



SAR EVALUATION REPORT

Applicant Name:

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

Date of Testing:

06/08/17 - 07/20/17

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Document Serial No.:

1M1706070186-01-R1.ZNF

FCC ID:

ZNFLS998

APPLICANT:

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

DUT Type:

Portable Handset

Application Type:

Certification

FCC Rule Part(s):

CFR §2.1093

Model:

LG-LS998

Additional Model(s):

LGLS998, LS998, LG-AS998, LGAS998, AS998

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 (S90S)	817.90 - 823.10 MHz	0.12	0.51	0.54	N/A
PCE	CDMA/EVDO BC0 (S22H)	824.70 - 848.31 MHz	0.13	0.57	0.60	N/A
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	0.13	0.60	0.80	N/A
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.10	0.46	0.45	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	< 0.1	0.37	0.38	N/A
PCE	UMTS 850	826.40 - 846.60 MHz	0.12	0.53	0.53	N/A
PCE	UMTS 1755	1712.4 - 1752.6 MHz	0.17	0.66	0.66	N/A
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.12	0.61	0.67	N/A
PCE	LTE Band 12	699.7 - 715.3 MHz	< 0.1	0.48	0.48	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	0.10	0.53	0.53	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.10	0.44	0.44	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	0.19	0.62	0.72	N/A
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.12	0.73	0.73	N/A
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 41	2498.5 - 2687.5 MHz	< 0.1	0.76	0.76	N/A
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.71	0.25	0.26	N/A
NI	U-NII-1	5180 - 5240 MHz	N/A	N/A	0.43	N/A
NI	U-NII-2A	5260 - 5320 MHz	0.70	0.44	N/A	1.67
NI	U-NII-2C	5500 - 5720 MHz	0.70	0.57	N/A	1.73
NI	U-NII-3	5745 - 5825 MHz	0.57	0.64	0.64	N/A
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.34	< 0.1	< 0.1	N/A
Simultaneous SAR per KDB 690783 D01v01r03:			1.49	1.58	1.59	3.40

Note: This revised Test Report (S/N: 1M1706070186-01-R1.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)	Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Data	824.7 - 848.3 MHz
LTE Band 4 (AWS)	Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Data	1850.7 - 1909.3 MHz
LTE Band 41	Data	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

This device uses an independent fixed level power reduction mechanism for WLAN operations during voice or VoIP held to ear scenarios. Per FCC Guidance, the held-to-ear exposure conditions were evaluated at reduced power according to the head SAR positions described in IEEE 1528-2013. Detailed descriptions of the power reduction mechanism are included in the operational description.

1.3 Nominal and Maximum Output Power Specifications

This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06.

1.3.1 Maximum Power

Mode / Band		Modulated Average (dBm)
CDMA/EVDO BC10 (\$90S)	Maximum	25.5
	Nominal	25.0
CDMA/EVDO BC0 (\$22H)	Maximum	25.5
	Nominal	25.0
PCS CDMA/EVDO	Maximum	25.2
	Nominal	24.7

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Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)		Burst Average 8-PSK (dBm)	
		1 TX Slot	1 TX Slots	2 TX Slots	1 TX Slots	2 TX Slots
GSM/GPRS/EDGE 850	Maximum	34.2	34.2	30.0	27.0	27.0
	Nominal	33.7	33.7	29.5	26.5	26.5
GSM/GPRS/EDGE 1900	Maximum	31.7	31.7	27.5	26.0	26.0
	Nominal	31.2	31.2	27.0	25.5	25.5

Mode / Band		Modulated Average (dBm)		
		3GPP WCDMA	3GPP HSDPA	3GPP HSUPA
UMTS Band 5 (850 MHz)	Maximum	25.5	25.5	25.5
	Nominal	25.0	25.0	25.0
UMTS Band 4 (1750 MHz)	Maximum	24.7	24.7	24.7
	Nominal	24.2	24.2	24.2
UMTS Band 2 (1900 MHz)	Maximum	24.7	24.7	24.7
	Nominal	24.2	24.2	24.2

Mode / Band		Modulated Average (dBm)
LTE Band 12	Maximum	25.5
	Nominal	25.0
LTE Band 17	Maximum	25.5
	Nominal	25.0
LTE Band 13	Maximum	25.5
	Nominal	25.0
LTE Band 26 (Cell)	Maximum	25.5
	Nominal	25.0
LTE Band 5 (Cell)	Maximum	25.5
	Nominal	25.0
LTE Band 4 (AWS)	Maximum	24.7
	Nominal	24.2
LTE Band 25 (PCS)	Maximum	25.2
	Nominal	24.7
LTE Band 2 (PCS)	Maximum	25.2
	Nominal	24.7
LTE Band 41 (PC3)	Maximum	24.7
	Nominal	24.2
LTE Band 41 HPUE (PC2)	Maximum	27.0
	Nominal	26.5

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Mode / Band		Modulated Average - Single Tx Chain (dBm)						Modulated Average - MIMO (dBm)		
		Antenna 1			Antenna 2			MIMO		
		Ch 1-2	Ch 3-9	Ch 10-11	Ch 1-2	Ch 3-9	Ch 10-11	Ch 1-2	Ch 3-9	Ch 10-11
IEEE 802.11b (2.4 GHz)	Maximum	20.0			19.5			22.7		
	Nominal	19.0			18.5			21.7		
IEEE 802.11g (2.4 GHz)	Maximum	17.5	18.5	16.0	17.5	18.5	16.0	20.5	21.5	19.0
	Nominal	16.5	17.5	15.0	16.5	17.5	15.0	19.5	20.5	18.0
IEEE 802.11n (2.4 GHz)	Maximum	16.5	17.5	15.0	16.5	17.5	15.0	19.5	20.5	18.0
	Nominal	15.5	16.5	14.0	15.5	16.5	14.0	18.5	19.5	17.0
IEEE 802.11ac (2.4 GHz)	Maximum	16.5	17.5	15.0	16.5	17.5	15.0	19.5	20.5	18.0
	Nominal	15.5	16.5	14.0	15.5	16.5	14.0	18.5	19.5	17.0

Mode / Band		Modulated Average (dBm)
Bluetooth 1 Mbps	Maximum	12.5
	Nominal	11.5
Bluetooth 2 Mbps	Maximum	12.0
	Nominal	11.0
Bluetooth 3 Mbps	Maximum	12.0
	Nominal	11.0
Bluetooth LE	Maximum	2.5
	Nominal	1.5

Mode / Band		Modulated Average (dBm)		
		20 MHz Bandwidth		
		Antenna 1	Antenna 2	MIMO
IEEE 802.11a (5 GHz)	Maximum	17.0	16.5	19.7
	Nominal	16.0	15.5	18.7
IEEE 802.11n (5 GHz)	Maximum	17.0	16.5	19.7
	Nominal	16.0	15.5	18.7
IEEE 802.11ac (5 GHz)	Maximum	17.0	16.5	19.7
	Nominal	16.0	15.5	18.7

Mode / Band		Modulated Average - Single Tx Chain (dBm)								Modulated Average - MIMO (dBm)			
		40 MHz Bandwidth											
		Antenna 1				Antenna 2				MIMO			
		Ch 38	Ch 46, 54	Ch 62, 102	Ch 110 - 159	Ch 38	Ch 46, 54	Ch 62, 102	Ch 110 - 159	Ch 38	Ch 46, 54	Ch 62, 102	Ch 110 - 159
IEEE 802.11n (5 GHz)	Maximum	14.0	16.0	14.0	16.0	13.5	15.5	13.5	15.5	16.7	18.7	16.7	18.7
	Nominal	13.0	15.0	13.0	15.0	12.5	14.5	12.5	14.5	15.7	17.7	15.7	17.7
IEEE 802.11ac (5 GHz)	Maximum	14.0	16.0	14.0	16.0	13.5	15.5	15.5	15.5	16.7	18.7	16.7	18.7
	Nominal	13.0	15.0	13.0	15.0	12.5	14.5	14.5	14.5	15.7	17.7	15.7	17.7

Mode / Band		Modulated Average - Single Tx Chain (dBm)						Modulated Average - MIMO (dBm)		
		80 MHz Bandwidth								
		Antenna 1			Antenna 2			MIMO		
		Ch 42	Ch 58	Ch 106 - 155	Ch 42	Ch 58	Ch 106 - 155	Ch 42	Ch 58	Ch 106 - 155
IEEE 802.11ac (5 GHz)	Maximum	13.0	11.0	13.0	12.5	10.5	12.5	15.7	13.7	15.7
	Nominal	12.0	10.0	12.0	11.5	9.5	11.5	14.7	12.7	14.7

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1.3.2 Reduced Power

Mode / Band		Modulated Average - Single Tx Chain (dBm)						Modulated Average - MIMO (dBm)		
		Antenna 1			Antenna 2			MIMO		
		Ch 1-2	Ch 3-9	Ch 10-11	Ch 1-2	Ch 3-9	Ch 10-11	Ch 1-2	Ch 3-9	Ch 10-11
IEEE 802.11b (2.4 GHz)	Maximum	17.0			17.0			20.0		
	Nominal	16.0			16.0			19.0		
IEEE 802.11g (2.4 GHz)	Maximum	17.0	17.0	16.0	17.0	17.0	16.0	20.0	20.0	19.0
	Nominal	16.0	16.0	15.0	16.0	16.0	15.0	19.0	19.0	18.0
IEEE 802.11n (2.4 GHz)	Maximum	16.5	17.0	15.0	16.5	17.0	15.0	19.5	20.0	18.0
	Nominal	15.5	16.0	14.0	15.5	16.0	14.0	18.5	19.0	17.0
IEEE 802.11ac (2.4 GHz)	Maximum	16.5	17.0	15.0	16.5	17.0	15.0	19.5	20.0	18.0
	Nominal	15.5	16.0	14.0	15.5	16.0	14.0	18.5	19.0	17.0

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 4 (AWS)	Yes	Yes	No	Yes	No	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	No	Yes
LTE Band 41	Yes	Yes	No	Yes	No	Yes
2.4 GHz WLAN Ant 1	Yes	Yes	Yes	No	No	Yes
2.4 GHz WLAN Ant 2	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	No	Yes
Bluetooth	Yes	Yes	Yes	No	No	Yes

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. Therefore, U-NII-2A and U-NII-2C operations are not considered in this section.

1.5 Near Field Communications (NFC) Antenna

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

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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.

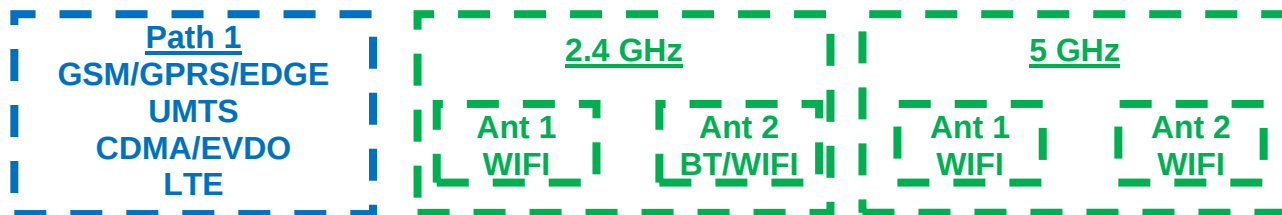


Figure 1-1

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.

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 W-Fi	Yes	Yes	N/A	Yes	
2	1x CDMA voice + 5 GHz W-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 W-Fi MIMO	Yes	Yes	N/A	Yes	
5	1x CDMA voice + 5 GHz W-Fi MIMO	Yes	Yes	N/A	Yes	
6	1x CDMA voice + 2.4 GHz W-Fi Ant 1 + 5 GHz W-Fi Ant 2	Yes	Yes	N/A	Yes	
7	GSM voice + 2.4 GHz W-Fi	Yes	Yes	N/A	Yes	
8	GSM voice + 5 GHz W-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 W-Fi MIMO	Yes	Yes	N/A	Yes	
11	GSM voice + 5 GHz W-Fi MIMO	Yes	Yes	N/A	Yes	
12	GSM voice + 2.4 GHz W-Fi Ant 1 + 5 GHz W-Fi Ant 2	Yes	Yes	N/A	Yes	
13	UMTS + 2.4 GHz W-Fi	Yes	Yes	Yes	Yes	
14	UMTS + 5 GHz W-Fi	Yes	Yes	Yes	Yes	
15	UMTS + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^Bluetooth Tethering is considered.
16	UMTS + 2.4 GHz W-Fi MIMO	Yes	Yes	Yes	Yes	
17	UMTS + 5 GHz W-Fi MIMO	Yes	Yes	Yes	Yes	
18	UMTS + 2.4 GHz W-Fi Ant 1 + 5 GHz W-Fi Ant 2	Yes	Yes	Yes	Yes	
19	LTE + 2.4 GHz W-Fi	Yes	Yes	Yes	Yes	
20	LTE + 5 GHz W-Fi	Yes	Yes	Yes	Yes	
21	LTE + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^Bluetooth Tethering is considered.
22	LTE + 2.4 GHz W-Fi MIMO	Yes	Yes	Yes	Yes	
23	LTE + 5 GHz W-Fi MIMO	Yes	Yes	Yes	Yes	
24	LTE + 2.4 GHz W-Fi + 5 GHz W-Fi	Yes	Yes	Yes	Yes	
25	CDMA/EVDO data + 2.4 GHz W-Fi	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
26	CDMA/EVDO data + 5 GHz W-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 W-Fi MIMO	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
29	CDMA/EVDO data + 5 GHz W-Fi MIMO	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
30	CDMA/EVDO data + 2.4 GHz W-Fi Ant 1 + 5 GHz W-Fi Ant 2	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
31	GPRS/EDGE + 2.4 GHz W-Fi	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
32	GPRS/EDGE + 5 GHz W-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 W-Fi MIMO	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
35	GPRS/EDGE + 5 GHz W-Fi MIMO	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
36	GPRS/EDGE + 2.4 GHz W-Fi Ant 1 + 5 GHz W-Fi Ant 2	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.

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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. There are no simultaneous transmission scenarios involving WIFI direct beyond that listed 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-NII2A and U-NII2C were not evaluated for wireless router conditions.
5. This device supports 2x2 MIMO Tx for WLAN 802.11n/ac. Each WLAN antenna can transmit independently or together when operating with MIMO.
6. This device supports VOWIFI.

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) TDWR is not supported
- f) 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

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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. All uplink communications are identical to Release 8 specifications for downlink CA. Per FCC KDB Publication 941225 D05A v01r02, SAR for LTE DL 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.

This device supports 64QAM on the uplink 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 64QAM 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 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 both LTE B26 (Cell) and LTE B5 (Cell). Since the supported frequency span for LTE B5 (Cell) falls completely within the supported frequency span for LTE B26 (Cell), both LTE bands have the same target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE B26 (Cell).

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)	03995	03995	03995	N/A
CDMA/EVDO BC0 (\$22H)	03995	03995	03995	N/A
PCS CDMA/EVDO	03995	03995	03995	N/A
GSM/GPRS/EDGE 850	04001	04001	04001	N/A
GSM/GPRS/EDGE 1900	04001	04001	04001	N/A
UMTS 850	04001	04001	04001	N/A
UMTS 1750	04001	04001	04001	N/A
UMTS 1900	04001	04001	04001	N/A
LTE Band 12	04019	04019	04019	N/A
LTE Band 13	04019	04019	04019	N/A
LTE Band 26 (Cell)	04019	04035	04035	N/A
LTE Band 4 (AWS)	04043	04035	04035	N/A
LTE Band 25 (PCS)	04027	04019	04019	N/A
LTE Band 41	04019	04027	04027	N/A
2.4 GHz WLAN	04175	04175	04175	N/A
5 GHz WLAN	04183	04183	04183	04183
Bluetooth	04175	04175	04175	N/A

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2

LTE INFORMATION

LTE Information					
FCC ID	ZNFLS998				
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 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 41 (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 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	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 (26765)		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 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 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	12				
Modulations Supported in UL	QPSK, 16QAM, 64 QAM				
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 carrier aggregation and downlink MIMO features as shown in Section 9 and Appendix H. 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 eCIC, 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.

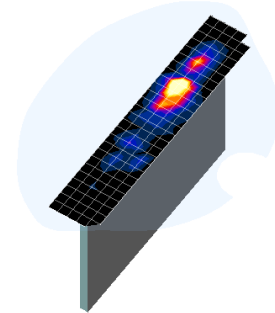


Figure 4-1
Sample SAR Area Scan

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 DEFINITION OF REFERENCE POINTS

5.1 EAR REFERENCE POINT

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

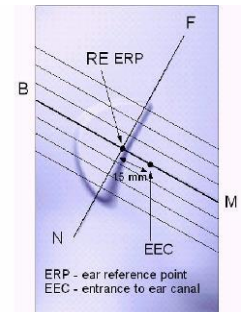


Figure 5-1
Close-Up Side view
of ERP

5.2 HANDSET REFERENCE POINTS

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The test device was placed in a normal operating position with the acoustic output located along the “vertical centerline” on the front of the device aligned to the “ear reference point” (See Figure 5-3). The acoustic output was then located at the same level as the center of the ear reference point. The test device was positioned so that the “vertical centerline” was bisecting the front surface of the handset at its top and bottom edges, positioning the “ear reference point” on the outer surface of the both the left and right head phantoms on the ear reference point.



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

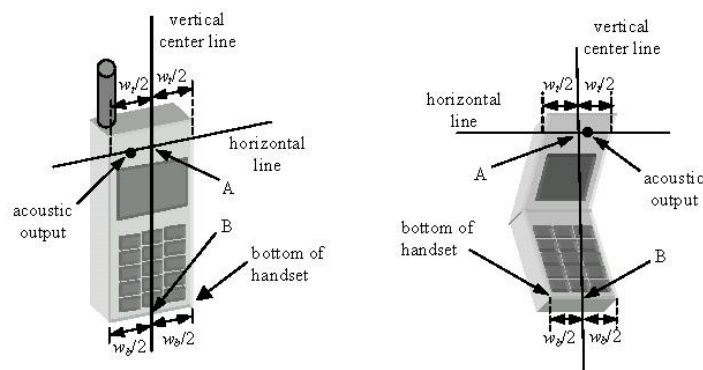


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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6 TEST CONFIGURATION POSITIONS

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.

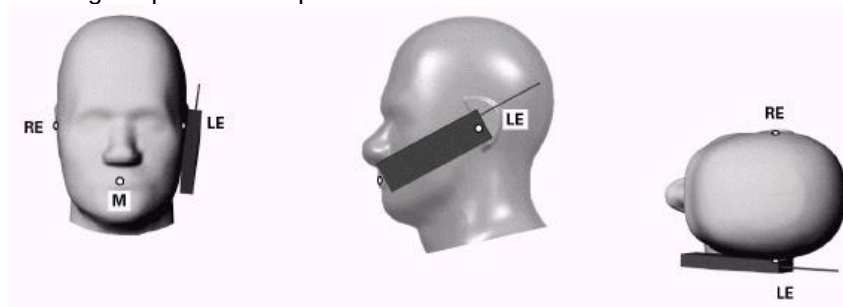


Figure 6-1 Front, Side and Top View of Cheek Position

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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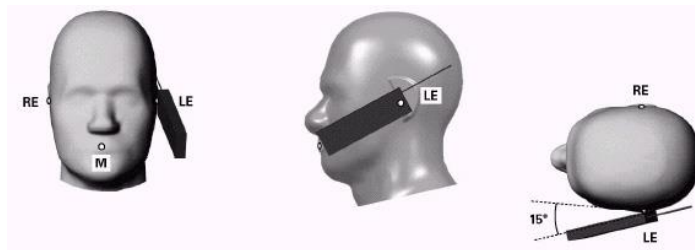


Figure 6-2 Front, Side and Top View of Ear/15° Tilt Position

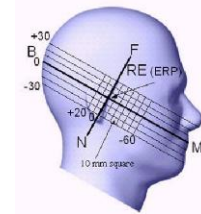


Figure 6-3 Side view w/ relevant markings

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.

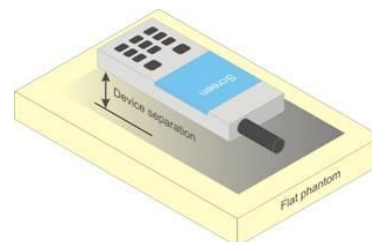


Figure 6-4 Sample Body-Worn Diagram

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

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

6.6 Extremity Exposure Configurations

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

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6.8 Phablet Configurations

For smart phones with a display diagonal dimension > 150 mm or an overall diagonal dimension > 160 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 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.

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1. If the mobile station (MS) supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only.
2. Under RC1, C.S0011 Table 4.4.5.2-1, Table 8-1 parameters were applied.
3. If the MS supports the RC 3 Reverse FCH, RC3 Reverse 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.
4. Under RC3, C.S0011 Table 4.4.5.2-2, Table 8-2 was applied.

Table 8-1
Parameters for Max. Power for RC1

Parameter	Units	Value
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

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

8.4.2 Head SAR Measurements

SAR for next to the ear head exposure is measured in RC3 with the handset configured to transmit at 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

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the highest reported SAR configuration for body-worn accessory exposure in Rev. 0 or 1x RTT RC3, as appropriate.

8.4.5 Body SAR Measurements for EVDO Hotspot

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

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

8.4.6 CDMA2000 1x Advanced

This device additionally supports 1x Advanced. Conducted powers are measured using SO75 with RC8 on the uplink and RC11 on the downlink per FCC KDB Publication 941225 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.

8.6 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:

- 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 for FDD and ≤ 0.6 W/kg for TDD, 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.

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- iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
- b. Per Section 5.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 5.2.1.
- c. Per Section 5.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 0.8 W/kg for FDD and ≤ 0.6 W/kg for TDD.
- 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 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.

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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 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

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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	25.28	25.32	25.35	25.37	25.33	25.29	25.36
Cellular	1013	22H	824.7	25.33	25.31	25.37	25.44	25.29	25.40	25.34
	384	22H	836.52	25.33	25.43	25.37	25.37	25.36	25.35	25.25
	777	22H	848.31	25.27	25.33	25.35	25.38	25.31	25.36	25.30
PCS	25	24E	1851.25	24.73	24.78	24.72	24.72	24.79	24.77	24.73
	600	24E	1880	24.77	24.75	24.87	24.86	24.88	24.71	24.88
	1175	24E	1908.75	24.85	24.73	24.74	24.75	24.78	24.76	24.77

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

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	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot
GSM 850	128	34.18	34.07	29.75	26.94	26.82
	190	34.16	34.09	29.89	26.87	26.91
	251	34.13	34.10	29.80	26.83	26.85
GSM 1900	512	31.54	31.50	27.25	25.79	25.82
	661	31.54	31.52	27.45	25.83	25.86
	810	31.46	31.55	27.38	25.96	25.83
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	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot
GSM 850	128	25.15	25.04	23.73	17.91	20.80
	190	25.13	25.06	23.87	17.84	20.89
	251	25.10	25.07	23.78	17.80	20.83
GSM 1900	512	22.51	22.47	21.23	16.76	19.80
	661	22.51	22.49	21.43	16.80	19.84
	810	22.43	22.52	21.36	16.93	19.81
GSM 850	Frame	24.67	24.67	23.48	17.47	20.48
GSM 1900	Avg. Targets:	22.17	22.17	20.98	16.47	19.48

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: 10 (Max 2 Tx uplink slots)
EDGE Multislot class: 10 (Max 2 Tx uplink slots)
DTM Multislot Class: N/A

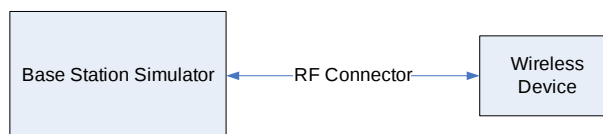


Figure 9-2
Power Measurement Setup

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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	25.34	25.35	25.38	24.53	24.63	24.69	24.42	24.53	24.61	-
99		12.2 kbps AMR	25.35	25.33	25.38	24.51	24.60	24.66	24.47	24.53	24.62	-
6	HSDPA	Subtest 1	25.33	25.30	25.34	24.55	24.60	24.65	24.56	24.51	24.66	0
6		Subtest 2	25.36	25.32	25.38	24.53	24.55	24.63	24.58	24.49	24.67	0
6		Subtest 3	24.83	24.81	24.86	24.08	24.10	24.15	23.95	24.00	24.15	0.5
6		Subtest 4	24.80	24.90	24.89	24.10	24.12	24.11	24.02	24.04	24.13	0.5
6	HSUPA	Subtest 1	25.25	25.20	25.27	24.50	24.52	24.55	24.53	24.51	24.60	0
6		Subtest 2	23.30	23.32	23.31	22.45	22.54	22.59	22.55	22.59	22.63	2
6		Subtest 3	24.33	24.38	24.39	23.49	23.55	23.57	23.48	23.51	23.58	1
6		Subtest 4	23.36	23.39	23.42	22.45	22.52	22.61	22.53	22.51	22.59	2
6		Subtest 5	25.30	25.23	25.29	24.55	24.54	24.63	24.59	24.48	24.62	0

DC-HSDPA is not supported

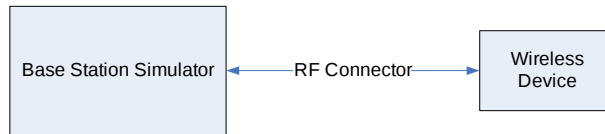


Figure 9-3
Power Measurement Setup

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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	25.43	0	0
	1	25	25.48		0
	1	49	25.35		0
	25	0	24.47	0-1	1
	25	12	24.45		1
	25	25	24.49		1
	50	0	24.40		1
16QAM	1	0	24.41	0-1	1
	1	25	24.30		1
	1	49	24.33		1
	25	0	23.35	0-2	2
	25	12	23.25		2
	25	25	23.41		2
	50	0	23.34		2
64QAM	1	0	23.40	0-2	2
	1	25	23.19		2
	1	49	23.26		2
	25	0	22.36	0-3	3
	25	12	22.31		3
	25	25	22.48		3
	50	0	22.42		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	25.02	25.49	25.32	0	0
	1	12	25.31	25.37	25.19		0
	1	24	25.32	25.38	24.70		0
	12	0	24.21	24.44	24.35	0-1	1
	12	6	24.36	24.43	24.27		1
	12	13	24.37	24.32	24.11		1
	25	0	24.28	24.43	24.17		1
16QAM	1	0	24.31	24.21	24.42	0-1	1
	1	12	24.49	24.42	24.32		1
	1	24	24.45	24.41	24.10		1
	12	0	23.30	23.31	23.44	0-2	2
	12	6	23.46	23.45	23.36		2
	12	13	23.44	23.42	23.22		2
	25	0	23.47	23.36	23.24		2
64QAM	1	0	23.27	23.17	23.40	0-2	2
	1	12	23.10	23.16	23.27		2
	1	24	23.46	23.34	23.11		2
	12	0	22.30	22.30	22.48	0-3	3
	12	6	22.44	22.40	22.32		3
	12	13	22.46	22.42	22.28		3
	25	0	22.39	22.45	22.26		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	24.89	25.36	25.13	0	0
	1	7	25.11	25.48	25.02		0
	1	14	25.24	25.27	24.54		0
	8	0	24.20	24.46	24.22	0-1	1
	8	4	24.29	24.45	24.11		1
	8	7	24.32	24.36	24.02		1
	15	0	24.24	24.39	24.09		1
16QAM	1	0	24.31	24.44	24.39	0-1	1
	1	7	24.50	24.48	24.34		1
	1	14	24.41	24.38	24.09		1
	8	0	23.30	23.41	23.27	0-2	2
	8	4	23.38	23.39	23.19		2
	8	7	23.43	23.39	23.09		2
	15	0	23.28	23.44	23.15		2
64QAM	1	0	23.34	23.50	23.43	0-2	2
	1	7	23.30	23.31	23.24		2
	1	14	23.48	23.48	23.09		2
	8	0	22.29	22.40	22.33	0-3	3
	8	4	22.47	22.31	22.23		3
	8	7	22.43	22.29	22.10		3
	15	0	22.21	22.48	22.14		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	24.91	25.27	24.81	0	0
	1	2	25.03	25.33	24.77		0
	1	5	24.96	25.26	24.66		0
	3	0	24.99	25.32	24.81		0
	3	2	25.02	25.33	24.70		0
	3	3	24.98	25.26	24.61		0
6	0	24.08	24.32	23.87	0-1	1	
16QAM	1	0	24.21	24.46	24.28	0-1	1
	1	2	24.37	24.45	24.36		1
	1	5	24.30	24.35	24.02		1
	3	0	24.16	24.45	23.98		1
	3	2	24.22	24.45	23.95		1
	3	3	24.20	24.42	23.79		1
6	0	23.09	23.47	22.91	0-2	2	
64QAM	1	0	23.11	23.40	23.20	0-2	2
	1	2	23.30	23.40	23.28		2
	1	5	23.39	23.43	22.91		2
	3	0	23.12	23.41	22.94		2
	3	2	23.22	23.44	22.96		2
	3	3	23.10	23.42	22.79		2
6	0	22.12	22.30	21.82	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	24.94	0	0
	1	25	25.49		0
	1	49	24.78		0
	25	0	24.33	0-1	1
	25	12	24.44		1
	25	25	24.30		1
	50	0	24.38		1
16QAM	1	0	24.27	0-1	1
	1	25	24.43		1
	1	49	24.14		1
	25	0	23.38	0-2	2
	25	12	23.43		2
	25	25	23.36		2
	50	0	23.43		2
64QAM	1	0	23.11	0-2	2
	1	25	23.06		2
	1	49	23.25		2
	25	0	22.06	0-3	3
	25	12	22.09		3
	25	25	22.13		3
	50	0	22.30		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	25.24	0	0
	1	12	25.08		0
	1	24	24.96		0
	12	0	24.35	0-1	1
	12	6	24.32		1
	12	13	24.36		1
	25	0	24.39		1
16QAM	1	0	24.41	0-1	1
	1	12	24.46		1
	1	24	24.50		1
	12	0	23.47	0-2	2
	12	6	23.43		2
	12	13	23.44		2
	25	0	23.46		2
64QAM	1	0	23.31	0-2	2
	1	12	23.13		2
	1	24	23.05		2
	12	0	22.06	0-3	3
	12	6	22.08		3
	12	13	22.15		3
	25	0	22.20		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	25.49	0	0
	1	36	25.28		0
	1	74	25.02		0
	36	0	24.27	0-1	1
	36	18	24.23		1
	36	37	24.09		1
16QAM	75	0	24.09	0-1	1
	1	0	24.50		1
	1	36	24.43		1
	1	74	24.32	0-2	1
	36	0	23.26		2
	36	18	23.22		2
64QAM	36	37	23.14	0-2	2
	75	0	23.16		2
	1	0	23.30	0-2	2
	1	36	23.45		2
	1	74	23.39		2
	36	0	22.21	0-3	3
	36	18	22.21		3
	36	37	22.20		3
	75	0	22.14		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)		
QPSK	1	0	25.00	25.20	25.09	0	0
	1	25	24.90	25.19	25.13		0
	1	49	24.88	24.90	24.70		0
	25	0	24.13	24.23	24.30	0-1	1
	25	12	24.02	24.12	24.29		1
	25	25	24.05	24.05	24.24		1
16QAM	50	0	23.98	24.20	24.22	0-1	1
	1	0	24.39	24.43	24.43		1
	1	25	24.24	24.39	24.47		1
	1	49	24.24	24.40	23.97	0-2	1
	25	0	23.13	23.25	23.31		2
	25	12	23.10	23.26	23.32		2
64QAM	25	25	23.05	23.19	23.30	0-2	2
	50	0	23.10	23.25	23.23		2
	1	0	23.42	23.43	23.42	0-2	2
	1	25	23.14	23.28	23.40		2
	1	49	23.26	23.38	23.10	0-3	2
	25	0	22.11	22.23	22.32		3
	25	12	22.03	22.15	22.27		3
	25	25	22.18	22.17	22.38		3
	50	0	22.07	22.27	22.17		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	25.13	25.20	25.04	0	0
	1	12	25.18	25.19	24.97		0
	1	24	25.03	25.09	24.90		0
	12	0	24.27	24.26	24.22	0-1	1
	12	6	24.28	24.26	24.23		1
	12	13	24.18	24.14	23.94		1
	25	0	24.10	24.16	24.16		1
16QAM	1	0	24.42	24.40	24.41	0-1	1
	1	12	24.39	24.46	24.38		1
	1	24	24.43	24.33	23.86		1
	12	0	23.32	23.27	23.34	0-2	2
	12	6	23.29	23.24	23.35		2
	12	13	23.19	23.11	23.12		2
	25	0	23.25	23.20	23.24		2
64QAM	1	0	23.46	23.36	23.42	0-2	2
	1	12	23.42	23.39	23.37		2
	1	24	23.44	23.32	22.75		2
	12	0	22.32	22.22	22.47	0-3	3
	12	6	22.29	22.21	22.38		3
	12	13	22.20	22.10	22.12		3
	25	0	22.24	22.14	22.23		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	25.02	25.20	25.06	0	0
	1	7	25.13	25.26	24.88		0
	1	14	25.02	25.04	24.85		0
	8	0	24.23	24.26	24.07	0-1	1
	8	4	24.25	24.23	23.96		1
	8	7	24.18	24.12	23.82		1
	15	0	24.20	24.22	24.02		1
16QAM	1	0	24.38	24.50	24.47	0-1	1
	1	7	24.50	24.42	24.35		1
	1	14	24.32	24.31	23.89		1
	8	0	23.31	23.18	23.08	0-2	2
	8	4	23.30	23.24	23.00		2
	8	7	23.25	23.11	22.87		2
	15	0	23.23	23.23	23.01		2
64QAM	1	0	23.40	23.47	23.45	0-2	2
	1	7	23.40	23.42	23.24		2
	1	14	23.35	23.36	22.96		2
	8	0	22.29	22.17	22.17	0-3	3
	8	4	22.21	22.24	21.98		3
	8	7	22.28	22.23	21.96		3
	15	0	22.19	22.30	21.97		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	25.03	25.08	24.72	0	0
	1	2	25.08	25.15	24.64		0
	1	5	25.02	24.96	24.38		0
	3	0	25.06	25.15	24.64		0
	3	2	25.11	25.18	24.55		0
	3	3	25.04	25.15	24.48		0
	6	0	24.03	24.13	23.71	0-1	1
16QAM	1	0	24.23	24.42	24.16	0-1	1
	1	2	24.34	24.45	24.12		1
	1	5	24.24	24.37	23.84		1
	3	0	24.27	24.17	23.76		1
	3	2	24.29	24.25	23.71		1
	3	3	24.21	24.18	23.60		1
	6	0	23.04	23.14	22.75	0-2	2
64QAM	1	0	23.11	23.33	23.17	0-2	2
	1	2	23.32	23.43	23.15		2
	1	5	23.26	23.29	22.75		2
	3	0	23.26	23.07	22.78		2
	3	2	23.39	23.38	22.72		2
	3	3	23.22	23.16	22.68		2
	6	0	22.09	22.15	21.74	0-3	3

9.4.4 LTE Band 4 (AWS)

Table 9-12
LTE Band 4 (AWS) Conducted Powers - 20 MHz Bandwidth

LTE Band 4 (AWS) 20 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20175 (1732.5 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	24.67	0	0
	1	50	24.66		0
	1	99	24.42		0
	50	0	23.51	0-1	1
	50	25	23.52		1
	50	50	23.39		1
	100	0	23.34		1
16QAM	1	0	23.69	0-1	1
	1	50	23.65		1
	1	99	23.51		1
	50	0	22.49	0-2	2
	50	25	22.42		2
	50	50	22.44		2
	100	0	22.38		2
64QAM	1	0	22.62	0-2	2
	1	50	22.36		2
	1	99	22.53		2
	50	0	21.51	0-3	3
	50	25	21.43		3
	50	50	21.32		3
	100	0	21.41		3

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

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Table 9-13
LTE Band 4 (AWS) Conducted Powers - 15 MHz Bandwidth

LTE Band 4 (AWS) 15 MHzBandwidth								
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]	
			20025 (1717.5 MHz)	20175 (1732.5 MHz)	20325 (1747.5 MHz)			
			Conducted Power [dBm]					
QPSK	1	0	24.25	24.51	23.93	0	0	
	1	36	24.60	24.42	23.66		0	
	1	74	24.25	24.28	23.57		0	
	36	0	23.44	23.46	23.05	0-1	1	
	36	18	23.52	23.41	22.78		1	
	36	37	23.09	23.44	22.98		1	
16QAM	75	0	23.54	23.35	22.83	0-1	1	
	1	0	22.99	23.60	23.36		0-1	1
	1	36	22.96	23.58	23.03			1
	1	74	23.51	23.59	23.17	0-2		1
	36	0	22.49	22.47	21.96		2	
	36	18	22.13	22.40	21.97		2	
64QAM	36	37	22.16	22.42	22.04	0-2	2	
	75	0	21.78	22.40	21.95		2	
	1	0	21.88	22.50	22.38		0-2	2
	1	36	21.84	22.58	22.01	2		
	1	74	22.51	22.63	22.09	0-3		2
	36	0	21.43	21.37	20.97		3	
36	18	21.20	21.33	20.98	3			
64QAM	36	37	21.14	21.32	21.05	0-3	3	
	75	0	20.86	21.42	20.92		3	

Table 9-14
LTE Band 4 (AWS) Conducted Powers - 10 MHz Bandwidth

LTE Band 4 (AWS) 10 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20000 (1715.0 MHz)	20175 (1732.5 MHz)	20350 (1750.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.43	24.42	23.64	0	0
	1	25	24.41	24.42	23.73		0
	1	49	24.25	24.29	23.80		0
	25	0	23.50	23.48	22.86	0-1	1
	25	12	23.47	23.45	23.01		1
	25	25	23.54	23.57	22.99		1
	50	0	23.45	23.46	22.97		1
16QAM	1	0	23.70	23.65	22.96	0-1	1
	1	25	23.65	23.64	23.14		1
	1	49	23.69	23.69	23.12		1
	25	0	22.53	22.54	21.90	0-2	2
	25	12	22.49	22.44	22.05		2
	25	25	22.54	22.59	22.06		2
	50	0	22.50	22.48	22.02		2
64QAM	1	0	22.58	22.65	21.98	0-2	2
	1	25	22.70	22.59	22.16		2
	1	49	22.67	22.70	22.16		2
	25	0	21.53	21.46	20.91	0-3	3
	25	12	21.54	21.53	21.09		3
	25	25	21.58	21.62	21.05		3
	50	0	21.50	21.49	21.12		3

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Table 9-15
LTE Band 4 (AWS) Conducted Powers - 5 MHz Bandwidth

LTE Band 4 (AWS) 5 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			19975 (1712.5 MHz)	20175 (1732.5 MHz)	20375 (1752.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.64	24.36	23.89	0	0
	1	12	24.60	24.36	23.85		0
	1	24	24.56	24.33	23.88		0
	12	0	23.66	23.45	22.97	0-1	1
	12	6	23.67	23.55	23.11		1
	12	13	23.61	23.52	22.94		1
16QAM	25	0	23.60	23.58	22.89	0-1	1
	1	0	23.62	23.68	23.24		1
	1	12	23.57	23.55	23.18		1
	1	24	23.62	23.54	23.12	0-2	1
	12	0	22.51	22.58	22.14		2
	12	6	22.52	22.69	22.09		2
64QAM	12	13	22.65	22.66	22.07	0-2	2
	25	0	22.58	22.56	21.95		2
	1	0	22.51	22.63	22.34		0-2
	1	12	22.61	22.51	22.23	2	
	1	24	22.54	22.44	22.21	0-3	
	12	0	21.47	21.61	21.18		3
12	6	21.44	21.66	21.14	3		
	12	13	21.60	21.65	20.93		3
	25	0	21.54	21.59	20.94		3

Table 9-16
LTE Band 4 (AWS) Conducted Powers - 3 MHz Bandwidth

LTE Band 4 (AWS) 3 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			19965 (1711.5 MHz)	20175 (1732.5 MHz)	20385 (1753.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.34	24.38	23.91	0	0
	1	7	24.14	24.56	23.94		0
	1	14	24.11	24.40	23.88		0
	8	0	23.12	23.41	22.99	0-1	1
	8	4	23.25	23.52	22.99		1
	8	7	23.25	23.51	23.11		1
16QAM	15	0	23.13	23.50	23.12	0-1	1
	1	0	23.40	23.62	23.21		1
	1	7	23.60	23.60	23.24		1
	1	14	23.47	23.70	23.15	0-2	1
	8	0	22.24	22.37	22.00		2
	8	4	22.33	22.50	22.06		2
64QAM	8	7	22.33	22.49	22.08	0-2	2
	15	0	22.17	22.54	21.92		2
	1	0	22.46	22.63	22.21	0-2	2
	1	7	22.53	22.65	22.31		2
	1	14	22.46	22.50	22.24		2
	64QAM	8	0	21.18	21.26	21.04	0-3
8		4	21.27	21.42	21.15	3	
8		7	21.39	21.46	21.06	3	
15		0	21.16	21.44	20.84	3	

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Table 9-17
LTE Band 4 (AWS) Conducted Powers -1.4 MHz Bandwidth

