



SAR EVALUATION REPORT

Applicant Name:

LG Electronics MobileComm U.S.A., Inc.
1000 Sylvan Avenue
Englewood Cliffs, NJ 07632
United States

Date of Testing:

06/20/17 - 07/28/17

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Document Serial No.:

1M1706200200-01-R2.ZNF

FCC ID:

ZNFG011C

APPLICANT:

LG ELECTRONICS MOBILECOMM U.S.A., INC.

DUT Type:

Portable Handset

Application Type:

Certification

FCC Rule Part(s):

CFR §2.1093

Model:

G011C

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 Phablet (W/kg)
PCE	CDMA/EVDO BC10 (E905)	817.90 - 823.10 MHz	0.15	0.25	0.23	N/A
PCE	CDMA/EVDO BC0 (E22H)	824.70 - 848.31 MHz	0.15	0.22	0.22	N/A
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	0.10	0.63	0.70	N/A
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.15	0.24	0.27	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	< 0.1	0.36	0.44	N/A
PCE	UMTS 850	825.40 - 846.60 MHz	0.16	0.23	0.26	N/A
PCE	UMTS 1755	1712.4 - 1752.6 MHz	0.17	0.79	1.04	N/A
PCE	UMTS 1900	1852.4 - 1907.6 MHz	< 0.1	0.83	0.95	N/A
PCE	LTE Band 12	699.7 - 715.3 MHz	< 0.1	0.26	0.27	N/A
PCE	LTE Band 17	706.5 - 713.5 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 13	779.5 - 784.5 MHz	0.14	0.23	0.23	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.17	0.23	0.28	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.14	0.72	1.08	N/A
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.12	0.72	0.98	N/A
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 30	2307.5 - 2312.5 MHz	0.20	0.40	0.40	N/A
PCE	LTE Band 7	2502.5 - 2567.5 MHz	0.26	0.36	0.36	N/A
PCE	LTE Band 41	2498.5 - 2687.5 MHz	0.21	0.34	0.34	N/A
DTS	2.4 GHz WLAN	2412 - 2462 MHz	1.00	0.40	0.41	N/A
NI	U-NII-1	5180 - 5240 MHz	N/A	N/A	0.21	N/A
NI	U-NII-2A	5260 - 5320 MHz	0.44	0.16	N/A	0.81
NI	U-NII-2C	5500 - 5720 MHz	0.40	0.24	N/A	1.58
NI	U-NII-3	5745 - 5825 MHz	0.40	0.32	N/A	0.32
DSS/DTSS	Bluetooth	2402 - 2480 MHz	0.11	< 0.1	< 0.1	N/A
Simultaneous SAR per KDB 690783 D01v0103:			1.59	1.59	1.59	2.31

Note: This revised Test Report (S/N: 1M1706200200-01-R2.ZNF) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE C95.1-1992 and has been tested in accordance with the measurement procedures specified in Section 1.8 of this report; for North American frequency bands only.

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


Randy Ortanez
President



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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
CDMA/EVDO BC10 (§90S)	Voice/Data	817.90 - 823.10 MHz
CDMA/EVDO BC0 (§22H)	Voice/Data	824.70 - 848.31 MHz
PCS CDMA/EVDO	Voice/Data	1851.25 - 1908.75 MHz
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 - 1752.6 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 12	Voice/Data	699.7 - 715.3 MHz
LTE Band 17	Voice/Data	706.5 - 713.5 MHz
LTE Band 13	Voice/Data	779.5 - 784.5 MHz
LTE Band 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 30	Voice/Data	2307.5 - 2312.5 MHz
LTE Band 7	Voice/Data	2502.5 - 2567.5 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2462 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz

1.2 Power Reduction for SAR

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

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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 D01v06.

1.3.1 Maximum Power

Mode / Band		Modulated Average (dBm)
CDMA/EVDO BC10 (§90S)	Maximum	25.2
	Nominal	24.7
CDMA/EVDO BC0 (§22H)	Maximum	25.2
	Nominal	24.7
PCS CDMA/EVDO	Maximum	24.7
	Nominal	24.2

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	33.7	33.7	31.2	29.2	28.2	26.7	26.7	25.7	24.7	
	Nominal	33.2	33.2	30.7	28.7	27.7	26.2	26.2	25.2	24.2	
GSM/GPRS/EDGE 1900	Maximum	30.7	30.7	28.2	26.7	25.7	25.7	25.7	24.7	23.7	
	Nominal	30.2	30.2	27.7	26.2	25.2	25.2	25.2	24.2	23.2	

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	3GPP HSDPA	3GPP HSUPA	3GPP DC-HSDPA
UMTS Band 5 (850 MHz)	Maximum	25.0	24.0	24.0	24.0
	Nominal	24.5	23.5	23.5	23.5
UMTS Band 4 (1750 MHz)	Maximum	24.7	23.7	23.7	23.7
	Nominal	24.2	23.2	23.2	23.2
UMTS Band 2 (1900 MHz)	Maximum	24.7	23.7	23.7	23.7
	Nominal	24.2	23.2	23.2	23.2

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Mode / Band		Modulated Average (dBm)
LTE Band 12	Maximum	25.2
	Nominal	24.7
LTE Band 17	Maximum	25.2
	Nominal	24.7
LTE Band 13	Maximum	25.7
	Nominal	25.2
LTE Band 26 (Cell)	Maximum	25.7
	Nominal	25.2
LTE Band 5 (Cell)	Maximum	25.7
	Nominal	25.2
LTE Band 66 (AWS)	Maximum	24.2
	Nominal	23.7
LTE Band 4 (AWS)	Maximum	24.2
	Nominal	23.7
LTE Band 25 (PCS)	Maximum	24.2
	Nominal	23.7
LTE Band 2 (PCS)	Maximum	24.2
	Nominal	23.7
LTE Band 30	Maximum	23.2
	Nominal	22.7
LTE Band 7	Maximum	25.2
	Nominal	24.7
LTE Band 41 (PC 3)	Maximum	25.2
	Nominal	24.7
LTE Band 41 (PC 2)	Maximum	27.0
	Nominal	26.5

WLAN Antenna 1 and 2 SISO

Mode / Band		Modulated Average - Single Tx Chain (dBm)		
		Ch 1-2	Ch 3-9	Ch 10-11
IEEE 802.11b (2.4 GHz)	Maximum	19.5		
	Nominal	18.5		
IEEE 802.11g (2.4 GHz)	Maximum	15.5	17.0	15.5
	Nominal	14.5	16.0	14.5
IEEE 802.11n (2.4 GHz)	Maximum	14.5	17.0	14.5
	Nominal	13.5	16.0	13.5
IEEE 802.11ac (2.4 GHz)	Maximum	14.5	17.0	14.5
	Nominal	13.5	16.0	13.5

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Mode / Band		Modulated Average - Single Tx Chain (dBm)			
		20 MHz Bandwidth	40 MHz Bandwidth		80 MHz Bandwidth
		Ch 36-165	Ch 38, 62,102,142,151	Ch 46,54,110,134,159	Ch 42 - 155
IEEE 802.11a (5 GHz)	Maximum	16.5			
	Nominal	15.5			
IEEE 802.11n (5 GHz)	Maximum	16.5	14.0	16.0	
	Nominal	15.5	13.0	15.0	
IEEE 802.11ac (5 GHz)	Maximum	16.5	14.0	16.0	12.5
	Nominal	15.5	13.0	15.0	11.5

WLAN MIMO

Mode / Band		Modulated Average - MIMO (dBm)		
		20 MHz Bandwidth		
		Ch 1-2	Ch 3-9	Ch 10-11
IEEE 802.11b (2.4 GHz)	Maximum	22.5		
	Nominal	21.5		
IEEE 802.11g (2.4 GHz)	Maximum	18.5	20.0	18.5
	Nominal	17.5	19.0	17.5
IEEE 802.11ac (2.4 GHz)	Maximum	18.5	20.0	18.5
	Nominal	17.5	19.0	17.5
IEEE 802.11n (5 GHz)	Maximum	17.5	20.0	17.5
	Nominal	16.5	19.0	16.5
IEEE 802.11ac (5 GHz)	Maximum	17.5	20.0	17.5
	Nominal	16.5	19.0	16.5

Mode / Band		Modulated Average - MIMO (dBm)			
		20 MHz Bandwidth	40 MHz Bandwidth		80 MHz Bandwidth
		Ch 36-165	Ch 38, 62,102,142,151	Ch 46,54,110,134,159	Ch 42 - 155
IEEE 802.11a (5 GHz)	Maximum	19.5			
	Nominal	18.5			
IEEE 802.11n (5 GHz)	Maximum	19.5	17.0	19.0	
	Nominal	18.5	16.0	18.0	
IEEE 802.11ac (5 GHz)	Maximum	19.5	17.0	19.0	15.5
	Nominal	18.5	16.0	18.0	14.5

Bluetooth

Mode / Band		Modulated Average - Single Tx Chain (dBm)
Bluetooth (1 Mbps)	Maximum	11.0
	Nominal	10.0
Bluetooth (2 Mbps)	Maximum	10.0
	Nominal	9.0
Bluetooth (3 Mbps)	Maximum	10.0
	Nominal	9.0
Bluetooth LE	Maximum	10.0
	Nominal	7.0

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1.4 DUT Antenna Locations

The overall dimensions of this device are > 9 x 5 cm. A diagram showing the location of the device antennas can be found in Appendix F. Since the diagonal dimension of this device is > 160 mm and <200 mm, it is considered a “phablet.”.

Table 1-1
Device Edges/Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
EVDO BC10 (§90S)	Yes	Yes	No	Yes	Yes	Yes
EVDO BC0 (§22H)	Yes	Yes	No	Yes	Yes	Yes
PCS EVDO	Yes	Yes	No	Yes	No	Yes
GPRS 850	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	No	Yes
UMTS 850	Yes	Yes	No	Yes	Yes	Yes
UMTS 1750	Yes	Yes	No	Yes	No	Yes
UMTS 1900	Yes	Yes	No	Yes	No	Yes
LTE Band 12	Yes	Yes	No	Yes	Yes	Yes
LTE Band 13	Yes	Yes	No	Yes	Yes	Yes
LTE Band 26 (Cell)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 66 (AWS)	Yes	Yes	No	Yes	No	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	No	Yes
LTE Band 30	Yes	Yes	No	Yes	Yes	Yes
LTE Band 7	Yes	Yes	No	Yes	Yes	Yes
LTE Band 41	Yes	Yes	No	Yes	Yes	Yes
2.4 GHz WLAN Ant 1	Yes	Yes	Yes	No	No	Yes
2.4 GHz WLAN Ant 2	Yes	Yes	Yes	No	Yes	No
Bluetooth	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN Ant 1	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN Ant 2	Yes	Yes	Yes	No	Yes	No

Note: Particular DUT edges were not required to be evaluated for wireless router SAR or phablet SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v02r01 Section III and FCC KDB Publication 648474 D04v01r03. The distances between the transmit antennas and the edges of the device are included in the filing. When wireless router mode is enabled, U-NII-2A and U-NII-2C operations are disabled.

1.5 Near Field Communications (NFC) Antenna

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

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1.6 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D01v06, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. Possible transmission paths for the DUT are shown in Figure 1-1 and are color-coded to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.



Figure 1-1
Simultaneous Transmission Paths

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB Publication 447498 D01v06 4.3.2 procedures.

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Table 1-2
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Phablet	Notes
1	1x CDMA voice + 2.4 GHz Wi-Fi	Yes	Yes	N/A	Yes	
2	1x CDMA voice + 5 GHz Wi-Fi	Yes	Yes	N/A	Yes	
3	1x CDMA voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	*Bluetooth tethering is considered.
4	1x CDMA voice + 2.4 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	
5	1x CDMA voice + 5 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	
6	1x CDMA voice + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	N/A	Yes	
7	GSM voice + 2.4 GHz Wi-Fi	Yes	Yes	N/A	Yes	
8	GSM voice + 5 GHz Wi-Fi	Yes	Yes	N/A	Yes	
9	GSM voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	*Bluetooth tethering is considered.
10	GSM voice + 2.4 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	
11	GSM voice + 5 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	
12	GSM voice + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	N/A	Yes	
13	UMTS + 2.4 GHz Wi-Fi	Yes	Yes	Yes	Yes	
14	UMTS + 5 GHz Wi-Fi	Yes	Yes	Yes	Yes	
15	UMTS + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	*Bluetooth tethering is considered.
16	UMTS + 2.4 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
17	UMTS + 5 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
18	UMTS + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	Yes	Yes	
19	LTE + 2.4 GHz Wi-Fi	Yes	Yes	Yes	Yes	
20	LTE + 5 GHz Wi-Fi	Yes	Yes	Yes	Yes	
21	LTE + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	*Bluetooth tethering is considered.
22	LTE + 2.4 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
23	LTE + 5 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
24	LTE + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	Yes	Yes	
25	CDMA/EVDO data + 2.4 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
26	CDMA/EVDO data + 5 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
27	CDMA/EVDO data + 2.4 GHz Bluetooth	Yes^*	Yes*	Yes^	Yes	*-Pre-installed VOIP applications are considered. *Bluetooth tethering is considered.
28	CDMA/EVDO data + 2.4 GHz Wi-Fi MIMO	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
29	CDMA/EVDO data + 5 GHz Wi-Fi MIMO	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
30	CDMA/EVDO data + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
31	GPRS/EDGE + 2.4 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
32	GPRS/EDGE + 5 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
33	GPRS/EDGE + 2.4 GHz Bluetooth	Yes^*	Yes*	Yes^	Yes	*-Pre-installed VOIP applications are considered. *Bluetooth tethering is considered.
34	GPRS/EDGE + 2.4 GHz Wi-Fi MIMO	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
35	GPRS/EDGE + 5 GHz Wi-Fi MIMO	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
36	GPRS/EDGE + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.

1. All licensed modes share the same antenna path and cannot transmit simultaneously.
2. 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.
3. Per the manufacturer, WIFI Direct is expected to be used in conjunction with a held-to-ear or body-worn accessory voice call. Simultaneous transmission scenarios involving WIFI direct are included in the above table.
4. 5 GHz Wireless Router is only supported for the U-NII-1 and U-NII-3 by S/W, therefore U-NII-2A, and U-NII-2C were not evaluated for wireless router conditions.
5. This device supports 2x2 MIMO Tx for WLAN. 802.11a/b/g/n/ac modes support CDD and 802.11n/ac modes additionally support SDM.
6. This device supports VOLTE and VOWIFI.

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1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

Since U-NII-1 and U-NII-2A bands have the same maximum output power and the highest reported SAR for U-NII-2A is less than 1.2 W/kg, SAR is not required for U-NII-1 band according to FCC KDB Publication 248227 D01v02r02.

Since Wireless Router operations are not allowed by the chipset firmware using U-NII-2A & U-NII-2C WIFI, only 2.4 GHz, U-NII-1, and U-NII-3 WIFI Hotspot SAR tests and combinations are considered for SAR with respect to Wireless Router configurations according to FCC KDB 941225 D06v02r01.

This device supports IEEE 802.11ac with the following features:

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

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is greater than 160mm and less than 200mm. Phablet 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 U-NII-2A & U-NII-2C WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for Bluetooth, 2.4 GHz, U-NII-1, and U-NII-3 WLAN operations since wireless router 1g SAR was < 1.2 W/kg.

(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 D01v03r01.

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 D05v02r04.

CDMA 1X Advanced technology was not required for SAR since the maximum allowed output powers for 1x Advanced was not more than 0.25 dB higher than the maximum powers for 1x and the measured SAR in any 1x mode exposure conditions was not greater than 1.2 W/kg per FCC KDB Publication 941225 D01v03r01.

This device supports LTE Carrier Aggregation (CA) in the downlink only. All uplink communications are identical to Release 8 specifications. Per FCC KDB Publication 941225 D05A v01r02, SAR for LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is greater than 160mm and less than 200mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Phablet SAR was not evaluated for licensed technologies since wireless router 1g SAR was < 1.2 W/kg for these modes.

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This device supports 64QAM on the uplink and 256QAM on the downlink for LTE Operations. Conducted powers for 64QAM uplink configurations were measured per Section 5.1 of FCC KDB Publication 941225 D05v02r05. SAR was not required for 64QAM since the highest maximum output power for 64 QAM is $\leq \frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg, per Section 5.2.4 of FCC KDB Publication 941225 D05v02r05.

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

This device supports both LTE B66 (AWS) and LTE B4 (AWS). Since the supported frequency span for LTE B4 (AWS) falls completely within the supported frequency span for LTE B66 (AWS), both LTE bands have the same target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE B66 (AWS).

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

This device supports downlink 4x4 MIMO operations for LTE Bands 2, 4, 66, 7 and 41 only. Per FCC Guidance, SAR for downlink 4x4 MIMO was not needed since the maximum average output power in 4x4 downlink MIMO mode was not > 0.25 dB higher than the maximum output power with downlink 4x4 MIMO inactive.

1.8 Guidance Applied

- IEEE 1528-2013
- FCC KDB Publication 941225 D01v03r01, D05v02r04, D05Av01r02, D06v02r01 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v06 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D04v01r03 (Phablet Procedures)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)

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1.9 Device Serial Numbers

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

	Head Serial Number	Body-Worn Serial Number	Hotspot Serial Number	Phablet Serial Number
CDMA/EVDO BC10 (\$90S)	13458	13058	14209	-
CDMA/EVDO BC0 (\$22H)	13458	13058	13058	-
PCS CDMA/EVDO	14209	14209	14209	-
GSM/GPRS/EDGE 850	13458	14191	14191	-
GSM/GPRS/EDGE 1900	14191	14209	14209	-
UMTS 850	13458	14191	14191	-
UMTS 1750	13458	13458	13458	-
UMTS 1900	14209	13466	13466	-
LTE Band 12	13474	14175	14175	-
LTE Band 13	13474	14209	14209	-
LTE Band 26 (Cell)	13490	14191	14191	-
LTE Band 66 (AWS)	13346	13466	13466	-
LTE Band 25 (PCS)	14209	13466	13466	-
LTE Band 30	14183	14209	14209	-
LTE Band 7	14191	14191	14191	-
LTE Band 41	14183	14183	14183	-
2.4 GHz WLAN	13649	13649	13649	-
5 GHz WLAN	13656	13656	13656	13656
Bluetooth	14183	13656	13656	-

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LTE Information					
FCC ID	ZNFG011C				
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 12 (699.7 - 715.3 MHz)				
	LTE Band 17 (706.5 - 713.5 MHz)				
	LTE Band 13 (779.5 - 784.5 MHz)				
	LTE Band 26 (Cell) (814.7 - 848.3 MHz)				
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)				
	LTE Band 66 (AWS) (1710.7 - 1779.3 MHz)				
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 30 (2307.5 - 2312.5 MHz)				
	LTE Band 7 (2502.5 - 2567.5 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
Channel Bandwidths	LTE Band 17: 5 MHz, 10 MHz				
	LTE Band 13: 5 MHz, 10 MHz				
	LTE Band 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 66 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 30: 5 MHz, 10 MHz				
	LTE Band 7: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 12: 1.4 MHz				
	LTE Band 12: 3 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 12: 1.4 MHz	699.7 (23017)		707.5 (23095)	715.3 (23173)	
LTE Band 12: 3 MHz	700.5 (23025)		707.5 (23095)	714.5 (23165)	
LTE Band 12: 5 MHz	701.5 (23035)		707.5 (23095)	713.5 (23155)	
LTE Band 12: 10 MHz	704 (23060)		707.5 (23095)	711 (23130)	
LTE Band 17: 5 MHz	706.5 (23755)		710 (23790)	713.5 (23825)	
LTE Band 17: 10 MHz	709 (23780)		710 (23790)	711 (23800)	
LTE Band 13: 5 MHz	779.5 (23205)		782 (23230)	784.5 (23255)	
LTE Band 13: 10 MHz	N/A		782 (23230)	N/A	
LTE Band 26 (Cell): 1.4 MHz	814.7 (26697)		831.5 (26865)	848.3 (27033)	
LTE Band 26 (Cell): 3 MHz	815.5 (26705)		831.5 (26865)	847.5 (27025)	
LTE Band 26 (Cell): 5 MHz	816.5 (26715)		831.5 (26865)	846.5 (27015)	
LTE Band 26 (Cell): 10 MHz	819 (26740)		831.5 (26865)	844 (26990)	
LTE Band 26 (Cell): 15 MHz	821.5 (26785)		831.5 (26865)	841.5 (26965)	
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 66 (AWS): 1.4 MHz	1710.7 (131979)		1745 (132322)	1779.3 (132665)	
LTE Band 66 (AWS): 3 MHz	1711.5 (131987)		1745 (132322)	1778.5 (132657)	
LTE Band 66 (AWS): 5 MHz	1712.5 (131997)		1745 (132322)	1777.5 (132647)	
LTE Band 66 (AWS): 10 MHz	1715 (132022)		1745 (132322)	1775 (132622)	
LTE Band 66 (AWS): 15 MHz	1717.5 (132047)		1745 (132322)	1772.5 (132597)	
LTE Band 66 (AWS): 20 MHz	1720 (132072)		1745 (132322)	1770 (132572)	
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)		1732.5 (20175)	1754.3 (20393)	
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)		1732.5 (20175)	1753.5 (20385)	
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)		1732.5 (20175)	1752.5 (20375)	
LTE Band 4 (AWS): 10 MHz	1715 (20000)		1732.5 (20175)	1750 (20350)	
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)		1732.5 (20175)	1747.5 (20325)	
LTE Band 4 (AWS): 20 MHz	1720 (20050)		1732.5 (20175)	1745 (20300)	
LTE Band 25 (PCS): 1.4 MHz	1850.7 (26047)		1882.5 (26365)	1914.3 (26683)	
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)		1882.5 (26365)	1913.5 (26675)	
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)		1882.5 (26365)	1912.5 (26665)	
LTE Band 25 (PCS): 10 MHz	1855 (26090)		1882.5 (26365)	1910 (26640)	
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)		1882.5 (26365)	1907.5 (26615)	
LTE Band 25 (PCS): 20 MHz	1860 (26140)		1882.5 (26365)	1905 (26590)	
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)		1880 (18900)	1909.3 (19193)	
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)		1880 (18900)	1908.5 (19185)	
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)		1880 (18900)	1907.5 (19175)	
LTE Band 2 (PCS): 10 MHz	1855 (18650)		1880 (18900)	1905 (19150)	
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)		1880 (18900)	1902.5 (19125)	
LTE Band 2 (PCS): 20 MHz	1860 (18700)		1880 (18900)	1900 (19100)	
LTE Band 30: 5 MHz	2307.5 (27685)		2310 (27710)	2312.5 (27735)	
LTE Band 30: 10 MHz	N/A		2310 (27710)	N/A	
LTE Band 7: 5 MHz	2502.5 (20775)		2535 (21100)	2567.5 (21425)	
LTE Band 7: 10 MHz	2505 (20800)		2535 (21100)	2565 (21400)	
LTE Band 7: 15 MHz	2507.5 (20825)		2535 (21100)	2562.5 (21375)	
LTE Band 7: 20 MHz	2510 (20850)		2535 (21100)	2560 (21350)	
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	11				
Modulations Supported in UL	QPSK, 16QAM, 64QAM				
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	The technical description includes all the possible carrier aggregation combinations				
LTE Additional Information	This device does not support full features on 3GPP Release 11. It supports downlink carrier aggregation and downlink MIMO features as shown in Section 9 and Appendix G. All other uplink communications are identical to the Release 8 specifications. Uplink Communications are done on the PCC unless otherwise specified. The following LTE Release 11 features are not supported: Relay, HetNet, Enhanced eICIC, WiFi Offloading, MDH, eMBMS, Cross-carrier scheduling, Enhanced SC-FDMA.				

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3 INTRODUCTION

The FCC and Innovation, Science, and Economic Development 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 D01v01r04 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 D01v01r04 (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 D01v01r04 (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.

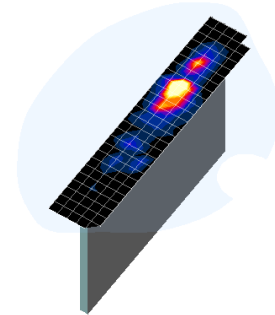


Figure 4-1 point
Sample SAR Area
Scan

Table 4-1
Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04*

Frequency	Maximum Area Scan Resolution (mm) ($\Delta x_{\text{area}}, \Delta y_{\text{area}}$)	Maximum Zoom Scan Resolution (mm) ($\Delta x_{\text{zoom}}, \Delta y_{\text{zoom}}$)	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid	Graded Grid		
				$\Delta z_{\text{zoom}}(n)$	$\Delta z_{\text{zoom}}(1)^*$	
≤2 GHz	≤15	≤8	≤5	≤4	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥30
2-3 GHz	≤12	≤5	≤5	≤4	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥30
3-4 GHz	≤12	≤5	≤4	≤3	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥28
4-5 GHz	≤10	≤4	≤3	≤2.5	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥25
5-6 GHz	≤10	≤4	≤2	≤2	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥22

*Also compliant to IEEE 1528-2013 Table 6

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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].

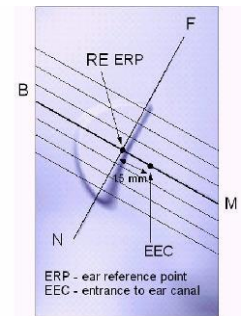


Figure 5-1
Close-Up Side view
of ERP

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

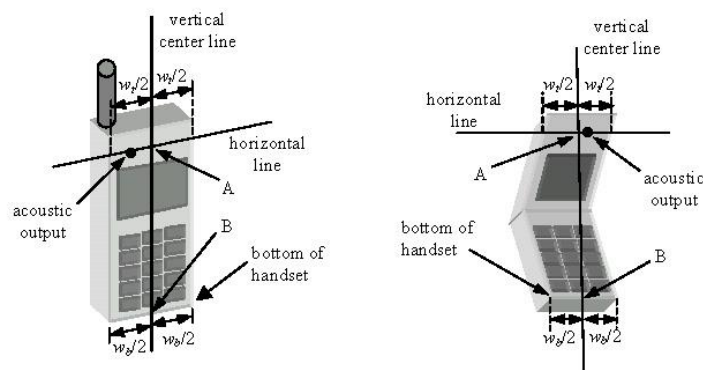


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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6 TEST CONFIGURATION POSITIONS

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.

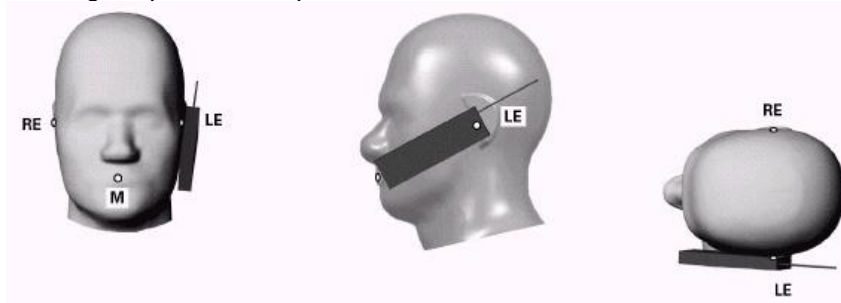


Figure 6-1 Front, Side and Top View of Cheek Position

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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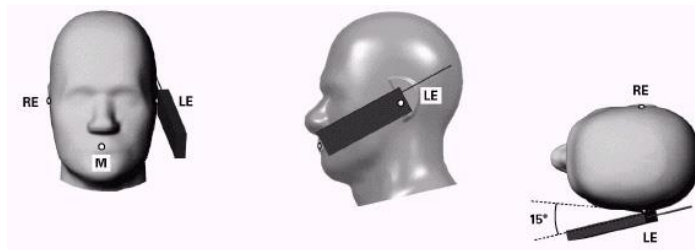


Figure 6-2 Front, Side and Top View of Ear/15° Tilt Position

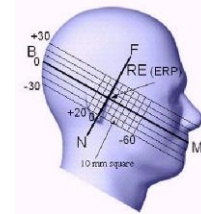


Figure 6-3 Side view w/ relevant markings

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 D04v01r03. 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 D04v01r03, 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 D01v06 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.

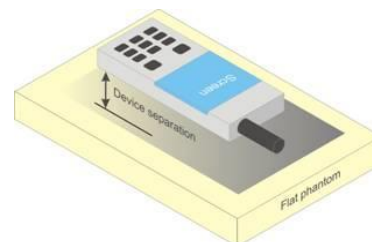


Figure 6-4 Sample Body-Worn Diagram

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

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dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

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

6.6 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions; i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. The 1-g body and 10-g extremity SAR Exclusion Thresholds found in KDB Publication 447498 D01v06 should be applied to determine SAR test requirements.

Per KDB Publication 447498 D01v06, Cell phones (handsets) are not normally designed to be used on extremities or operated in extremity only exposure conditions. The maximum output power levels of handsets generally do not require extremity SAR testing to show compliance. Therefore, extremity SAR was not evaluated for this device.

6.7 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06v02r01 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 D01v06 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.

6.8 Phablet Configurations

For smart phones with a display diagonal dimension $> 150 \text{ mm}$ or an overall diagonal dimension $> 160 \text{ mm}$ that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04v01r03 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

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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 mode 1-g SAR > 1.2 W/kg.

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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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8 FCC MEASUREMENT PROCEDURES

Power measurements for licensed transmitters are performed using a base station simulator under digital average power.

8.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D01v06, 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 D01v01r03.

8.2 3G SAR Test Reduction Procedure

In FCC KDB Publication 941225 D01v03r01, certain transmission modes within a frequency band and wireless mode evaluated for SAR are defined as primary modes. The equivalent modes considered for SAR test reduction are denoted as secondary modes. When the maximum output power including tune-up tolerance specified for production units in a secondary mode is ≤ 0.25 dB higher than the primary mode or when the highest reported SAR of the primary mode, scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode, is ≤ 1.2 W/kg, SAR measurements are not required for the secondary mode. These criteria are referred to as the 3G SAR test reduction procedure. When the 3G SAR test reduction procedure is not satisfied, SAR measurements are additionally required for the secondary mode.

8.3 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB Publication 941225 D01v03r01 “3G SAR Measurement Procedures.”

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

8.4 SAR Measurement Conditions for CDMA2000

The following procedures were performed according to FCC KDB Publication 941225 D01v03r01 “3G SAR Measurement Procedures.”

8.4.1 Output Power Verification

See 3GPP2 C.S0011/TIA-98-E as recommended by FCC KDB Publication 941225 D01v03r01 “3G SAR Measurement Procedures.” Maximum output power is verified on the High, Middle and Low channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. SO55 tests were measured with power control bits in the “All Up” condition.

1. If the mobile station (MS) supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only.

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

Table 8-1
Parameters for Max. Power for RC1

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

Table 8-2
Parameters for Max. Power for RC3

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

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

8.4.2 Head SAR Measurements

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

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

8.4.3 Body-worn SAR Measurements

SAR for body-worn exposure configurations is measured in RC3 with the DUT configured to transmit at full rate on FCH with all other code channels disabled using TDSO / SO32. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH_n), with FCH only as the primary mode. Otherwise, SAR is required for multiple code channel configuration (FCH + SCH_n), with FCH at full rate and SCH₀ enabled at 9600 bps, using the highest reported SAR configuration for FCH only. When multiple code channels are enabled, the transmitter output can shift by more than 0.5 dB and may lead to higher SAR drifts and SCH dropouts.

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

8.4.4 Body-worn SAR Measurements for EVDO Devices

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

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

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

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8.4.5 Body SAR Measurements for EVDO Hotspot

Hotspot Body SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0. The 3G SAR test reduction procedure is applied to Rev. A, Subtype 2 Physical layer configuration, with Rev. 0 as the primary mode; otherwise, SAR is measured for Rev. A using the highest reported SAR configuration for body-worn accessory exposure in Rev. 0. The AT is tested with a Reverse Data Channel rate of 153.6 kbps in Subtype 0/1 Physical Layer configurations; and a Reverse Data Channel payload size of 4096 bits and Termination Target of 16 slots in Subtype 2 Physical Layer configurations.

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

8.4.6 CDMA2000 1x Advanced

This device additionally supports 1x Advanced. Conducted powers are measured using SO75 with RC8 on the uplink and RC11 on the downlink per FCC KDB Publication 941225 D01v03r01. Smart blanking is disabled for all measurements. The EUT is configured with forward power control Mode 000 and reverse power control at 400 bps. Conducted powers are measured on an Agilent 8960 Series 10 Wireless Communications Test Set, Model E5515C using the CDMA2000 1x Advanced application, Option E1962B-410.

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

8.5 SAR Measurement Conditions for UMTS

8.5.1 Output Power Verification

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

8.5.2 Head SAR Measurements

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

8.5.3 Body SAR Measurements

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

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8.5.4 SAR Measurements with Rel 5 HSDPA

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

8.5.5 SAR Measurements with Rel 6 HSUPA

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

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

8.5.6 SAR Measurement Conditions for DC-HSDPA

SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

8.6 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05v02r04 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 or Anritsu MT8820C simulators are used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

8.6.1 Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

8.6.2 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

8.6.3 A-MPR

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

8.6.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r04:

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

8.6.5 TDD

LTE TDD testing is performed using the SAR test guidance provided in FCC KDB 941225 D05v02r04. TDD is tested at the highest duty factor using UL-DL configuration 0 with special subframe configuration 6 and applying the FDD LTE procedures in KDB 941225 D05v02r04. SAR testing is performed using the extended cyclic prefix listed in 3GPP TS 36.211 Section 4.

8.6.6 Downlink Only Carrier Aggregation

Conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. 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 secondary component carrier(s) (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to specifications when downlink carrier aggregation is inactive on the PCC. For every supported combination of downlink only carrier aggregation, additional conducted output powers are measured with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band. Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for carrier aggregation configurations when the average output power with downlink only carrier aggregation active is not more than 0.25 dB higher than the average output power with downlink only carrier aggregation inactive.

8.7 SAR Testing with 802.11 Transmitters

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 D01v02r02 for more details.

8.7.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those

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programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters.

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

8.7.2 U-NII-1 and U-NII-2A

For devices that operate in both U-NII-1 and U-NII-2A bands, when the same maximum output power is specified for both bands, SAR measurement using OFDM SAR test procedures is not required for U-NII-1 unless the highest reported SAR for U-NII-2A is > 1.2 W/kg. When different maximum output powers are specified for the bands, SAR measurement for the U-NII band with the lower maximum output power is not required unless the highest reported SAR for the U-NII band with the higher maximum output power, adjusted by the ratio of lower to higher specified maximum output power for the two bands, is > 1.2 W/kg. When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

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

The frequency range covered by U-NII-2C and U-NII-3 is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, the channels at 5.60 – 5.65 GHz in U-NII-2C band must be disabled with acceptable mechanisms and documented in the equipment certification. Unless band gap channels are permanently disabled, SAR must be considered for these channels. Each band is tested independently according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

8.7.4 Initial Test Position Procedure

For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode or UMPC mini-tablet, procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all positions in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured. When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.5 2.4 GHz SAR Test Requirements

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

- 1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
- 2) When the reported SAR is > 0.8 W/kg, SAR is required for that position using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

2.4 GHz 802.11 g/n OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is > 1.2 W/kg. When SAR is

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required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Procedures should be followed. When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.6 OFDM Transmission Mode and SAR Test Channel Selection

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

8.7.7 Initial Test Configuration Procedure

For OFDM, an initial test configuration is determined for each frequency band and aggregated band, according to the transmission mode with the highest maximum output power specified for SAR measurements. When the same maximum output power is specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration(s) with the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order IEEE 802.11 mode. The channel of the transmission mode with the highest average RF output conducted power will be the initial test configuration.

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is ≤ 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements (See Section 8.7.6). When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.8 Subsequent Test Configuration Procedures

For OFDM configurations in each frequency band and aggregated band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position procedure. When the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is ≤ 1.2 W/kg, no additional SAR tests for the subsequent test configurations are required. When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.9 MIMO SAR considerations

Per KDB Publication 248227 D01v02r02, the simultaneous SAR provisions in KDB Publication 447498 D01v06 should be applied to determine simultaneous transmission SAR test exclusion for WIFI MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6 W/kg, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation. When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

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9 RF CONDUCTED POWERS

9.1 CDMA Conducted Powers

Band	Channel	Rule Part	Frequency	SO55 [dBm]	SO55 [dBm]	SO75 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	RC1	RC3	RC11	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	564	90S	820.1	25.01	25.16	25.00	25.10	25.01	25.07	25.09
Cellular	1013	22H	824.7	25.04	25.04	24.94	24.86	24.83	24.83	24.84
	384	22H	836.52	25.05	25.09	25.00	25.02	25.04	25.14	25.00
	777	22H	848.31	25.08	25.03	24.92	24.86	24.85	24.95	24.90
PCS	25	24E	1851.25	24.54	24.56	24.56	24.70	24.63	24.61	24.70
	600	24E	1880	24.58	24.57	24.51	24.45	24.46	24.45	24.54
	1175	24E	1908.75	24.66	24.68	24.60	24.61	24.68	24.70	24.70

Note: 1. RC1 is only applicable for IS-95 compatibility.
 2. For FCC Rule Part 90S, Per FCC KDB Publication 447498 D01v06 4.1.g), only one channel is required since the device operates within the transmission range of 817.90 – 823.10 MHz.

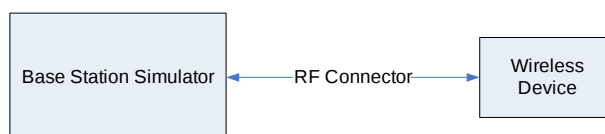


Figure 9-1
Power Measurement Setup

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9.2 GSM Conducted Powers

Maximum Burst-Averaged Output Power										
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 850	128	33.67	33.59	31.13	29.20	28.20	26.69	26.41	25.61	24.70
	190	33.56	33.51	31.20	29.15	28.16	26.68	26.36	25.53	24.64
	251	33.70	33.70	31.18	29.16	28.15	26.70	26.64	25.70	24.55
GSM 1900	512	30.70	30.60	28.11	26.67	25.67	25.69	25.70	24.65	23.59
	661	30.53	30.61	28.20	26.70	25.69	25.42	25.43	24.44	23.68
	810	30.66	30.61	28.15	26.63	25.64	25.70	25.42	24.43	23.56
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	24.64	24.56	25.11	24.94	25.19	17.66	20.39	21.35	21.69
	190	24.53	24.48	25.18	24.89	25.15	17.65	20.34	21.27	21.63
	251	24.67	24.67	25.16	24.90	25.14	17.67	20.62	21.44	21.54
GSM 1900	512	21.67	21.57	22.09	22.41	22.66	16.66	19.68	20.39	20.58
	661	21.50	21.58	22.18	22.44	22.68	16.39	19.41	20.18	20.67
	810	21.63	21.58	22.13	22.37	22.63	16.67	19.40	20.17	20.55
GSM 850	Frame	24.17	24.17	24.68	24.44	24.69	17.17	20.18	20.94	21.19
GSM 1900	Avg.Targets:	21.17	21.17	21.68	21.94	22.19	16.17	19.18	19.94	20.19

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

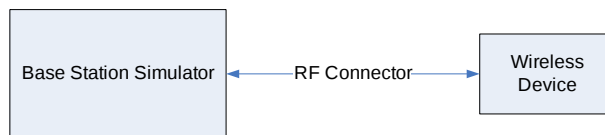


Figure 9-2
Power Measurement Setup

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9.3 UMTS Conducted Powers

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	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	24.98	24.95	24.93	24.60	24.70	24.70	24.70	24.57	24.69	-
99		12.2 kbps AMR	24.93	25.00	24.98	24.53	24.66	24.62	24.62	24.52	24.70	-
6	HSDPA	Subtest 1	23.90	23.94	23.98	23.51	23.63	23.70	23.58	23.66	23.64	0
6		Subtest 2	23.81	23.89	23.95	23.60	23.42	23.52	23.68	23.65	23.68	0
6		Subtest 3	23.50	23.35	23.31	23.17	23.01	23.19	23.13	23.09	23.03	0.5
6		Subtest 4	23.48	23.49	23.46	23.12	23.04	23.12	22.99	23.03	23.04	0.5
6	HSUPA	Subtest 1	24.00	23.91	23.95	23.43	23.61	23.57	23.70	23.53	23.69	0
6		Subtest 2	22.00	21.85	21.95	21.51	21.60	21.59	21.68	21.62	21.61	2
6		Subtest 3	22.87	22.90	22.87	22.62	22.61	22.59	22.60	22.57	22.52	1
6		Subtest 4	21.93	21.99	22.00	21.51	21.55	21.63	21.66	21.56	21.60	2
6		Subtest 5	23.97	23.84	23.92	23.63	23.55	23.60	23.70	23.67	23.59	0
8	DC-HSDPA	Subtest 1	23.98	23.96	23.93	23.59	23.69	23.69	23.63	23.70	23.54	0
8		Subtest 2	23.76	23.97	23.93	23.65	23.52	23.48	23.69	23.61	23.66	0
8		Subtest 3	23.44	23.48	23.35	23.07	23.11	23.15	23.05	23.09	23.11	0.5
8		Subtest 4	23.48	23.44	23.50	23.11	23.07	23.12	22.98	23.06	23.07	0.5

DC-HSDPA considerations

- 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
- The DUT supports UE category 24 for HSDPA



Figure 9-3
Power Measurement Setup

FCC ID: ZNFG011C	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Approved by: Quality Manager
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9.4 LTE Conducted Powers

9.4.1 LTE Band 12

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

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23095 (707.5 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	25.09	0	0
	1	25	25.05		0
	1	49	25.12		0
	25	0	24.20	0-1	1
	25	12	24.19		1
	25	25	24.19		1
	50	0	24.17		1
16QAM	1	0	24.16	0-1	1
	1	25	24.05		1
	1	49	24.00		1
	25	0	23.15	0-2	2
	25	12	23.20		2
	25	25	23.16		2
	50	0	23.19		2
64QAM	1	0	23.14	0-2	2
	1	25	23.08		2
	1	49	22.97		2
	25	0	22.14	0-3	3
	25	12	22.10		3
	25	25	22.13		3
	50	0	22.11		3

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

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

LTE Band 12 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23035 (701.5 MHz)	23095 (707.5 MHz)	23155 (713.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.05	25.03	24.92	0	0
	1	12	25.00	24.98	24.91		0
	1	24	24.96	25.01	24.83		0
	12	0	24.03	24.02	24.06	0-1	1
	12	6	24.01	23.97	24.06		1
	12	13	23.96	23.90	24.02		1
	25	0	24.02	23.96	24.04		1
16QAM	1	0	24.06	24.00	24.02	0-1	1
	1	12	24.09	24.17	24.06		1
	1	24	24.06	24.05	23.99		1
	12	0	23.08	23.05	23.18	0-2	2
	12	6	23.07	23.02	23.15		2
	12	13	23.08	22.94	23.12		2
	25	0	23.01	23.02	23.07		2
64QAM	1	0	23.03	23.04	23.09	0-2	2
	1	12	23.15	23.08	23.00		2
	1	24	23.03	23.05	23.08		2
	12	0	22.09	22.08	22.13	0-3	3
	12	6	22.14	22.11	22.02		3
	12	13	22.10	22.05	22.04		3
	25	0	22.00	21.99	22.09		3

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

LTE Band 12 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23025 (700.5 MHz)	23095 (707.5 MHz)	23165 (714.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.99	24.95	25.03	0	0
	1	7	25.03	25.05	25.06		0
	1	14	24.92	24.91	24.97		0
	8	0	24.06	24.01	24.07	0-1	1
	8	4	24.07	23.97	24.09		1
	8	7	24.04	23.96	24.03		1
16QAM	15	0	24.07	23.92	24.05	0-1	1
	1	0	24.00	24.16	24.00		1
	1	7	24.05	24.16	24.06		1
	1	14	24.10	24.16	24.18	0-2	1
	8	0	23.13	22.97	23.07		2
	8	4	23.16	22.95	23.04		2
64QAM	8	7	23.11	22.89	23.04	0-2	2
	15	0	23.08	23.00	23.07		2
	1	0	22.92	23.02	23.00	0-2	2
	1	7	23.07	23.04	23.00		2
	1	14	23.06	23.08	23.08		2
	8	0	22.06	22.09	22.17	0-3	3
	8	4	22.00	22.14	22.08		3
	8	7	22.14	22.11	22.16		3
	15	0	22.09	22.07	22.06		3

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

LTE Band 12 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23017 (699.7 MHz)	23095 (707.5 MHz)	23173 (715.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.94	24.89	24.92	0	0
	1	2	24.98	24.95	24.97		0
	1	5	24.92	24.88	24.87		0
	3	0	25.00	24.87	24.97		0
	3	2	25.01	24.93	25.02		0
	3	3	24.96	24.85	24.95		0
16QAM	6	0	23.99	23.90	23.90	0-1	1
	1	0	24.13	24.14	24.03	0-1	1
	1	2	24.10	24.00	24.06		1
	1	5	24.00	24.16	24.05		1
	3	0	24.17	23.98	23.99		1
	3	2	24.14	23.97	24.01		1
	3	3	24.10	23.97	24.03		1
	6	0	22.99	23.05	22.88	0-2	2
	64QAM	1	0	23.14	23.13	23.02	0-2
1		2	23.04	23.00	23.03	2	
1		5	23.00	23.09	23.05	2	
3		0	23.19	22.95	22.90	2	
3		2	23.11	23.02	23.00	2	
3		3	23.13	23.00	23.03	2	
	6	0	22.01	22.02	21.85	0-3	3

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9.4.2

LTE Band 13

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

LTE Band 13 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23230 (782.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	25.42	0	0
	1	25	25.38		0
	1	49	25.44		0
	25	0	24.56	0-1	1
	25	12	24.55		1
	25	25	24.55		1
16QAM	50	0	24.51	0-1	1
	1	0	24.58		1
	1	25	24.70		1
	1	49	24.60	0-2	1
	25	0	23.58		2
	25	12	23.54		2
64QAM	25	25	23.58	0-2	2
	50	0	23.54		2
	1	0	23.40	0-2	2
	1	25	23.44		2
	1	49	23.33		2
	25	0	22.26	0-3	3
	25	12	22.40		3
	25	25	22.24		3
	50	0	22.21		3

Table 9-6
LTE Band 13 Conducted Powers - 5 MHz Bandwidth

LTE Band 13 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23230 (782.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	25.27	0	0
	1	12	25.17		0
	1	24	25.25		0
	12	0	24.25	0-1	1
	12	6	24.25		1
	12	13	24.31		1
16QAM	25	0	24.22	0-1	1
	1	0	24.53		1
	1	12	24.50		1
	1	24	24.57	0-2	1
	12	0	23.28		2
	12	6	23.30		2
64QAM	12	13	23.35	0-2	2
	25	0	23.23		2
	1	0	23.10	0-2	2
	1	12	23.16		2
	1	24	23.25		2
	12	0	22.20	0-3	3
	12	6	22.16		3
	12	13	22.28		3
	25	0	22.30		3

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

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9.4.3

LTE Band 26 (Cell)

Table 9-7
LTE Band 26 (Cell) Conducted Powers - 15 MHz Bandwidth

LTE Band 26 (Cell) 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26865 (831.5 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	25.60	0	0
	1	36	25.50		0
	1	74	25.34		0
	36	0	24.66	0-1	1
	36	18	24.68		1
	36	37	24.58		1
	75	0	24.64		1
16QAM	1	0	24.70	0-1	1
	1	36	24.67		1
	1	74	24.64		1
	36	0	23.64	0-2	2
	36	18	23.60		2
	36	37	23.60		2
	75	0	23.67		2
64QAM	1	0	23.69	0-2	2
	1	36	23.70		2
	1	74	23.66		2
	36	0	22.60	0-3	3
	36	18	22.62		3
	36	37	22.60		3
	75	0	22.66		3

Note: LTE Band 26 (Cell) at 15 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 26 (Cell) Conducted Powers - 10 MHz Bandwidth

LTE Band 26 (Cell) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26740 (819.0 MHz)	26865 (831.5 MHz)	26990 (844.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.40	25.49	25.40	0	0
	1	25	25.27	25.35	25.34		0
	1	49	25.15	25.36	25.14		0
	25	0	24.43	24.44	24.45	0-1	1
	25	12	24.41	24.45	24.45		1
	25	25	24.32	24.35	24.28		1
	50	0	24.34	24.44	24.37		1
16QAM	1	0	24.60	24.55	24.51	0-1	1
	1	25	24.61	24.66	24.60		1
	1	49	24.53	24.65	24.63		1
	25	0	23.46	23.49	23.42	0-2	2
	25	12	23.39	23.41	23.50		2
	25	25	23.33	23.40	23.33		2
	50	0	23.38	23.44	23.38		2
64QAM	1	0	23.65	23.55	23.54	0-2	2
	1	25	23.57	23.60	23.55		2
	1	49	23.60	23.59	23.60		2
	25	0	22.45	22.45	22.40	0-3	3
	25	12	22.30	22.42	22.51		3
	25	25	22.24	22.42	22.33		3
	50	0	22.45	22.45	22.44		3

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

LTE Band 26 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26715 (816.5 MHz)	26865 (831.5 MHz)	27015 (846.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.43	25.44	25.32	0	0
	1	12	25.36	25.38	25.14		0
	1	24	25.34	25.33	25.14		0
	12	0	24.42	24.44	24.33	0-1	1
	12	6	24.39	24.40	24.28		1
	12	13	24.35	24.41	24.25		1
16QAM	25	0	24.40	24.43	24.32	0-1	1
	1	0	24.60	24.68	24.69		1
	1	12	24.69	24.60	24.53		1
	1	24	24.64	24.59	24.52	0-2	1
	12	0	23.47	23.41	23.46		2
	12	6	23.48	23.43	23.44		2
64QAM	12	13	23.40	23.38	23.37	0-2	2
	25	0	23.42	23.56	23.34		2
	1	0	23.59	23.62	23.69	0-2	2
	1	12	23.69	23.61	23.62		2
	1	24	23.60	23.63	23.46		2
	12	0	22.52	22.40	22.42	0-3	3
12	6	22.48	22.35	22.35	3		
12	13	22.39	22.40	22.29	3		
	25	0	22.41	22.58	22.36		3

Table 9-10
LTE Band 26 (Cell) Conducted Powers - 3 MHz Bandwidth

LTE Band 26 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26705 (815.5 MHz)	26865 (831.5 MHz)	27025 (847.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.32	25.36	25.20	0	0
	1	7	25.41	25.47	25.26		0
	1	14	25.23	25.32	25.16		0
	8	0	24.43	24.39	24.28	0-1	1
	8	4	24.44	24.38	24.28		1
	8	7	24.38	24.37	24.29		1
	15	0	24.40	24.38	24.29		1
16QAM	1	0	24.69	24.65	24.67	0-1	1
	1	7	24.65	24.62	24.63		1
	1	14	24.61	24.59	24.56		1
	8	0	23.48	23.36	23.28	0-2	2
	8	4	23.51	23.35	23.27		2
	8	7	23.44	23.35	23.27		2
	15	0	23.40	23.40	23.24		2
64QAM	1	0	23.70	23.63	23.67	0-2	2
	1	7	23.67	23.67	23.69		2
	1	14	23.60	23.60	23.56		2
	8	0	22.46	22.36	22.26	0-3	3
	8	4	22.54	22.38	22.24		3
	8	7	22.46	22.42	22.21		3
	15	0	22.42	22.40	22.29		3

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Table 9-11
LTE Band 26 (Cell) Conducted Powers -1.4 MHz Bandwidth

LTE Band 26 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26697 (814.7 MHz)	26865 (831.5 MHz)	27033 (848.3 MHz)		
Conducted Power [dBm]							
QPSK	1	0	25.28	25.25	25.10	0	0
	1	2	25.32	25.34	25.17		0
	1	5	25.31	25.24	25.09		0
	3	0	25.34	25.29	25.17		0
	3	2	25.39	25.30	25.18		0
	3	3	25.31	25.23	25.13		0
6	0	24.34	24.34	24.19	0-1	1	
16QAM	1	0	24.53	24.55	24.55	0-1	1
	1	2	24.63	24.63	24.62		1
	1	5	24.56	24.56	24.54		1
	3	0	24.49	24.37	24.19		1
	3	2	24.51	24.40	24.23		1
	3	3	24.45	24.37	24.20		1
6	0	23.29	23.46	23.04	0-2	2	
64QAM	1	0	23.48	23.56	23.53	0-2	2
	1	2	23.63	23.65	23.57		2
	1	5	23.60	23.59	23.45		2
	3	0	23.50	23.38	23.20		2
	3	2	23.47	23.43	23.21		2
	3	3	23.40	23.35	23.20		2
6	0	22.31	22.50	21.99	0-3	3	

9.4.4 LTE Band 66 (AWS)

Table 9-12
LTE Band 66 (AWS) Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.20	24.16	24.08	0	0
	1	50	24.05	23.90	23.80		0
	1	99	24.02	23.99	23.86		0
	50	0	23.19	23.08	23.18	0-1	1
	50	25	23.11	22.96	23.07		1
	50	50	23.00	22.96	22.96		1
	100	0	23.09	22.96	23.07		1
16QAM	1	0	23.15	23.18	23.19	0-1	1
	1	50	23.04	23.06	23.20		1
	1	99	23.08	23.15	23.05		1
	50	0	22.06	22.03	22.02	0-2	2
	50	25	22.14	22.00	22.07		2
	50	50	22.10	21.98	22.02		2
	100	0	22.12	21.98	22.07		2
64QAM	1	0	22.16	22.11	22.17	0-2	2
	1	50	22.07	22.07	22.15		2
	1	99	22.11	22.15	22.12		2
	50	0	21.13	21.09	21.02	0-3	3
	50	25	21.12	20.93	20.98		3
	50	50	21.10	20.93	20.93		3
	100	0	21.12	21.01	21.10		3

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Table 9-13
LTE Band 66 (AWS) Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132047 (1717.5 MHz)	132322 (1745.0 MHz)	132597 (1772.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.13	24.16	24.05	0	0
	1	36	24.07	23.86	23.79		0
	1	74	24.01	23.96	23.79		0
	36	0	23.16	23.08	23.01	0-1	1
	36	18	23.14	22.87	23.07		1
	36	37	22.99	23.04	22.87		1
	75	0	23.10	22.94	23.09		1
16QAM	1	0	23.09	23.18	23.16	0-1	1
	1	36	22.99	23.04	23.14		1
	1	74	23.11	23.10	23.02		1
	36	0	22.03	21.98	21.99	0-2	2
	36	18	22.10	22.00	22.09		2
	36	37	22.06	22.03	22.00		2
	75	0	22.19	21.98	22.06		2
64QAM	1	0	22.10	22.17	22.18	0-2	2
	1	36	21.98	22.12	22.14		2
	1	74	22.14	22.14	21.99		2
	36	0	21.01	20.98	20.91	0-3	3
	36	18	21.19	20.94	21.01		3
	36	37	21.04	20.97	21.10		3
	75	0	21.16	20.94	21.04		3

Table 9-14
LTE Band 66 (AWS) Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132022 (1715.0 MHz)	132322 (1745.0 MHz)	132622 (1775.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.19	24.11	24.04	0	0
	1	25	24.07	23.89	23.78		0
	1	49	24.05	23.95	23.84		0
	25	0	23.17	23.12	23.16	0-1	1
	25	12	23.09	23.02	22.99		1
	25	25	23.05	22.93	22.94		1
	50	0	23.11	23.00	23.09		1
16QAM	1	0	23.14	23.14	23.16	0-1	1
	1	25	23.12	23.03	23.10		1
	1	49	23.06	23.10	23.05		1
	25	0	22.05	22.10	21.94	0-2	2
	25	12	22.17	22.05	22.10		2
	25	25	22.09	22.02	22.03		2
	50	0	22.08	21.99	22.02		2
64QAM	1	0	22.07	22.11	22.12	0-2	2
	1	25	22.17	22.02	22.09		2
	1	49	22.08	22.09	22.06		2
	25	0	21.11	21.12	20.99	0-3	3
	25	12	21.16	21.05	21.02		3
	25	25	21.07	21.01	21.05		3
	50	0	21.06	20.98	21.01		3

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Table 9-15
LTE Band 66 (AWS) Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131997 (1712.5 MHz)	132322 (1745.0 MHz)	132647 (1777.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.04	24.07	24.09	0	0
	1	12	24.02	23.91	23.85		0
	1	24	23.98	23.97	23.93		0
	12	0	23.19	23.05	23.16	0-1	1
	12	6	23.07	22.96	23.06		1
	12	13	23.08	22.99	23.01		1
16QAM	25	0	23.12	22.92	23.13	0-1	1
	1	0	23.17	23.16	23.16		1
	1	12	23.03	23.10	23.12		1
	1	24	23.09	23.17	23.07	0-2	1
	12	0	22.10	21.96	22.06		2
	12	6	22.04	22.03	22.03		2
64QAM	12	13	22.13	22.02	21.97	0-2	2
	25	0	22.08	22.00	22.11		2
	1	0	22.13	22.14	22.11		0-2
	1	12	21.96	22.17	22.12	2	
	1	24	22.17	22.03	22.07	0-3	
	12	0	21.06	20.97	21.09		3
12	6	21.06	21.00	21.01	3		
	12	13	21.18	20.97	20.97	0-3	3
	25	0	21.13	21.03	21.10		3

Table 9-16
LTE Band 66 (AWS) Conducted Powers - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131987 (1711.5 MHz)	132322 (1745.0 MHz)	132657 (1778.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.20	24.20	24.02	0	0
	1	7	24.01	23.92	23.87		0
	1	14	24.07	24.02	23.87		0
	8	0	23.05	23.09	23.18	0-1	1
	8	4	23.12	22.96	23.03		1
	8	7	23.07	22.95	22.98		1
	15	0	23.01	22.99	23.08		1
16QAM	1	0	23.16	23.10	23.14	0-1	1
	1	7	23.04	23.01	23.11		1
	1	14	23.04	23.16	23.14		1
	8	0	22.11	22.03	21.97	0-2	2
	8	4	22.14	21.92	22.10		2
	8	7	22.10	22.01	21.93		2
	15	0	22.14	22.01	22.10		2
64QAM	1	0	22.15	22.14	22.08	0-2	2
	1	7	22.06	22.03	22.13		2
	1	14	22.01	22.12	22.20		2
	8	0	21.11	21.00	20.96	0-3	3
	8	4	21.06	20.92	21.13		3
	8	7	21.11	20.96	21.00		3
	15	0	21.14	21.01	21.18		3

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Table 9-17
LTE Band 66 (AWS) Conducted Powers -1.4 MHz Bandwidth

