



SAR EVALUATION REPORT

Applicant Name:

Samsung Electronics, Co. Ltd.
129, Samsung-ro, Maetan dong,
Yeongtong-gu, Suwon-si
Gyeonggi-do 443-742, Korea

Date of Testing:

07/31/14- 09/01/14

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Document Serial No.:

OY1408011591.A3L

FCC ID:

A3LSMN910P

APPLICANT:

SAMSUNG ELECTRONICS, CO. LTD.

DUT Type:

Portable Handset

Application Type:

Certification

FCC Rule Part(s):

CFR §2.1093

Model(s):

SM-N910P

Equipment Class	Band & Mode	Tx Frequency	SAR			10 gm Extremity (W/kg)
			1 gm Head (W/kg)	1 gm Body-Worn (W/kg)	1 gm Hotspot (W/kg)	
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.12	0.35	0.84	
PCE	UMTS 850	826.40 - 846.60 MHz	0.11	0.25	0.47	
PCE	CDMA/EVDO BC10 (S90S)	817.90 - 823.10 MHz	0.27	0.51	0.50	
PCE	CDMA/EVDO BC0 (S22H)	824.70 - 848.31 MHz	0.36	0.69	0.60	
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	0.11	0.29	1.07	
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.22	0.21	0.52	
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	0.39	0.29	1.05	
PCE	LTE Band 26	814.7 - 848.3 MHz	0.18	0.41	0.76	
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.23	0.29	0.49	
PCE	LTE Band 41	2498.5 - 2687.5 MHz	0.11	0.14	0.41	
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.67	0.14	0.14	0.35
DTS	5.8 GHz WLAN	5745 - 5825 MHz	<0.1	0.22	0.46	
NII	5.2 GHz WLAN	5180 - 5240 MHz	0.16	0.11		
NII	5.3 GHz WLAN	5260 - 5320 MHz	0.14	0.12		
NII	5.5 GHz WLAN	5500 - 5700 MHz	0.10	0.37		0.68
DSS/DTS	Bluetooth	2402 - 2480 MHz	N/A			
Simultaneous SAR per KDB 690783 D01v01r03:			0.86	1.22	1.24	3.28

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

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


Randy Ortanez
President



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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
CDMA/EVDO BC10 (§90S)	Voice/Data	817.90 - 823.10 MHz
CDMA/EVDO BC0 (§22H)	Voice/Data	824.70 - 848.31 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
PCS CDMA/EVDO	Voice/Data	1851.25 - 1908.75 MHz
LTE Band 26	Data	814.7 - 848.3 MHz
LTE Band 25 (PCS)	Data	1850.7 - 1914.3 MHz
LTE Band 41	Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2462 MHz
5.8 GHz WLAN	Voice/Data	5745 - 5825 MHz
5.2 GHz WLAN	Voice/Data	5180 - 5240 MHz
5.3 GHz WLAN	Voice/Data	5260 - 5320 MHz
5.5 GHz WLAN	Voice/Data	5500 - 5700 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
ANT+	Data	2402 - 2480 MHz

1.2 Power Reduction for SAR

The device utilizes power reduction using an independent single fixed level of reduction through a static table look-up, triggered by turning on Hotspot operating in BC10/0/PCS CDMA/EVDO, UMTS Band 2, and LTE band 25 modes.

1.3 Nominal and Maximum Output Power Specifications

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

1.3.1 Maximum Power

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
GSM/GPRS/EDGE 850	Maximum	33.5	33.5	32.0	29.5	26.5	27.5	27.0	23.0	22.5
	Nominal	33.0	33.0	31.5	29.0	26.0	27.0	26.5	22.5	22.0
GSM/GPRS/EDGE 1900	Maximum	30.5	30.5	29.0	27.0	26.0	26.5	26.0	22.0	21.5
	Nominal	30.0	30.0	28.5	26.5	25.5	26.0	25.5	21.5	21.0

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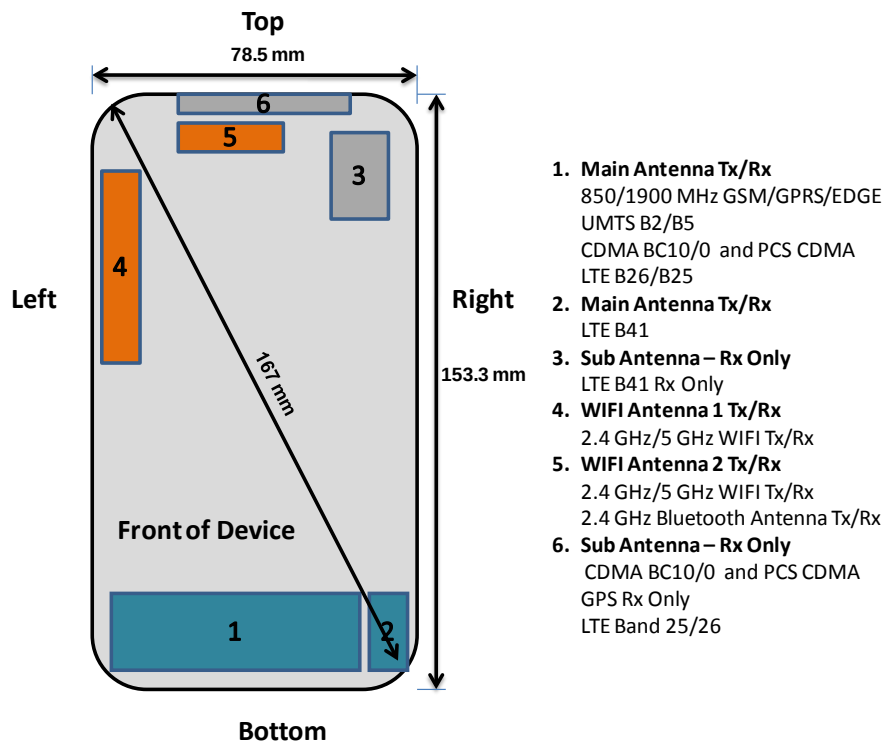
Mode / Band		Modulated Average (dBm)		
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6
UMTS Band 5 (850 MHz)	Maximum	23.5	22.5	22.5
	Nominal	23.0	22.0	22.0
UMTS Band 2 (1900 MHz)	Maximum	23.5	22.5	22.5
	Nominal	23.0	22.0	22.0
Mode / Band		Modulated Average (dBm)		
CDMA/EVDO BC10 (§90S)	Maximum	25.0		
	Nominal	24.5		
CDMA/EVDO BC0 (§22H)	Maximum	25.0		
	Nominal	24.5		
PCS CDMA/EVDO	Maximum	25.0		
	Nominal	24.5		
Mode / Band		Modulated Average (dBm)		
LTE Band 26	Maximum	24.5		
	Nominal	24.0		
LTE Band 25 (PCS)	Maximum	24.5		
	Nominal	24.0		
LTE Band 41	Maximum	24.5		
	Nominal	24.0		
Mode / Band		Modulated Average (dBm)		
SISO IEEE 802.11b (2.4 GHz)	Maximum	15.5		
	Nominal	15.0		
SISO IEEE 802.11g (2.4 GHz)	Maximum	14.5		
	Nominal	14.0		
SISO IEEE 802.11n (2.4 GHz)	Maximum	13.5		
	Nominal	13.0		
MIMO IEEE 802.11n (2.4 GHz)	Maximum	15.5		
	Nominal	15.0		
SISO IEEE 802.11a (5 GHz)	Maximum	12.5		
	Nominal	12.0		
SISO IEEE 802.11n (5 GHz - 20 MHz Bandwidth)	Maximum	12.5		
	Nominal	12.0		
MIMO IEEE 802.11n (5 GHz - 20 MHz Bandwidth)	Maximum	15.5		
	Nominal	15.0		
SISO IEEE 802.11n (5 GHz - 40 MHz Bandwidth)	Maximum	9.5		
	Nominal	9.0		
MIMO IEEE 802.11n (5 GHz - 40 MHz Bandwidth)	Maximum	12.5		
	Nominal	12.0		
SISO IEEE 802.11ac (5 GHz - 80 MHz Bandwidth)	Maximum	10.5		
	Nominal	10.0		
MIMO IEEE 802.11ac (5 GHz - 80 MHz Bandwidth)	Maximum	13.5		
	Nominal	13.0		
Bluetooth	Maximum	12.0		
	Nominal	11.5		
Bluetooth LE	Maximum	8.0		
	Nominal	7.5		

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1.3.2 Reduced Power with Hotspot Mode Activated

Mode / Band		Modulated Average (dBm)		
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6
UMTS Band 2 (1900 MHz)	Maximum	20.5	20.5	20.5
	Nominal	20.0	20.0	20.0
Mode / Band		Modulated Average (dBm)		
CDMA/EVDO BC10 (\$90S)	Maximum	22.0		
	Nominal	21.5		
CDMA/EVDO BC0 (\$22H)	Maximum	22.0		
	Nominal	21.5		
PCS CDMA/EVDO	Maximum	22.0		
	Nominal	21.5		
Mode / Band		Modulated Average (dBm)		
LTE Band 25 (PCS)	Maximum	21.5		
	Nominal	21.0		

1.4 DUT Antenna Locations



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

Figure 1-1
DUT Antenna Locations

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Table 1-1
Sides for SAR Testing for Mobile Hotspot and Extremity Exposure Conditions

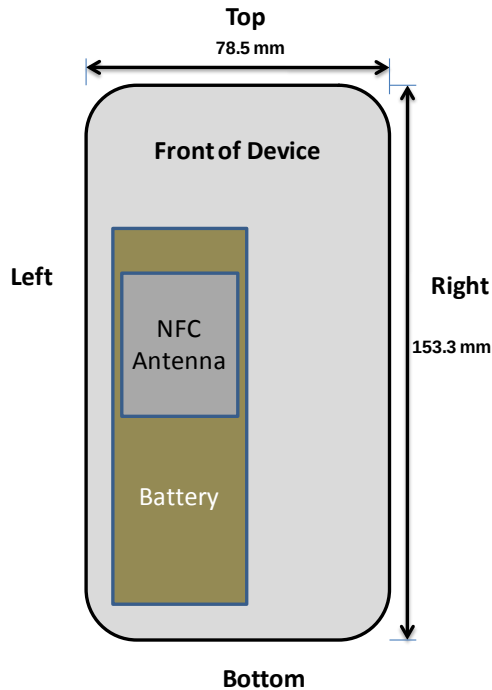
Mode	Back	Front	Top	Bottom	Right	Left
GPRS 850	Yes	Yes	No	Yes	Yes	Yes
UMTS 850	Yes	Yes	No	Yes	Yes	Yes
EVDO BC10 (§90S)	Yes	Yes	No	Yes	Yes	Yes
EVDO BC0 (§22H)	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	Yes	Yes
UMTS 1900	Yes	Yes	No	Yes	Yes	Yes
PCS EVDO	Yes	Yes	No	Yes	Yes	Yes
LTE Band 26	Yes	Yes	No	Yes	Yes	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 41	Yes	Yes	No	Yes	Yes	No
2.4 GHz WLAN Ant. 1 & MIMO	Yes	Yes	Yes	No	No	Yes
2.4 GHz WLAN Ant. 2	Yes	Yes	Yes	No	No	No
5 GHz WLAN Ant. 1 & MIMO	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN Ant. 2	Yes	Yes	Yes	No	No	No

Note: Particular DUT edges were not required to be evaluated for Wireless Router SAR or Extremity SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v01 guidance, page 2 and FCC KDB 648474 D04v01r01. The distances between the transmit antennas and the edges of the device are included in the filing. When wireless router mode is enabled, 5.2-5.7 GHz WLAN operations are disabled. Therefore, 5.8 GHz WLAN refers to mobile hotspot testing sides and 5.2-5.7 GHz WLAN refers to extremity testing sides.

1.5 Near Field Communications (NFC) Antenna

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

Figure 1-2
NFC Antenna Locations



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1.6 Simultaneous Transmission Capabilities

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



Figure 1-3

Simultaneous Transmission Paths

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

Table 1-2
Simultaneous Transmission Scenarios

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

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

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1.7 Wireless Charging Cover

This DUT may be used with a standard battery cover or with an optional wireless charging battery cover. Per FCC KDB Publication 648474 D03, SAR was measured using the standard battery cover and then repeated with the wireless charging battery cover for the highest measured SAR for each wireless technology, frequency band, operating mode, and exposure condition. No additional tests with wireless charging cover were required since all reported SAR values were less than 1.2 W/kg.

1.8 SAR Test Exclusions Applied

(A) WIFI/BT

Since Wireless Router operations are not allowed by the chipset firmware using 5 GHz NII WIFI, only 2.4 GHz and 5 GHz DTS WIFI Hotspot SAR tests and combinations are considered for SAR with respect to Wireless Router configurations according to FCC KDB 941225 D06v01.

This device supports 20 MHz and 40 MHz Bandwidths for IEEE 802.11n for 5 GHz WIFI only. IEEE 802.11n was not evaluated for SAR since the average output power of 20 MHz and 40 MHz bandwidths was not more than 0.25 dB higher than the average output power of IEEE 802.11a.

This device supports IEEE 802.11ac with the following features:

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

Per FCC KDB Publication 648474 D04v01r01, this device is considered a "phablet" since the diagonal dimension is greater than 160mm and less than 200mm. Extremity SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Because wireless router operations are not supported for 5 GHz NII WIFI, extremity SAR tests were performed. Extremity SAR was not evaluated for 2.4 GHz and 5 GHz DTS WLAN operations since wireless router 1g SAR was < 1.2 W/kg.

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

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

Based on the maximum conducted power of Bluetooth (rounded to the nearest mW) and the antenna to user separation distance, body-worn Bluetooth SAR was not required; $[(16/15) * \sqrt{2.480}] = 1.7 < 3.0$. Per KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mW before calculation.

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

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

Based on the maximum conducted power of Bluetooth (rounded to the nearest mW) and the antenna to user separation distance, extremity Bluetooth SAR was not required; $[(16/5) * \sqrt{2.480}] = 5 < 7.5$. Per KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mW before calculation.

