



SAR EVALUATION REPORT

Applicant Name:

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

Date of Testing:

03/20/18 - 04/03/18

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Document Serial No.:

1M1803120039-01-R1.ZNF

FCC ID:

ZNFV350A

APPLICANT:

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

DUT Type:

Portable Handset

Application Type:

Certification

FCC Rule Part(s):

CFR §2.1093

Model:

LM-V350AWM

Additional Model(s):

LMV350AWM, V350AWM, LM-V350AWA, LMV350AWA, V350AWA, LM-V350AWS, LMV350AWS, V350AWS, LM-V350ULA, LMV350ULA, V350ULA, LM-V350ULM, LMV350ULM, V350ULM, LM-V350ULS, LMV350ULS, V350ULS

Equipment Class	Band & Mode	Tx Frequency	SAR			
			1g Head (W/kg)	1g Body-Worn (W/kg)	1g Hotspot (W/kg)	10g Phablet (W/kg)
PCE	CDMA/EVDO BC10 (800S)	817.90 - 823.10 MHz	0.13	0.49	0.51	N/A
PCE	CDMA/EVDO BC0 (824H)	824.70 - 848.31 MHz	0.13	0.51	0.50	N/A
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	0.20	0.64	0.80	N/A
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.12	0.52	0.52	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	0.12	0.41	0.41	N/A
PCE	UMTS 850	826.40 - 846.60 MHz	0.11	0.44	0.44	N/A
PCE	UMTS 1750	1712.4 - 1752.6 MHz	0.16	0.62	0.62	N/A
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.18	0.61	0.61	N/A
PCE	LTE Band 12	699.7 - 715.3 MHz	0.10	0.39	0.42	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	< 0.1	0.43	0.43	N/A
PCE	LTE Band 14	790.5 - 795.5 MHz	< 0.1	0.34	0.34	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.13	0.52	0.52	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	0.14	0.49	0.49	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.15	0.73	0.73	N/A
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.20	0.64	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 30	2307.5 - 2312.5 MHz	< 0.1	0.69	0.77	N/A
PCE	LTE Band 7	2502.5 - 2567.5 MHz	< 0.1	0.66	0.66	N/A
PCE	LTE Band 41	2498.5 - 2687.5 MHz	< 0.1	0.75	0.75	N/A
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.69	0.28	0.33	N/A
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	0.27	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.76	0.35	N/A	0.98
NII	U-NII-2C	5500 - 5720 MHz	0.52	0.59	N/A	1.22
NII	U-NII-3	5745 - 5825 MHz	0.40	0.79	0.79	N/A
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.39	< 0.1	< 0.1	N/A
Simultaneous SAR per KDB 690783 D01v01r03:			1.59	1.50	1.59	2.20

Note: This revised Test Report (S/N: 1M1803120039-01-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 14	Voice/Data	790.5 - 795.5 MHz
LTE Band 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 30	Voice/Data	2307.5 - 2312.5 MHz
LTE Band 7	Voice/Data	2502.5 - 2567.5 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2462 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
WMC	Data	500 Hz - 4 kHz

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.

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Maximum PCE Power

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
GSM/GPRS/EDGE 850	Maximum	33.7	33.7	32.7	30.0	28.3	28.0	27.7	26.5	26.2
	Nominal	33.2	33.2	32.2	29.5	27.8	27.5	27.2	26.0	25.7
GSM/GPRS/EDGE 1900	Maximum	30.7	30.7	28.7	27.0	25.5	26.8	26.8	25.2	25.2
	Nominal	30.2	30.2	28.2	26.5	25.0	26.3	26.3	24.7	24.7

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	24.5	24.5	24.5
	Nominal	24.0	24.0	24.0
UMTS Band 2 (1900 MHz)	Maximum	24.7	24.7	24.7
	Nominal	24.2	24.2	24.2

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	24.7
	Nominal	24.2

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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 14	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 66 (AWS)	Maximum	24.7
	Nominal	24.2
LTE Band 4 (AWS)	Maximum	24.7
	Nominal	24.2
LTE Band 25 (PCS)	Maximum	24.7
	Nominal	24.2
LTE Band 2 (PCS)	Maximum	24.7
	Nominal	24.2
LTE Band 30	Maximum	25.2
	Nominal	24.7
LTE Band 7	Maximum	23.7
	Nominal	23.2
LTE Band 41	Maximum	25.2
	Nominal	24.7

1.3.1 Maximum Bluetooth and SISO and MIMO WLAN Power

Mode / Band		Modulated Average - Single Tx Chain (dBm)		
Channel		1-2	3-9	10-11
IEEE 802.11b (2.4 GHz)	Maximum	19.5		18.5
	Nominal	18.5		17.5
IEEE 802.11g (2.4 GHz)	Maximum	17.0	18.0	17.0
	Nominal	16.0	17.0	16.0
IEEE 802.11n (2.4 GHz)	Maximum	16.5	17.5	16.5
	Nominal	15.5	16.5	15.5
IEEE 802.11ac (2.4 GHz)	Maximum	16.5		
	Nominal	15.5		

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Mode / Band		Modulated Average - MIMO (dBm)		
Channel		1-2	3-9	10-11
IEEE 802.11b (2.4 GHz)	Maximum	22.5		21.5
	Nominal	21.5		20.5
IEEE 802.11g (2.4 GHz)	Maximum	20.0	21.0	20.0
	Nominal	19.0	20.0	19.0
IEEE 802.11n (2.4 GHz)	Maximum	19.5	20.5	19.5
	Nominal	18.5	19.5	18.5
IEEE 802.11ac (2.4 GHz)	Maximum	19.5		
	Nominal	18.5		

Mode / Band		Modulated Average - Single Tx Chain (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11a (5 GHz)	Maximum	15.0		
	Nominal	14.0		
IEEE 802.11n (5 GHz)	Maximum	15.0		
	Nominal	14.0		
IEEE 802.11ac (5 GHz)	Maximum	15.0	13.0	11.0
	Nominal	14.0	12.0	10.0

Mode / Band		Modulated Average - MIMO (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11a (5 GHz)	Maximum	18.0		
	Nominal	17.0		
IEEE 802.11n (5 GHz)	Maximum	18.0		
	Nominal	17.0		
IEEE 802.11ac (5 GHz)	Maximum	18.0	16.0	14.0
	Nominal	17.0	15.0	13.0

Mode / Band		Modulated Average (dBm)
Bluetooth (1 Mbps GFSK)	Maximum	13.0
	Nominal	12.0
Bluetooth (2 Mbps DPSK)	Maximum	12.0
	Nominal	11.0
Bluetooth (3 Mbps 8Dpsk)	Maximum	12.0
	Nominal	11.0
Bluetooth LE	Maximum	7.0
	Nominal	6.0

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1.3.1

Reduced SISO and MIMO WLAN Power

Mode / Band		Modulated Average - Single Tx Chain (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	15.5
	Nominal	14.5
IEEE 802.11g (2.4 GHz)	Maximum	15.5
	Nominal	14.5
IEEE 802.11n (2.4 GHz)	Maximum	15.5
	Nominal	14.5
IEEE 802.11ac (2.4 GHz)	Maximum	15.5
	Nominal	14.5

Mode / Band		Modulated Average - MIMO (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	18.5
	Nominal	17.5
IEEE 802.11g (2.4 GHz)	Maximum	18.5
	Nominal	17.5
IEEE 802.11n (2.4 GHz)	Maximum	18.5
	Nominal	17.5
IEEE 802.11ac (2.4 GHz)	Maximum	18.5
	Nominal	17.5

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1.4 DUT Antenna Locations

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

Table 1-1
Device Edges/Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
EVDO BC10 (\$90S)	Yes	Yes	No	Yes	Yes	Yes
EVDO BC0 (\$22H)	Yes	Yes	No	Yes	Yes	Yes
PCS EVDO	Yes	Yes	No	Yes	No	Yes
GPRS 850	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	No	Yes
UMTS 850	Yes	Yes	No	Yes	Yes	Yes
UMTS 1750	Yes	Yes	No	Yes	No	Yes
UMTS 1900	Yes	Yes	No	Yes	No	Yes
LTE Band 12	Yes	Yes	No	Yes	Yes	Yes
LTE Band 13	Yes	Yes	No	Yes	Yes	Yes
LTE Band 14	Yes	Yes	No	Yes	Yes	Yes
LTE Band 26 (Cell)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 5 (Cell)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 66 (AWS)	Yes	Yes	No	Yes	No	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	No	Yes
LTE Band 30	Yes	Yes	No	Yes	No	Yes
LTE Band 7	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.

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.

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 Wi-Fi	Yes	Yes	N/A	Yes	
2	1x CDMA voice + 5 GHz Wi-Fi	Yes	Yes	N/A	Yes	
3	1x CDMA voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
4	1x CDMA voice + 2.4 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	
5	1x CDMA voice + 5 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	
6	1x CDMA voice + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	N/A	Yes	
7	GSM voice + 2.4 GHz Wi-Fi	Yes	Yes	N/A	Yes	
8	GSM voice + 5 GHz Wi-Fi	Yes	Yes	N/A	Yes	
9	GSM voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
10	GSM voice + 2.4 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	
11	GSM voice + 5 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	
12	GSM voice + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	N/A	Yes	
13	UMTS + 2.4 GHz Wi-Fi	Yes	Yes	Yes	Yes	
14	UMTS + 5 GHz Wi-Fi	Yes	Yes	Yes	Yes	
15	UMTS + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
16	UMTS + 2.4 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
17	UMTS + 5 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
18	UMTS + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	Yes	Yes	
19	LTE + 2.4 GHz Wi-Fi	Yes	Yes	Yes	Yes	
20	LTE + 5 GHz Wi-Fi	Yes	Yes	Yes	Yes	
21	LTE + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
22	LTE + 2.4 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
23	LTE + 5 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
24	LTE + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	Yes	Yes	
25	CDMA/EVDO data + 2.4 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
26	CDMA/EVDO data + 5 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
27	CDMA/EVDO data + 2.4 GHz Bluetooth	Yes^*	Yes*	Yes^	Yes	* Pre-installed VOIP applications are considered ^ Bluetooth Tethering is considered
28	CDMA/EVDO data + 2.4 GHz Wi-Fi MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
29	CDMA/EVDO data + 5 GHz Wi-Fi MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
30	CDMA/EVDO data + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
31	GPRS/EDGE + 2.4 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
32	GPRS/EDGE + 5 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
33	GPRS/EDGE + 2.4 GHz Bluetooth	Yes^*	Yes*	Yes^	Yes	* Pre-installed VOIP applications are considered ^ Bluetooth Tethering is considered
34	GPRS/EDGE + 2.4 GHz Wi-Fi MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
35	GPRS/EDGE + 5 GHz Wi-Fi MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
36	GPRS/EDGE + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered

- Bluetooth cannot transmit simultaneously with WLAN.
- All licensed modes share the same antenna path and cannot transmit simultaneously.
- When the user utilizes multiple services in UMTS 3G mode it uses multi-Radio Access Bearer or multi-RAB. The power control is based on a physical control channel (Dedicated Physical Control Channel [DPCCH]) and power control will be adjusted to meet the needs of both services. Therefore, the UMTS+WLAN scenario also represents the UMTS Voice/DATA + WLAN Hotspot scenario.
- Per the manufacturer, WIFI Direct is expected to be used in conjunction with a held-to-ear or body-worn accessory voice call. Therefore, the simultaneous transmission scenarios involving WIFI are listed in the above table.
- 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.
- This device supports 2x2 MIMO Tx for WLAN. 802.11a/g/n/ac modes support CDD and 802.11n/ac modes additionally support SDM. 802.11b operates as TDD only. Each WLAN antenna can transmit independently or together when operating with MIMO.

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7. This device supports BT Tethering.
8. This device supports VOLTE.
9. This device supports VOWIFI.

1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

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 and Band gap channels are supported

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

(B) Licensed Transmitter(s)

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

This device is only capable of QPSK HSUPA in the uplink. Therefore, no additional SAR tests are required beyond that described for devices with HSUPA in KDB 941225 D01v03r01.

LTE SAR for the higher modulations and lower bandwidths were not tested since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth; and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05v02r04.

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

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

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

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FCC KDB Publication 941225 D05v02r05.

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.

This device supports downlink 4x4 MIMO operations for some LTE Bands. Per May 2017 TCB Workshop Guidance, SAR for downlink 4x4 MIMO was not needed since the maximum average output power in 4x4 downlink MIMO mode was not > 0.25 dB higher than the maximum output power with downlink 4x4 MIMO inactive.

This device supports LTE capabilities with overlapping transmission frequency ranges. When the supported frequency range of an LTE Band falls completely within an LTE band with a larger transmission frequency range, both LTE bands have the same target power (or the band with the larger transmission frequency range has a higher target power), and both LTE bands share the same transmission path and signal characteristics, SAR was only assessed for the band with the larger transmission frequency range.

This device supports LTE Carrier Aggregation (CA) in the uplink for LTE Band 41 and LTE Band 5 with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per 2017 Fall TCB Workshop Notes.

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)
- May 2017 TCB Workshop Notes (LTE 4x4 Downlink MIMO)
- Fall 2017 TCB Workshop Notes (LTE Carrier Aggregation)

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. The serial numbers used for each test are indicated alongside the results in Section 11.

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LTE Information					
FCC ID	ZNFV350A				
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 14 (790.5 - 795.5 MHz)				
	LTE Band 26 (Cell) (814.7 - 848.3 MHz)				
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)				
	LTE Band 66 (AWS) (1710.7 - 1779.3 MHz)				
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 30 (2307.5 - 2312.5 MHz)				
	LTE Band 7 (2502.5 - 2567.5 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
Channel Bandwidths	LTE Band 17: 5 MHz, 10 MHz				
	LTE Band 13: 5 MHz, 10 MHz				
	LTE Band 14: 5 MHz, 10 MHz				
	LTE Band 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 66 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 30: 5 MHz, 10 MHz				
	LTE Band 7: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
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 14: 5 MHz	790.5 (23305)		793 (23330)		795.5 (23355)
LTE Band 14: 10 MHz	N/A		793 (23330)		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 66 (AWS): 1.4 MHz	1710.7 (131979)		1745 (132322)		1779.3 (132665)
LTE Band 66 (AWS): 3 MHz	1711.5 (131987)		1745 (132322)		1778.5 (132657)
LTE Band 66 (AWS): 5 MHz	1712.5 (131997)		1745 (132322)		1777.5 (132647)
LTE Band 66 (AWS): 10 MHz	1715 (132022)		1745 (132322)		1775 (132622)
LTE Band 66 (AWS): 15 MHz	1717.5 (132047)		1745 (132322)		1772.5 (132597)
LTE Band 66 (AWS): 20 MHz	1720 (132072)		1745 (132322)		1770 (132572)
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)		1732.5 (20175)		1754.3 (20393)
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)		1732.5 (20175)		1753.5 (20385)
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)		1732.5 (20175)		1752.5 (20375)
LTE Band 4 (AWS): 10 MHz	1715 (20000)		1732.5 (20175)		1750 (20350)
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)		1732.5 (20175)		1747.5 (20325)
LTE Band 4 (AWS): 20 MHz	1720 (20050)		1732.5 (20175)		1745 (20300)
LTE Band 25 (PCS): 1.4 MHz	1850.7 (26047)		1882.5 (26365)		1914.3 (26683)
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)		1882.5 (26365)		1913.5 (26675)
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)		1882.5 (26365)		1912.5 (26665)
LTE Band 25 (PCS): 10 MHz	1855 (26090)		1882.5 (26365)		1910 (26640)
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)		1882.5 (26365)		1907.5 (26615)
LTE Band 25 (PCS): 20 MHz	1860 (26140)		1882.5 (26365)		1905 (26590)
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)		1880 (18900)		1909.3 (19193)
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)		1880 (18900)		1908.5 (19185)
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)		1880 (18900)		1907.5 (19175)
LTE Band 2 (PCS): 10 MHz	1855 (18650)		1880 (18900)		1905 (19150)
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)		1880 (18900)		1902.5 (19125)
LTE Band 2 (PCS): 20 MHz	1860 (18700)		1880 (18900)		1900 (19100)
LTE Band 30: 5 MHz	2307.5 (27685)		2310 (27710)		2312.5 (27735)
LTE Band 30: 10 MHz	N/A		2310 (27710)		N/A
LTE Band 7: 5 MHz	2502.5 (20775)		2535 (21100)		2567.5 (21425)
LTE Band 7: 10 MHz	2505 (20800)		2535 (21100)		2565 (21400)
LTE Band 7: 15 MHz	2507.5 (20825)		2535 (21100)		2562.5 (21375)
LTE Band 7: 20 MHz	2510 (20850)		2535 (21100)		2560 (21350)
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	DL UE Cat 18 (QPSK, 16QAM, 64QAM, 256QAM), UL UE Cat 13 (QPSK, 16QAM, 64QAM)				
Modulations Supported in UL	QPSK, 16QAM, 64QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3-6.2.5? (manufacturer attestation to be provided)	YES				
A-MPR (Additional MPR disabled for SAR Testing?)	YES				
LTE Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations				
LTE Additional Information	This device does not support full CA features on 3GPP Release 12. It supports uplink carrier aggregation for LTE CA_41C with a maximum of two 20MHz component carriers and LTE CA_5B with a maximum of two 10MHz component carriers. 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 12 Features are not supported: Relay, HetNet, eICIC, MDH, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

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3 INTRODUCTION

The FCC and Innovation, Science, and Economic Development Canada have adopted the guidelines for evaluating the environmental effects of radio frequency (RF) radiation in ET Docket 93-62 on Aug. 6, 1996 and Health Canada Safety Code 6 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices. [1]

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz [3] and Health Canada RF Exposure Guidelines Safety Code 6 [22]. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave [4] is used for guidance in measuring the Specific Absorption Rate (SAR) due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields,” Report No. Vol 74. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

3.1 SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 3-1).

Equation 3-1
SAR Mathematical Equation

$$SAR = \frac{d}{dt} \left(\frac{dU}{dm} \right) = \frac{d}{dt} \left(\frac{dU}{\rho dv} \right)$$

SAR is expressed in units of Watts per Kilogram (W/kg).

$$SAR = \frac{\sigma \cdot E^2}{\rho}$$

where:

- σ = conductivity of the tissue-simulating material (S/m)
- ρ = mass density of the tissue-simulating material (kg/m³)
- E = Total RMS electric field strength (V/m)

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

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4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013:

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):
 - a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 4-1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).
 - b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.
 - c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

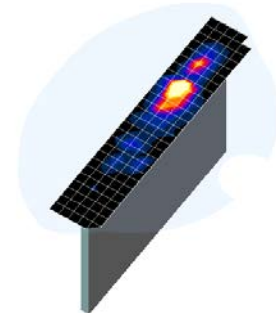


Figure 4-1 point
Sample SAR Area
Scan was

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

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

*Also compliant to IEEE 1528-2013 Table 6

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5.1 EAR REFERENCE POINT

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

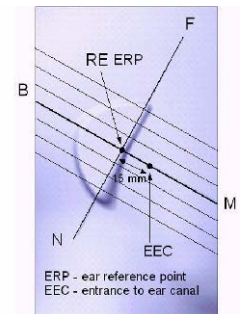


Figure 5-1
Close-Up Side view
of ERP

5.2 HANDSET REFERENCE POINTS

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



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

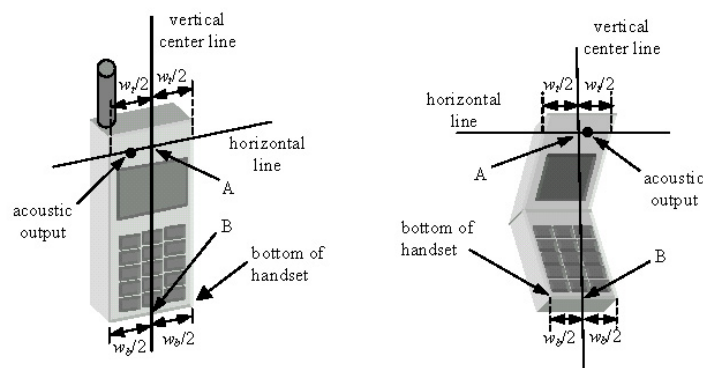


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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6 TEST CONFIGURATION POSITIONS

6.1 Device Holder

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

6.2 Positioning for Cheek

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

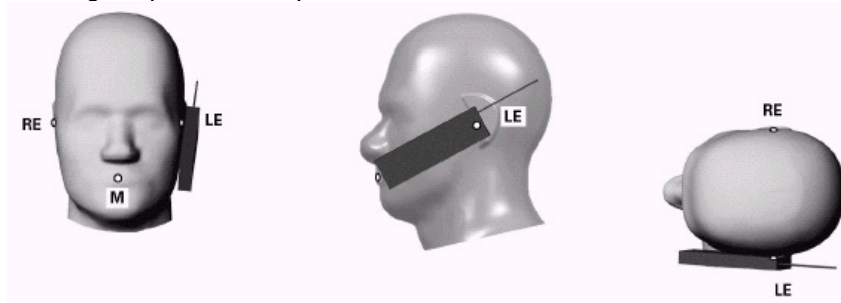


Figure 6-1 Front, Side and Top View of Cheek Position

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

6.3 Positioning for Ear / 15° Tilt

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

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

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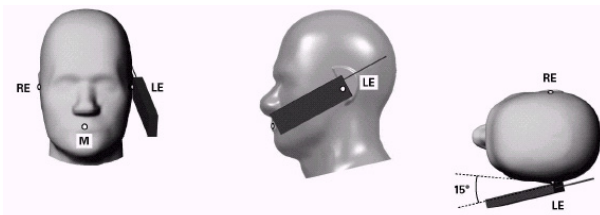


Figure 6-2 Front, Side and Top View of Ear/15° Tilt Position

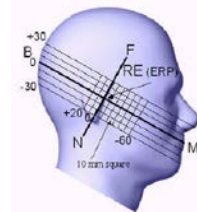


Figure 6-3 Side view w/ relevant markings

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

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

Under these circumstances, the following procedures apply, adopted from the FCC guidance on SAR handsets document FCC KDB Publication 648474 D04v01r03. The SAR required in these regions of SAM should be measured using a flat phantom. The phone should be positioned with a separation distance of 4 mm between the ear reference point (ERP) and the outer surface of the flat phantom shell. While maintaining this distance at the ERP location, the low (bottom) edge of the phone should be lowered from the phantom to establish the same separation distance between the peak SAR location identified by the truncated partial SAR distribution measured with the SAM phantom. The distance from the peak SAR location to the phone is determined by the straight line passing perpendicularly through the phantom surface. When it is not feasible to maintain 4 mm separation at the ERP while also establishing the required separation at the peak SAR location, the top edge of the phone will be allowed to touch the phantom with a separation < 4 mm at the ERP. The phone should not be tilted to the left or right while placed in this inclined position to the flat phantom.

6.5 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6-4). Per FCC KDB Publication 648474 D04v01r03, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

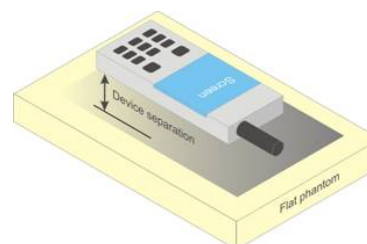


Figure 6-4 Sample Body-Worn Diagram

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

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Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented.

Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

6.6 Extremity Exposure Configurations

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

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

6.7 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06v02r01 where SAR test considerations for handsets ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) are based on a composite test separation distance of 10 mm from the front, back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 procedures. The "Portable Hotspot" feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

6.8 Phablet Configurations

For smart phones with a display diagonal dimension $> 150 \text{ mm}$ or an overall diagonal dimension $> 160 \text{ mm}$ that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04v01r03 should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. In addition to the normally required head and body-worn accessory SAR test procedures required for handsets, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna $\leq 25 \text{ mm}$ from that surface or edge, in direct contact with the phantom, for 10g SAR. The UMPC mini-tablet 1g SAR at 5 mm is not required. When hotspot mode applies, 10g SAR is required only for the surfaces and edges with hotspot mode 1g SAR $> 1.2 \text{ W/kg}$.

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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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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
$\bar{I}_{or}$	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
$\bar{I}_{or}$	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 EVDO capabilities, the 3G SAR test reduction procedure is applied to EVDO 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.

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

8.4.5 Body SAR Measurements for EVDO Hotspot

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

For EVDO 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 EVDO 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, DPDCHn and spreading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

8.5.2 Head SAR Measurements

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1s". The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the

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primary mode. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure.

8.5.3 Body SAR Measurements

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

8.5.4 SAR Measurements with Rel 5 HSDPA

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

8.5.5 SAR Measurements with Rel 6 HSUPA

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

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

8.6 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 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.

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

8.6.5 TDD

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

8.6.6 Downlink Only Carrier Aggregation

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

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8.7 SAR Testing with 802.11 Transmitters

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

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 10g 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 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

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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 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.6 OFDM Transmission Mode and SAR Test Channel Selection

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

8.7.7 Initial Test Configuration Procedure

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

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

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subsequent test configurations are required. When 10g 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 10g 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

Table 9-1
Maximum Conducted Power

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)
BC10	564	90S	820.1	25.41	25.40	25.38	25.38	25.33	25.34	25.35
Cellular	1013	22H	824.7	25.35	25.32	25.35	25.30	25.29	25.31	25.33
	384	22H	836.52	25.45	25.38	25.40	25.32	25.37	25.32	25.39
	777	22H	848.31	25.40	25.30	25.38	25.31	25.37	25.35	25.36
PCS	25	24E	1851.25	24.52	24.37	24.35	24.38	24.40	24.46	24.46
	600	24E	1880	24.50	24.33	24.47	24.36	24.39	24.47	24.50
	1175	24E	1908.75	24.46	24.30	24.44	24.35	24.33	24.41	24.40

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.

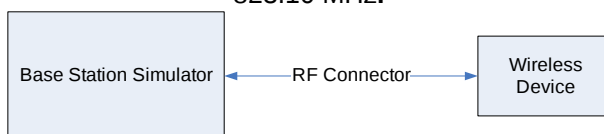


Figure 9-1
Power Measurement Setup

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9.2 GSM Conducted Powers

Table 9-2
Maximum Conducted Power

Maximum Burst-Averaged Output Power										
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 850	128	33.41	33.39	32.48	29.99	28.08	27.86	27.58	26.13	25.78
	190	33.46	33.46	32.43	29.88	27.84	27.82	27.53	26.13	25.84
	251	33.49	33.54	32.32	29.65	27.46	27.85	27.57	26.29	25.79
GSM 1900	512	30.35	30.38	28.70	26.88	25.00	26.53	26.30	25.20	24.87
	661	30.45	30.41	28.69	26.75	24.86	26.49	26.26	25.14	24.78
	810	30.25	30.25	28.46	26.61	24.54	26.36	26.18	25.09	24.62
Calculated Maximum Frame-Averaged Output Power										
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 850	128	24.38	24.36	26.46	25.73	25.07	18.83	21.56	21.87	22.77
	190	24.43	24.43	26.41	25.62	24.83	18.79	21.51	21.87	22.83
	251	24.46	24.51	26.30	25.39	24.45	18.82	21.55	22.03	22.78
GSM 1900	512	21.32	21.35	22.68	22.62	21.99	17.50	20.28	20.94	21.86
	661	21.42	21.38	22.67	22.49	21.85	17.46	20.24	20.88	21.77
	810	21.22	21.22	22.44	22.35	21.53	17.33	20.16	20.83	21.61
GSM 850	Frame Avg.Targets:	24.17	24.17	26.18	25.24	24.79	18.47	21.18	21.74	22.69
GSM 1900		21.17	21.17	22.18	22.24	21.99	17.27	20.28	20.44	21.69

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

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ensure GMSK modulation in the signal. Our Investigation has shown that CS1 - CS4 settings do not have any impact on the output levels or modulation in the GPRS modes.

3. EDGE (8-PSK) output powers were measured with MCS7 on the base station simulator. MCS7 coding scheme was used to measure the output powers for EDGE since investigation has shown that choosing MCS7 coding scheme will ensure 8-PSK modulation. It has been shown that MCS levels that produce 8PSK modulation do not have an impact on output power.

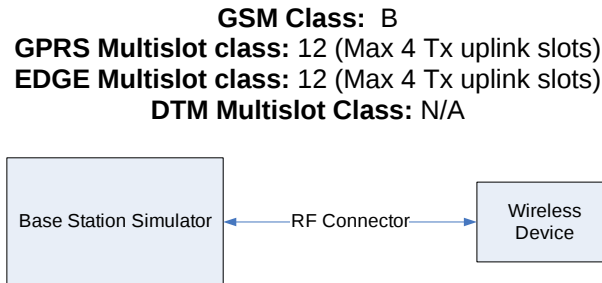


Figure 9-2
Power Measurement Setup

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9.3 UMTS Conducted Powers

Table 9-3
Maximum Conducted Power

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	25.17	25.21	25.30	24.12	24.21	24.18	24.62	24.67	24.68	-
99		12.2 kbps AMR	25.22	25.22	25.33	24.20	24.15	24.16	24.63	24.59	24.61	-
6	HSDPA	Subtest 1	24.41	24.50	24.51	23.63	23.64	23.61	24.21	24.17	24.12	0
6		Subtest 2	24.46	24.52	24.58	23.64	23.63	23.70	24.25	24.20	24.13	0
6		Subtest 3	23.94	24.01	24.08	23.16	23.14	23.15	23.75	23.74	23.62	0.5
6		Subtest 4	23.98	24.00	24.07	23.16	23.14	23.13	23.71	23.66	23.65	0.5
6	HSUPA	Subtest 1	24.43	24.50	24.53	23.67	23.65	23.64	24.20	24.18	24.08	0
6		Subtest 2	22.40	22.53	22.57	21.66	21.58	21.60	22.16	22.14	22.02	2
6		Subtest 3	23.45	23.48	23.53	22.66	22.65	22.58	23.14	23.12	23.03	1
6		Subtest 4	22.48	22.50	22.54	21.65	21.62	21.58	22.13	22.12	22.06	2
6		Subtest 5	24.40	24.49	24.51	23.71	23.65	23.64	24.20	24.16	24.10	0

This device does not support DC-HSDPA.



Figure 9-3
Power Measurement Setup

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9.4 LTE Conducted Powers

9.4.1 LTE Band 12

Table 9-4
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	25.49	0	0
	1	25	25.44		0
	1	49	25.36		0
	25	0	24.25	0-1	1
	25	12	24.40		1
	25	25	24.41		1
	50	0	24.38		1
16QAM	1	0	24.29	0-1	1
	1	25	24.38		1
	1	49	24.36		1
	25	0	23.35	0-2	2
	25	12	23.36		2
	25	25	23.25		2
	50	0	23.29		2
64QAM	1	0	23.30	0-2	2
	1	25	23.15		2
	1	49	23.06		2
	25	0	22.26	0-3	3
	25	12	22.30		3
	25	25	22.05		3
	50	0	22.10		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 9-5
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	25.46	25.47	25.43	0	0
	1	12	25.42	25.44	25.36		0
	1	24	25.32	25.24	25.26		0
	12	0	24.15	24.18	24.23	0-1	1
	12	6	24.34	24.34	24.37		1
	12	13	24.33	24.39	24.31		1
	25	0	24.36	24.38	24.31		1
16QAM	1	0	24.21	24.26	24.22	0-1	1
	1	12	24.27	24.31	24.33		1
	1	24	24.30	24.25	24.28		1
	12	0	23.23	23.31	23.27	0-2	2
	12	6	23.28	23.24	23.33		2
	12	13	23.14	23.16	23.20		2
	25	0	23.25	23.24	23.27		2
64QAM	1	0	23.29	23.19	23.28	0-2	2
	1	12	23.05	23.11	23.10		2
	1	24	23.05	23.05	22.96		2
	12	0	22.25	22.19	22.19	0-3	3
	12	6	22.22	22.20	22.26		3
	12	13	22.04	21.95	21.93		3
	25	0	22.03	22.00	22.09		3

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Table 9-6
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	25.37	25.45	25.31	0	0
	1	7	25.39	25.35	25.25		0
	1	14	25.20	25.19	25.24		0
	8	0	24.05	24.08	24.21	0-1	1
	8	4	24.32	24.33	24.29		1
	8	7	24.28	24.31	24.28		1
	15	0	24.29	24.31	24.30		1
16QAM	1	0	24.11	24.25	24.16	0-1	1
	1	7	24.22	24.19	24.22		1
	1	14	24.25	24.21	24.26		1
	8	0	23.21	23.26	23.17	0-2	2
	8	4	23.26	23.14	23.25		2
	8	7	23.10	23.04	23.13		2
	15	0	23.13	23.17	23.24		2
64QAM	1	0	23.19	23.16	23.19	0-2	2
	1	7	22.99	23.01	23.02		2
	1	14	23.02	22.98	22.90		2
	8	0	22.14	22.09	22.13	0-3	3
	8	4	22.21	22.17	22.17		3
	8	7	21.92	21.93	21.87		3
	15	0	21.92	21.95	22.00		3

Table 9-7
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	25.45	25.43	25.39	0	0
	1	2	25.34	25.39	25.24		0
	1	5	25.28	25.18	25.14		0
	3	0	25.35	25.47	25.37		0
	3	2	25.36	25.43	25.24		0
	3	3	25.23	25.15	25.22		0
	6	0	24.10	24.07	24.22	0-1	1
16QAM	1	0	24.20	24.22	24.18	0-1	1
	1	2	24.23	24.28	24.30		1
	1	5	24.23	24.13	24.23		1
	3	0	24.08	24.07	24.16		1
	3	2	24.24	24.22	24.27		1
	3	3	24.29	24.35	24.23		1
	6	0	23.23	23.26	23.20	0-2	2
64QAM	1	0	23.24	23.15	23.27	0-2	2
	1	2	23.05	23.10	22.99		2
	1	5	23.25	23.15	23.30		2
	3	0	23.02	23.16	23.12		2
	3	2	23.24	23.13	23.21		2
	3	3	23.23	23.16	23.18		2
	6	0	22.00	21.91	22.00	0-3	3

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LTE Band 13

Table 9-8
LTE Band 13 Conducted Powers - 10 MHz Bandwidth

LTE Band 13 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23230 (782.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	25.30	0	0
	1	25	25.26		0
	1	49	25.29		0
	25	0	24.13	0-1	1
	25	12	24.22		1
	25	25	24.28		1
	50	0	24.26		1
16QAM	1	0	24.15	0-1	1
	1	25	24.16		1
	1	49	24.22		1
	25	0	23.26	0-2	2
	25	12	23.24		2
	25	25	23.28		2
	50	0	23.15		2
64QAM	1	0	23.07	0-2	2
	1	25	23.04		2
	1	49	23.05		2
	25	0	22.16	0-3	3
	25	12	22.09		3
	25	25	21.93		3
	50	0	21.92		3

Table 9-9
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	25.45	0	0
	1	12	25.31		0
	1	24	25.08		0
	12	0	24.01	0-1	1
	12	6	24.24		1
	12	13	24.29		1
	25	0	24.28		1
16QAM	1	0	24.23	0-1	1
	1	12	24.17		1
	1	24	24.12		1
	12	0	23.14	0-2	2
	12	6	23.03		2
	12	13	23.02		2
	25	0	23.16		2
64QAM	1	0	23.09	0-2	2
	1	12	23.00		2
	1	24	22.92		2
	12	0	21.99	0-3	3
	12	6	22.14		3
	12	13	21.81		3
	25	0	21.94		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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9.4.1

LTE Band 14

Table 9-10
LTE Band 14 Conducted Powers - 10 MHz Bandwidth

LTE Band 14 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23330 (793.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	25.23	0	0
	1	25	25.26		0
	1	49	25.30		0
	25	0	24.30	0-1	1
	25	12	24.25		1
	25	25	24.25		1
16QAM	50	0	24.22	0-1	1
	1	0	24.16		1
	1	25	24.18		1
	1	49	24.22	0-2	1
	25	0	23.40		2
	25	12	23.45		2
64QAM	25	25	23.35	0-2	2
	50	0	23.35		2
	1	0	23.13	0-2	2
	1	25	23.10		2
	1	49	22.98		2
	25	0	22.18	0-3	3
64QAM	25	12	22.12		3
	25	25	21.90		3
	50	0	21.93		3

Table 9-11
LTE Band 14 Conducted Powers - 5 MHz Bandwidth

LTE Band 14 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23330 (793.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	25.35	0	0
	1	12	25.40		0
	1	24	25.23		0
	12	0	24.11	0-1	1
	12	6	24.29		1
	12	13	24.33		1
16QAM	25	0	24.32	0-1	1
	1	0	24.23		1
	1	12	24.27		1
	1	24	24.24	0-2	1
	12	0	23.19		2
	12	6	23.17		2
64QAM	12	13	23.14	0-2	2
	25	0	23.23		2
	1	0	23.10	0-2	2
	1	12	23.06		2
	1	24	23.00		2
	12	0	22.12	0-3	3
64QAM	12	6	22.08		3
	12	13	21.93		3
	25	0	21.95		3

Note: LTE Band 14 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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LTE Band 26 (Cell)

Table 9-12
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	25.26	0	0
	1	36	25.25		0
	1	74	25.20		0
	36	0	24.36	0-1	1
	36	18	24.35		1
	36	37	24.31		1
	75	0	24.33		1
16QAM	1	0	24.26	0-1	1
	1	36	24.25		1
	1	74	24.38		1
	36	0	23.36	0-2	2
	36	18	23.35		2
	36	37	23.34		2
	75	0	23.24		2
64QAM	1	0	23.18	0-2	2
	1	36	23.01		2
	1	74	23.02		2
	36	0	22.16	0-3	3
	36	18	22.15		3
	36	37	21.84		3
	75	0	21.90		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 9-13
LTE Band 26 (Cell) Conducted Powers - 10 MHz Bandwidth

LTE Band 26 (Cell) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26740 (819.0 MHz)	26865 (831.5 MHz)	26990 (844.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.41	25.40	25.36	0	0
	1	25	25.34	25.34	25.27		0
	1	49	25.29	25.15	25.18		0
	25	0	24.12	24.11	24.18	0-1	1
	25	12	24.23	24.26	24.32		1
	25	25	24.31	24.33	24.24		1
	50	0	24.36	24.29	24.22		1
16QAM	1	0	24.14	24.21	24.11	0-1	1
	1	25	24.25	24.30	24.21		1
	1	49	24.25	24.21	24.16		1
	25	0	23.23	23.24	23.26	0-2	2
	25	12	23.21	23.20	23.21		2
	25	25	23.04	23.13	23.10		2
	50	0	23.15	23.15	23.17		2
64QAM	1	0	23.20	23.18	23.25	0-2	2
	1	25	23.04	23.02	23.02		2
	1	49	23.00	22.96	22.85		2
	25	0	22.24	22.09	22.16	0-3	3
	25	12	22.19	22.08	22.17		3
	25	25	21.94	21.85	21.93		3
	50	0	22.02	21.96	22.02		3