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High	MPR Allowed per 3GPP [dB]	MPR [dB]
			131979 (1710.7 MHz)	132322 (1745.0 MHz)	132665 (1779.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.16	24.16	24.14	0	0
	1	2	24.06	23.89	23.85		0
	1	5	24.05	24.03	23.93		0
	3	0	24.02	24.16	24.13		0
	3	2	24.04	23.93	24.13		0
	3	3	24.02	23.96	23.91		0
	6	0	23.05	22.91	23.06	0-1	1
16QAM	1	0	23.16	23.16	23.17	0-1	1
	1	2	23.05	23.07	23.06		1
	1	5	23.04	23.06	23.10		1
	3	0	23.02	23.00	23.05		1
	3	2	23.01	22.99	23.03		1
	3	3	23.14	22.98	23.03		1
	6	0	22.08	21.97	22.04	0-2	2
64QAM	1	0	22.17	22.15	22.16	0-2	2
	1	2	22.05	22.06	22.04		2
	1	5	22.01	22.07	22.12		2
	3	0	22.02	21.93	22.11		2
	3	2	22.01	21.95	22.08		2
	3	3	22.13	22.00	22.03		2
	6	0	21.15	20.97	21.02	0-3	3

9.4.5 LTE Band 25 (PCS)

Table 9-18
LTE Band 25 (PCS) Conducted Powers - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26140 (1860.0 MHz)	26365 (1882.5 MHz)	26590 (1905.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.09	24.18	24.18	0	0
	1	50	23.68	23.90	24.06		0
	1	99	23.76	24.02	24.06		0
	50	0	23.03	23.00	23.06	0-1	1
	50	25	22.89	22.94	23.14		1
	50	50	22.83	22.89	23.10		1
	100	0	22.96	22.89	23.13		1
16QAM	1	0	23.16	23.17	23.20	0-1	1
	1	50	23.06	23.20	23.08		1
	1	99	23.20	23.04	23.05		1
	50	0	22.08	22.04	22.16	0-2	2
	50	25	22.00	21.95	22.18		2
	50	50	21.89	21.91	22.11		2
	100	0	21.94	21.91	22.19		2
64QAM	1	0	22.08	22.01	22.17	0-2	2
	1	50	22.01	22.01	22.11		2
	1	99	22.02	22.11	22.07		2
	50	0	21.06	21.03	21.15	0-3	3
	50	25	20.94	20.96	21.17		3
	50	50	20.87	20.86	21.19		3
	100	0	20.94	20.91	21.18		3

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Table 9-19
LTE Band 25 (PCS) Conducted Powers - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26115 (1857.5 MHz)	26365 (1882.5 MHz)	26615 (1907.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.03	24.15	24.19	0	0
	1	36	23.64	23.89	24.08		0
	1	74	23.76	24.03	24.07		0
	36	0	23.01	23.05	23.09	0-1	1
	36	18	22.97	22.87	23.10		1
	36	37	22.81	22.94	23.16		1
	75	0	22.99	22.91	23.13		1
16QAM	1	0	23.12	23.10	23.02	0-1	1
	1	36	23.09	23.18	23.12		1
	1	74	23.16	23.03	22.99		1
	36	0	22.07	21.98	22.14	0-2	2
	36	18	21.95	21.87	22.15		2
	36	37	21.83	21.95	22.11		2
	75	0	21.91	21.90	22.00		2
64QAM	1	0	22.14	22.06	21.98	0-2	2
	1	36	22.06	22.19	22.19		2
	1	74	22.06	22.05	21.97		2
	36	0	21.00	21.02	21.09	0-3	3
	36	18	20.98	20.85	21.18		3
	36	37	20.79	20.97	21.12		3
	75	0	20.98	20.95	21.00		3

Table 9-20
LTE Band 25 (PCS) Conducted Powers - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26090 (1855.0 MHz)	26365 (1882.5 MHz)	26640 (1910.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.08	24.13	24.13	0	0
	1	25	23.68	23.96	24.09		0
	1	49	23.76	24.10	23.99		0
	25	0	23.04	22.99	23.01	0-1	1
	25	12	22.90	23.00	23.17		1
	25	25	22.83	22.82	23.09		1
16QAM	50	0	22.98	22.87	23.12	1	
	1	0	23.16	23.13	23.17	0-1	1
	1	25	23.06	23.13	23.13		1
	1	49	23.13	23.08	23.05		1
	25	0	22.08	22.05	22.17	0-2	2
	25	12	22.03	22.02	22.14		2
25	25	21.93	21.91	22.11	2		
64QAM	50	0	21.92	21.97	22.13	2	
	1	0	22.14	22.15	22.10	0-2	2
	1	25	22.09	22.12	22.09		2
	1	49	22.11	22.06	22.11		2
	25	0	21.08	21.11	21.09	0-3	3
	25	12	21.04	21.00	21.12		3
25	25	20.96	20.93	21.14	3		
	50	0	20.95	20.95	21.16		3

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Table 9-21
LTE Band 25 (PCS) Conducted Powers - 5 MHz Bandwidth

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26065 (1852.5 MHz)	26365 (1882.5 MHz)	26665 (1912.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.12	24.18	24.10	0	0
	1	12	23.73	23.96	24.07		0
	1	24	23.81	24.04	24.02		0
	12	0	22.98	22.96	23.05	0-1	1
	12	6	22.82	22.97	23.12		1
	12	13	22.76	22.86	23.10		1
16QAM	25	0	22.96	22.87	23.18	0-1	1
	1	0	23.18	23.20	23.18		1
	1	12	23.06	23.13	23.07		1
	1	24	23.13	23.07	23.05	0-2	1
	12	0	22.05	22.06	22.15		2
	12	6	21.93	21.93	22.13		2
64QAM	12	13	21.85	21.91	22.08	0-2	2
	25	0	22.02	21.91	22.00		2
	1	0	22.04	22.07	22.16	0-2	2
	1	12	22.07	22.07	22.08		2
	1	24	22.15	22.08	22.05	0-3	2
	12	0	21.00	21.10	21.19		3
12	6	20.90	20.88	21.17	3		
64QAM	12	13	20.79	20.95	21.06	0-3	3
	25	0	21.04	20.87	21.16		3

Table 9-22
LTE Band 25 (PCS) Conducted Powers - 3 MHz Bandwidth

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26055 (1851.5 MHz)	26365 (1882.5 MHz)	26675 (1913.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.03	24.03	24.20	0	0
	1	7	23.63	23.89	24.07		0
	1	14	23.68	24.10	24.06		0
	8	0	23.01	22.99	23.08	0-1	1
	8	4	22.94	23.02	23.14		1
	8	7	22.78	22.82	23.09		1
16QAM	15	0	23.03	22.91	23.14	0-1	1
	1	0	23.09	23.19	23.01		1
	1	7	23.04	23.14	23.10		1
	1	14	23.17	23.10	22.99	0-2	1
	8	0	22.09	22.09	21.60		2
	8	4	21.95	21.91	22.16		2
64QAM	8	7	21.97	21.88	22.07	0-2	2
	15	0	21.93	21.87	22.20		2
	1	0	22.03	22.19	21.99		0-2
	1	7	22.02	22.03	22.13	2	
	1	14	22.19	22.17	22.03	0-3	
	8	0	21.13	21.16	20.66		3
8	4	20.98	20.90	21.15	3		
64QAM	8	7	20.93	20.89	21.10	0-3	3
	15	0	20.99	20.92	21.19		3

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Table 9-23
LTE Band 25 (PCS) Conducted Powers -1.4 MHz Bandwidth

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26047 (1850.7 MHz)	26365 (1882.5 MHz)	26683 (1914.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.10	24.00	24.12	0	0
	1	2	23.65	23.96	24.06		0
	1	5	23.80	24.05	24.04		0
	3	0	24.09	24.04	24.11		0
	3	2	23.88	23.94	24.11		0
	3	3	23.87	23.90	24.12		0
	6	0	22.93	22.83	23.08		0
16QAM	1	0	23.14	23.09	23.15	0-1	1
	1	2	23.05	23.13	23.12		1
	1	5	23.17	22.99	23.08		1
	3	0	22.99	23.06	23.17		1
	3	2	22.94	23.00	23.05		1
	3	3	22.97	23.01	23.10		1
	6	0	21.87	21.93	22.16		2
64QAM	1	0	22.09	22.16	22.16	0-2	2
	1	2	22.03	22.12	22.17		2
	1	5	22.20	22.00	22.05		2
	3	0	21.98	22.03	22.00		2
	3	2	21.89	22.01	21.98		2
	3	3	21.90	22.05	22.16		2
	6	0	20.89	20.99	21.20		3

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LTE Band 30

Table 9-24
LTE Band 30 Conducted Powers - 10 MHz Bandwidth

LTE Band 30 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			27710 (2310.0 MHz) Conducted Power [dBm]		
QPSK	1	0	23.01	0	0
	1	25	22.80		0
	1	49	22.77		0
	25	0	22.11	0-1	1
	25	12	22.00		1
	25	25	21.95		1
16QAM	50	0	21.98	0-1	1
	1	0	22.20		1
	1	25	22.02		1
	1	49	21.99	0-2	1
	25	0	21.16		2
	25	12	20.99		2
64QAM	25	25	20.97	0-2	2
	50	0	20.96		2
	1	0	20.95	0-2	2
	1	25	20.88		2
	1	49	20.80		2
	25	0	19.68	0-3	3
	25	12	19.88		3
	25	25	19.85		3
	50	0	19.80		3

Table 9-25
LTE Band 30 Conducted Powers - 5 MHz Bandwidth

LTE Band 30 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			27710 (2310.0 MHz) Conducted Power [dBm]		
QPSK	1	0	23.00	0	0
	1	12	22.99		0
	1	24	22.68		0
	12	0	21.60	0-1	1
	12	6	21.88		1
	12	13	21.84		1
16QAM	25	0	21.78	0-1	1
	1	0	21.79		1
	1	12	21.96		1
	1	24	21.68	0-2	1
	12	0	20.75		2
	12	6	20.79		2
64QAM	12	13	20.77	0-2	2
	25	0	20.80		2
	1	0	20.90	0-2	2
	1	12	20.91		2
	1	24	20.77		2
	12	0	19.88	0-3	3
	12	6	19.89		3
	12	13	19.75		3
	25	0	19.78		3

Note: LTE Band 30 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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LTE Band 7

Table 9-26
LTE Band 7 Conducted Powers - 20 MHz Bandwidth

LTE Band 7 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20850 (2510.0 MHz)	21100 (2535.0 MHz)	21350 (2560.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.10	24.99	25.12	0	0
	1	50	24.81	24.81	24.87		0
	1	99	24.73	24.74	24.78		0
	50	0	23.91	23.98	23.90	0-1	1
	50	25	23.87	23.96	23.84		1
	50	50	23.77	23.87	23.76		1
16QAM	100	0	23.88	23.95	23.81	0-1	1
	1	0	24.15	24.19	24.20		1
	1	50	24.07	24.08	24.15		1
	1	99	24.02	23.98	24.12	0-2	1
	50	0	22.93	23.04	22.97		2
	50	25	22.87	22.97	22.85		2
64QAM	50	50	22.82	22.89	22.78	0-2	2
	100	0	22.86	22.93	22.82		2
	1	0	23.10	23.16	23.19		2
	1	50	23.07	23.13	23.20	0-2	2
	1	99	23.04	23.07	23.12		2
	50	0	21.98	22.12	21.98		3
64QAM	50	25	21.88	22.05	21.84	0-3	3
	50	50	21.81	21.91	21.77		3
	100	0	21.78	21.94	21.78		3

Table 9-27
LTE Band 7 Conducted Powers - 15 MHz Bandwidth

LTE Band 7 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20825 (2507.5 MHz)	21100 (2535.0 MHz)	21375 (2562.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.89	24.91	24.64	0	0
	1	36	24.69	24.63	24.53		0
	1	74	24.62	24.53	24.64		0
	36	0	23.95	23.83	23.73	0-1	1
	36	18	23.81	23.80	23.69		1
	36	37	23.77	23.70	23.64		1
	75	0	23.79	23.77	23.66		1
16QAM	1	0	24.05	24.17	24.01	0-1	1
	1	36	24.04	24.01	23.91		1
	1	74	23.99	23.94	23.84		1
	36	0	22.96	22.85	22.78	0-2	2
	36	18	22.81	22.79	22.72		2
	36	37	22.74	22.73	22.60		2
	75	0	22.80	22.76	22.69		2
64QAM	1	0	23.03	23.10	23.02	0-2	2
	1	36	22.98	23.01	22.88		2
	1	74	23.02	22.94	22.86		2
	36	0	22.04	21.90	21.74	0-3	3
	36	18	21.89	21.83	21.70		3
	36	37	21.76	21.72	21.62		3
	75	0	21.83	21.77	21.68		3

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Table 9-28
LTE Band 7 Conducted Powers - 10 MHz Bandwidth

LTE Band 7 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20800 (2505.0 MHz)	21100 (2535.0 MHz)	21400 (2565.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.84	24.86	24.71	0	0
	1	25	24.73	24.75	24.58		0
	1	49	24.62	24.67	24.51		0
	25	0	23.89	23.81	23.73	0-1	1
	25	12	23.90	23.83	23.72		1
	25	25	23.74	23.76	23.61		1
	50	0	23.89	23.80	23.68		1
16QAM	1	0	24.20	24.15	24.14	0-1	1
	1	25	24.11	24.04	24.04		1
	1	49	23.98	23.94	23.96		1
	25	0	22.92	22.83	22.73	0-2	2
	25	12	22.89	22.82	22.73		2
	25	25	22.78	22.74	22.64		2
	50	0	22.87	22.83	22.69		2
64QAM	1	0	23.10	23.18	23.18	0-2	2
	1	25	23.07	23.02	23.06		2
	1	49	22.97	22.88	22.97		2
	25	0	21.95	21.80	21.71	0-3	3
	25	12	21.84	21.85	21.75		3
	25	25	21.73	21.74	21.67		3
	50	0	21.95	21.91	21.72		3

Table 9-29
LTE Band 7 Conducted Powers -5 MHz Bandwidth

LTE Band 7 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20775 (2502.5 MHz)	21100 (2535.0 MHz)	21425 (2567.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.83	24.80	24.59	0	0
	1	12	24.88	24.74	24.52		0
	1	24	24.83	24.70	24.45		0
	12	0	23.90	23.80	23.65	0-1	1
	12	6	23.91	23.78	23.66		1
	12	13	23.82	23.78	23.60		1
16QAM	25	0	23.88	23.77	23.65	1	
	1	0	24.12	24.02	23.90	0-1	1
	1	12	24.15	24.00	23.88		1
	1	24	24.07	23.94	23.85		1
	12	0	22.95	22.79	22.78	0-2	2
	12	6	22.99	22.81	22.80		2
12	13	22.88	22.78	22.74	2		
64QAM	25	0	22.88	22.85	22.67	2	
	1	0	23.12	23.09	22.89	0-2	2
	1	12	23.09	23.07	22.81		2
	1	24	23.06	22.88	22.81		2
	12	0	22.01	21.75	21.78	0-3	3
	12	6	21.98	21.74	21.82		3
12	13	21.85	21.81	21.76	3		
	25	0	21.86	21.85	21.67	3	

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LTE Band 41

Table 9-30
LTE Band 41 Power Class 3 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	25.17	25.05	25.16	24.92	25.02	0	0
	1	50	24.84	24.77	24.91	24.81	24.75		0
	1	99	24.76	24.59	24.82	24.82	24.79		0
	50	0	24.05	23.90	23.98	23.91	23.91	0-1	1
	50	25	23.89	23.83	23.92	23.87	23.82		1
	50	50	23.82	23.77	23.79	23.80	23.84		1
	100	0	23.88	23.85	23.88	23.90	23.82		1
16QAM	1	0	24.10	23.86	24.16	23.91	23.86	0-1	1
	1	50	23.80	23.63	23.93	23.79	23.60		1
	1	99	23.74	23.46	23.84	23.76	23.60		1
	50	0	23.03	22.92	22.99	22.94	22.88	0-2	2
	50	25	22.88	22.85	22.93	22.86	22.79		2
	50	50	22.81	22.77	22.86	22.77	22.81		2
	100	0	22.85	22.87	22.91	22.88	22.81		2
64QAM	1	0	23.09	22.83	23.18	22.97	22.82	0-2	2
	1	50	22.81	22.59	22.91	22.87	22.62		2
	1	99	22.71	22.51	22.84	22.80	22.66		2
	50	0	22.06	21.85	22.04	22.00	21.91	0-3	3
	50	25	21.88	21.76	21.90	21.91	21.76		3
	50	50	21.84	21.77	21.83	21.75	21.82		3
	100	0	21.76	21.82	21.97	21.91	21.80		3

Table 9-31
LTE Band 41 Power Class 3 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	25.02	24.90	25.00	24.90	24.90	0	0
	1	36	24.88	24.75	24.84	24.75	24.87		0
	1	74	24.71	24.70	24.75	24.76	24.77		0
	36	0	24.00	23.86	23.88	23.88	23.85	0-1	1
	36	18	23.95	23.81	23.89	23.86	23.89		1
	36	37	23.82	23.73	23.81	23.77	23.83		1
	75	0	23.96	23.87	23.82	23.82	23.90		1
16QAM	1	0	24.01	23.87	24.01	23.90	23.87	0-1	1
	1	36	23.86	23.72	23.86	23.75	23.82		1
	1	74	23.72	23.63	23.76	23.74	23.71		1
	36	0	22.98	22.86	22.92	22.86	22.82	0-2	2
	36	18	22.97	22.80	22.90	22.86	22.87		2
	36	37	22.79	22.72	22.80	22.78	22.77		2
	75	0	22.93	22.80	22.86	22.84	22.89		2
64QAM	1	0	22.98	22.81	22.94	22.86	22.82	0-2	2
	1	36	22.78	22.76	22.77	22.69	22.75		2
	1	74	22.76	22.62	22.77	22.78	22.77		2
	36	0	22.05	21.81	21.94	21.88	21.92	0-3	3
	36	18	21.98	21.86	21.88	21.88	21.88		3
	36	37	21.79	21.66	21.80	21.81	21.77		3
	75	0	21.93	21.81	21.92	21.83	21.87		3

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Table 9-32
LTE Band 41 Power Class 3 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	24.97	24.88	24.94	24.88	24.84	0	0
	1	25	24.91	24.74	24.83	24.78	24.82		0
	1	49	24.75	24.71	24.78	24.82	24.77		0
	25	0	23.94	23.81	23.89	23.87	23.91	0-1	1
	25	12	23.97	23.86	23.86	23.87	23.86		1
	25	25	23.90	23.75	23.78	23.78	23.82		1
50	0	23.94	23.80	23.85	23.83	23.82	1		
16QAM	1	0	23.94	23.82	24.07	23.87	23.73	0-1	1
	1	25	23.89	23.73	23.96	23.77	23.77		1
	1	49	23.75	23.64	23.88	23.82	23.73		1
	25	0	23.01	22.84	22.88	22.87	22.92	0-2	2
	25	12	22.98	22.82	22.88	22.87	22.90		2
	25	25	22.93	22.79	22.80	22.81	22.84		2
50	0	22.93	22.83	22.90	22.83	22.92	2		
64QAM	1	0	22.95	22.84	23.00	22.83	22.76	0-2	2
	1	25	22.96	22.77	22.97	22.75	22.78		2
	1	49	22.70	22.61	22.86	22.81	22.72		2
	25	0	21.97	21.90	21.85	21.87	21.97	0-3	3
	25	12	21.98	21.82	21.93	21.88	21.91		3
	25	25	21.86	21.83	21.77	21.83	21.85		3
50	0	22.00	21.76	21.97	21.81	21.92	3		

Table 9-33
LTE Band 41 Power Class 3 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	24.91	24.80	24.80	24.82	24.76	0	0
	1	12	24.87	24.81	24.79	24.80	24.86		0
	1	24	24.73	24.73	24.72	24.73	24.82		0
	12	0	23.92	23.81	23.88	23.84	23.88	0-1	1
	12	6	23.98	23.85	23.86	23.84	23.85		1
	12	13	23.92	23.76	23.82	23.81	23.83		1
25	0	23.93	23.75	23.84	23.81	23.82			
16QAM	1	0	23.84	23.75	23.93	23.75	23.68	0-1	1
	1	12	23.83	23.69	23.90	23.72	23.77		1
	1	24	23.68	23.67	23.82	23.68	23.76		1
	12	0	22.96	22.79	22.91	22.84	22.84	0-2	2
	12	6	22.97	22.81	22.91	22.88	22.87		2
	12	13	22.94	22.75	22.88	22.79	22.77		2
25	0	22.91	22.82	22.83	22.81	22.89			
64QAM	1	0	22.91	22.76	22.91	22.74	22.67	0-2	2
	1	12	22.87	22.71	22.94	22.69	22.81		2
	1	24	22.67	22.69	22.77	22.66	22.76		2
	12	0	21.95	21.72	21.93	21.77	21.85	0-3	3
	12	6	22.03	21.78	21.81	21.89	21.90		3
	12	13	21.90	21.83	21.87	21.78	21.79		3
25	0	21.95	21.81	21.79	21.75	21.93			

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Table 9-34
LTE Band 41 Power Class 2 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	26.96	26.76	26.89	26.95	26.77	0	0
	1	50	26.64	26.56	26.72	26.83	26.57		0
	1	99	26.59	26.45	26.66	26.88	26.56		0
	50	0	25.87	25.69	25.80	25.86	25.70	0-1	1
	50	25	25.57	25.64	25.76	25.78	25.65		1
	50	50	25.52	25.56	25.73	25.73	25.61		1
16QAM	100	0	25.59	25.66	25.77	25.79	25.64	0-1	1
	1	0	26.00	25.99	26.00	26.00	25.98		1
	1	50	25.93	25.80	25.83	25.99	25.78		1
	1	99	25.85	25.68	25.78	25.89	25.80	0-2	1
	50	0	24.86	24.71	24.86	24.89	24.69		2
	50	25	24.63	24.63	24.80	24.84	24.62		2
64QAM	50	50	24.56	24.58	24.72	24.78	24.63	0-2	2
	100	0	24.59	24.66	24.78	24.78	24.62		2
	1	0	25.00	24.96	25.00	24.97	24.96		0-2
	1	50	24.97	24.73	24.81	24.96	24.82	2	
	1	99	24.86	24.63	24.79	24.82	24.80	2	
	64QAM	50	0	23.87	23.67	23.80	23.87	23.68	0-3
50		25	23.58	23.59	23.79	23.90	23.54	3	
50		50	23.57	23.60	23.65	23.78	23.70	3	
100		0	23.52	23.72	23.75	23.74	23.58	3	

Table 9-35
LTE Band 41 Power Class 2 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	26.64	26.66	26.72	26.87	26.74	0	0
	1	36	26.49	26.53	26.59	26.73	26.67		0
	1	74	26.31	26.47	26.48	26.73	26.58		0
	36	0	25.66	25.58	25.72	25.78	25.62	0-1	1
	36	18	25.64	25.54	25.71	25.70	25.67		1
	36	37	25.43	25.47	25.62	25.67	25.61		1
	75	0	25.61	25.53	25.67	25.66	25.62		1
16QAM	1	0	25.89	26.00	25.96	25.80	25.98	0-1	1
	1	36	25.79	25.84	25.83	25.88	25.92		1
	1	74	25.58	25.82	25.80	25.90	25.78		1
	36	0	24.65	24.56	24.74	24.75	24.62	0-2	2
	36	18	24.62	24.57	24.71	24.73	24.69		2
	36	37	24.40	24.47	24.63	24.62	24.58		2
	75	0	24.61	24.52	24.69	24.69	24.63		2
64QAM	1	0	24.93	25.00	24.96	24.81	25.00	0-2	2
	1	36	24.79	24.84	24.84	24.88	24.98		2
	1	74	24.63	24.82	24.86	24.87	24.76		2
	36	0	23.64	23.58	23.74	23.84	23.57	0-3	3
	36	18	23.62	23.59	23.69	23.70	23.71		3
	36	37	23.43	23.43	23.58	23.65	23.66		3
	75	0	23.62	23.52	23.69	23.79	23.61		3

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Table 9-36
LTE Band 41 Power Class 2 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	26.64	26.65	26.74	26.69	26.60	0	0
	1	25	26.56	26.59	26.67	26.61	26.62		0
	1	49	26.45	26.57	26.61	26.66	26.57		0
	25	0	25.68	25.58	25.70	25.72	25.67	0-1	1
	25	12	25.71	25.58	25.72	25.70	25.64		1
	25	25	25.64	25.53	25.68	25.68	25.52		1
16QAM	50	0	25.68	25.56	25.70	25.69	25.62	1	
	1	0	25.92	25.97	25.99	25.95	25.90	0-1	1
	1	25	25.85	25.93	25.94	25.88	25.97		1
	1	49	25.69	25.86	25.94	25.92	25.94		1
	25	0	24.71	24.61	24.74	24.74	24.68	0-2	2
	25	12	24.70	24.60	24.75	24.72	24.66		2
25	25	24.66	24.55	24.71	24.68	24.65	2		
64QAM	50	0	24.69	24.60	24.75	24.68	24.66	2	
	1	0	24.83	24.95	24.96	24.96	24.93	0-2	2
	1	25	24.81	24.91	25.00	24.86	24.96		2
	1	49	24.64	24.90	25.00	25.00	24.98		2
	25	0	23.68	23.62	23.75	23.72	23.65	0-3	3
	25	12	23.73	23.65	23.80	23.73	23.65		3
25	25	23.63	23.53	23.77	23.62	23.68	3		
	50	0	23.72	23.67	23.69	23.66	23.59	3	

Table 9-37
LTE Band 41 Power Class 2 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	26.60	26.59	26.66	26.64	26.55	0	0
	1	12	26.61	26.57	26.64	26.63	26.62		0
	1	24	26.45	26.49	26.55	26.57	26.59		0
	12	0	25.67	25.58	25.73	25.70	25.62	0-1	1
	12	6	25.70	25.60	25.70	25.70	25.66		1
	12	13	25.64	25.55	25.69	25.69	25.56		1
	25	0	25.63	25.57	25.67	25.70	25.60		1
16QAM	1	0	25.82	25.81	25.80	25.89	25.78	0-1	1
	1	12	25.80	25.77	25.81	25.84	25.81		1
	1	24	25.67	25.76	25.77	25.83	25.83		1
	12	0	24.72	24.59	24.80	24.76	24.66	0-2	2
	12	6	24.75	24.63	24.85	24.80	24.65		2
	12	13	24.67	24.57	24.76	24.71	24.59		2
	25	0	24.65	24.62	24.69	24.67	24.67		2
64QAM	1	0	24.89	24.85	24.77	24.92	24.85	0-2	2
	1	12	24.79	24.77	24.74	24.90	24.79		2
	1	24	24.61	24.81	24.77	24.81	24.81		2
	12	0	23.75	23.57	23.82	23.82	23.69	0-3	3
	12	6	23.77	23.70	23.79	23.73	23.61		3
	12	13	23.68	23.60	23.74	23.68	23.58		3
	25	0	23.68	23.60	23.63	23.68	23.66		3

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9.4.9 LTE Carrier Aggregation Conducted Powers

Table 9-38
Two Component Carrier Conducted Powers

	PCC									SCC				Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2A-12A (1)	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B12	10	5095	737.5	24.17	24.19
CA_2A-2A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B2	5	625	1932.5	24.08	24.19
CA_2A-17A	LTE B2	5	18925	1882.5	QPSK	1	0	925	1962.5	LTE B17	10	5790	740	24.01	24.18
CA_2A-4A (2)	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B4	20	2175	2132.5	24.06	24.19
CA_2A-5A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B5	10	2525	881.5	24.07	24.19
CA_2A-29A (2)	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B29	10	9715	722.5	24.09	24.19
CA_2A-13A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B13	10	5230	751	24.06	24.19
CA_2A-66A (2)	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B66	20	66786	2145	24.08	24.19
CA_2A-12A (1)	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B2	20	900	1960	25.10	25.12
CA_4A-12A (2)	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B4	20	2175	2132.5	25.13	25.12
CA_12A-30A	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B30	10	9820	2355	25.16	25.12
CA_7A-12A	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B7	20	3100	2655	25.20	25.12
CA_12A-66A (2)	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B66	20	66786	2145	25.18	25.12
CA_2A-17A	LTE B17	10	23790	710	QPSK	1	49	5790	740	LTE B2	10	900	1960	25.01	25.12
CA_4A-17A	LTE B17	10	23790	710	QPSK	1	49	5790	740	LTE B4	10	2175	2132.5	25.00	25.12
CA_4A-12A (2)	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B12	10	5095	737.5	24.18	24.20
CA_2A-4A (2)	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B2	20	900	1960	24.06	24.20
CA_4A-4A	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B4	5	2375	2152.5	24.05	24.20
CA_4A-13A	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B13	10	5230	751	24.08	24.20
CA_4A-17A	LTE B4	10	20000	1715	QPSK	1	0	2000	2115	LTE B17	10	5790	740	24.00	24.19
CA_4A-29A (2)	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B29	10	9715	722.5	24.07	24.20
CA_4A-5A (1)	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B5	10	2525	881.5	24.05	24.20
CA_2A-66A (2)	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B2	20	900	1960	24.20	24.20
CA_5A-66A	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B5	10	2525	881.5	24.19	24.20
CA_66A-66A	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B66	5	67311	2197.5	24.18	24.20
CA_12A-66A (2)	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B12	10	5095	737.5	24.18	24.20
CA_13A-66A	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B13	10	5230	751	24.19	24.20
CA_66B	LTE B66	10	132022	1715	QPSK	1	0	66486	2115	LTE B66	10	66585	2124.9	24.12	24.19
CA_66C	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B66	20	66734	2139.8	24.20	24.20
CA_12A-30A	LTE B30	10	27710	2310	QPSK	1	0	9820	2355	LTE B12	10	5095	737.5	23.09	23.01
CA_5A-30A	LTE B30	10	27710	2310	QPSK	1	0	9820	2355	LTE B5	10	2525	881.5	23.05	23.01
CA_29A-30A	LTE B30	10	27710	2310	QPSK	1	0	9820	2355	LTE B29	10	9715	722.5	23.10	23.01
CA_2A-13A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B2	20	900	1960	25.53	25.44
CA_4A-13A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B4	20	2175	2132.5	25.51	25.44
CA_13A-66A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B66	20	66786	2145	25.52	25.44
CA_5B	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B5	10	2574	886.4	25.56	25.49
CA_5A-30A	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B30	10	9820	2355	25.49	25.49
CA_2A-5A	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B2	20	900	1960	25.35	25.49
CA_5A-7A (1)	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B7	20	3100	2655	25.36	25.49
CA_5A-66A	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B66	20	66786	2145	25.33	25.49
CA_4A-5A (1)	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B4	20	2175	2132.5	25.40	25.49
CA_7A-7A (1)	LTE B7	20	21350	2560	QPSK	1	0	3350	2680	LTE B7	5	2775	2622.5	25.14	25.12
CA_7C (1)	LTE B7	20	21350	2560	QPSK	1	0	3350	2680	LTE B7	20	3152	2660.2	25.10	25.12
CA_5A-7A (1)	LTE B7	20	21350	2560	QPSK	1	0	3350	2680	LTE B5	10	2525	881.5	25.20	25.12
CA_7A-12A	LTE B7	20	21350	2560	QPSK	1	0	3350	2680	LTE B12	10	5095	737.5	25.18	25.12
CA_25A-25A (1)	LTE B25	15	26615	1907.5	QPSK	1	0	8615	1987.5	LTE B25	5	8065	1932.5	24.15	24.19
CA_41A-41A (1)	LTE B41	20	39750	2506	QPSK	1	0	39750	2506	LTE B41	5	41565	2687.5	25.15	25.17
CA_41C (3)	LTE B41	20	39750	2506	QPSK	1	0	39750	2506	LTE B41	20	39948	2525.8	25.19	25.17
CA_2A-30A	LTE B30	10	27710	2310	QPSK	1	0	9820	2355	LTE B2	20	900	1960	23.10	23.01
CA_4A-30A	LTE B30	10	27710	2310	QPSK	1	0	9820	2355	LTE B4	20	2175	2132.5	23.06	23.01
CA_4A-7A (1)	LTE B7	20	21350	2560	QPSK	1	0	3350	2680	LTE B4	20	2175	2132.5	25.11	25.12
CA_2A-7A	LTE B7	20	21350	2560	QPSK	1	0	3350	2680	LTE B2	20	900	1960	25.12	25.12
CA_2A-30A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B30	10	9820	2355	24.15	24.19
CA_4A-30A	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B30	10	9820	2355	24.19	24.20
CA_4A-7A (1)	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B7	20	3100	2655	24.20	24.20
CA_2A-7A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B7	20	3100	2655	24.16	24.19
CA_41A-41A (1)	LTE B41 (PC 2)	20	39750	2506	QPSK	1	0	39750	2506	LTE B41	5	41565	2687.5	26.98	26.96
CA_41C (1)	LTE B41 (PC 2)	20	39750	2506	QPSK	1	0	39750	2506	LTE B41	20	39948	2525.8	26.90	26.96

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Table 9-39
Three Component Carrier Conducted Powers

Combination	PCC Band	PCC					SCC 1				SCC 2				Power				
		PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)	
CA 2A-4A-7A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B4	20	2175	2132.5	LTE B7	20	3100	2655	24.16	24.19
CA 2A-5A-66A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B5	10	2525	881.5	LTE B66	20	66786	2145	24.15	24.19
CA 2A-29A-30A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B29	10	9715	722.5	LTE B30	10	9820	2355	24.08	24.19
CA 2A-5A-30A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B5	10	2525	881.5	LTE B30	10	9820	2355	24.15	24.19
CA 2A-12A-30A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B12	10	5095	737.5	LTE B30	10	9820	2355	24.19	24.19
CA 2A-2A-5A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B2	5	625	1932.5	LTE B5	10	2525	881.5	24.11	24.19
CA 2A-2A-12A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B2	5	625	1932.5	LTE B12	10	5095	737.5	24.13	24.19
CA 2A-2A-13A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B2	5	625	1932.5	LTE B13	10	5230	751	24.14	24.19
CA 2A-4A-4A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B4	5	2175	2132.5	LTE B4	5	2375	2152.5	24.10	24.19
CA 2A-4A-5A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B4	20	2175	2132.5	LTE B5	10	2525	881.5	24.09	24.19
CA 2A-4A-12A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B4	20	2175	2132.5	LTE B12	10	5095	737.5	24.13	24.19
CA 2A-4A-13A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B4	20	2175	2132.5	LTE B13	10	5230	751	24.12	24.19
CA 2A-4A-29A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B4	20	2175	2132.5	LTE B29	10	9715	722.5	24.10	24.19
CA 2A-13A-66A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B13	10	5230	751	LTE B66	20	66786	2145	24.12	24.19
CA 2A-12A-66A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B12	10	5095	737.5	LTE B66	20	66786	2145	24.13	24.19
CA 2A-66A-66A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B66	5	66786	2145	LTE B66	5	67311	2197.5	24.12	24.19
CA 2A-66C	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B66	20	66786	2145	LTE B66	20	66984	2164.8	24.11	24.19
CA 41D	LTE B41	20	39750	2506	QPSK	1	0	39750	2506	LTE B41	20	39948	2525.8	LTE B41	20	40146	2545.6	25.11	25.17
CA 41A-41C	LTE B41	20	39750	2506	QPSK	1	0	39750	2506	LTE B41	20	41292	2660.2	LTE B41	20	41490	2680	25.10	25.17
CA 41C-41A	LTE B41	20	39750	2506	QPSK	1	0	39750	2506	LTE B41	20	39948	2525.8	LTE B41	5	41565	2687.5	25.07	25.17
CA 2A-4A-4A	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B2	20	900	1960	LTE B4	5	2375	2152.5	24.12	24.20
CA 2A-4A-5A	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B2	20	900	1960	LTE B5	10	2525	881.5	24.10	24.20
CA 2A-4A-12A	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B2	20	900	1960	LTE B12	10	5095	737.5	24.11	24.20
CA 2A-4A-13A	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B2	20	900	1960	LTE B13	10	5230	751	24.09	24.20
CA 2A-4A-29A	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B2	20	900	1960	LTE B29	10	9715	722.5	24.11	24.20
CA 4A-4A-5A	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B4	5	2375	2152.5	LTE B5	10	2525	881.5	24.10	24.20
CA 4A-4A-12A	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B4	5	2375	2152.5	LTE B12	10	5095	737.5	24.11	24.20
CA 4A-4A-13A	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B4	5	2375	2152.5	LTE B13	10	5230	751	24.13	24.20
CA 2A-4A-7A	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B2	20	900	1960	LTE B7	20	3100	2655	24.16	24.20
CA 4A-29A-30A	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B29	10	9715	722.5	LTE B30	10	9820	2355	24.18	24.20
CA 4A-5A-30A	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B5	10	2525	881.5	LTE B30	10	9820	2355	24.11	24.20
CA 4A-7A-12A	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B7	20	3100	2655	LTE B12	10	5095	737.5	24.20	24.20
CA 4A-12A-30A	LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B12	10	5095	737.5	LTE B30	10	9820	2355	24.19	24.20
CA 2A-30A-66A	LTE B30	10	27710	2310	QPSK	1	0	9820	2355	LTE B2	20	900	1960	LTE B66	20	66786	2145	23.06	23.01
CA 4A-29A-30A	LTE B30	10	27710	2310	QPSK	1	0	9820	2355	LTE B4	20	2175	2132.5	LTE B29	10	9715	722.5	23.16	23.01
CA 4A-5A-30A	LTE B30	10	27710	2310	QPSK	1	0	9820	2355	LTE B4	20	2175	2132.5	LTE B5	10	2525	881.5	23.14	23.01
CA 4A-12A-30A	LTE B30	10	27710	2310	QPSK	1	0	9820	2355	LTE B4	20	2175	2132.5	LTE B12	10	5095	737.5	23.18	23.01
CA 2A-5A-30A	LTE B30	10	27710	2310	QPSK	1	0	9820	2355	LTE B2	20	900	1960	LTE B5	10	2525	881.5	23.10	23.01
CA 2A-12A-30A	LTE B30	10	27710	2310	QPSK	1	0	9820	2355	LTE B2	20	900	1960	LTE B12	10	5095	737.5	23.04	23.01
CA 2A-29A-30A	LTE B30	10	27710	2310	QPSK	1	0	9820	2355	LTE B2	20	900	1960	LTE B29	10	9715	722.5	23.03	23.01
CA 2A-4A-7A	LTE B7	20	21350	2560	QPSK	1	0	3350	2680	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	25.19	25.12
CA 4A-7A-12A	LTE B7	20	21350	2560	QPSK	1	0	3350	2680	LTE B4	20	2175	2132.5	LTE B12	10	5095	737.5	25.18	25.12
CA 2A-5A-66A	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B2	20	900	1960	LTE B5	10	2525	881.5	24.19	24.20
CA 13A-66C	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B13	10	5230	751	LTE B66	20	66734	2139.8	24.18	24.20
CA 12A-66A-66A	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B12	10	5095	737.5	LTE B66	5	67311	2197.5	24.20	24.20
CA 2A-13A-66A	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B2	20	900	1960	LTE B13	10	5230	751	24.20	24.20
CA 2A-12A-66A	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B2	20	900	1960	LTE B12	10	5095	737.5	24.19	24.20
CA 2A-66A-66A	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B2	20	900	1960	LTE B66	5	67311	2197.5	24.17	24.20
CA 2A-66C	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B2	20	900	1960	LTE B66	20	66734	2139.8	24.20	24.20
CA 5A-66A-66A	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B5	10	2525	881.5	LTE B66	5	67311	2197.5	24.17	24.20
CA 5A-66C	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B5	10	2525	881.5	LTE B66	20	66734	2139.8	24.19	24.20
CA 12A-66C	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B12	10	5095	737.5	LTE B66	20	66734	2139.8	24.18	24.20
CA 13A-66A-66A	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B13	10	5230	751	LTE B66	5	67311	2197.5	24.16	24.20
CA 66A-66C	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B66	20	67186	2185	LTE B66	5	67303	2196.7	24.20	24.20
CA 66C-66A	LTE B66	20	132072	1720	QPSK	1	0	66536	2120	LTE B66	5	67311	2197.5	LTE B66	5	66653	2131.7	24.19	24.20
CA 2A-5A-66A	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B2	20	900	1960	LTE B66	20	66786	2145	25.50	25.49
CA 4A-5A-30A	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B4	20	2175	2132.5	LTE B30	10	9820	2355	25.39	25.49
CA 2A-5A-30A	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B2	20	900	1960	LTE B30	10	9820	2355	25.44	25.49
CA 2A-2A-5A	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B2	5	900	1960	LTE B2	5	625	1932.5	25.39	25.49
CA 2A-4A-5A	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	25.41	25.49
CA 4A-4A-5A	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B4	5	2175	2132.5	LTE B4	5	1975	2112.5	25.42	25.49
CA 5A-66A-66A	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B66	5	66786	2145	LTE B66	5	67311	2197.5	25.40	25.49
CA 5A-66C	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B66	20	66786	2145	LTE B66	20	66984	2164.8	25.49	25.49
CA 2A-2A-12A	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B2	5	900	1960	LTE B2	5	625	1932.5	25.20	25.12
CA 2A-4A-12A	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B2	20	900	1960	LTE B4	20	2175	2		

1. The device only supports downlink Carrier Aggregation. For every supported combination of downlink carrier aggregation, power measurements were performed with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.
2. All control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
3. For every supported combination of downlink carrier aggregation, power measurements were performed with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.
4. All control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
5. Per FCC guidance, LTE B26 standalone powers were used to select measurement configurations for LTE B5, LTE Band 25 standalone powers were used to select measurement configurations for LTE Band 2, LTE Band 66 standalone powers were used to select measurement configurations for LTE B4, and LTE Band 12 standalone powers were used to select measurement configurations for LTE B17.
6. For downlink carrier aggregation combinations, PCC uplink channel was selected based on section C)3)b)ii) of KBD 941225 D05 V01r02. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation. For inter-band CA, the SCC downlink channels were selected near the middle of their transmission bands. For contiguous intra-band CA, the downlink channel spacing between the component carriers was set to multiple of 300 kHz less than the nominal channel spacing defined in section 5.4.1A of 3GPP TS 36.521. For non-contiguous intra-band CA, the downlink channel spacing between the component carriers was set to be larger than the nominal channel spacing and provided maximum separation between the component carriers. All selected downlink channels remained fully within the downlink transmission band of the respective component carrier.

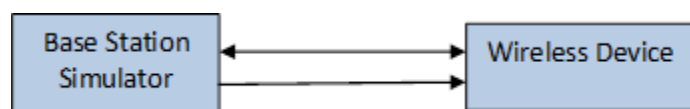


Figure 9-4
Power Measurement Setup

9.5 WLAN Conducted Powers

Table 9-40
2.4 GHz WLAN Ant 1 Maximum Average RF Power

2.4GHz Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11b	802.11g
2412	1	19.40	14.92
2422	3	N/A	16.29
2437	6	19.07	16.10
2452	9	N/A	15.82
2462	11	19.28	15.40

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Table 9-41
2.4 GHz WLAN Ant 2 Maximum Average RF Power

2.4GHz Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11b	802.11g
2412	1	19.03	14.79
2422	3	N/A	16.47
2437	6	19.08	16.35
2452	9	N/A	16.60
2462	11	19.30	15.43

Table 9-42
5 GHz WLAN Ant 1 Maximum Average RF Power

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
5180	36	16.09	15.85	15.86
5200	40	15.90	15.74	15.68
5220	44	15.81	15.64	15.62
5240	48	15.59	15.48	15.41
5260	52	15.50	15.30	15.23
5280	56	15.54	15.39	15.42
5300	60	15.32	15.06	15.08
5320	64	15.34	15.05	15.25
5500	100	16.43	16.28	16.21
5580	116	15.70	15.61	15.60
5660	132	15.84	15.70	15.71
5720	144	15.83	15.73	15.70
5745	149	15.79	15.69	15.67
5785	157	15.79	15.52	15.58
5825	165	15.85	15.73	15.74

Table 9-43
5 GHz WLAN Ant 2 Maximum Average RF Power

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
5180	36	15.04	14.89	14.92
5200	40	14.88	14.72	14.70
5220	44	14.89	14.70	14.73
5240	48	15.21	15.04	15.15
5260	52	15.20	15.05	15.10
5280	56	14.97	14.90	14.89
5300	60	14.94	14.90	14.83
5320	64	14.84	14.74	14.71
5500	100	15.84	15.77	15.71
5580	116	14.70	14.53	14.55
5660	132	14.87	14.72	14.67
5720	144	16.49	16.36	16.34
5745	149	16.40	16.15	16.13
5785	157	16.25	16.06	16.00
5825	165	16.49	16.46	16.34

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Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02:

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

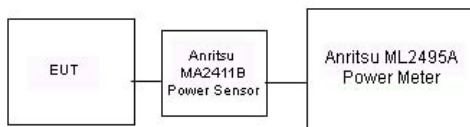


Figure 9-5

Power Measurement Setup for Bandwidths < 50 MHz

9.6 Bluetooth Conducted Powers

Table 9-44

Bluetooth Average RF Power

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	10.01	10.016
2441	1.0	39	9.57	9.050
2480	1.0	78	9.59	9.106
2402	2.0	0	9.22	8.348
2441	2.0	39	8.77	7.532
2480	2.0	78	8.90	7.770
2402	3.0	0	9.26	8.430
2441	3.0	39	8.82	7.620
2480	3.0	78	8.96	7.862

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

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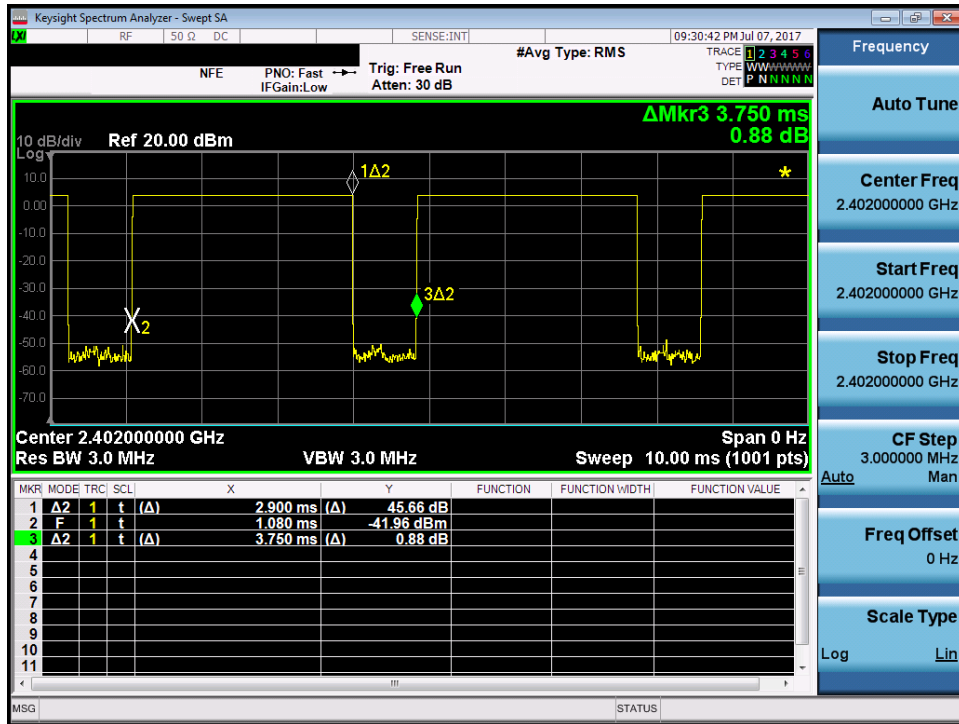


Figure 9-6
Bluetooth Transmission Plot

Equation 2
Bluetooth Duty Cycle Calculation

$$\text{Duty Cycle} = \frac{\text{Pulse Width}}{\text{Period}} * 100\% = \frac{2.900\text{ms}}{3.750\text{ms}} * 100\% = 77.3\%$$

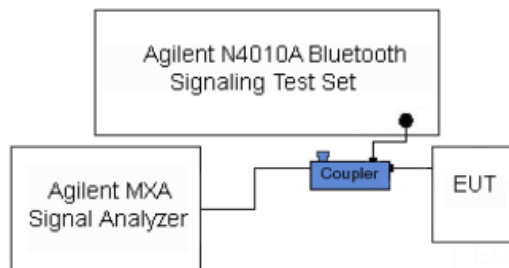


Figure 9-7
Power Measurement Setup

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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
7/10/2017	750H	24.4	700	0.854	42.374	0.889	42.201	-3.94%	0.41%
			710	0.865	42.237	0.890	42.149	-2.81%	0.21%
			740	0.894	41.854	0.893	41.994	0.11%	-0.33%
			755	0.907	41.669	0.894	41.916	1.45%	-0.59%
			770	0.920	41.471	0.895	41.838	2.79%	-0.88%
			785	0.932	41.274	0.896	41.760	4.02%	-1.16%
6/22/2017	835H	25.0	820	0.859	41.191	0.899	41.578	-4.45%	-0.93%
			835	0.872	41.030	0.900	41.500	-3.11%	-1.13%
			850	0.885	40.871	0.916	41.500	-3.38%	-1.52%
7/28/2017	835H	21.6	820	0.894	42.612	0.899	41.578	-0.56%	2.49%
			835	0.907	42.421	0.900	41.500	0.78%	2.22%
			850	0.921	42.229	0.916	41.500	0.55%	1.76%
6/26/2017	1750H	21.0	1710	1.361	38.578	1.348	40.142	0.96%	-3.90%
			1750	1.403	38.373	1.371	40.079	2.33%	-4.26%
			1790	1.439	38.205	1.394	40.016	3.23%	-4.53%
6/26/2017	1900H	21.5	1850	1.379	40.337	1.400	40.000	-1.50%	0.84%
			1880	1.412	40.196	1.400	40.000	0.86%	0.49%
			1910	1.444	40.082	1.400	40.000	3.14%	0.21%
6/28/2017	1900H	21.6	1850	1.397	39.761	1.400	40.000	-0.21%	-0.60%
			1880	1.429	39.643	1.400	40.000	2.07%	-0.89%
			1910	1.459	39.530	1.400	40.000	4.21%	-1.18%
			2400	1.793	39.150	1.756	39.289	2.11%	-0.35%
			2450	1.848	38.974	1.800	39.200	2.67%	-0.58%
6/26/2017	2450H	23.0	2500	1.904	38.783	1.855	39.136	2.64%	-0.90%
			2550	1.960	38.623	1.909	39.073	2.67%	-1.15%
			2600	2.014	38.417	1.964	39.009	2.55%	-1.52%
			2650	2.071	38.243	2.018	38.945	2.63%	-1.80%
			2700	2.128	38.049	2.073	38.882	2.65%	-2.14%
			2400	1.786	38.448	1.756	39.289	1.71%	-2.14%
			2450	1.836	38.270	1.800	39.200	2.00%	-2.37%
6/29/2017	2450H	21.8	2500	1.896	38.054	1.855	39.136	2.21%	-2.76%
			2550	1.955	37.903	1.909	39.073	2.41%	-2.99%
			2600	2.006	37.692	1.964	39.009	2.14%	-3.38%
			2650	2.068	37.523	2.018	38.945	2.48%	-3.65%
			2700	2.121	37.345	2.073	38.882	2.32%	-3.95%
			2300	1.721	39.641	1.670	39.500	3.05%	0.36%
			2310	1.733	39.609	1.679	39.480	3.22%	0.33%
7/3/2017	2450H	22.0	2320	1.744	39.562	1.687	39.460	3.38%	0.26%
			2400	1.831	39.251	1.756	39.289	4.27%	-0.10%
			2450	1.888	39.091	1.800	39.200	4.89%	-0.28%
			2500	1.944	38.880	1.855	39.136	4.80%	-0.65%
7/6/2017	2450H	22.1	2400	1.827	38.736	1.756	39.289	4.04%	-1.41%
			2450	1.881	38.554	1.800	39.200	4.50%	-1.65%
			2500	1.940	38.328	1.855	39.136	4.58%	-2.06%
06/28/2017	5200H-5800H	21.0	5240	4.546	36.017	4.696	35.940	-3.19%	0.21%
			5260	4.559	36.005	4.717	35.917	-3.35%	0.25%
			5280	4.575	35.974	4.737	35.894	-3.42%	0.22%
			5500	4.793	35.703	4.963	35.643	-3.43%	0.17%
			5600	4.907	35.541	5.065	35.529	-3.12%	0.03%
			5700	5.014	35.426	5.168	35.414	-2.98%	0.03%
			5745	5.053	35.359	5.214	35.363	-3.09%	-0.01%
			5765	5.077	35.384	5.234	35.340	-3.00%	0.12%
			5825	5.153	35.274	5.296	35.271	-2.70%	0.01%

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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
7/4/2017	750B	24.2	700	0.917	55.914	0.959	55.726	-4.38%	0.34%
			710	0.925	55.775	0.960	55.687	-3.65%	0.16%
			740	0.954	55.578	0.963	55.570	-0.93%	0.01%
			755	0.970	55.462	0.964	55.512	0.62%	-0.09%
			770	0.983	55.433	0.965	55.453	1.87%	-0.04%
			785	0.999	55.264	0.966	55.395	3.42%	-0.24%
7/24/2017	750B	23.5	700	0.912	55.492	0.959	55.726	-4.90%	-0.42%
			710	0.921	55.402	0.960	55.687	-4.06%	-0.51%
			740	0.949	55.110	0.963	55.570	-1.45%	-0.83%
			755	0.963	54.956	0.964	55.512	-0.10%	-1.00%
6/27/2017	835B	20.4	820	0.977	53.273	0.969	55.258	0.83%	-3.59%
			835	0.991	53.110	0.970	55.200	2.16%	-3.79%
			850	1.005	52.963	0.988	55.154	1.72%	-3.97%
7/3/2017	835B	18.8	820	0.977	53.780	0.969	55.258	0.83%	-2.67%
			835	0.995	53.599	0.970	55.200	2.58%	-2.90%
			850	1.008	53.427	0.988	55.154	2.02%	-3.13%
7/22/2017	835B	20.9	820	1.001	54.446	0.969	55.258	3.30%	-1.47%
			835	1.018	54.215	0.970	55.200	4.95%	-1.78%
			850	1.036	54.166	0.988	55.154	4.86%	-1.79%
6/23/2017	1750B	25.0	1710	1.407	52.265	1.463	53.537	-3.83%	-2.38%
			1750	1.456	52.155	1.488	53.432	-2.15%	-2.39%
			1790	1.497	51.932	1.514	53.326	-1.12%	-2.61%
6/26/2017	1750B	20.0	1710	1.491	51.736	1.463	53.537	1.91%	-3.36%
			1750	1.535	51.537	1.488	53.432	3.16%	-3.55%
			1790	1.584	51.393	1.514	53.326	4.62%	-3.62%
6/20/2017	1900B	21.3	1850	1.513	51.297	1.520	53.300	-0.46%	-3.76%
			1880	1.545	51.183	1.520	53.300	1.64%	-3.97%
			1910	1.582	51.123	1.520	53.300	4.08%	-4.08%
6/27/2017	1900B	22.5	1850	1.510	53.192	1.520	53.300	-0.66%	-0.20%
			1880	1.542	53.146	1.520	53.300	1.45%	-0.29%
			1910	1.575	53.059	1.520	53.300	3.62%	-0.45%
7/1/2017	1900B	22.5	1850	1.518	52.398	1.520	53.300	-0.13%	-1.69%
			1880	1.553	52.311	1.520	53.300	2.17%	-1.86%
			1910	1.588	52.193	1.520	53.300	4.47%	-2.08%
7/3/2017	2450B	22.7	2400	1.931	51.285	1.902	52.767	1.52%	-2.81%
			2450	1.999	51.139	1.950	52.700	2.51%	-2.96%
			2500	2.068	50.934	2.021	52.636	2.33%	-3.23%
7/5/2017	2450B	23.6	2300	1.817	51.859	1.809	52.900	0.44%	-1.97%
			2310	1.829	51.817	1.816	52.887	0.72%	-2.02%
			2320	1.842	51.780	1.826	52.873	0.88%	-2.07%
			2400	1.953	51.492	1.902	52.767	2.68%	-2.42%
			2450	2.016	51.287	1.950	52.700	3.38%	-2.68%
			2500	2.088	51.087	2.021	52.636	3.32%	-2.94%
			2550	2.160	50.920	2.092	52.573	3.25%	-3.14%
			2600	2.221	50.709	2.163	52.509	2.68%	-3.43%
			2650	2.293	50.552	2.234	52.445	2.64%	-3.61%
			2700	2.358	50.373	2.305	52.382	2.30%	-3.84%
7/5/2017	2450B	22.6	2400	1.894	51.393	1.902	52.767	-0.42%	-2.60%
			2450	1.967	51.248	1.950	52.700	0.87%	-2.76%
			2500	2.034	51.044	2.021	52.636	0.64%	-3.02%
			2550	2.105	50.843	2.092	52.573	0.62%	-3.29%
			2600	2.179	50.674	2.163	52.509	0.74%	-3.49%
			2650	2.248	50.461	2.234	52.445	0.63%	-3.78%
			2700	2.318	50.264	2.305	52.382	0.56%	-4.04%
07/03/2017	5200B-5800B	21.7	5180	5.329	47.516	5.276	49.041	1.00%	-3.11%
			5240	5.416	47.361	5.346	48.960	1.31%	-3.27%
			5260	5.442	47.354	5.369	48.933	1.36%	-3.23%
			5280	5.459	47.299	5.393	48.906	1.22%	-3.29%
			5500	5.748	46.887	5.650	48.607	1.73%	-3.54%
			5600	5.882	46.749	5.766	48.471	2.01%	-3.55%
			5700	6.024	46.673	5.883	48.336	2.40%	-3.44%
			5745	6.070	46.587	5.936	48.275	2.26%	-3.50%
			5765	6.122	46.505	5.959	48.248	2.74%	-3.61%
			5825	6.199	46.453	6.029	48.166	2.82%	-3.56%

