	0.082	
5660	132	IEEE 802.11n	20	OFDM	12.5	11.96	0.18	0 mm	1	Standard	015D7	6.5	left	1:1	0.156	1.132	0.177	
5200	40	IEEE 802.11a	20	OFDM	12.5	11.92	0.08	0 mm	2	Standard	015D7	6	back	1:1	0.305	1.143	0.349	
5210	42	IEEE 802.11ac	20	OFDM	10.5	10.04	-0.12	0 mm	2	Standard	015D7	29.3	back	1:1	0.176	1.112	0.196	
5200	40	IEEE 802.11a	20	OFDM	12.5	11.92	0.16	0 mm	2	Standard	015D7	6	front	1:1	0.068	1.143	0.078	
5200	40	IEEE 802.11a	20	OFDM	12.5	11.92	-0.02	0 mm	2	Standard	015D7	6	top	1:1	0.106	1.143	0.121	
5260	52	IEEE 802.11a	20	OFDM	12.5	11.54	-0.10	0 mm	2	Standard	015D7	6	back	1:1	0.297	1.247	0.370	
5290	58	IEEE 802.11ac	80	OFDM	10.5	9.59	-0.18	0 mm	2	Standard	015D7	29.3	back	1:1	0.164	1.233	0.202	
5260	52	IEEE 802.11ac	20	OFDM	12.5	11.55	0.08	0 mm	2	Standard	015D7	6.5	back	1:1	0.290	1.245	0.361	
5270	54	IEEE 802.11n	40	OFDM	9.5	8.94	0.14	0 mm	2	Standard	015D7	13.5	back	1:1	0.155	1.138	0.176	
5280	56	IEEE 802.11n	20	OFDM	12.5	11.67	0.21	0 mm	2	Standard	015D7	6.5	back	1:1	0.274	1.211	0.332	
5260	52	IEEE 802.11a	20	OFDM	12.5	11.54	0.17	0 mm	2	Standard	015D7	6	front	1:1	0.050	1.247	0.062	
5260	52	IEEE 802.11a	20	OFDM	12.5	11.54	0.14	0 mm	2	Standard	015D7	6	top	1:1	0.099	1.247	0.123	
5700	140	IEEE 802.11a	20	OFDM	12.5	11.92	0.15	0 mm	2	Standard	015D7	6	back	1:1	0.595	1.143	0.680	A36
5700	140	IEEE 802.11a	20	OFDM	12.5	11.92	-0.13	0 mm	2	Wireless Charging	015D7	6	back	1:1	0.500	1.143	0.572	
5530	106	IEEE 802.11ac	80	OFDM	10.5	9.50	-0.12	0 mm	2	Standard	015D7	29.3	back	1:1	0.225	1.259	0.283	
5700	140	IEEE 802.11ac	20	OFDM	12.5	11.70	0.12	0 mm	2	Standard	015D7	6.5	back	1:1	0.415	1.202	0.499	
5510	102	IEEE 802.11n	40	OFDM	9.5	8.80	0.15	0 mm	2	Standard	015D7	13.5	back	1:1	0.198	1.175	0.233	
5680	136	IEEE 802.11n	20	OFDM	12.5	11.70	0.16	0 mm	2	Standard	015D7	6.5	back	1:1	0.545	1.202	0.655	
5700	140	IEEE 802.11a	20	OFDM	12.5	11.92	0.16	0 mm	2	Standard	015D7	6	front	1:1	0.047	1.143	0.054	
5700	140	IEEE 802.11a	20	OFDM	12.5	11.92	0.20	0 mm	2	Standard	015D7	6	top	1:1	0.136	1.143	0.155	
5180	36	IEEE 802.11n	20	OFDM	15.5	14.78	0.12	0 mm	MIMO	Standard	015D7	13	back	1:1	0.304	1.180	0.359	
5180	36	IEEE 802.11n	20	OFDM	15.5	14.78	0.03	0 mm	MIMO	Wireless Charging	015D7	13	back	1:1	0.243	1.180	0.287	
5180	36	IEEE 802.11n	20	OFDM	15.5	14.78	0.12	0 mm	MIMO	Standard	015D7	13	front	1:1	0.096	1.180	0.113	
5180	36	IEEE 802.11n	20	OFDM	15.5	14.78	0.05	0 mm	MIMO	Standard	015D7	13	top	1:1	0.102	1.180	0.120	
5180	36	IEEE 802.11n	20	OFDM	15.5	14.78	-0.02	0 mm	MIMO	Standard	015D7	13	left	1:1	0.066	1.180	0.078	
5280	56	IEEE 802.11n	20	OFDM	15.5	14.67	0.12	0 mm	MIMO	Standard	015D7	13	back	1:1	0.303	1.211	0.367	
5280	56	IEEE 802.11n	20	OFDM	15.5	14.67	0.13	0 mm	MIMO	Standard	015D7	13	front	1:1	0.072	1.211	0.087	
5280	56	IEEE 802.11n	20	OFDM	15.5	14.67	0.13	0 mm	MIMO	Standard	015D7	13	top	1:1	0.090	1.211	0.109	
5280	56	IEEE 802.11n	20	OFDM	15.5	14.67	0.14	0 mm	MIMO	Standard	015D7	13	left	1:1	0.084	1.211	0.102	
5680	136	IEEE 802.11n	20	OFDM	15.5	14.80	0.18	0 mm	MIMO	Standard	015D7	13	back	1:1	0.285	1.175	0.335	
5680	136	IEEE 802.11n	20	OFDM	15.5	14.80	0.12	0 mm	MIMO	Standard	015D7	13	front	1:1	0.070	1.175	0.082	
5680	136	IEEE 802.11n	20	OFDM	15.5	14.80	0.15	0 mm	MIMO	Standard	015D7	13	top	1:1	0.134	1.175	0.157	
5680	136	IEEE 802.11n	20	OFDM	15.5	14.80	0.15	0 mm	MIMO	Standard	015D7	13	left	1:1	0.181	1.175	0.213	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak										Extremity 4.0 W/kg (mW/g) averaged over 10 grams								
Uncontrolled Exposure/General Population																		

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Table 11-24
DSS Extremity SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Cover Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (10g)	Scaling Factor	Scaled SAR (10g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
2441	39	Bluetooth	FHSS	12.0	11.54	0.21	0 mm	Standard	015D8	1	back	1:1	0.042	1.112	0.047	A37
2441	39	Bluetooth	FHSS	12.0	11.54	0.16	0 mm	Wireless Charging	015D8	1	back	1:1	0.023	1.112	0.026	
2441	39	Bluetooth	FHSS	12.0	11.54	-0.04	0 mm	Standard	015D8	1	front	1:1	0.017	1.112	0.019	
2441	39	Bluetooth	FHSS	12.0	11.54	0.15	0 mm	Standard	015D8	1	top	1:1	0.011	1.112	0.012	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Extremity 4.0 W/kg (mW/g) averaged over 10 grams								

11.5 SAR Test Notes

General Notes:

- 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.
- Batteries are fully charged at the beginning of the SAR measurements.
- Liquid tissue depth was at least 15.0 cm for all frequencies.
- 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.
- SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v05.
- Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 15 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance. A test separation distance of 10 mm for body-worn SAR was also used for GSM 850/1900, UMTS Band 5, LTE Bands 12/5, 2.4/5 GHz WLAN, and 2.4 GHz Bluetooth as it is more conservative.
- 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.
- Per FCC KDB 865664 D01 v01, variability SAR tests were not performed since the measured 1 gram SAR results for a frequency band were greater than 0.8 W/kg and the measured 10 gram SAR results for a frequency band were greater than 2.0 W/kg. Please see Section 13 for more information.
- During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.7 for more details).
- This device utilizes power reduction for UMTS Bands 4/2 and LTE Bands 4/2 under some portable hotspot conditions for SAR compliance. Therefore, these wireless router configurations were tested at reduced output power levels.
- Per FCC KDB Publication 648474 D04v01r01, this device is considered a "phablet" since the diagonal dimension is > 160 mm. Therefore, extremity SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg when scaled to maximum output power.
- Per FCC KDB Publication 648474 D03, SAR was measured using the standard battery cover and then repeated with the wireless charging battery cover for the configuration with the highest measured SAR for each wireless technology, frequency band, operating mode, and exposure condition. Since reported SAR did not exceed 1.2 W/kg, additional testing with the wireless charging battery cover was not required.

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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 D03v01 and October 2013 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all GPRS/EDGE slot configurations. The configuration with the highest target frame averaged output power was evaluated for hotspot SAR. When the maximum frame-averaged powers are equivalent across two or more slots (within 0.25 dB), the configuration with the most number of time slots was tested.
3. Per FCC KDB Publication 447498 D01v05, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.

UMTS Notes:

1. UMTS mode in was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v02. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.
2. Per FCC KDB Publication 447498 D01v05, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.
3. This device applies power reduction for UMTS Bands 4 and 2 when Hotspot is ON. Therefore, UMTS Bands 4 and 2 were evaluated at hotspot reduced power levels. There is no power reduction applied to UMTS Band 5.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r01. The general test procedures used for testing can be found in Section 8.4.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC Guidance, LTE CA SAR was not needed for testing since the data sent by uplink on the uplink physical channels does not change between Rel. 8 and Rel. 10.
5. This device applies power reduction for LTE Bands 4 and 2 modes when Hotspot is ON. Therefore, LTE Bands 4 and 2 modes were evaluated at hotspot reduced power levels. There is no power reduction applied to LTE Bands 12 and 5.

WLAN/BT Notes:

1. Justification for reduced test configurations for WIFI channels per KDB Publication 248227 D01v01r02 and October 2012 FCC/TCB Meeting Notes for 2.4 GHz WIFI SISO operations: Highest average RF output power channel for the lowest data rate was selected for SAR evaluation in 802.11b. Other SISO IEEE 802.11 modes (including 802.11g/n) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11b mode. Some

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additional IEEE 802.11n SAR tests for the highest measured SAR positions were included in this report, per manufacturer request.

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

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12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

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

12.2 Simultaneous Transmission Procedures

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

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

Table 12-1
Estimated SAR

Mode	Frequency	Maximum Allowed Power	Separation Distance (Body)	Estimated SAR (Body)
	[MHz]	[dBm]	[mm]	[W/kg]
Bluetooth LE	2480	8.00	15	0.084

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.

Main antenna SAR testing was not required for extremity exposure conditions per FCC KDB 648474. Therefore, no further analysis was required to determine that possible simultaneous scenarios would not exceed the SAR limit.

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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)

Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.057	0.329	0.386	Head SAR	Right Cheek	0.044	0.329	0.373
	Right Tilt	0.030	0.216	0.246		Right Tilt	0.026	0.216	0.242
	Left Cheek	0.144	0.174	0.318		Left Cheek	0.059	0.174	0.233
	Left Tilt	0.045	0.094	0.139		Left Tilt	0.025	0.094	0.119
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.045	0.329	0.374	Head SAR	Right Cheek	0.148	0.329	0.477
	Right Tilt	0.023	0.216	0.239		Right Tilt	0.089	0.216	0.305
	Left Cheek	0.126	0.174	0.300		Left Cheek	0.182	0.174	0.356
	Left Tilt	0.033	0.094	0.127		Left Tilt	0.070	0.094	0.164
Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.076	0.329	0.405	Head SAR	Right Cheek	0.168	0.329	0.497
	Right Tilt	0.026	0.216	0.242		Right Tilt	0.061	0.216	0.277
	Left Cheek	0.091	0.174	0.265		Left Cheek	0.137	0.174	0.311
	Left Tilt	0.025	0.094	0.119		Left Tilt	0.061	0.094	0.155
Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.065	0.329	0.394	Head SAR	Right Cheek	0.164	0.329	0.493
	Right Tilt	0.038	0.216	0.254		Right Tilt	0.053	0.216	0.269
	Left Cheek	0.151	0.174	0.325		Left Cheek	0.327	0.174	0.501
	Left Tilt	0.047	0.094	0.141		Left Tilt	0.037	0.094	0.131
Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)					
Head SAR	Right Cheek	0.081	0.329	0.410					
	Right Tilt	0.042	0.216	0.258					
	Left Cheek	0.109	0.174	0.283					
	Left Tilt	0.038	0.094	0.132					

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

Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.057	0.673	0.730	Head SAR	Right Cheek	0.044	0.673	0.717
	Right Tilt	0.030	0.388	0.418		Right Tilt	0.026	0.388	0.414
	Left Cheek	0.144	0.519	0.663		Left Cheek	0.059	0.519	0.578
	Left Tilt	0.045	0.367	0.412		Left Tilt	0.025	0.367	0.392

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.045	0.673	0.718	Head SAR	Right Cheek	0.148	0.673	0.821
	Right Tilt	0.023	0.388	0.411		Right Tilt	0.089	0.388	0.477
	Left Cheek	0.126	0.519	0.645		Left Cheek	0.182	0.519	0.701
	Left Tilt	0.033	0.367	0.400		Left Tilt	0.070	0.367	0.437

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.076	0.673	0.749	Head SAR	Right Cheek	0.168	0.673	0.841
	Right Tilt	0.026	0.388	0.414		Right Tilt	0.061	0.388	0.449
	Left Cheek	0.091	0.519	0.610		Left Cheek	0.137	0.519	0.656
	Left Tilt	0.025	0.367	0.392		Left Tilt	0.061	0.367	0.428

Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.065	0.673	0.738	Head SAR	Right Cheek	0.164	0.673	0.837
	Right Tilt	0.038	0.388	0.426		Right Tilt	0.053	0.388	0.441
	Left Cheek	0.151	0.519	0.670		Left Cheek	0.327	0.519	0.846
	Left Tilt	0.047	0.367	0.414		Left Tilt	0.037	0.367	0.404

Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.081	0.673	0.754
	Right Tilt	0.042	0.388	0.430
	Left Cheek	0.109	0.519	0.628
	Left Tilt	0.038	0.367	0.405

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

Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.057	0.420	0.477	Head SAR	Right Cheek	0.044	0.420	0.464
	Right Tilt	0.030	0.312	0.342		Right Tilt	0.026	0.312	0.338
	Left Cheek	0.144	0.291	0.435		Left Cheek	0.059	0.291	0.350
	Left Tilt	0.045	0.190	0.235		Left Tilt	0.025	0.190	0.215
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.045	0.420	0.465	Head SAR	Right Cheek	0.148	0.420	0.568
	Right Tilt	0.023	0.312	0.335		Right Tilt	0.089	0.312	0.401
	Left Cheek	0.126	0.291	0.417		Left Cheek	0.182	0.291	0.473
	Left Tilt	0.033	0.190	0.223		Left Tilt	0.070	0.190	0.260
Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.076	0.420	0.496	Head SAR	Right Cheek	0.168	0.420	0.588
	Right Tilt	0.026	0.312	0.338		Right Tilt	0.061	0.312	0.373
	Left Cheek	0.091	0.291	0.382		Left Cheek	0.137	0.291	0.428
	Left Tilt	0.025	0.190	0.215		Left Tilt	0.061	0.190	0.251
Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.065	0.420	0.485	Head SAR	Right Cheek	0.164	0.420	0.584
	Right Tilt	0.038	0.312	0.350		Right Tilt	0.053	0.312	0.365
	Left Cheek	0.151	0.291	0.442		Left Cheek	0.327	0.291	0.618
	Left Tilt	0.047	0.190	0.237		Left Tilt	0.037	0.190	0.227
Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)					
Head SAR	Right Cheek	0.081	0.420	0.501					
	Right Tilt	0.042	0.312	0.354					
	Left Cheek	0.109	0.291	0.400					
	Left Tilt	0.038	0.190	0.228					

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

Simult Tx	Configuration	GSM 850 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GSM 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.057	0.180	0.237	Head SAR	Right Cheek	0.044	0.180	0.224
	Right Tilt	0.030	0.048	0.078		Right Tilt	0.026	0.048	0.074
	Left Cheek	0.144	0.040	0.184		Left Cheek	0.059	0.040	0.099
	Left Tilt	0.045	0.000	0.045		Left Tilt	0.025	0.000	0.025
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.045	0.180	0.225	Head SAR	Right Cheek	0.148	0.180	0.328
	Right Tilt	0.023	0.048	0.071		Right Tilt	0.089	0.048	0.137
	Left Cheek	0.126	0.040	0.166		Left Cheek	0.182	0.040	0.222
	Left Tilt	0.033	0.000	0.033		Left Tilt	0.070	0.000	0.070
Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.076	0.180	0.256	Head SAR	Right Cheek	0.168	0.180	0.348
	Right Tilt	0.026	0.048	0.074		Right Tilt	0.061	0.048	0.109
	Left Cheek	0.091	0.040	0.131		Left Cheek	0.137	0.040	0.177
	Left Tilt	0.025	0.000	0.025		Left Tilt	0.061	0.000	0.061
Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.065	0.180	0.245	Head SAR	Right Cheek	0.164	0.180	0.344
	Right Tilt	0.038	0.048	0.086		Right Tilt	0.053	0.048	0.101
	Left Cheek	0.151	0.040	0.191		Left Cheek	0.327	0.040	0.367
	Left Tilt	0.047	0.000	0.047		Left Tilt	0.037	0.000	0.037
Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)					
Head SAR	Right Cheek	0.081	0.180	0.261					
	Right Tilt	0.042	0.048	0.090					
	Left Cheek	0.109	0.040	0.149					
	Left Tilt	0.038	0.000	0.038					

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

Simult Tx	Configuration	GSM 850 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GSM 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.057	0.110	0.167	Head SAR	Right Cheek	0.044	0.110	0.154
	Right Tilt	0.030	0.083	0.113		Right Tilt	0.026	0.083	0.109
	Left Cheek	0.144	0.160	0.304		Left Cheek	0.059	0.160	0.219
	Left Tilt	0.045	0.135	0.180		Left Tilt	0.025	0.135	0.160

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.045	0.110	0.155	Head SAR	Right Cheek	0.148	0.110	0.258
	Right Tilt	0.023	0.083	0.106		Right Tilt	0.089	0.083	0.172
	Left Cheek	0.126	0.160	0.286		Left Cheek	0.182	0.160	0.342
	Left Tilt	0.033	0.135	0.168		Left Tilt	0.070	0.135	0.205

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.076	0.110	0.186	Head SAR	Right Cheek	0.168	0.110	0.278
	Right Tilt	0.026	0.083	0.109		Right Tilt	0.061	0.083	0.144
	Left Cheek	0.091	0.160	0.251		Left Cheek	0.137	0.160	0.297
	Left Tilt	0.025	0.135	0.160		Left Tilt	0.061	0.135	0.196

Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.065	0.110	0.175	Head SAR	Right Cheek	0.164	0.110	0.274
	Right Tilt	0.038	0.083	0.121		Right Tilt	0.053	0.083	0.136
	Left Cheek	0.151	0.160	0.311		Left Cheek	0.327	0.160	0.487
	Left Tilt	0.047	0.135	0.182		Left Tilt	0.037	0.135	0.172

Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
	Right Cheek	0.081	0.110	0.191
	Right Tilt	0.042	0.083	0.125
	Left Cheek	0.109	0.160	0.269
	Left Tilt	0.038	0.135	0.173

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

Simult Tx	Configuration	GSM 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GSM 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.057	0.249	0.306	Head SAR	Right Cheek	0.044	0.249	0.293
	Right Tilt	0.030	0.143	0.173		Right Tilt	0.026	0.143	0.169
	Left Cheek	0.144	0.125	0.269		Left Cheek	0.059	0.125	0.184
	Left Tilt	0.045	0.100	0.145		Left Tilt	0.025	0.100	0.125
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.045	0.249	0.294	Head SAR	Right Cheek	0.148	0.249	0.397
	Right Tilt	0.023	0.143	0.166		Right Tilt	0.089	0.143	0.232
	Left Cheek	0.126	0.125	0.251		Left Cheek	0.182	0.125	0.307
	Left Tilt	0.033	0.100	0.133		Left Tilt	0.070	0.100	0.170
Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.076	0.249	0.325	Head SAR	Right Cheek	0.168	0.249	0.417
	Right Tilt	0.026	0.143	0.169		Right Tilt	0.061	0.143	0.204
	Left Cheek	0.091	0.125	0.216		Left Cheek	0.137	0.125	0.262
	Left Tilt	0.025	0.100	0.125		Left Tilt	0.061	0.100	0.161
Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.065	0.249	0.314	Head SAR	Right Cheek	0.164	0.249	0.413
	Right Tilt	0.038	0.143	0.181		Right Tilt	0.053	0.143	0.196
	Left Cheek	0.151	0.125	0.276		Left Cheek	0.327	0.125	0.452
	Left Tilt	0.047	0.100	0.147		Left Tilt	0.037	0.100	0.137
Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)					
Head SAR	Right Cheek	0.081	0.249	0.330					
	Right Tilt	0.042	0.143	0.185					
	Left Cheek	0.109	0.125	0.234					
	Left Tilt	0.038	0.100	0.138					

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12.4 Body-Worn Simultaneous Transmission Analysis

1. For SAR summation for body-worn back side at 15 mm, GSM850/1900, UMTS 850, and LTE Band 12/17/5 SAR values for 1.0 cm were used since the 1.0 cm test distance was more conservative. "<" denotes that the 1.0 cm GSM850/1900, UMTS 850, and LTE Band 12/17/5 SAR values were used for summation purposes.
2. For SAR summations for body-worn back side at 15 mm, WLAN SAR values for 1.0 cm were used since the 1.0 cm test distance for WLAN was more conservative. "<" denotes that the 1.0 cm WLAN SAR values were used for summation purposes.

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.521	< 0.134	< 0.655
Back Side	GSM 1900	< 0.364	< 0.134	< 0.498
Back Side	UMTS 850	< 0.469	< 0.134	< 0.603
Back Side	UMTS 1750	0.455	< 0.134	< 0.589
Back Side	UMTS 1900	0.250	< 0.134	< 0.384
Back Side	LTE Band 12	< 0.314	< 0.134	< 0.448
Back Side	LTE Band 5 (Cell)	< 0.543	< 0.134	< 0.677
Back Side	LTE Band 4 (AWS)	0.560	< 0.134	< 0.694
Back Side	LTE Band 2 (PCS)	0.303	< 0.134	< 0.437

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.521	< 0.139	< 0.660
Back Side	GSM 1900	< 0.364	< 0.139	< 0.503
Back Side	UMTS 850	< 0.469	< 0.139	< 0.608
Back Side	UMTS 1750	0.455	< 0.139	< 0.594
Back Side	UMTS 1900	0.250	< 0.139	< 0.389
Back Side	LTE Band 12	< 0.314	< 0.139	< 0.453
Back Side	LTE Band 5 (Cell)	< 0.543	< 0.139	< 0.682
Back Side	LTE Band 4 (AWS)	0.560	< 0.139	< 0.699
Back Side	LTE Band 2 (PCS)	0.303	< 0.139	< 0.442

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.521	< 0.062	< 0.583
Back Side	GSM 1900	< 0.364	< 0.062	< 0.426
Back Side	UMTS 850	< 0.469	< 0.062	< 0.531
Back Side	UMTS 1750	0.455	< 0.062	< 0.517
Back Side	UMTS 1900	0.250	< 0.062	< 0.312
Back Side	LTE Band 12	< 0.314	< 0.062	< 0.376
Back Side	LTE Band 5 (Cell)	< 0.543	< 0.062	< 0.605
Back Side	LTE Band 4 (AWS)	0.560	< 0.062	< 0.622
Back Side	LTE Band 2 (PCS)	0.303	< 0.062	< 0.365

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.521	< 0.204	< 0.725
Back Side	GSM 1900	< 0.364	< 0.204	< 0.568
Back Side	UMTS 850	< 0.469	< 0.204	< 0.673
Back Side	UMTS 1750	0.455	< 0.204	< 0.659
Back Side	UMTS 1900	0.250	< 0.204	< 0.454
Back Side	LTE Band 12	< 0.314	< 0.204	< 0.518
Back Side	LTE Band 5 (Cell)	< 0.543	< 0.204	< 0.747
Back Side	LTE Band 4 (AWS)	0.560	< 0.204	< 0.764
Back Side	LTE Band 2 (PCS)	0.303	< 0.204	< 0.507

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.521	< 0.367	< 0.888
Back Side	GSM 1900	< 0.364	< 0.367	< 0.731
Back Side	UMTS 850	< 0.469	< 0.367	< 0.836
Back Side	UMTS 1750	0.455	< 0.367	< 0.822
Back Side	UMTS 1900	0.250	< 0.367	< 0.617
Back Side	LTE Band 12	< 0.314	< 0.367	< 0.681
Back Side	LTE Band 5 (Cell)	< 0.543	< 0.367	< 0.910
Back Side	LTE Band 4 (AWS)	0.560	< 0.367	< 0.927
Back Side	LTE Band 2 (PCS)	0.303	< 0.367	< 0.670

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.521	< 0.533	< 1.054
Back Side	GSM 1900	< 0.364	< 0.533	< 0.897
Back Side	UMTS 850	< 0.469	< 0.533	< 1.002
Back Side	UMTS 1750	0.455	< 0.533	< 0.988
Back Side	UMTS 1900	0.250	< 0.533	< 0.783
Back Side	LTE Band 12	< 0.314	< 0.533	< 0.847
Back Side	LTE Band 5 (Cell)	< 0.543	< 0.533	< 1.076
Back Side	LTE Band 4 (AWS)	0.560	< 0.533	< 1.093
Back Side	LTE Band 2 (PCS)	0.303	< 0.533	< 0.836

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	Bluetooth LE SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	< 0.521	0.084	< 0.605
Back Side	GSM 1900	< 0.364	0.084	< 0.448
Back Side	UMTS 850	< 0.469	0.084	< 0.553
Back Side	UMTS 1750	0.455	0.084	0.539
Back Side	UMTS 1900	0.250	0.084	0.334
Back Side	LTE Band 12	< 0.314	0.084	< 0.398
Back Side	LTE Band 5 (Cell)	< 0.543	0.084	< 0.627
Back Side	LTE Band 4 (AWS)	0.560	0.084	0.644
Back Side	LTE Band 2 (PCS)	0.303	0.084	0.387

Note: Bluetooth LE SAR was not required to be measured per FCC KDB 447498. Estimated SAR results were used in the above table to determine simultaneous transmission SAR test exclusion. BT LE Estimated SAR was used because it is more conservative than BT measured SAR.

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12.5 Hotspot SAR Simultaneous Transmission Analysis

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

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

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.606	0.134	0.740	Body SAR	Back	0.366	0.134	0.500
	Front	0.798	0.070	0.868		Front	0.497	0.070	0.567
	Top	-	0.026	0.026		Top	-	0.026	0.026
	Bottom	0.227	-	0.227		Bottom	0.767	-	0.767
	Right	0.028	-	0.028		Right	0.134	-	0.134
	Left	0.267	0.048	0.315		Left	0.099	0.048	0.147
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.424	0.134	0.558	Body SAR	Back	0.414	0.134	0.548
	Front	0.550	0.070	0.620		Front	0.553	0.070	0.623
	Top	-	0.026	0.026		Top	-	0.026	0.026
	Bottom	0.165	-	0.165		Bottom	0.673	-	0.673
	Right	0.227	-	0.227		Right	0.118	-	0.118
	Left	0.185	0.048	0.233		Left	0.139	0.048	0.187
Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.262	0.134	0.396	Body SAR	Back	0.314	0.134	0.448
	Front	0.394	0.070	0.464		Front	0.377	0.070	0.447
	Top	-	0.026	0.026		Top	-	0.026	0.026
	Bottom	0.599	-	0.599		Bottom	0.214	-	0.214
	Right	0.105	-	0.105		Right	0.202	-	0.202
	Left	0.060	0.048	0.108		Left	0.136	0.048	0.184
Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.527	0.134	0.661	Body SAR	Back	0.497	0.134	0.631
	Front	0.735	0.070	0.805		Front	0.621	0.070	0.691
	Top	-	0.026	0.026		Top	-	0.026	0.026
	Bottom	0.210	-	0.210		Bottom	0.654	-	0.654
	Right	0.261	-	0.261		Right	0.120	-	0.120
	Left	0.227	0.048	0.275		Left	0.160	0.048	0.208
Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)					
Body SAR	Back	0.290	0.134	0.424					
	Front	0.387	0.070	0.457					
	Top	-	0.026	0.026					
	Bottom	0.554	-	0.554					
	Right	0.121	-	0.121					
	Left	0.066	0.048	0.114					

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

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.606	0.139	0.745	Body SAR	Back	0.366	0.139	0.505
	Front	0.798	0.075	0.873		Front	0.497	0.075	0.572
	Top	-	0.061	0.061		Top	-	0.061	0.061
	Bottom	0.227	-	0.227		Bottom	0.767	-	0.767
	Right	0.028	-	0.028		Right	0.134	-	0.134
	Left	0.267	-	0.267		Left	0.099	-	0.099

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.424	0.139	0.563	Body SAR	Back	0.414	0.139	0.553
	Front	0.550	0.075	0.625		Front	0.553	0.075	0.628
	Top	-	0.061	0.061		Top	-	0.061	0.061
	Bottom	0.165	-	0.165		Bottom	0.673	-	0.673
	Right	0.227	-	0.227		Right	0.118	-	0.118
	Left	0.185	-	0.185		Left	0.139	-	0.139

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.262	0.139	0.401	Body SAR	Back	0.314	0.139	0.453
	Front	0.394	0.075	0.469		Front	0.377	0.075	0.452
	Top	-	0.061	0.061		Top	-	0.061	0.061
	Bottom	0.599	-	0.599		Bottom	0.214	-	0.214
	Right	0.105	-	0.105		Right	0.202	-	0.202
	Left	0.060	-	0.060		Left	0.136	-	0.136

Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.527	0.139	0.666	Body SAR	Back	0.497	0.139	0.636
	Front	0.735	0.075	0.810		Front	0.621	0.075	0.696
	Top	-	0.061	0.061		Top	-	0.061	0.061
	Bottom	0.210	-	0.210		Bottom	0.654	-	0.654
	Right	0.261	-	0.261		Right	0.120	-	0.120
	Left	0.227	-	0.227		Left	0.160	-	0.160

Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.290	0.139	0.429
	Front	0.387	0.075	0.462
	Top	-	0.061	0.061
	Bottom	0.554	-	0.554
	Right	0.121	-	0.121
	Left	0.066	-	0.066

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

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.606	0.062	0.668	Body SAR	Back	0.366	0.062	0.428
	Front	0.798	0.039	0.837		Front	0.497	0.039	0.536
	Top	-	0.019	0.019		Top	-	0.019	0.019
	Bottom	0.227	-	0.227		Bottom	0.767	-	0.767
	Right	0.028	-	0.028		Right	0.134	-	0.134
	Left	0.267	0.018	0.285		Left	0.099	0.018	0.117

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.424	0.062	0.486	Body SAR	Back	0.414	0.062	0.476
	Front	0.550	0.039	0.589		Front	0.553	0.039	0.592
	Top	-	0.019	0.019		Top	-	0.019	0.019
	Bottom	0.165	-	0.165		Bottom	0.673	-	0.673
	Right	0.227	-	0.227		Right	0.118	-	0.118
	Left	0.185	0.018	0.203		Left	0.139	0.018	0.157

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.262	0.062	0.324	Body SAR	Back	0.314	0.062	0.376
	Front	0.394	0.039	0.433		Front	0.377	0.039	0.416
	Top	-	0.019	0.019		Top	-	0.019	0.019
	Bottom	0.599	-	0.599		Bottom	0.214	-	0.214
	Right	0.105	-	0.105		Right	0.202	-	0.202
	Left	0.060	0.018	0.078		Left	0.136	0.018	0.154

Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.527	0.062	0.589	Body SAR	Back	0.497	0.062	0.559
	Front	0.735	0.039	0.774		Front	0.621	0.039	0.660
	Top	-	0.019	0.019		Top	-	0.019	0.019
	Bottom	0.210	-	0.210		Bottom	0.654	-	0.654
	Right	0.261	-	0.261		Right	0.120	-	0.120
	Left	0.227	0.018	0.245		Left	0.160	0.018	0.178

Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.290	0.062	0.352
	Front	0.387	0.039	0.426
	Top	-	0.019	0.019
	Bottom	0.554	-	0.554
	Right	0.121	-	0.121
	Left	0.066	0.018	0.084

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

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.606	0.115	0.721	Body SAR	Back	0.366	0.115	0.481
	Front	0.798	0.013	0.811		Front	0.497	0.013	0.510
	Top	-	0.023	0.023		Top	-	0.023	0.023
	Bottom	0.227	-	0.227		Bottom	0.767	-	0.767
	Right	0.028	-	0.028		Right	0.134	-	0.134
	Left	0.267	0.025	0.292		Left	0.099	0.025	0.124

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.424	0.115	0.539	Body SAR	Back	0.414	0.115	0.529
	Front	0.550	0.013	0.563		Front	0.553	0.013	0.566
	Top	-	0.023	0.023		Top	-	0.023	0.023
	Bottom	0.165	-	0.165		Bottom	0.673	-	0.673
	Right	0.227	-	0.227		Right	0.118	-	0.118
	Left	0.185	0.025	0.210		Left	0.139	0.025	0.164