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Table 9-14
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	25.38	25.45	25.36	0	0
	1	12	25.30	25.38	25.25		0
	1	24	25.32	25.15	25.25		0
	12	0	24.03	24.07	24.20	0-1	1
	12	6	24.28	24.28	24.27		1
	12	13	24.31	24.37	24.23		1
16QAM	25	0	24.33	24.29	24.20		1
	1	0	24.16	24.20	24.15	0-1	1
	1	12	24.24	24.26	24.32		1
	1	24	24.19	24.20	24.19		1
	12	0	23.11	23.21	23.23	0-2	2
	12	6	23.20	23.13	23.25		2
12	13	23.12	23.15	23.19	2		
64QAM	25	0	23.22	23.16	23.21		2
	1	0	23.26	23.19	23.27	0-2	2
	1	12	22.93	23.03	23.00		2
	1	24	22.93	22.98	22.85		2
	12	0	22.14	22.19	22.13	0-3	3
	12	6	22.10	22.09	22.25		3
12	13	22.01	21.90	21.84	3		
	25	0	22.00	21.93	21.99		3

Table 9-15
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	25.38	25.46	25.41	0	0
	1	7	25.36	25.41	25.24		0
	1	14	25.27	25.20	25.18		0
	8	0	24.07	24.17	24.23	0-1	1
	8	4	24.22	24.22	24.36		1
	8	7	24.22	24.36	24.23		1
16QAM	15	0	24.35	24.37	24.28		
	1	0	24.17	24.23	24.13	0-1	1
	1	7	24.25	24.20	24.25		1
	1	14	24.27	24.24	24.26		1
	8	0	23.11	23.19	23.23	0-2	2
	8	4	23.21	23.22	23.31		2
8	7	23.05	23.08	23.19	2		
64QAM	15	0	23.13	23.24	23.21		
	1	0	23.25	23.19	23.25	0-2	2
	1	7	22.98	23.05	23.06		2
	1	14	23.04	22.95	22.90		2
	8	0	22.19	22.09	22.13	0-3	3
	8	4	22.19	22.17	22.17		3
8	7	21.95	21.95	21.86	3		
	15	0	21.92	21.94	22.03		

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Table 9-16
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	25.35	25.39	25.37	0	0
	1	2	25.28	25.36	25.19		0
	1	5	25.20	25.12	25.03		0
	3	0	25.32	25.40	25.27		0
	3	2	25.32	25.33	25.17		0
	3	3	25.14	25.11	25.20		0
	6	0	24.05	24.03	24.10	0-1	1
16QAM	1	0	24.15	24.21	24.12	0-1	1
	1	2	24.14	24.18	24.23		1
	1	5	24.11	24.13	24.14		1
	3	0	23.98	24.03	24.09		1
	3	2	24.12	24.18	24.27		1
	3	3	24.21	24.31	24.22		1
	6	0	23.18	23.23	23.12	0-2	2
64QAM	1	0	23.14	23.04	23.27	0-2	2
	1	2	22.93	22.98	22.89		2
	1	5	23.15	23.13	23.26		2
	3	0	22.91	23.13	23.01		2
	3	2	23.18	23.05	23.20		2
	3	3	23.19	23.08	23.15		2
	6	0	21.96	21.82	21.95	0-3	3

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LTE Band 5 (Cell)

Table 9-17
LTE Band 5 (Cell) Conducted Powers - 10 MHz Bandwidth

LTE Band 5 (Cell) 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20525 (836.5 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	25.18	0	0
	1	25	25.22		0
	1	49	25.23		0
	25	0	24.22	0-1	1
	25	12	24.20		1
	25	25	24.23		1
16QAM	50	0	24.13	0-1	1
	1	0	24.15		1
	1	25	24.41		1
	1	49	24.20	0-2	1
	25	0	23.20		2
	25	12	23.16		2
64QAM	25	25	23.27	0-2	2
	50	0	23.31		2
	1	0	23.14	0-2	2
	1	25	23.29		2
	1	49	23.26	0-3	2
	25	0	22.32		3
	25	12	22.37		3
	25	25	22.14		3
	50	0	22.30		3

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

Table 9-18
LTE Band 5 (Cell) Conducted Powers - 5 MHz Bandwidth

LTE Band 5 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20425 (826.5 MHz)	20525 (836.5 MHz)	20625 (846.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.38	25.32	25.33	0	0
	1	12	25.25	25.40	25.28		0
	1	24	25.10	25.19	25.32		0
	12	0	24.18	24.18	24.16	0-1	1
	12	6	24.18	24.21	24.22		1
	12	13	24.27	24.21	24.20		1
	25	0	24.23	24.24	24.22	1	
16QAM	1	0	24.43	24.12	24.21	0-1	1
	1	12	24.24	24.23	24.22		1
	1	24	24.20	24.45	24.31		1
	12	0	23.31	23.27	23.18	0-2	2
	12	6	23.30	23.23	23.19		2
	12	13	23.20	23.29	23.09		2
	25	0	23.23	23.43	23.21	2	
64QAM	1	0	23.14	23.07	23.42	0-2	2
	1	12	23.33	23.35	23.12		2
	1	24	23.41	23.28	23.23		2
	12	0	22.35	22.22	22.41	0-3	3
	12	6	22.31	22.15	22.26		3
	12	13	22.15	22.31	22.34		3
	25	0	22.21	22.20	22.28	3	

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Table 9-19
LTE Band 5 (Cell) Conducted Powers - 3 MHz Bandwidth

LTE Band 5 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20415 (825.5 MHz)	20525 (836.5 MHz)	20635 (847.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.19	25.14	25.24	0	0
	1	7	25.22	25.06	25.32		0
	1	14	25.33	25.12	25.28		0
	8	0	24.30	24.22	24.24	0-1	1
	8	4	24.48	24.35	24.20		1
	8	7	24.34	24.16	24.23		1
	15	0	24.06	24.39	24.32		1
16QAM	1	0	24.34	24.20	24.42	0-1	1
	1	7	24.20	24.30	24.18		1
	1	14	24.20	24.22	24.43		1
	8	0	23.17	23.29	23.36	0-2	2
	8	4	23.45	23.22	23.28		2
	8	7	23.26	23.06	23.37		2
	15	0	23.06	23.21	23.39		2
64QAM	1	0	23.16	23.17	23.35	0-2	2
	1	7	23.23	23.22	23.26		2
	1	14	23.41	23.38	23.32		2
	8	0	22.47	22.32	22.27	0-3	3
	8	4	22.35	22.15	22.27		3
	8	7	22.11	22.20	22.21		3
	15	0	22.07	22.24	22.21		3

Table 9-20
LTE Band 5 (Cell) Conducted Powers -1.4 MHz Bandwidth

LTE Band 5 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20407 (824.7 MHz)	20525 (836.5 MHz)	20643 (848.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.15	25.38	25.16	0	0
	1	2	25.27	25.26	25.34		0
	1	5	25.28	25.40	25.23		0
	3	0	25.13	25.42	25.24		0
	3	2	25.23	25.41	25.30		0
	3	3	25.08	25.44	25.19		0
	6	0	24.45	24.18	24.35	0-1	1
16QAM	1	0	24.25	24.23	24.23	0-1	1
	1	2	24.27	24.04	24.19		1
	1	5	24.25	24.16	24.22		1
	3	0	24.45	24.30	24.30		1
	3	2	24.35	24.31	24.29		1
	3	3	24.30	24.42	24.27		1
	6	0	23.18	23.10	23.07	0-2	2
64QAM	1	0	23.29	23.44	23.35	0-2	2
	1	2	23.37	23.42	23.26		2
	1	5	23.35	23.21	23.07		2
	3	0	23.12	23.43	23.22		2
	3	2	23.33	23.37	23.26		2
	3	3	23.19	23.46	23.32		2
	6	0	22.31	22.29	22.33	0-3	3

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LTE Band 66 (AWS)

Table 9-21
LTE Band 66 (AWS) Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.63	24.66	24.56	0	0
	1	50	24.50	24.51	24.56		0
	1	99	24.49	24.53	24.49		0
	50	0	23.68	23.69	23.68	0-1	1
	50	25	23.66	23.58	23.50		1
	50	50	23.55	23.63	23.56		1
	100	0	23.63	23.66	23.62		1
16QAM	1	0	23.54	23.63	23.57	0-1	1
	1	50	23.59	23.62	23.53		1
	1	99	23.58	23.69	23.70		1
	50	0	22.69	22.67	22.56	0-2	2
	50	25	22.66	22.64	22.67		2
	50	50	22.67	22.55	22.62		2
	100	0	22.58	22.56	22.63		2
64QAM	1	0	22.45	22.61	22.52	0-2	2
	1	50	22.52	22.54	22.52		2
	1	99	22.46	22.62	22.59		2
	50	0	21.64	21.63	21.52	0-3	3
	50	25	21.57	21.63	21.55		3
	50	50	21.64	21.48	21.62		3
	100	0	21.51	21.45	21.57		3

Table 9-22
LTE Band 66 (AWS) Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132047 (1717.5 MHz)	132322 (1745.0 MHz)	132597 (1772.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.56	24.54	24.55	0	0
	1	36	24.42	24.51	24.46		0
	1	74	24.39	24.42	24.46		0
	36	0	23.64	23.57	23.66	0-1	1
	36	18	23.63	23.51	23.47		1
	36	37	23.51	23.51	23.51		1
	75	0	23.54	23.55	23.53		1
16QAM	1	0	23.48	23.61	23.50	0-1	1
	1	36	23.57	23.60	23.49		1
	1	74	23.52	23.63	23.66		1
	36	0	22.66	22.57	22.50	0-2	2
	36	18	22.60	22.57	22.66		2
	36	37	22.61	22.46	22.54		2
	75	0	22.47	22.44	22.51		2
64QAM	1	0	22.33	22.51	22.46	0-2	2
	1	36	22.50	22.50	22.41		2
	1	74	22.35	22.57	22.51		2
	36	0	21.58	21.52	21.51	0-3	3
	36	18	21.49	21.58	21.48		3
	36	37	21.62	21.48	21.51		3
	75	0	21.47	21.35	21.47		3

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Table 9-23
LTE Band 66 (AWS) Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132022 (1715.0 MHz)	132322 (1745.0 MHz)	132622 (1775.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.51	24.58	24.46	0	0
	1	25	24.41	24.44	24.50		0
	1	49	24.38	24.45	24.42		0
	25	0	23.60	23.61	23.67	0-1	1
	25	12	23.56	23.55	23.49		1
	25	25	23.45	23.62	23.53		1
	50	0	23.54	23.60	23.59		1
16QAM	1	0	23.50	23.56	23.50	0-1	1
	1	25	23.53	23.53	23.51		1
	1	49	23.49	23.58	23.69		1
	25	0	22.59	22.56	22.48	0-2	2
	25	12	22.65	22.62	22.55		2
	25	25	22.57	22.49	22.52		2
	50	0	22.57	22.49	22.54		2
64QAM	1	0	22.37	22.55	22.52	0-2	2
	1	25	22.40	22.44	22.45		2
	1	49	22.42	22.57	22.49		2
	25	0	21.53	21.53	21.45	0-3	3
	25	12	21.51	21.62	21.55		3
	25	25	21.57	21.37	21.55		3
	50	0	21.49	21.39	21.53		3

Table 9-24
LTE Band 66 (AWS) Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131997 (1712.5 MHz)	132322 (1745.0 MHz)	132647 (1777.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.51	24.59	24.45	0	0
	1	12	24.49	24.50	24.52		0
	1	24	24.48	24.51	24.44		0
	12	0	23.65	23.62	23.67	0-1	1
	12	6	23.62	23.54	23.38		1
	12	13	23.52	23.53	23.50		1
	25	0	23.56	23.57	23.50		1
16QAM	1	0	23.52	23.57	23.56	0-1	1
	1	12	23.49	23.53	23.43		1
	1	24	23.57	23.66	23.64		1
	12	0	22.62	22.55	22.49	0-2	2
	12	6	22.59	22.57	22.56		2
	12	13	22.61	22.54	22.53		2
	25	0	22.47	22.51	22.56		2
64QAM	1	0	22.44	22.57	22.43	0-2	2
	1	12	22.48	22.47	22.47		2
	1	24	22.41	22.55	22.54		2
	12	0	21.58	21.52	21.49	0-3	3
	12	6	21.48	21.61	21.52		3
	12	13	21.57	21.37	21.56		3
	25	0	21.41	21.39	21.49		3

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Table 9-25
LTE Band 66 (AWS) Conducted Powers - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131987 (1711.5 MHz)	132322 (1745.0 MHz)	132657 (1778.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.59	24.60	24.44	0	0
	1	7	24.47	24.39	24.46		0
	1	14	24.46	24.45	24.39		0
	8	0	23.67	23.61	23.61	0-1	1
	8	4	23.59	23.53	23.40		1
	8	7	23.45	23.54	23.51		1
	15	0	23.51	23.56	23.52		1
16QAM	1	0	23.52	23.57	23.54	0-1	1
	1	7	23.56	23.61	23.51		1
	1	14	23.51	23.69	23.58		1
	8	0	22.62	22.55	22.46	0-2	2
	8	4	22.54	22.62	22.65		2
	8	7	22.63	22.53	22.56		2
	15	0	22.57	22.51	22.53		2
64QAM	1	0	22.34	22.57	22.50	0-2	2
	1	7	22.47	22.51	22.48		2
	1	14	22.39	22.51	22.54		2
	8	0	21.56	21.52	21.48	0-3	3
	8	4	21.53	21.60	21.49		3
	8	7	21.59	21.41	21.59		3
	15	0	21.49	21.40	21.56		3

Table 9-26
LTE Band 66 (AWS) Conducted Powers -1.4 MHz Bandwidth

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131979 (1710.7 MHz)	132322 (1745.0 MHz)	132665 (1779.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.63	24.66	24.56	0	0
	1	2	24.38	24.47	24.51		0
	1	5	24.43	24.45	24.37		0
	3	0	24.65	24.62	24.60		0
	3	2	24.63	24.46	24.39		0
	3	3	24.44	24.51	24.49		0
	6	0	23.55	23.50	23.60	0-1	1
16QAM	1	0	23.47	23.53	23.46	0-1	1
	1	2	23.58	23.61	23.45		1
	1	5	23.48	23.63	23.68		1
	3	0	23.64	23.61	23.54		1
	3	2	23.62	23.52	23.57		1
	3	3	23.62	23.47	23.51		1
	6	0	22.54	22.51	22.55	0-2	2
64QAM	1	0	22.36	22.57	22.50	0-2	2
	1	2	22.45	22.53	22.49		2
	1	5	22.37	22.53	22.49		2
	3	0	22.61	22.57	22.51		2
	3	2	22.45	22.52	22.45		2
	3	3	22.61	22.36	22.50		2
	6	0	21.40	21.44	21.47	0-3	3

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LTE Band 25 (PCS)

Table 9-27
LTE Band 25 (PCS) Maximum Conducted Powers - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26140 (1860.0 MHz)	26365 (1882.5 MHz)	26590 (1905.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.49	24.58	24.65	0	0
	1	50	24.54	24.56	24.54		0
	1	99	24.44	24.50	24.52		0
	50	0	23.61	23.60	23.61	0-1	1
	50	25	23.56	23.62	23.64		1
	50	50	23.55	23.56	23.59		1
	100	0	23.60	23.60	23.61		1
16QAM	1	0	23.48	23.56	23.56	0-1	1
	1	50	23.56	23.56	23.57		1
	1	99	23.66	23.60	23.66		1
	50	0	22.62	22.68	22.59	0-2	2
	50	25	22.65	22.60	22.59		2
	50	50	22.68	22.58	22.56		2
	100	0	22.47	22.54	22.44		2
64QAM	1	0	22.44	22.56	22.54	0-2	2
	1	50	22.54	22.49	22.48		2
	1	99	22.61	22.59	22.64		2
	50	0	21.58	21.59	21.49	0-3	3
	50	25	21.63	21.51	21.50		3
	50	50	21.61	21.48	21.52		3
	100	0	21.39	21.44	21.38		3

Table 9-28
LTE Band 25 (PCS) Maximum 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	24.41	24.53	24.61	0	0
	1	36	24.46	24.46	24.42		0
	1	74	24.40	24.49	24.40		0
	36	0	23.60	23.51	23.55	0-1	1
	36	18	23.54	23.53	23.54		1
	36	37	23.44	23.53	23.53		1
	75	0	23.52	23.53	23.56		1
16QAM	1	0	23.48	23.45	23.47	0-1	1
	1	36	23.51	23.56	23.45		1
	1	74	23.54	23.56	23.59		1
	36	0	22.61	22.56	22.56	0-2	2
	36	18	22.58	22.53	22.47		2
	36	37	22.62	22.48	22.52		2
	75	0	22.45	22.42	22.33		2
64QAM	1	0	22.32	22.56	22.47	0-2	2
	1	36	22.46	22.43	22.48		2
	1	74	22.59	22.49	22.61		2
	36	0	21.57	21.47	21.41	0-3	3
	36	18	21.53	21.48	21.48		3
	36	37	21.59	21.45	21.49		3
	75	0	21.28	21.35	21.34		3

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Table 9-29
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	24.39	24.46	24.55	0	0
	1	25	24.42	24.46	24.52		0
	1	49	24.44	24.39	24.40		0
	25	0	23.60	23.51	23.49	0-1	1
	25	12	23.45	23.57	23.60		1
	25	25	23.45	23.46	23.59		1
	50	0	23.52	23.58	23.61		1
16QAM	1	0	23.37	23.55	23.47	0-1	1
	1	25	23.55	23.53	23.56		1
	1	49	23.58	23.58	23.58		1
	25	0	22.51	22.67	22.56	0-2	2
	25	12	22.58	22.53	22.51		2
	25	25	22.57	22.46	22.56		2
	50	0	22.35	22.50	22.38		2
64QAM	1	0	22.36	22.51	22.51	0-2	2
	1	25	22.53	22.40	22.42		2
	1	49	22.52	22.55	22.52		2
	25	0	21.46	21.47	21.45	0-3	3
	25	12	21.59	21.50	21.42		3
	25	25	21.57	21.37	21.46		3
	50	0	21.34	21.33	21.36		3

Table 9-30
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	24.45	24.49	24.61	0	0
	1	12	24.47	24.50	24.43		0
	1	24	24.38	24.42	24.42		0
	12	0	23.56	23.58	23.60	0-1	1
	12	6	23.50	23.52	23.64		1
	12	13	23.48	23.44	23.59		1
	25	0	23.51	23.56	23.58		1
16QAM	1	0	23.42	23.51	23.52	0-1	1
	1	12	23.44	23.55	23.49		1
	1	24	23.61	23.53	23.63		1
	12	0	22.56	22.66	22.59	0-2	2
	12	6	22.64	22.52	22.53		2
	12	13	22.62	22.47	22.54		2
	25	0	22.42	22.47	22.37		2
64QAM	1	0	22.44	22.46	22.50	0-2	2
	1	12	22.53	22.38	22.41		2
	1	24	22.52	22.49	22.54		2
	12	0	21.53	21.48	21.47	0-3	3
	12	6	21.55	21.48	21.40		3
	12	13	21.54	21.42	21.42		3
	25	0	21.33	21.39	21.29		3

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Table 9-31
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	24.39	24.48	24.57	0	0
	1	7	24.45	24.54	24.43		0
	1	14	24.42	24.50	24.47		0
	8	0	23.60	23.49	23.53	0-1	1
	8	4	23.47	23.50	23.59		1
	8	7	23.54	23.48	23.52		1
	15	0	23.53	23.53	23.56		1
16QAM	1	0	23.36	23.52	23.52	0-1	1
	1	7	23.52	23.47	23.49		1
	1	14	23.55	23.56	23.60		1
	8	0	22.53	22.68	22.56	0-2	2
	8	4	22.57	22.48	22.48		2
	8	7	22.68	22.56	22.51		2
	15	0	22.36	22.51	22.37		2
64QAM	1	0	22.38	22.53	22.42	0-2	2
	1	7	22.46	22.45	22.36		2
	1	14	22.50	22.55	22.52		2
	8	0	21.52	21.51	21.39	0-3	3
	8	4	21.52	21.46	21.48		3
	8	7	21.59	21.42	21.42		3
	15	0	21.33	21.33	21.27		3

Table 9-32
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	24.42	24.57	24.61	0	0
	1	2	24.48	24.55	24.51		0
	1	5	24.39	24.43	24.40		0
	3	0	24.61	24.50	24.54		0
	3	2	24.56	24.53	24.58		0
	3	3	24.49	24.44	24.49		0
	6	0	23.54	23.54	23.49	0-1	1
16QAM	1	0	23.37	23.44	23.51	0-1	1
	1	2	23.47	23.51	23.50		1
	1	5	23.64	23.48	23.61		1
	3	0	23.59	23.64	23.54		1
	3	2	23.61	23.54	23.57		1
	3	3	23.58	23.52	23.47		1
	6	0	22.36	22.44	22.41	0-2	2
64QAM	1	0	22.37	22.44	22.50	0-2	2
	1	2	22.46	22.38	22.43		2
	1	5	22.58	22.56	22.53		2
	3	0	22.51	22.56	22.41		2
	3	2	22.52	22.46	22.41		2
	3	3	22.51	22.36	22.45		2
	6	0	21.39	21.32	21.35	0-3	3

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LTE Band 7

Table 9-33
LTE Band 7 Conducted Powers - 20 MHz Bandwidth

LTE Band 7 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20850 (2510.0 MHz)	21100 (2535.0 MHz)	21350 (2560.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.32	23.47	23.38	0	0
	1	50	23.26	23.68	23.65		0
	1	99	23.56	23.36	23.35		0
	50	0	22.37	22.56	22.53	0-1	1
	50	25	22.42	22.60	22.50		1
	50	50	22.51	22.45	22.22		1
	100	0	22.44	22.46	22.46		1
16QAM	1	0	22.23	22.48	22.23	0-1	1
	1	50	22.41	22.59	22.67		1
	1	99	22.21	22.53	22.45		1
	50	0	21.25	21.28	21.31	0-2	2
	50	25	21.40	21.47	21.45		2
	50	50	21.48	21.40	21.49		2
	100	0	21.56	21.49	21.48		2
64QAM	1	0	21.21	21.25	21.57	0-2	2
	1	50	21.48	21.50	21.37		2
	1	99	21.36	21.31	21.31		2
	50	0	20.65	20.58	20.22	0-3	3
	50	25	20.63	20.30	20.25		3
	50	50	20.67	20.56	20.58		3
	100	0	20.24	20.58	20.56		3

Table 9-34
LTE Band 7 Conducted Powers - 15 MHz Bandwidth

LTE Band 7 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20825 (2507.5 MHz)	21100 (2535.0 MHz)	21375 (2562.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.43	23.60	23.44	0	0
	1	36	23.34	23.44	23.48		0
	1	74	23.67	23.36	23.23		0
	36	0	22.57	22.40	22.47	0-1	1
	36	18	22.55	22.63	22.30		1
	36	37	22.65	22.61	22.40		1
	75	0	22.25	22.63	22.43		1
16QAM	1	0	22.50	22.57	22.29	0-1	1
	1	36	22.43	22.50	22.27		1
	1	74	22.23	22.22	22.66		1
	36	0	21.65	21.65	21.27	0-2	2
	36	18	21.63	21.22	21.31		2
	36	37	21.37	21.28	21.65		2
	75	0	21.51	21.20	21.53		2
64QAM	1	0	21.32	21.46	21.70	0-2	2
	1	36	21.68	21.50	21.52		2
	1	74	21.64	21.43	21.55		2
	36	0	20.43	20.70	20.44	0-3	3
	36	18	20.35	20.27	20.65		3
	36	37	20.40	20.68	20.35		3
	75	0	20.55	20.22	20.52		3

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Table 9-35
LTE Band 7 Conducted Powers - 10 MHz Bandwidth

LTE Band 7 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20800 (2505.0 MHz)	21100 (2535.0 MHz)	21400 (2565.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.43	23.24	23.62	0	0
	1	25	23.29	23.47	23.65		0
	1	49	23.44	23.67	23.24		0
	25	0	22.65	22.68	22.35	0-1	1
	25	12	22.23	22.44	22.57		1
	25	25	22.60	22.26	22.61		1
	50	0	22.57	22.68	22.46		1
16QAM	1	0	22.25	22.29	22.47	0-1	1
	1	25	22.49	22.22	22.59		1
	1	49	22.70	22.30	22.35		1
	25	0	21.28	21.26	21.67	0-2	2
	25	12	21.67	21.69	21.27		2
	25	25	21.66	21.29	21.70		2
	50	0	21.37	21.28	21.36		2
64QAM	1	0	21.66	21.35	21.66	0-2	2
	1	25	21.40	21.22	21.50		2
	1	49	21.29	21.37	21.43		2
	25	0	20.26	20.24	20.22	0-3	3
	25	12	20.65	20.25	20.43		3
	25	25	20.49	20.62	20.28		3
	50	0	20.23	20.59	20.69		3

Table 9-36
LTE Band 7 Conducted Powers - 5 MHz Bandwidth

LTE Band 7 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20775 (2502.5 MHz)	21100 (2535.0 MHz)	21425 (2567.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.49	23.46	23.23	0	0
	1	12	23.44	23.35	23.63		0
	1	24	23.43	23.44	23.56		0
	12	0	22.35	22.39	22.63	0-1	1
	12	6	22.29	22.32	22.45		1
	12	13	22.28	22.61	22.36		1
	25	0	22.50	22.56	22.43		1
16QAM	1	0	22.25	22.43	22.64	0-1	1
	1	12	22.23	22.66	22.24		1
	1	24	22.28	22.45	22.54		1
	12	0	21.63	21.67	21.47	0-2	2
	12	6	21.22	21.49	21.31		2
	12	13	21.54	21.21	21.28		2
	25	0	21.44	21.24	21.43		2
64QAM	1	0	21.26	21.24	21.46	0-2	2
	1	12	21.33	21.25	21.42		2
	1	24	21.63	21.29	21.39		2
	12	0	20.44	20.41	20.59	0-3	3
	12	6	20.49	20.22	20.48		3
	12	13	20.61	20.55	20.48		3
	25	0	20.24	20.46	20.31		3

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LTE Band 30

Table 9-37
LTE Band 30 Conducted Powers - 10 MHz Bandwidth

LTE Band 30 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			27710 (2310.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	25.04	0	0
	1	25	24.96		0
	1	49	24.92		0
	25	0	24.04	0-1	1
	25	12	24.01		1
	25	25	24.05		1
	50	0	24.03		1
16QAM	1	0	24.20	0-1	1
	1	25	24.15		1
	1	49	24.08		1
	25	0	23.13	0-2	2
	25	12	23.10		2
	25	25	23.20		2
	50	0	23.08		2
64QAM	1	0	23.15	0-2	2
	1	25	23.06		2
	1	49	23.05		2
	25	0	22.12	0-3	3
	25	12	22.03		3
	25	25	22.08		3
	50	0	22.17		3

Table 9-38
LTE Band 30 Conducted Powers - 5 MHz Bandwidth

LTE Band 30 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			27710 (2310.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	25.02	0	0
	1	12	24.87		0
	1	24	24.83		0
	12	0	24.01	0-1	1
	12	6	23.92		1
	12	13	24.02		1
	25	0	23.91		1
16QAM	1	0	24.19	0-1	1
	1	12	24.13		1
	1	24	24.04		1
	12	0	23.06	0-2	2
	12	6	23.04		2
	12	13	23.14		2
	25	0	23.01		2
64QAM	1	0	23.09	0-2	2
	1	12	22.96		2
	1	24	22.95		2
	12	0	22.10	0-3	3
	12	6	21.95		3
	12	13	21.98		3
	25	0	22.08		3

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

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LTE Band 41

Table 9-39
LTE Band 41 Power Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
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	24.83	24.72	24.69	24.88	24.71	0	0
	1	50	24.62	24.51	24.46	24.46	24.53		0
	1	99	24.57	24.43	24.43	24.35	24.43		0
	50	0	23.80	23.73	23.75	23.84	23.71	0-1	1
	50	25	23.76	23.63	23.65	23.64	23.56		1
	50	50	23.65	23.54	23.58	23.53	23.51		1
	100	0	23.68	23.63	23.60	23.55	23.51		1
16QAM	1	0	24.00	23.86	23.70	23.72	23.78	0-1	1
	1	50	23.76	23.65	23.48	23.46	23.63		1
	1	99	23.64	23.60	23.40	23.35	23.53		1
	50	0	22.90	22.85	22.79	22.78	22.73	0-2	2
	50	25	22.83	22.79	22.71	22.73	22.66		2
	50	50	22.78	22.69	22.65	22.60	22.61		2
	100	0	22.78	22.69	22.66	22.59	22.62		2
64QAM	1	0	22.69	22.58	22.59	22.66	22.59	0-2	2
	1	50	22.80	22.70	22.74	22.68	22.70		2
	1	99	22.75	22.67	22.69	22.69	22.71		2
	50	0	21.77	21.69	21.74	21.73	21.73	0-3	3
	50	25	21.85	21.83	21.75	21.84	21.78		3
	50	50	21.80	21.68	21.73	21.76	21.76		3
	100	0	21.95	21.85	21.90	21.92	21.91		3

Table 9-40
LTE Band 41 Power Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
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	24.89	24.69	24.57	24.61	24.64	0	0
	1	36	24.51	24.49	24.34	24.36	24.48		0
	1	74	24.49	24.33	24.40	24.31	24.37		0
	36	0	23.81	23.73	23.73	23.69	23.66	0-1	1
	36	18	23.65	23.61	23.57	23.57	23.50		1
	36	37	23.64	23.52	23.53	23.45	23.46		1
	75	0	23.56	23.59	23.54	23.48	23.45		1
16QAM	1	0	23.90	23.83	23.67	23.72	23.69	0-1	1
	1	36	23.72	23.56	23.39	23.38	23.61		1
	1	74	23.53	23.57	23.34	23.28	23.48		1
	36	0	22.81	22.82	22.68	22.71	22.68	0-2	2
	36	18	22.73	22.74	22.64	22.65	22.60		2
	36	37	22.75	22.62	22.60	22.48	22.57		2
	75	0	22.75	22.61	22.56	22.53	22.60		2
64QAM	1	0	22.66	22.49	22.54	22.55	22.48	0-2	2
	1	36	22.72	22.69	22.71	22.64	22.63		2
	1	74	22.69	22.67	22.57	22.61	22.65		2
	36	0	21.76	21.60	21.70	21.72	21.68	0-3	3
	36	18	21.81	21.81	21.66	21.80	21.72		3
	36	37	21.68	21.59	21.72	21.69	21.74		3
	75	0	21.95	21.84	21.89	21.87	21.82		3

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

LTE Band 41 10 MHz Bandwidth									
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	24.86	24.63	24.64	24.66	24.66	0	0
	1	25	24.61	24.41	24.44	24.37	24.44		0
	1	49	24.53	24.41	24.39	24.29	24.32		0
	25	0	23.71	23.65	23.63	23.63	23.59	0-1	1
	25	12	23.68	23.51	23.58	23.62	23.52		1
	25	25	23.53	23.53	23.53	23.42	23.43		1
16QAM	50	0	23.60	23.60	23.59	23.49	23.41	1	
	1	0	23.97	23.75	23.62	23.61	23.72	0-1	1
	1	25	23.68	23.57	23.45	23.39	23.55		1
	1	49	23.58	23.57	23.35	23.35	23.44		1
	25	0	22.84	22.75	22.72	22.66	22.72	0-2	2
	25	12	22.78	22.72	22.60	22.67	22.55		2
25	25	22.74	22.61	22.53	22.49	22.58	2		
64QAM	50	0	22.66	22.62	22.63	22.48	22.51	2	
	1	0	22.67	22.48	22.54	22.61	22.47	0-2	2
	1	25	22.78	22.58	22.66	22.57	22.66		2
	1	49	22.64	22.64	22.62	22.68	22.60		2
	25	0	21.68	21.68	21.67	21.67	21.66	0-3	3
	25	12	21.74	21.76	21.66	21.73	21.71		3
25	25	21.80	21.68	21.73	21.69	21.73	3		
	50	0	21.87	21.83	21.82	21.86	21.91	3	

Table 9-42
LTE Band 41 Power Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
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	24.87	24.71	24.67	24.67	24.60	0	0
	1	12	24.55	24.40	24.41	24.38	24.42		0
	1	24	24.48	24.35	24.33	24.25	24.32		0
	12	0	23.79	23.63	23.70	23.62	23.71	0-1	1
	12	6	23.74	23.60	23.58	23.61	23.49		1
	12	13	23.62	23.47	23.47	23.42	23.40		1
16QAM	25	0	23.62	23.53	23.49	23.50	23.48	1	
	1	0	23.93	23.74	23.59	23.70	23.70	0-1	1
	1	12	23.66	23.55	23.48	23.46	23.63		1
	1	24	23.61	23.50	23.29	23.30	23.47		1
	12	0	22.85	22.74	22.73	22.75	22.66	0-2	2
	12	6	22.79	22.73	22.59	22.65	22.65		2
12	13	22.74	22.60	22.58	22.54	22.52	2		
64QAM	25	0	22.69	22.60	22.62	22.49	22.54	2	
	1	0	22.67	22.56	22.54	22.56	22.54	0-2	2
	1	12	22.78	22.58	22.63	22.57	22.60		2
	1	24	22.75	22.57	22.69	22.64	22.67		2
	12	0	21.66	21.67	21.65	21.68	21.61	0-3	3
	12	6	21.73	21.81	21.75	21.82	21.67		3
12	13	21.76	21.64	21.69	21.70	21.73	3		
	25	0	21.90	21.81	21.83	21.83	21.84	3	

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9.4.3 LTE Uplink Carrier Aggregation Conducted Powers

Table 9-43
LTE Band 5 Uplink Carrier Aggregation Conducted Powers

	PCC									SCC								Power		
Combination	PCC Band	PCC Bandwidth [MHz]	PCC UL Channel	PCC UL Frequency [MHz]	PCC DL Channel	PCC DL Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC UL Channel	SCC UL Frequency [MHz]	SCC DL Channel	SCC DL Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled [dBm]	LTE Single Carrier Tx Power [dBm]
CA_5B	LTE B5	10	20525	836.5	2525	881.5	QPSK	1	49	LTE B5	5	20597	843.7	2597	888.7	QPSK	1	0	25.16	25.23

Table 9-44
LTE Band 41 Uplink Carrier Aggregation Conducted Powers

Table 42: Example Carrier Aggregation Configuration																
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 Single Carrier Tx Power (dBm)
CA_41C	LTE B41	20	40620	2593.0	QPSK	1	0	LTE B41	20	40422	2573.2	QPSK	1	99	24.82	24.69
CA_41C	LTE B41	20	41055	2636.5	QPSK	1	0	LTE B41	20	40857	2616.7	QPSK	1	99	24.85	24.88

Notes:

1. This device supports uplink carrier aggregation for LTE CA_41C with a maximum of two 20 MHz component carriers and LTE CA_5B with a maximum of two 10 MHz component carriers. For intraband contiguous carrier aggregation scenarios, 3GPP 36.101 Table 6.2.2A-1 specifies that the aggregate maximum allowed output power is 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.
2. Per FCC Guidance, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.



Figure 9-4
Power Measurement Setup

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9.5 WLAN Conducted Powers

Table 9-45
2.4 GHz WLAN Maximum Average RF Power – Ant 1

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
		Average	Average	Average	Average
2412	1	19.46	16.93	15.68	15.63
2422	3	N/A	17.97	16.52	N/A
2437	6	19.44	17.98	16.61	15.73
2452	9	19.33	17.93	16.52	N/A
2462	11	18.48	16.12	15.63	15.58

Table 9-46
2.4 GHz WLAN Maximum Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
		Average	Average	Average	Average
2412	1	19.49	16.90	15.70	15.69
2422	3	N/A	17.99	16.57	N/A
2437	6	19.44	17.98	16.63	15.70
2452	9	19.45	17.99	16.64	N/A
2462	11	18.49	16.10	15.55	15.56

Table 9-47
2.4 GHz WLAN Maximum Average RF Power – MIMO

2.4GHz 802.11n Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
2422	3	16.52	16.57	19.56
2437	6	16.61	16.63	19.63
2452	9	16.52	16.64	19.59

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Table 9-48
2.4 GHz WLAN Reduced Average RF Power – Ant 1

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
		Average	Average	Average	Average
2412	1	15.41	15.26	15.05	14.95
2437	6	15.50	15.32	15.11	15.00
2462	11	15.40	15.26	15.06	15.02

Table 9-49
2.4 GHz WLAN Reduced Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
		Average	Average	Average	Average
2412	1	15.34	15.29	15.14	15.12
2437	6	15.48	15.36	15.20	15.10
2462	11	15.29	15.31	15.26	15.06

Table 9-50
5 GHz WLAN Maximum Average RF Power – Ant 1

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
		Average	Average	Average
5180	36	14.64	14.52	14.51
5200	40	14.73	14.56	14.56
5220	44	14.82	14.61	14.59
5240	48	14.84	14.71	14.65
5260	52	14.83	14.64	14.72
5280	56	14.63	14.48	14.57
5300	60	14.97	14.70	14.73
5320	64	14.93	14.66	14.75
5500	100	14.80	14.62	14.59
5600	120	14.88	14.66	14.68
5620	124	14.93	14.70	14.72
5720	144	14.79	14.62	14.54
5745	149	14.88	14.70	14.64
5785	157	14.77	14.58	14.60
5825	165	14.67	14.53	14.50

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Table 9-51
5 GHz WLAN Maximum Average RF Power – Ant 2

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
		Average	Average	Average
5180	36	14.66	14.47	14.44
5200	40	14.50	14.31	14.28
5220	44	14.51	14.29	14.26
5240	48	14.53	14.35	14.33
5260	52	14.62	14.37	14.41
5280	56	14.61	14.35	14.31
5300	60	14.63	14.43	14.41
5320	64	14.60	14.35	14.34
5500	100	14.70	14.49	14.47
5600	120	14.71	14.53	14.49
5620	124	14.68	14.44	14.44
5720	144	14.66	14.53	14.53
5745	149	14.76	14.50	14.56
5785	157	14.72	14.55	14.58
5825	165	14.74	14.54	14.54

Table 9-52
5 GHz WLAN Maximum Average RF Power – MIMO

5GHz (20MHz) 802.11n Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
5180	36	14.52	14.47	17.51
5200	40	14.56	14.31	17.45
5220	44	14.61	14.29	17.46
5240	48	14.71	14.35	17.54
5260	52	14.64	14.37	17.52
5280	56	14.48	14.35	17.43
5300	60	14.70	14.43	17.58
5320	64	14.66	14.35	17.52
5500	100	14.62	14.49	17.57
5600	120	14.66	14.53	17.61
5620	124	14.70	14.44	17.58
5720	144	14.62	14.53	17.59
5745	149	14.70	14.50	17.61
5785	157	14.58	14.55	17.58
5825	165	14.53	14.54	17.55

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

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

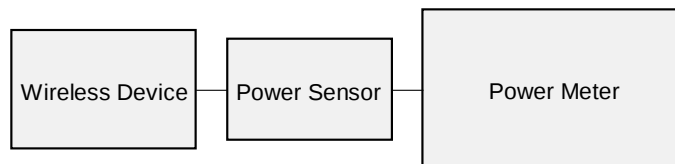


Figure 9-5
Power Measurement Setup

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9.6 Bluetooth Conducted Powers

Table 9-53
Bluetooth Average RF Power

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	12.10	16.230
2441	1.0	39	11.97	15.726
2480	1.0	78	11.11	12.919
2402	2.0	0	11.42	13.872
2441	2.0	39	11.31	13.507
2480	2.0	78	10.46	11.116
2402	3.0	0	11.49	14.090
2441	3.0	39	11.38	13.725
2480	3.0	78	10.51	11.251

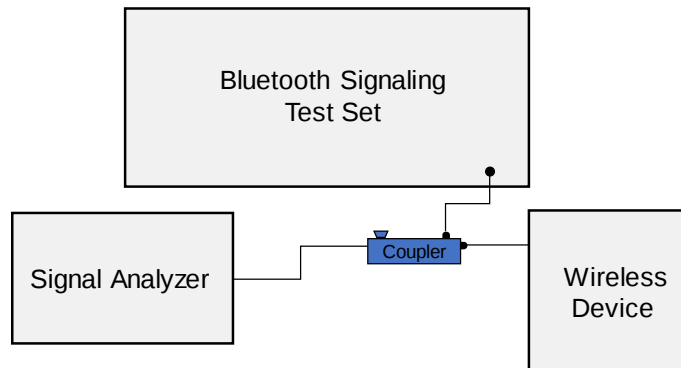
Note: The bolded data rates and channel above were tested for SAR.