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 D01v01r04 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 10-3
System Verification Results – 1g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR _{1g} (W/kg)	1 W Target SAR _{1g} (W/kg)	1 W Normalized SAR _{1g} (W/kg)	Deviation _{1g} (%)
E	750	HEAD	07/10/2017	23.3	22.5	0.200	1003	3319	1.640	8.390	8.200	-2.26%
I	835	HEAD	06/22/2017	24.5	24.5	0.200	4d133	3213	1.930	9.320	9.650	3.54%
E	835	HEAD	07/28/2017	23.1	21.9	0.200	4d119	3319	1.880	9.460	9.400	-0.63%
E	1750	HEAD	06/26/2017	21.7	21.1	0.100	1148	3319	3.700	36.400	37.000	1.65%
J	1900	HEAD	06/26/2017	21.3	21.2	0.100	5d080	3209	3.820	39.300	38.200	-2.80%
J	1900	HEAD	06/28/2017	21.7	21.5	0.100	5d080	3209	4.010	39.300	40.100	2.04%
I	2300	HEAD	07/03/2017	21.9	22.0	0.100	1038	3213	4.920	47.500	49.200	3.58%
I	2450	HEAD	06/26/2017	22.0	21.4	0.100	981	3213	5.380	52.800	53.800	1.89%
I	2450	HEAD	06/29/2017	22.2	20.5	0.100	797	3213	5.350	52.100	53.500	2.69%
I	2450	HEAD	07/03/2017	21.9	22.0	0.100	797	3213	5.290	52.100	52.900	1.54%
I	2450	HEAD	07/06/2017	21.9	21.6	0.100	797	3213	5.500	52.100	55.000	5.57%
I	2600	HEAD	06/29/2017	22.2	20.5	0.100	1071	3213	5.740	56.300	57.400	1.95%
H	5250	HEAD	06/28/2017	21.7	21.0	0.050	1237	3914	3.730	79.200	74.600	-5.81%
H	5600	HEAD	06/28/2017	21.7	21.0	0.050	1237	3914	3.900	83.300	78.000	-6.36%
H	5750	HEAD	06/28/2017	21.7	21.0	0.050	1237	3914	3.920	81.500	78.400	-3.80%
E	750	BODY	07/04/2017	22.9	23.5	0.200	1161	3319	1.750	8.430	8.750	3.80%
K	750	BODY	07/24/2017	21.7	22.0	0.200	1054	7406	1.750	8.610	8.750	1.63%
K	835	BODY	06/27/2017	22.4	20.4	0.200	4d133	7406	2.060	9.500	10.300	8.42%
K	835	BODY	07/03/2017	20.3	19.0	0.200	4d133	7406	2.040	9.500	10.200	7.37%
J	835	BODY	07/22/2017	22.0	21.9	0.200	4d180	3209	2.050	9.610	10.250	6.66%
J	1750	BODY	06/23/2017	25.0	25.0	0.100	1092	3209	3.710	37.000	37.100	0.27%
K	1750	BODY	06/26/2017	22.1	19.9	0.100	1092	7406	3.940	37.000	39.400	6.49%
E	1900	BODY	06/20/2017	23.3	21.3	0.100	5d149	3319	4.060	39.900	40.600	1.75%
H	1900	BODY	06/27/2017	20.4	22.5	0.100	5d080	3318	4.170	39.100	41.700	6.65%
J	1900	BODY	07/01/2017	21.8	21.5	0.100	5d080	3209	3.990	39.100	39.900	2.05%
K	2300	BODY	07/05/2017	22.4	23.6	0.100	1038	7406	5.040	47.500	50.400	6.11%
G	2450	BODY	07/03/2017	20.0	22.6	0.100	981	3287	5.270	50.800	52.700	3.74%
K	2450	BODY	07/05/2017	22.4	23.6	0.100	797	7406	5.410	50.700	54.100	6.71%
G	2450	BODY	07/05/2017	20.0	22.6	0.100	981	3287	5.460	50.800	54.600	7.48%
K	2600	BODY	07/05/2017	22.4	23.6	0.100	1071	7406	5.330	54.200	53.300	-1.66%
G	2600	BODY	07/05/2017	20.0	22.6	0.100	1004	3287	5.850	55.300	58.500	5.79%
D	5250	BODY	07/03/2017	22.5	21.7	0.050	1123	3589	3.570	75.900	71.400	-5.93%
D	5600	BODY	07/03/2017	22.5	21.7	0.050	1123	3589	4.070	78.900	81.400	3.17%
D	5750	BODY	07/03/2017	22.5	21.7	0.050	1123	3589	3.690	76.300	73.800	-3.28%

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Table 10-4
System Verification Results – 10g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR _{10g} (W/kg)	1 W Target SAR _{10g} (W/kg)	1 W Normalized SAR _{10g} (W/kg)	Deviation _{10g} (%)
D	5250	BODY	07/03/2017	22.5	21.7	0.050	1123	3589	0.986	21.300	19.720	-7.42%
D	5600	BODY	07/03/2017	22.5	21.7	0.050	1123	3589	1.120	22.100	22.400	1.36%
D	5750	BODY	07/03/2017	22.5	21.7	0.050	1123	3589	1.020	21.300	20.400	-4.23%

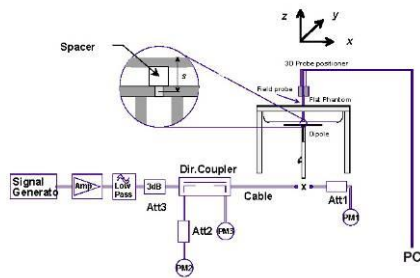


Figure 10-1
System Verification Setup Diagram



Figure 10-2
System Verification Setup Photo

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11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
Cell. CDMA BC10 (§90S) Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Ant State	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.2	25.16	0.01	Right	Cheek	60	13458	1:1	0.150	1.009	0.151	A1
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.2	25.16	0.07	Right	Tilt	60	13458	1:1	0.079	1.009	0.080	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.2	25.16	-0.15	Left	Cheek	60	13458	1:1	0.123	1.009	0.124	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.2	25.16	0.09	Left	Tilt	60	13458	1:1	0.063	1.009	0.064	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.2	25.09	0.02	Right	Cheek	60	13458	1:1	0.142	1.026	0.146	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.2	25.09	0.10	Right	Tilt	60	13458	1:1	0.062	1.026	0.064	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.2	25.09	0.06	Left	Cheek	60	13458	1:1	0.121	1.026	0.124	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.2	25.09	0.03	Left	Tilt	60	13458	1:1	0.060	1.026	0.062	
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
Cell. CDMA BC0 (§22H) Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Ant State	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.52	384	CDMA BC0 (\$22H)	RC3 / SO55	25.2	25.09	0.06	Right	Cheek	60	13458	1:1	0.128	1.026	0.131	
836.52	384	CDMA BC0 (\$22H)	RC3 / SO55	25.2	25.09	0.07	Right	Tilt	60	13458	1:1	0.051	1.026	0.052	
836.52	384	CDMA BC0 (\$22H)	RC3 / SO55	25.2	25.09	-0.10	Left	Cheek	60	13458	1:1	0.137	1.026	0.141	
836.52	384	CDMA BC0 (\$22H)	RC3 / SO55	25.2	25.09	0.02	Left	Tilt	60	13458	1:1	0.069	1.026	0.071	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.2	25.00	0.04	Right	Cheek	60	13458	1:1	0.139	1.047	0.146	A2
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.2	25.00	0.03	Right	Tilt	60	13458	1:1	0.059	1.047	0.062	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.2	25.00	0.02	Left	Cheek	60	13458	1:1	0.134	1.047	0.140	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.2	25.00	0.00	Left	Tilt	60	13458	1:1	0.062	1.047	0.065	
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 11-3
PCS CDMA Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	600	PCS CDMA	RC3 / SO55	24.7	24.57	0.02	Right	Cheek	14209	1:1	0.099	1.030	0.102	
1880.00	600	PCS CDMA	RC3 / SO55	24.7	24.57	0.14	Right	Tilt	14209	1:1	0.035	1.030	0.036	
1880.00	600	PCS CDMA	RC3 / SO55	24.7	24.57	-0.12	Left	Cheek	14209	1:1	0.073	1.030	0.075	
1880.00	600	PCS CDMA	RC3 / SO55	24.7	24.57	0.01	Left	Tilt	14209	1:1	0.032	1.030	0.033	
1880.00	600	PCS CDMA	EVDO Rev. A	24.7	24.54	-0.02	Right	Cheek	14209	1:1	0.099	1.038	0.103	A3
1880.00	600	PCS CDMA	EVDO Rev. A	24.7	24.54	0.18	Right	Tilt	14209	1:1	0.031	1.038	0.032	
1880.00	600	PCS CDMA	EVDO Rev. A	24.7	24.54	0.10	Left	Cheek	14209	1:1	0.062	1.038	0.064	
1880.00	600	PCS CDMA	EVDO Rev. A	24.7	24.54	-0.02	Left	Tilt	14209	1:1	0.034	1.038	0.035	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-4
GSM 850 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	33.7	33.56	0.16	Right	Cheek	13458	1	1:8.3	0.098	1.033	0.101	
836.60	190	GSM 850	GSM	33.7	33.56	0.14	Right	Tilt	13458	1	1:8.3	0.046	1.033	0.048	
836.60	190	GSM 850	GSM	33.7	33.56	0.10	Left	Cheek	13458	1	1:8.3	0.097	1.033	0.100	
836.60	190	GSM 850	GSM	33.7	33.56	0.02	Left	Tilt	13458	1	1:8.3	0.048	1.033	0.050	
836.60	190	GSM 850	GPRS	28.2	28.16	-0.01	Right	Cheek	13458	4	1:2.076	0.146	1.009	0.147	A4
836.60	190	GSM 850	GPRS	28.2	28.16	0.18	Right	Tilt	13458	4	1:2.076	0.070	1.009	0.071	
836.60	190	GSM 850	GPRS	28.2	28.16	-0.01	Left	Cheek	13458	4	1:2.076	0.126	1.009	0.127	
836.60	190	GSM 850	GPRS	28.2	28.16	0.04	Left	Tilt	13458	4	1:2.076	0.071	1.009	0.072	
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 11-5
GSM 1900 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	30.7	30.53	0.17	Right	Cheek	14191	1	1:8.3	0.062	1.040	0.064	
1880.00	661	GSM 1900	GSM	30.7	30.53	0.01	Right	Tilt	14191	1	1:8.3	0.028	1.040	0.029	
1880.00	661	GSM 1900	GSM	30.7	30.53	0.13	Left	Cheek	14191	1	1:8.3	0.055	1.040	0.057	
1880.00	661	GSM 1900	GSM	30.7	30.53	0.13	Left	Tilt	14191	1	1:8.3	0.036	1.040	0.037	
1880.00	661	GSM 1900	GPRS	25.7	25.69	0.02	Right	Cheek	14191	4	1:2.076	0.081	1.002	0.081	A5
1880.00	661	GSM 1900	GPRS	25.7	25.69	0.12	Right	Tilt	14191	4	1:2.076	0.032	1.002	0.032	
1880.00	661	GSM 1900	GPRS	25.7	25.69	0.15	Left	Cheek	14191	4	1:2.076	0.077	1.002	0.077	
1880.00	661	GSM 1900	GPRS	25.7	25.69	-0.01	Left	Tilt	14191	4	1:2.076	0.046	1.002	0.046	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-6
UMTS 850 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Ant State	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	4183	UMTS 850	RMC	25.0	24.95	-0.01	Right	Cheek	60	13458	1:1	0.156	1.012	0.158	A6
836.60	4183	UMTS 850	RMC	25.0	24.95	0.04	Right	Tilt	60	13458	1:1	0.075	1.012	0.076	
836.60	4183	UMTS 850	RMC	25.0	24.95	0.00	Left	Cheek	60	13458	1:1	0.142	1.012	0.144	
836.60	4183	UMTS 850	RMC	25.0	24.95	0.00	Left	Tilt	60	13458	1:1	0.070	1.012	0.071	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-7
UMTS 1750 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	24.7	24.70	0.12	Right	Cheek	13458	1:1	0.169	1.000	0.169	A7
1732.40	1412	UMTS 1750	RMC	24.7	24.70	0.08	Right	Tilt	13458	1:1	0.100	1.000	0.100	
1732.40	1412	UMTS 1750	RMC	24.7	24.70	-0.01	Left	Cheek	13458	1:1	0.159	1.000	0.159	
1732.40	1412	UMTS 1750	RMC	24.7	24.70	-0.15	Left	Tilt	13458	1:1	0.086	1.000	0.086	
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 11-8
UMTS 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	24.7	24.57	0.06	Right	Cheek	14209	1:1	0.091	1.030	0.094	A8
1880.00	9400	UMTS 1900	RMC	24.7	24.57	0.12	Right	Tilt	14209	1:1	0.035	1.030	0.036	
1880.00	9400	UMTS 1900	RMC	24.7	24.57	-0.03	Left	Cheek	14209	1:1	0.075	1.030	0.077	
1880.00	9400	UMTS 1900	RMC	24.7	24.57	0.06	Left	Tilt	14209	1:1	0.038	1.030	0.039	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-9
LTE Band 12 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Ant State	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.	(W/kg)															(W/kg)			
707.50	23095	Mid	LTE Band 12	10	25.2	25.12	0.04	0	Right	Cheek	69	QPSK	1	49	13474	1:1	0.087	1.019	0.089	A9
707.50	23095	Mid	LTE Band 12	10	24.2	24.20	-0.06	1	Right	Cheek	69	QPSK	25	0	13474	1:1	0.075	1.000	0.075	
707.50	23095	Mid	LTE Band 12	10	25.2	25.12	0.19	0	Right	Tilt	69	QPSK	1	49	13474	1:1	0.041	1.019	0.042	
707.50	23095	Mid	LTE Band 12	10	24.2	24.20	0.20	1	Right	Tilt	69	QPSK	25	0	13474	1:1	0.039	1.000	0.039	
707.50	23095	Mid	LTE Band 12	10	25.2	25.12	0.09	0	Left	Cheek	69	QPSK	1	49	13474	1:1	0.083	1.019	0.085	
707.50	23095	Mid	LTE Band 12	10	24.2	24.20	0.14	1	Left	Cheek	69	QPSK	25	0	13474	1:1	0.066	1.000	0.066	
707.50	23095	Mid	LTE Band 12	10	25.2	25.12	0.13	0	Left	Tilt	69	QPSK	1	49	13474	1:1	0.037	1.019	0.038	
707.50	23095	Mid	LTE Band 12	10	24.2	24.20	0.13	1	Left	Tilt	69	QPSK	25	0	13474	1:1	0.029	1.000	0.029	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-10
LTE Band 13 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Ant State	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
782.00	23230	Mid	LTE Band 13	10	25.7	25.44	0.08	0	Right	Cheek	12	QPSK	1	49	13474	1:1	0.130	1.062	0.138	A10
782.00	23230	Mid	LTE Band 13	10	24.7	24.56	0.02	1	Right	Cheek	12	QPSK	25	0	13474	1:1	0.104	1.033	0.107	
782.00	23230	Mid	LTE Band 13	10	25.7	25.44	0.12	0	Right	Tilt	12	QPSK	1	49	13474	1:1	0.076	1.062	0.081	
782.00	23230	Mid	LTE Band 13	10	24.7	24.56	0.10	1	Right	Tilt	12	QPSK	25	0	13474	1:1	0.062	1.033	0.064	
782.00	23230	Mid	LTE Band 13	10	25.7	25.44	0.13	0	Left	Cheek	12	QPSK	1	49	13474	1:1	0.112	1.062	0.119	
782.00	23230	Mid	LTE Band 13	10	24.7	24.56	0.07	1	Left	Cheek	12	QPSK	25	0	13474	1:1	0.109	1.033	0.113	
782.00	23230	Mid	LTE Band 13	10	25.7	25.44	0.13	0	Left	Tilt	12	QPSK	1	49	13474	1:1	0.058	1.062	0.062	
782.00	23230	Mid	LTE Band 13	10	24.7	24.56	0.12	1	Left	Tilt	12	QPSK	25	0	13474	1:1	0.059	1.033	0.061	
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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Table 11-11
LTE Band 26 (Cell) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR[dB]	Side	Test Position	Ant State	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.60	0.17	0	Right	Cheek	60	QPSK	1	0	13490	1:1	0.163	1.023	0.167	A11
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.68	0.03	1	Right	Cheek	60	QPSK	36	18	13490	1:1	0.128	1.005	0.129	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.60	-0.07	0	Right	Tilt	60	QPSK	1	0	13490	1:1	0.063	1.023	0.064	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.68	-0.07	1	Right	Tilt	60	QPSK	36	18	13490	1:1	0.055	1.005	0.055	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.60	-0.08	0	Left	Cheek	60	QPSK	1	0	13490	1:1	0.134	1.023	0.137	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.68	0.04	1	Left	Cheek	60	QPSK	36	18	13490	1:1	0.118	1.005	0.119	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.60	-0.06	0	Left	Tilt	60	QPSK	1	0	13490	1:1	0.062	1.023	0.063	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.68	0.01	1	Left	Tilt	60	QPSK	36	18	13490	1:1	0.056	1.005	0.056	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-12
LTE Band 66 (AWS) Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	-0.07	0	Right	Cheek	QPSK	1	0	13346	1:1	0.144	1.000	0.144	A12
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.2	23.19	0.12	1	Right	Cheek	QPSK	50	0	13346	1:1	0.126	1.002	0.126	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	0.07	0	Right	Tilt	QPSK	1	0	13346	1:1	0.092	1.000	0.092	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.2	23.19	0.03	1	Right	Tilt	QPSK	50	0	13346	1:1	0.072	1.002	0.072	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	0.05	0	Left	Cheek	QPSK	1	0	13346	1:1	0.143	1.000	0.143	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.2	23.19	0.08	1	Left	Cheek	QPSK	50	0	13346	1:1	0.111	1.002	0.111	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	0.08	0	Left	Tilt	QPSK	1	0	13346	1:1	0.085	1.000	0.085	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.2	23.19	0.03	1	Left	Tilt	QPSK	50	0	13346	1:1	0.067	1.002	0.067	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-13
LTE Band 25 (PCS) Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.18	0.12	0	Right	Cheek	QPSK	1	0	14209	1:1	0.121	1.005	0.122	A13
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.14	0.11	1	Right	Cheek	QPSK	50	25	14209	1:1	0.096	1.014	0.097	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.18	-0.16	0	Right	Tilt	QPSK	1	0	14209	1:1	0.033	1.005	0.033	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.14	0.07	1	Right	Tilt	QPSK	50	25	14209	1:1	0.029	1.014	0.029	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.18	-0.19	0	Left	Cheek	QPSK	1	0	14209	1:1	0.077	1.005	0.077	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.14	0.10	1	Left	Cheek	QPSK	50	25	14209	1:1	0.054	1.014	0.055	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.18	-0.12	0	Left	Tilt	QPSK	1	0	14209	1:1	0.035	1.005	0.035	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.14	-0.12	1	Left	Tilt	QPSK	50	25	14209	1:1	0.028	1.014	0.028	
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 11-14
LTE Band 30 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
2310.00	27710	Mid	LTE Band 30	10	23.2	23.01	0.11	0	Right	Cheek	QPSK	1	0	14183	1:1	0.195	1.045	0.204	A14
2310.00	27710	Mid	LTE Band 30	10	22.2	22.11	0.09	1	Right	Cheek	QPSK	25	0	14183	1:1	0.147	1.021	0.150	
2310.00	27710	Mid	LTE Band 30	10	23.2	23.01	0.03	0	Right	Tilt	QPSK	1	0	14183	1:1	0.054	1.045	0.056	
2310.00	27710	Mid	LTE Band 30	10	22.2	22.11	0.18	1	Right	Tilt	QPSK	25	0	14183	1:1	0.044	1.021	0.045	
2310.00	27710	Mid	LTE Band 30	10	23.2	23.01	0.04	0	Left	Cheek	QPSK	1	0	14183	1:1	0.092	1.045	0.096	
2310.00	27710	Mid	LTE Band 30	10	22.2	22.11	0.19	1	Left	Cheek	QPSK	25	0	14183	1:1	0.072	1.021	0.074	
2310.00	27710	Mid	LTE Band 30	10	23.2	23.01	-0.04	0	Left	Tilt	QPSK	1	0	14183	1:1	0.085	1.045	0.089	
2310.00	27710	Mid	LTE Band 30	10	22.2	22.11	0.01	1	Left	Tilt	QPSK	25	0	14183	1:1	0.061	1.021	0.062	
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 11-15
LTE Band 7 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
2560.00	21350	High	LTE Band 7	20	25.2	25.12	-0.01	0	Right	Cheek	QPSK	1	0	14191	1:1	0.250	1.019	0.255	A15
2535.00	21100	Mid	LTE Band 7	20	24.2	23.98	0.05	1	Right	Cheek	QPSK	50	0	14191	1:1	0.182	1.052	0.191	
2560.00	21350	High	LTE Band 7	20	25.2	25.12	0.01	0	Right	Tilt	QPSK	1	0	14191	1:1	0.103	1.019	0.105	
2535.00	21100	Mid	LTE Band 7	20	24.2	23.98	-0.12	1	Right	Tilt	QPSK	50	0	14191	1:1	0.072	1.052	0.076	
2560.00	21350	High	LTE Band 7	20	25.2	25.12	0.02	0	Left	Cheek	QPSK	1	0	14191	1:1	0.117	1.019	0.119	
2535.00	21100	Mid	LTE Band 7	20	24.2	23.98	0.11	1	Left	Cheek	QPSK	50	0	14191	1:1	0.086	1.052	0.090	
2560.00	21350	High	LTE Band 7	20	25.2	25.12	0.15	0	Left	Tilt	QPSK	1	0	14191	1:1	0.155	1.019	0.158	
2535.00	21100	Mid	LTE Band 7	20	24.2	23.98	0.11	1	Left	Tilt	QPSK	50	0	14191	1:1	0.115	1.052	0.121	
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 11-16
LTE Band 41 Head SAR

MEASUREMENT RESULTS																				
Power Class	FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
	MHz	Ch.														(W/kg)		(W/kg)		
Power Class 3	2506.00	39750	Low	LTE Band 41	20	25.2	25.17	0.12	0	Right	Cheek	QPSK	1	0	14183	1:1.58	0.209	1.007	0.210	A16
Power Class 2	2506.00	39750	Low	LTE Band 41	20	27.0	26.96	-0.01	0	Right	Cheek	QPSK	1	0	14183	1:2.309	0.204	1.009	0.206	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	24.2	24.05	0.15	1	Right	Cheek	QPSK	50	0	14183	1:1.58	0.115	1.035	0.119	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	25.2	25.17	-0.17	0	Right	Tilt	QPSK	1	0	14183	1:1.58	0.057	1.007	0.057	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	24.2	24.05	0.15	1	Right	Tilt	QPSK	50	0	14183	1:1.58	0.040	1.035	0.041	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	25.2	25.17	0.05	0	Left	Cheek	QPSK	1	0	14183	1:1.58	0.067	1.007	0.067	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	24.2	24.05	0.11	1	Left	Cheek	QPSK	50	0	14183	1:1.58	0.054	1.035	0.056	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	25.2	25.17	0.12	0	Left	Tilt	QPSK	1	0	14183	1:1.58	0.089	1.007	0.090	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	24.2	24.05	0.06	1	Left	Tilt	QPSK	50	0	14183	1:1.58	0.069	1.035	0.071	
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 11-17
DTS Head SAR**

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	19.5	19.40	0.01	Right	Cheek	1	13649	1	99.2	1.313	0.970	1.023	1.008	1.000	A17
2462	11	802.11b	DSSS	22	19.5	19.28	0.14	Right	Cheek	1	13649	1	99.2	0.994	0.782	1.052	1.008	0.829	
2412	1	802.11b	DSSS	22	19.5	19.40	0.09	Right	Tilt	1	13649	1	99.2	0.508	0.508	1.023	1.008	0.524	
2412	1	802.11b	DSSS	22	19.5	19.40	-0.20	Left	Cheek	1	13649	1	99.2	0.373	0.264	1.023	1.008	0.272	
2412	1	802.11b	DSSS	22	19.5	19.40	0.10	Left	Tilt	1	13649	1	99.2	0.204	0.190	1.023	1.008	0.196	
2462	11	802.11b	DSSS	22	19.5	19.30	-0.04	Right	Cheek	2	13649	1	99.3	0.269	0.252	1.047	1.007	0.266	
2462	11	802.11b	DSSS	22	19.5	19.30	0.13	Right	Tilt	2	13649	1	99.3	0.108	0.090	1.047	1.007	0.095	
2462	11	802.11b	DSSS	22	19.5	19.30	0.11	Left	Cheek	2	13649	1	99.3	0.857	0.621	1.047	1.007	0.655	
2462	11	802.11b	DSSS	22	19.5	19.30	0.16	Left	Tilt	2	13649	1	99.3	0.276	0.235	1.047	1.007	0.248	
2412	1	802.11b	DSSS	22	19.5	19.40	0.14	Right	Cheek	1	13649	1	99.2	1.069	0.877	1.023	1.008	0.904	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Note: Blue entry indicates variability measurement.

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Table 11-18
NII Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5280	56	802.11a	OFDM	20	16.5	15.54	0.14	Right	Cheek	1	13656	6	95.5	0.397	0.185	1.247	1.047	0.242	
5280	56	802.11a	OFDM	20	16.5	15.54	0.10	Right	Tilt	1	13656	6	95.5	0.198	0.135	1.247	1.047	0.176	
5280	56	802.11a	OFDM	20	16.5	15.54	0.19	Left	Cheek	1	13656	6	95.5	0.116	0.070	1.247	1.047	0.091	
5280	56	802.11a	OFDM	20	16.5	15.54	0.19	Left	Tilt	1	13656	6	95.5	0.067	0.064	1.247	1.047	0.084	
5260	52	802.11a	OFDM	20	16.5	15.20	0.17	Right	Cheek	2	13656	6	95.2	0.165	0.082	1.349	1.050	0.116	
5260	52	802.11a	OFDM	20	16.5	15.20	0.14	Right	Tilt	2	13656	6	95.2	0.097	0.051	1.349	1.050	0.072	
5260	52	802.11a	OFDM	20	16.5	15.20	0.16	Left	Cheek	2	13656	6	95.2	0.923	0.313	1.349	1.050	0.443	
5260	52	802.11a	OFDM	20	16.5	15.20	0.18	Left	Tilt	2	13656	6	95.2	0.236	0.107	1.349	1.050	0.152	
5500	100	802.11a	OFDM	20	16.5	16.43	0.14	Right	Cheek	1	13656	6	95.5	0.636	0.372	1.016	1.047	0.396	
5500	100	802.11a	OFDM	20	16.5	16.43	0.13	Right	Tilt	1	13656	6	95.5	0.643	0.267	1.016	1.047	0.284	
5500	100	802.11a	OFDM	20	16.5	16.43	0.11	Left	Cheek	1	13656	6	95.5	0.508	0.258	1.016	1.047	0.274	
5500	100	802.11a	OFDM	20	16.5	16.43	0.12	Left	Tilt	1	13656	6	95.5	0.502	0.235	1.016	1.047	0.250	
5720	144	802.11a	OFDM	20	16.5	16.49	0.19	Right	Cheek	2	13656	6	95.2	0.127	0.081	1.002	1.050	0.085	
5720	144	802.11a	OFDM	20	16.5	16.49	0.19	Right	Tilt	2	13656	6	95.2	0.096	0.071	1.002	1.050	0.075	
5720	144	802.11a	OFDM	20	16.5	16.49	0.14	Left	Cheek	2	13656	6	95.2	1.011	0.345	1.002	1.050	0.363	
5720	144	802.11a	OFDM	20	16.5	16.49	0.10	Left	Tilt	2	13656	6	95.2	0.297	0.200	1.002	1.050	0.210	
5825	165	802.11a	OFDM	20	16.5	15.85	0.13	Right	Cheek	1	13656	6	95.5	0.594	0.317	1.161	1.047	0.385	
5825	165	802.11a	OFDM	20	16.5	15.85	0.12	Right	Tilt	1	13656	6	95.5	0.606	0.214	1.161	1.047	0.260	
5825	165	802.11a	OFDM	20	16.5	15.85	0.16	Left	Cheek	1	13656	6	95.5	0.489	0.211	1.161	1.047	0.256	
5825	165	802.11a	OFDM	20	16.5	15.85	0.15	Left	Tilt	1	13656	6	95.5	0.495	0.207	1.161	1.047	0.252	
5825	165	802.11a	OFDM	20	16.5	16.49	0.16	Right	Cheek	2	13656	6	95.2	0.263	0.071	1.002	1.050	0.075	
5825	165	802.11a	OFDM	20	16.5	16.49	0.19	Right	Tilt	2	13656	6	95.2	0.136	0.070	1.002	1.050	0.074	
5825	165	802.11a	OFDM	20	16.5	16.49	0.16	Left	Cheek	2	13656	6	95.2	1.057	0.376	1.002	1.050	0.396	A18
5825	165	802.11a	OFDM	20	16.5	16.49	0.10	Left	Tilt	2	13656	6	95.2	0.351	0.188	1.002	1.050	0.198	
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 11-19
Bluetooth Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2402	0	Bluetooth	FHSS	11.0	10.01	-0.02	Right	Cheek	14183	1	77.3	0.067	1.256	1.294	0.109	A19
2402	0	Bluetooth	FHSS	11.0	10.01	0.02	Right	Tilt	14183	1	77.3	0.039	1.256	1.294	0.063	
2402	0	Bluetooth	FHSS	11.0	10.01	0.12	Left	Cheek	14183	1	77.3	0.024	1.256	1.294	0.039	
2402	0	Bluetooth	FHSS	11.0	10.01	0.12	Left	Tilt	14183	1	77.3	0.012	1.256	1.294	0.020	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram								

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11.2 Standalone Body-Worn SAR Data

Table 11-20
CDMA/GSM/UMTS Body-Worn SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Ant State	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
820.10	564	CDMABC10 (\$90S)	TDSO / SO32	25.2	25.01	0.00	10 mm	60	13058	N/A	1:1	back	0.234	1.045	0.245	A20
836.52	384	CDMABC0 (\$22H)	TDSO / SO32	25.2	25.04	-0.02	10 mm	60	13058	N/A	1:1	back	0.216	1.038	0.224	A22
1880.00	600	PCS CDMA	TDSO / SO32	24.7	24.46	-0.12	10 mm	N/A	14209	N/A	1:1	back	0.600	1.057	0.634	A24
836.60	190	GSM 850	GSM	33.7	33.56	0.02	10 mm	N/A	14191	1	1:8.3	back	0.226	1.033	0.233	
836.60	190	GSM 850	GPRS	28.2	28.16	-0.13	10 mm	N/A	14191	4	1:2.076	back	0.234	1.009	0.236	A26
1880.00	661	GSM 1900	GSM	30.7	30.53	-0.15	10 mm	N/A	14209	1	1:8.3	back	0.292	1.040	0.304	
1880.00	661	GSM 1900	GPRS	25.7	25.69	-0.15	10 mm	N/A	14209	4	1:2.076	back	0.354	1.002	0.355	A28
836.60	4183	UMTS 850	RMC	25.0	24.95	0.00	10 mm	58	14191	N/A	1:1	back	0.225	1.012	0.228	A30
1732.40	1412	UMTS 1750	RMC	24.7	24.70	-0.04	10 mm	N/A	13458	N/A	1:1	back	0.792	1.000	0.792	A32
1852.40	9262	UMTS 1900	RMC	24.7	24.70	0.05	10 mm	N/A	13466	N/A	1:1	back	0.773	1.000	0.773	
1880.00	9400	UMTS 1900	RMC	24.7	24.57	0.06	10 mm	N/A	13466	N/A	1:1	back	0.802	1.030	0.826	
1907.60	9538	UMTS 1900	RMC	24.7	24.69	0.00	10 mm	N/A	13466	N/A	1:1	back	0.819	1.002	0.821	A34
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 FDD Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Ant State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
707.50	23095	Mid	LTE Band 12	10	25.2	25.12	-0.07	0	59	14175	QPSK	1	49	10 mm	back	1:1	0.254	1.019	0.259	A36
707.50	23095	Mid	LTE Band 12	10	24.2	24.20	-0.04	1	59	14175	QPSK	25	0	10 mm	back	1:1	0.204	1.000	0.204	
782.00	23230	Mid	LTE Band 13	10	25.7	25.44	0.00	0	2	14209	QPSK	1	49	10 mm	back	1:1	0.215	1.062	0.228	A38
782.00	23230	Mid	LTE Band 13	10	24.7	24.56	0.01	1	2	14209	QPSK	25	0	10 mm	back	1:1	0.171	1.033	0.177	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.60	-0.03	0	0	14191	QPSK	1	0	10 mm	back	1:1	0.228	1.023	0.233	A39
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.68	0.04	1	0	14191	QPSK	36	18	10 mm	back	1:1	0.182	1.005	0.183	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	-0.02	0	N/A	13466	QPSK	1	0	10 mm	back	1:1	0.721	1.000	0.721	A41
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.2	23.19	0.00	1	N/A	13466	QPSK	50	0	10 mm	back	1:1	0.580	1.002	0.581	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.18	0.01	0	N/A	13466	QPSK	1	0	10 mm	back	1:1	0.718	1.005	0.722	A43
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.14	0.12	1	N/A	13466	QPSK	50	25	10 mm	back	1:1	0.561	1.014	0.569	
2310.00	27710	Mid	LTE Band 30	10	23.2	23.01	-0.01	0	N/A	14209	QPSK	1	0	10 mm	back	1:1	0.385	1.045	0.402	A45
2310.00	27710	Mid	LTE Band 30	10	22.2	22.11	-0.02	1	N/A	14209	QPSK	25	0	10 mm	back	1:1	0.300	1.021	0.306	
2560.00	21350	High	LTE Band 7	20	25.2	25.12	0.00	0	N/A	14191	QPSK	1	0	10 mm	back	1:1	0.352	1.019	0.359	A46
2535.00	21100	Mid	LTE Band 7	20	24.2	23.98	-0.01	1	N/A	14191	QPSK	50	0	10 mm	back	1:1	0.304	1.052	0.320	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram											

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Table 11-22
LTE TDD Body-Worn SAR

MEASUREMENT RESULTS																				
Power Class	FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
	MHz	Ch.														(W/kg)		(W/kg)		
Power Class 3	2506.00	39750	Low	LTE Band 41	20	25.2	25.17	-0.09	0	14183	QPSK	1	0	10 mm	back	1:1.58	0.336	1.007	0.338	A47
Power Class 2	2506.00	39750	Low	LTE Band 41	20	27.0	26.96	-0.11	0	14183	QPSK	1	0	10 mm	back	1:2.309	0.332	1.009	0.335	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	24.2	24.05	-0.03	1	14183	QPSK	50	0	10 mm	back	1:1.58	0.257	1.035	0.266	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-23
DTS Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	19.5	19.40	0.00	10 mm	1	13649	1	back	99.2	0.435	0.384	1.023	1.008	0.396	A48
2462	11	802.11b	DSSS	22	19.5	19.30	0.00	10 mm	2	13649	1	back	99.3	0.413	0.352	1.047	1.007	0.371	
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 11-24
NII Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5280	56	802.11a	OFDM	20	16.5	15.54	0.11	10 mm	1	13656	6	back	95.5	0.238	0.086	1.247	1.047	0.112	
5260	52	802.11a	OFDM	20	16.5	15.20	0.13	10 mm	2	13656	6	back	95.2	0.304	0.111	1.349	1.050	0.157	
5500	100	802.11a	OFDM	20	16.5	16.43	0.09	10 mm	1	13656	6	back	95.5	0.414	0.172	1.016	1.047	0.183	
5720	144	802.11a	OFDM	20	16.5	16.49	-0.02	10 mm	2	13656	6	back	95.2	0.561	0.232	1.002	1.050	0.244	
5825	165	802.11a	OFDM	20	16.5	15.85	0.13	10 mm	1	13656	6	back	95.5	0.301	0.108	1.161	1.047	0.131	
5825	165	802.11a	OFDM	20	16.5	16.49	0.18	10 mm	2	13656	6	back	95.2	0.773	0.301	1.002	1.050	0.317	A50
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 11-25
Bluetooth Body-Worn SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2402	0	Bluetooth	FHSS	11.0	10.01	0.10	10 mm	13656	1	back	77.3	0.029	1.256	1.294	0.047	A51
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 Hotspot SAR Data

Table 11-26
CDMA/GPRS/UMTS Hotspot SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Ant State	Device Serial Number	# of GPRS Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. 0	25.2	25.07	0.03	10 mm	60	14209	N/A	1:1	back	0.225	1.030	0.232	A21
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. 0	25.2	25.07	-0.01	10 mm	60	14209	N/A	1:1	front	0.190	1.030	0.196	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. 0	25.2	25.07	-0.17	10 mm	60	14209	N/A	1:1	bottom	0.089	1.030	0.092	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. 0	25.2	25.07	-0.12	10 mm	60	14209	N/A	1:1	right	0.220	1.030	0.227	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. 0	25.2	25.07	-0.08	10 mm	60	14209	N/A	1:1	left	0.143	1.030	0.147	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	25.2	25.14	-0.08	10 mm	60	13058	N/A	1:1	back	0.220	1.014	0.223	A23
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	25.2	25.14	-0.06	10 mm	60	13058	N/A	1:1	front	0.196	1.014	0.199	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	25.2	25.14	-0.08	10 mm	60	13058	N/A	1:1	bottom	0.086	1.014	0.087	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	25.2	25.14	-0.04	10 mm	60	13058	N/A	1:1	right	0.181	1.014	0.184	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	25.2	25.14	0.03	10 mm	60	13058	N/A	1:1	left	0.135	1.014	0.137	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.45	-0.07	10 mm	N/A	14209	N/A	1:1	back	0.660	1.059	0.699	A25
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.45	-0.01	10 mm	N/A	14209	N/A	1:1	front	0.524	1.059	0.555	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.45	-0.05	10 mm	N/A	14209	N/A	1:1	bottom	0.624	1.059	0.661	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.45	-0.01	10 mm	N/A	14209	N/A	1:1	left	0.233	1.059	0.247	
836.60	190	GSM 850	GPRS	28.2	28.16	-0.13	10 mm	N/A	14191	4	1:2.076	back	0.234	1.009	0.236	
836.60	190	GSM 850	GPRS	28.2	28.16	-0.02	10 mm	N/A	14191	4	1:2.076	front	0.198	1.009	0.200	
836.60	190	GSM 850	GPRS	28.2	28.16	0.02	10 mm	N/A	14191	4	1:2.076	bottom	0.084	1.009	0.085	
836.60	190	GSM 850	GPRS	28.2	28.16	0.00	10 mm	N/A	14191	4	1:2.076	right	0.266	1.009	0.268	A27
836.60	190	GSM 850	GPRS	28.2	28.16	-0.02	10 mm	N/A	14191	4	1:2.076	left	0.171	1.009	0.173	
1880.00	661	GSM 1900	GPRS	25.7	25.69	-0.15	10 mm	N/A	14209	4	1:2.076	back	0.354	1.002	0.355	
1880.00	661	GSM 1900	GPRS	25.7	25.69	-0.12	10 mm	N/A	14209	4	1:2.076	front	0.256	1.002	0.257	
1880.00	661	GSM 1900	GPRS	25.7	25.69	0.01	10 mm	N/A	14209	4	1:2.076	bottom	0.439	1.002	0.440	A29
1880.00	661	GSM 1900	GPRS	25.7	25.69	0.05	10 mm	N/A	14209	4	1:2.076	left	0.151	1.002	0.151	
836.60	4183	UMTS 850	RMC	25.0	24.95	0.00	10 mm	58	14191	N/A	1:1	back	0.225	1.012	0.228	
836.60	4183	UMTS 850	RMC	25.0	24.95	0.03	10 mm	58	14191	N/A	1:1	front	0.200	1.012	0.202	
836.60	4183	UMTS 850	RMC	25.0	24.95	-0.02	10 mm	58	14191	N/A	1:1	bottom	0.081	1.012	0.082	
836.60	4183	UMTS 850	RMC	25.0	24.95	0.00	10 mm	58	14191	N/A	1:1	right	0.253	1.012	0.256	A31
836.60	4183	UMTS 850	RMC	25.0	24.95	-0.01	10 mm	58	14191	N/A	1:1	left	0.161	1.012	0.163	
1732.40	1412	UMTS 1750	RMC	24.7	24.70	-0.04	10 mm	N/A	13458	N/A	1:1	back	0.792	1.000	0.792	
1732.40	1412	UMTS 1750	RMC	24.7	24.70	-0.03	10 mm	N/A	13458	N/A	1:1	front	0.660	1.000	0.660	
1712.40	1312	UMTS 1750	RMC	24.7	24.60	0.00	10 mm	N/A	13458	N/A	1:1	bottom	0.928	1.023	0.949	
1732.40	1412	UMTS 1750	RMC	24.7	24.70	0.00	10 mm	N/A	13458	N/A	1:1	bottom	1.000	1.000	1.000	
1752.60	1513	UMTS 1750	RMC	24.7	24.70	-0.01	10 mm	N/A	13458	N/A	1:1	bottom	1.040	1.000	1.040	A33
1732.40	1412	UMTS 1750	RMC	24.7	24.70	-0.02	10 mm	N/A	13458	N/A	1:1	left	0.380	1.000	0.380	
1852.40	9262	UMTS 1900	RMC	24.7	24.70	0.05	10 mm	N/A	13466	N/A	1:1	back	0.773	1.000	0.773	
1880.00	9400	UMTS 1900	RMC	24.7	24.57	0.06	10 mm	N/A	13466	N/A	1:1	back	0.802	1.030	0.826	
1907.60	9538	UMTS 1900	RMC	24.7	24.69	0.00	10 mm	N/A	13466	N/A	1:1	back	0.819	1.002	0.821	
1880.00	9400	UMTS 1900	RMC	24.7	24.57	-0.06	10 mm	N/A	13466	N/A	1:1	front	0.614	1.030	0.632	
1852.40	9262	UMTS 1900	RMC	24.7	24.70	-0.03	10 mm	N/A	13466	N/A	1:1	bottom	0.833	1.000	0.833	
1880.00	9400	UMTS 1900	RMC	24.7	24.57	-0.10	10 mm	N/A	13466	N/A	1:1	bottom	0.832	1.030	0.857	
1907.60	9538	UMTS 1900	RMC	24.7	24.69	-0.05	10 mm	N/A	13466	N/A	1:1	bottom	0.944	1.002	0.946	A35
1880.00	9400	UMTS 1900	RMC	24.7	24.57	-0.02	10 mm	N/A	13466	N/A	1:1	left	0.351	1.030	0.362	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram									

FCC ID: ZNFG011C			SAR EVALUATION REPORT		Approved by: Quality Manager
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Table 11-27
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Ant State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
707.50	23095	Mid	LTE Band 12	10	25.2	25.12	-0.07	0	59	14175	QPSK	1	49	10 mm	back	1:1	0.254	1.019	0.259	
707.50	23095	Mid	LTE Band 12	10	24.2	24.20	-0.04	1	59	14175	QPSK	25	0	10 mm	back	1:1	0.204	1.000	0.204	
707.50	23095	Mid	LTE Band 12	10	25.2	25.12	0.04	0	59	14175	QPSK	1	49	10 mm	front	1:1	0.190	1.019	0.194	
707.50	23095	Mid	LTE Band 12	10	24.2	24.20	-0.02	1	59	14175	QPSK	25	0	10 mm	front	1:1	0.154	1.000	0.154	
707.50	23095	Mid	LTE Band 12	10	25.2	25.12	0.08	0	59	14175	QPSK	1	49	10 mm	bottom	1:1	0.030	1.019	0.031	
707.50	23095	Mid	LTE Band 12	10	24.2	24.20	-0.09	1	59	14175	QPSK	25	0	10 mm	bottom	1:1	0.025	1.000	0.025	
707.50	23095	Mid	LTE Band 12	10	25.2	25.12	0.18	0	59	14175	QPSK	1	49	10 mm	right	1:1	0.262	1.019	0.267	A37
707.50	23095	Mid	LTE Band 12	10	24.2	24.20	0.01	1	59	14175	QPSK	25	0	10 mm	right	1:1	0.191	1.000	0.191	
707.50	23095	Mid	LTE Band 12	10	25.2	25.12	0.21	0	59	14175	QPSK	1	49	10 mm	left	1:1	0.149	1.019	0.152	
707.50	23095	Mid	LTE Band 12	10	24.2	24.20	0.01	1	59	14175	QPSK	25	0	10 mm	left	1:1	0.112	1.000	0.112	
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 11-28
LTE Band 13 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Ant State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
782.00	23230	Mid	LTE Band 13	10	25.7	25.44	0.00	0	2	14209	QPSK	1	49	10 mm	back	1:1	0.215	1.062	0.228	A39
782.00	23230	Mid	LTE Band 13	10	24.7	24.56	0.01	1	2	14209	QPSK	25	0	10 mm	back	1:1	0.171	1.033	0.177	
782.00	23230	Mid	LTE Band 13	10	25.7	25.44	0.00	0	2	14209	QPSK	1	49	10 mm	front	1:1	0.192	1.062	0.204	
782.00	23230	Mid	LTE Band 13	10	24.7	24.56	0.03	1	2	14209	QPSK	25	0	10 mm	front	1:1	0.162	1.033	0.167	
782.00	23230	Mid	LTE Band 13	10	25.7	25.44	0.05	0	2	14209	QPSK	1	49	10 mm	bottom	1:1	0.032	1.062	0.034	
782.00	23230	Mid	LTE Band 13	10	24.7	24.56	0.04	1	2	14209	QPSK	25	0	10 mm	bottom	1:1	0.026	1.033	0.027	
782.00	23230	Mid	LTE Band 13	10	25.7	25.44	-0.02	0	2	14209	QPSK	1	49	10 mm	right	1:1	0.213	1.062	0.226	
782.00	23230	Mid	LTE Band 13	10	24.7	24.56	0.02	1	2	14209	QPSK	25	0	10 mm	right	1:1	0.189	1.033	0.195	
782.00	23230	Mid	LTE Band 13	10	25.7	25.44	0.00	0	2	14209	QPSK	1	49	10 mm	left	1:1	0.168	1.062	0.178	
782.00	23230	Mid	LTE Band 13	10	24.7	24.56	-0.01	1	2	14209	QPSK	25	0	10 mm	left	1:1	0.141	1.033	0.146	
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 11-29
LTE Band 26 (Cell) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Ant State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.60	-0.03	0	0	14191	QPSK	1	0	10 mm	back	1:1	0.228	1.023	0.233	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.68	0.04	1	0	14191	QPSK	36	18	10 mm	back	1:1	0.182	1.005	0.183	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.60	-0.01	0	0	14191	QPSK	1	0	10 mm	front	1:1	0.188	1.023	0.192	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.68	0.03	1	0	14191	QPSK	36	18	10 mm	front	1:1	0.151	1.005	0.152	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.60	-0.04	0	0	14191	QPSK	1	0	10 mm	bottom	1:1	0.074	1.023	0.076	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.68	0.06	1	0	14191	QPSK	36	18	10 mm	bottom	1:1	0.065	1.005	0.065	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.60	-0.03	0	0	14191	QPSK	1	0	10 mm	right	1:1	0.276	1.023	0.282	A41
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.68	0.03	1	0	14191	QPSK	36	18	10 mm	right	1:1	0.215	1.005	0.216	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.60	0.04	0	0	14191	QPSK	1	0	10 mm	left	1:1	0.138	1.023	0.141	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.68	0.00	1	0	14191	QPSK	36	18	10 mm	left	1:1	0.111	1.005	0.112	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram												

FCC ID: ZNFG011C		SAR EVALUATION REPORT		Approved by: Quality Manager
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Table 11-30
LTE Band 66 (AWS) Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	-0.02	0	13466	QPSK	1	0	10 mm	back	1:1	0.721	1.000	0.721	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.2	23.19	0.00	1	13466	QPSK	50	0	10 mm	back	1:1	0.580	1.002	0.581	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	-0.04	0	13466	QPSK	1	0	10 mm	front	1:1	0.678	1.000	0.678	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.2	23.19	0.00	1	13466	QPSK	50	0	10 mm	front	1:1	0.543	1.002	0.544	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	-0.01	0	13466	QPSK	1	0	10 mm	bottom	1:1	0.803	1.000	0.803	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.2	24.16	-0.01	0	13466	QPSK	1	0	10 mm	bottom	1:1	0.886	1.009	0.894	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.2	24.08	-0.02	0	13466	QPSK	1	0	10 mm	bottom	1:1	1.050	1.028	1.079	A42
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.2	23.19	-0.01	1	13466	QPSK	50	0	10 mm	bottom	1:1	0.632	1.002	0.633	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.2	23.09	-0.03	1	13466	QPSK	100	0	10 mm	bottom	1:1	0.641	1.026	0.658	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	0.00	0	13466	QPSK	1	0	10 mm	left	1:1	0.475	1.000	0.475	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.2	23.19	-0.03	1	13466	QPSK	50	0	10 mm	left	1:1	0.381	1.002	0.382	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.2	24.08	-0.01	0	13466	QPSK	1	0	10 mm	bottom	1:1	0.950	1.028	0.977	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Note: Blue entry indicates variability measurement.

Table 11-31
LTE Band 25 (PCS) Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.18	0.01	0	13466	QPSK	1	0	10 mm	back	1:1	0.718	1.005	0.722	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.14	0.12	1	13466	QPSK	50	25	10 mm	back	1:1	0.561	1.014	0.569	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.18	0.02	0	13466	QPSK	1	0	10 mm	front	1:1	0.585	1.005	0.588	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.14	0.02	1	13466	QPSK	50	25	10 mm	front	1:1	0.440	1.014	0.446	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.2	24.09	-0.03	0	13466	QPSK	1	0	10 mm	bottom	1:1	0.920	1.026	0.944	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.18	-0.01	0	13466	QPSK	1	0	10 mm	bottom	1:1	0.920	1.005	0.925	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.18	-0.01	0	13466	QPSK	1	0	10 mm	bottom	1:1	0.973	1.005	0.978	A44
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.14	-0.04	1	13466	QPSK	50	25	10 mm	bottom	1:1	0.694	1.014	0.704	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.13	-0.02	1	13466	QPSK	100	0	10 mm	bottom	1:1	0.706	1.016	0.717	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.18	-0.01	0	13466	QPSK	1	0	10 mm	left	1:1	0.294	1.005	0.295	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.14	0.12	1	13466	QPSK	50	25	10 mm	left	1:1	0.234	1.014	0.237	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.18	-0.05	0	13466	QPSK	1	0	10 mm	bottom	1:1	0.934	1.005	0.939	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Note: Blue entry indicates variability measurement.

FCC ID: ZNFG011C		SAR EVALUATION REPORT		Approved by: Quality Manager
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Table 11-32
LTE Band 30 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
2310.00	27710	Mid	LTE Band 30	10	23.2	23.01	-0.01	0	14209	QPSK	1	0	10 mm	back	1:1	0.385	1.045	0.402	A45
2310.00	27710	Mid	LTE Band 30	10	22.2	22.11	-0.02	1	14209	QPSK	25	0	10 mm	back	1:1	0.300	1.021	0.306	
2310.00	27710	Mid	LTE Band 30	10	23.2	23.01	0.06	0	14209	QPSK	1	0	10 mm	front	1:1	0.310	1.045	0.324	
2310.00	27710	Mid	LTE Band 30	10	22.2	22.11	0.05	1	14209	QPSK	25	0	10 mm	front	1:1	0.246	1.021	0.251	
2310.00	27710	Mid	LTE Band 30	10	23.2	23.01	-0.05	0	14209	QPSK	1	0	10 mm	bottom	1:1	0.157	1.045	0.164	
2310.00	27710	Mid	LTE Band 30	10	22.2	22.11	0.03	1	14209	QPSK	25	0	10 mm	bottom	1:1	0.122	1.021	0.125	
2310.00	27710	Mid	LTE Band 30	10	23.2	23.01	-0.02	0	14209	QPSK	1	0	10 mm	right	1:1	0.318	1.045	0.332	
2310.00	27710	Mid	LTE Band 30	10	22.2	22.11	0.04	1	14209	QPSK	25	0	10 mm	right	1:1	0.248	1.021	0.253	
2310.00	27710	Mid	LTE Band 30	10	23.2	23.01	0.18	0	14209	QPSK	1	0	10 mm	left	1:1	0.009	1.045	0.009	
2310.00	27710	Mid	LTE Band 30	10	22.2	22.11	0.17	1	14209	QPSK	25	0	10 mm	left	1:1	0.008	1.021	0.008	
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 11-33
LTE Band 7 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
2560.00	21350	High	LTE Band 7	20	25.2	25.12	0.00	0	14191	QPSK	1	0	10 mm	back	1:1	0.352	1.019	0.359	A49
2535.00	21100	Mid	LTE Band 7	20	24.2	23.98	-0.01	1	14191	QPSK	50	0	10 mm	back	1:1	0.304	1.052	0.320	
2560.00	21350	High	LTE Band 7	20	25.2	25.12	0.06	0	14191	QPSK	1	0	10 mm	front	1:1	0.309	1.019	0.315	
2535.00	21100	Mid	LTE Band 7	20	24.2	23.98	0.05	1	14191	QPSK	50	0	10 mm	front	1:1	0.265	1.052	0.279	
2560.00	21350	High	LTE Band 7	20	25.2	25.12	0.00	0	14191	QPSK	1	0	10 mm	bottom	1:1	0.150	1.019	0.153	
2535.00	21100	Mid	LTE Band 7	20	24.2	23.98	-0.14	1	14191	QPSK	50	0	10 mm	bottom	1:1	0.135	1.052	0.142	
2560.00	21350	High	LTE Band 7	20	25.2	25.12	0.02	0	14191	QPSK	1	0	10 mm	right	1:1	0.316	1.019	0.322	
2535.00	21100	Mid	LTE Band 7	20	24.2	23.98	-0.13	1	14191	QPSK	50	0	10 mm	right	1:1	0.280	1.052	0.295	
2560.00	21350	High	LTE Band 7	20	25.2	25.12	0.16	0	14191	QPSK	1	0	10 mm	left	1:1	0.015	1.019	0.015	
2535.00	21100	Mid	LTE Band 7	20	24.2	23.98	-0.07	1	14191	QPSK	50	0	10 mm	left	1:1	0.013	1.052	0.014	
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 11-34
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																				
Power Class	FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
	MHz	Ch.														(W/kg)		(W/kg)		
Power Class 3	2506.00	39750	Low	LTE Band 41	20	25.2	25.17	-0.09	0	14183	QPSK	1	0	10 mm	back	1:1.58	0.336	1.007	0.338	A47
Power Class 2	2506.00	39750	Low	LTE Band 41	20	27.0	26.96	-0.11	0	14183	QPSK	1	0	10 mm	back	1:2.309	0.332	1.009	0.335	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	24.2	24.05	-0.03	1	14183	QPSK	50	0	10 mm	back	1:1.58	0.257	1.035	0.266	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	25.2	25.17	0.07	0	14183	QPSK	1	0	10 mm	front	1:1.58	0.274	1.007	0.276	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	24.2	24.05	-0.11	1	14183	QPSK	50	0	10 mm	front	1:1.58	0.212	1.035	0.219	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	25.2	25.17	-0.03	0	14183	QPSK	1	0	10 mm	bottom	1:1.58	0.131	1.007	0.132	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	24.2	24.05	0.12	1	14183	QPSK	50	0	10 mm	bottom	1:1.58	0.106	1.035	0.110	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	25.2	25.17	-0.19	0	14183	QPSK	1	0	10 mm	right	1:1.58	0.229	1.007	0.231	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	24.2	24.05	-0.03	1	14183	QPSK	50	0	10 mm	right	1:1.58	0.185	1.035	0.191	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	25.2	25.17	0.17	0	14183	QPSK	1	0	10 mm	left	1:1.58	0.012	1.007	0.012	
Power Class 3	2506.00	39750	Low	LTE Band 41	20	24.2	24.05	0.12	1	14183	QPSK	50	0	10 mm	left	1:1.58	0.009	1.035	0.009	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT																				
Spatial Peak									Body											
Uncontrolled Exposure/General Population									1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-35
WLAN Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	19.5	19.40	0.00	10 mm	1	13649	1	back	99.2	0.435	0.384	1.023	1.008	0.396	
2412	1	802.11b	DSSS	22	19.5	19.40	0.17	10 mm	1	13649	1	front	99.2	0.203	-	1.023	1.008	-	
2412	1	802.11b	DSSS	22	19.5	19.40	0.19	10 mm	1	13649	1	top	99.2	0.061	-	1.023	1.008	-	
2412	1	802.11b	DSSS	22	19.5	19.40	0.17	10 mm	1	13649	1	left	99.2	0.501	0.400	1.023	1.008	0.412	A49
2462	11	802.11b	DSSS	22	19.5	19.30	0.00	10 mm	2	13649	1	back	99.3	0.413	0.352	1.047	1.007	0.371	
2462	11	802.11b	DSSS	22	19.5	19.30	-0.17	10 mm	2	13649	1	front	99.3	0.176	-	1.047	1.007	-	
2462	11	802.11b	DSSS	22	19.5	19.30	0.14	10 mm	2	13649	1	top	99.3	0.046	-	1.047	1.007	-	
2462	11	802.11b	DSSS	22	19.5	19.30	0.13	10 mm	2	13649	1	right	99.3	0.339	-	1.047	1.007	-	
5180	36	802.11a	OFDM	20	16.5	16.09	0.13	10 mm	1	13656	6	back	95.5	0.238	0.086	1.099	1.047	0.099	
5180	36	802.11a	OFDM	20	16.5	16.09	0.00	10 mm	1	13656	6	front	95.5	0.040	-	1.099	1.047	-	
5180	36	802.11a	OFDM	20	16.5	16.09	-0.12	10 mm	1	13656	6	top	95.5	0.042	-	1.099	1.047	-	
5180	36	802.11a	OFDM	20	16.5	16.09	0.00	10 mm	1	13656	6	left	95.5	0.103	-	1.099	1.047	-	
5240	48	802.11a	OFDM	20	16.5	15.21	0.09	10 mm	2	13656	6	back	95.2	0.264	-	1.346	1.050	-	
5240	48	802.11a	OFDM	20	16.5	15.21	-0.04	10 mm	2	13656	6	front	95.2	0.113	-	1.346	1.050	-	
5240	48	802.11a	OFDM	20	16.5	15.21	0.00	10 mm	2	13656	6	top	95.2	0.037	-	1.346	1.050	-	
5240	48	802.11a	OFDM	20	16.5	15.21	0.13	10 mm	2	13656	6	right	95.2	0.315	0.150	1.346	1.050	0.212	
5825	165	802.11a	OFDM	20	16.5	15.85	0.13	10 mm	1	13656	6	back	95.5	0.301	0.108	1.161	1.047	0.131	
5825	165	802.11a	OFDM	20	16.5	15.85	0.00	10 mm	1	13656	6	front	95.5	0.120	-	1.161	1.047	-	
5825	165	802.11a	OFDM	20	16.5	15.85	0.00	10 mm	1	13656	6	top	95.5	0.104	-	1.161	1.047	-	
5825	165	802.11a	OFDM	20	16.5	15.85	0.00	10 mm	1	13656	6	left	95.5	0.084	-	1.161	1.047	-	
5825	165	802.11a	OFDM	20	16.5	16.49	0.18	10 mm	2	13656	6	back	95.2	0.773	0.301	1.002	1.050	0.317	A50
5825	165	802.11a	OFDM	20	16.5	16.49	0.00	10 mm	2	13656	6	front	95.2	0.134	-	1.002	1.050	-	
5825	165	802.11a	OFDM	20	16.5	16.49	0.00	10 mm	2	13656	6	top	95.2	0.082	-	1.002	1.050	-	
5825	165	802.11a	OFDM	20	16.5	16.49	-0.12	10 mm	2	13656	6	right	95.2	0.556	-	1.002	1.050	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT																			
Spatial Peak								Body											
Uncontrolled Exposure/General Population								1.6 W/kg (mW/g) averaged over 1 gram											

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Table 11-36
Bluetooth Hotspot SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2402	0	Bluetooth	FHSS	11.0	10.01	0.10	10 mm	13656	1	back	77.3	0.029	1.256	1.294	0.047	
2402	0	Bluetooth	FHSS	11.0	10.01	-0.18	10 mm	13656	1	front	77.3	0.016	1.256	1.294	0.026	
2402	0	Bluetooth	FHSS	11.0	10.01	0.16	10 mm	13656	1	top	77.3	0.004	1.256	1.294	0.007	
2402	0	Bluetooth	FHSS	11.0	10.01	0.05	10 mm	13656	1	left	77.3	0.029	1.256	1.294	0.047	A52
ANSI / IEEE C95.1 1992 - SAFETY LIMIT							Body									
Spatial Peak							1.6 W/kg (mW/g)									
Uncontrolled Exposure/General Population							averaged over 1 gram									

11.4 Standalone Phablet SAR Data

Table 11-37
WLAN Phablet SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g) (W/kg)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5280	56	802.11a	OFDM	20	16.5	15.54	-0.10	0 mm	1	13656	6	back	95.5	9.312	0.488	1.247	1.047	0.637	
5280	56	802.11a	OFDM	20	16.5	15.54	0.00	0 mm	1	13656	6	front	95.5	0.791	-	1.247	1.047	-	
5280	56	802.11a	OFDM	20	16.5	15.54	0.17	0 mm	1	13656	6	top	95.5	2.212	-	1.247	1.047	-	
5280	56	802.11a	OFDM	20	16.5	15.54	0.00	0 mm	1	13656	6	left	95.5	1.425	-	1.247	1.047	-	
5260	52	802.11a	OFDM	20	16.5	15.20	0.14	0 mm	2	13656	6	back	95.2	6.707	0.571	1.349	1.050	0.809	
5260	52	802.11a	OFDM	20	16.5	15.20	0.00	0 mm	2	13656	6	front	95.2	1.578	-	1.349	1.050	-	
5260	52	802.11a	OFDM	20	16.5	15.20	0.00	0 mm	2	13656	6	top	95.2	0.800	-	1.349	1.050	-	
5260	52	802.11a	OFDM	20	16.5	15.20	-0.02	0 mm	2	13656	6	right	95.2	6.202	-	1.349	1.050	-	
5500	100	802.11a	OFDM	20	16.5	16.43	0.04	0 mm	1	13656	6	back	95.5	23.821	1.410	1.016	1.047	1.500	A53
5660	132	802.11a	OFDM	20	16.5	15.84	-0.05	0 mm	1	13656	6	back	95.5	40.907	1.140	1.164	1.047	1.389	
5720	144	802.11a	OFDM	20	16.5	15.83	-0.08	0 mm	1	13656	6	back	95.5	33.190	0.966	1.167	1.047	1.180	
5500	100	802.11a	OFDM	20	16.5	16.43	0.00	0 mm	1	13656	6	front	95.5	1.994	-	1.016	1.047	-	
5500	100	802.11a	OFDM	20	16.5	16.43	-0.19	0 mm	1	13656	6	top	95.5	5.771	0.378	1.016	1.047	0.402	
5500	100	802.11a	OFDM	20	16.5	16.43	-0.20	0 mm	1	13656	6	left	95.5	2.628	-	1.016	1.047	-	
5720	144	802.11a	OFDM	20	16.5	16.49	0.14	0 mm	2	13656	6	back	95.2	6.579	-	1.002	1.050	-	
5720	144	802.11a	OFDM	20	16.5	16.49	0.10	0 mm	2	13656	6	front	95.2	2.257	-	1.002	1.050	-	
5720	144	802.11a	OFDM	20	16.5	16.49	0.16	0 mm	2	13656	6	top	95.2	1.409	-	1.002	1.050	-	
5720	144	802.11a	OFDM	20	16.5	16.49	0.14	0 mm	2	13656	6	right	95.2	6.825	0.603	1.002	1.050	0.634	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Phablet											
Spatial Peak								4.0 W/kg (mW/g)											
Uncontrolled Exposure/General Population								averaged over 10 grams											

11.5 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.