LTE Band 4 (AWS) 1.4 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			19957 (1710.7 MHz)	20175 (1732.5 MHz)	20393 (1754.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.44	24.25	23.88	0	0
	1	2	24.48	24.29	23.91		0
	1	5	24.47	24.32	23.84		0
	3	0	24.43	24.34	23.91		0
	3	2	24.44	24.46	23.89		0
	3	3	24.39	24.43	23.82		0
	6	0	23.49	23.46	22.95	0-1	1
16QAM	1	0	23.68	23.69	23.12	0-1	1
	1	2	23.67	23.54	23.18		1
	1	5	23.51	23.56	23.16		1
	3	0	23.57	23.35	23.05		1
	3	2	23.67	23.50	23.12		1
	3	3	23.55	23.48	23.00		1
	6	0	22.45	22.46	21.89	0-2	2
64QAM	1	0	22.70	22.63	22.12	0-2	2
	1	2	22.64	22.51	22.07		2
	1	5	22.54	22.58	22.15		2
	3	0	22.56	22.21	22.10		2
	3	2	22.40	22.42	22.21		2
	3	3	22.61	22.55	21.98		2
	6	0	21.48	21.49	20.78	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	25.18	25.02	24.96	0	0
	1	50	24.91	24.67	24.87		0
	1	99	24.74	24.35	24.91		0
	50	0	23.95	24.12	24.02	0-1	1
	50	25	23.93	23.96	24.09		1
	50	50	23.83	23.85	24.05		1
	100	0	23.84	23.88	24.10		1
16QAM	1	0	24.16	24.17	24.13	0-1	1
	1	50	23.97	24.18	24.20		1
	1	99	24.01	24.12	24.18		1
	50	0	22.96	23.00	23.05	0-2	2
	50	25	22.92	22.96	23.08		2
	50	50	22.83	22.83	23.04		2
	100	0	22.84	22.90	23.07		2
64QAM	1	0	23.08	23.20	23.16	0-2	2
	1	50	22.98	23.18	23.15		2
	1	99	23.01	23.18	23.07		2
	50	0	21.89	21.89	22.04	0-3	3
	50	25	21.85	21.92	22.12		3
	50	50	21.78	21.80	22.00		3
	100	0	21.82	21.84	22.03		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	24.51	24.68	24.77	0	0
	1	36	24.25	24.50	24.66		0
	1	74	24.24	24.46	24.61		0
	36	0	23.55	23.51	23.79	0-1	1
	36	18	23.43	23.67	23.74		1
	36	37	23.44	23.75	23.73		1
	75	0	23.47	23.54	23.73		1
16QAM	1	0	23.84	23.84	24.05	0-1	1
	1	36	23.63	23.77	23.92		1
	1	74	23.65	23.69	23.93		1
	36	0	22.58	22.61	22.80	0-2	2
	36	18	22.47	22.61	22.75		2
	36	37	22.43	22.60	22.71		2
	75	0	22.54	22.57	22.79		2
64QAM	1	0	22.79	22.85	23.07	0-2	2
	1	36	22.60	22.77	22.88		2
	1	74	22.69	22.73	23.04		2
	36	0	21.58	21.57	21.83	0-3	3
	36	18	21.41	21.55	21.79		3
	36	37	21.44	21.65	21.72		3
	75	0	21.60	21.62	21.78		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	24.70	24.74	24.71	0	0
	1	25	24.45	24.51	24.61		0
	1	49	24.59	24.61	24.55		0
	25	0	23.61	23.56	23.74	0-1	1
	25	12	23.62	23.57	23.70		1
	25	25	23.48	23.56	23.68		1
	50	0	23.63	23.57	23.71		1
16QAM	1	0	24.07	24.07	24.15	0-1	1
	1	25	23.84	23.79	24.01		1
	1	49	23.99	23.93	24.01		1
	25	0	22.66	22.61	22.83	0-2	2
	25	12	22.66	22.57	22.77		2
	25	25	22.53	22.61	22.75		2
	50	0	22.67	22.60	22.79		2
64QAM	1	0	23.07	23.10	23.20	0-2	2
	1	25	22.92	22.77	22.88		2
	1	49	22.96	23.01	23.03		2
	25	0	21.58	21.68	21.73	0-3	3
	25	12	21.66	21.58	21.80		3
	25	25	21.48	21.70	21.67		3
	50	0	21.61	21.71	21.89		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	24.58	24.55	24.59	0	0
	1	12	24.53	24.48	24.48		0
	1	24	24.57	24.50	24.50		0
	12	0	23.56	23.53	23.67	0-1	1
	12	6	23.56	23.50	23.90		1
	12	13	23.54	23.49	23.65		1
	25	0	23.61	23.54	23.72		1
16QAM	1	0	23.89	23.80	23.84	0-1	1
	1	12	23.83	23.72	23.90		1
	1	24	23.87	23.81	23.84		1
	12	0	22.62	22.55	22.73	0-2	2
	12	6	22.62	22.57	22.71		2
	12	13	22.64	22.58	22.66		2
	25	0	22.60	22.62	22.64		2
64QAM	1	0	22.98	22.88	22.83	0-2	2
	1	12	22.94	22.71	22.89		2
	1	24	22.94	22.86	22.81		2
	12	0	21.57	21.52	21.67	0-3	3
	12	6	21.52	21.54	21.67		3
	12	13	21.67	21.54	21.63		3
	25	0	21.69	21.57	21.69		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	24.42	24.46	24.56	0	0
	1	7	24.51	24.57	24.65		0
	1	14	24.40	24.49	24.53		0
	8	0	23.53	23.51	23.64	0-1	1
	8	4	23.54	23.49	23.67		1
	8	7	23.51	23.51	23.69		1
	15	0	23.51	23.50	23.75		1
16QAM	1	0	23.73	23.78	23.58	0-1	1
	1	7	23.87	23.86	24.02		1
	1	14	23.73	23.76	23.92		1
	8	0	22.61	22.48	22.63	0-2	2
	8	4	22.63	22.50	22.62		2
	8	7	22.60	22.49	22.61		2
	15	0	22.53	22.52	22.61		2
64QAM	1	0	22.75	22.83	22.57	0-2	2
	1	7	22.91	22.84	23.02		2
	1	14	22.68	22.87	22.92		2
	8	0	21.61	21.39	21.50	0-3	3
	8	4	21.62	21.49	21.56		3
	8	7	21.62	21.49	21.57		3
	15	0	21.49	21.50	21.66		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	24.40	24.60	24.50	0	0
	1	2	24.44	24.72	24.50		0
	1	5	24.40	24.65	24.46		0
	3	0	24.41	24.66	24.56		0
	3	2	24.44	24.68	24.60		0
	3	3	24.40	24.62	24.56		0
	6	0	23.45	23.70	23.56	0-1	1
16QAM	1	0	23.64	23.92	23.90	0-1	1
	1	2	23.72	23.98	23.95		1
	1	5	23.65	23.93	23.89		1
	3	0	23.60	23.75	23.54		1
	3	2	23.61	23.77	23.61		1
	3	3	23.55	23.73	23.59		1
	6	0	22.44	22.81	22.54	0-2	2
64QAM	1	0	22.75	23.02	23.02	0-2	2
	1	2	22.74	22.90	22.98		2
	1	5	22.65	22.97	22.84		2
	3	0	22.63	22.63	22.63		2
	3	2	22.52	22.75	22.60		2
	3	3	22.56	22.79	22.54		2
	6	0	21.39	21.76	21.61	0-3	3

9.4.6 LTE Band 41

Table 9-24
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	23.88	24.09	24.20	23.97	23.71	0	0
	1	50	23.79	23.96	23.68	23.91	23.99		0
	1	99	23.82	23.91	23.88	23.53	23.33		0
	50	0	22.95	22.90	22.91	22.73	22.88	0-1	1
	50	25	22.95	22.86	22.88	22.79	22.73		1
	50	50	22.89	22.81	22.86	22.73	22.81		1
	100	0	22.92	22.83	22.93	22.85	22.86		1
16QAM	1	0	22.89	23.14	23.04	22.75	23.15	0-1	1
	1	50	22.73	22.94	22.88	22.64	23.02		1
	1	99	22.71	22.92	22.83	22.65	23.03		1
	50	0	22.00	22.00	21.94	21.75	21.94	0-2	2
	50	25	21.91	21.94	21.84	21.80	21.82		2
	50	50	21.87	21.90	21.83	21.74	21.84		2
	100	0	21.94	21.86	21.89	21.82	21.86		2
64QAM	1	0	21.90	22.09	22.06	21.66	22.14	0-2	2
	1	50	21.71	21.92	21.89	21.61	22.06		2
	1	99	21.75	21.94	21.84	21.65	22.00		2
	50	0	20.95	21.05	20.94	20.69	20.92	0-3	3
	50	25	20.83	20.98	20.97	20.83	20.85		3
	50	50	20.80	20.90	20.92	20.71	20.86		3
	100	0	20.88	20.85	20.86	20.84	20.89		3

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Table 9-25
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	24.01	23.95	24.05	23.96	23.83	0	0
	1	36	23.86	23.80	23.92	23.86	23.72		0
	1	74	23.81	23.81	23.86	23.79	23.65		0
	36	0	22.97	22.94	22.91	22.91	22.78	0-1	1
	36	18	22.88	22.88	22.88	22.90	22.71		1
	36	37	22.90	22.88	22.85	22.85	22.77		1
	75	0	22.91	22.86	22.85	22.87	22.72		1
16QAM	1	0	22.92	22.99	23.10	22.88	22.84	0-1	1
	1	36	22.76	22.84	22.97	22.85	22.70		1
	1	74	22.73	22.78	22.92	22.76	22.70		1
	36	0	21.94	21.89	21.88	21.89	21.80	0-2	2
	36	18	21.87	21.86	21.88	21.90	21.74		2
	36	37	21.83	21.83	21.84	21.81	21.69		2
	75	0	21.92	21.86	21.90	21.87	21.72		2
64QAM	1	0	21.93	22.07	22.12	21.91	21.74	0-2	2
	1	36	21.69	21.86	22.10	21.76	21.78		2
	1	74	21.73	21.81	21.92	21.68	21.65		2
	36	0	20.97	20.95	20.90	20.85	20.87	0-3	3
	36	18	20.88	20.90	20.90	20.93	20.77		3
	36	37	20.78	20.83	20.83	20.84	20.67		3
	75	0	20.92	20.93	20.89	20.94	20.80		3

Table 9-26
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	23.94	23.87	23.99	23.97	24.19	0	0
	1	25	23.80	23.82	23.94	23.86	23.72		0
	1	49	23.84	23.81	23.88	23.85	24.16		0
	25	0	22.90	22.90	22.86	22.93	22.88	0-1	1
	25	12	22.96	22.92	22.87	22.90	22.78		1
	25	25	22.88	22.86	22.87	22.88	22.89		1
	50	0	22.92	22.87	22.90	22.91	22.89		1
16QAM	1	0	22.91	22.94	23.09	22.89	23.13	0-1	1
	1	25	22.81	22.89	22.99	22.82	22.71		1
	1	49	22.80	22.83	22.99	22.74	23.17		1
	25	0	21.94	21.88	21.91	21.93	21.89	0-2	2
	25	12	21.93	21.85	21.85	21.90	21.74		2
	25	25	21.87	21.87	21.86	21.85	21.85		2
	50	0	21.91	21.87	21.90	21.89	21.90		2
64QAM	1	0	21.92	21.99	22.11	21.98	22.05	0-2	2
	1	25	21.75	21.90	22.03	21.80	21.80		2
	1	49	21.80	21.84	21.92	21.76	22.16		2
	25	0	20.91	20.76	20.87	20.94	20.95	0-3	3
	25	12	20.82	20.88	20.84	20.79	20.65		3
	25	25	20.87	20.85	20.88	20.86	20.80		3
	50	0	20.86	20.78	20.94	20.90	20.96		3

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Table 9-27
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	23.86	23.86	23.71	23.92	23.71	0	0
	1	12	23.81	23.81	23.69	23.96	23.71		0
	1	24	23.79	23.79	23.68	23.86	23.70		0
	12	0	22.90	22.84	22.88	22.94	22.73	0-1	1
	12	6	22.94	22.95	22.91	22.91	22.75		1
	12	13	22.92	22.86	22.85	22.87	22.71		1
16QAM	25	0	22.87	22.89	22.89	22.91	22.69	0-1	1
	1	0	22.80	22.79	22.95	22.86	22.68		1
	1	12	22.79	22.75	23.03	22.85	22.63		1
	1	24	22.72	22.78	23.00	22.80	22.62	0-2	1
	12	0	21.89	21.89	21.95	21.91	21.68		2
	12	6	21.94	21.89	21.96	21.89	21.70		2
64QAM	12	13	21.89	21.81	21.88	21.85	21.66	0-2	2
	25	0	21.87	21.85	21.85	21.87	21.72		2
	1	0	21.89	21.66	21.93	21.86	21.71		2
	1	12	21.84	21.81	22.08	21.95	21.59	0-2	2
	1	24	21.64	21.73	22.00	21.90	21.66		2
	12	0	20.88	20.85	20.90	20.91	20.77		0-3
12	6	20.99	20.97	20.93	20.96	20.71	3		
12	13	20.78	20.93	20.92	20.95	20.55	3		
25	0	20.88	20.78	20.84	20.91	20.78		3	

Table 9-28
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	26.67	26.69	27.00	26.20	26.65	0	0
	1	50	26.58	26.54	26.56	26.01	26.21		0
	1	99	26.49	26.43	26.32	25.72	26.98		0
	50	0	25.98	25.95	25.95	25.23	25.86	0-1	1
	50	25	25.92	25.90	25.89	25.15	25.73		1
	50	50	25.92	25.79	25.88	25.01	25.78		1
16QAM	100	0	25.95	25.88	25.91	25.06	25.83	0-1	1
	1	0	25.95	25.75	25.89	25.49	25.30		1
	1	50	25.76	25.73	25.79	25.34	25.89		1
	1	99	25.71	25.82	25.73	25.04	25.79	0-2	1
	50	0	24.94	24.95	24.75	24.24	24.94		2
	50	25	24.87	24.94	24.81	24.17	24.81		2
64QAM	50	50	24.82	24.82	24.92	24.03	24.85	0-2	2
	100	0	24.92	24.89	24.91	24.07	24.83		2
	1	0	24.98	24.62	24.87	24.43	24.34		0-2
	1	50	24.79	24.78	24.90	24.30	24.91	2	
	1	99	24.62	24.82	24.71	24.01	24.81	2	
	50	0	23.95	23.99	23.64	23.26	23.95	0-3	3
50	25	23.85	23.80	23.71	23.17	23.69	3		
50	50	23.82	23.89	23.91	23.01	23.95	3		
	100	0	23.88	23.91	23.89	23.07	23.81		3

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Table 9-29
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	26.93	26.85	26.78	26.10	26.84	0	0
	1	36	26.80	26.93	26.96	25.93	26.79		0
	1	74	26.71	26.85	26.87	25.74	26.72		0
	36	0	25.95	25.90	25.95	25.15	25.80	0-1	1
	36	18	25.95	25.92	25.94	25.13	25.76		1
	36	37	25.89	25.83	25.89	25.03	25.74		1
	75	0	25.88	25.88	25.86	25.04	25.72		1
16QAM	1	0	25.96	25.83	25.87	25.37	25.90	0-1	1
	1	36	25.88	25.97	25.82	25.22	25.82		1
	1	74	26.00	25.71	25.88	25.05	25.84		1
	36	0	24.95	24.97	24.98	24.20	24.80	0-2	2
	36	18	24.92	24.90	24.96	24.19	24.80		2
	36	37	24.85	24.84	24.88	24.08	24.74		2
	75	0	24.91	24.90	24.90	24.11	24.76		2
64QAM	1	0	24.96	24.82	24.76	24.28	24.96	0-2	2
	1	36	24.86	24.88	24.83	24.21	24.83		2
	1	74	25.00	24.70	24.94	24.01	24.92		2
	36	0	23.80	23.88	23.89	23.19	23.81	0-3	3
	36	18	23.91	23.91	23.99	23.19	23.69		3
	36	37	23.84	23.83	23.81	23.01	23.65		3
	75	0	23.95	23.88	23.94	23.09	23.83		3

Table 9-30
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	26.88	26.85	26.97	25.97	26.61	0	0
	1	25	26.79	26.97	26.95	25.91	26.81		0
	1	49	26.77	26.94	26.83	25.82	26.84		0
	25	0	25.93	25.91	25.91	25.12	25.94	0-1	1
	25	12	25.94	25.93	25.88	25.15	25.82		1
	25	25	25.91	25.84	25.87	25.06	25.92		1
	50	0	25.92	25.91	25.88	25.07	25.96		1
16QAM	1	0	25.98	25.74	25.83	25.24	25.84	0-1	1
	1	25	25.86	25.68	25.98	25.21	25.78		1
	1	49	25.79	25.63	25.76	25.12	25.86		1
	25	0	24.97	24.92	24.98	24.15	24.98	0-2	2
	25	12	24.93	24.90	24.98	24.18	24.80		2
	25	25	24.90	24.86	24.91	24.10	24.90		2
	50	0	24.92	24.92	24.91	24.13	24.95		2
64QAM	1	0	25.00	24.67	24.94	24.33	24.82	0-2	2
	1	25	24.85	24.70	24.70	24.11	24.76		2
	1	49	24.78	24.62	24.76	24.24	24.91		2
	25	0	23.88	23.87	23.88	23.08	23.85	0-3	3
	25	12	23.90	23.91	23.98	23.15	23.76		3
	25	25	23.87	23.89	23.89	23.04	23.92		3
	50	0	23.89	23.80	23.87	23.14	23.95		3

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Table 9-31
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	26.95	26.97	26.71	26.11	26.80	0	0
	1	12	27.00	26.95	26.88	26.06	26.82		0
	1	24	26.79	26.89	26.84	25.99	26.74		0
	12	0	25.96	25.95	25.92	25.24	25.82	0-1	1
	12	6	26.00	25.99	25.96	25.27	25.79		1
	12	13	25.92	25.92	25.91	25.23	25.74		1
16QAM	25	0	25.96	25.93	25.91	25.21	25.80	0-1	1
	1	0	25.78	25.87	25.87	25.38	25.86		1
	1	12	25.89	25.83	25.87	25.34	25.91		1
	1	24	25.76	25.81	25.86	25.28	25.82	0-2	1
	12	0	24.84	24.95	24.86	24.31	24.78		2
	12	6	25.00	24.98	24.81	24.34	24.80		2
64QAM	12	13	25.00	24.92	24.82	24.30	24.79	0-2	2
	25	0	24.95	24.99	24.93	24.26	24.83		2
	1	0	24.72	24.76	24.85	24.42	24.88	0-2	2
	1	12	24.93	24.80	24.92	24.38	24.98		2
	1	24	24.80	24.92	24.84	24.34	24.78	0-3	2
	12	0	23.92	23.89	23.92	23.39	23.87		3
12	6	23.66	23.94	23.72	23.37	23.85	3		
64QAM	12	13	23.95	23.98	23.77	23.27	23.76	0-3	3
	25	0	23.82	23.70	23.82	23.18	23.88		3

9.4.7 LTE Carrier Aggregation Conducted Powers

Table 9-32
Two Component Carrier Conducted Powers

Combination	PCC									SCC				Power	
	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-5A	LTE B2	20	18700	1860	QPSK	1	0	700	1940	LTE B5	10	2525	881.5	25.20	25.18
CA_2A-12A (1)	LTE B2	20	18700	1860	QPSK	1	0	700	1940	LTE B12	10	5095	737.5	25.13	25.18
CA_5A-25A	LTE B25	20	26140	1860	QPSK	1	0	8140	1940	LTE B5	10	2525	881.5	25.05	25.18
CA_12A-25A	LTE B25	20	26140	1860	QPSK	1	0	8140	1940	LTE B12	10	5095	737.5	25.00	25.18
CA_25A-25A (1)	LTE B25	20	26140	1860	QPSK	1	0	8140	1940	LTE B25	5	8665	1992.5	24.80	25.18
CA_2A-5A	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B2	20	900	1960	25.06	25.20
CA_5A-25A	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B25	20	8365	1962.5	25.11	25.20
CA_2A-12A (1)	LTE B12	5	23095	707.5	QPSK	1	0	5095	737.5	LTE B2	20	900	1960	25.30	25.49
CA_12A-25A	LTE B12	5	23095	707.5	QPSK	1	0	5095	737.5	LTE B25	20	8365	1962.5	25.31	25.49
CA_41A-41A (1)	LTE B41	20	40620	2593	QPSK	1	0	40620	2593	LTE B41	5	39675	2498.5	24.19	24.20
CA_41C (1)	LTE B41	20	40620	2593	QPSK	1	0	40620	2593	LTE B41	20	40422	2573.2	24.14	24.20
CA_41A-41A (1)	LTE B41 PC2	20	40620	2593	QPSK	1	0	40620	2593	LTE B41	5	39675	2498.5	26.88	27.00
CA_41C (1)	LTE B41 PC2	20	40620	2593	QPSK	1	0	40620	2593	LTE B41	20	40422	2573.2	26.80	27.00

Table 9-33
Three Component Carrier Conducted Powers

Combination	PCC Band	PCC Bandwidth [MHz]	PCC					SCC 1				SCC 2				Power			
			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]	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_41D	LTE B41	20	40620	2593	QPSK	1	0	40620	2593	LTE B41	20	40422	2573.2	LTE B41	20	40224	2553.4	24.16	24.00
CA_41A-41C	LTE B41	20	40620	2593	QPSK	1	0	40620	2593	LTE B41	20	41292	2660.2	LTE B41	20	41490	2680	24.19	24.00
CA_41D	LTE B41 PC2	20	40620	2593	QPSK	1	0	40620	2593	LTE B41	20	40422	2573.2	LTE B41	20	40224	2553.4	26.90	27.00
CA_41A-41C	LTE B41 PC2	20	40620	2593	QPSK	1	0	40620	2593	LTE B41	20	39948	2525.8	LTE B41	20	39750	2506	26.94	27.00
CA_41C-41A	LTE B41	20	40620	2593	QPSK	1	0	40620	2593	LTE B41	20	41292	2660.2	LTE B41	20	41490	2680	23.95	24.00
CA_41C-41A	LTE B41 PC2	20	40620	2593	QPSK	1	0	40620	2593	LTE B41	20	41292	2660.2	LTE B41	20	41490	2680	26.89	27.00

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Table 9-34
Four Component Carrier Conducted Powers

Combination	PCC Band	PCC									SCC 1			SCC 2			SCC 3			Power			
		PCC BW [MHz]	PCC (UL) Channel	PCC (UL) Freq [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq [MHz]	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA 41A-41D	LTE B41	20	40620	2593	QPSK	1	0	40620	2593	LTE B41	20	41094	2640.4	LTE B41	20	41292	2660.2	LTE B41	20	41490	2680	24.06	24.00
CA 41C-41C	LTE B41	20	40620	2593	QPSK	1	0	40620	2593	LTE B41	20	40422	2573.2	LTE B41	20	41292	2660.2	LTE B41	20	41490	2680	24.12	24.00
CA 41A-41D	LTE B41 PC2	20	40620	2593	QPSK	1	99	40620	2593	LTE B41	20	40146	2545.6	LTE B41	20	39948	2525.8	LTE B41	20	39750	2506	26.98	27.00
CA 41C-41C	LTE B41 PC2	20	40620	2593	QPSK	1	99	40620	2593	LTE B41	20	40422	2573.2	LTE B41	20	39948	2525.8	LTE B41	20	39750	2506	26.49	27.00
CA 41D-41A	LTE B41	20	40620	2593	QPSK	1	0	40620	2593	LTE B41	20	40422	2573.2	LTE B41	20	40224	2553.4	LTE B41	20	41490	2680	23.97	24.00
CA 41D-41A	LTE B41	20	40620	2593	QPSK	1	0	40620	2593	LTE B41	20	40422	2573.2	LTE B41	20	40224	2553.4	LTE B41	20	41490	2680	26.85	27.00

1. The device 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, and LTE Band 25 standalone powers were used to select measurement configurations for LTE Band 2..
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.

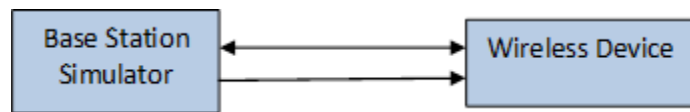


Figure 9-4
Power Measurement Setup

9.4.8 LTE Uplink Carrier Aggregation Conducted Powers

Table 9-35
LTE Uplink Carrier Aggregation Conducted Powers

Combination	PCC								SCC						Power	
	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx Power with UL CA Enabled (dBm)	LTE Rel 8 Target Power (dBm)
CA 41C	LTE B41	20	39750	2506.0	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	24.57	24.2
CA 41C	LTE B41	20	40185	2549.5	QPSK	1	0	LTE B41	20	39987	2529.7	QPSK	1	99	24.63	24.2
CA 41C	LTE B41	20	40620	2593.0	QPSK	1	0	LTE B41	20	40422	2573.2	QPSK	1	99	24.70	24.2
CA 41C	LTE B41	20	41055	2636.5	QPSK	1	99	LTE B41	20	41253	2656.3	QPSK	1	0	24.58	24.2
CA 41C	LTE B41	20	41490	2680.0	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	24.65	24.2

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Notes:

1. This device supports uplink carrier aggregation for LTE CA_41C with a maximum of two 20 MHz component carriers.
2. For intraband contiguous carrier aggregation scenarios, 3GPP 36.101 Table 6.2.2A-1 specifies that the aggregate maximum allowed output power should be equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when non-contiguous RB allocation is implemented. The conducted powers and MPR settings in this device are permanently implemented per the above 3GPP requirements.
3. Per FCC Guidance, maximum output power measurement was performed for the required test channels (associated with the UL PCC) described in KDB 941225 D05. The power was measured with wideband signal integration over both component carriers (40 MHz Bandwidth).



Figure 9-5
Power Measurement Setup

9.5 WLAN Conducted Powers

Table 9-36
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	19.78	17.20
2422	3	N/A	18.30
2437	6	19.80	18.28
2452	9	N/A	18.34
2462	11	19.73	15.71

Table 9-37
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	19.33	16.69
2422	3	N/A	17.72
2437	6	19.39	17.75
2452	9	N/A	17.52
2462	11	19.37	15.29

Table 9-38
2.4 GHz WLAN Ant 1 Reduced Average RF Power

2.4GHz Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11b	802.11g
2412	1	16.80	16.69
2437	6	16.95	16.98
2452	9	N/A	16.92
2462	11	16.80	N/A

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Table 9-39
2.4 GHz WLAN Ant 2 Reduced Average RF Power

2.4GHz Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11b	802.11g
2412	1	16.33	16.31
2437	6	16.43	16.23
2452	9	N/A	16.19
2462	11	16.37	N/A

Table 9-40
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	16.63	16.55	16.53
5200	40	16.60	16.55	16.57
5220	44	16.61	16.54	16.56
5240	48	16.39	16.42	16.48
5260	52	16.42	16.52	16.50
5280	56	16.77	16.67	16.66
5300	60	16.54	16.52	16.53
5320	64	16.66	16.61	16.62
5500	100	16.58	16.52	16.57
5580	116	16.71	16.59	16.65
5660	132	16.65	16.45	16.45
5720	144	16.62	16.50	16.48
5745	149	16.59	16.46	16.47
5785	157	16.57	16.44	16.46
5825	165	16.55	16.44	16.47

Table 9-41
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	14.88	14.80	14.94
5200	40	14.91	14.79	14.91
5220	44	14.94	14.79	14.95
5240	48	14.99	14.84	14.95
5260	52	14.95	14.89	14.95
5280	56	15.10	14.98	15.02
5300	60	15.14	14.96	15.07
5320	64	15.28	15.22	15.23
5500	100	15.29	15.15	15.12
5580	116	15.77	15.60	15.59
5660	132	15.71	15.56	15.49
5720	144	15.75	15.58	15.54
5745	149	15.87	15.67	15.62
5785	157	15.85	15.62	15.62
5825	165	15.77	15.60	15.52

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Table 9-42
5 GHz 802.11n WLAN MIMO Maximum Average RF Power

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
5180	36	16.55	14.80	18.77
5200	40	16.55	14.79	18.77
5220	44	16.54	14.79	18.76
5240	48	16.42	14.84	18.71
5260	52	16.52	14.89	18.79
5280	56	16.67	14.98	18.92
5300	60	16.52	14.96	18.82
5320	64	16.61	15.22	18.98
5500	100	16.52	15.15	18.90
5580	116	16.59	15.60	19.13
5660	132	16.45	15.56	19.04
5720	144	16.50	15.58	19.07
5745	149	16.46	15.67	19.09
5785	157	16.44	15.62	19.06
5825	165	16.44	15.60	19.05

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.

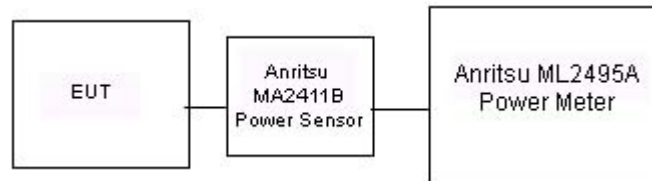


Figure 9-6
Power Measurement Setup for Bandwidths < 50 MHz

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9.6 Bluetooth Conducted Powers

Table 9-43
Bluetooth Average RF Power

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	10.25	10.595
2441	1.0	39	11.34	13.612
2480	1.0	78	10.65	11.603
2402	2.0	0	9.46	8.839
2441	2.0	39	10.60	11.476
2480	2.0	78	9.91	9.801
2402	3.0	0	9.52	8.945
2441	3.0	39	10.65	11.618
2480	3.0	78	9.96	9.919

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

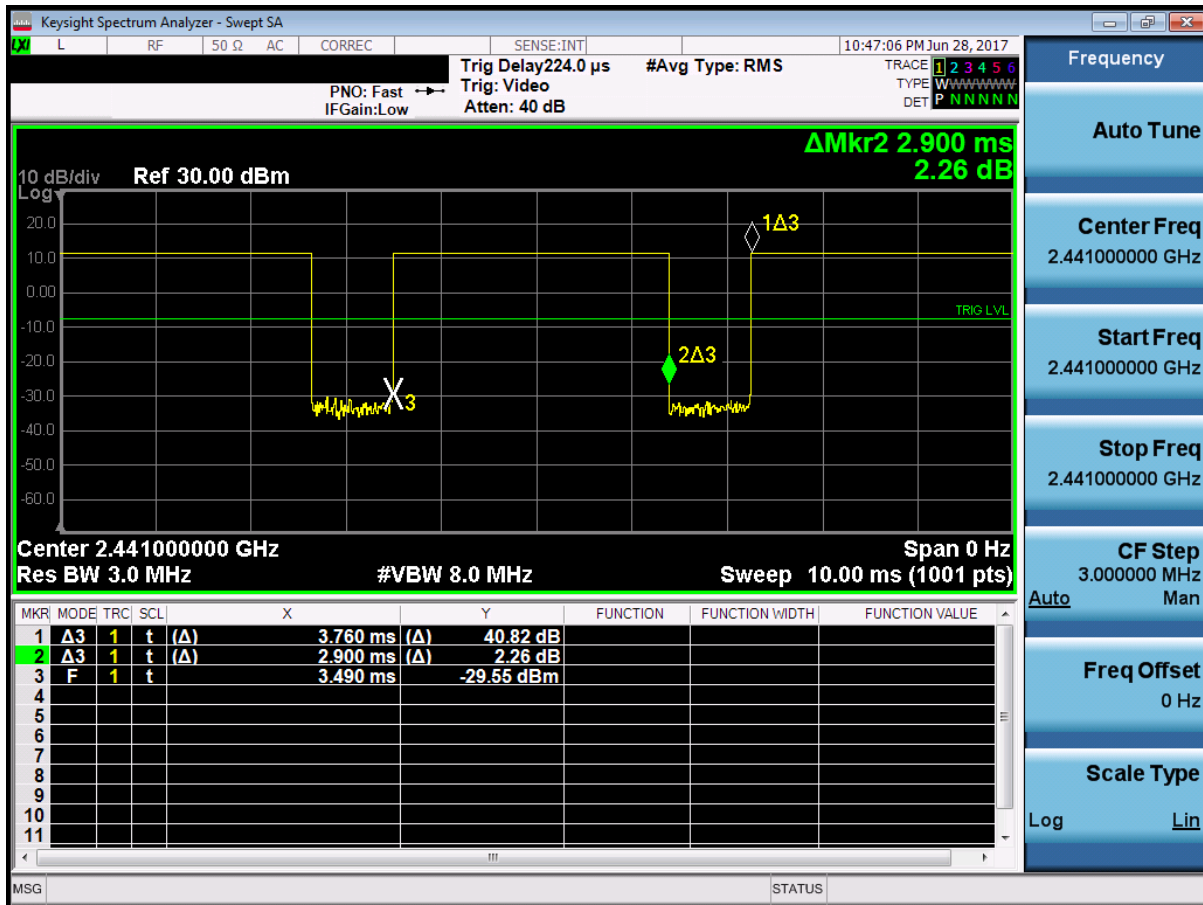


Figure 9-7
Bluetooth Transmission Plot

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Equation 2
Bluetooth Duty Cycle Calculation

$$Duty\ Cycle = Pulse\ \frac{Width}{Period} * 100\% = \frac{2.900ms}{3.760ms} * 100\% = 77.1\%$$

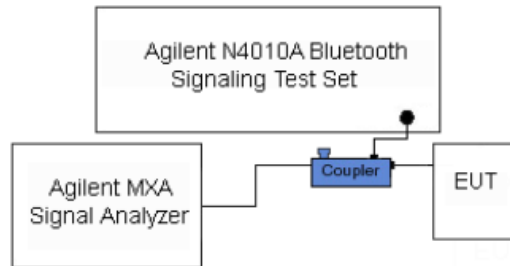


Figure 9-8
Power Measurement Setup

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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
6/8/2017	750H	22.1	700	0.852	42.391	0.889	42.201	-4.16%	0.45%
			710	0.861	42.163	0.890	42.149	-3.26%	0.03%
			740	0.891	41.665	0.893	41.994	-0.22%	-0.78%
			755	0.899	41.478	0.894	41.916	0.56%	-1.04%
			770	0.916	41.391	0.895	41.838	2.35%	-1.07%
			785	0.929	41.191	0.896	41.760	3.68%	-1.36%
6/20/2017	835H	23.9	820	0.882	42.010	0.899	41.578	-1.89%	1.04%
			835	0.896	41.838	0.900	41.500	-0.44%	0.81%
			850	0.910	41.644	0.916	41.500	-0.66%	0.35%
6/23/2017	1750H	24.0	1710	1.295	39.994	1.348	40.142	-3.93%	-0.37%
			1750	1.333	39.844	1.371	40.079	-2.77%	-0.59%
			1790	1.374	39.648	1.394	40.016	-1.43%	-0.92%
6/12/2017	1900H	22.0	1850	1.398	39.162	1.400	40.000	-0.14%	-2.10%
			1880	1.431	39.060	1.400	40.000	2.21%	-2.35%
			1910	1.462	38.950	1.400	40.000	4.43%	-2.62%
6/12/2017	2450H	23.8	2400	1.820	38.441	1.756	39.289	3.64%	-2.16%
			2450	1.876	38.255	1.800	39.200	4.22%	-2.41%
			2500	1.931	38.053	1.855	39.136	4.10%	-2.77%
			2550	1.992	37.865	1.909	39.073	4.35%	-3.09%
			2600	2.044	37.646	1.964	39.009	4.07%	-3.49%
			2650	2.108	37.461	2.018	38.945	4.46%	-3.81%
6/19/2017	2450H	24.0	2700	2.159	37.265	2.073	38.882	4.15%	-4.16%
			2400	1.750	38.524	1.756	39.289	-0.34%	-1.95%
			2450	1.803	38.360	1.800	39.200	0.17%	-2.14%
			2500	1.858	38.152	1.855	39.136	0.16%	-2.51%
			5180	4.503	35.130	4.635	36.009	-2.85%	-2.44%
			5200	4.525	35.103	4.655	35.986	-2.79%	-2.45%
06/10/2017	5200H-5800H	21.6	5220	4.550	35.064	4.676	35.963	-2.69%	-2.50%
			5240	4.573	35.051	4.696	35.940	-2.62%	-2.47%
			5260	4.587	35.008	4.717	35.917	-2.76%	-2.53%
			5280	4.600	34.970	4.737	35.894	-2.89%	-2.57%
			5300	4.622	34.927	4.758	35.871	-2.86%	-2.63%
			5320	4.647	34.917	4.778	35.849	-2.74%	-2.60%
			5500	4.828	34.670	4.963	35.643	-2.72%	-2.73%
			5520	4.842	34.647	4.983	35.620	-2.83%	-2.73%
			5540	4.868	34.595	5.004	35.597	-2.72%	-2.81%
			5560	4.875	34.592	5.024	35.574	-2.97%	-2.76%
			5580	4.906	34.548	5.045	35.551	-2.76%	-2.82%
			5600	4.940	34.501	5.065	35.529	-2.47%	-2.89%
			5620	4.966	34.473	5.086	35.506	-2.36%	-2.91%
			5640	4.990	34.432	5.106	35.483	-2.27%	-2.96%
			5660	4.983	34.451	5.127	35.460	-2.81%	-2.85%
			5680	5.008	34.377	5.147	35.437	-2.70%	-2.99%
			5700	5.039	34.346	5.168	35.414	-2.50%	-3.02%
			5745	5.097	34.312	5.214	35.363	-2.24%	-2.97%
			5765	5.120	34.263	5.234	35.340	-2.18%	-3.05%
			5785	5.122	34.259	5.255	35.317	-2.53%	-3.00%
			5800	5.132	34.211	5.270	35.300	-2.62%	-3.08%
			5805	5.138	34.193	5.275	35.294	-2.60%	-3.12%
			5825	5.167	34.154	5.296	35.271	-2.44%	-3.17%

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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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
6/14/2017	750B	22.8	700	0.914	56.901	0.959	55.726	-4.69%	2.11%
			710	0.924	56.757	0.960	55.687	-3.75%	1.92%
			740	0.954	56.473	0.963	55.570	-0.93%	1.62%
			755	0.968	56.371	0.964	55.512	0.41%	1.55%
			770	0.982	56.269	0.965	55.453	1.76%	1.47%
			785	0.997	56.054	0.966	55.395	3.21%	1.19%
6/12/2017	835B	22.7	820	0.949	52.847	0.969	55.258	-2.06%	-4.36%
			835	0.964	52.729	0.970	55.200	-0.62%	-4.48%
			850	0.980	52.597	0.988	55.154	-0.81%	-4.64%
6/19/2017	835B	21.5	820	0.990	53.616	0.969	55.258	2.17%	-2.97%
			835	1.004	53.487	0.970	55.200	3.51%	-3.10%
			850	1.019	53.344	0.988	55.154	3.14%	-3.28%
6/11/2017	1750B	22.4	1710	1.421	53.115	1.463	53.537	-2.87%	-0.79%
			1750	1.461	52.944	1.488	53.432	-1.81%	-0.91%
			1790	1.500	52.802	1.514	53.326	-0.92%	-0.98%
6/15/2017	1900B	21.3	1850	1.495	52.403	1.520	53.300	-1.64%	-1.68%
			1880	1.526	52.252	1.520	53.300	0.39%	-1.97%
			1910	1.565	52.179	1.520	53.300	2.96%	-2.10%
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%
6/24/2017	2450B	22.6	2400	1.875	51.730	1.902	52.767	-1.42%	-1.97%
			2450	1.944	51.566	1.950	52.700	-0.31%	-2.15%
			2500	2.012	51.356	2.021	52.636	-0.45%	-2.43%
6/27/2017	2450B	22.6	2400	1.921	52.129	1.902	52.767	1.00%	-1.21%
			2450	1.985	51.927	1.950	52.700	1.79%	-1.47%
			2500	2.056	51.724	2.021	52.636	1.73%	-1.73%
7/20/2017	2400B	23.0	2400	1.944	52.696	1.902	52.767	2.21%	-0.13%
			2450	2.010	52.517	1.950	52.700	3.08%	-0.35%
			2500	2.079	52.344	2.021	52.636	2.87%	-0.58%
			2550	2.147	52.179	2.092	52.573	2.63%	-0.75%
			2600	2.219	51.988	2.163	52.509	2.59%	-0.99%
			2650	2.291	51.787	2.234	52.445	2.55%	-1.25%
			2700	2.357	51.598	2.305	52.382	2.26%	-1.50%
			5180	5.403	48.060	5.276	49.041	2.41%	-2.00%
			5200	5.422	47.985	5.299	49.014	2.32%	-2.10%
			5220	5.466	47.940	5.323	48.987	2.69%	-2.14%
06/12/2017	5200B-5800B	21.5	5240	5.487	47.929	5.346	48.960	2.64%	-2.11%
			5260	5.518	47.906	5.369	48.933	2.78%	-2.10%
			5280	5.526	47.806	5.393	48.906	2.47%	-2.25%
			5300	5.556	47.800	5.416	48.879	2.58%	-2.21%
			5320	5.587	47.818	5.439	48.851	2.72%	-2.11%
			5500	5.829	47.500	5.650	48.607	3.17%	-2.28%
			5520	5.854	47.516	5.673	48.580	3.19%	-2.19%
			5540	5.876	47.470	5.696	48.553	3.16%	-2.23%
			5560	5.901	47.419	5.720	48.526	3.16%	-2.28%
			5580	5.937	47.378	5.743	48.499	3.38%	-2.31%
			5600	5.965	47.313	5.766	48.471	3.45%	-2.39%
			5620	5.986	47.313	5.790	48.444	3.39%	-2.33%
			5640	6.021	47.278	5.813	48.417	3.58%	-2.35%
			5660	6.045	47.266	5.837	48.390	3.56%	-2.32%
			5680	6.069	47.239	5.860	48.363	3.57%	-2.32%
			5700	6.088	47.203	5.883	48.336	3.48%	-2.34%
			5745	6.179	47.093	5.936	48.275	4.09%	-2.45%
			5765	6.190	47.049	5.959	48.248	3.88%	-2.49%
			5785	6.224	47.062	5.982	48.220	4.05%	-2.40%
			5800	6.246	47.014	6.000	48.200	4.10%	-2.46%
06/19/2017	5200B-5800B	22.4	5805	6.251	46.990	6.006	48.193	4.08%	-2.50%
			5825	6.285	46.990	6.029	48.166	4.25%	-2.44%
			5180	5.289	47.782	5.276	49.041	0.25%	-2.57%
			5200	5.326	47.729	5.299	49.014	0.51%	-2.62%
			5220	5.347	47.692	5.323	48.987	0.45%	-2.64%
			5240	5.372	47.693	5.346	48.960	0.49%	-2.59%
			5260	5.379	47.642	5.369	48.933	0.19%	-2.64%
			5280	5.397	47.614	5.393	48.906	0.07%	-2.64%
			5300	5.436	47.551	5.416	48.879	0.37%	-2.72%
			5320	5.476	47.511	5.439	48.851	0.68%	-2.74%
			5500	5.699	47.298	5.650	48.607	0.87%	-2.69%
			5520	5.716	47.231	5.673	48.580	0.76%	-2.78%
			5540	5.747	47.196	5.696	48.553	0.90%	-2.79%
			5560	5.773	47.134	5.720	48.526	0.93%	-2.87%
			5580	5.825	47.089	5.743	48.499	1.43%	-2.91%
			5600	5.840	47.091	5.766	48.471	1.28%	-2.85%
			5620	5.869	47.072	5.790	48.444	1.36%	-2.83%
			5640	5.884	47.060	5.813	48.417	1.22%	-2.80%
			5660	5.909	46.944	5.837	48.390	1.23%	-2.99%
			5680	5.934	46.943	5.860	48.363	1.26%	-2.94%
06/12/2017	5200B-5800B	21.5	5700	5.985	46.933	5.883	48.336	1.73%	-2.90%
			5745	6.059	46.879	5.936	48.275	2.07%	-2.89%
			5765	6.067	46.855	5.959	48.248	1.81%	-2.89%
			5785	6.071	46.805	5.982	48.220	1.49%	-2.93%
			5800	6.102	46.745	6.000	48.200	1.70%	-3.02%
			5805	6.112	46.722	6.006	48.193	1.76%	-3.05%
			5825	6.142	46.714	6.029	48.166	1.87%	-3.01%