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Equation 9-1 Bluetooth Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.930ms}{3.760ms} * 100\% = 77.9\%$$



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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
3/23/2018	750H	21.6	740	0.901	40.775	0.893	41.994	0.90%	-2.90%
			755	0.906	40.713	0.894	41.916	1.34%	-2.87%
			785	0.917	40.594	0.896	41.760	2.34%	-2.79%
			800	0.923	40.557	0.897	41.682	2.90%	-2.70%
3/26/2018	750H	21.1	700	0.881	40.729	0.889	42.201	-0.90%	-3.49%
			710	0.885	40.700	0.890	42.149	-0.56%	-3.44%
			740	0.896	40.632	0.893	41.994	0.34%	-3.24%
			755	0.901	40.584	0.894	41.916	0.78%	-3.18%
3/30/2018	750H	21.0	740	0.900	42.685	0.893	41.994	0.78%	1.65%
			755	0.913	42.469	0.894	41.916	2.13%	1.32%
			770	0.926	42.250	0.895	41.838	3.46%	0.98%
			785	0.940	42.037	0.896	41.760	4.91%	0.66%
3/25/2018	835H	21.3	820	0.884	41.223	0.899	41.578	-1.67%	-0.85%
			835	0.899	41.025	0.900	41.500	-0.11%	-1.14%
			850	0.914	40.840	0.916	41.500	-0.22%	-1.59%
			820	0.892	42.653	0.899	41.578	-0.78%	2.59%
3/31/2018	835H	21.2	835	0.907	42.478	0.900	41.500	0.78%	2.36%
			850	0.922	42.293	0.916	41.500	0.66%	1.91%
			1710	1.353	39.663	1.348	40.142	0.37%	-1.19%
			1750	1.396	39.468	1.371	40.079	1.82%	-1.52%
3/20/2018	1750H	21.3	1790	1.436	39.285	1.394	40.016	3.01%	-1.83%
			1850	1.397	38.849	1.400	40.000	-0.21%	-2.88%
			1880	1.428	38.738	1.400	40.000	2.00%	-3.16%
			1910	1.462	38.630	1.400	40.000	4.43%	-3.42%
3/28/2018	2450H	23.2	2300	1.643	40.639	1.670	39.500	-1.62%	2.88%
			2310	1.655	40.600	1.679	39.480	-1.43%	2.84%
			2400	1.710	40.716	1.756	39.289	-2.62%	3.63%
			2450	1.764	40.568	1.800	39.200	-2.00%	3.49%
3/25/2018	2450H	23.5	2500	1.818	40.397	1.855	39.136	-1.99%	3.22%
			2450	1.857	40.181	1.800	39.200	3.17%	2.50%
			2500	1.915	39.995	1.855	39.136	3.23%	2.19%
			2550	1.971	39.843	1.909	39.073	3.25%	1.97%
4/1/2018	2450H	22.9	2600	2.027	39.626	1.964	39.009	3.21%	1.58%
			2650	2.086	39.459	2.018	38.945	3.37%	1.32%
			2700	2.142	39.269	2.073	38.882	3.33%	1.00%
			2400	1.794	39.503	1.756	39.289	2.16%	0.54%
4/3/2018	2450H	22.5	2450	1.849	39.322	1.800	39.200	2.72%	0.31%
			2500	1.907	39.124	1.855	39.136	2.80%	-0.03%
			2550	1.963	38.943	1.909	39.073	2.83%	-0.33%
			2600	2.019	38.733	1.964	39.009	2.80%	-0.71%
03/26/2018	5200H-5800H	22.3	2650	2.076	38.555	2.018	38.945	2.87%	-1.00%
			2700	2.133	38.349	2.073	38.882	2.89%	-1.37%
			5180	4.573	37.599	4.635	36.009	-1.34%	4.42%
			5200	4.611	37.578	4.655	35.986	-0.95%	4.42%
			5220	4.616	37.581	4.676	35.963	-1.28%	4.50%
			5240	4.659	37.531	4.696	35.940	-0.79%	4.43%
			5260	4.680	37.538	4.717	35.917	-0.78%	4.51%
			5280	4.677	37.436	4.737	35.894	-1.27%	4.30%
			5300	4.706	37.487	4.758	35.871	-1.09%	4.51%
			5320	4.736	37.336	4.778	35.849	-0.88%	4.15%
			5500	4.886	37.146	4.963	35.643	-1.55%	4.22%
			5520	4.942	37.088	4.983	35.620	-0.82%	4.12%
			5540	4.954	37.142	5.004	35.597	-1.00%	4.34%
			5560	4.972	37.026	5.024	35.574	-1.04%	4.08%
			5580	5.031	37.068	5.045	35.551	-0.28%	4.27%
			5600	5.020	36.954	5.065	35.529	-0.89%	4.01%
			5620	5.047	36.994	5.086	35.506	-0.77%	4.19%
			5640	5.086	36.922	5.106	35.483	-0.39%	4.06%
			5660	5.091	36.971	5.127	35.460	-0.70%	4.26%
			5680	5.116	36.894	5.147	35.437	-0.60%	4.11%
			5700	5.127	36.883	5.168	35.414	-0.79%	4.15%
			5745	5.192	36.779	5.214	35.363	-0.42%	4.00%
			5765	5.201	36.758	5.234	35.340	-0.63%	4.01%
			5785	5.217	36.796	5.255	35.317	-0.72%	4.19%
			5800	5.243	36.662	5.270	35.300	-0.51%	3.86%
			5805	5.255	36.680	5.275	35.294	-0.38%	3.93%
			5825	5.263	36.694	5.296	35.271	-0.62%	4.03%

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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
3/22/2018	750B	21.5	700	0.951	54.014	0.959	55.726	-0.83%	-3.07%
			710	0.955	54.002	0.960	55.687	-0.52%	-3.03%
			740	0.965	53.954	0.963	55.570	0.21%	-2.91%
			755	0.970	53.903	0.964	55.512	0.62%	-2.90%
3/29/2018	750B	23.4	740	0.953	56.670	0.963	55.570	-1.04%	1.98%
			755	0.975	56.572	0.964	55.512	1.14%	1.91%
			770	0.987	56.399	0.965	55.453	2.28%	1.71%
			785	0.998	56.191	0.966	55.395	3.31%	1.44%
3/22/2018	835B	20.7	800	1.013	56.231	0.967	55.336	4.76%	1.62%
			820	0.944	53.006	0.969	55.258	-2.58%	-4.08%
			835	0.958	52.853	0.970	55.200	-1.24%	-4.25%
			850	0.972	52.698	0.988	55.154	-1.62%	-4.45%
3/28/2018	835B	21.2	820	0.946	54.045	0.969	55.258	-2.37%	-2.20%
			835	0.964	53.907	0.970	55.200	-0.62%	-2.34%
			850	0.976	53.775	0.988	55.154	-1.21%	-2.50%
			820	0.960	53.680	0.969	55.258	-0.93%	-2.86%
4/3/2018	835B	21.3	835	0.974	53.530	0.970	55.200	0.41%	-3.03%
			850	0.989	53.387	0.988	55.154	0.10%	-3.20%
			1710	1.479	51.319	1.463	53.537	1.09%	-4.14%
			1750	1.527	51.137	1.488	53.432	2.62%	-4.30%
3/26/2018	1750B	21.3	1790	1.571	50.987	1.514	53.326	3.76%	-4.39%
			1850	1.525	53.549	1.520	53.300	0.33%	0.47%
			1880	1.560	53.441	1.520	53.300	2.63%	0.26%
			1910	1.595	53.334	1.520	53.300	4.93%	0.06%
3/28/2018	2450B	23.5	2300	1.845	50.887	1.809	52.900	1.99%	-3.81%
			2310	1.856	50.861	1.816	52.887	2.20%	-3.83%
			2320	1.867	50.830	1.826	52.873	2.25%	-3.86%
			2400	1.954	50.629	1.902	52.767	2.73%	-4.05%
			2450	2.011	50.491	1.950	52.700	3.13%	-4.19%
			2500	2.070	50.356	2.021	52.636	2.42%	-4.33%
			2550	2.126	50.238	2.092	52.573	1.63%	-4.44%
			2600	2.185	50.074	2.163	52.509	1.02%	-4.64%
			2650	2.247	49.931	2.234	52.445	0.58%	-4.79%
			2700	2.305	49.769	2.305	52.382	0.00%	-4.99%
			2450	2.047	51.075	1.950	52.700	4.97%	-3.08%
			2500	2.111	50.898	2.021	52.636	4.45%	-3.30%
3/31/2018	2450B	21.7	2550	2.170	50.797	2.092	52.573	3.73%	-3.38%
			2600	2.229	50.657	2.163	52.509	3.05%	-3.53%
			5180	5.393	47.301	5.276	49.041	2.22%	-3.55%
			5200	5.420	47.239	5.299	49.014	2.28%	-3.62%
			5220	5.458	47.219	5.323	48.987	2.54%	-3.61%
			5240	5.482	47.192	5.346	48.960	2.54%	-3.61%
			5260	5.507	47.138	5.369	48.933	2.57%	-3.67%
			5280	5.526	47.094	5.393	48.906	2.47%	-3.71%
			5300	5.559	47.048	5.416	48.879	2.64%	-3.75%
			5320	5.570	47.047	5.439	48.851	2.41%	-3.69%
			5500	5.810	46.734	5.650	48.607	2.83%	-3.85%
			5520	5.839	46.691	5.673	48.580	2.93%	-3.89%
03/26/2018	5200B-5800B	21.6	5540	5.855	46.654	5.696	48.553	2.79%	-3.91%
			5560	5.899	46.619	5.720	48.526	3.13%	-3.93%
			5580	5.927	46.614	5.743	48.499	3.20%	-3.89%
			5600	5.953	46.547	5.766	48.471	3.24%	-3.97%
			5620	5.977	46.501	5.790	48.444	3.23%	-4.01%
			5640	6.004	46.468	5.813	48.417	3.29%	-4.03%
			5660	6.030	46.452	5.837	48.390	3.31%	-4.00%
			5680	6.073	46.418	5.860	48.363	3.63%	-4.02%
			5700	6.096	46.402	5.883	48.336	3.62%	-4.00%
			5745	6.151	46.296	5.936	48.275	3.62%	-4.10%
			5765	6.184	46.257	5.959	48.248	3.78%	-4.13%
			5785	6.202	46.246	5.982	48.220	3.68%	-4.09%
			5800	6.228	46.191	6.000	48.200	3.80%	-4.17%
			5805	6.239	46.195	6.006	48.193	3.88%	-4.15%
			5825	6.265	46.182	6.029	48.166	3.91%	-4.12%

The above measured tissue parameters were used in the DASY software. The DASY software was used to perform interpolation to determine the dielectric parameters at the SAR test device frequencies (per KDB Publication 865664 D01v01r04 and IEEE 1528-2013 6.6.1.2). The tissue parameters listed in the SAR test plots may slightly differ from the table above due to significant digit rounding in the software.

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10.2 Test System Verification

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

Table 10-3
System Verification Results – 1g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR _{1g} (W/kg)	1 W Target SAR _{1g} (W/kg)	1 W Normalized SAR _{1g} (W/kg)	Deviation _{1g} (%)
I	750	HEAD	03/23/2018	21.6	21.6	0.200	1054	3287	1.700	8.370	8.500	1.55%
I	750	HEAD	03/26/2018	21.3	20.8	0.200	1054	3287	1.730	8.370	8.650	3.35%
H	750	HEAD	03/30/2018	23.8	21.2	0.200	1161	7410	1.620	8.170	8.100	-0.86%
E	835	HEAD	03/31/2018	23.8	21.4	0.200	4d132	3213	1.900	9.360	9.500	1.50%
E	835	HEAD	03/25/2018	23.5	21.5	0.200	4d132	3213	1.980	9.360	9.900	5.77%
H	1750	HEAD	03/20/2018	22.8	21.8	0.100	1148	7410	3.540	36.400	35.400	-2.75%
G	1900	HEAD	03/21/2018	21.3	21.1	0.100	5d148	3332	3.930	40.100	39.300	-2.00%
G	2300	HEAD	03/28/2018	22.3	21.5	0.100	1073	3332	4.700	48.600	47.000	-3.29%
G	2450	HEAD	03/25/2018	23.2	23.1	0.100	797	3332	4.920	52.700	49.200	-6.64%
G	2450	HEAD	04/01/2018	22.1	22.2	0.100	797	3332	5.210	52.700	52.100	-1.14%
G	2450	HEAD	04/03/2018	22.4	21.0	0.100	981	3332	5.370	52.800	53.700	1.70%
G	2600	HEAD	04/01/2018	22.1	22.2	0.100	1126	3332	5.550	56.400	55.500	-1.60%
G	2600	HEAD	04/03/2018	22.4	21.0	0.100	1126	3332	5.400	56.400	54.000	-4.26%
H	5250	HEAD	03/26/2018	21.5	20.4	0.050	1120	3589	3.900	81.300	78.000	-4.06%
H	5600	HEAD	03/26/2018	21.5	20.4	0.050	1120	3589	4.270	84.700	85.400	0.83%
H	5750	HEAD	03/26/2018	21.5	20.4	0.050	1120	3589	3.900	81.000	78.000	-3.70%
H	750	BODY	03/22/2018	23.0	21.8	0.200	1054	7410	1.700	8.610	8.500	-1.28%
I	750	BODY	03/29/2018	22.8	23.4	0.200	1161	3287	1.740	8.430	8.700	3.20%
E	835	BODY	03/22/2018	21.3	20.7	0.200	4d132	3213	1.920	9.710	9.600	-1.13%
E	835	BODY	03/28/2018	20.8	21.2	0.200	4d132	3213	2.060	9.710	10.300	6.08%
E	835	BODY	04/03/2018	22.0	21.3	0.200	4d132	3213	2.070	9.710	10.350	6.59%
K	1750	BODY	03/26/2018	22.0	21.3	0.100	1150	7406	3.920	36.500	39.200	7.40%
J	1900	BODY	03/28/2018	21.1	21.8	0.100	5d148	3914	4.180	39.600	41.800	5.56%
K	2300	BODY	03/28/2018	22.5	22.2	0.100	1073	7406	4.850	48.100	48.500	0.83%
K	2450	BODY	03/28/2018	22.5	22.2	0.100	797	7406	5.060	51.100	50.600	-0.98%
K	2450	BODY	03/31/2018	21.5	21.7	0.100	797	7406	4.950	51.100	49.500	-3.13%
K	2600	BODY	03/28/2018	22.5	22.2	0.100	1126	7406	5.570	54.300	55.700	2.58%
K	2600	BODY	03/31/2018	21.5	21.7	0.100	1126	7406	5.250	54.300	52.500	-3.31%
D	5250	BODY	03/26/2018	21.6	20.7	0.050	1237	7308	3.560	76.900	71.200	-7.41%
D	5600	BODY	03/26/2018	21.6	20.7	0.050	1237	7308	3.690	78.500	73.800	-5.99%
D	5750	BODY	03/26/2018	21.6	20.7	0.050	1237	7308	3.600	77.100	72.000	-6.61%

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Table 10-4
System Verification Results – 10g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR _{10g} (W/kg)	1 W Target SAR _{10g} (W/kg)	1 W Normalized SAR _{10g} (W/kg)	Deviation _{10g} (%)
D	5250	BODY	03/26/2018	21.6	20.7	0.050	1237	7308	0.995	21.500	19.900	-7.44%
D	5600	BODY	03/26/2018	21.6	20.7	0.050	1237	7308	1.020	22.100	20.400	-7.69%

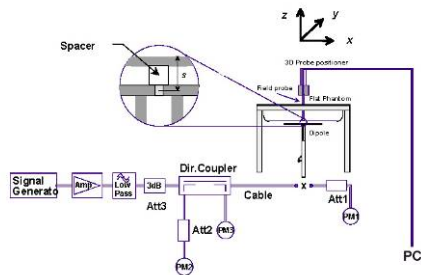


Figure 10-1
System Verification Setup Diagram



Figure 10-2
System Verification Setup Photo

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11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
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	25.40	0.09	Right	Cheek	01380	1:1	0.094	1.023	0.096	
820.10	564	CDMA BC10 (\$90S)	RC3 / SO55	25.5	25.40	0.09	Right	Tilt	01380	1:1	0.081	1.023	0.083	
820.10	564	CDMA BC10 (\$90S)	RC3 / SO55	25.5	25.40	0.02	Left	Cheek	01380	1:1	0.131	1.023	0.134	A1
820.10	564	CDMA BC10 (\$90S)	RC3 / SO55	25.5	25.40	-0.01	Left	Tilt	01380	1:1	0.065	1.023	0.066	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. A	25.5	25.35	0.08	Right	Cheek	01380	1:1	0.081	1.035	0.084	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. A	25.5	25.35	0.02	Right	Tilt	01380	1:1	0.072	1.035	0.075	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. A	25.5	25.35	-0.01	Left	Cheek	01380	1:1	0.119	1.035	0.123	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. A	25.5	25.35	0.01	Left	Tilt	01380	1:1	0.059	1.035	0.061	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-2
CDMA BC0 (§22H) Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
836.52	384	CDMA BC0 (\$22H)	RC3 / SO55	25.5	25.38	0.16	Right	Cheek	01380	1:1	0.081	1.028	0.083	
836.52	384	CDMA BC0 (\$22H)	RC3 / SO55	25.5	25.38	0.15	Right	Tilt	01380	1:1	0.034	1.028	0.035	
836.52	384	CDMA BC0 (\$22H)	RC3 / SO55	25.5	25.38	-0.01	Left	Cheek	01380	1:1	0.126	1.028	0.130	A2
836.52	384	CDMA BC0 (\$22H)	RC3 / SO55	25.5	25.38	0.05	Left	Tilt	01380	1:1	0.060	1.028	0.062	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.5	25.39	0.06	Right	Cheek	01380	1:1	0.081	1.026	0.083	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.5	25.39	0.07	Right	Tilt	01380	1:1	0.071	1.026	0.073	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.5	25.39	0.02	Left	Cheek	01380	1:1	0.123	1.026	0.126	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.5	25.39	0.01	Left	Tilt	01380	1:1	0.059	1.026	0.061	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

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Table 11-3
PCS CDMA Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	600	PCS CDMA	RC3 / SO55	24.7	24.33	0.10	Right	Cheek	01380	1:1	0.121	1.089	0.132	
1880.00	600	PCS CDMA	RC3 / SO55	24.7	24.33	0.04	Right	Tilt	01380	1:1	0.063	1.089	0.069	
1880.00	600	PCS CDMA	RC3 / SO55	24.7	24.33	-0.03	Left	Cheek	01380	1:1	0.182	1.089	0.198	A3
1880.00	600	PCS CDMA	RC3 / SO55	24.7	24.33	0.09	Left	Tilt	01380	1:1	0.090	1.089	0.098	
1880.00	600	PCS CDMA	EVDO Rev. A	24.7	24.50	-0.04	Right	Cheek	01380	1:1	0.147	1.047	0.154	
1880.00	600	PCS CDMA	EVDO Rev. A	24.7	24.50	0.15	Right	Tilt	01380	1:1	0.078	1.047	0.082	
1880.00	600	PCS CDMA	EVDO Rev. A	24.7	24.50	-0.15	Left	Cheek	01380	1:1	0.148	1.047	0.155	
1880.00	600	PCS CDMA	EVDO Rev. A	24.7	24.50	-0.10	Left	Tilt	01380	1:1	0.060	1.047	0.063	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-4
GSM 850 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	33.7	33.46	0.10	Right	Cheek	01372	1	1:8.3	0.049	1.057	0.052	
836.60	190	GSM 850	GSM	33.7	33.46	0.15	Right	Tilt	01372	1	1:8.3	0.040	1.057	0.042	
836.60	190	GSM 850	GSM	33.7	33.46	-0.08	Left	Cheek	01372	1	1:8.3	0.080	1.057	0.085	
836.60	190	GSM 850	GSM	33.7	33.46	0.01	Left	Tilt	01372	1	1:8.3	0.039	1.057	0.041	
836.60	190	GSM 850	GPRS	32.7	32.43	0.00	Right	Cheek	01372	2	1:4.15	0.071	1.064	0.076	
836.60	190	GSM 850	GPRS	32.7	32.43	-0.02	Right	Tilt	01372	2	1:4.15	0.059	1.064	0.063	
836.60	190	GSM 850	GPRS	32.7	32.43	0.09	Left	Cheek	01372	2	1:4.15	0.111	1.064	0.118	A4
836.60	190	GSM 850	GPRS	32.7	32.43	0.13	Left	Tilt	01372	2	1:4.15	0.056	1.064	0.060	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

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**Table 11-5
GSM 1900 Head SAR**

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	30.7	30.45	0.04	Right	Cheek	01372	1	1:8.3	0.065	1.059	0.069	
1880.00	661	GSM 1900	GSM	30.7	30.45	0.01	Right	Tilt	01372	1	1:8.3	0.047	1.059	0.050	
1880.00	661	GSM 1900	GSM	30.7	30.45	0.10	Left	Cheek	01372	1	1:8.3	0.115	1.059	0.122	A5
1880.00	661	GSM 1900	GSM	30.7	30.45	-0.05	Left	Tilt	01372	1	1:8.3	0.061	1.059	0.065	
1880.00	661	GSM 1900	GPRS	27.0	26.75	-0.18	Right	Cheek	01372	3	1:2.76	0.065	1.059	0.069	
1880.00	661	GSM 1900	GPRS	27.0	26.75	0.00	Right	Tilt	01372	3	1:2.76	0.047	1.059	0.050	
1880.00	661	GSM 1900	GPRS	27.0	26.75	0.05	Left	Cheek	01372	3	1:2.76	0.108	1.059	0.114	
1880.00	661	GSM 1900	GPRS	27.0	26.75	-0.06	Left	Tilt	01372	3	1:2.76	0.058	1.059	0.061	
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	25.21	0.01	Right	Cheek	01372	1:1	0.066	1.069	0.071	
836.60	4183	UMTS 850	RMC	25.5	25.21	0.09	Right	Tilt	01372	1:1	0.052	1.069	0.056	
836.60	4183	UMTS 850	RMC	25.5	25.21	0.03	Left	Cheek	01372	1:1	0.103	1.069	0.110	A6
836.60	4183	UMTS 850	RMC	25.5	25.21	0.11	Left	Tilt	01372	1:1	0.051	1.069	0.055	
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	24.5	24.21	0.02	Right	Cheek	01372	1:1	0.121	1.069	0.129	
1732.40	1412	UMTS 1750	RMC	24.5	24.21	0.11	Right	Tilt	01372	1:1	0.078	1.069	0.083	
1732.40	1412	UMTS 1750	RMC	24.5	24.21	0.05	Left	Cheek	01372	1:1	0.147	1.069	0.157	A7
1732.40	1412	UMTS 1750	RMC	24.5	24.21	0.09	Left	Tilt	01372	1:1	0.088	1.069	0.094	
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	24.67	0.00	Right	Cheek	01372	1:1	0.098	1.007	0.099	
1880.00	9400	UMTS 1900	RMC	24.7	24.67	0.07	Right	Tilt	01372	1:1	0.075	1.007	0.076	
1880.00	9400	UMTS 1900	RMC	24.7	24.67	0.13	Left	Cheek	01372	1:1	0.176	1.007	0.177	A8
1880.00	9400	UMTS 1900	RMC	24.7	24.67	-0.10	Left	Tilt	01372	1:1	0.104	1.007	0.105	
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 #
MHz	Ch.	Ch.														(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.5	25.49	-0.08	0	Right	Cheek	QPSK	1	0	01349	1:1	0.075	1.002	0.075	
707.50	23095	Mid	LTE Band 12	10	24.5	24.41	0.04	1	Right	Cheek	QPSK	25	25	01349	1:1	0.058	1.021	0.059	
707.50	23095	Mid	LTE Band 12	10	25.5	25.49	0.18	0	Right	Tilt	QPSK	1	0	01349	1:1	0.044	1.002	0.044	
707.50	23095	Mid	LTE Band 12	10	24.5	24.41	0.02	1	Right	Tilt	QPSK	25	25	01349	1:1	0.031	1.021	0.032	
707.50	23095	Mid	LTE Band 12	10	25.5	25.49	-0.02	0	Left	Cheek	QPSK	1	0	01349	1:1	0.095	1.002	0.095	A9
707.50	23095	Mid	LTE Band 12	10	24.5	24.41	0.07	1	Left	Cheek	QPSK	25	25	01349	1:1	0.072	1.021	0.074	
707.50	23095	Mid	LTE Band 12	10	25.5	25.49	0.05	0	Left	Tilt	QPSK	1	0	01349	1:1	0.042	1.002	0.042	
707.50	23095	Mid	LTE Band 12	10	24.5	24.41	0.02	1	Left	Tilt	QPSK	25	25	01349	1:1	0.030	1.021	0.031	
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.	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	0.01	0	Right	Cheek	QPSK	1	0	01349	1:1	0.059	1.047	0.062	
782.00	23230	Mid	LTE Band 13	10	24.5	24.28	0.02	1	Right	Cheek	QPSK	25	25	01349	1:1	0.047	1.052	0.049	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	-0.01	0	Right	Tilt	QPSK	1	0	01349	1:1	0.039	1.047	0.041	
782.00	23230	Mid	LTE Band 13	10	24.5	24.28	0.21	1	Right	Tilt	QPSK	25	25	01349	1:1	0.028	1.052	0.029	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	0.07	0	Left	Cheek	QPSK	1	0	01349	1:1	0.079	1.047	0.083	A10
782.00	23230	Mid	LTE Band 13	10	24.5	24.28	0.07	1	Left	Cheek	QPSK	25	25	01349	1:1	0.062	1.052	0.065	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	0.13	0	Left	Tilt	QPSK	1	0	01349	1:1	0.033	1.047	0.035	
782.00	23230	Mid	LTE Band 13	10	24.5	24.28	0.16	1	Left	Tilt	QPSK	25	25	01349	1:1	0.027	1.052	0.028	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

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Table 11-11
LTE Band 14 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)		
793.00	23330	Mid	LTE Band 14	10	25.5	25.30	-0.10	0	Right	Cheek	QPSK	1	49	01349	1:1	0.049	1.047	0.051	
793.00	23330	Mid	LTE Band 14	10	24.5	24.30	0.07	1	Right	Cheek	QPSK	25	0	01349	1:1	0.036	1.047	0.038	
793.00	23330	Mid	LTE Band 14	10	25.5	25.30	0.12	0	Right	Tilt	QPSK	1	49	01349	1:1	0.032	1.047	0.034	
793.00	23330	Mid	LTE Band 14	10	24.5	24.30	0.14	1	Right	Tilt	QPSK	25	0	01349	1:1	0.024	1.047	0.025	
793.00	23330	Mid	LTE Band 14	10	25.5	25.30	-0.01	0	Left	Cheek	QPSK	1	49	01349	1:1	0.064	1.047	0.067	A11
793.00	23330	Mid	LTE Band 14	10	24.5	24.30	0.07	1	Left	Cheek	QPSK	25	0	01349	1:1	0.053	1.047	0.055	
793.00	23330	Mid	LTE Band 14	10	25.5	25.30	0.01	0	Left	Tilt	QPSK	1	49	01349	1:1	0.061	1.047	0.064	
793.00	23330	Mid	LTE Band 14	10	24.5	24.30	0.05	1	Left	Tilt	QPSK	25	0	01349	1:1	0.052	1.047	0.054	
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 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 #	
MHz	Ch.														(W/kg)		(W/kg)		
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.26	0.06	0	Right	Cheek	QPSK	1	0	01349	1:1	0.075	1.057	0.079	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.36	0.07	1	Right	Cheek	QPSK	36	0	01349	1:1	0.060	1.033	0.062	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.26	0.06	0	Right	Tilt	QPSK	1	0	01349	1:1	0.066	1.057	0.070	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.36	0.08	1	Right	Tilt	QPSK	36	0	01349	1:1	0.053	1.033	0.055	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.26	-0.03	0	Left	Cheek	QPSK	1	0	01349	1:1	0.121	1.057	0.128	A12
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.36	0.02	1	Left	Cheek	QPSK	36	0	01349	1:1	0.100	1.033	0.103	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.26	0.13	0	Left	Tilt	QPSK	1	0	01349	1:1	0.058	1.057	0.061	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.36	0.05	1	Left	Tilt	QPSK	36	0	01349	1:1	0.048	1.033	0.050	
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 5 (Cell) Head SAR

MEASUREMENT RESULTS																					
1 CC Uplink 2 CC 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	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.23	0.09	0	Right	Cheek	QPSK	1	49	01356	1:1	0.075	1.064	0.080	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.23	0.10	1	Right	Cheek	QPSK	25	25	01356	1:1	0.062	1.064	0.066	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.23	0.13	0	Right	Tilt	QPSK	1	49	01356	1:1	0.063	1.064	0.067	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.23	0.15	1	Right	Tilt	QPSK	25	25	01356	1:1	0.049	1.064	0.052	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.23	0.01	0	Left	Cheek	QPSK	1	49	01356	1:1	0.124	1.064	0.132	
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.16	-0.01	0	Left	Cheek	QPSK	1	49	01356	1:1	0.127	1.081	0.137	A13
2 CC Uplink	SCC	843.70	20597	Mid	LTE Band 5 (Cell)	5				0	Left	Cheek	QPSK	1	0						
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.23	0.03	1	Left	Cheek	QPSK	25	25	01356	1:1	0.101	1.064	0.107	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.23	0.08	0	Left	Tilt	QPSK	1	49	01356	1:1	0.056	1.064	0.060	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.23	0.02	1	Left	Tilt	QPSK	25	25	01356	1:1	0.045	1.064	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 11-14
LTE Band 66 (AWS) Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.7	24.66	-0.14	0	Right	Cheek	QPSK	1	0	01356	1:1	0.153	1.009	0.154	A14
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.7	23.69	0.03	1	Right	Cheek	QPSK	50	0	01356	1:1	0.116	1.002	0.116	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.7	24.66	-0.02	0	Right	Tilt	QPSK	1	0	01356	1:1	0.097	1.009	0.098	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.7	23.69	0.02	1	Right	Tilt	QPSK	50	0	01356	1:1	0.074	1.002	0.074	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.7	24.66	-0.02	0	Left	Cheek	QPSK	1	0	01356	1:1	0.144	1.009	0.145	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.7	23.69	0.00	1	Left	Cheek	QPSK	50	0	01356	1:1	0.111	1.002	0.111	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.7	24.66	0.01	0	Left	Tilt	QPSK	1	0	01356	1:1	0.103	1.009	0.104	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.7	23.69	0.01	1	Left	Tilt	QPSK	50	0	01356	1:1	0.087	1.002	0.087	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-15
LTE Band 25 (PCS) Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1905.00	26590	High	LTE Band 25 (PCS)	20	24.7	24.65	0.09	0	Right	Cheek	QPSK	1	0	01349	1:1	0.177	1.012	0.179	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.7	23.64	0.06	1	Right	Cheek	QPSK	50	25	01349	1:1	0.130	1.014	0.132	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.7	24.65	-0.10	0	Right	Tilt	QPSK	1	0	01349	1:1	0.095	1.012	0.096	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.7	23.64	0.13	1	Right	Tilt	QPSK	50	25	01349	1:1	0.072	1.014	0.073	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.7	24.65	-0.13	0	Left	Cheek	QPSK	1	0	01349	1:1	0.197	1.012	0.199	A15
1905.00	26590	High	LTE Band 25 (PCS)	20	23.7	23.64	0.00	1	Left	Cheek	QPSK	50	25	01349	1:1	0.139	1.014	0.141	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.7	24.65	0.15	0	Left	Tilt	QPSK	1	0	01349	1:1	0.130	1.012	0.132	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.7	23.64	-0.11	1	Left	Tilt	QPSK	50	25	01349	1:1	0.096	1.014	0.097	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-16
LTE Band 30 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
2310.00	27710	Mid	LTE Band 30	10	25.2	25.04	-0.17	0	Right	Cheek	QPSK	1	0	01349	1:1	0.073	1.038	0.076	
2310.00	27710	Mid	LTE Band 30	10	24.2	24.05	-0.07	1	Right	Cheek	QPSK	25	25	01349	1:1	0.050	1.035	0.052	
2310.00	27710	Mid	LTE Band 30	10	25.2	25.04	0.16	0	Right	Tilt	QPSK	1	0	01349	1:1	0.031	1.038	0.032	
2310.00	27710	Mid	LTE Band 30	10	24.2	24.05	0.18	1	Right	Tilt	QPSK	25	25	01349	1:1	0.024	1.035	0.025	
2310.00	27710	Mid	LTE Band 30	10	25.2	25.04	0.10	0	Left	Cheek	QPSK	1	0	01349	1:1	0.088	1.038	0.091	A16
2310.00	27710	Mid	LTE Band 30	10	24.2	24.05	0.00	1	Left	Cheek	QPSK	25	25	01349	1:1	0.060	1.035	0.062	
2310.00	27710	Mid	LTE Band 30	10	25.2	25.04	0.17	0	Left	Tilt	QPSK	1	0	01349	1:1	0.033	1.038	0.034	
2310.00	27710	Mid	LTE Band 30	10	24.2	24.05	0.11	1	Left	Tilt	QPSK	25	25	01349	1:1	0.021	1.035	0.022	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram									

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Table 11-17
LTE Band 7 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR[dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
																(W/kg)		(W/kg)	
MHz	Ch.																		
2535.00	21100	Mid	LTE Band 7	20	23.7	23.68	-0.03	0	Right	Cheek	QPSK	1	50	01349	1:1	0.068	1.005	0.068	A17
2535.00	21100	Mid	LTE Band 7	20	22.7	22.60	0.14	1	Right	Cheek	QPSK	50	25	01349	1:1	0.054	1.023	0.055	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.68	-0.13	0	Right	Tilt	QPSK	1	50	01349	1:1	0.016	1.005	0.016	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.60	0.16	1	Right	Tilt	QPSK	50	25	01349	1:1	0.013	1.023	0.013	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.68	0.16	0	Left	Mouth-Jaw	QPSK	1	50	01349	1:1	0.050	1.005	0.050	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.60	0.03	1	Left	Mouth-Jaw	QPSK	50	25	01349	1:1	0.042	1.023	0.043	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.68	0.18	0	Left	Tilt	QPSK	1	50	01349	1:1	0.019	1.005	0.019	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.60	0.14	1	Left	Tilt	QPSK	50	25	01349	1:1	0.015	1.023	0.015	
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 11-18
LTE Band 41 Head SAR

MEASUREMENT RESULTS																					
1 CC Uplink 2 CC 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	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.2	24.88	-0.13	0	Right	Cheek	QPSK	1	0	01356	1:1.58	0.071	1.076	0.076	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	24.2	23.84	0.19	1	Right	Cheek	QPSK	50	0	01356	1:1.58	0.054	1.086	0.059	
2 CC Uplink	PCC	2636.50	41055	Mid-High	LTE Band 41	20	25.2	24.85	0.18	0	Right	Cheek	QPSK	1	0	01356	1:1.58	0.083	1.084	0.090	A18
2 CC Uplink	SCC	2616.70	40857		LTE Band 41	20				0	Right	Cheek	QPSK	1	99	01356	1:1.58				
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.2	24.88	0.16	0	Right	Tilt	QPSK	1	0	01356	1:1.58	0.029	1.076	0.031	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	24.2	23.84	0.16	1	Right	Tilt	QPSK	50	0	01356	1:1.58	0.022	1.086	0.024	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.2	24.88	0.08	0	Left	Mouth-Jaw	QPSK	1	0	01356	1:1.58	0.052	1.076	0.056	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	24.2	23.84	0.17	1	Left	Mouth-Jaw	QPSK	50	0	01356	1:1.58	0.041	1.086	0.045	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.2	24.88	0.04	0	Left	Tilt	QPSK	1	0	01356	1:1.58	0.023	1.076	0.025	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	24.2	23.84	0.12	1	Left	Tilt	QPSK	50	0	01356	1:1.58	0.018	1.086	0.020	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT											Head										
Spatial Peak											1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population											averaged over 1 gram										