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.262	0.115	0.377	Body SAR	Back	0.314	0.115	0.429
	Front	0.394	0.013	0.407		Front	0.377	0.013	0.390
	Top	-	0.023	0.023		Top	-	0.023	0.023
	Bottom	0.599	-	0.599		Bottom	0.214	-	0.214
	Right	0.105	-	0.105		Right	0.202	-	0.202
	Left	0.060	0.025	0.085		Left	0.136	0.025	0.161

Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.527	0.115	0.642	Body SAR	Back	0.497	0.115	0.612
	Front	0.735	0.013	0.748		Front	0.621	0.013	0.634
	Top	-	0.023	0.023		Top	-	0.023	0.023
	Bottom	0.210	-	0.210		Bottom	0.654	-	0.654
	Right	0.261	-	0.261		Right	0.120	-	0.120
	Left	0.227	0.025	0.252		Left	0.160	0.025	0.185

	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
	Body SAR	Back	0.290	0.115	0.405
		Front	0.387	0.013	0.400
		Top	-	0.023	0.023
		Bottom	0.554	-	0.554
		Right	0.121	-	0.121
		Left	0.066	0.025	0.091

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

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.606	0.463	1.069	Body SAR	Back	0.366	0.463	0.829
	Front	0.798	0.031	0.829		Front	0.497	0.031	0.528
	Top	-	0.059	0.059		Top	-	0.059	0.059
	Bottom	0.227	-	0.227		Bottom	0.767	-	0.767
	Right	0.028	-	0.028		Right	0.134	-	0.134
	Left	0.267	-	0.267		Left	0.099	-	0.099

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.424	0.463	0.887	Body SAR	Back	0.414	0.463	0.877
	Front	0.550	0.031	0.581		Front	0.553	0.031	0.584
	Top	-	0.059	0.059		Top	-	0.059	0.059
	Bottom	0.165	-	0.165		Bottom	0.673	-	0.673
	Right	0.227	-	0.227		Right	0.118	-	0.118
	Left	0.185	-	0.185		Left	0.139	-	0.139

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.262	0.463	0.725	Body SAR	Back	0.314	0.463	0.777
	Front	0.394	0.031	0.425		Front	0.377	0.031	0.408
	Top	-	0.059	0.059		Top	-	0.059	0.059
	Bottom	0.599	-	0.599		Bottom	0.214	-	0.214
	Right	0.105	-	0.105		Right	0.202	-	0.202
	Left	0.060	-	0.060		Left	0.136	-	0.136

Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.527	0.463	0.990	Body SAR	Back	0.497	0.463	0.960
	Front	0.735	0.031	0.766		Front	0.621	0.031	0.652
	Top	-	0.059	0.059		Top	-	0.059	0.059
	Bottom	0.210	-	0.210		Bottom	0.654	-	0.654
	Right	0.261	-	0.261		Right	0.120	-	0.120
	Left	0.227	-	0.227		Left	0.160	-	0.160

Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.290	0.463	0.753
	Front	0.387	0.031	0.418
	Top	-	0.059	0.059
	Bottom	0.554	-	0.554
	Right	0.121	-	0.121
	Left	0.066	-	0.066

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

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.606	0.560	1.166	Body SAR	Back	0.366	0.560	0.926
	Front	0.798	0.027	0.825		Front	0.497	0.027	0.524
	Top	-	0.158	0.158		Top	-	0.158	0.158
	Bottom	0.227	-	0.227		Bottom	0.767	-	0.767
	Right	0.028	-	0.028		Right	0.134	-	0.134
	Left	0.267	0.088	0.355		Left	0.099	0.088	0.187
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.424	0.560	0.984	Body SAR	Back	0.414	0.560	0.974
	Front	0.550	0.027	0.577		Front	0.553	0.027	0.580
	Top	-	0.158	0.158		Top	-	0.158	0.158
	Bottom	0.165	-	0.165		Bottom	0.673	-	0.673
	Right	0.227	-	0.227		Right	0.118	-	0.118
	Left	0.185	0.088	0.273		Left	0.139	0.088	0.227
Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.262	0.560	0.822	Body SAR	Back	0.314	0.560	0.874
	Front	0.394	0.027	0.421		Front	0.377	0.027	0.404
	Top	-	0.158	0.158		Top	-	0.158	0.158
	Bottom	0.599	-	0.599		Bottom	0.214	-	0.214
	Right	0.105	-	0.105		Right	0.202	-	0.202
	Left	0.060	0.088	0.148		Left	0.136	0.088	0.224
Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.527	0.560	1.087	Body SAR	Back	0.497	0.560	1.057
	Front	0.735	0.027	0.762		Front	0.621	0.027	0.648
	Top	-	0.158	0.158		Top	-	0.158	0.158
	Bottom	0.210	-	0.210		Bottom	0.654	-	0.654
	Right	0.261	-	0.261		Right	0.120	-	0.120
	Left	0.227	0.088	0.315		Left	0.160	0.088	0.248
Simult Tx		Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)				
Body SAR		Back	0.290	0.560	0.850				
		Front	0.387	0.027	0.414				
		Top	-	0.158	0.158				
		Bottom	0.554	-	0.554				
		Right	0.121	-	0.121				
		Left	0.066	0.088	0.154				

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, all measured 1g SAR values were <0.8 W/kg and all measured 10g SAR values were <2.0 W/kg. Therefore, no SAR measurement variability analysis was required.

13.2 Measurement Uncertainty

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

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14 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	8648D	(9kHz-4GHz) Signal Generator	4/15/2014	Annual	4/15/2015	3629U00687
Agilent	E4438C	ESG Vector Signal Generator	4/25/2014	Annual	4/25/2015	MY42082385
Agilent	E4438C	ESG Vector Signal Generator	4/1/2014	Annual	4/1/2015	MY47270002
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/15/2014	Annual	4/15/2015	MY45470194
Agilent	N4010A	Wireless Connectivity Test Set	CBT	N/A	CBT	GB46170464
Agilent	N5182A	MXG Vector Signal Generator	4/15/2014	Annual	4/15/2015	MY47420651
Agilent	N9020A	MXA Signal Analyzer	10/29/2013	Annual	10/29/2014	US46470561
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433978
Anritsu	MA24106A	USB Power Sensor	5/14/2014	Annual	5/14/2015	1231535
Anritsu	MA24106A	USB Power Sensor	5/14/2014	Annual	5/14/2015	1231538
Anritsu	MA24106A	USB Power Sensor	5/15/2014	Annual	5/15/2015	1244512
Anritsu	MA24106A	USB Power Sensor	5/14/2014	Annual	5/14/2015	1244515
Anritsu	MA2411B	Pulse Power Sensor	11/14/2013	Annual	11/14/2014	1126066
Anritsu	MA2411B	Pulse Power Sensor	3/25/2014	Annual	3/25/2015	1207470
Anritsu	ML2469A	Power Meter	3/14/2014	Annual	3/14/2015	1306009
Anritsu	ML2495A	Power Meter	10/31/2013	Annual	10/31/2014	1039008
Anritsu	MT8820C	Radio Communication Analyzer	12/12/2013	Annual	12/12/2014	620901190
Anritsu	MT8820C	Radio Communication Analyzer	12/12/2013	Annual	12/12/2014	6201300731
COMTECH	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M155A00-009
COMTECH	AR85729-5/57598	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
Control Company	4052	Long Stem Thermometer	9/27/2013	Biennial	9/27/2015	130567447
Control Company	36934-158	Wall-Mounted Thermometer	4/29/2014	Biennial	4/29/2016	122014488
Control Company	61220-416	Long-Stem Thermometer	4/29/2014	Biennial	4/29/2016	111331323
Fisher Scientific	15-077-960	Digital Thermometer	11/6/2012	Biennial	11/6/2014	122640025
Fisher Scientific	5407993	Long Stem Thermometer	11/4/2013	Biennial	11/4/2015	130671826
Fisher Scientific	S97611	Thermometer	4/12/2013	Biennial	4/12/2015	130219304
Gigatronics	80701A	(0.05-18GHz) Power Sensor	10/30/2013	Annual	10/30/2014	1833460
Gigatronics	8651A	Universal Power Meter	10/30/2013	Annual	10/30/2014	8650319
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
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
Mitutoyo	CD-6"CSX	Digital Caliper	5/8/2014	Biennial	5/8/2016	13264162
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	6/6/2014	Annual	6/6/2015	105892
Rohde & Schwarz	CMW500	Radio Communication Tester	10/18/2013	Annual	10/18/2014	100976
Rohde & Schwarz	CMW500	Radio Communication Tester	6/3/2014	Annual	6/3/2015	108843
Rohde & Schwarz	CMW500	Radio Communication Tester	12/9/2013	Annual	12/9/2014	109366
Rohde & Schwarz	CMW500	Radio Communication Tester	2/20/2014	Annual	2/20/2015	128633
Rohde & Schwarz	NRVD	Dual Channel Power Meter	10/12/2012	Biennial	10/12/2014	101695
Rohde & Schwarz	NRVS	Single Channel Power Meter	10/31/2013	Annual	10/31/2014	835360/0079
Rohde & Schwarz	NRV-Z32	Peak Power Sensor	10/12/2012	Biennial	10/12/2014	836019/013
Rohde & Schwarz	SME06	Signal Generator	10/30/2013	Annual	10/30/2014	832026
Seekonk	NC-100	Torque Wrench	3/18/2014	Biennial	3/18/2016	22313
Seekonk	NC-100	Torque Wrench	3/18/2014	Biennial	3/18/2016	N/A
SPEAG	D750V3	750 MHz Dipole	1/20/2014	Annual	1/20/2015	1003
SPEAG	D835V2	835 MHz SAR Dipole	4/7/2014	Annual	4/7/2015	44119
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	54141
SPEAG	D2450V2	2450 MHz SAR Dipole	1/21/2014	Annual	1/21/2015	797
SPEAG	D5GHZV2	5 GHz SAR Dipole	9/23/2013	Annual	9/23/2014	1007
SPEAG	D5GHZV2	5 GHz SAR Dipole	1/27/2014	Annual	1/27/2015	1057
SPEAG	DAE4	Dasy Data Acquisition Electronics	12/12/2013	Annual	12/12/2014	649
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/26/2014	Annual	2/26/2015	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/14/2014	Annual	5/14/2015	859
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/19/2013	Annual	11/19/2014	1333
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	11/19/2013	Annual	11/19/2014	1408
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/6/2014	Annual	5/6/2015	1070
SPEAG	DAK-3.5	Dielectric Assessment Kit	11/13/2013	Annual	11/13/2014	1091
SPEAG	ES3DV3	SAR Probe	3/19/2014	Annual	3/19/2015	3209
SPEAG	ES3DV3	SAR Probe	2/25/2014	Annual	2/25/2015	3258
SPEAG	ES3DV3	SAR Probe	5/15/2014	Annual	5/15/2015	3263
SPEAG	ES3DV3	SAR Probe	11/20/2013	Annual	11/20/2014	3287
SPEAG	ES3DV3	SAR Probe	4/17/2014	Annual	4/17/2015	3319
SPEAG	EX3DV4	SAR Probe	1/29/2014	Annual	1/29/2015	3589
SPEAG	EX3DV4	SAR Probe	10/23/2013	Annual	10/23/2014	3914
SPEAG	EX3DV4	SAR Probe	12/18/2013	Annual	12/18/2014	3920
Tektronix	MSA6114A	Real Time Spectrum Analyzer	4/16/2014	Annual	4/16/2015	8010177
VWR	36934-158	Wall-Mounted Thermometer	4/29/2014	Biennial	4/29/2016	111859323

Note:

1. CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.
2. All equipment was used within its 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
Expanded Uncertainty							k=2	24.2	23.5
(95% CONFIDENCE LEVEL)									

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
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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 20AD5

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

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

$f = 836.6 \text{ MHz}$; $\sigma = 0.896 \text{ S/m}$; $\epsilon_r = 39.921$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 08-19-2014; Ambient Temp: 23.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3287; ConvF(6.3, 6.3, 6.3); Calibrated: 11/20/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

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

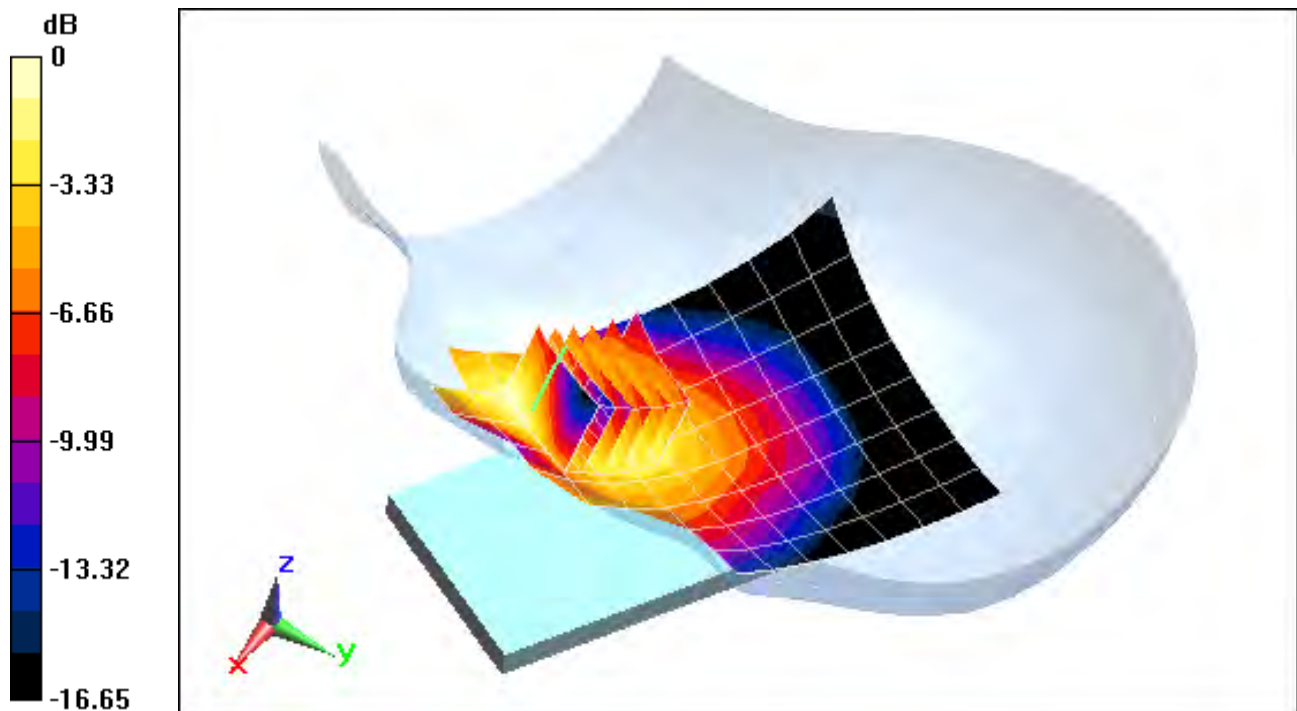
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 12.47 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.167 W/kg

SAR(1 g) = 0.134 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 20AC2

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

Medium: 1900 Head, Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.376 \text{ S/m}$; $\epsilon_r = 39.077$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 07-29-2014; Ambient Temp: 23.4°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM front; Type: QD000P40CD; Serial: TP:1759

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

**Mode: GSM 1900, Left Head, Cheek, Mid.ch
with Standard Back Cover**

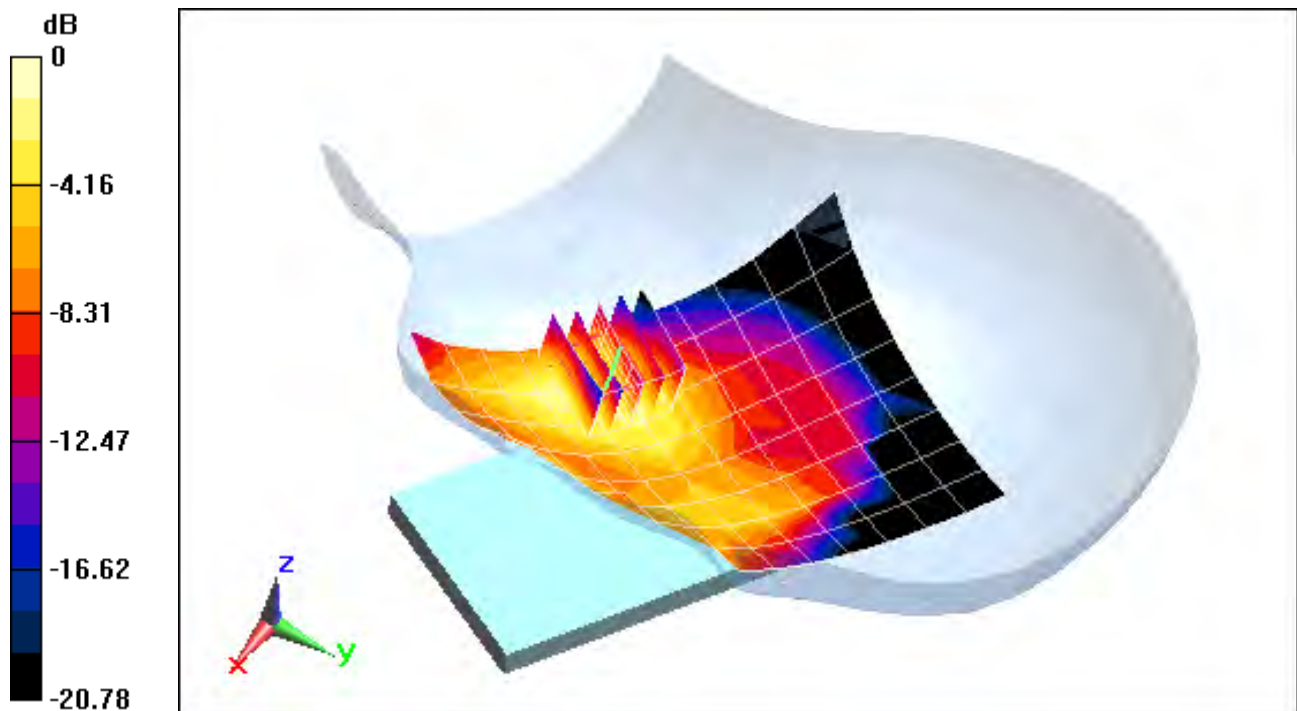
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 5.793 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.0690 W/kg

SAR(1 g) = 0.0434 W/kg



0 dB = 0.0513 W/kg = -12.90 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 20AD5

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

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

$f = 836.6 \text{ MHz}$; $\sigma = 0.896 \text{ S/m}$; $\epsilon_r = 39.921$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 08-19-2014; Ambient Temp: 23.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3287; ConvF(6.3, 6.3, 6.3); Calibrated: 11/20/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

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

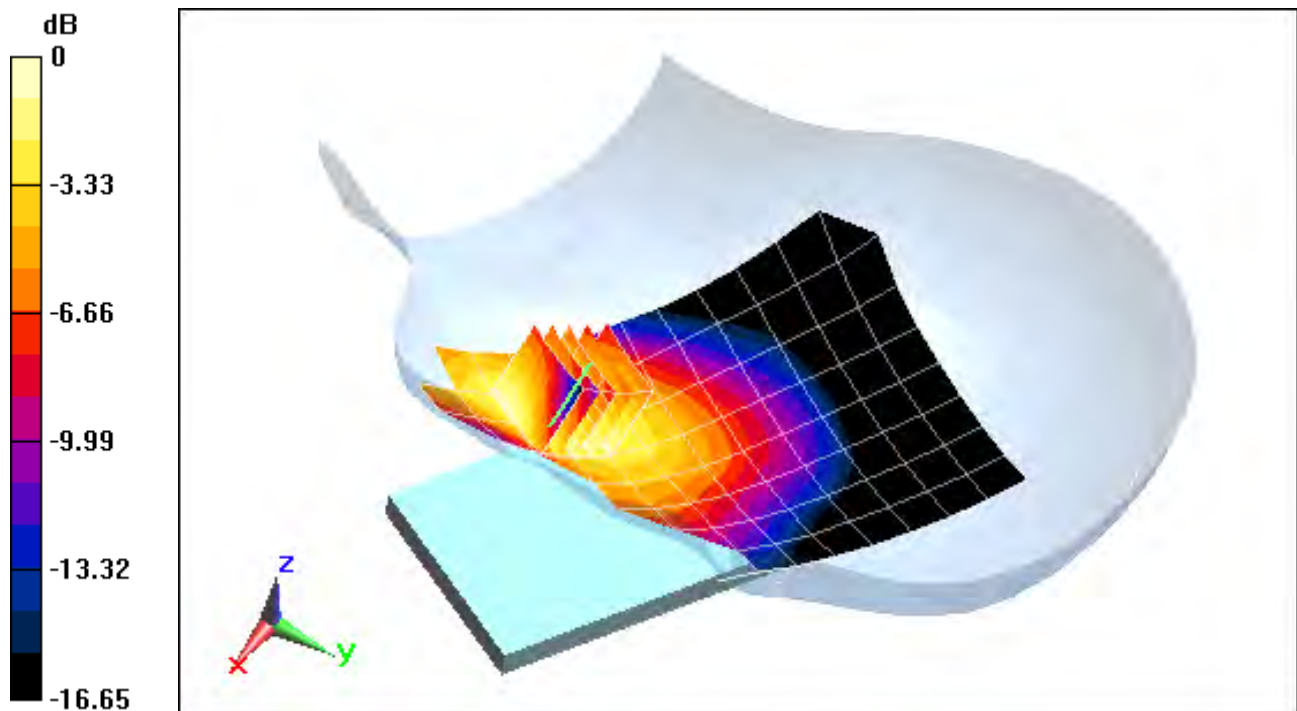
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 11.78 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.148 W/kg

SAR(1 g) = 0.119 W/kg



0 dB = 0.130 W/kg = -8.86 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 20AD4

Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1

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

$f = 1732.4 \text{ MHz}$; $\sigma = 1.349 \text{ S/m}$; $\epsilon_r = 39.754$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 08-06-2014; Ambient Temp: 23.9°C; Tissue Temp: 23.2°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 front; Type: QD000P40CD; Serial: TP-1646

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

**Mode: AWS UMTS, Left Head, Cheek, Mid.ch
with Standard Back Cover**

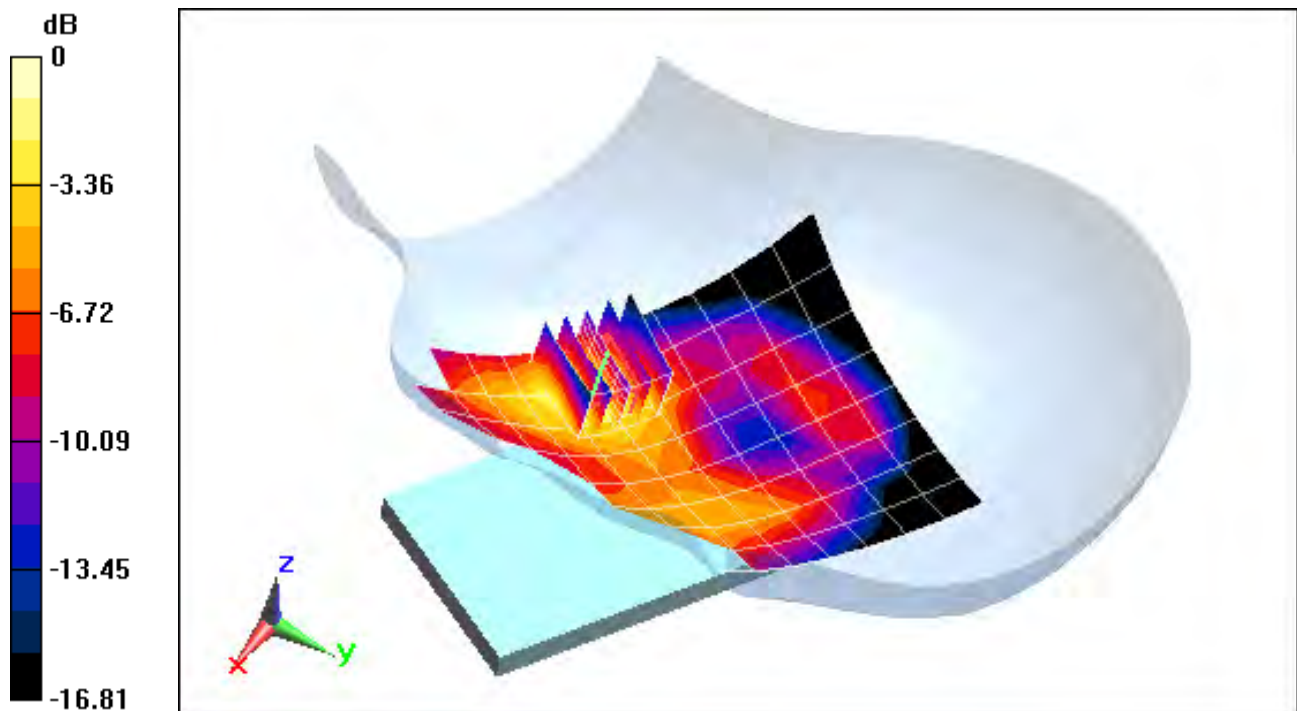
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 11.35 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.280 W/kg

SAR(1 g) = 0.166 W/kg



0 dB = 0.215 W/kg = -6.68 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 209AF

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

Medium: 1900 Head, Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.376 \text{ S/m}$; $\epsilon_r = 39.077$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 07-29-2014; Ambient Temp: 23.4C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM front; Type: QD000P40CD; Serial: TP:1759

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

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

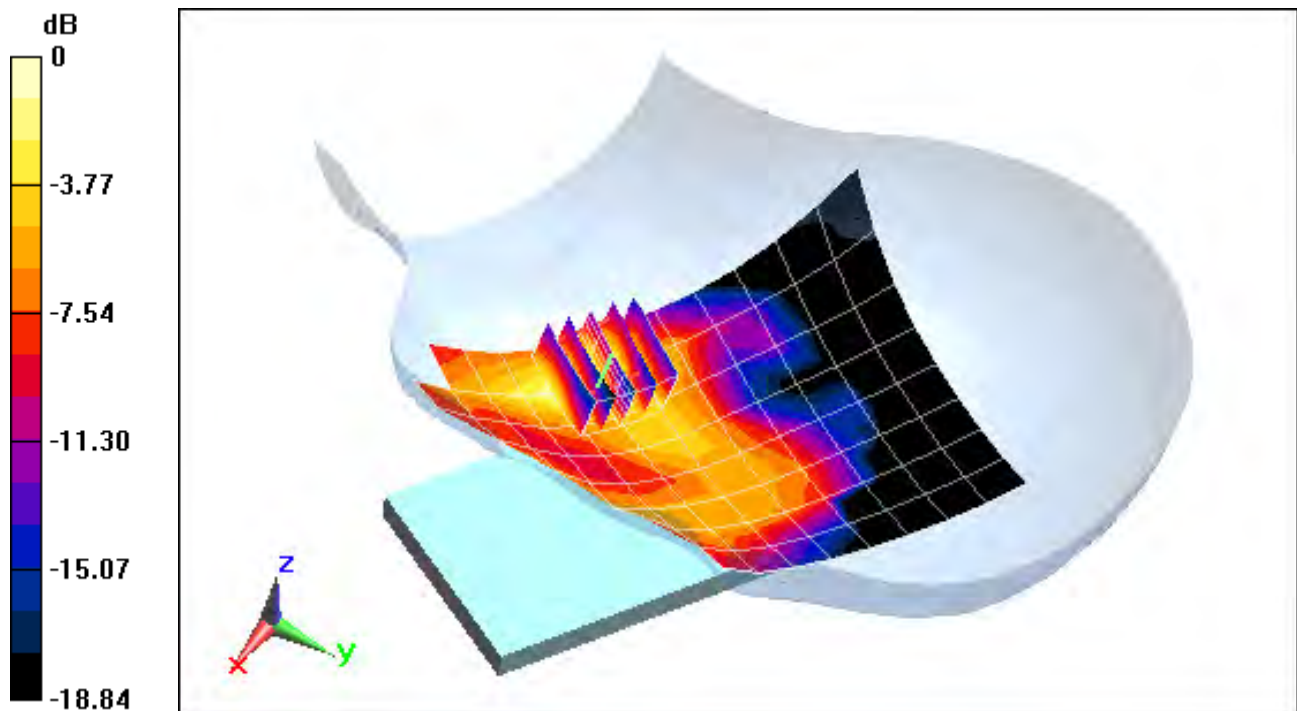
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 8.726 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.163 W/kg

SAR(1 g) = 0.0895 W/kg



0 dB = 0.108 W/kg = -9.67 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 221F0

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

Medium: 750 Head, Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.877 \text{ S/m}$; $\epsilon_r = 41.631$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 09-01-2014; Ambient Temp: 24.0°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3263; ConvF(6.42, 6.42, 6.42); 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 12, Right Head, Cheek, Mid.ch, 10 MHz Bandwidth,
QPSK, 1 RB, 25 RB Offset, with Standard Back Cover**

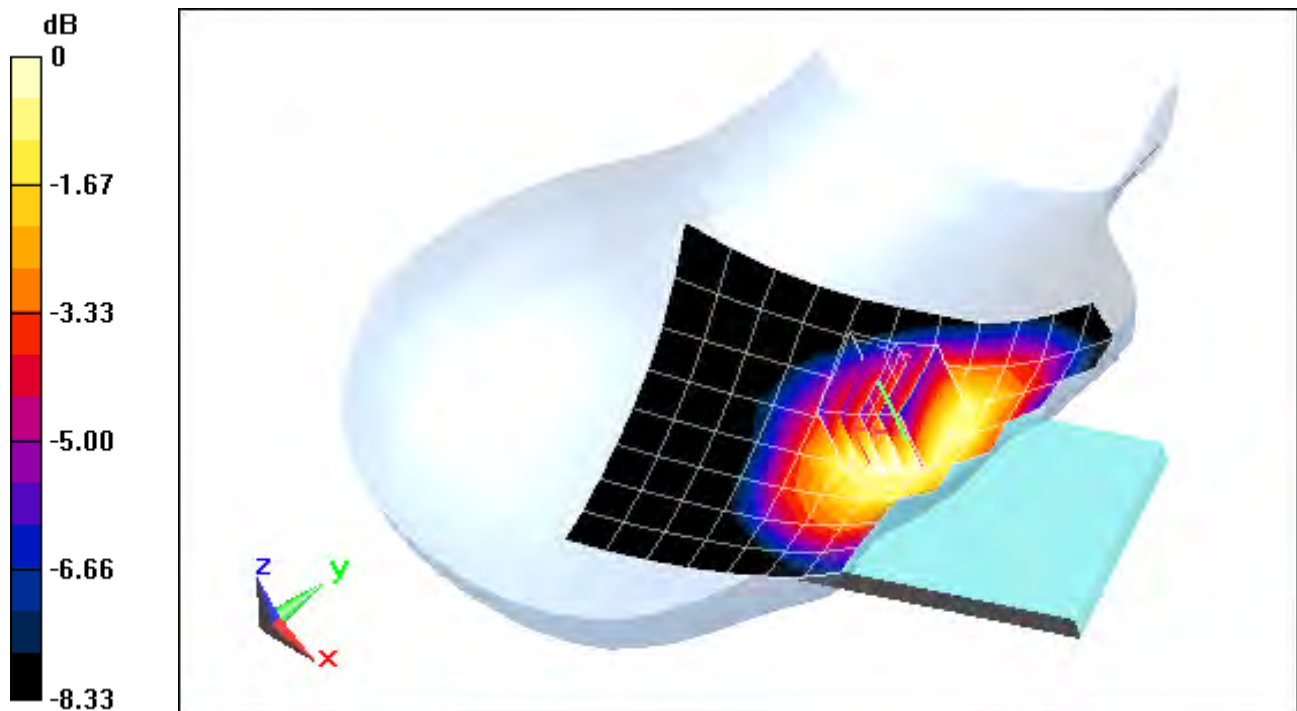
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 14.52 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.194 W/kg

SAR(1 g) = 0.160 W/kg



0 dB = 0.172 W/kg = -7.64 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 20AD5

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

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

$f = 836.5 \text{ MHz}$; $\sigma = 0.896 \text{ S/m}$; $\epsilon_r = 39.921$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 08-19-2014; Ambient Temp: 23.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3287; ConvF(6.3, 6.3, 6.3); Calibrated: 11/20/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

**Mode: LTE Band 5 (Cell), Left Head, Cheek, Mid.ch, 10 MHz Bandwidth,
QPSK, 1 RB, 0 RB Offset, with Wireless Charging Cover**