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

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} (%)
K	750	HEAD	06/08/2017	22.7	21.7	0.200	1003	7406	1.790	8.390	8.950	6.67%
I	835	HEAD	06/20/2017	23.8	23.9	0.200	4d047	3213	1.870	9.130	9.350	2.41%
J	1750	HEAD	06/23/2017	25.0	24.7	0.100	1092	3209	3.600	36.400	36.000	-1.10%
J	1900	HEAD	06/12/2017	19.2	22.0	0.100	5d080	3209	3.860	39.300	38.600	-1.78%
I	2450	HEAD	06/12/2017	22.2	22.0	0.100	797	3213	5.230	52.100	52.300	0.38%
I	2450	HEAD	06/19/2017	23.0	23.0	0.100	797	3213	5.330	52.100	53.300	2.30%
I	2600	HEAD	06/12/2017	22.2	22.0	0.100	1126	3213	5.430	56.300	54.300	-3.55%
H	5250	HEAD	06/10/2017	19.9	19.8	0.050	1191	3914	3.870	78.900	77.400	-1.90%
H	5600	HEAD	06/10/2017	19.9	19.8	0.050	1191	3914	4.150	83.600	83.000	-0.72%
H	5750	HEAD	06/10/2017	19.9	19.8	0.050	1191	3914	3.800	79.100	76.000	-3.92%
J	750	BODY	06/14/2017	21.1	21.4	0.200	1003	3209	1.730	8.790	8.650	-1.59%
E	835	BODY	06/12/2017	23.9	22.5	0.200	4d133	3319	2.050	9.500	10.250	7.89%
J	835	BODY	06/19/2017	22.9	21.5	0.200	4d133	3209	2.020	9.500	10.100	6.32%
E	1750	BODY	06/11/2017	23.0	22.5	0.100	1148	3319	3.730	37.000	37.300	0.81%
J	1900	BODY	06/15/2017	21.0	21.3	0.100	5d026	3209	4.000	40.300	40.000	-0.74%
H	1900	BODY	06/27/2017	20.4	22.5	0.100	5d080	3318	4.170	39.100	41.700	6.65%
G	2450	BODY	06/24/2017	22.1	22.6	0.100	797	3287	5.300	50.700	53.000	4.54%
G	2450	BODY	06/27/2017	21.1	22.6	0.100	797	3287	5.430	50.700	54.300	7.10%
G	2450	BODY	07/20/2017	22.5	23.9	0.100	797	3287	5.290	50.700	52.900	4.34%
G	2600	BODY	07/20/2017	22.5	23.9	0.100	1071	3287	5.820	54.200	58.200	7.38%
D	5250	BODY	06/19/2017	22.3	21.6	0.050	1123	3589	3.630	75.900	72.600	-4.35%
D	5600	BODY	06/19/2017	22.3	21.6	0.050	1123	3589	3.960	78.900	79.200	0.38%
D	5750	BODY	06/19/2017	22.3	21.6	0.050	1123	3589	3.500	76.300	70.000	-8.26%

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Table 10-4
System Verification Results – 10g

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	06/12/2017	22.1	21.3	0.050	1237	3589	1.060	21.000	21.200	0.95%
D	5600	BODY	06/12/2017	22.1	21.3	0.050	1237	3589	1.050	21.500	21.000	-2.33%

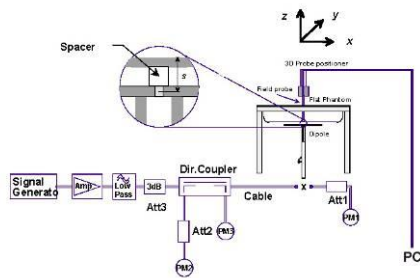


Figure 10-1
System Verification Setup Diagram



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	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	25.5	25.32	0.00	Right	Cheek	03995	1:1	0.079	1.042	0.082	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.5	25.32	0.15	Right	Tilt	03995	1:1	0.050	1.042	0.052	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.5	25.32	0.00	Left	Cheek	03995	1:1	0.114	1.042	0.119	A1
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.5	25.32	-0.02	Left	Tilt	03995	1:1	0.050	1.042	0.052	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.36	0.07	Right	Cheek	03995	1:1	0.070	1.033	0.072	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.36	0.03	Right	Tilt	03995	1:1	0.043	1.033	0.044	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.36	0.07	Left	Cheek	03995	1:1	0.097	1.033	0.100	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.36	0.03	Left	Tilt	03995	1:1	0.040	1.033	0.041	
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	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	25.5	25.43	0.08	Right	Cheek	03995	1:1	0.088	1.016	0.089	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.5	25.43	0.08	Right	Tilt	03995	1:1	0.055	1.016	0.056	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.5	25.43	-0.02	Left	Cheek	03995	1:1	0.121	1.016	0.123	A2
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.5	25.43	0.09	Left	Tilt	03995	1:1	0.052	1.016	0.053	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.25	-0.05	Right	Cheek	03995	1:1	0.074	1.059	0.078	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.25	0.07	Right	Tilt	03995	1:1	0.051	1.059	0.054	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.25	-0.05	Left	Cheek	03995	1:1	0.118	1.059	0.125	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.25	0.05	Left	Tilt	03995	1:1	0.045	1.059	0.048	
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	25.2	24.75	-0.11	Right	Cheek	03995	1:1	0.095	1.109	0.105	
1880.00	600	PCS CDMA	RC3 / SO55	25.2	24.75	0.14	Right	Tilt	03995	1:1	0.035	1.109	0.039	
1880.00	600	PCS CDMA	RC3 / SO55	25.2	24.75	0.10	Left	Cheek	03995	1:1	0.113	1.109	0.125	
1880.00	600	PCS CDMA	RC3 / SO55	25.2	24.75	0.07	Left	Tilt	03995	1:1	0.054	1.109	0.060	
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	24.88	-0.17	Right	Cheek	03995	1:1	0.088	1.076	0.095	
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	24.88	-0.14	Right	Tilt	03995	1:1	0.038	1.076	0.041	
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	24.88	0.01	Left	Cheek	03995	1:1	0.121	1.076	0.130	A3
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	24.88	0.03	Left	Tilt	03995	1:1	0.055	1.076	0.059	
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	34.2	34.16	0.01	Right	Cheek	04001	1	1:8.3	0.083	1.009	0.084	
836.60	190	GSM 850	GSM	34.2	34.16	-0.11	Right	Tilt	04001	1	1:8.3	0.049	1.009	0.049	
836.60	190	GSM 850	GSM	34.2	34.16	-0.09	Left	Cheek	04001	1	1:8.3	0.099	1.009	0.100	A4
836.60	190	GSM 850	GSM	34.2	34.16	0.03	Left	Tilt	04001	1	1:8.3	0.036	1.009	0.036	
836.60	190	GSM 850	GPRS	34.2	34.09	-0.06	Right	Cheek	04001	1	1:8.3	0.067	1.026	0.069	
836.60	190	GSM 850	GPRS	34.2	34.09	0.11	Right	Tilt	04001	1	1:8.3	0.044	1.026	0.045	
836.60	190	GSM 850	GPRS	34.2	34.09	0.08	Left	Cheek	04001	1	1:8.3	0.097	1.026	0.100	
836.60	190	GSM 850	GPRS	34.2	34.09	0.02	Left	Tilt	04001	1	1:8.3	0.040	1.026	0.041	
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	31.7	31.54	0.08	Right	Cheek	04001	1	1:8.3	0.061	1.038	0.063	
1880.00	661	GSM 1900	GSM	31.7	31.54	0.15	Right	Tilt	04001	1	1:8.3	0.020	1.038	0.021	
1880.00	661	GSM 1900	GSM	31.7	31.54	-0.01	Left	Cheek	04001	1	1:8.3	0.069	1.038	0.072	A5
1880.00	661	GSM 1900	GSM	31.7	31.54	-0.01	Left	Tilt	04001	1	1:8.3	0.031	1.038	0.032	
1880.00	661	GSM 1900	GPRS	31.7	31.52	0.19	Right	Cheek	04001	1	1:8.3	0.061	1.042	0.064	
1880.00	661	GSM 1900	GPRS	31.7	31.52	0.12	Right	Tilt	04001	1	1:8.3	0.019	1.042	0.020	
1880.00	661	GSM 1900	GPRS	31.7	31.52	0.09	Left	Cheek	04001	1	1:8.3	0.066	1.042	0.069	
1880.00	661	GSM 1900	GPRS	31.7	31.52	0.16	Left	Tilt	04001	1	1:8.3	0.029	1.042	0.030	
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	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	25.5	25.35	0.05	Right	Cheek	04001	1:1	0.078	1.035	0.081	
836.60	4183	UMTS 850	RMC	25.5	25.35	0.14	Right	Tilt	04001	1:1	0.050	1.035	0.052	
836.60	4183	UMTS 850	RMC	25.5	25.35	-0.01	Left	Cheek	04001	1:1	0.120	1.035	0.124	A6
836.60	4183	UMTS 850	RMC	25.5	25.35	0.01	Left	Tilt	04001	1:1	0.049	1.035	0.051	
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	24.63	0.01	Right	Cheek	04001	1:1	0.143	1.016	0.145	
1732.40	1412	UMTS 1750	RMC	24.7	24.63	0.08	Right	Tilt	04001	1:1	0.115	1.016	0.117	
1732.40	1412	UMTS 1750	RMC	24.7	24.63	-0.02	Left	Cheek	04001	1:1	0.169	1.016	0.172	A7
1732.40	1412	UMTS 1750	RMC	24.7	24.63	0.09	Left	Tilt	04001	1:1	0.128	1.016	0.130	
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	24.53	0.11	Right	Cheek	04001	1:1	0.095	1.040	0.099	
1880.00	9400	UMTS 1900	RMC	24.7	24.53	0.21	Right	Tilt	04001	1:1	0.036	1.040	0.037	
1880.00	9400	UMTS 1900	RMC	24.7	24.53	0.09	Left	Cheek	04001	1:1	0.118	1.040	0.123	A8
1880.00	9400	UMTS 1900	RMC	24.7	24.53	0.03	Left	Tilt	04001	1:1	0.051	1.040	0.053	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-9
LTE Band 12 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
																(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.5	25.48	0.17	0	Right	Cheek	QPSK	1	25	04019	1:1	0.067	1.005	0.067	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	0.01	1	Right	Cheek	QPSK	25	25	04019	1:1	0.057	1.002	0.057	
707.50	23095	Mid	LTE Band 12	10	25.5	25.48	0.11	0	Right	Tilt	QPSK	1	25	04019	1:1	0.038	1.005	0.038	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	0.17	1	Right	Tilt	QPSK	25	25	04019	1:1	0.036	1.002	0.036	
707.50	23095	Mid	LTE Band 12	10	25.5	25.48	-0.04	0	Left	Cheek	QPSK	1	25	04019	1:1	0.085	1.005	0.085	A9
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	0.06	1	Left	Cheek	QPSK	25	25	04019	1:1	0.077	1.002	0.077	
707.50	23095	Mid	LTE Band 12	10	25.5	25.48	0.05	0	Left	Tilt	QPSK	1	25	04019	1:1	0.037	1.005	0.037	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	0.16	1	Left	Tilt	QPSK	25	25	04019	1:1	0.035	1.002	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 11-10
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	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	25.5	25.49	0.19	0	Right	Cheek	QPSK	1	25	04019	1:1	0.060	1.002	0.060	
782.00	23230	Mid	LTE Band 13	10	24.5	24.44	0.11	1	Right	Cheek	QPSK	25	12	04019	1:1	0.058	1.014	0.059	
782.00	23230	Mid	LTE Band 13	10	25.5	25.49	0.20	0	Right	Tilt	QPSK	1	25	04019	1:1	0.041	1.002	0.041	
782.00	23230	Mid	LTE Band 13	10	24.5	24.44	0.13	1	Right	Tilt	QPSK	25	12	04019	1:1	0.041	1.014	0.042	
782.00	23230	Mid	LTE Band 13	10	25.5	25.49	0.07	0	Left	Cheek	QPSK	1	25	04019	1:1	0.103	1.002	0.103	A10
782.00	23230	Mid	LTE Band 13	10	24.5	24.44	0.08	1	Left	Cheek	QPSK	25	12	04019	1:1	0.094	1.014	0.095	
782.00	23230	Mid	LTE Band 13	10	25.5	25.49	-0.10	0	Left	Tilt	QPSK	1	25	04019	1:1	0.052	1.002	0.052	
782.00	23230	Mid	LTE Band 13	10	24.5	24.44	0.18	1	Left	Tilt	QPSK	25	12	04019	1:1	0.041	1.014	0.042	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

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Table 11-11
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	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
																(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.49	0.01	0	Right	Cheek	QPSK	1	0	04019	1:1	0.067	1.002	0.067	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.27	-0.03	1	Right	Cheek	QPSK	36	0	04019	1:1	0.055	1.054	0.058	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.49	0.04	0	Right	Tilt	QPSK	1	0	04019	1:1	0.047	1.002	0.047	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.27	0.10	1	Right	Tilt	QPSK	36	0	04019	1:1	0.036	1.054	0.038	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.49	-0.06	0	Left	Cheek	QPSK	1	0	04019	1:1	0.103	1.002	0.103	A11
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.27	0.01	1	Left	Cheek	QPSK	36	0	04019	1:1	0.087	1.054	0.092	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.49	-0.03	0	Left	Tilt	QPSK	1	0	04019	1:1	0.039	1.002	0.039	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.27	0.06	1	Left	Tilt	QPSK	36	0	04019	1:1	0.034	1.054	0.036	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-12
LTE Band 4 (AWS) Head SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.	(W/kg)														(W/kg)			
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.7	24.67	0.00	0	Right	Cheek	QPSK	1	0	04043	1:1	0.157	1.007	0.158	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.7	23.52	0.06	1	Right	Cheek	QPSK	50	25	04043	1:1	0.116	1.042	0.121	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.7	24.67	0.13	0	Right	Tilt	QPSK	1	0	04043	1:1	0.134	1.007	0.135	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.7	23.52	0.03	1	Right	Tilt	QPSK	50	25	04043	1:1	0.110	1.042	0.115	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.7	24.67	0.15	0	Left	Cheek	QPSK	1	0	04043	1:1	0.188	1.007	0.189	A12
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.7	23.52	0.01	1	Left	Cheek	QPSK	50	25	04043	1:1	0.142	1.042	0.148	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.7	24.67	-0.06	0	Left	Tilt	QPSK	1	0	04043	1:1	0.113	1.007	0.114	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.7	23.52	-0.06	1	Left	Tilt	QPSK	50	25	04043	1:1	0.100	1.042	0.104	
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 #
																(W/kg)		(W/kg)	
MHz	Ch.																		
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.18	-0.12	0	Right	Cheek	QPSK	1	0	04027	1:1	0.113	1.005	0.114	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.12	0.06	1	Right	Cheek	QPSK	50	0	04027	1:1	0.087	1.019	0.089	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.18	0.06	0	Right	Tilt	QPSK	1	0	04027	1:1	0.052	1.005	0.052	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.12	0.07	1	Right	Tilt	QPSK	50	0	04027	1:1	0.035	1.019	0.036	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.18	0.14	0	Left	Cheek	QPSK	1	0	04027	1:1	0.120	1.005	0.121	A13
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.12	0.06	1	Left	Cheek	QPSK	50	0	04027	1:1	0.096	1.019	0.098	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.18	-0.13	0	Left	Tilt	QPSK	1	0	04027	1:1	0.064	1.005	0.064	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.12	-0.03	1	Left	Tilt	QPSK	50	0	04027	1:1	0.051	1.019	0.052	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram									

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Table 11-14
LTE Band 41 Head SAR

MEASUREMENT RESULTS																					
1 CC Uplink 2CC Uplink	Component Carrier	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)		
1 CC Uplink, Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.7	24.20	0.14	0	Right	Cheek	QPSK	1	0	04019	1:1.58	0.062	1.122	0.070	
2 CC Uplink, Power Class 3	PCC	2593.00	40620	Mid	LTE Band 41	20	24.7	24.70	-0.14	0	Right	Cheek	QPSK	1	0	04019	1:1.58	0.056	1.000	0.056	
2 CC Uplink, Power Class 3	SCC	2573.20	40422	Mid	LTE Band 41	20							QPSK	1	99		1:1.58				
1 CC Uplink, Power Class 2	N/A	2593.00	40620	Mid	LTE Band 41	20	27.0	27.00	0.14	0	Right	Cheek	QPSK	1	0	04019	1:2.31	0.077	1.000	0.077	A14
1 CC Uplink, Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.7	22.95	0.17	0	Right	Cheek	QPSK	50	0	04019	1:1.58	0.039	1.496	0.058	
1 CC Uplink, Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.7	24.20	0.13	0	Right	Tilt	QPSK	1	0	04019	1:1.58	0.036	1.122	0.040	
1 CC Uplink, Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.7	22.95	0.15	0	Right	Tilt	QPSK	50	0	04019	1:1.58	0.027	1.496	0.040	
1 CC Uplink, Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.7	24.20	0.05	0	Left	Cheek	QPSK	1	0	04019	1:1.58	0.049	1.122	0.055	
1 CC Uplink, Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.7	22.95	0.13	0	Left	Cheek	QPSK	50	0	04019	1:1.58	0.041	1.496	0.061	
1 CC Uplink, Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.7	24.20	0.13	0	Left	Tilt	QPSK	1	0	04019	1:1.58	0.028	1.122	0.031	
1 CC Uplink, Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.7	22.95	0.16	0	Left	Tilt	QPSK	50	0	04019	1:1.58	0.017	1.496	0.025	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Head 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-15
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)	
2437	6	802.11b	DSSS	22	17.0	16.95	-0.14	Right	Cheek	1	04175	1	99.0	0.816	0.580	1.012	1.010	0.593	
2437	6	802.11b	DSSS	22	17.0	16.95	0.09	Right	Tilt	1	04175	1	99.0	0.313	0.246	1.012	1.010	0.251	
2437	6	802.11b	DSSS	22	17.0	16.95	-0.20	Left	Cheek	1	04175	1	99.0	0.175	-	1.012	1.010	-	
2437	6	802.11b	DSSS	22	17.0	16.95	0.16	Left	Tilt	1	04175	1	99.0	0.115	-	1.012	1.010	-	
2437	6	802.11b	DSSS	22	17.0	16.43	0.09	Right	Cheek	2	04175	1	97.4	0.632	0.603	1.140	1.027	0.706	A15
2437	6	802.11b	DSSS	22	17.0	16.43	0.06	Right	Tilt	2	04175	1	97.4	0.530	0.450	1.140	1.027	0.527	
2437	6	802.11b	DSSS	22	17.0	16.43	-0.20	Left	Cheek	2	04175	1	97.4	0.408	-	1.140	1.027	-	
2437	6	802.11b	DSSS	22	17.0	16.43	0.10	Left	Tilt	2	04175	1	97.4	0.410	-	1.140	1.027	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

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Table 11-16
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	17.0	16.77	-0.11	Right	Cheek	1	04183	6	94.5	0.569	0.229	1.054	1.058	0.255	
5280	56	802.11a	OFDM	20	17.0	16.77	0.15	Right	Tilt	1	04183	6	94.5	0.544	-	1.054	1.058	-	
5280	56	802.11a	OFDM	20	17.0	16.77	0.17	Left	Cheek	1	04183	6	94.5	0.205	-	1.054	1.058	-	
5280	56	802.11a	OFDM	20	17.0	16.77	0.21	Left	Tilt	1	04183	6	94.5	0.232	-	1.054	1.058	-	
5320	64	802.11a	OFDM	20	16.5	15.28	-0.16	Right	Cheek	2	04183	6	94.5	0.926	0.438	1.324	1.058	0.614	
5320	64	802.11a	OFDM	20	16.5	15.28	0.18	Right	Tilt	2	04183	6	94.5	0.688	0.497	1.324	1.058	0.696	
5320	64	802.11a	OFDM	20	16.5	15.28	0.19	Left	Cheek	2	04183	6	94.5	0.372	-	1.324	1.058	-	
5320	64	802.11a	OFDM	20	16.5	15.28	0.13	Left	Tilt	2	04183	6	94.5	0.437	-	1.324	1.058	-	
5580	116	802.11a	OFDM	20	17.0	16.71	-0.12	Right	Cheek	1	04183	6	94.5	0.950	0.403	1.069	1.058	0.456	
5580	116	802.11a	OFDM	20	17.0	16.71	0.15	Right	Tilt	1	04183	6	94.5	0.785	0.339	1.069	1.058	0.383	
5580	116	802.11a	OFDM	20	17.0	16.71	0.18	Left	Cheek	1	04183	6	94.5	0.273	-	1.069	1.058	-	
5580	116	802.11a	OFDM	20	17.0	16.71	0.19	Left	Tilt	1	04183	6	94.5	0.298	-	1.069	1.058	-	
5580	116	802.11a	OFDM	20	16.5	15.77	0.16	Right	Cheek	2	04183	6	94.5	0.999	0.559	1.183	1.058	0.700	A16
5580	116	802.11a	OFDM	20	16.5	15.77	0.21	Right	Tilt	2	04183	6	94.5	0.919	0.502	1.183	1.058	0.628	
5580	116	802.11a	OFDM	20	16.5	15.77	0.21	Left	Cheek	2	04183	6	94.5	0.570	-	1.183	1.058	-	
5580	116	802.11a	OFDM	20	16.5	15.77	0.20	Left	Tilt	2	04183	6	94.5	0.469	-	1.183	1.058	-	
5745	149	802.11a	OFDM	20	17.0	16.59	0.20	Right	Cheek	1	04183	6	94.5	1.073	0.487	1.099	1.058	0.566	
5745	149	802.11a	OFDM	20	17.0	16.59	0.20	Right	Tilt	1	04183	6	94.5	0.830	0.322	1.099	1.058	0.374	
5745	149	802.11a	OFDM	20	17.0	16.59	0.16	Left	Cheek	1	04183	6	94.5	0.273	-	1.099	1.058	-	
5745	149	802.11a	OFDM	20	17.0	16.59	0.17	Left	Tilt	1	04183	6	94.5	0.309	-	1.099	1.058	-	
5745	149	802.11a	OFDM	20	16.5	15.87	0.20	Right	Cheek	2	04183	6	94.5	0.690	0.398	1.156	1.058	0.487	
5745	149	802.11a	OFDM	20	16.5	15.87	0.12	Right	Tilt	2	04183	6	94.5	0.676	0.350	1.156	1.058	0.428	
5745	149	802.11a	OFDM	20	16.5	15.87	0.15	Left	Cheek	2	04183	6	94.5	0.325	-	1.156	1.058	-	
5745	149	802.11a	OFDM	20	16.5	15.87	0.14	Left	Tilt	2	04183	6	94.5	0.281	-	1.156	1.058	-	
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 11-17
Bluetooth Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Service	Data Rate (Mbps)	Device Serial Number	Duty Cycle (%)	SAR (1g)	Scaling Factor (Conducted Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	12.5	11.34	-0.21	Right	Cheek	FHSS	1	04175	77.1	0.202	1.306	1.297	0.342	A17
2441	39	Bluetooth	12.5	11.34	0.05	Right	Tilt	FHSS	1	04175	77.1	0.074	1.306	1.297	0.125	
2441	39	Bluetooth	12.5	11.34	-0.02	Left	Cheek	FHsS	1	04175	77.1	0.038	1.306	1.297	0.064	
2441	39	Bluetooth	12.5	11.34	0.13	Left	Tilt	FHSS	1	04175	77.1	0.026	1.306	1.297	0.044	
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 11-18
CDMA/GSM/UMTS Body-Worn SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
820.10	564	CDMABC10 (\$90S)	TDSO / SO32	25.5	25.33	0.02	10 mm	03995	N/A	1:1	back	0.494	1.040	0.514	A18
836.52	384	CDMABC0 (\$22H)	TDSO / SO32	25.5	25.36	0.00	10 mm	03995	N/A	1:1	back	0.556	1.033	0.574	A20
1880.00	600	PCS CDMA	TDSO / SO32	25.2	24.88	-0.06	10 mm	03995	N/A	1:1	back	0.558	1.076	0.600	A22
836.60	190	GSM 850	GSM	34.2	34.16	-0.06	10 mm	04001	1	1:8.3	back	0.458	1.009	0.462	A24
836.60	190	GSM 850	GPRS	34.2	34.09	-0.02	10 mm	04001	1	1:8.3	back	0.435	1.026	0.446	
1880.00	661	GSM 1900	GSM	31.7	31.54	-0.08	10 mm	04001	1	1:8.3	back	0.354	1.038	0.367	A26
1880.00	661	GSM 1900	GPRS	31.7	31.52	-0.06	10 mm	04001	1	1:8.3	back	0.331	1.042	0.345	
836.60	4183	UMTS 850	RMC	25.5	25.35	0.00	10 mm	04001	N/A	1:1	back	0.511	1.035	0.529	A28
1732.40	1412	UMTS 1750	RMC	24.7	24.63	-0.01	10 mm	04001	N/A	1:1	back	0.653	1.016	0.663	A29
1880.00	9400	UMTS 1900	RMC	24.7	24.53	0.00	10 mm	04001	N/A	1:1	back	0.589	1.040	0.613	A30
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-19
LTE FDD Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
707.50	23095	Mid	LTE Band 12	10	25.5	25.48	0.02	0	04019	QPSK	1	25	10 mm	back	1:1	0.478	1.005	0.480	A32
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	-0.03	1	04019	QPSK	25	25	10 mm	back	1:1	0.383	1.002	0.384	
782.00	23230	Mid	LTE Band 13	10	25.5	25.49	0.01	0	04019	QPSK	1	25	10 mm	back	1:1	0.526	1.002	0.527	A33
782.00	23230	Mid	LTE Band 13	10	24.5	24.44	0.01	1	04019	QPSK	25	12	10 mm	back	1:1	0.428	1.014	0.434	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.49	0.00	0	04035	QPSK	1	0	10 mm	back	1:1	0.443	1.002	0.444	A34
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.27	-0.03	1	04035	QPSK	36	0	10 mm	back	1:1	0.347	1.054	0.366	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.7	24.67	0.10	0	04035	QPSK	1	0	10 mm	back	1:1	0.616	1.007	0.620	A35
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.7	23.52	-0.02	1	04035	QPSK	50	25	10 mm	back	1:1	0.526	1.042	0.548	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.18	0.04	0	04019	QPSK	1	0	10 mm	back	1:1	0.725	1.005	0.729	A37
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.12	-0.09	1	04019	QPSK	50	0	10 mm	back	1:1	0.536	1.019	0.546	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak									Body 1.6 W/kg (mW/g) averaged over 1 gram										
Uncontrolled Exposure/General Population																			

Table 11-20
LTE TDD Body-Worn SAR

MEASUREMENT RESULTS																					
1 CC Uplink / 2CC Uplink	Component Carrier	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)		
1 CC Uplink, Power Class 3	NIA	2506.00	39750	Low	LTE Band 41	20	24.7	23.88	-0.07	0	04027	QPSK	1	0	10 mm	back	1:1.58	0.546	1.208	0.660	A38
1 CC Uplink, Power Class 3	NIA	2549.50	40185	Low-Mid	LTE Band 41	20	24.7	24.09	0.01	0	04027	QPSK	1	0	10 mm	back	1:1.58	0.582	1.151	0.670	
1CC Uplink, Power Class 3	NIA	2593.00	40620	Mid	LTE Band 41	20	24.7	24.20	0.00	0	04027	QPSK	1	0	10 mm	back	1:1.58	0.591	1.122	0.663	
2CC Uplink, Power Class 3	PCC	2593.00	40620	Mid	LTE Band 41	20	24.7	24.70	-0.15	0	04027	QPSK	1	0	10 mm	back	1:1.58	0.759	1.000	0.759	
2CC Uplink, Power Class 3	SCC	2573.20	40422	Mid	LTE Band 41	20					04027	QPSK	1	99							
1 CC Uplink, Power Class 2	NIA	2593.00	40620	Mid	LTE Band 41	20	27.0	27.00	-0.01	0	04027	QPSK	1	0	10 mm	back	12:31	0.756	1.000	0.756	
1 CC Uplink, Power Class 3	NIA	2636.50	41055	Mid-High	LTE Band 41	20	24.7	23.97	0.06	0	04027	QPSK	1	0	10 mm	back	1:1.58	0.390	1.183	0.461	
1 CC Uplink, Power Class 3	NIA	2680.00	41490	High	LTE Band 41	20	24.7	23.99	0.02	0	04027	QPSK	1	50	10 mm	back	1:1.58	0.461	1.178	0.543	
1 CC Uplink, Power Class 3	NIA	2506.00	39750	Low	LTE Band 41	20	24.7	22.95	-0.01	0	04027	QPSK	50	0	10 mm	back	1:1.58	0.373	1.496	0.558	
1 CC Uplink, Power Class 3	NIA	2593.00	40620	Mid	LTE Band 41	20	24.7	22.93	-0.04	0	04027	QPSK	100	0	10 mm	back	1:1.58	0.484	1.503	0.727	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT												Body									
Spatial Peak												1.6 W/kg (mW/g)									
Uncontrolled Exposure/General Population												averaged over 1 gram									

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**Table 11-21
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)	
2437	6	802.11b	DSSS	22	20.0	19.80	-0.16	10 mm	1	04175	1	back	99.0	0.293	0.240	1.047	1.010	0.254	A39
2437	6	802.11b	DSSS	22	19.5	19.39	0.17	10 mm	2	04175	1	back	97.4	0.186	0.147	1.026	1.027	0.155	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

**Table 11-22
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	17.0	16.77	0.08	10 mm	1	04183	6	back	94.5	0.788	0.363	1.054	1.058	0.405	
5320	64	802.11a	OFDM	20	16.5	15.28	-0.05	10 mm	2	04183	6	back	94.5	0.720	0.312	1.324	1.058	0.437	
5580	116	802.11a	OFDM	20	17.0	16.71	0.14	10 mm	1	04183	6	back	94.5	1.032	0.503	1.069	1.058	0.569	
5580	116	802.11a	OFDM	20	16.5	15.77	0.11	10 mm	2	04183	6	back	94.5	1.077	0.452	1.183	1.058	0.566	
5745	149	802.11a	OFDM	20	17.0	16.59	0.06	10 mm	1	04183	6	back	94.5	1.131	0.546	1.099	1.058	0.635	
5745	149	802.11a	OFDM	20	16.5	15.87	0.06	10 mm	2	04183	6	back	94.5	0.754	0.334	1.156	1.058	0.408	
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
NII MIMO Body-Worn SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Ant 1 Maximum Allowed Power [dBm]	Ant 1 Conducted Power [dBm]	Ant 2 Maximum Allowed Power [dBm]	Ant 2 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	802.11n	OFDM	20	17.0	16.67	16.5	14.98	0.13	10 mm	MIMO	04183	13	back	95.0	1.156	0.544	1.419	1.053	0.813	
5320	64	802.11n	OFDM	20	17.0	16.61	16.5	15.22	0.21	10 mm	MIMO	04183	13	back	95.0	1.313	0.578	1.343	1.053	0.817	
5580	116	802.11n	OFDM	20	17.0	16.59	16.5	15.60	0.07	10 mm	MIMO	04183	13	back	95.0	1.797	0.758	1.230	1.053	0.982	A41
5720	144	802.11n	OFDM	20	17.0	16.50	16.5	15.58	0.06	10 mm	MIMO	04183	13	back	95.0	1.465	0.626	1.236	1.053	0.815	
5745	149	802.11n	OFDM	20	17.0	16.46	16.5	15.67	0.09	10 mm	MIMO	04183	13	back	95.0	1.315	0.633	1.211	1.053	0.807	
5785	157	802.11n	OFDM	20	17.0	16.44	16.5	15.62	0.15	10 mm	MIMO	04183	13	back	95.0	1.575	0.682	1.225	1.053	0.880	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT																Body					
Spatial Peak																1.6 W/kg (mW/g)					
Uncontrolled Exposure/General Population																averaged over 1 gram					

To achieve the 19.7 dBm maximum allowed MIMO power shown in the documentation, antenna 1 transmits at a maximum allowed power of 17.0 dBm and antenna 2 transmits at a maximum allowed power of 16.5 dBm.