Table 11-19
DTS Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	15.5	15.41	0.17	Right	Cheek	1	01489	1	99.2	0.879	0.620	1.021	1.008	0.638	
2437	6	802.11b	DSSS	22	15.5	15.50	0.16	Right	Cheek	1	01489	1	99.2	0.722	0.675	1.000	1.008	0.680	A19
2462	11	802.11b	DSSS	22	15.5	15.40	0.18	Right	Cheek	1	01489	1	99.2	0.695	0.664	1.023	1.008	0.685	
2437	6	802.11b	DSSS	22	15.5	15.50	0.19	Right	Tilt	1	01489	1	99.2	0.304	0.242	1.000	1.008	0.244	
2437	6	802.11b	DSSS	22	15.5	15.50	0.15	Left	Cheek	1	01489	1	99.2	0.135	0.109	1.000	1.008	0.110	
2437	6	802.11b	DSSS	22	15.5	15.50	0.14	Left	Tilt	1	01489	1	99.2	0.085	-	1.000	1.008	-	
2437	6	802.11b	DSSS	22	15.5	15.48	0.07	Right	Cheek	2	01497	1	99.2	0.606	0.545	1.005	1.008	0.552	
2437	6	802.11b	DSSS	22	15.5	15.48	-0.03	Right	Tilt	2	01497	1	99.2	0.504	0.469	1.005	1.008	0.475	
2437	6	802.11b	DSSS	22	15.5	15.48	-0.17	Left	Cheek	2	01497	1	99.2	0.347	-	1.005	1.008	-	
2437	6	802.11b	DSSS	22	15.5	15.48	-0.10	Left	Tilt	2	01497	1	99.2	0.362	-	1.005	1.008	-	
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 11-20
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)	
5300	60	802.11a	OFDM	20	15.0	14.97	0.12	Right	Cheek	1	01489	6	98.3	0.284	-	1.007	1.017	-	
5300	60	802.11a	OFDM	20	15.0	14.97	0.13	Right	Tilt	1	01489	6	98.3	0.341	0.122	1.007	1.017	0.125	
5300	60	802.11a	OFDM	20	15.0	14.97	0.13	Left	Cheek	1	01489	6	98.3	0.147	-	1.007	1.017	-	
5300	60	802.11a	OFDM	20	15.0	14.97	0.16	Left	Tilt	1	01489	6	98.3	0.165	-	1.007	1.017	-	
5300	60	802.11a	OFDM	20	15.0	14.63	0.16	Right	Cheek	2	01489	6	99.3	1.228	0.660	1.089	1.007	0.724	
5260	52	802.11a	OFDM	20	15.0	14.62	0.19	Right	Tilt	2	01489	6	99.3	1.126	0.667	1.091	1.007	0.733	
5300	60	802.11a	OFDM	20	15.0	14.63	0.13	Right	Tilt	2	01489	6	99.3	1.375	0.697	1.089	1.007	0.764	A20
5320	64	802.11a	OFDM	20	15.0	14.60	-0.11	Right	Tilt	2	01489	6	99.3	1.012	0.514	1.096	1.007	0.567	
5300	60	802.11a	OFDM	20	15.0	14.63	0.12	Left	Cheek	2	01489	6	99.3	0.627	-	1.089	1.007	-	
5300	60	802.11a	OFDM	20	15.0	14.63	0.10	Left	Tilt	2	01489	6	99.3	0.681	-	1.089	1.007	-	
5620	124	802.11a	OFDM	20	15.0	14.93	0.17	Right	Cheek	1	01489	6	98.3	0.532	-	1.016	1.017	-	
5620	124	802.11a	OFDM	20	15.0	14.93	0.18	Right	Tilt	1	01489	6	98.3	0.591	0.303	1.016	1.017	0.313	
5620	124	802.11a	OFDM	20	15.0	14.93	0.17	Left	Cheek	1	01489	6	98.3	0.218	-	1.016	1.017	-	
5620	124	802.11a	OFDM	20	15.0	14.93	0.10	Left	Tilt	1	01489	6	98.3	0.216	-	1.016	1.017	-	
5600	120	802.11a	OFDM	20	15.0	14.71	0.10	Right	Cheek	2	01489	6	99.3	0.629	0.480	1.069	1.007	0.517	
5600	120	802.11a	OFDM	20	15.0	14.71	0.10	Right	Tilt	2	01489	6	99.3	0.645	0.466	1.069	1.007	0.502	
5600	120	802.11a	OFDM	20	15.0	14.71	0.10	Left	Cheek	2	01489	6	99.3	0.366	-	1.069	1.007	-	
5600	120	802.11a	OFDM	20	15.0	14.71	0.14	Left	Tilt	2	01489	6	99.3	0.385	-	1.069	1.007	-	
5745	149	802.11a	OFDM	20	15.0	14.88	0.17	Right	Cheek	1	01489	6	98.3	0.613	0.251	1.028	1.017	0.262	
5745	149	802.11a	OFDM	20	15.0	14.88	0.18	Right	Tilt	1	01489	6	98.3	0.358	-	1.028	1.017	-	
5745	149	802.11a	OFDM	20	15.0	14.88	0.00	Left	Cheek	1	01489	6	98.3	0.145	-	1.028	1.017	-	
5745	149	802.11a	OFDM	20	15.0	14.88	0.10	Left	Tilt	1	01489	6	98.3	0.139	-	1.028	1.017	-	
5745	149	802.11a	OFDM	20	15.0	14.76	0.11	Right	Cheek	2	01489	6	99.3	0.677	0.376	1.057	1.007	0.400	
5745	149	802.11a	OFDM	20	15.0	14.76	0.10	Right	Tilt	2	01489	6	99.3	0.523	0.336	1.057	1.007	0.358	
5745	149	802.11a	OFDM	20	15.0	14.76	0.10	Left	Cheek	2	01489	6	99.3	0.321	-	1.057	1.007	-	
5745	149	802.11a	OFDM	20	15.0	14.76	0.12	Left	Tilt	2	01489	6	99.3	0.425	-	1.057	1.007	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT									Head										
Spatial Peak									1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population									averaged over 1 gram										

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**Table 11-21
DSS Head SAR**

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	Duty Cycle %	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2402.00	0	Bluetooth	FHSS	13.0	12.10	0.12	Right	Cheek	01497	1	77.9	0.248	1.230	1.284	0.392	A21
2402.00	0	Bluetooth	FHSS	13.0	12.10	-0.01	Right	Tilt	01497	1	77.9	0.165	1.230	1.284	0.261	
2402.00	0	Bluetooth	FHSS	13.0	12.10	0.10	Left	Cheek	01497	1	77.9	0.040	1.230	1.284	0.063	
2402.00	0	Bluetooth	FHSS	13.0	12.10	0.13	Left	Tilt	01497	1	77.9	0.026	1.230	1.284	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								

11.2 Standalone Body-Worn SAR Data

**Table 11-22
GSM/UMTS/CDMA Body-Worn SAR Data**

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.											(W/kg)			
820.10	564	CDMA BC10 (S90S)	TDSO / SO32	25.5	25.33	-0.03	10 mm	01380	N/A	1:1	back	0.471	1.040	0.490	A22
836.52	384	CDMA BC0 (S22H)	TDSO / SO32	25.5	25.37	0.00	10 mm	01380	N/A	1:1	back	0.494	1.030	0.509	A24
1851.25	25	PCS CDMA	TDSO / SO32	24.7	24.40	0.01	10 mm	01380	N/A	1:1	back	0.586	1.072	0.628	
1880.00	600	PCS CDMA	TDSO / SO32	24.7	24.39	0.01	10 mm	01380	N/A	1:1	back	0.584	1.074	0.627	
1908.75	1175	PCS CDMA	TDSO / SO32	24.7	24.33	0.04	10 mm	01380	N/A	1:1	back	0.589	1.089	0.641	A26
836.60	190	GSM 850	GSM	33.7	33.46	-0.02	10 mm	01372	1	1:8.3	back	0.355	1.057	0.375	
836.60	190	GSM 850	GPRS	32.7	32.43	-0.06	10 mm	01372	2	1:4.15	back	0.488	1.064	0.519	A28
1880.00	661	GSM 1900	GSM	30.7	30.45	0.03	10 mm	01372	1	1:8.3	back	0.330	1.059	0.349	
1880.00	661	GSM 1900	GPRS	27.0	26.75	0.21	10 mm	01372	3	1:2.76	back	0.385	1.059	0.408	A29
836.60	4183	UMTS 850	RMC	25.5	25.21	-0.04	10 mm	01372	N/A	1:1	back	0.407	1.069	0.435	A30
1712.40	1312	UMTS 1750	RMC	24.5	24.12	-0.02	10 mm	00135	N/A	1:1	back	0.572	1.091	0.624	
1732.40	1412	UMTS 1750	RMC	24.5	24.21	0.00	10 mm	00135	N/A	1:1	back	0.580	1.069	0.620	A31
1752.60	1513	UMTS 1750	RMC	24.5	24.18	0.04	10 mm	00135	N/A	1:1	back	0.521	1.076	0.561	
1852.40	9262	UMTS 1900	RMC	24.7	24.62	0.01	10 mm	01372	N/A	1:1	back	0.586	1.019	0.597	
1880.00	9400	UMTS 1900	RMC	24.7	24.67	0.06	10 mm	01372	N/A	1:1	back	0.608	1.007	0.612	A32
1907.60	9538	UMTS 1900	RMC	24.7	24.68	0.03	10 mm	01372	N/A	1:1	back	0.603	1.005	0.606	
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 11-23
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	25.49	0.02	0	01356	QPSK	1	0	10 mm	back	1:1	0.388	1.002	0.389	A33
707.50	23095	Mid	LTE Band 12	10	24.5	24.41	0.04	1	01356	QPSK	25	25	10 mm	back	1:1	0.306	1.021	0.312	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	0.02	0	01349	QPSK	1	0	10 mm	back	1:1	0.407	1.047	0.426	A35
782.00	23230	Mid	LTE Band 13	10	24.5	24.28	0.00	1	01349	QPSK	25	25	10 mm	back	1:1	0.322	1.052	0.339	
793.00	23330	Mid	LTE Band 14	10	25.5	25.30	0.18	0	01349	QPSK	1	49	10 mm	back	1:1	0.320	1.047	0.335	A36
793.00	23330	Mid	LTE Band 14	10	24.5	24.30	-0.03	1	01349	QPSK	25	0	10 mm	back	1:1	0.220	1.047	0.230	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.26	0.01	0	01356	QPSK	1	0	10 mm	back	1:1	0.496	1.057	0.524	A37
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.36	0.05	1	01356	QPSK	36	0	10 mm	back	1:1	0.413	1.033	0.427	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.7	24.63	-0.03	0	01356	QPSK	1	0	10 mm	back	1:1	0.689	1.016	0.700	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.7	24.66	0.02	0	01356	QPSK	1	0	10 mm	back	1:1	0.662	1.009	0.668	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.7	24.56	0.00	0	01356	QPSK	1	0	10 mm	back	1:1	0.702	1.033	0.725	A39
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.7	23.69	0.02	1	01356	QPSK	50	0	10 mm	back	1:1	0.524	1.002	0.525	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.7	24.65	-0.10	0	01356	QPSK	1	0	10 mm	back	1:1	0.631	1.012	0.639	A40
1905.00	26590	High	LTE Band 25 (PCS)	20	23.7	23.64	0.08	1	01356	QPSK	50	25	10 mm	back	1:1	0.468	1.014	0.475	
2310.00	27710	Mid	LTE Band 30	10	25.2	25.04	0.07	0	01349	QPSK	1	0	10 mm	back	1:1	0.667	1.038	0.692	A42
2310.00	27710	Mid	LTE Band 30	10	24.2	24.05	-0.02	1	01349	QPSK	25	25	10 mm	back	1:1	0.529	1.035	0.548	
2510.00	20850	Low	LTE Band 7	20	23.7	23.56	0.07	0	01356	QPSK	1	99	10 mm	back	1:1	0.578	1.033	0.597	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.68	0.02	0	01356	QPSK	1	50	10 mm	back	1:1	0.620	1.005	0.623	
2560.00	21350	High	LTE Band 7	20	23.7	23.65	-0.11	0	01356	QPSK	1	50	10 mm	back	1:1	0.654	1.012	0.662	A44
2535.00	21100	Mid	LTE Band 7	20	22.7	22.60	-0.01	1	01356	QPSK	50	25	10 mm	back	1:1	0.504	1.023	0.516	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-24
LTE FDD Band 5 Body-Worn SAR

MEASUREMENT RESULTS																					
1 CC Uplink 2 CC 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	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.23	0.00	0	01349	QPSK	1	49	10 mm	back	1:1	0.458	1.064	0.487	A38
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.16	-0.01	0	01349	QPSK	1	49	10 mm	back	1:1	0.456	1.081	0.493	
2 CC Uplink	SCC	843.70	20597	Mid	LTE Band 5 (Cell)	5						QPSK	1	0							
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.23	0.00	1	01349	QPSK	25	25	10 mm	back	1:1	0.371	1.064	0.395	
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 11-25
LTE TDD Body-Worn SAR

MEASUREMENT RESULTS																					
1 CC Uplink 2 CC 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.	Low														(W/kg)		(W/kg)	
1 CC Uplink	N/A	2506.00	39750	Low	LTE Band 41	20	25.2	24.83	0.02	0	01349	QPSK	1	0	10 mm	back	1:1.58	0.603	1.089	0.657	
1 CC Uplink	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	25.2	24.72	0.04	0	01349	QPSK	1	0	10 mm	back	1:1.58	0.638	1.117	0.713	
1 CC Uplink	N/A	2593.00	40620	Mid	LTE Band 41	20	25.2	24.69	-0.01	0	01349	QPSK	1	0	10 mm	back	1:1.58	0.667	1.125	0.750	A45
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.2	24.88	0.15	0	01349	QPSK	1	0	10 mm	back	1:1.58	0.658	1.076	0.708	
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	25.2	24.71	0.10	0	01349	QPSK	1	0	10 mm	back	1:1.58	0.600	1.119	0.671	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	24.2	23.84	0.06	1	01349	QPSK	50	0	10 mm	back	1:1.58	0.506	1.086	0.550	
1 CC Uplink	N/A	2506.00	39750	Low	LTE Band 41	20	24.2	23.68	0.05	1	01349	QPSK	100	0	10 mm	back	1:1.58	0.478	1.127	0.539	
2 CC Uplink	PCC	2593.00	40620	Mid	LTE Band 41	20	25.2	24.82	0.01	0	01349	QPSK	1	0	10 mm	back	1:1.58	0.644	1.091	0.703	
2 CC Uplink	SCC	2573.20	40422		LTE Band 41	20				0	01349	QPSK	1	99	10 mm	back	1:1.58				
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 11-26
DTS SISO 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)
MHz	Ch.													W/kg	(W/kg)		Reported SAR (1g) (W/kg)
2412	1	802.11b	DSSS	22	19.5	19.46	-0.01	10 mm	1	01349	1	back	99.2	0.409	0.271	1.009	1.008
2412	1	802.11b	DSSS	22	19.5	19.49	0.19	10 mm	2	01349	1	back	99.2	0.244	0.158	1.002	1.008
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-27
NII SISO 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)
MHz	Ch.													W/kg	(W/kg)		Reported SAR (1g) (W/kg)
5300	60	802.11a	OFDM	20	15.0	14.97	-0.01	10 mm	1	01497	6	back	98.3	0.796	0.343	1.007	1.017
5300	60	802.11a	OFDM	20	15.0	14.63	0.14	10 mm	2	01497	6	back	99.3	0.403	0.179	1.089	1.007
5620	124	802.11a	OFDM	20	15.0	14.93	0.00	10 mm	1	01497	6	back	98.3	1.276	0.566	1.016	1.017
5600	120	802.11a	OFDM	20	15.0	14.71	0.15	10 mm	2	01497	6	back	99.3	0.509	0.211	1.069	1.007
5745	149	802.11a	OFDM	20	15.0	14.88	0.01	10 mm	1	01497	6	back	98.3	1.665	0.693	1.028	1.017
5785	157	802.11a	OFDM	20	15.0	14.77	-0.01	10 mm	1	01497	6	back	98.3	1.526	0.695	1.054	1.017
5825	165	802.11a	OFDM	20	15.0	14.67	0.01	10 mm	1	01497	6	back	98.3	1.861	0.716	1.079	1.017
5745	149	802.11a	OFDM	20	15.0	14.76	0.12	10 mm	2	01497	6	back	99.3	0.524	0.223	1.057	1.007
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 11-28
NII MIMO Body-Worn SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [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) (W/kg)	Plot #
MHz	Ch.															W/kg	(W/kg)				
5300	60	802.11n	OFDM	20	15.0	14.70	15.0	14.43	0.13	10 mm	MIMO	01497	13	back	98.3	0.757	0.360	1.140	1.017	0.417	
5600	120	802.11n	OFDM	20	15.0	14.66	15.0	14.53	0.07	10 mm	MIMO	01497	13	back	98.3	1.322	0.549	1.114	1.017	0.622	
5745	149	802.11n	OFDM	20	15.0	14.70	15.0	14.50	0.04	10 mm	MIMO	01497	13	back	98.3	1.538	0.700	1.122	1.017	0.799	
5785	157	802.11n	OFDM	20	15.0	14.58	15.0	14.55	0.14	10 mm	MIMO	01497	13	back	98.3	1.247	0.780	1.109	1.017	0.880	
5825	165	802.11n	OFDM	20	15.0	14.53	15.0	14.54	0.13	10 mm	MIMO	01497	13	back	98.3	1.564	0.806	1.114	1.017	0.913	A48
5825	165	802.11n	OFDM	20	15.0	14.53	15.0	14.54	0.11	10 mm	MIMO	01497	13	back	98.3	1.291	0.806	1.114	1.017	0.913	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Body											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

Note:

1. Blue entry represents variability measurement.
2. To achieve the 5GHz WLAN 18.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 15.0 dBm.

Table 11-29
DSS 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 (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.											(W/kg)				
2402	0	Bluetooth	FHSS	13.0	12.10	-0.10	10 mm	01489	1	back	77.9	0.057	1.230	1.284	0.090	A49
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 11-30
GPRS/UMTS/CDMA Hotspot SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of GPRS Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	25.5	25.34	-0.03	10 mm	01380	N/A	1:1	back	0.489	1.038	0.508	A23
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	25.5	25.34	-0.04	10 mm	01380	N/A	1:1	front	0.454	1.038	0.471	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	25.5	25.34	-0.13	10 mm	01380	N/A	1:1	bottom	0.259	1.038	0.269	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	25.5	25.34	0.09	10 mm	01380	N/A	1:1	right	0.090	1.038	0.093	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	25.5	25.34	-0.06	10 mm	01380	N/A	1:1	left	0.158	1.038	0.164	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	25.5	25.32	0.00	10 mm	01380	N/A	1:1	back	0.478	1.042	0.498	A25
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	25.5	25.32	-0.04	10 mm	01380	N/A	1:1	front	0.475	1.042	0.495	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	25.5	25.32	-0.04	10 mm	01380	N/A	1:1	bottom	0.253	1.042	0.264	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	25.5	25.32	0.04	10 mm	01380	N/A	1:1	right	0.083	1.042	0.086	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	25.5	25.32	0.01	10 mm	01380	N/A	1:1	left	0.147	1.042	0.153	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.47	0.00	10 mm	01380	N/A	1:1	back	0.553	1.054	0.583	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.47	0.01	10 mm	01380	N/A	1:1	front	0.486	1.054	0.512	
1851.25	25	PCS CDMA	EVDO Rev. 0	24.7	24.46	-0.04	10 mm	01380	N/A	1:1	bottom	0.718	1.057	0.759	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.47	-0.02	10 mm	01380	N/A	1:1	bottom	0.707	1.054	0.745	
1908.75	1175	PCS CDMA	EVDO Rev. 0	24.7	24.41	-0.01	10 mm	01380	N/A	1:1	bottom	0.748	1.069	0.800	A27
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.47	-0.04	10 mm	01380	N/A	1:1	left	0.241	1.054	0.254	
836.60	190	GSM 850	GPRS	32.7	32.43	-0.06	10 mm	01372	2	1:4.15	back	0.488	1.064	0.519	
836.60	190	GSM 850	GPRS	32.7	32.43	-0.10	10 mm	01372	2	1:4.15	front	0.418	1.064	0.445	
836.60	190	GSM 850	GPRS	32.7	32.43	-0.06	10 mm	01372	2	1:4.15	bottom	0.239	1.064	0.254	
836.60	190	GSM 850	GPRS	32.7	32.43	0.05	10 mm	01372	2	1:4.15	right	0.092	1.064	0.098	
836.60	190	GSM 850	GPRS	32.7	32.43	0.00	10 mm	01372	2	1:4.15	left	0.171	1.064	0.182	
1880.00	661	GSM 1900	GPRS	27.0	26.75	0.21	10 mm	01372	3	1:2.76	back	0.385	1.059	0.408	A29
1880.00	661	GSM 1900	GPRS	27.0	26.75	0.19	10 mm	01372	3	1:2.76	front	0.242	1.059	0.256	
1880.00	661	GSM 1900	GPRS	27.0	26.75	0.16	10 mm	01372	3	1:2.76	bottom	0.241	1.059	0.255	
1880.00	661	GSM 1900	GPRS	27.0	26.75	0.13	10 mm	01372	3	1:2.76	left	0.137	1.059	0.145	
836.60	4183	UMTS 850	RMC	25.5	25.21	-0.04	10 mm	01372	N/A	1:1	back	0.407	1.069	0.435	A30
836.60	4183	UMTS 850	RMC	25.5	25.21	0.06	10 mm	01372	N/A	1:1	front	0.377	1.069	0.403	
836.60	4183	UMTS 850	RMC	25.5	25.21	-0.09	10 mm	01372	N/A	1:1	bottom	0.204	1.069	0.218	
836.60	4183	UMTS 850	RMC	25.5	25.21	-0.02	10 mm	01372	N/A	1:1	right	0.083	1.069	0.089	
836.60	4183	UMTS 850	RMC	25.5	25.21	-0.02	10 mm	01372	N/A	1:1	left	0.151	1.069	0.161	
1712.40	1312	UMTS 1750	RMC	24.5	24.12	-0.02	10 mm	00135	N/A	1:1	back	0.572	1.091	0.624	
1732.40	1412	UMTS 1750	RMC	24.5	24.21	0.00	10 mm	00135	N/A	1:1	back	0.580	1.069	0.620	A31
1752.60	1513	UMTS 1750	RMC	24.5	24.18	0.04	10 mm	00135	N/A	1:1	back	0.521	1.076	0.561	
1732.40	1412	UMTS 1750	RMC	24.5	24.21	-0.03	10 mm	00135	N/A	1:1	front	0.547	1.069	0.585	
1732.40	1412	UMTS 1750	RMC	24.5	24.21	0.00	10 mm	00135	N/A	1:1	bottom	0.527	1.069	0.563	
1732.40	1412	UMTS 1750	RMC	24.5	24.21	-0.02	10 mm	00135	N/A	1:1	left	0.252	1.069	0.269	
1852.40	9262	UMTS 1900	RMC	24.7	24.62	0.01	10 mm	01372	N/A	1:1	back	0.586	1.019	0.597	
1880.00	9400	UMTS 1900	RMC	24.7	24.67	0.06	10 mm	01372	N/A	1:1	back	0.608	1.007	0.612	A32
1907.60	9538	UMTS 1900	RMC	24.7	24.68	0.03	10 mm	01372	N/A	1:1	back	0.603	1.005	0.606	
1880.00	9400	UMTS 1900	RMC	24.7	24.67	0.02	10 mm	01372	N/A	1:1	front	0.459	1.007	0.462	
1880.00	9400	UMTS 1900	RMC	24.7	24.67	-0.06	10 mm	01372	N/A	1:1	bottom	0.383	1.007	0.386	
1880.00	9400	UMTS 1900	RMC	24.7	24.67	0.03	10 mm	01372	N/A	1:1	left	0.282	1.007	0.284	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak							Body 1.6 W/kg (mW/g) averaged over 1 gram								
Uncontrolled Exposure/General Population															

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Table 11-31
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	25.49	0.02	0	01356	QPSK	1	0	10 mm	back	1:1	0.388	1.002	0.389	
707.50	23095	Mid	LTE Band 12	10	24.5	24.41	0.04	1	01356	QPSK	25	25	10 mm	back	1:1	0.306	1.021	0.312	
707.50	23095	Mid	LTE Band 12	10	25.5	25.49	0.02	0	01356	QPSK	1	0	10 mm	front	1:1	0.420	1.002	0.421	A34
707.50	23095	Mid	LTE Band 12	10	24.5	24.41	0.00	1	01356	QPSK	25	25	10 mm	front	1:1	0.322	1.021	0.329	
707.50	23095	Mid	LTE Band 12	10	25.5	25.49	0.00	0	01356	QPSK	1	0	10 mm	bottom	1:1	0.250	1.002	0.251	
707.50	23095	Mid	LTE Band 12	10	24.5	24.41	0.01	1	01356	QPSK	25	25	10 mm	bottom	1:1	0.202	1.021	0.206	
707.50	23095	Mid	LTE Band 12	10	25.5	25.49	-0.04	0	01356	QPSK	1	0	10 mm	right	1:1	0.121	1.002	0.121	
707.50	23095	Mid	LTE Band 12	10	24.5	24.41	0.02	1	01356	QPSK	25	25	10 mm	right	1:1	0.088	1.021	0.090	
707.50	23095	Mid	LTE Band 12	10	25.5	25.49	0.00	0	01356	QPSK	1	0	10 mm	left	1:1	0.174	1.002	0.174	
707.50	23095	Mid	LTE Band 12	10	24.5	24.41	0.01	1	01356	QPSK	25	25	10 mm	left	1:1	0.142	1.021	0.145	
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 11-32
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	25.30	0.02	0	01349	QPSK	1	0	10 mm	back	1:1	0.407	1.047	0.426	A35
782.00	23230	Mid	LTE Band 13	10	24.5	24.28	0.00	1	01349	QPSK	25	25	10 mm	back	1:1	0.322	1.052	0.339	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	0.01	0	01349	QPSK	1	0	10 mm	front	1:1	0.369	1.047	0.386	
782.00	23230	Mid	LTE Band 13	10	24.5	24.28	0.00	1	01349	QPSK	25	25	10 mm	front	1:1	0.287	1.052	0.302	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	-0.03	0	01349	QPSK	1	0	10 mm	bottom	1:1	0.224	1.047	0.235	
782.00	23230	Mid	LTE Band 13	10	24.5	24.28	0.15	1	01349	QPSK	25	25	10 mm	bottom	1:1	0.161	1.052	0.169	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	0.07	0	01349	QPSK	1	0	10 mm	right	1:1	0.067	1.047	0.070	
782.00	23230	Mid	LTE Band 13	10	24.5	24.28	-0.05	1	01349	QPSK	25	25	10 mm	right	1:1	0.054	1.052	0.057	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	0.00	0	01349	QPSK	1	0	10 mm	left	1:1	0.154	1.047	0.161	
782.00	23230	Mid	LTE Band 13	10	24.5	24.28	0.01	1	01349	QPSK	25	25	10 mm	left	1:1	0.121	1.052	0.127	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-33
LTE Band 14 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)		
793.00	23330	Mid	LTE Band 14	10	25.5	25.30	0.18	0	01349	QPSK	1	49	10 mm	back	1:1	0.320	1.047	0.335	A36
793.00	23330	Mid	LTE Band 14	10	24.5	24.30	-0.03	1	01349	QPSK	25	0	10 mm	back	1:1	0.220	1.047	0.230	
793.00	23330	Mid	LTE Band 14	10	25.5	25.30	-0.12	0	01349	QPSK	1	49	10 mm	front	1:1	0.260	1.047	0.272	
793.00	23330	Mid	LTE Band 14	10	24.5	24.30	0.01	1	01349	QPSK	25	0	10 mm	front	1:1	0.205	1.047	0.215	
793.00	23330	Mid	LTE Band 14	10	25.5	25.30	-0.06	0	01349	QPSK	1	49	10 mm	bottom	1:1	0.154	1.047	0.161	
793.00	23330	Mid	LTE Band 14	10	24.5	24.30	-0.04	1	01349	QPSK	25	0	10 mm	bottom	1:1	0.120	1.047	0.126	
793.00	23330	Mid	LTE Band 14	10	25.5	25.30	0.03	0	01349	QPSK	1	49	10 mm	right	1:1	0.050	1.047	0.052	
793.00	23330	Mid	LTE Band 14	10	24.5	24.30	-0.03	1	01349	QPSK	25	0	10 mm	right	1:1	0.043	1.047	0.045	
793.00	23330	Mid	LTE Band 14	10	25.5	25.30	-0.01	0	01349	QPSK	1	49	10 mm	left	1:1	0.127	1.047	0.133	
793.00	23330	Mid	LTE Band 14	10	24.5	24.30	-0.01	1	01349	QPSK	25	0	10 mm	left	1:1	0.116	1.047	0.121	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

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Table 11-34
LTE Band 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	25.26	0.01	0	01356	QPSK	1	0	10 mm	back	1:1	0.496	1.057	0.524	A37
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.36	0.05	1	01356	QPSK	36	0	10 mm	back	1:1	0.413	1.033	0.427	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.26	-0.10	0	01356	QPSK	1	0	10 mm	front	1:1	0.454	1.057	0.480	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.36	0.04	1	01356	QPSK	36	0	10 mm	front	1:1	0.369	1.033	0.381	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.26	-0.07	0	01356	QPSK	1	0	10 mm	bottom	1:1	0.283	1.057	0.299	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.36	0.02	1	01356	QPSK	36	0	10 mm	bottom	1:1	0.221	1.033	0.228	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.26	-0.02	0	01356	QPSK	1	0	10 mm	right	1:1	0.100	1.057	0.106	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.36	-0.02	1	01356	QPSK	36	0	10 mm	right	1:1	0.079	1.033	0.082	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.26	0.00	0	01356	QPSK	1	0	10 mm	left	1:1	0.166	1.057	0.175	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.36	-0.02	1	01356	QPSK	36	0	10 mm	left	1:1	0.135	1.033	0.139	
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 11-35
LTE Band 5 (Cell) Hotspot SAR

MEASUREMENT RESULTS																					
1 CC Uplink 2 CC 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	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.23	0.00	0	01349	QPSK	1	49	10 mm	back	1:1	0.458	1.064	0.487	A38
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.16	-0.01	0	01349	QPSK	1	49	10 mm	back	1:1	0.456	1.081	0.493	
2 CC Uplink	SCC	843.70	20597	Mid	LTE Band 5 (Cell)	5				0		QPSK	1	0	10 mm	back	1:1				
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.23	0.00	1	01349	QPSK	25	25	10 mm	back	1:1	0.371	1.064	0.395	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.23	-0.01	0	01349	QPSK	1	49	10 mm	front	1:1	0.457	1.064	0.486	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.23	0.01	1	01349	QPSK	25	25	10 mm	front	1:1	0.364	1.064	0.387	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.23	-0.05	0	01349	QPSK	1	49	10 mm	bottom	1:1	0.211	1.064	0.225	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.23	-0.04	1	01349	QPSK	25	25	10 mm	bottom	1:1	0.179	1.064	0.190	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.23	-0.03	0	01349	QPSK	1	49	10 mm	right	1:1	0.071	1.064	0.076	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.23	-0.01	1	01349	QPSK	25	25	10 mm	right	1:1	0.060	1.064	0.064	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.23	-0.06	0	01349	QPSK	1	49	10 mm	left	1:1	0.151	1.064	0.161	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.23	0.04	1	01349	QPSK	25	25	10 mm	left	1:1	0.127	1.064	0.135	
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 11-36
LTE Band 66 (AWS) Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.7	24.63	-0.03	0	01356	QPSK	1	0	10 mm	back	1:1	0.689	1.016	0.700	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.7	24.66	0.02	0	01356	QPSK	1	0	10 mm	back	1:1	0.662	1.009	0.668	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.7	24.56	0.00	0	01356	QPSK	1	0	10 mm	back	1:1	0.702	1.033	0.725	A39
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.7	23.69	0.02	1	01356	QPSK	50	0	10 mm	back	1:1	0.524	1.002	0.525	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.7	24.66	0.05	0	01356	QPSK	1	0	10 mm	front	1:1	0.592	1.009	0.597	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.7	23.69	0.01	1	01356	QPSK	50	0	10 mm	front	1:1	0.474	1.002	0.475	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.7	24.66	0.02	0	01356	QPSK	1	0	10 mm	bottom	1:1	0.492	1.009	0.496	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.7	23.69	0.02	1	01356	QPSK	50	0	10 mm	bottom	1:1	0.388	1.002	0.389	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.7	24.66	0.01	0	01356	QPSK	1	0	10 mm	left	1:1	0.246	1.009	0.248	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.7	23.69	0.00	1	01356	QPSK	50	0	10 mm	left	1:1	0.196	1.002	0.196	
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 11-37
LTE Band 25 (PCS) Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1905.00	26590	High	LTE Band 25 (PCS)	20	24.7	24.65	-0.10	0	01356	QPSK	1	0	10 mm	back	1:1	0.631	1.012	0.639	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.7	23.64	0.08	1	01356	QPSK	50	25	10 mm	back	1:1	0.468	1.014	0.475	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.7	24.65	0.06	0	01346	QPSK	1	0	10 mm	front	1:1	0.548	1.012	0.555	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.7	23.64	-0.09	1	01356	QPSK	50	25	10 mm	front	1:1	0.403	1.014	0.409	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.7	24.54	0.00	0	01356	QPSK	1	50	10 mm	bottom	1:1	0.566	1.038	0.588	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.7	24.58	0.07	0	01356	QPSK	1	0	10 mm	bottom	1:1	0.575	1.028	0.591	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.7	24.65	-0.05	0	01356	QPSK	1	0	10 mm	bottom	1:1	0.724	1.012	0.733	A41
1905.00	26590	High	LTE Band 25 (PCS)	20	23.7	23.64	-0.02	1	01356	QPSK	50	25	10 mm	bottom	1:1	0.536	1.014	0.544	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.7	24.65	-0.10	0	01356	QPSK	1	0	10 mm	left	1:1	0.316	1.012	0.320	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.7	23.64	-0.04	1	01356	QPSK	50	25	10 mm	left	1:1	0.224	1.014	0.227	
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 11-38
LTE Band 30 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
2310.00	27710	Mid	LTE Band 30	10	25.2	25.04	0.07	0	01349	QPSK	1	0	10 mm	back	1:1	0.667	1.038	0.692	
2310.00	27710	Mid	LTE Band 30	10	24.2	24.05	-0.02	1	01349	QPSK	25	25	10 mm	back	1:1	0.529	1.035	0.548	
2310.00	27710	Mid	LTE Band 30	10	25.2	25.04	-0.06	0	01349	QPSK	1	0	10 mm	front	1:1	0.470	1.038	0.488	
2310.00	27710	Mid	LTE Band 30	10	24.2	24.05	0.03	1	01349	QPSK	25	25	10 mm	front	1:1	0.365	1.035	0.378	
2310.00	27710	Mid	LTE Band 30	10	25.2	25.04	0.11	0	01349	QPSK	1	0	10 mm	bottom	1:1	0.738	1.038	0.766	A43
2310.00	27710	Mid	LTE Band 30	10	24.2	24.05	0.21	1	01349	QPSK	25	25	10 mm	bottom	1:1	0.598	1.035	0.619	
2310.00	27710	Mid	LTE Band 30	10	25.2	25.04	0.00	0	01349	QPSK	1	0	10 mm	left	1:1	0.125	1.038	0.130	
2310.00	27710	Mid	LTE Band 30	10	24.2	24.05	0.03	1	01349	QPSK	25	25	10 mm	left	1:1	0.099	1.035	0.102	
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 11-39
LTE Band 7 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
2510.00	20850	Low	LTE Band 7	20	23.7	23.56	0.07	0	01356	QPSK	1	99	10 mm	back	1:1	0.578	1.033	0.597	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.68	0.02	0	01356	QPSK	1	50	10 mm	back	1:1	0.620	1.005	0.623	
2560.00	21350	High	LTE Band 7	20	23.7	23.65	-0.11	0	01356	QPSK	1	50	10 mm	back	1:1	0.654	1.012	0.662	A44
2535.00	21100	Mid	LTE Band 7	20	22.7	22.60	-0.01	1	01356	QPSK	50	25	10 mm	back	1:1	0.504	1.023	0.516	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.68	0.04	0	01356	QPSK	1	50	10 mm	front	1:1	0.383	1.005	0.385	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.60	0.04	1	01356	QPSK	50	25	10 mm	front	1:1	0.317	1.023	0.324	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.68	0.04	0	01356	QPSK	1	50	10 mm	bottom	1:1	0.456	1.005	0.458	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.60	0.03	1	01356	QPSK	50	25	10 mm	bottom	1:1	0.370	1.023	0.379	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.68	-0.01	0	01356	QPSK	1	50	10 mm	left	1:1	0.096	1.005	0.096	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.60	0.12	1	01356	QPSK	50	25	10 mm	left	1:1	0.079	1.023	0.081	
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 11-40
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																						
1 CC Uplink 2 CC 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	N/A	2506.00	39750	Low	LTE Band 41	20	25.2	24.83	0.02	0	01349	QPSK	1	0	10 mm	back	1:1.58	0.603	1.089	0.657		
1 CC Uplink	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	25.2	24.72	0.04	0	01349	QPSK	1	0	10 mm	back	1:1.58	0.638	1.117	0.713		
1 CC Uplink	N/A	2593.00	40620	Mid	LTE Band 41	20	25.2	24.69	-0.01	0	01349	QPSK	1	0	10 mm	back	1:1.58	0.667	1.125	0.750	A45	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.2	24.88	0.15	0	01349	QPSK	1	0	10 mm	back	1:1.58	0.658	1.076	0.708		
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	25.2	24.71	0.10	0	01349	QPSK	1	0	10 mm	back	1:1.58	0.600	1.119	0.671		
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	24.2	23.84	0.06	1	01349	QPSK	50	0	10 mm	back	1:1.58	0.506	1.086	0.550		
1 CC Uplink	N/A	2506.00	39750	Low	LTE Band 41	20	24.2	23.68	0.05	1	01349	QPSK	100	0	10 mm	back	1:1.58	0.478	1.127	0.539		
2 CC Uplink	PCC	2593.00	40620	Mid	LTE Band 41	20	25.2	24.82	0.01	0	01349	QPSK	1	0	10 mm	back	1:1.58	0.644	1.091	0.703		
2 CC Uplink	SCC	2573.20	40422	Mid	LTE Band 41	20				0	01349	QPSK	1	99	10 mm	back	1:1.58					
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.2	24.88	0.04	0	01349	QPSK	1	0	10 mm	front	1:1.58	0.397	1.076	0.427		
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	24.2	23.84	-0.01	1	01349	QPSK	50	0	10 mm	front	1:1.58	0.309	1.086	0.336		
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.2	24.88	0.04	0	01349	QPSK	1	0	10 mm	bottom	1:1.58	0.310	1.076	0.334		
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	24.2	23.84	0.01	1	01349	QPSK	50	0	10 mm	bottom	1:1.58	0.239	1.086	0.260		
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.2	24.88	0.07	0	01349	QPSK	1	0	10 mm	left	1:1.58	0.112	1.076	0.121		
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	24.2	23.84	0.16	1	01349	QPSK	50	0	10 mm	left	1:1.58	0.086	1.086	0.093		
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 11-41
WLAN Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	19.5	19.46	-0.01	10 mm	1	01349	1	back	99.2	0.409	0.271	1.009	1.008	0.276	
2412	1	802.11b	DSSS	22	19.5	19.46	0.17	10 mm	1	01349	1	front	99.2	0.436	-	1.009	1.008	-	
2412	1	802.11b	DSSS	22	19.5	19.46	-0.21	10 mm	1	01349	1	top	99.2	0.197	-	1.009	1.008	-	
2412	1	802.11b	DSSS	22	19.5	19.46	0.13	10 mm	1	01349	1	left	99.2	0.507	0.326	1.009	1.008	0.332	A47
2412	1	802.11b	DSSS	22	19.5	19.49	0.19	10 mm	2	01349	1	back	99.2	0.244	0.158	1.002	1.008	0.160	
2412	1	802.11b	DSSS	22	19.5	19.49	0.13	10 mm	2	01349	1	front	99.2	0.308	-	1.002	1.008	-	
2412	1	802.11b	DSSS	22	19.5	19.49	0.00	10 mm	2	01349	1	top	99.2	0.335	0.221	1.002	1.008	0.223	
2412	1	802.11b	DSSS	22	19.5	19.49	0.19	10 mm	2	01349	1	left	99.2	0.013	-	1.002	1.008	-	
5240	48	802.11a	OFDM	20	15.0	14.84	0.06	10 mm	1	01497	6	back	98.3	0.352	0.159	1.038	1.017	0.168	
5240	48	802.11a	OFDM	20	15.0	14.84	0.12	10 mm	1	01497	6	front	98.3	0.020	-	1.038	1.017	-	
5240	48	802.11a	OFDM	20	15.0	14.84	0.18	10 mm	1	01497	6	top	98.3	0.101	-	1.038	1.017	-	
5240	48	802.11a	OFDM	20	15.0	14.84	-0.11	10 mm	1	01497	6	left	98.3	0.213	-	1.038	1.017	-	
5180	36	802.11a	OFDM	20	15.0	14.66	0.15	10 mm	2	01497	6	back	99.3	0.539	0.244	1.081	1.007	0.266	
5180	36	802.11a	OFDM	20	15.0	14.66	0.17	10 mm	2	01497	6	front	99.3	0.140	-	1.081	1.007	-	
5180	36	802.11a	OFDM	20	15.0	14.66	0.06	10 mm	2	01497	6	top	99.3	0.239	-	1.081	1.007	-	
5180	36	802.11a	OFDM	20	15.0	14.66	0.00	10 mm	2	01497	6	left	99.3	0.095	-	1.081	1.007	-	
5745	149	802.11a	OFDM	20	15.0	14.88	0.01	10 mm	1	01497	6	back	98.3	1.665	0.693	1.028	1.017	0.725	
5785	157	802.11a	OFDM	20	15.0	14.77	-0.01	10 mm	1	01497	6	back	98.3	1.526	0.695	1.054	1.017	0.745	
5825	165	802.11a	OFDM	20	15.0	14.67	0.01	10 mm	1	01497	6	back	98.3	1.661	0.716	1.079	1.017	0.786	
5745	149	802.11a	OFDM	20	15.0	14.88	0.19	10 mm	1	01497	6	front	98.3	0.195	-	1.028	1.017	-	
5745	149	802.11a	OFDM	20	15.0	14.88	0.14	10 mm	1	01497	6	top	98.3	0.281	-	1.028	1.017	-	
5745	149	802.11a	OFDM	20	15.0	14.88	-0.03	10 mm	1	01497	6	left	98.3	0.835	0.374	1.028	1.017	0.391	
5745	149	802.11a	OFDM	20	15.0	14.76	0.12	10 mm	2	01497	6	back	99.3	0.524	0.223	1.057	1.007	0.237	
5745	149	802.11a	OFDM	20	15.0	14.76	0.19	10 mm	2	01497	6	front	99.3	0.126	-	1.057	1.007	-	
5745	149	802.11a	OFDM	20	15.0	14.76	0.17	10 mm	2	01497	6	top	99.3	0.287	-	1.057	1.007	-	
5745	149	802.11a	OFDM	20	15.0	14.76	0.00	10 mm	2	01497	6	left	99.3	0.130	-	1.057	1.007	-	
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 11-42
WLAN MIMO Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [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)		
5240	48	802.11n	OFDM	20	15.0	14.71	15.0	14.35	0.17	10 mm	MIMO	01497	13	back	98.3	0.616	0.289	1.161	1.017	0.341	
5240	48	802.11n	OFDM	20	15.0	14.71	15.0	14.35	0.13	10 mm	MIMO	01497	13	front	98.3	0.203	0.078	1.161	1.017	0.092	
5240	48	802.11n	OFDM	20	15.0	14.71	15.0	14.35	0.04	10 mm	MIMO	01497	13	top	98.3	0.417	-	1.161	1.017	-	
5240	48	802.11n	OFDM	20	15.0	14.71	15.0	14.35	0.12	10 mm	MIMO	01497	13	left	98.3	0.371	-	1.161	1.017	-	
5745	149	802.11n	OFDM	20	15.0	14.70	15.0	14.50	0.04	10 mm	MIMO	01497	13	back	98.3	1.538	0.700	1.122	1.017	0.799	
5785	157	802.11n	OFDM	20	15.0	14.58	15.0	14.55	0.14	10 mm	MIMO	01497	13	back	98.3	1.247	0.780	1.109	1.017	0.880	
5825	165	802.11n	OFDM	20	15.0	14.53	15.0	14.54	0.13	10 mm	MIMO	01497	13	back	98.3	1.554	0.806	1.114	1.017	0.913	A48
5745	149	802.11n	OFDM	20	15.0	14.70	15.0	14.50	0.18	10 mm	MIMO	01497	13	front	98.3	0.237	0.072	1.122	1.017	0.082	
5745	149	802.11n	OFDM	20	15.0	14.70	15.0	14.50	0.11	10 mm	MIMO	01497	13	top	98.3	0.408	0.170	1.122	1.017	0.194	
5745	149	802.11n	OFDM	20	15.0	14.70	15.0	14.50	0.14	10 mm	MIMO	01497	13	left	98.3	0.368	-	1.122	1.017	-	
5825	165	802.11n	OFDM	20	15.0	14.53	15.0	14.54	0.11	10 mm	MIMO	01497	13	back	98.3	1.291	0.806	1.114	1.017	0.913	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT											Body										
Spatial Peak											1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population											averaged over 1 gram										

Note:

1. Blue entry represents variability measurement.
2. To achieve the 5GHz WLAN 18 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 15.0 dBm.