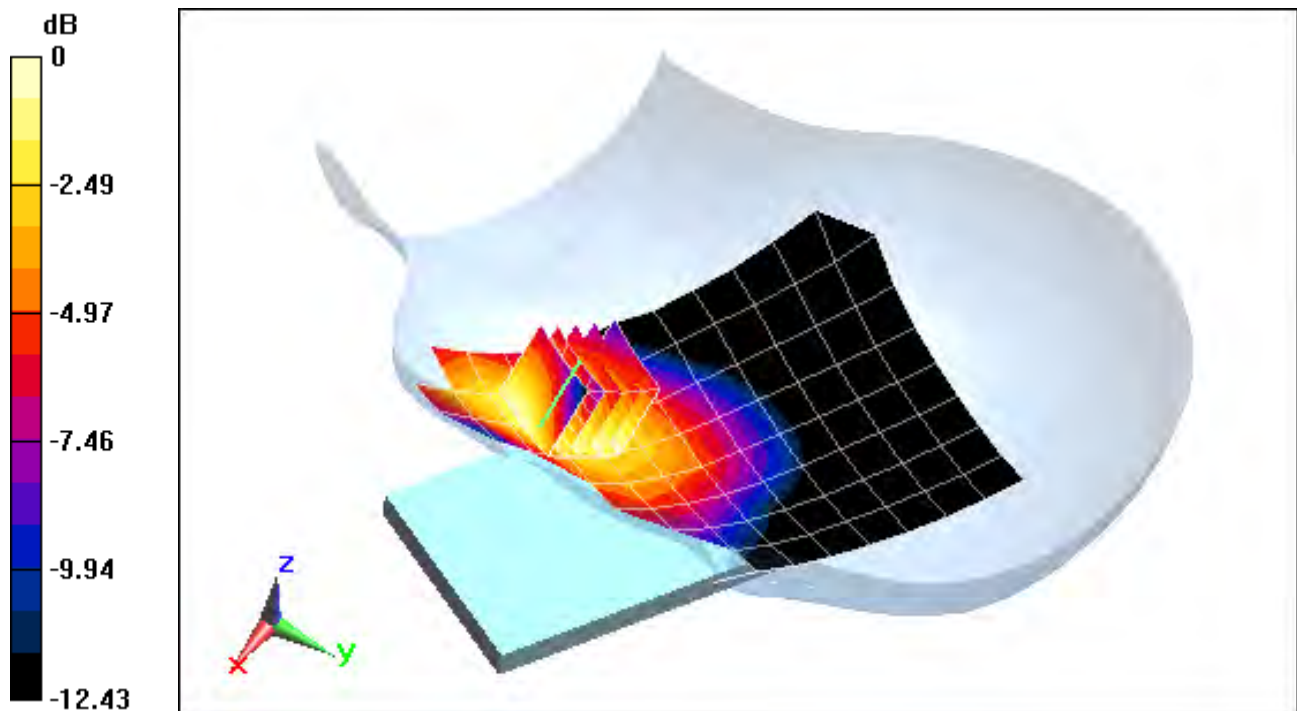
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 13.20 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.166 W/kg

SAR(1 g) = 0.135 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 20ACC

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

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

$f = 1732.5 \text{ MHz}$; $\sigma = 1.349 \text{ S/m}$; $\epsilon_r = 39.754$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 08-06-2014; Ambient Temp: 23.9°C; Tissue Temp: 23.2°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 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), Left Head, Cheek, Mid.ch, 20 MHz Bandwidth,
QPSK, 1 RB, 0 RB Offset, with Standard Back Cover**

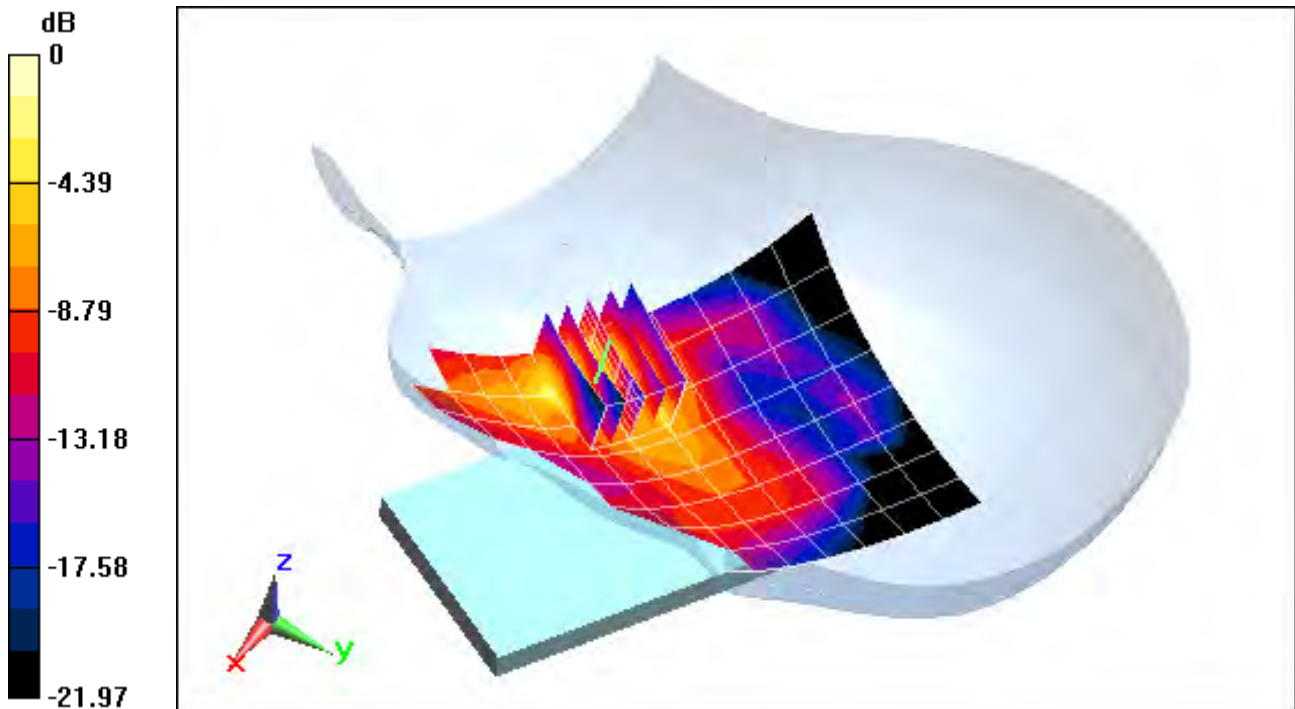
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 11.49 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.580 W/kg

SAR(1 g) = 0.312 W/kg



0 dB = 0.410 W/kg = -3.87 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 20ACC

Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head, Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.382 \text{ S/m}$; $\epsilon_r = 39.348$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 08-04-2014; Ambient Temp: 24.0°C; Tissue Temp: 22.9°C

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

**Mode: LTE Band 2 (PCS), Left Head, Cheek, Mid.ch, 20 MHz Bandwidth,
QSPK, 1 RB, 50 RB Offset, with Wireless Charging Cover**

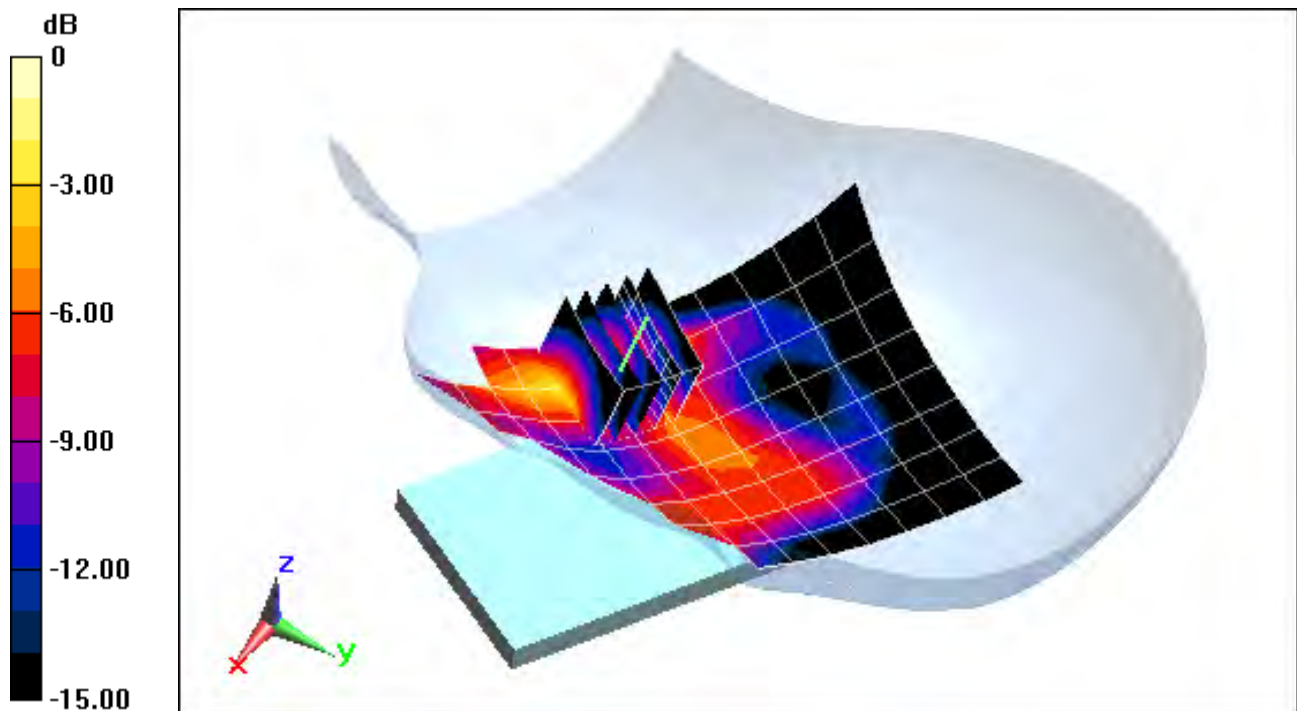
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 10.07 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.191 W/kg

SAR(1 g) = 0.106 W/kg



0 dB = 0.127 W/kg = -8.96 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 01FC3

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

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.872 \text{ S/m}$; $\epsilon_r = 38.098$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 08-28-2014; Ambient Temp: 24.1°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, Right Head, Cheek, Ch 11, 1 Mbps,
Antenna 2, with Standard Back Cover**

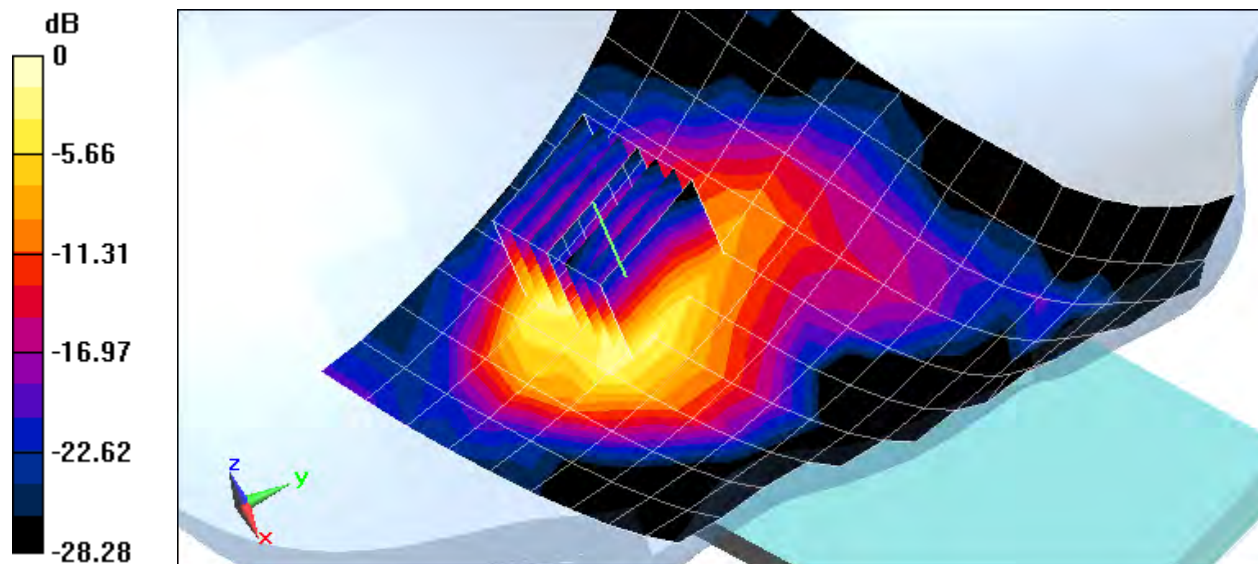
Area Scan (11x18x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 20.063 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.48 W/kg

SAR(1 g) = 0.573 W/kg



0 dB = 0.808 W/kg = -0.93 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 015D8

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

Medium: 5 GHz Head Medium parameters used:

$f = 5745 \text{ MHz}$; $\sigma = 5.306 \text{ S/m}$; $\epsilon_r = 34.78$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 08-12-2014; Ambient Temp: 24.2°C; Tissue Temp: 22.9°C

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

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

**Mode: IEEE 802.11n, 5.8 GHz, Right Head, Cheek, Ch 149, 13 Mbps,
MIMO, with Standard Back Cover**

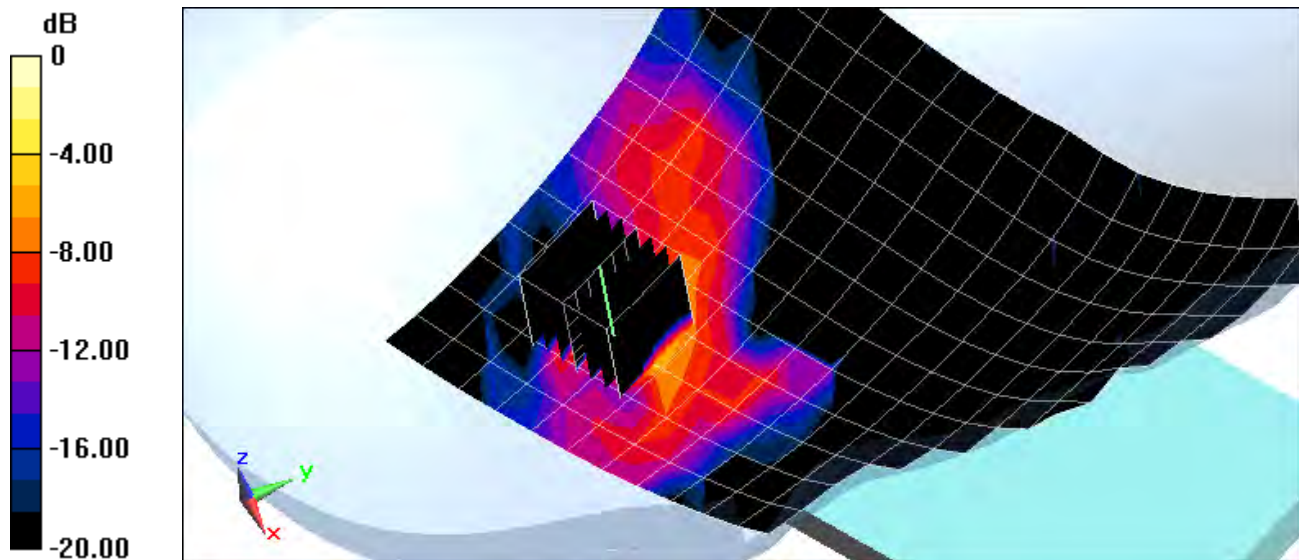
Area Scan (13x22x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Reference Value = 2.082 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.840 W/kg

SAR(1 g) = 0.169 W/kg



0 dB = 0.515 W/kg = -2.88 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 015D8

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

Medium: 5 GHz Head Medium parameters used:

$f = 5680 \text{ MHz}$; $\sigma = 5.205 \text{ S/m}$; $\epsilon_r = 34.89$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 08-12-2014; Ambient Temp: 24.2°C; Tissue Temp: 22.9°C

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

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

**Mode: IEEE 802.11n, 5.5 - 5.7 GHz, Right Head, Cheek, Ch 136, 13 Mbps,
MIMO, with Wireless Charging Cover**

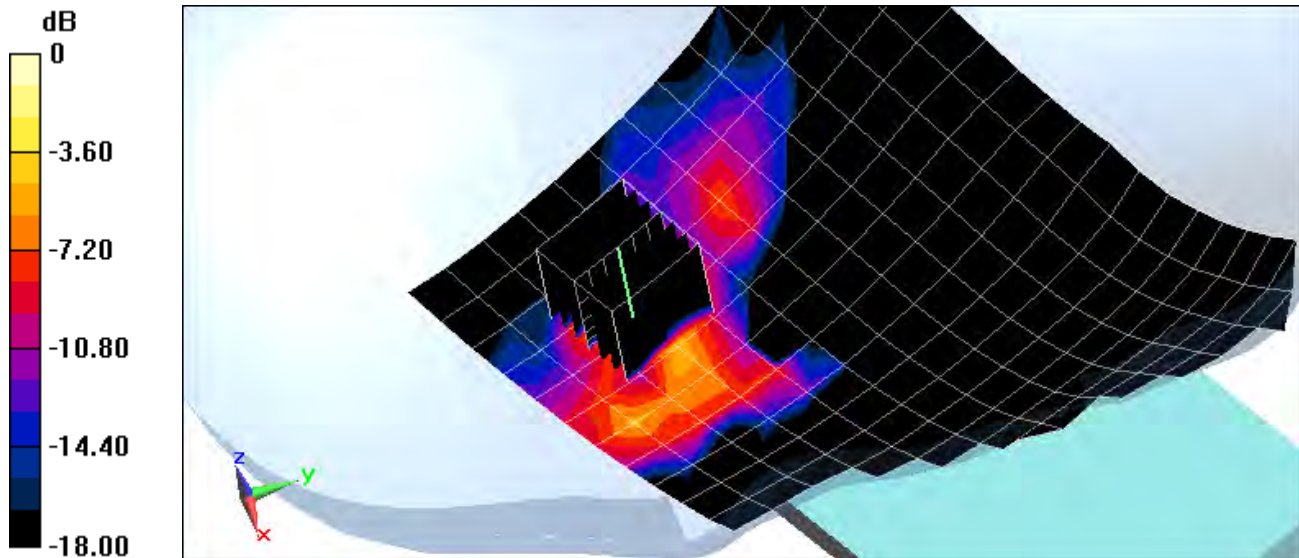
Area Scan (13x19x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Reference Value = 7.391 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.966 W/kg

SAR(1 g) = 0.212 W/kg



0 dB = 0.603 W/kg = -2.20 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 20AD5

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

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

$f = 836.6 \text{ MHz}$; $\sigma = 1.005 \text{ S/m}$; $\epsilon_r = 53.65$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-19-2014; Ambient Temp: 23.7°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(6.16, 6.16, 6.16); 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: GSM 850, Body SAR, Back Side, Mid.ch
with Wireless Charging Cover**

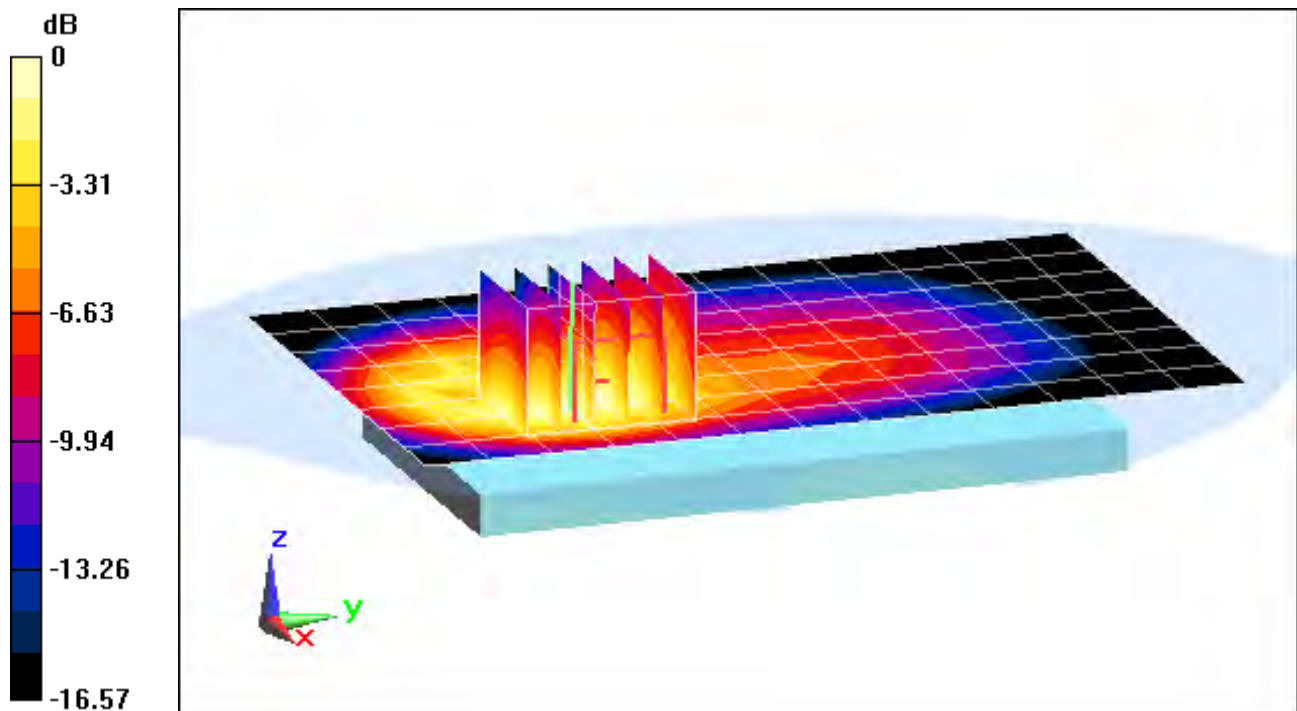
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.27 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 0.761 W/kg

SAR(1 g) = 0.486 W/kg



0 dB = 0.559 W/kg = -2.53 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 20AD5

Communication System: UID 0, GSM GPRS; 4 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.076

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

$f = 836.6 \text{ MHz}$; $\sigma = 1.005 \text{ S/m}$; $\epsilon_r = 53.65$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-19-2014; Ambient Temp: 23.7°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(6.16, 6.16, 6.16); 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: GPRS 850, Body SAR, Front Side, Mid.ch, 4 Tx Slots
with Wireless Charging Cover**

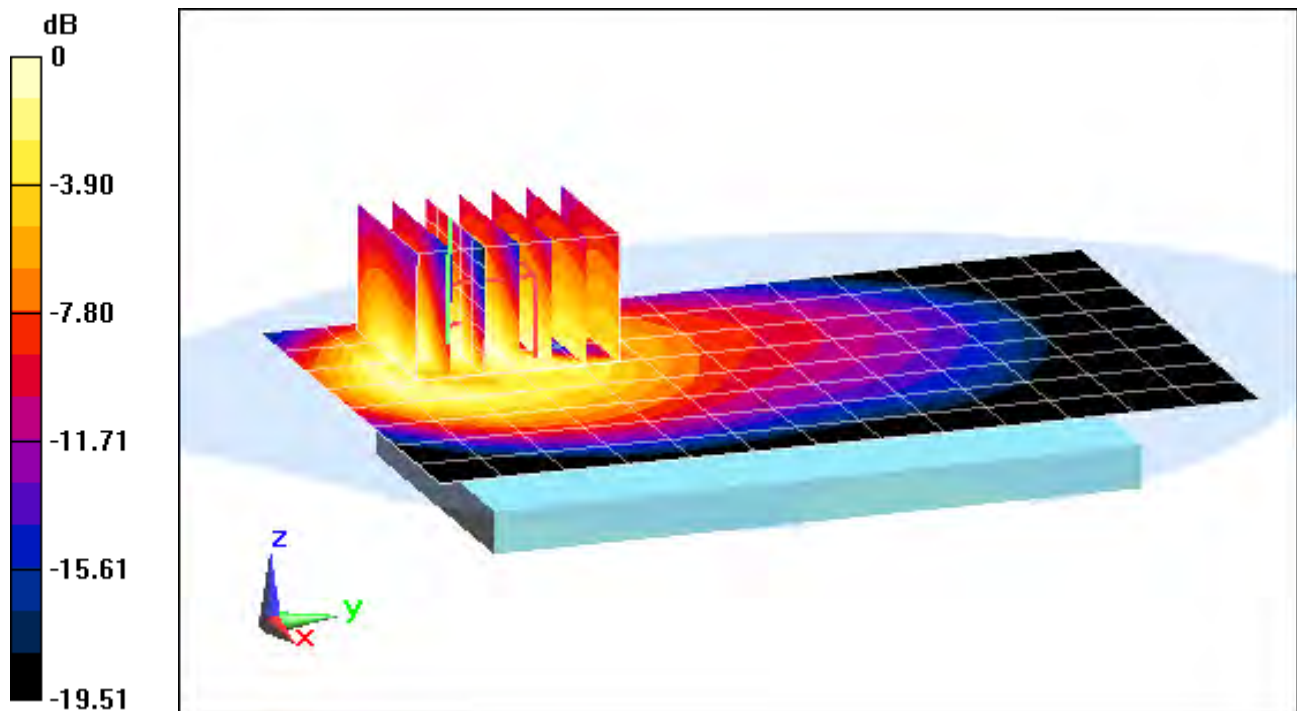
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 28.31 V/m; Power Drift = -0.19 dB

Peak SAR (extrapolated) = 1.11 W/kg

SAR(1 g) = 0.720 W/kg



0 dB = 0.835 W/kg = -0.78 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 20AC2

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

Medium: 1900 Body, Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.497 \text{ S/m}$; $\epsilon_r = 53.978$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-28-2014; Ambient Temp: 24.3°C; Tissue Temp: 23.2°C

Probe: ES3DV3 - SN3287; ConvF(4.67, 4.67, 4.67); Calibrated: 11/20/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229

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

**Mode: GSM 1900, Body SAR, Back Side, Mid.ch,
with Standard Back Cover**

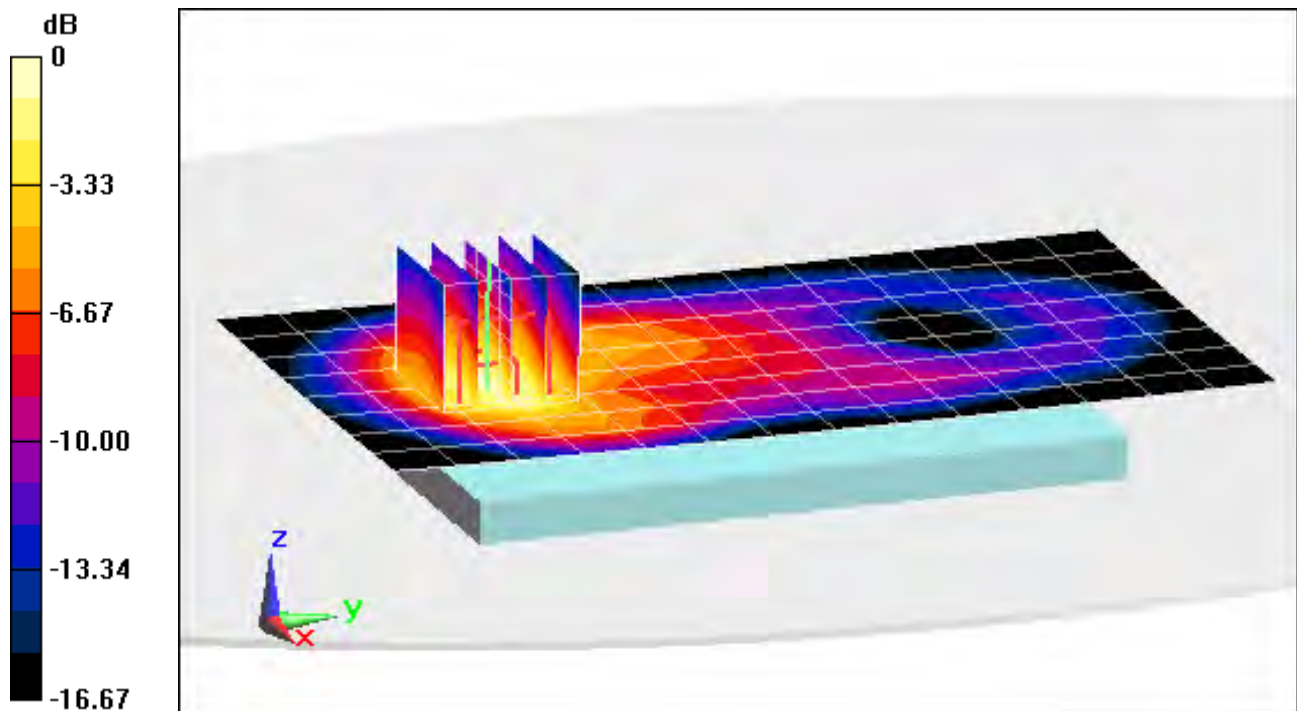
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 13.84 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.421 W/kg

SAR(1 g) = 0.264 W/kg



0 dB = 0.318 W/kg = -4.98 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 221A5

Communication System: UID 0, GSM GPRS; 4 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.076

Medium: 1900 Body, Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.502 \text{ S/m}$; $\epsilon_r = 52.007$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-28-2014; Ambient Temp: 23.5°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3319; ConvF(4.67, 4.67, 4.67); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/11/2014

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

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

**Mode: GPRS 1900, Body SAR, Bottom Edge, Mid.ch, 4 Tx Slots
with Wireless Charging Cover**

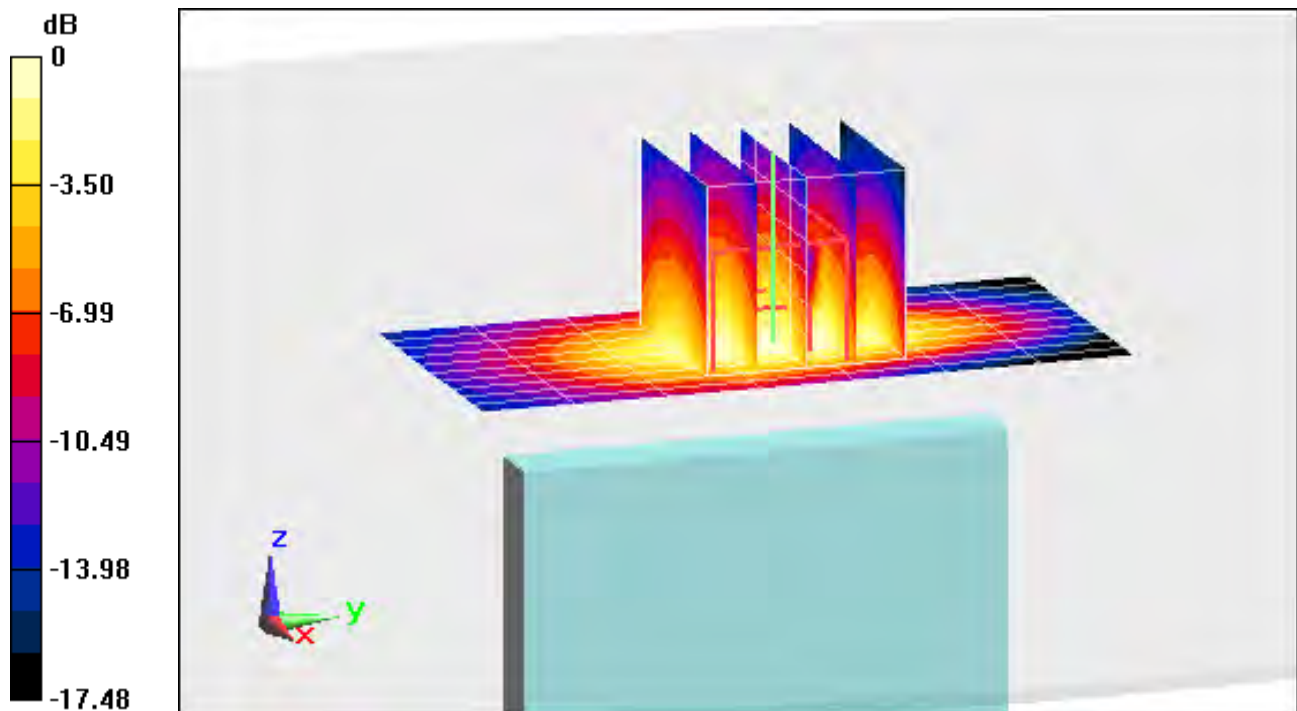
Area Scan (11x8x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 22.72 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.56 W/kg

SAR(1 g) = 0.684 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 20AD5

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

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

$f = 836.6 \text{ MHz}$; $\sigma = 1.005 \text{ S/m}$; $\epsilon_r = 53.65$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-19-2014; Ambient Temp: 23.7°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(6.16, 6.16, 6.16); 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: UMTS 850, Body SAR, Back Side, Mid.ch
with Wireless Charging Cover**