**Table 11-24
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 (Conducted Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	12.5	11.34	-0.14	10 mm	04175	1	back	77.1	0.031	1.306	1.297	0.053	A43
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 11-25
CDMA/GPRS/UMTS Hotspot SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of GPRS Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. 0	25.5	25.29	-0.05	10 mm	03995	N/A	1:1	back	0.512	1.050	0.538	A19
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. 0	25.5	25.29	0.02	10 mm	03995	N/A	1:1	front	0.464	1.050	0.487	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. 0	25.5	25.29	-0.13	10 mm	03995	N/A	1:1	bottom	0.273	1.050	0.287	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. 0	25.5	25.29	-0.02	10 mm	03995	N/A	1:1	right	0.078	1.050	0.082	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. 0	25.5	25.29	0.02	10 mm	03995	N/A	1:1	left	0.178	1.050	0.187	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	25.5	25.35	-0.05	10 mm	03995	N/A	1:1	back	0.580	1.035	0.600	A21
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	25.5	25.35	-0.02	10 mm	03995	N/A	1:1	front	0.523	1.035	0.541	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	25.5	25.35	-0.09	10 mm	03995	N/A	1:1	bottom	0.296	1.035	0.306	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	25.5	25.35	-0.05	10 mm	03995	N/A	1:1	right	0.082	1.035	0.085	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	25.5	25.35	0.03	10 mm	03995	N/A	1:1	left	0.180	1.035	0.186	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	24.71	-0.04	10 mm	03995	N/A	1:1	back	0.583	1.119	0.652	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	24.71	0.06	10 mm	03995	N/A	1:1	front	0.539	1.119	0.603	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	24.71	-0.05	10 mm	03995	N/A	1:1	bottom	0.711	1.119	0.796	A23
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	24.71	-0.04	10 mm	03995	N/A	1:1	left	0.195	1.119	0.218	
836.60	190	GSM 850	GPRS	34.2	34.09	-0.02	10 mm	04001	1	1:8.3	back	0.435	1.026	0.446	A25
836.60	190	GSM 850	GPRS	34.2	34.09	-0.14	10 mm	04001	1	1:8.3	front	0.434	1.026	0.445	
836.60	190	GSM 850	GPRS	34.2	34.09	-0.09	10 mm	04001	1	1:8.3	bottom	0.255	1.026	0.262	
836.60	190	GSM 850	GPRS	34.2	34.09	-0.06	10 mm	04001	1	1:8.3	right	0.080	1.026	0.082	
836.60	190	GSM 850	GPRS	34.2	34.09	-0.13	10 mm	04001	1	1:8.3	left	0.168	1.026	0.172	
1880.00	661	GSM 1900	GPRS	31.7	31.52	-0.06	10 mm	04001	1	1:8.3	back	0.331	1.042	0.345	
1880.00	661	GSM 1900	GPRS	31.7	31.52	0.00	10 mm	04001	1	1:8.3	front	0.275	1.042	0.287	
1880.00	661	GSM 1900	GPRS	31.7	31.52	-0.05	10 mm	04001	1	1:8.3	bottom	0.368	1.042	0.383	A27
1880.00	661	GSM 1900	GPRS	31.7	31.52	-0.07	10 mm	04001	1	1:8.3	left	0.111	1.042	0.116	
836.60	4183	UMTS 850	RMC	25.5	25.35	0.00	10 mm	04001	N/A	1:1	back	0.511	1.035	0.529	A28
836.60	4183	UMTS 850	RMC	25.5	25.35	-0.08	10 mm	04001	N/A	1:1	front	0.471	1.035	0.487	
836.60	4183	UMTS 850	RMC	25.5	25.35	-0.06	10 mm	04001	N/A	1:1	bottom	0.227	1.035	0.235	
836.60	4183	UMTS 850	RMC	25.5	25.35	-0.05	10 mm	04001	N/A	1:1	right	0.073	1.035	0.076	
836.60	4183	UMTS 850	RMC	25.5	25.35	-0.05	10 mm	04001	N/A	1:1	left	0.189	1.035	0.196	
1732.40	1412	UMTS 1750	RMC	24.7	24.63	-0.01	10 mm	04001	N/A	1:1	back	0.653	1.016	0.663	A29
1732.40	1412	UMTS 1750	RMC	24.7	24.63	-0.16	10 mm	04001	N/A	1:1	front	0.620	1.016	0.630	
1732.40	1412	UMTS 1750	RMC	24.7	24.63	-0.01	10 mm	04001	N/A	1:1	bottom	0.531	1.016	0.539	
1732.40	1412	UMTS 1750	RMC	24.7	24.63	0.04	10 mm	04001	N/A	1:1	left	0.361	1.016	0.367	
1880.00	9400	UMTS 1900	RMC	24.7	24.53	0.00	10 mm	04001	N/A	1:1	back	0.589	1.040	0.613	
1880.00	9400	UMTS 1900	RMC	24.7	24.53	0.02	10 mm	04001	N/A	1:1	front	0.439	1.040	0.457	
1880.00	9400	UMTS 1900	RMC	24.7	24.53	-0.04	10 mm	04001	N/A	1:1	bottom	0.639	1.040	0.665	A31
1880.00	9400	UMTS 1900	RMC	24.7	24.53	-0.05	10 mm	04001	N/A	1:1	left	0.194	1.040	0.202	
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 11-26
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
707.50	23095	Mid	LTE Band 12	10	25.5	25.48	0.02	0	04019	QPSK	1	25	10 mm	back	1:1	0.478	1.005	0.480	A32
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	-0.03	1	04019	QPSK	25	25	10 mm	back	1:1	0.383	1.002	0.384	
707.50	23095	Mid	LTE Band 12	10	25.5	25.48	-0.02	0	04019	QPSK	1	25	10 mm	front	1:1	0.440	1.005	0.442	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	-0.07	1	04019	QPSK	25	25	10 mm	front	1:1	0.354	1.002	0.355	
707.50	23095	Mid	LTE Band 12	10	25.5	25.48	-0.05	0	04019	QPSK	1	25	10 mm	bottom	1:1	0.279	1.005	0.280	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	-0.06	1	04019	QPSK	25	25	10 mm	bottom	1:1	0.223	1.002	0.223	
707.50	23095	Mid	LTE Band 12	10	25.5	25.48	0.03	0	04019	QPSK	1	25	10 mm	right	1:1	0.119	1.005	0.120	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	-0.02	1	04019	QPSK	25	25	10 mm	right	1:1	0.093	1.002	0.093	
707.50	23095	Mid	LTE Band 12	10	25.5	25.48	-0.02	0	04019	QPSK	1	25	10 mm	left	1:1	0.132	1.005	0.133	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	-0.14	1	04019	QPSK	25	25	10 mm	left	1:1	0.105	1.002	0.105	
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 11-27
LTE Band 13 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
782.00	23230	Mid	LTE Band 13	10	25.5	25.49	0.01	0	04019	QPSK	1	25	10 mm	back	1:1	0.526	1.002	0.527	A33
782.00	23230	Mid	LTE Band 13	10	24.5	24.44	0.01	1	04019	QPSK	25	12	10 mm	back	1:1	0.428	1.014	0.434	
782.00	23230	Mid	LTE Band 13	10	25.5	25.49	-0.01	0	04019	QPSK	1	25	10 mm	front	1:1	0.495	1.002	0.496	
782.00	23230	Mid	LTE Band 13	10	24.5	24.44	-0.02	1	04019	QPSK	25	12	10 mm	front	1:1	0.396	1.014	0.402	
782.00	23230	Mid	LTE Band 13	10	25.5	25.49	-0.11	0	04019	QPSK	1	25	10 mm	bottom	1:1	0.272	1.002	0.273	
782.00	23230	Mid	LTE Band 13	10	24.5	24.44	-0.04	1	04019	QPSK	25	12	10 mm	bottom	1:1	0.225	1.014	0.228	
782.00	23230	Mid	LTE Band 13	10	25.5	25.49	0.00	0	04019	QPSK	1	25	10 mm	right	1:1	0.070	1.002	0.070	
782.00	23230	Mid	LTE Band 13	10	24.5	24.44	-0.05	1	04019	QPSK	25	12	10 mm	right	1:1	0.064	1.014	0.065	
782.00	23230	Mid	LTE Band 13	10	25.5	25.49	-0.03	0	04019	QPSK	1	25	10 mm	left	1:1	0.184	1.002	0.184	
782.00	23230	Mid	LTE Band 13	10	24.5	24.44	0.09	1	04019	QPSK	25	12	10 mm	left	1:1	0.158	1.014	0.160	
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 11-28
LTE Band 26 (Cell) Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.49	0.00	0	04035	QPSK	1	0	10 mm	back	1:1	0.443	1.002	0.444	A34
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.27	-0.03	1	04035	QPSK	36	0	10 mm	back	1:1	0.347	1.054	0.366	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.49	-0.04	0	04035	QPSK	1	0	10 mm	front	1:1	0.348	1.002	0.349	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.27	-0.03	1	04035	QPSK	36	0	10 mm	front	1:1	0.314	1.054	0.331	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.49	-0.04	0	04035	QPSK	1	0	10 mm	bottom	1:1	0.233	1.002	0.233	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.27	-0.08	1	04035	QPSK	36	0	10 mm	bottom	1:1	0.205	1.054	0.216	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.49	-0.19	0	04035	QPSK	1	0	10 mm	right	1:1	0.079	1.002	0.079	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.27	-0.04	1	04035	QPSK	36	0	10 mm	right	1:1	0.061	1.054	0.064	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.49	0.05	0	04035	QPSK	1	0	10 mm	left	1:1	0.148	1.002	0.148	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.27	-0.06	1	04035	QPSK	36	0	10 mm	left	1:1	0.114	1.054	0.120	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body											
Spatial Peak								1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population								averaged over 1 gram											

FCC ID: ZNFLS998		SAR EVALUATION REPORT		Approved by: Quality Manager
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Table 11-29
LTE Band 4 (AWS) Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.7	24.67	0.10	0	04035	QPSK	1	0	10 mm	back	1:1	0.616	1.007	0.620	A36
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.7	23.52	-0.02	1	04035	QPSK	50	25	10 mm	back	1:1	0.526	1.042	0.548	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.7	24.67	-0.04	0	04035	QPSK	1	0	10 mm	front	1:1	0.702	1.007	0.707	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.7	23.52	-0.13	1	04035	QPSK	50	25	10 mm	front	1:1	0.693	1.042	0.722	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.7	24.67	-0.04	0	04035	QPSK	1	0	10 mm	bottom	1:1	0.522	1.007	0.526	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.7	23.52	-0.01	1	04035	QPSK	50	25	10 mm	bottom	1:1	0.467	1.042	0.487	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.7	24.67	-0.01	0	04035	QPSK	1	0	10 mm	left	1:1	0.305	1.007	0.307	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.7	23.52	0.05	1	04035	QPSK	50	25	10 mm	left	1:1	0.261	1.042	0.272	
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 11-30
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)		
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.18	0.04	0	04019	QPSK	1	0	10 mm	back	1:1	0.725	1.005	0.729	A37
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.12	-0.09	1	04019	QPSK	50	0	10 mm	back	1:1	0.536	1.019	0.546	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.18	0.05	0	04019	QPSK	1	0	10 mm	front	1:1	0.535	1.005	0.538	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.12	0.06	1	04019	QPSK	50	0	10 mm	front	1:1	0.384	1.019	0.391	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.18	-0.03	0	04019	QPSK	1	0	10 mm	bottom	1:1	0.712	1.005	0.716	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.12	-0.02	1	04019	QPSK	50	0	10 mm	bottom	1:1	0.567	1.019	0.578	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.18	-0.05	0	04019	QPSK	1	0	10 mm	left	1:1	0.271	1.005	0.272	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.12	-0.07	1	04019	QPSK	50	0	10 mm	left	1:1	0.184	1.019	0.187	
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 11-31
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																					
1 CC Uplink 2CC Uplink	Component Carrier	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)		
1 CC Uplink, Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.7	23.88	-0.07	0	04027	QPSK	1	0	10 mm	back	1:1.58	0.546	1.208	0.660	
1 CC Uplink, Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	24.7	24.09	0.01	0	04027	QPSK	1	0	10 mm	back	1:1.58	0.582	1.151	0.670	
1 CC Uplink, Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.7	24.20	0.00	0	04027	QPSK	1	0	10 mm	back	1:1.58	0.591	1.122	0.663	
2 CC Uplink, Power Class 3	PCC	2593.00	40620	Mid	LTE Band 41	20	24.7	24.70	-0.15	0	04027	QPSK	1	0	10 mm	back	1:1.58	0.759	1.000	0.759	A38
2 CC Uplink, Power Class 3	SCC	2573.20	40422	Mid	LTE Band 41	20						QPSK	1	99							
1 CC Uplink, Power Class 2	N/A	2593.00	40620	Mid	LTE Band 41	20	27.0	27.00	-0.01	0	04027	QPSK	1	0	10 mm	back	12:31	0.756	1.000	0.756	
1 CC Uplink, Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	24.7	23.97	0.06	0	04027	QPSK	1	0	10 mm	back	1:1.58	0.390	1.183	0.461	
1 CC Uplink, Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	24.7	23.99	0.02	0	04027	QPSK	1	50	10 mm	back	1:1.58	0.461	1.178	0.543	
1 CC Uplink, Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.7	22.95	-0.01	1	04027	QPSK	50	0	10 mm	back	1:1.58	0.373	1.189	0.443	
1 CC Uplink, Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	23.7	22.93	-0.04	1	04027	QPSK	100	0	10 mm	back	1:1.58	0.484	1.194	0.578	
1 CC Uplink, Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.7	24.20	0.03	0	04027	QPSK	1	0	10 mm	front	1:1.58	0.400	1.122	0.449	
1 CC Uplink, Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.7	22.95	0.01	1	04027	QPSK	50	0	10 mm	front	1:1.58	0.277	1.189	0.329	
1 CC Uplink, Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.7	23.88	-0.02	0	04027	QPSK	1	0	10 mm	bottom	1:1.58	0.515	1.208	0.622	
1 CC Uplink, Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	24.7	24.09	0.05	0	04027	QPSK	1	0	10 mm	bottom	1:1.58	0.504	1.151	0.580	
1 CC Uplink, Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.7	24.20	-0.03	0	04027	QPSK	1	0	10 mm	bottom	1:1.58	0.573	1.122	0.643	
1 CC Uplink, Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	24.7	23.97	0.01	0	04027	QPSK	1	0	10 mm	bottom	1:1.58	0.538	1.183	0.636	
1 CC Uplink, Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	24.7	23.99	0.00	0	04027	QPSK	1	50	10 mm	bottom	1:1.58	0.505	1.178	0.595	
1 CC Uplink, Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.7	22.95	0.00	1	04027	QPSK	50	0	10 mm	bottom	1:1.58	0.405	1.189	0.482	
1 CC Uplink, Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	23.7	22.93	0.03	1	04027	QPSK	100	0	10 mm	bottom	1:1.58	0.437	1.194	0.522	
1 CC Uplink, Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.7	24.20	-0.04	0	04027	QPSK	1	0	10 mm	left	1:1.58	0.132	1.122	0.148	
1 CC Uplink, Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.7	22.95	-0.09	1	04027	QPSK	50	0	10 mm	left	1:1.58	0.093	1.189	0.111	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Body											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

FCC ID: ZNFLS998		SAR EVALUATION REPORT		Approved by: Quality Manager
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Table 11-32
WLAN SISO 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)	
2437	6	802.11b	DSSS	22	20.0	19.80	-0.16	10 mm	1	04175	1	back	99.0	0.293	0.240	1.047	1.010	0.254	
2437	6	802.11b	DSSS	22	20.0	19.80	0.07	10 mm	1	04175	1	front	99.0	0.261	-	1.047	1.010	-	
2437	6	802.11b	DSSS	22	20.0	19.80	0.12	10 mm	1	04175	1	top	99.0	0.156	-	1.047	1.010	-	
2437	6	802.11b	DSSS	22	20.0	19.80	0.07	10 mm	1	04175	1	left	99.0	0.287	-	1.047	1.010	-	
2437	6	802.11b	DSSS	22	19.5	19.39	0.17	10 mm	2	04175	1	back	97.4	0.186	-	1.026	1.027	-	
2437	6	802.11b	DSSS	22	19.5	19.39	-0.12	10 mm	2	04175	1	front	97.4	0.264	-	1.026	1.027	-	
2437	6	802.11b	DSSS	22	19.5	19.39	0.14	10 mm	2	04175	1	top	97.4	0.299	0.248	1.026	1.027	0.261	A40
2437	6	802.11b	DSSS	22	19.5	19.39	0.13	10 mm	2	04175	1	left	97.4	0.011	-	1.026	1.027	-	
5180	36	802.11a	OFDM	20	17.0	16.63	0.00	10 mm	1	04183	6	back	94.5	0.836	0.370	1.089	1.058	0.426	
5180	36	802.11a	OFDM	20	17.0	16.63	0.00	10 mm	1	04183	6	front	94.5	0.048	-	1.089	1.058	-	
5180	36	802.11a	OFDM	20	17.0	16.63	0.14	10 mm	1	04183	6	top	94.5	0.133	-	1.089	1.058	-	
5180	36	802.11a	OFDM	20	17.0	16.63	0.11	10 mm	1	04183	6	left	94.5	0.370	0.165	1.089	1.058	0.190	
5240	48	802.11a	OFDM	20	16.5	14.99	0.00	10 mm	2	04183	6	back	94.5	0.575	0.274	1.416	1.058	0.410	
5240	48	802.11a	OFDM	20	16.5	14.99	0.13	10 mm	2	04183	6	front	94.5	0.043	-	1.416	1.058	-	
5240	48	802.11a	OFDM	20	16.5	14.99	0.14	10 mm	2	04183	6	top	94.5	0.183	0.080	1.416	1.058	0.120	
5240	48	802.11a	OFDM	20	16.5	14.99	0.00	10 mm	2	04183	6	left	94.5	0.157	-	1.416	1.058	-	
5745	149	802.11a	OFDM	20	17.0	16.59	0.06	10 mm	1	04183	6	back	94.5	1.131	0.546	1.099	1.058	0.635	
5745	149	802.11a	OFDM	20	17.0	16.59	0.11	10 mm	1	04183	6	front	94.5	0.145	-	1.099	1.058	-	
5745	149	802.11a	OFDM	20	17.0	16.59	0.20	10 mm	1	04183	6	top	94.5	0.174	-	1.099	1.058	-	
5745	149	802.11a	OFDM	20	17.0	16.59	0.16	10 mm	1	04183	6	left	94.5	0.652	0.269	1.099	1.058	0.313	
5745	149	802.11a	OFDM	20	16.5	15.87	0.06	10 mm	2	04183	6	back	94.5	0.754	0.334	1.156	1.058	0.408	
5745	149	802.11a	OFDM	20	16.5	15.87	0.19	10 mm	2	04183	6	front	94.5	0.093	-	1.156	1.058	-	
5745	149	802.11a	OFDM	20	16.5	15.87	0.16	10 mm	2	04183	6	top	94.5	0.287	0.100	1.156	1.058	0.122	
5745	149	802.11a	OFDM	20	16.5	15.87	0.00	10 mm	2	04183	6	left	94.5	0.153	-	1.156	1.058	-	
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 11-33
WLAN MIMO Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Ant 2 Maximum Allowed Power [dBm]	Ant 2 Conducted Power [dBm]	Ant 2 Maximum Allowed Power [dBm]	Ant 2 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)	
5180	36	802.11n	OFDM	20	17.0	16.55	16.5	14.80	0.08	10 mm	MMO	04183	13	back	95.0	1.017	0.490	1.479	1.053	0.763	
5200	40	802.11n	OFDM	20	17.0	16.55	16.5	14.79	0.00	10 mm	MMO	04183	13	back	95.0	1.282	0.636	1.483	1.053	0.993	
5200	40	802.11n	OFDM	20	17.0	16.55	16.5	14.79	0.00	10 mm	MMO	04183	13	front	95.0	0.114	0.033	1.483	1.053	0.052	
5200	40	802.11n	OFDM	20	17.0	16.55	16.5	14.79	-0.16	10 mm	MMO	04183	13	top	95.0	0.334	0.126	1.483	1.053	0.197	
5200	40	802.11n	OFDM	20	17.0	16.55	16.5	14.79	0.19	10 mm	MMO	04183	13	left	95.0	0.508	0.214	1.483	1.053	0.334	
5745	149	802.11n	OFDM	20	17.0	16.46	16.5	15.67	0.09	10 mm	MMO	04183	13	back	95.0	1.315	0.633	1.211	1.053	0.807	
5785	157	802.11n	OFDM	20	17.0	16.44	16.5	15.62	0.15	10 mm	MMO	04183	13	back	95.0	1.575	0.682	1.225	1.053	0.880	A42
5745	149	802.11n	OFDM	20	17.0	16.46	16.5	15.67	0.14	10 mm	MMO	04183	13	front	95.0	0.229	0.078	1.211	1.053	0.099	
5745	149	802.11n	OFDM	20	17.0	16.46	16.5	15.67	0.18	10 mm	MMO	04183	13	top	95.0	0.418	-	1.211	1.053	-	
5745	149	802.11n	OFDM	20	17.0	16.46	16.5	15.67	0.18	10 mm	MMO	04183	13	left	95.0	0.785	0.326	1.211	1.053	0.416	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Body											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

To achieve the 19.7 dBm maximum allowed MIMO power shown in the documentation, antenna 1 transmits at a maximum allowed power of 17.0 dBm and antenna 2 transmits at a maximum allowed power of 16.5 dBm.

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**Table 11-34
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 (Conducted Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	12.5	11.34	-0.14	10 mm	04175	1	back	77.1	0.031	1.306	1.297	0.053	
2441	39	Bluetooth	FHSS	12.5	11.34	0.05	10 mm	04175	1	front	77.1	0.034	1.306	1.297	0.058	
2441	39	Bluetooth	FHSS	12.5	11.34	-0.20	10 mm	04175	1	top	77.1	0.018	1.306	1.297	0.030	
2441	39	Bluetooth	FHSS	12.5	11.34	-0.01	10 mm	04175	1	left	77.1	0.040	1.306	1.297	0.068	A44
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram									

11.4 Standalone Phablet SAR Data

**Table 11-35
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)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5280	56	802.11a	OFDM	20	17.0	16.77	0.05	0 mm	1	04183	6	back	94.5	21.894	1.370	1.054	1.058	1.528	
5280	56	802.11a	OFDM	20	17.0	16.77	0.00	0 mm	1	04183	6	front	94.5	1.721	-	1.054	1.058	-	
5280	56	802.11a	OFDM	20	17.0	16.77	0.13	0 mm	1	04183	6	top	94.5	3.002	-	1.054	1.058	-	
5280	56	802.11a	OFDM	20	17.0	16.77	0.00	0 mm	1	04183	6	left	94.5	7.121	0.725	1.054	1.058	0.808	
5320	64	802.11a	OFDM	20	16.5	15.28	0.06	0 mm	2	04183	6	back	94.5	10.042	1.190	1.324	1.058	1.667	
5320	64	802.11a	OFDM	20	16.5	15.28	0.01	0 mm	2	04183	6	front	94.5	1.786	-	1.324	1.058	-	
5320	64	802.11a	OFDM	20	16.5	15.28	0.00	0 mm	2	04183	6	top	94.5	5.588	0.487	1.324	1.058	0.682	
5320	64	802.11a	OFDM	20	16.5	15.28	0.00	0 mm	2	04183	6	left	94.5	0.959	-	1.324	1.058	-	
5580	116	802.11a	OFDM	20	17.0	16.71	-0.02	0 mm	1	04183	6	back	94.5	27.199	1.530	1.069	1.058	1.730	A45
5580	116	802.11a	OFDM	20	17.0	16.71	0.00	0 mm	1	04183	6	front	94.5	3.022	-	1.069	1.058	-	
5580	116	802.11a	OFDM	20	17.0	16.71	-0.07	0 mm	1	04183	6	top	94.5	4.382	-	1.069	1.058	-	
5580	116	802.11a	OFDM	20	17.0	16.71	0.00	0 mm	1	04183	6	left	94.5	11.357	1.100	1.069	1.058	1.244	
5580	116	802.11a	OFDM	20	16.5	15.77	0.05	0 mm	2	04183	6	back	94.5	7.735	0.949	1.183	1.058	1.188	
5580	116	802.11a	OFDM	20	16.5	15.77	0.00	0 mm	2	04183	6	front	94.5	1.762	-	1.183	1.058	-	
5580	116	802.11a	OFDM	20	16.5	15.77	0.00	0 mm	2	04183	6	top	94.5	6.195	0.548	1.183	1.058	0.686	
5580	116	802.11a	OFDM	20	16.5	15.77	0.00	0 mm	2	04183	6	left	94.5	1.424	-	1.183	1.058	-	
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 not performed since the measured SAR results for each frequency band were less than or equal to 0.8 W/kg. 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.

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.
6. 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.

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UMTS Notes:

1. UMTS mode in was tested under RMC 12.2 kbps with HSDPA 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 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.
8. For LTE Band 41, per FCC guidance, SAR was first measured with only a single carrier active in the uplink (carrier aggregation not active). For each exposure condition, the uplink CA scenario with two component carriers was additionally tested for the configuration with the highest SAR when carrier aggregation was not active. The SCC was configured with the closest available contiguous channel. The two component carriers were configured so the resource blocks are physically allocated side by side to achieve the maximum output power. Since the maximum allowed output power of the uplink SAR configuration is not more than 1/4 dB higher than the standalone mode and then reported SAR for all test configurations was < 1.2 W/kg, no additional SAR measurements were required.

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

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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 investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg. See Section 8.7.6 for more information.
4. Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D01v06. Please see Section 12 for complete analysis. Per KDB Publication 248227 D01v02r02, MIMO SAR was measured with both antennas transmitting simultaneously at the specified maximum output power in MIMO mode following the initial test configuration procedures.
5. When the maximum reported 1g averaged SAR is ≤ 0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg or all test channels were measured.
6. When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.
7. 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.

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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)

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
Head SAR	CDMA/EVDO BC10 (\$90S)	0.119	0.593	0.706	0.712	0.825	1.418
	CDMA/EVDO BC0 (\$22H)	0.125	0.593	0.706	0.718	0.831	1.424
	PCS CDMA/EVDO	0.130	0.593	0.706	0.723	0.836	1.429
	GSM/GPRS 850	0.100	0.593	0.706	0.693	0.806	1.399
	GSM/GPRS 1900	0.072	0.593	0.706	0.665	0.778	1.371
	UMTS 850	0.124	0.593	0.706	0.717	0.830	1.423
	UMTS 1750	0.172	0.593	0.706	0.765	0.878	1.471
	UMTS 1900	0.123	0.593	0.706	0.716	0.829	1.422
	LTE Band 12	0.085	0.593	0.706	0.678	0.791	1.384
	LTE Band 13	0.103	0.593	0.706	0.696	0.809	1.402
	LTE Band 26 (Cell)	0.103	0.593	0.706	0.696	0.809	1.402
	LTE Band 4 (AWS)	0.189	0.593	0.706	0.782	0.895	1.488
	LTE Band 25 (PCS)	0.121	0.593	0.706	0.714	0.827	1.420
	LTE Band 41	0.077	0.593	0.706	0.670	0.783	1.376

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)	0.119	0.566	0.700	0.685	0.819	1.385
	CDMA/EVDO BC0 (\$22H)	0.125	0.566	0.700	0.691	0.825	1.391
	PCS CDMA/EVDO	0.130	0.566	0.700	0.696	0.830	1.396
	GSM/GPRS 850	0.100	0.566	0.700	0.666	0.800	1.366
	GSM/GPRS 1900	0.072	0.566	0.700	0.638	0.772	1.338
	UMTS 850	0.124	0.566	0.700	0.690	0.824	1.390
	UMTS 1750	0.172	0.566	0.700	0.738	0.872	1.438
	UMTS 1900	0.123	0.566	0.700	0.689	0.823	1.389
	LTE Band 12	0.085	0.566	0.700	0.651	0.785	1.351
	LTE Band 13	0.103	0.566	0.700	0.669	0.803	1.369
	LTE Band 26 (Cell)	0.103	0.566	0.700	0.669	0.803	1.369
	LTE Band 4 (AWS)	0.189	0.566	0.700	0.755	0.889	1.455
	LTE Band 25 (PCS)	0.121	0.566	0.700	0.687	0.821	1.387
	LTE Band 41	0.077	0.566	0.700	0.643	0.777	1.343

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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)	0.119	0.593	0.700	0.712	0.819	1.412
	CDMA/EVDO BC0 (§22H)	0.125	0.593	0.700	0.718	0.825	1.418
	PCS CDMA/EVDO	0.130	0.593	0.700	0.723	0.830	1.423
	GSM/GPRS 850	0.100	0.593	0.700	0.693	0.800	1.393
	GSM/GPRS 1900	0.072	0.593	0.700	0.665	0.772	1.365
	UMTS 850	0.124	0.593	0.700	0.717	0.824	1.417
	UMTS 1750	0.172	0.593	0.700	0.765	0.872	1.465
	UMTS 1900	0.123	0.593	0.700	0.716	0.823	1.416
	LTE Band 12	0.085	0.593	0.700	0.678	0.785	1.378
	LTE Band 13	0.103	0.593	0.700	0.696	0.803	1.396
	LTE Band 26 (Cell)	0.103	0.593	0.700	0.696	0.803	1.396
	LTE Band 4 (AWS)	0.189	0.593	0.700	0.782	0.889	1.482
	LTE Band 25 (PCS)	0.121	0.593	0.700	0.714	0.821	1.414
	LTE Band 41	0.077	0.593	0.700	0.670	0.777	1.370

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)
Head SAR	CDMA/EVDO BC10 (§90S)	0.119	0.342	0.461
	CDMA/EVDO BC0 (§22H)	0.125	0.342	0.467
	PCS CDMA/EVDO	0.130	0.342	0.472
	GSM/GPRS 850	0.100	0.342	0.442
	GSM/GPRS 1900	0.072	0.342	0.414
	UMTS 850	0.124	0.342	0.466
	UMTS 1750	0.172	0.342	0.514
	UMTS 1900	0.123	0.342	0.465
	LTE Band 12	0.085	0.342	0.427
	LTE Band 13	0.103	0.342	0.445
	LTE Band 26 (Cell)	0.103	0.342	0.445
	LTE Band 4 (AWS)	0.189	0.342	0.531
	LTE Band 25 (PCS)	0.121	0.342	0.463
	LTE Band 41	0.077	0.342	0.419

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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)	0.514	0.254	0.155	0.768	0.669	0.923
	CDMA BC0 (\$22H)	0.574	0.254	0.155	0.828	0.729	0.983
	PCS CDMA	0.600	0.254	0.155	0.854	0.755	1.009
	GSM/GPRS 850	0.462	0.254	0.155	0.716	0.617	0.871
	GSM/GPRS 1900	0.367	0.254	0.155	0.621	0.522	0.776
	UMTS 850	0.529	0.254	0.155	0.783	0.684	0.938
	UMTS 1750	0.663	0.254	0.155	0.917	0.818	1.072
	UMTS 1900	0.613	0.254	0.155	0.867	0.768	1.022
	LTE Band 12	0.480	0.254	0.155	0.734	0.635	0.889
	LTE Band 13	0.527	0.254	0.155	0.781	0.682	0.936
	LTE Band 26 (Cell)	0.444	0.254	0.155	0.698	0.599	0.853
	LTE Band 4 (AWS)	0.620	0.254	0.155	0.874	0.775	1.029
	LTE Band 25 (PCS)	0.729	0.254	0.155	0.983	0.884	1.138
	LTE Band 41	0.759	0.254	0.155	1.013	0.914	1.168

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)	Σ SAR (W/kg)	Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body-Worn	CDMA BC10 (\$90S)	0.514	0.635	1.149	Body-Worn	CDMA BC10 (\$90S)	0.514	0.566	1.080
	CDMA BC0 (\$22H)	0.574	0.635	1.209		CDMA BC0 (\$22H)	0.574	0.566	1.140
	PCS CDMA	0.600	0.635	1.235		PCS CDMA	0.600	0.566	1.166
	GSM/GPRS 850	0.462	0.635	1.097		GSM/GPRS 850	0.462	0.566	1.028
	GSM/GPRS 1900	0.367	0.635	1.002		GSM/GPRS 1900	0.367	0.566	0.933
	UMTS 850	0.529	0.635	1.164		UMTS 850	0.529	0.566	1.095
	UMTS 1750	0.663	0.635	1.298		UMTS 1750	0.663	0.566	1.229
	UMTS 1900	0.613	0.635	1.248		UMTS 1900	0.613	0.566	1.179
	LTE Band 12	0.480	0.635	1.115		LTE Band 12	0.480	0.566	1.046
	LTE Band 13	0.527	0.635	1.162		LTE Band 13	0.527	0.566	1.093
	LTE Band 26 (Cell)	0.444	0.635	1.079		LTE Band 26 (Cell)	0.444	0.566	1.010
	LTE Band 4 (AWS)	0.620	0.635	1.255		LTE Band 4 (AWS)	0.620	0.566	1.186
	LTE Band 25 (PCS)	0.729	0.635	1.364		LTE Band 25 (PCS)	0.729	0.566	1.295
	LTE Band 41	0.759	0.635	1.394		LTE Band 41	0.759	0.566	1.325

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
Body-Worn	CDMA BC10 (\$90S)	0.514	0.982	1.496	N/A
	CDMA BC0 (\$22H)	0.574	0.982	1.556	N/A
	PCS CDMA	0.600	0.982	1.582	N/A
	GSM/GPRS 850	0.462	0.982	1.444	N/A
	GSM/GPRS 1900	0.367	0.982	1.349	N/A
	UMTS 850	0.529	0.982	1.511	N/A
	UMTS 1750	0.663	0.982	See Note 1	0.01
	UMTS 1900	0.613	0.982	See Note 1	0.02
	LTE Band 12	0.480	0.982	1.462	N/A
	LTE Band 13	0.527	0.982	1.509	N/A
	LTE Band 26 (Cell)	0.444	0.982	1.426	N/A
	LTE Band 4 (AWS)	0.620	0.982	See Note 1	0.02
	LTE Band 25 (PCS)	0.729	0.982	See Note 1	0.02
	LTE Band 41	0.759	0.982	See Note 1	0.02

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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)	0.514	0.254	0.566	0.768	1.080	1.334
	CDMA BC0 (\$22H)	0.574	0.254	0.566	0.828	1.140	1.394
	PCS CDMA	0.600	0.254	0.566	0.854	1.166	1.420
	GSM/GPRS 850	0.462	0.254	0.566	0.716	1.028	1.282
	GSM/GPRS 1900	0.367	0.254	0.566	0.621	0.933	1.187
	UMTS 850	0.529	0.254	0.566	0.783	1.095	1.349
	UMTS 1750	0.663	0.254	0.566	0.917	1.229	1.483
	UMTS 1900	0.613	0.254	0.566	0.867	1.179	1.433
	LTE Band 12	0.480	0.254	0.566	0.734	1.046	1.300
	LTE Band 13	0.527	0.254	0.566	0.781	1.093	1.347
	LTE Band 26 (Cell)	0.444	0.254	0.566	0.698	1.010	1.264
	LTE Band 4 (AWS)	0.620	0.254	0.566	0.874	1.186	1.440
	LTE Band 25 (PCS)	0.729	0.254	0.566	0.983	1.295	1.549
	LTE Band 41	0.759	0.254	0.566	1.013	1.325	1.579

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)
Body-Worn	CDMA BC10 (\$90S)	0.514	0.053	0.567
	CDMA BC0 (\$22H)	0.574	0.053	0.627
	PCS CDMA	0.600	0.053	0.653
	GSM/GPRS 850	0.462	0.053	0.515
	GSM/GPRS 1900	0.367	0.053	0.420
	UMTS 850	0.529	0.053	0.582
	UMTS 1750	0.663	0.053	0.716
	UMTS 1900	0.613	0.053	0.666
	LTE Band 12	0.480	0.053	0.533
	LTE Band 13	0.527	0.053	0.580
	LTE Band 26 (Cell)	0.444	0.053	0.497
	LTE Band 4 (AWS)	0.620	0.053	0.673
	LTE Band 25 (PCS)	0.729	0.053	0.782
	LTE Band 41	0.759	0.053	0.812

Notes:

1. No evaluation was performed to determine the aggregate 1g SAR for these configurations as the SPLS ratio between the antenna pairs was not greater than 0.04 per FCC KDB 447498 D01v06. See Section 12.7 for detailed SPLS ratio analysis.

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12.5 Hotspot SAR Simultaneous Transmission Analysis

Per FCC KDB Publication 941225 D06v02r01, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR (“-“)

(*) For test positions that were not required to be evaluated for WLAN SAR per FCC KDB publication 248227, the worst case WLAN SAR result for applicable exposure conditions was used for 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)	0.538	0.254	0.261	0.792	0.799	1.053
	EVDO BC0 (§22H)	0.600	0.254	0.261	0.854	0.861	1.115
	PCS EVDO	0.796	0.254	0.261	1.050	1.057	1.311
	GPRS 850	0.446	0.254	0.261	0.700	0.707	0.961
	GPRS 1900	0.383	0.254	0.261	0.637	0.644	0.898
	UMTS 850	0.529	0.254	0.261	0.783	0.790	1.044
	UMTS 1750	0.663	0.254	0.261	0.917	0.924	1.178
	UMTS 1900	0.665	0.254	0.261	0.919	0.926	1.180
	LTE Band 12	0.480	0.254	0.261	0.734	0.741	0.995
	LTE Band 13	0.527	0.254	0.261	0.781	0.788	1.042
	LTE Band 26 (Cell)	0.444	0.254	0.261	0.698	0.705	0.959
	LTE Band 4 (AWS)	0.722	0.254	0.261	0.976	0.983	1.237
	LTE Band 25 (PCS)	0.729	0.254	0.261	0.983	0.990	1.244
	LTE Band 41	0.759	0.254	0.261	1.013	1.020	1.274

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)	Σ SAR (W/kg)	Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Hotspot SAR	EVDO BC10 (§90S)	0.538	0.635	1.173	Hotspot SAR	EVDO BC10 (§90S)	0.538	0.410	0.948
	EVDO BC0 (§22H)	0.600	0.635	1.235		EVDO BC0 (§22H)	0.600	0.410	1.010
	PCS EVDO	0.796	0.635	1.431		PCS EVDO	0.796	0.410	1.206
	GPRS 850	0.446	0.635	1.081		GPRS 850	0.446	0.410	0.856
	GPRS 1900	0.383	0.635	1.018		GPRS 1900	0.383	0.410	0.793
	UMTS 850	0.529	0.635	1.164		UMTS 850	0.529	0.410	0.939
	UMTS 1750	0.663	0.635	1.298		UMTS 1750	0.663	0.410	1.073
	UMTS 1900	0.665	0.635	1.300		UMTS 1900	0.665	0.410	1.075
	LTE Band 12	0.480	0.635	1.115		LTE Band 12	0.480	0.410	0.890
	LTE Band 13	0.527	0.635	1.162		LTE Band 13	0.527	0.410	0.937
	LTE Band 26 (Cell)	0.444	0.635	1.079		LTE Band 26 (Cell)	0.444	0.410	0.854
	LTE Band 4 (AWS)	0.722	0.635	1.357		LTE Band 4 (AWS)	0.722	0.410	1.132
	LTE Band 25 (PCS)	0.729	0.635	1.364		LTE Band 25 (PCS)	0.729	0.410	1.139
	LTE Band 41	0.759	0.635	1.394		LTE Band 41	0.759	0.410	1.169

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Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Hotspot SAR	EVDO BC10 (\$90S)	0.538	0.993	1.531
	EVDO BC0 (\$22H)	0.600	0.993	1.593
	PCS EVDO	0.796	0.993	See Table Below
	GPRS 850	0.446	0.993	1.439
	GPRS 1900	0.383	0.993	1.376
	UMTS 850	0.529	0.993	1.522
	UMTS 1750	0.663	0.993	See Table Below
	UMTS 1900	0.665	0.993	See Table Below
	LTE Band 12	0.480	0.993	1.473
	LTE Band 13	0.527	0.993	1.520
	LTE Band 26 (Cell)	0.444	0.993	1.437
	LTE Band 4 (AWS)	0.722	0.993	See Table Below
	LTE Band 25 (PCS)	0.729	0.993	See Table Below
	LTE Band 41	0.759	0.993	See Table Below

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR	Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
Hotspot SAR	Back	0.652	0.993	See Note 1	0.02	Hotspot SAR	Back	0.663	0.993	See Note 1	0.01
	Front	0.603	0.099	0.702	N/A		Front	0.630	0.099	0.729	N/A
	Top	-	0.197	0.197	N/A		Top	-	0.197	0.197	N/A
	Bottom	0.796	-	0.796	N/A		Bottom	0.539	-	0.539	N/A
	Right	-	-	0.000	N/A		Right	-	-	0.000	N/A
	Left	0.218	0.416	0.634	N/A		Left	0.367	0.416	0.783	N/A
Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
Hotspot SAR	Back	0.613	0.993	See Note 1	0.02	Hotspot SAR	Back	0.620	0.993	See Note 1	0.02
	Front	0.457	0.099	0.556	N/A		Front	0.722	0.099	0.821	N/A
	Top	-	0.197	0.197	N/A		Top	-	0.197	0.197	N/A
	Bottom	0.665	-	0.665	N/A		Bottom	0.526	-	0.526	N/A
	Right	-	-	0.000	N/A		Right	-	-	0.000	N/A
	Left	0.202	0.416	0.618	N/A		Left	0.307	0.416	0.723	N/A
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR	Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
Hotspot SAR	Back	0.729	0.993	See Note 1	0.02	Hotspot SAR	Back	0.759	0.993	See Note 1	0.02
	Front	0.538	0.099	0.637	N/A		Front	0.449	0.099	0.548	N/A
	Top	-	0.197	0.197	N/A		Top	-	0.197	0.197	N/A
	Bottom	0.716	-	0.716	N/A		Bottom	0.643	-	0.643	N/A
	Right	-	-	0.000	N/A		Right	-	-	0.000	N/A
	Left	0.272	0.416	0.688	N/A		Left	0.148	0.416	0.564	N/A

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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)	0.538	0.254	0.410	0.792	0.948	1.202
	EVDO BC0 (\$22H)	0.600	0.254	0.410	0.854	1.010	1.264
	PCS EVDO	0.796	0.254	0.410	1.050	1.206	1.460
	GPRS 850	0.446	0.254	0.410	0.700	0.856	1.110
	GPRS 1900	0.383	0.254	0.410	0.637	0.793	1.047
	UMTS 850	0.529	0.254	0.410	0.783	0.939	1.193
	UMTS 1750	0.663	0.254	0.410	0.917	1.073	1.327
	UMTS 1900	0.665	0.254	0.410	0.919	1.075	1.329
	LTE Band 12	0.480	0.254	0.410	0.734	0.890	1.144
	LTE Band 13	0.527	0.254	0.410	0.781	0.937	1.191
	LTE Band 26 (Cell)	0.444	0.254	0.410	0.698	0.854	1.108
	LTE Band 4 (AWS)	0.722	0.254	0.410	0.976	1.132	1.386
	LTE Band 25 (PCS)	0.729	0.254	0.410	0.983	1.139	1.393
	LTE Band 41	0.759	0.254	0.410	1.013	1.169	1.423

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)
Hotspot SAR	EVDO BC10 (\$90S)	0.538	0.068	0.606
	EVDO BC0 (\$22H)	0.600	0.068	0.668
	PCS EVDO	0.796	0.068	0.864
	GPRS 850	0.446	0.068	0.514
	GPRS 1900	0.383	0.068	0.451
	UMTS 850	0.529	0.068	0.597
	UMTS 1750	0.663	0.068	0.731
	UMTS 1900	0.665	0.068	0.733
	LTE Band 12	0.480	0.068	0.548
	LTE Band 13	0.527	0.068	0.595
	LTE Band 26 (Cell)	0.444	0.068	0.512
	LTE Band 4 (AWS)	0.722	0.068	0.790
	LTE Band 25 (PCS)	0.729	0.068	0.797
	LTE Band 41	0.759	0.068	0.827

Notes:

1. No evaluation was performed to determine the aggregate 1g SAR for these configurations as the SPLS ratio between the antenna pairs was not greater than 0.04 per FCC KDB 447498 D01v06. See Section 12.7 for detailed SPLS ratio analysis.