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**Table 11-43
DSS 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 (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2402	0	Bluetooth	FHSS	13.0	12.10	-0.10	10 mm	01489	1	back	77.9	0.057	1.230	1.284	0.090	
2402	0	Bluetooth	FHSS	13.0	12.10	0.14	10 mm	01489	1	front	77.9	0.047	1.230	1.284	0.074	
2402	0	Bluetooth	FHSS	13.0	12.10	-0.10	10 mm	01489	1	top	77.9	0.022	1.230	1.284	0.035	
2402	0	Bluetooth	FHSS	13.0	12.10	0.15	10 mm	01489	1	left	77.9	0.059	1.230	1.284	0.093	A50
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 11-44
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)	
5300	60	802.11a	OFDM	20	15.0	14.97	0.10	0 mm	1	01497	6	back	98.3	14.629	0.628	1.007	1.017	0.643	
5300	60	802.11a	OFDM	20	15.0	14.97	0.10	0 mm	1	01497	6	front	98.3	0.615	-	1.007	1.017	-	
5300	60	802.11a	OFDM	20	15.0	14.97	-0.17	0 mm	1	01497	6	top	98.3	1.596	-	1.007	1.017	-	
5300	60	802.11a	OFDM	20	15.0	14.97	0.00	0 mm	1	01497	6	left	98.3	2.381	-	1.007	1.017	-	
5300	60	802.11a	OFDM	20	15.0	14.63	0.02	0 mm	2	01497	6	back	99.3	8.049	0.896	1.089	1.007	0.983	
5300	60	802.11a	OFDM	20	15.0	14.63	-0.01	0 mm	2	01497	6	front	99.3	1.454	0.275	1.089	1.007	0.302	
5300	60	802.11a	OFDM	20	15.0	14.63	-0.10	0 mm	2	01497	6	top	99.3	5.552	-	1.089	1.007	-	
5300	60	802.11a	OFDM	20	15.0	14.63	0.00	0 mm	2	01497	6	left	99.3	0.417	-	1.089	1.007	-	
5620	124	802.11a	OFDM	20	15.0	14.93	-0.16	0 mm	1	01497	6	back	98.3	23.673	1.180	1.016	1.017	1.219	A51
5620	124	802.11a	OFDM	20	15.0	14.93	0.04	0 mm	1	01497	6	front	98.3	1.934	-	1.016	1.017	-	
5620	124	802.11a	OFDM	20	15.0	14.93	0.05	0 mm	1	01497	6	top	98.3	3.184	-	1.016	1.017	-	
5620	124	802.11a	OFDM	20	15.0	14.93	0.10	0 mm	1	01497	6	left	98.3	5.692	0.687	1.016	1.017	0.710	
5600	120	802.11a	OFDM	20	15.0	14.71	-0.01	0 mm	2	01497	6	back	99.3	6.898	0.785	1.069	1.007	0.845	
5600	120	802.11a	OFDM	20	15.0	14.71	0.00	0 mm	2	01497	6	front	99.3	1.194	-	1.069	1.007	-	
5600	120	802.11a	OFDM	20	15.0	14.71	-0.13	0 mm	2	01497	6	top	99.3	3.905	-	1.069	1.007	-	
5600	120	802.11a	OFDM	20	15.0	14.71	-0.11	0 mm	2	01497	6	left	99.3	0.481	-	1.069	1.007	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT													Extremity						
Spatial Peak													4.0 W/kg (mW/g)						
Uncontrolled Exposure/General Population													averaged over 10 grams						

11.5 SAR Test Notes

General Notes:

- The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, FCC KDB Publication 616217 D04v01r02, and FCC KDB Publication 447498 D01v06.
- Batteries are fully charged at the beginning of the SAR measurements.
- Liquid tissue depth was at least 15.0 cm for all frequencies.
- The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
- SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.

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6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. Per FCC KDB 865664 D01v01r04, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 13 for variability analysis.
9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v02r01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.7 for more details).
10. Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is > 160 mm and < 200 mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg.
11. This device utilizes power reduction for some wireless modes and technologies, as outlined in Section 1.3. The maximum output power allowed for each transmitter and exposure condition was evaluated for SAR compliance based on expected use conditions and simultaneous transmission scenarios.
12. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds below.

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 for 1g evaluations 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 for 1g evaluations then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.

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- 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.

UMTS Notes:

- UMTS mode in was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. AMR and HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03r01.
- 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 for 1g evaluations 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:

- 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.
- 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.
- A-MPR was disabled for all SAR tests by setting NS=01 and MCC=001 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
- Per FCC KDB Publication 447498 D01v06, when the reported LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg for 1g evaluations, testing at the other channels was required for such test configurations.
- 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.
- Per KDB Publication 941225 D05Av01r02, SAR for downlink only 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.
- For LTE Band 41 and LTE Band 5, per Fall TCB Workshop Notes, 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.

WLAN Notes:

- 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 for 1g evaluations, 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.
- Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.7.5 for more information.
- 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

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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 for 1g evaluations. 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 by either evaluating the sum of the 1g SAR values of each antenna transmitting independently or making a SAR measurement with both antennas transmitting simultaneously. Please see Section 12 for complete analysis.
5. When the maximum reported 1g averaged SAR is ≤ 0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg for 1g evaluations or all test channels were measured.
6. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated EMC test reports.
7. When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

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.
2. Head and hotspot Bluetooth SAR were evaluated for BT BR tethering applications.

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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 1g 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 1g or 10g SAR.

12.3 Head SAR Simultaneous Transmission Analysis

(*) 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 12-1
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)	0.134	0.685	0.552	0.819	0.686	1.371
	CDMA/EVDO BC0 (§22H)	0.130	0.685	0.552	0.815	0.682	1.367
	PCS CDMA/EVDO	0.198	0.685	0.552	0.883	0.750	1.435
	GSM/GPRS 850	0.118	0.685	0.552	0.803	0.670	1.355
	GSM/GPRS 1900	0.122	0.685	0.552	0.807	0.674	1.359
	UMTS 850	0.110	0.685	0.552	0.795	0.662	1.347
	UMTS 1750	0.157	0.685	0.552	0.842	0.709	1.394
	UMTS 1900	0.177	0.685	0.552	0.862	0.729	1.414
	LTE Band 12	0.095	0.685	0.552	0.780	0.647	1.332
	LTE Band 13	0.083	0.685	0.552	0.768	0.635	1.320
	LTE Band 14	0.067	0.685	0.552	0.752	0.619	1.304
	LTE Band 26 (Cell)	0.128	0.685	0.552	0.813	0.680	1.365
	LTE Band 5 (Cell)	0.137	0.685	0.552	0.822	0.689	1.374
	LTE Band 66 (AWS)	0.154	0.685	0.552	0.839	0.706	1.391
	LTE Band 25 (PCS)	0.199	0.685	0.552	0.884	0.751	1.436
	LTE Band 30	0.091	0.685	0.552	0.776	0.643	1.328
	LTE Band 7	0.068	0.685	0.552	0.753	0.620	1.305
	LTE Band 41	0.090	0.685	0.552	0.775	0.642	1.327

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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)	0.134	0.313	0.764	0.447	0.898	1.211
	CDMA/EVDO BC0 (\$22H)	0.130	0.313	0.764	0.443	0.894	1.207
	PCS CDMA/EVDO	0.198	0.313	0.764	0.511	0.962	1.275
	GSM/GPRS 850	0.118	0.313	0.764	0.431	0.882	1.195
	GSM/GPRS 1900	0.122	0.313	0.764	0.435	0.886	1.199
	UMTS 850	0.110	0.313	0.764	0.423	0.874	1.187
	UMTS 1750	0.157	0.313	0.764	0.470	0.921	1.234
	UMTS 1900	0.177	0.313	0.764	0.490	0.941	1.254
	LTE Band 12	0.095	0.313	0.764	0.408	0.859	1.172
	LTE Band 13	0.083	0.313	0.764	0.396	0.847	1.160
	LTE Band 14	0.067	0.313	0.764	0.380	0.831	1.144
	LTE Band 26 (Cell)	0.128	0.313	0.764	0.441	0.892	1.205
	LTE Band 5 (Cell)	0.137	0.313	0.764	0.450	0.901	1.214
	LTE Band 66 (AWS)	0.154	0.313	0.764	0.467	0.918	1.231
	LTE Band 25 (PCS)	0.199	0.313	0.764	0.512	0.963	1.276
	LTE Band 30	0.091	0.313	0.764	0.404	0.855	1.168
	LTE Band 7	0.068	0.313	0.764	0.381	0.832	1.145
	LTE Band 41	0.090	0.313	0.764	0.403	0.854	1.167

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Table 12-3
Simultaneous Transmission Scenario with 2.4 GHz Ant 1 and 5 GHz Ant 2 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)	0.134	0.685	0.764	0.819	0.898	1.583
	CDMA/EVDO BC0 (\$22H)	0.130	0.685	0.764	0.815	0.894	1.579
	PCS CDMA/EVDO	0.198	0.685	0.764	0.883	0.962	See Table Below
	GSM/GPRS 850	0.118	0.685	0.764	0.803	0.882	1.567
	GSM/GPRS 1900	0.122	0.685	0.764	0.807	0.886	1.571
	UMTS 850	0.110	0.685	0.764	0.795	0.874	1.559
	UMTS 1750	0.157	0.685	0.764	0.842	0.921	See Table Below
	UMTS 1900	0.177	0.685	0.764	0.862	0.941	See Table Below
	LTE Band 12	0.095	0.685	0.764	0.780	0.859	1.544
	LTE Band 13	0.083	0.685	0.764	0.768	0.847	1.532
	LTE Band 14	0.067	0.685	0.764	0.752	0.831	1.516
	LTE Band 26 (Cell)	0.128	0.685	0.764	0.813	0.892	1.577
	LTE Band 5 (Cell)	0.137	0.685	0.764	0.822	0.901	1.586
	LTE Band 66 (AWS)	0.154	0.685	0.764	0.839	0.918	See Table Below
	LTE Band 25 (PCS)	0.199	0.685	0.764	0.884	0.963	See Table Below
	LTE Band 30	0.091	0.685	0.764	0.776	0.855	1.540
	LTE Band 7	0.068	0.685	0.764	0.753	0.832	1.517
	LTE Band 41	0.090	0.685	0.764	0.775	0.854	1.539

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO 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+3			1	2	3	1+2+3
Head SAR	Right Cheek	0.132	0.685	0.724	1.541	Head SAR	Right Cheek	0.154	0.685	0.724	1.563
	Right Tilt	0.069	0.244	0.764	1.077		Right Tilt	0.082	0.244	0.764	1.090
	Left Cheek	0.198	0.110	0.764*	1.072		Left Cheek	0.155	0.110	0.764*	1.029
	Left Tilt	0.098	0.685*	0.764*	1.547		Left Tilt	0.063	0.685*	0.764*	1.512
Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Head SAR	Right Cheek	0.129	0.685	0.724	1.538	Head SAR	Right Cheek	0.099	0.685	0.724	1.508
	Right Tilt	0.083	0.244	0.764	1.091		Right Tilt	0.076	0.244	0.764	1.084
	Left Cheek	0.157	0.110	0.764*	1.031		Left Cheek	0.177	0.110	0.764*	1.051
	Left Tilt	0.094	0.685*	0.764*	1.543		Left Tilt	0.105	0.685*	0.764*	1.554
Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Head SAR	Right Cheek	0.154	0.685	0.724	1.563	Head SAR	Right Cheek	0.179	0.685	0.724	1.588
	Right Tilt	0.098	0.244	0.764	1.106		Right Tilt	0.096	0.244	0.764	1.104
	Left Cheek	0.145	0.110	0.764*	1.019		Left Cheek	0.199	0.110	0.764*	1.073
	Left Tilt	0.104	0.685*	0.764*	1.553		Left Tilt	0.132	0.685*	0.764*	1.581

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	CDMA/EVDO BC10 (§90S)	0.134	0.392	0.526
	CDMA/EVDO BC0 (§22H)	0.130	0.392	0.522
	PCS CDMA/EVDO	0.198	0.392	0.590
	GSM/GPRS 850	0.118	0.392	0.510
	GSM/GPRS 1900	0.122	0.392	0.514
	UMTS 850	0.110	0.392	0.502
	UMTS 1750	0.157	0.392	0.549
	UMTS 1900	0.177	0.392	0.569
	LTE Band 12	0.095	0.392	0.487
	LTE Band 13	0.083	0.392	0.475
	LTE Band 14	0.067	0.392	0.459
	LTE Band 26 (Cell)	0.128	0.392	0.520
	LTE Band 5 (Cell)	0.137	0.392	0.529
	LTE Band 66 (AWS)	0.154	0.392	0.546
	LTE Band 25 (PCS)	0.199	0.392	0.591
	LTE Band 30	0.091	0.392	0.483
	LTE Band 7	0.068	0.392	0.460
	LTE Band 41	0.090	0.392	0.482

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)	0.490	0.276	0.160	0.766	0.650	0.926
	CDMA BC0 (§22H)	0.509	0.276	0.160	0.785	0.669	0.945
	PCS CDMA	0.641	0.276	0.160	0.917	0.801	1.077
	GSM/GPRS 850	0.519	0.276	0.160	0.795	0.679	0.955
	GSM/GPRS 1900	0.408	0.276	0.160	0.684	0.568	0.844
	UMTS 850	0.435	0.276	0.160	0.711	0.595	0.871
	UMTS 1750	0.624	0.276	0.160	0.900	0.784	1.060
	UMTS 1900	0.612	0.276	0.160	0.888	0.772	1.048
	LTE Band 12	0.389	0.276	0.160	0.665	0.549	0.825
	LTE Band 13	0.426	0.276	0.160	0.702	0.586	0.862
	LTE Band 14	0.335	0.276	0.160	0.611	0.495	0.771
	LTE Band 26 (Cell)	0.524	0.276	0.160	0.800	0.684	0.960
	LTE Band 5 (Cell)	0.493	0.276	0.160	0.769	0.653	0.929
	LTE Band 66 (AWS)	0.725	0.276	0.160	1.001	0.885	1.161
	LTE Band 25 (PCS)	0.639	0.276	0.160	0.915	0.799	1.075
	LTE Band 30	0.692	0.276	0.160	0.968	0.852	1.128
	LTE Band 7	0.662	0.276	0.160	0.938	0.822	1.098
	LTE Band 41	0.750	0.276	0.160	1.026	0.910	1.186

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Body-Worn	CDMA BC10 (§90S)	0.490	0.786	0.237	1.276	0.727
	CDMA BC0 (§22H)	0.509	0.786	0.237	1.295	0.746
	PCS CDMA	0.641	0.786	0.237	1.427	0.878
	GSM/GPRS 850	0.519	0.786	0.237	1.305	0.756
	GSM/GPRS 1900	0.408	0.786	0.237	1.194	0.645
	UMTS 850	0.435	0.786	0.237	1.221	0.672
	UMTS 1750	0.624	0.786	0.237	1.410	0.861
	UMTS 1900	0.612	0.786	0.237	1.398	0.849
	LTE Band 12	0.389	0.786	0.237	1.175	0.626
	LTE Band 13	0.426	0.786	0.237	1.212	0.663
	LTE Band 14	0.335	0.786	0.237	1.121	0.572
	LTE Band 26 (Cell)	0.524	0.786	0.237	1.310	0.761
	LTE Band 5 (Cell)	0.493	0.786	0.237	1.279	0.730
	LTE Band 66 (AWS)	0.725	0.786	0.237	1.511	0.962
	LTE Band 25 (PCS)	0.639	0.786	0.237	1.425	0.876
	LTE Band 30	0.692	0.786	0.237	1.478	0.929
	LTE Band 7	0.662	0.786	0.237	1.448	0.899
	LTE Band 41	0.750	0.786	0.237	1.536	0.987

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Body-Worn	CDMA BC10 (§90S)	0.490	0.913	1.403	N/A
	CDMA BC0 (§22H)	0.509	0.913	1.422	N/A
	PCS CDMA	0.641	0.913	1.554	N/A
	GSM/GPRS 850	0.519	0.913	1.432	N/A
	GSM/GPRS 1900	0.408	0.913	1.321	N/A
	UMTS 850	0.435	0.913	1.348	N/A
	UMTS 1750	0.624	0.913	1.537	N/A
	UMTS 1900	0.612	0.913	1.525	N/A
	LTE Band 12	0.389	0.913	1.302	N/A
	LTE Band 13	0.426	0.913	1.339	N/A
	LTE Band 14	0.335	0.913	1.248	N/A
	LTE Band 26 (Cell)	0.524	0.913	1.437	N/A
	LTE Band 5 (Cell)	0.493	0.913	1.406	N/A
	LTE Band 66 (AWS)	0.725	0.913	See Note 1	0.02
	LTE Band 25 (PCS)	0.639	0.913	1.552	N/A
	LTE Band 30	0.692	0.913	See Note 1	0.02
	LTE Band 7	0.662	0.913	1.575	N/A
	LTE Band 41	0.750	0.913	See Note 1	0.02

Note 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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Table 12-7

Simultaneous Transmission Scenario with 2.4 GHz Ant 1 and 5 GHz Ant 2 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+3
Body-Worn	CDMA BC10 (§90S)	0.490	0.276	0.237	1.003
	CDMA BC0 (§22H)	0.509	0.276	0.237	1.022
	PCS CDMA	0.641	0.276	0.237	1.154
	GSM/GPRS 850	0.519	0.276	0.237	1.032
	GSM/GPRS 1900	0.408	0.276	0.237	0.921
	UMTS 850	0.435	0.276	0.237	0.948
	UMTS 1750	0.624	0.276	0.237	1.137
	UMTS 1900	0.612	0.276	0.237	1.125
	LTE Band 12	0.389	0.276	0.237	0.902
	LTE Band 13	0.426	0.276	0.237	0.939
	LTE Band 14	0.335	0.276	0.237	0.848
	LTE Band 26 (Cell)	0.524	0.276	0.237	1.037
	LTE Band 5 (Cell)	0.493	0.276	0.237	1.006
	LTE Band 66 (AWS)	0.725	0.276	0.237	1.238
	LTE Band 25 (PCS)	0.639	0.276	0.237	1.152
	LTE Band 30	0.692	0.276	0.237	1.205
	LTE Band 7	0.662	0.276	0.237	1.175
	LTE Band 41	0.750	0.276	0.237	1.263

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Table 12-8
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	CDMA BC10 (§90S)	0.490	0.090	0.580
	CDMA BC0 (§22H)	0.509	0.090	0.599
	PCS CDMA	0.641	0.090	0.731
	GSM/GPRS 850	0.519	0.090	0.609
	GSM/GPRS 1900	0.408	0.090	0.498
	UMTS 850	0.435	0.090	0.525
	UMTS 1750	0.624	0.090	0.714
	UMTS 1900	0.612	0.090	0.702
	LTE Band 12	0.389	0.090	0.479
	LTE Band 13	0.426	0.090	0.516
	LTE Band 14	0.335	0.090	0.425
	LTE Band 26 (Cell)	0.524	0.090	0.614
	LTE Band 5 (Cell)	0.493	0.090	0.583
	LTE Band 66 (AWS)	0.725	0.090	0.815
	LTE Band 25 (PCS)	0.639	0.090	0.729
	LTE Band 30	0.692	0.090	0.782
	LTE Band 7	0.662	0.090	0.752
	LTE Band 41	0.750	0.090	0.840

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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 with 2.4 GHz WLAN (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)	0.508	0.332	0.223	0.840	0.731	1.063
	EVDO BC0 (\$22H)	0.498	0.332	0.223	0.830	0.721	1.053
	PCS EVDO	0.800	0.332	0.223	1.132	1.023	1.355
	GPRS 850	0.519	0.332	0.223	0.851	0.742	1.074
	GPRS 1900	0.408	0.332	0.223	0.740	0.631	0.963
	UMTS 850	0.435	0.332	0.223	0.767	0.658	0.990
	UMTS 1750	0.624	0.332	0.223	0.956	0.847	1.179
	UMTS 1900	0.612	0.332	0.223	0.944	0.835	1.167
	LTE Band 12	0.421	0.332	0.223	0.753	0.644	0.976
	LTE Band 13	0.426	0.332	0.223	0.758	0.649	0.981
	LTE Band 14	0.335	0.332	0.223	0.667	0.558	0.890
	LTE Band 26 (Cell)	0.524	0.332	0.223	0.856	0.747	1.079
	LTE Band 5 (Cell)	0.493	0.332	0.223	0.825	0.716	1.048
	LTE Band 66 (AWS)	0.725	0.332	0.223	1.057	0.948	1.280
	LTE Band 25 (PCS)	0.733	0.332	0.223	1.065	0.956	1.288
	LTE Band 30	0.766	0.332	0.223	1.098	0.989	1.321
	LTE Band 7	0.662	0.332	0.223	0.994	0.885	1.217
	LTE Band 41	0.750	0.332	0.223	1.082	0.973	1.305

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Hotspot SAR	EVDO BC10 (\$90S)	0.508	0.786	0.266	1.294	0.774
	EVDO BC0 (\$22H)	0.498	0.786	0.266	1.284	0.764
	PCS EVDO	0.800	0.786	0.266	1.586	1.066
	GPRS 850	0.519	0.786	0.266	1.305	0.785
	GPRS 1900	0.408	0.786	0.266	1.194	0.674
	UMTS 850	0.435	0.786	0.266	1.221	0.701
	UMTS 1750	0.624	0.786	0.266	1.410	0.890
	UMTS 1900	0.612	0.786	0.266	1.398	0.878
	LTE Band 12	0.421	0.786	0.266	1.207	0.687
	LTE Band 13	0.426	0.786	0.266	1.212	0.692
	LTE Band 14	0.335	0.786	0.266	1.121	0.601
	LTE Band 26 (Cell)	0.524	0.786	0.266	1.310	0.790
	LTE Band 5 (Cell)	0.493	0.786	0.266	1.279	0.759
	LTE Band 66 (AWS)	0.725	0.786	0.266	1.511	0.991
	LTE Band 25 (PCS)	0.733	0.786	0.266	1.519	0.999
	LTE Band 30	0.766	0.786	0.266	1.552	1.032
	LTE Band 7	0.662	0.786	0.266	1.448	0.928
	LTE Band 41	0.750	0.786	0.266	1.536	1.016

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Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	EVDO BC10 (§90S)	0.508	0.913	1.421
	EVDO BC0 (§22H)	0.498	0.913	1.411
	PCS EVDO	0.800	0.913	See Table Below
	GPRS 850	0.519	0.913	1.432
	GPRS 1900	0.408	0.913	1.321
	UMTS 850	0.435	0.913	1.348
	UMTS 1750	0.624	0.913	1.537
	UMTS 1900	0.612	0.913	1.525
	LTE Band 12	0.421	0.913	1.334
	LTE Band 13	0.426	0.913	1.339
	LTE Band 14	0.335	0.913	1.248
	LTE Band 26 (Cell)	0.524	0.913	1.437
	LTE Band 5 (Cell)	0.493	0.913	1.406
	LTE Band 66 (AWS)	0.725	0.913	See Table Below
	LTE Band 25 (PCS)	0.733	0.913	See Table Below
	LTE Band 30	0.766	0.913	See Table Below
	LTE Band 7	0.662	0.913	1.575
	LTE Band 41	0.750	0.913	See Table Below

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2			1	2	1+2	
Body SAR	Back	0.583	0.913	1.496	Body SAR	Back	0.725	0.913	See Note 1	0.02
	Front	0.512	0.092	0.604		Front	0.597	0.092	0.689	N/A
	Top	-	0.194	0.194		Top	-	0.194	0.194	N/A
	Bottom	0.800	-	0.800		Bottom	0.496	-	0.496	N/A
	Right	-	-	0.000		Right	-	-	0.000	N/A
	Left	0.254	0.913*	1.167		Left	0.248	0.913*	1.161	N/A
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2			1	2	1+2	
Body SAR	Back	0.639	0.913	1.552	Body SAR	Back	0.692	0.913	See Note 1	0.02
	Front	0.555	0.092	0.647		Front	0.488	0.092	0.580	N/A
	Top	-	0.194	0.194		Top	-	0.194	0.194	N/A
	Bottom	0.733	-	0.733		Bottom	0.766	-	0.766	N/A
	Right	-	-	0.000		Right	-	-	0.000	N/A
	Left	0.320	0.913*	1.233		Left	0.130	0.913*	1.043	N/A

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Body SAR	Back	0.750	0.913	See Note 1	0.02
	Front	0.427	0.092	0.519	N/A
	Top	-	0.194	0.194	N/A
	Bottom	0.334	-	0.334	N/A
	Right	-	-	0.000	N/A
	Left	0.121	0.913*	1.034	N/A

Note 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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Table 12-11
Simultaneous Transmission Scenario with 2.4 GHz Ant 1 and 5 GHz Ant 2 WLAN (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+3
Hotspot SAR	EVDO BC10 (§90S)	0.508	0.332	0.266	1.106
	EVDO BC0 (§22H)	0.498	0.332	0.266	1.096
	PCS EVDO	0.800	0.332	0.266	1.398
	GPRS 850	0.519	0.332	0.266	1.117
	GPRS 1900	0.408	0.332	0.266	1.006
	UMTS 850	0.435	0.332	0.266	1.033
	UMTS 1750	0.624	0.332	0.266	1.222
	UMTS 1900	0.612	0.332	0.266	1.210
	LTE Band 12	0.421	0.332	0.266	1.019
	LTE Band 13	0.426	0.332	0.266	1.024
	LTE Band 14	0.335	0.332	0.266	0.933
	LTE Band 26 (Cell)	0.524	0.332	0.266	1.122
	LTE Band 5 (Cell)	0.493	0.332	0.266	1.091
	LTE Band 66 (AWS)	0.725	0.332	0.266	1.323
	LTE Band 25 (PCS)	0.733	0.332	0.266	1.331
	LTE Band 30	0.766	0.332	0.266	1.364
	LTE Band 7	0.662	0.332	0.266	1.260
	LTE Band 41	0.750	0.332	0.266	1.348

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	EVDO BC10 (§90S)	0.508	0.093	0.601
	EVDO BC0 (§22H)	0.498	0.093	0.591
	PCS EVDO	0.800	0.093	0.893
	GPRS 850	0.519	0.093	0.612
	GPRS 1900	0.408	0.093	0.501
	UMTS 850	0.435	0.093	0.528
	UMTS 1750	0.624	0.093	0.717
	UMTS 1900	0.612	0.093	0.705
	LTE Band 12	0.421	0.093	0.514
	LTE Band 13	0.426	0.093	0.519
	LTE Band 14	0.335	0.093	0.428
	LTE Band 26 (Cell)	0.524	0.093	0.617
	LTE Band 5 (Cell)	0.493	0.093	0.586
	LTE Band 66 (AWS)	0.725	0.093	0.818
	LTE Band 25 (PCS)	0.733	0.093	0.826
	LTE Band 30	0.766	0.093	0.859
	LTE Band 7	0.662	0.093	0.755
	LTE Band 41	0.750	0.093	0.843

12.6 Phablet SAR Simultaneous Transmission Analysis

Per FCC KDB Publication 648474 D04 Handset SAR, Phablet SAR tests were not required if wireless router 1g SAR (scaled to the maximum output power, including tolerance) < 1.2 W/kg. Therefore no further analysis beyond the tables included in this section was required to determine that possible simultaneous transmission scenarios would not exceed the SAR limit.

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

Simult Tx	Configuration	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1 + 2
Phablet SAR	Back	1.219	0.983	2.202

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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 and ≤ 0.10 , 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 Body Worn/Hotspot Back Side SPLSR Evaluation and Analysis

Table 12-14
Peak SAR Locations for Back Side

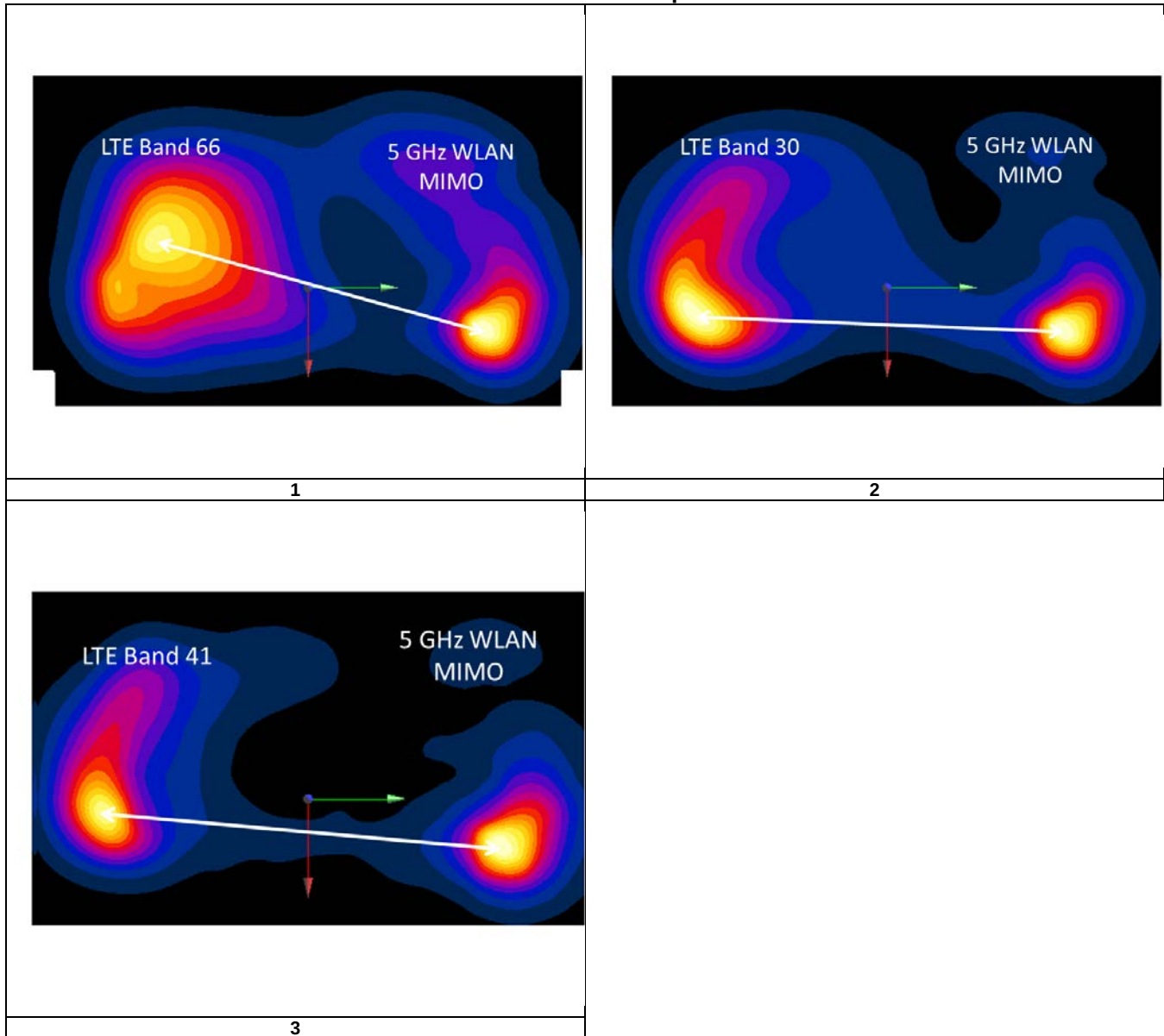
Mode/Band	x (mm)	y (mm)	Reported SAR (W/kg)
5 GHz WLAN MIMO	17.00	65.00	0.913
LTE Band 66 (AWS)	-25.00	-55.50	0.725
LTE Band 30	4.00	-68.20	0.692
LTE Band 41	-3.50	-72.20	0.75

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

Antenna Pair		Standalone 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}	
LTE Band 66 (AWS)	5 GHz WLAN MIMO	0.725	0.913	1.638	127.61	0.02	1
LTE Band 30	5 GHz WLAN MIMO	0.692	0.913	1.605	133.83	0.02	2
LTE Band 41	5 GHz WLAN MIMO	0.75	0.913	1.663	138.72	0.02	3

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



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

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

- 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
- 2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1g SAR limit).
- 3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .
- 4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg
- 5) When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

Table 13-1
Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS														
Band	FREQUENCY		Mode	Service	Data Rate (Mbps)	Side	Spacing	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.						(W/kg)	(W/kg)		(W/kg)		(W/kg)	
5750	5825.00	165	802.11n, 20 MHz Bandwidth	OFDM , MIMO	13	back	10 mm	0.806	0.806	1.00	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT							Body							
Spatial Peak							1.6 W/kg (mW/g)							
Uncontrolled Exposure/General Population							averaged over 1 gram							