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6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. Per FCC KDB 865664 D01v01r04, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 13 for variability analysis.
9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v02r01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.7 for more details).
10. Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is > 160 mm and < 200 mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg.
11. This device supports dynamic antenna tuning for some bands. Per FCC Guidance, SAR was measured according to the normally required SAR measurement configurations with tuner active. The auto-tune state determined by the device was verified before and after each SAR measurement and is listed in tables above. Please see Section 14 for supplemental data.

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 D01v03r01 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 D01v06, 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.
4. GPRS was additionally evaluated for head and body-worn exposure conditions to address possible VoIP scenarios.

CDMA Notes:

1. Head SAR for CDMA2000 mode was tested under RC3/SO55 per FCC KDB Publication 941225 D01v03r01.
2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. EVDO Rev0 and RevA and TDSO / SO32 FCH+SCH SAR tests were not required per the 3G SAR Test Reduction Procedure in FCC KDB Publication 941225 D01v03r01.
3. CDMA Wireless Router SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 according to KDB 941225 D01v03r01 procedures for data devices. Wireless Router SAR tests for Subtype 2 of Rev.A and 1x RTT configurations were not required per the 3G SAR Test Reduction Policy in KDB Publication 941225 D01v03r01.
4. Head SAR was additionally evaluated using EVDO Rev. A to determine compliance for VoIP operations.
5. Per FCC KDB Publication 447498 D01v06, 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.

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UMTS Notes:

1. UMTS mode in was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. AMR and HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03r01.
2. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 8.6.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 and MCC=001 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D01v06, when the reported (scaled) for LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg, testing at the other channels was required for such test configurations.
5. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r04. Testing was performed using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.
6. This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per FCC Guidance, all SAR tests were performed using Power Class 3. SAR with Power Class 2 at the highest available duty factor was additionally performed for the Power Class 3 configuration with the highest SAR among all exposure condition. Please see Section 14 for linearity results.
7. Per KDB Publication 941225 D05Av01r02, SAR for LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.

WLAN Notes:

1. For held-to-ear and hotspot operations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.7.5 for more information.
3. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not

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investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg. See Section 8.7.6 for more information.

4. When the maximum reported 1g averaged SAR is ≤ 0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg or all test channels were measured.
5. When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.
6. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated EMC test reports.

Bluetooth Notes:

1. Bluetooth SAR was measured with the device connected to a call box with hopping disabled with DH5 operation and Tx Tests test mode type. Per October 2016 TCB Workshop Notes, the reported SAR was scaled to the 100% transmission duty factor to determine compliance. See section 9.6 for the time-domain plot and calculation for the duty factor of the device.

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12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

The following procedures adopted from FCC KDB Publication 447498 D01v06 are applicable to devices with built-in unlicensed transmitters such as 802.11 and Bluetooth devices which may simultaneously transmit with the licensed transmitter.

12.2 Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB Publication 447498 D01v06 4.3.2 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. The different test positions in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1-g or 10-g SAR.

Main antenna SAR testing was not required for phablet exposure conditions per FCC KDB 648474 D04v01r03. Therefore, no further analysis was required to determine that possible simultaneous scenarios would not exceed the SAR limit.

(*) For test positions that were not required to be evaluated for WLAN SAR per FCC KDB Publication 248227, the worst case WLAN head SAR result was used for simultaneous transmission analysis.

Per FCC KDB Publication 648474 D04 Handset SAR v01r01, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR (“-”).

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12.3 Head SAR Simultaneous Transmission Analysis

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

Simult Tx	Configuration	CDMA BC10 (\$90S) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.151	1.000	0.266	1.151	0.417	1.417
	Right Tilt	0.080	0.524	0.095	0.604	0.175	0.699
	Left Cheek	0.124	0.272	0.655	0.396	0.779	1.051
	Left Tilt	0.064	0.196	0.248	0.260	0.312	0.508
Simult Tx	Configuration	EVDO BC10 (\$90S) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.146	1.000	0.266	1.146	0.412	1.412
	Right Tilt	0.064	0.524	0.095	0.588	0.159	0.683
	Left Cheek	0.124	0.272	0.655	0.396	0.779	1.051
	Left Tilt	0.062	0.196	0.248	0.258	0.310	0.506
Simult Tx	Configuration	CDMA BC0 (\$22H) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.131	1.000	0.266	1.131	0.397	1.397
	Right Tilt	0.052	0.524	0.095	0.576	0.147	0.671
	Left Cheek	0.141	0.272	0.655	0.413	0.796	1.068
	Left Tilt	0.071	0.196	0.248	0.267	0.319	0.515
Simult Tx	Configuration	EVDO BC0 (\$22H) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.146	1.000	0.266	1.146	0.412	1.412
	Right Tilt	0.062	0.524	0.095	0.586	0.157	0.681
	Left Cheek	0.140	0.272	0.655	0.412	0.795	1.067
	Left Tilt	0.065	0.196	0.248	0.261	0.313	0.509
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.102	1.000	0.266	1.102	0.368	1.368
	Right Tilt	0.036	0.524	0.095	0.560	0.131	0.655
	Left Cheek	0.075	0.272	0.655	0.347	0.730	1.002
	Left Tilt	0.033	0.196	0.248	0.229	0.281	0.477
Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.103	1.000	0.266	1.103	0.369	1.369
	Right Tilt	0.032	0.524	0.095	0.556	0.127	0.651
	Left Cheek	0.064	0.272	0.655	0.336	0.719	0.991
	Left Tilt	0.035	0.196	0.248	0.231	0.283	0.479

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Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.101	1.000	0.266	1.101	0.367	1.367
	Right Tilt	0.048	0.524	0.095	0.572	0.143	0.667
	Left Cheek	0.100	0.272	0.655	0.372	0.755	1.027
	Left Tilt	0.050	0.196	0.248	0.246	0.298	0.494
Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.147	1.000	0.266	1.147	0.413	1.413
	Right Tilt	0.071	0.524	0.095	0.595	0.166	0.690
	Left Cheek	0.127	0.272	0.655	0.399	0.782	1.054
	Left Tilt	0.072	0.196	0.248	0.268	0.320	0.516
Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.064	1.000	0.266	1.064	0.330	1.330
	Right Tilt	0.029	0.524	0.095	0.553	0.124	0.648
	Left Cheek	0.057	0.272	0.655	0.329	0.712	0.984
	Left Tilt	0.037	0.196	0.248	0.233	0.285	0.481
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.081	1.000	0.266	1.081	0.347	1.347
	Right Tilt	0.032	0.524	0.095	0.556	0.127	0.651
	Left Cheek	0.077	0.272	0.655	0.349	0.732	1.004
	Left Tilt	0.046	0.196	0.248	0.242	0.294	0.490
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.158	1.000	0.266	1.158	0.424	1.424
	Right Tilt	0.076	0.524	0.095	0.600	0.171	0.695
	Left Cheek	0.144	0.272	0.655	0.416	0.799	1.071
	Left Tilt	0.071	0.196	0.248	0.267	0.319	0.515
Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.169	1.000	0.266	1.169	0.435	1.435
	Right Tilt	0.100	0.524	0.095	0.624	0.195	0.719
	Left Cheek	0.159	0.272	0.655	0.431	0.814	1.086
	Left Tilt	0.086	0.196	0.248	0.282	0.334	0.530

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Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.094	1.000	0.266	1.094	0.360	1.360
	Right Tilt	0.036	0.524	0.095	0.560	0.131	0.655
	Left Cheek	0.077	0.272	0.655	0.349	0.732	1.004
	Left Tilt	0.039	0.196	0.248	0.235	0.287	0.483
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.089	1.000	0.266	1.089	0.355	1.355
	Right Tilt	0.042	0.524	0.095	0.566	0.137	0.661
	Left Cheek	0.085	0.272	0.655	0.357	0.740	1.012
	Left Tilt	0.038	0.196	0.248	0.234	0.286	0.482
Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.138	1.000	0.266	1.138	0.404	1.404
	Right Tilt	0.081	0.524	0.095	0.605	0.176	0.700
	Left Cheek	0.119	0.272	0.655	0.391	0.774	1.046
	Left Tilt	0.062	0.196	0.248	0.258	0.310	0.506
Simult Tx	Configuration	LTE Band 26 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.167	1.000	0.266	1.167	0.433	1.433
	Right Tilt	0.064	0.524	0.095	0.588	0.159	0.683
	Left Cheek	0.137	0.272	0.655	0.409	0.792	1.064
	Left Tilt	0.063	0.196	0.248	0.259	0.311	0.507
Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.144	1.000	0.266	1.144	0.410	1.410
	Right Tilt	0.092	0.524	0.095	0.616	0.187	0.711
	Left Cheek	0.143	0.272	0.655	0.415	0.798	1.070
	Left Tilt	0.085	0.196	0.248	0.281	0.333	0.529
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.122	1.000	0.266	1.122	0.388	1.388
	Right Tilt	0.033	0.524	0.095	0.557	0.128	0.652
	Left Cheek	0.077	0.272	0.655	0.349	0.732	1.004
	Left Tilt	0.035	0.196	0.248	0.231	0.283	0.479

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Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.204	1.000	0.266	1.204	0.470	1.470
	Right Tilt	0.056	0.524	0.095	0.580	0.151	0.675
	Left Cheek	0.096	0.272	0.655	0.368	0.751	1.023
	Left Tilt	0.089	0.196	0.248	0.285	0.337	0.533
Simult Tx	Configuration	LTE Band 7 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.255	1.000	0.266	1.255	0.521	1.521
	Right Tilt	0.105	0.524	0.095	0.629	0.200	0.724
	Left Cheek	0.119	0.272	0.655	0.391	0.774	1.046
	Left Tilt	0.158	0.196	0.248	0.354	0.406	0.602
Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.210	1.000	0.266	1.210	0.476	1.476
	Right Tilt	0.057	0.524	0.095	0.581	0.152	0.676
	Left Cheek	0.067	0.272	0.655	0.339	0.722	0.994
	Left Tilt	0.090	0.196	0.248	0.286	0.338	0.534

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	CDMA/EVDO BC10 (\$90S)	0.151	0.396	0.443	0.547	0.594	0.990
	CDMA/EVDO BC0 (\$22H)	0.146	0.396	0.443	0.542	0.589	0.985
	PCS CDMA/EVDO	0.103	0.396	0.443	0.499	0.546	0.942
	GSM/GPRS 850	0.147	0.396	0.443	0.543	0.590	0.986
	GSM/GPRS 1900	0.081	0.396	0.443	0.477	0.524	0.920
	UMTS 850	0.158	0.396	0.443	0.554	0.601	0.997
	UMTS 1750	0.169	0.396	0.443	0.565	0.612	1.008
	UMTS 1900	0.094	0.396	0.443	0.490	0.537	0.933
	LTE Band 12	0.089	0.396	0.443	0.485	0.532	0.928
	LTE Band 13	0.138	0.396	0.443	0.534	0.581	0.977
	LTE Band 26 (Cell)	0.167	0.396	0.443	0.563	0.610	1.006
	LTE Band 66 (AWS)	0.144	0.396	0.443	0.540	0.587	0.983
	LTE Band 25 (PCS)	0.122	0.396	0.443	0.518	0.565	0.961
	LTE Band 30	0.204	0.396	0.443	0.600	0.647	1.043
	LTE Band 7	0.255	0.396	0.443	0.651	0.698	1.094
	LTE Band 41	0.210	0.396	0.443	0.606	0.653	1.049

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Table 12-3
Simultaneous Transmission Scenario with 2.4 GHz Ant1 & 5GHz Ant2 WLAN (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	CDMA/EVDO BC10 (§90S)	0.151	1.000	0.443	1.151	0.594	1.594
	CDMA/EVDO BC0 (§22H)	0.146	1.000	0.443	1.146	0.589	1.589
	PCS CDMA/EVDO	0.103	1.000	0.443	1.103	0.546	1.546
	GSM/GPRS 850	0.147	1.000	0.443	1.147	0.590	1.590
	GSM/GPRS 1900	0.081	1.000	0.443	1.081	0.524	1.524
	UMTS 850	0.158	1.000	0.443	1.158	0.601	See Below
	UMTS 1750	0.169	1.000	0.443	1.169	0.612	See Below
	UMTS 1900	0.094	1.000	0.443	1.094	0.537	1.537
	LTE Band 12	0.089	1.000	0.443	1.089	0.532	1.532
	LTE Band 13	0.138	1.000	0.443	1.138	0.581	1.581
	LTE Band 26 (Cell)	0.167	1.000	0.443	1.167	0.610	See Below
	LTE Band 66 (AWS)	0.144	1.000	0.443	1.144	0.587	1.587
	LTE Band 25 (PCS)	0.122	1.000	0.443	1.122	0.565	1.565
	LTE Band 30	0.204	1.000	0.443	1.204	0.647	See Below
	LTE Band 7	0.255	1.000	0.443	1.255	0.698	See Below
	LTE Band 41	0.210	1.000	0.443	1.210	0.653	See Below
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.158	1.000	0.116	1.158	0.274	1.274
	Right Tilt	0.076	0.524	0.075	0.600	0.151	0.675
	Left Cheek	0.144	0.272	0.443	0.416	0.587	0.859
	Left Tilt	0.071	0.196	0.210	0.267	0.281	0.477
Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.169	1.000	0.116	1.169	0.285	1.285
	Right Tilt	0.100	0.524	0.075	0.624	0.175	0.699
	Left Cheek	0.159	0.272	0.443	0.431	0.602	0.874
	Left Tilt	0.086	0.196	0.210	0.282	0.296	0.492
Simult Tx	Configuration	LTE Band 26 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.167	1.000	0.116	1.167	0.283	1.283
	Right Tilt	0.064	0.524	0.075	0.588	0.139	0.663
	Left Cheek	0.137	0.272	0.443	0.409	0.580	0.852
	Left Tilt	0.063	0.196	0.210	0.259	0.273	0.469

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Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.204	1.000	0.116	1.204	0.320	1.320
	Right Tilt	0.056	0.524	0.075	0.580	0.131	0.655
	Left Cheek	0.096	0.272	0.443	0.368	0.539	0.811
	Left Tilt	0.089	0.196	0.210	0.285	0.299	0.495
Simult Tx	Configuration	LTE Band 7 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.255	1.000	0.116	1.255	0.371	1.371
	Right Tilt	0.105	0.524	0.075	0.629	0.180	0.704
	Left Cheek	0.119	0.272	0.443	0.391	0.562	0.834
	Left Tilt	0.158	0.196	0.210	0.354	0.368	0.564
Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.210	1.000	0.116	1.210	0.326	1.326
	Right Tilt	0.057	0.524	0.075	0.581	0.132	0.656
	Left Cheek	0.067	0.272	0.443	0.339	0.510	0.782
	Left Tilt	0.090	0.196	0.210	0.286	0.300	0.496

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Table 12-4
Simultaneous Transmission Scenario with Bluetooth (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	CDMA/EVDO BC10 (§90S)	0.151	0.109	0.260
	CDMA/EVDO BC0 (§22H)	0.146	0.109	0.255
	PCS CDMA/EVDO	0.103	0.109	0.212
	GSM/GPRS 850	0.147	0.109	0.256
	GSM/GPRS 1900	0.081	0.109	0.190
	UMTS 850	0.158	0.109	0.267
	UMTS 1750	0.169	0.109	0.278
	UMTS 1900	0.094	0.109	0.203
	LTE Band 12	0.089	0.109	0.198
	LTE Band 13	0.138	0.109	0.247
	LTE Band 26 (Cell)	0.167	0.109	0.276
	LTE Band 66 (AWS)	0.144	0.109	0.253
	LTE Band 25 (PCS)	0.122	0.109	0.231
	LTE Band 30	0.204	0.109	0.313
	LTE Band 7	0.255	0.109	0.364
	LTE Band 41	0.210	0.109	0.319

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12.4 Body-Worn Simultaneous Transmission Analysis

Table 12-5
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	CDMA BC10 (\$90S)	0.245	0.396	0.371	0.641	0.616	1.012
	CDMA BC0 (\$22H)	0.224	0.396	0.371	0.620	0.595	0.991
	PCS CDMA	0.634	0.396	0.371	1.030	1.005	1.401
	GSM/GPRS 850	0.236	0.396	0.371	0.632	0.607	1.003
	GSM/GPRS 1900	0.355	0.396	0.371	0.751	0.726	1.122
	UMTS 850	0.228	0.396	0.371	0.624	0.599	0.995
	UMTS 1750	0.792	0.396	0.371	1.188	1.163	1.559
	UMTS 1900	0.826	0.396	0.371	1.222	1.197	1.593
	LTE Band 12	0.259	0.396	0.371	0.655	0.630	1.026
	LTE Band 13	0.228	0.396	0.371	0.624	0.599	0.995
	LTE Band 26 (Cell)	0.233	0.396	0.371	0.629	0.604	1.000
	LTE Band 66 (AWS)	0.721	0.396	0.371	1.117	1.092	1.488
	LTE Band 25 (PCS)	0.722	0.396	0.371	1.118	1.093	1.489
	LTE Band 30	0.402	0.396	0.371	0.798	0.773	1.169
	LTE Band 7	0.359	0.396	0.371	0.755	0.730	1.126
	LTE Band 41	0.338	0.396	0.371	0.734	0.709	1.105

Table 12-6
Simultaneous Transmission Scenario with 5 GHz WLAN (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	CDMA BC10 (\$90S)	0.245	0.183	0.317	0.428	0.562	0.745
	CDMA BC0 (\$22H)	0.224	0.183	0.317	0.407	0.541	0.724
	PCS CDMA	0.634	0.183	0.317	0.817	0.951	1.134
	GSM/GPRS 850	0.236	0.183	0.317	0.419	0.553	0.736
	GSM/GPRS 1900	0.355	0.183	0.317	0.538	0.672	0.855
	UMTS 850	0.228	0.183	0.317	0.411	0.545	0.728
	UMTS 1750	0.792	0.183	0.317	0.975	1.109	1.292
	UMTS 1900	0.826	0.183	0.317	1.009	1.143	1.326
	LTE Band 12	0.259	0.183	0.317	0.442	0.576	0.759
	LTE Band 13	0.228	0.183	0.317	0.411	0.545	0.728
	LTE Band 26 (Cell)	0.233	0.183	0.317	0.416	0.550	0.733
	LTE Band 66 (AWS)	0.721	0.183	0.317	0.904	1.038	1.221
	LTE Band 25 (PCS)	0.722	0.183	0.317	0.905	1.039	1.222
	LTE Band 30	0.402	0.183	0.317	0.585	0.719	0.902
	LTE Band 7	0.359	0.183	0.317	0.542	0.676	0.859
	LTE Band 41	0.338	0.183	0.317	0.521	0.655	0.838

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Table 12-7

Simultaneous Transmission Scenario with 2.4 GHz Ant1 and 5 GHz Ant2 WLAN (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	CDMA BC10 (§90S)	0.245	0.396	0.317	0.641	0.562	0.958
	CDMA BC0 (§22H)	0.224	0.396	0.317	0.620	0.541	0.937
	PCS CDMA	0.634	0.396	0.317	1.030	0.951	1.347
	GSM/GPRS 850	0.236	0.396	0.317	0.632	0.553	0.949
	GSM/GPRS 1900	0.355	0.396	0.317	0.751	0.672	1.068
	UMTS 850	0.228	0.396	0.317	0.624	0.545	0.941
	UMTS 1750	0.792	0.396	0.317	1.188	1.109	1.505
	UMTS 1900	0.826	0.396	0.317	1.222	1.143	1.539
	LTE Band 12	0.259	0.396	0.317	0.655	0.576	0.972
	LTE Band 13	0.228	0.396	0.317	0.624	0.545	0.941
	LTE Band 26 (Cell)	0.233	0.396	0.317	0.629	0.550	0.946
	LTE Band 66 (AWS)	0.721	0.396	0.317	1.117	1.038	1.434
	LTE Band 25 (PCS)	0.722	0.396	0.317	1.118	1.039	1.435
	LTE Band 30	0.402	0.396	0.317	0.798	0.719	1.115
	LTE Band 7	0.359	0.396	0.317	0.755	0.676	1.072
	LTE Band 41	0.338	0.396	0.317	0.734	0.655	1.051

Table 12-8

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	CDMA BC10 (§90S)	0.245	0.047	0.292
	CDMA BC0 (§22H)	0.224	0.047	0.271
	PCS CDMA	0.634	0.047	0.681
	GSM/GPRS 850	0.236	0.047	0.283
	GSM/GPRS 1900	0.355	0.047	0.402
	UMTS 850	0.228	0.047	0.275
	UMTS 1750	0.792	0.047	0.839
	UMTS 1900	0.826	0.047	0.873
	LTE Band 12	0.259	0.047	0.306
	LTE Band 13	0.228	0.047	0.275
	LTE Band 26 (Cell)	0.233	0.047	0.280
	LTE Band 66 (AWS)	0.721	0.047	0.768
	LTE Band 25 (PCS)	0.722	0.047	0.769
	LTE Band 30	0.402	0.047	0.449
	LTE Band 7	0.359	0.047	0.406
	LTE Band 41	0.338	0.047	0.385

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12.5 Hotspot SAR Simultaneous Transmission Analysis

Table 12-9
Simultaneous Transmission Scenario (2.4 GHz Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	EVDO BC10 (\$90S)	0.232	0.412	0.371	0.644	0.603	1.015
	EVDO BC0 (\$22H)	0.223	0.412	0.371	0.635	0.594	1.006
	PCS EVDO	0.699	0.412	0.371	1.111	1.070	1.482
	GPRS 850	0.268	0.412	0.371	0.680	0.639	1.051
	GPRS 1900	0.440	0.412	0.371	0.852	0.811	1.223
	UMTS 850	0.256	0.412	0.371	0.668	0.627	1.039
	UMTS 1750	1.040	0.412	0.371	1.452	1.411	See Below
	UMTS 1900	0.946	0.412	0.371	1.358	1.317	See Below
	LTE Band 12	0.267	0.412	0.371	0.679	0.638	1.050
	LTE Band 13	0.228	0.412	0.371	0.640	0.599	1.011
	LTE Band 26 (Cell)	0.282	0.412	0.371	0.694	0.653	1.065
	LTE Band 66 (AWS)	1.079	0.412	0.371	1.491	1.450	See Below
	LTE Band 25 (PCS)	0.978	0.412	0.371	1.390	1.349	See Below
	LTE Band 30	0.402	0.412	0.371	0.814	0.773	1.185
	LTE Band 7	0.359	0.412	0.371	0.771	0.730	1.142
	LTE Band 41	0.338	0.412	0.371	0.750	0.709	1.121
Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.792	0.396	0.371	1.188	1.163	1.559
	Front	0.660	0.412*	0.371*	1.072	1.031	1.443
	Top	-	0.412*	0.371*	0.412	0.371	0.783
	Bottom	1.040	-	-	1.040	1.040	1.040
	Right	-	-	0.371*	0.000	0.371	0.371
	Left	0.380	0.412	-	0.792	0.380	0.792
Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.826	0.396	0.371	1.222	1.197	1.593
	Front	0.632	0.412*	0.371*	1.044	1.003	1.415
	Top	-	0.412*	0.371*	0.412	0.371	0.783
	Bottom	0.946	-	-	0.946	0.946	0.946
	Right	-	-	0.371*	0.000	0.371	0.371
	Left	0.362	0.412	-	0.774	0.362	0.774
Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.721	0.396	0.371	1.117	1.092	1.488
	Front	0.678	0.412*	0.371*	1.090	1.049	1.461
	Top	-	0.412*	0.371*	0.412	0.371	0.783
	Bottom	1.079	-	-	1.079	1.079	1.079
	Right	-	-	0.371*	0.000	0.371	0.371
	Left	0.475	0.412	-	0.887	0.475	0.887

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Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.722	0.396	0.371	1.118	1.093	1.489
	Front	0.588	0.412*	0.371*	1.000	0.959	1.371
	Top	-	0.412*	0.371*	0.412	0.371	0.783
	Bottom	0.978	-	-	0.978	0.978	0.978
	Right	-	-	0.371*	0.000	0.371	0.371
	Left	0.295	0.412	-	0.707	0.295	0.707

Table 12-10
Simultaneous Transmission Scenario (5 GHz Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	EVDO BC10 (\$90S)	0.232	0.131	0.317	0.363	0.549	0.680
	EVDO BC0 (\$22H)	0.223	0.131	0.317	0.354	0.540	0.671
	PCS EVDO	0.699	0.131	0.317	0.830	1.016	1.147
	GPRS 850	0.268	0.131	0.317	0.399	0.585	0.716
	GPRS 1900	0.440	0.131	0.317	0.571	0.757	0.888
	UMTS 850	0.256	0.131	0.317	0.387	0.573	0.704
	UMTS 1750	1.040	0.131	0.317	1.171	1.357	1.488
	UMTS 1900	0.946	0.131	0.317	1.077	1.263	1.394
	LTE Band 12	0.267	0.131	0.317	0.398	0.584	0.715
	LTE Band 13	0.228	0.131	0.317	0.359	0.545	0.676
	LTE Band 26 (Cell)	0.282	0.131	0.317	0.413	0.599	0.730
	LTE Band 66 (AWS)	1.079	0.131	0.317	1.210	1.396	1.527
	LTE Band 25 (PCS)	0.978	0.131	0.317	1.109	1.295	1.426
	LTE Band 30	0.402	0.131	0.317	0.533	0.719	0.850
	LTE Band 7	0.359	0.131	0.317	0.490	0.676	0.807
	LTE Band 41	0.338	0.131	0.317	0.469	0.655	0.786

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Table 12-11
Simultaneous Transmission Scenario (2.4 GHz Ant1 and 5 GHz Ant2 Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	EVDO BC10 (\$90S)	0.232	0.412	0.317	0.644	0.549	0.961
	EVDO BC0 (\$22H)	0.223	0.412	0.317	0.635	0.540	0.952
	PCS EVDO	0.699	0.412	0.317	1.111	1.016	1.428
	GPRS 850	0.268	0.412	0.317	0.680	0.585	0.997
	GPRS 1900	0.440	0.412	0.317	0.852	0.757	1.169
	UMTS 850	0.256	0.412	0.317	0.668	0.573	0.985
	UMTS 1750	1.040	0.412	0.317	1.452	1.357	See Below
	UMTS 1900	0.946	0.412	0.317	1.358	1.263	See Below
	LTE Band 12	0.267	0.412	0.317	0.679	0.584	0.996
	LTE Band 13	0.228	0.412	0.317	0.640	0.545	0.957
	LTE Band 26 (Cell)	0.282	0.412	0.317	0.694	0.599	1.011
	LTE Band 66 (AWS)	1.079	0.412	0.317	1.491	1.396	See Below
	LTE Band 25 (PCS)	0.978	0.412	0.317	1.390	1.295	See Below
	LTE Band 30	0.402	0.412	0.317	0.814	0.719	1.131
	LTE Band 7	0.359	0.412	0.317	0.771	0.676	1.088
	LTE Band 41	0.338	0.412	0.317	0.750	0.655	1.067
Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.792	0.396	0.317	1.188	1.109	1.505
	Front	0.660	0.412*	0.317*	1.072	0.977	1.389
	Top	-	0.412*	0.317*	0.412	0.317	0.729
	Bottom	1.040	-	-	1.040	1.040	1.040
	Right	-	-	0.212	0.000	0.212	0.212
	Left	0.380	0.412	-	0.792	0.380	0.792
Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.826	0.396	0.317	1.222	1.143	1.539
	Front	0.632	0.412*	0.317*	1.044	0.949	1.361
	Top	-	0.412*	0.317*	0.412	0.317	0.729
	Bottom	0.946	-	-	0.946	0.946	0.946
	Right	-	-	0.212	0.000	0.212	0.212
	Left	0.362	0.412	-	0.774	0.362	0.774

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Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.721	0.396	0.317	1.117	1.038	1.434
	Front	0.678	0.412*	0.317*	1.090	0.995	1.407
	Top	-	0.412*	0.317*	0.412	0.317	0.729
	Bottom	1.079	-	-	1.079	1.079	1.079
	Right	-	-	0.212	0.000	0.212	0.212
	Left	0.475	0.412	-	0.887	0.475	0.887
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.722	0.396	0.317	1.118	1.039	1.435
	Front	0.588	0.412*	0.317*	1.000	0.905	1.317
	Top	-	0.412*	0.317*	0.412	0.317	0.729
	Bottom	0.978	-	-	0.978	0.978	0.978
	Right	-	-	0.212	0.000	0.212	0.212
	Left	0.295	0.412	-	0.707	0.295	0.707

Table 12-12
Simultaneous Transmission Scenario (Bluetooth Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	EVDO BC10 (\$90S)	0.232	0.047	0.279
	EVDO BC0 (\$22H)	0.223	0.047	0.270
	PCS EVDO	0.699	0.047	0.746
	GPRS 850	0.268	0.047	0.315
	GPRS 1900	0.440	0.047	0.487
	UMTS 850	0.256	0.047	0.303
	UMTS 1750	1.040	0.047	1.087
	UMTS 1900	0.946	0.047	0.993
	LTE Band 12	0.267	0.047	0.314
	LTE Band 13	0.228	0.047	0.275
	LTE Band 26 (Cell)	0.282	0.047	0.329
	LTE Band 66 (AWS)	1.079	0.047	1.126
	LTE Band 25 (PCS)	0.978	0.047	1.025
	LTE Band 30	0.402	0.047	0.449
	LTE Band 7	0.359	0.047	0.406
	LTE Band 41	0.338	0.047	0.385

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12.6 Phablet Simultaneous Transmission Analysis

Table 12-13
Simultaneous Transmission Scenario with 5 GHz WLAN (Phablet at 0.0 cm)

Simult Tx	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
	1	2	1+2
Phablet SAR	1.500	0.809	2.309

12.7 Simultaneous Transmission Conclusion

The above numerical summed SAR results analysis are 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 D01v06 and IEEE 1528- 2013 Section 6.3.4.1.

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13 SAR MEASUREMENT VARIABILITY

13.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01r04, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

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

- 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
- 2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
- 3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .
- 4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg

Table 13-1
Head SAR Measurement Variability Results

HEAD VARIABILITY RESULTS															
Band	FREQUENCY		Mode/Band	Service	Side	Test Position	Antenna	Data Rate (Mbps)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.							(W/kg)	(W/kg)		(W/kg)		(W/kg)	
2450	2412.00	1	802.11b, 22 MHz Bandwidth	DSSS	Right	Cheek	1	1	0.970	0.877	1.11	N/A	N/A	N/A	N/A
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 13-2
Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS													
Band	FREQUENCY		Mode	Service	Side	Spacing	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.					(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1750	1770.00	132572	LTE Band 66 (AWS), 20 MHz Bandwidth	QPSK, 1 RB, 0 RB Offset	bottom	10 mm	1.050	0.950	1.11	N/A	N/A	N/A	N/A
1900	1905.00	26590	LTE Band 25 (PCS), 20 MHz Bandwidth	QPSK, 1 RB, 0 RB Offset	bottom	10 mm	0.973	0.934	1.04	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT						Body							
Spatial Peak						1.6 W/kg (mW/g)							
Uncontrolled Exposure/General Population						averaged over 1 gram							

13.2 Measurement Uncertainty

The measured SAR was < 1.5 W/kg for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis per IEEE 1528-2013 was not required.

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14 ADDITIONAL TESTING PER FCC GUIDANCE

14.1 Tuner Testing

The following test procedures were followed to demonstrate that the SAR results in Section 11 represented the appropriate SAR test conditions.

For bands with dynamic tuning implemented, SAR was measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. The additional tuner hardware has no influence to the antenna characteristics, other than impedance matching. Additional single point SAR time-sweep measurements were evaluated for other tuner states to determine that the other tuner configurations would result in similar SAR values. Per FCC Guidance, no additional SAR measurements were needed since the reported 1g SAR was under 0.5 W/kg.

To evaluate all of the tuner states, the 139 tuner states were divided evenly among band, mode and exposure combinations so that at least one single point SAR measurement was measured among the configurations. Single point time-sweep measurements were performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state was able to be established remotely so that the device was not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe remained stationary at the same position throughout the entire series of single point measurements for each combination. The tuner state was able to be established remotely so that the device was not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe remained stationary at the same position throughout the entire series of single point measurements for each combination.

The operational description contains more information about the design and implementation of the dynamic antenna tuning.

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Table 14-1
UMTS/CDMA/LTE Supplemental Head SAR Data

Supplemental Head SAR Data											
UMTS 850		CDMA BC10		CDMA BC0		LTE Band 12		LTE Band 13		LTE Band 26	
RMC		RC3/SO55		EVDO Rev. A		QPSK, 10MHz Bandwidth, 1 RB, 49 RB Offsets		QPSK, 10MHz Bandwidth, 1 RB, 49 RB Offsets		QPSK, 15MHz Bandwidth, 1 RB, 0 RB Offsets	
Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek
Frequency (MHz)	836.6	Frequency (MHz)	820.1	Frequency (MHz)	836.52	Frequency (MHz)	707.5	Frequency (MHz)	782	Frequency (MHz)	831.5
Channel	4183	Channel	564	Channel	384	Channel	23095	Channel	23230	Channel	26865
Measured 1g SAR (W/kg)	0.156	Measured 1g SAR (W/kg)	0.15	Measured 1g SAR (W/kg)	0.139	Measured 1g SAR (W/kg)	0.087	Measured 1g SAR (W/kg)	0.130	Measured 1g SAR (W/kg)	0.163
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 60)	0.165	Auto-tune (State 60)	0.159	Auto-tune (State 60)	0.182	Auto-tune (State 69)	0.105	Auto-tune (State 12)	0.151	Auto-tune (State 60)	0.167
Default (State 0)	0.16	Default (State 0)	0.144	Default (State 0)	0.163	Default (State 0)	0.099	Default (State 0)	0.151	Default (State 0)	0.148
0	0.160	0	0.144	0	0.163	0	0.099	0	0.151	0	0.148
2	0.163	7	0.144	4	0.166	2	0.101	1	0.153	3	0.152
5	0.162	14	0.167	6	0.168	9	0.101	8	0.152	10	0.153
12	0.163	21	0.165	11	0.167	16	0.108	12	0.151	17	0.178
19	0.184	28	0.122	17	0.193	23	0.108	15	0.181	24	0.178
21	0.184	35	0.122	31	0.144	30	0.090	22	0.181	31	0.132
26	0.140	42	0.162	45	0.184	37	0.091	29	0.137	38	0.131
33	0.144	49	0.161	49	0.183	44	0.098	36	0.138	45	0.167
40	0.177	56	0.153	56	0.167	51	0.099	43	0.166	49	0.168
47	0.178	60	0.159	60	0.185	58	0.108	50	0.167	52	0.169
54	0.174	63	0.155	66	0.141	63	0.107	57	0.184	59	0.169
60	0.166	70	0.123	73	0.154	65	0.093	64	0.186	60	0.168
61	0.174	77	0.123	91	0.168	69	0.104	71	0.187	66	0.149
68	0.148	84	0.152	94	0.167	72	0.092	77	0.187	73	0.149
75	0.147	91	0.136	95	0.168	79	0.103	78	0.170	80	0.163
82	0.170	101	0.136	104	0.168	86	0.103	85	0.173	87	0.164
89	0.171	105	0.164	108	0.182	100	0.095	87	0.174	101	0.159
103	0.159	119	0.162	118	0.164	101	0.095	99	0.184	115	0.171
105	0.182	133	0.163	132	0.165	114	0.098	113	0.134	129	0.171
117	0.159			133	0.189	128	0.099	127	0.134	133	0.176
129	0.175										
131	0.159										

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Table 14-2
UMTS/CDMA/LTE Supplemental Body SAR Data

Supplemental Body SAR Data											
UMTS 850		CDMA BC10		CDMA BC0		LTE Band 12		LTE Band 13		LTE Band 26	
RMC		TDSO/SO32		TDSO/SO33		QPSK, 10MHz Bandwidth, 1 RB, 49 RB Offsets		QPSK, 10MHz Bandwidth, 1 RB, 49 RB Offsets		QPSK, 15MHz Bandwidth, 1 RB, 0 RB Offsets	
Test Position	Right Edge	Test Position	Back Side	Test Position	Back Side	Test Position	Right Edge	Test Position	Back Side	Test Position	Right Edge
Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm
Frequency (MHz)	836.6	Frequency (MHz)	820.1	Frequency (MHz)	836.52	Frequency (MHz)	707.5	Frequency (MHz)	782	Frequency (MHz)	831.5
Channel	4183	Channel	564	Channel	384	Channel	23095	Channel	23230	Channel	26865
Measured 1g SAR (W/kg)	0.253	Measured 1g SAR (W/kg)	0.234	Measured 1g SAR (W/kg)	0.216	Measured 1g SAR (W/kg)	0.262	Measured 1g SAR (W/kg)	0.215	Measured 1g SAR (W/kg)	0.276
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 58)	0.292	Auto-tune (State 60)	0.293	Auto-tune (State 60)	0.257	Auto-tune (State 59)	0.346	Auto-tune (State 2)	0.328	Auto-tune (State 60)	0.283
Default (State 0)	0.296	Default (State 0)	0.213	Default (State 0)	0.234	Default (State 0)	0.353	Default (State 0)	0.289	Default (State 0)	0.268
0	0.296	0	0.213	0	0.234	0	0.353	0	0.289	0	0.268
12	0.298	14	0.313	13	0.259	9	0.360	2	0.328	18	0.296
19	0.323	21	0.312	14	0.276	16	0.374	8	0.294	25	0.297
26	0.26	28	0.189	20	0.276	23	0.373	10	0.295	32	0.235
28	0.265	35	0.189	27	0.210	24	0.373	15	0.331	38	0.235
33	0.265	42	0.235	34	0.210	30	0.316	22	0.332	39	0.292
40	0.320	49	0.234	41	0.256	37	0.321	29	0.266	46	0.297
47	0.318	56	0.226	48	0.250	44	0.368	36	0.266	53	0.284
52	0.308	60	0.292	55	0.251	51	0.368	43	0.312	60	0.286
54	0.305	63	0.226	60	0.258	58	0.386	50	0.313	67	0.226
58	0.291	68	0.177	62	0.251	59	0.346	57	0.341	74	0.225
61	0.304	70	0.177	69	0.211	65	0.299	64	0.341	80	0.281
68	0.247	77	0.177	76	0.211	70	0.3	71	0.323	81	0.280
75	0.248	84	0.224	82	0.247	72	0.299	78	0.32	88	0.279
82	0.303	91	0.195	83	0.247	79	0.385	84	0.325	94	0.249
89	0.303	98	0.194	90	0.247	86	0.374	85	0.325	102	0.25
96	0.269	112	0.235	97	0.227	93	0.312	92	0.323	118	0.284
110	0.269	121	0.230	98	0.228	107	0.364	106	0.265	109	0.280
112	0.317	126	0.234	111	0.234	121	0.365	120	0.262	116	0.282
124	0.269	135	0.230	125	0.235	135	0.364	134	0.262	122	0.288
138	0.270	136	0.228	136	0.253					123	0.283
										130	0.283
										137	0.282

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14.2 LTE Band 41 Power Class 2 and Power Class 3 Linearity

This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per FCC Guidance based on the device behavior, all SAR tests were performed using Power Class 3. SAR with Power Class 2 at the highest power and available duty factor was additionally performed for the Power Class 3 configuration with the highest SAR among all exposure conditions. The linearity between the Power Class 2 and Power Class 3 SAR results and the respective frame averaged powers was calculated to determine that the results were linear. Per FCC Guidance, no additional SAR measurements were required.

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.2	27
Measured Output Power (dBm)	25.17	26.96
Measured SAR (W/kg)	0.209	0.204
Measured Power (mW)	328.85	496.59
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	208.16	215.02
% deviation from expected linearity		-5.51%

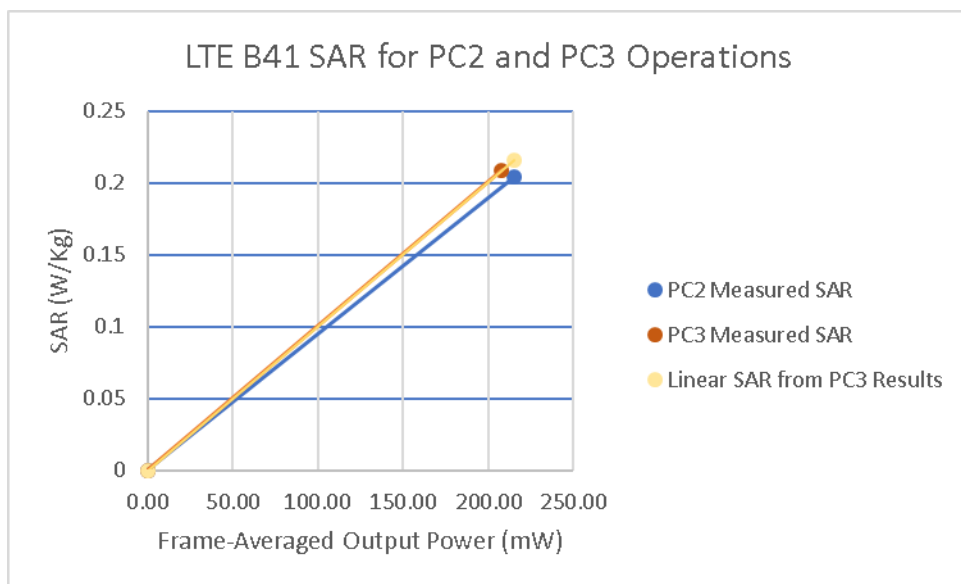


Table 14-3
LTE Band 41 Head Linearity Data

FCC ID: ZNFG011C		SAR EVALUATION REPORT		Approved by: Quality Manager
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	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.2	27
Measured Output Power (dBm)	25.17	26.96
Measured SAR (W/kg)	0.336	0.332
Measured Power (mW)	328.85	496.59
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	208.16	215.02
% deviation from expected linearity		-4.34%

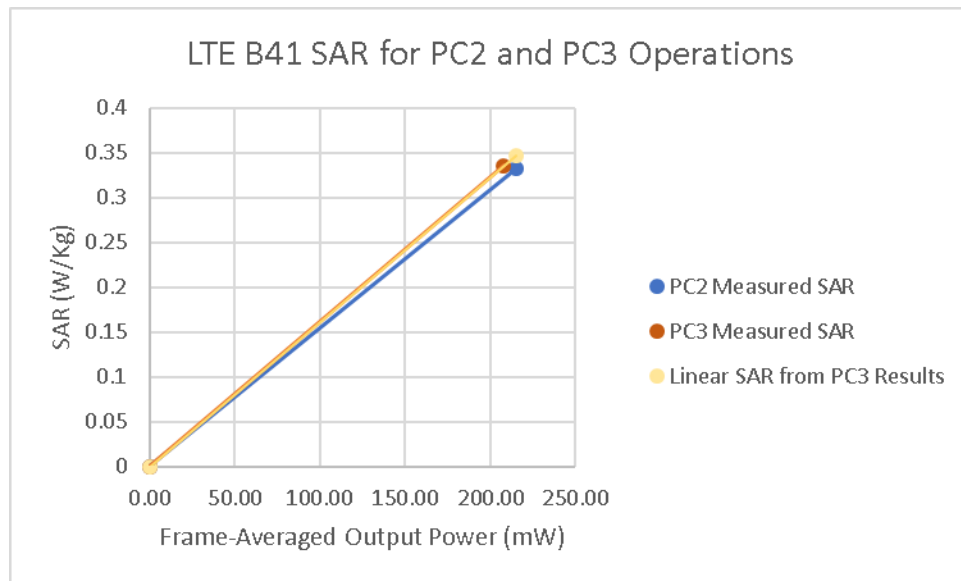


Table 14-4
LTE Band 41 Body Linearity Data

FCC ID: ZNFG011C		SAR EVALUATION REPORT		Approved by: Quality Manager
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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	8753ES	S-Parameter Vector Network Analyzer	8/19/2016	Annual	8/19/2017	MY40003841
Agilent	8753ES	S-Parameter Network Analyzer	10/26/2016	Annual	10/26/2017	US39170118
Agilent	E4438C	ESG Vector Signal Generator	3/24/2017	Annual	3/24/2018	MY45091346
Agilent	E4438C	ESG Vector Signal Generator	3/23/2017	Annual	3/23/2018	MY47270002
Agilent	E5515C	8960 Series 10 Wireless Communications Test Set	10/5/2016	Annual	10/5/2017	GB42230325
Agilent	E5515C	Wireless Communications Test Set	12/12/2016	Annual	12/12/2017	GB44400860
Agilent	E8257D	(250kHz-20GHz) Signal Generator	3/22/2017	Annual	3/22/2018	MY45470194
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB44450273
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Agilent	N5182A	MXG Vector Signal Generator	10/27/2016	Annual	10/27/2017	MY47420603
Agilent	N5182A	MXG Vector Signal Generator	2/28/2017	Annual	2/28/2018	MY47420800
Agilent	N9020A	MXA Signal Analyzer	10/28/2016	Annual	10/28/2017	US46470561
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	433971
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	433972
Anritsu	MA24106A	USB Power Sensor	6/7/2017	Annual	6/7/2018	1231535
Anritsu	MA24106A	USB Power Sensor	6/7/2017	Annual	6/7/2018	1231538
Anritsu	MA24106A	USB Power Sensor	6/7/2017	Annual	6/7/2018	1244512
Anritsu	MA24106A	USB Power Sensor	6/7/2017	Annual	6/7/2018	1244515
Anritsu	MA2411B	Pulse Power Sensor	8/18/2016	Annual	8/18/2017	1207470
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1339018
Anritsu	ML2495A	Power Meter	10/16/2015	Biennial	10/16/2017	941001
Anritsu	ML2496A	Power Meter	3/28/2017	Annual	3/28/2018	1351001
Anritsu	MT8820C	Radio Communication Analyzer	9/15/2016	Annual	9/15/2017	6200901190
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	4352	Ultra Long Stem Thermometer	3/8/2016	Biennial	3/8/2018	160261694
Control Company	4352	Ultra Long Stem Thermometer	3/8/2016	Biennial	3/8/2018	160261729
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
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	3/2/2016	Biennial	3/2/2018	13264162
Mitutoyo	CD-6"CSX	Digital Caliper	3/2/2016	Biennial	3/2/2018	13264165
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-53W2	Attenuator (3dB)	CBT	N/A	CBT	120
Narda	EHP-200AC	Electric & Magnetic Field Probe	4/18/2017	Annual	4/18/2018	170WX70211
Pasternack	NC-100	Torque Wrench	3/8/2017	Annual	3/8/2018	N/A
Pasternack	NC-100	Torque Wrench	3/8/2017	Annual	3/8/2018	N/A
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	12/12/2016	Annual	12/12/2017	833855/0010
Rohde & Schwarz	CMU200	Base Station Simulator	4/11/2017	Annual	4/11/2018	836371/0079
Rohde & Schwarz	CMW500	Radio Communication Tester	3/29/2017	Annual	3/29/2018	128633
Rohde & Schwarz	CMW500	Radio Communication tester	6/5/2017	Annual	6/5/2018	140144
Seekonk	NC-100	Torque Wrench (8" lb)	9/1/2016	Biennial	9/1/2018	21053
Seekonk	NC-100	Torque Wrench (8" lb)	8/30/2016	Biennial	8/30/2018	N/A
SPEAG	ES30V3	SAR Probe	3/14/2017	Annual	3/14/2018	3319
SPEAG	ES30V3	SAR Probe	2/10/2017	Annual	2/10/2018	3213
SPEAG	ES30V3	SAR Probe	3/14/2017	Annual	3/14/2018	3209
SPEAG	EX30V4	SAR Probe	2/13/2017	Annual	2/13/2018	3914
SPEAG	EX30V4	SAR Probe	4/18/2017	Annual	4/18/2018	7406
SPEAG	ES30V3	SAR Probe	2/10/2017	Annual	2/10/2018	3318
SPEAG	ES30V3	SAR Probe	9/19/2016	Annual	9/19/2017	3287
SPEAG	EX30V4	SAR Probe	1/13/2017	Annual	1/13/2018	3589
SPEAG	D750V3	750 MHz SAR Dipole	1/11/2017	Annual	1/11/2018	1003
SPEAG	D835V2	835 MHz SAR Dipole	7/14/2016	Annual	7/14/2017	4d133
SPEAG	D835V2	835 MHz SAR Dipole	4/11/2017	Annual	4/11/2018	4d119
SPEAG	D1750V2	1750 MHz SAR Dipole	5/9/2017	Annual	5/9/2018	1148
SPEAG	D1900V2	1900 MHz SAR Dipole	7/8/2016	Annual	7/6/2018	5d080
SPEAG	D2300V2	2300 MHz SAR Dipole	3/7/2017	Annual	3/7/2018	1038
SPEAG	D2450V2	2450 MHz SAR Dipole	9/13/2016	Annual	9/13/2017	797
SPEAG	D2600V2	2600 MHz SAR Dipole	9/13/2016	Annual	9/13/2017	1071
SPEAG	D5GHzV2	5 GHz SAR Dipole	8/2/2016	Annual	8/2/2017	1237
SPEAG	D750V3	750 MHz SAR Dipole	7/13/2016	Annual	7/13/2017	1161
SPEAG	D750V3	750 MHz Dipole	3/7/2017	Annual	3/7/2018	1054
SPEAG	D835V2	850 MHz SAR Dipole	5/11/2017	Annual	5/11/2018	4d180
SPEAG	D1750V2	1750 MHz SAR Dipole	5/9/2017	Annual	5/9/2018	1092
SPEAG	D1900V2	1900 MHz SAR Dipole	7/15/2016	Annual	7/15/2017	5d149
SPEAG	D2450V2	2450 MHz SAR Dipole	7/25/2016	Annual	7/25/2017	981
SPEAG	D2600V2	2600 MHz SAR Dipole	9/13/2016	Annual	9/13/2017	1071
SPEAG	D2600V2	2600 MHz SAR Dipole	4/13/2017	Annual	4/13/2018	1004
SPEAG	D5GHzV2	5 GHz SAR Dipole	3/9/2017	Annual	3/9/2018	1123
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/8/2017	Annual	3/8/2018	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2017	Annual	2/9/2018	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/13/2017	Annual	3/13/2018	1415
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2017	Annual	2/9/2018	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/11/2017	Annual	4/11/2018	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/14/2016	Annual	9/14/2017	1408
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/16/2017	Annual	1/16/2018	1466
SPEAG	DAK-3.5	Dielectric Assessment Kit	9/13/2016	Annual	9/13/2017	1091

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

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16 MEASUREMENT UNCERTAINTIES

a	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	Tol. (± %)	Prob. Dist.	Div.	c _i 1gm	c _i 10 gms	1gm u _i (± %)	10gms u _i (± %)	v _i
Measurement System								
Probe Calibration	6.55	N	1	1.0	1.0	6.6	6.6	∞
Axial Isotropy	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	2.0	R	1.73	1.0	1.0	1.2	1.2	∞
Linearity	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	0.25	R	1.73	1.0	1.0	0.1	0.1	∞
Readout Electronics	0.3	N	1	1.0	1.0	0.3	0.3	∞
Response Time	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions - Noise	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
RF Ambient Conditions - Reflections	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	6.7	R	1.73	1.0	1.0	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Test Sample Related								
Test Sample Positioning	2.7	N	1	1.0	1.0	2.7	2.7	35
Device Holder Uncertainty	1.67	N	1	1.0	1.0	1.7	1.7	5
Output Power Variation - SAR drift measurement	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
SAR Scaling	0.0	R	1.73	1.0	1.0	0.0	0.0	∞
Phantom & Tissue Parameters								
Phantom Uncertainty (Shape & Thickness tolerances)	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	4.2	N	1	0.78	0.71	3.3	3.0	10
Liquid Permittivity - measurement uncertainty	4.1	N	1	0.23	0.26	1.0	1.1	10
Liquid Conductivity - Temperature Uncertainty	3.4	R	1.73	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Uncertainty	0.6	R	1.73	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)	RSS					11.5	11.3	60
Expanded Uncertainty (95% CONFIDENCE LEVEL)	k=2					23.0	22.6	

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17 CONCLUSION

17.1 Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Innovation, Science, and Economic Development 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: ZNFG011C; Type: Portable Handset; Serial: 13458

Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 820.1 \text{ MHz}$; $\sigma = 0.859 \text{ S/m}$; $\epsilon_r = 41.19$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-22-2017; Ambient Temp: 24.5°C; Tissue Temp: 24.5°C

Probe: ES3DV3 - SN3213; ConvF(6.49, 6.49, 6.49); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: CDMA, Rule Part 90S, Right Head, Cheek, Mid.ch

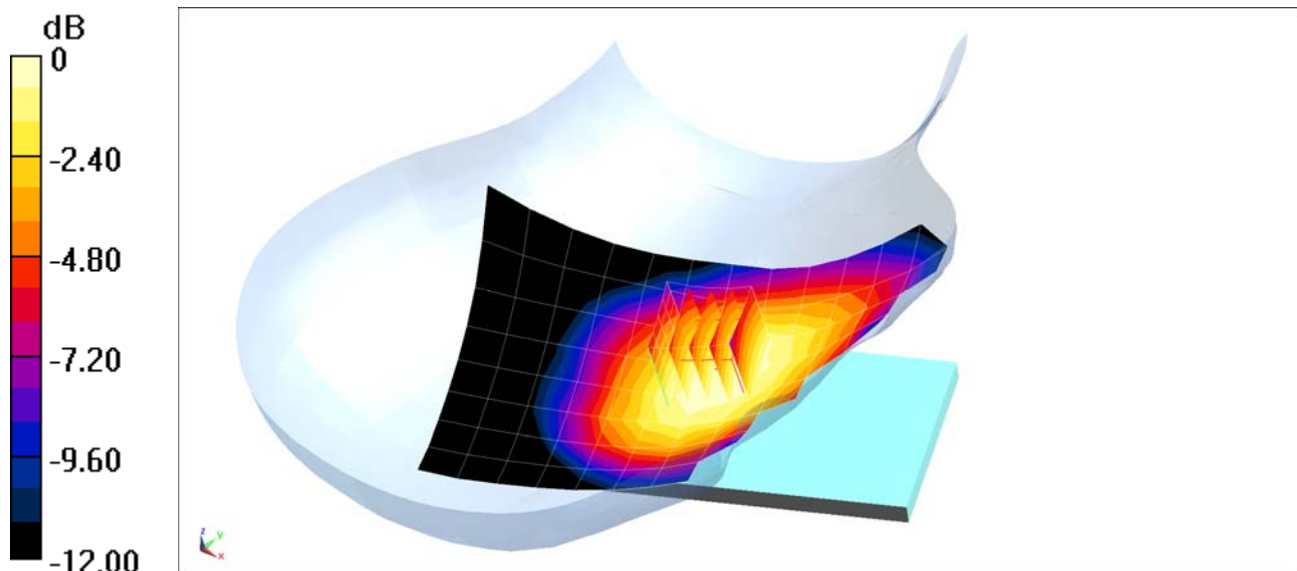
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 13.77 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.185 W/kg