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(B) Licensed Transmitter(s)

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

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

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

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

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

1.9 Guidance Applied

- IEEE 1528-2003
- FCC KDB Publication 941225 D01v02, D02v02r02, D03v01, D05v02r03, D05Av01, D06v01r01 (2G/3G/4G, Hotspot, and CDMA 2000 1x Advanced)
- FCC KDB Publication 248227 D01v01r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v05r02 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r03, D02v01r01 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D03-D04 (Phablet Procedures, Wireless Charging Cover)
- April 2013 TCB Workshop Notes (IEEE 802.11ac and LTE TDD)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)

1.10 Device Serial Numbers

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

Mode	Head Max Serial Number	Head Reduced Serial Number	Body-Worn Serial Number	Hotspot Serial Number	Extremity Serial Number
GSM/GPRS/EDGE 850	F4D34	-	F4D34	F4D34	-
UMTS 850	F4D2A	-	F4D2A	F4D2A	-
CDMA/EVDO BC10 (§90S)	F4D33	F4D2B	F4D33	F4D2B	-
CDMA/EVDO BC0 (§22H)	F4D33	F4D2B	F4D33	F4D2B	-
GSM/GPRS/EDGE 1900	F4D34	-	F4D34	F4D34	-
UMTS 1900	F4D2A	-	F4D2A	F4D35	-
PCS CDMA/EVDO	F4D33	F4D2B	F4D33	F4D2B	F4D33
LTE Band 26	F4D31	-	F4D31	F4D31	-
LTE Band 25 (PCS)	F4D30	F4D32	F4D30	F4D32	-
LTE Band 41	F4D29	-	F4D29	F4D29	-
2.4 GHz WLAN Ant 1	015D8	-	015D8	015D8	-
2.4 GHz WLAN Ant 2 and MIMO	01FC3	-	015D8	015D8	-
5.8 GHz WLAN	015D8	-	015D8	015D8	-
5.2 - 5.7 GHz WLAN	015D8	-	015D8	-	015D7

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LTE INFORMATION

LTE Information					
FCC ID	A3LSMN910P				
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 26 (814.7 - 848.3 MHz)				
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
Channel Bandwidths	LTE Band 26: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	High-Mid	High
LTE Band 26: 1.4 MHz	814.7 (26697)		831.5 (26865)	848.3 (27033)	
LTE Band 26: 3 MHz	815.5 (26705)		831.5 (26865)	847.5 (27025)	
LTE Band 26: 5 MHz	816.5 (26715)		831.5 (26865)	846.5 (27015)	
LTE Band 26: 10 MHz	819 (26740)		831.5 (26865)	844 (26990)	
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 41: 5 MHz	2498.5 (39675)	2545.8 (40148)	2593 (40620)	2640.3 (41093)	2687.5 (41565)
LTE Band 41: 10 MHz	2501 (39700)	2547 (40160)	2593 (40620)	2639 (41080)	2685 (41540)
LTE Band 41: 15 MHz	2503.5 (39725)	2548.3 (40173)	2593 (40620)	2637.8 (41068)	2682.5 (41515)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	3				
Modulations Supported in UL	QPSK, 16QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3-6.2.5? (manufacturer attestation to be provided)	YES				
A-MPR (Additional MPR) disabled for SAR Testing?	YES				

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3 INTRODUCTION

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

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

3.1 SAR Definition

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

Equation 3-1
SAR Mathematical Equation

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

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

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

where:

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

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

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4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

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

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

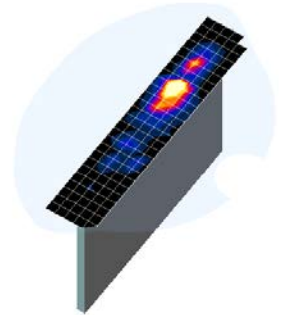


Figure 4-1
Sample SAR Area
Scan

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

Frequency	Maximum Area Scan Resolution (mm) ($\Delta x_{area}, \Delta y_{area}$)	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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DEFINITION OF REFERENCE POINTS

5.1 EAR REFERENCE POINT

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

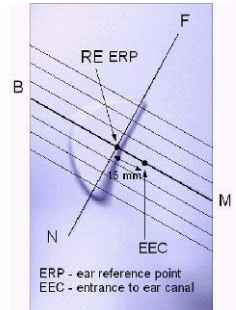


Figure 5-1
Close-Up Side view
of ERP

5.2 HANDSET REFERENCE POINTS

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



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

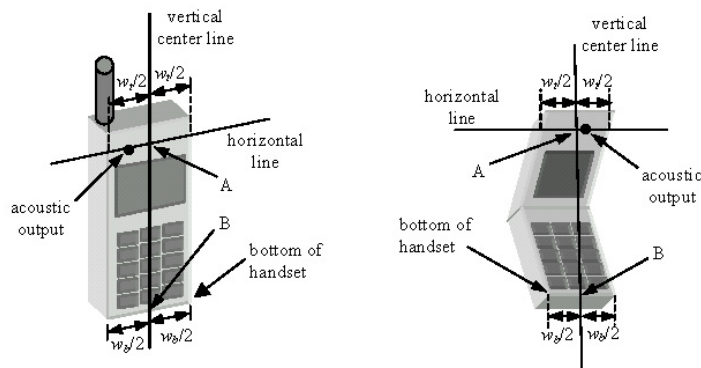


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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TEST CONFIGURATION POSITIONS FOR HANDSETS

6.1 Device Holder

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

6.2 Positioning for Cheek

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

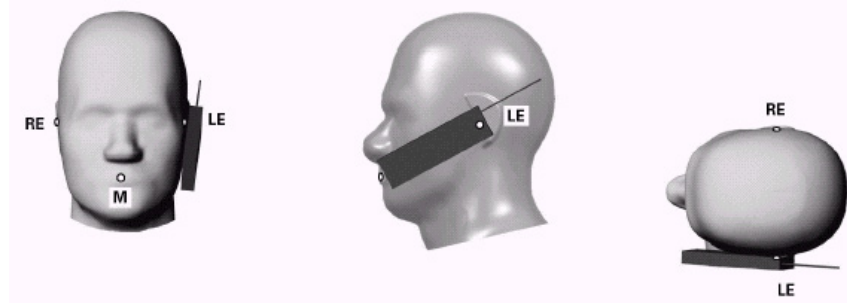


Figure 6-1 Front, Side and Top View of Cheek Position

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

6.3 Positioning for Ear / 15° Tilt

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

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

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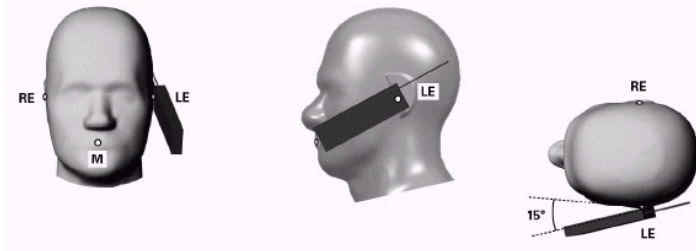


Figure 6-2 Front, Side and Top View of Ear/15° Tilt Position

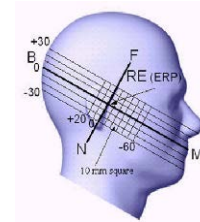


Figure 6-3 Side view w/ relevant markings

6.4 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6-4). Per FCC KDB Publication 648474 D04v01, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01v05 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is $> 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

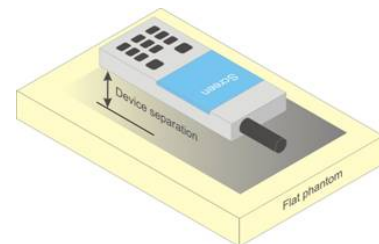


Figure 6-4 Sample Body-Worn Diagram

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

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

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6.5 Extremity Exposure Configurations

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

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

6.6 Wireless Router Configurations

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

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

There is mobile hotspot power reduction for UMTS Band 2, CDMA BC 10/0/1, and LTE Band 25. There is no power reduction for GSM/GPRS/EDGE 850, GSM/GPRS/EDGE 1900, UMTS Band 5, LTE Band 26/41, and WLAN modes. The reduced powers were confirmed via conducted power measurements at the RF port (See Section 9). Detailed description of the hotspot power reduction mechanism is included in the operational description.

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7 RF EXPOSURE LIMITS

7.1 Uncontrolled Environment

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

7.2 Controlled Environment

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

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

HUMAN EXPOSURE LIMITS		
	UNCONTROLLED ENVIRONMENT <i>General Population</i> (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT <i>Occupational</i> (W/kg) or (mW/g)
Peak Spatial Average SAR Head	1.6	8.0
Whole Body SAR	0.08	0.4
Peak Spatial Average SAR Hands, Feet, Ankle, Wrists, etc.	4.0	20

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

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

8.1 Measured and Reported SAR

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

8.2 Procedures Used to Establish RF Signal for SAR

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

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

8.3 SAR Measurement Conditions for UMTS

8.3.1 Output Power Verification

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

Maximum output power is verified on the High, Middle and Low channels according to the general descriptions in section 5.2 of 3GPP TS 34.121 (release 5), using the appropriate RMC with TPC (transmit power control) set to all "1s" or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, 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.

8.3.2 Head SAR Measurements for Handsets

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

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8.3.3 Body SAR Measurements

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

8.3.4 SAR Measurements for Handsets with Rel 5 HSDPA

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

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

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

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

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

8.3.5 SAR Measurements for Handsets with Rel 6 HSUPA

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

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

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Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	$\beta_{hs}^{(1)}$	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM ⁽²⁾ (dB)	MPR (dB)	AG ⁽⁴⁾ Index	E-TFCI
1	11/15 ⁽³⁾	15/15 ⁽³⁾	64	11/15 ⁽³⁾	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed}: 47/15$ $\beta_{ec}: 47/15$	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 ⁽⁴⁾	15/15 ⁽⁴⁾	64	15/15 ⁽⁴⁾	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$.

Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.

Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.

8.4 SAR Measurement Conditions for CDMA2000

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

8.4.1 Output Power Verification

See 3GPP2 C.S0011/TIA-98-E as recommended by "SAR Measurement Procedures for 3G Devices" v02, October 2007. Maximum output power is verified on the High, Middle and Low channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. SO55 tests were measured with power control bits in the "All Up" condition.

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

Table 8-1
Parameters for Max. Power for RC1

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

Table 8-2
Parameters for Max. Power for RC3

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

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

8.4.2 CDMA2000 1x Advanced

This device additionally supports 1x Advanced. Conducted powers were measured using SO75 with RC8 on the uplink and RC11 on the downlink per KDB Publication 941225 D02v02. Smart blanking was disabled for all measurements. The EUT was configured with forward power control Mode 000 and reverse power control at 400 bps. Conducted powers were measured on an Agilent 8960 Series 10 Wireless Communications Test Set, Model E5515C using the CDMA2000 1x Advanced application, Option E1962B-410.

Based on the maximum output power measured for 1x Advanced, SAR would have to be evaluated for 1x advanced if the maximum output for 1x Advanced is more than 0.25 dB higher than the maximum measured for 1x. Also, if the measured SAR in any 1x mode exposure conditions (head, body etc.) is larger than 1.2 W/kg, the highest of those configurations above 1.2

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W/kg for each exposure condition in 1x Advanced has to be repeated. All measured SAR in 1x mode higher than 1.5 W/kg must be repeated for 1x Advanced.

8.4.3 Head SAR Measurements

SAR for head exposure configurations is measured in RC3 with the DUT configured to transmit at full rate using Loopback Service Option SO55. SAR for RC1 is not required when the maximum average output of each channel is less than ¼ dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel in RC1 using the exposure configuration that results in the highest SAR for that channel in RC3.

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

8.4.4 Body SAR Measurements

SAR for body 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. SAR for multiple code channels (FCH + SCH_n) is not required when the maximum average output of each RF channel is less than ¼ dB higher than that measured with FCH only. Otherwise, SAR is measured on the maximum output channel (FCH + SCH_n) with FCH at full rate and SCH₀ enabled at 9600 bps using the exposure configuration that results in the highest SAR for that channel with FCH only. When multiple code channels are enabled, the DUT output may shift by more than 0.5 dB and lead to higher SAR drifts and SCH dropouts. Body SAR was measured using TDSO / SO32 with power control bits in the “All Up”

Body SAR in RC1 is not required when the maximum average output of each channel is less than ¼ dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel in RC1; with Loopback Service Option SO55, at full rate, using the body exposure configuration that results in the highest SAR for that channel in RC3.

8.4.5 Handsets with EVDO

For handsets with Ev-Do capabilities, when the maximum average output of each channel in Rev. 0 is less than ¼ dB higher than that measured in RC3 (1x RTT), body SAR for EV-DO is not required. Otherwise, SAR for Rev. 0 is measured on the maximum output channel at 153.6 kbps using the body exposure configuration that results in the highest SAR for that channel in RC3. SAR for Rev. A is not required when the maximum average output of each channel is less than that measured in Rev. 0 or less than ¼ dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel for Rev. A using a Reverse Data Channel payload size of 4096 bits and a Termination Target of 16 slots defined for Subtype 2 Physical Layer configurations. A Forward Traffic Channel data rate corresponding to the 2-slot version of 307.2 kbps with the ACK Channel transmitting in all slots would be configured in the downlink for both Rev. 0 and Rev. A.

8.4.6 Body SAR Measurements for EVDO Hotspot

Hotspot Body SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 per KDB Publication 941225 D01 procedures for “1x Ev-Do data Devices”. SAR for Subtype 2 Physical layer configurations is not required for Rev. A when the maximum average output of each RF channels is less than that measured in Subtype 0/1 Physical layer configurations. Otherwise, SAR is measured on the maximum output channel for Rev. A using the exposure configuration that results in the highest SAR for the RF channels 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.

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SAR is not required for 1x RTT for Ev-Do devices that also support 1x RTT voice and/or data operations, when the maximum average output of each channel is less than 1/4 dB higher than that measured in Subtype 0/1 Physical Layer configurations for Rev. 0. Otherwise, CDMA "Body-SAR Measurement" procedures for "CDMA 2000 1x Handsets" were applied.

8.5 SAR Measurement Conditions for LTE

LTE modes were tested according to FCC KDB 941225 D05v02 publication. Please see notes after the tabulated SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 was 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).

8.5.1 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.

8.5.2 MPR

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

8.5.3 A-MPR

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

8.5.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r01:

- 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 1/2 dB

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higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is <1.45 W/kg.

8.5.5 TDD

LTE 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. SAR testing was performed using the extended cyclic prefix listed in 3GPP TS 36.211 Section 4.

8.6 SAR Testing with 802.11 Transmitters

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

8.6.1 General Device Setup

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

8.6.2 Frequency Channel Configurations [24]

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

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

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

8.6.3 MIMO SAR considerations

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

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9 RF CONDUCTED POWERS

9.1 GSM Conducted Powers

		Maximum Burst-Averaged Output Power								
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 850	128	32.91	33.02	31.39	29.03	26.44	27.05	26.88	22.81	21.88
	190	33.00	32.96	31.02	29.26	26.47	26.85	26.95	22.89	21.93
	251	32.86	32.93	31.10	29.40	26.50	26.92	26.84	22.98	21.87
GSM 1900	512	30.34	30.26	29.00	27.00	25.99	26.50	26.00	21.42	20.36
	661	30.50	29.92	28.80	26.85	25.88	26.28	25.48	21.32	20.27
	810	30.49	30.13	28.77	26.94	25.90	26.00	25.84	21.05	19.97
		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	23.88	23.99	25.37	24.77	23.43	18.02	20.86	18.55	18.87
	190	23.97	23.93	25.00	25.00	23.46	17.82	20.93	18.63	18.92
	251	23.83	23.90	25.08	25.14	23.49	17.89	20.82	18.72	18.86
GSM 1900	512	21.31	21.23	22.98	22.74	22.98	17.47	19.98	17.16	17.35
	661	21.47	20.89	22.78	22.59	22.87	17.25	19.46	17.06	17.26
	810	21.46	21.10	22.75	22.68	22.89	16.97	19.82	16.79	16.96
GSM 850	Frame	23.97	23.97	25.48	24.74	22.99	17.97	20.48	18.24	18.99
GSM 1900	Avg. Targets:	20.97	20.97	22.48	22.24	22.49	16.97	19.48	17.24	17.99

Note:

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

GSM Class: B

GPRS Multislot class: 33 (Max 4 Tx uplink slots)

EDGE Multislot class: 33 (Max 4 Tx uplink slots)

DTM Multislot Class: N/A

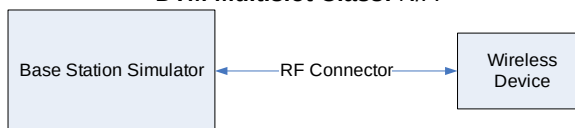


Figure 9-1
Power Measurement Setup

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9.2 UMTS Conducted Powers

Table 9-1
Maximum UMTS Conducted Powers with Hotspot Inactive

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	23.50	23.43	23.49	23.33	23.31	23.44	-
99		12.2 kbps AMR	23.41	23.23	23.35	23.08	23.25	23.26	-
6	HSDPA	Subtest 1	22.43	22.45	22.50	22.46	22.25	22.49	0
6		Subtest 2	22.50	22.47	22.50	22.45	22.27	22.50	0
6		Subtest 3	22.01	21.99	22.01	21.98	21.77	22.08	0.5
6		Subtest 4	21.93	21.97	22.00	21.96	21.80	22.10	0.5
6	HSUPA	Subtest 1	22.23	22.25	22.24	22.30	22.27	22.43	0
6		Subtest 2	21.48	21.21	21.56	21.03	20.61	21.21	2
6		Subtest 3	21.32	21.29	21.44	21.22	20.96	20.83	1
6		Subtest 4	21.95	21.70	21.93	21.46	21.35	21.43	2
6		Subtest 5	22.49	22.45	22.50	22.44	22.26	22.50	0

Table 9-2
Reduced UMTS Conducted Powers with Hotspot Active

3GPP Release Version	Mode	3GPP 34.121 Subtest	PCS Band [dBm]			3GPP MPR [dB]
			9262	9400	9538	
99	WCDMA	12.2 kbps RMC	20.11	20.26	20.33	-
99		12.2 kbps AMR	20.09	20.10	20.21	-
6	HSDPA	Subtest 1	19.28	19.14	19.28	0
6		Subtest 2	19.30	19.13	19.38	0
6		Subtest 3	18.77	18.66	18.87	0.5
6		Subtest 4	18.80	18.62	18.90	0.5
6	HSUPA	Subtest 1	18.82	18.76	18.94	0
6		Subtest 2	18.16	18.03	18.24	2
6		Subtest 3	17.91	17.93	18.10	1
6		Subtest 4	18.62	18.46	18.53	2
6		Subtest 5	19.33	19.15	19.31	0

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

This device does not support DC-HSDPA

It is expected by the manufacturer that MPR for some HSPA subtests may be up to 1 dB more than specified by 3GPP, but also as low as 0 dB according to the chipset implementation in this model.