13.2 Measurement Uncertainty

The measured SAR was < 1.5 W/kg for 1g and < 3.75 W/kg for 10g 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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Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	CBT	N/A	CBT	3051A00187
Agilent	8753ES	S-Parameter Vector Network Analyzer	8/17/2017	Annual	8/17/2018	MY40003841
Agilent	8753ES	S-Parameter Network Analyzer	9/14/2017	Annual	9/14/2018	US39170118
Agilent	E4438C	ESG Vector Signal Generator	3/21/2017	Biennial	3/21/2019	MY45090700
Agilent	E5515C	Wireless Communications Test Set	5/31/2017	Annual	5/31/2018	GB43304278
Agilent	E5515C	8960 Series 10 Wireless Communications Test Set	11/15/2017	Annual	11/15/2018	GB42230325
Agilent	E5515C	Wireless Communications Test Set	1/24/2018	Annual	1/24/2019	GB44400860
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Agilent	N5182A	MXG Vector Signal Generator	11/1/2017	Annual	11/1/2018	MY47420603
Agilent	N9020A	MXA Signal Analyzer	1/24/2018	Annual	1/24/2019	US46470561
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Anritsu	MA24106A	USB Power Sensor	3/12/2018	Annual	3/12/2019	1344557
Anritsu	MA24118	Pulse Power Sensor	10/16/2017	Annual	10/16/2018	1207470
Anritsu	ML2496A	Power Meter	4/20/2017	Annual	4/20/2018	1306009
Anritsu	MT8821C	Radio Communication Analyzer	11/17/2017	Annual	11/17/2018	6201381794
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	4040	Therm./Clock/Humidity Monitor	3/31/2017	Biennial	3/31/2019	170232394
Control Company	4352	Ultra Long Stem Thermometer	5/2/2017	Biennial	5/2/2019	170330144
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	6/1/2017	Annual	6/1/2018	MY53401181
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
Mini Circuits	PWR-4GHS	USB Power Sensor	1/20/2018	Annual	1/20/2019	11710030063
Mini Circuits	PWR-4GHS	USB Power Sensor	1/22/2018	Annual	1/22/2019	11710030062
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R897950903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	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
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE5011-1	Torque Wrench	7/19/2017	Biennial	7/19/2019	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	4/11/2017	Annual	4/11/2018	836371/0079
Rohde & Schwarz	CMW500	Radio Communication Tester	5/4/2017	Annual	5/4/2018	101699
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	1/19/2018	Annual	1/19/2019	164948
Seekonk	NC-100	Torque Wrench (8" lb)	9/1/2016	Biennial	9/1/2018	21053
SPEAG	D1750V2	1750 MHz SAR Dipole	5/9/2017	Annual	5/9/2018	1148
SPEAG	D1750V2	1750 MHz SAR Dipole	7/14/2016	Biennial	7/14/2018	1150
SPEAG	D1900V2	1900 MHz SAR Dipole	2/7/2018	Annual	2/7/2019	50148
SPEAG	D2300V2	2300 MHz SAR Dipole	7/25/2016	Biennial	7/25/2018	1073
SPEAG	D2450V2	2450 MHz SAR Dipole	9/11/2017	Annual	9/11/2018	797
SPEAG	D2450V2	2450 MHz SAR Dipole	7/25/2016	Biennial	7/25/2018	981
SPEAG	D2600V2	2600 MHz SAR Dipole	7/10/2017	Annual	7/10/2018	1126
SPEAG	D5GHV2	5 GHz SAR Dipole	2/12/2018	Annual	2/12/2019	1120
SPEAG	D5GHV2	5 GHz SAR Dipole	8/15/2017	Annual	8/15/2018	1237
SPEAG	D750V3	750 MHz Dipole	3/7/2017	Biennial	3/7/2019	1054
SPEAG	D750V3	750 MHz SAR Dipole	7/13/2016	Biennial	7/13/2018	1161
SPEAG	D835V2	835 MHz SAR Dipole	1/15/2018	Annual	1/15/2019	40132
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/21/2017	Annual	6/21/2018	1333
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2018	Annual	2/9/2019	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/13/2017	Annual	7/13/2018	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/9/2017	Annual	8/9/2018	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/11/2017	Annual	4/11/2018	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/15/2018	Annual	2/15/2019	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/14/2017	Annual	6/14/2018	1334
SPEAG	DAK-12	Dielectric Assessment Kit (10MHz - 3GHz)	3/13/2018	Annual	3/13/2019	1102
SPEAG	DAK-3.5	Dielectric Assessment Kit	9/12/2017	Annual	9/12/2018	1091
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	7/11/2017	Annual	7/11/2018	1039
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	8/8/2017	Annual	8/8/2018	1041
SPEAG	ES3DV3	SAR Probe	9/18/2017	Annual	9/18/2018	3287
SPEAG	ES3DV3	SAR Probe	2/13/2018	Annual	2/13/2019	3213
SPEAG	ES3DV3	SAR Probe	8/14/2017	Annual	8/14/2018	3332
SPEAG	EX3DV4	SAR Probe	7/17/2017	Annual	7/17/2018	7410
SPEAG	EX3DV4	SAR Probe	1/16/2018	Annual	1/16/2019	3589
SPEAG	EX3DV4	SAR Probe	4/18/2017	Annual	4/18/2018	7406
SPEAG	EX3DV4	SAR Probe	2/14/2018	Annual	2/14/2019	3914
SPEAG	EX3DV4	SAR Probe	8/16/2017	Annual	8/16/2018	7308

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

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15 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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16 CONCLUSION

16.1 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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17 REFERENCES

- [1] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, Aug. 1996.
- [2] ANSI/IEEE C95.1-2005, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, 2006.
- [3] ANSI/IEEE C95.1-1992, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, Sept. 1992.
- [4] ANSI/IEEE C95.3-2002, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave, New York: IEEE, December 2002.
- [5] IEEE Standards Coordinating Committee 39 –Standards Coordinating Committee 34 – IEEE Std. 1528-2013, IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.
- [6] NCRP, National Council on Radiation Protection and Measurements, Biological Effects and Exposure Criteria for RadioFrequency Electromagnetic Fields, NCRP Report No. 86, 1986. Reprinted Feb. 1995.
- [7] T. Schmid, O. Egger, N. Kuster, Automated E-field scanning system for dosimetric assessments, IEEE Transaction on Microwave Theory and Techniques, vol. 44, Jan. 1996, pp. 105-113.
- [8] K. Pokovic, T. Schmid, N. Kuster, Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequencies, ICECOM97, Oct. 1997, pp. 1 -124.
- [9] K. Pokovic, T. Schmid, and N. Kuster, E-field Probe with improved isotropy in brain simulating liquids, Proceedings of the ELMAR, Zadar, Croatia, June 23-25, 1996, pp. 172-175.
- [10] Schmid & Partner Engineering AG, Application Note: Data Storage and Evaluation, June 1998, p2.
- [11] V. Hombach, K. Meier, M. Burkhardt, E. Kuhn, N. Kuster, The Dependence of EM Energy Absorption upon Human Modeling at 900 MHz, IEEE Transaction on Microwave Theory and Techniques, vol. 44 no. 10, Oct. 1996, pp. 1865-1873.
- [12] N. Kuster and Q. Balzano, Energy absorption mechanism by biological bodies in the near field of dipole antennas above 300MHz, IEEE Transaction on Vehicular Technology, vol. 41, no. 1, Feb. 1992, pp. 17-23.
- [13] G. Hartsgrrove, A. Kraszewski, A. Surowiec, Simulated Biological Materials for Electromagnetic Radiation Absorption Studies, University of Ottawa, Bioelectromagnetics, Canada: 1987, pp. 29-36.
- [14] Q. Balzano, O. Garay, T. Manning Jr., Electromagnetic Energy Exposure of Simulated Users of Portable Cellular Telephones, IEEE Transactions on Vehicular Technology, vol. 44, no.3, Aug. 1995.
- [15] W. Gander, Computermathematik, Birkhaeuser, Basel, 1992.
- [16] W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, Numerical Recipes in C, The Art of Scientific Computing, Second edition, Cambridge University Press, 1992.
- [17] N. Kuster, R. Kastle, T. Schmid, Dosimetric evaluation of mobile communications equipment with known precision, IEEE Transaction on Communications, vol. E80-B, no. 5, May 1997, pp. 645-652.

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- [18] CENELEC CLC/SC111B, European Prestandard (prENV 50166-2), Human Exposure to Electromagnetic Fields High-frequency: 10kHz-300GHz, Jan. 1995.
- [19] Prof. Dr. Niels Kuster, ETH, Eidgenössische Technische Hochschule Zürich, Dosimetric Evaluation of the Cellular Phone.
- [20] IEC 62209-1, Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1: Devices used next to the ear (Frequency range of 300 MHz to 6 GHz), July 2016.
- [21] Innovation, Science, Economic Development Canada RSS-102 Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) Issue 5, March 2015.
- [22] Health Canada Safety Code 6 Limits of Human Exposure to Radio Frequency Electromagnetic Fields in the Frequency Range from 3 kHz – 300 GHz, 2015
- [23] FCC SAR Test Procedures for 2G-3G Devices, Mobile Hotspot and UMPC Devices KDB Publications 941225, D01-D07
- [24] SAR Measurement Guidance for IEEE 802.11 Transmitters, KDB Publication 248227 D01
- [25] FCC SAR Considerations for Handsets with Multiple Transmitters and Antennas, KDB Publications 648474 D03-D04
- [26] FCC SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers, FCC KDB Publication 616217 D04
- [27] FCC SAR Measurement and Reporting Requirements for 100MHz – 6 GHz, KDB Publications 865664 D01-D02
- [28] FCC General RF Exposure Guidance and SAR Procedures for Dongles, KDB Publication 447498, D01-D02
- [29] Anexo à Resolução No. 533, de 10 de Setembro de 2009.
- [30] IEC 62209-2, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz), Mar. 2010.

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APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01380

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 820.1 \text{ MHz}$; $\sigma = 0.892 \text{ S/m}$; $\epsilon_r = 42.652$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 03-31-2018; Ambient Temp: 23.8°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2018

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

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

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

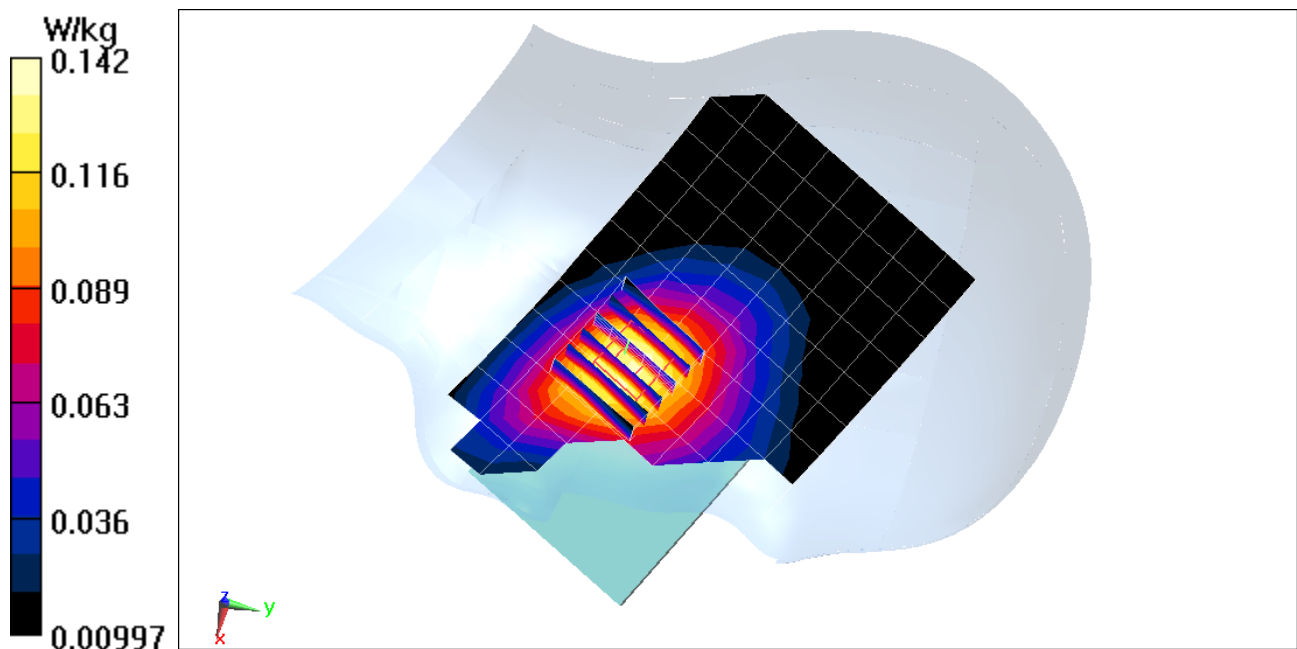
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 12.52 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.164 W/kg

SAR(1 g) = 0.131 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01380

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.52$ MHz; $\sigma = 0.909$ S/m; $\epsilon_r = 42.459$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Test Date: 03-31-2018; Ambient Temp: 23.8°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2018

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

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

Mode: Cell. CDMA, Rule Part 22H, Left Head, Cheek, Mid.ch

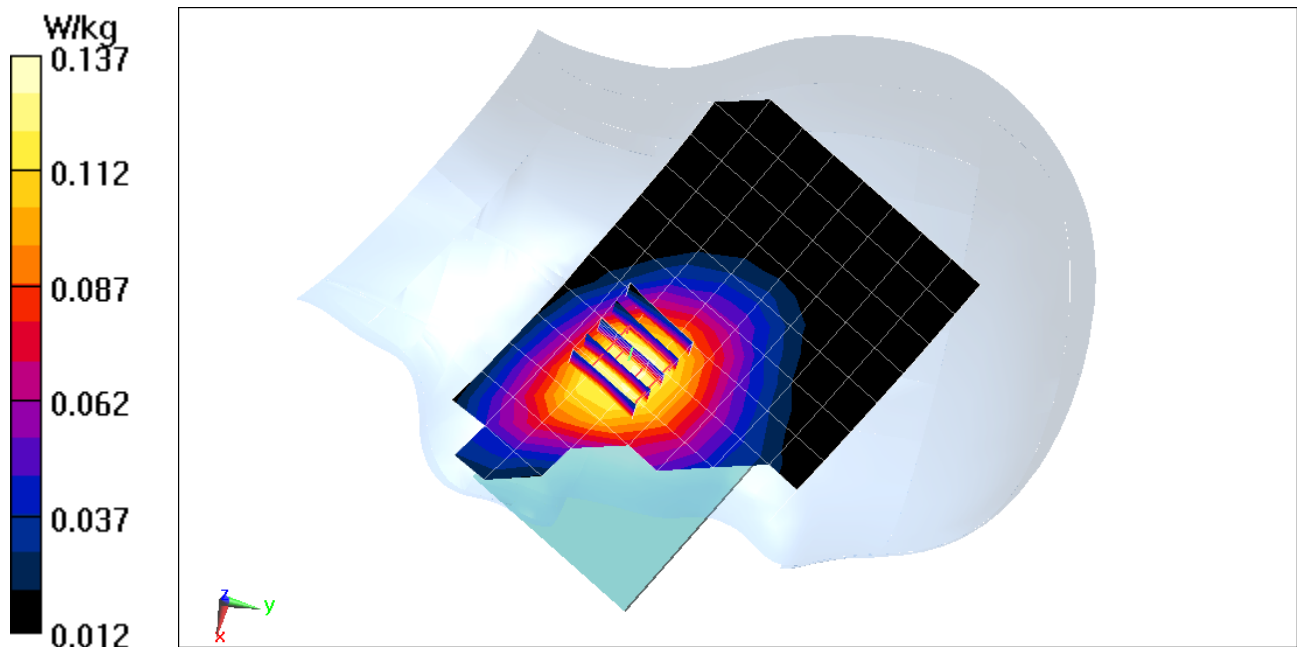
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 12.22 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.159 W/kg

SAR(1 g) = 0.126 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01380

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

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.428 \text{ S/m}$; $\epsilon_r = 38.738$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 03-21-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3332; ConvF(5.33, 5.33, 5.33); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

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

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

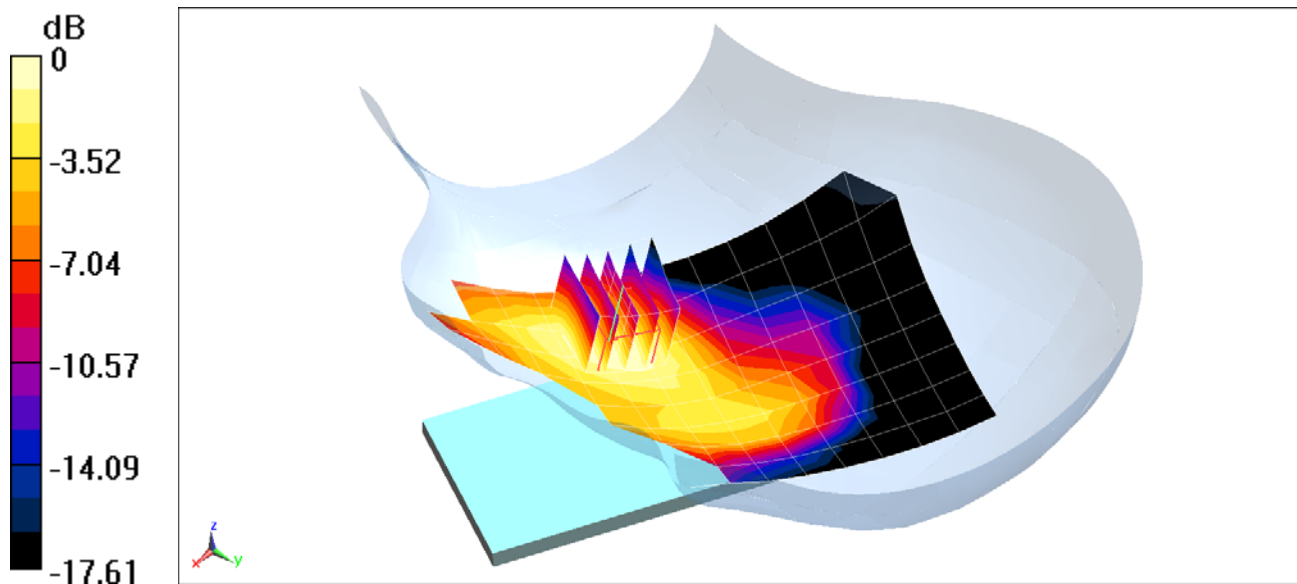
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 11.99 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.271 W/kg

SAR(1 g) = 0.182 W/kg



0 dB = 0.210 W/kg = -6.78 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01372

Communication System: UID 0, _GSM GPRS; 2 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:4.15

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.901 \text{ S/m}$; $\epsilon_r = 41.005$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 03-25-2018; Ambient Temp: 23.5°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2018

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

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

Mode: GPRS 850, Left Head, Cheek, Mid.ch, 2 Tx slots

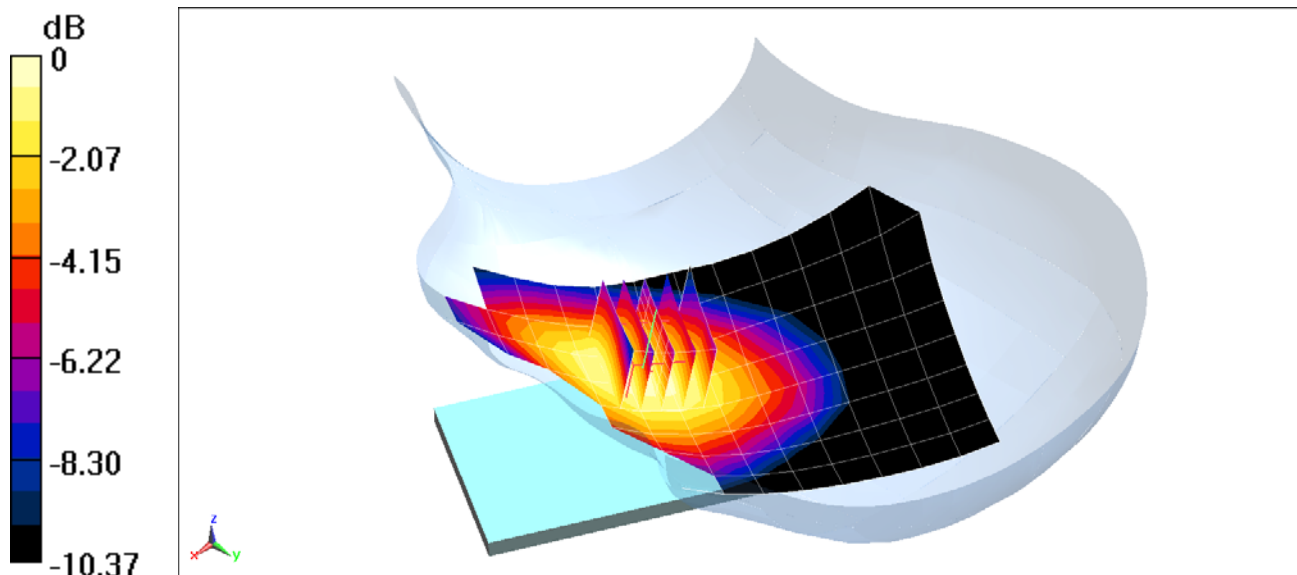
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 11.46 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.139 W/kg

SAR(1 g) = 0.111 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01372

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

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.428 \text{ S/m}$; $\epsilon_r = 38.738$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 03-21-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3332; ConvF(5.33, 5.33, 5.33); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

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

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

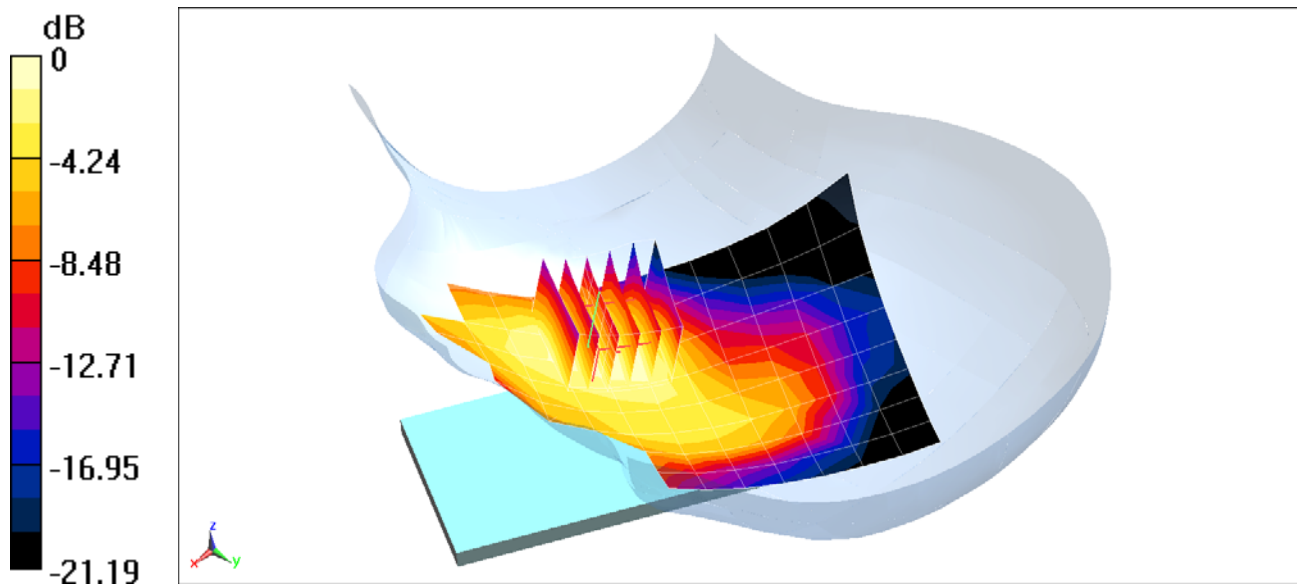
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 9.304 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.167 W/kg

SAR(1 g) = 0.115 W/kg



0 dB = 0.129 W/kg = -8.89 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01372

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.901 \text{ S/m}$; $\epsilon_r = 41.005$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 03-25-2018; Ambient Temp: 23.5°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2018

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

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

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

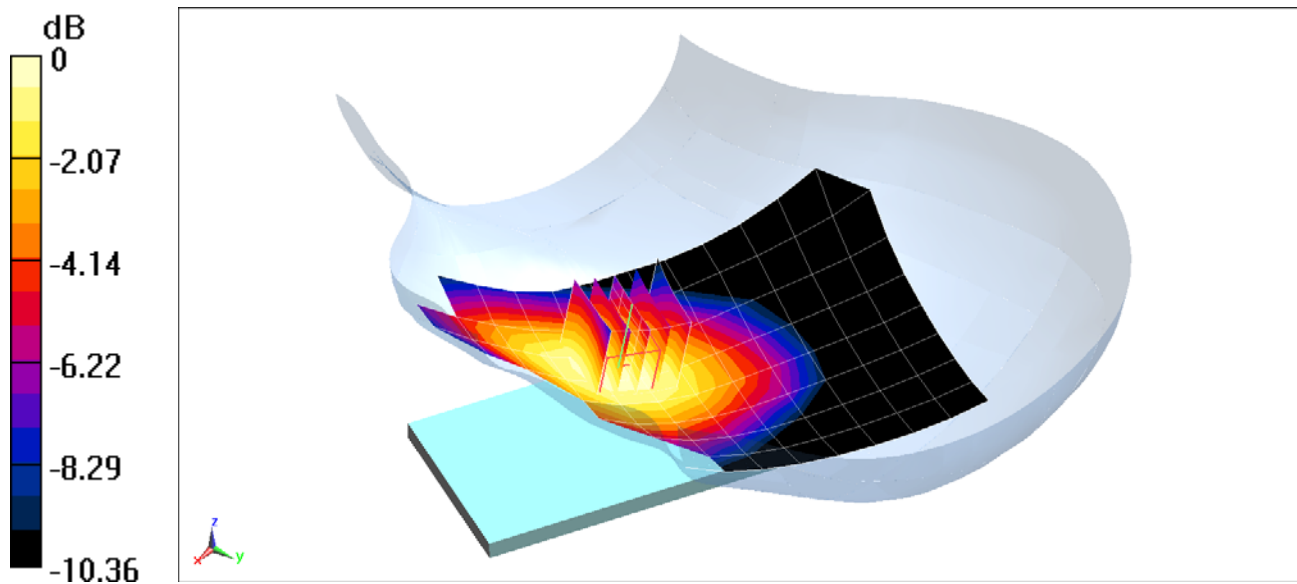
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 11.07 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.129 W/kg

SAR(1 g) = 0.103 W/kg



0 dB = 0.112 W/kg = -9.51 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01372

Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
 $f = 1732.4 \text{ MHz}$; $\sigma = 1.377 \text{ S/m}$; $\epsilon_r = 39.554$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Left Section

Test Date: 03-20-2018; Ambient Temp: 22.8°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7410; ConvF(8.66, 8.66, 8.66); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

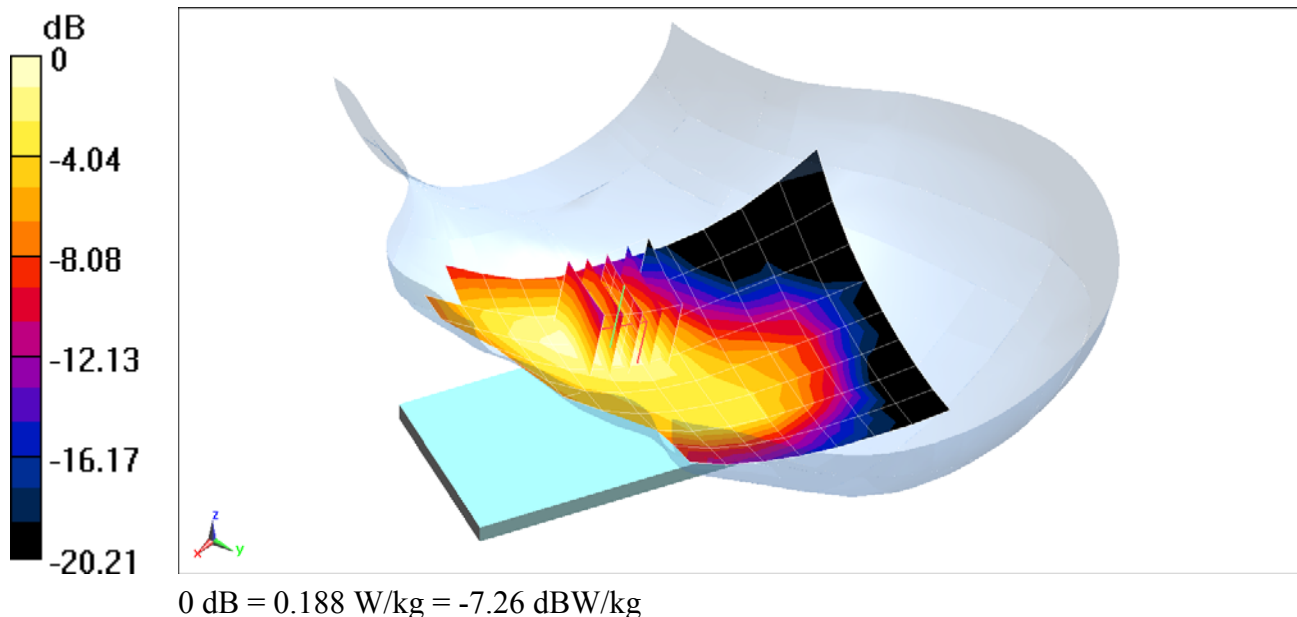
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 10.67 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.218 W/kg

SAR(1 g) = 0.147 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01372

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

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.428 \text{ S/m}$; $\epsilon_r = 38.738$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 03-21-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3332; ConvF(5.33, 5.33, 5.33); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

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

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

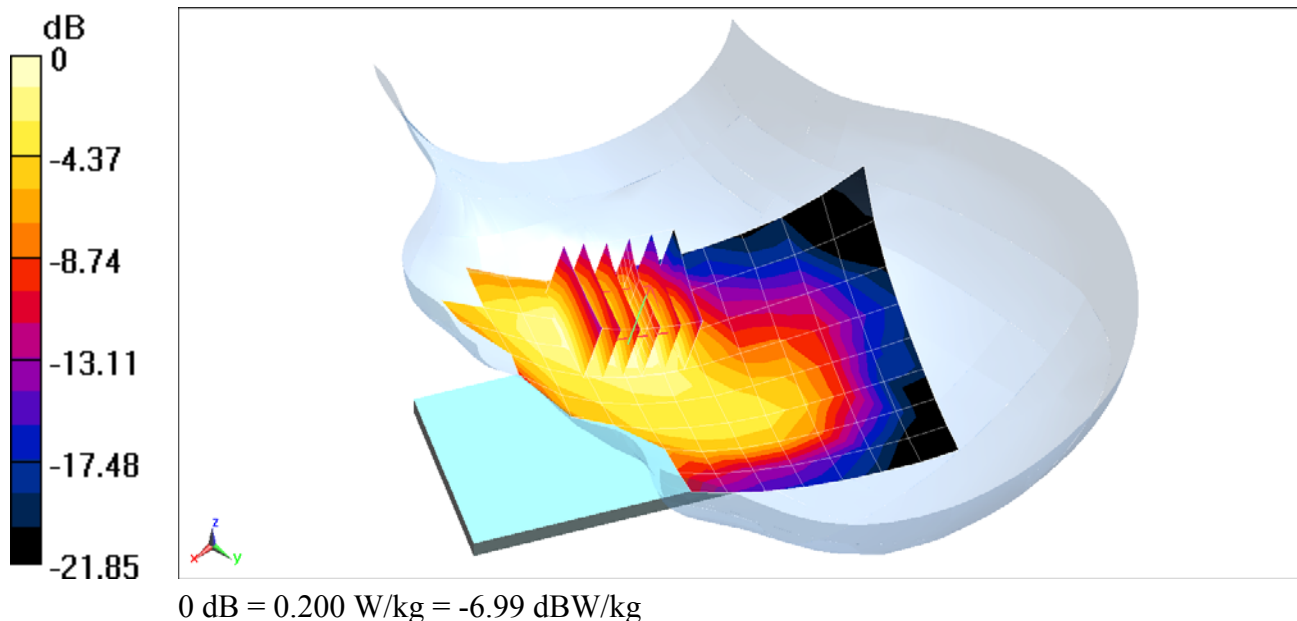
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 11.55 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.256 W/kg

SAR(1 g) = 0.176 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01349

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

Medium: 750 Head Medium parameters used (interpolated):

$f = 707.5$ MHz; $\sigma = 0.884$ S/m; $\epsilon_r = 40.712$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Test Date: 03-26-2018; Ambient Temp: 21.3°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3287; ConvF(7, 7, 7); Calibrated: 9/18/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 6/21/2017

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1692

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

**Mode: LTE Band 12, Left Head, Cheek, Mid.ch, QPSK,
10 MHz Bandwidth, 1 RB, 0 RB Offset**

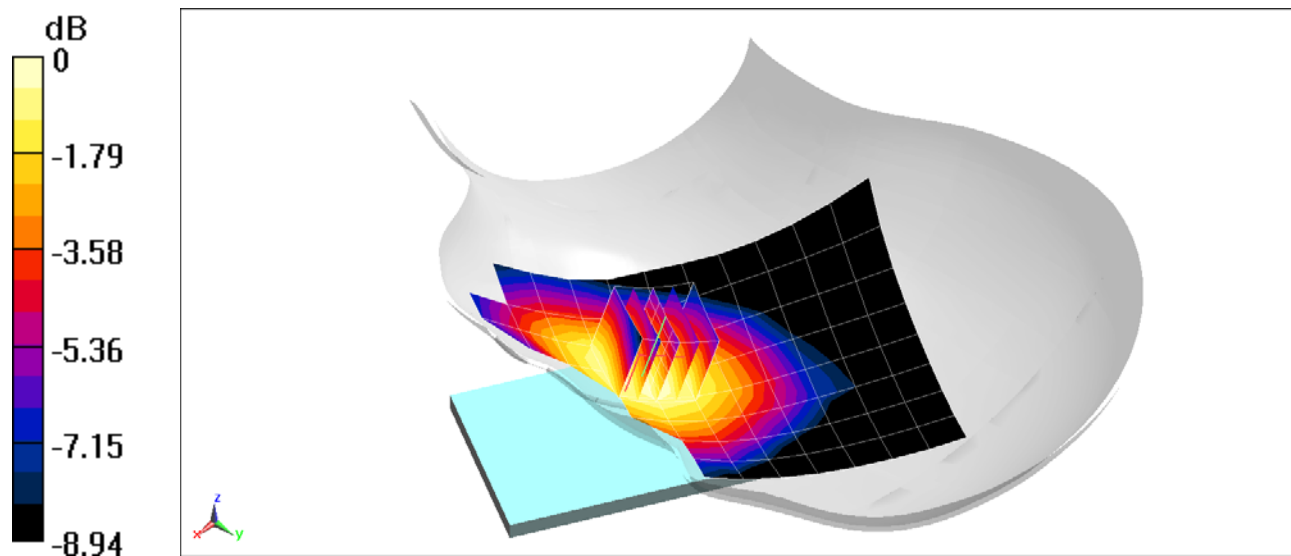
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 11.03 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.115 W/kg

SAR(1 g) = 0.095 W/kg



0 dB = 0.101 W/kg = -9.96 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01349

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

Medium: 750 Head Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 0.937 \text{ S/m}$; $\epsilon_r = 42.08$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 03-30-2018; Ambient Temp: 23.8°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7410; ConvF(10.6, 10.6, 10.6); Calibrated: 7/17/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/13/2017

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

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, 0 RB Offset**

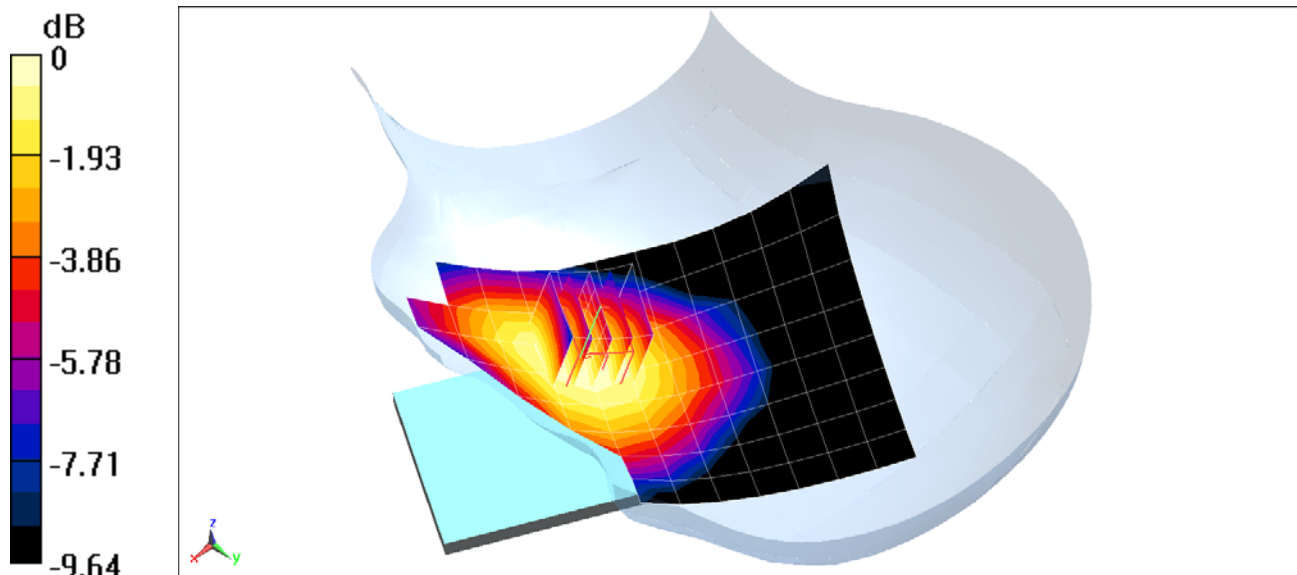
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 9.745 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.0970 W/kg

SAR(1 g) = 0.079 W/kg



0 dB = 0.0905 W/kg = -10.43 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01349

Communication System: UID 0, LTE Band 14; Frequency: 793 MHz; Duty Cycle: 1:1

Medium: 750 Head Medium parameters used (interpolated):

$f = 793 \text{ MHz}$; $\sigma = 0.92 \text{ S/m}$; $\epsilon_r = 40.574$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 03-23-2018; Ambient Temp: 21.6°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3287; ConvF(7, 7, 7); Calibrated: 9/18/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 6/21/2017

Phantom: Twin-SAM V5.0 ; Type: QD 000 P40 CD; Serial: 1692

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

**Mode: LTE Band 14, Left Head, Cheek, Mid.ch, QPSK,
10 MHz Bandwidth, 1 RB, 49 RB Offset**

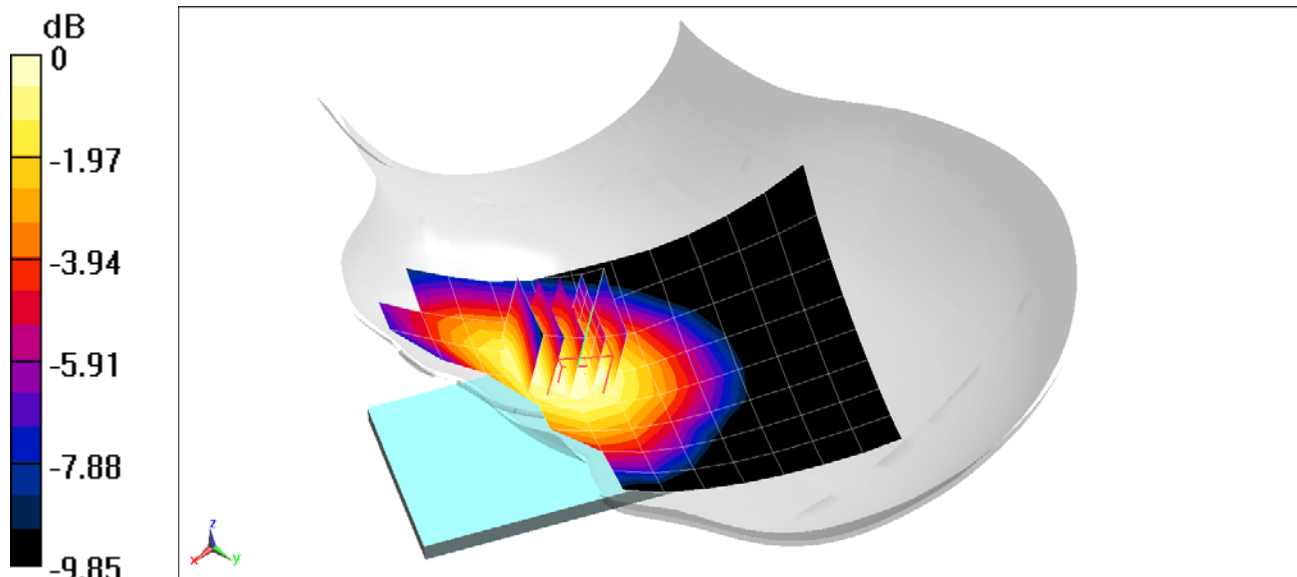
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 8.909 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.0800 W/kg