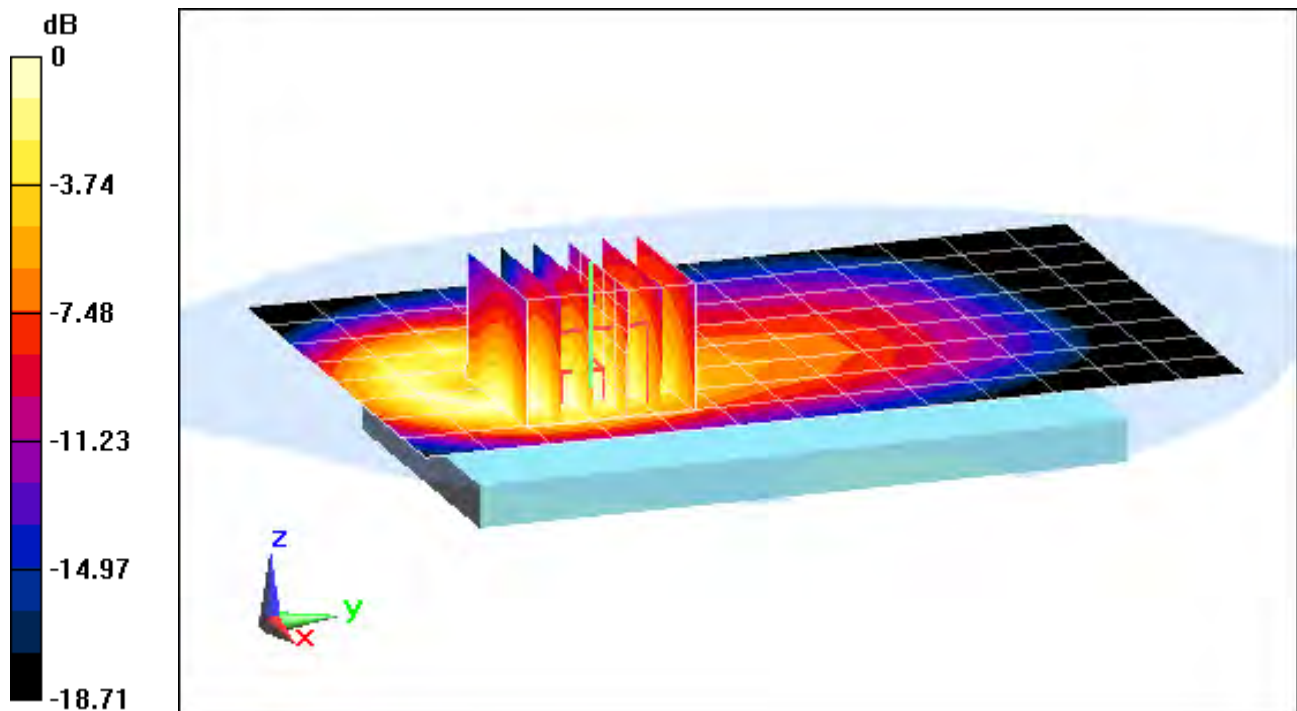
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 21.56 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 0.690 W/kg

SAR(1 g) = 0.444 W/kg



0 dB = 0.500 W/kg = -3.01 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 20AD5

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

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

$f = 836.6 \text{ MHz}$; $\sigma = 1.005 \text{ S/m}$; $\epsilon_r = 53.65$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-19-2014; Ambient Temp: 23.7°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(6.16, 6.16, 6.16); 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: UMTS 850, Body SAR, Front Side, Mid.ch
with Wireless Charging Cover**

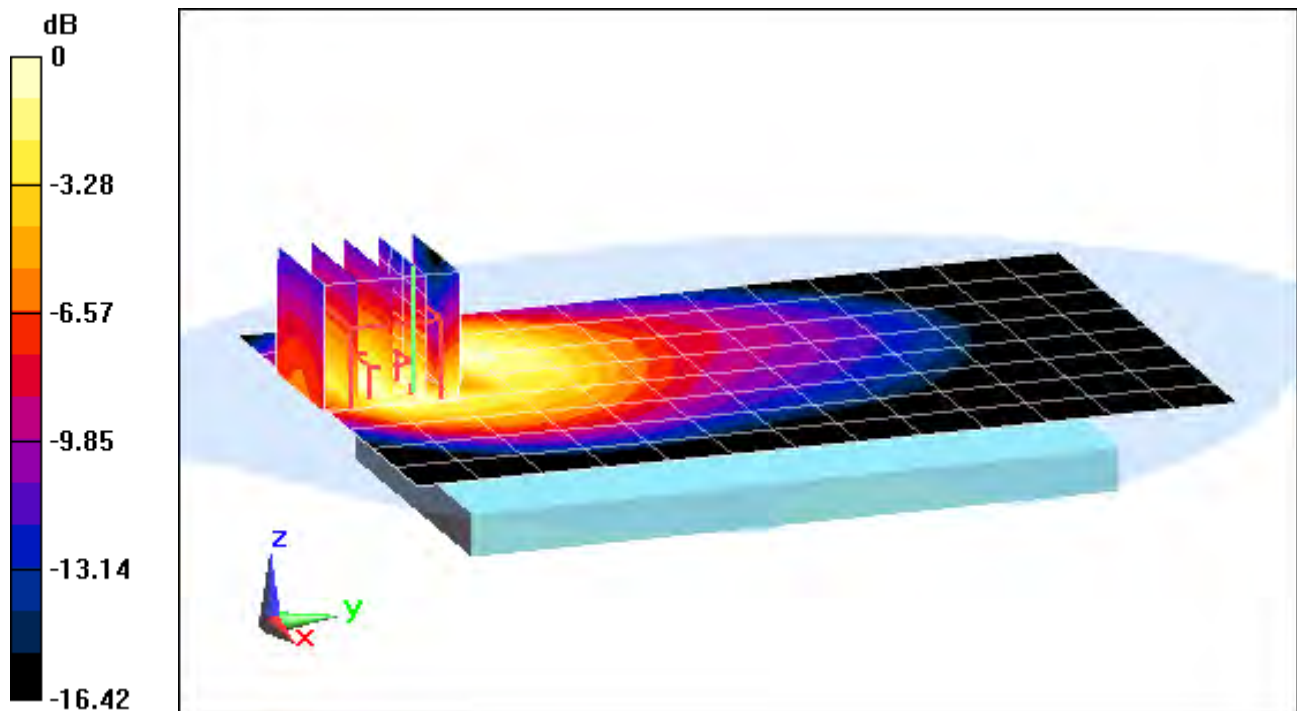
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 23.76 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.899 W/kg

SAR(1 g) = 0.520 W/kg



0 dB = 0.595 W/kg = -2.25 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 221F2

Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1

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

$f = 1732.4 \text{ MHz}$; $\sigma = 1.444 \text{ S/m}$; $\epsilon_r = 51.765$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-29-2014; Ambient Temp: 23.8°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3287; ConvF(4.93, 4.93, 4.93); Calibrated: 11/20/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229

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

**Mode: AWS UMTS, Body SAR, Back Side, Mid.ch
with Standard Back Cover**

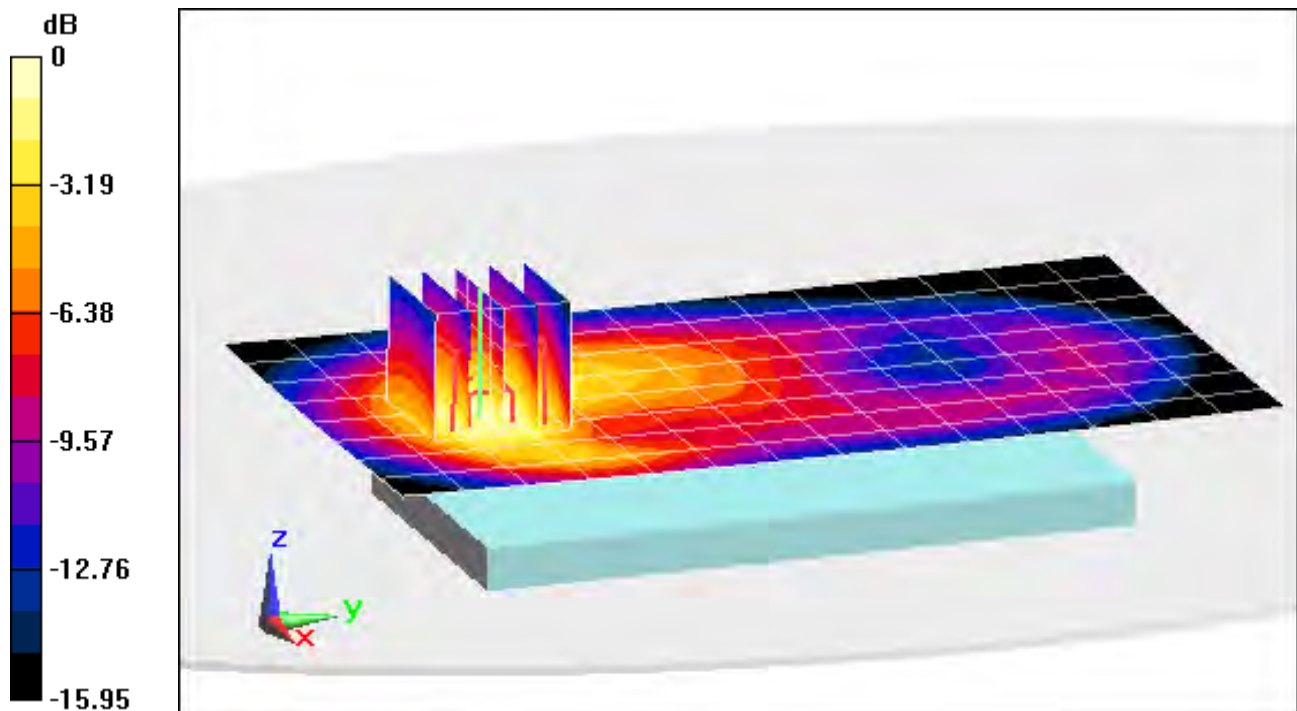
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 17.27 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.640 W/kg

SAR(1 g) = 0.415 W/kg



0 dB = 0.493 W/kg = -3.07 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 221F2

Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1

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

$f = 1732.4 \text{ MHz}$; $\sigma = 1.444 \text{ S/m}$; $\epsilon_r = 51.765$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-29-2014; Ambient Temp: 23.8°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3287; ConvF(4.93, 4.93, 4.93); Calibrated: 11/20/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229

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

**Mode: AWS UMTS, Body SAR, Bottom Edge, Mid.ch
with Wireless Charging Cover**

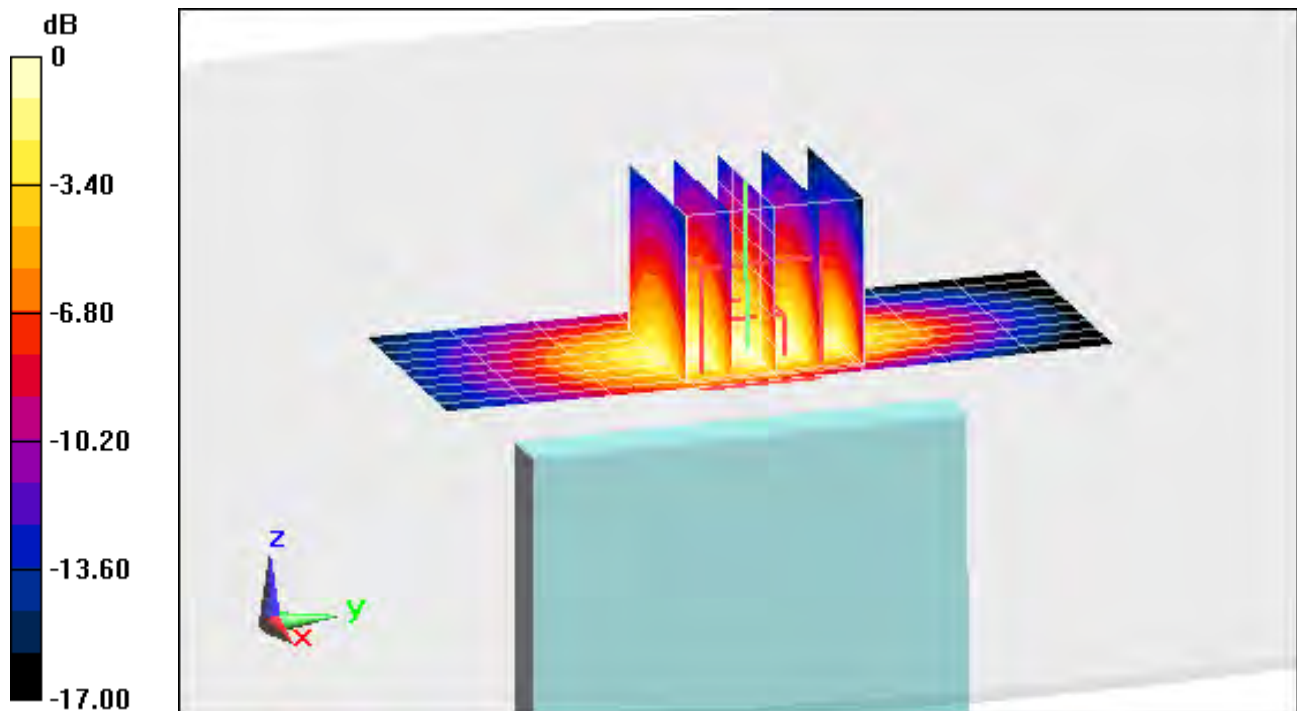
Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 22.13 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.994 W/kg

SAR(1 g) = 0.614 W/kg



0 dB = 0.750 W/kg = -1.25 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 221A9

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

Medium: 1900 Body, Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.502 \text{ S/m}$; $\epsilon_r = 52.007$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-28-2014; Ambient Temp: 23.5°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3319; ConvF(4.67, 4.67, 4.67); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/11/2014

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

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

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

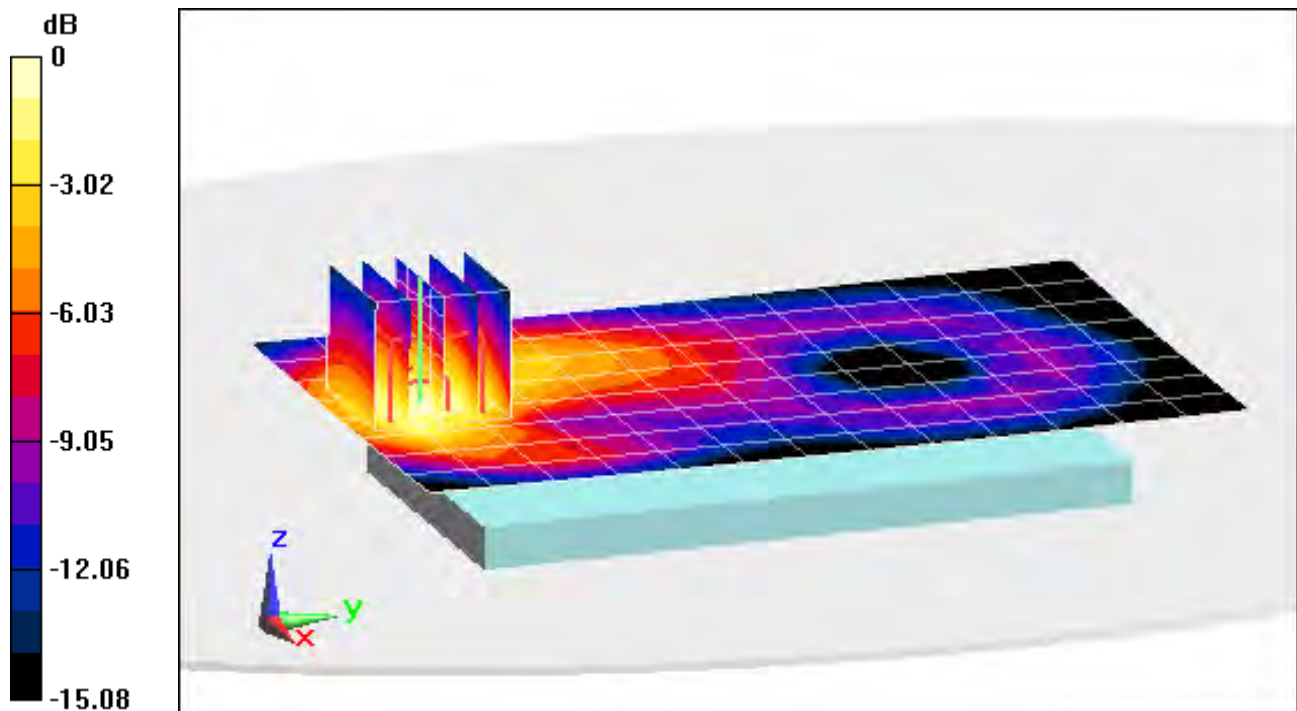
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 12.84 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.378 W/kg

SAR(1 g) = 0.247 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 221A9

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

Medium: 1900 Body, Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.502 \text{ S/m}$; $\epsilon_r = 52.007$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-28-2014; Ambient Temp: 23.5°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3319; ConvF(4.67, 4.67, 4.67); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/11/2014

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

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

**Mode: UMTS 1900, Body SAR, Bottom Edge, Mid.ch
with Wireless Charging Cover**

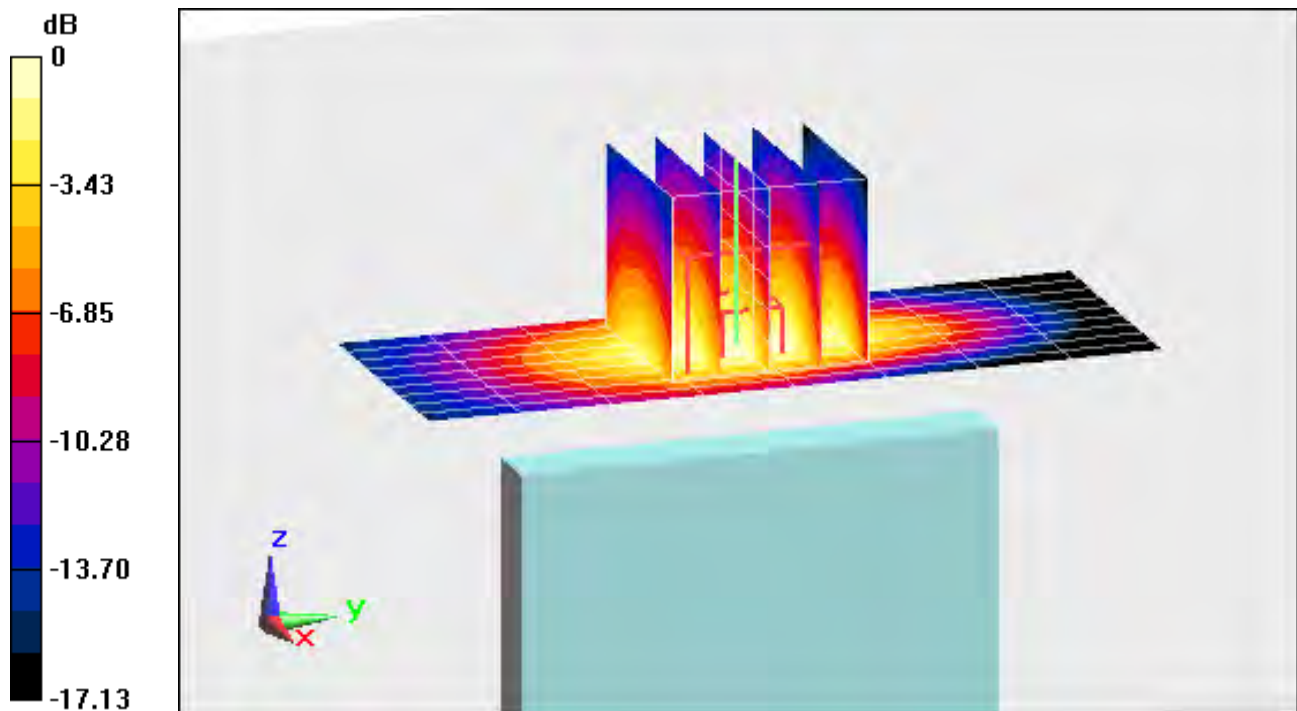
Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 20.85 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.902 W/kg

SAR(1 g) = 0.559 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 20A9B

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

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

$f = 707.5 \text{ MHz}$; $\sigma = 0.926 \text{ S/m}$; $\epsilon_r = 53.888$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.6°C

Probe: ES3DV3 - SN3287; ConvF(6.09, 6.09, 6.09); Calibrated: 11/20/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

**Mode: LTE Band 12, Body SAR, Back Side, Mid.ch, 10 MHz Bandwidth,
QPSK, 1 RB, 25 RB Offset, with Standard Back Cover**

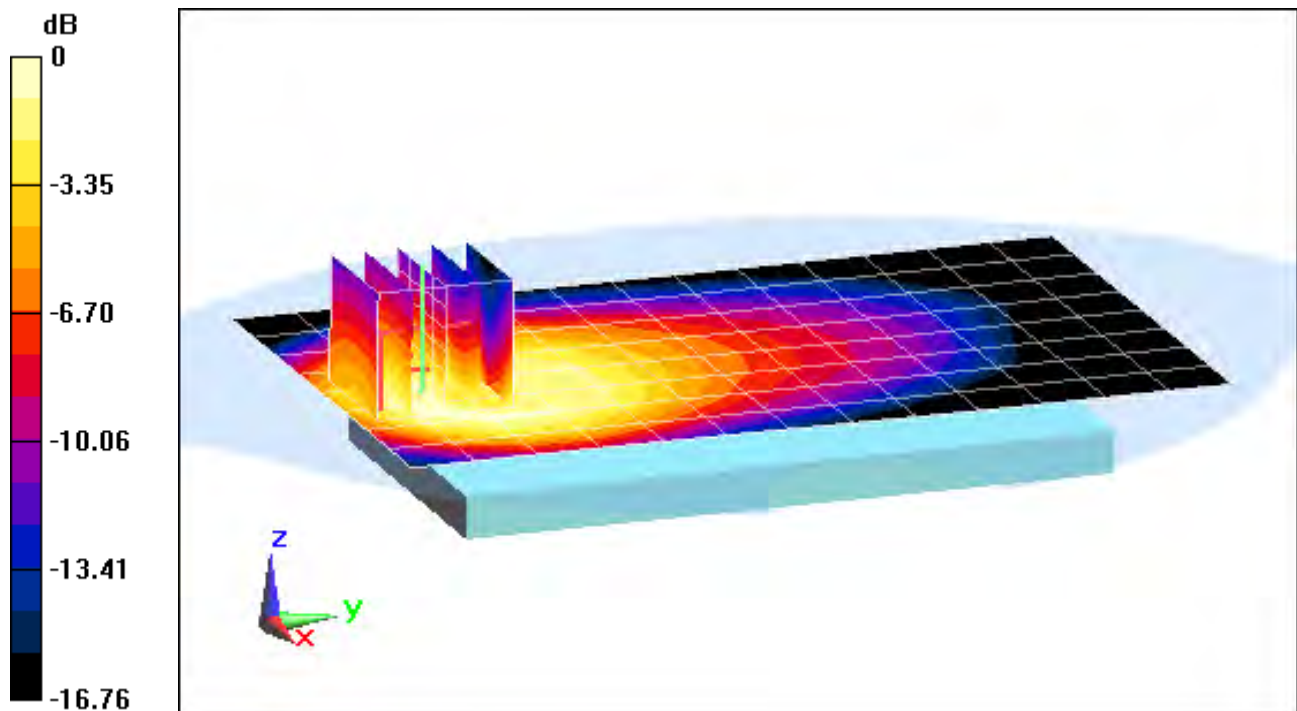
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 18.88 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.508 W/kg

SAR(1 g) = 0.300 W/kg



0 dB = 0.369 W/kg = -4.33 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 20A9B

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

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

$f = 707.5 \text{ MHz}$; $\sigma = 0.926 \text{ S/m}$; $\epsilon_r = 53.888$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.6°C

Probe: ES3DV3 - SN3287; ConvF(6.09, 6.09, 6.09); Calibrated: 11/20/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

**Mode: LTE Band 12, Body SAR, Front Side, Mid.ch, 10 MHz Bandwidth,
QPSK, 1 RB, 25 RB Offset, with Standard Back Cover**

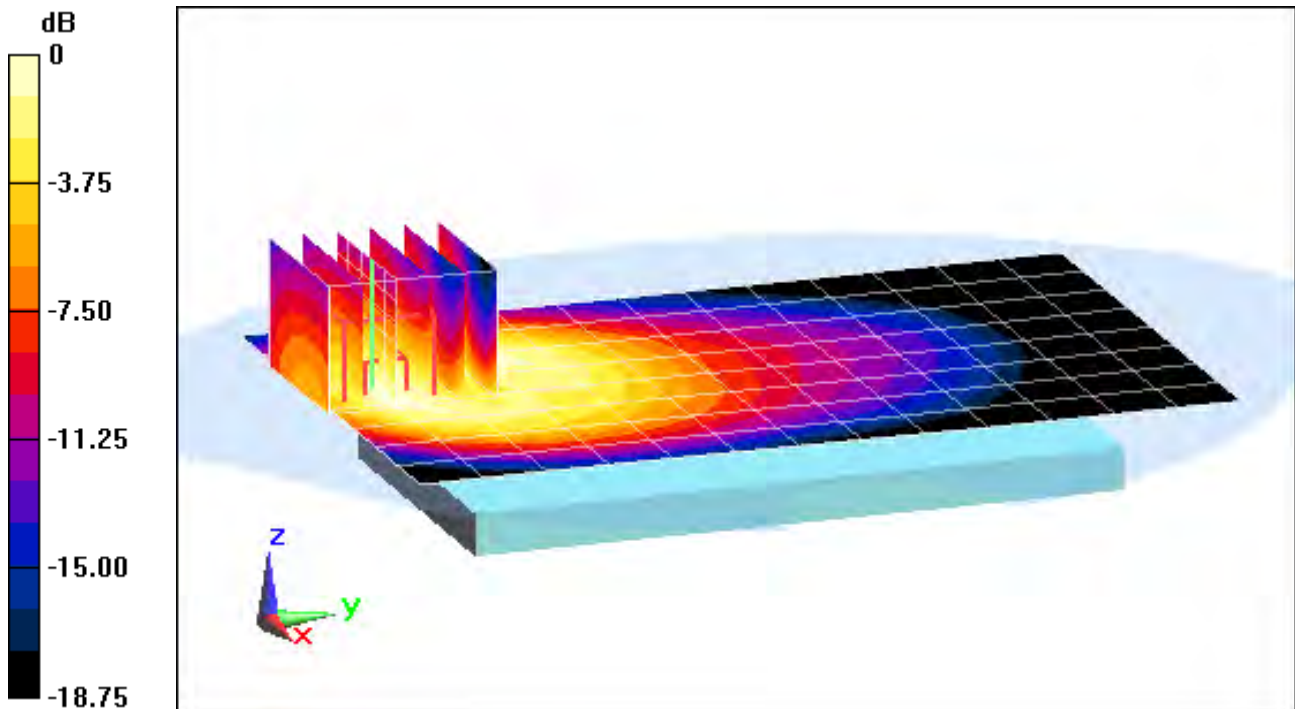
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.13 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.625 W/kg

SAR(1 g) = 0.360 W/kg



0 dB = 0.420 W/kg = -3.77 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 20AD5

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

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

$f = 836.5 \text{ MHz}$; $\sigma = 1.005 \text{ S/m}$; $\epsilon_r = 53.651$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-19-2014; Ambient Temp: 23.7°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(6.16, 6.16, 6.16); 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 5 (Cell.), Body SAR, Back Side, Mid.ch, 10 MHz Bandwidth,
QPSK, 1 RB, 0 RB Offset, with Wireless Charging Cover**

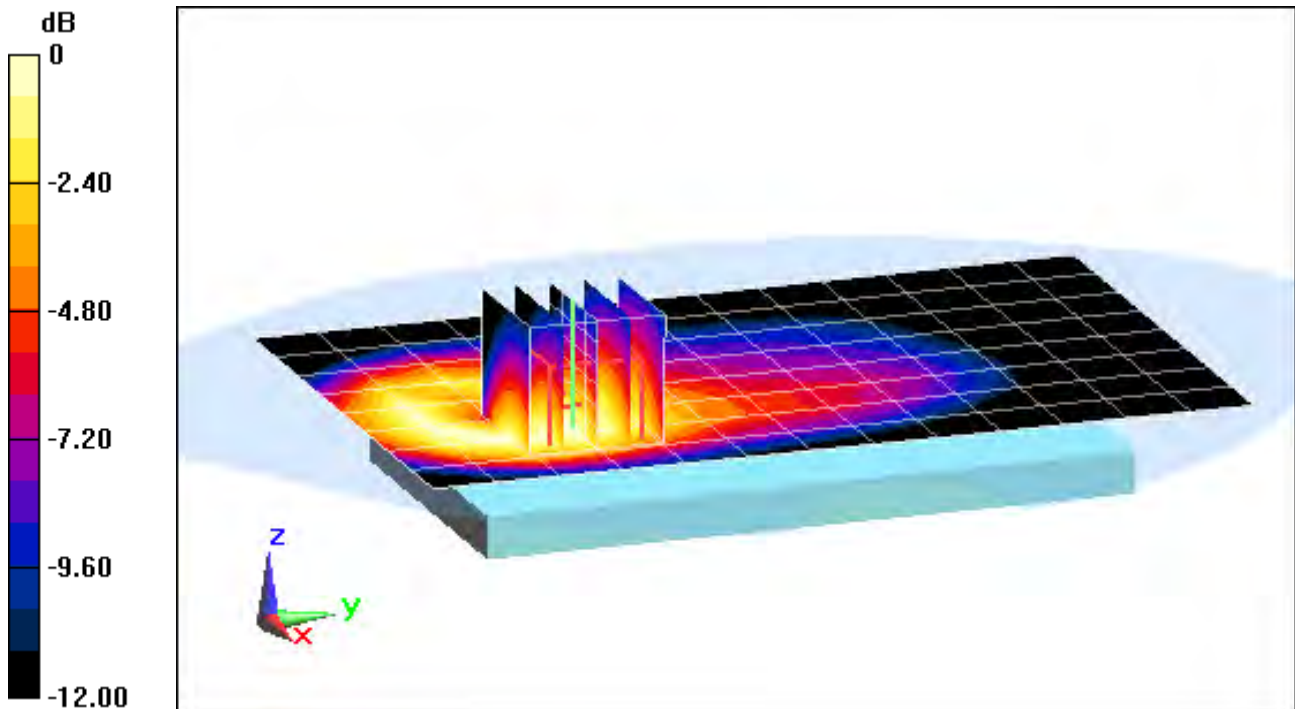
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 22.96 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.740 W/kg

SAR(1 g) = 0.485 W/kg



0 dB = 0.569 W/kg = -2.45 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 20AD5

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

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

$f = 836.5 \text{ MHz}$; $\sigma = 1.005 \text{ S/m}$; $\epsilon_r = 53.651$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-19-2014; Ambient Temp: 23.7°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(6.16, 6.16, 6.16); 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 5 (Cell.), Body SAR, Front Side, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset, with Wireless Charging Cover

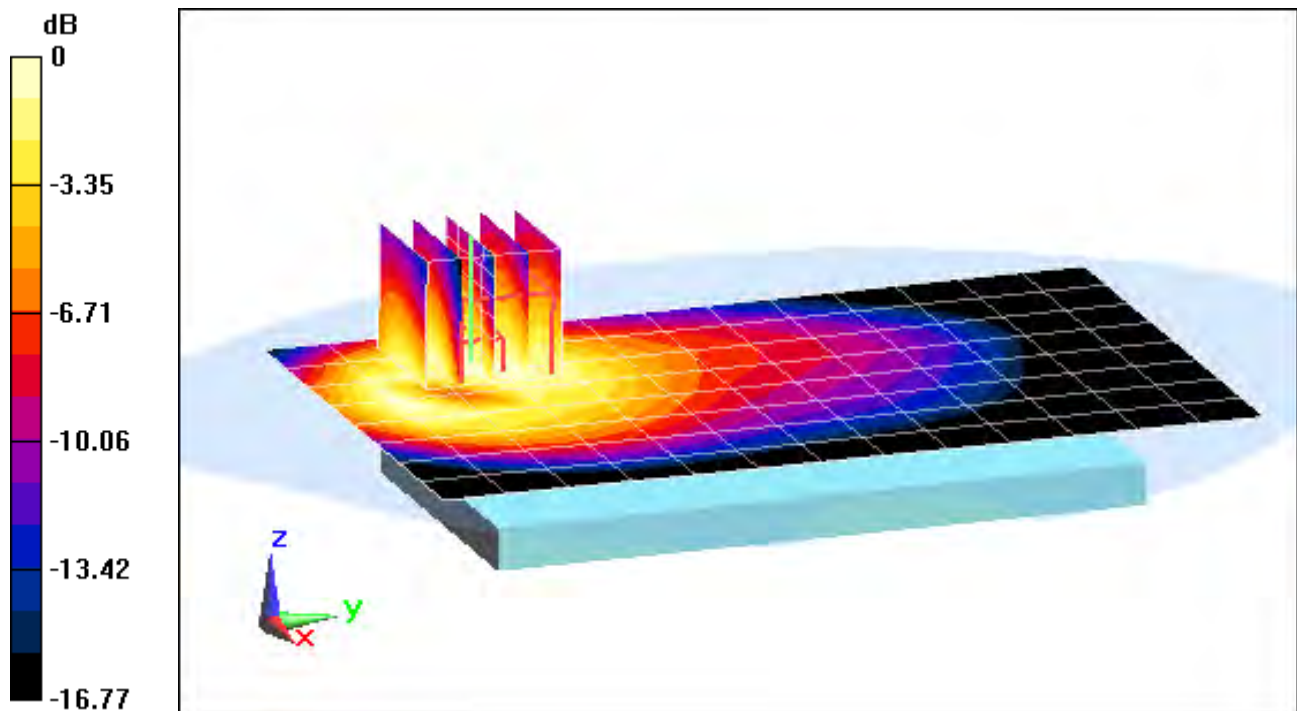
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 27.10 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.00 W/kg