SAR(1 g) = 0.150 W/kg



0 dB = 0.144 W/kg = -8.42 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13458

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.873 \text{ S/m}$; $\epsilon_r = 41.014$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-22-2017; Ambient Temp: 24.5°C; Tissue Temp: 24.5°C

Probe: ES3DV3 - SN3213; ConvF(6.49, 6.49, 6.49); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

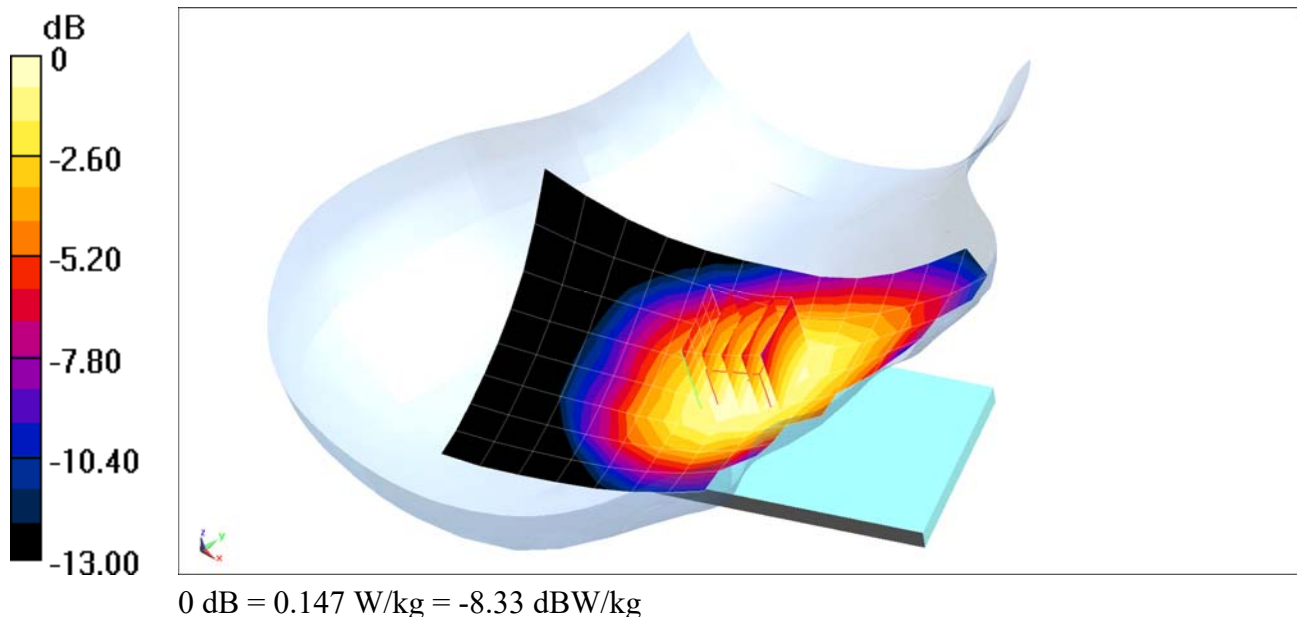
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 13.14 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.171 W/kg

SAR(1 g) = 0.139 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14209

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

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.429 \text{ S/m}$; $\epsilon_r = 39.643$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-28-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3209; ConvF(5.31, 5.31, 5.31); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: PCS EVDO Rev. A, Right Head, Cheek, Mid.ch

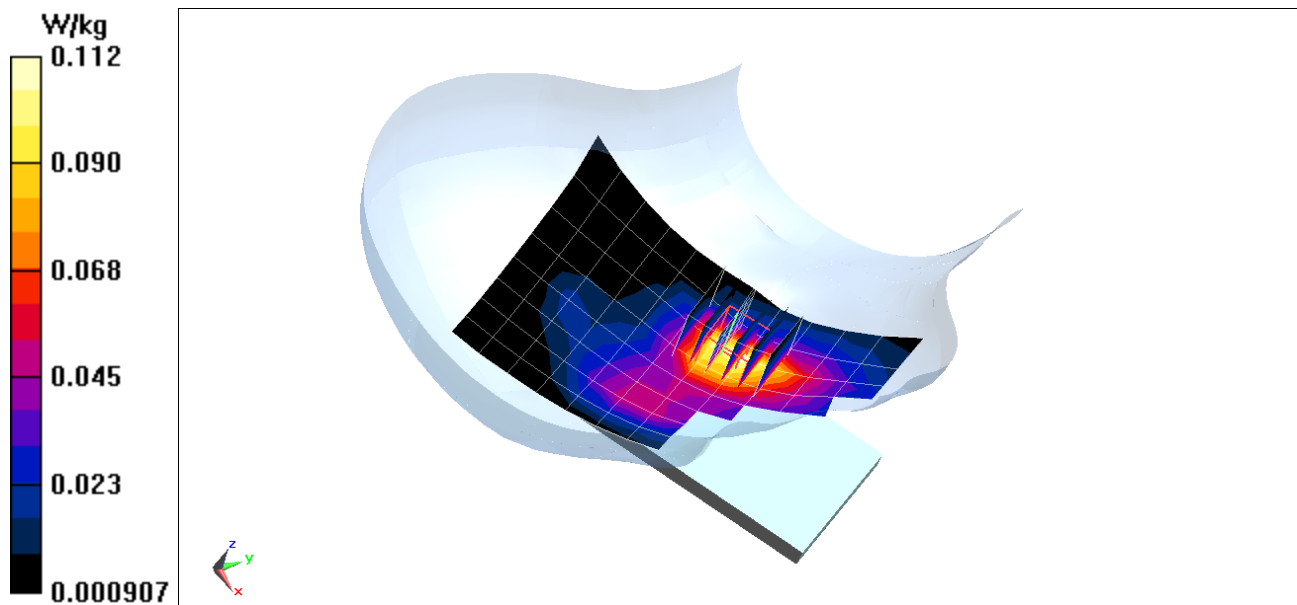
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 8.863 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.149 W/kg

SAR(1 g) = 0.099 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13458

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6$ MHz; $\sigma = 0.908$ S/m; $\epsilon_r = 42.401$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Test Date: 07-28-2017; Ambient Temp: 23.1°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3319; ConvF(6.46, 6.46, 6.46); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: GPRS 850, Right Head, Cheek, Mid.ch, 4 Tx slots

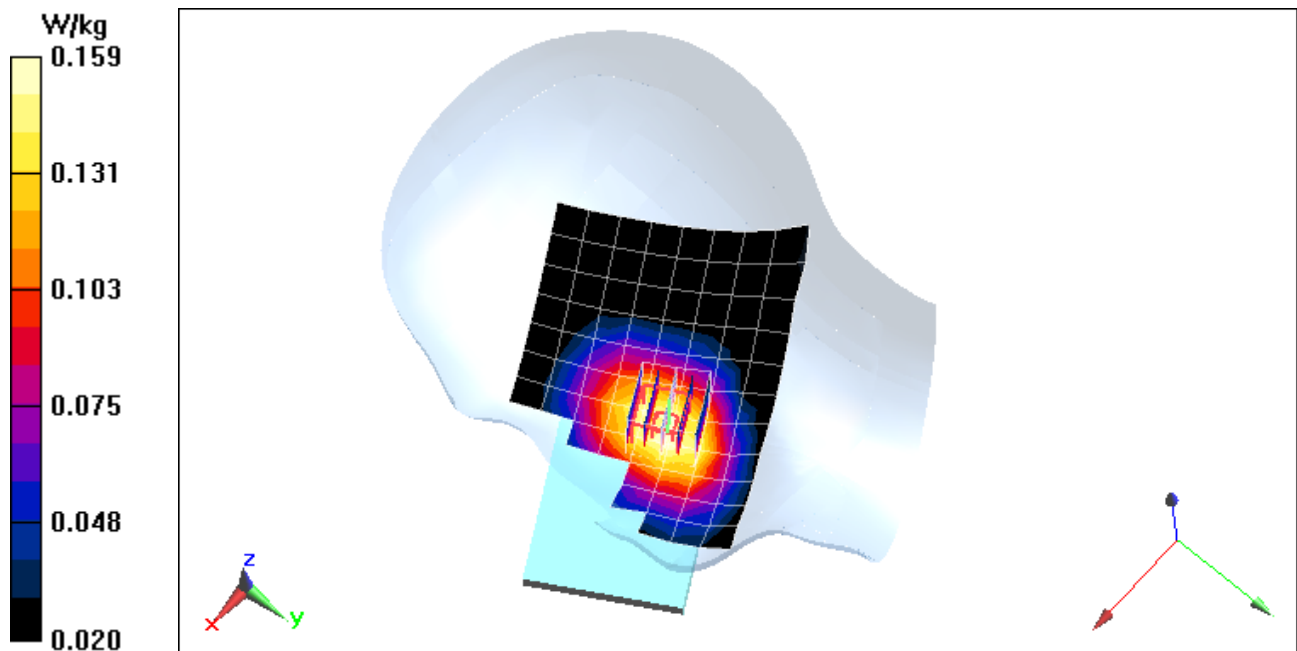
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 13.19 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.181 W/kg

SAR(1 g) = 0.146 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14191

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

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.429 \text{ S/m}$; $\epsilon_r = 39.643$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-28-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3209; ConvF(5.31, 5.31, 5.31); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: GPRS 1900, Right Head, Cheek, Mid.ch, 4 Tx slots

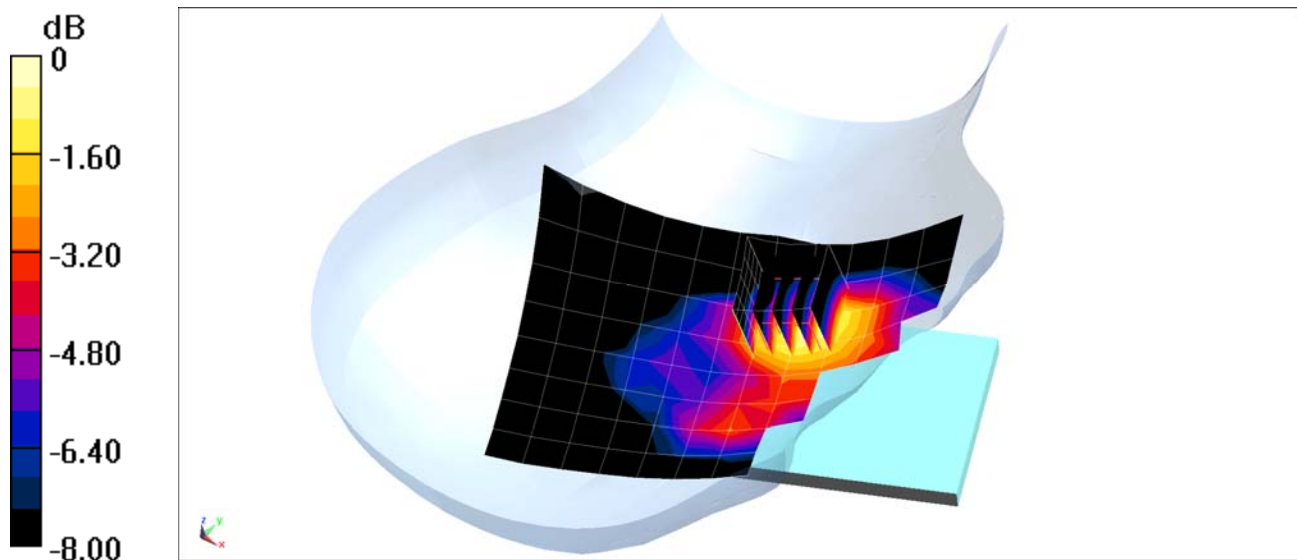
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 7.947 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.125 W/kg

SAR(1 g) = 0.081 W/kg



0 dB = 0.0899 W/kg = -10.46 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13458

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.873 \text{ S/m}$; $\epsilon_r = 41.013$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-22-2017; Ambient Temp: 24.5°C; Tissue Temp: 24.5°C

Probe: ES3DV3 - SN3213; ConvF(6.49, 6.49, 6.49); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

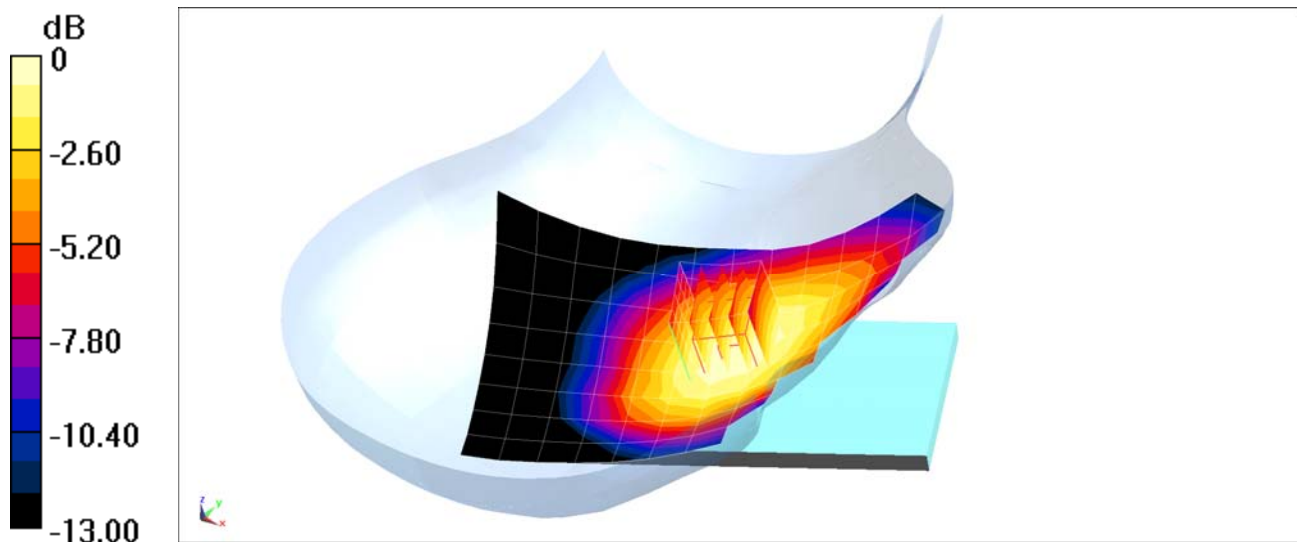
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 13.93 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.190 W/kg

SAR(1 g) = 0.156 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13458

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

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.4 \text{ MHz}$; $\sigma = 1.385 \text{ S/m}$; $\epsilon_r = 38.463$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-26-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3319; ConvF(5.38, 5.38, 5.38); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

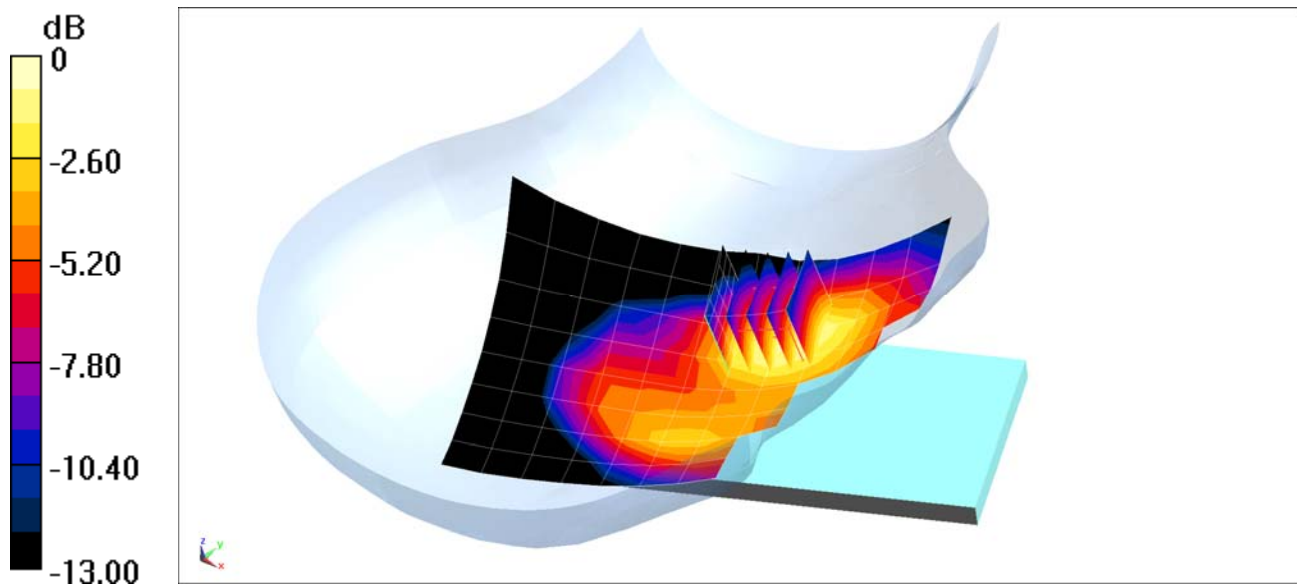
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 11.64 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.245 W/kg

SAR(1 g) = 0.169 W/kg



0 dB = 0.193 W/kg = -7.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14209

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

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.429 \text{ S/m}$; $\epsilon_r = 39.643$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-28-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3209; ConvF(5.31, 5.31, 5.31); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

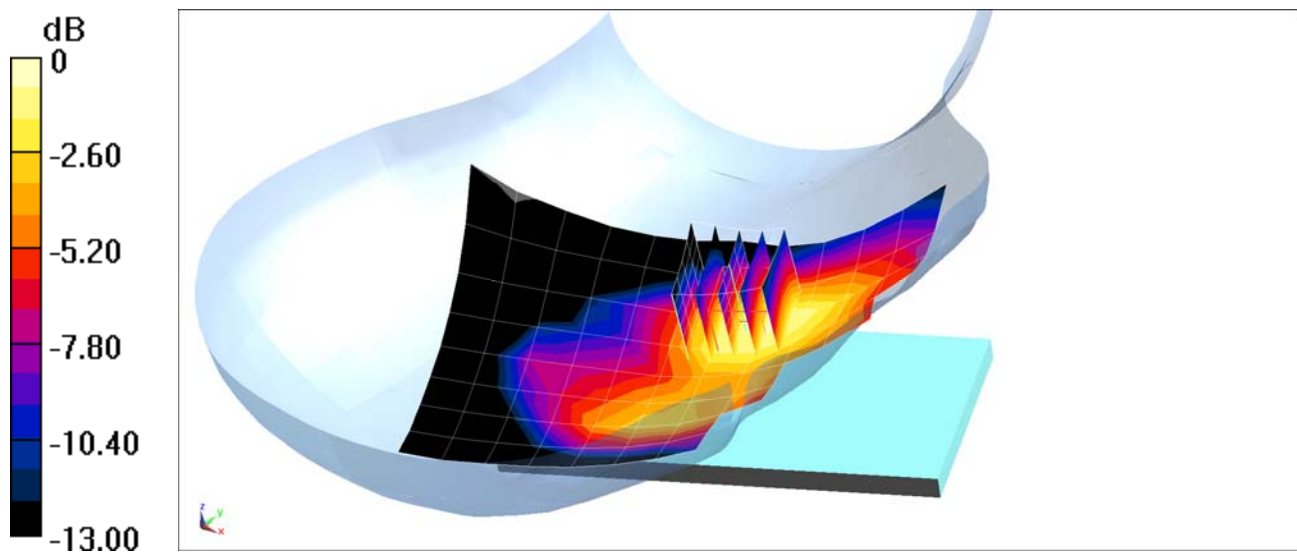
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 8.372 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.135 W/kg

SAR(1 g) = 0.091 W/kg



0 dB = 0.104 W/kg = -9.83 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13474

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

Medium: 750 Head Medium parameters used (interpolated):

$f = 707.5$ MHz; $\sigma = 0.862$ S/m; $\epsilon_r = 42.271$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Test Date: 07-10-2017; Ambient Temp: 23.3°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(6.76, 6.76, 6.76); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

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

Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

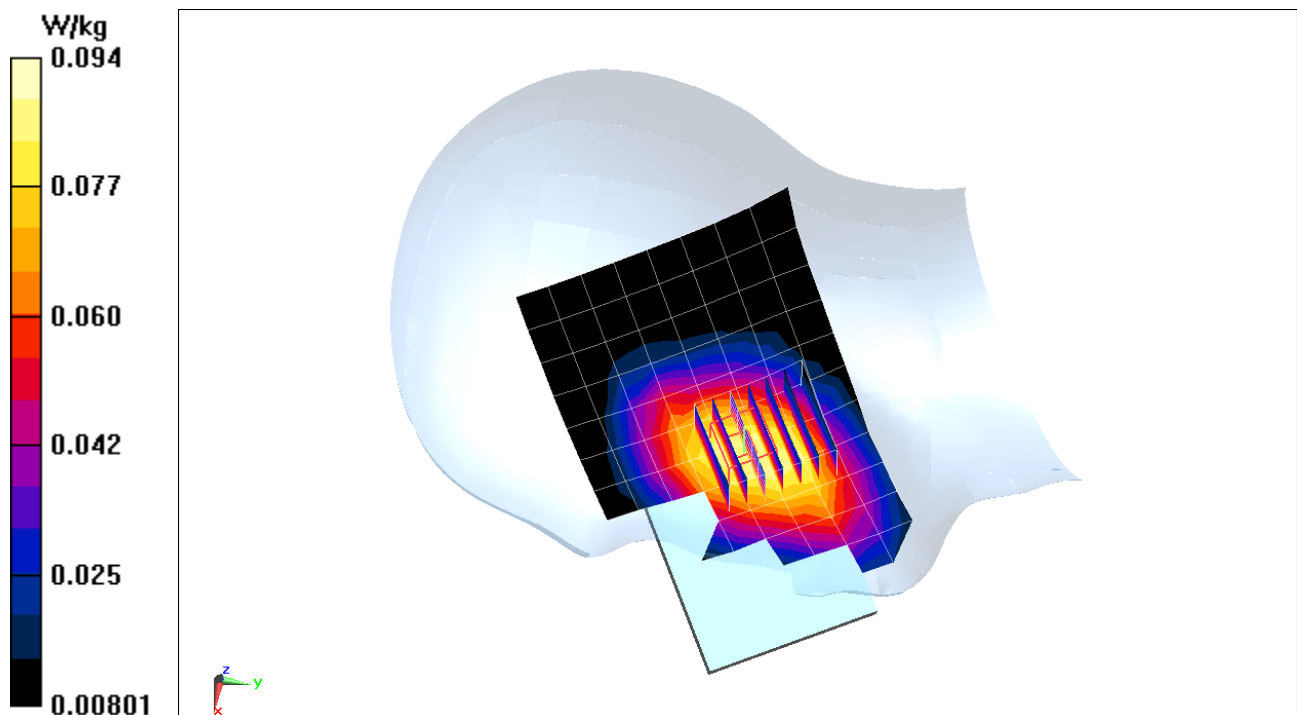
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (7x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.57 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.104 W/kg

SAR(1 g) = 0.087 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13474

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

Medium: 750 Head Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 0.93 \text{ S/m}$; $\epsilon_r = 41.313$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 07-10-2017; Ambient Temp: 23.3°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(6.76, 6.76, 6.76); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

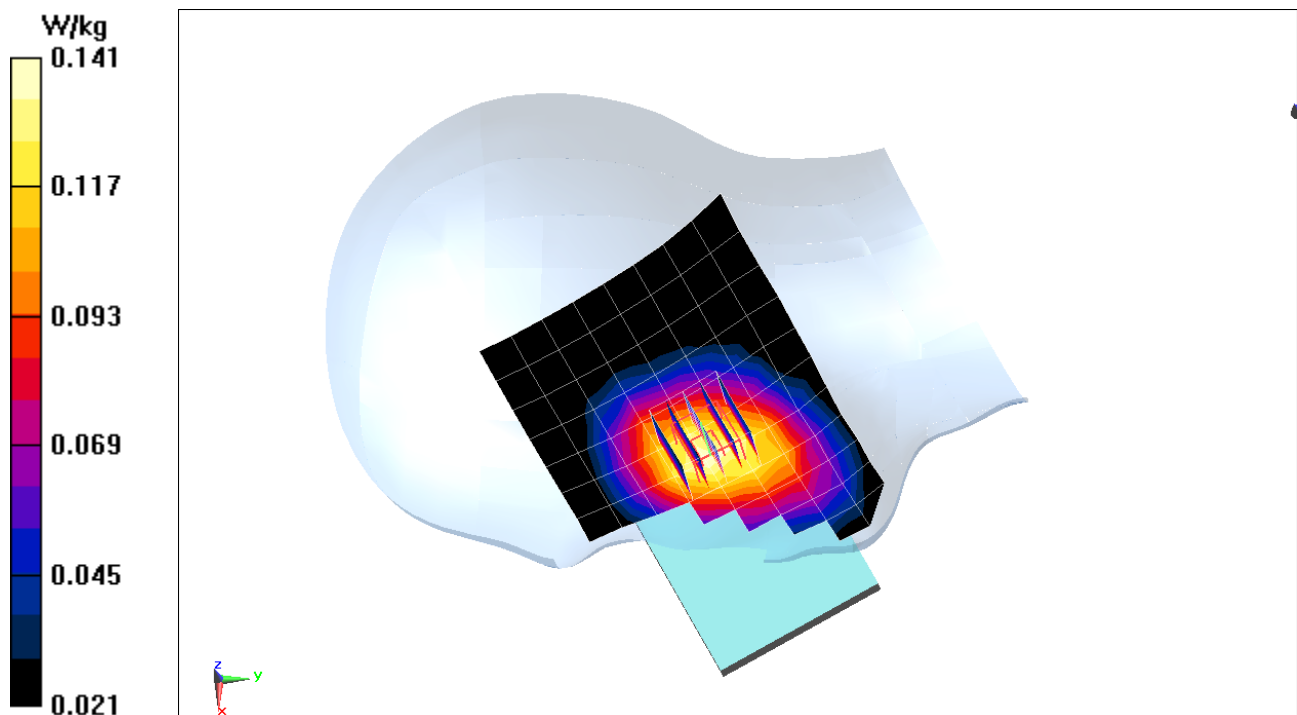
Area Scan (9x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 12.68 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.159 W/kg

SAR(1 g) = 0.130 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13490

Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 831.5 \text{ MHz}$; $\sigma = 0.869 \text{ S/m}$; $\epsilon_r = 41.068$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-22-2017; Ambient Temp: 24.5°C; Tissue Temp: 24.5°C

Probe: ES3DV3 - SN3213; ConvF(6.49, 6.49, 6.49); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

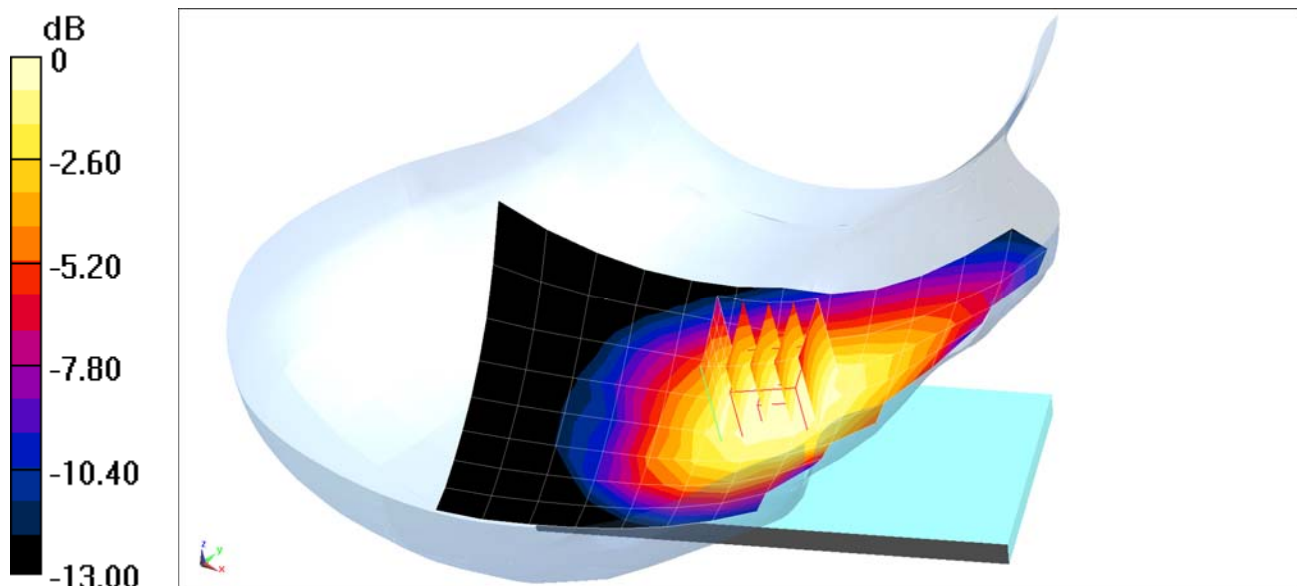
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 14.59 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 0.201 W/kg

SAR(1 g) = 0.163 W/kg



0 dB = 0.143 W/kg = -8.45 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13346

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1720 \text{ MHz}$; $\sigma = 1.371 \text{ S/m}$; $\epsilon_r = 38.527$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-26-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3319; ConvF(5.38, 5.38, 5.38); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 66 (AWS), Right Head, Cheek, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

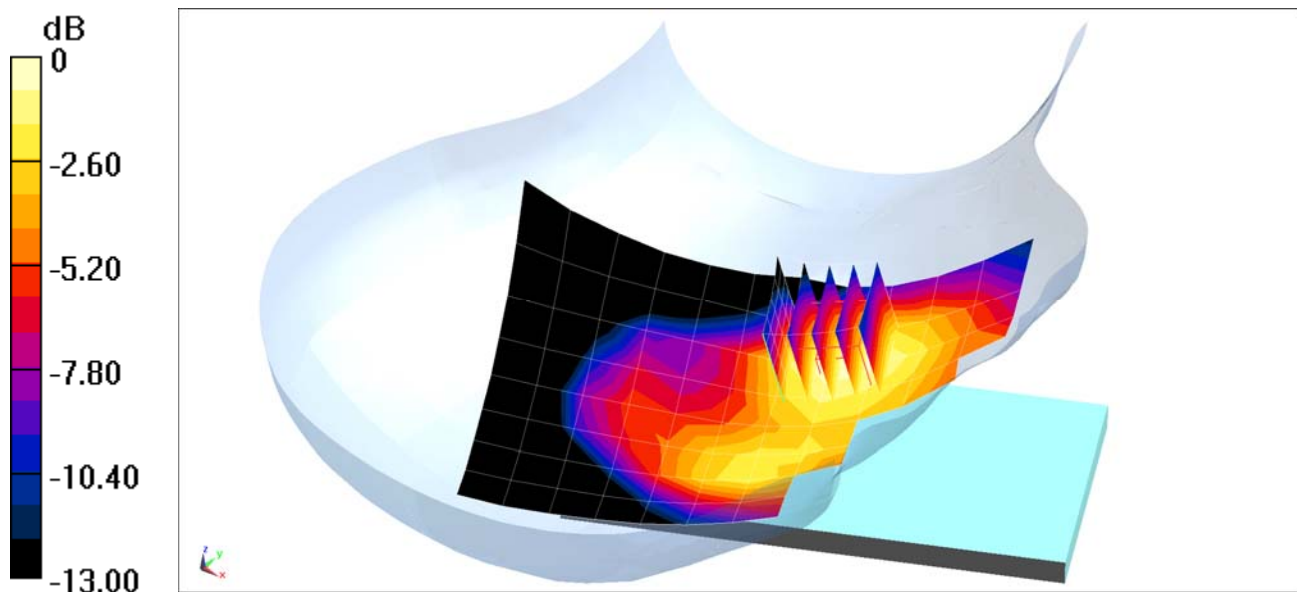
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 11.30 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.203 W/kg

SAR(1 g) = 0.144 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14209

Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1905 \text{ MHz}$; $\sigma = 1.439 \text{ S/m}$; $\epsilon_r = 40.101$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-26-2017; Ambient Temp: 21.3°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3209; ConvF(5.31, 5.31, 5.31); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

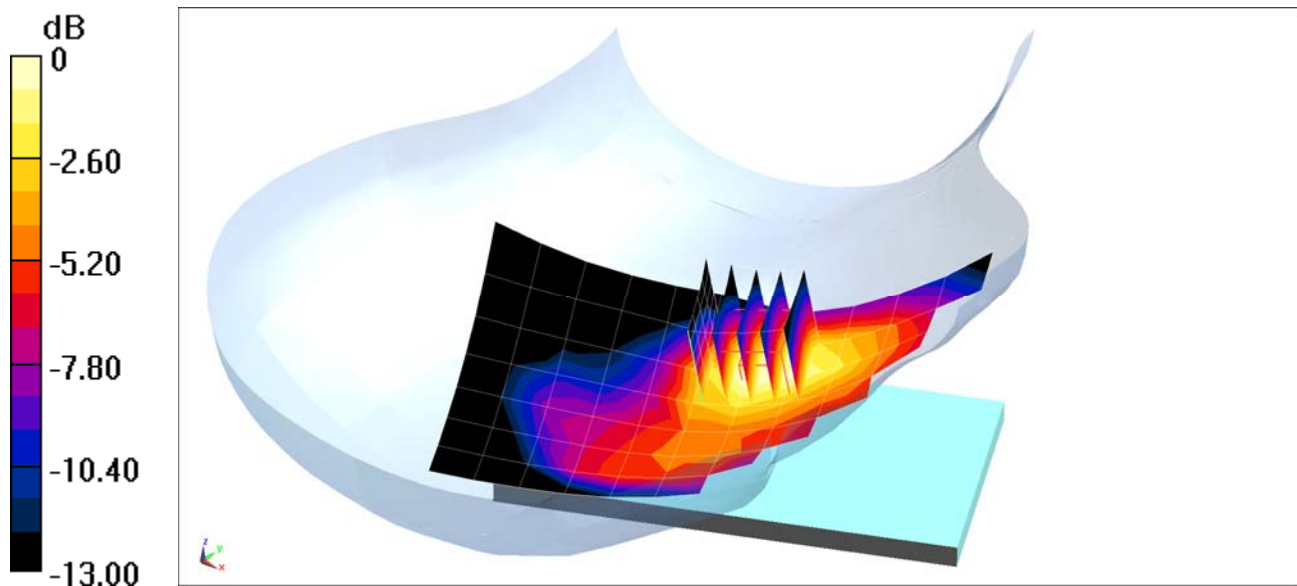
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 9.973 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.189 W/kg

SAR(1 g) = 0.121 W/kg



0 dB = 0.132 W/kg = -8.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14183

Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used:

$f = 2310$ MHz; $\sigma = 1.733$ S/m; $\epsilon_r = 39.609$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Test Date: 07-03-2017; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3213; ConvF(4.95, 4.95, 4.95); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 30, Right Head, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

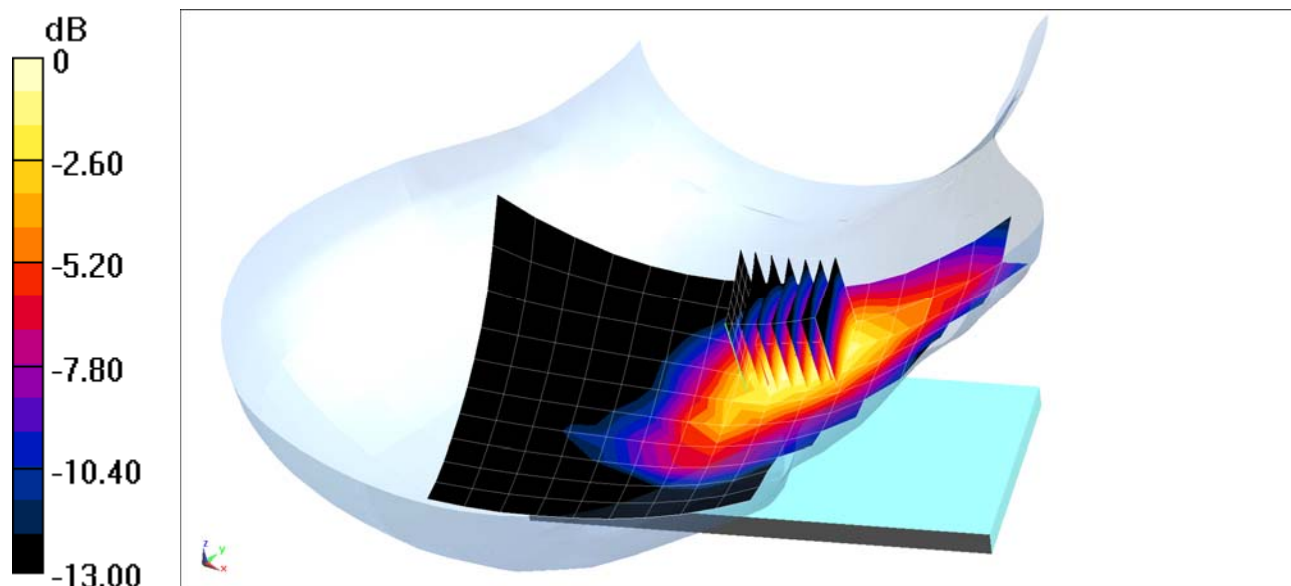
Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm

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

Reference Value = 11.99 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.314 W/kg

SAR(1 g) = 0.195 W/kg



0 dB = 0.230 W/kg = -6.38 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14191

Communication System: UID 0, _LTE Band 7; Frequency: 2560 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2560 \text{ MHz}$; $\sigma = 1.965 \text{ S/m}$; $\epsilon_r = 37.861$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-29-2017; Ambient Temp: 22.2°C; Tissue Temp: 20.5°C

Probe: ES3DV3 - SN3213; ConvF(4.52, 4.52, 4.52); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 7, Right Head, Cheek, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

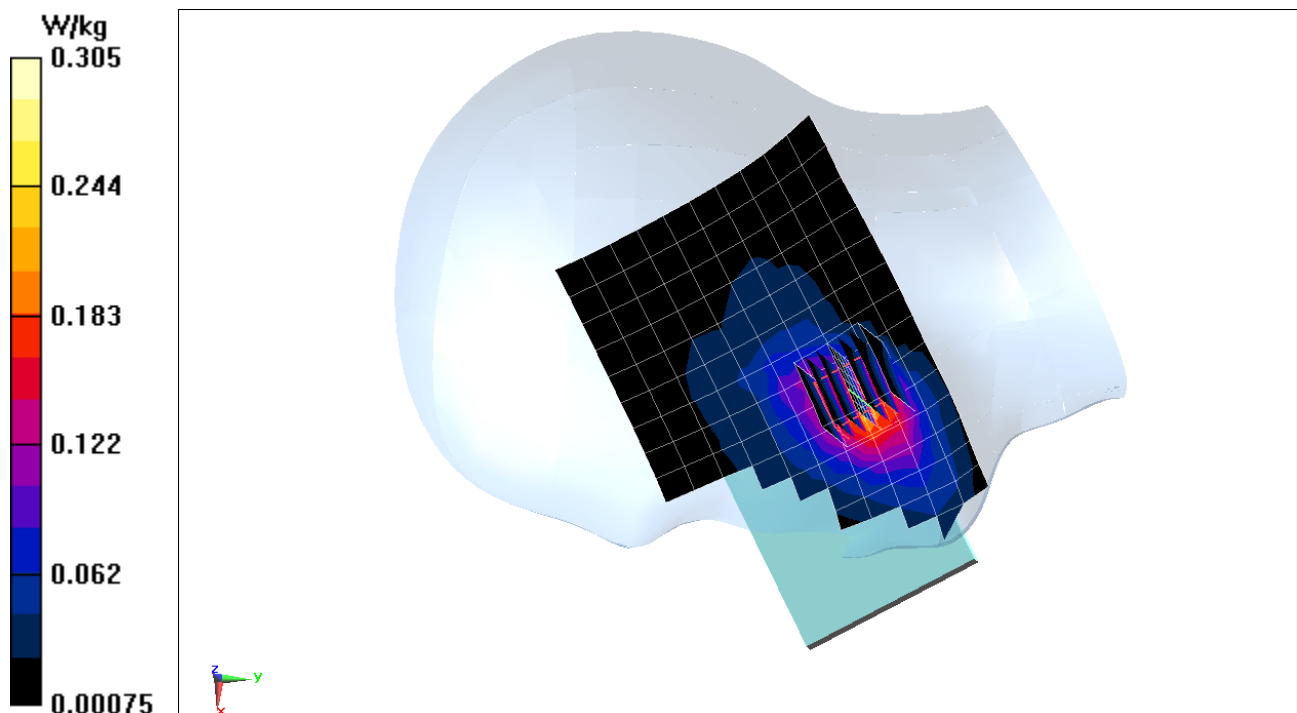
Area Scan (11x18x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 12.97 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.441 W/kg

SAR(1 g) = 0.250 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14183

Communication System: UID 0, LTE Band 41 (Class 3); Frequency: 2506 MHz; Duty Cycle: 1:1.58

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2506 \text{ MHz}$; $\sigma = 1.911 \text{ S/m}$; $\epsilon_r = 38.764$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-26-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3213; ConvF(4.7, 4.7, 4.7); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

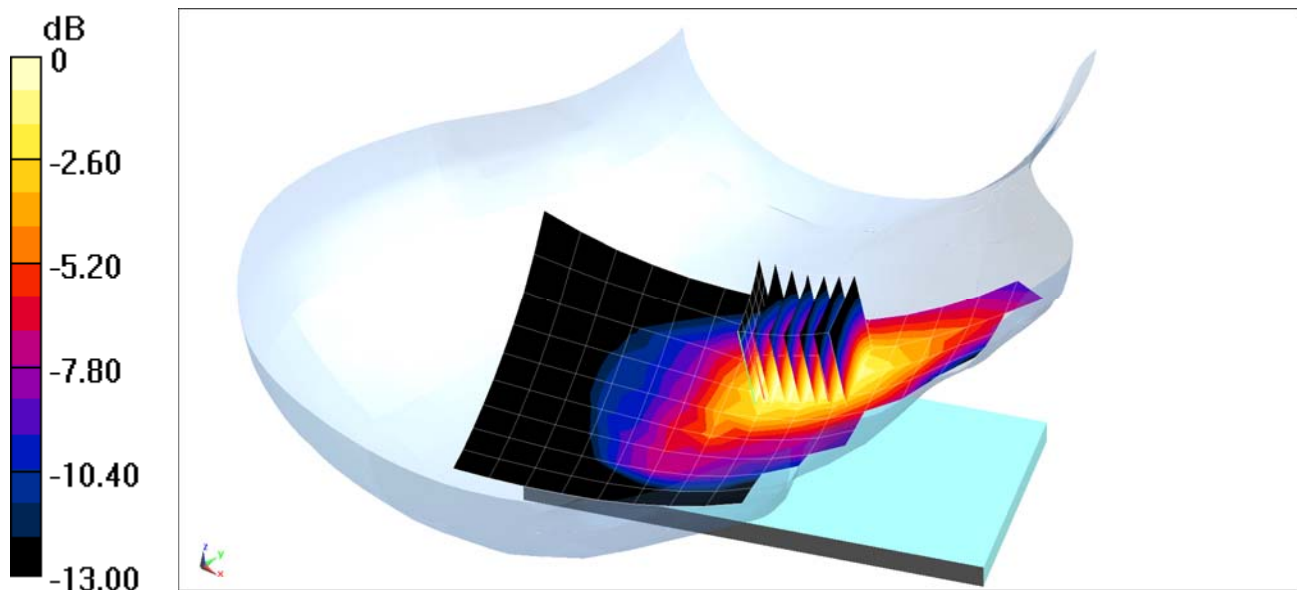
Area Scan (10x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 11.62 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.354 W/kg

SAR(1 g) = 0.209 W/kg



0 dB = 0.189 W/kg = -7.24 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13649

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

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2412 \text{ MHz}$; $\sigma = 1.798 \text{ S/m}$; $\epsilon_r = 38.405$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-29-2017; Ambient Temp: 22.2°C; Tissue Temp: 20.5°C

Probe: ES3DV3 - SN3213; ConvF(4.7, 4.7, 4.7); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

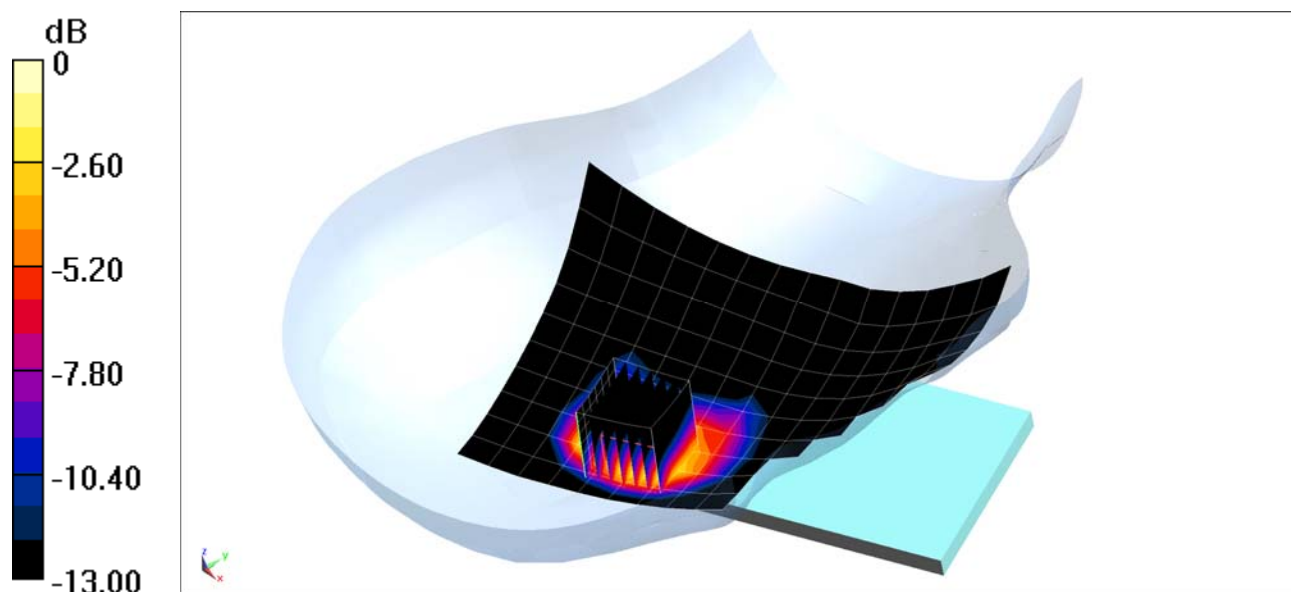
Area Scan (11x18x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 9.044 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 2.25 W/kg

SAR(1 g) = 0.970 W/kg



0 dB = 1.31 W/kg = 1.17 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13656

Communication System: UID 0, 802.11a 5.2-5.8 GHz Band;

Frequency: 5825 MHz; Duty Cycle: 1:1

Medium: 5GHz Head Medium parameters used:

$f = 5825 \text{ MHz}$; $\sigma = 5.153 \text{ S/m}$; $\epsilon_r = 35.274$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-28-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN3914; ConvF(4.91, 4.91, 4.91); Calibrated: 2/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/9/2017

Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11a, U-NII-3, 20 MHz Bandwidth, Antenna 2
Left Head, Cheek, Ch 165, 6 Mbps

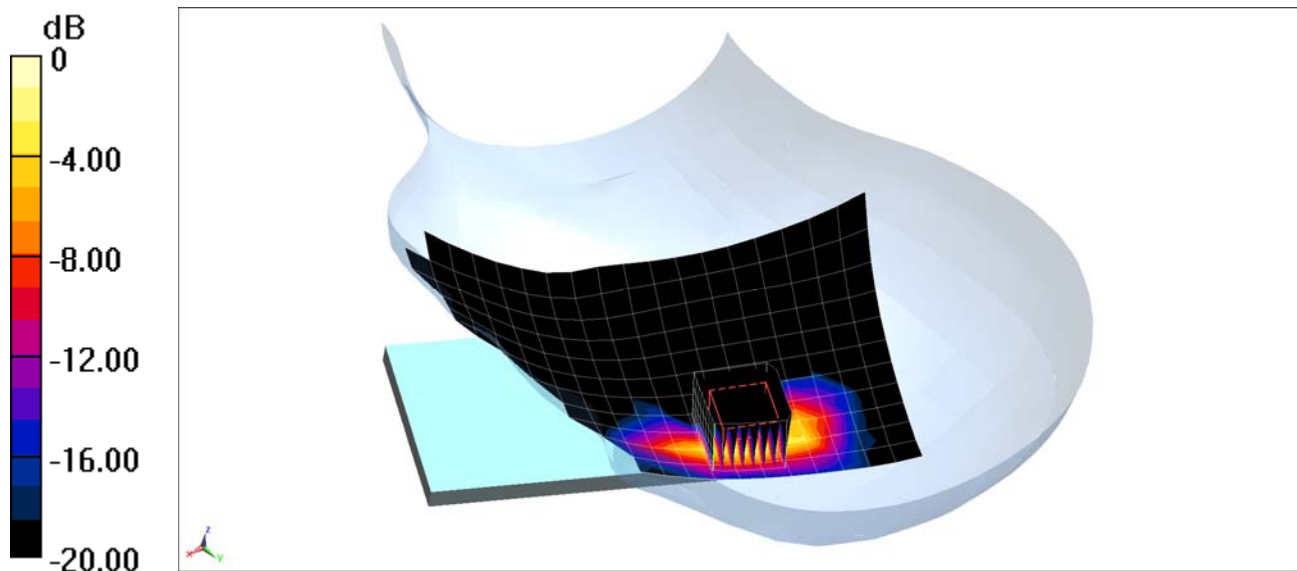
Area Scan (12x20x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (9x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 0.9360 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 2.05 W/kg

SAR(1 g) = 0.376 W/kg



0 dB = 1.06 W/kg = 0.25 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14183

Communication System: UID 0, Bluetooth; Frequency: 2402 MHz; Duty Cycle: 1:1.294

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2402 \text{ MHz}$; $\sigma = 1.833 \text{ S/m}$; $\epsilon_r = 39.245$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 07-03-2017; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3213; ConvF(4.7, 4.7, 4.7); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: Bluetooth, Right Head, Cheek, Ch 0, 1 Mbps

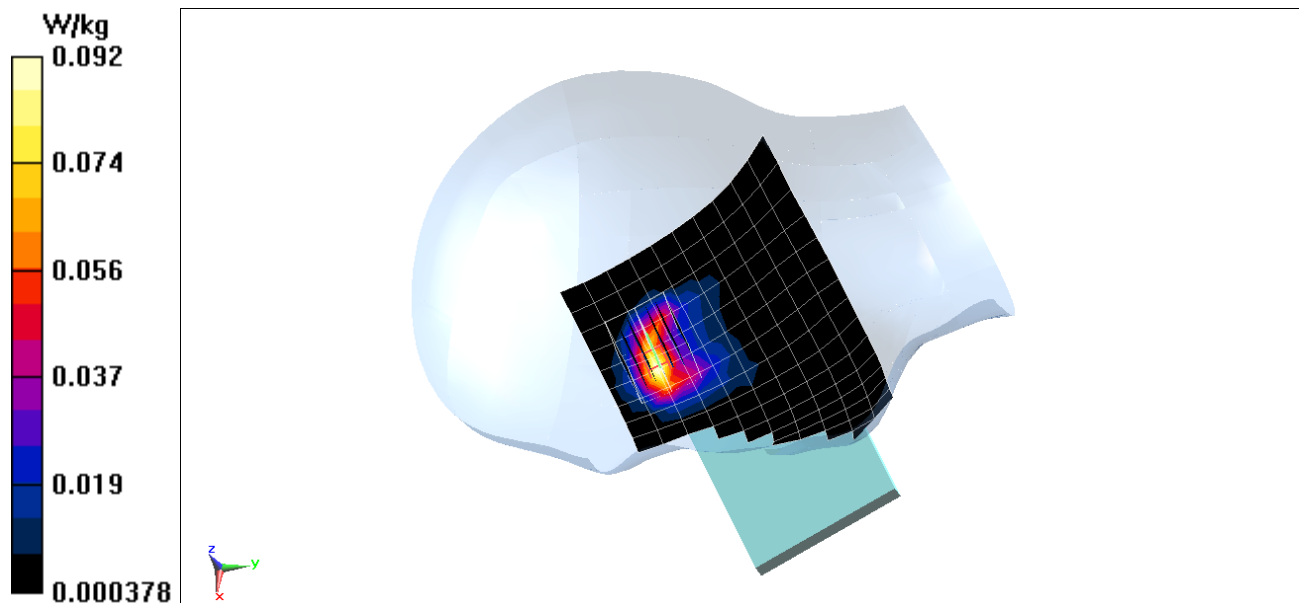
Area Scan (11x19x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 6.677 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.163 W/kg

SAR(1 g) = 0.067 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13508

Communication System: UID 0, CDMA, Frequency: 820.1 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 820.1 \text{ MHz}$; $\sigma = 1.001 \text{ S/m}$; $\epsilon_r = 54.444$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-22-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

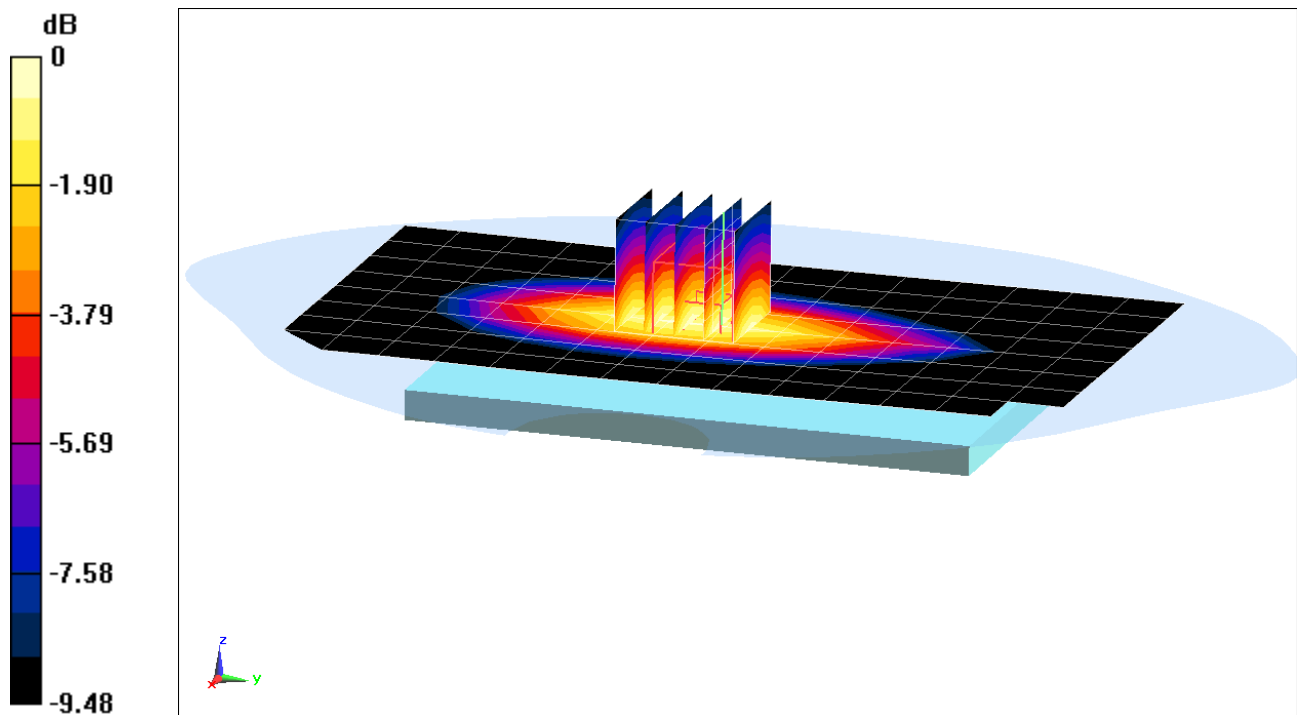
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 15.93 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.328 W/kg

SAR(1 g) = 0.234 W/kg



0 dB = 0.268 W/kg = -5.72 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14209

Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 820.1 \text{ MHz}$; $\sigma = 0.977 \text{ S/m}$; $\epsilon_r = 53.779$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-03-2017; Ambient Temp: 20.3°C; Tissue Temp: 19.0°C

Probe: EX3DV4 - SN7406; ConvF(9.77, 9.77, 9.77); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

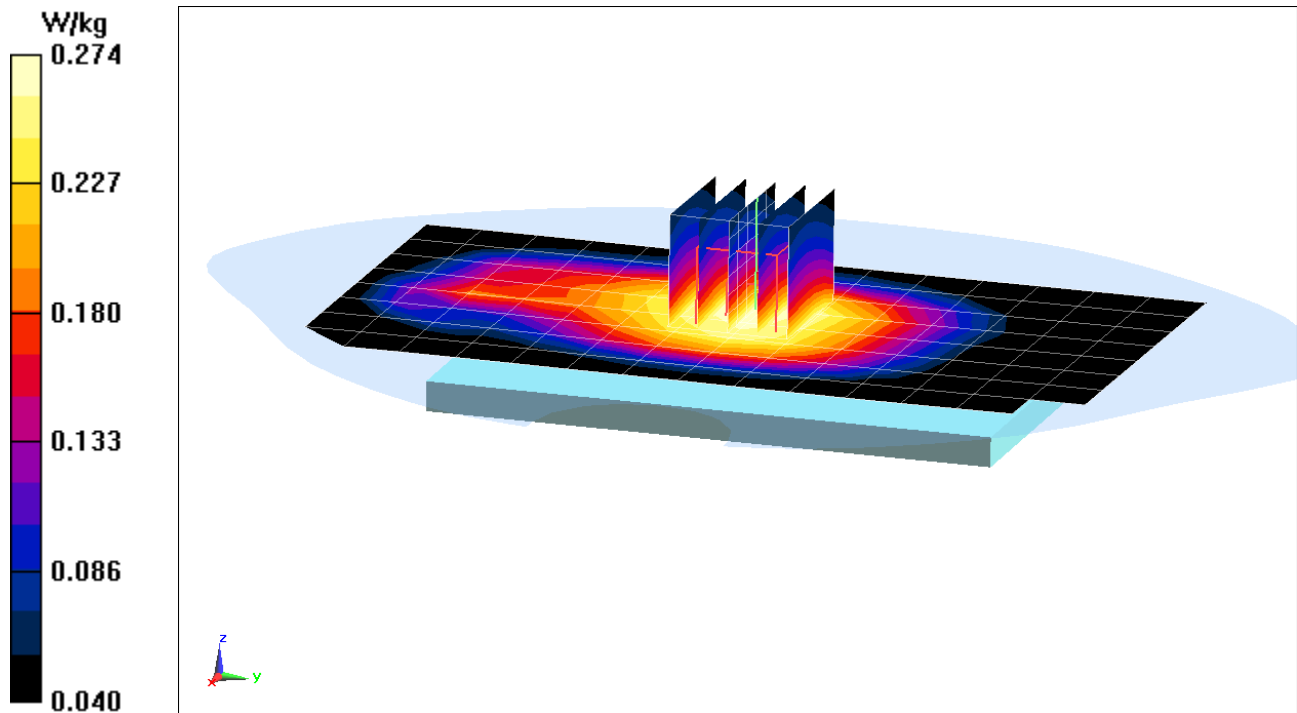
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 15.32 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.302 W/kg