12.6 Phablet Simultaneous Transmission Analysis

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

Exposure Condition	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Phablet SAR	1.730	1.667	3.397

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12.7 SPLSR Evaluation and Analysis

Per FCC KDB Publication 447498 D01v06, when the sum of the standalone transmitters is more than 1.6 W/kg for 1g, the SAR sum to peak locations can be analyzed to determine SAR distribution overlaps. When the SAR peak to location ratio (shown below) for each pair of antennas is

≤ 0.04 for 1g, simultaneous SAR evaluation is not required. The distance between the transmitters was calculated using the following formula.

$$\text{Distance}_{\text{Tx1} - \text{Tx2}} = R_i = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

$$\text{SPLS Ratio} = \frac{(SAR_1 + SAR_2)^{1.5}}{R_i}$$

12.7.1 Back Side SPLSR Evaluation and Analysis

Table 12-14
Peak SAR Locations for Body Worn Back Side

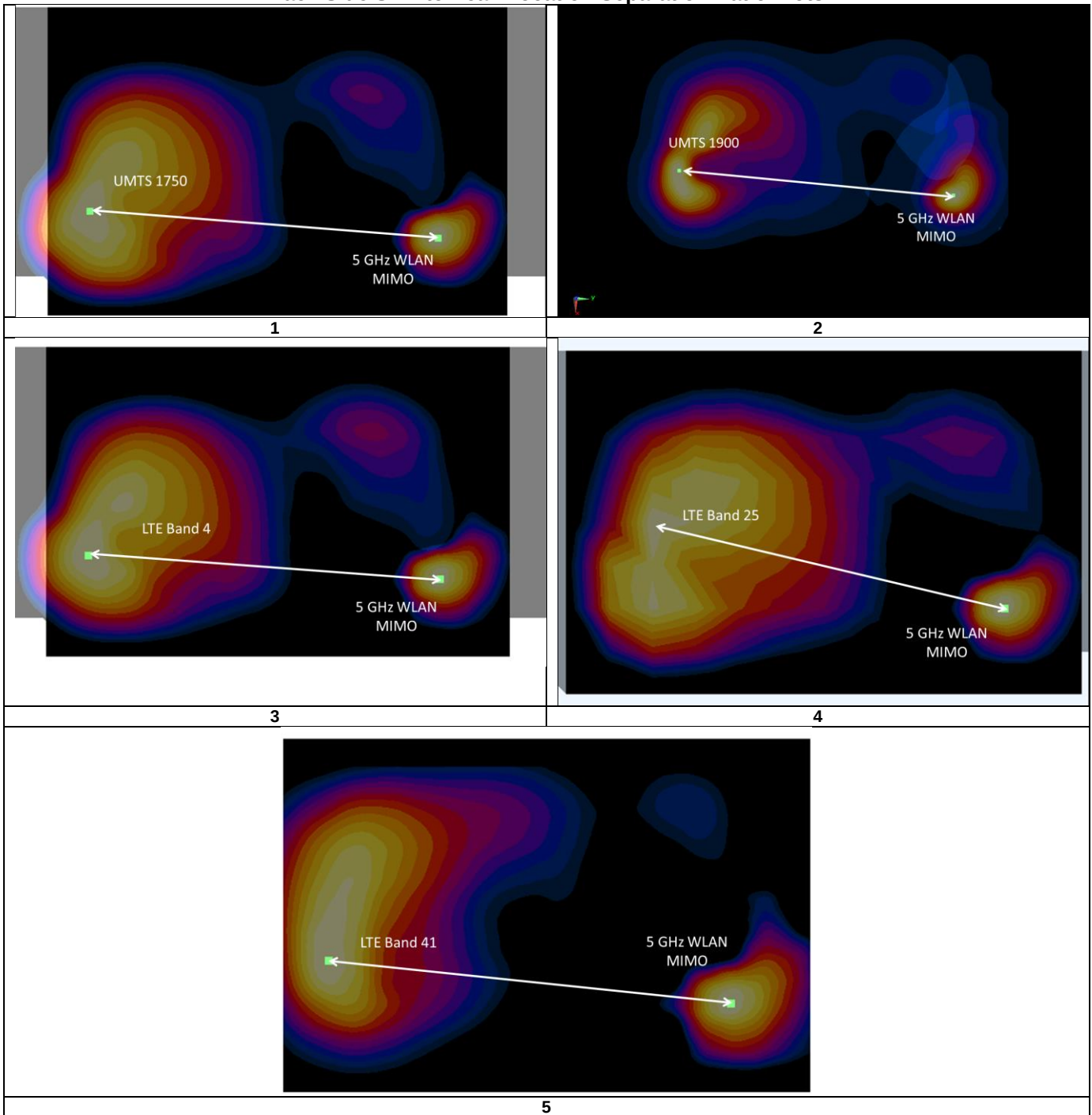
Mode/Band	x (mm)	y (mm)	Reported SAR (W/kg)
5 GHz WLAN MIMO	12.00	67.00	0.982
UMTS 1750	-5.50	-73.50	0.663
LTE Band 4	-12.00	-65.50	0.620
LTE Band 25	-17.00	-57.00	0.729
LTE Band 41	-1.50	-74.40	0.759
UMTS 1900	-16.50	-64.00	0.613

Table 12-15
Body Worn Back Side SAR to Peak Location Separation Ratio Calculations

Antenna Pair		Standalone 1g SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio	Plot Number
Ant "a"	Ant "b"	a	b	a+b	D _{a-b}	(a+b) ^{1.5} /D _{a-b}	
UMTS 1750	5 GHz WLAN MIMO	0.663	0.982	1.645	141.59	0.01	1
UMTS 1900	5 GHz WLAN MIMO	0.613	0.982	1.595	134.06	0.02	2
LTE Band 4	5 GHz WLAN MIMO	0.62	0.982	1.602	134.66	0.02	3
LTE Band 25	5 GHz WLAN MIMO	0.729	0.982	1.711	127.35	0.02	4
LTE Band 41	5 GHz WLAN MIMO	0.759	0.982	1.741	142.04	0.02	5

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Table 12-16
Back Side SAR to Peak Location Separation Ratio Plots



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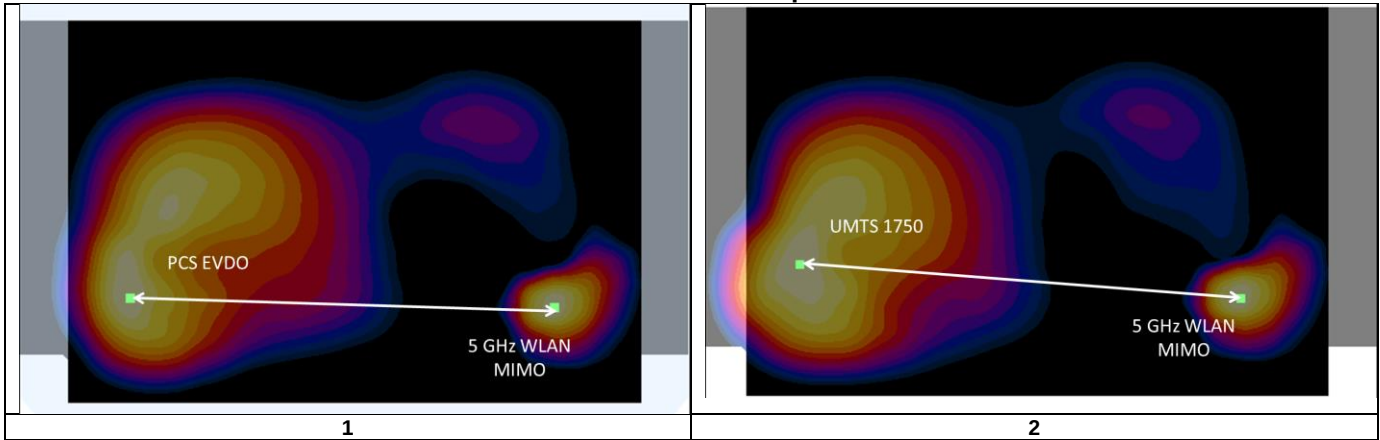
Table 12-17
Peak SAR Locations for Hotspot Back Side

Mode/Band	x (mm)	y (mm)	Reported SAR (W/kg)
5 GHz WLAN MIMO	13.00	64.00	0.993
PCS EVDO	-6.00	-70.50	0.652
UMTS 1750	-5.50	-73.50	0.663
UMTS 1900	-16.50	-64.00	0.613
LTE Band 4	-12.00	-65.50	0.620
LTE Band 25	-17.00	-57.00	0.729
LTE Band 41	-1.50	-74.40	0.759

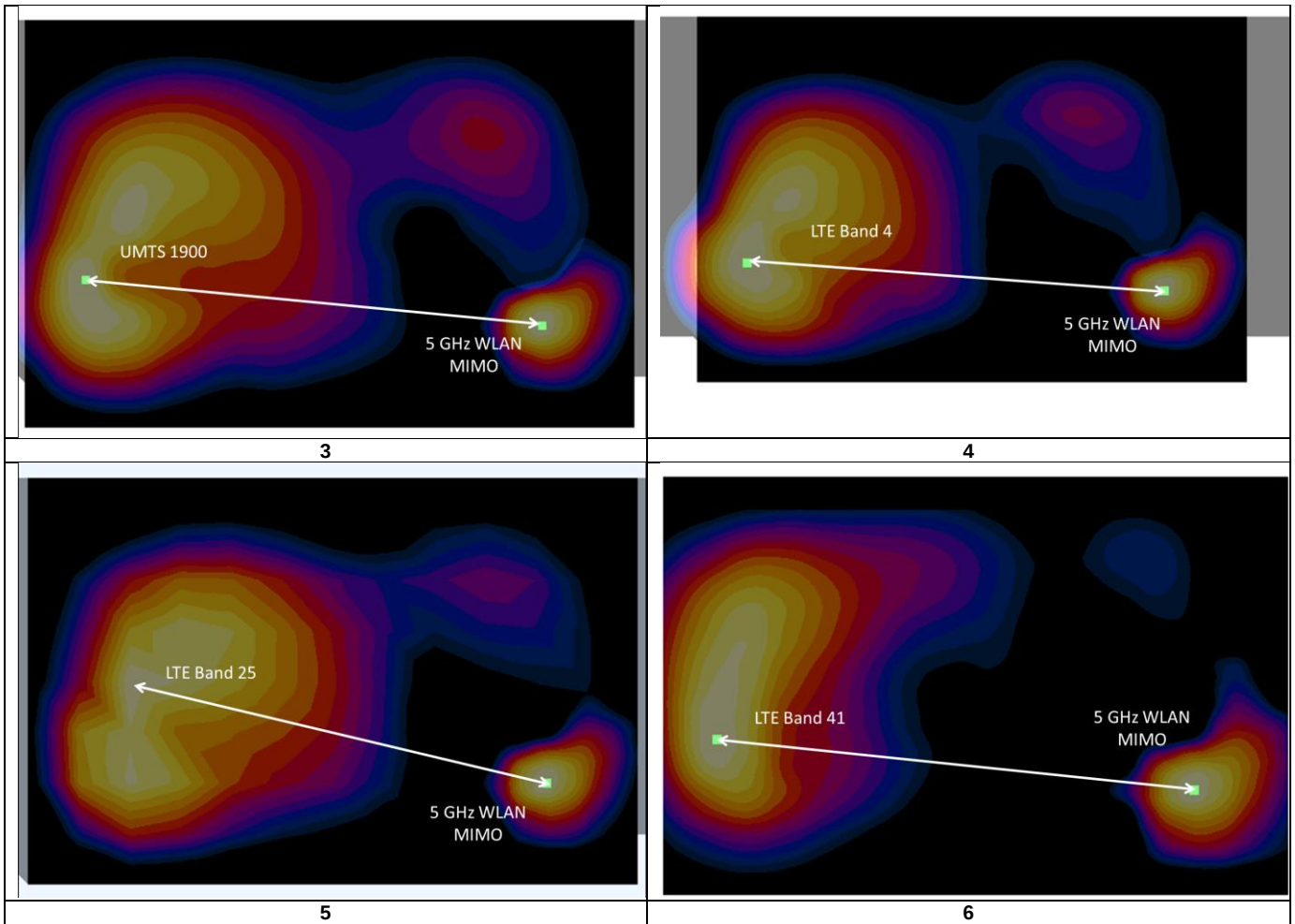
Table 12-18
Hotspot Back Side SAR to Peak Location Separation Ratio Calculations

Antenna Pair		Standalone 1g SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio	Plot Number
Ant "a"	Ant "b"	a	b	a+b	D _{a-b}	(a+b) ^{1.5} /D _{a-b}	
PCS EVDO	5 GHz WLAN MIMO	0.652	0.993	1.645	135.84	0.02	1
UMTS 1750	5 GHz WLAN MIMO	0.663	0.993	1.656	138.74	0.02	2
UMTS 1900	5 GHz WLAN MIMO	0.613	0.993	1.606	131.36	0.02	3
LTE Band 4	5 GHz WLAN MIMO	0.62	0.993	1.613	131.89	0.02	4
LTE Band 25	5 GHz WLAN MIMO	0.729	0.993	1.722	124.66	0.02	5
LTE Band 41	5 GHz WLAN MIMO	0.759	0.993	1.752	139.16	0.02	6

Table 12-19
Back Side SAR to Peak Location Separation Ratio Plots



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12.8 Simultaneous Transmission Conclusion

The above numerical summed SAR results and SPLSR 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, variability SAR tests were not required since measured SAR results for all frequency bands were less than 0.8 W/kg.

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 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 test configuration for each exposure condition. 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)	24.7	27
Measured Output Power (dBm)	24.2	27
Measured SAR (W/kg)	0.0623	0.077
Measured Power (mW)	263.03	501.19
Duty Cycle	63.30%	43.30%
Frame Averaged Output Power (mW)	166.50	217.01
% deviation from expected linearity		-5.18%

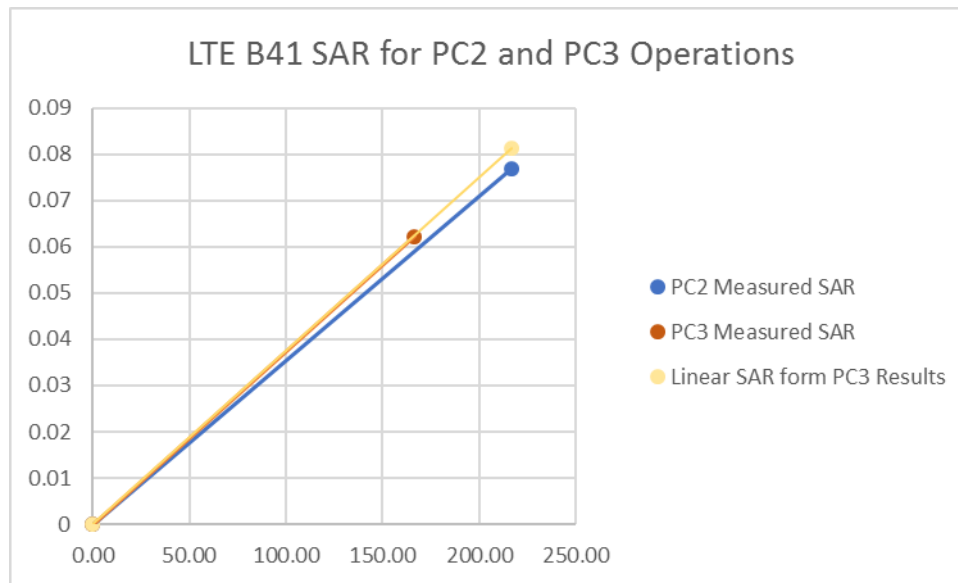


Table 14-1
LTE Band 41 Head Linearity Data

FCC ID: ZNFLS998		SAR EVALUATION REPORT		Approved by: Quality Manager
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	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	24.7	27
Measured Output Power (dBm)	24.2	27
Measured SAR (W/kg)	0.591	0.756
Measured Power (mW)	263.03	501.19
Duty Cycle	63.30%	43.30%
Frame Averaged Output Power (mW)	166.50	217.01
% deviation from expected linearity		-1.86%

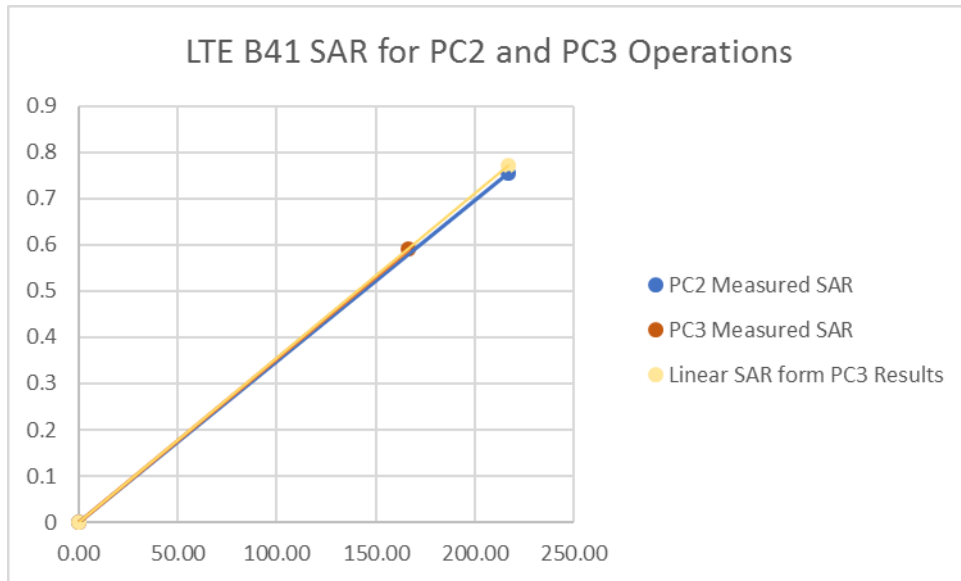


Table 14-2
LTE Band 41 Body Linearity Data

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15 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	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	AR85729-5/5759B	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-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
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	D1750V2	1750 MHz SAR Dipole	5/9/2017	Annual	5/9/2018	1092
SPEAG	D1750V2	1750 MHz SAR Dipole	5/9/2017	Annual	5/9/2018	1148
SPEAG	D1900V2	1900 MHz SAR Dipole	5/10/2017	Annual	5/10/2018	50206
SPEAG	D1900V2	1900 MHz SAR Dipole	7/8/2016	Annual	7/8/2017	50080
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	D2600V2	2600 MHz SAR Dipole	7/25/2016	Annual	7/25/2017	1126
SPEAG	D5GHzV2	5 GHz SAR Dipole	3/9/2017	Annual	3/9/2018	1123
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/21/2016	Annual	9/21/2017	1191
SPEAG	D5GHzV2	5 GHz SAR Dipole	8/2/2016	Annual	8/2/2017	1237
SPEAG	D750V3	750 MHz SAR Dipole	1/11/2017	Annual	1/11/2018	1003
SPEAG	D835V2	835 MHz SAR Dipole	7/13/2016	Annual	7/13/2017	40407
SPEAG	D835V2	835 MHz SAR Dipole	7/14/2016	Annual	7/14/2017	40133
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2017	Annual	2/9/2018	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2017	Annual	2/9/2018	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/8/2017	Annual	3/8/2018	1368
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	3/13/2017	Annual	3/13/2018	1415
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/16/2017	Annual	1/16/2018	1466
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/10/2017	Annual	5/10/2018	1070
SPEAG	DAK-3.5	Dielectric Assessment Kit	9/13/2016	Annual	9/13/2017	1091
SPEAG	ES3DV3	SAR Probe	3/14/2017	Annual	3/14/2018	3209
SPEAG	ES3DV3	SAR Probe	2/10/2017	Annual	2/10/2018	3213
SPEAG	ES3DV3	SAR Probe	9/19/2016	Annual	9/19/2017	3287
SPEAG	ES3DV3	SAR Probe	2/10/2017	Annual	2/10/2018	3318
SPEAG	ES3DV3	SAR Probe	3/14/2017	Annual	3/14/2018	3319
SPEAG	EX3DV4	SAR Probe	1/13/2017	Annual	1/13/2018	3589
SPEAG	EX3DV4	SAR Probe	2/13/2017	Annual	2/13/2018	3914
SPEAG	EX3DV4	SAR Probe	4/18/2017	Annual	4/18/2018	7406

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

2. Each equipment item was used solely within its respective calibration period.

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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: ZNFLS998; Type: Portable Handset; Serial: 03995

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 820.1 \text{ MHz}$; $\sigma = 0.882 \text{ S/m}$; $\epsilon_r = 42.009$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-20-2017; Ambient Temp: 23.8°C; Tissue Temp: 23.9°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: BC10 Cell. CDMA, Rule Part 90S, Left Head, Cheek, Mid.ch

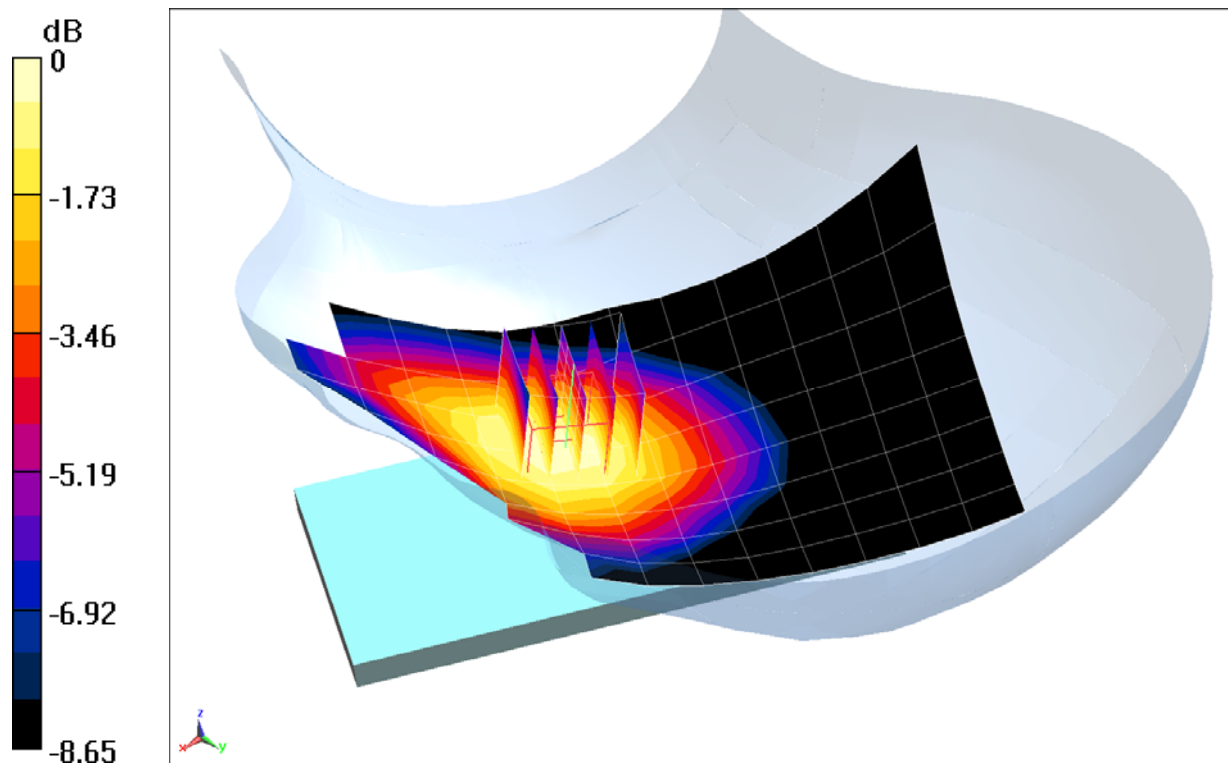
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 11.79 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.139 W/kg

SAR(1 g) = 0.114 W/kg



0 dB = 0.123 W/kg = -9.10 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 03995

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.897 \text{ S/m}$; $\epsilon_r = 41.818$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-20-2017; Ambient Temp: 23.8°C; Tissue Temp: 23.9°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: BC0 Cell. CDMA, Rule Part 22H, Left Head, Cheek, Mid.ch

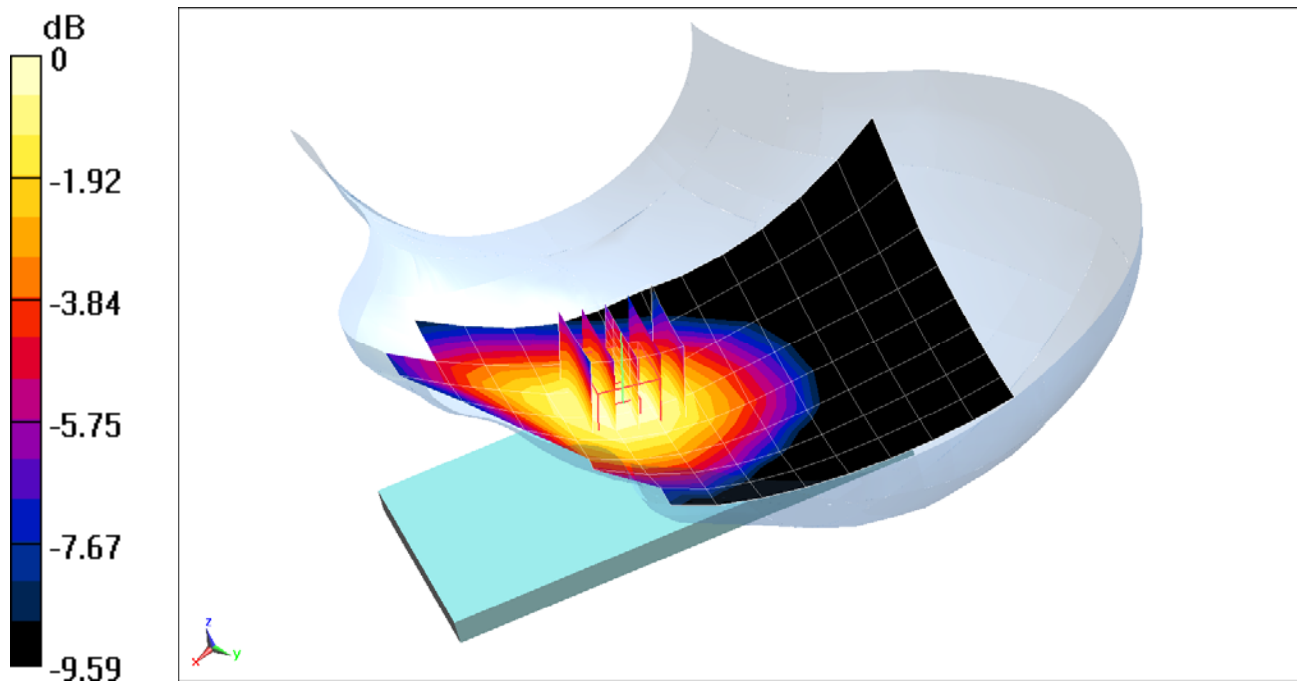
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 12.04 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.147 W/kg

SAR(1 g) = 0.121 W/kg



0 dB = 0.131 W/kg = -8.83 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 03995

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

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.431 \text{ S/m}$; $\epsilon_r = 39.06$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-12-2017; Ambient Temp: 19.2°C; Tissue Temp: 22.0°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, Left Head, Cheek, Mid.ch

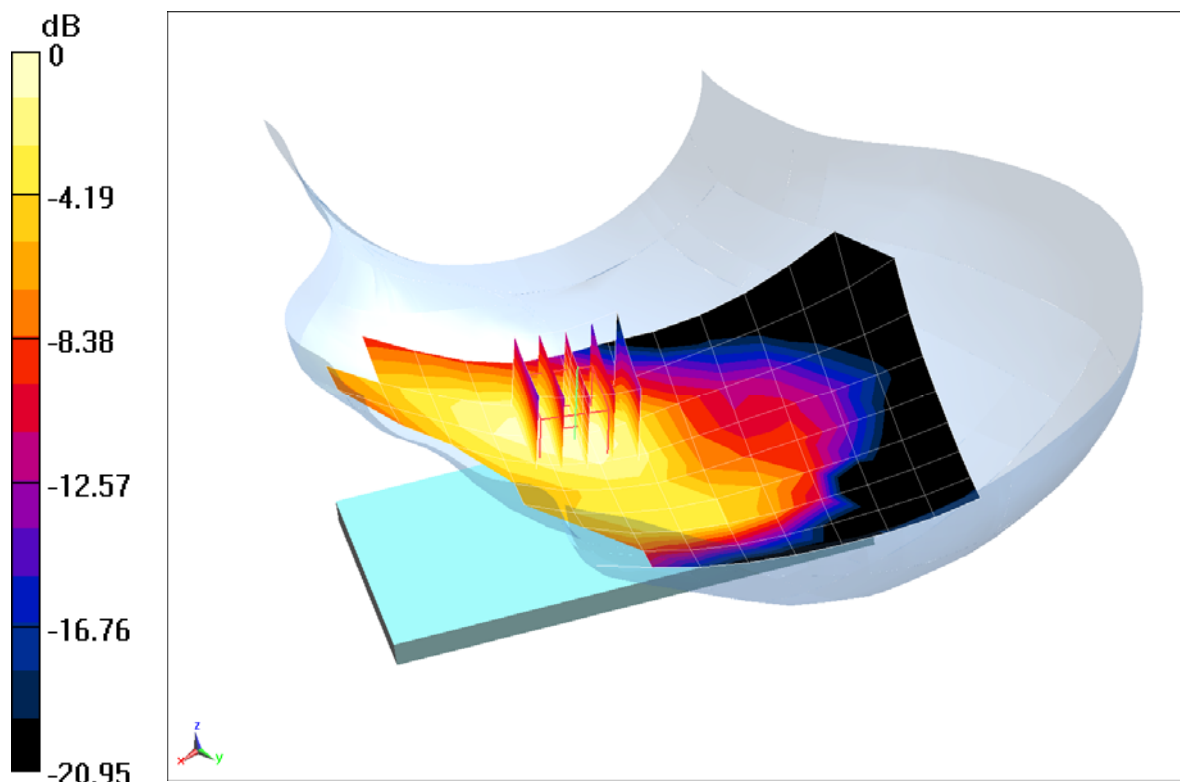
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 9.584 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.190 W/kg

SAR(1 g) = 0.121 W/kg



0 dB = 0.140 W/kg = -8.54 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04001

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.897 \text{ S/m}$; $\epsilon_r = 41.817$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-20-2017; Ambient Temp: 23.8°C; Tissue Temp: 23.9°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: GSM 850, Left Head, Cheek, Mid.ch

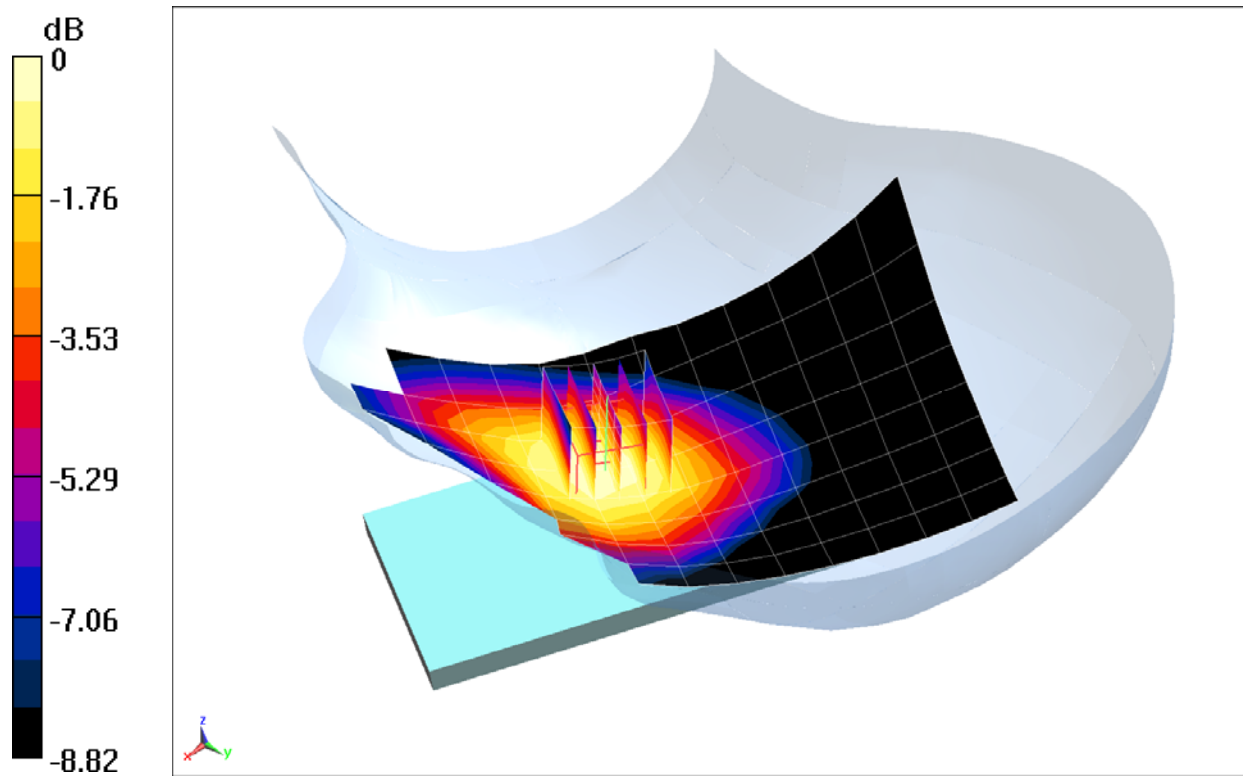
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 11.02 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.117 W/kg

SAR(1 g) = 0.099 W/kg



0 dB = 0.106 W/kg = -9.75 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04001

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

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.431 \text{ S/m}$; $\epsilon_r = 39.06$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-12-2017; Ambient Temp: 19.2°C; Tissue Temp: 22.0°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: GSM 1900, Left Head, Cheek, Mid.ch

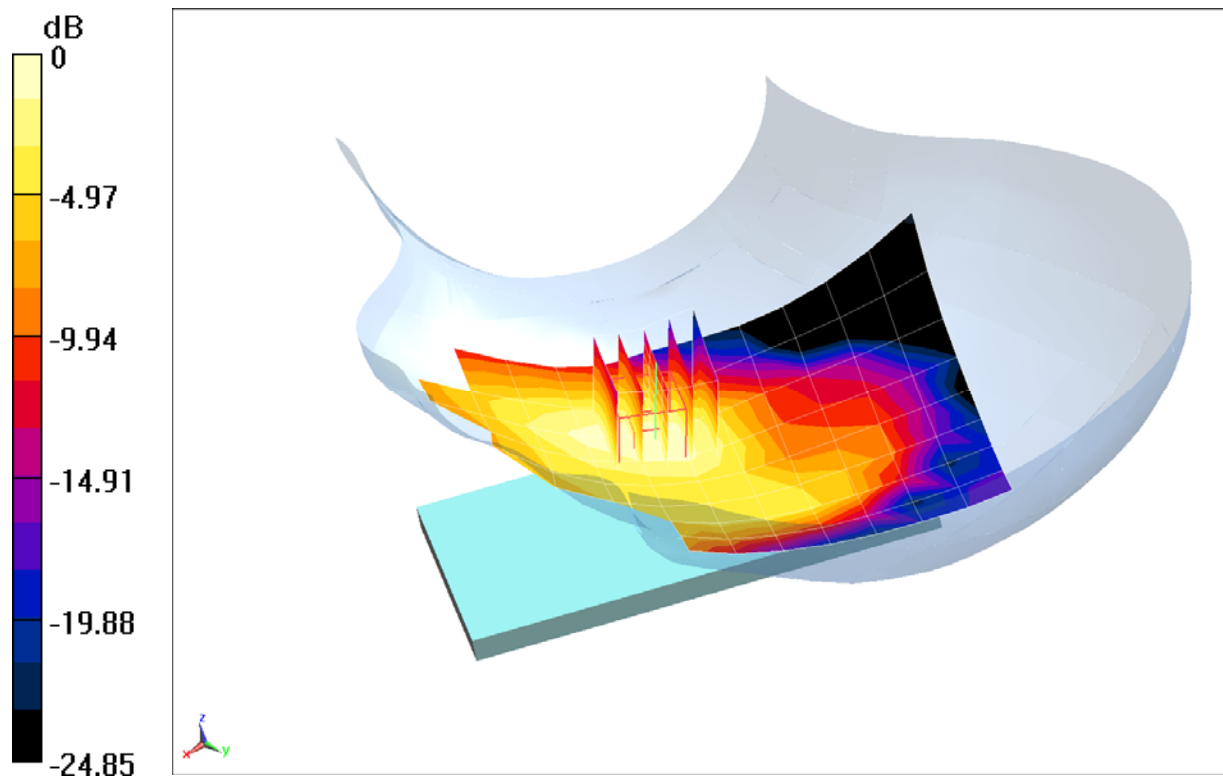
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 7.340 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.110 W/kg

SAR(1 g) = 0.069 W/kg



0 dB = 0.0813 W/kg = -10.90 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04001

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.897 \text{ S/m}$; $\epsilon_r = 41.817$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-20-2017; Ambient Temp: 23.8°C; Tissue Temp: 23.9°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, Left Head, Cheek, Mid.ch

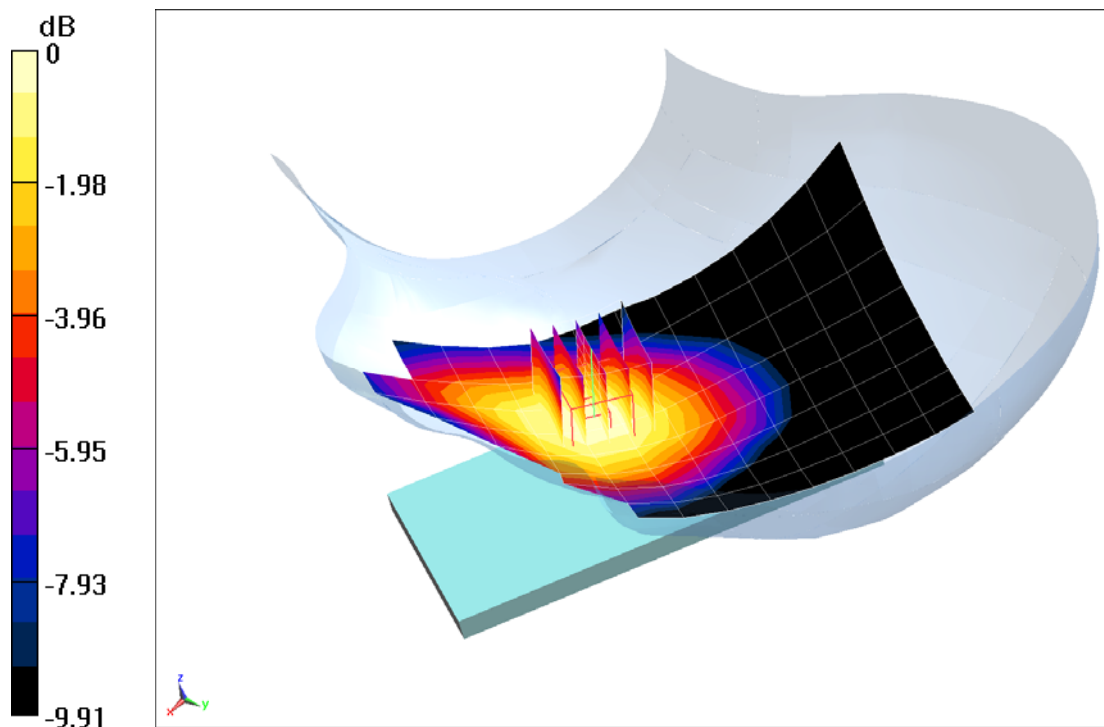
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 12.00 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.147 W/kg

SAR(1 g) = 0.120 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04001

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

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.4$ MHz; $\sigma = 1.316$ S/m; $\epsilon_r = 39.91$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Test Date: 06-23-2017; Ambient Temp: 25.0°C; Tissue Temp: 24.7°C

Probe: ES3DV3 - SN3209; ConvF(5.50, 5.50, 5.50); 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 1750, Left Head, Cheek, Mid.ch

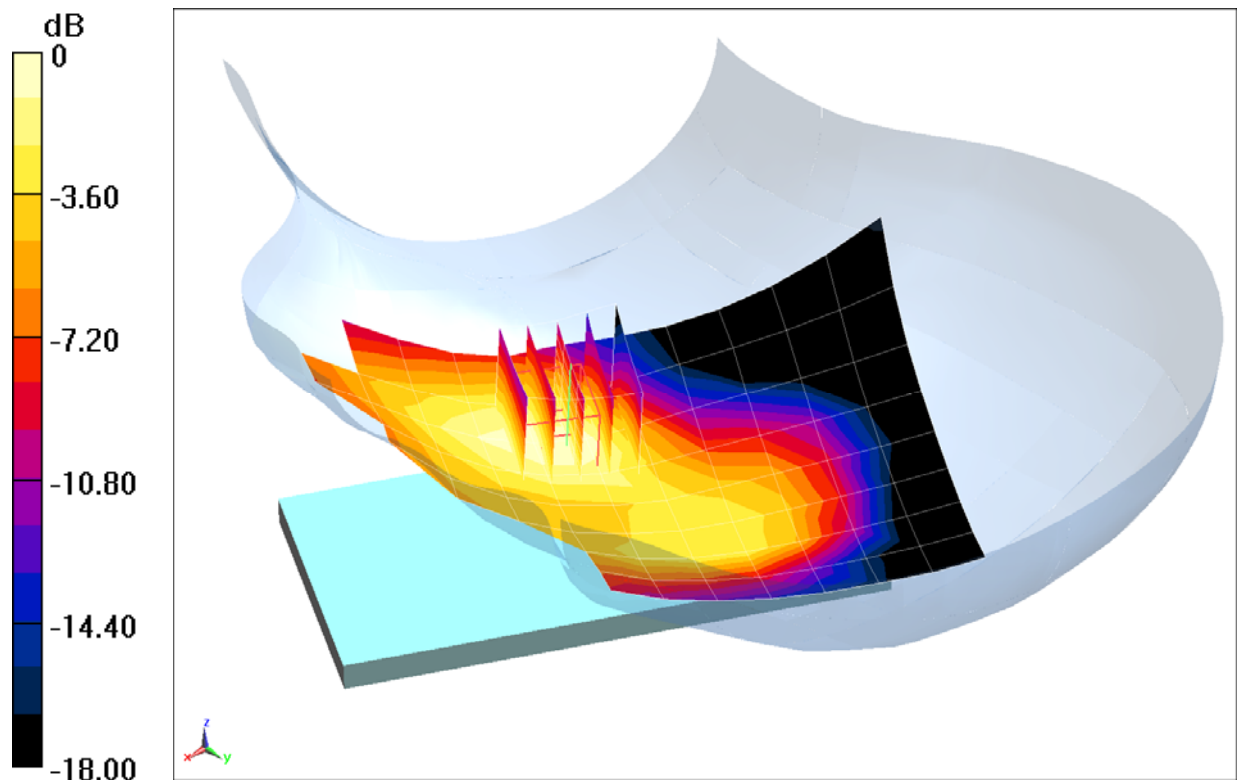
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 11.90 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.250 W/kg

SAR(1 g) = 0.169 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04001

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

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.431 \text{ S/m}$; $\epsilon_r = 39.06$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-12-2017; Ambient Temp: 19.2°C; Tissue Temp: 22.0°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, Left Head, Cheek, Mid.ch