SAR(1 g) = 0.064 W/kg



0 dB = 0.0691 W/kg = -11.61 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01349

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 831.5$ MHz; $\sigma = 0.895$ S/m; $\epsilon_r = 41.071$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Test Date: 03-25-2018; Ambient Temp: 23.5°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2018

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

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**

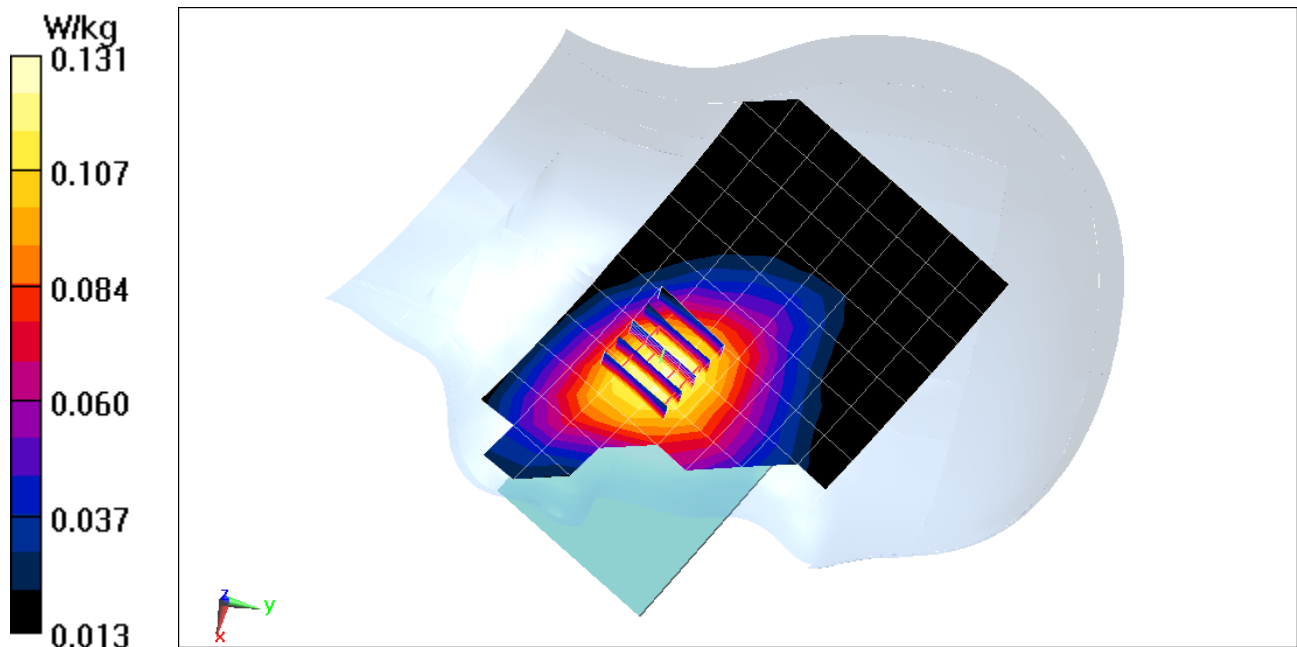
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 12.57 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.148 W/kg

SAR(1 g) = 0.121 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01356

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.5$ MHz; $\sigma = 0.909$ S/m; $\epsilon_r = 42.459$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Test Date: 03-31-2018; Ambient Temp: 23.8°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2018

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

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

Mode: LTE Band 5 (Cell.) ULCA, Left Head, Cheek,
PCC: 10 MHZ Bandwidth, QPSK Ch 20525, 1 RB, 49 RB Offset
SCC: 5 MHz Bandwidth, QPSK Ch 20597, 1 RB, 0 RB Offset

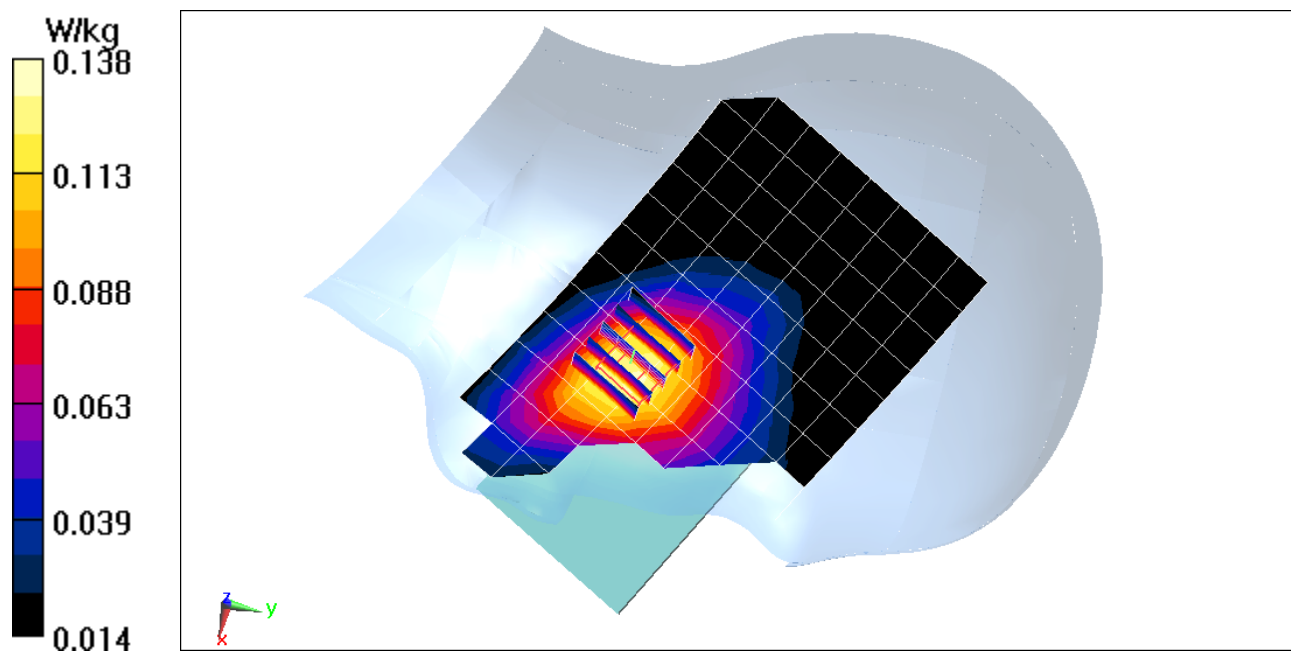
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 12.76 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.158 W/kg

SAR(1 g) = 0.127 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01356

Communication System: UID 0, _LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1745 \text{ MHz}$; $\sigma = 1.391 \text{ S/m}$; $\epsilon_r = 39.492$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 03-20-2018; Ambient Temp: 22.8°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7410; ConvF(8.66, 8.66, 8.66); Calibrated: 7/17/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/13/2017

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

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

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

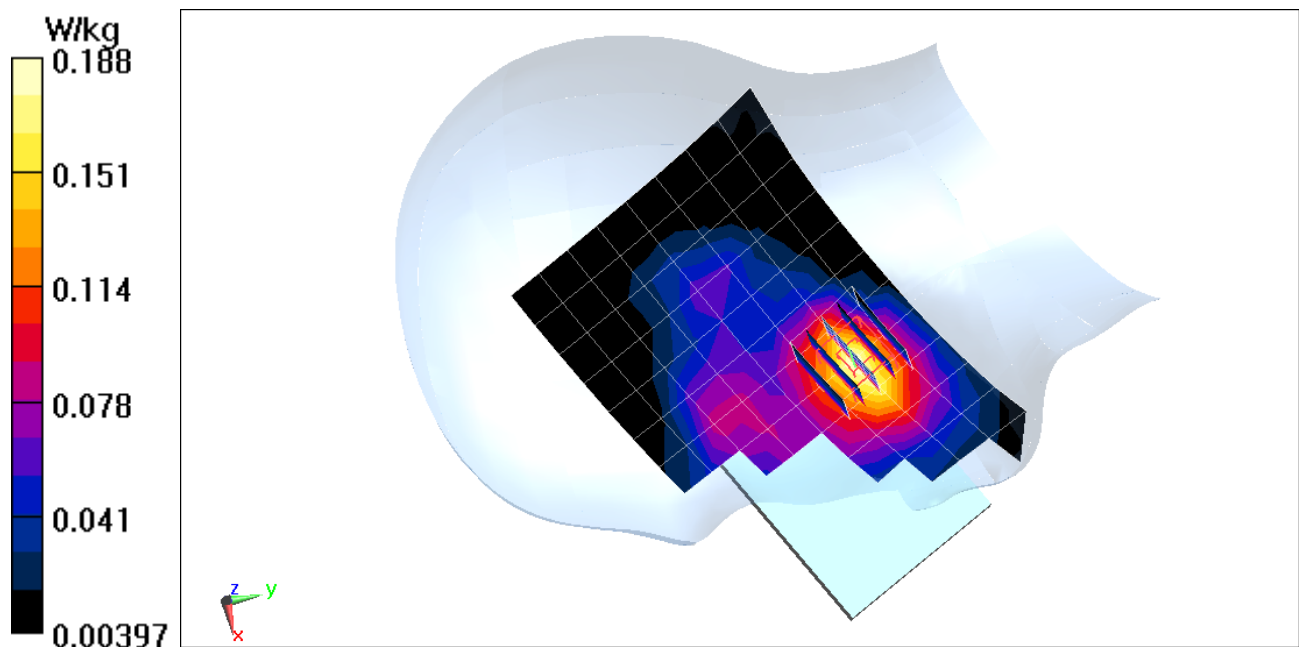
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 11.31 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 0.222 W/kg

SAR(1 g) = 0.153 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01349

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

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1905 \text{ MHz}$; $\sigma = 1.456 \text{ S/m}$; $\epsilon_r = 38.648$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 03-21-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3332; ConvF(5.33, 5.33, 5.33); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

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

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

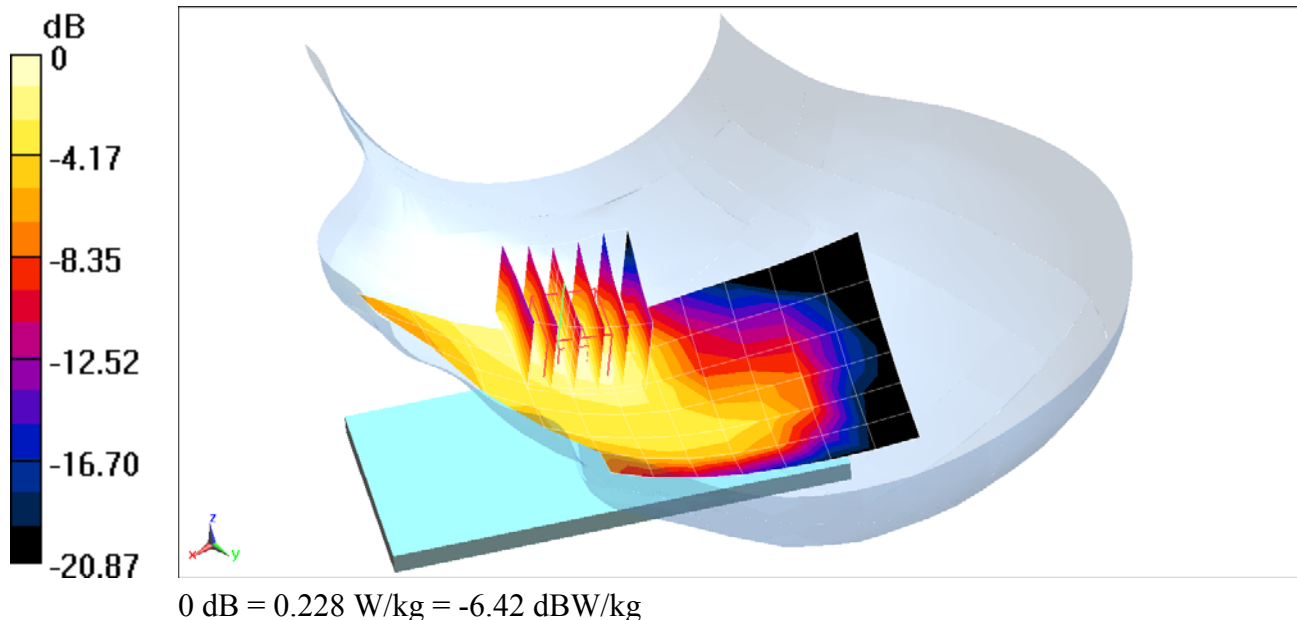
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 12.42 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.297 W/kg

SAR(1 g) = 0.197 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01349

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

Medium: 2450 Head Medium parameters used:

$f = 2310 \text{ MHz}$; $\sigma = 1.655 \text{ S/m}$; $\epsilon_r = 40.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 03-28-2018; Ambient Temp: 22.3°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3332; ConvF(4.99, 4.99, 4.99); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

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

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

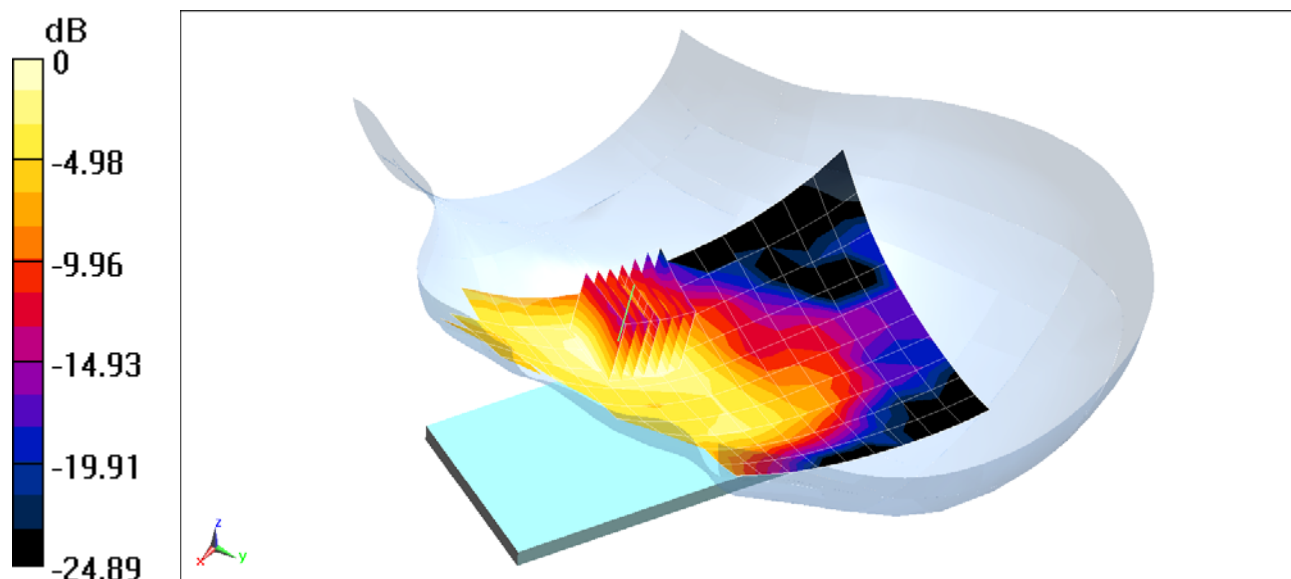
Area Scan (11x18x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 7.957 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.145 W/kg

SAR(1 g) = 0.088 W/kg



0 dB = 0.103 W/kg = -9.87 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01349

Communication System: UID 0, _LTE Band 7; Frequency: 2535 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2535 \text{ MHz}$; $\sigma = 1.954 \text{ S/m}$; $\epsilon_r = 39.889$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 04-01-2018; Ambient Temp: 22.1°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3332; ConvF(4.56, 4.56, 4.56); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

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

**Mode: LTE Band 7, Right Head, Cheek, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset**

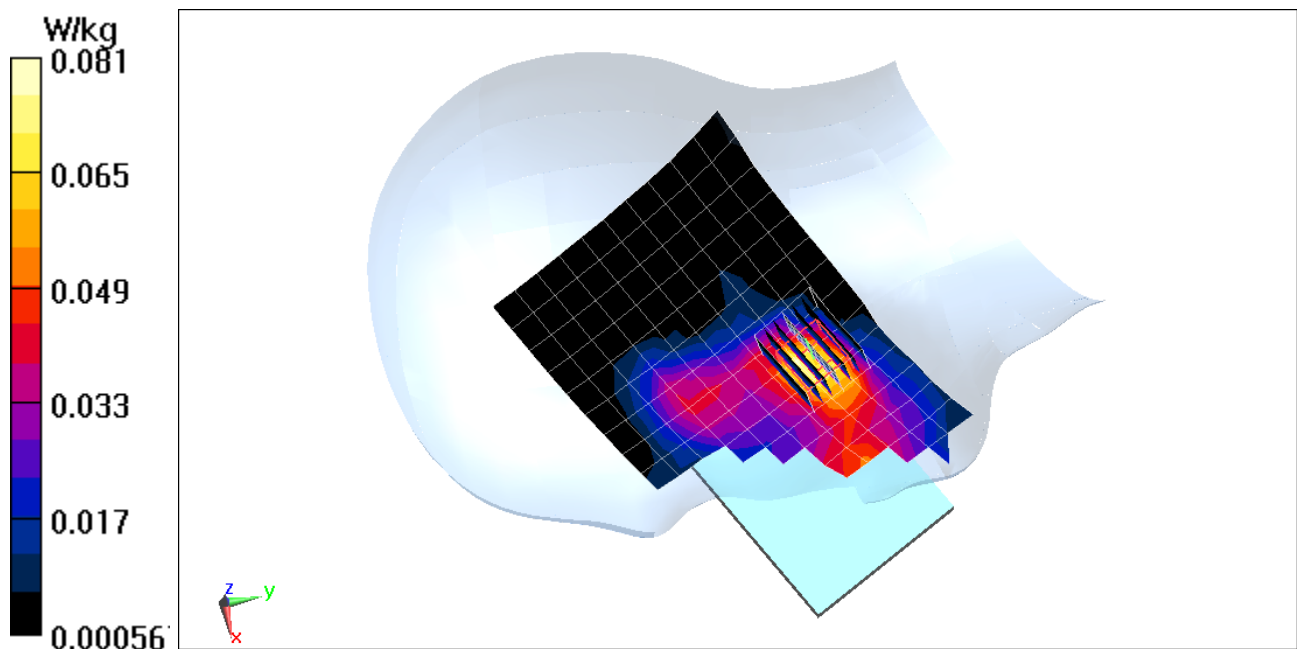
Area Scan (11x18x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x8x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 6.761 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.121 W/kg

SAR(1 g) = 0.068 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01356

Communication System: UID 0, LTE Band 41; Frequency: 2636.5 MHz; Duty Cycle: 1:1.58

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2636.5 \text{ MHz}$; $\sigma = 2.061 \text{ S/m}$; $\epsilon_r = 38.603$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 04-03-2018; Ambient Temp: 22.4°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3332; ConvF(4.56, 4.56, 4.56); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

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

Mode: LTE Band 41 ULCA, Right Head, Cheek,

PCC: 20 MHz Bandwidth, QPSK Ch 41055, 1 RB, 0 RB Offset

SCC: 20 MHz Bandwidth, QPSK Ch 40857, 1 RB 99 RB Offset

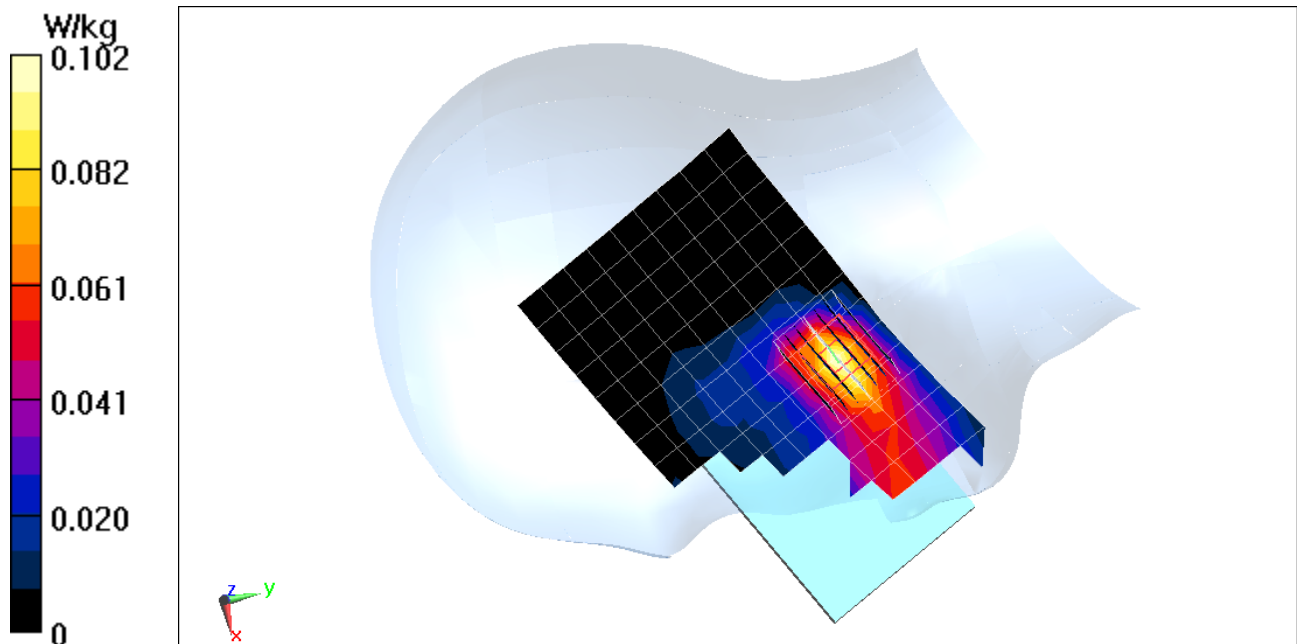
Area Scan (10x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x8x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.272 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 0.158 W/kg

SAR(1 g) = 0.083 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01489

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

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 1.835 \text{ S/m}$; $\epsilon_r = 39.369$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 04-03-2018; Ambient Temp: 22.4°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

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

Mode: 802.11b, 22 MHz Bandwidth, Antenna 1, Right Head, Cheek, Ch 6, 1 Mbps

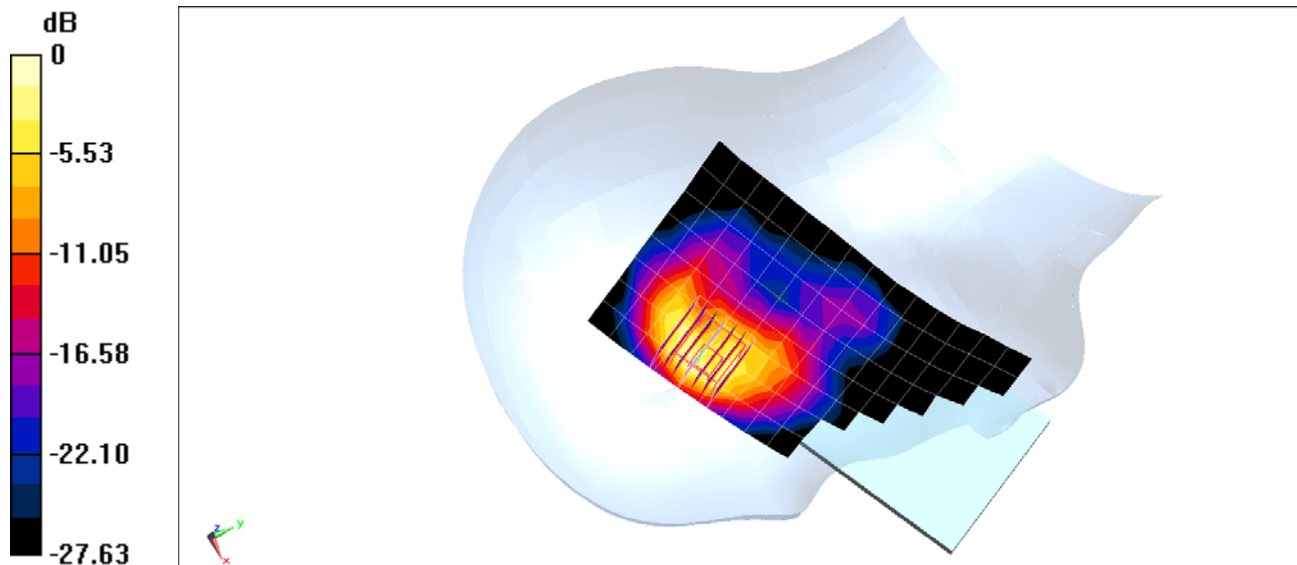
Area Scan (9x18x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 3.057 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 1.89 W/kg

SAR(1 g) = 0.675 W/kg



0 dB = 0.935 W/kg = -0.29 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01489

Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5300 MHz, Duty Cycle: 1:1

Medium: 5GHz Head Medium parameters used:

$f = 5300 \text{ MHz}$; $\sigma = 4.706 \text{ S/m}$; $\epsilon_r = 37.487$; $\rho = 1000 \text{ kg/m}^3$,

Phantom section: Right Section

Test Date: 03-26-2018; Ambient Temp: 21.5°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN3589; ConvF(4.69, 4.69, 4.69); Calibrated: 1/16/2018;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/13/2017

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-2A, 20 MHz Bandwidth, Antenna 2,
Right Head, Tilt, Ch 60, 6 Mbps**

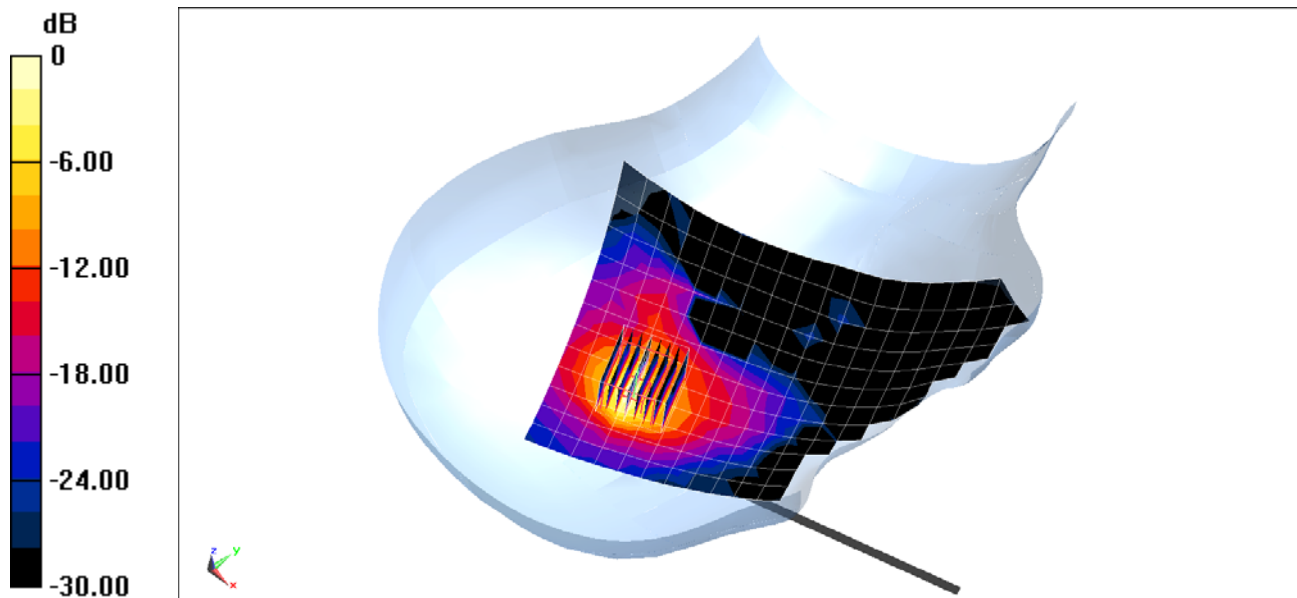
Area Scan (13x12x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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 = 3.667 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 3.25 W/kg

SAR(1 g) = 0.697 W/kg



0 dB = 2.06 W/kg = 3.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01497

Communication System: UID 0, Bluetooth; Frequency: 2402 MHz; Duty Cycle: 1:1.284

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2402 \text{ MHz}$; $\sigma = 1.712 \text{ S/m}$; $\epsilon_r = 40.71$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 03-25-2018; Ambient Temp: 23.2°C; Tissue Temp: 23.1°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

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

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

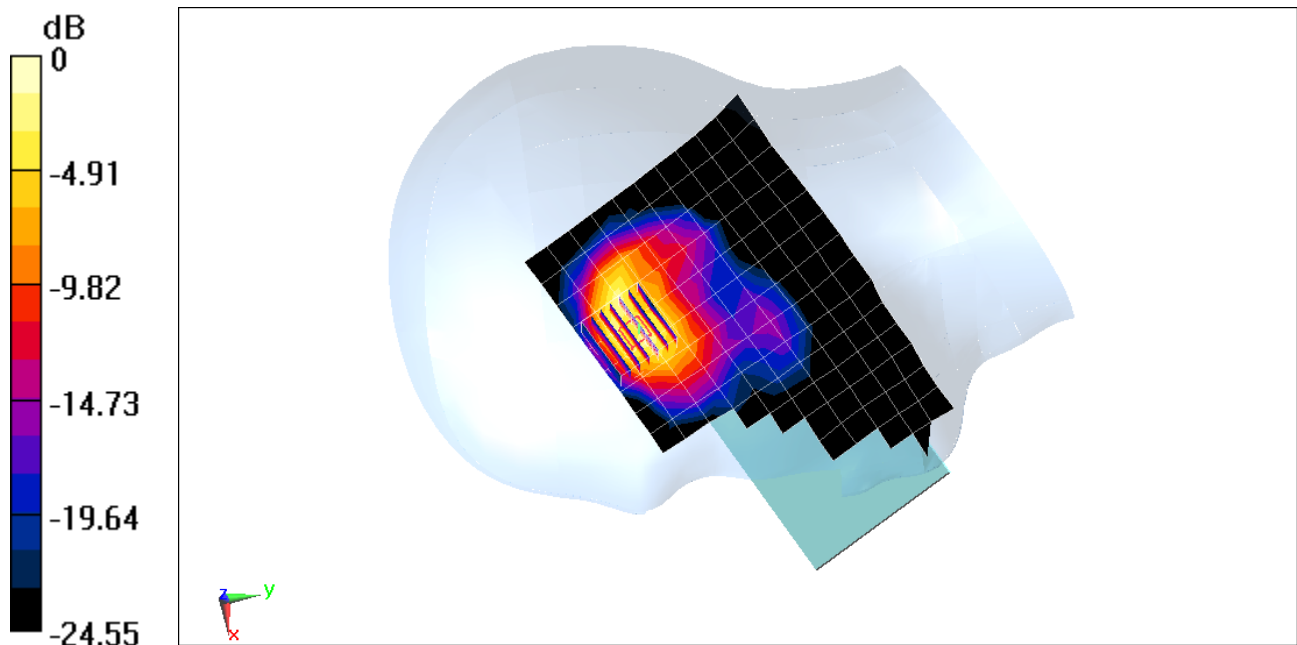
Area Scan (11x19x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 12.07 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.699 W/kg

SAR(1 g) = 0.248 W/kg



0 dB = 0.371 W/kg = -4.31 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01380

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 820.1 \text{ MHz}$; $\sigma = 0.946 \text{ S/m}$; $\epsilon_r = 54.044$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-28-2018; Ambient Temp: 20.8°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3213; ConvF(6.2, 6.2, 6.2); Calibrated: 2/13/2018;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2018

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

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

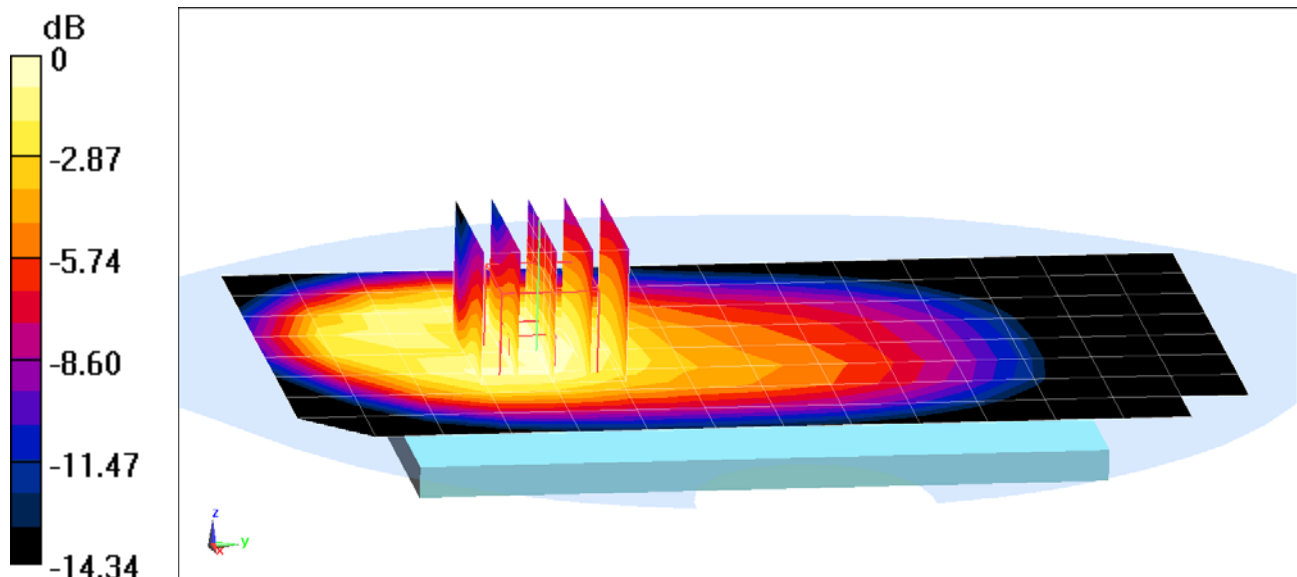
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.17 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.675 W/kg

SAR(1 g) = 0.471 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01380

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 820.1 \text{ MHz}$; $\sigma = 0.946 \text{ S/m}$; $\epsilon_r = 54.044$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-28-2018; Ambient Temp: 20.8°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3213; ConvF(6.2, 6.2, 6.2); Calibrated: 2/13/2018;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2018

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

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

Mode: Cell. EVDO BC10, Body SAR, Back side, Mid.ch

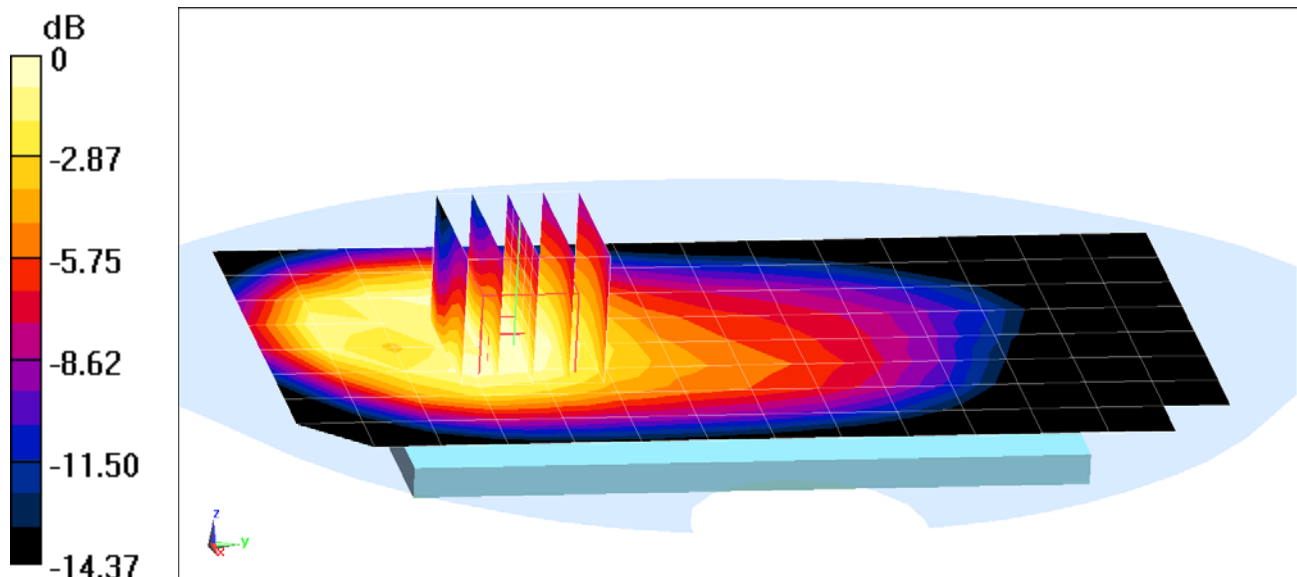
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.27 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.705 W/kg

SAR(1 g) = 0.489 W/kg



0 dB = 0.549 W/kg = -2.60 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01380

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52$ MHz; $\sigma = 0.965$ S/m; $\epsilon_r = 53.894$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-28-2018; Ambient Temp: 20.8°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3213; ConvF(6.2, 6.2, 6.2); Calibrated: 2/13/2018;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2018

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

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

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

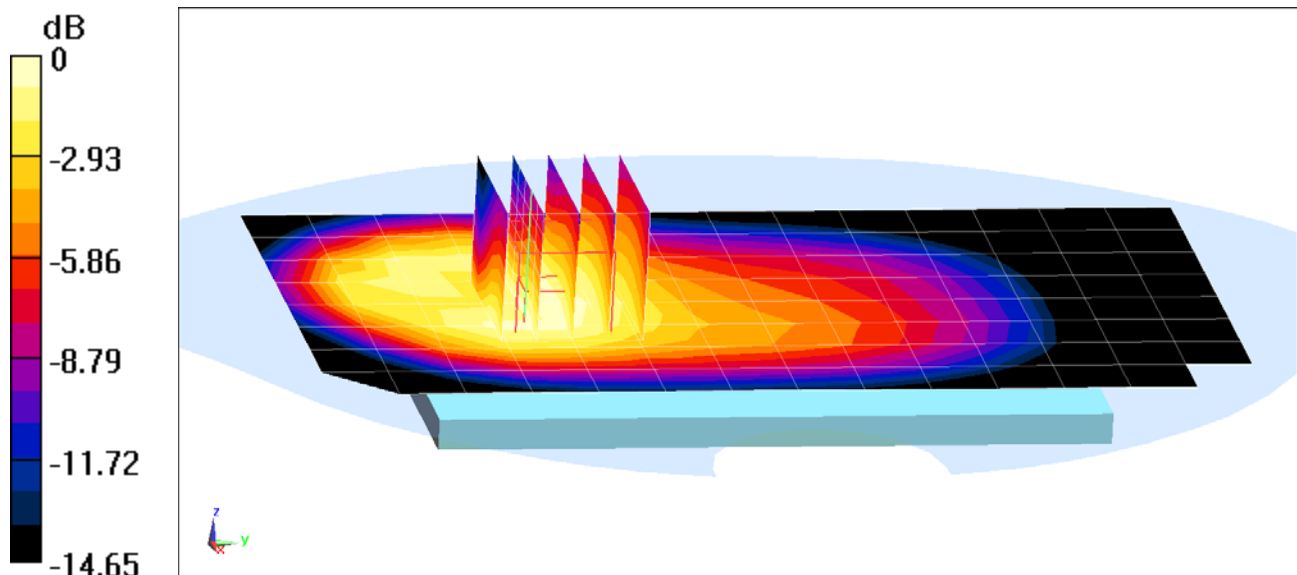
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 23.43 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.709 W/kg