SAR(1 g) = 0.225 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13508

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 1.02 \text{ S/m}$; $\epsilon_r = 54.21$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-22-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

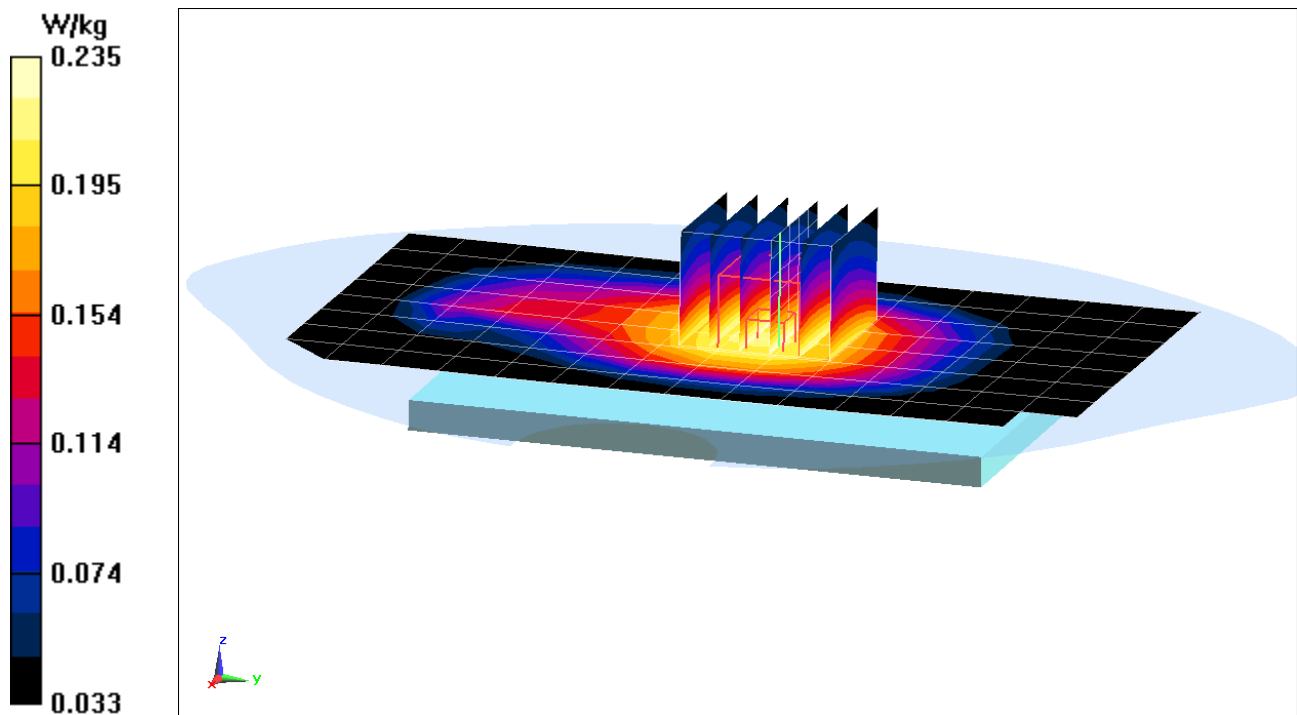
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 14.95 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.269 W/kg

SAR(1 g) = 0.216 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13508

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 1.02 \text{ S/m}$; $\epsilon_r = 54.21$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-22-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

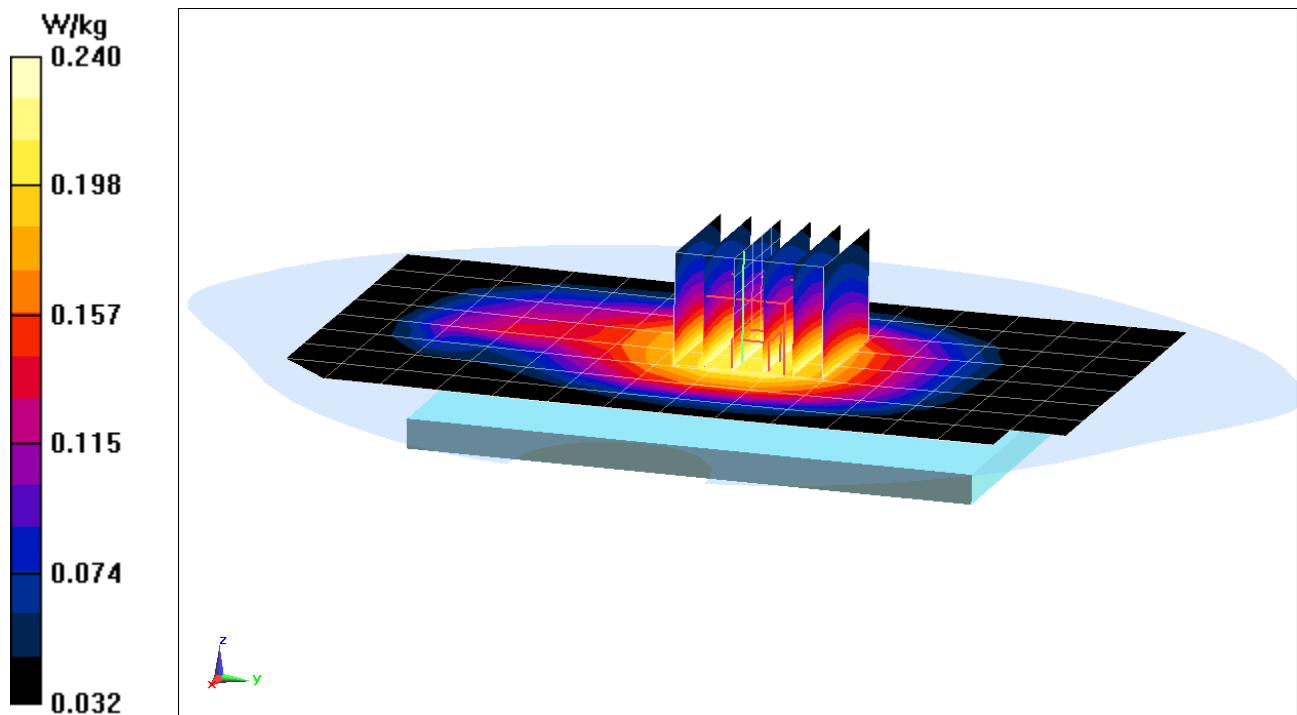
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 15.14 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.274 W/kg

SAR(1 g) = 0.220 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14209

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.553 \text{ S/m}$; $\epsilon_r = 52.311$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-01-2017; Ambient Temp: 21.8°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

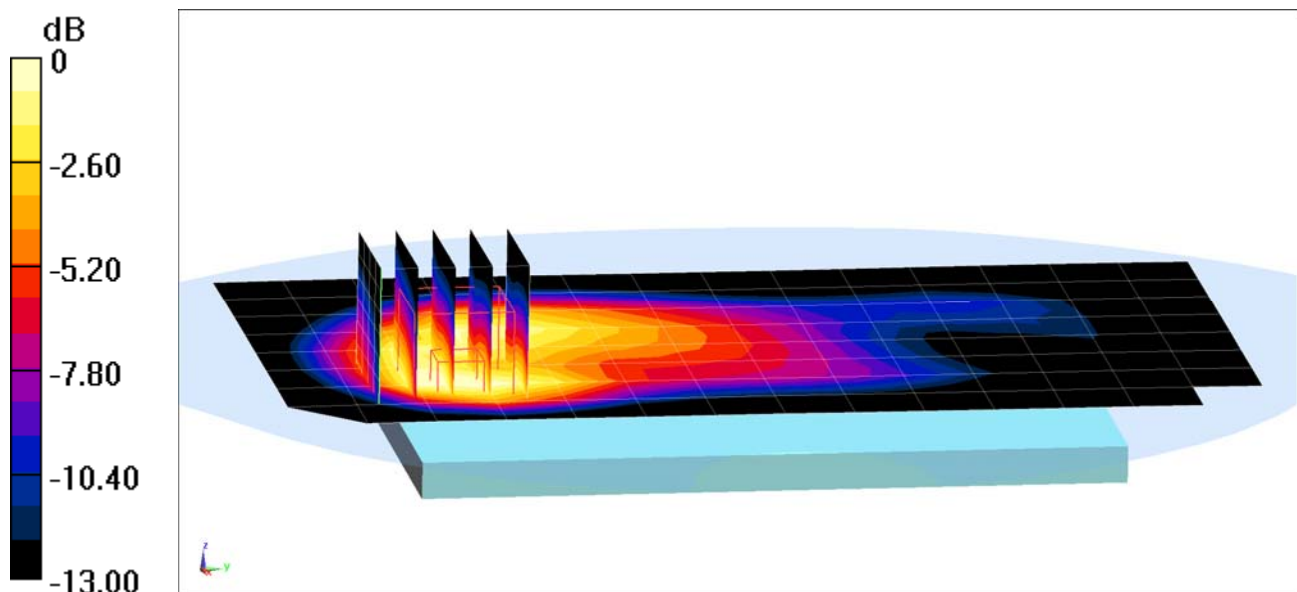
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 21.12 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 1.13 W/kg

SAR(1 g) = 0.600 W/kg



0 dB = 0.690 W/kg = -1.61 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14209

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.553 \text{ S/m}$; $\epsilon_r = 52.311$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-01-2017; Ambient Temp: 21.8°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: PCS EVDO Rev.0, Body SAR, Back side, Mid.ch

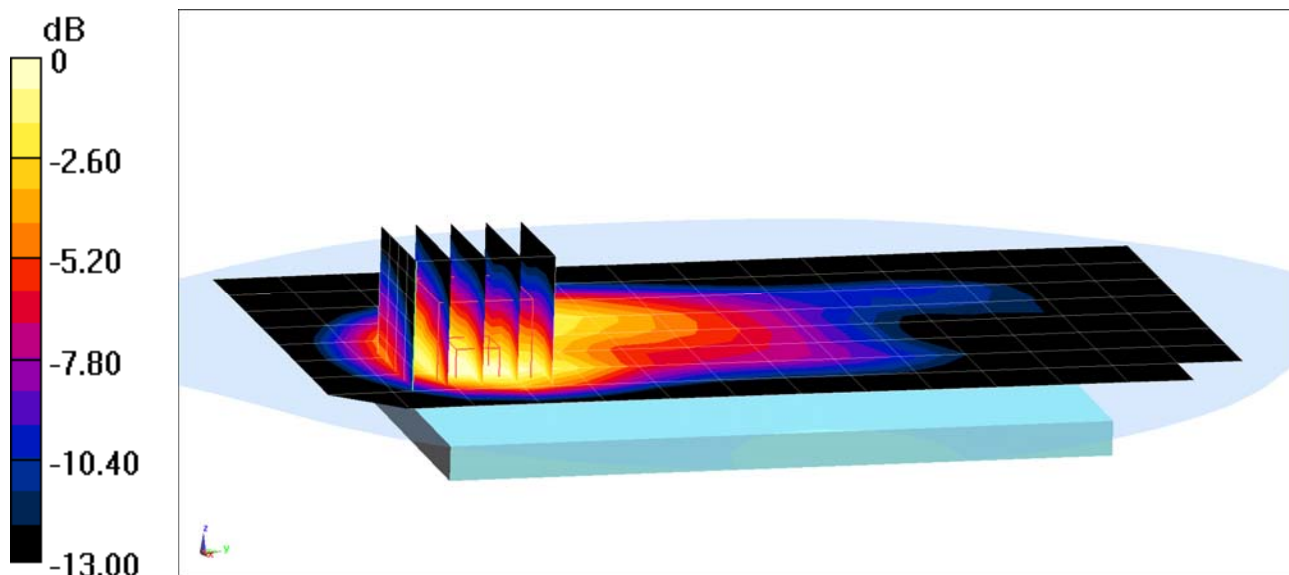
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 22.08 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 1.26 W/kg

SAR(1 g) = 0.660 W/kg



0 dB = 0.707 W/kg = -1.51 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14191

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):

$f = 836.6 \text{ MHz}$; $\sigma = 0.992 \text{ S/m}$; $\epsilon_r = 53.094$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2017; Ambient Temp: 22.4°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7406; ConvF(9.77, 9.77, 9.77); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: GPRS 850, Body SAR, Back side, Mid.ch, 4 Tx Slots

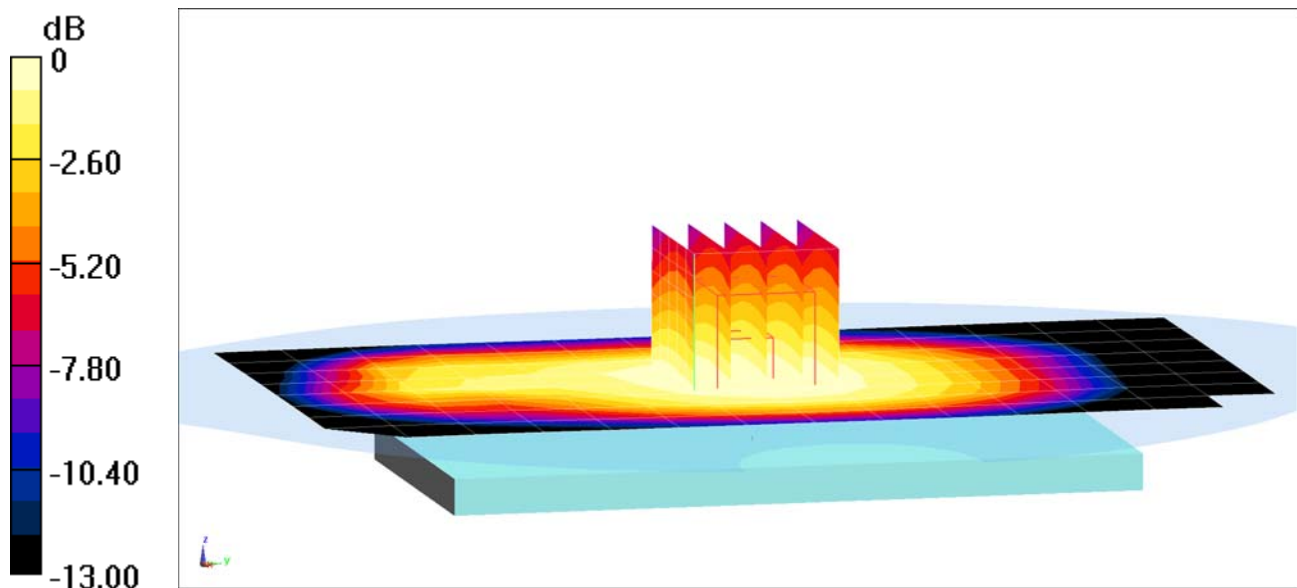
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 15.59 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = -0.13 W/kg

SAR(1 g) = 0.234 W/kg



0 dB = 0.274 W/kg = -5.62 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14191

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):

$f = 836.6 \text{ MHz}$; $\sigma = 0.992 \text{ S/m}$; $\epsilon_r = 53.094$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2017; Ambient Temp: 22.4°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7406; ConvF(9.77, 9.77, 9.77); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: GPRS 850, Body SAR, Right Edge, Mid.ch, 4 Tx Slots

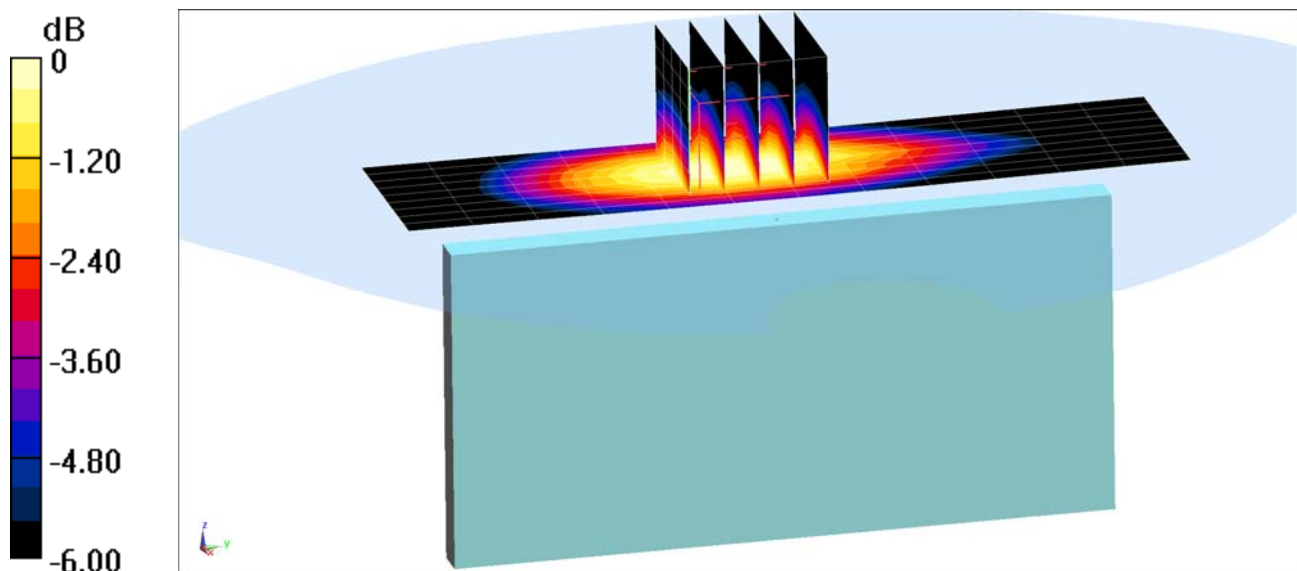
Area Scan (10x13x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 16.68 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.402 W/kg

SAR(1 g) = 0.266 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14209

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.553 \text{ S/m}$; $\epsilon_r = 52.311$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-01-2017; Ambient Temp: 21.8°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: GPRS 1900, Body SAR, Back side, Mid.ch, 4 Tx Slots

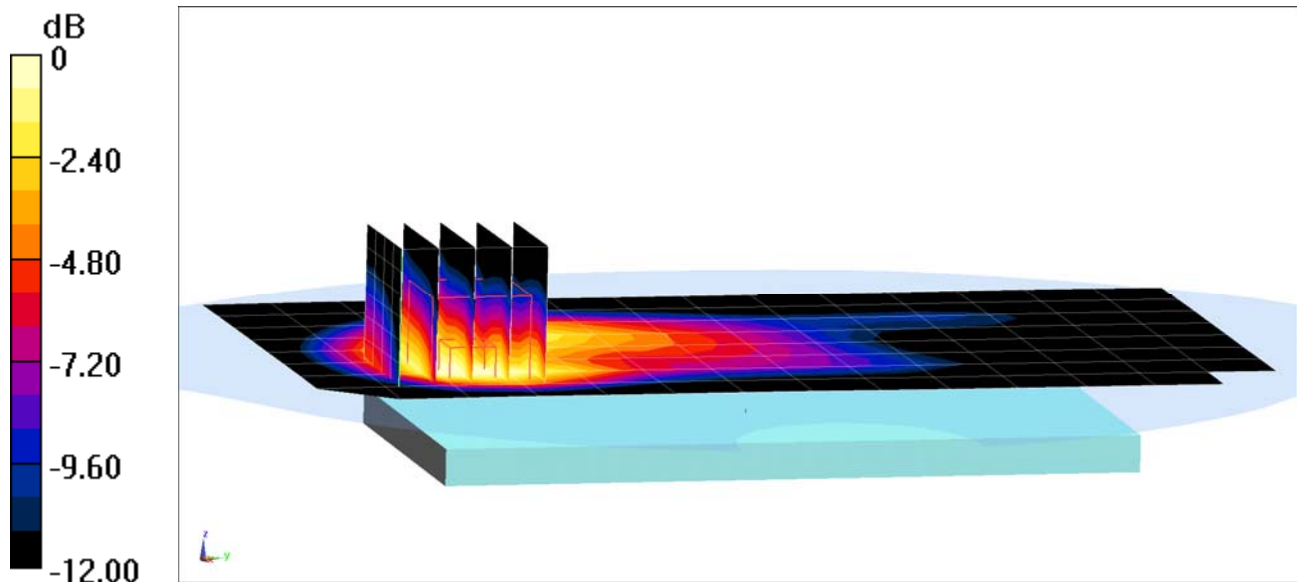
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 16.14 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 0.661 W/kg

SAR(1 g) = 0.354 W/kg



0 dB = 0.330 W/kg = -4.81 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14209

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.553 \text{ S/m}$; $\epsilon_r = 52.311$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-01-2017; Ambient Temp: 21.8°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

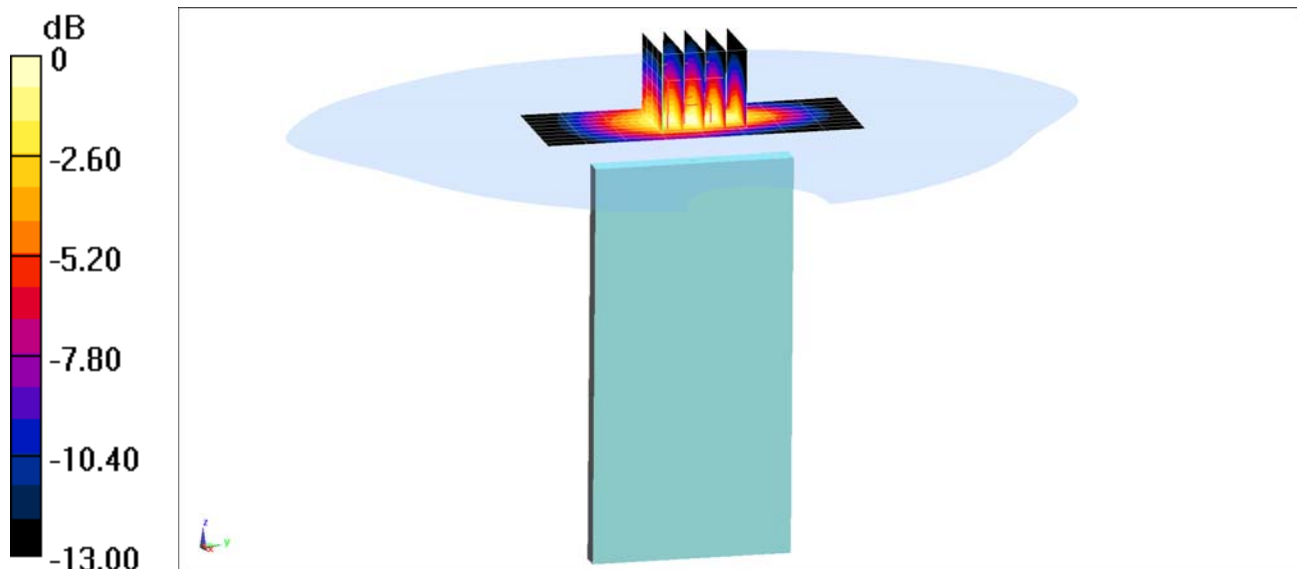
Area Scan (10x9x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 18.07 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.720 W/kg

SAR(1 g) = 0.439 W/kg



0 dB = 0.528 W/kg = -2.77 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14191

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.992 \text{ S/m}$; $\epsilon_r = 53.094$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2017; Ambient Temp: 22.4°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7406; ConvF(9.77, 9.77, 9.77); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

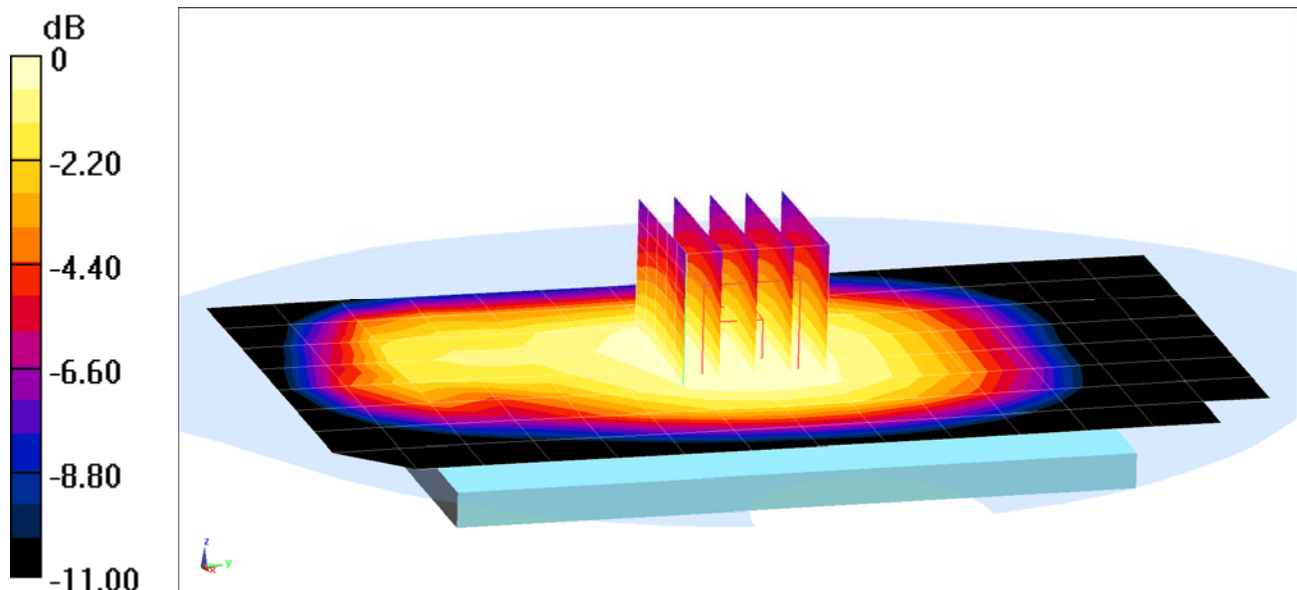
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 15.21 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.302 W/kg

SAR(1 g) = 0.225 W/kg



0 dB = 0.274 W/kg = -5.62 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14191

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.992 \text{ S/m}$; $\epsilon_r = 53.094$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2017; Ambient Temp: 22.4°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7406; ConvF(9.77, 9.77, 9.77); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

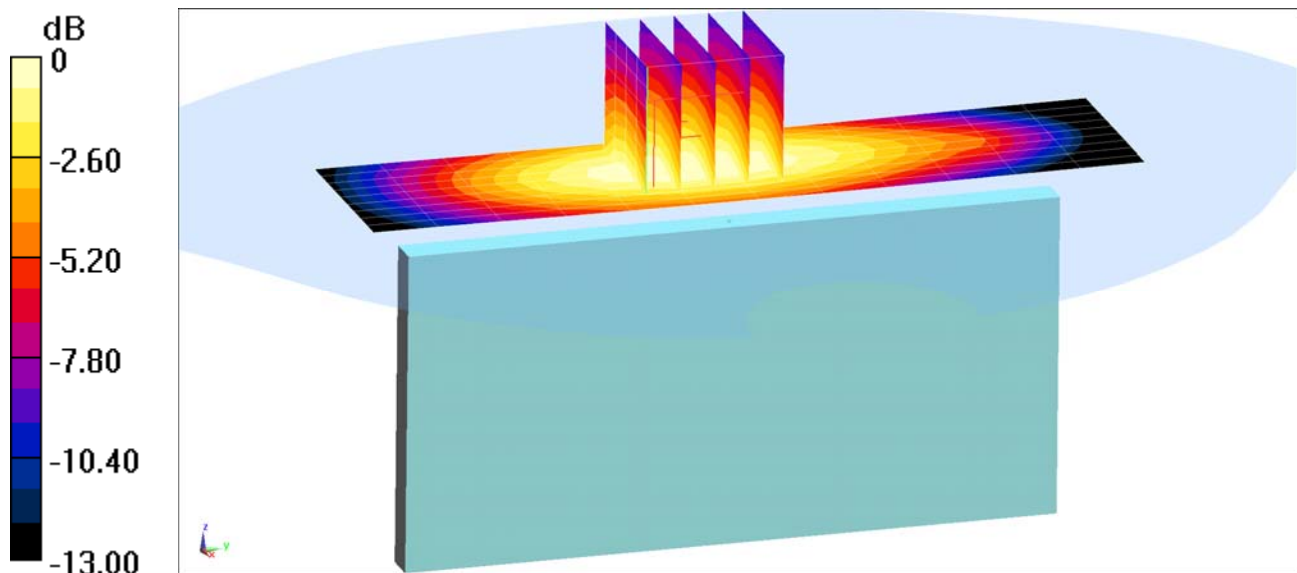
Area Scan (10x13x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 16.34 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.386 W/kg

SAR(1 g) = 0.253 W/kg



0 dB = 0.329 W/kg = -4.83 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13458

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

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.4 \text{ MHz}$; $\sigma = 1.434 \text{ S/m}$; $\epsilon_r = 52.203$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-23-2017; Ambient Temp: 25.0°C; Tissue Temp: 25.0°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

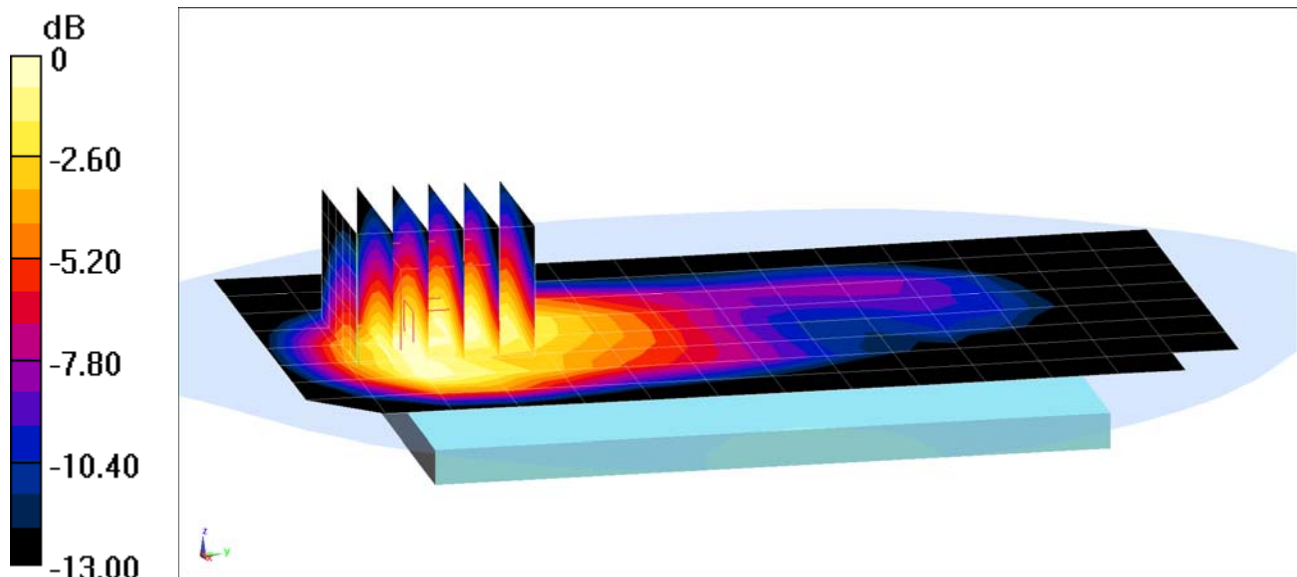
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 24.96 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.21 W/kg

SAR(1 g) = 0.792 W/kg



0 dB = 0.900 W/kg = -0.46 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13458

Communication System: UID 0, UMTS; Frequency: 1752.6 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1752.6 \text{ MHz}$; $\sigma = 1.459 \text{ S/m}$; $\epsilon_r = 52.141$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-23-2017; Ambient Temp: 25.0°C; Tissue Temp: 25.0°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1750, Body SAR, Bottom Edge, High.ch

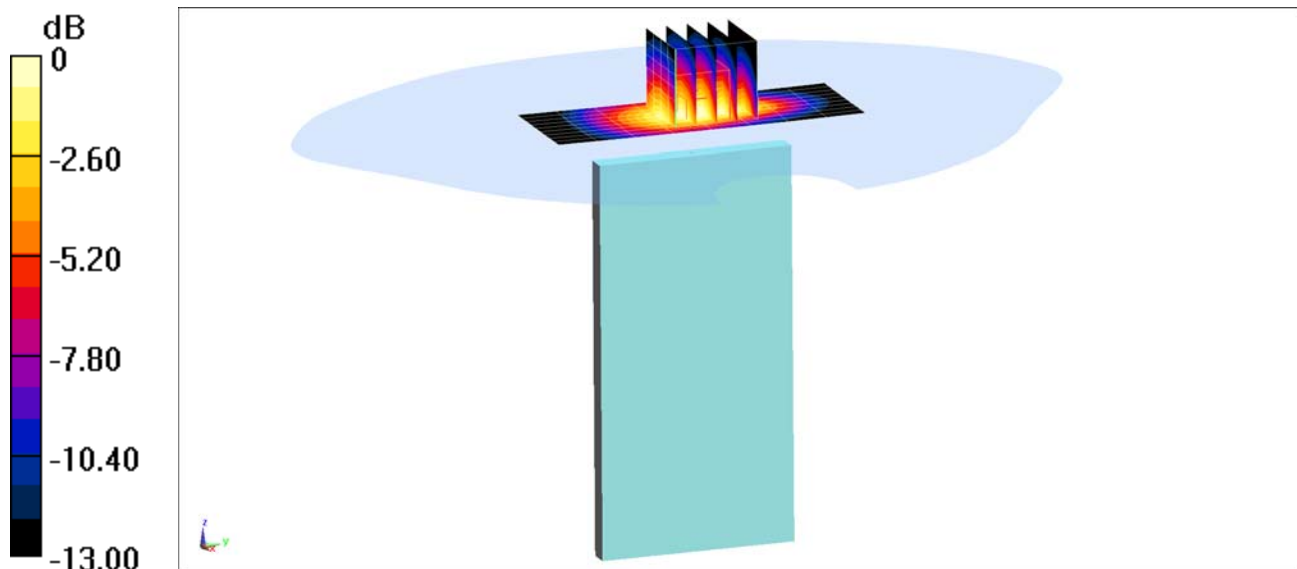
Area Scan (10x9x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 28.61 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.71 W/kg

SAR(1 g) = 1.04 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13466

Communication System: UID 0, UMTS; Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1907.6 \text{ MHz}$; $\sigma = 1.579 \text{ S/m}$; $\epsilon_r = 51.128$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-20-2017; Ambient Temp: 23.3°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3319; ConvF(4.88, 4.88, 4.88); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

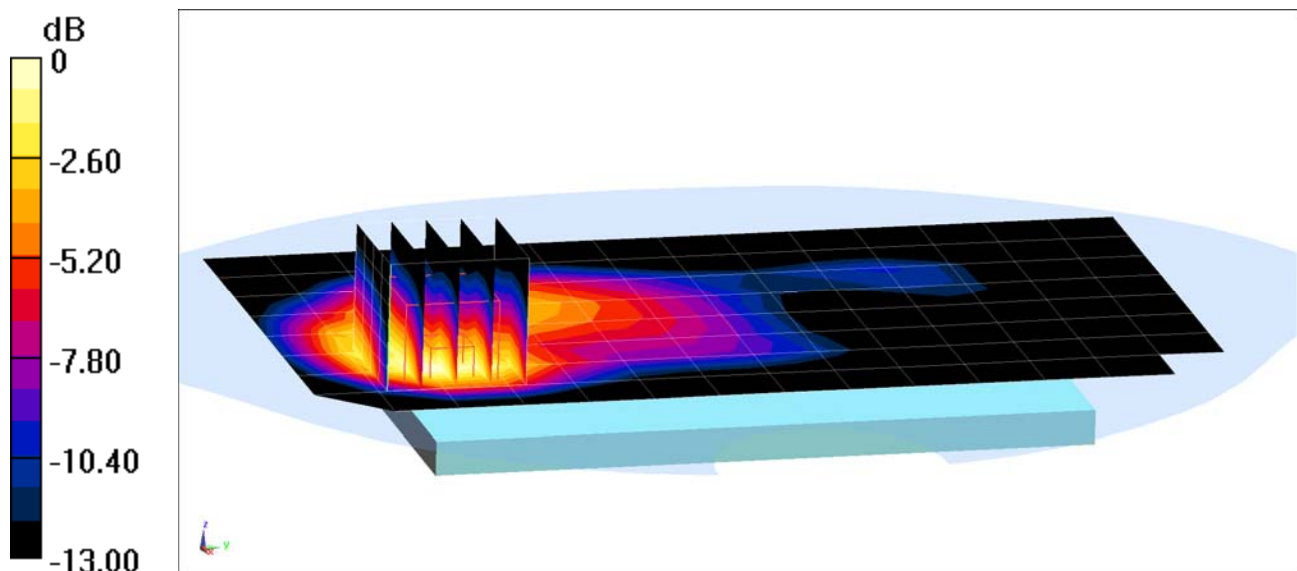
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 24.21 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 1.56 W/kg

SAR(1 g) = 0.819 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13466

Communication System: UID 0, UMTS; Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1907.6$ MHz; $\sigma = 1.579$ S/m; $\epsilon_r = 51.128$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-20-2017; Ambient Temp: 23.3°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3319; ConvF(4.88, 4.88, 4.88); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1900, Body SAR, Bottom Edge, High.ch

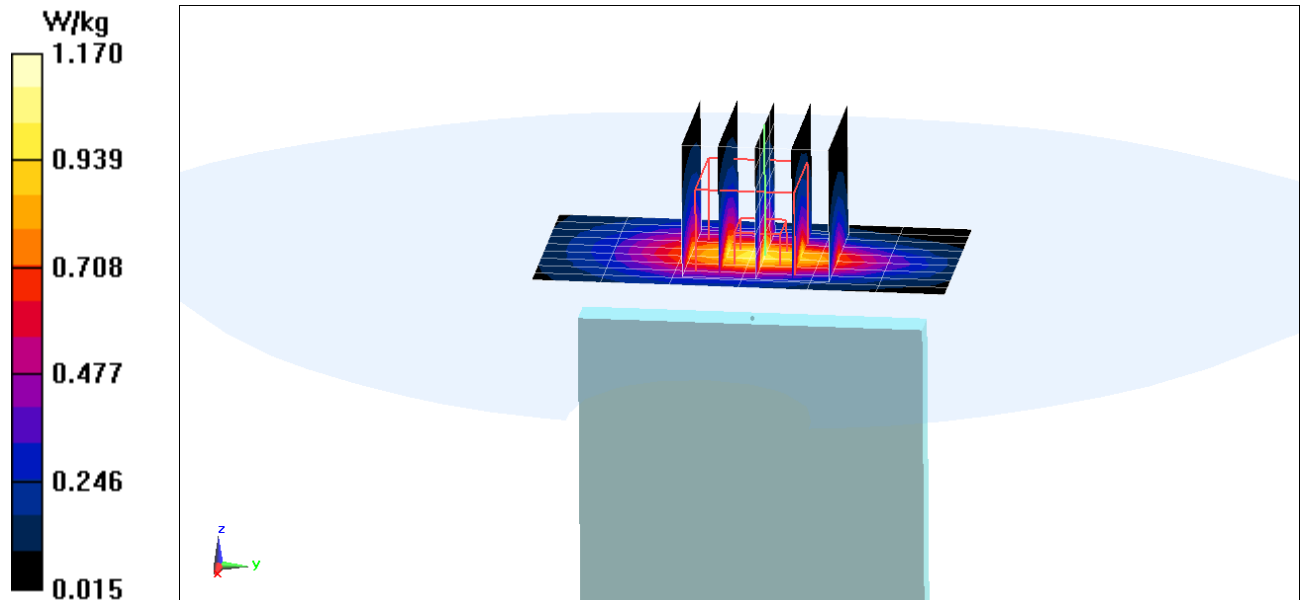
Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 26.30 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.59 W/kg

SAR(1 g) = 0.944 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14175

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

Medium: 750 Body Medium parameters used (interpolated):

$f = 707.5$ MHz; $\sigma = 0.919$ S/m; $\epsilon_r = 55.425$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-24-2017; Ambient Temp: 21.7°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(9.9, 9.9, 9.9); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

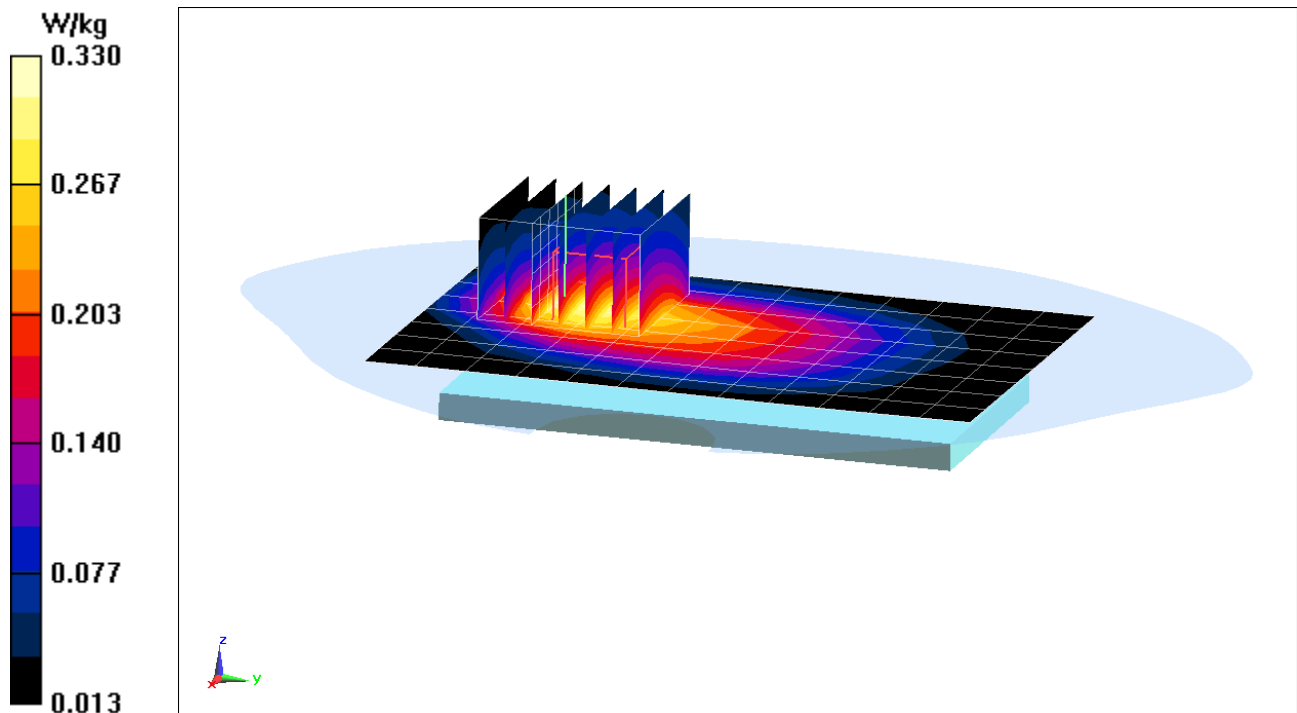
Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.74 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.384 W/kg

SAR(1 g) = 0.254 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14175

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

Medium: 750 Body Medium parameters used (interpolated):

$f = 707.5$ MHz; $\sigma = 0.919$ S/m; $\epsilon_r = 55.425$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-24-2017; Ambient Temp: 21.7°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(9.9, 9.9, 9.9); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 12, Body SAR, Right Edge, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset**

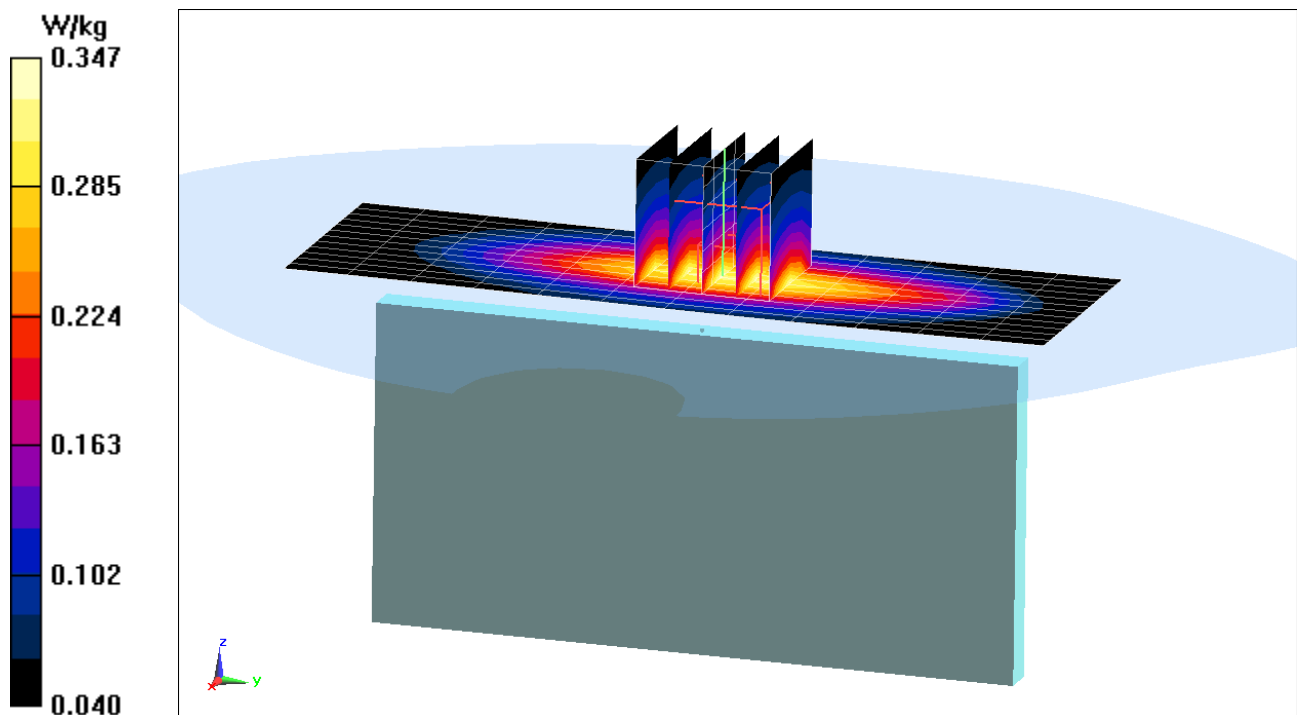
Area Scan (13x13x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 17.30 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 0.393 W/kg

SAR(1 g) = 0.262 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14209

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

Medium: 750 Body Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 0.996 \text{ S/m}$; $\epsilon_r = 55.298$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-04-2017; Ambient Temp: 22.9°C; Tissue Temp: 23.5°C

Probe: ES3DV3 - SN3319; ConvF(6.37, 6.37, 6.37); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

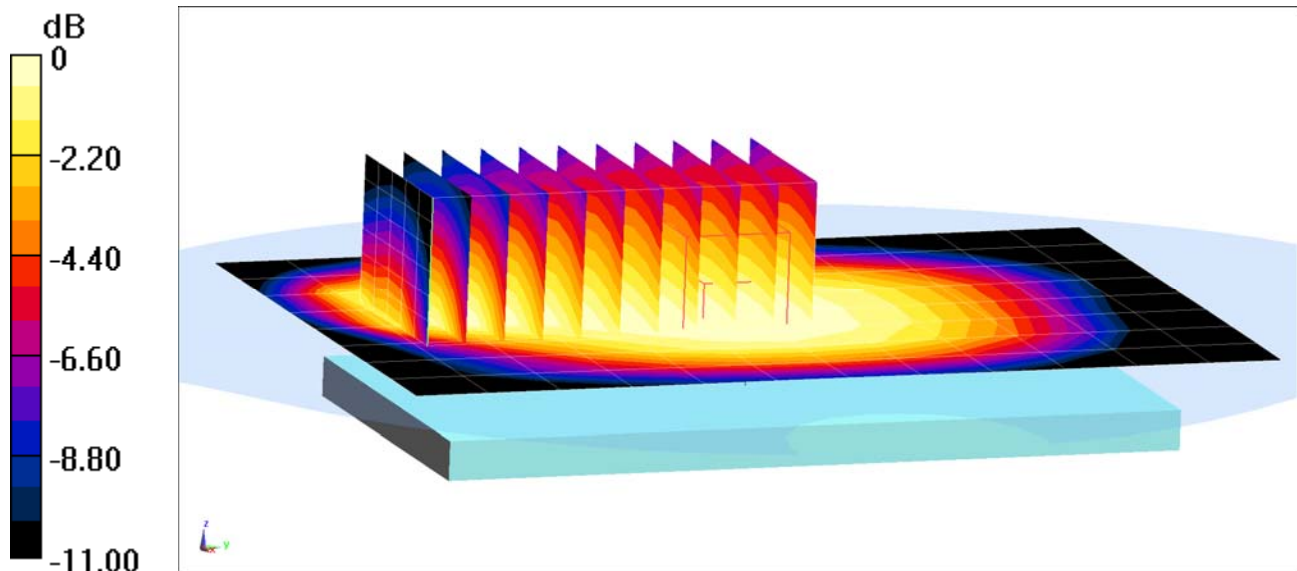
Area Scan (9x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x11x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 14.94 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.333 W/kg

SAR(1 g) = 0.215 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14191

Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 831.5 \text{ MHz}$; $\sigma = 0.991 \text{ S/m}$; $\epsilon_r = 53.641$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-03-2017; Ambient Temp: 20.3°C; Tissue Temp: 19.0°C

Probe: EX3DV4 - SN7406; ConvF(9.77, 9.77, 9.77); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

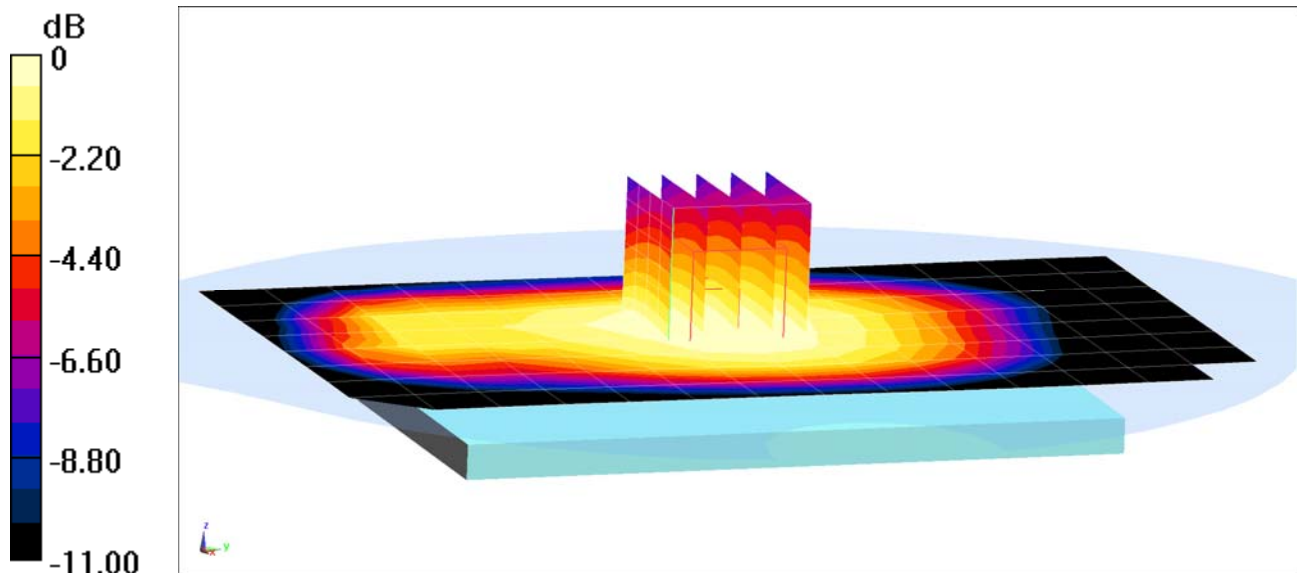
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 15.39 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.309 W/kg

SAR(1 g) = 0.228 W/kg



0 dB = 0.279 W/kg = -5.54 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14191

Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 831.5 \text{ MHz}$; $\sigma = 0.991 \text{ S/m}$; $\epsilon_r = 53.641$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-03-2017; Ambient Temp: 20.3°C; Tissue Temp: 19.0°C

Probe: EX3DV4 - SN7406; ConvF(9.77, 9.77, 9.77); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

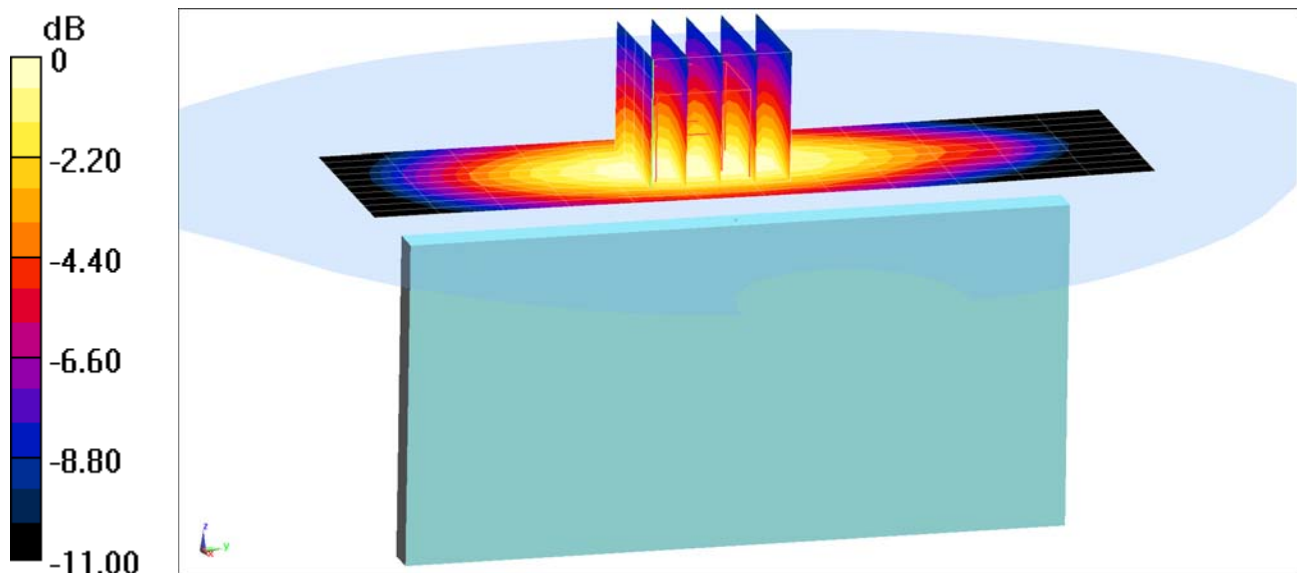
Area Scan (11x13x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 17.15 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.420 W/kg

SAR(1 g) = 0.276 W/kg



0 dB = 0.368 W/kg = -4.34 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13466

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1720 \text{ MHz}$; $\sigma = 1.502 \text{ S/m}$; $\epsilon_r = 51.686$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2017; Ambient Temp: 22.1°C; Tissue Temp: 19.9°C

Probe: EX3DV4 - SN7406; ConvF(8.08, 8.08, 8.08); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 66 (AWS), Body SAR, Back side, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

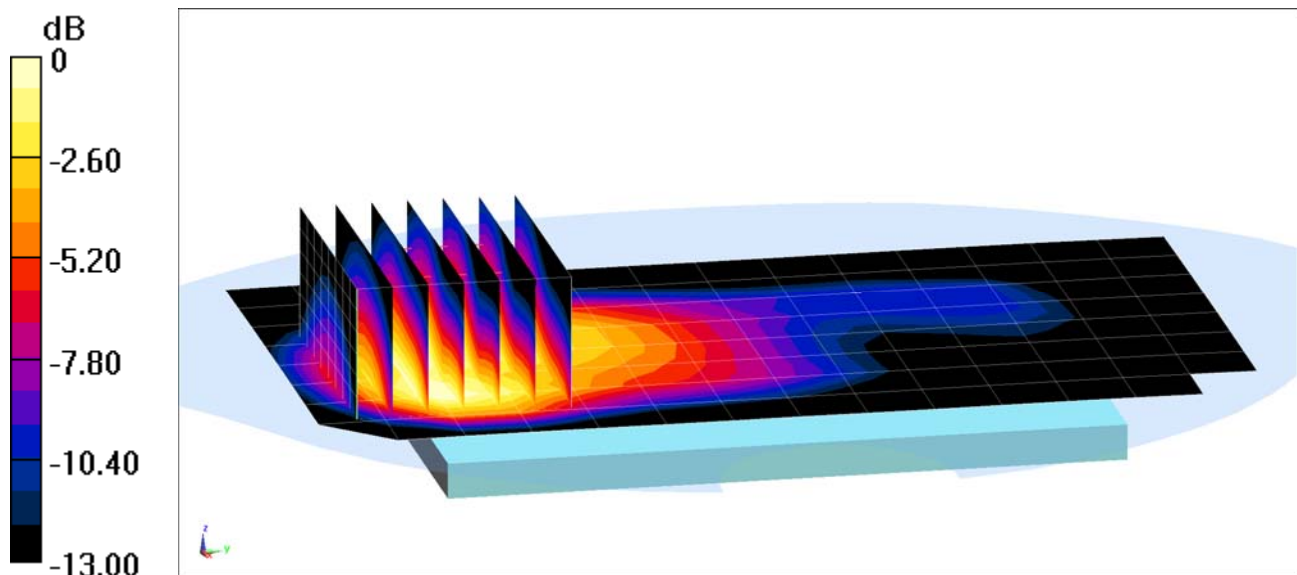
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (9x7x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 20.57 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.15 W/kg

SAR(1 g) = 0.721 W/kg



0 dB = 0.991 W/kg = -0.04 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13466

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1770 \text{ MHz}$; $\sigma = 1.559 \text{ S/m}$; $\epsilon_r = 51.465$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2017; Ambient Temp: 22.1°C; Tissue Temp: 19.9°C

Probe: EX3DV4 - SN7406; ConvF(8.08, 8.08, 8.08); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 66 (AWS), Body SAR, Bottom Edge,
High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