Figure 9-2
Power Measurement Setup

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9.3 CDMA Conducted Powers

Table 9-3
Maximum CDMA Conducted Powers with Hotspot Inactive

Band	Channel	Rule Part	Frequency	SO2 [dBm]	SO55 [dBm]	SO75 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	RC1	RC3	RC11	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	564	90S	820.1	24.88	24.91	24.87	24.92	24.94	24.70	24.68
Cellular	1013	22H	824.7	24.96	24.99	24.99	24.95	24.97	24.78	24.73
	384	22H	836.52	24.91	24.95	24.94	24.96	24.94	24.76	24.72
	777	22H	848.31	24.88	24.93	24.90	24.98	24.92	24.69	24.65
PCS	25	24E	1851.25	24.84	24.85	24.90	24.97	24.95	24.96	24.94
	600	24E	1880	24.78	24.85	24.85	24.84	24.87	24.92	24.91
	1175	24E	1908.75	24.85	24.97	24.93	24.98	24.99	25.00	24.96

Table 9-4
Reduced CDMA Conducted Powers with Hotspot Active

Band	Channel	Rule Part	Frequency	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	564	90S	820.1	21.83	21.84	21.96	21.74
Cellular	1013	22H	824.7	21.93	21.93	21.89	21.88
	384	22H	836.52	21.84	21.85	21.84	21.83
	777	22H	848.31	21.92	21.90	21.87	21.86
PCS	25	24E	1851.25	21.64	21.69	21.80	21.78
	600	24E	1880	21.67	21.79	21.95	21.85
	1175	24E	1908.75	21.75	21.76	22.00	21.84

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

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Per KDB Publication 941225 D01v02:

1. Head SAR was tested with SO55 RC3. SO55 RC1 was not required since the average output power was not more than 0.25 dB than the SO55 RC3 powers.
2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. Ev-Do and TDSO / SO32 FCH+SCH SAR tests were not required since the average output power was not more than 0.25 dB higher than the TDSO / SO32 FCH only powers.
3. Wireless router (hotspot)/extremity SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0. If the average output power of Subtype 2 for Rev. A is less than the Rev. 0 power levels, then Rev. A SAR is not required. Otherwise, SAR is measured on the maximum output channel for Rev. A using the exposure configuration that results in the highest SAR for that RF channel in Rev. 0. SAR is not required for 1x RTT for Ev-Do hotspot devices when the maximum average output of each channel is less than 1/4 dB higher than that measured in Subtype 0/1 Physical Layer configurations for Rev. 0
4. Head SAR was additionally evaluated with EVDO Rev. A to determine compliance for held-to-ear VoIP operations.

Per KDB Publication 941225 D02v02:

1. CDMA 1X Advanced technology was not required for SAR since the maximum output powers for 1x Advanced was not more than 0.25 dB higher than the maximum measured powers for 1x and the measured SAR in any 1x mode exposure conditions was not greater than 1.2 W/kg. See Section 8.4.2 for 1x Advanced test set up.



Figure 9-3
Power Measurement Setup

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9.4 LTE Conducted Powers

9.4.1 LTE Band 26 (Cell)

Table 9-5
LTE Band 26 Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	819	26740	10	QPSK	1	0	24.27	0	0
	819	26740	10	QPSK	1	25	24.32	0	0
	819	26740	10	QPSK	1	49	24.13	0	0
	819	26740	10	QPSK	25	0	23.24	0-1	1
	819	26740	10	QPSK	25	12	23.29	0-1	1
	819	26740	10	QPSK	25	25	23.32	0-1	1
	819	26740	10	QPSK	50	0	23.31	0-1	1
	819	26740	10	16QAM	1	0	23.32	0-1	1
	819	26740	10	16QAM	1	25	23.31	0-1	1
	819	26740	10	16QAM	1	49	23.25	0-1	1
	819	26740	10	16QAM	25	0	22.30	0-2	2
	819	26740	10	16QAM	25	12	22.30	0-2	2
Mid	819	26740	10	16QAM	25	25	22.32	0-2	2
	819	26740	10	16QAM	50	0	22.27	0-2	2
	831.5	26865	10	QPSK	1	0	24.23	0	0
	831.5	26865	10	QPSK	1	25	24.29	0	0
	831.5	26865	10	QPSK	1	49	24.33	0	0
	831.5	26865	10	QPSK	25	0	23.36	0-1	1
	831.5	26865	10	QPSK	25	12	23.32	0-1	1
	831.5	26865	10	QPSK	25	25	23.33	0-1	1
	831.5	26865	10	QPSK	50	0	23.40	0-1	1
	831.5	26865	10	16QAM	1	0	23.48	0-1	1
	831.5	26865	10	16QAM	1	25	23.50	0-1	1
	831.5	26865	10	16QAM	1	49	23.50	0-1	1
High	844	26990	10	16QAM	25	0	22.46	0-2	2
	844	26990	10	16QAM	25	12	22.43	0-2	2
	844	26990	10	16QAM	25	25	22.38	0-2	2
	844	26990	10	16QAM	50	0	22.43	0-2	2
	844	26990	10	QPSK	1	0	24.45	0	0
	844	26990	10	QPSK	1	25	24.50	0	0
	844	26990	10	QPSK	1	49	24.30	0	0
	844	26990	10	QPSK	25	0	23.42	0-1	1
	844	26990	10	QPSK	25	12	23.47	0-1	1
	844	26990	10	QPSK	25	25	23.50	0-1	1
	844	26990	10	QPSK	50	0	23.49	0-1	1
	844	26990	10	16QAM	1	0	23.50	0-1	1
	844	26990	10	16QAM	1	25	23.49	0-1	1
	844	26990	10	16QAM	1	49	23.43	0-1	1
	844	26990	10	16QAM	25	0	22.48	0-2	2
	844	26990	10	16QAM	25	12	22.50	0-2	2
	844	26990	10	16QAM	25	25	22.50	0-2	2
	844	26990	10	16QAM	50	0	22.47	0-2	2

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Table 9-6
LTE Band 26 Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	816.5	26715	5	QPSK	1	0	24.35	0	0
	816.5	26715	5	QPSK	1	12	24.17	0	0
	816.5	26715	5	QPSK	1	24	24.43	0	0
	816.5	26715	5	QPSK	12	0	23.34	0-1	1
	816.5	26715	5	QPSK	12	6	23.24	0-1	1
	816.5	26715	5	QPSK	12	13	23.19	0-1	1
	816.5	26715	5	QPSK	25	0	23.32	0-1	1
	816.5	26715	5	16-QAM	1	0	23.13	0-1	1
	816.5	26715	5	16-QAM	1	12	23.09	0-1	1
	816.5	26715	5	16-QAM	1	24	23.24	0-1	1
	816.5	26715	5	16-QAM	12	0	22.32	0-2	2
	816.5	26715	5	16-QAM	12	6	22.25	0-2	2
Mid	816.5	26715	5	16-QAM	12	13	22.22	0-2	2
	816.5	26715	5	16-QAM	25	0	22.36	0-2	2
	831.5	26865	5	QPSK	1	0	24.28	0	0
	831.5	26865	5	QPSK	1	12	24.32	0	0
	831.5	26865	5	QPSK	1	24	24.17	0	0
	831.5	26865	5	QPSK	12	0	23.24	0-1	1
	831.5	26865	5	QPSK	12	6	23.05	0-1	1
	831.5	26865	5	QPSK	12	13	23.05	0-1	1
	831.5	26865	5	QPSK	25	0	23.04	0-1	1
	831.5	26865	5	16-QAM	1	0	23.06	0-1	1
	831.5	26865	5	16-QAM	1	12	23.13	0-1	1
	831.5	26865	5	16-QAM	1	24	23.00	0-1	1
High	831.5	26865	5	16-QAM	12	0	22.23	0-2	2
	831.5	26865	5	16-QAM	12	6	22.12	0-2	2
	831.5	26865	5	16-QAM	12	13	22.10	0-2	2
	831.5	26865	5	16-QAM	25	0	22.17	0-2	2
	846.5	27015	5	QPSK	1	0	24.48	0	0
	846.5	27015	5	QPSK	1	12	24.46	0	0
	846.5	27015	5	QPSK	1	24	24.25	0	0
	846.5	27015	5	QPSK	12	0	23.43	0-1	1
	846.5	27015	5	QPSK	12	6	23.49	0-1	1
	846.5	27015	5	QPSK	12	13	23.32	0-1	1
	846.5	27015	5	QPSK	25	0	23.45	0-1	1
	846.5	27015	5	16-QAM	1	0	23.42	0-1	1
	846.5	27015	5	16-QAM	1	12	23.42	0-1	1
	846.5	27015	5	16-QAM	1	24	23.10	0-1	1
	846.5	27015	5	16-QAM	12	0	22.40	0-2	2
	846.5	27015	5	16-QAM	12	6	22.16	0-2	2
	846.5	27015	5	16-QAM	12	13	22.23	0-2	2
	846.5	27015	5	16-QAM	25	0	22.17	0-2	2

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Table 9-7
LTE Band 26 Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	815.5	26705	3	QPSK	1	0	24.31	0	0
	815.5	26705	3	QPSK	1	7	24.35	0	0
	815.5	26705	3	QPSK	1	14	24.11	0	0
	815.5	26705	3	QPSK	8	0	23.34	0-1	1
	815.5	26705	3	QPSK	8	4	23.22	0-1	1
	815.5	26705	3	QPSK	8	7	23.42	0-1	1
	815.5	26705	3	QPSK	15	0	23.32	0-1	1
	815.5	26705	3	16-QAM	1	0	23.28	0-1	1
	815.5	26705	3	16-QAM	1	7	23.30	0-1	1
	815.5	26705	3	16-QAM	1	14	23.25	0-1	1
	815.5	26705	3	16-QAM	8	0	22.37	0-2	2
	815.5	26705	3	16-QAM	8	4	22.31	0-2	2
	815.5	26705	3	16-QAM	8	7	22.34	0-2	2
	815.5	26705	3	16-QAM	15	0	22.17	0-2	2
Mid	831.5	26865	3	QPSK	1	0	24.27	0	0
	831.5	26865	3	QPSK	1	7	24.39	0	0
	831.5	26865	3	QPSK	1	14	24.24	0	0
	831.5	26865	3	QPSK	8	0	23.26	0-1	1
	831.5	26865	3	QPSK	8	4	23.28	0-1	1
	831.5	26865	3	QPSK	8	7	23.30	0-1	1
	831.5	26865	3	QPSK	15	0	23.34	0-1	1
	831.5	26865	3	16-QAM	1	0	23.47	0-1	1
	831.5	26865	3	16-QAM	1	7	23.41	0-1	1
	831.5	26865	3	16-QAM	1	14	23.40	0-1	1
	831.5	26865	3	16-QAM	8	0	22.43	0-2	2
	831.5	26865	3	16-QAM	8	4	22.44	0-2	2
	831.5	26865	3	16-QAM	8	7	22.43	0-2	2
	831.5	26865	3	16-QAM	15	0	22.43	0-2	2
High	847.5	27025	3	QPSK	1	0	24.37	0	0
	847.5	27025	3	QPSK	1	7	24.47	0	0
	847.5	27025	3	QPSK	1	14	24.24	0	0
	847.5	27025	3	QPSK	8	0	23.34	0-1	1
	847.5	27025	3	QPSK	8	4	23.39	0-1	1
	847.5	27025	3	QPSK	8	7	23.44	0-1	1
	847.5	27025	3	QPSK	15	0	23.43	0-1	1
	847.5	27025	3	16-QAM	1	0	23.42	0-1	1
	847.5	27025	3	16-QAM	1	7	23.47	0-1	1
	847.5	27025	3	16-QAM	1	14	23.38	0-1	1
	847.5	27025	3	16-QAM	8	0	22.38	0-2	2
	847.5	27025	3	16-QAM	8	4	22.37	0-2	2
	847.5	27025	3	16-QAM	8	7	22.45	0-2	2
	847.5	27025	3	16-QAM	15	0	22.35	0-2	2

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Table 9-8
LTE Band 26 Conducted Powers -1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	814.7	26697	1.4	QPSK	1	0	24.17	0	0
	814.7	26697	1.4	QPSK	1	2	24.33	0	0
	814.7	26697	1.4	QPSK	1	5	24.43	0	0
	814.7	26697	1.4	QPSK	3	0	24.35	0	0
	814.7	26697	1.4	QPSK	3	2	24.43	0	0
	814.7	26697	1.4	QPSK	3	3	24.08	0	0
	814.7	26697	1.4	QPSK	6	0	23.35	0-1	1
	814.7	26697	1.4	16-QAM	1	0	23.31	0-1	1
	814.7	26697	1.4	16-QAM	1	2	23.11	0-1	1
	814.7	26697	1.4	16-QAM	1	5	23.31	0-1	1
	814.7	26697	1.4	16-QAM	3	0	23.15	0-1	1
	814.7	26697	1.4	16-QAM	3	2	23.06	0-1	1
Mid	831.5	26865	1.4	QPSK	3	3	23.23	0-1	1
	814.7	26697	1.4	16-QAM	6	0	22.28	0-2	2
	831.5	26865	1.4	QPSK	1	0	24.36	0	0
	831.5	26865	1.4	QPSK	1	2	24.39	0	0
	831.5	26865	1.4	QPSK	1	5	24.17	0	0
	831.5	26865	1.4	QPSK	3	0	24.31	0	0
	831.5	26865	1.4	QPSK	3	2	24.03	0	0
	831.5	26865	1.4	QPSK	3	3	23.93	0	0
	831.5	26865	1.4	QPSK	6	0	23.09	0-1	1
	831.5	26865	1.4	16-QAM	1	0	23.25	0-1	1
	831.5	26865	1.4	16-QAM	1	2	23.12	0-1	1
	831.5	26865	1.4	16-QAM	1	5	23.03	0-1	1
High	831.5	26865	1.4	16-QAM	3	0	23.42	0-1	1
	831.5	26865	1.4	16-QAM	3	2	23.13	0-1	1
	831.5	26865	1.4	16-QAM	3	3	23.20	0-1	1
	831.5	26865	1.4	16-QAM	6	0	21.99	0-2	2
	848.3	27033	1.4	QPSK	1	0	24.40	0	0
	848.3	27033	1.4	QPSK	1	2	24.32	0	0
	848.3	27033	1.4	QPSK	1	5	24.25	0	0
	848.3	27033	1.4	QPSK	3	0	24.23	0	0
	848.3	27033	1.4	QPSK	3	2	24.37	0	0
	848.3	27033	1.4	QPSK	3	3	24.36	0	0
	848.3	27033	1.4	QPSK	6	0	23.32	0-1	1
	848.3	27033	1.4	16-QAM	1	0	23.44	0-1	1
	848.3	27033	1.4	16-QAM	1	2	23.41	0-1	1
	848.3	27033	1.4	16-QAM	1	5	22.96	0-1	1
	848.3	27033	1.4	16-QAM	3	0	23.31	0-1	1
	848.3	27033	1.4	16-QAM	3	2	23.08	0-1	1
	848.3	27033	1.4	16-QAM	3	3	23.24	0-1	1
	848.3	27033	1.4	16-QAM	6	0	22.34	0-2	2

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LTE Band 25 (PCS)