SAR(1 g) = 0.657 W/kg



0 dB = 0.772 W/kg = -1.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 221AA

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

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

$f = 1732.5 \text{ MHz}$; $\sigma = 1.444 \text{ S/m}$; $\epsilon_r = 51.764$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-29-2014; Ambient Temp: 23.8°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3287; ConvF(4.93, 4.93, 4.93); Calibrated: 11/20/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229

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

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

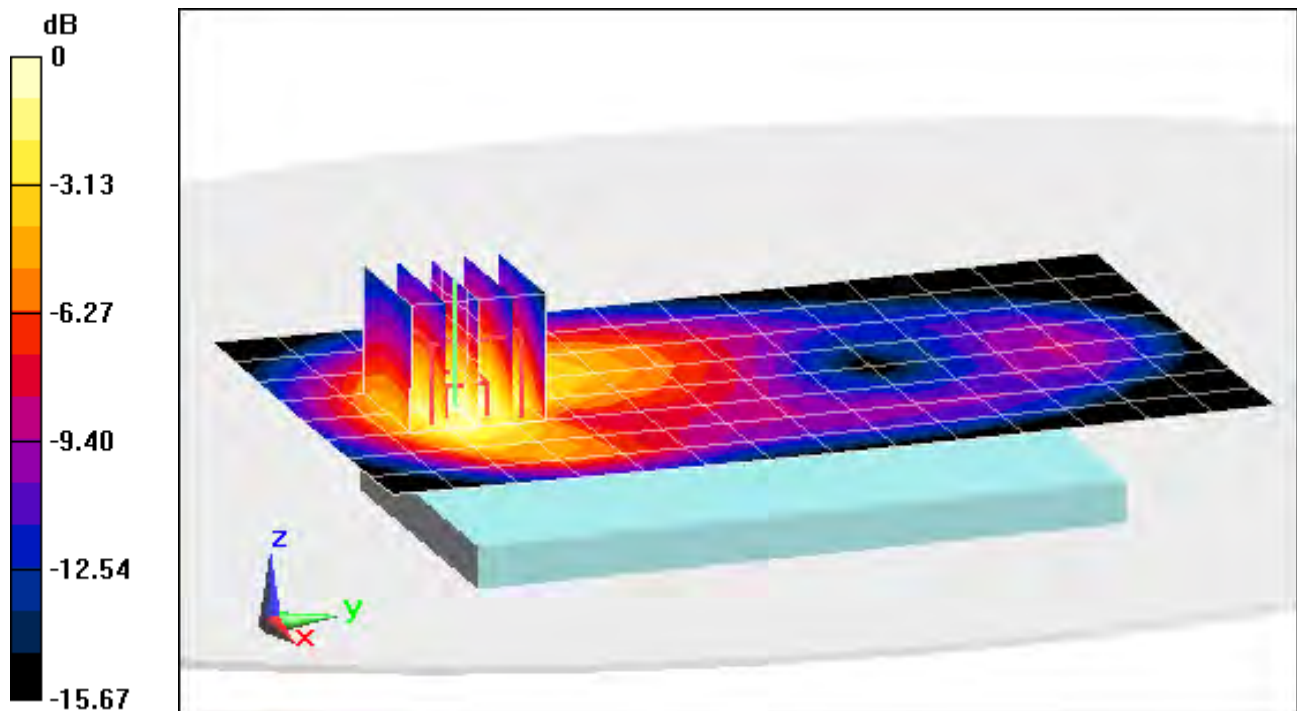
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 20.49 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.822 W/kg

SAR(1 g) = 0.535 W/kg



0 dB = 0.635 W/kg = -1.97 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 221AA

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

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

$f = 1732.5 \text{ MHz}$; $\sigma = 1.444 \text{ S/m}$; $\epsilon_r = 51.764$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-29-2014; Ambient Temp: 23.8°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3287; ConvF(4.93, 4.93, 4.93); Calibrated: 11/20/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229

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

**Mode: LTE Band 4 (AWS), Body SAR, Bottom Edge, Mid.ch, 20 MHz Bandwidth,
QPSK, 50 RB, 25 RB Offset, with Wireless Charging Cover**

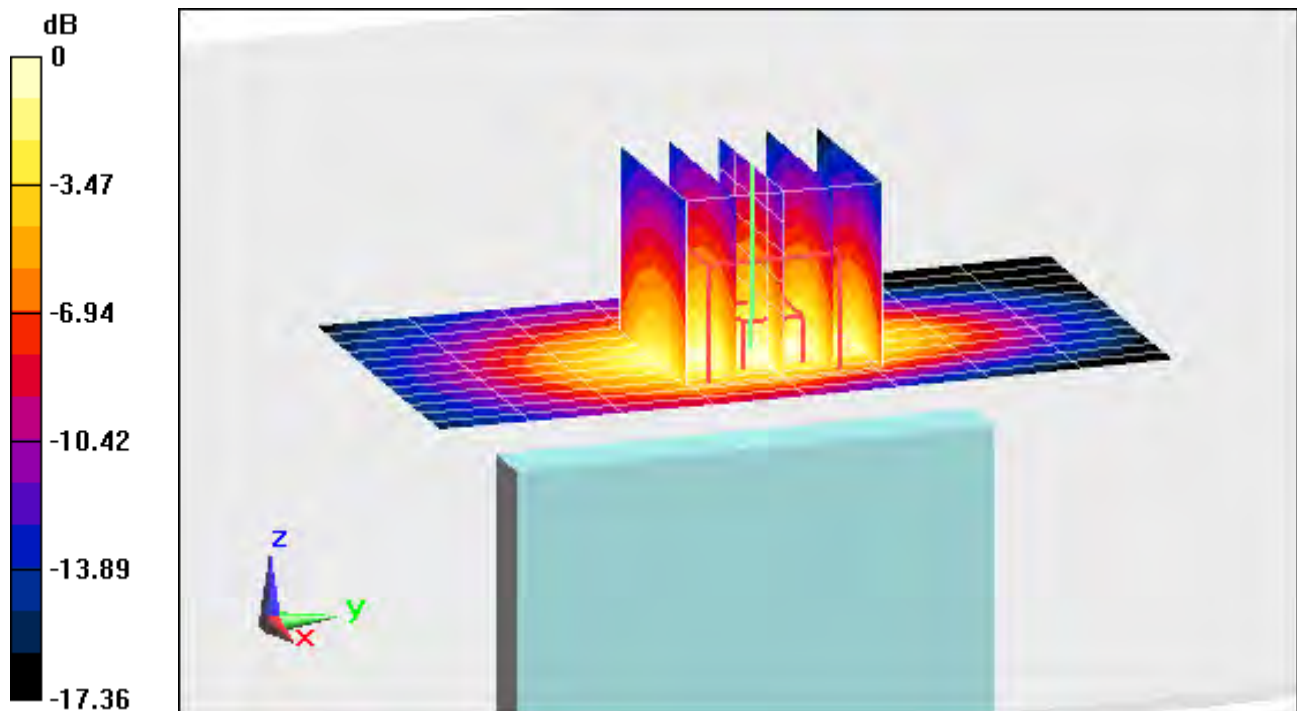
Area Scan (13x9x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 21.79 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.991 W/kg

SAR(1 g) = 0.616 W/kg



0 dB = 0.725 W/kg = -1.40 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 221A5

Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body, Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.488 \text{ S/m}$; $\epsilon_r = 52.13$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 09-01-2014; Ambient Temp: 23.0°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3319; ConvF(4.67, 4.67, 4.67); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/11/2014

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

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

**Mode: LTE Band 2 (PCS), Body SAR, Back side, Mid.ch, 20 MHz Bandwidth,
QPSK, 1 RB, 50 RB Offset, with Standard Back Cover**

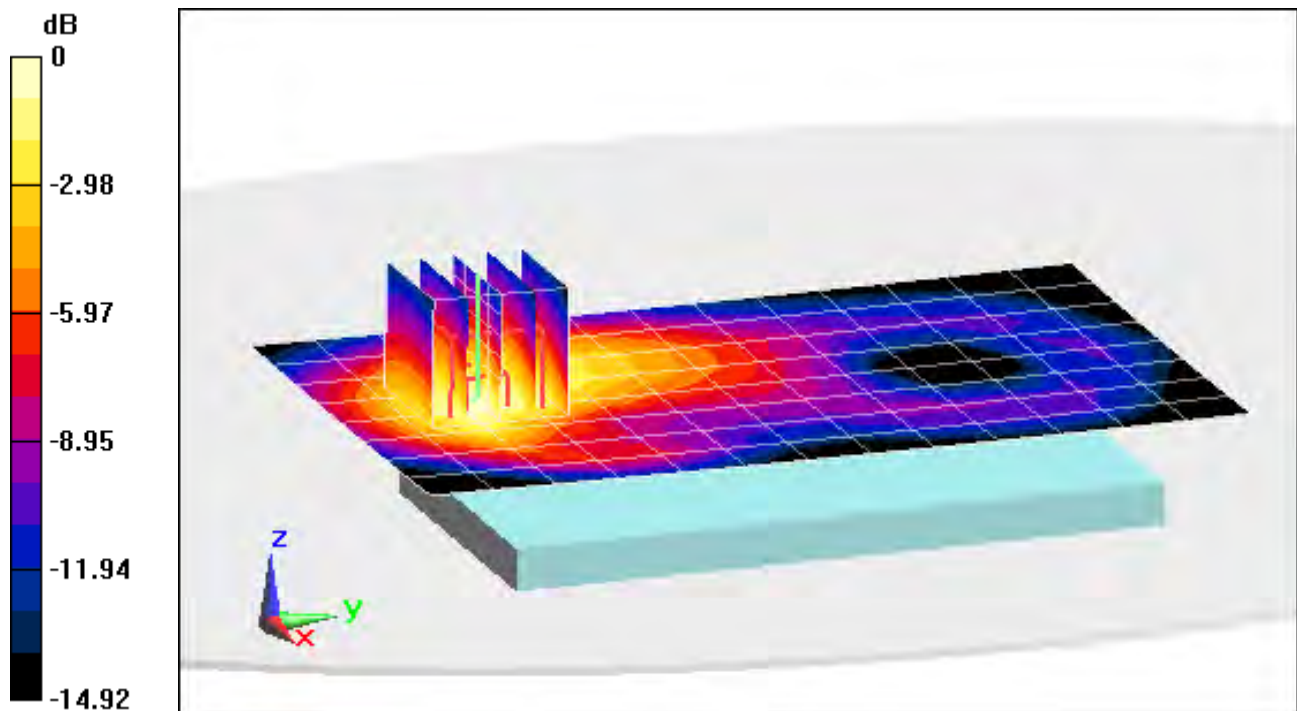
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 14.47 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.449 W/kg

SAR(1 g) = 0.295 W/kg



0 dB = 0.349 W/kg = -4.57 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 221A5

Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body, Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.488 \text{ S/m}$; $\epsilon_r = 52.13$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-01-2014; Ambient Temp: 23.0°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3319; ConvF(4.67, 4.67, 4.67); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/11/2014

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

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

**Mode: LTE Band 2 (PCS), Body SAR, Bottom Edge, Mid.ch, 20 MHz Bandwidth,
QPSK, 1 RB, 50 RB Offset, with Wireless Charging Cover**

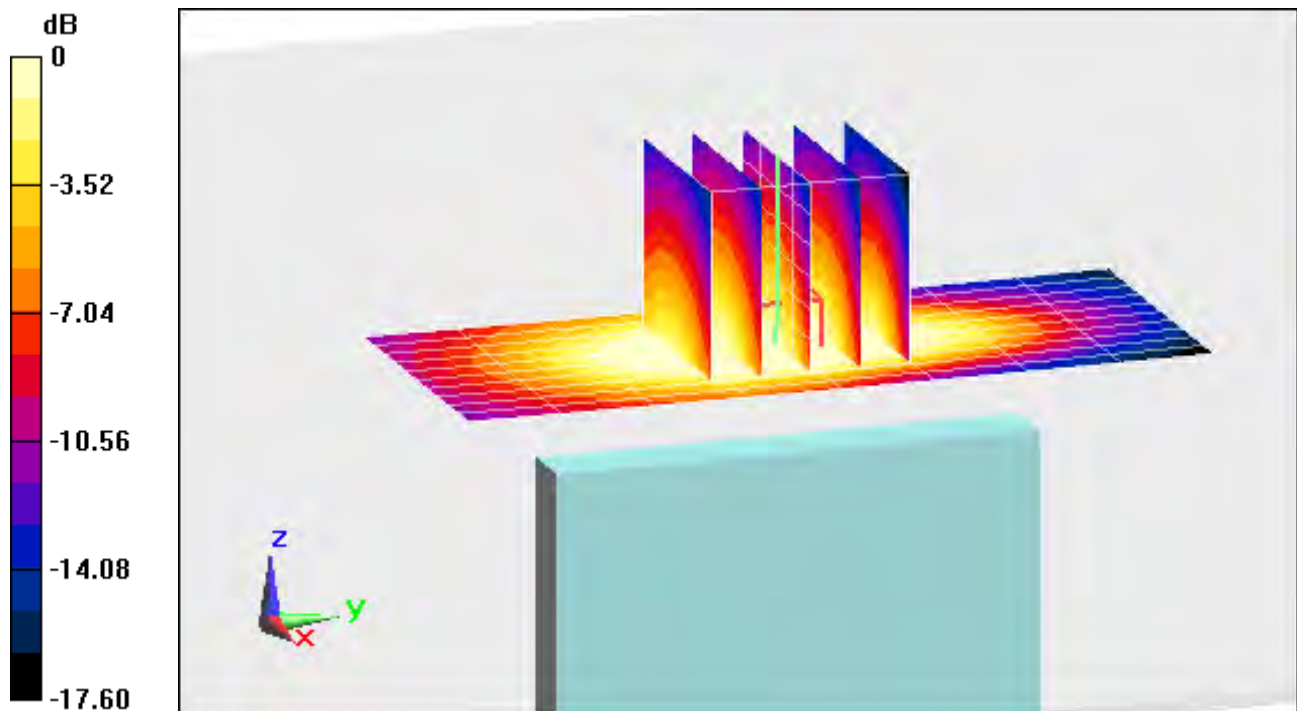
Area Scan (11x9x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 19.41 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.865 W/kg

SAR(1 g) = 0.539 W/kg



0 dB = 0.610 W/kg = -2.15 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 015D8

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

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.919 \text{ S/m}$; $\epsilon_r = 50.812$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-07-2014; Ambient Temp: 23.9°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3319; ConvF(4.24, 4.24, 4.24); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/11/2014

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

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

**Mode: IEEE 802.11b, Body SAR, Ch 11, 1 Mbps, Back Side,
Antenna 1, with Standard Back Cover**

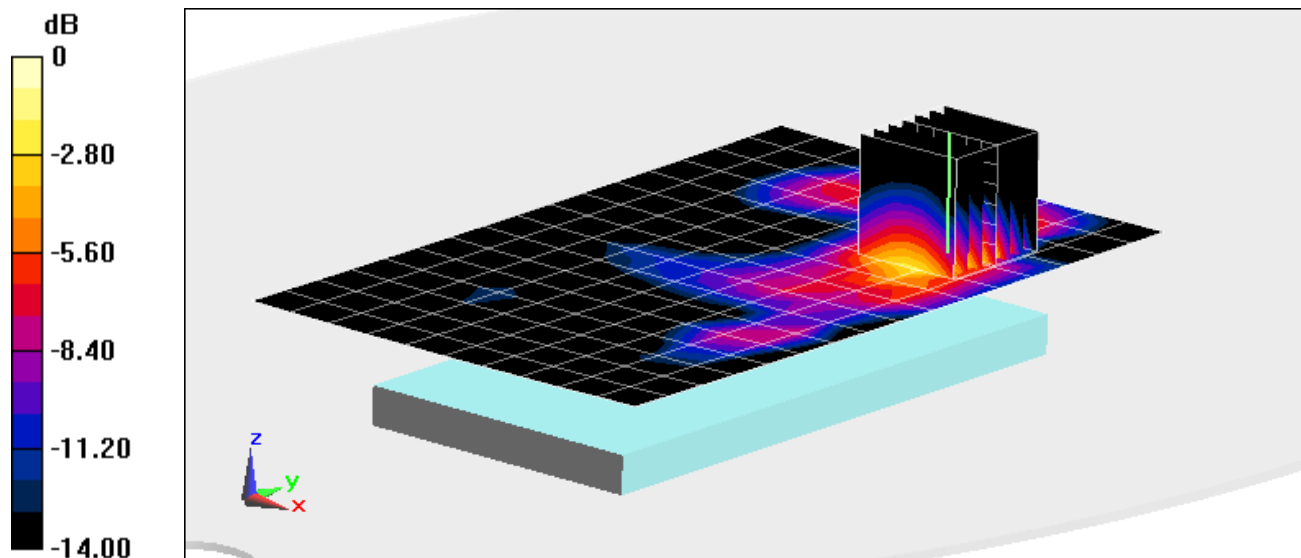
Area Scan (11x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 8.728 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.270 W/kg

SAR(1 g) = 0.128 W/kg



0 dB = 0.161 W/kg = -7.93 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 015D8

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

Medium: 5 GHz Body Medium parameters used:

$f = 5745 \text{ MHz}$; $\sigma = 5.988 \text{ S/m}$; $\epsilon_r = 46.411$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-11-2014; Ambient Temp: 22.4°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN3920; ConvF(4, 4, 4); Calibrated: 12/18/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7331)

**Mode: IEEE 802.11n, 5.8 GHz, Body SAR, Ch 149, 13 Mbps, Back Side,
MIMO, with Standard Charging Cover**

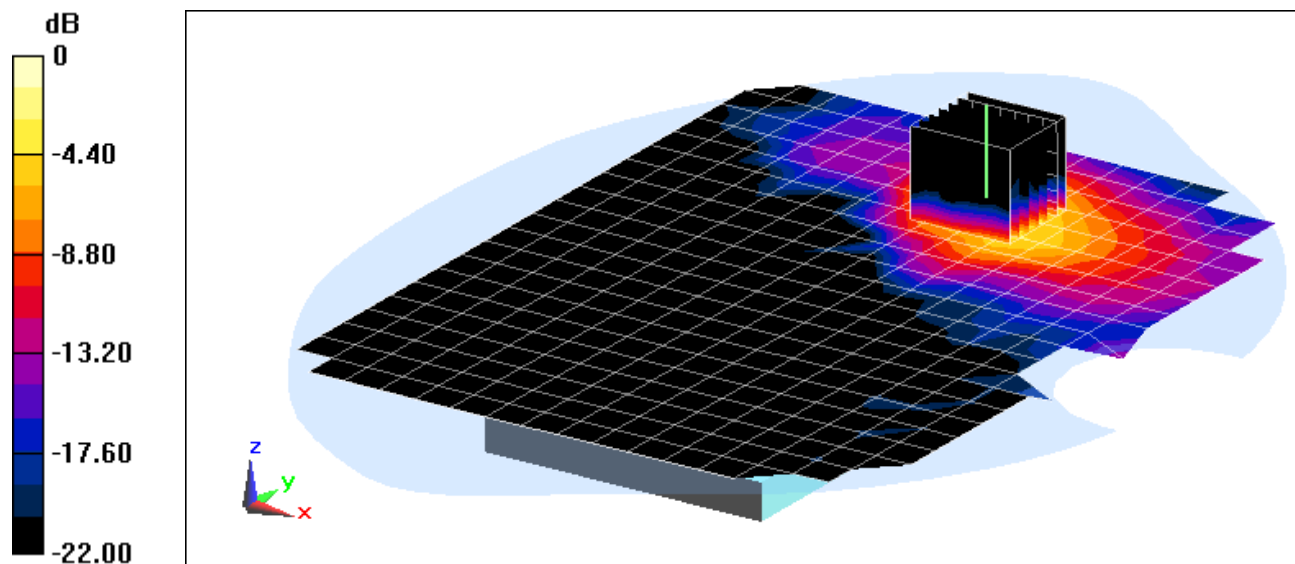
Area Scan (17x22x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 5.652 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 1.44 W/kg

SAR(1 g) = 0.292 W/kg



0 dB = 1.17 W/kg = 0.68 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 015D8

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

Medium: 5 GHz Body Medium parameters used:

$f = 5745 \text{ MHz}$; $\sigma = 6.114 \text{ S/m}$; $\epsilon_r = 47.032$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-13-2014; Ambient Temp: 24.4°C; Tissue Temp: 24.0°C

Probe: EX3DV4 - SN3589; ConvF(3.97, 3.97, 3.97); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM front; Type: QD000P40CD; Serial: TP:1759

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

**Mode: IEEE 802.11n, 5.8 GHz, Body SAR, Ch 149, 13 Mbps, Back Side,
MIMO, with Wireless Charging Cover**

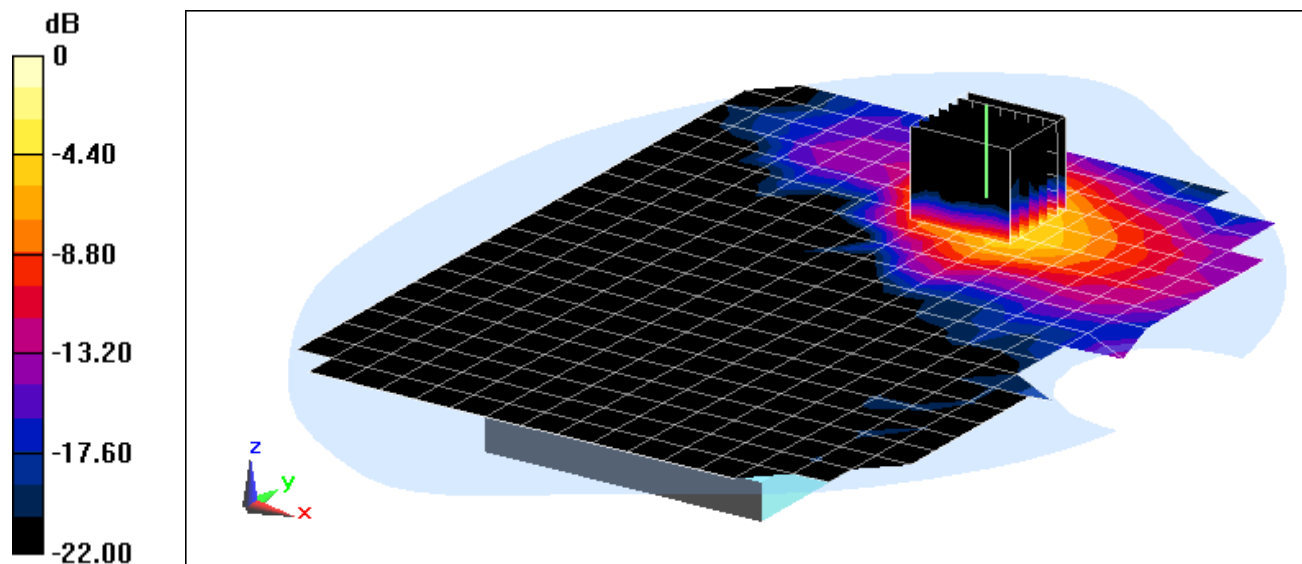
Area Scan (17x22x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 7.354 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 2.21 W/kg

SAR(1 g) = 0.482 W/kg



0 dB = 1.17 W/kg = 0.68 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 015D8

Communication System: UID 0, IEEE 802.11a 5.2-5.8 GHz Band; Frequency: 5680 MHz, Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used:

$f = 5680 \text{ MHz}$; $\sigma = 5.917 \text{ S/m}$; $\epsilon_r = 46.318$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-11-2014; Ambient Temp: 22.4°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN3920; ConvF(3.62, 3.62, 3.62); Calibrated: 12/18/2013,

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11n, 5.5 - 5.7 GHz, Body SAR, Ch 136, 13 Mbps, Back Side, MIMO, with Standard Back Cover

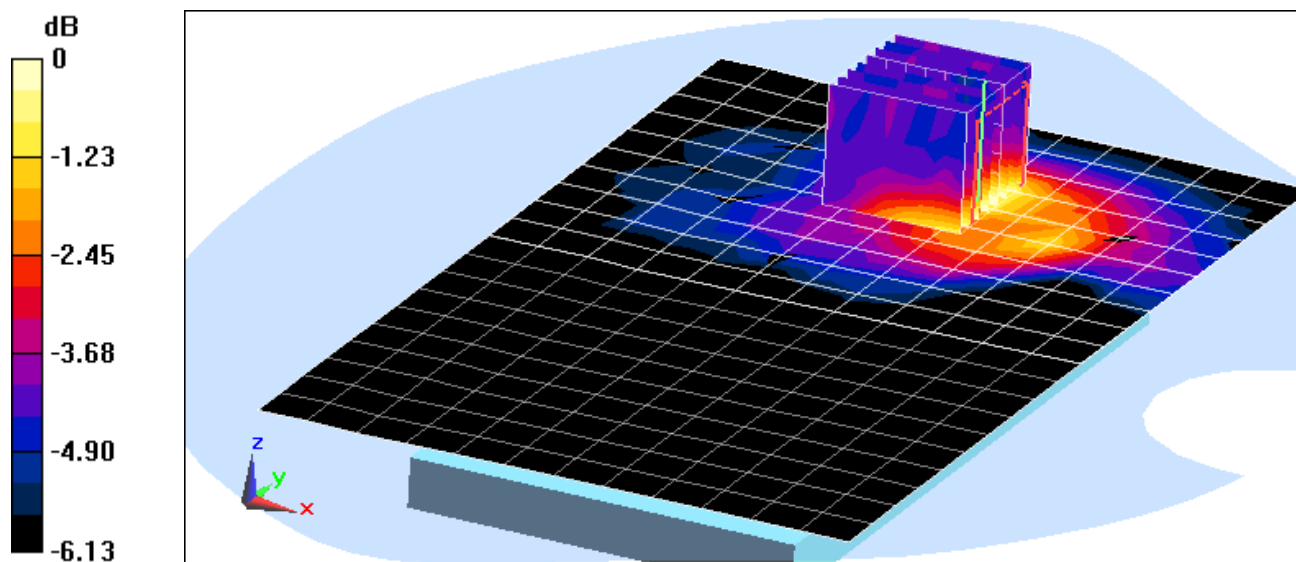
Area Scan (13x21x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 7.062 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 2.06 W/kg

SAR(1 g) = 0.454 W/kg



0 dB = 0.718 W/kg = -1.44 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 015D8

Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1

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

$f = 2441 \text{ MHz}$; $\sigma = 1.898 \text{ S/m}$; $\epsilon_r = 52.796$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2014; Ambient Temp: 23.2°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.24, 4.24, 4.24); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/11/2014

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

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

**Mode: Bluetooth, Body SAR, Ch 39, 1 Mbps, Back Side
with Standard Back Cover**

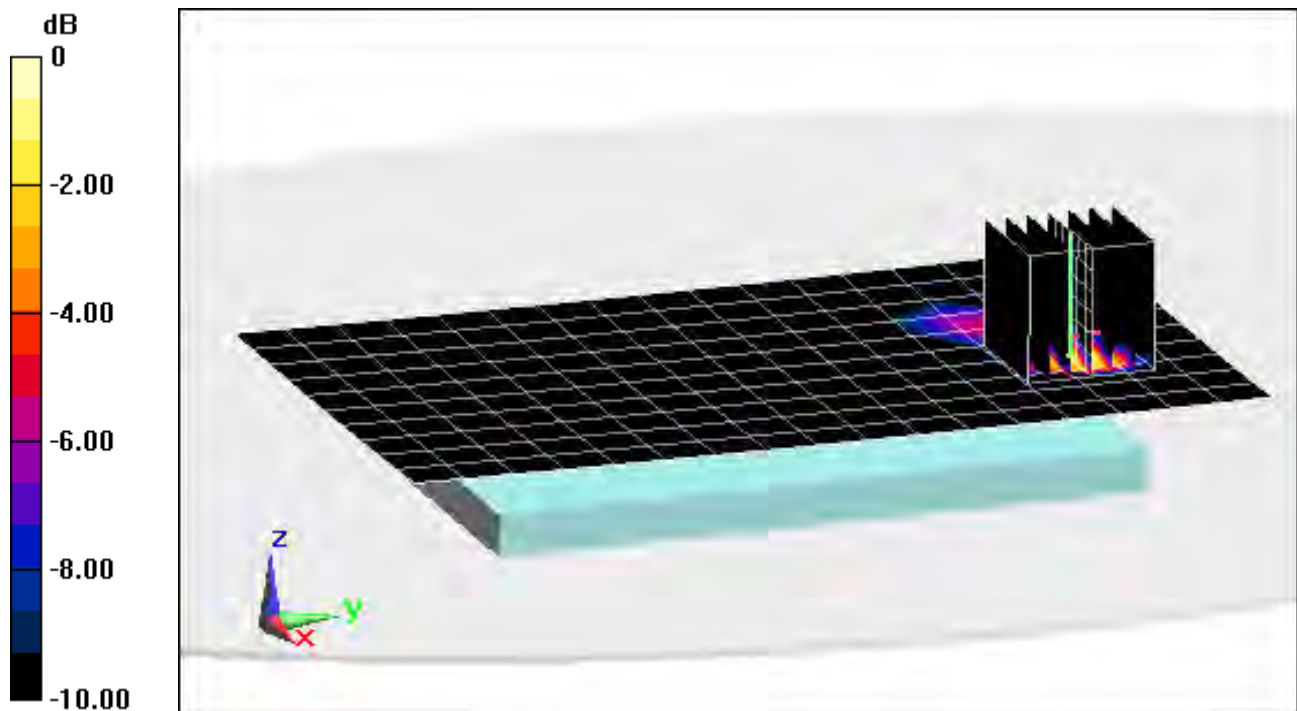
Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm

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

Reference Value = 1.718 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.0380 W/kg

SAR(1 g) = 0.00621 W/kg



0 dB = 0.00917 W/kg = -20.38 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 015D7

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

Medium: 5 GHz Body Medium parameters used:

$f = 5700 \text{ MHz}$; $\sigma = 6.018 \text{ S/m}$; $\epsilon_r = 47.133$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-13-2014; Ambient Temp: 24.2°C; Tissue Temp: 23.9°C

Probe: EX3DV4 - SN3589; ConvF(3.81, 3.81, 3.81); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM front; Type: QD000P40CD; Serial: TP:1759

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

**Mode: IEEE 802.11a, 5.5 GHz, Extremity SAR, Ch 140, 6 Mbps, Back Side,
Antenna 2, with Standard Back Cover**

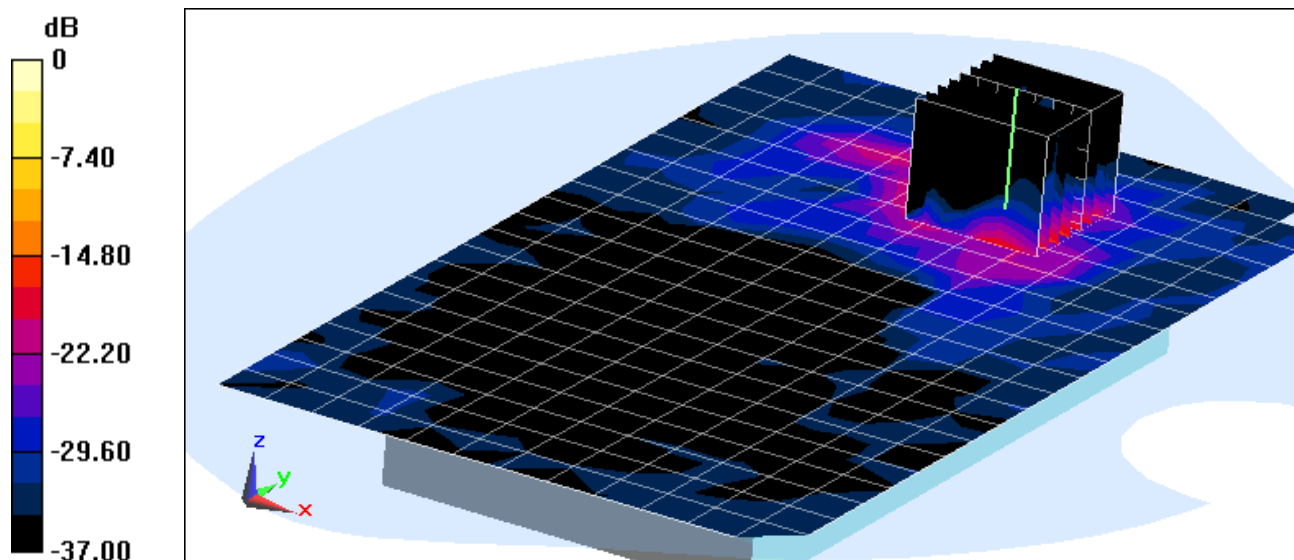
Area Scan (13x22x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 24.200 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 32.0 W/kg

SAR(10 g) = 0.595 W/kg



0 dB = 14.5 W/kg = 11.61 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910T; Type: Portable Handset; Serial: 015D8

Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1

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

$f = 2441 \text{ MHz}$; $\sigma = 1.898 \text{ S/m}$; $\epsilon_r = 52.796$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-15-2014; Ambient Temp: 23.2°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.24, 4.24, 4.24); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/11/2014