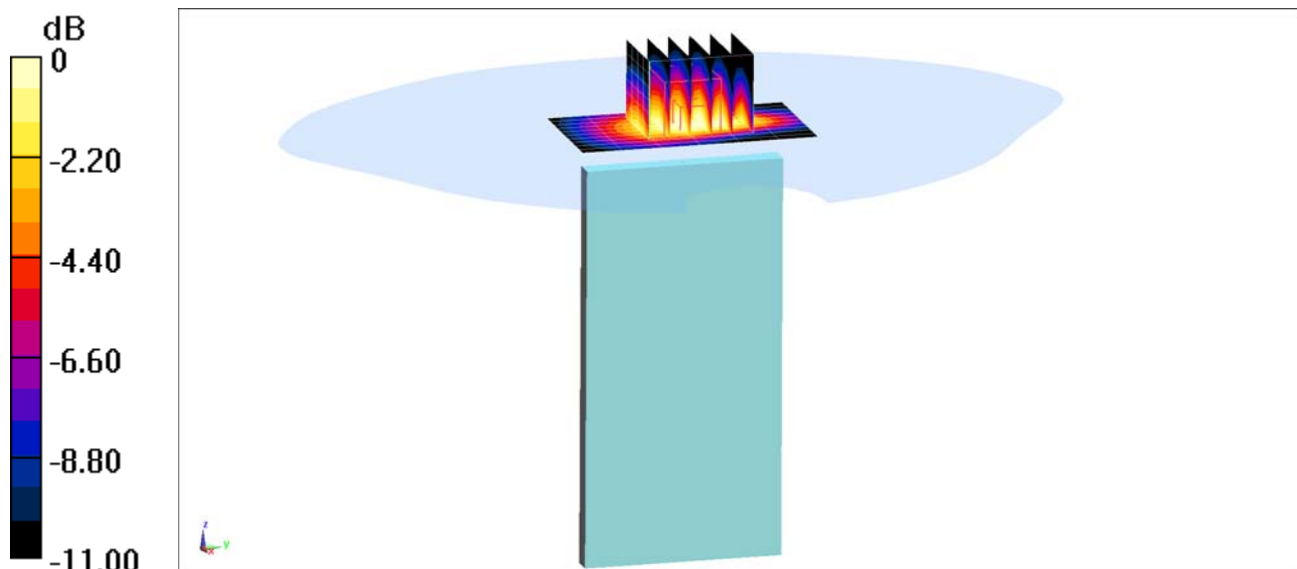
Area Scan (11x7x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 27.04 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.81 W/kg

SAR(1 g) = 1.05 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13466

Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1905 \text{ MHz}$; $\sigma = 1.57 \text{ S/m}$; $\epsilon_r = 53.073$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2017; Ambient Temp: 20.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3318; ConvF(4.96, 4.96, 4.96); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/9/2017

Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 25 (PCS), Body SAR, Back side, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

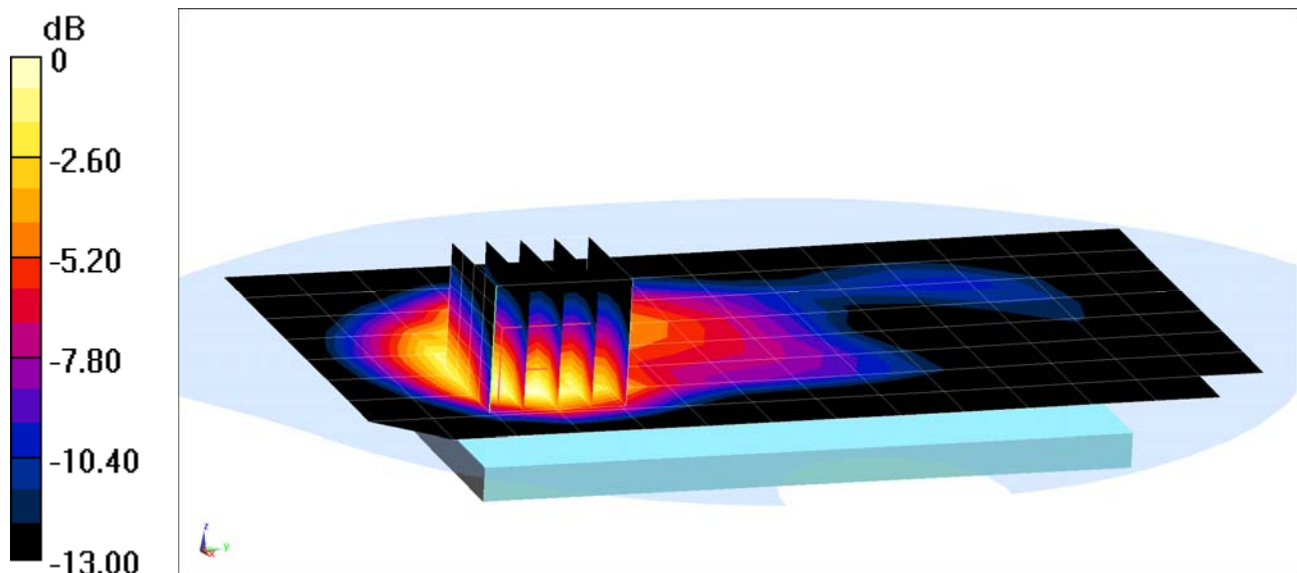
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 22.15 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.35 W/kg

SAR(1 g) = 0.718 W/kg



0 dB = 0.908 W/kg = -0.42 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13466

Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1905 \text{ MHz}$; $\sigma = 1.57 \text{ S/m}$; $\epsilon_r = 53.073$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2017; Ambient Temp: 20.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3318; ConvF(4.96, 4.96, 4.96); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/9/2017

Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

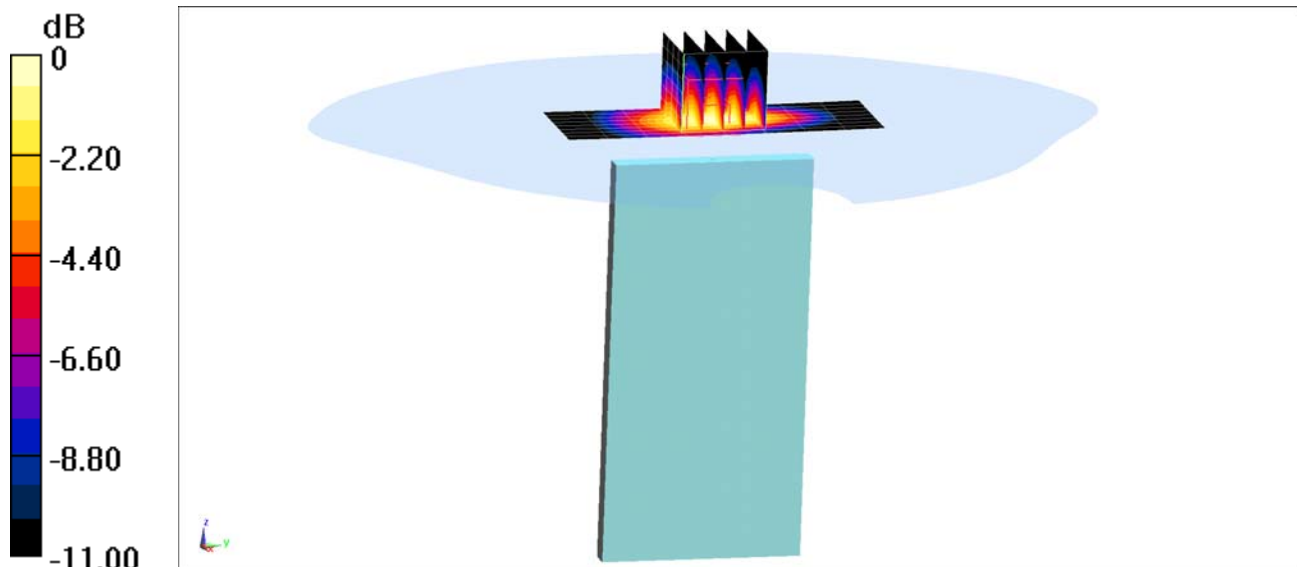
Area Scan (9x9x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 26.87 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.61 W/kg

SAR(1 g) = 0.973 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14209

Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used:

$f = 2310 \text{ MHz}$; $\sigma = 1.829 \text{ S/m}$; $\epsilon_r = 51.817$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2017; Ambient Temp: 22.4°C; Tissue Temp: 23.6°C

Probe: EX3DV4 - SN7406; ConvF(7.65, 7.65, 7.65); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 30, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

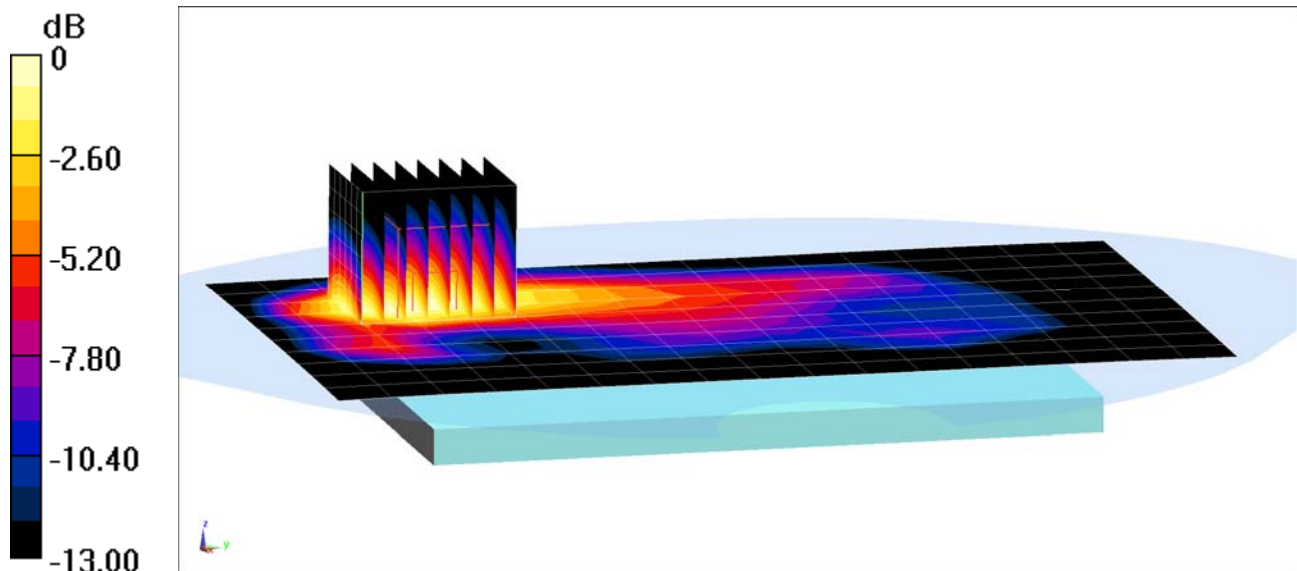
Area Scan (11x18x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x8x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 15.00 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.721 W/kg

SAR(1 g) = 0.385 W/kg



0 dB = 0.572 W/kg = -2.43 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14191

Communication System: UID 0, LTE Band 7; Frequency: 2560 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2560$ MHz; $\sigma = 2.172$ S/m; $\epsilon_r = 50.878$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2017; Ambient Temp: 22.4°C; Tissue Temp: 23.6°C

Probe: EX3DV4 - SN7406; ConvF(7.31, 7.31, 7.31); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 7, Body SAR, Back side, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

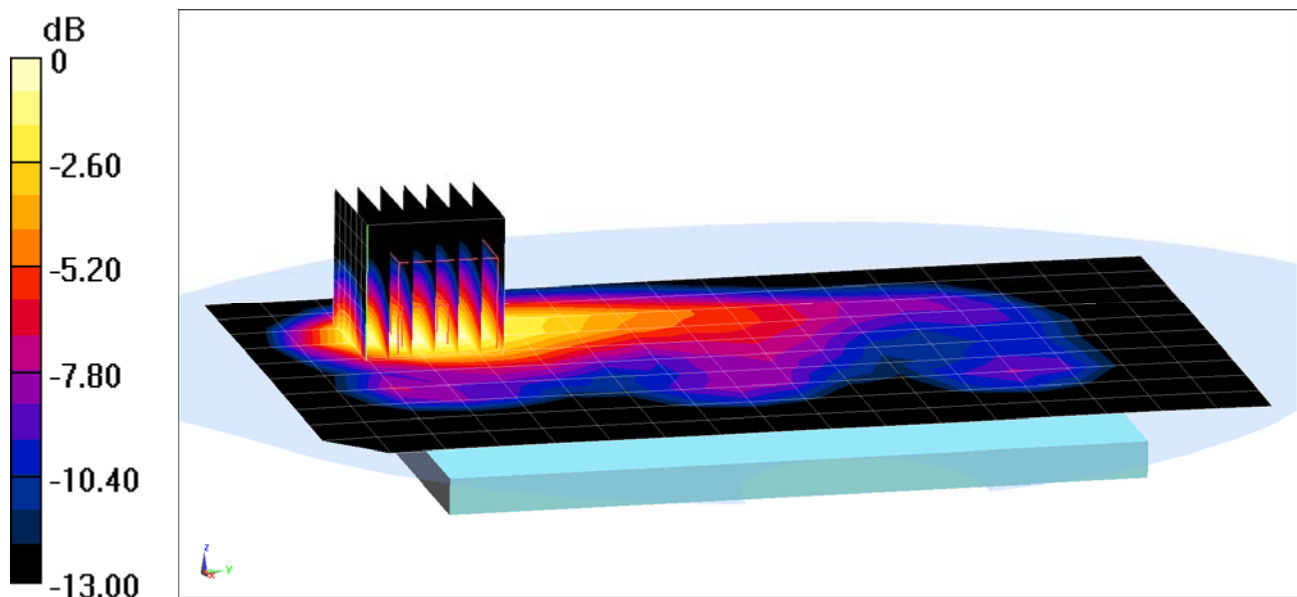
Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm

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

Reference Value = 13.20 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.749 W/kg

SAR(1 g) = 0.352 W/kg



0 dB = 0.577 W/kg = -2.39 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 14183

Communication System: UID 0, LTE Band 41 (Class 3); Frequency: 2506 MHz; Duty Cycle: 1:1.58

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2506 \text{ MHz}$; $\sigma = 2.043 \text{ S/m}$; $\epsilon_r = 51.02$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2017; Ambient Temp: 20.0°C; Tissue Temp: 22.6°C

Probe: ES3DV3 - SN3287; ConvF(4.35, 4.35, 4.35); Calibrated: 9/19/2016;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1408; Calibrated: 9/14/2016

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

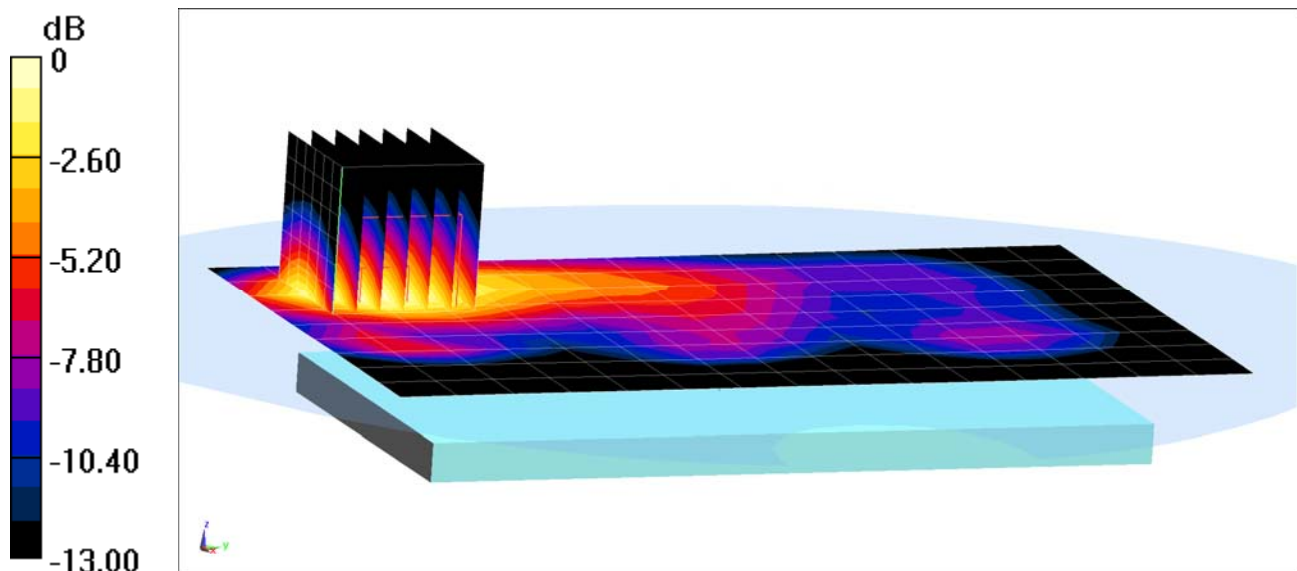
Area Scan (10x16x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 13.67 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.658 W/kg

SAR(1 g) = 0.336 W/kg



0 dB = 0.413 W/kg = -3.84 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13649

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

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2412 \text{ MHz}$; $\sigma = 1.947 \text{ S/m}$; $\epsilon_r = 51.25$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-03-2017; Ambient Temp: 20.0°C; Tissue Temp: 22.6°C

Probe: ES3DV3 - SN3287; ConvF(4.35, 4.35, 4.35); Calibrated: 9/19/2016;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1408; Calibrated: 9/14/2016

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

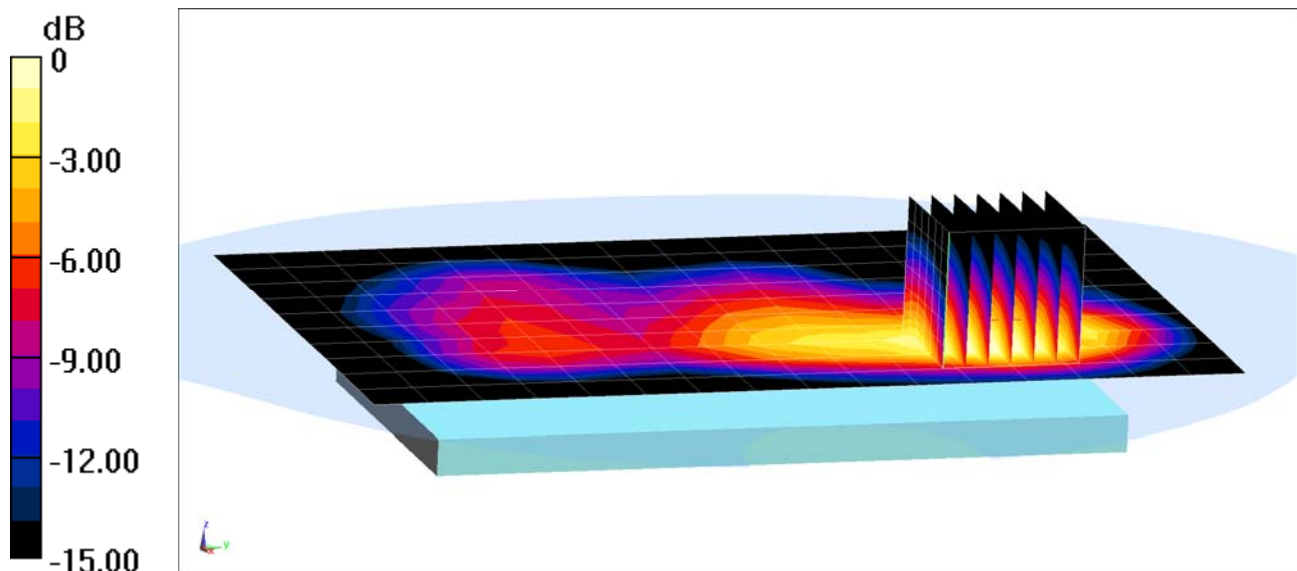
Area Scan (11x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 15.15 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.796 W/kg

SAR(1 g) = 0.384 W/kg



0 dB = 0.435 W/kg = -3.62 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13649

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

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2412 \text{ MHz}$; $\sigma = 1.947 \text{ S/m}$; $\epsilon_r = 51.25$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-03-2017; Ambient Temp: 20.0°C; Tissue Temp: 22.6°C

Probe: ES3DV3 - SN3287; ConvF(4.35, 4.35, 4.35); Calibrated: 9/19/2016;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1408; Calibrated: 9/14/2016

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: IEEE 802.11b, 22 MHz Bandwidth, Body SAR,
Ch 1, 1 Mbps, Left Side , Antenna 1**

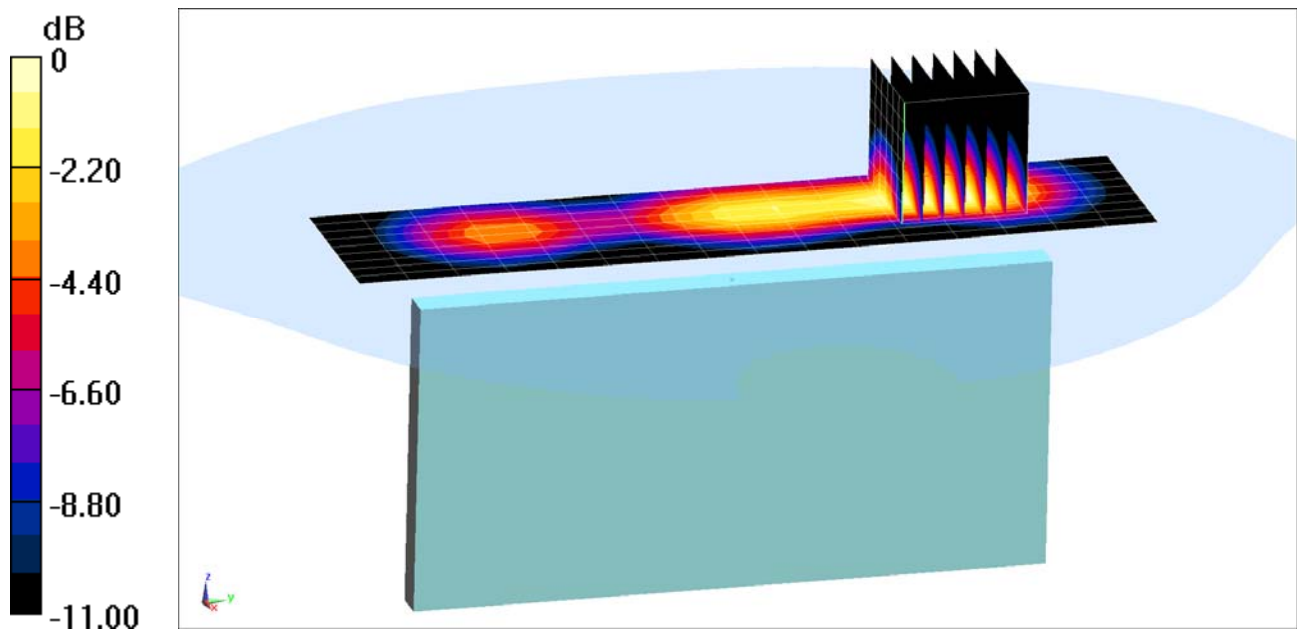
Area Scan (10x17x1): Measurement grid: dx=5mm, dy=12mm

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

Reference Value = 12.05 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 0.834 W/kg

SAR(1 g) = 0.400 W/kg



0 dB = 0.501 W/kg = -3.00 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13656

Communication System: UID 0, 802.11a 5.2-5.8 GHz Band;

Frequency: 5825 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used:

$f = 5825 \text{ MHz}$; $\sigma = 6.199 \text{ S/m}$; $\epsilon_r = 46.453$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-03-2017; Ambient Temp: 22.5°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN3589; ConvF(3.83, 3.83, 3.83); Calibrated: 1/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1466; Calibrated: 1/16/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: IEEE 802.11a, UNII-3, 20 MHz Bandwidth,
Body SAR, Ch 165, 6 Mbps, Back Side, Antenna 2**

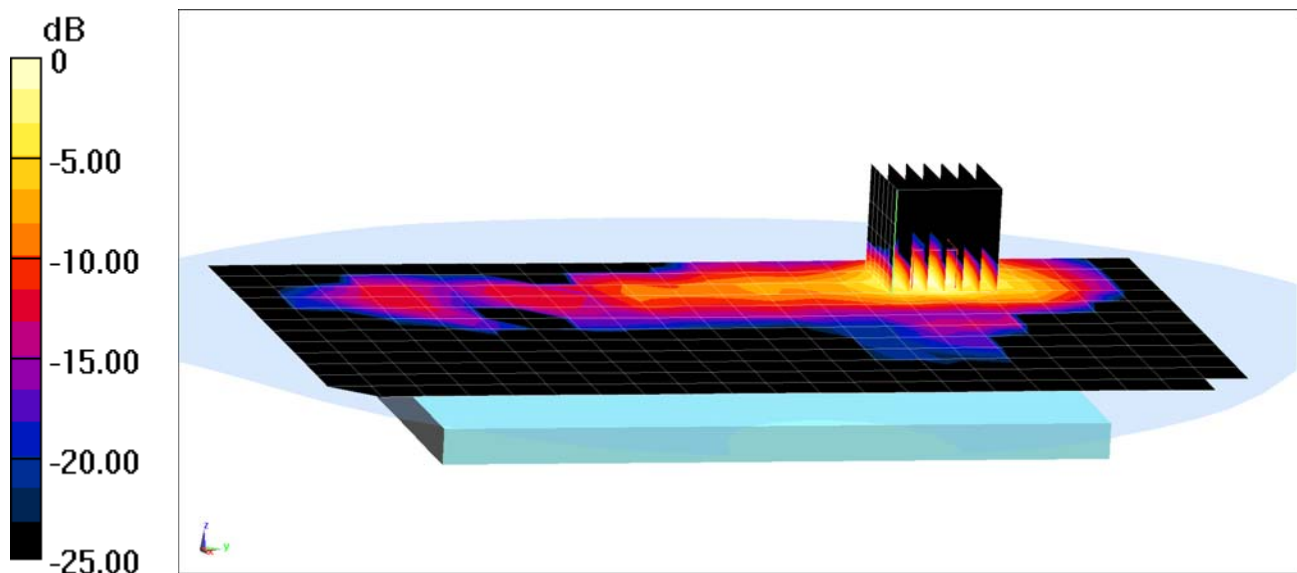
Area Scan (13x22x1): Measurement grid: dx=10mm, dy=10mm

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

Reference Value = 7.229 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 1.26 W/kg

SAR(1 g) = 0.301 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13656

Communication System: UID 0, Bluetooth; Frequency: 2402 MHz; Duty Cycle: 1:1.294

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2402 \text{ MHz}$; $\sigma = 1.956 \text{ S/m}$; $\epsilon_r = 51.484$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2017; Ambient Temp: 22.4°C; Tissue Temp: 23.6°C

Probe: EX3DV4 - SN7406; ConvF(7.6, 7.6, 7.6); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: Bluetooth, Body SAR, Ch 0, 1 Mbps, Back Side

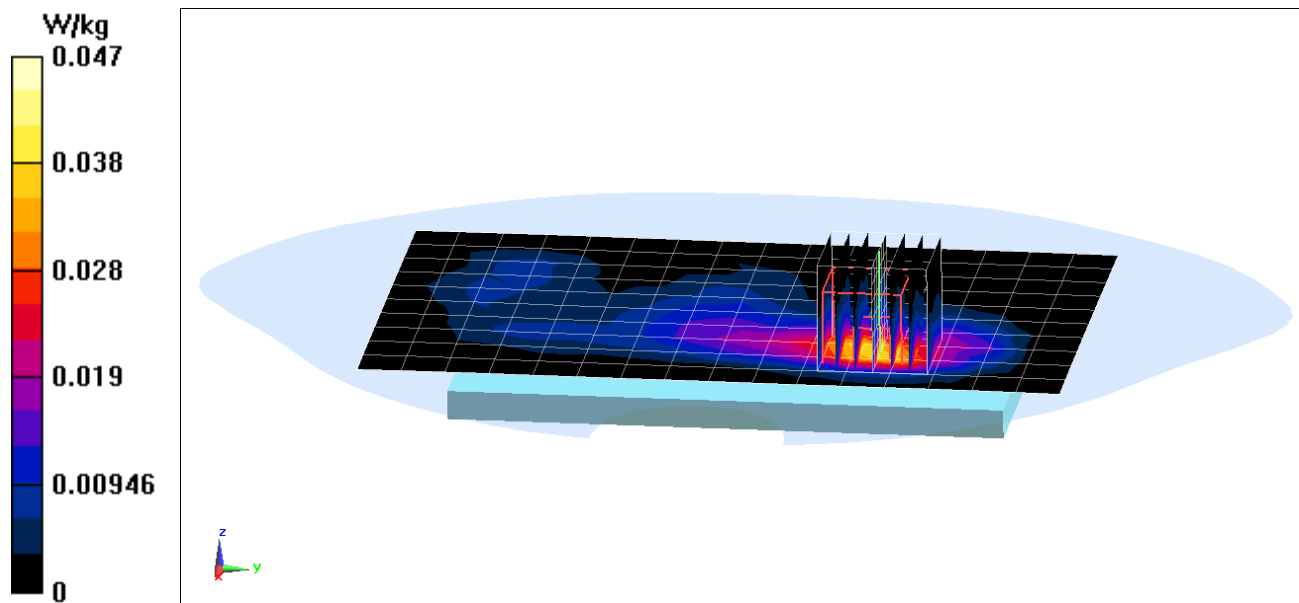
Area Scan (11x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 4.019 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.0600 W/kg

SAR(1 g) = 0.029 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13656

Communication System: UID 0, Bluetooth; Frequency: 2402 MHz; Duty Cycle: 1:1.294

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2402 \text{ MHz}$; $\sigma = 1.956 \text{ S/m}$; $\epsilon_r = 51.484$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2017; Ambient Temp: 22.4°C; Tissue Temp: 23.6°C

Probe: EX3DV4 - SN7406; ConvF(7.6, 7.6, 7.6); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: Bluetooth, Body SAR, Ch 0, 1 Mbps, Left Edge

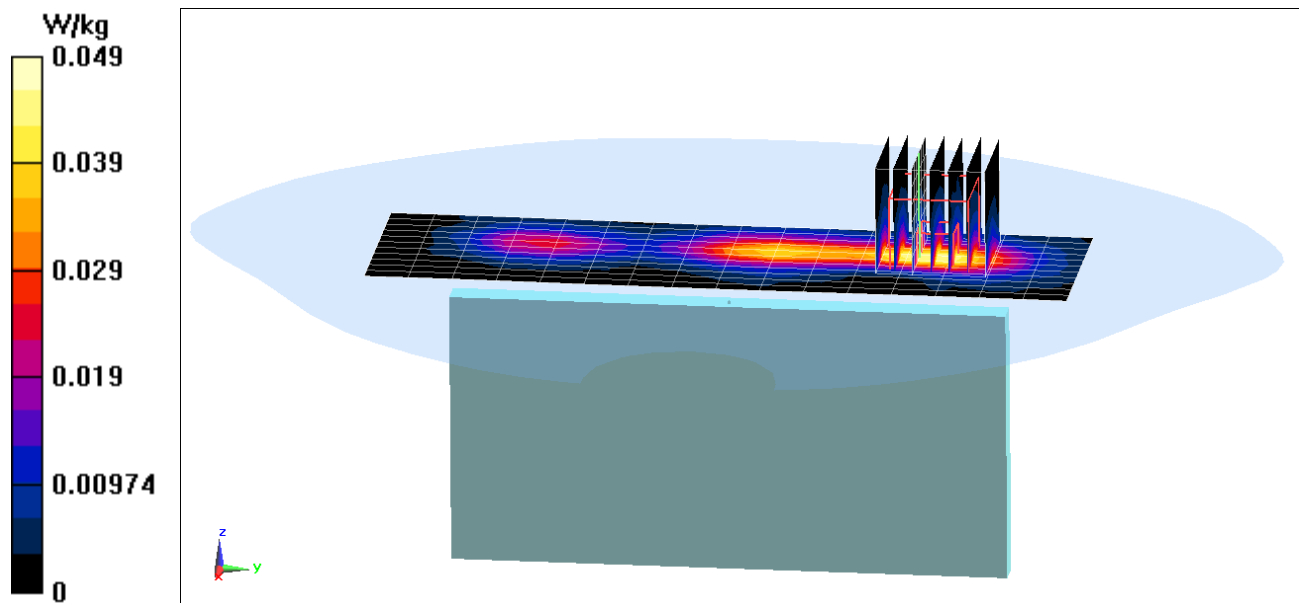
Area Scan (12x17x1): Measurement grid: $dx=5\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 4.088 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.0620 W/kg

SAR(1 g) = 0.029 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 13656

Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 5.748 \text{ S/m}$; $\epsilon_r = 46.887$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-03-2017; Ambient Temp: 22.5°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN3589; ConvF(3.82, 3.82, 3.82); Calibrated: 1/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1466; Calibrated: 1/16/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: IEEE 802.11a, U-NII-2C, 20 MHz Bandwidth, Phablet SAR,
Ch 100, 6 Mbps, Back Side, Antenna 1**

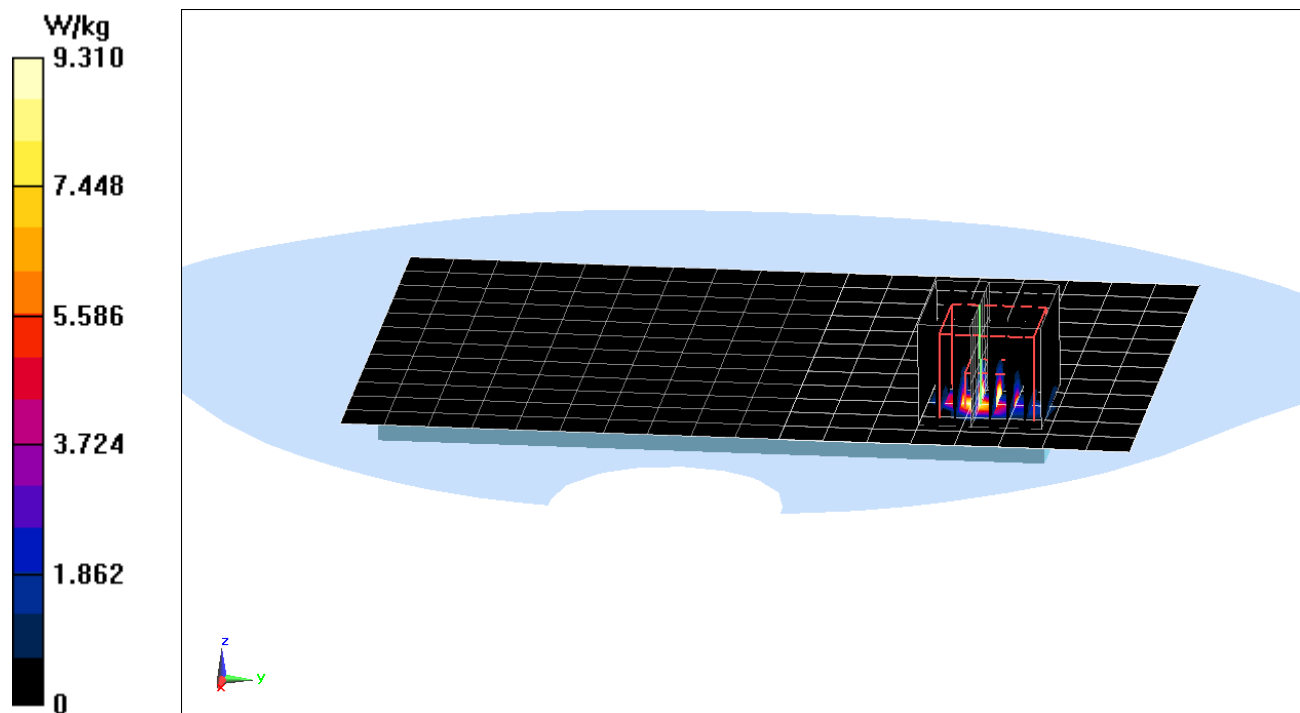
Area Scan (13x9x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (9x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 46.61 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 101 W/kg

SAR(10 g) = 1.41 W/kg



APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 750 Head Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.903 \text{ S/m}$; $\epsilon_r = 41.731$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-10-2017; Ambient Temp: 23.3°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(6.76, 6.76, 6.76); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

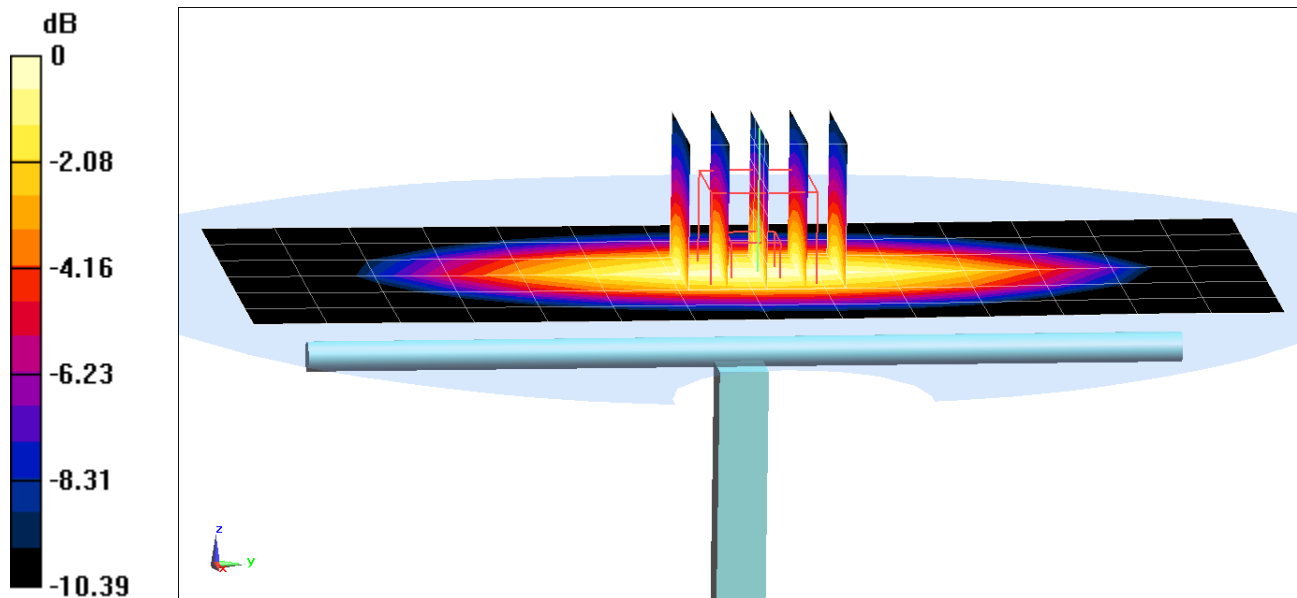
Area Scan (7x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 2.42 W/kg

SAR(1 g) = 1.64 W/kg

Deviation(1 g) = -2.26%



0 dB = 1.92 W/kg = 2.83 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 835 Head Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.872 \text{ S/m}$; $\epsilon_r = 41.03$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-22-2017; Ambient Temp: 24.5°C; Tissue Temp: 24.5°C

Probe: ES3DV3 - SN3213; ConvF(6.49, 6.49, 6.49); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

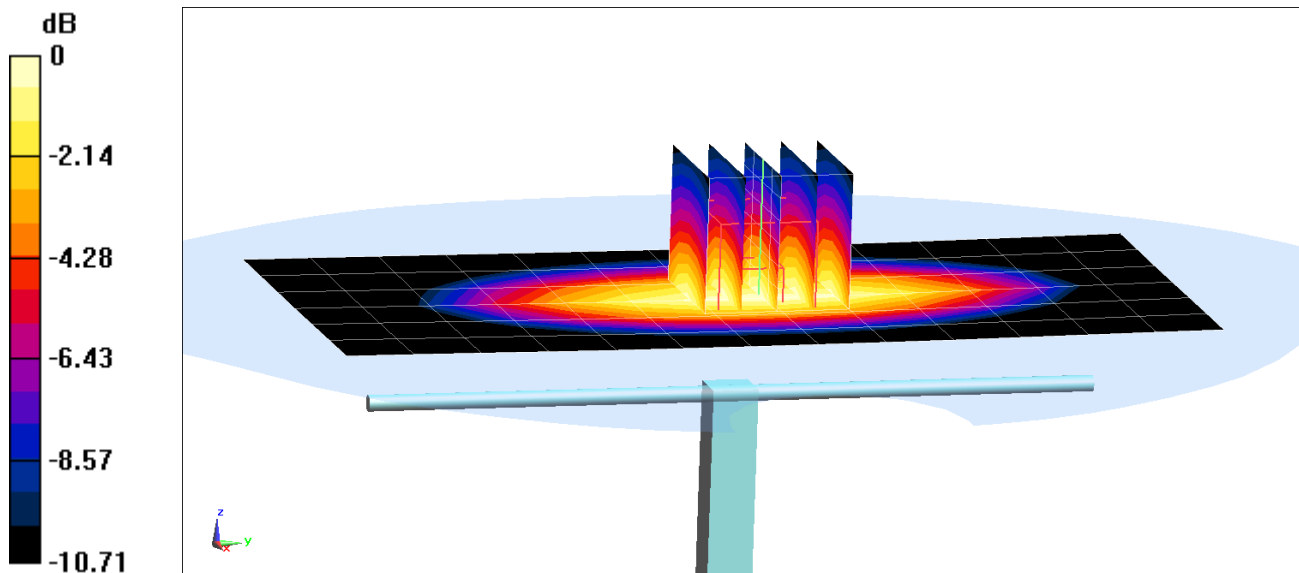
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 2.86 W/kg

SAR(1 g) = 1.93 W/kg

Deviation(1 g) = 3.54%



0 dB = 2.27 W/kg = 3.56 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:

$f = 835 \text{ MHz}$; $\sigma = 0.907 \text{ S/m}$; $\epsilon_r = 42.421$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-28-2017; Ambient Temp: 23.1°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3319; ConvF(6.46, 6.46, 6.46); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

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

Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

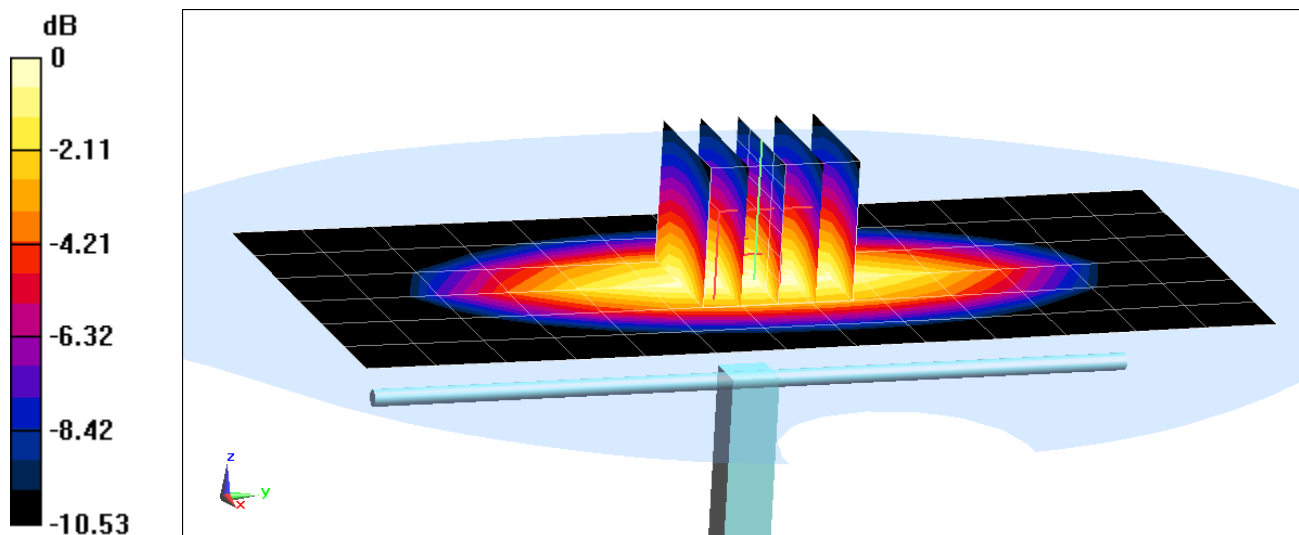
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 2.78 W/kg

SAR(1 g) = 1.88 W/kg

Deviation(1 g) = -0.63%



0 dB = 2.19 W/kg = 3.40 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148

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

Medium: 1750 Head Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.403 \text{ S/m}$; $\epsilon_r = 38.373$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3319; ConvF(5.38, 5.38, 5.38); Calibrated: 03/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 03/08/2017

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

Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

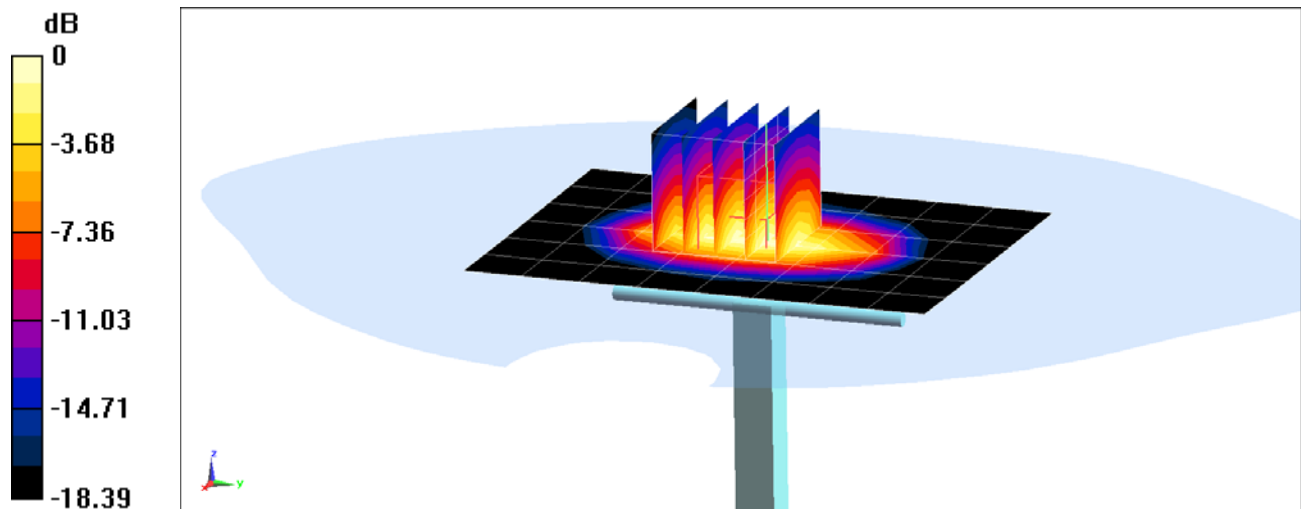
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 6.68 W/kg

SAR(1 g) = 3.7 W/kg

Deviation(1 g) = 1.65%



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

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

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.433 \text{ S/m}$; $\epsilon_r = 40.12$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2017; Ambient Temp: 21.3°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3209; ConvF(5.31, 5.31, 5.31); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

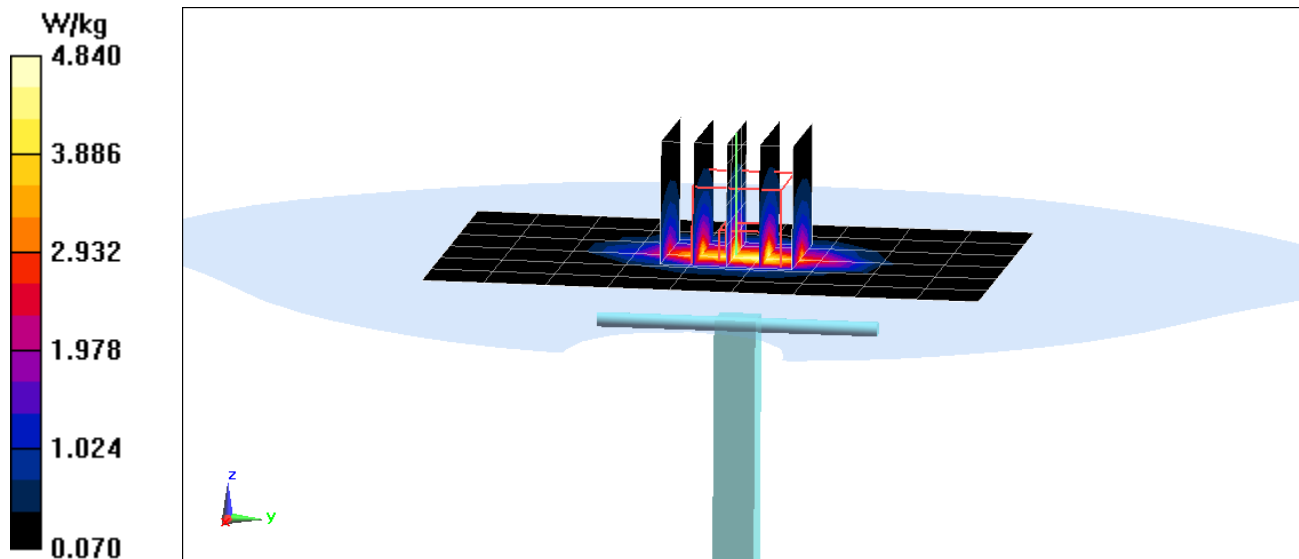
Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 7.06 W/kg

SAR(1 g) = 3.82 W/kg

Deviation(1 g) = -2.80%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2300 MHz; Type: D2300V2; Serial: 1038

Communication System: UID 0, CW; Frequency: 2300 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used:

$f = 2450$ MHz; $\sigma = 1.721$ S/m; $\epsilon_r = 39.641$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-03-2017; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3213; ConvF(4.95, 4.95, 4.95); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2300 MHz System Verification at 20.0 dBm (100 mW)

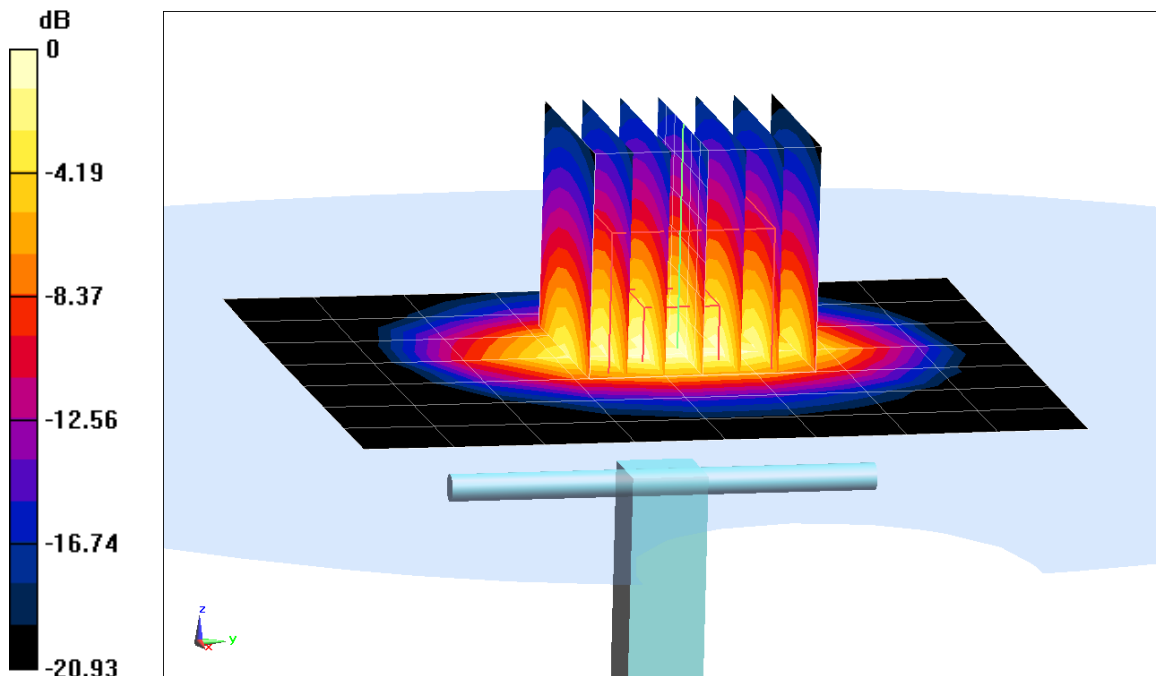
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

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

Peak SAR (extrapolated) = 9.84 W/kg

SAR(1 g) = 4.92 W/kg

Deviation(1 g) = 3.58%



0 dB = 6.46 W/kg = 8.10 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 981

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

Medium: 2450 Head Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.848 \text{ S/m}$; $\epsilon_r = 38.974$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3213; ConvF(4.7, 4.7, 4.7); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

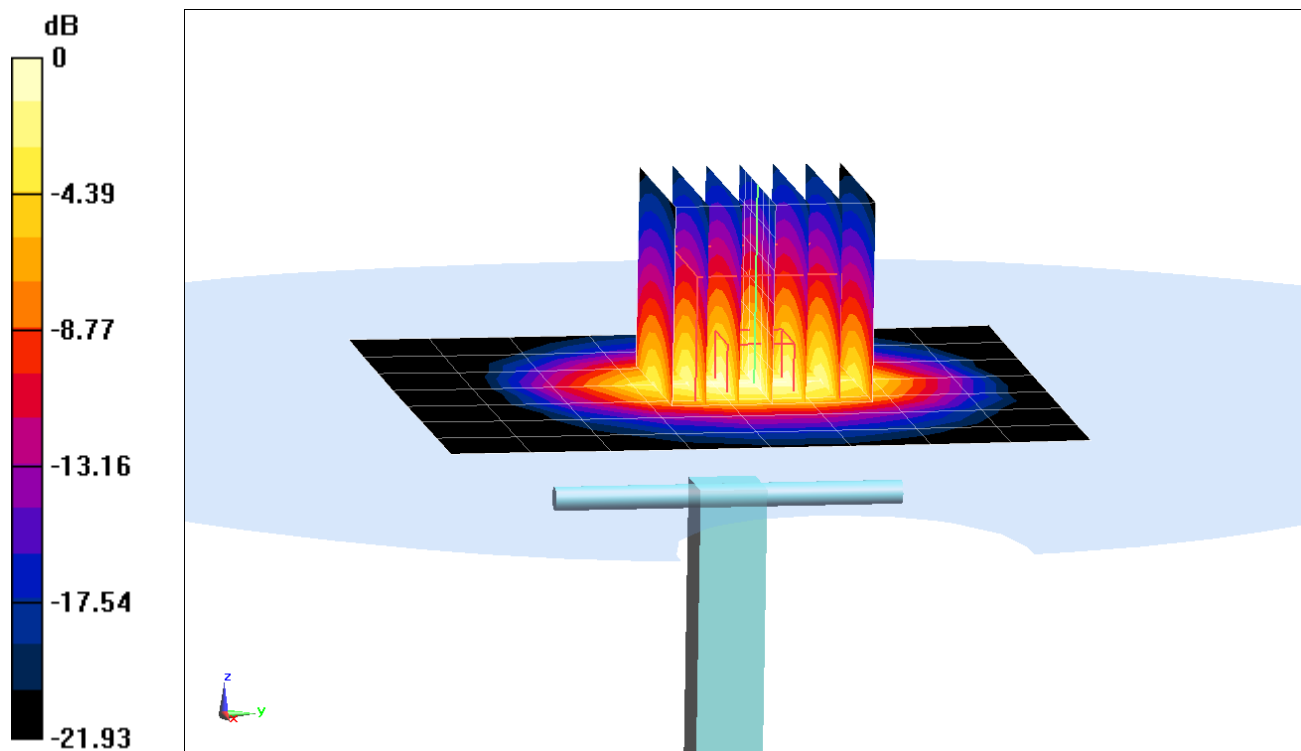
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

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

Peak SAR (extrapolated) = 11.1 W/kg

SAR(1 g) = 5.38 W/kg

Deviation(1 g) = 1.89%



0 dB = 7.14 W/kg = 8.54 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:

$f = 2450 \text{ MHz}$; $\sigma = 1.881 \text{ S/m}$; $\epsilon_r = 38.554$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-06-2017; Ambient Temp: 21.9°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3213; ConvF(4.7, 4.7, 4.7); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

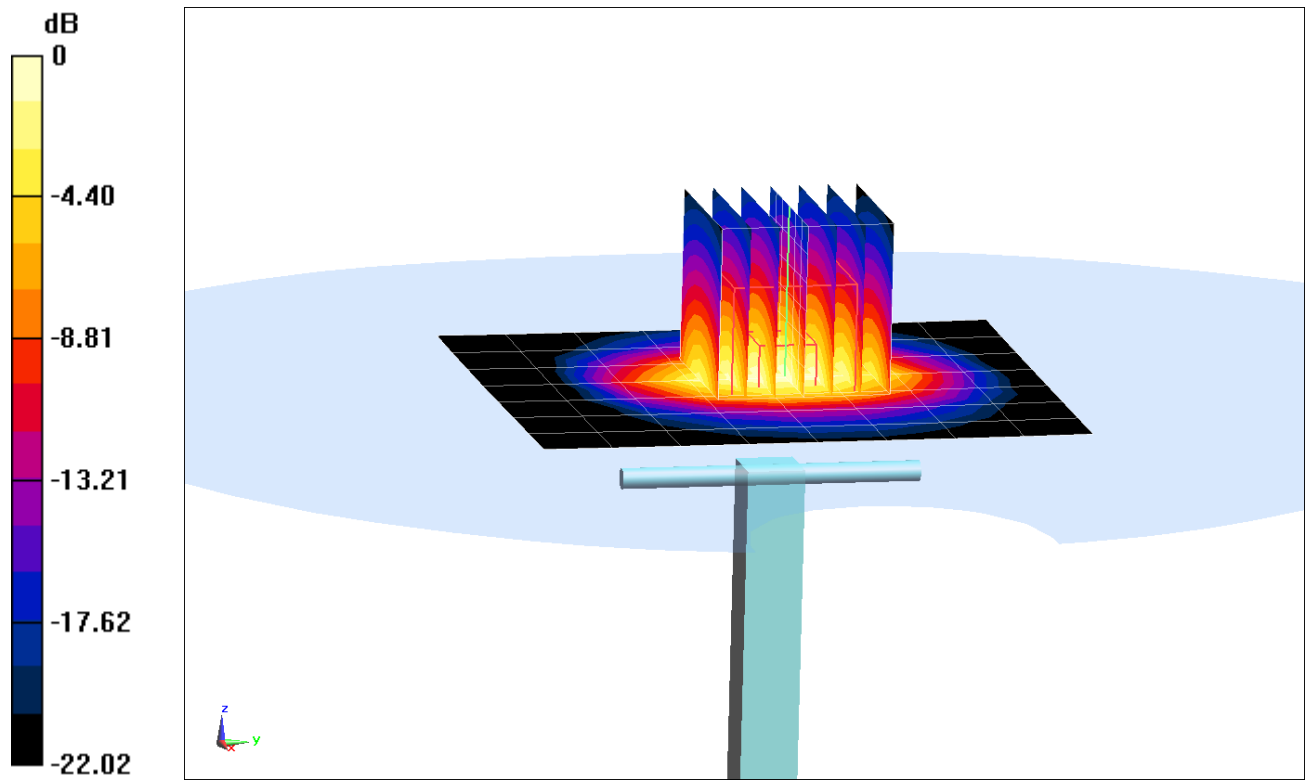
Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Peak SAR (extrapolated) = 11.4 W/kg