Table 9-9

LTE Band 25 (PCS) Max Conducted Powers - 20 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1860	26140	20	QPSK	1	0	24.20	0	0
	1860	26140	20	QPSK	1	50	24.00	0	0
	1860	26140	20	QPSK	1	99	24.03	0	0
	1860	26140	20	QPSK	50	0	23.21	0-1	1
	1860	26140	20	QPSK	50	25	23.19	0-1	1
	1860	26140	20	QPSK	50	50	23.00	0-1	1
	1860	26140	20	QPSK	100	0	23.03	0-1	1
	1860	26140	20	16QAM	1	0	23.14	0-1	1
	1860	26140	20	16QAM	1	50	23.00	0-1	1
	1860	26140	20	16QAM	1	99	23.02	0-1	1
	1860	26140	20	16QAM	50	0	22.32	0-2	2
	1860	26140	20	16QAM	50	25	22.21	0-2	2
	1860	26140	20	16QAM	50	50	22.04	0-2	2
	1860	26140	20	16QAM	100	0	22.09	0-2	2
Mid	1882.5	26365	20	QPSK	1	0	24.30	0	0
	1882.5	26365	20	QPSK	1	50	24.32	0	0
	1882.5	26365	20	QPSK	1	99	24.30	0	0
	1882.5	26365	20	QPSK	50	0	23.38	0-1	1
	1882.5	26365	20	QPSK	50	25	23.32	0-1	1
	1882.5	26365	20	QPSK	50	50	23.28	0-1	1
	1882.5	26365	20	QPSK	100	0	23.25	0-1	1
	1882.5	26365	20	16QAM	1	0	23.29	0-1	1
	1882.5	26365	20	16QAM	1	50	23.33	0-1	1
	1882.5	26365	20	16QAM	1	99	23.38	0-1	1
	1882.5	26365	20	16QAM	50	0	22.40	0-2	2
	1882.5	26365	20	16QAM	50	25	22.36	0-2	2
	1882.5	26365	20	16QAM	50	50	22.31	0-2	2
	1882.5	26365	20	16QAM	100	0	22.32	0-2	2
High	1905	26590	20	QPSK	1	0	24.18	0	0
	1905	26590	20	QPSK	1	50	24.50	0	0
	1905	26590	20	QPSK	1	99	24.44	0	0
	1905	26590	20	QPSK	50	0	23.50	0-1	1
	1905	26590	20	QPSK	50	25	23.45	0-1	1
	1905	26590	20	QPSK	50	50	23.49	0-1	1
	1905	26590	20	QPSK	100	0	23.45	0-1	1
	1905	26590	20	16QAM	1	0	23.10	0-1	1
	1905	26590	20	16QAM	1	50	23.50	0-1	1
	1905	26590	20	16QAM	1	99	23.47	0-1	1
	1905	26590	20	16QAM	50	0	22.45	0-2	2
	1905	26590	20	16QAM	50	25	22.44	0-2	2
	1905	26590	20	16QAM	50	50	22.39	0-2	2
	1905	26590	20	16QAM	100	0	22.47	0-2	2

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Table 9-10
LTE Band 25 (PCS) Max Conducted Powers - 15 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1857.5	26115	15	QPSK	1	0	24.25	0	0
	1857.5	26115	15	QPSK	1	36	24.02	0	0
	1857.5	26115	15	QPSK	1	74	23.83	0	0
	1857.5	26115	15	QPSK	36	0	22.93	0-1	1
	1857.5	26115	15	QPSK	36	18	23.01	0-1	1
	1857.5	26115	15	QPSK	36	37	22.84	0-1	1
	1857.5	26115	15	QPSK	75	0	22.95	0-1	1
	1857.5	26115	15	16QAM	1	0	23.02	0-1	1
	1857.5	26115	15	16QAM	1	36	22.85	0-1	1
	1857.5	26115	15	16QAM	1	74	22.61	0-1	1
	1857.5	26115	15	16QAM	36	0	22.01	0-2	2
	1857.5	26115	15	16QAM	36	18	22.04	0-2	2
	1857.5	26115	15	16QAM	36	37	21.87	0-2	2
Mid	1857.5	26115	15	16QAM	75	0	22.00	0-2	2
	1882.5	26365	15	QPSK	1	0	24.08	0	0
	1882.5	26365	15	QPSK	1	36	24.00	0	0
	1882.5	26365	15	QPSK	1	74	23.98	0	0
	1882.5	26365	15	QPSK	36	0	23.02	0-1	1
	1882.5	26365	15	QPSK	36	18	22.95	0-1	1
	1882.5	26365	15	QPSK	36	37	22.93	0-1	1
	1882.5	26365	15	QPSK	75	0	23.01	0-1	1
	1882.5	26365	15	16QAM	1	0	23.00	0-1	1
	1882.5	26365	15	16QAM	1	36	22.95	0-1	1
	1882.5	26365	15	16QAM	1	74	22.78	0-1	1
	1882.5	26365	15	16QAM	36	0	22.09	0-2	2
	1882.5	26365	15	16QAM	36	18	21.94	0-2	2
	1882.5	26365	15	16QAM	36	37	22.02	0-2	2
High	1882.5	26365	15	16QAM	75	0	22.04	0-2	2
	1907.5	26615	15	QPSK	1	0	24.15	0	0
	1907.5	26615	15	QPSK	1	36	24.11	0	0
	1907.5	26615	15	QPSK	1	74	24.27	0	0
	1907.5	26615	15	QPSK	36	0	23.19	0-1	1
	1907.5	26615	15	QPSK	36	18	23.31	0-1	1
	1907.5	26615	15	QPSK	36	37	23.45	0-1	1
	1907.5	26615	15	QPSK	75	0	23.43	0-1	1
	1907.5	26615	15	16QAM	1	0	23.07	0-1	1
	1907.5	26615	15	16QAM	1	36	23.39	0-1	1
	1907.5	26615	15	16QAM	1	74	23.49	0-1	1
	1907.5	26615	15	16QAM	36	0	22.28	0-2	2
	1907.5	26615	15	16QAM	36	18	22.34	0-2	2
	1907.5	26615	15	16QAM	36	37	22.48	0-2	2
	1907.5	26615	15	16QAM	75	0	22.46	0-2	2

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Table 9-11
LTE Band 25 (PCS) Max Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1855	26090	10	QPSK	1	0	24.19	0	0
	1855	26090	10	QPSK	1	25	24.06	0	0
	1855	26090	10	QPSK	1	49	23.92	0	0
	1855	26090	10	QPSK	25	0	22.81	0-1	1
	1855	26090	10	QPSK	25	12	22.96	0-1	1
	1855	26090	10	QPSK	25	25	22.80	0-1	1
	1855	26090	10	QPSK	50	0	23.05	0-1	1
	1855	26090	10	16QAM	1	0	23.10	0-1	1
	1855	26090	10	16QAM	1	25	22.88	0-1	1
	1855	26090	10	16QAM	1	49	22.69	0-1	1
	1855	26090	10	16QAM	25	0	21.87	0-2	2
	1855	26090	10	16QAM	25	12	21.96	0-2	2
	1855	26090	10	16QAM	25	25	21.75	0-2	2
Mid	1855	26090	10	16QAM	50	0	21.83	0-2	2
	1882.5	26365	10	QPSK	1	0	23.96	0	0
	1882.5	26365	10	QPSK	1	25	24.12	0	0
	1882.5	26365	10	QPSK	1	49	23.82	0	0
	1882.5	26365	10	QPSK	25	0	23.00	0-1	1
	1882.5	26365	10	QPSK	25	12	23.08	0-1	1
	1882.5	26365	10	QPSK	25	25	22.89	0-1	1
	1882.5	26365	10	QPSK	50	0	22.92	0-1	1
	1882.5	26365	10	16QAM	1	0	23.17	0-1	1
	1882.5	26365	10	16QAM	1	25	22.94	0-1	1
	1882.5	26365	10	16QAM	1	49	22.82	0-1	1
	1882.5	26365	10	16QAM	25	0	22.15	0-2	2
	1882.5	26365	10	16QAM	25	12	22.05	0-2	2
	1882.5	26365	10	16QAM	25	25	21.91	0-2	2
High	1882.5	26365	10	16QAM	50	0	22.02	0-2	2
	1910	26640	10	QPSK	1	0	24.25	0	0
	1910	26640	10	QPSK	1	25	24.15	0	0
	1910	26640	10	QPSK	1	49	24.24	0	0
	1910	26640	10	QPSK	25	0	23.06	0-1	1
	1910	26640	10	QPSK	25	12	23.35	0-1	1
	1910	26640	10	QPSK	25	25	23.45	0-1	1
	1910	26640	10	QPSK	50	0	23.28	0-1	1
	1910	26640	10	16QAM	1	0	22.90	0-1	1
	1910	26640	10	16QAM	1	25	23.21	0-1	1
	1910	26640	10	16QAM	1	49	23.47	0-1	1
	1910	26640	10	16QAM	25	0	22.11	0-2	2
	1910	26640	10	16QAM	25	12	22.47	0-2	2
	1910	26640	10	16QAM	25	25	22.34	0-2	2
	1910	26640	10	16QAM	50	0	22.46	0-2	2

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Table 9-12
LTE Band 25 (PCS) Max Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1852.5	26065	5	QPSK	1	0	24.09	0	0
	1852.5	26065	5	QPSK	1	12	24.26	0	0
	1852.5	26065	5	QPSK	1	24	23.99	0	0
	1852.5	26065	5	QPSK	12	0	22.96	0-1	1
	1852.5	26065	5	QPSK	12	6	23.12	0-1	1
	1852.5	26065	5	QPSK	12	13	23.21	0-1	1
	1852.5	26065	5	QPSK	25	0	23.02	0-1	1
	1852.5	26065	5	16-QAM	1	0	23.16	0-1	1
	1852.5	26065	5	16-QAM	1	12	22.96	0-1	1
	1852.5	26065	5	16-QAM	1	24	22.96	0-1	1
	1852.5	26065	5	16-QAM	12	0	22.06	0-2	2
	1852.5	26065	5	16-QAM	12	6	22.07	0-2	2
	1852.5	26065	5	16-QAM	12	13	22.13	0-2	2
	1852.5	26065	5	16-QAM	25	0	21.96	0-2	2
Mid	1882.5	26365	5	QPSK	1	0	24.08	0	0
	1882.5	26365	5	QPSK	1	12	24.10	0	0
	1882.5	26365	5	QPSK	1	24	24.09	0	0
	1882.5	26365	5	QPSK	12	0	23.00	0-1	1
	1882.5	26365	5	QPSK	12	6	22.97	0-1	1
	1882.5	26365	5	QPSK	12	13	23.04	0-1	1
	1882.5	26365	5	QPSK	25	0	22.99	0-1	1
	1882.5	26365	5	16-QAM	1	0	22.96	0-1	1
	1882.5	26365	5	16-QAM	1	12	22.88	0-1	1
	1882.5	26365	5	16-QAM	1	24	22.93	0-1	1
	1882.5	26365	5	16-QAM	12	0	22.01	0-2	2
	1882.5	26365	5	16-QAM	12	6	21.91	0-2	2
	1882.5	26365	5	16-QAM	12	13	22.01	0-2	2
	1882.5	26365	5	16-QAM	25	0	21.99	0-2	2
High	1912.5	26665	5	QPSK	1	0	23.97	0	0
	1912.5	26665	5	QPSK	1	12	24.29	0	0
	1912.5	26665	5	QPSK	1	24	23.92	0	0
	1912.5	26665	5	QPSK	12	0	22.94	0-1	1
	1912.5	26665	5	QPSK	12	6	23.17	0-1	1
	1912.5	26665	5	QPSK	12	13	23.13	0-1	1
	1912.5	26665	5	QPSK	25	0	23.12	0-1	1
	1912.5	26665	5	16-QAM	1	0	23.13	0-1	1
	1912.5	26665	5	16-QAM	1	12	22.84	0-1	1
	1912.5	26665	5	16-QAM	1	24	23.04	0-1	1
	1912.5	26665	5	16-QAM	12	0	21.85	0-2	2
	1912.5	26665	5	16-QAM	12	6	21.86	0-2	2
	1912.5	26665	5	16-QAM	12	13	22.01	0-2	2
	1912.5	26665	5	16-QAM	25	0	22.01	0-2	2

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Table 9-13
LTE Band 25 (PCS) Max Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1851.5	26055	3	QPSK	1	0	24.04	0	0
	1851.5	26055	3	QPSK	1	7	24.19	0	0
	1851.5	26055	3	QPSK	1	14	23.92	0	0
	1851.5	26055	3	QPSK	8	0	22.62	0-1	1
	1851.5	26055	3	QPSK	8	4	23.07	0-1	1
	1851.5	26055	3	QPSK	8	7	22.97	0-1	1
	1851.5	26055	3	QPSK	15	0	23.17	0-1	1
	1851.5	26055	3	16-QAM	1	0	23.02	0-1	1
	1851.5	26055	3	16-QAM	1	7	23.02	0-1	1
	1851.5	26055	3	16-QAM	1	14	22.75	0-1	1
	1851.5	26055	3	16-QAM	8	0	22.05	0-2	2
	1851.5	26055	3	16-QAM	8	4	21.86	0-2	2
	1851.5	26055	3	16-QAM	8	7	21.76	0-2	2
	1851.5	26055	3	16-QAM	15	0	21.88	0-2	2
Mid	1882.5	26365	3	QPSK	1	0	23.92	0	0
	1882.5	26365	3	QPSK	1	7	23.92	0	0
	1882.5	26365	3	QPSK	1	14	23.94	0	0
	1882.5	26365	3	QPSK	8	0	23.11	0-1	1
	1882.5	26365	3	QPSK	8	4	22.93	0-1	1
	1882.5	26365	3	QPSK	8	7	22.78	0-1	1
	1882.5	26365	3	QPSK	15	0	22.78	0-1	1
	1882.5	26365	3	16-QAM	1	0	23.31	0-1	1
	1882.5	26365	3	16-QAM	1	7	22.85	0-1	1
	1882.5	26365	3	16-QAM	1	14	22.79	0-1	1
	1882.5	26365	3	16-QAM	8	0	22.20	0-2	2
	1882.5	26365	3	16-QAM	8	4	21.94	0-2	2
	1882.5	26365	3	16-QAM	8	7	22.05	0-2	2
	1882.5	26365	3	16-QAM	15	0	21.98	0-2	2
High	1913.5	26675	3	QPSK	1	0	24.07	0	0
	1913.5	26675	3	QPSK	1	7	24.17	0	0
	1913.5	26675	3	QPSK	1	14	24.18	0	0
	1913.5	26675	3	QPSK	8	0	22.94	0-1	1
	1913.5	26675	3	QPSK	8	4	23.36	0-1	1
	1913.5	26675	3	QPSK	8	7	23.32	0-1	1
	1913.5	26675	3	QPSK	15	0	23.21	0-1	1
	1913.5	26675	3	16-QAM	1	0	23.05	0-1	1
	1913.5	26675	3	16-QAM	1	7	23.17	0-1	1
	1913.5	26675	3	16-QAM	1	14	23.31	0-1	1
	1913.5	26675	3	16-QAM	8	0	22.24	0-2	2
	1913.5	26675	3	16-QAM	8	4	22.28	0-2	2
	1913.5	26675	3	16-QAM	8	7	22.16	0-2	2
	1913.5	26675	3	16-QAM	15	0	22.37	0-2	2