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

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

**Mode: Bluetooth, Extremity SAR, Ch 39, 1 Mbps, Back Side
with Standard Back Cover**

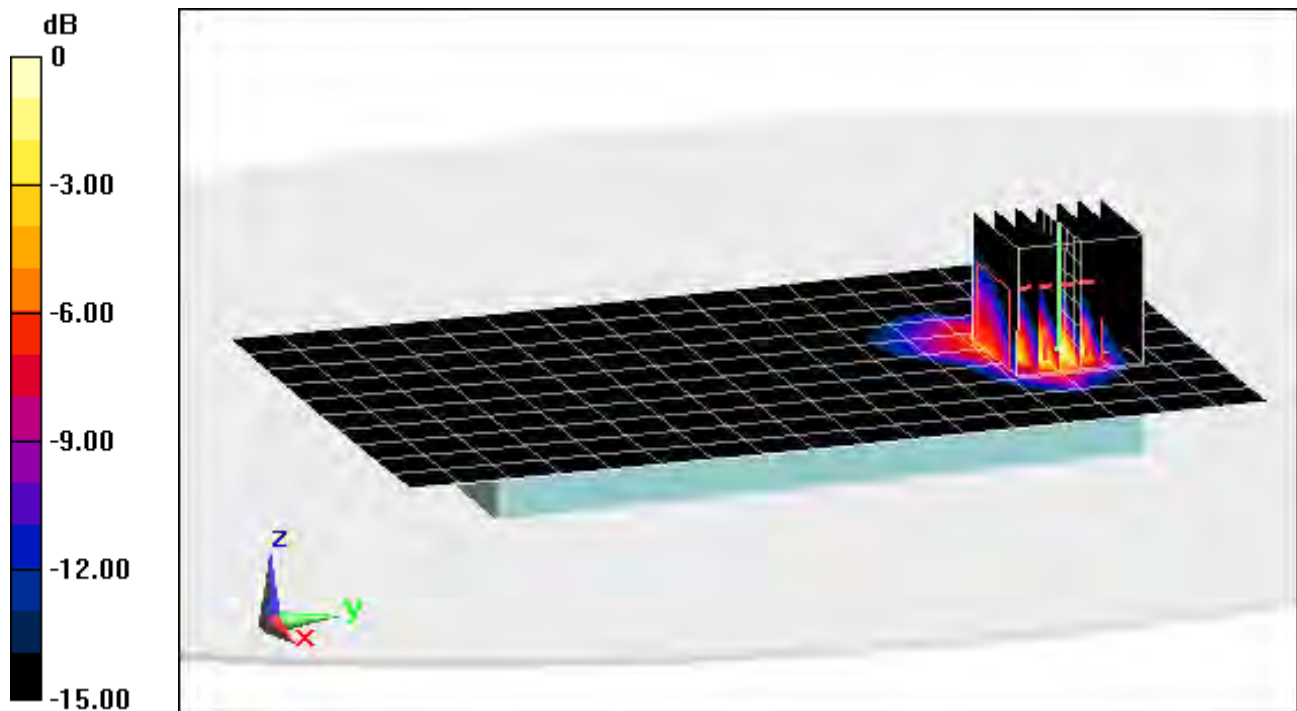
Area Scan (11x18x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 7.314 V/m; Power Drift = 0.21 dB

Peak SAR (extrapolated) = 0.485 W/kg

SAR(10 g) = 0.042 W/kg



0 dB = 0.159 W/kg = -7.99 dBW/kg

APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 750 Head, Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.913 \text{ S/m}$; $\epsilon_r = 41.009$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 09-01-2014; Ambient Temp: 24.0°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3263; ConvF(6.42, 6.42, 6.42); 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)

750 MHz System Verification

Area Scan (7x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

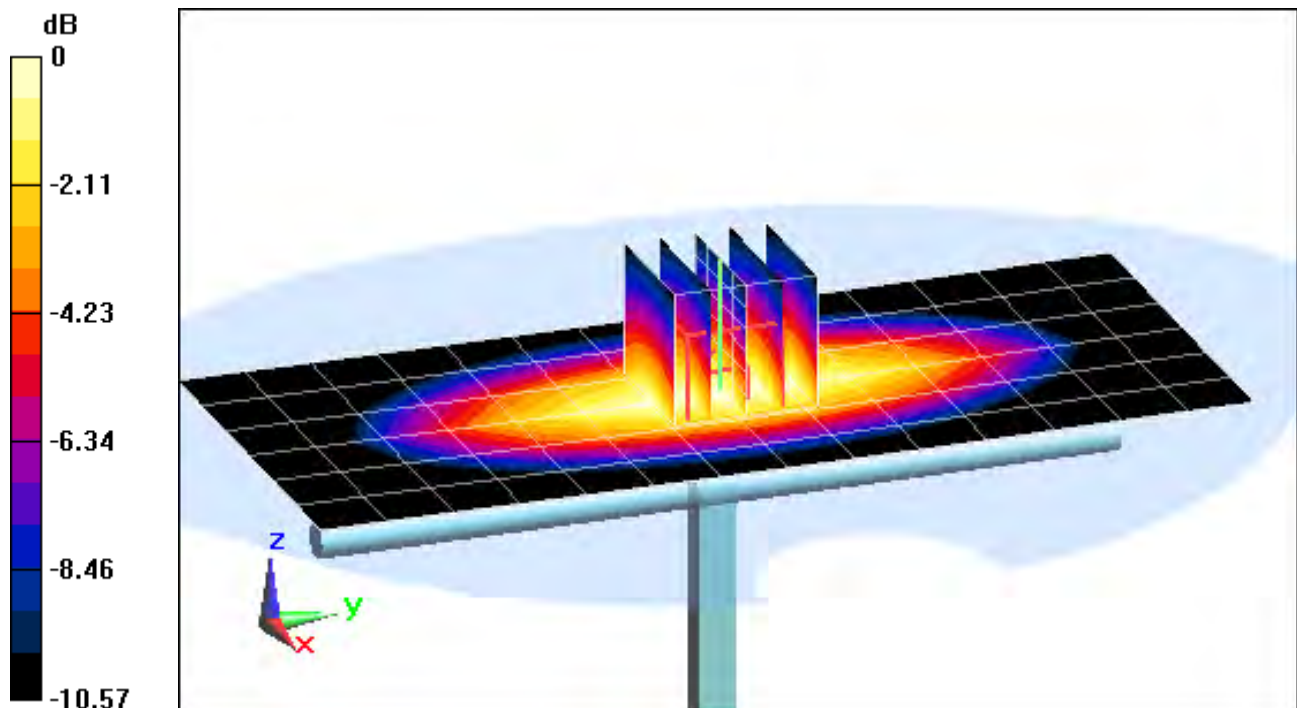
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 1.26 W/kg

SAR(1 g) = 0.831 W/kg

Deviation(1 g) = -0.72%



0 dB = 0.973 W/kg = -0.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 835 Head, Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.894 \text{ S/m}$; $\epsilon_r = 39.934$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-19-2014; Ambient Temp: 23.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3287; ConvF(6.3, 6.3, 6.3); Calibrated: 11/20/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

835 MHz System Verification

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

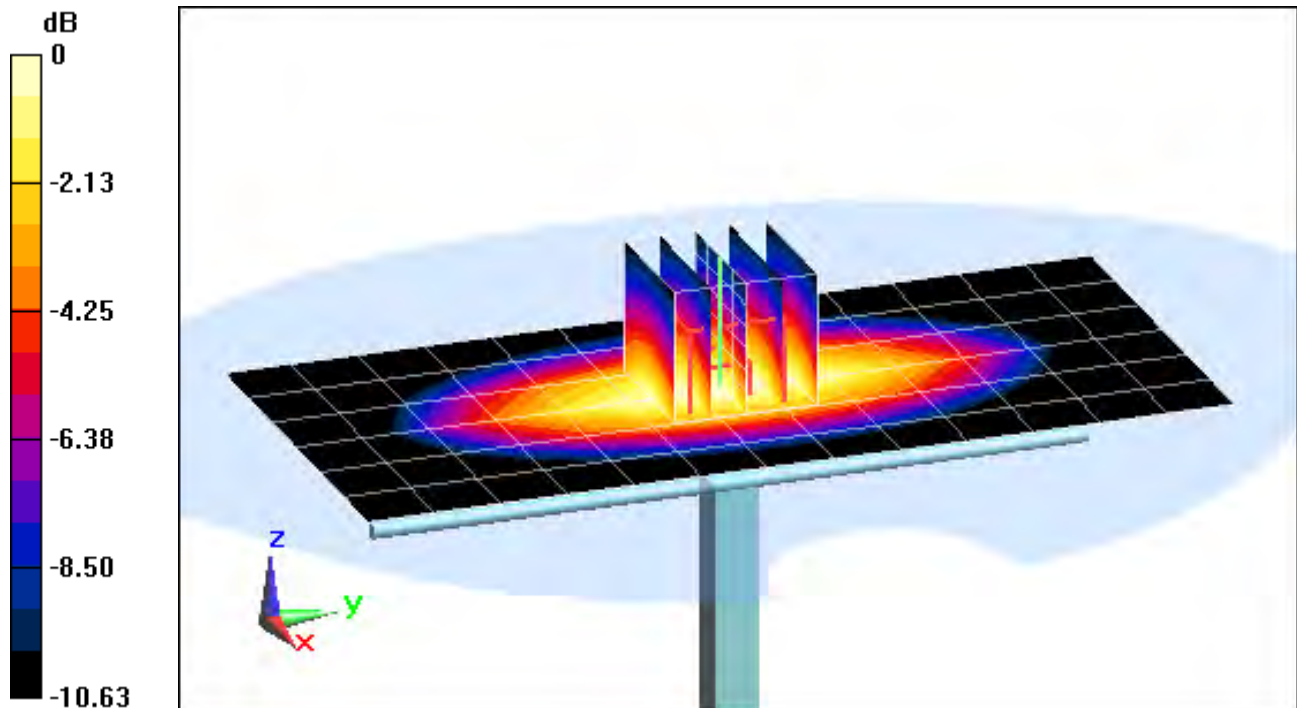
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 1.44 W/kg

SAR(1 g) = 0.968 W/kg

Deviation(1 g) = 4.99%



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

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 1750 Head, Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.369 \text{ S/m}$; $\epsilon_r = 39.677$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-06-2014; Ambient Temp: 23.9°C; Tissue Temp: 23.2°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 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: $dx=15\text{mm}$, $dy=15\text{mm}$

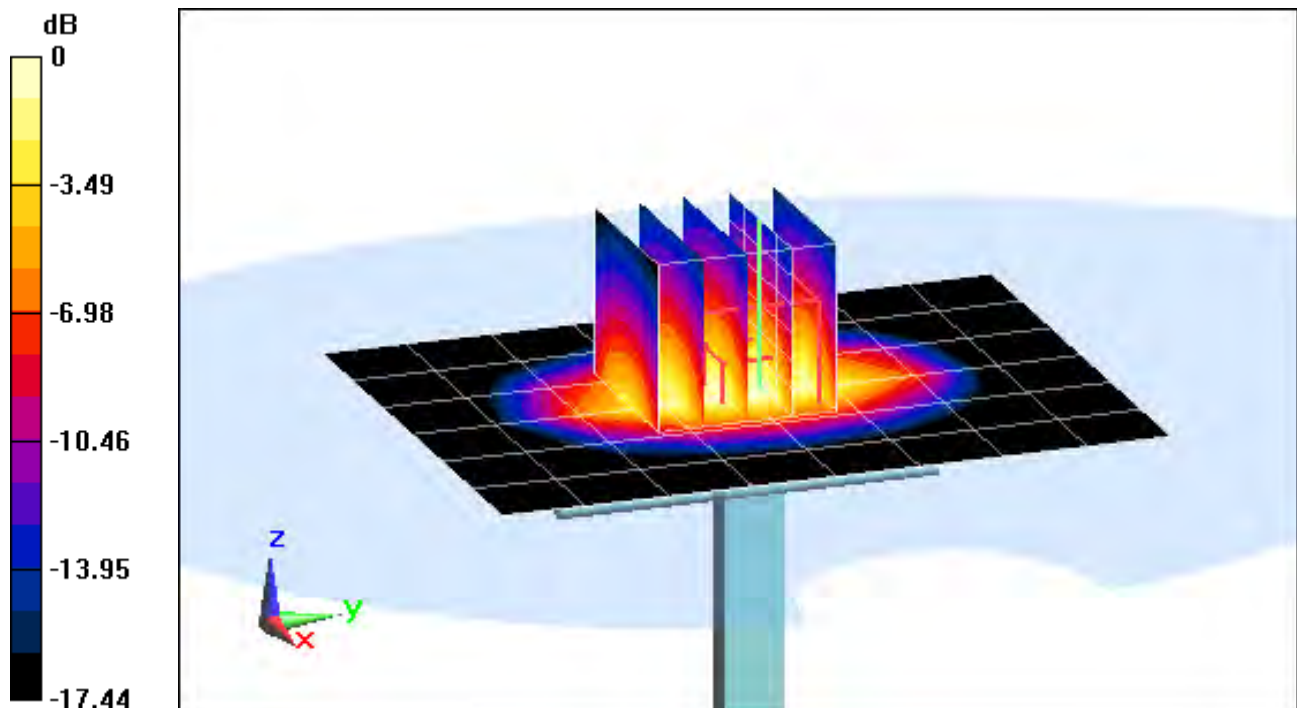
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 6.38 W/kg

SAR(1 g) = 3.58 W/kg

Deviation(1 g) = -2.98%



0 dB = 4.43 W/kg = 6.46 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

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

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

$f = 1900 \text{ MHz}$; $\sigma = 1.397 \text{ S/m}$; $\epsilon_r = 39.001$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-29-2014; Ambient Temp: 23.4°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/19/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM front; Type: QD000P40CD; Serial: TP:1759

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

1900 MHz System Verification

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

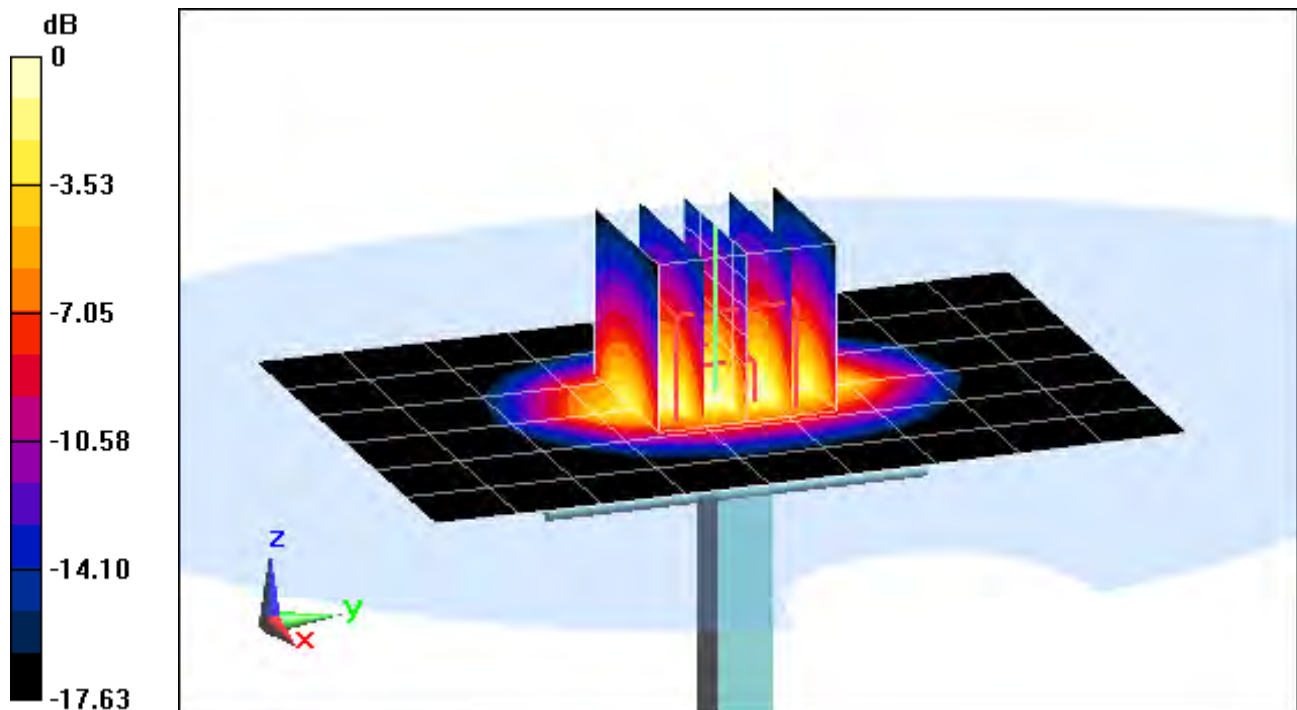
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 7.38 W/kg

SAR(1 g) = 4.03 W/kg

Deviation(1 g) = 0.50%



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

PCTEST ENGINEERING LABORATORY, INC.

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

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

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

$f = 1900 \text{ MHz}$; $\sigma = 1.405 \text{ S/m}$; $\epsilon_r = 39.261$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-04-2014; Ambient Temp: 24.0°C; Tissue Temp: 22.9°C

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

1900 MHz System Verification

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

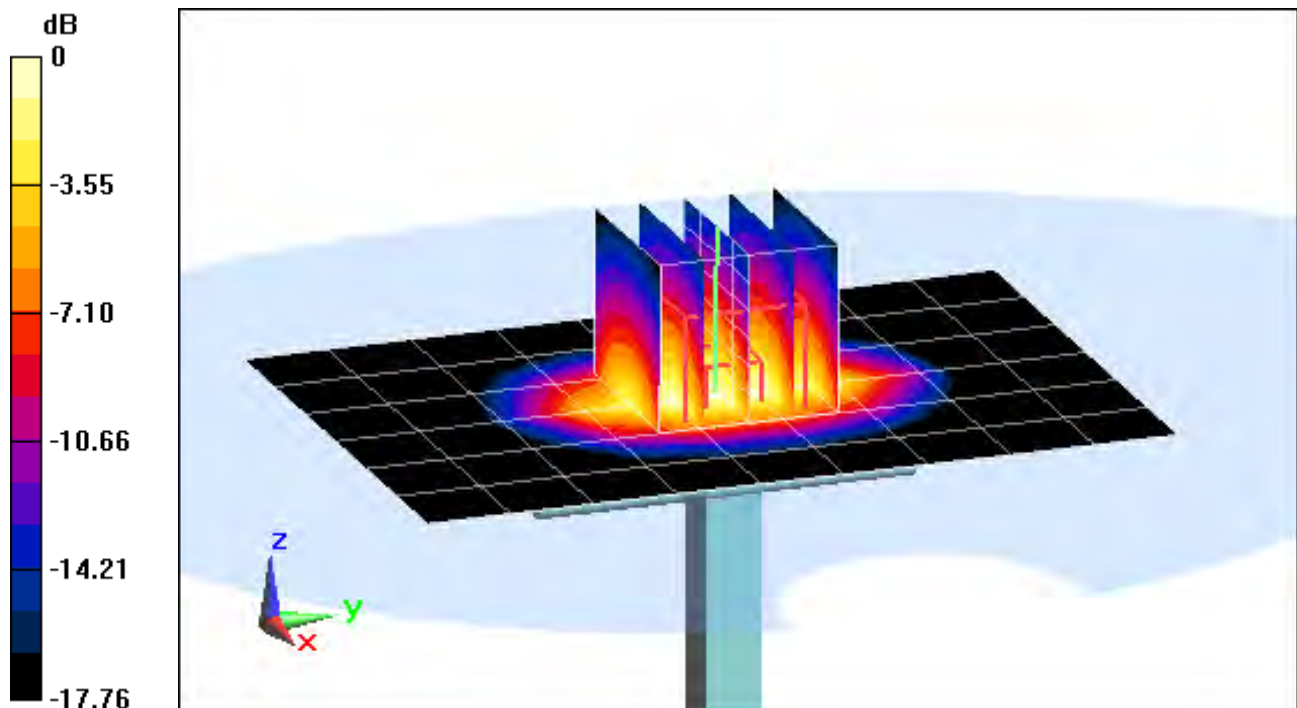
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 7.04 W/kg

SAR(1 g) = 3.91 W/kg

Deviation(1 g) = -2.49%



0 dB = 4.96 W/kg = 6.95 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 2450 Head, Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.861 \text{ S/m}$; $\epsilon_r = 38.157$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-28-2014; Ambient Temp: 24.1°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: $dx=12\text{mm}$, $dy=12\text{mm}$

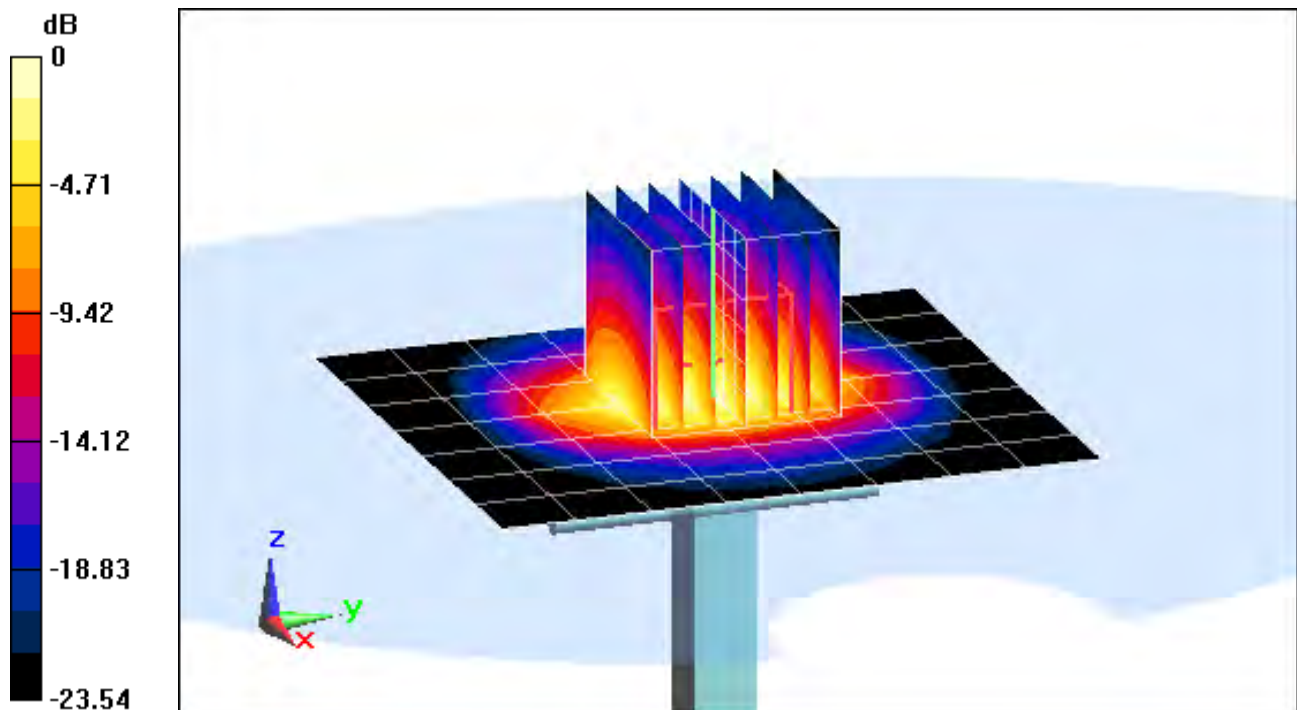
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 10.3 W/kg

SAR(1 g) = 4.82 W/kg

Deviation(1 g) = -6.95%



0 dB = 6.36 W/kg = 8.03 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5200 MHz; Type: D5GHzV2; Serial: 1057

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

Medium: 5 GHz Head Medium parameters used:

$f = 5200 \text{ MHz}$; $\sigma = 4.724 \text{ S/m}$; $\epsilon_r = 35.49$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-12-2014; Ambient Temp: 24.2°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN3914; ConvF(4.99, 4.99, 4.99); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5200 MHz System Verification

Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

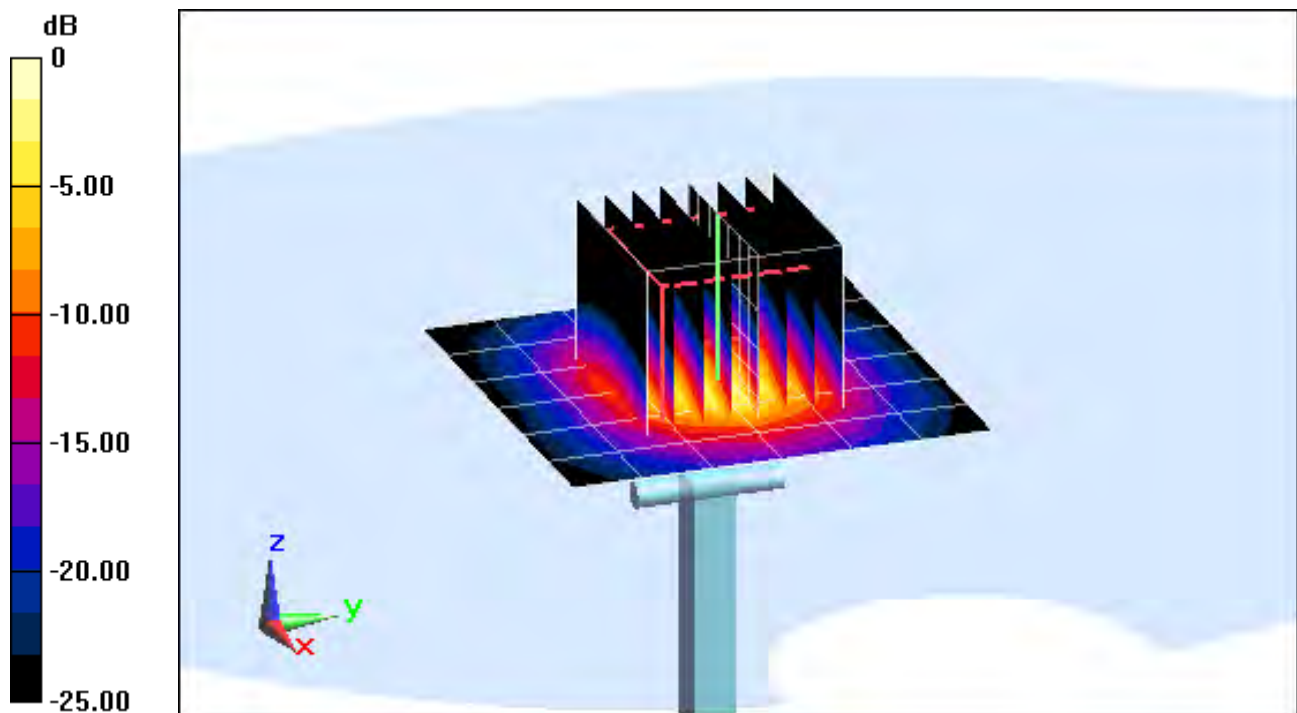
Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 31.6 W/kg

SAR(1 g) = 7.57 W/kg

Deviation(1 g) = -2.95%



0 dB = 17.6 W/kg = 12.46 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5300 MHz; Type: D5GHzV2; Serial: 1057

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

Medium: 5 GHz Head Medium parameters used:

$f = 5300 \text{ MHz}$; $\sigma = 4.826 \text{ S/m}$; $\epsilon_r = 35.388$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-12-2014; Ambient Temp: 24.2°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3914; ConvF(4.82, 4.82, 4.82); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5300 MHz System Verification

Area Scan (7x8x1): Measurement grid: dx=10mm, dy=10mm

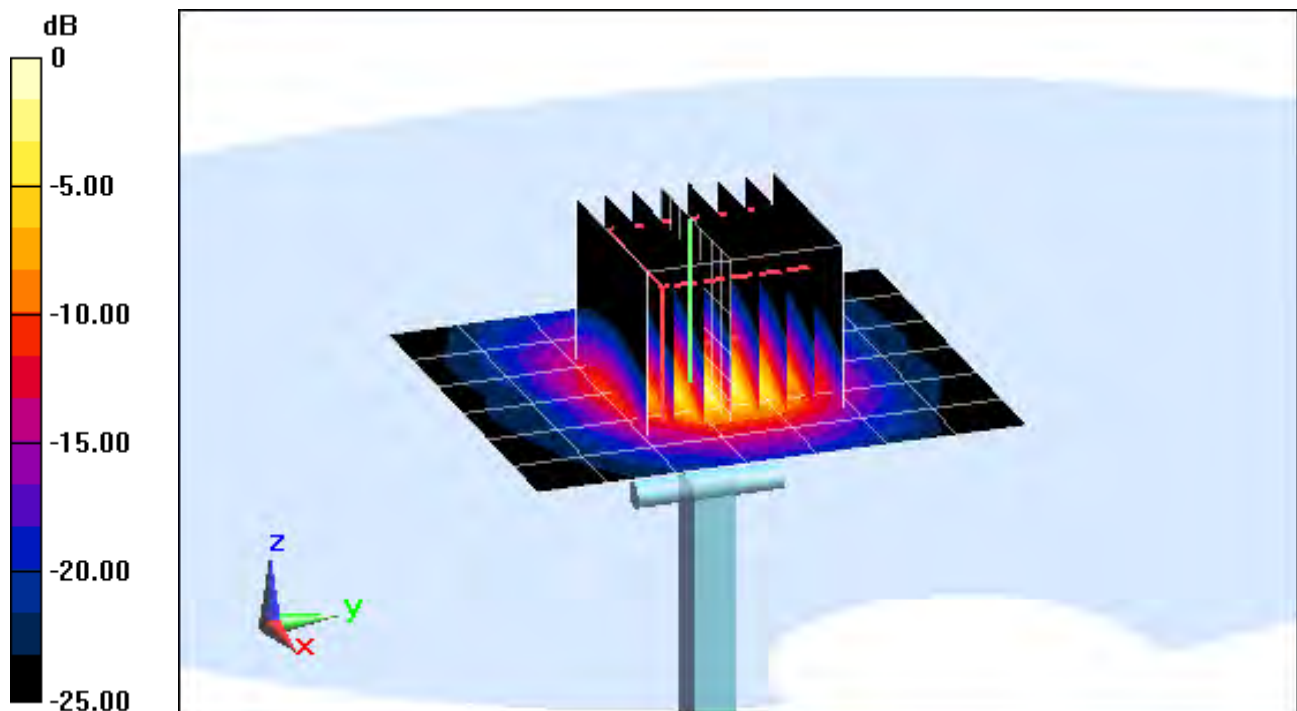
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 35.5 W/kg

SAR(1 g) = 8.18 W/kg

Deviation(1 g) = -1.45%



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1057

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

Medium: 5 GHz Head Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 5.059 \text{ S/m}$; $\epsilon_r = 35.124$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-12-2014; Ambient Temp: 24.3°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3914; ConvF(4.55, 4.55, 4.55); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5500 MHz System Verification

Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

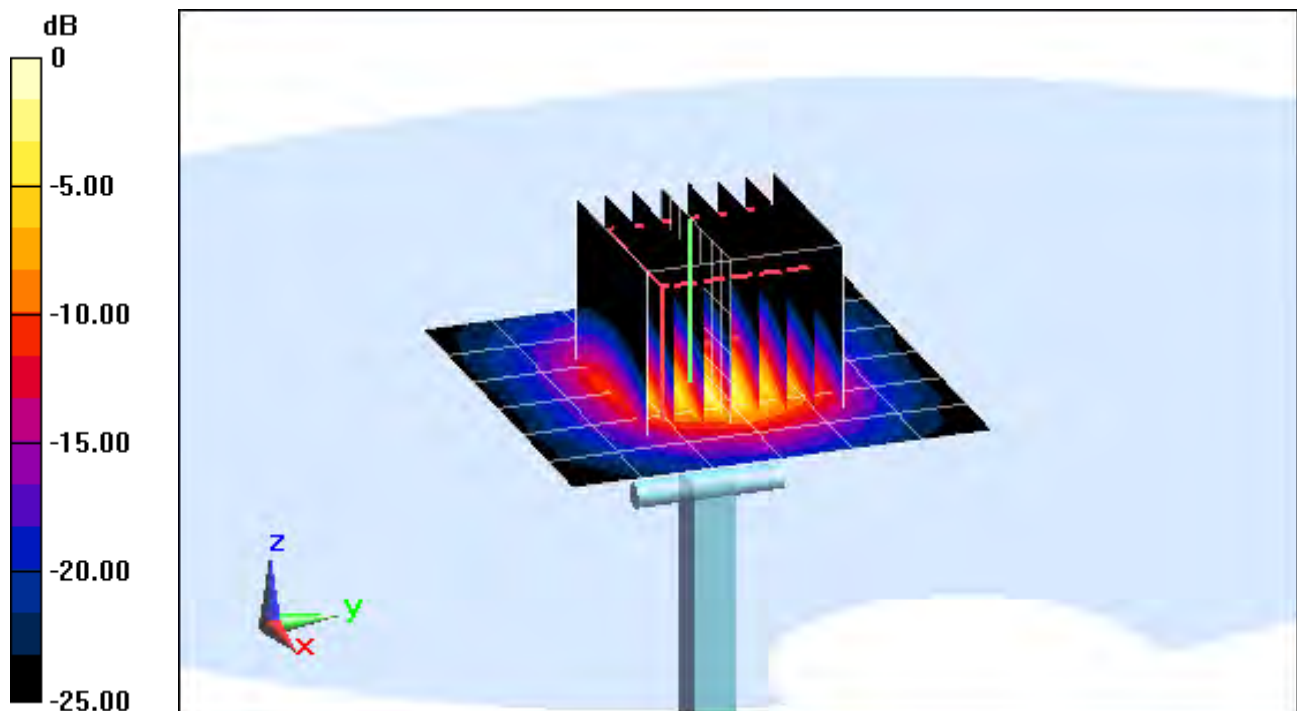
Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 34.8 W/kg