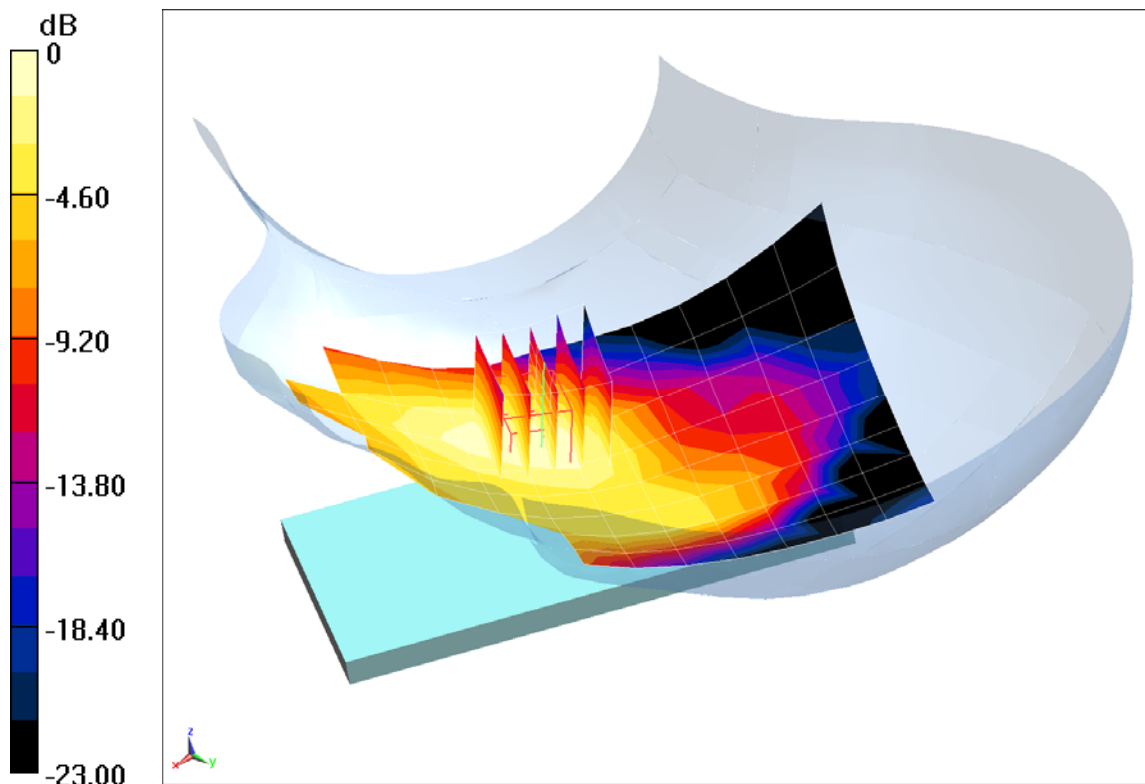
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 9.483 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.183 W/kg

SAR(1 g) = 0.118 W/kg



0 dB = 0.134 W/kg = -8.72 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04019

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

Medium: 750 Head Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.859 \text{ S/m}$; $\epsilon_r = 42.22$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-08-2017; Ambient Temp: 22.7°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7406; ConvF(10.26, 10.26, 10.26); 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, Left Head, Cheek, Mid.ch

10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

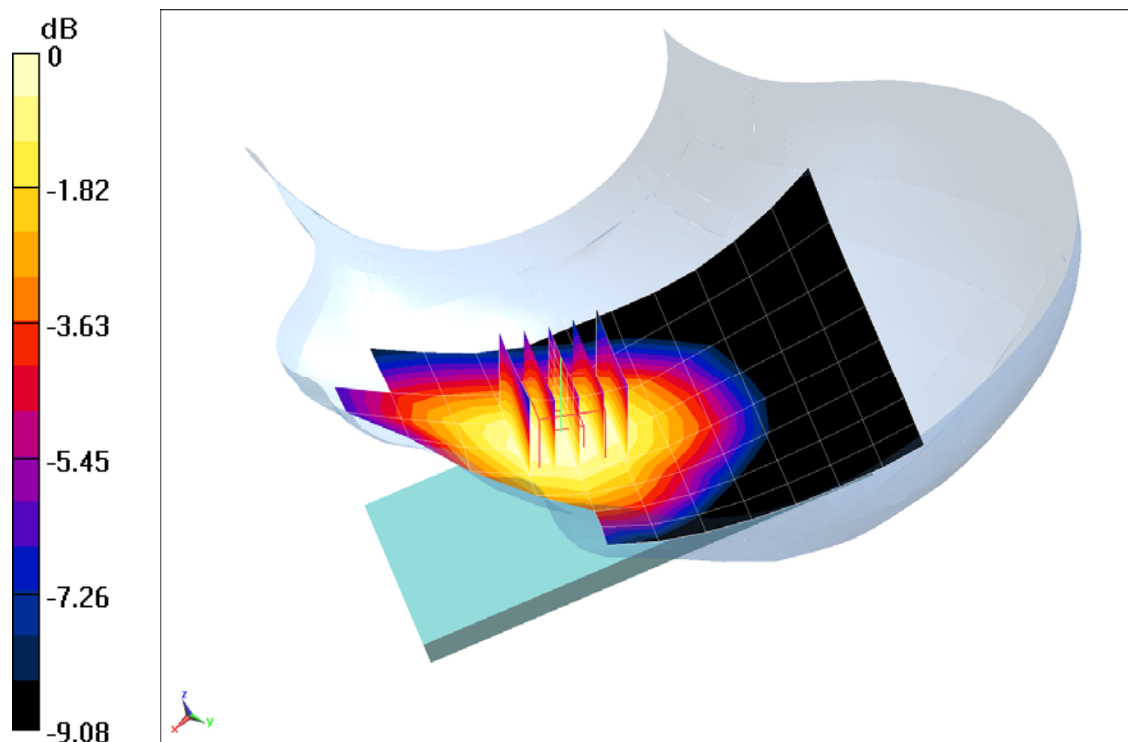
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 10.32 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.104 W/kg

SAR(1 g) = 0.085 W/kg



0 dB = 0.0968 W/kg = -10.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04019

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

Medium: 750 Head Medium parameters used (extrapolated):

$f = 782 \text{ MHz}$; $\sigma = 0.926 \text{ S/m}$; $\epsilon_r = 41.231$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-08-2017; Ambient Temp: 22.7°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7406; ConvF(10.26, 10.26, 10.26); 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 13, Left Head, Cheek, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, 25 RB Offset

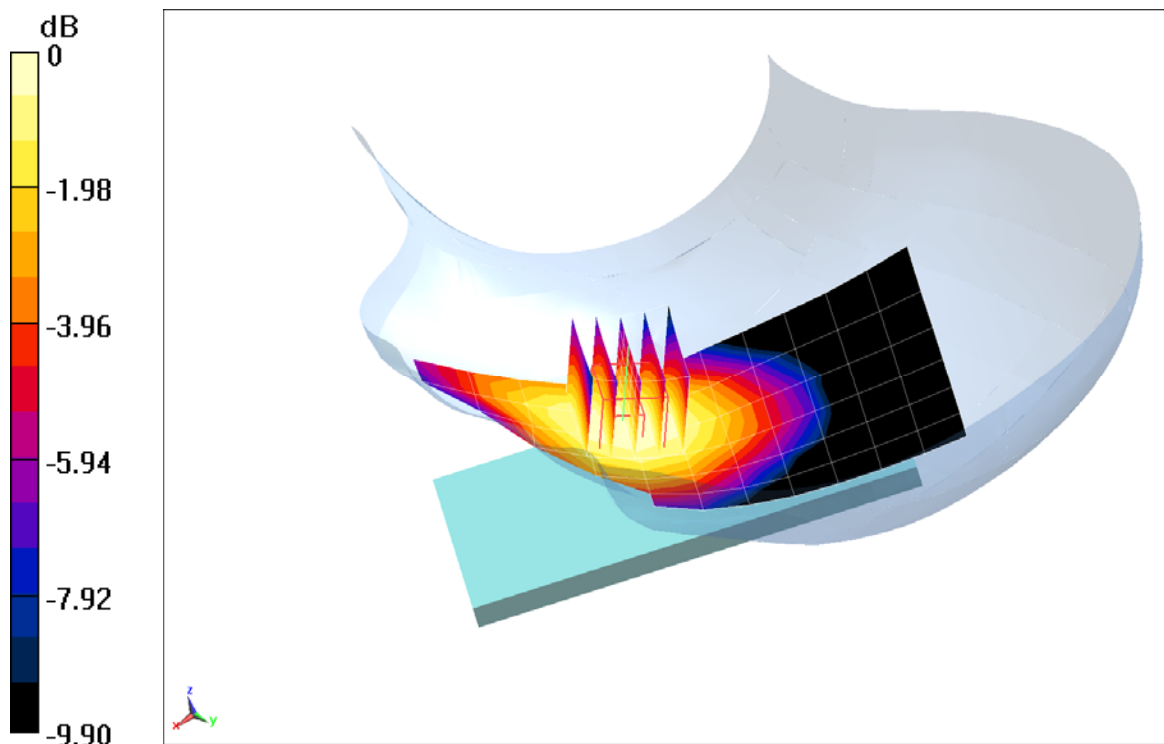
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 10.99 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.130 W/kg

SAR(1 g) = 0.103 W/kg



0 dB = 0.120 W/kg = -9.21 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04019

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 831.5 \text{ MHz}$; $\sigma = 0.893 \text{ S/m}$; $\epsilon_r = 41.878$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-20-2017; Ambient Temp: 23.8°C; Tissue Temp: 23.9°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.), Left Head, Cheek, Mid.ch
15 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

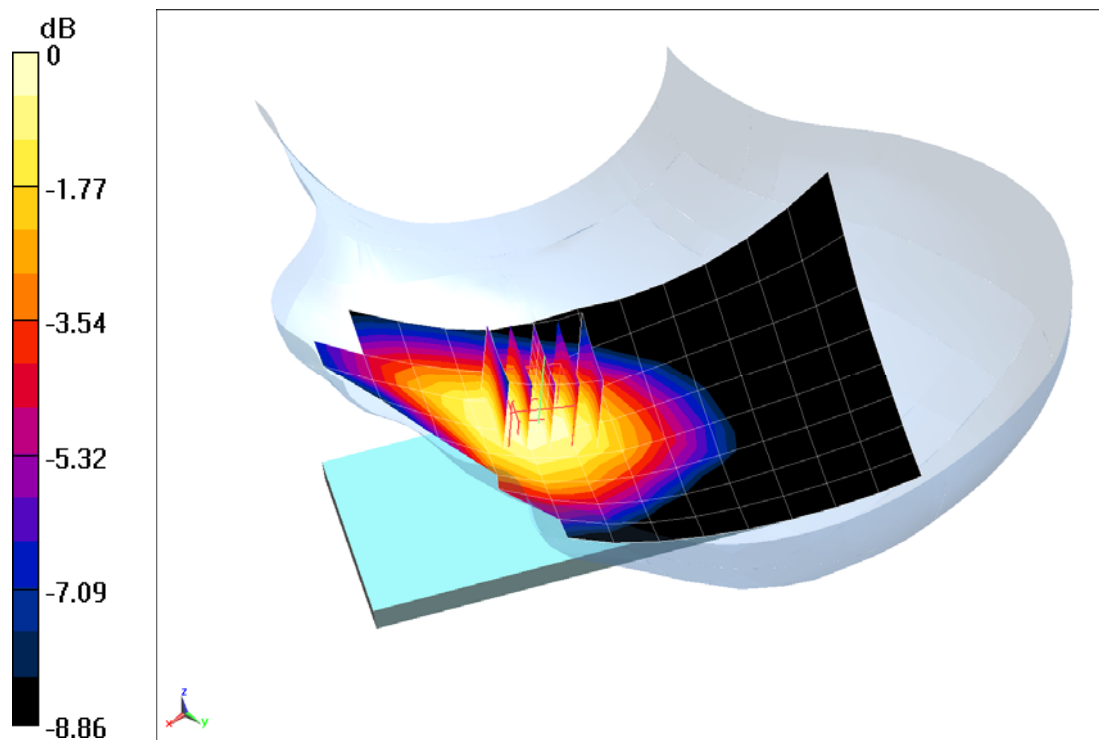
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 11.56 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.123 W/kg

SAR(1 g) = 0.103 W/kg



0 dB = 0.110 W/kg = -9.59 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04043

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

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.316 \text{ S/m}$; $\epsilon_r = 39.91$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 06-23-2017; Ambient Temp: 25.0°C; Tissue Temp: 24.7°C

Probe: ES3DV3 - SN3209; ConvF(5.50, 5.50, 5.50); 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 4 (AWS), Left Head, Cheek, Mid.ch
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

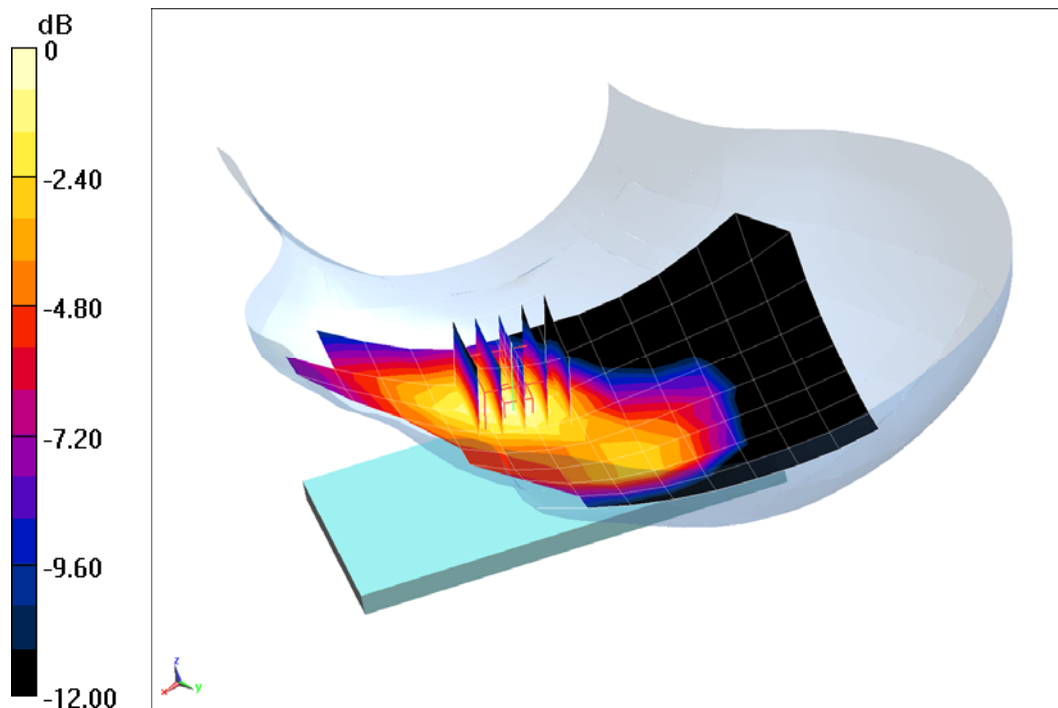
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 13.07 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.282 W/kg

SAR(1 g) = 0.188 W/kg



0 dB = 0.218 W/kg = -6.62 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04027

Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1860$ MHz; $\sigma = 1.409$ S/m; $\epsilon_r = 39.128$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Test Date: 06-12-2017; Ambient Temp: 19.2°C; Tissue Temp: 22.0°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), Left Head, Cheek, Low.ch
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

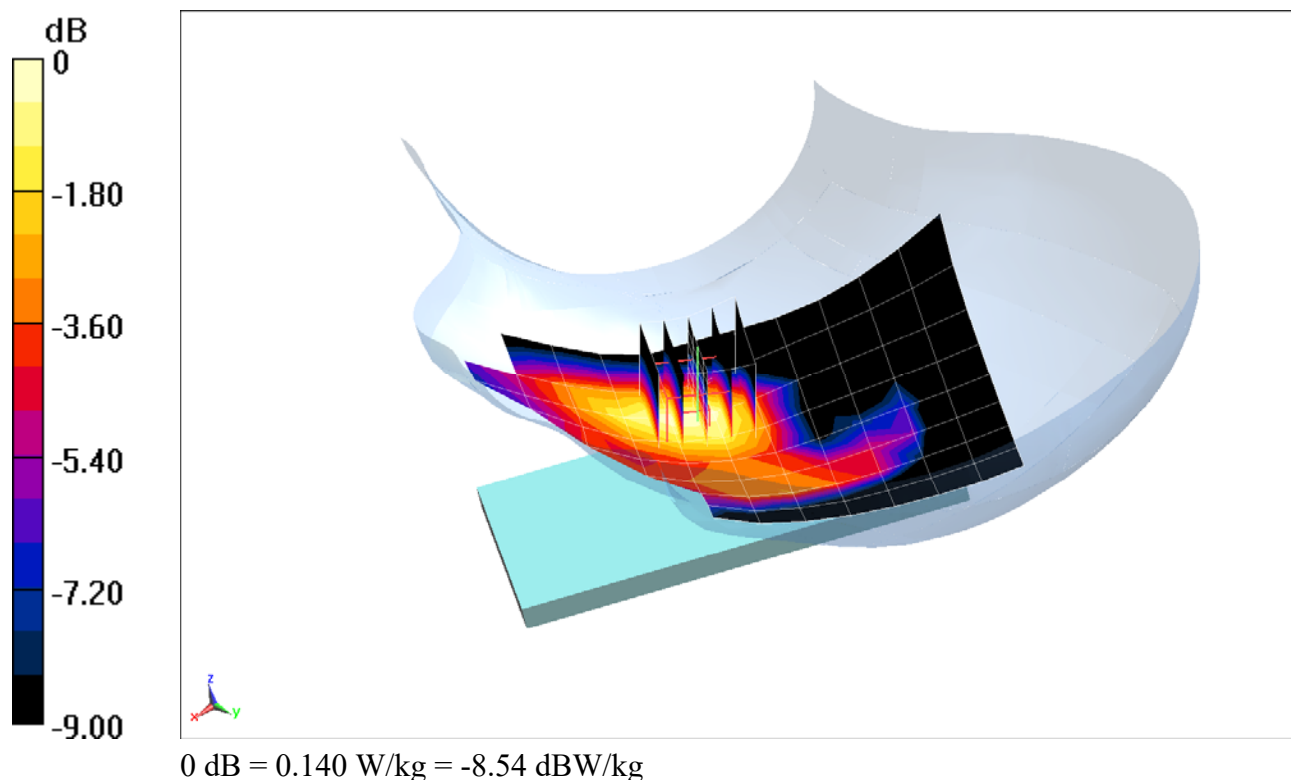
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 10.27 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.186 W/kg

SAR(1 g) = 0.120 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04019

Communication System: UID 0, LTE Band 41 (Class 2); Frequency: 2593 MHz; Duty Cycle: 1:2.31

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2593 \text{ MHz}$; $\sigma = 2.037 \text{ S/m}$; $\epsilon_r = 37.677$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-12-2017; Ambient Temp: 22.2°C; Tissue Temp: 22.0°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 41, PC2, Right Head, Cheek, Mid.ch

20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

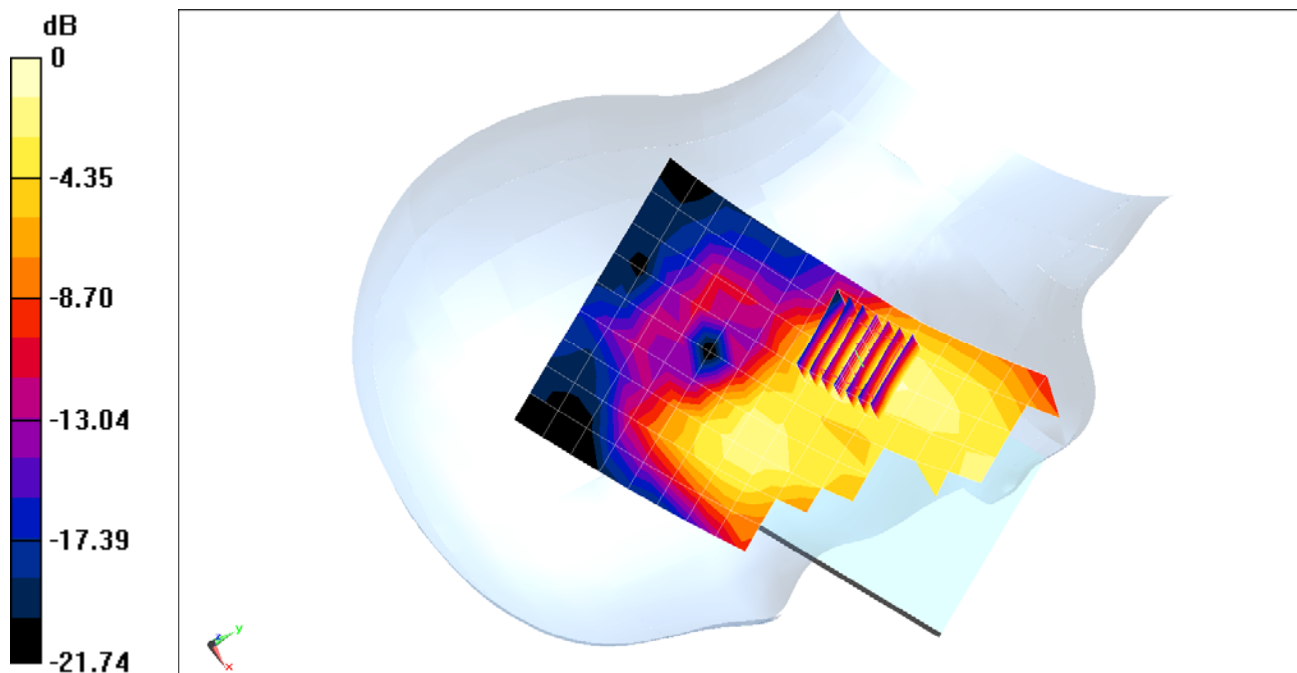
Area Scan (10x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 7.125 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.139 W/kg

SAR(1 g) = 0.077 W/kg



0 dB = 0.0949 W/kg = -10.23 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04175

Communication System: UID 0, 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 1.861 \text{ S/m}$; $\epsilon_r = 38.303$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-12-2017; Ambient Temp: 22.2°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: IEEE 802.11b, Antenna 2, 22 MHz Bandwidth, Right Head, Cheek, Ch 6, 1 Mbps

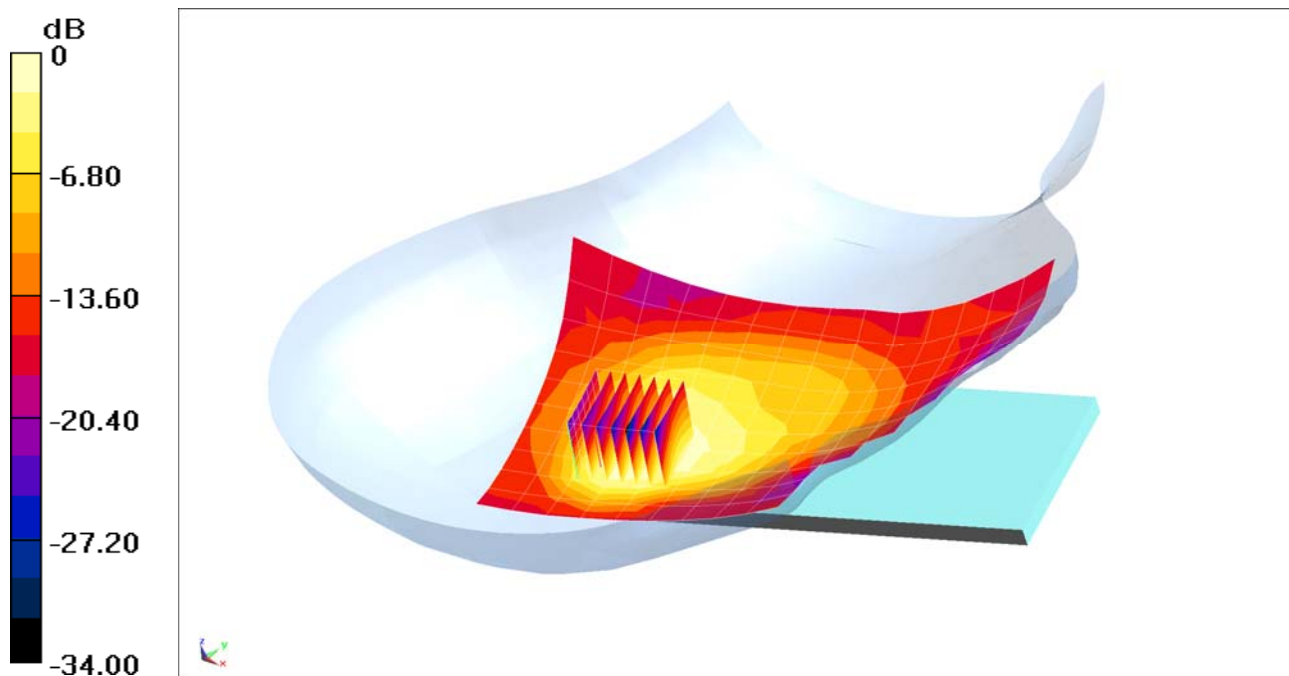
Area Scan (11x18x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 19.29 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 1.40 W/kg

SAR(1 g) = 0.603 W/kg



0 dB = 0.805 W/kg = -0.94 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04183

Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5580 MHz; Duty Cycle: 1:1

Medium: 5GHz Head Medium parameters used:

$f = 5580 \text{ MHz}$; $\sigma = 4.906 \text{ S/m}$; $\epsilon_r = 34.548$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-10-2017; Ambient Temp: 19.9°C; Tissue Temp: 19.8°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)

**Mode: IEEE 802.11a, U-NII-2C, Antenna 2, 20 MHz Bandwidth, Right Head, Cheek,
Ch 116, 6 Mbps**

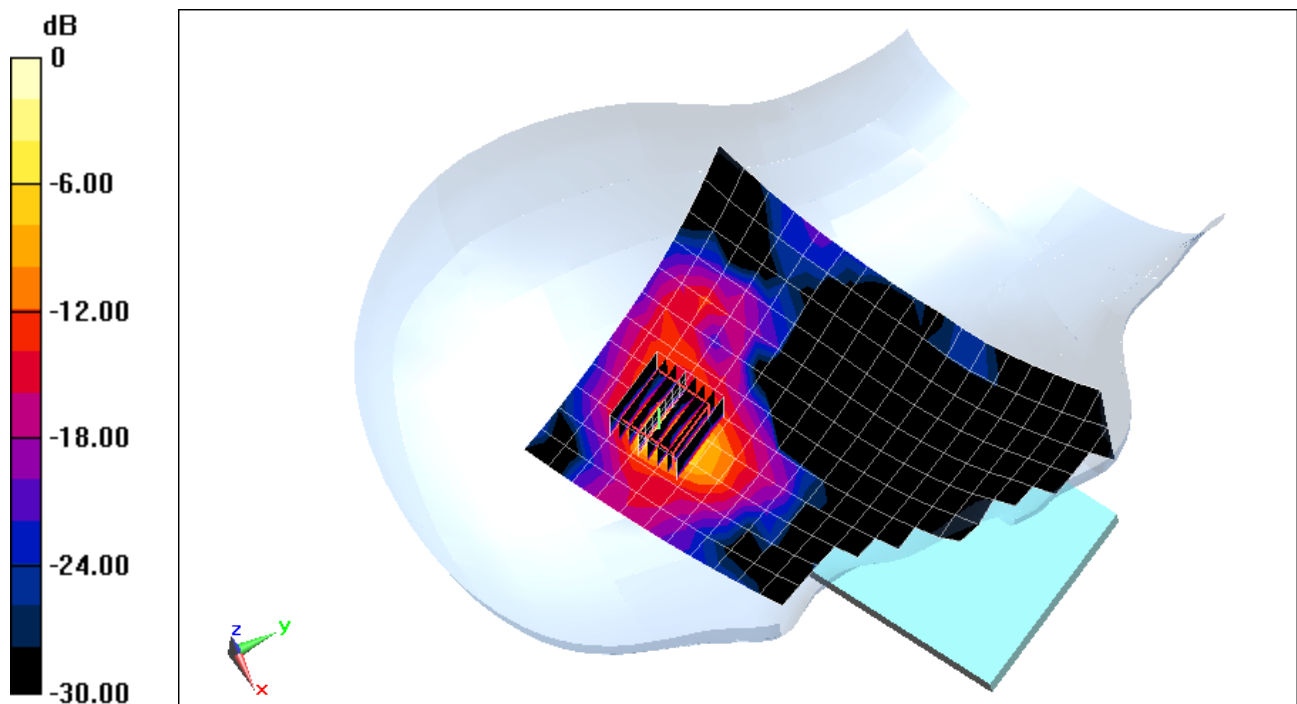
Area Scan (13x20x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Reference Value = 2.655 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 2.85 W/kg

SAR(1 g) = 0.559 W/kg



0 dB = 1.69 W/kg = 2.28 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04175

Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.297

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2441 \text{ MHz}$; $\sigma = 1.793 \text{ S/m}$; $\epsilon_r = 38.39$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 06-19-2017; Ambient Temp: 23.0°C; Tissue Temp: 23.0°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 39, 1Mbps

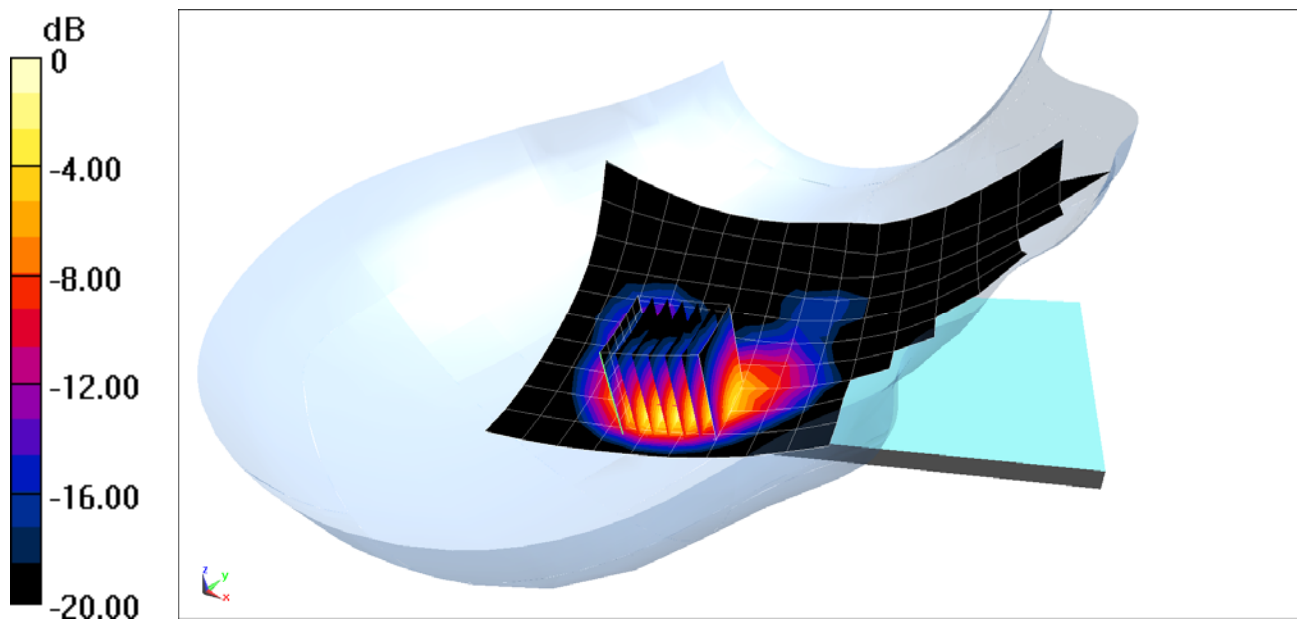
Area Scan (11x19x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 11.87 V/m; Power Drift = -0.21 dB

Peak SAR (extrapolated) = 0.548 W/kg

SAR(1 g) = 0.202 W/kg



0 dB = 0.256 W/kg = -5.92 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 03995

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 820.1 \text{ MHz}$; $\sigma = 0.99 \text{ S/m}$; $\epsilon_r = 53.615$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-19-2017; Ambient Temp: 22.9°C; Tissue Temp: 21.5°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; Type: QD000P40CD; Serial: TP:1800

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

Mode: Cell. CDMA BC10, Rule Part 90S, Body SAR, Back side, Mid.ch

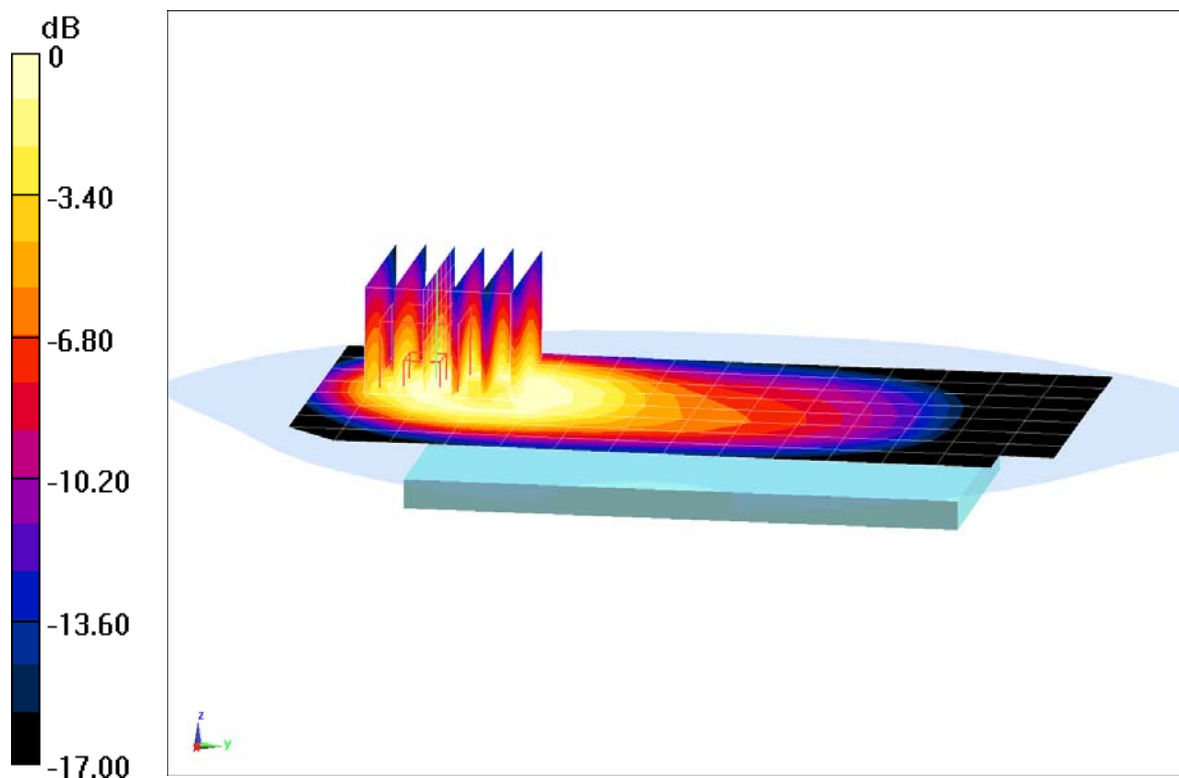
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.28 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.850 W/kg

SAR(1 g) = 0.494 W/kg



0 dB = 0.591 W/kg = -2.28 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 03995

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 820.1 \text{ MHz}$; $\sigma = 0.99 \text{ S/m}$; $\epsilon_r = 53.615$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-19-2017; Ambient Temp: 22.9°C; Tissue Temp: 21.5°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; Type: QD000P40CD; Serial: TP:1800

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

Mode: Cell. EVDO BC10, Rule Part 90S, Body SAR, Back side, Mid.ch

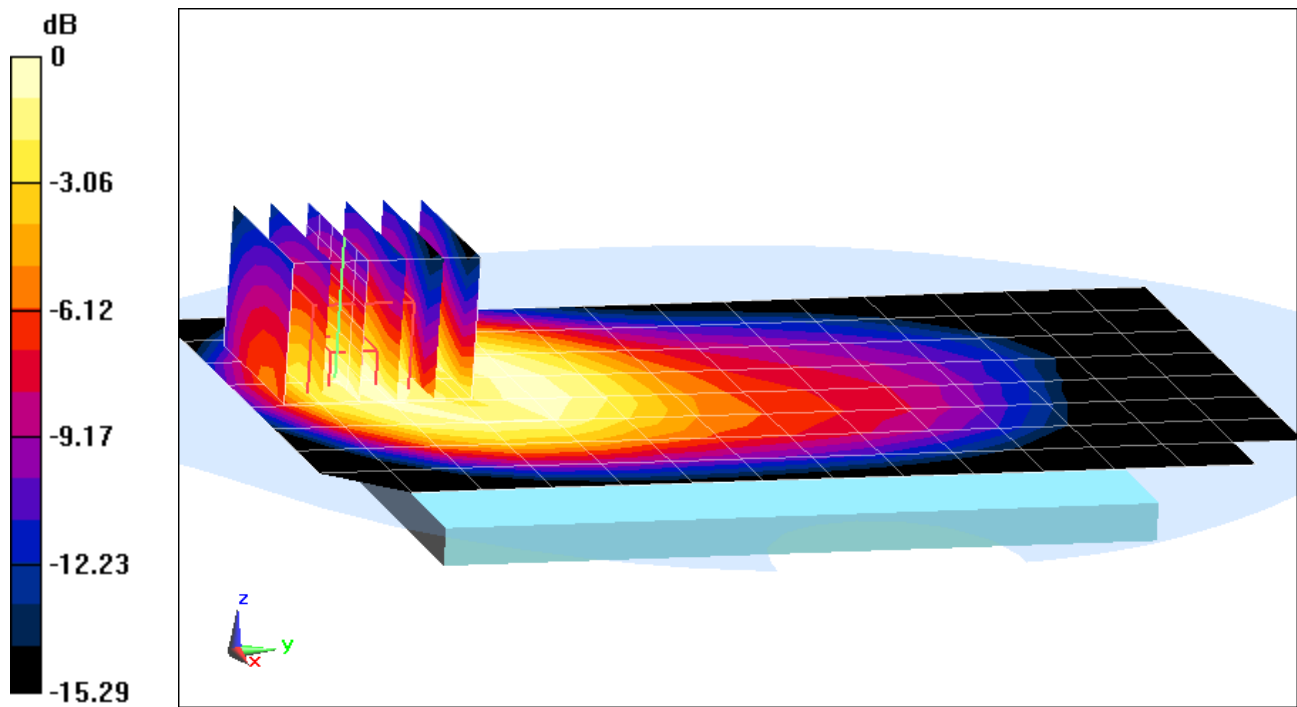
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.21 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.882 W/kg

SAR(1 g) = 0.512 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 03995

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 1.006 \text{ S/m}$; $\epsilon_r = 53.473$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-19-2017; Ambient Temp: 22.9°C; Tissue Temp: 21.5°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; Type: QD000P40CD; Serial: TP:1800

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

Mode: Cell. CDMA BC0, Rule Part 22H, Body SAR, Back side, Mid.ch

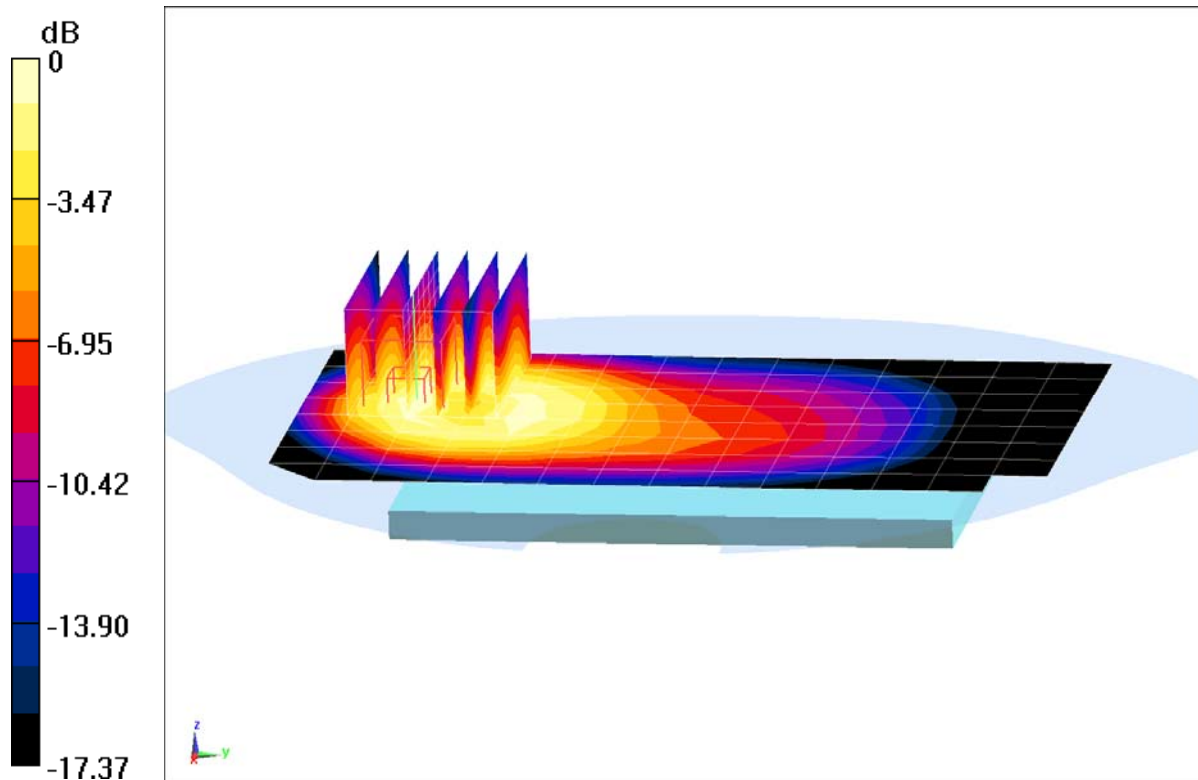
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 24.53 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.962 W/kg