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Table 9-14
LTE Band 25 (PCS) Max Conducted Powers -1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1850.7	26047	1.4	QPSK	1	0	23.79	0	0
	1850.7	26047	1.4	QPSK	1	2	23.83	0	0
	1850.7	26047	1.4	QPSK	1	5	23.84	0	0
	1850.7	26047	1.4	QPSK	3	0	23.88	0	0
	1850.7	26047	1.4	QPSK	3	2	23.98	0	0
	1850.7	26047	1.4	QPSK	3	3	23.79	0	0
	1850.7	26047	1.4	QPSK	6	0	22.78	0-1	1
	1850.7	26047	1.4	16-QAM	1	0	23.25	0-1	1
	1850.7	26047	1.4	16-QAM	1	2	22.84	0-1	1
	1850.7	26047	1.4	16-QAM	1	5	22.82	0-1	1
	1850.7	26047	1.4	16-QAM	3	0	22.79	0-1	1
	1850.7	26047	1.4	16-QAM	3	2	22.77	0-1	1
	1850.7	26047	1.4	16-QAM	3	3	22.93	0-1	1
Mid	1850.7	26047	1.4	16-QAM	6	0	21.92	0-2	2
	1882.5	26365	1.4	QPSK	1	0	23.82	0	0
	1882.5	26365	1.4	QPSK	1	2	23.89	0	0
	1882.5	26365	1.4	QPSK	1	5	23.87	0	0
	1882.5	26365	1.4	QPSK	3	0	23.88	0	0
	1882.5	26365	1.4	QPSK	3	2	23.93	0	0
	1882.5	26365	1.4	QPSK	3	3	23.70	0	0
	1882.5	26365	1.4	QPSK	6	0	22.76	0-1	1
	1882.5	26365	1.4	16-QAM	1	0	23.22	0-1	1
	1882.5	26365	1.4	16-QAM	1	2	22.75	0-1	1
	1882.5	26365	1.4	16-QAM	1	5	22.73	0-1	1
	1882.5	26365	1.4	16-QAM	3	0	22.86	0-1	1
	1882.5	26365	1.4	16-QAM	3	2	22.87	0-1	1
	1882.5	26365	1.4	16-QAM	3	3	22.89	0-1	1
High	1882.5	26365	1.4	16-QAM	6	0	21.98	0-2	2
	1914.3	26683	1.4	QPSK	1	0	23.86	0	0
	1914.3	26683	1.4	QPSK	1	2	23.84	0	0
	1914.3	26683	1.4	QPSK	1	5	23.95	0	0
	1914.3	26683	1.4	QPSK	3	0	23.95	0	0
	1914.3	26683	1.4	QPSK	3	2	23.85	0	0
	1914.3	26683	1.4	QPSK	3	3	23.69	0	0
	1914.3	26683	1.4	QPSK	6	0	22.80	0-1	1
	1914.3	26683	1.4	16-QAM	1	0	23.19	0-1	1
	1914.3	26683	1.4	16-QAM	1	2	22.68	0-1	1
	1914.3	26683	1.4	16-QAM	1	5	22.69	0-1	1
	1914.3	26683	1.4	16-QAM	3	0	22.78	0-1	1
	1914.3	26683	1.4	16-QAM	3	2	22.91	0-1	1
	1914.3	26683	1.4	16-QAM	3	3	22.82	0-1	1
	1914.3	26683	1.4	16-QAM	6	0	22.01	0-2	2

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Table 9-15

LTE Band 25 (PCS) Reduced Conducted Powers with Hotspot Active - 20 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1860	26140	20	QPSK	1	0	21.24	0	0
	1860	26140	20	QPSK	1	50	21.21	0	0
	1860	26140	20	QPSK	1	99	21.27	0	0
	1860	26140	20	QPSK	50	0	21.30	0-1	0
	1860	26140	20	QPSK	50	25	21.23	0-1	0
	1860	26140	20	QPSK	50	50	21.17	0-1	0
	1860	26140	20	QPSK	100	0	21.18	0-1	0
	1860	26140	20	16QAM	1	0	21.20	0-1	0
	1860	26140	20	16QAM	1	50	21.24	0-1	0
	1860	26140	20	16QAM	1	99	21.23	0-1	0
	1860	26140	20	16QAM	50	0	21.34	0-2	0
	1860	26140	20	16QAM	50	25	21.20	0-2	0
	1860	26140	20	16QAM	50	50	21.31	0-2	0
	1860	26140	20	16QAM	100	0	21.27	0-2	0
Mid	1882.5	26365	20	QPSK	1	0	21.43	0	0
	1882.5	26365	20	QPSK	1	50	21.39	0	0
	1882.5	26365	20	QPSK	1	99	21.46	0	0
	1882.5	26365	20	QPSK	50	0	21.49	0-1	0
	1882.5	26365	20	QPSK	50	25	21.39	0-1	0
	1882.5	26365	20	QPSK	50	50	21.36	0-1	0
	1882.5	26365	20	QPSK	100	0	21.37	0-1	0
	1882.5	26365	20	16QAM	1	0	21.39	0-1	0
	1882.5	26365	20	16QAM	1	50	21.43	0-1	0
	1882.5	26365	20	16QAM	1	99	21.42	0-1	0
	1882.5	26365	20	16QAM	50	0	21.50	0-2	0
	1882.5	26365	20	16QAM	50	25	21.42	0-2	0
	1882.5	26365	20	16QAM	50	50	21.49	0-2	0
	1882.5	26365	20	16QAM	100	0	21.45	0-2	0
High	1905	26590	20	QPSK	1	0	21.32	0	0
	1905	26590	20	QPSK	1	50	21.50	0	0
	1905	26590	20	QPSK	1	99	21.46	0	0
	1905	26590	20	QPSK	50	0	21.48	0-1	0
	1905	26590	20	QPSK	50	25	21.50	0-1	0
	1905	26590	20	QPSK	50	50	21.47	0-1	0
	1905	26590	20	QPSK	100	0	21.46	0-1	0
	1905	26590	20	16QAM	1	0	21.20	0-1	0
	1905	26590	20	16QAM	1	50	21.40	0-1	0
	1905	26590	20	16QAM	1	99	21.42	0-1	0
	1905	26590	20	16QAM	50	0	21.49	0-2	0
	1905	26590	20	16QAM	50	25	21.48	0-2	0
	1905	26590	20	16QAM	50	50	21.40	0-2	0
	1905	26590	20	16QAM	100	0	21.43	0-2	0

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Table 9-16

LTE Band 25 (PCS) Reduced Conducted Powers with Hotspot Active - 15 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1857.5	26115	15	QPSK	1	0	21.26	0	0
	1857.5	26115	15	QPSK	1	36	21.09	0	0
	1857.5	26115	15	QPSK	1	74	21.17	0	0
	1857.5	26115	15	QPSK	36	0	21.05	0-1	0
	1857.5	26115	15	QPSK	36	18	20.95	0-1	0
	1857.5	26115	15	QPSK	36	37	20.99	0-1	0
	1857.5	26115	15	QPSK	75	0	21.06	0-1	0
	1857.5	26115	15	16QAM	1	0	21.09	0-1	0
	1857.5	26115	15	16QAM	1	36	20.89	0-1	0
	1857.5	26115	15	16QAM	1	74	20.99	0-1	0
	1857.5	26115	15	16QAM	36	0	21.01	0-2	0
	1857.5	26115	15	16QAM	36	18	21.00	0-2	0
	1857.5	26115	15	16QAM	36	37	21.02	0-2	0
	1857.5	26115	15	16QAM	75	0	21.10	0-2	0
Mid	1882.5	26365	15	QPSK	1	0	21.40	0	0
	1882.5	26365	15	QPSK	1	36	21.27	0	0
	1882.5	26365	15	QPSK	1	74	21.23	0	0
	1882.5	26365	15	QPSK	36	0	21.22	0-1	0
	1882.5	26365	15	QPSK	36	18	21.17	0-1	0
	1882.5	26365	15	QPSK	36	37	21.08	0-1	0
	1882.5	26365	15	QPSK	75	0	21.10	0-1	0
	1882.5	26365	15	16QAM	1	0	21.28	0-1	0
	1882.5	26365	15	16QAM	1	36	21.13	0-1	0
	1882.5	26365	15	16QAM	1	74	21.04	0-1	0
	1882.5	26365	15	16QAM	36	0	21.26	0-2	0
	1882.5	26365	15	16QAM	36	18	21.17	0-2	0
	1882.5	26365	15	16QAM	36	37	21.13	0-2	0
	1882.5	26365	15	16QAM	75	0	21.12	0-2	0
High	1907.5	26615	15	QPSK	1	0	21.49	0	0
	1907.5	26615	15	QPSK	1	36	21.50	0	0
	1907.5	26615	15	QPSK	1	74	21.46	0	0
	1907.5	26615	15	QPSK	36	0	21.37	0-1	0
	1907.5	26615	15	QPSK	36	18	21.35	0-1	0
	1907.5	26615	15	QPSK	36	37	21.35	0-1	0
	1907.5	26615	15	QPSK	75	0	21.39	0-1	0
	1907.5	26615	15	16QAM	1	0	21.32	0-1	0
	1907.5	26615	15	16QAM	1	36	21.40	0-1	0
	1907.5	26615	15	16QAM	1	74	21.28	0-1	0
	1907.5	26615	15	16QAM	36	0	21.39	0-2	0
	1907.5	26615	15	16QAM	36	18	21.36	0-2	0
	1907.5	26615	15	16QAM	36	37	21.38	0-2	0
	1907.5	26615	15	16QAM	75	0	21.37	0-2	0

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Table 9-17

LTE Band 25 (PCS) Reduced Conducted Powers with Hotspot Active - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1855	26090	10	QPSK	1	0	21.30	0	0
	1855	26090	10	QPSK	1	25	21.29	0	0
	1855	26090	10	QPSK	1	49	21.22	0	0
	1855	26090	10	QPSK	25	0	21.33	0-1	0
	1855	26090	10	QPSK	25	12	21.32	0-1	0
	1855	26090	10	QPSK	25	25	21.14	0-1	0
	1855	26090	10	QPSK	50	0	21.10	0-1	0
	1855	26090	10	16QAM	1	0	21.24	0-1	0
	1855	26090	10	16QAM	1	25	21.27	0-1	0
	1855	26090	10	16QAM	1	49	21.13	0-1	0
	1855	26090	10	16QAM	25	0	21.27	0-2	0
	1855	26090	10	16QAM	25	12	21.28	0-2	0
	1855	26090	10	16QAM	25	25	21.32	0-2	0
Mid	1855	26090	10	16QAM	50	0	21.31	0-2	0
	1882.5	26365	10	QPSK	1	0	21.34	0	0
	1882.5	26365	10	QPSK	1	25	21.34	0	0
	1882.5	26365	10	QPSK	1	49	21.47	0	0
	1882.5	26365	10	QPSK	25	0	21.40	0-1	0
	1882.5	26365	10	QPSK	25	12	21.46	0-1	0
	1882.5	26365	10	QPSK	25	25	21.28	0-1	0
	1882.5	26365	10	QPSK	50	0	21.37	0-1	0
	1882.5	26365	10	16QAM	1	0	21.32	0-1	0
	1882.5	26365	10	16QAM	1	25	21.45	0-1	0
	1882.5	26365	10	16QAM	1	49	21.42	0-1	0
	1882.5	26365	10	16QAM	25	0	21.46	0-2	0
	1882.5	26365	10	16QAM	25	12	21.50	0-2	0
	1882.5	26365	10	16QAM	25	25	21.42	0-2	0
High	1882.5	26365	10	16QAM	50	0	21.43	0-2	0
	1910	26640	10	QPSK	1	0	21.38	0	0
	1910	26640	10	QPSK	1	25	21.50	0	0
	1910	26640	10	QPSK	1	49	21.46	0	0
	1910	26640	10	QPSK	25	0	21.39	0-1	0
	1910	26640	10	QPSK	25	12	21.43	0-1	0
	1910	26640	10	QPSK	25	25	21.50	0-1	0
	1910	26640	10	QPSK	50	0	21.43	0-1	0
	1910	26640	10	16QAM	1	0	21.28	0-1	0
	1910	26640	10	16QAM	1	25	21.38	0-1	0
	1910	26640	10	16QAM	1	49	21.43	0-1	0
	1910	26640	10	16QAM	25	0	21.43	0-2	0
	1910	26640	10	16QAM	25	12	21.46	0-2	0
	1910	26640	10	16QAM	25	25	21.38	0-2	0
	1910	26640	10	16QAM	50	0	21.49	0-2	0

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Table 9-18

LTE Band 25 (PCS) Reduced Conducted Powers with Hotspot Active- 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1852.5	26065	5	QPSK	1	0	21.22	0	0
	1852.5	26065	5	QPSK	1	12	21.12	0	0
	1852.5	26065	5	QPSK	1	24	21.18	0	0
	1852.5	26065	5	QPSK	12	0	20.97	0-1	0
	1852.5	26065	5	QPSK	12	6	20.90	0-1	0
	1852.5	26065	5	QPSK	12	13	21.09	0-1	0
	1852.5	26065	5	QPSK	25	0	21.13	0-1	0
	1852.5	26065	5	16-QAM	1	0	21.07	0-1	0
	1852.5	26065	5	16-QAM	1	12	20.98	0-1	0
	1852.5	26065	5	16-QAM	1	24	21.09	0-1	0
	1852.5	26065	5	16-QAM	12	0	20.97	0-2	0
	1852.5	26065	5	16-QAM	12	6	21.04	0-2	0
	1852.5	26065	5	16-QAM	12	13	20.94	0-2	0
	1852.5	26065	5	16-QAM	25	0	21.05	0-2	0
Mid	1882.5	26365	5	QPSK	1	0	21.33	0	0
	1882.5	26365	5	QPSK	1	12	21.28	0	0
	1882.5	26365	5	QPSK	1	24	21.26	0	0
	1882.5	26365	5	QPSK	12	0	21.15	0-1	0
	1882.5	26365	5	QPSK	12	6	21.07	0-1	0
	1882.5	26365	5	QPSK	12	13	21.06	0-1	0
	1882.5	26365	5	QPSK	25	0	21.04	0-1	0
	1882.5	26365	5	16-QAM	1	0	21.20	0-1	0
	1882.5	26365	5	16-QAM	1	12	21.16	0-1	0
	1882.5	26365	5	16-QAM	1	24	21.08	0-1	0
	1882.5	26365	5	16-QAM	12	0	21.19	0-2	0
	1882.5	26365	5	16-QAM	12	6	21.18	0-2	0
	1882.5	26365	5	16-QAM	12	13	21.16	0-2	0
	1882.5	26365	5	16-QAM	25	0	21.13	0-2	0
High	1912.5	26665	5	QPSK	1	0	21.40	0	0
	1912.5	26665	5	QPSK	1	12	21.40	0	0
	1912.5	26665	5	QPSK	1	24	21.45	0	0
	1912.5	26665	5	QPSK	12	0	21.43	0-1	0
	1912.5	26665	5	QPSK	12	6	21.32	0-1	0
	1912.5	26665	5	QPSK	12	13	21.41	0-1	0
	1912.5	26665	5	QPSK	25	0	21.41	0-1	0
	1912.5	26665	5	16-QAM	1	0	21.24	0-1	0
	1912.5	26665	5	16-QAM	1	12	21.37	0-1	0
	1912.5	26665	5	16-QAM	1	24	21.19	0-1	0
	1912.5	26665	5	16-QAM	12	0	21.49	0-2	0
	1912.5	26665	5	16-QAM	12	6	21.44	0-2	0
	1912.5	26665	5	16-QAM	12	13	21.38	0-2	0
	1912.5	26665	5	16-QAM	25	0	21.27	0-2	0

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Table 9-19

LTE Band 25 (PCS) Reduced Conducted Powers with Hotspot Active – 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1851.5	26055	3	QPSK	1	0	21.13	0	0
	1851.5	26055	3	QPSK	1	7	21.27	0	0
	1851.5	26055	3	QPSK	1	14	20.94	0	0
	1851.5	26055	3	QPSK	8	0	21.06	0-1	0
	1851.5	26055	3	QPSK	8	4	21.22	0-1	0
	1851.5	26055	3	QPSK	8	7	20.98	0-1	0
	1851.5	26055	3	QPSK	15	0	21.38	0-1	0
	1851.5	26055	3	16-QAM	1	0	21.28	0-1	0
	1851.5	26055	3	16-QAM	1	7	21.41	0-1	0
	1851.5	26055	3	16-QAM	1	14	21.16	0-1	0
	1851.5	26055	3	16-QAM	8	0	21.26	0-2	0
	1851.5	26055	3	16-QAM	8	4	21.32	0-2	0
	1851.5	26055	3	16-QAM	8	7	21.21	0-2	0
Mid	1851.5	26055	3	16-QAM	15	0	21.21	0-2	0
	1882.5	26365	3	QPSK	1	0	21.47	0	0
	1882.5	26365	3	QPSK	1	7	21.45	0	0
	1882.5	26365	3	QPSK	1	14	21.47	0	0
	1882.5	26365	3	QPSK	8	0	21.37	0-1	0
	1882.5	26365	3	QPSK	8	4	21.17	0-1	0
	1882.5	26365	3	QPSK	8	7	21.19	0-1	0
	1882.5	26365	3	QPSK	15	0	21.20	0-1	0
	1882.5	26365	3	16-QAM	1	0	21.09	0-1	0
	1882.5	26365	3	16-QAM	1	7	21.37	0-1	0
	1882.5	26365	3	16-QAM	1	14	21.50	0-1	0
	1882.5	26365	3	16-QAM	8	0	21.36	0-2	0
	1882.5	26365	3	16-QAM	8	4	21.22	0-2	0
High	1882.5	26365	3	16-QAM	8	7	21.19	0-2	0
	1882.5	26365	3	16-QAM	15	0	21.26	0-2	0
	1913.5	26675	3	QPSK	1	0	21.50	0	0
	1913.5	26675	3	QPSK	1	7	21.22	0	0
	1913.5	26675	3	QPSK	1	14	21.25	0	0
	1913.5	26675	3	QPSK	8	0	21.28	0-1	0
	1913.5	26675	3	QPSK	8	4	21.22	0-1	0
	1913.5	26675	3	QPSK	8	7	21.26	0-1	0
	1913.5	26675	3	QPSK	15	0	21.26	0-1	0
	1913.5	26675	3	16-QAM	1	0	21.09	0-1	0
	1913.5	26675	3	16-QAM	1	7	21.43	0-1	0
	1913.5	26675	3	16-QAM	1	14	21.29	0-1	0
	1913.5	26675	3	16-QAM	8	0	21.16	0-2	0
	1913.5	26675	3	16-QAM	8	4	21.09	0-2	0
	1913.5	26675	3	16-QAM	8	7	21.46	0-2	0
	1913.5	26675	3	16-QAM	15	0	21.25	0-2	0