SAR(1 g) = 0.494 W/kg



0 dB = 0.556 W/kg = -2.55 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01380

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.965 \text{ S/m}$; $\epsilon_r = 53.894$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-28-2018; Ambient Temp: 20.8°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3213; ConvF(6.2, 6.2, 6.2); Calibrated: 2/13/2018;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2018

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

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

Mode: Cell. EVDO BC0, Body SAR, Back side, Mid.ch

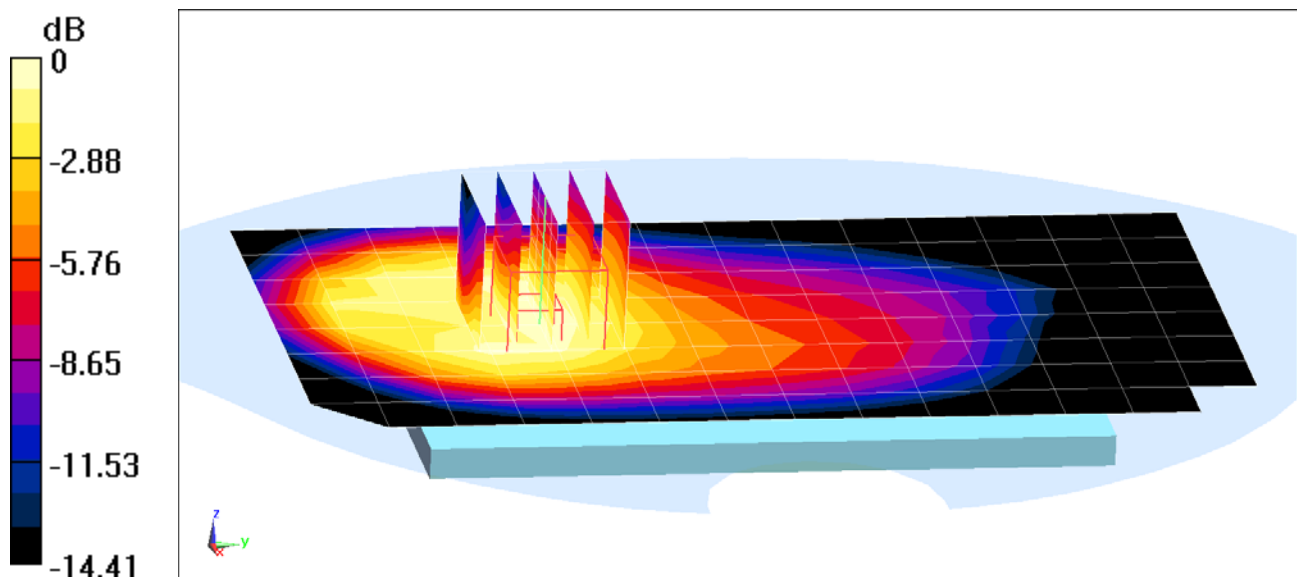
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.20 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.695 W/kg

SAR(1 g) = 0.478 W/kg



0 dB = 0.540 W/kg = -2.68 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01380

Communication System: UID 0, CDMA; Frequency: 1908.75 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1908.75 \text{ MHz}$; $\sigma = 1.594 \text{ S/m}$; $\epsilon_r = 53.338$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-28-2018; Ambient Temp: 21.1°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN3914; ConvF(7.62, 7.62, 7.62); Calibrated: 2/14/2018;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/15/2018

Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800

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

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

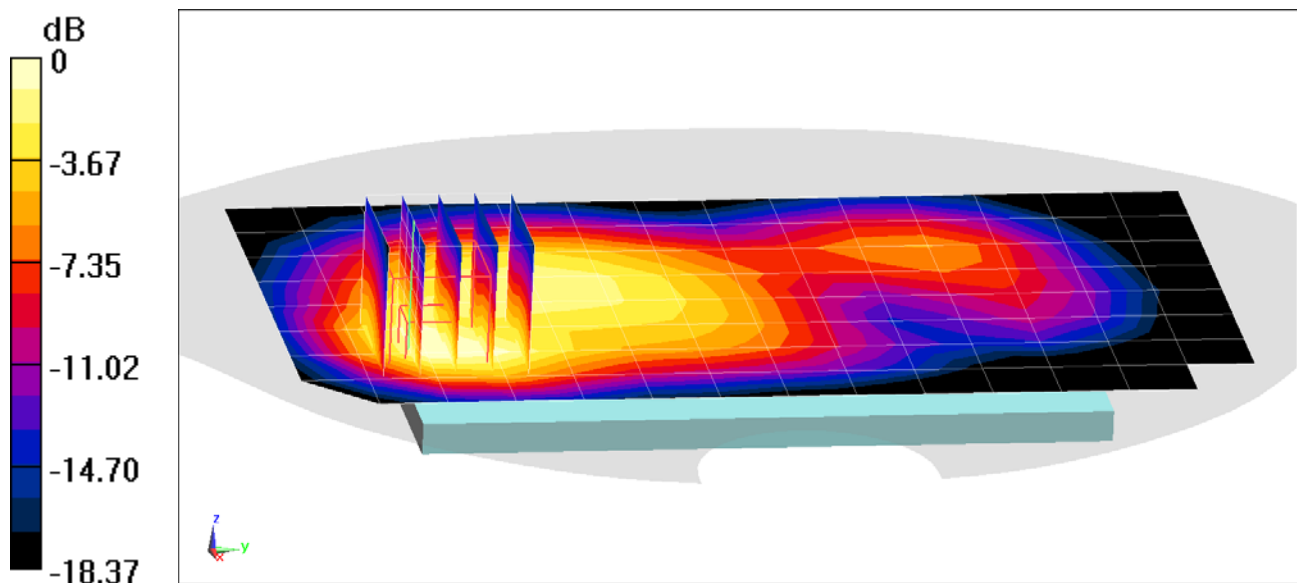
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 19.38 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 1.11 W/kg

SAR(1 g) = 0.589 W/kg



0 dB = 0.886 W/kg = -0.53 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01380

Communication System: UID 0, CDMA; Frequency: 1908.75 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1908.75 \text{ MHz}$; $\sigma = 1.594 \text{ S/m}$; $\epsilon_r = 53.338$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-28-2018; Ambient Temp: 21.1°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN3914; ConvF(7.62, 7.62, 7.62); Calibrated: 2/14/2018;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/15/2018

Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800

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

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

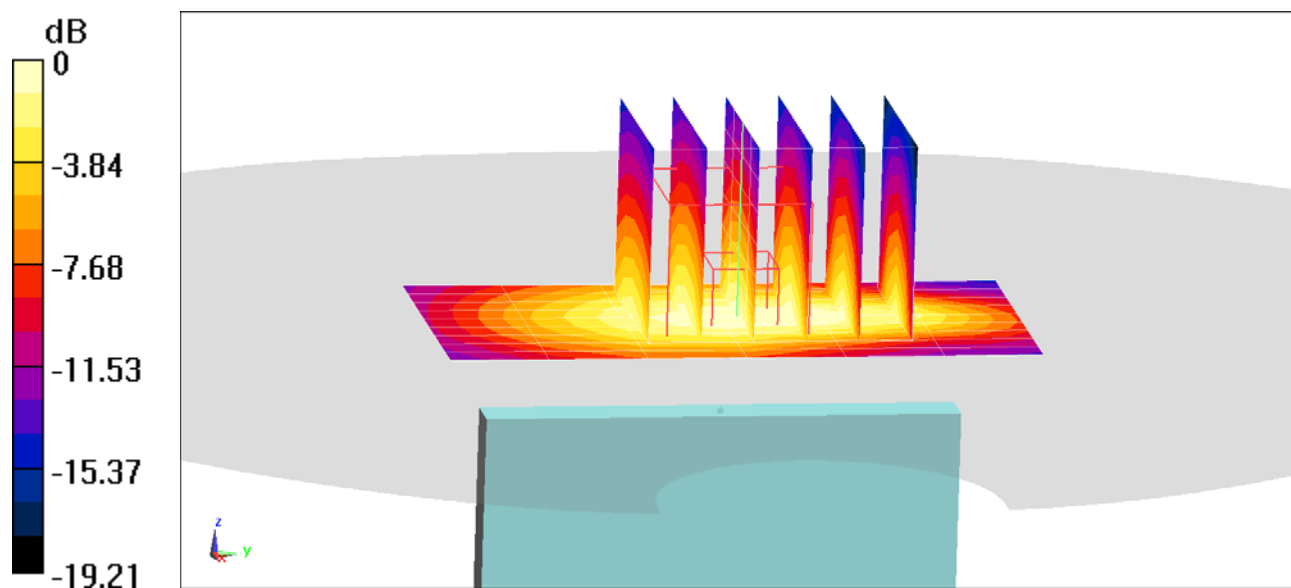
Area Scan (10x7x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 22.41 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.29 W/kg

SAR(1 g) = 0.748 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01372

Communication System: UID 0, GSM GPRS; 2 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:4.15

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.965 \text{ S/m}$; $\epsilon_r = 53.893$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-28-2018; Ambient Temp: 20.8°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3213; ConvF(6.2, 6.2, 6.2); Calibrated: 2/13/2018;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2018

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

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

Mode: GPRS 850, Body SAR, Back side, Mid.ch, 2 Tx Slots

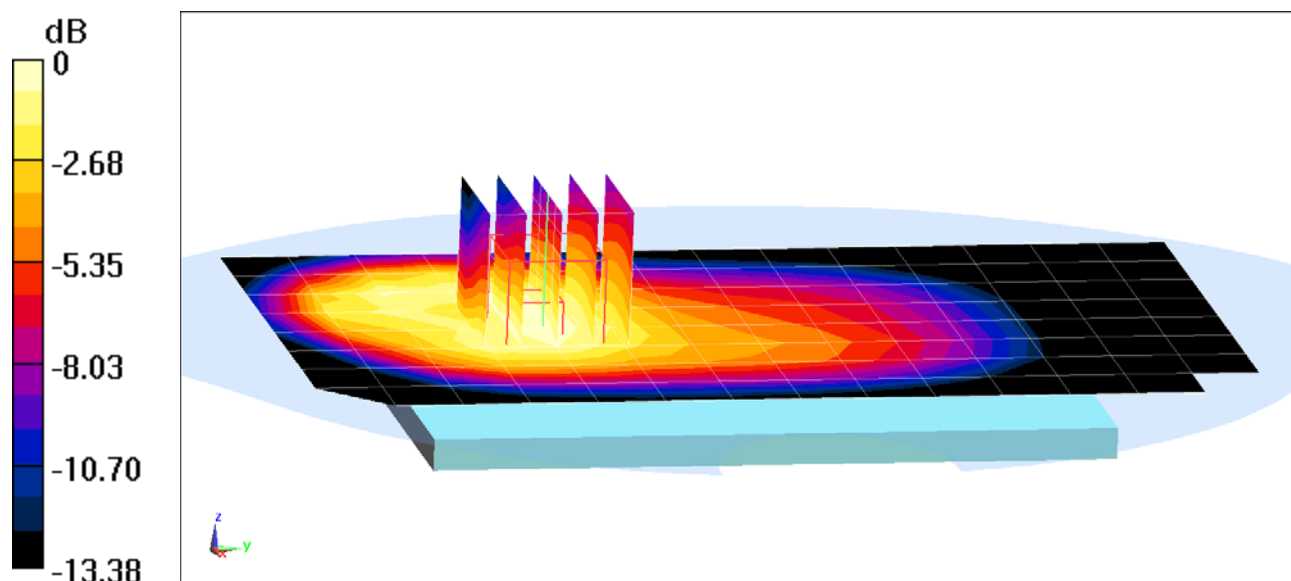
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.50 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.688 W/kg

SAR(1 g) = 0.488 W/kg



0 dB = 0.548 W/kg = -2.61 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01372

Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.76

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.56 \text{ S/m}$; $\epsilon_r = 53.441$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-28-2018; Ambient Temp: 21.1°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN3914; ConvF(7.62, 7.62, 7.62); Calibrated: 2/14/2018;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/15/2018

Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800

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

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

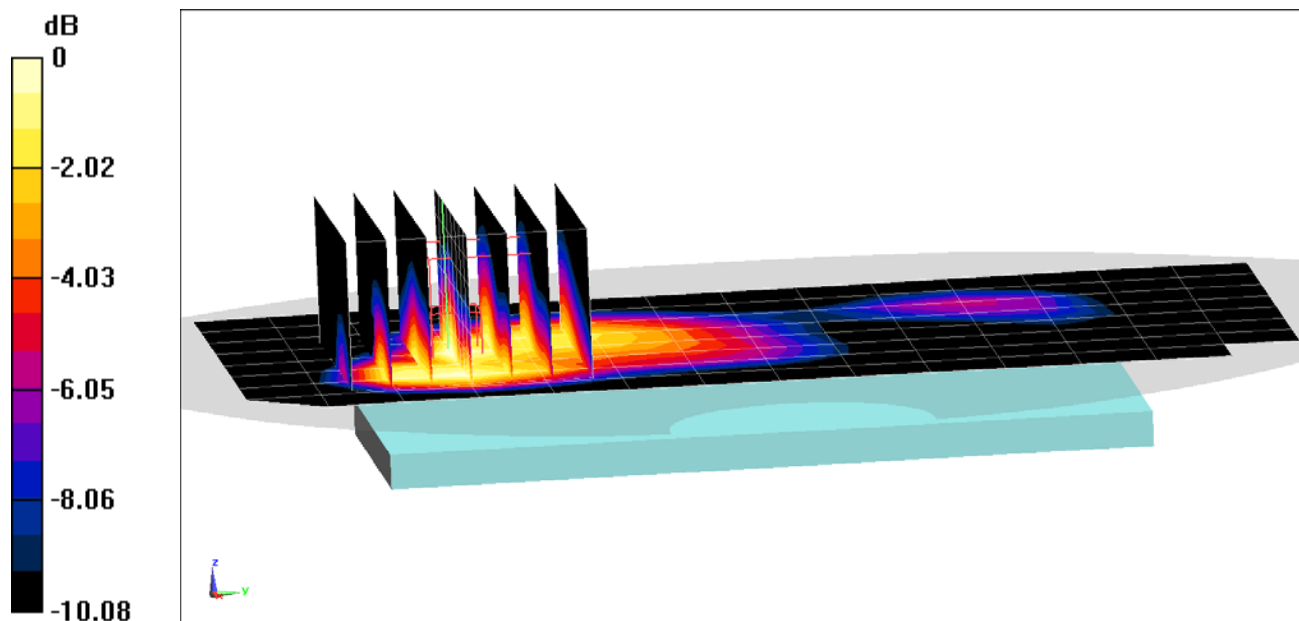
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (9x7x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 13.95 V/m; Power Drift = 0.21 dB

Peak SAR (extrapolated) = 0.685 W/kg

SAR(1 g) = 0.385 W/kg



0 dB = 0.534 W/kg = -2.72 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01372

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.959 \text{ S/m}$; $\epsilon_r = 52.836$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-22-2018; Ambient Temp: 21.3°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3213; ConvF(6.2, 6.2, 6.2); Calibrated: 2/13/2018;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2018

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

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

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

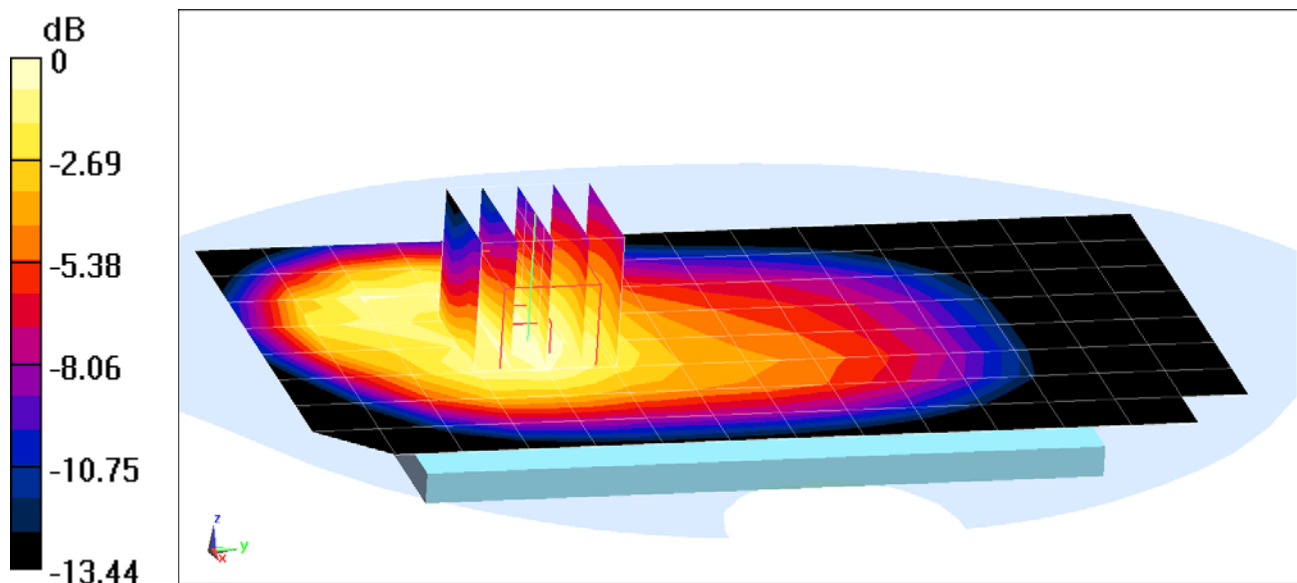
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 21.52 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.572 W/kg

SAR(1 g) = 0.407 W/kg



0 dB = 0.459 W/kg = -3.38 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 00135

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

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.4 \text{ MHz}$; $\sigma = 1.506 \text{ S/m}$; $\epsilon_r = 51.217$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-26-2018; Ambient Temp: 22.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7406; ConvF(8.08, 8.08, 8.08); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

Phantom: LeftTwin-SAM V5.0 ; Type: QD 000 P40 CD; Serial: 1375

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

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

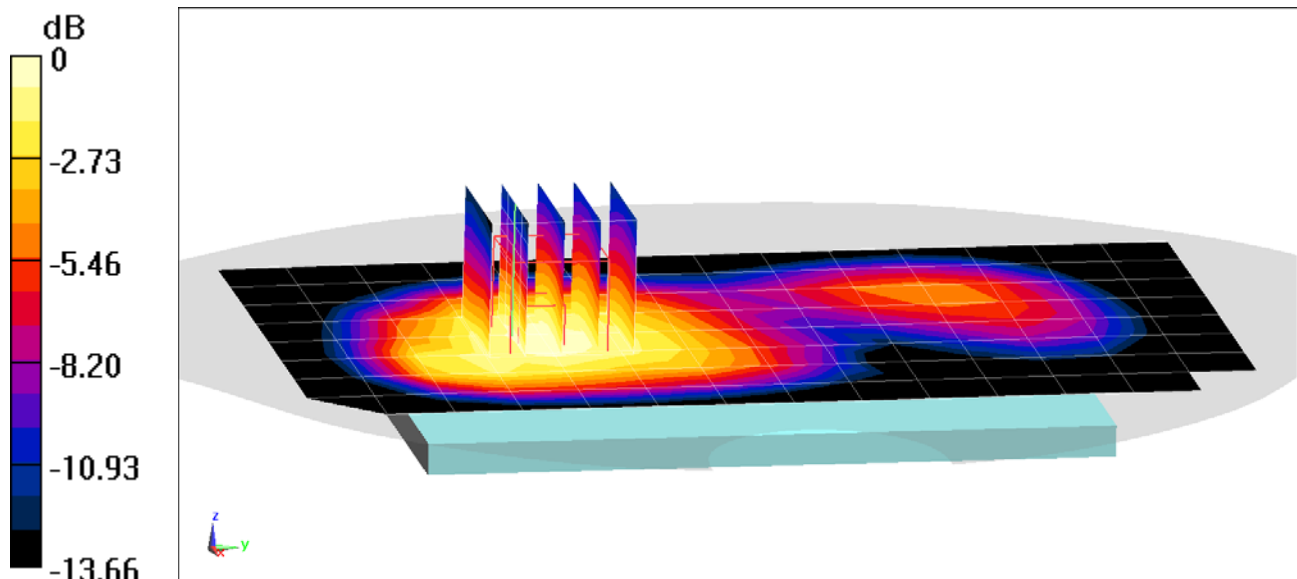
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.16 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.899 W/kg

SAR(1 g) = 0.580 W/kg



0 dB = 0.768 W/kg = -1.15 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01372

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.56 \text{ S/m}$; $\epsilon_r = 53.441$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-28-2018; Ambient Temp: 21.1°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN3914; ConvF(7.62, 7.62, 7.62); Calibrated: 2/14/2018;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/15/2018

Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800

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

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

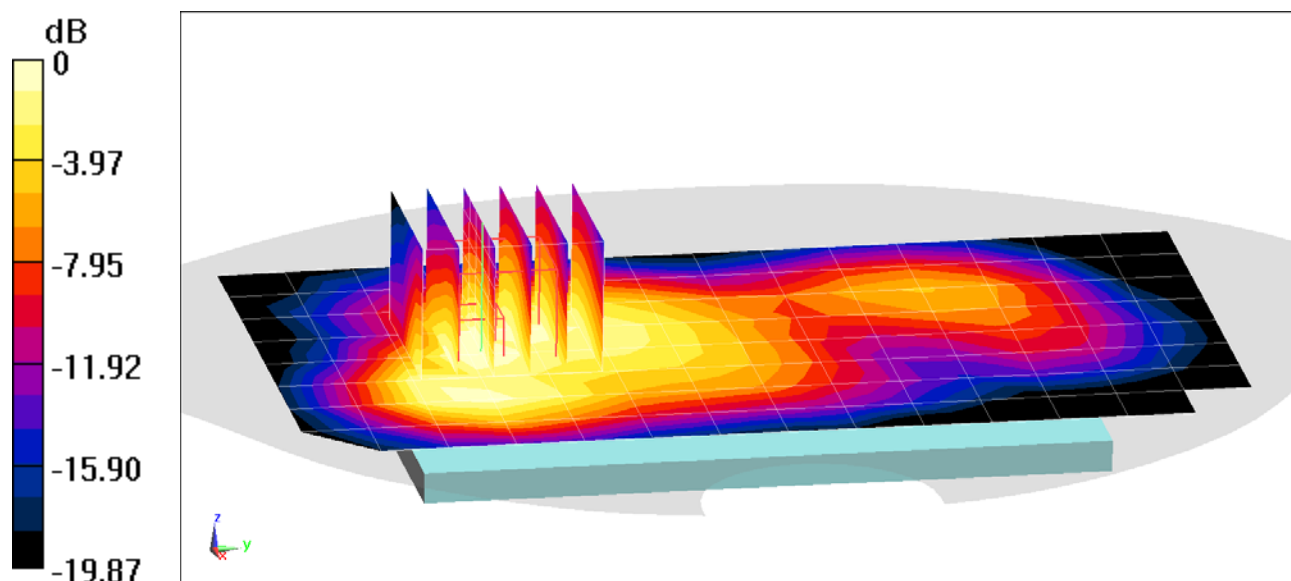
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.38 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 1.03 W/kg

SAR(1 g) = 0.608 W/kg



0 dB = 0.817 W/kg = -0.88 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01356

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

Medium: 750 Body Medium parameters used (interpolated):

$f = 707.5$ MHz; $\sigma = 0.954$ S/m; $\epsilon_r = 54.005$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-22-2018; Ambient Temp: 23.0°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7410; ConvF(10.19, 10.19, 10.19); Calibrated: 7/17/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/13/2017

Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759

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

**Mode: LTE Band 12, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

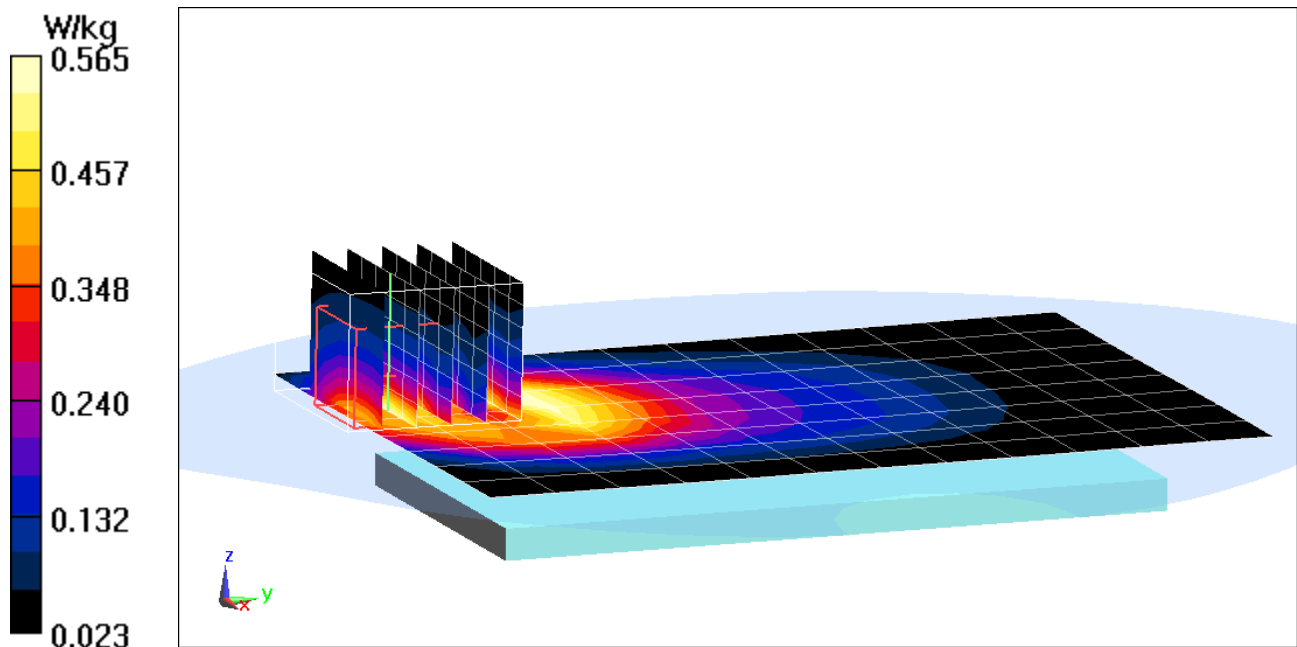
Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x6x6)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.72 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.662 W/kg

SAR(1 g) = 0.388 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01356

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

Medium: 750 Body Medium parameters used (interpolated):

$f = 707.5$ MHz; $\sigma = 0.954$ S/m; $\epsilon_r = 54.005$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-22-2018; Ambient Temp: 23.0°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7410; ConvF(10.19, 10.19, 10.19); Calibrated: 7/17/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/13/2017

Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759

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

**Mode: LTE Band 12, Body SAR, Front side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

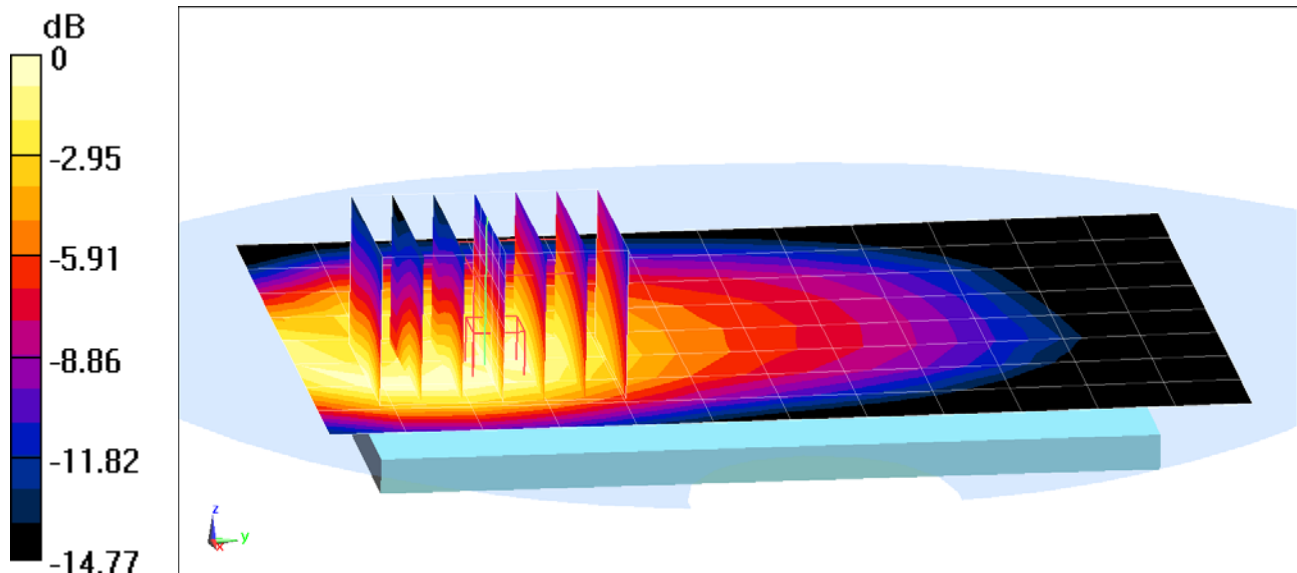
Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 21.03 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.677 W/kg

SAR(1 g) = 0.420 W/kg



0 dB = 0.571 W/kg = -2.43 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01349

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

Medium: 750 Body Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 0.996 \text{ S/m}$; $\epsilon_r = 56.233$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-29-2018; Ambient Temp: 22.8°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3287; ConvF(6.71, 6.71, 6.71); Calibrated: 9/18/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 6/21/2017

Phantom: Twin-SAM V5.0 ; Type: QD 000 P40 CD; Serial: 1692

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, 0 RB Offset**

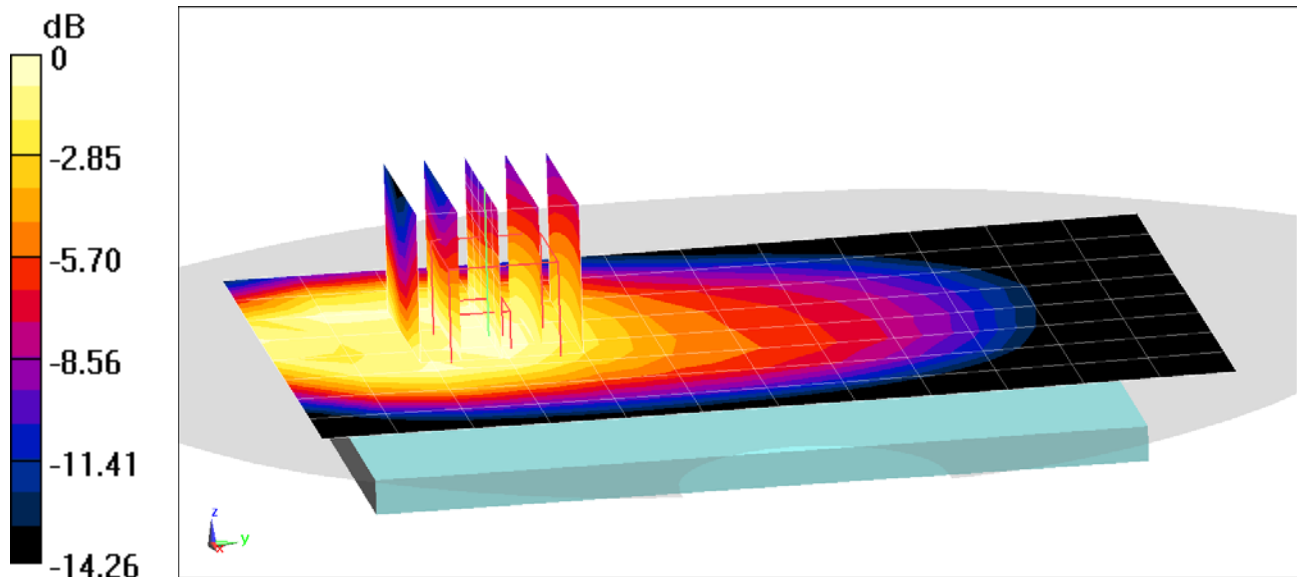
Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 19.27 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.596 W/kg

SAR(1 g) = 0.407 W/kg



0 dB = 0.462 W/kg = -3.35 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01349

Communication System: UID 0, LTE Band 14; Frequency: 793 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 793 \text{ MHz}$; $\sigma = 1.006 \text{ S/m}$; $\epsilon_r = 56.212$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-29-2018; Ambient Temp: 22.8°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3287; ConvF(6.71, 6.71, 6.71); Calibrated: 9/18/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 6/21/2017

Phantom: Twin-SAM V5.0 ; Type: QD 000 P40 CD Serial: 1692

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

**Mode: LTE Band 14, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset**

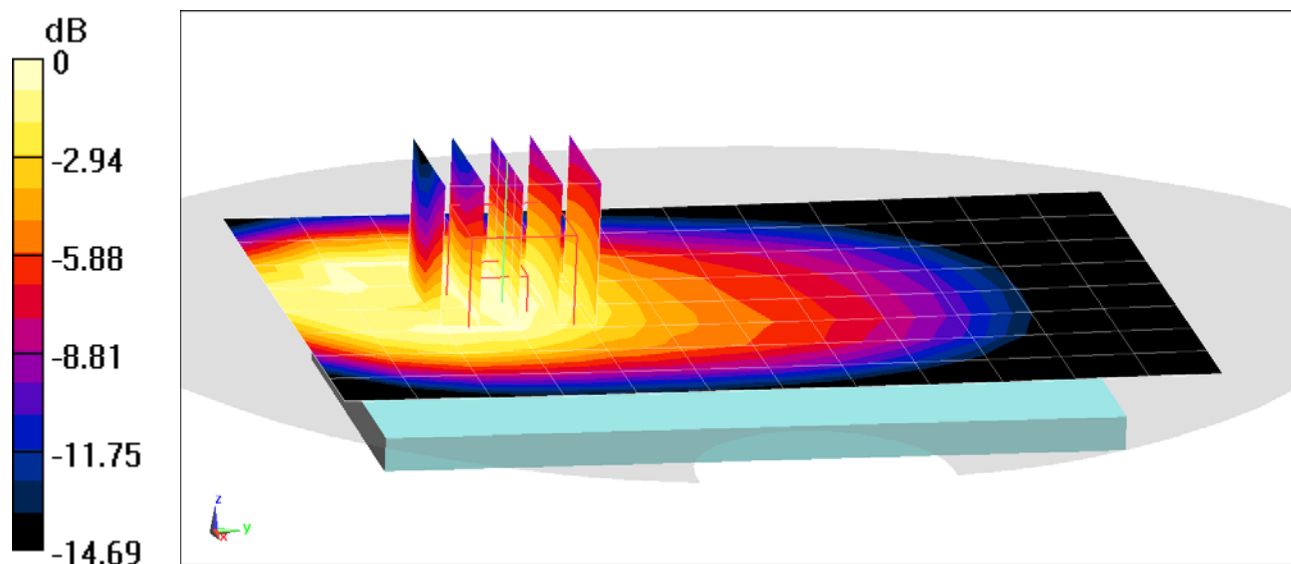
Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 14.67 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 0.475 W/kg

SAR(1 g) = 0.320 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01356

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 831.5 \text{ MHz}$; $\sigma = 0.955 \text{ S/m}$; $\epsilon_r = 52.889$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-22-2018; Ambient Temp: 21.3°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3213; ConvF(6.2, 6.2, 6.2); Calibrated: 2/13/2018;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2018

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

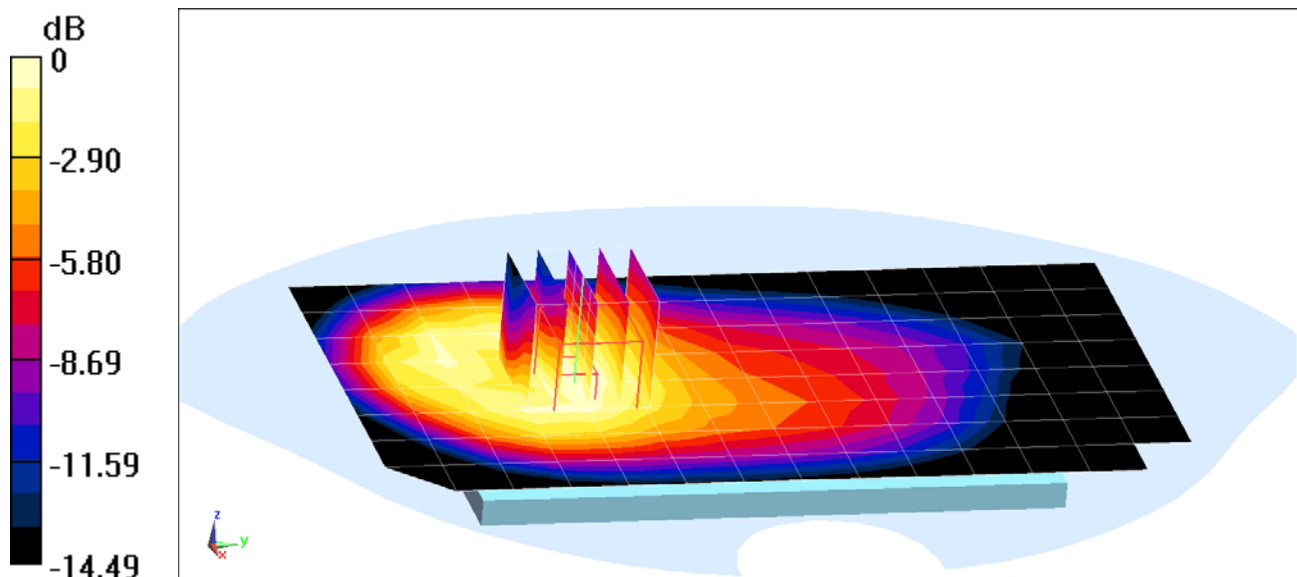
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.79 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.723 W/kg

SAR(1 g) = 0.496 W/kg



0 dB = 0.565 W/kg = -2.48 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV350A; Type: Portable Handset; Serial: 01349

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 0.975 \text{ S/m}$; $\epsilon_r = 53.516$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-03-2018; Ambient Temp: 22.0°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3213; ConvF(6.2, 6.2, 6.2); Calibrated: 2/13/2018;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2018

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 5 (Cell.), Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset**

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 = 22.43 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.677 W/kg

SAR(1 g) = 0.458 W/kg