SAR(1 g) = 0.556 W/kg



0 dB = 0.667 W/kg = -1.76 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 03995

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52$ MHz; $\sigma = 1.006$ S/m; $\epsilon_r = 53.473$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-19-2017; Ambient Temp: 22.9°C; Tissue Temp: 21.5°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; Type: QD000P40CD; Serial: TP:1800

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

Mode: Cell. EVDO BC0, Rule Part 22H, Body SAR, Back side, Mid.ch

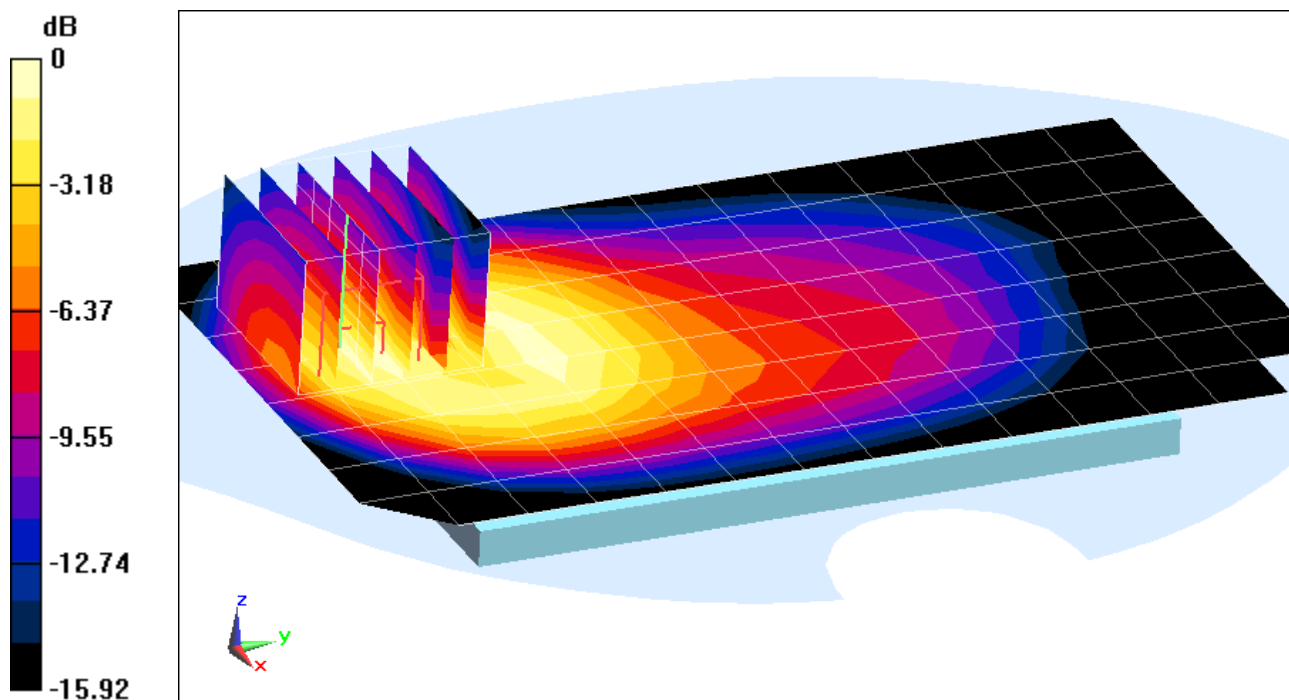
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 24.51 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.00 W/kg

SAR(1 g) = 0.580 W/kg



0 dB = 0.680 W/kg = -1.67 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 03995

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.526 \text{ S/m}$; $\epsilon_r = 52.252$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-15-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.3°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 CDMA, Body SAR, Back side, Mid.ch

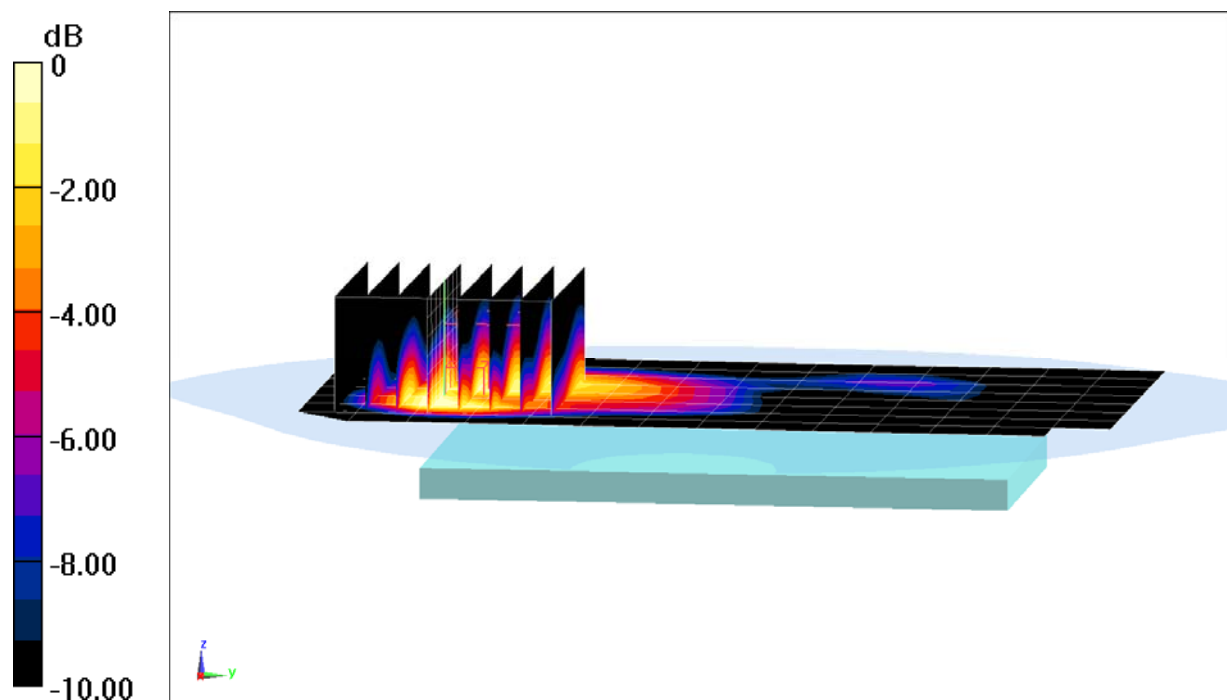
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (9x8x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 19.82 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.922 W/kg

SAR(1 g) = 0.558 W/kg



0 dB = 0.672 W/kg = -1.73 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 03995

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.526 \text{ S/m}$; $\epsilon_r = 52.252$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-15-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.3°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, Body SAR, Bottom Edge, Mid.ch

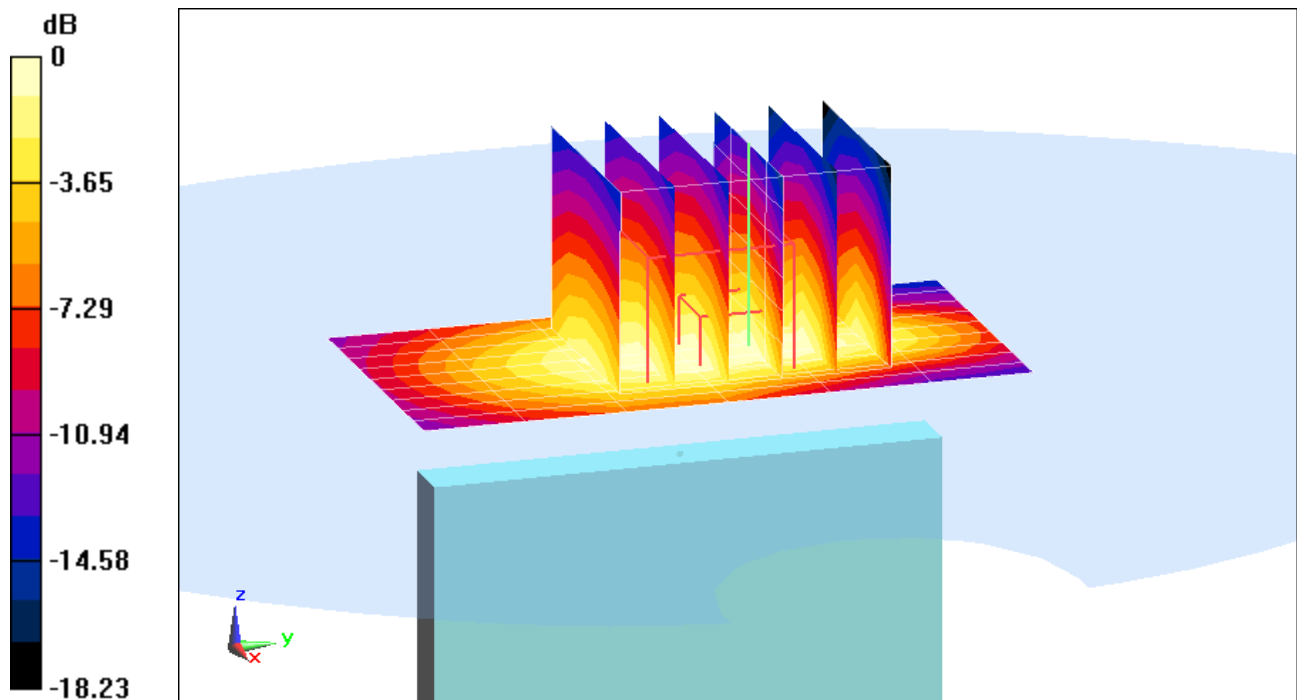
Area Scan (10x7x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.25 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.22 W/kg

SAR(1 g) = 0.711 W/kg



0 dB = 0.865 W/kg = -0.63 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04001

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.006 \text{ S/m}$; $\epsilon_r = 53.472$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-19-2017; Ambient Temp: 22.9°C; Tissue Temp: 21.5°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; Type: QD000P40CD; Serial: TP:1800

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

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

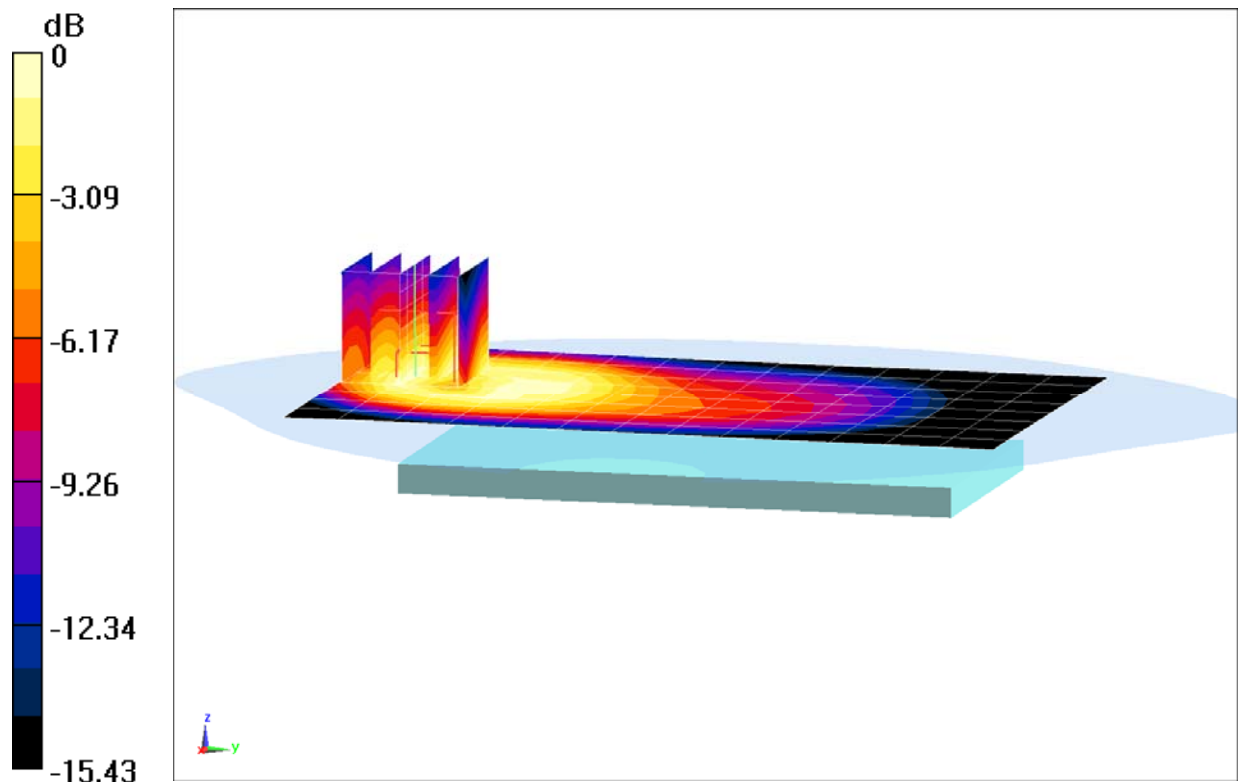
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 22.89 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.760 W/kg

SAR(1 g) = 0.458 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04001

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.006 \text{ S/m}$; $\epsilon_r = 53.472$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-19-2017; Ambient Temp: 22.9°C; Tissue Temp: 21.5°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; Type: QD000P40CD; Serial: TP:1800

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

Mode: GPRS 850, Body SAR, Back side, Mid.ch, 1 Tx Slots

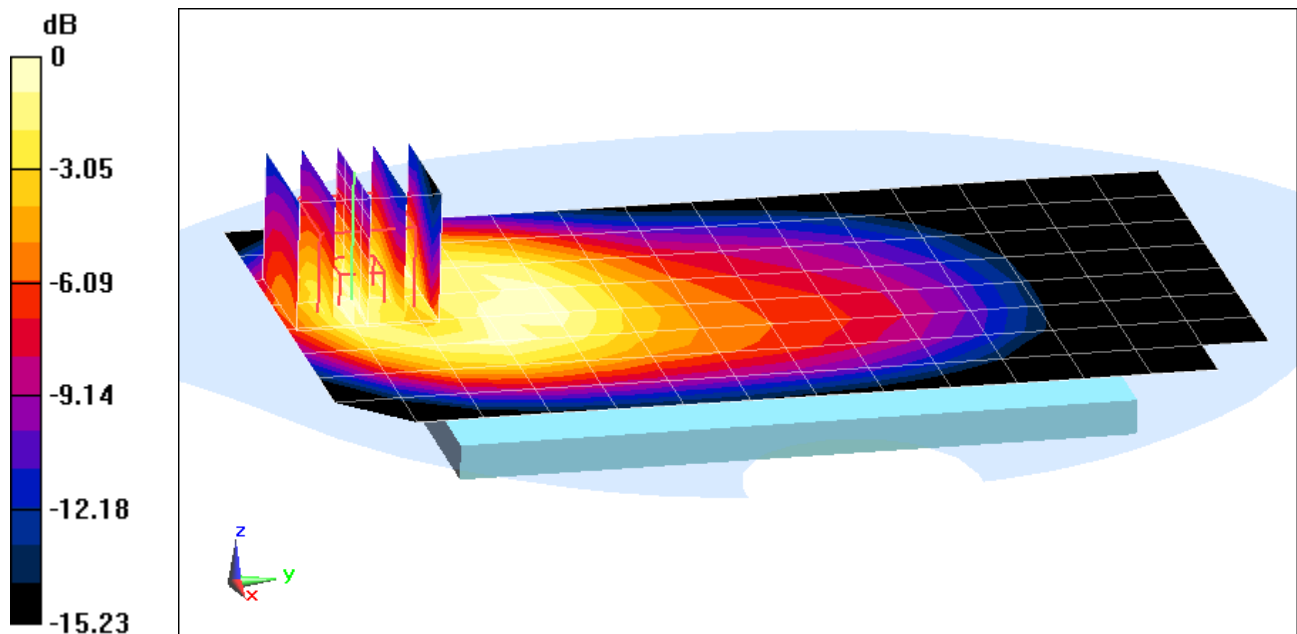
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 22.11 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.719 W/kg

SAR(1 g) = 0.435 W/kg



0 dB = 0.527 W/kg = -2.78 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04001

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.526 \text{ S/m}$; $\epsilon_r = 52.252$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-15-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.3°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: GSM 1900, Body SAR, Back side, Mid.ch

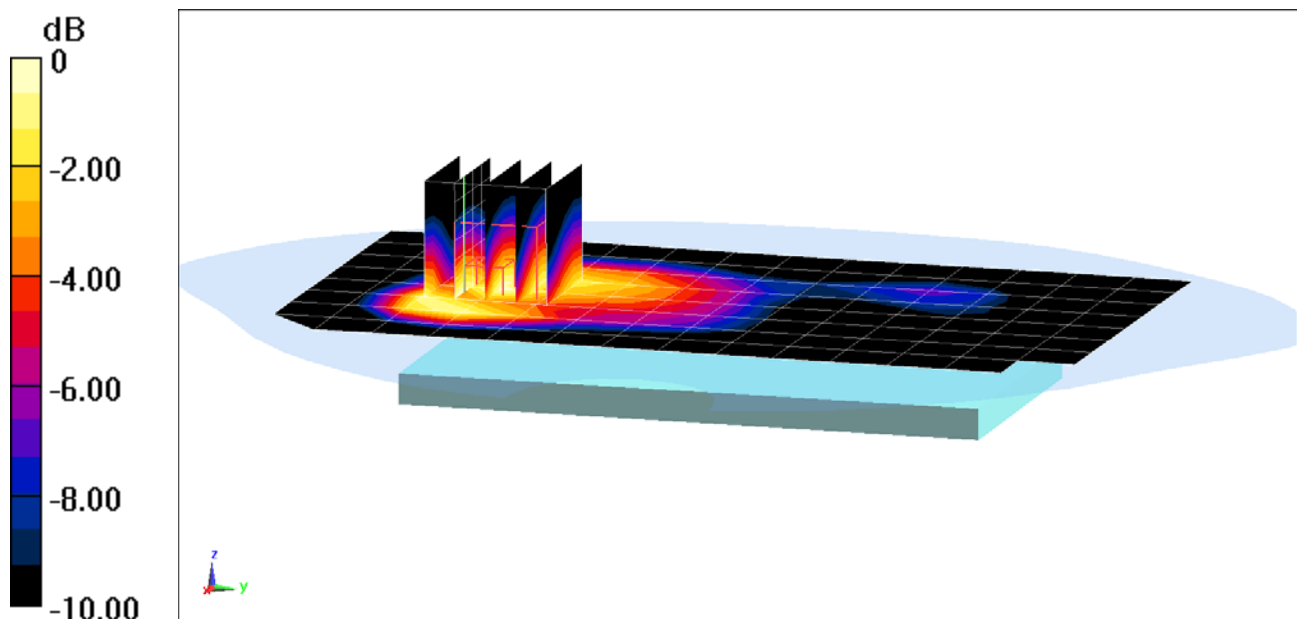
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 16.40 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.581 W/kg

SAR(1 g) = 0.354 W/kg



0 dB = 0.432 W/kg = -3.65 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04001

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.526 \text{ S/m}$; $\epsilon_r = 52.252$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-15-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.3°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, 1 Tx Slots

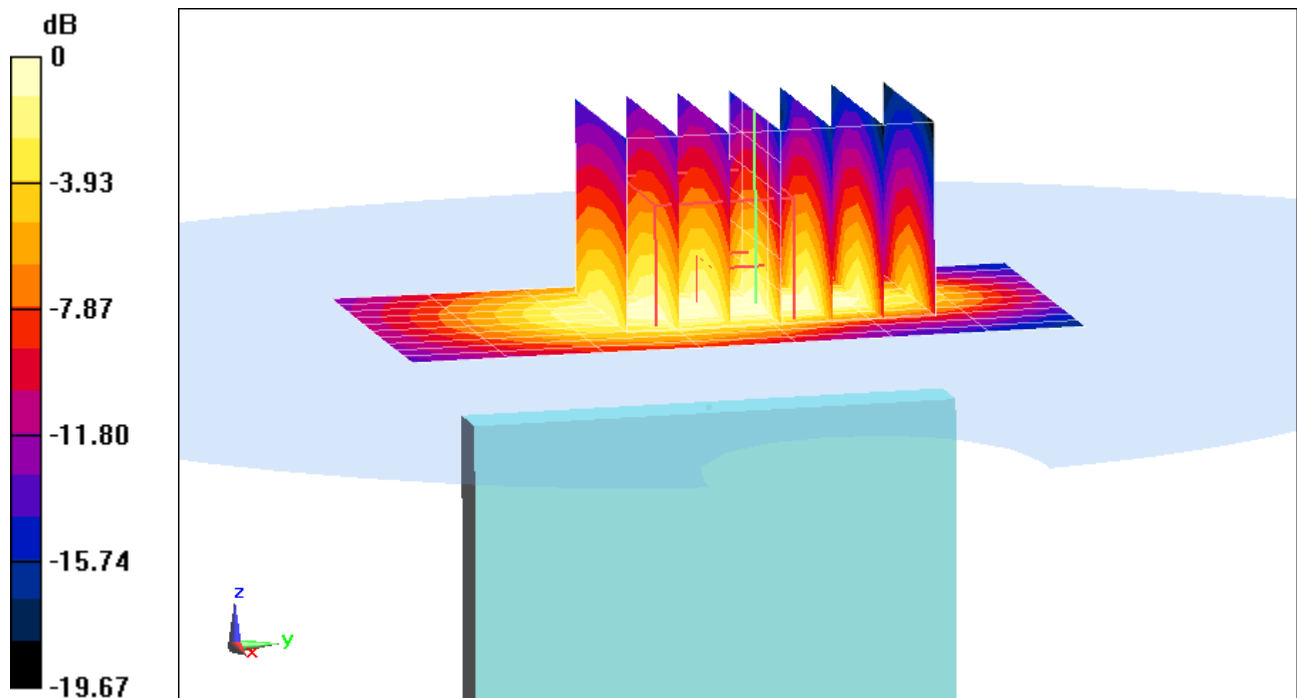
Area Scan (11x8x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x7x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 16.46 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.627 W/kg

SAR(1 g) = 0.368 W/kg



0 dB = 0.450 W/kg = -3.47 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04001

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.006 \text{ S/m}$; $\epsilon_r = 53.472$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-19-2017; Ambient Temp: 22.9°C; Tissue Temp: 21.5°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; Type: QD000P40CD; Serial: TP:1800

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

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

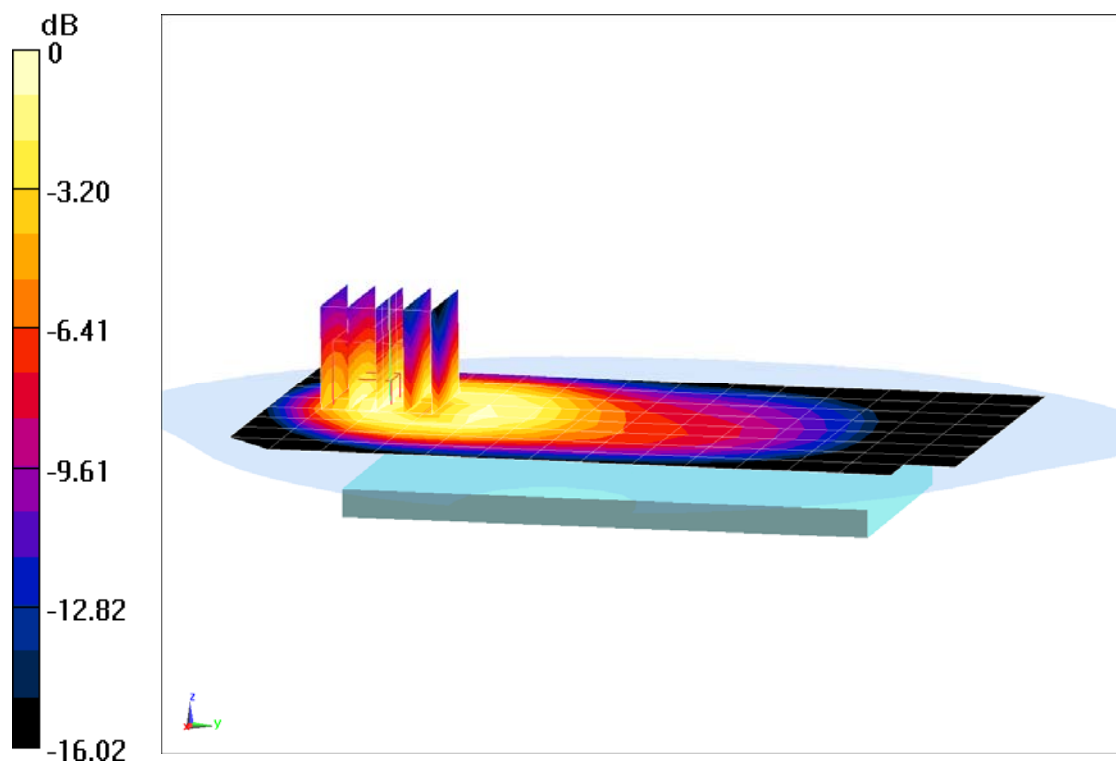
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 22.97 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.878 W/kg

SAR(1 g) = 0.511 W/kg



0 dB = 0.605 W/kg = -2.18 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04001

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

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.4 \text{ MHz}$; $\sigma = 1.443 \text{ S/m}$; $\epsilon_r = 53.019$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-11-2017; Ambient Temp: 23.0°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(5.07, 5.07, 5.07); 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: UMTS 1750, Body SAR, Back side, Mid.ch

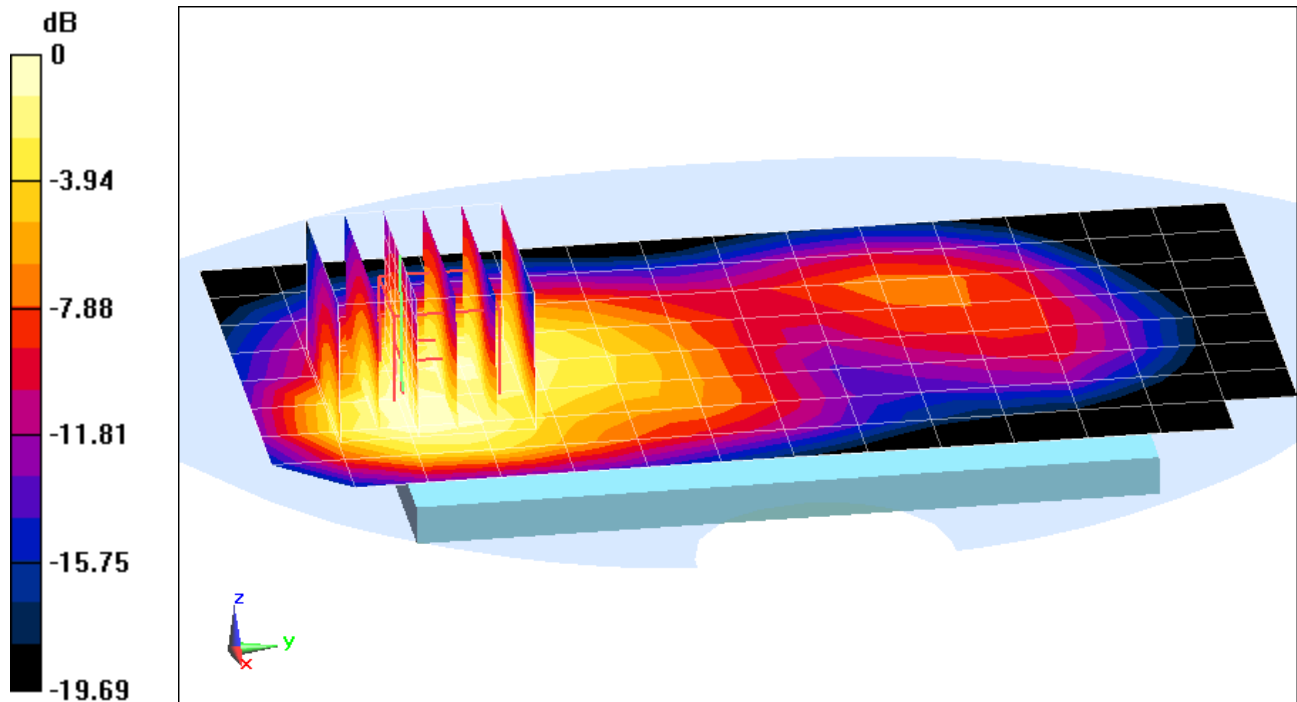
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 21.54 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.04 W/kg

SAR(1 g) = 0.653 W/kg



0 dB = 0.786 W/kg = -1.05 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04001

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.542 \text{ S/m}$; $\epsilon_r = 53.146$; $\rho = 1000 \text{ kg/m}^3$

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

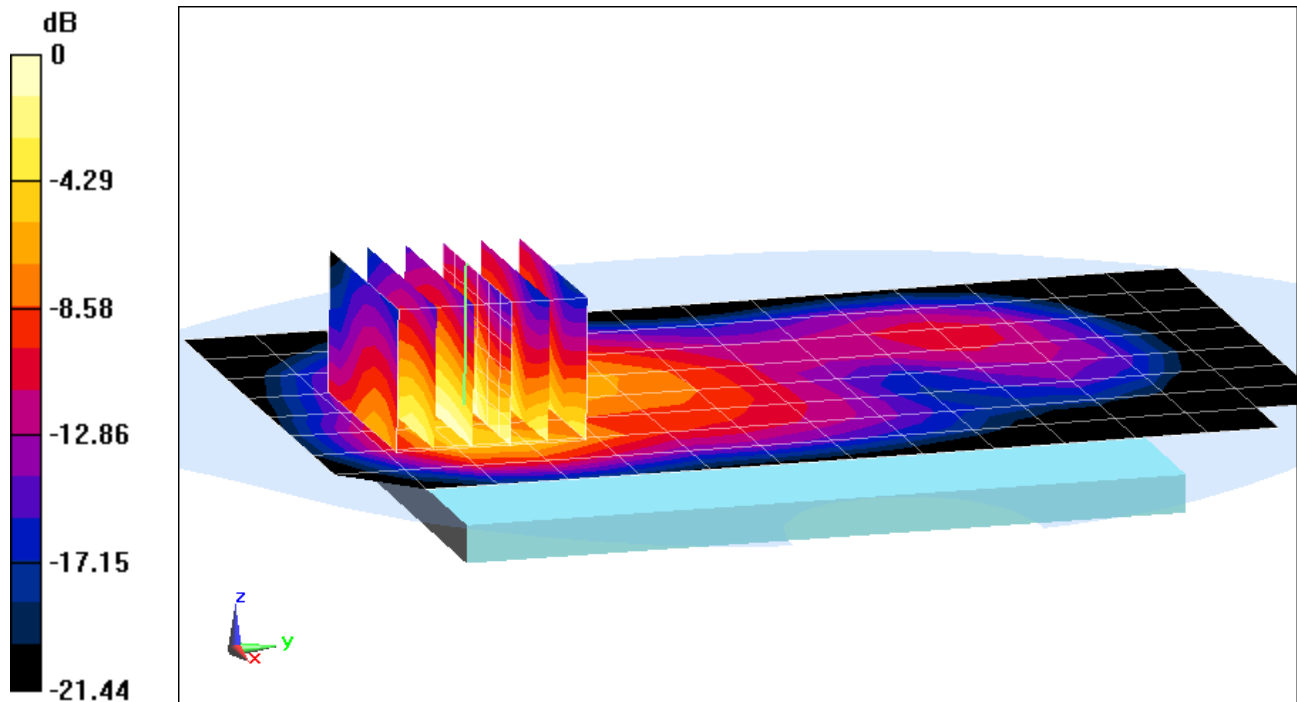
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.93 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.978 W/kg

SAR(1 g) = 0.589 W/kg



0 dB = 0.724 W/kg = -1.40 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04001

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.542 \text{ S/m}$; $\epsilon_r = 53.146$; $\rho = 1000 \text{ kg/m}^3$

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: UMTS 1900, Body SAR, Bottom Edge, Mid.ch

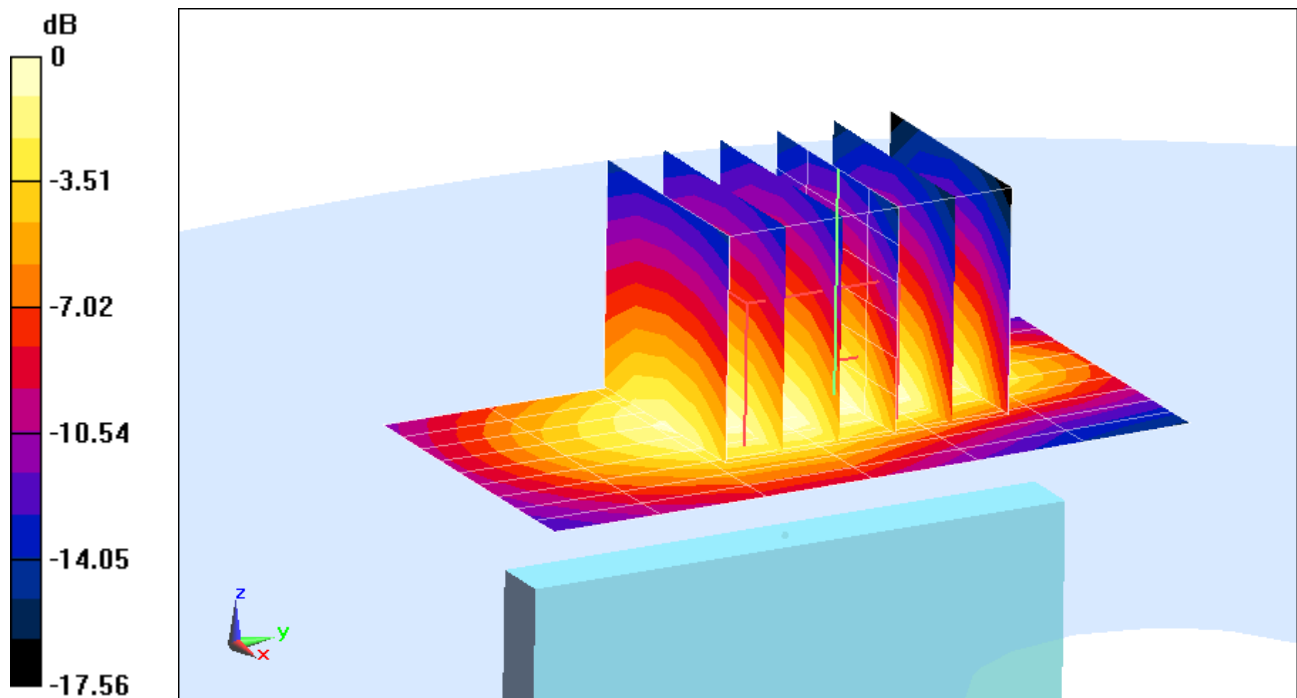
Area Scan (10x7x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 21.83 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.10 W/kg

SAR(1 g) = 0.639 W/kg



0 dB = 0.780 W/kg = -1.08 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04019

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

Medium: 750 Body Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.921 \text{ S/m}$; $\epsilon_r = 56.793$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-14-2017; Ambient Temp: 21.1°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3209; ConvF(6.44, 6.44, 6.44); 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 12, Body SAR, Back side, Mid.ch

10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

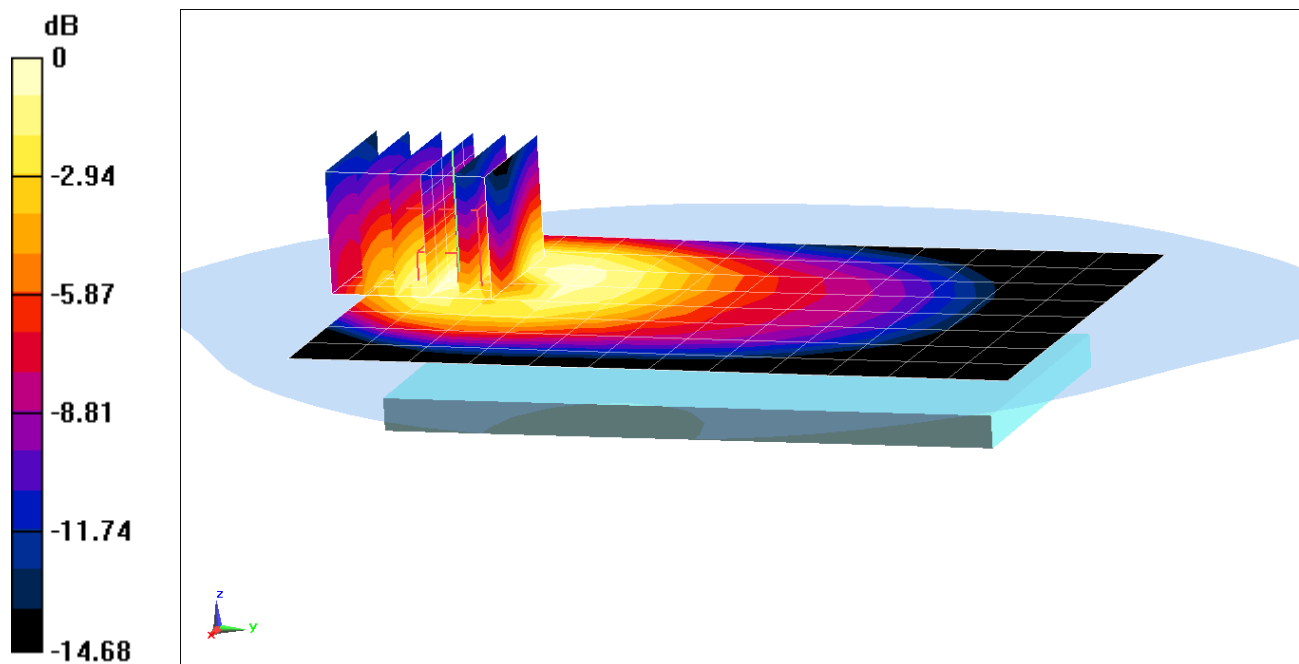
Area Scan (9x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.88 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.819 W/kg

SAR(1 g) = 0.478 W/kg



0 dB = 0.587 W/kg = -2.31 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04019

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

Medium: 750 Body Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 0.994 \text{ S/m}$; $\epsilon_r = 56.097$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-14-2017; Ambient Temp: 21.1°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3209; ConvF(6.44, 6.44, 6.44); 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 13, Body SAR, Back side, Mid.ch

10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

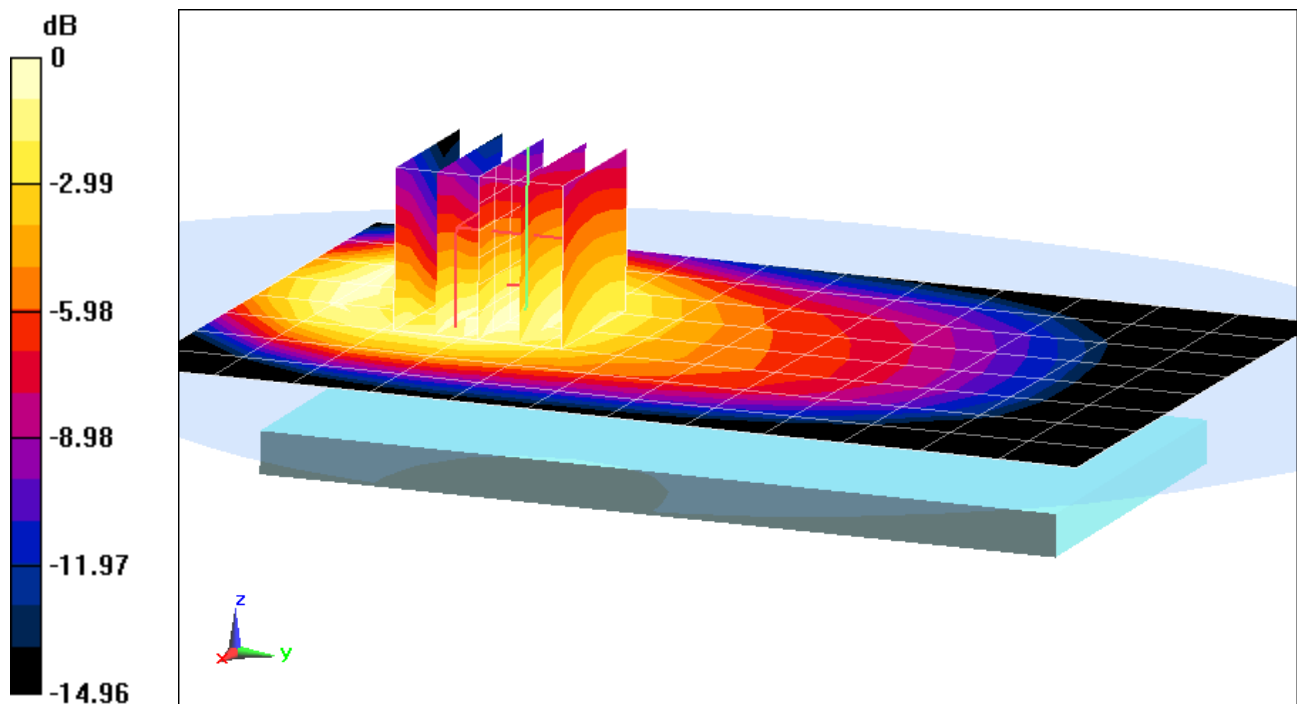
Area Scan (9x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 24.07 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.782 W/kg