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Table 9-20

LTE Band 25 (PCS) Reduced Conducted Powers with Hotspot Active– 1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1850.7	26047	1.4	QPSK	1	0	21.23	0	0
	1850.7	26047	1.4	QPSK	1	2	21.20	0	0
	1850.7	26047	1.4	QPSK	1	5	21.27	0	0
	1850.7	26047	1.4	QPSK	3	0	21.21	0	0
	1850.7	26047	1.4	QPSK	3	2	21.19	0	0
	1850.7	26047	1.4	QPSK	3	3	21.09	0	0
	1850.7	26047	1.4	QPSK	6	0	21.17	0-1	0
	1850.7	26047	1.4	16-QAM	1	0	21.28	0-1	0
	1850.7	26047	1.4	16-QAM	1	2	21.31	0-1	0
	1850.7	26047	1.4	16-QAM	1	5	21.13	0-1	0
	1850.7	26047	1.4	16-QAM	3	0	21.24	0-1	0
	1850.7	26047	1.4	16-QAM	3	2	21.20	0-1	0
	1850.7	26047	1.4	16-QAM	3	3	21.28	0-1	0
Mid	1850.7	26047	1.4	16-QAM	6	0	21.30	0-2	0
	1882.5	26365	1.4	QPSK	1	0	21.36	0	0
	1882.5	26365	1.4	QPSK	1	2	21.32	0	0
	1882.5	26365	1.4	QPSK	1	5	21.40	0	0
	1882.5	26365	1.4	QPSK	3	0	21.36	0	0
	1882.5	26365	1.4	QPSK	3	2	21.35	0	0
	1882.5	26365	1.4	QPSK	3	3	21.45	0	0
	1882.5	26365	1.4	QPSK	6	0	21.40	0-1	0
	1882.5	26365	1.4	16-QAM	1	0	21.45	0-1	0
	1882.5	26365	1.4	16-QAM	1	2	21.44	0-1	0
	1882.5	26365	1.4	16-QAM	1	5	21.36	0-1	0
	1882.5	26365	1.4	16-QAM	3	0	21.41	0-1	0
	1882.5	26365	1.4	16-QAM	3	2	21.46	0-1	0
	1882.5	26365	1.4	16-QAM	3	3	21.49	0-1	0
High	1882.5	26365	1.4	16-QAM	6	0	21.46	0-2	0
	1914.3	26683	1.4	QPSK	1	0	21.40	0	0
	1914.3	26683	1.4	QPSK	1	2	21.47	0	0
	1914.3	26683	1.4	QPSK	1	5	21.40	0	0
	1914.3	26683	1.4	QPSK	3	0	21.42	0	0
	1914.3	26683	1.4	QPSK	3	2	21.46	0	0
	1914.3	26683	1.4	QPSK	3	3	21.43	0	0
	1914.3	26683	1.4	QPSK	6	0	21.41	0-1	0
	1914.3	26683	1.4	16-QAM	1	0	21.21	0-1	0
	1914.3	26683	1.4	16-QAM	1	2	21.35	0-1	0
	1914.3	26683	1.4	16-QAM	1	5	21.33	0-1	0
	1914.3	26683	1.4	16-QAM	3	0	21.42	0-1	0
	1914.3	26683	1.4	16-QAM	3	2	21.40	0-1	0
	1914.3	26683	1.4	16-QAM	3	3	21.49	0-1	0
	1914.3	26683	1.4	16-QAM	6	0	21.48	0-2	0

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LTE Band 41

Table 9-21
LTE Band 41 Conducted Powers - 20 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	2506	39750	20	QPSK	1	0	24.47	0	0
	2506	39750	20	QPSK	1	50	24.44	0	0
	2506	39750	20	QPSK	1	99	24.40	0	0
	2506	39750	20	QPSK	50	0	23.48	0-1	1
	2506	39750	20	QPSK	50	25	23.43	0-1	1
	2506	39750	20	QPSK	50	50	23.36	0-1	1
	2506	39750	20	QPSK	100	0	23.40	0-1	1
	2506	39750	20	16QAM	1	0	23.50	0-1	1
	2506	39750	20	16QAM	1	50	23.48	0-1	1
	2506	39750	20	16QAM	1	99	23.49	0-1	1
	2506	39750	20	16QAM	50	0	22.48	0-2	2
	2506	39750	20	16QAM	50	25	22.39	0-2	2
	2506	39750	20	16QAM	50	50	22.33	0-2	2
	2506	39750	20	16QAM	100	0	22.30	0-2	2
Low Mid	2549.5	40185	20	QPSK	1	0	24.00	0	0
	2549.5	40185	20	QPSK	1	50	24.23	0	0
	2549.5	40185	20	QPSK	1	99	24.39	0	0
	2549.5	40185	20	QPSK	50	0	23.08	0-1	1
	2549.5	40185	20	QPSK	50	25	23.03	0-1	1
	2549.5	40185	20	QPSK	50	50	23.00	0-1	1
	2549.5	40185	20	QPSK	100	0	23.01	0-1	1
	2549.5	40185	20	16-QAM	1	0	23.13	0-1	1
	2549.5	40185	20	16-QAM	1	50	23.24	0-1	1
	2549.5	40185	20	16-QAM	1	99	23.27	0-1	1
	2549.5	40185	20	16-QAM	50	0	22.06	0-2	2
	2549.5	40185	20	16-QAM	50	25	22.02	0-2	2
	2549.5	40185	20	16-QAM	50	50	22.00	0-2	2
	2549.5	40185	20	16-QAM	100	0	22.06	0-2	2
Mid	2593	40620	20	QPSK	1	0	24.38	0	0
	2593	40620	20	QPSK	1	50	24.33	0	0
	2593	40620	20	QPSK	1	99	24.36	0	0
	2593	40620	20	QPSK	50	0	23.35	0-1	1
	2593	40620	20	QPSK	50	25	23.32	0-1	1
	2593	40620	20	QPSK	50	50	23.26	0-1	1
	2593	40620	20	QPSK	100	0	23.29	0-1	1
	2593	40620	20	16-QAM	1	0	23.50	0-1	1
	2593	40620	20	16-QAM	1	50	23.49	0-1	1
	2593	40620	20	16-QAM	1	99	23.50	0-1	1
	2593	40620	20	16-QAM	50	0	22.46	0-2	2
	2593	40620	20	16-QAM	50	25	22.31	0-2	2
	2593	40620	20	16-QAM	50	50	22.27	0-2	2
	2593	40620	20	16-QAM	100	0	22.29	0-2	2
Mid High	2636.5	41055	20	QPSK	1	0	24.45	0	0
	2636.5	41055	20	QPSK	1	50	24.44	0	0
	2636.5	41055	20	QPSK	1	99	24.43	0	0
	2636.5	41055	20	QPSK	50	0	23.48	0-1	1
	2636.5	41055	20	QPSK	50	25	23.42	0-1	1
	2636.5	41055	20	QPSK	50	50	23.41	0-1	1
	2636.5	41055	20	QPSK	100	0	23.48	0-1	1
	2636.5	41055	20	16-QAM	1	0	23.46	0-1	1
	2636.5	41055	20	16-QAM	1	50	23.50	0-1	1
	2636.5	41055	20	16-QAM	1	99	23.47	0-1	1
	2636.5	41055	20	16-QAM	50	0	22.44	0-2	2
	2636.5	41055	20	16-QAM	50	25	22.45	0-2	2
	2636.5	41055	20	16-QAM	50	50	22.46	0-2	2
	2636.5	41055	20	16-QAM	100	0	22.43	0-2	2
High	2680	41490	20	QPSK	1	0	24.50	0	0
	2680	41490	20	QPSK	1	50	24.49	0	0
	2680	41490	20	QPSK	1	99	24.47	0	0
	2680	41490	20	QPSK	50	0	23.50	0-1	1
	2680	41490	20	QPSK	50	25	23.45	0-1	1
	2680	41490	20	QPSK	50	50	23.44	0-1	1
	2680	41490	20	QPSK	100	0	23.46	0-1	1
	2680	41490	20	16-QAM	1	0	23.50	0-1	1
	2680	41490	20	16-QAM	1	50	23.42	0-1	1
	2680	41490	20	16-QAM	1	99	23.43	0-1	1
	2680	41490	20	16-QAM	50	0	22.48	0-2	2
	2680	41490	20	16-QAM	50	25	22.36	0-2	2
	2680	41490	20	16-QAM	50	50	22.34	0-2	2
	2680	41490	20	16-QAM	100	0	22.39	0-2	2

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Table 9-22
LTE Band 41 Conducted Powers - 15 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	2503.5	39725	15	QPSK	1	0	24.41	0	0
	2503.5	39725	15	QPSK	1	36	24.38	0	0
	2503.5	39725	15	QPSK	1	74	24.34	0	0
	2503.5	39725	15	QPSK	36	0	23.42	0-1	1
	2503.5	39725	15	QPSK	36	18	23.40	0-1	1
	2503.5	39725	15	QPSK	36	37	23.30	0-1	1
	2503.5	39725	15	QPSK	75	0	23.34	0-1	1
	2503.5	39725	15	16QAM	1	0	23.44	0-1	1
	2503.5	39725	15	16QAM	1	36	23.42	0-1	1
	2503.5	39725	15	16QAM	1	74	23.43	0-1	1
	2503.5	39725	15	16QAM	36	0	22.42	0-2	2
	2503.5	39725	15	16QAM	36	18	22.31	0-2	2
	2503.5	39725	15	16QAM	36	37	22.27	0-2	2
	2503.5	39725	15	16QAM	75	0	22.24	0-2	2
	2548.25	40173	15	QPSK	1	0	23.96	0	0
Low Mid	2548.25	40173	15	QPSK	1	36	24.19	0	0
	2548.25	40173	15	QPSK	1	74	24.35	0	0
	2548.25	40173	15	QPSK	36	0	23.04	0-1	1
	2548.25	40173	15	QPSK	36	18	22.99	0-1	1
	2548.25	40173	15	QPSK	36	37	23.06	0-1	1
	2548.25	40173	15	QPSK	75	0	22.97	0-1	1
	2548.25	40173	15	16-QAM	1	0	23.13	0-1	1
	2548.25	40173	15	16-QAM	1	36	23.20	0-1	1
	2548.25	40173	15	16-QAM	1	74	23.23	0-1	1
	2548.25	40173	15	16-QAM	36	0	22.02	0-2	2
	2548.25	40173	15	16-QAM	36	18	21.98	0-2	2
	2548.25	40173	15	16-QAM	36	37	22.00	0-2	2
	2548.25	40173	15	16-QAM	75	0	22.02	0-2	2
	2593	40620	15	QPSK	1	0	24.26	0	0
	2593	40620	15	QPSK	1	36	24.21	0	0
Mid	2593	40620	15	QPSK	1	74	24.24	0	0
	2593	40620	15	QPSK	36	0	23.23	0-1	1
	2593	40620	15	QPSK	36	18	23.20	0-1	1
	2593	40620	15	QPSK	36	37	23.14	0-1	1
	2593	40620	15	QPSK	75	0	23.17	0-1	1
	2593	40620	15	16-QAM	1	0	23.38	0-1	1
	2593	40620	15	16-QAM	1	36	23.37	0-1	1
	2593	40620	15	16-QAM	1	74	23.38	0-1	1
	2593	40620	15	16-QAM	36	0	22.34	0-2	2
	2593	40620	15	16-QAM	36	18	22.19	0-2	2
	2593	40620	15	16-QAM	36	37	22.15	0-2	2
	2593	40620	15	16-QAM	75	0	22.17	0-2	2
	2637.75	41068	15	QPSK	1	0	24.33	0	0
	2637.75	41068	15	QPSK	1	36	24.32	0	0
	2637.75	41068	15	QPSK	1	74	24.31	0	0
Mid High	2637.75	41068	15	QPSK	36	0	23.36	0-1	1
	2637.75	41068	15	QPSK	36	18	23.30	0-1	1
	2637.75	41068	15	QPSK	36	37	23.29	0-1	1
	2637.75	41068	15	QPSK	75	0	23.31	0-1	1
	2637.75	41068	15	16-QAM	1	0	23.34	0-1	1
	2637.75	41068	15	16-QAM	1	36	23.38	0-1	1
	2637.75	41068	15	16-QAM	1	74	23.35	0-1	1
	2637.75	41068	15	16-QAM	36	0	22.32	0-2	2
	2637.75	41068	15	16-QAM	36	18	22.33	0-2	2
	2637.75	41068	15	16-QAM	36	37	22.34	0-2	2
	2637.75	41068	15	16-QAM	75	0	22.31	0-2	2
	2682.5	41515	15	QPSK	1	0	24.44	0	0
	2682.5	41515	15	QPSK	1	36	24.39	0	0
	2682.5	41515	15	QPSK	1	74	24.31	0	0
High	2682.5	41515	15	QPSK	36	0	23.40	0-1	1
	2682.5	41515	15	QPSK	36	18	23.35	0-1	1
	2682.5	41515	15	QPSK	36	37	23.34	0-1	1
	2682.5	41515	15	QPSK	75	0	23.37	0-1	1
	2682.5	41515	15	16-QAM	1	0	23.40	0-1	1
	2682.5	41515	15	16-QAM	1	36	23.32	0-1	1
	2682.5	41515	15	16-QAM	1	74	23.33	0-1	1
	2682.5	41515	15	16-QAM	36	0	22.38	0-2	2
	2682.5	41515	15	16-QAM	36	18	22.26	0-2	2
	2682.5	41515	15	16-QAM	36	37	22.24	0-2	2
	2682.5	41515	15	16-QAM	75	0	22.29	0-2	2