SAR(1 g) = 7.92 W/kg

Deviation(1 g) = -6.05%



0 dB = 18.9 W/kg = 12.76 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5600 MHz; Type: D5GHzV2; Serial: 1057

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

Medium: 5 GHz Head Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 5.129 \text{ S/m}$; $\epsilon_r = 34.965$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-12-2014; Ambient Temp: 24.2°C; Tissue Temp: 22.9°C

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

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5600 MHz System Verification

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

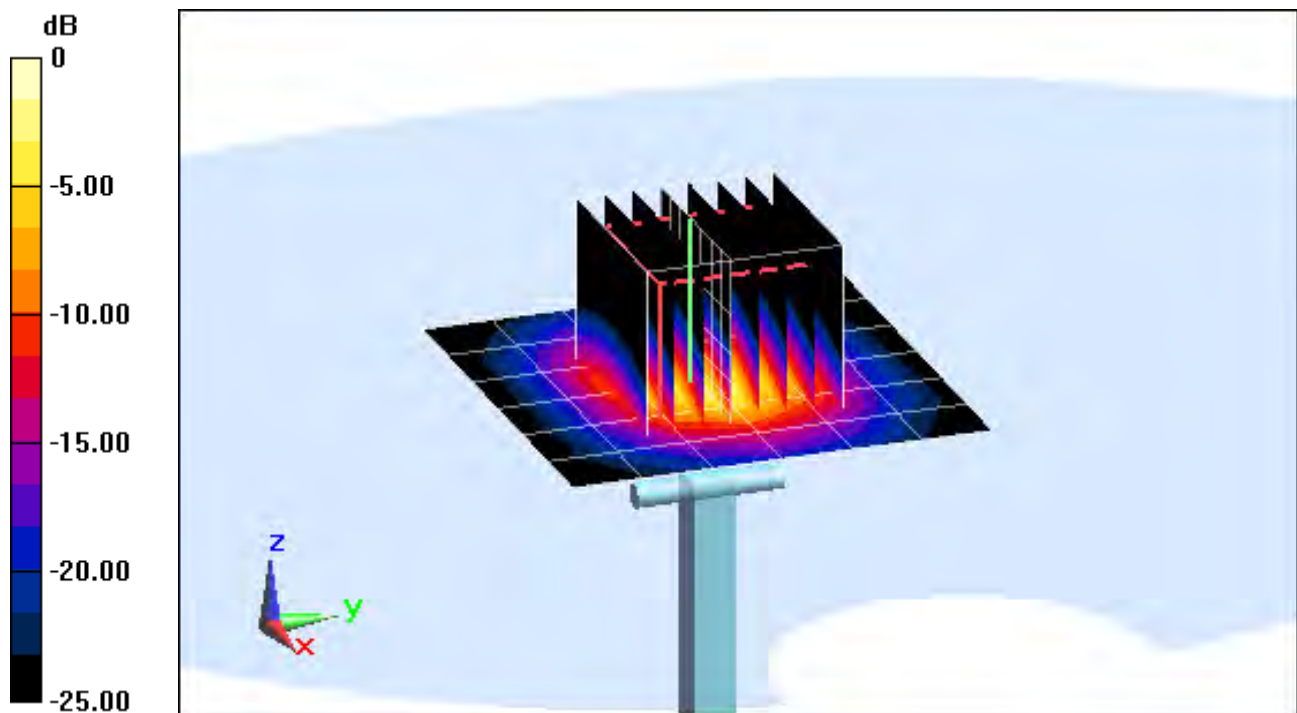
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 38.1 W/kg

SAR(1 g) = 8.50 W/kg

Deviation(1 g) = 1.80%



0 dB = 20.6 W/kg = 13.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head Medium parameters used:

$f = 5800 \text{ MHz}$; $\sigma = 5.343 \text{ S/m}$; $\epsilon_r = 34.693$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-12-2014; Ambient Temp: 24.2°C; Tissue Temp: 22.9°C

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

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5800 MHz System Verification

Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

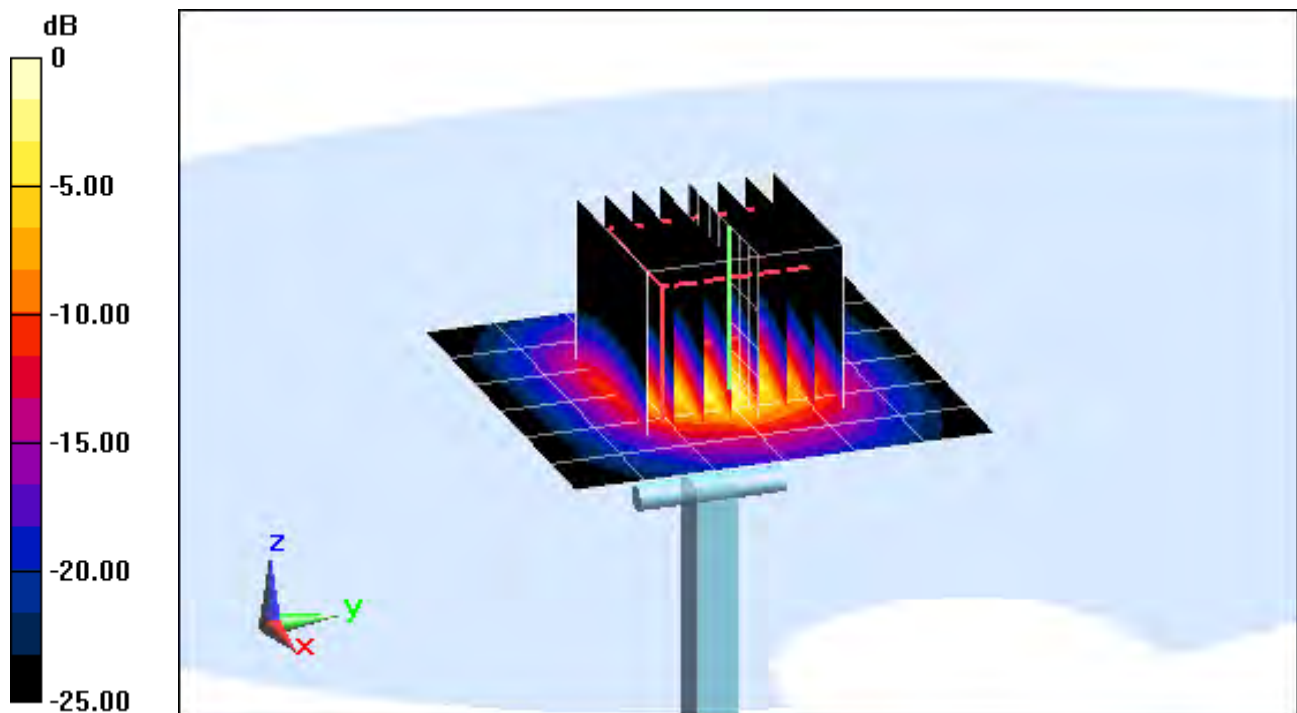
Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 36.2 W/kg

SAR(1 g) = 7.70 W/kg

Deviation(1 g) = -2.90%



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

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

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

$f = 750 \text{ MHz}$; $\sigma = 0.964 \text{ S/m}$; $\epsilon_r = 53.425$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-30-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.6°C

Probe: ES3DV3 - SN3287; ConvF(6.09, 6.09, 6.09); Calibrated: 11/20/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

750 MHz System Verification

Area Scan (7x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

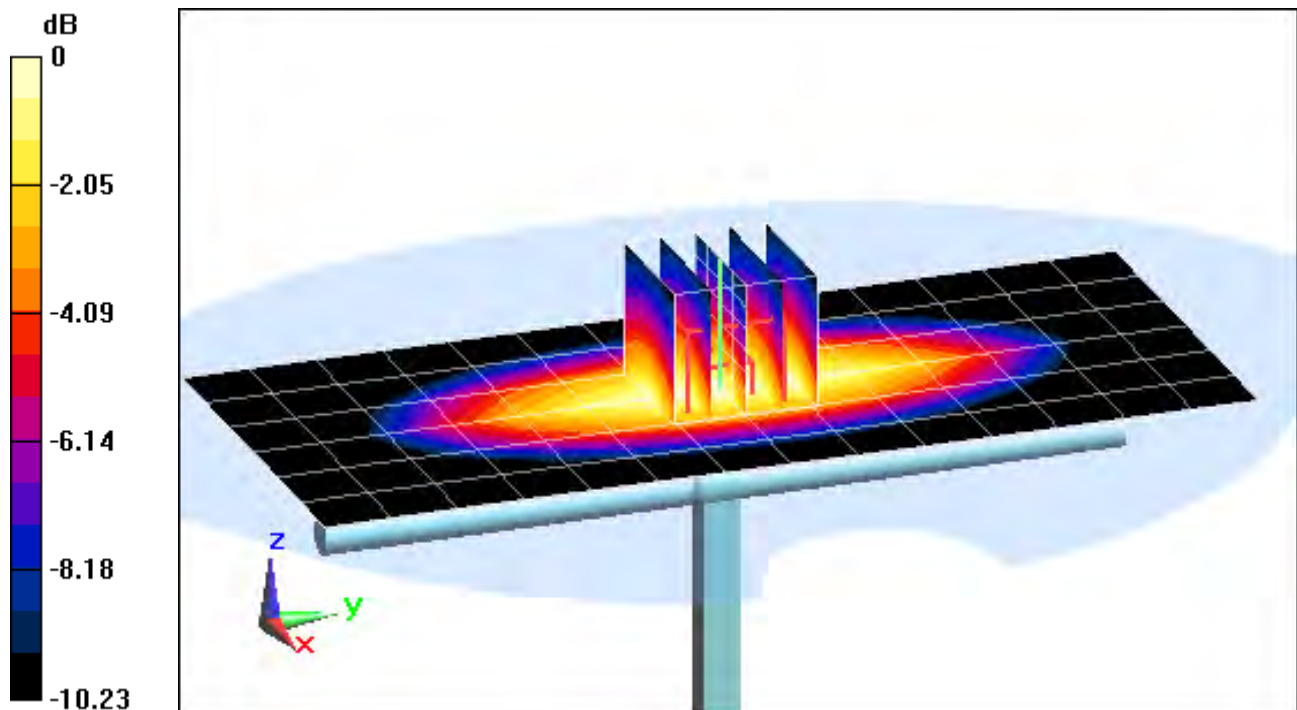
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 1.30 W/kg

SAR(1 g) = 0.887 W/kg

Deviation(1 g) = 1.14%



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

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 835 Body, Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 1.003 \text{ S/m}$; $\epsilon_r = 53.663$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-19-2014; Ambient Temp: 23.7°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(6.16, 6.16, 6.16); 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)

835 MHz System Verification

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

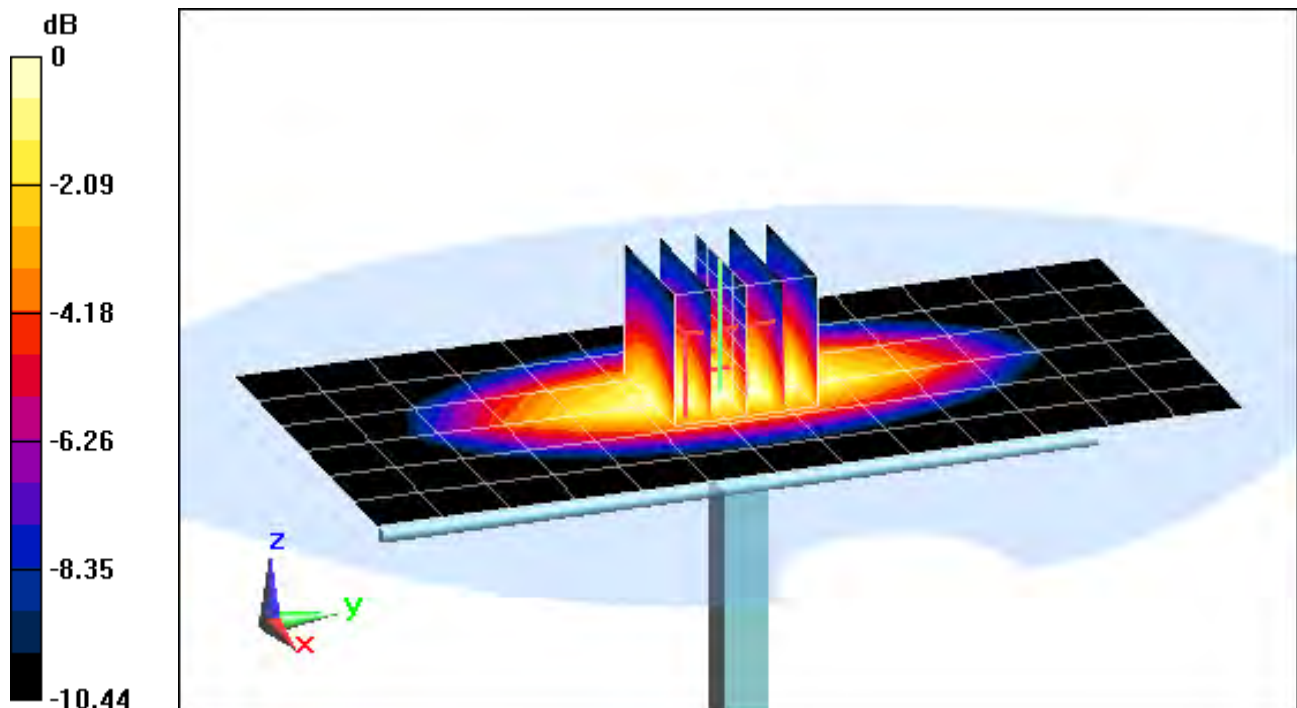
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 1.32 W/kg

SAR(1 g) = 0.897 W/kg

Deviation(1 g) = -3.96%



0 dB = 1.05 W/kg = 0.21 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 1750 Body, Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.462 \text{ S/m}$; $\epsilon_r = 51.676$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-29-2014; Ambient Temp: 23.8°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3287; ConvF(4.93, 4.93, 4.93); Calibrated: 11/20/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229

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

1750 MHz System Verification

Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

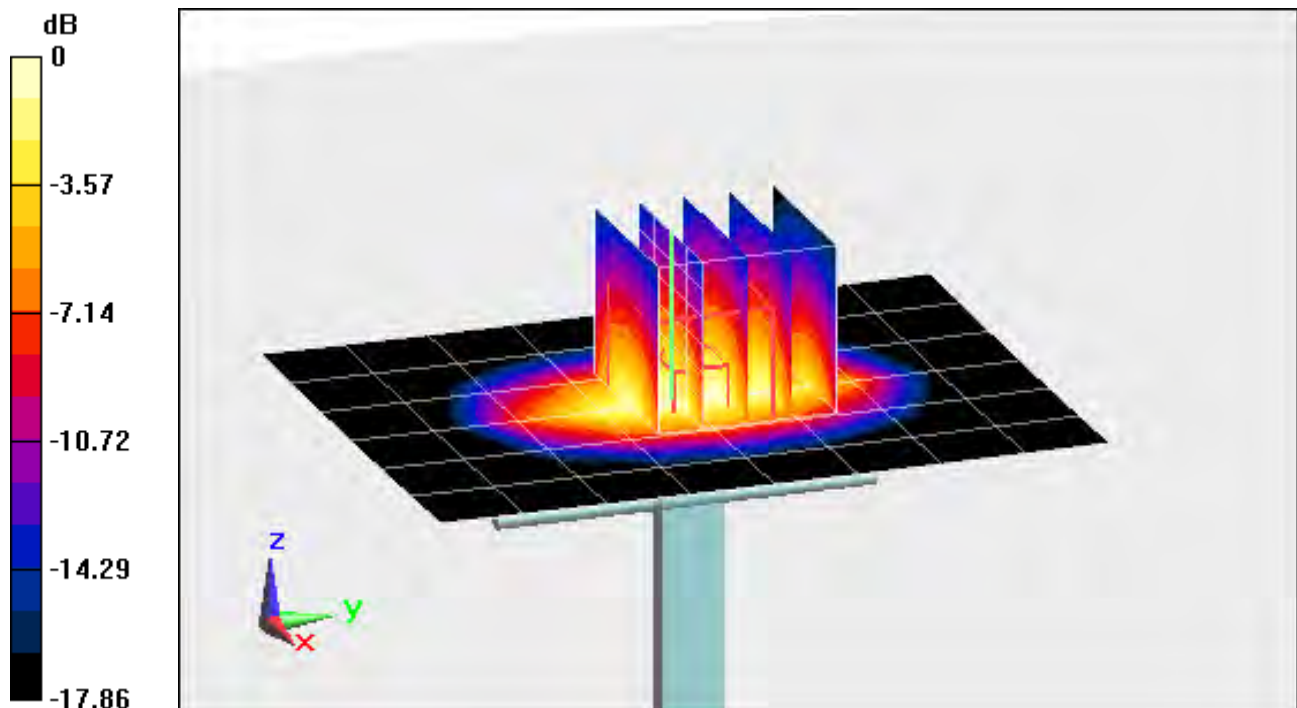
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 6.61 W/kg

SAR(1 g) = 3.79 W/kg

Deviation(1 g) = 0.80%



0 dB = 4.66 W/kg = 6.68 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 1900 Body, Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.521 \text{ S/m}$; $\epsilon_r = 53.914$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-28-2014; Ambient Temp: 24.3°C; Tissue Temp: 23.2°C

Probe: ES3DV3 - SN3287; ConvF(4.67, 4.67, 4.67); Calibrated: 11/20/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229

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

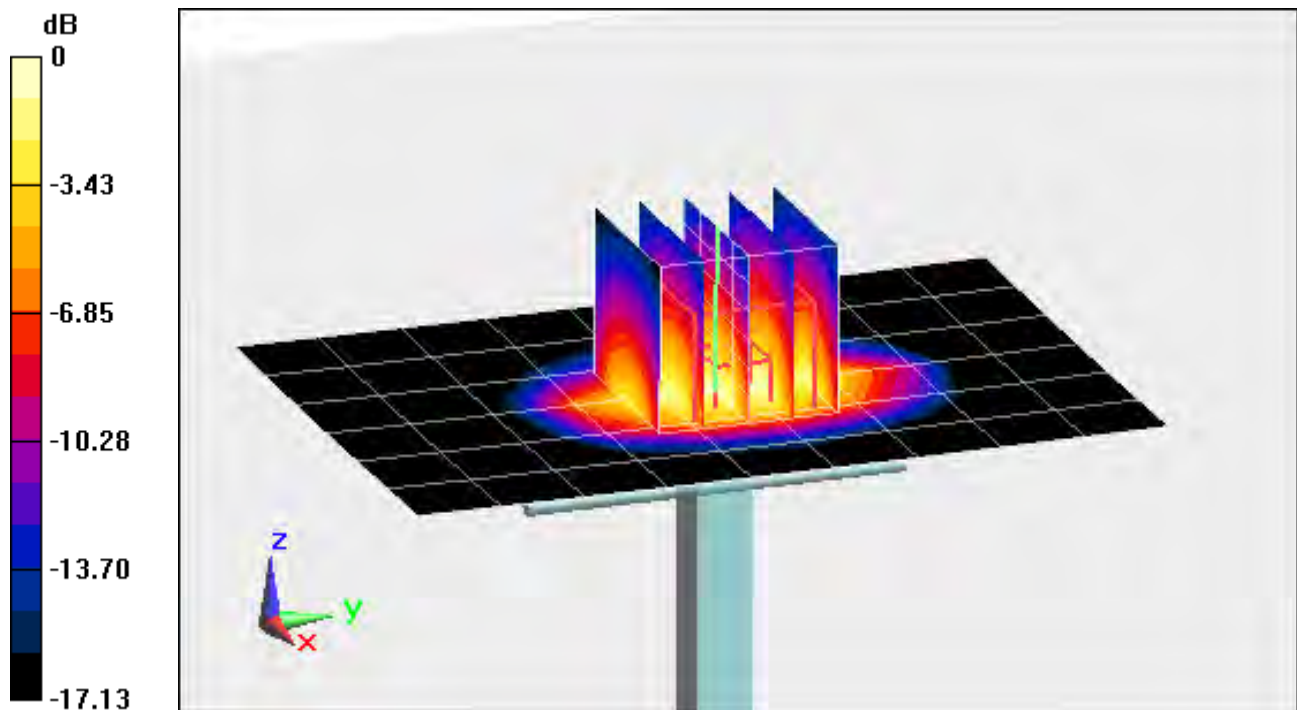
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 7.28 W/kg

SAR(1 g) = 4.16 W/kg

Deviation(1 g) = 2.46%



0 dB = 5.17 W/kg = 7.13 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 1900 Body, Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.509 \text{ S/m}$; $\epsilon_r = 52.062$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-01-2014; Ambient Temp: 23.0°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3319; ConvF(4.67, 4.67, 4.67); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/11/2014

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

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

1900 MHz System Verification

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

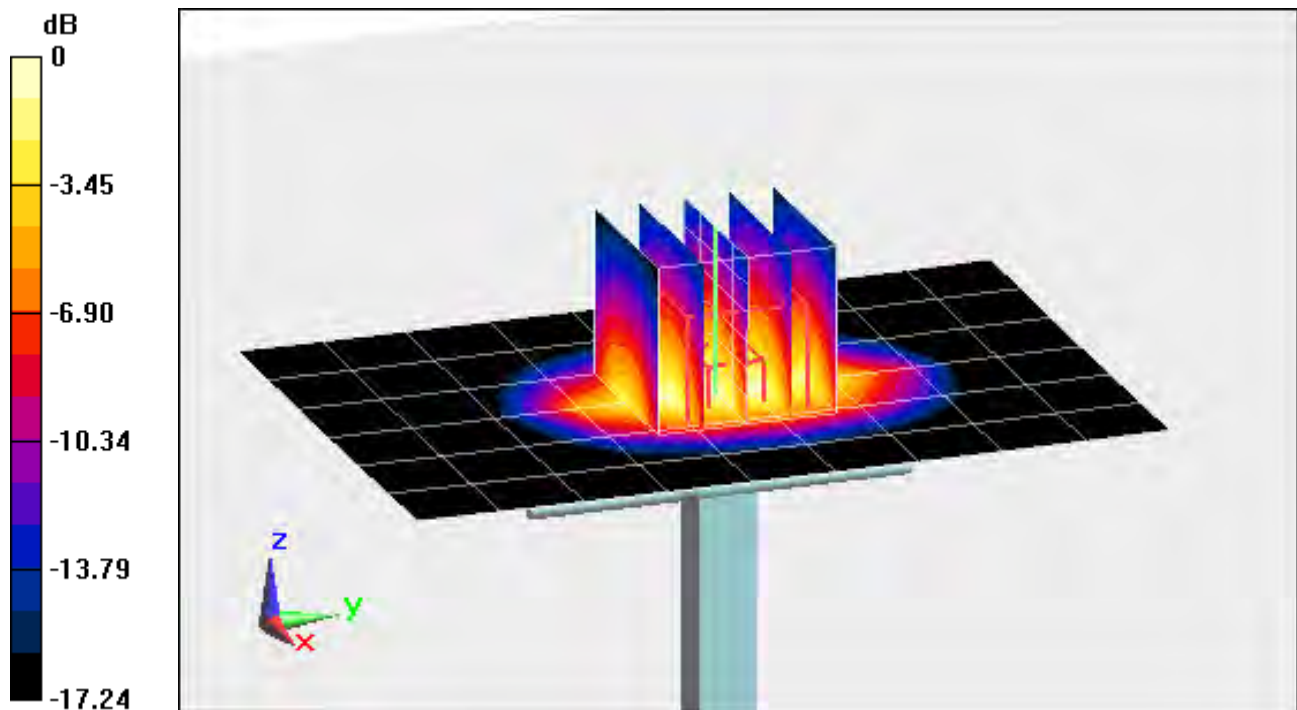
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 6.80 W/kg

SAR(1 g) = 3.92 W/kg

Deviation(1 g) = -3.45%



0 dB = 4.92 W/kg = 6.92 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 2450 Body, Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.903 \text{ S/m}$; $\epsilon_r = 50.849$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-07-2014; Ambient Temp: 23.9°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3319; ConvF(4.24, 4.24, 4.24); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/11/2014

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

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

2450 MHz System Verification

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

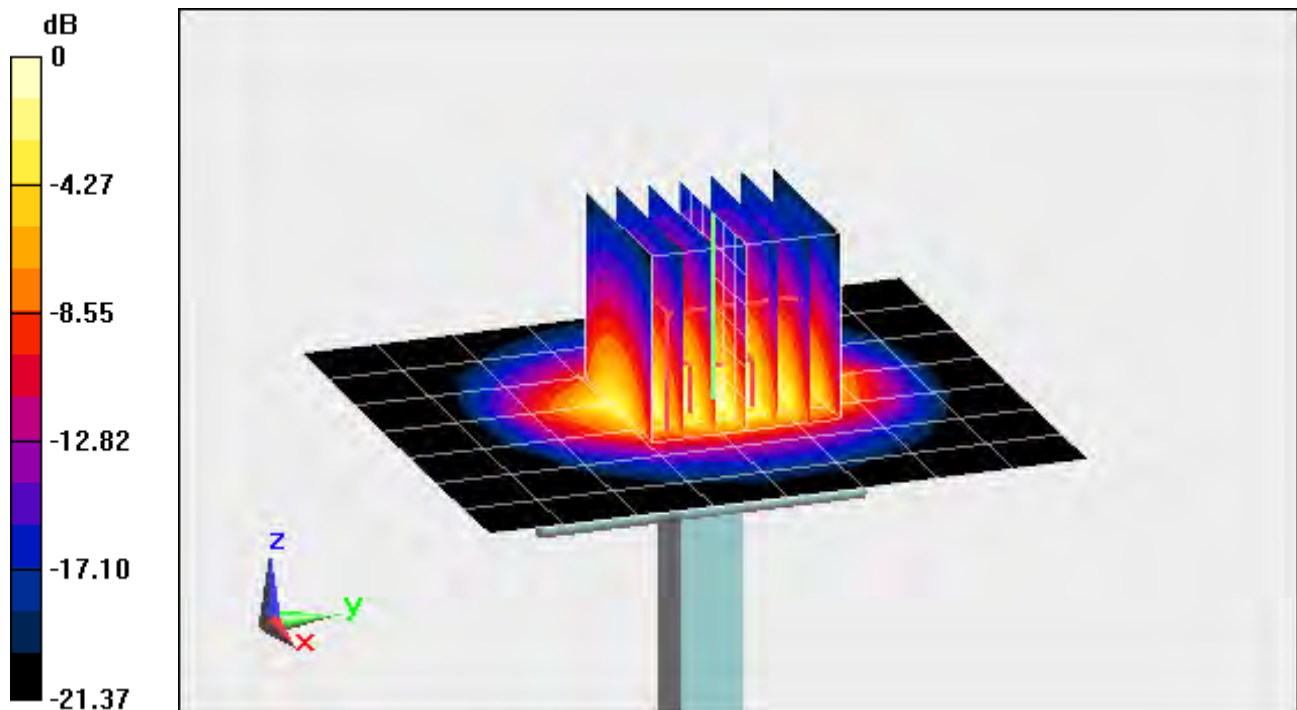
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 11.0 W/kg

SAR(1 g) = 5.24 W/kg

Deviation(1 g) = 6.07%



0 dB = 6.87 W/kg = 8.37 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 2450 Body, Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.91 \text{ S/m}$; $\epsilon_r = 52.778$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2014; Ambient Temp: 23.2°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.24, 4.24, 4.24); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/11/2014

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

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

2450 MHz System Verification

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

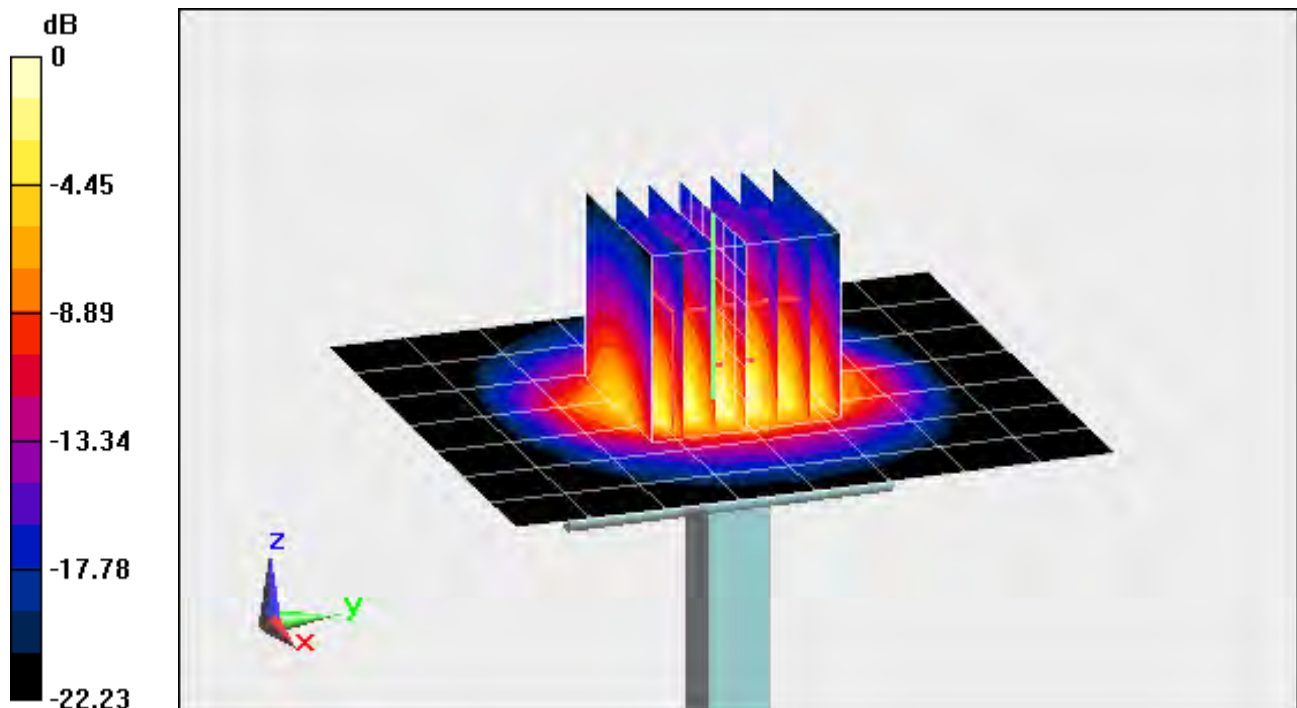
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 9.99 W/kg

SAR(1 g) = 4.78 W/kg; SAR(10 g) = 2.18 W/kg

Deviation(1 g) = -3.24%; Deviation(10 g) = -5.63%



0 dB = 6.26 W/kg = 7.97 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 5 GHz Body, Medium parameters used:

$f = 5200 \text{ MHz}$; $\sigma = 5.365 \text{ S/m}$; $\epsilon_r = 47.684$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-11-2014; Ambient Temp: 22.4°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN3920; ConvF(4.23, 4.23, 4.23); Calibrated: 12/18/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7331)