SAR(1 g) = 0.526 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04035

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 831.5 \text{ MHz}$; $\sigma = 0.961 \text{ S/m}$; $\epsilon_r = 52.757$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-12-2017; Ambient Temp: 23.9°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(6.29, 6.29, 6.29); 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 26 (Cell.), Body SAR, Back side, Mid.ch

15 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

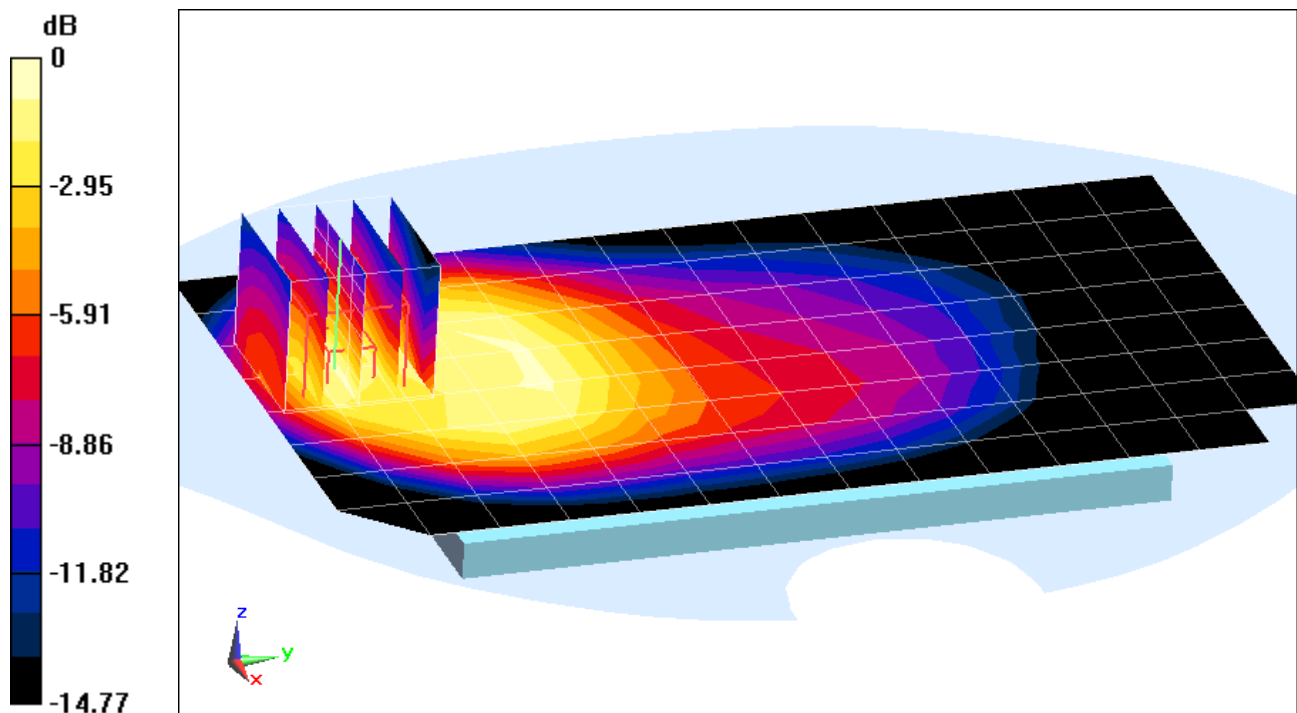
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 22.68 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.755 W/kg

SAR(1 g) = 0.443 W/kg



0 dB = 0.530 W/kg = -2.76 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04035

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

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.444 \text{ S/m}$; $\epsilon_r = 53.019$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-11-2017; Ambient Temp: 23.0°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(5.07, 5.07, 5.07); 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 4 (AWS), Body SAR, Back side, Mid.ch
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

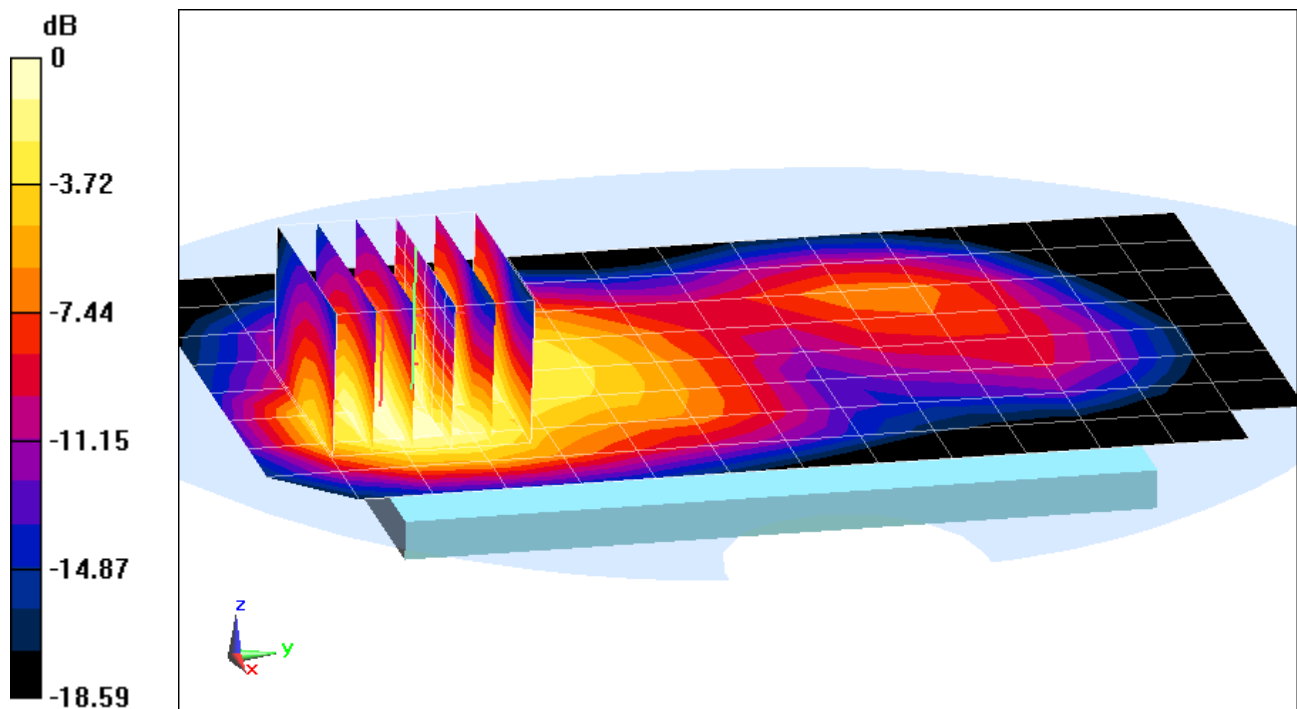
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.06 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.965 W/kg

SAR(1 g) = 0.616 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04035

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

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.444 \text{ S/m}$; $\epsilon_r = 53.019$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-11-2017; Ambient Temp: 23.0°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(5.07, 5.07, 5.07); 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 4 (AWS), Body SAR, Front side, Mid.ch
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

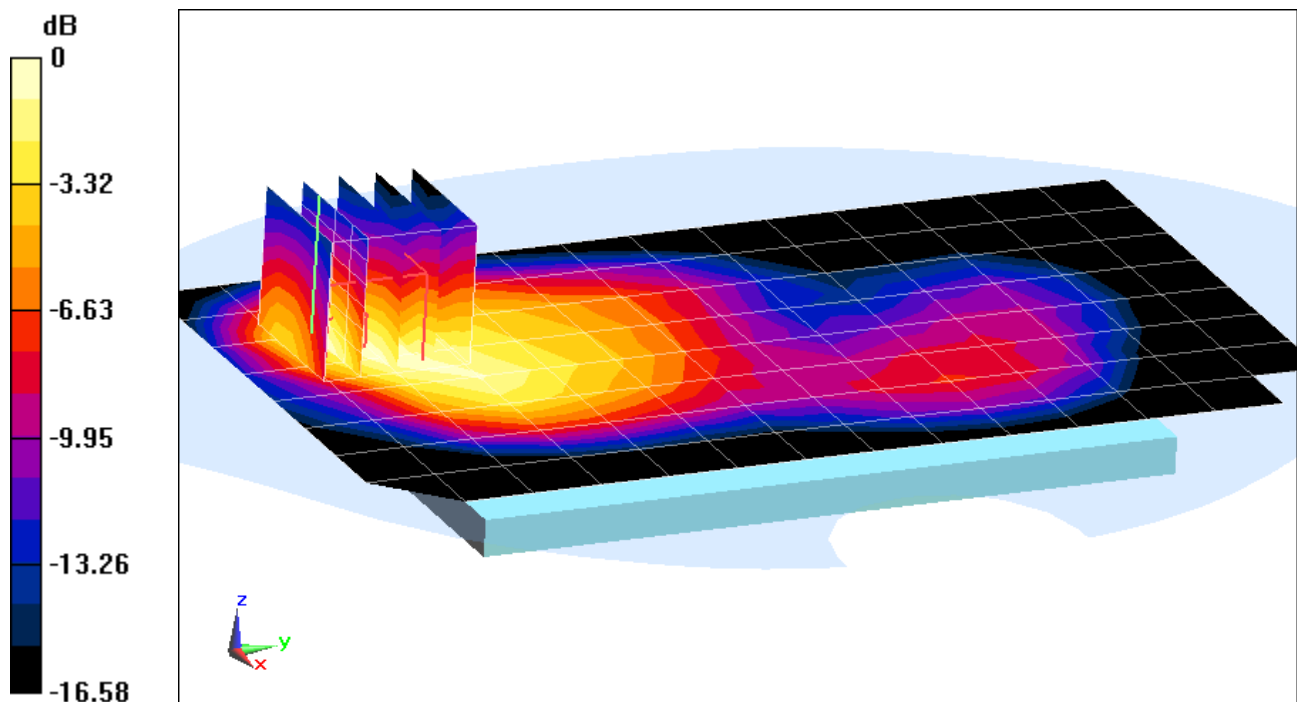
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 21.61 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.27 W/kg

SAR(1 g) = 0.702 W/kg



0 dB = 0.828 W/kg = -0.82 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04019

Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1860 \text{ MHz}$; $\sigma = 1.505 \text{ S/m}$; $\epsilon_r = 52.353$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-15-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.3°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: LTE Band 25 (PCS), Body SAR, Back side, Low.ch
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

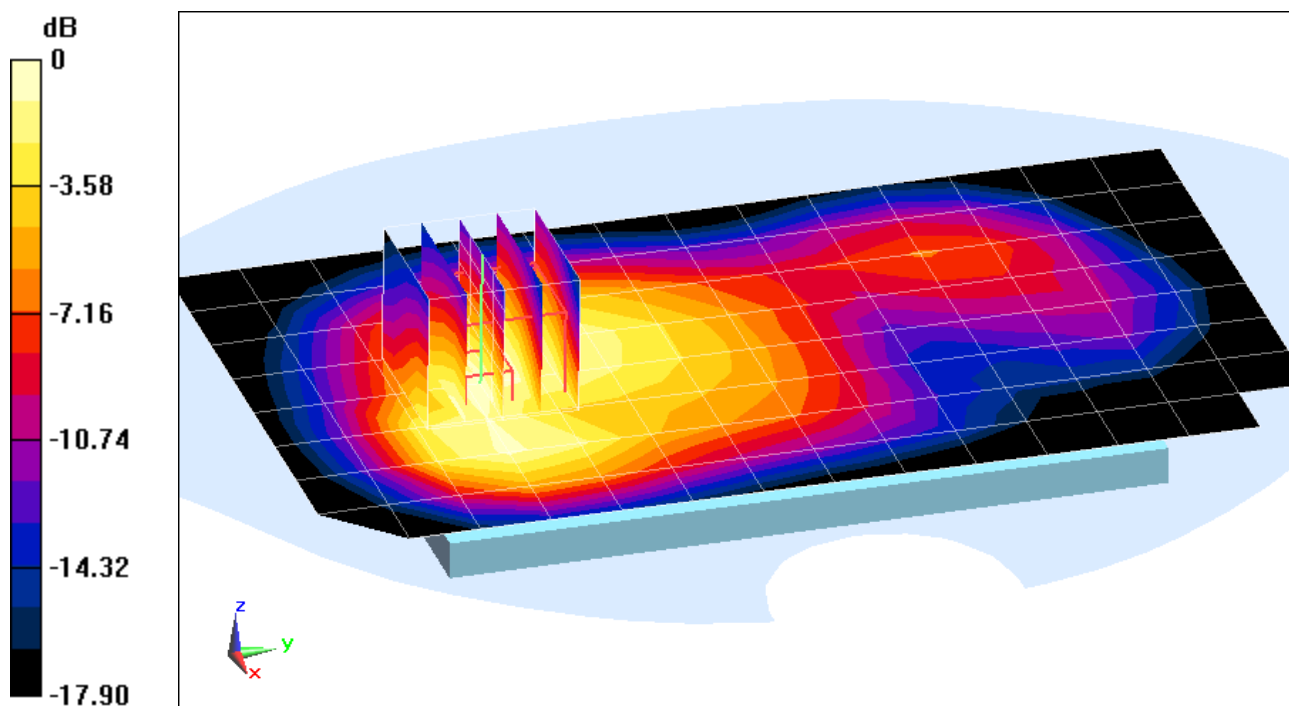
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.53 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 1.17 W/kg

SAR(1 g) = 0.725 W/kg



0 dB = 0.875 W/kg = -0.58 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04027

Communication System: UID 0, LTE Band 41; Frequency: 2593 MHz; Duty Cycle: 1:1.58

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2593 \text{ MHz}$; $\sigma = 2.209 \text{ S/m}$; $\epsilon_r = 52.015$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-20-2017; Ambient Temp: 22.5°C; Tissue Temp: 23.9°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 Left; Type: QD000P40CA; Serial: TP:82355

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

Mode: LTE Band 41, 2CC Uplink, Body SAR, Back side, Mid.ch 20 MHz Bandwidth

PCC: QPSK, Ch 40620, 1 RB, 0 RB Offset

SCC: QPSK, Ch 40422, 1 RB, 99 RB Offset

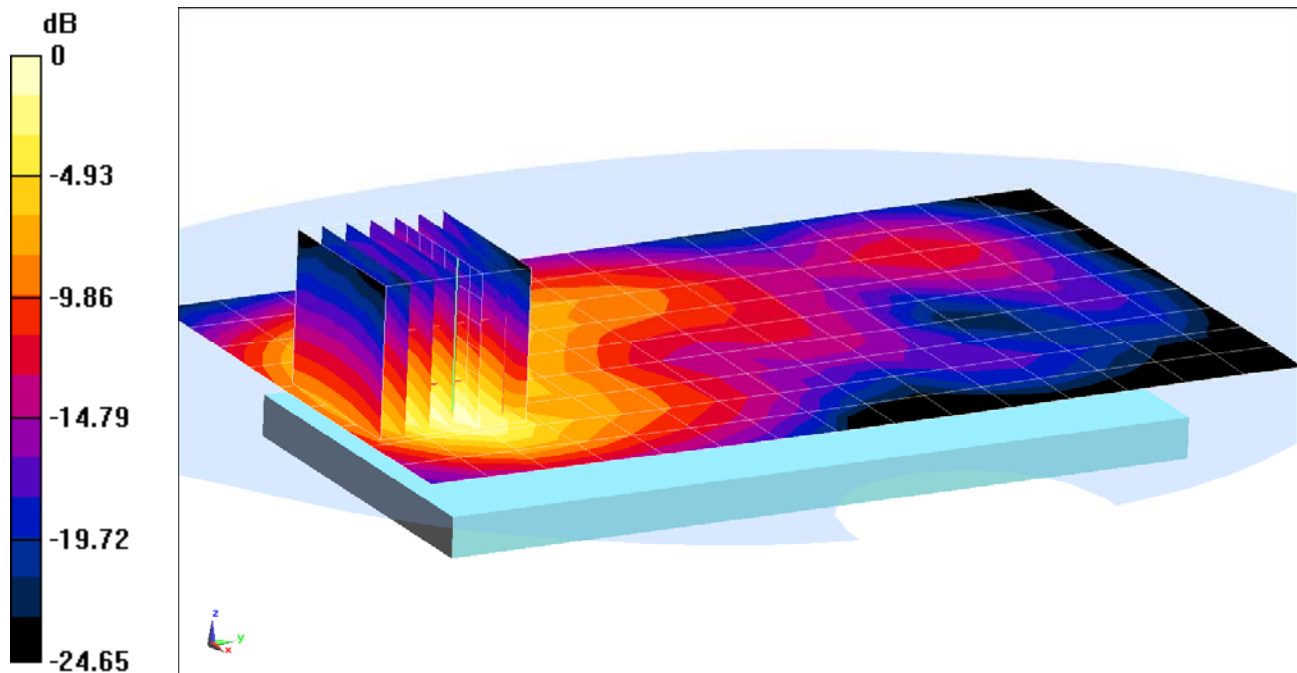
Area Scan (10x16x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (8x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 19.34 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 1.68 W/kg

SAR(1 g) = 0.759 W/kg



0 dB = 0.967 W/kg = -0.15 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04175

Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 1.926 \text{ S/m}$; $\epsilon_r = 51.609$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-24-2017; Ambient Temp: 22.1°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, Antenna 1, 22 MHz Bandwidth, Body SAR, Ch 6, 1 Mbps, Back Side

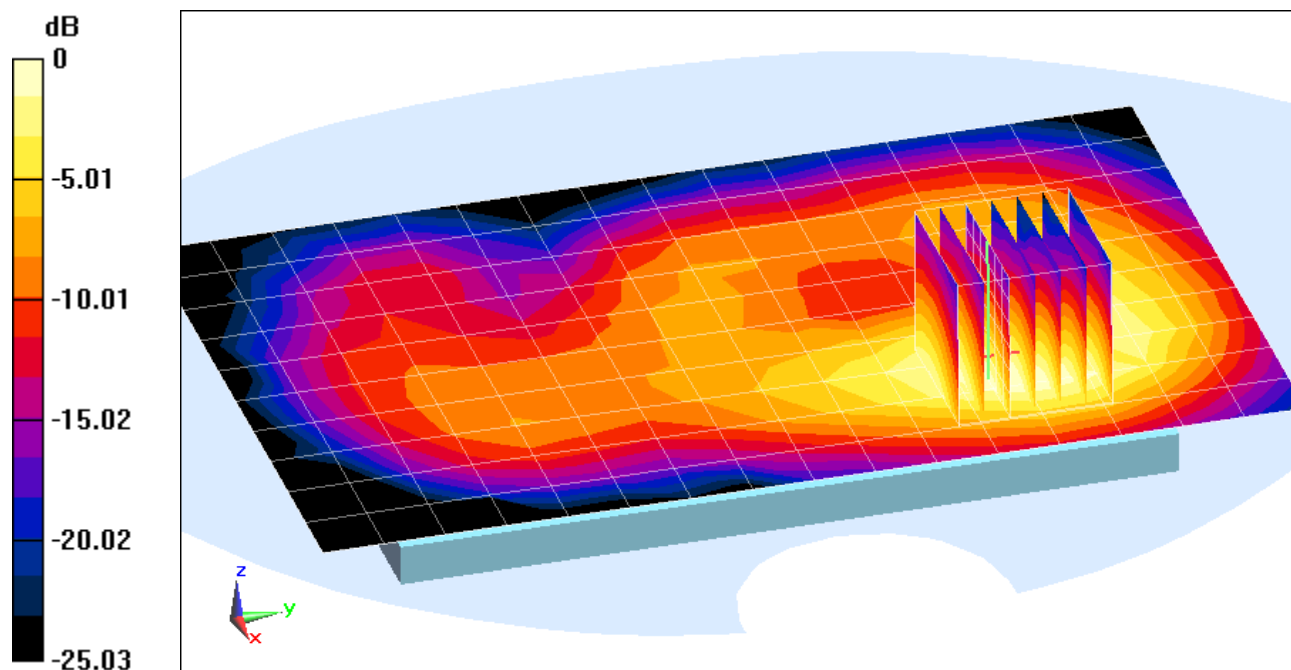
Area Scan (11x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 4.830 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 0.485 W/kg

SAR(1 g) = 0.240 W/kg



0 dB = 0.303 W/kg = -5.19 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04175

Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 1.926 \text{ S/m}$; $\epsilon_r = 51.609$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-24-2017; Ambient Temp: 22.1°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, Antenna 2, 22 MHz Bandwidth, Body SAR, Ch 6, 1 Mbps, Top Edge

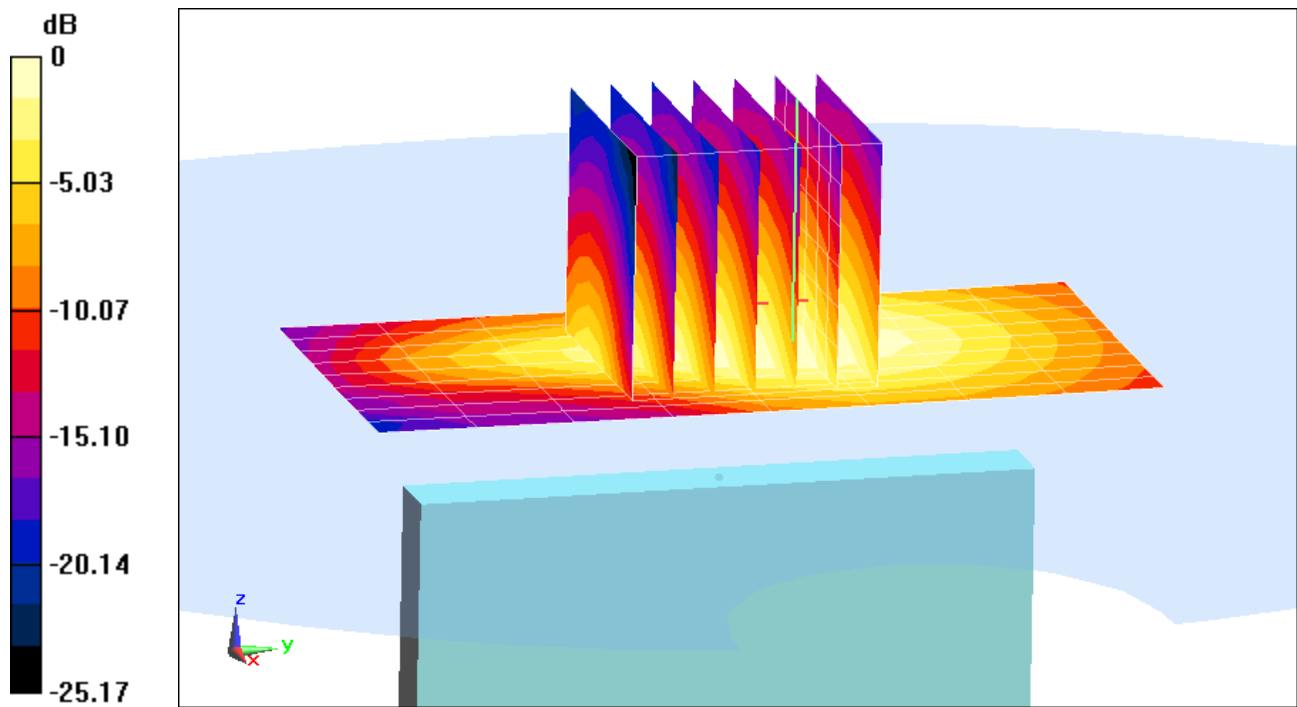
Area Scan (10x9x1): Measurement grid: $dx=5\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 11.12 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.467 W/kg

SAR(1 g) = 0.248 W/kg



0 dB = 0.305 W/kg = -5.16 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04183

Communication System: UID 0, 802.11n 5.2-5.8 GHz Band; Frequency: 5580 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used:

$f = 5580 \text{ MHz}$; $\sigma = 5.825 \text{ S/m}$; $\epsilon_r = 47.089$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-19-2017; Ambient Temp: 22.3°C; Tissue Temp: 21.6°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 802.11n, MIMO, UNII-2C, 20 MHz Bandwidth, Body SAR,
Ch 116, 13 Mbps, Back Side**

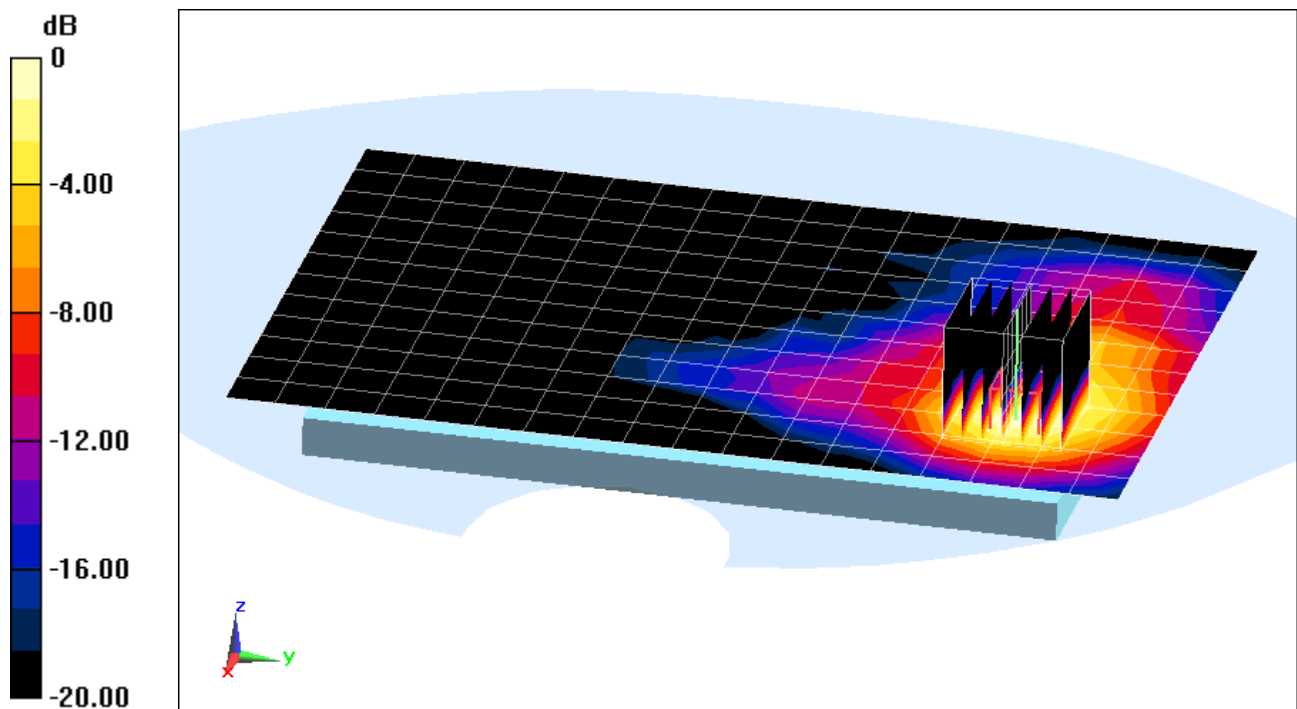
Area Scan (13x19x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Reference Value = 11.77 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 3.14 W/kg

SAR(1 g) = 0.758 W/kg



0 dB = 1.82 W/kg = 2.60 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04183

Communication System: UID 0, 802.11n 5.2-5.8 GHz Band; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used:

$f = 5785 \text{ MHz}$; $\sigma = 6.071 \text{ S/m}$; $\epsilon_r = 46.805$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-19-2017; Ambient Temp: 22.3°C; Tissue Temp: 21.6°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 802.11n, MIMO, U-NII-3, 20 MHz Bandwidth, Body SAR,
Ch 157, 13 Mbps, Back Side**

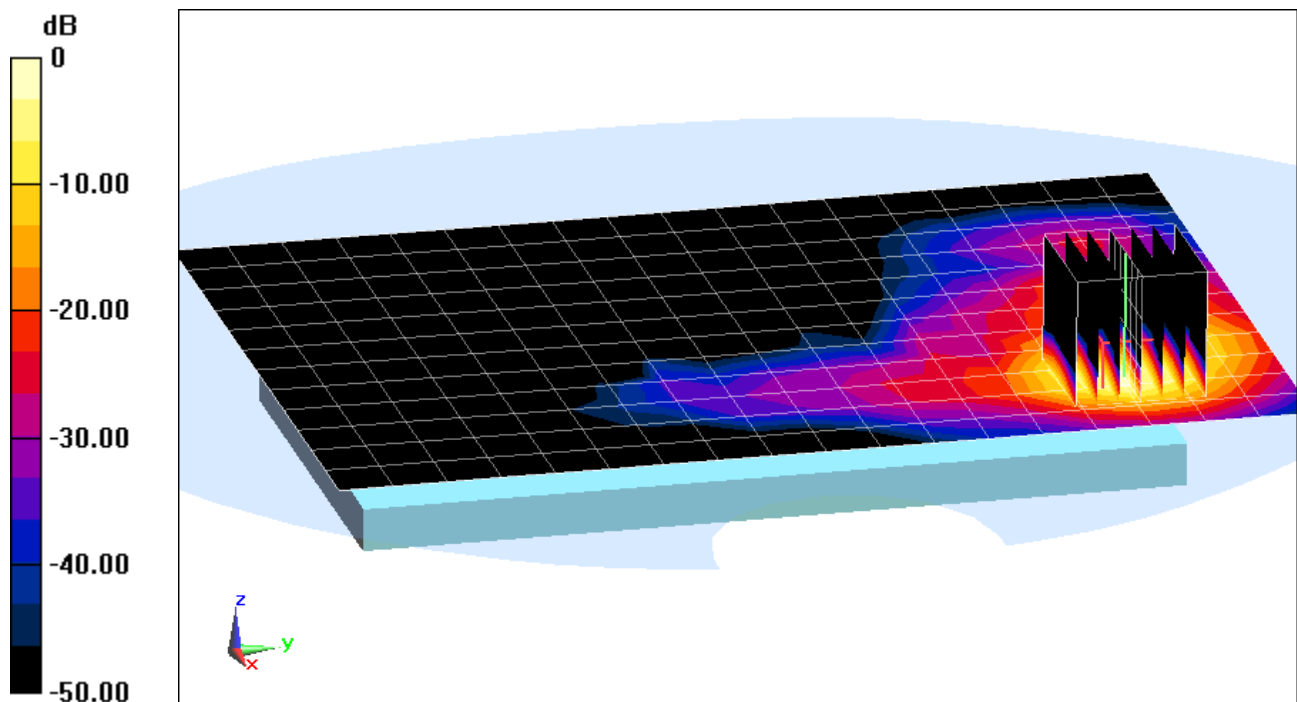
Area Scan (13x11x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Reference Value = 11.06 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 2.89 W/kg

SAR(1 g) = 0.682 W/kg



0 dB = 1.57 W/kg = 1.97 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04175

Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.29718

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2441 \text{ MHz}$; $\sigma = 1.973 \text{ S/m}$; $\epsilon_r = 51.963$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2017; Ambient Temp: 21.1°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: Bluetooth, Body SAR, Ch 39, 1 Mbps, Back Side

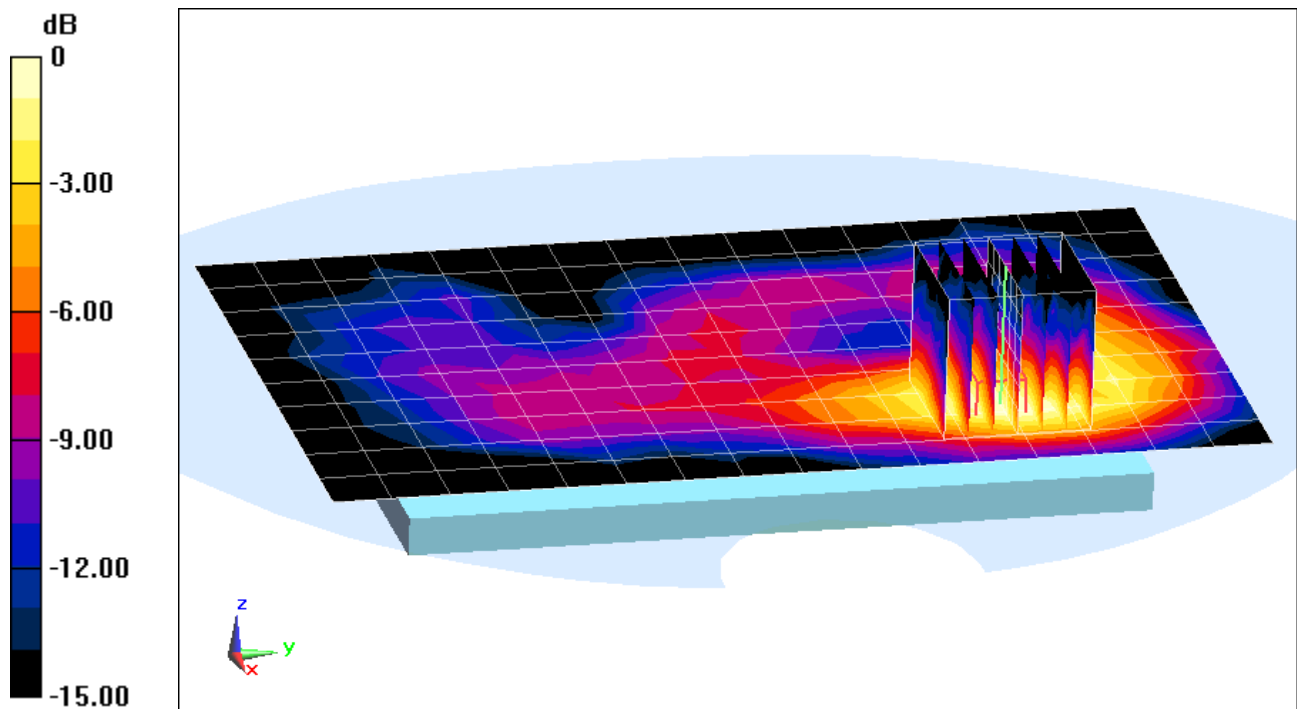
Area Scan (11x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 1.730 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 0.0620 W/kg

SAR(1 g) = 0.031 W/kg



0 dB = 0.0394 W/kg = -14.05 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: : 04175

Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.29718

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2441 \text{ MHz}$; $\sigma = 1.973 \text{ S/m}$; $\epsilon_r = 51.963$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2017; Ambient Temp: 21.1°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: Bluetooth, Body SAR, Ch 39, 1 Mbps, Left Edge

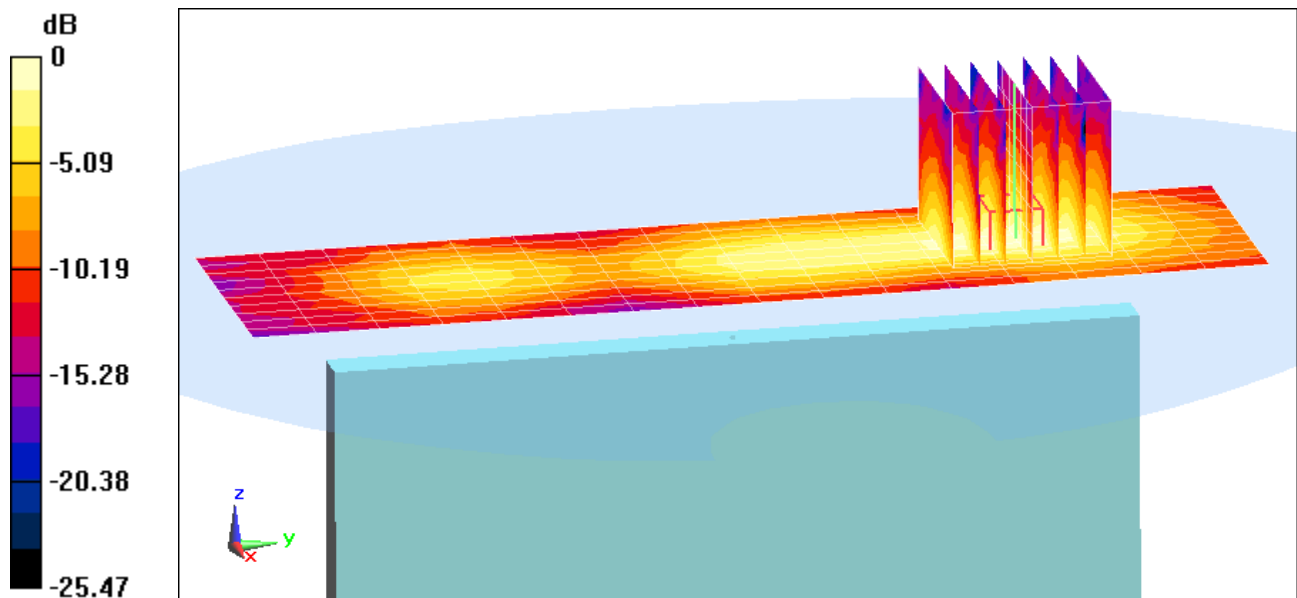
Area Scan (11x17x1): Measurement grid: $dx=5\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 4.935 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.0820 W/kg

SAR(1 g) = 0.040 W/kg



0 dB = 0.0526 W/kg = -12.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLS998; Type: Portable Handset; Serial: 04183

Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5580 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used:

$f = 5580 \text{ MHz}$; $\sigma = 5.937 \text{ S/m}$; $\epsilon_r = 47.378$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 06-12-2017; Ambient Temp: 22.1°C; Tissue Temp: 21.3°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, Antenna 1, U-NII-2C, 20 MHz Bandwidth, Phablet SAR
Ch 116, 6 Mbps, Back Side**

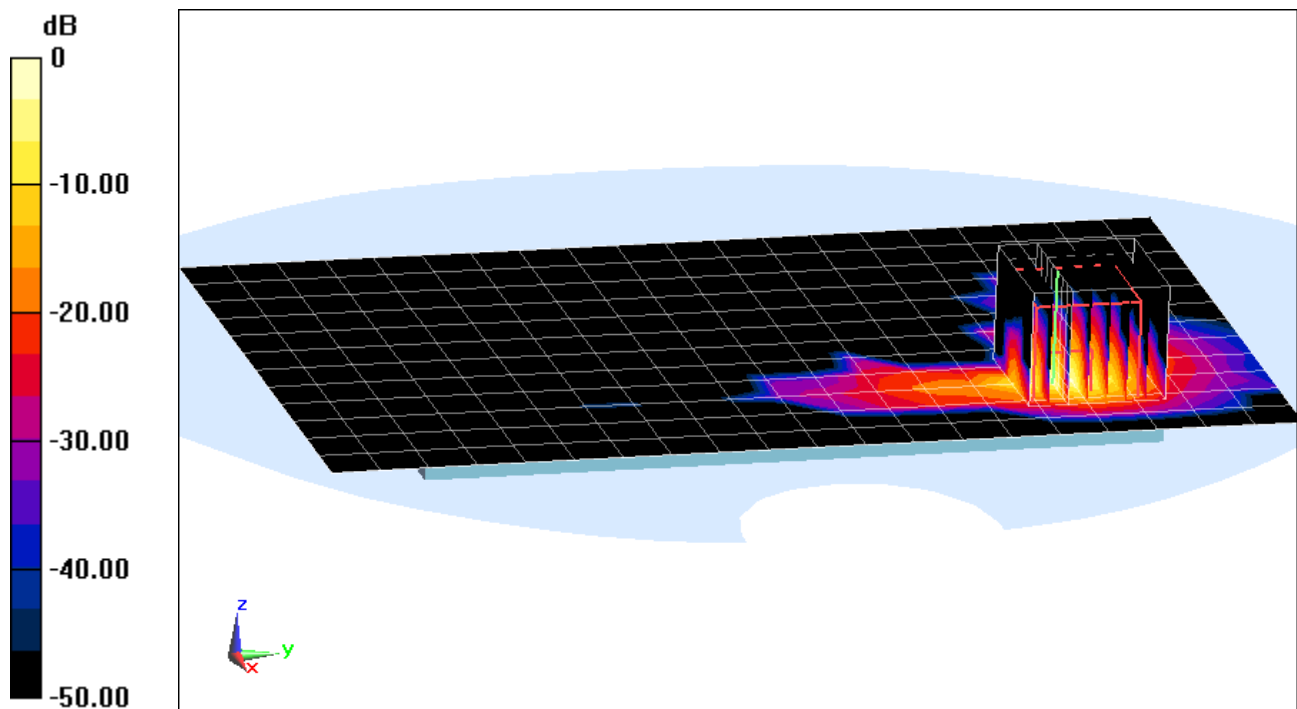
Area Scan (13x21x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Reference Value = 42.76 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 89.3 W/kg

SAR(10 g) = 1.53 W/kg



0 dB = 37.6 W/kg = 15.75 dBW/kg