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Table 9-23
LTE Band 41 Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	2501	39700	10	QPSK	1	0	24.44	0	0
	2501	39700	10	QPSK	1	25	24.41	0	0
	2501	39700	10	QPSK	1	49	24.37	0	0
	2501	39700	10	QPSK	25	0	23.45	0-1	1
	2501	39700	10	QPSK	25	12	23.43	0-1	1
	2501	39700	10	QPSK	25	25	23.33	0-1	1
	2501	39700	10	QPSK	50	0	23.37	0-1	1
	2501	39700	10	16QAM	1	0	23.47	0-1	1
	2501	39700	10	16QAM	1	25	23.45	0-1	1
	2501	39700	10	16QAM	1	49	23.46	0-1	1
	2501	39700	10	16QAM	25	0	22.45	0-2	2
	2501	39700	10	16QAM	25	12	22.34	0-2	2
Low Mid	2501	39700	10	16QAM	25	25	22.30	0-2	2
	2501	39700	10	16QAM	50	0	22.27	0-2	2
	2547	40160	10	QPSK	1	0	23.93	0	0
	2547	40160	10	QPSK	1	25	24.16	0	0
	2547	40160	10	QPSK	1	49	24.32	0	0
	2547	40160	10	QPSK	25	0	23.01	0-1	1
	2547	40160	10	QPSK	25	12	22.96	0-1	1
	2547	40160	10	QPSK	25	25	22.93	0-1	1
	2547	40160	10	QPSK	50	0	22.94	0-1	1
	2547	40160	10	16-QAM	1	0	23.10	0-1	1
	2547	40160	10	16-QAM	1	25	23.17	0-1	1
	2547	40160	10	16-QAM	1	49	23.20	0-1	1
Mid	2547	40160	10	16-QAM	25	0	21.99	0-2	2
	2547	40160	10	16-QAM	25	12	21.95	0-2	2
	2547	40160	10	16-QAM	25	25	21.93	0-2	2
	2547	40160	10	16-QAM	50	0	21.99	0-2	2
	2593	40620	10	QPSK	1	0	24.34	0	0
	2593	40620	10	QPSK	1	25	24.29	0	0
	2593	40620	10	QPSK	1	49	24.32	0	0
	2593	40620	10	QPSK	25	0	23.31	0-1	1
	2593	40620	10	QPSK	25	12	23.28	0-1	1
	2593	40620	10	QPSK	25	25	23.22	0-1	1
	2593	40620	10	QPSK	50	0	23.25	0-1	1
	2593	40620	10	16-QAM	1	0	23.46	0-1	1
Mid-High	2593	40620	10	16-QAM	1	25	23.45	0-1	1
	2593	40620	10	16-QAM	1	49	23.46	0-1	1
	2593	40620	10	16-QAM	25	0	22.42	0-2	2
	2593	40620	10	16-QAM	25	12	22.27	0-2	2
	2593	40620	10	16-QAM	25	25	22.23	0-2	2
	2593	40620	10	16-QAM	50	0	22.25	0-2	2
	2639	41080	10	QPSK	1	0	24.42	0	0
	2639	41080	10	QPSK	1	25	24.41	0	0
	2639	41080	10	QPSK	1	49	24.40	0	0
	2639	41080	10	QPSK	25	0	23.45	0-1	1
	2639	41080	10	QPSK	25	12	23.39	0-1	1
	2639	41080	10	QPSK	25	25	23.38	0-1	1
High	2639	41080	10	QPSK	50	0	23.40	0-1	1
	2639	41080	10	16-QAM	1	0	23.43	0-1	1
	2639	41080	10	16-QAM	1	25	23.47	0-1	1
	2639	41080	10	16-QAM	1	49	23.44	0-1	1
	2639	41080	10	16-QAM	25	0	22.41	0-2	2
	2639	41080	10	16-QAM	25	12	22.42	0-2	2
	2639	41080	10	16-QAM	25	25	22.43	0-2	2
	2639	41080	10	16-QAM	50	0	22.40	0-2	2
	2685	41540	10	QPSK	1	0	24.48	0	0
	2685	41540	10	QPSK	1	25	24.43	0	0
	2685	41540	10	QPSK	1	49	24.41	0	0
	2685	41540	10	QPSK	25	0	23.44	0-1	1
	2685	41540	10	QPSK	25	12	23.39	0-1	1
	2685	41540	10	QPSK	25	25	23.38	0-1	1
	2685	41540	10	QPSK	50	0	23.41	0-1	1
	2685	41540	10	16-QAM	1	0	23.44	0-1	1
	2685	41540	10	16-QAM	1	25	23.36	0-1	1
	2685	41540	10	16-QAM	1	49	23.37	0-1	1
	2685	41540	10	16-QAM	25	0	22.42	0-2	2
	2685	41540	10	16-QAM	25	12	22.30	0-2	2
	2685	41540	10	16-QAM	25	25	22.28	0-2	2
	2685	41540	10	16-QAM	50	0	22.33	0-2	2

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Table 9-24
LTE Band 41 Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	2498.5	39675	5	QPSK	1	0	24.41	0	0
	2498.5	39675	5	QPSK	1	12	24.38	0	0
	2498.5	39675	5	QPSK	1	24	24.34	0	0
	2498.5	39675	5	QPSK	12	0	23.42	0-1	1
	2498.5	39675	5	QPSK	12	6	23.37	0-1	1
	2498.5	39675	5	QPSK	12	13	23.30	0-1	1
	2498.5	39675	5	QPSK	25	0	23.34	0-1	1
	2498.5	39675	5	16-QAM	1	0	23.44	0-1	1
	2498.5	39675	5	16-QAM	1	12	23.42	0-1	1
	2498.5	39675	5	16-QAM	1	24	23.43	0-1	1
	2498.5	39675	5	16-QAM	12	0	22.42	0-2	2
	2498.5	39675	5	16-QAM	12	6	22.33	0-2	2
	2498.5	39675	5	16-QAM	12	13	22.27	0-2	2
	2498.5	39675	5	16-QAM	25	0	22.24	0-2	2
	2545.75	40148	5	QPSK	1	0	23.95	0	0
Low Mid	2545.75	40148	5	QPSK	1	12	24.18	0	0
	2545.75	40148	5	QPSK	1	24	24.34	0	0
	2545.75	40148	5	QPSK	12	0	23.03	0-1	1
	2545.75	40148	5	QPSK	12	6	22.98	0-1	1
	2545.75	40148	5	QPSK	12	13	22.95	0-1	1
	2545.75	40148	5	QPSK	25	0	22.96	0-1	1
	2545.75	40148	5	16-QAM	1	0	23.08	0-1	1
	2545.75	40148	5	16-QAM	1	12	23.19	0-1	1
	2545.75	40148	5	16-QAM	1	24	23.22	0-1	1
	2545.75	40148	5	16-QAM	12	0	22.01	0-2	2
	2545.75	40148	5	16-QAM	12	6	21.97	0-2	2
	2545.75	40148	5	16-QAM	12	13	21.95	0-2	2
	2545.75	40148	5	16-QAM	25	0	22.01	0-2	2
	2593	40620	5	QPSK	1	0	24.33	0	0
	2593	40620	5	QPSK	1	12	24.28	0	0
Mid	2593	40620	5	QPSK	1	24	24.31	0	0
	2593	40620	5	QPSK	12	0	23.30	0-1	1
	2593	40620	5	QPSK	12	6	23.27	0-1	1
	2593	40620	5	QPSK	12	13	23.21	0-1	1
	2593	40620	5	QPSK	25	0	23.24	0-1	1
	2593	40620	5	16-QAM	1	0	23.45	0-1	1
	2593	40620	5	16-QAM	1	12	23.44	0-1	1
	2593	40620	5	16-QAM	1	24	23.45	0-1	1
	2593	40620	5	16-QAM	12	0	22.41	0-2	2
	2593	40620	5	16-QAM	12	6	22.26	0-2	2
	2593	40620	5	16-QAM	12	13	22.22	0-2	2
	2593	40620	5	16-QAM	25	0	22.24	0-2	2
	2640.25	41093	5	QPSK	1	0	24.35	0	0
	2640.25	41093	5	QPSK	1	12	24.34	0	0
	2640.25	41093	5	QPSK	1	24	24.33	0	0
Mid High	2640.25	41093	5	QPSK	12	0	23.38	0-1	1
	2640.25	41093	5	QPSK	12	6	23.32	0-1	1
	2640.25	41093	5	QPSK	12	13	23.31	0-1	1
	2640.25	41093	5	QPSK	25	0	23.38	0-1	1
	2640.25	41093	5	16-QAM	1	0	23.36	0-1	1
	2640.25	41093	5	16-QAM	1	12	23.40	0-1	1
	2640.25	41093	5	16-QAM	1	24	23.37	0-1	1
	2640.25	41093	5	16-QAM	12	0	22.34	0-2	2
	2640.25	41093	5	16-QAM	12	6	22.35	0-2	2
	2640.25	41093	5	16-QAM	12	13	22.36	0-2	2
	2640.25	41093	5	16-QAM	25	0	22.33	0-2	2
	2687.5	41565	5	QPSK	1	0	24.46	0	0
	2687.5	41565	5	QPSK	1	12	24.43	0	0
	2687.5	41565	5	QPSK	1	24	24.44	0	0
	2687.5	41565	5	QPSK	12	0	23.42	0-1	1
High	2687.5	41565	5	QPSK	12	6	23.41	0-1	1
	2687.5	41565	5	QPSK	12	13	23.40	0-1	1
	2687.5	41565	5	QPSK	25	0	23.43	0-1	1
	2687.5	41565	5	16-QAM	1	0	23.47	0-1	1
	2687.5	41565	5	16-QAM	1	12	23.39	0-1	1
	2687.5	41565	5	16-QAM	1	24	23.40	0-1	1
	2687.5	41565	5	16-QAM	12	0	22.45	0-2	2
	2687.5	41565	5	16-QAM	12	6	22.33	0-2	2
	2687.5	41565	5	16-QAM	12	13	22.31	0-2	2
	2687.5	41565	5	16-QAM	25	0	22.36	0-2	2

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9.5 WLAN Conducted Powers

Table 9-25
SISO IEEE 802.11b Average RF Power- Antenna 1

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

Table 9-26
SISO IEEE 802.11b Average RF Power- Antenna 2

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

Table 9-27
SISO IEEE 802.11g Average RF Power- Antenna 1

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

Table 9-28
SISO IEEE 802.11g Average RF Power- Antenna 2

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

Table 9-29
SISO IEEE 802.11n Average RF Power- Antenna 1

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

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Table 9-30
SISO IEEE 802.11n Average RF Power- Antenna 2

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

Table 9-31
MIMO IEEE 802.11n Average RF Power

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

Table 9-32
SISO IEEE 802.11a Average RF Power-Antenna 1

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

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

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

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Table 9-33
SISO IEEE 802.11a Average RF Power-Antenna 2

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

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

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

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Table 9-34
SISO IEEE 802.11n Average RF Power – 20 MHz Bandwidth- Antenna 1

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

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Table 9-35
SISO IEEE 802.11n Average RF Power – 20 MHz Bandwidth- Antenna 2

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

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Table 9-36
MIMO IEEE 802.11n Average RF Power – 20 MHz Bandwidth

20MHz BW 802.11n (5GHz) Conducted Power [dBm]			
Mode	Freq [MHz]	Channel	Data Rate [Mbps]
			13
802.11n	5180	36	14.78
802.11n	5200	40	14.73
802.11n	5220	44	14.66
802.11n	5240	48	14.68
802.11n	5260	52	14.60
802.11n	5280	56	14.67
802.11n	5300	60	14.67
802.11n	5320	64	14.59
802.11n	5500	100	14.53
802.11n	5520	104	14.60
802.11n	5540	108	14.62
802.11n	5560	112	14.61
802.11n	5580	116	14.75
802.11n	5600	120	N/A
802.11n	5620	124	N/A
802.11n	5640	128	N/A
802.11n	5660	132	14.75
802.11n	5680	136	14.80
802.11n	5700	140	14.69
802.11n	5745	149	14.85
802.11n	5765	153	14.46
802.11n	5785	157	14.38
802.11n	5805	161	14.39
802.11n	5825	165	14.29

Table 9-37
SISO IEEE 802.11n Average RF Power – 40 MHz Bandwidth- Antenna 1

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

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Table 9-38
SISO IEEE 802.11n Average RF Power – 40 MHz Bandwidth- Antenna 2

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

Table 9-39
MIMO IEEE 802.11n Average RF Power – 40 MHz Bandwidth

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

Table 9-40
SISO IEEE 802.11ac Average RF Power – 80 MHz Bandwidth- Antenna 1

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

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Table 9-41
SISO IEEE 802.11ac Average RF Power – 80 MHz Bandwidth- Antenna 2

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

Table 9-42
MIMO IEEE 802.11ac Average RF Power – 80 MHz Bandwidth

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

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

- For 2.4 GHz SISO operations, highest average RF output power channel for the lowest data rate for IEEE 802.11b were selected for SAR evaluation. Other IEEE 802.11 SISO modes (including 802.11g/n) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11b mode.
- For 5 GHz SISO operations, highest average RF output power channel for the lowest data rate for IEEE 802.11a were selected for SAR evaluation. Other IEEE 802.11 SISO modes (including 802.11n 20 MHz and 40 MHz) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11a mode.
- Full SAR tests for all SISO IEEE 802.11ac configurations were not required because the average output power was not more than 0.25 dB higher than IEEE 802.11a mode. IEEE 802.11ac in SISO mode was evaluated for the highest IEEE 802.11a position in each 5 GHz band and exposure condition.
- For MIMO 2.4 GHz and 5 GHz operations, the highest average RF output power channel for the lowest data rate for IEEE 802.11n (20 MHz bandwidth) was selected for SAR evaluation. Other IEEE 802.11 modes and bandwidths were not investigated for MIMO operations since the maximum allowed output power (including tolerance) was not higher for these modes.
- Per FCC KDB 662911 D01v02r01, the individual spectra for each 2x2 MIMO WIFI Antenna were summed mathematically in linear power units for the MIMO output power measurements.
- When the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the reported 1g averaged SAR is <0.8 W/kg, SAR testing on other channels is not required. Otherwise, the other default (or corresponding required) test channels were additionally tested using the lowest data rate.
- The bolded data rate and channel above were tested for SAR.

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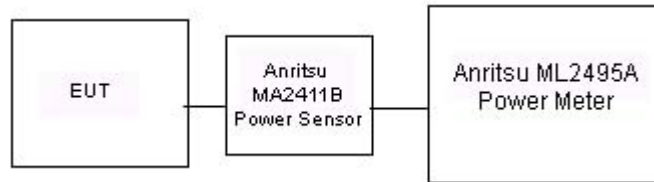


Figure 9-4
Power Measurement Setup for Bandwidths < 50 MHz

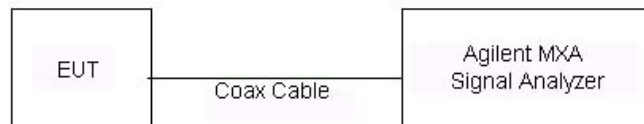


Figure 9-5
Power Measurement Setup for Bandwidths > 50 MHz

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10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Head Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (C°)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ϵ	% dev σ	% dev ϵ
07/31/2014	835H	23.5	820	0.909	41.869	0.899	41.578	1.11%	0.70%
			835	0.923	41.662	0.900	41.500	2.56%	0.39%
			850	0.938	41.461	0.916	41.500	2.40%	-0.09%
08/04/2014	1900H	22.9	1850	1.353	39.481	1.400	40.000	-3.36%	-1.30%
			1880	1.382	39.348	1.400	40.000	-1.29%	-1.63%
			1910	1.416	39.218	1.400	40.000	1.14%	-1.95%
08/28/2014	2450H	22.2	2401	1.795	38.318	1.756	39.287	2.22%	-2.47%
			2450	1.861	38.157	1.800	39.200	3.39%	-2.66%
			2499	1.906	37.915	1.853	39.138	2.86%	-3.12%
08/04/2014	2600H	23.7	2600	1.911	40.407	1.964	39.009	-2.70%	3.58%
			2650	1.965	40.207	2.018	38.945	-2.63%	3.24%
			2700	2.024	40.051	2.073	38.882	-2.36%	3.01%
08/12/2014	5200H-5800H	22.8	5180	4.700	35.571	4.635	36.009	1.40%	-1.22%
			5200	4.724	35.490	4.655	35.986	1.48%	-1.38%
			5220	4.766	35.472	4.676	35.963	1.92%	-1.37%
			5240	4.800	35.467	4.696	35.940	2.21%	-1.32%
			5260	4.825	35.471	4.717	35.917	2.29%	-1.24%
			5280	4.830	35.454	4.737	35.894	1.96%	-1.23%
			5300	4.826	35.388	4.758	35.871	1.43%	-1.35%
			5320	4.850	35.358	4.778	35.849	1.51%	-1.37%
			5500	5.059	35.124	4.963	35.643	1.93%	-1.46%
			5520	5.078	35.101	4.983	35.620	1.91%	-1.46%
			5540	5.076	35.089	5.004	35.597	1.44%	-1.43%
			5580	5.090	34.981	5.045	35.551	0.89%	-1.60%
			5600	5.129	34.965	5.065	35.529	1.26%	-1.59%
			5680	5.205	34.890	5.147	35.437	1.13%	-1.54%
			5700	5.219	34.819	5.168	35.414	0.99%	-1.68%
			5745	5.306	34.780	5.214	35.363	1.76%	-1.65%
			5765	5.335	34.765	5.234	35.340	1.93%	-1.63%
			5785	5.340	34.778	5.255	35.317	1.62%	-1.53%
			5800	5.343	34.693	5.270	35.300	1.39%	-1.72%
			5825	5.358	34.622	5.296	35.271	1.17%	-1.84%