5200 MHz System Verification

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

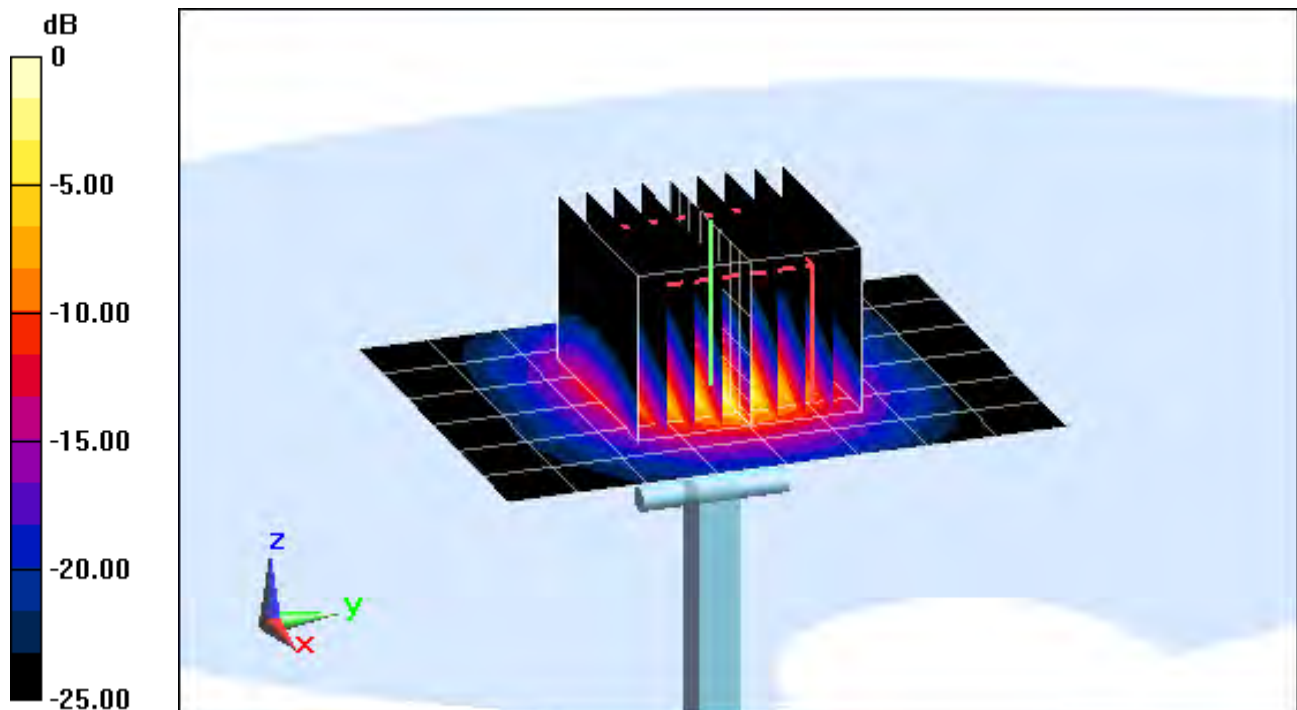
Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 28.6 W/kg

SAR(1 g) = 7.51 W/kg

Deviation(1 g) = 3.44%



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5200 MHz; Type: D5GHzV2; Serial: 1057

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

Medium: 5 GHz Body, Medium parameters used:

$f = 5200 \text{ MHz}$; $\sigma = 5.262 \text{ S/m}$; $\epsilon_r = 48.246$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-13-2014; Ambient Temp: 24.4°C; Tissue Temp: 24.0°C

Probe: EX3DV4 - SN3589; ConvF(4.19, 4.19, 4.19); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM front; Type: QD000P40CD; Serial: TP:1759

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

5200 MHz System Verification

Area Scan (7x8x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

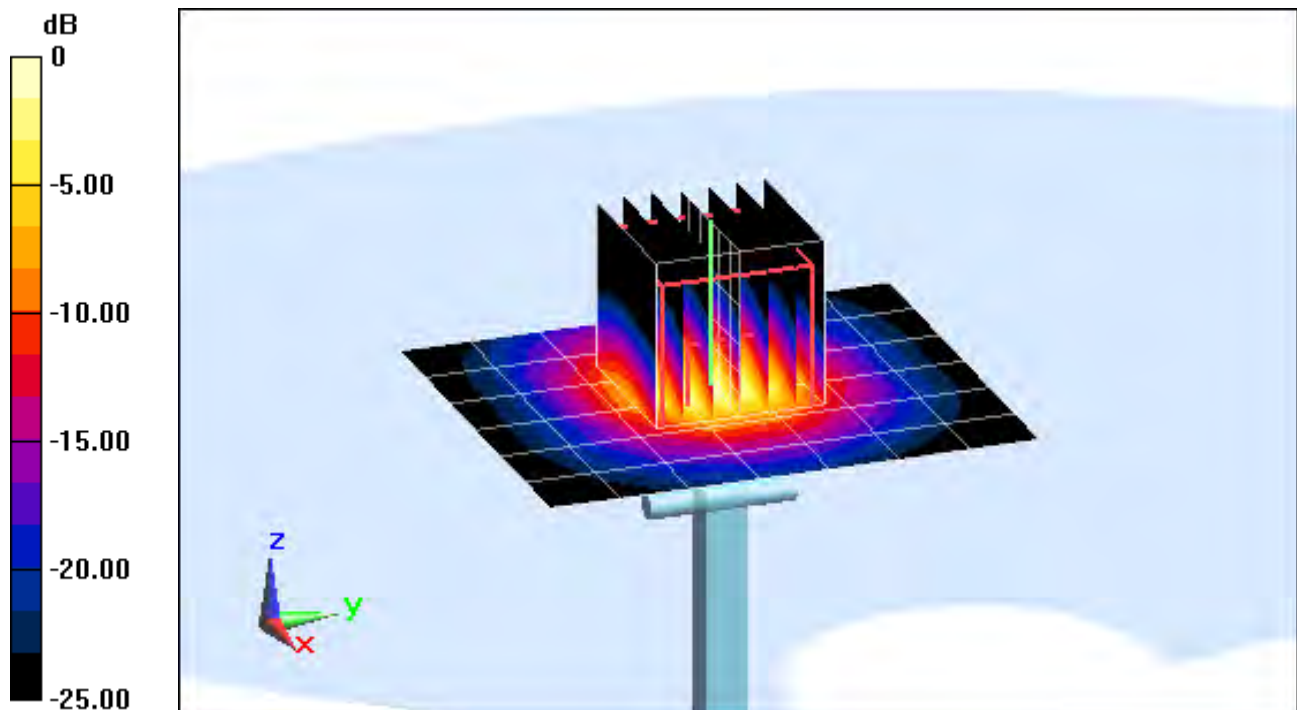
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 33.8 W/kg

SAR(10 g) = 2.25 W/kg

Deviation(10 g) = 7.14%



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

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 5 GHz Body, Medium parameters used:

$f = 5300 \text{ MHz}$; $\sigma = 5.483 \text{ S/m}$; $\epsilon_r = 47.707$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-11-2014; Ambient Temp: 22.4°C; Tissue Temp: 21.3°C

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

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7331)

5300 MHz System Verification

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

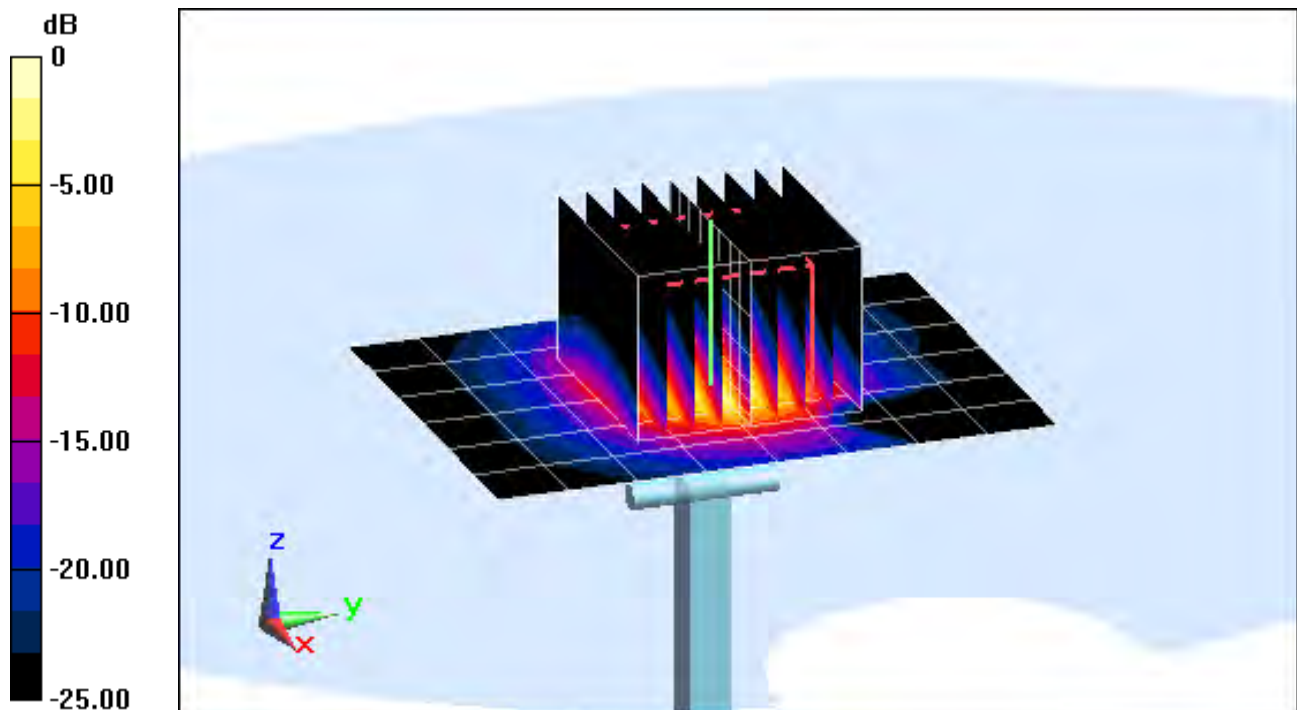
Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 29.5 W/kg

SAR(1 g) = 7.72 W/kg

Deviation(1 g) = 3.35%



0 dB = 18.9 W/kg = 12.76 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5300 MHz; Type: D5GHzV2; Serial: 1057

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

Medium: 5 GHz Body, Medium parameters used:

$f = 5300 \text{ MHz}$; $\sigma = 5.427 \text{ S/m}$; $\epsilon_r = 48.087$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-13-2014; Ambient Temp: 24.4°C; Tissue Temp: 24.1°C

Probe: EX3DV4 - SN3589; ConvF(3.98, 3.98, 3.98); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM front; 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: $dx=10\text{mm}$, $dy=10\text{mm}$

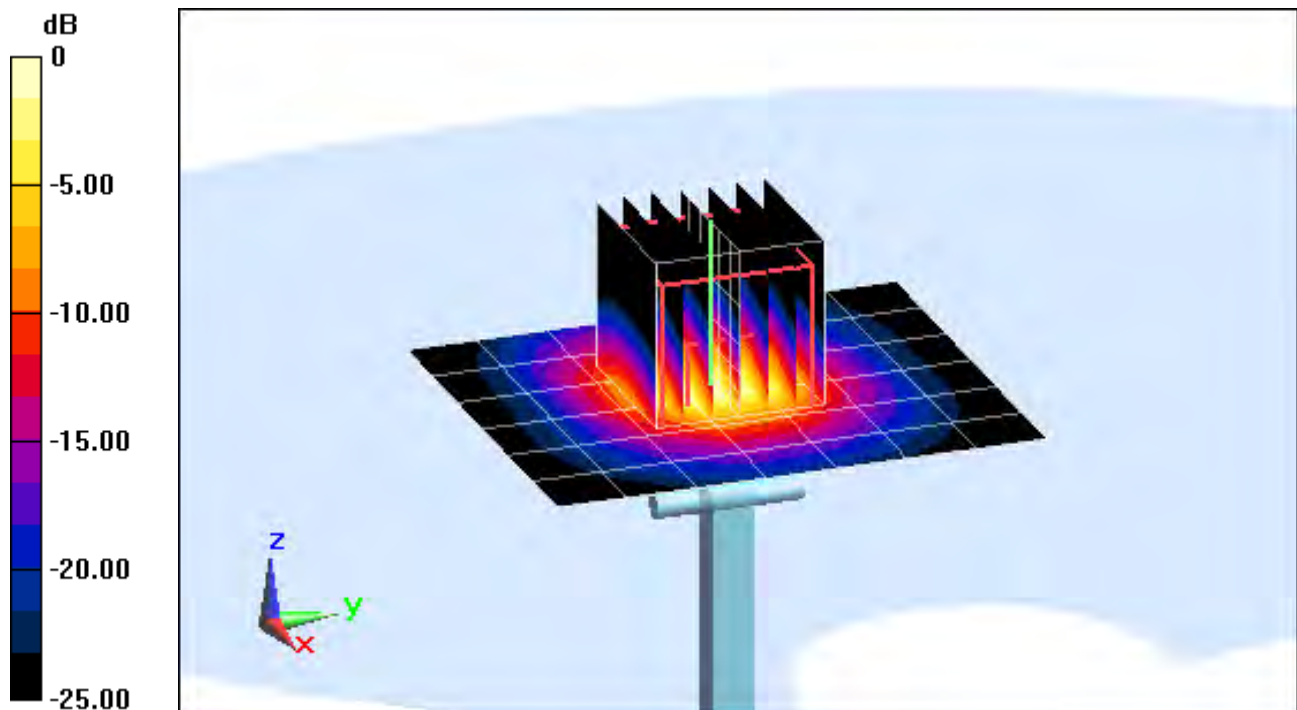
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 36.7 W/kg

SAR(10 g) = 2.36 W/kg

Deviation(10 g) = 9.77%



0 dB = 21.7 W/kg = 13.36 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 5 GHz Body, Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 5.726 \text{ S/m}$; $\epsilon_r = 47.237$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-11-2014; Ambient Temp: 22.4°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN3920; ConvF(3.8, 3.8, 3.8); Calibrated: 12/18/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7331)

5500 MHz System Verification

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

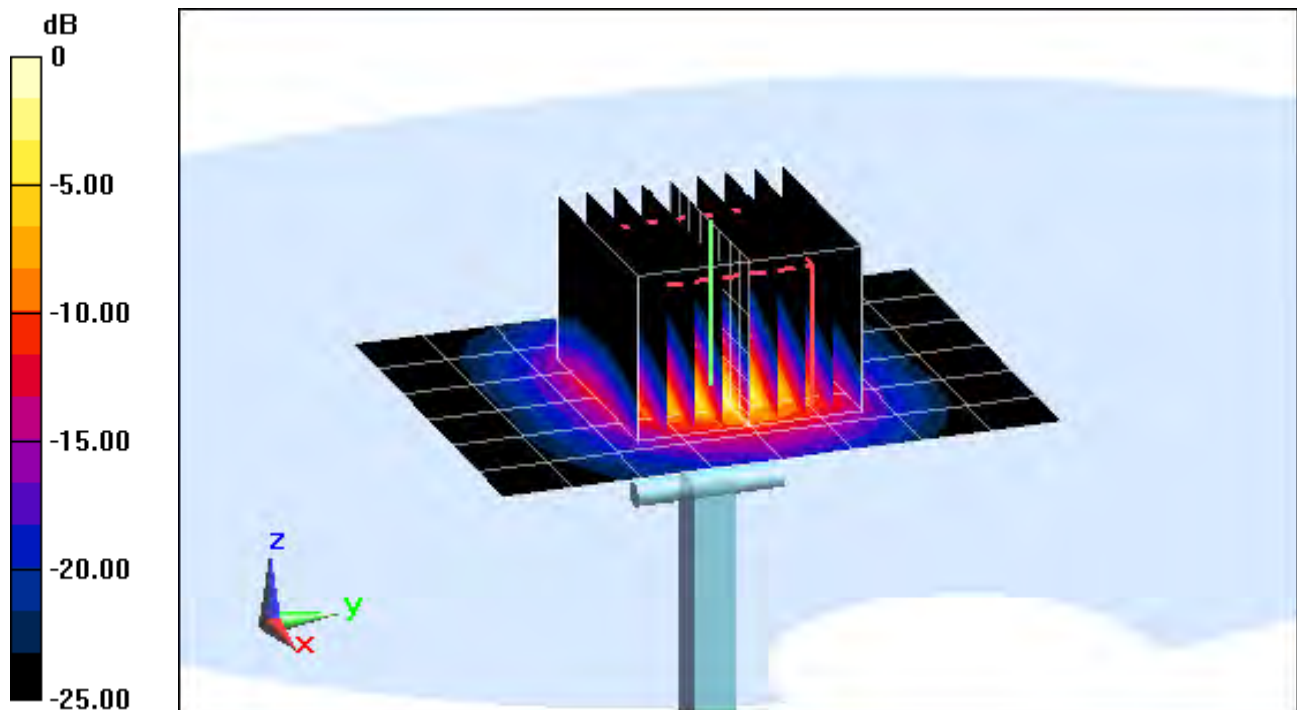
Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 30.7 W/kg

SAR(1 g) = 7.81 W/kg

Deviation(1 g) = 2.90%



0 dB = 19.8 W/kg = 12.97 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1057

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

Medium: 5 GHz Body, Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 5.733 \text{ S/m}$; $\epsilon_r = 47.55$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-13-2014; Ambient Temp: 24.3°C; Tissue Temp: 23.9°C

Probe: EX3DV4 - SN3589; ConvF(3.76, 3.76, 3.76); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM front; 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: $dx=10\text{mm}$, $dy=10\text{mm}$

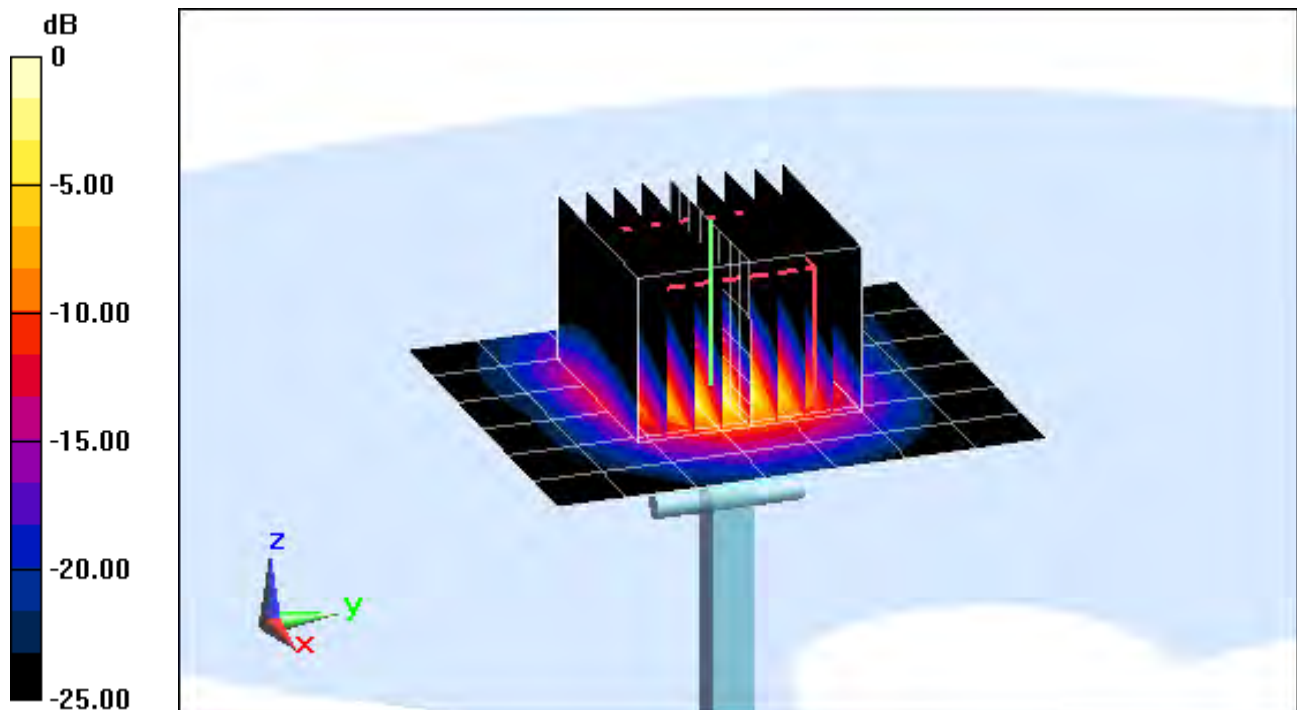
Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 37.5 W/kg

SAR(10 g) = 2.30 W/kg

Deviation(10 g) = 4.55%



0 dB = 21.7 W/kg = 13.36 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 5 GHz Body, Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 5.861 \text{ S/m}$; $\epsilon_r = 46.839$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-11-2014; Ambient Temp: 22.4°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN3920; ConvF(3.62, 3.62, 3.62); Calibrated: 12/18/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7331)

5600 MHz System Verification

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

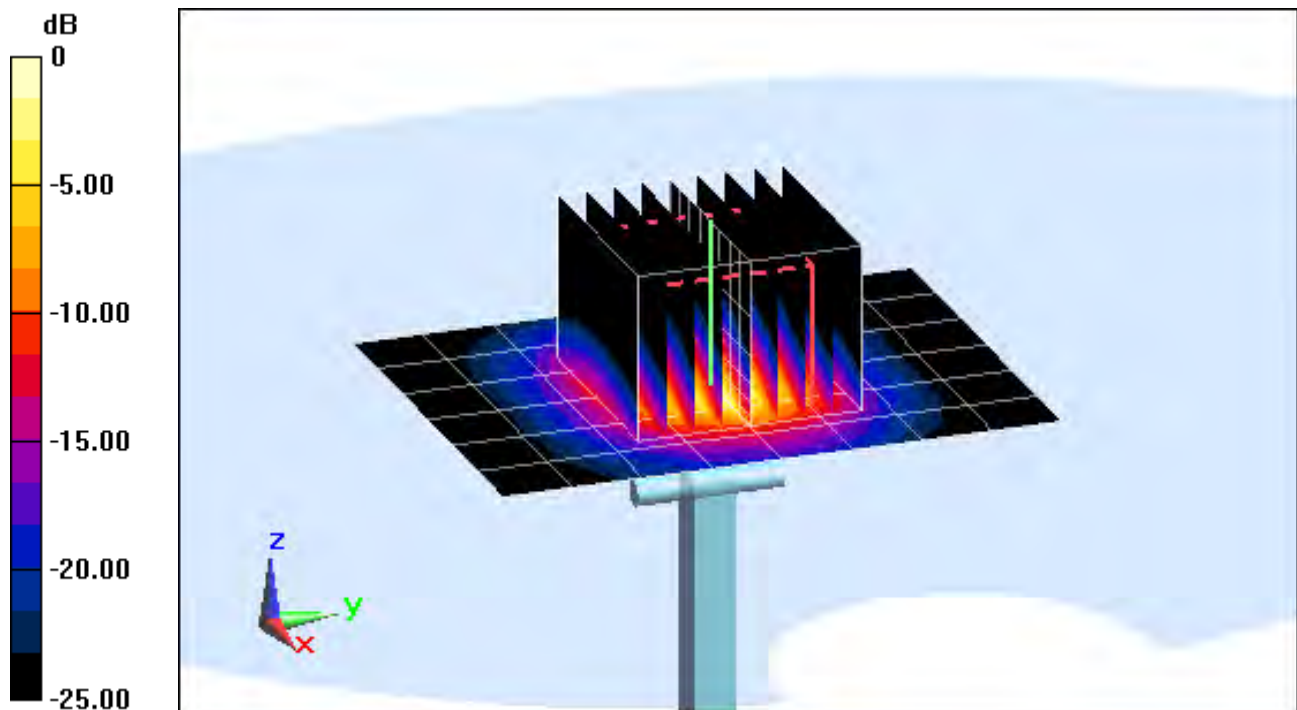
Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 32.1 W/kg

SAR(1 g) = 7.66 W/kg

Deviation(1 g) = -0.91%



0 dB = 19.6 W/kg = 12.92 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5600 MHz; Type: D5GHzV2; Serial: 1057

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

Medium: 5 GHz Body, Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 5.871 \text{ S/m}$; $\epsilon_r = 47.349$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-13-2014; Ambient Temp: 24.2°C; Tissue Temp: 23.9°C

Probe: EX3DV4 - SN3589; ConvF(3.81, 3.81, 3.81); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM front; Type: QD000P40CD; Serial: TP:1759

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

5600 MHz System Verification

Area Scan (7x8x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

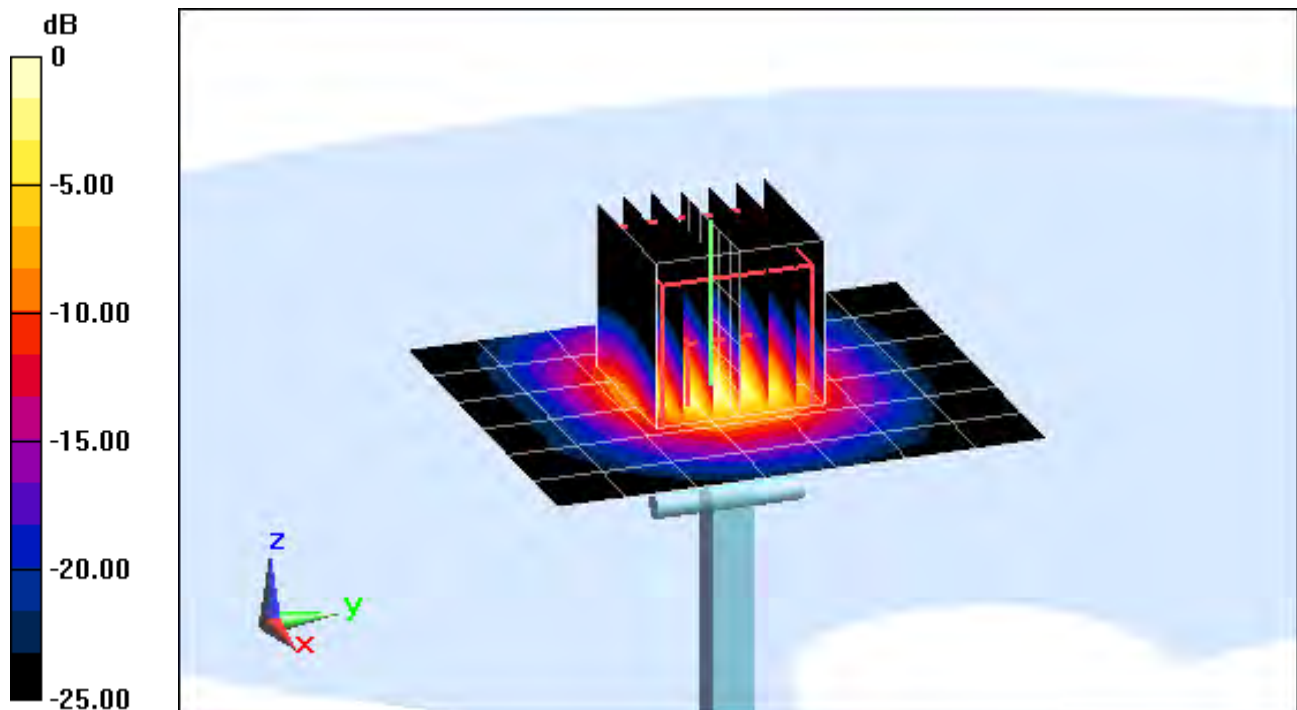
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 40.4 W/kg

SAR(10 g) = 2.24 W/kg

Deviation(10 g) = 0.90%



0 dB = 21.6 W/kg = 13.34 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5800 \text{ MHz}$; $\sigma = 6.062 \text{ S/m}$; $\epsilon_r = 45.948$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-11-2014; Ambient Temp: 22.4°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN3920; ConvF(4, 4, 4); Calibrated: 12/18/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7331)

5800 MHz System Verification

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

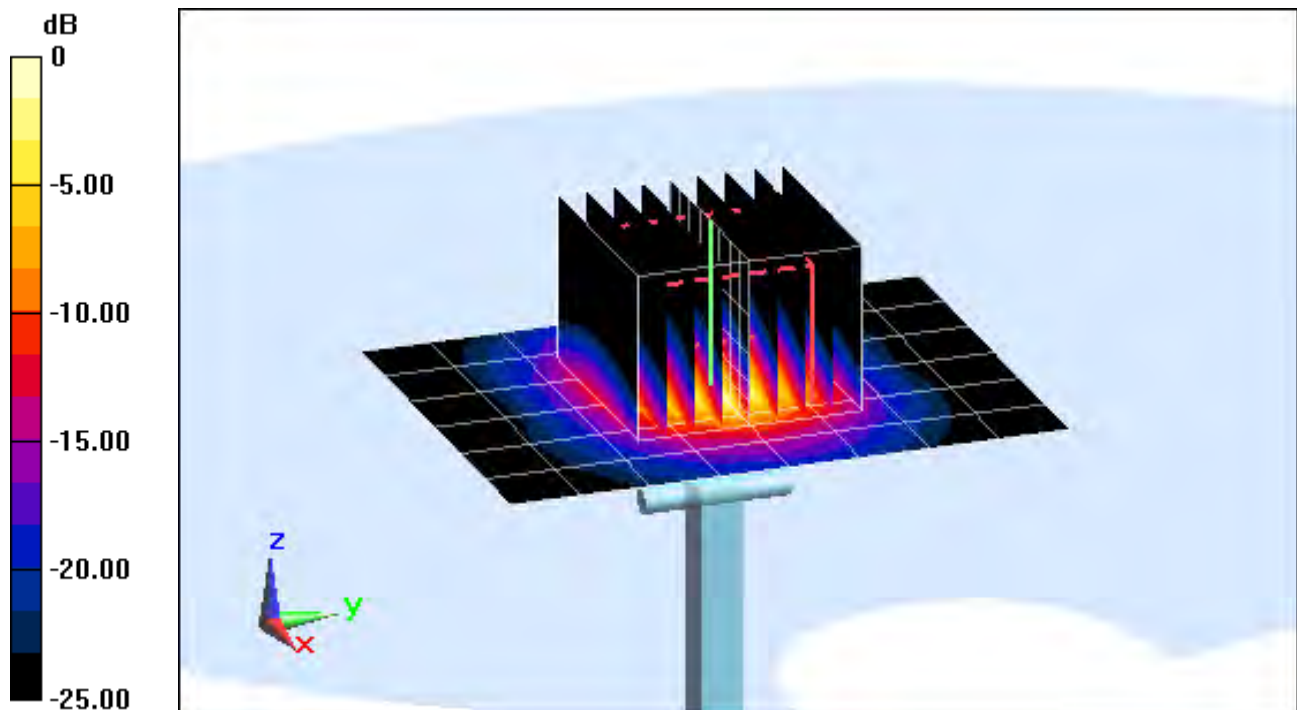
Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 35.4 W/kg

SAR(1 g) = 7.23 W/kg

Deviation(1 g) = -0.82%



0 dB = 62.77 V/m = 35.96 dBV/m

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5800 \text{ MHz}$; $\sigma = 6.186 \text{ S/m}$; $\epsilon_r = 46.881$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-13-2014; Ambient Temp: 24.4°C; Tissue Temp: 24.0°C

Probe: EX3DV4 - SN3589; ConvF(3.97, 3.97, 3.97); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 3/17/2014

Phantom: SAM front; 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 (7x8x1): Measurement grid: dx=10mm, dy=10mm

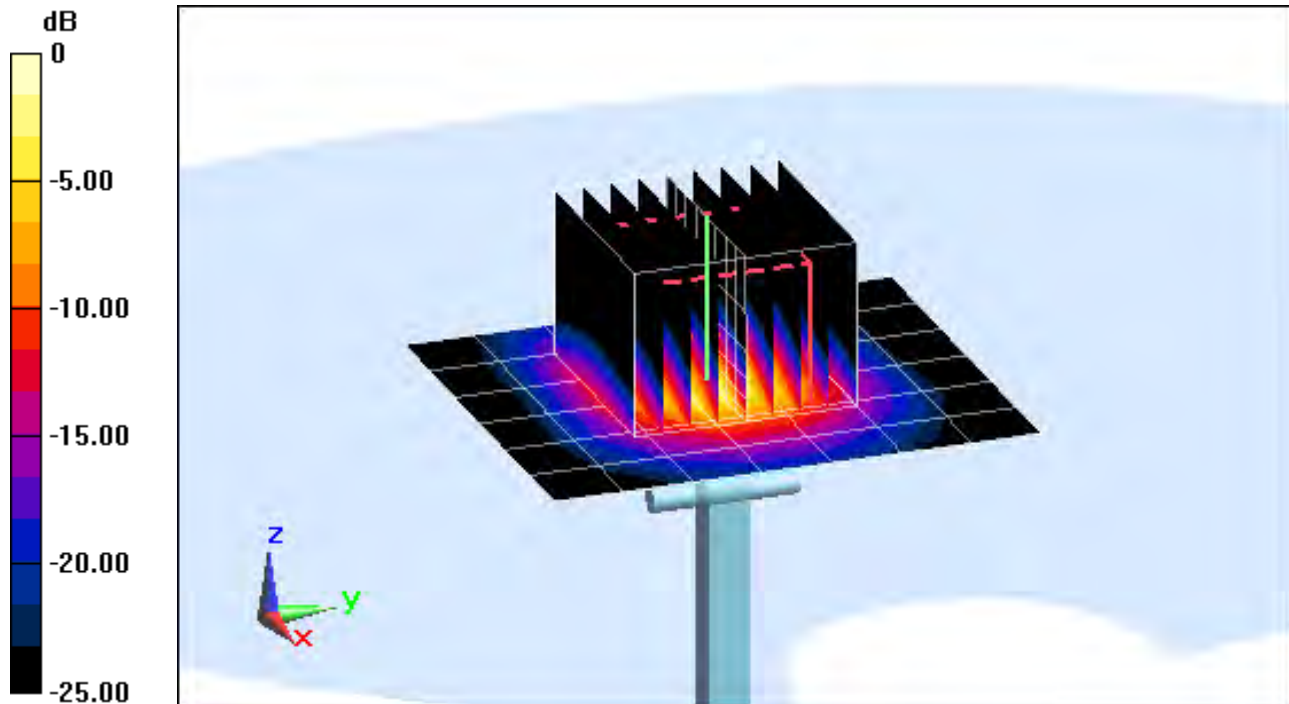
Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 35.8 W/kg

SAR(1 g) = 7.35 W/kg

Deviation(1 g) = -1.08%



0 dB = 19.8 W/kg = 12.97 dBW/kg