SAR(1 g) = 5.5 W/kg

Deviation(1 g) = 5.57%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1071

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used:

$f = 2600 \text{ MHz}$; $\sigma = 2.006 \text{ S/m}$; $\epsilon_r = 37.692$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-29-2017; Ambient Temp: 22.2°C; Tissue Temp: 20.5°C

Probe: ES3DV3 - SN3213; ConvF(4.52, 4.52, 4.52); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

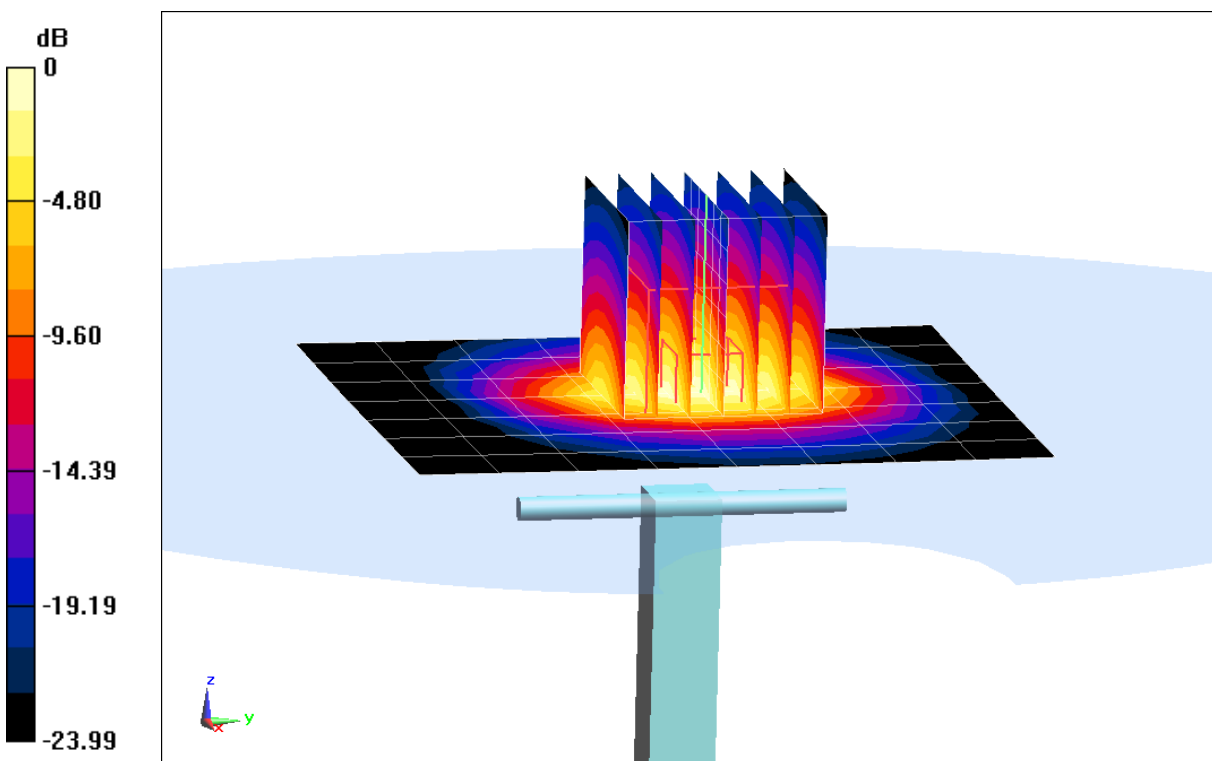
Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Peak SAR (extrapolated) = 12.7 W/kg

SAR(1 g) = 5.74 W/kg

Deviation(1 g) = 1.95%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237

Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: 5GHz Head Medium parameters used (interpolated):

$f = 5250 \text{ MHz}$; $\sigma = 4.553 \text{ S/m}$; $\epsilon_r = 36.011$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-28-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN3914; ConvF(5.49, 5.49, 5.49); Calibrated: 2/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/9/2017

Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715

Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5250 MHz System Verification at 17.0 dBm (50 mW)

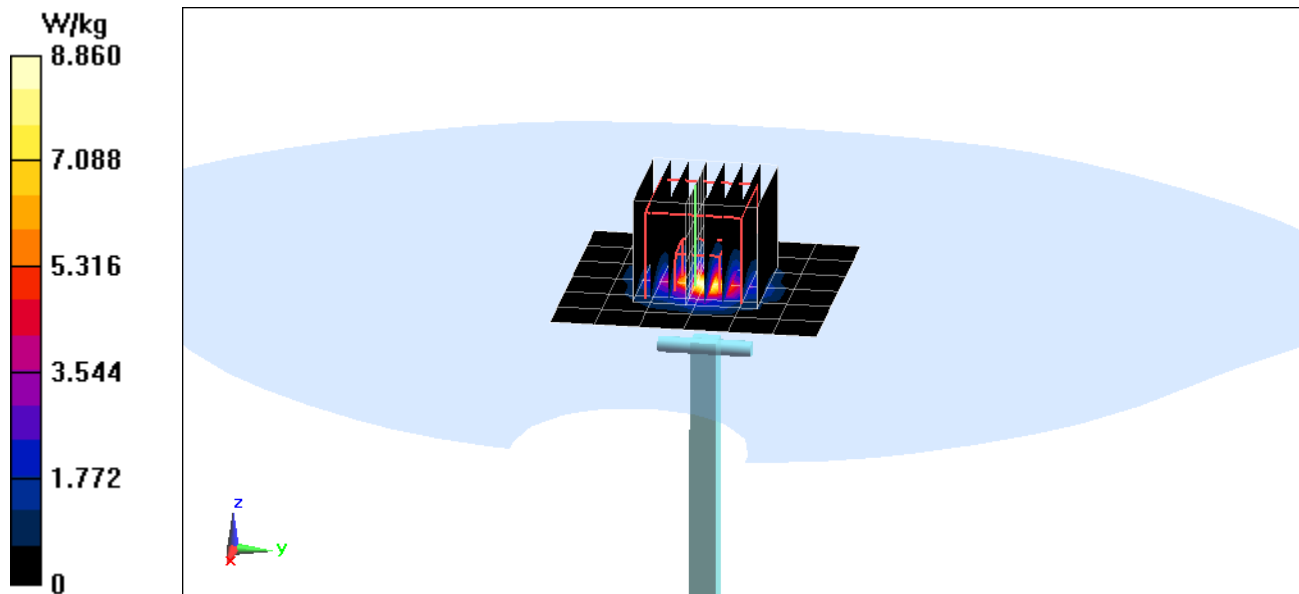
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

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

Peak SAR (extrapolated) = 16.3 W/kg

SAR(1 g) = 3.73 W/kg

Deviation(1 g) = -5.81%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237

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

Medium: 5GHz Head Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 4.907 \text{ S/m}$; $\epsilon_r = 35.541$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-28-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN3914; ConvF(4.94, 4.94, 4.94); Calibrated: 2/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/9/2017

Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715

Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5600 MHz System Verification at 17.0 dBm (50 mW)

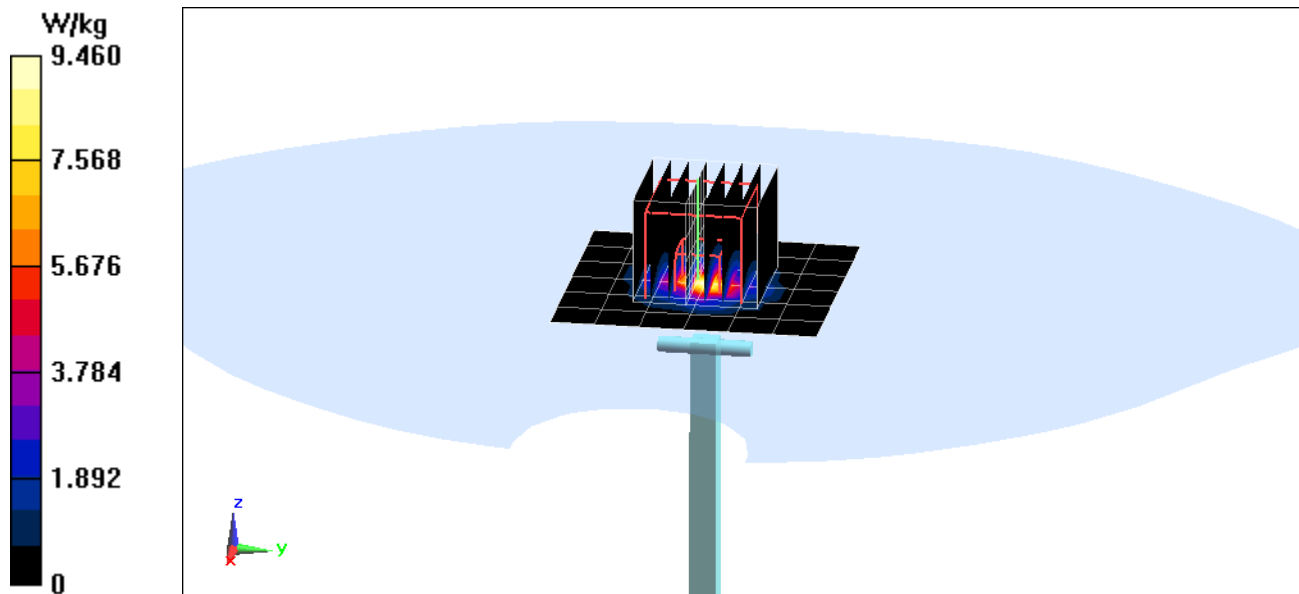
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

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

Peak SAR (extrapolated) = 17.3 W/kg

SAR(1 g) = 3.9 W/kg

Deviation(1 g) = -6.36%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: 5GHz Head Medium parameters used (interpolated):

$f = 5750 \text{ MHz}$; $\sigma = 5.059 \text{ S/m}$; $\epsilon_r = 35.365$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-28-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN3914; ConvF(4.91, 4.91, 4.91); Calibrated: 2/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/9/2017

Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715

Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

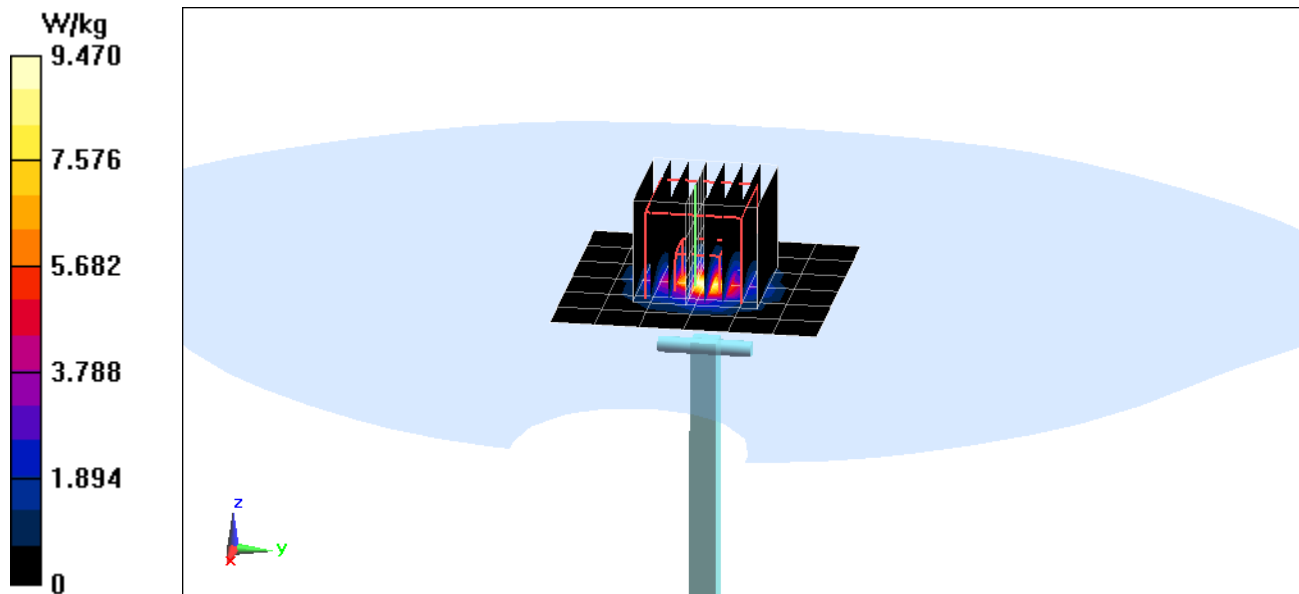
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

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

Peak SAR (extrapolated) = 17.8 W/kg

SAR(1 g) = 3.92 W/kg

Deviation(1 g) = -3.80%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1161

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.965 \text{ S/m}$; $\epsilon_r = 55.501$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-04-2017; Ambient Temp: 22.9°C; Tissue Temp: 23.5°C

Probe: ES3DV3 - SN3319; ConvF(6.37, 6.37, 6.37); Calibrated: 3/14/2017

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

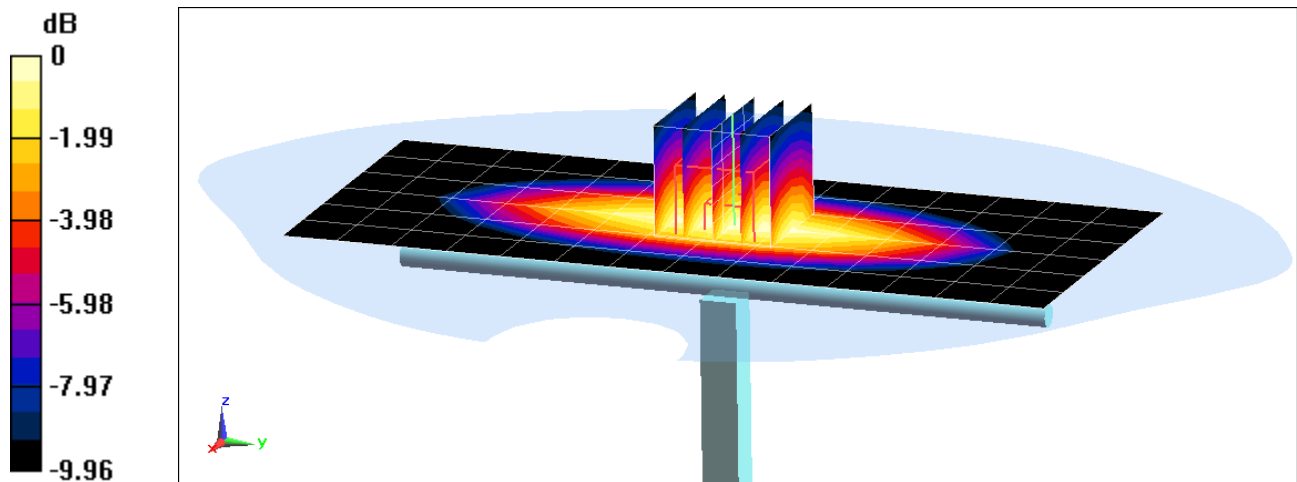
Area Scan (7x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 2.54 W/kg

SAR(1 g) = 1.75 W/kg

Deviation(1 g) = 3.80%



0 dB = 2.03 W/kg = 3.07 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.958 \text{ S/m}$; $\epsilon_r = 55.007$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-24-2017; Ambient Temp: 21.7°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(9.9, 9.9, 9.9); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

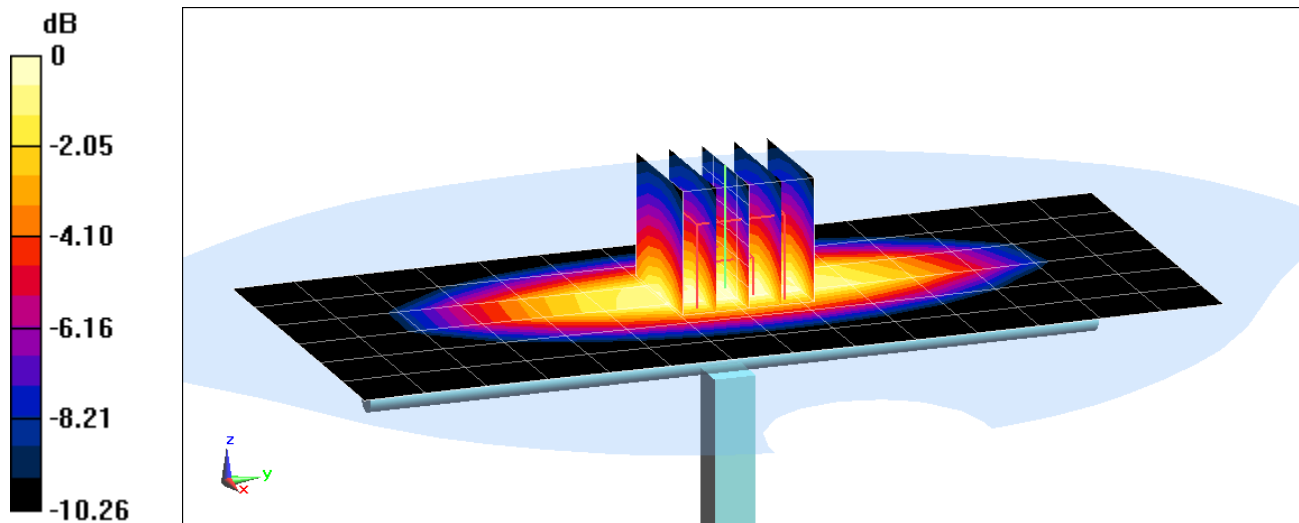
Area Scan (7x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 2.70 W/kg

SAR(1 g) = 1.75 W/kg

Deviation(1 g) = 1.63%



0 dB = 2.36 W/kg = 3.73 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.991 \text{ S/m}$; $\epsilon_r = 53.11$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-27-2017; Ambient Temp: 22.4°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7406; ConvF(9.77, 9.77, 9.77); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

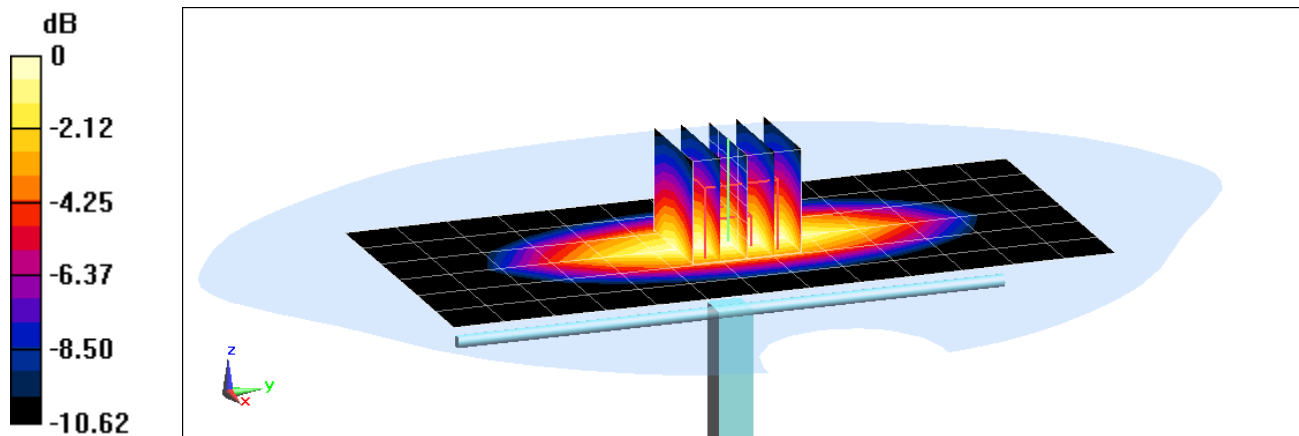
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 3.14 W/kg

SAR(1 g) = 2.06 W/kg

Deviation(1 g) = 8.42%



0 dB = 2.77 W/kg = 4.42 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d180

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

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 1.018 \text{ S/m}$; $\epsilon_r = 54.215$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-22-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)/

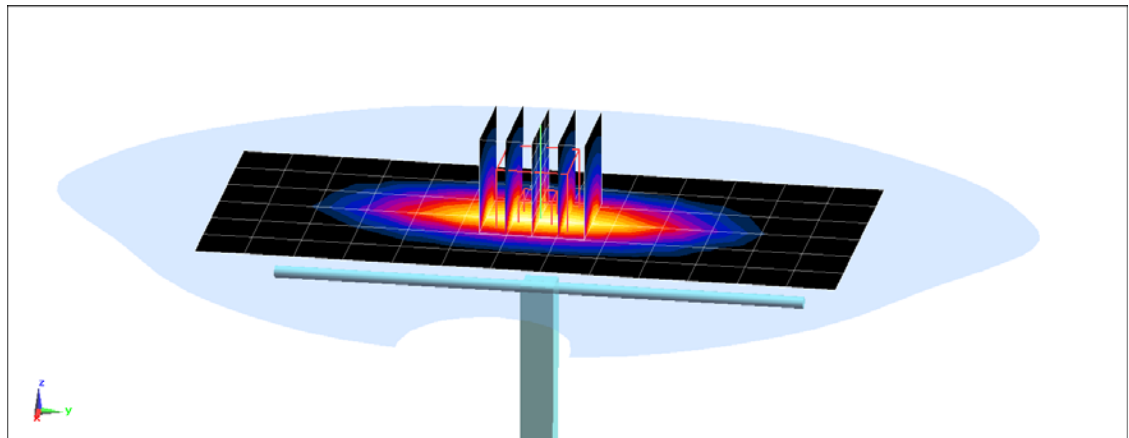
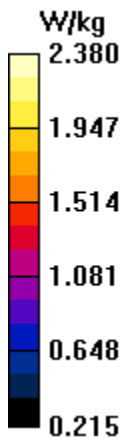
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 2.97 W/kg

SAR(1 g) = 2.05 W/kg

Deviation(1 g) = 6.66%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1092

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

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.456 \text{ S/m}$; $\epsilon_r = 52.155$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-23-2017; Ambient Temp: 25.0°C; Tissue Temp: 25.0°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

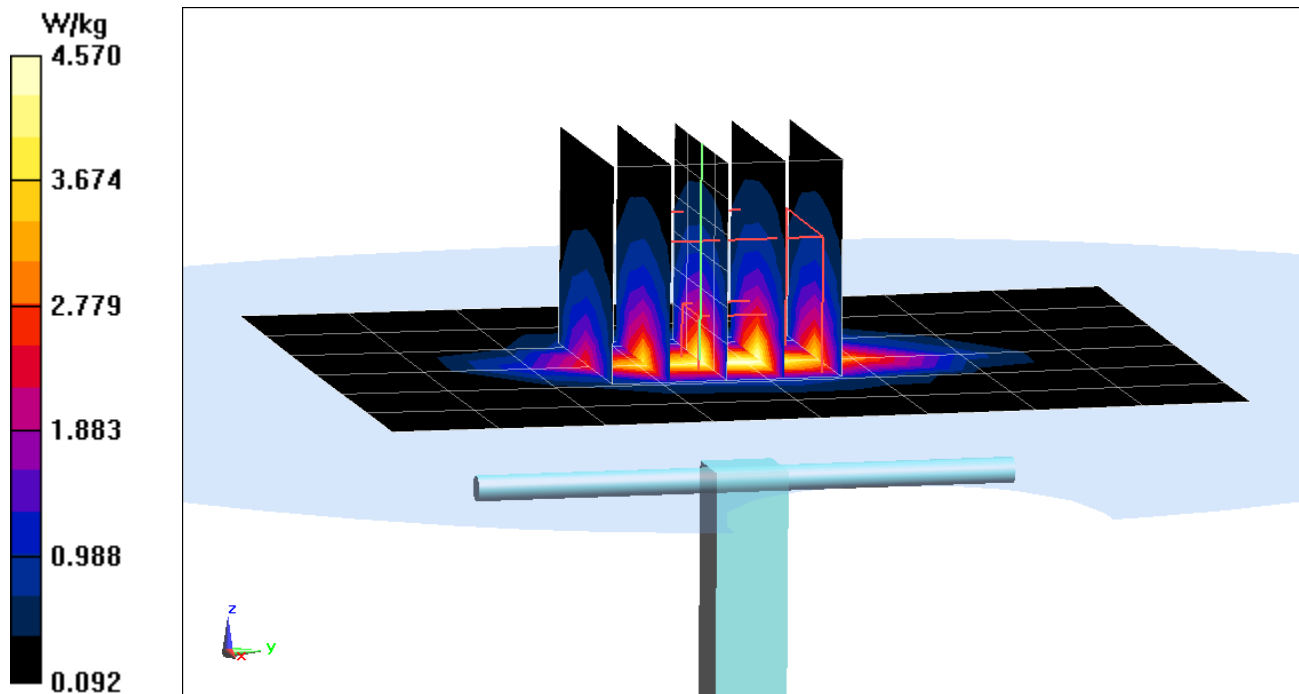
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 6.42 W/kg

SAR(1 g) = 3.71 W/kg

Deviation(1 g) = 0.27%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1092

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

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.535 \text{ S/m}$; $\epsilon_r = 51.537$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2017; Ambient Temp: 22.1°C; Tissue Temp: 19.9°C

Probe: EX3DV4 - SN7406; ConvF(8.08, 8.08, 8.08); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

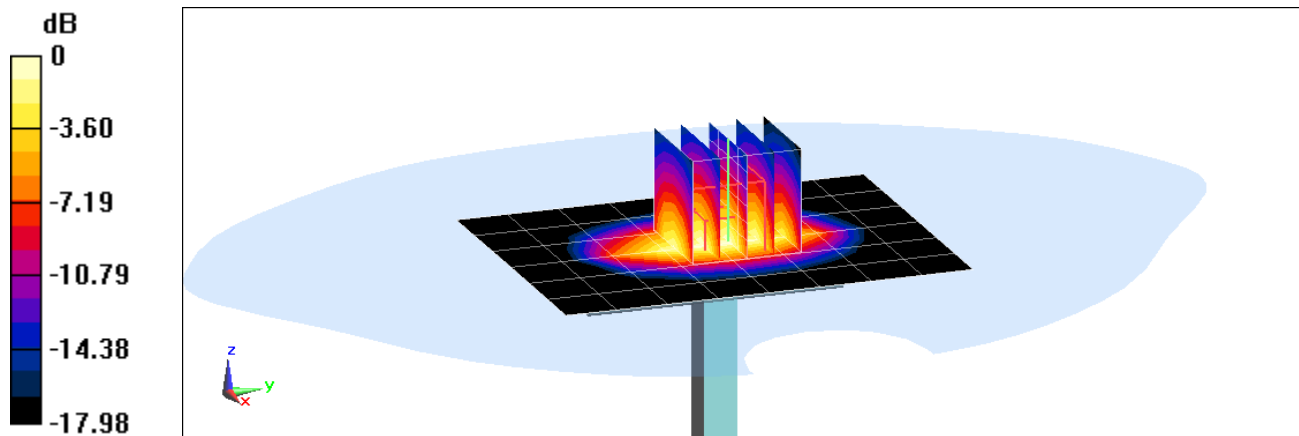
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 7.28 W/kg

SAR(1 g) = 3.94 W/kg

Deviation(1 g) = 6.49%



0 dB = 6.02 W/kg = 7.80 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

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

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.57 \text{ S/m}$; $\epsilon_r = 51.143$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-20-2017; Ambient Temp: 23.3°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3319; ConvF(4.88, 4.88, 4.88); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

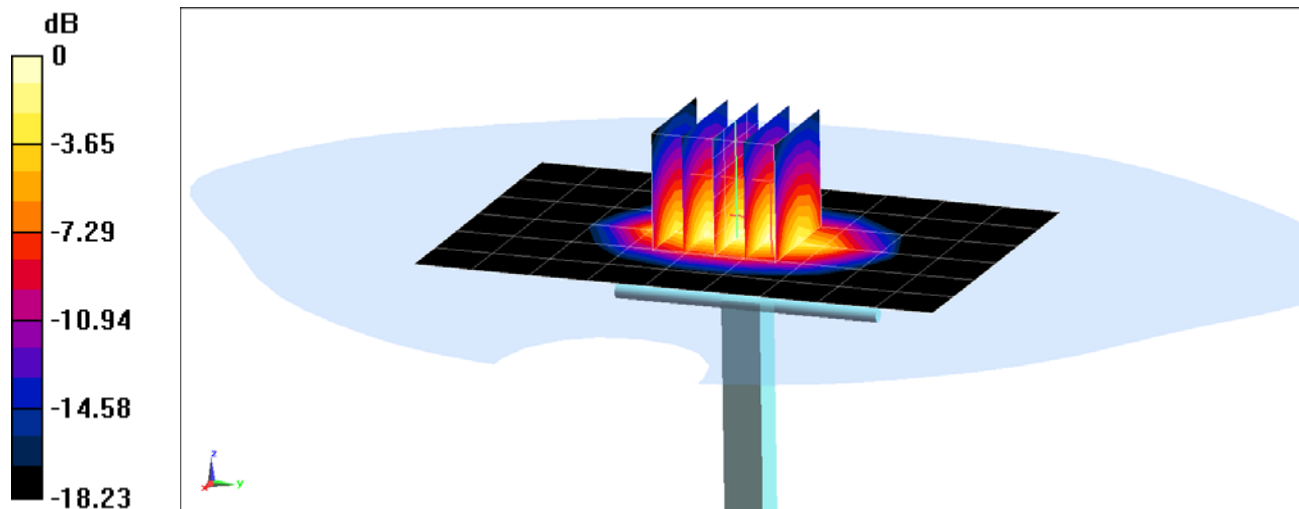
Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 7.32 W/kg

SAR(1 g) = 4.06 W/kg

Deviation(1 g) = 1.75%



0 dB = 5.15 W/kg = 7.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

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

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.564 \text{ S/m}$; $\epsilon_r = 53.088$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2017; Ambient Temp: 20.4°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3318; ConvF(4.96, 4.96, 4.96); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/9/2017

Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

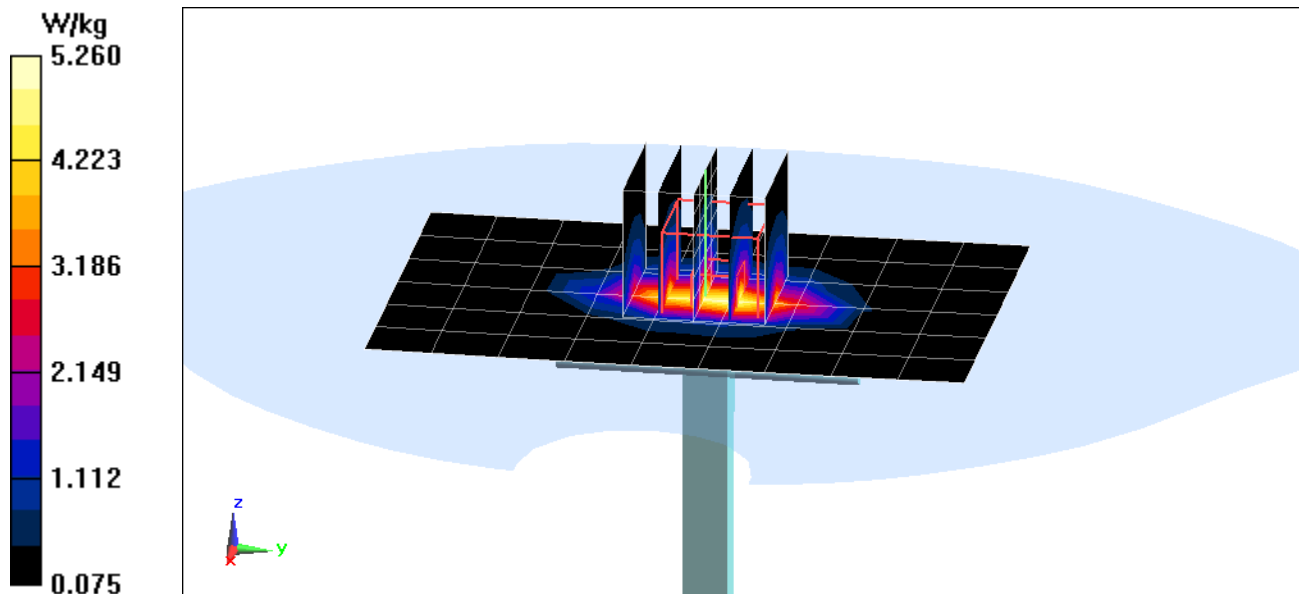
Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 7.65 W/kg

SAR(1 g) = 4.17 W/kg

Deviation(1 g) = 6.65%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

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

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.576 \text{ S/m}$; $\epsilon_r = 52.232$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-01-2017; Ambient Temp: 21.8°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

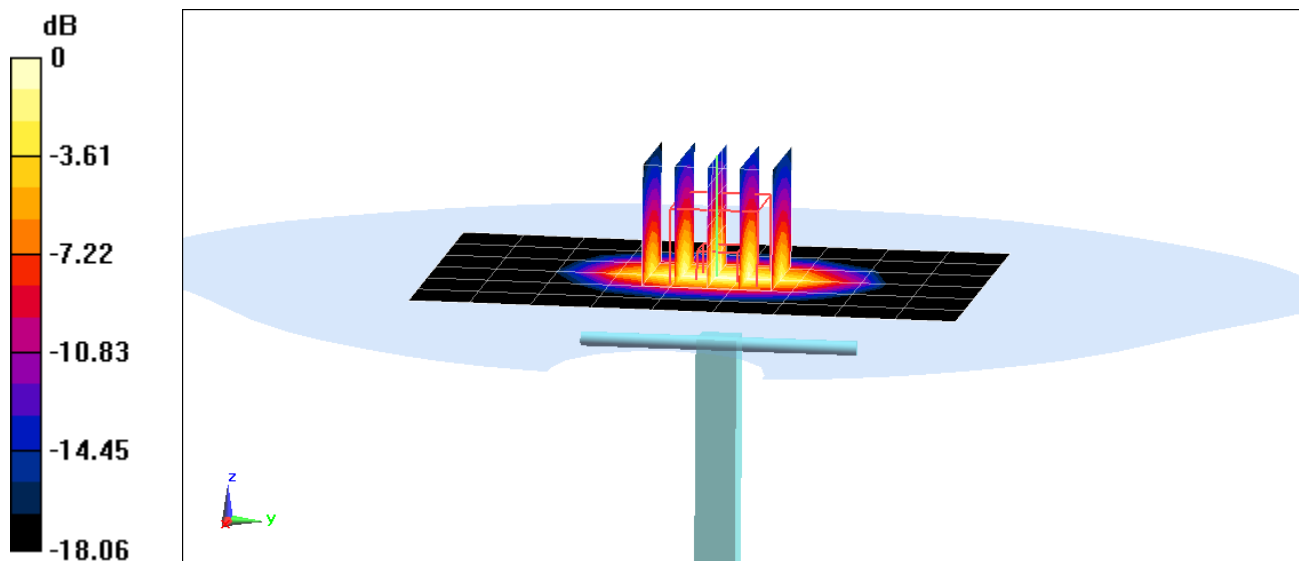
Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 7.17 W/kg

SAR(1 g) = 3.99 W/kg

Deviation(1 g) = 2.05%



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2300 MHz; Type: D2300V2; Serial: 1038

Communication System: UID 0, CW; Frequency: 2300 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used:

$f = 2300 \text{ MHz}$; $\sigma = 1.817 \text{ S/m}$; $\epsilon_r = 51.859$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2017; Ambient Temp: 22.4°C; Tissue Temp: 23.6°C

Probe: EX3DV4 - SN7406; ConvF(7.65, 7.65, 7.65); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2300 MHz System Verification at 20.0 dBm (100 mW)

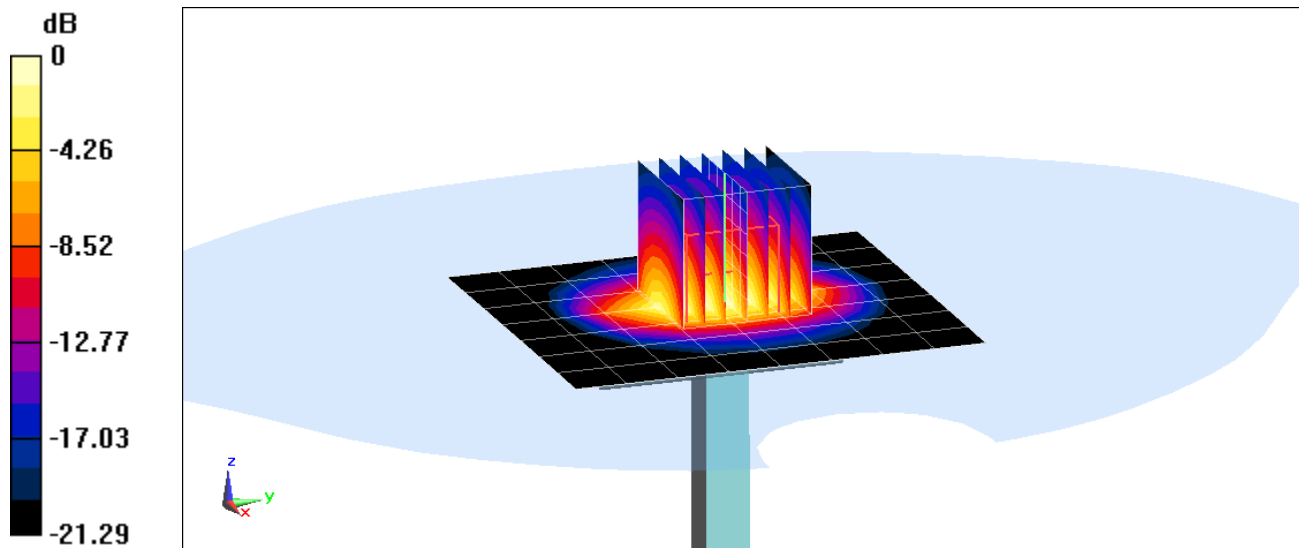
Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Peak SAR (extrapolated) = 10.3 W/kg

SAR(1 g) = 5.04 W/kg

Deviation(1 g) = 6.11%



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:

$f = 2450$ MHz; $\sigma = 2.016$ S/m; $\epsilon_r = 51.287$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2017; Ambient Temp: 22.4°C; Tissue Temp: 23.6°C

Probe: EX3DV4 - SN7406; ConvF(7.6, 7.6, 7.6); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

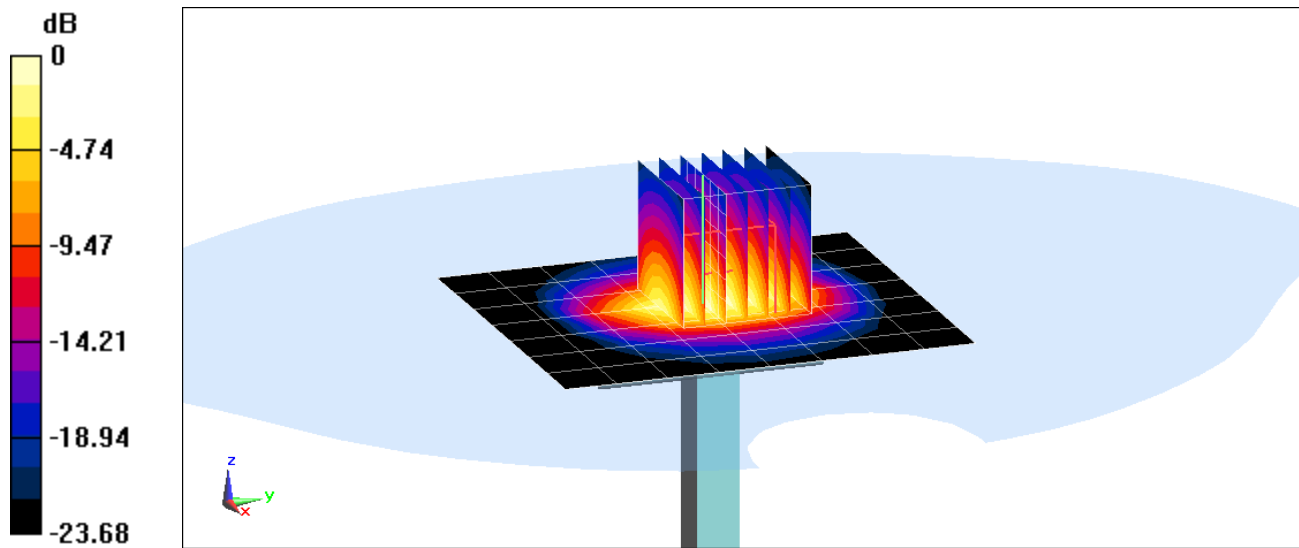
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

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

Peak SAR (extrapolated) = 11.7 W/kg

SAR(1 g) = 5.41 W/kg

Deviation(1 g) = 6.71%



0 dB = 9.16 W/kg = 9.62 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 981

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

Medium: 2450 Body Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.967 \text{ S/m}$; $\epsilon_r = 51.248$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2017; Ambient Temp: 20.0°C; Tissue Temp: 22.6°C

Probe: ES3DV3 - SN3287; ConvF(4.35, 4.35, 4.35); Calibrated: 9/19/2016;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1408; Calibrated: 9/14/2016

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

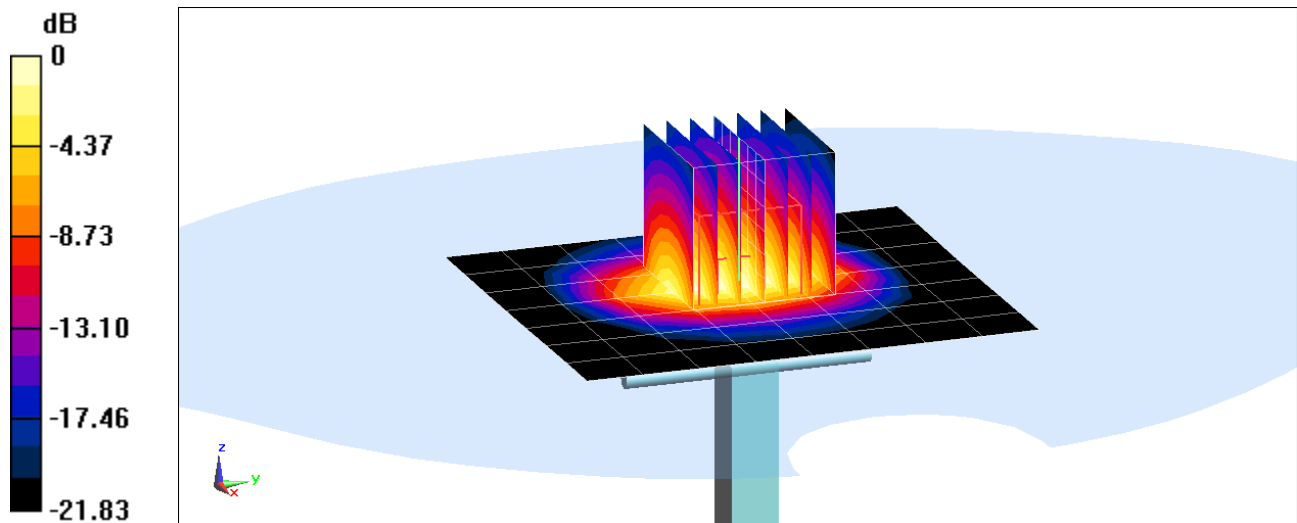
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

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

Peak SAR (extrapolated) = 11.2 W/kg

SAR(1 g) = 5.46 W/kg

Deviation(1 g) = 7.48%



0 dB = 7.10 W/kg = 8.51 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1071

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used:

$f = 2600 \text{ MHz}$; $\sigma = 2.221 \text{ S/m}$; $\epsilon_r = 50.709$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2017; Ambient Temp: 22.4°C; Tissue Temp: 23.6°C

Probe: EX3DV4 - SN7406; ConvF(7.31, 7.31, 7.31); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

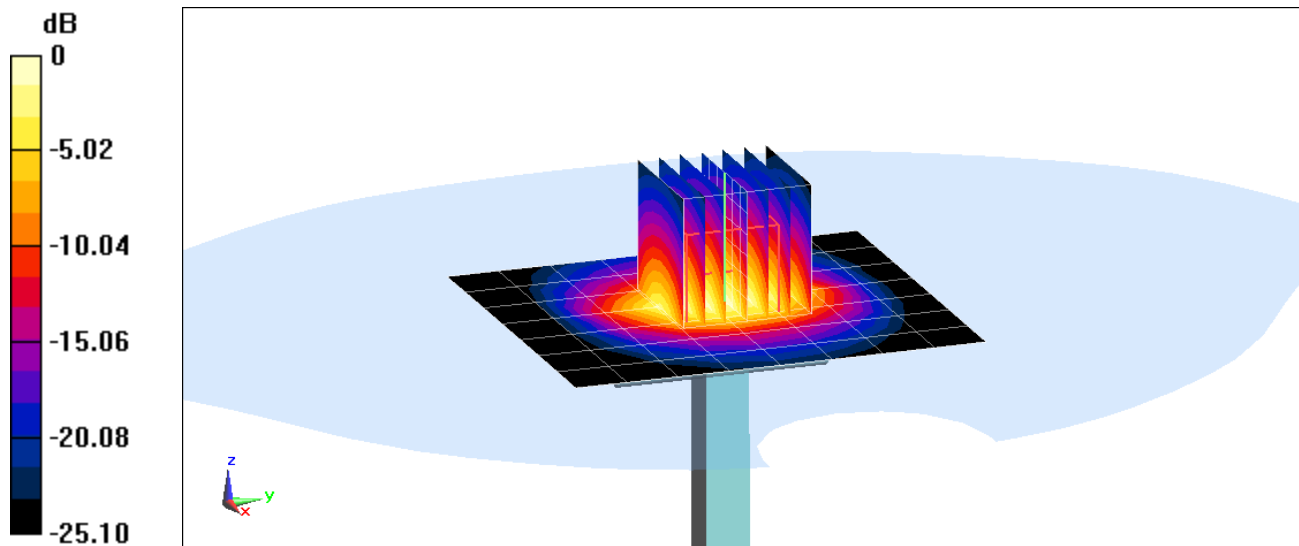
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

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

Peak SAR (extrapolated) = 12.5 W/kg

SAR(1 g) = 5.33 W/kg

Deviation(1 g) = -1.66%



0 dB = 9.57 W/kg = 9.81 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used:

$f = 2600$ MHz; $\sigma = 2.179$ S/m; $\epsilon_r = 50.674$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2017; Ambient Temp: 20.0°C; Tissue Temp: 22.6°C

Probe: ES3DV3 - SN3287; ConvF(4.12, 4.12, 4.12); Calibrated: 9/19/2016;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1408; Calibrated: 9/14/2016

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

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

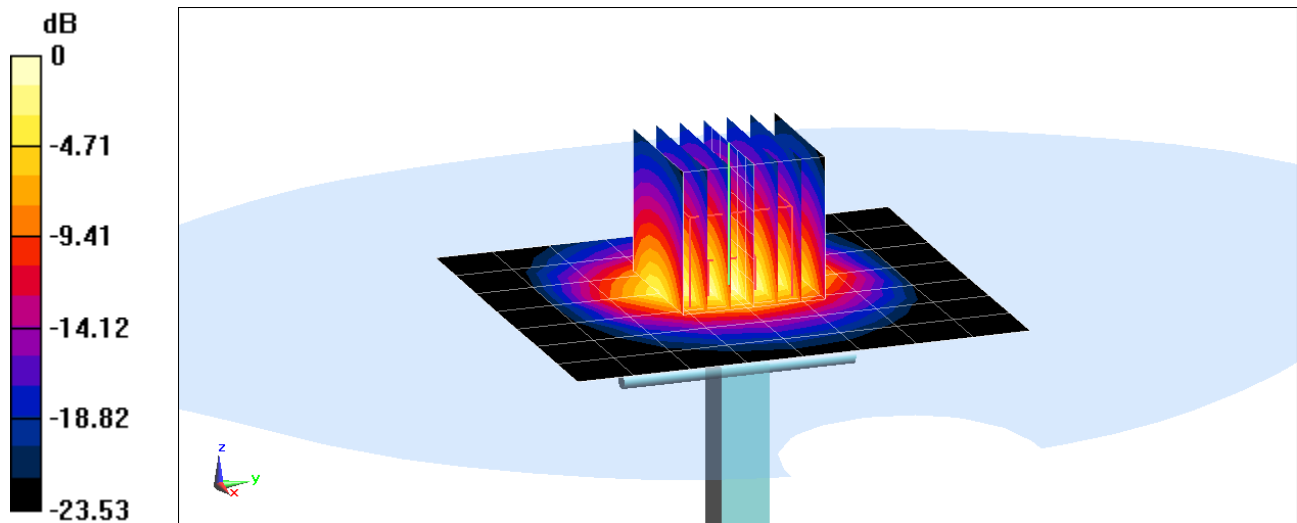
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

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

Peak SAR (extrapolated) = 12.8 W/kg

SAR(1 g) = 5.85 W/kg

Deviation(1 g) = 5.79%



0 dB = 7.77 W/kg = 8.90 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1123

Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used (interpolated):

$f = 5250 \text{ MHz}$; $\sigma = 5.429 \text{ S/m}$; $\epsilon_r = 47.357$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-03-2017; Ambient Temp: 22.5°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN3589; ConvF(4.19, 4.19, 4.19); Calibrated: 1/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1466; Calibrated: 1/16/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5250 MHz System Verification at 17.0 dBm (50 mW)

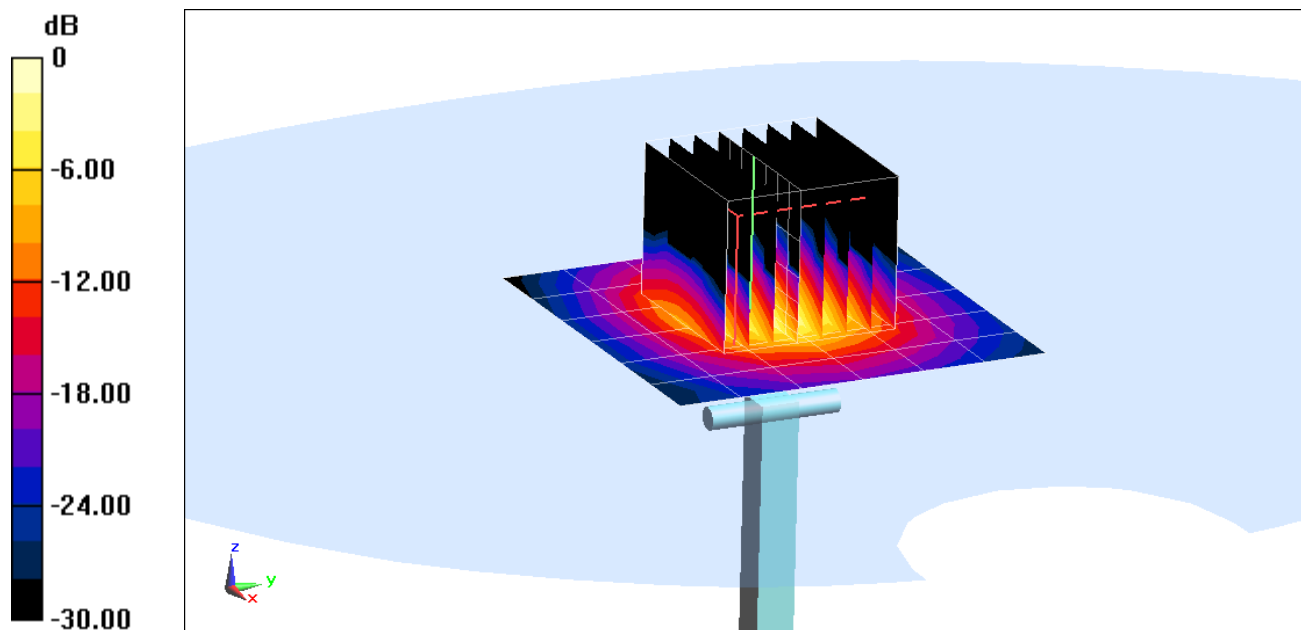
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

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

Peak SAR (extrapolated) = 15.2 W/kg

SAR(1 g) = 3.57 W/kg; SAR(10 g) = 0.986 W/kg

Deviation(1 g) = -5.93%; Deviation(10 g) = -7.42%



0 dB = 8.26 W/kg = 9.17 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1123

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

Medium: 5 GHz Body Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 5.882 \text{ S/m}$; $\epsilon_r = 46.749$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-03-2017; Ambient Temp: 22.5°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN3589; ConvF(3.82, 3.82, 3.82); Calibrated: 1/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1466; Calibrated: 1/16/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5600 MHz System Verification at 17.0 dBm (50 mW)

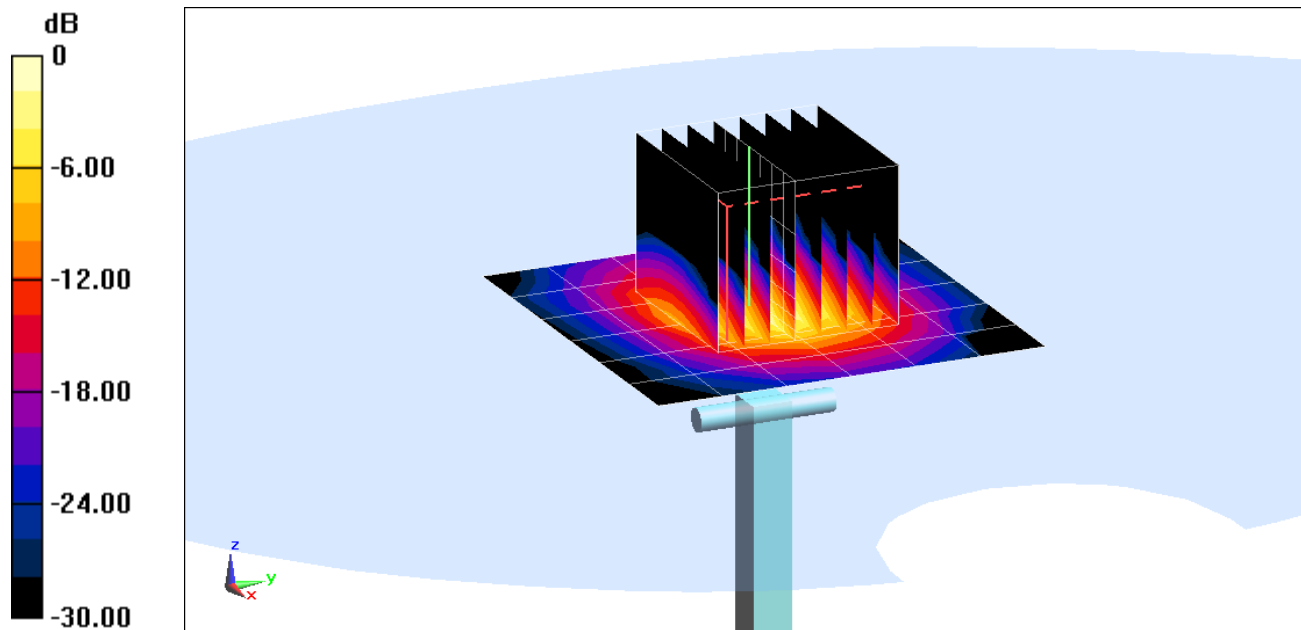
Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Peak SAR (extrapolated) = 18.8 W/kg

SAR(1 g) = 4.07 W/kg; SAR(10 g) = 1.12 W/kg

Deviation(1 g) = 3.17%; Deviation(10 g) = 1.36%



0 dB = 10.1 W/kg = 10.04 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1123

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used (interpolated):

$f = 5750 \text{ MHz}$; $\sigma = 6.083 \text{ S/m}$; $\epsilon_r = 46.567$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-03-2017; Ambient Temp: 22.5°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN3589; ConvF(3.83, 3.83, 3.83); Calibrated: 1/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1466; Calibrated: 1/16/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

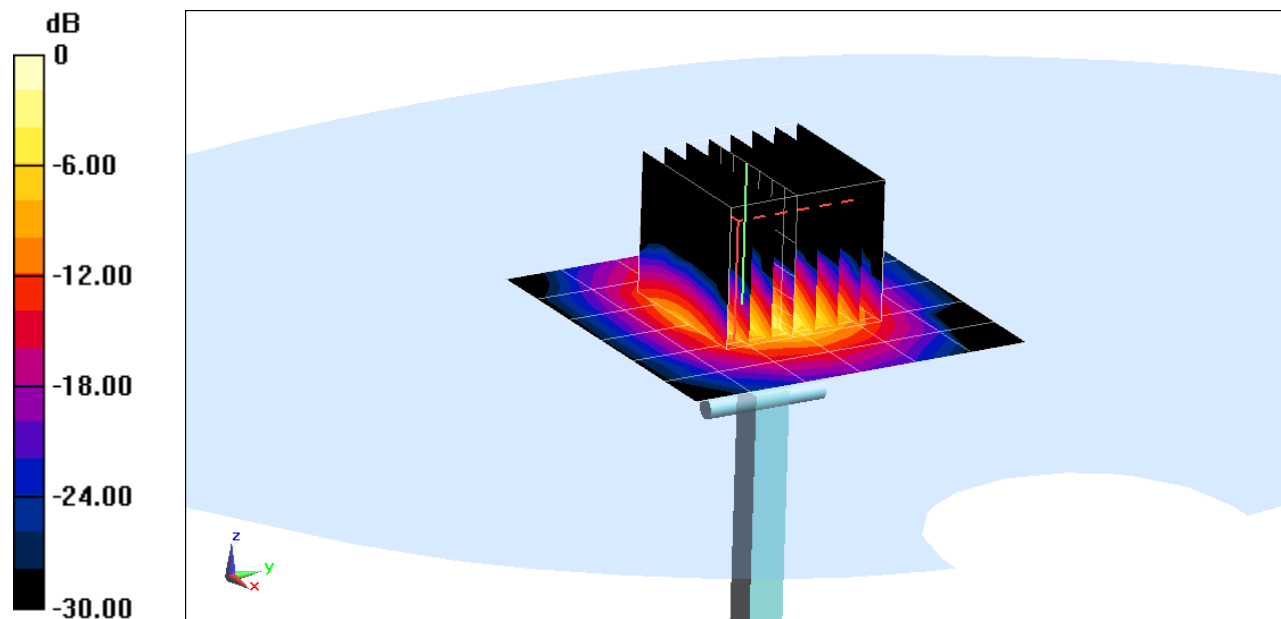
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

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

Peak SAR (extrapolated) = 16.5 W/kg

SAR(1 g) = 3.69 W/kg; SAR(10 g) = 1.02 W/kg

Deviation(1 g) = -3.28%; Deviation(10 g) = -4.23%



0 dB = 9.11 W/kg = 9.60 dBW/kg