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Table 10-2
Measured Body Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ϵ	%dev σ	%dev ϵ
08/01/2014	835B	23.0	820	1.000	54.117	0.969	55.258	3.20%	-2.06%
			835	1.013	53.942	0.970	55.200	4.43%	-2.28%
			850	1.028	53.802	0.988	55.154	4.05%	-2.45%
08/04/2014	835B	23.0	820	0.988	53.543	0.969	55.258	1.96%	-3.10%
			835	1.003	53.359	0.970	55.200	3.40%	-3.34%
			850	1.016	53.223	0.988	55.154	2.83%	-3.50%
08/29/2014	835B	22.9	820	0.993	54.156	0.969	55.258	2.48%	-1.99%
			835	1.009	53.980	0.970	55.200	4.02%	-2.21%
			850	1.022	53.859	0.988	55.154	3.44%	-2.35%
08/04/2014	1900B	22.3	1850	1.453	53.366	1.520	53.300	-4.41%	0.12%
			1880	1.485	53.252	1.520	53.300	-2.30%	-0.09%
			1910	1.520	53.133	1.520	53.300	0.00%	-0.31%
08/07/2014	1900B	22.9	1850	1.470	53.038	1.520	53.300	-3.29%	-0.49%
			1880	1.507	52.954	1.520	53.300	-0.86%	-0.65%
			1910	1.545	52.838	1.520	53.300	1.64%	-0.87%
08/25/2014	1900B	22.3	1850	1.459	52.552	1.520	53.300	-4.01%	-1.40%
			1880	1.496	52.453	1.520	53.300	-1.58%	-1.59%
			1910	1.532	52.376	1.520	53.300	0.79%	-1.73%
08/28/2014	1900B	22.1	1850	1.466	52.100	1.520	53.300	-3.55%	-2.25%
			1880	1.502	52.007	1.520	53.300	-1.18%	-2.43%
			1910	1.536	51.906	1.520	53.300	1.05%	-2.62%
09/01/2014	1900B	22.0	1850	1.454	52.229	1.520	53.300	-4.34%	-2.01%
			1880	1.488	52.130	1.520	53.300	-2.11%	-2.20%
			1910	1.520	52.028	1.520	53.300	0.00%	-2.39%
08/07/2014	2450B	22.9	2401	1.839	51.034	1.903	52.765	-3.36%	-3.28%
			2450	1.903	50.849	1.950	52.700	-2.41%	-3.51%
			2499	1.969	50.697	2.019	52.638	-2.48%	-3.69%
08/29/2014	2600B	22.3	2600	2.220	51.095	2.163	52.509	2.64%	-2.69%
			2650	2.288	50.842	2.234	52.445	2.42%	-3.06%
			2700	2.370	50.700	2.305	52.382	2.82%	-3.21%
08/11/2014	5200B-5800B	20.7	5180	5.353	47.869	5.276	49.041	1.46%	-2.39%
			5200	5.365	47.684	5.299	49.014	1.25%	-2.71%
			5220	5.415	47.736	5.323	48.987	1.73%	-2.55%
			5240	5.425	47.793	5.346	48.960	1.48%	-2.38%
			5260	5.447	47.871	5.369	48.933	1.45%	-2.17%
			5280	5.478	47.828	5.393	48.906	1.58%	-2.20%
			5300	5.483	47.707	5.416	48.879	1.24%	-2.40%
			5320	5.524	47.617	5.439	48.851	1.56%	-2.53%
			5500	5.726	47.237	5.650	48.607	1.35%	-2.82%
			5520	5.732	47.156	5.673	48.580	1.04%	-2.93%
			5540	5.755	46.979	5.696	48.553	1.04%	-3.24%
			5580	5.838	46.840	5.743	48.499	1.65%	-3.42%
			5600	5.861	46.839	5.766	48.471	1.65%	-3.37%
			5680	5.917	46.318	5.860	48.363	0.97%	-4.23%
			5700	5.978	46.386	5.883	48.336	1.61%	-4.03%
			5745	5.988	46.411	5.936	48.275	0.88%	-3.86%
			5765	5.997	46.229	5.959	48.248	0.64%	-4.18%
			5785	6.021	45.999	5.982	48.220	0.65%	-4.61%
			5800	6.062	45.948	6.000	48.200	1.03%	-4.67%
			5805	6.093	45.915	6.006	48.193	1.45%	-4.73%
08/13/2014	5200B-5800B	24.0	5825	6.138	46.091	6.029	48.166	1.81%	-4.31%
			5180	5.237	48.386	5.276	49.041	-0.74%	-1.34%
			5200	5.262	48.246	5.299	49.014	-0.70%	-1.57%
			5220	5.299	48.228	5.323	48.987	-0.45%	-1.55%
			5240	5.344	48.146	5.346	48.960	-0.04%	-1.66%
			5260	5.397	48.132	5.369	48.933	0.52%	-1.64%
			5280	5.416	48.124	5.393	48.906	0.43%	-1.60%
			5300	5.427	48.087	5.416	48.879	0.20%	-1.62%
			5320	5.450	47.979	5.439	48.851	0.20%	-1.79%
			5500	5.733	47.550	5.650	48.607	1.47%	-2.17%
			5520	5.773	47.507	5.673	48.580	1.76%	-2.21%
			5540	5.795	47.517	5.696	48.553	1.74%	-2.13%
			5580	5.835	47.398	5.743	48.499	1.60%	-2.27%
			5600	5.871	47.349	5.766	48.471	1.82%	-2.31%
			5680	5.999	47.173	5.860	48.363	2.37%	-2.46%
			5700	6.018	47.133	5.883	48.336	2.29%	-2.49%
			5745	6.114	47.032	5.936	48.275	3.00%	-2.57%
			5800	6.186	46.881	6.000	48.200	3.10%	-2.74%

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

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10.2 Test System Verification

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

Table 10-3
System Verification Results – 1g SAR

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR _{1g} (W/kg)	1 W Target SAR _{1g} (W/kg)	1 W Normalized SAR _{1g} (W/kg)	Deviation _{1g} (%)
H	835	HEAD	07/31/2014	24.3	23.5	0.100	4d119	3319	0.961	9.220	9.610	4.23%
K	1900	HEAD	08/04/2014	24.0	22.9	0.100	5d141	3287	3.910	40.100	39.100	-2.49%
G	2450	HEAD	08/28/2014	24.1	22.2	0.100	797	3258	4.820	51.800	48.200	-6.95%
H	2600	HEAD	08/04/2014	23.7	23.7	0.100	1004	3319	5.740	57.300	57.400	0.17%
E	5200	HEAD	08/12/2014	24.2	22.8	0.100	1057	3914	7.570	78.000	75.700	-2.95%
E	5300	HEAD	08/12/2014	24.2	22.9	0.100	1057	3914	8.180	83.000	81.800	-1.45%
E	5500	HEAD	08/12/2014	24.3	22.9	0.100	1057	3914	7.920	84.300	79.200	-6.05%
E	5600	HEAD	08/12/2014	24.2	22.9	0.100	1057	3914	8.500	83.500	85.000	1.80%
E	5800	HEAD	08/12/2014	24.2	22.9	0.100	1057	3914	7.700	79.300	77.000	-2.90%
D	835	BODY	08/01/2014	24.9	23.0	0.100	4d119	3022	0.985	9.340	9.850	5.46%
D	835	BODY	08/04/2014	23.8	23.0	0.100	4d119	3022	0.995	9.340	9.950	6.53%
D	835	BODY	08/29/2014	24.4	22.9	0.100	4d119	3263	0.979	9.340	9.790	4.82%
K	1900	BODY	08/04/2014	24.0	22.6	0.100	5d141	3287	4.100	40.600	41.000	0.99%
K	1900	BODY	08/07/2014	24.2	22.9	0.100	5d141	3287	4.200	40.600	42.000	3.45%
H	1900	BODY	08/25/2014	22.6	21.6	0.100	5d141	3319	4.160	40.600	41.600	2.46%
H	1900	BODY	08/28/2014	23.5	22.1	0.100	5d141	3319	3.920	40.600	39.200	-3.45%
H	1900	BODY	09/01/2014	23.0	22.1	0.100	5d141	3319	3.920	40.600	39.200	-3.45%
H	2450	BODY	08/07/2014	23.9	23.0	0.100	797	3319	5.240	49.400	52.400	6.07%
G	2600	BODY	08/29/2014	24.0	23.0	0.100	1004	3258	5.750	56.700	57.500	1.41%
A	5200	BODY	08/11/2014	22.4	21.3	0.100	1007	3920	7.510	72.600	75.100	3.44%
A	5300	BODY	08/11/2014	22.4	21.3	0.100	1007	3920	7.720	74.700	77.200	3.35%
A	5500	BODY	08/11/2014	22.4	21.3	0.100	1007	3920	7.810	75.900	78.100	2.90%
A	5600	BODY	08/11/2014	22.4	21.3	0.100	1007	3920	7.660	77.300	76.600	-0.91%
A	5800	BODY	08/11/2014	22.4	21.3	0.100	1007	3920	7.230	72.900	72.300	-0.82%
I	5800	BODY	08/13/2014	24.4	24.0	0.100	1057	3589	7.350	74.300	73.500	-1.08%

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Table 10-4
System Verification Results – 10g SAR

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR _{10g} (W/kg)	1 W Target SAR _{10g} (W/kg)	1 W Normalized SAR _{10g} (W/kg)	Deviation _{10g} (%)
H	1900	BODY	08/28/2014	23.5	22.1	0.100	5d141	3319	2.090	21.600	20.900	-3.24%
I	5200	BODY	08/13/2014	24.4	24.0	0.100	1057	3589	2.250	21.000	22.500	7.14%
I	5300	BODY	08/13/2014	24.4	24.1	0.100	1057	3589	2.330	21.500	23.300	8.37%
I	5500	BODY	08/13/2014	24.3	23.9	0.100	1057	3589	2.300	22.000	23.000	4.55%
I	5600	BODY	08/13/2014	24.2	23.9	0.100	1057	3589	2.240	22.200	22.400	0.90%

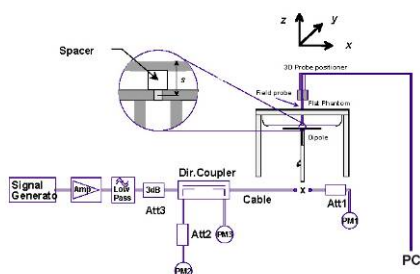


Figure 10-1
System Verification Setup Diagram



Figure 10-2
System Verification Setup Photo

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11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
GSM 850 Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	33.5	33.00	0.04	Right	Cheek	Standard	F4D34	1	1:8.3	0.053	1.122	0.059	
836.60	190	GSM 850	GSM	33.5	33.00	-0.08	Right	Tilt	Standard	F4D34	1	1:8.3	0.041	1.122	0.046	
836.60	190	GSM 850	GSM	33.5	33.00	-0.04	Left	Cheek	Standard	F4D34	1	1:8.3	0.110	1.122	0.123	A1
836.60	190	GSM 850	GSM	33.5	33.00	-0.04	Left	Cheek	Wireless Charging	F4D34	1	1:8.3	0.095	1.122	0.107	
836.60	190	GSM 850	GSM	33.5	33.00	0.15	Left	Tilt	Standard	F4D34	1	1:8.3	0.032	1.122	0.036	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-2
UMTS 850 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	4183	UMTS 850	RMC	23.5	23.43	-0.11	Right	Cheek	Standard	F4D2A	1:1	0.048	1.016	0.049	
836.60	4183	UMTS 850	RMC	23.5	23.43	0.03	Right	Tilt	Standard	F4D2A	1:1	0.032	1.016	0.033	
836.60	4183	UMTS 850	RMC	23.5	23.43	0.02	Left	Cheek	Standard	F4D2A	1:1	0.101	1.016	0.103	
836.60	4183	UMTS 850	RMC	23.5	23.43	0.01	Left	Cheek	Wireless Charging	F4D2A	1:1	0.110	1.016	0.112	A2
836.60	4183	UMTS 850	RMC	23.5	23.43	0.04	Left	Tilt		Standard	F4D2A	1:1	0.033	1.016	0.034
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

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Table 11-3
Cell. CDMA BC10 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
820.10	564	CDMA BC10 (S90S)	RC3 / SO55	25.0	24.91	-0.07	Right	Cheek	Standard	F4D33	1:1	0.103	1.021	0.105	
820.10	564	CDMA BC10 (S90S)	RC3 / SO55	25.0	24.91	0.21	Right	Tilt	Standard	F4D33	1:1	0.075	1.021	0.077	
820.10	564	CDMA BC10 (S90S)	RC3 / SO55	25.0	24.91	-0.04	Left	Cheek	Standard	F4D33	1:1	0.193	1.021	0.197	
820.10	564	CDMA BC10 (S90S)	RC3 / SO55	25.0	24.91	0.07	Left	Cheek	Wireless Charging	F4D33	1:1	0.236	1.021	0.241	
820.10	564	CDMA BC10 (S90S)	RC3 / SO55	25.0	24.91	0.02	Left	Tilt	Standard	F4D33	1:1	0.080	1.021	0.082	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. A	22.0	21.74	0.10	Right	Cheek	Standard	F4D2B	1:1	0.068	1.062	0.072	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. A	22.0	21.74	0.18	Right	Tilt	Standard	F4D2B	1:1	0.045	1.062	0.048	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. A	22.0	21.74	0.14	Left	Cheek	Standard	F4D2B	1:1	0.120	1.062	0.127	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. A	22.0	21.74	0.17	Left	Tilt	Standard	F4D2B	1:1	0.053	1.062	0.056	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. A	25.0	24.68	0.08	Right	Cheek	Standard	F4D33	1:1	0.107	1.076	0.115	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. A	25.0	24.68	0.06	Right	Tilt	Standard	F4D33	1:1	0.070	1.076	0.075	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. A	25.0	24.68	0.03	Left	Cheek	Standard	F4D33	1:1	0.212	1.076	0.228	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. A	25.0	24.68	0.08	Left	Cheek	Wireless Charging	F4D33	1:1	0.252	1.076	0.271	A3
820.10	564	CDMA BC10 (S90S)	EVDO Rev. A	25.0	24.68	0.05	Left	Tilt	Standard	F4D33	1:1	0.089	1.076	0.096	
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
Cell. CDMA BC0 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.52	384	CDMA BC0 (S22H)	RC3 / SO55	25.0	24.95	0.03	Right	Cheek	Standard	F4D33	1:1	0.158	1.012	0.160	
836.52	384	CDMA BC0 (S22H)	RC3 / SO55	25.0	24.95	0.11	Right	Tilt	Standard	F4D33	1:1	0.096	1.012	0.097	
836.52	384	CDMA BC0 (S22H)	RC3 / SO55	25.0	24.95	0.10	Left	Cheek	Standard	F4D33	1:1	0.266	1.012	0.269	
836.52	384	CDMA BC0 (S22H)	RC3 / SO55	25.0	24.95	-0.12	Left	Cheek	Wireless Charging	F4D33	1:1	0.283	1.012	0.286	
836.52	384	CDMA BC0 (S22H)	RC3 / SO55	25.0	24.95	0.02	Left	Tilt	Standard	F4D33	1:1	0.111	1.012	0.112	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. A	22.0	21.83	0.02	Right	Cheek	Standard	F4D2B	1:1	0.065	1.040	0.068	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. A	22.0	21.83	0.18	Right	Tilt	Standard	F4D2B	1:1	0.036	1.040	0.037	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. A	22.0	21.83	0.02	Left	Cheek	Standard	F4D2B	1:1	0.133	1.040	0.138	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. A	22.0	21.83	0.15	Left	Tilt	Standard	F4D2B	1:1	0.054	1.040	0.056	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. A	25.0	24.72	0.18	Right	Cheek	Standard	F4D33	1:1	0.165	1.067	0.176	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. A	25.0	24.72	0.03	Right	Tilt	Standard	F4D33	1:1	0.101	1.067	0.108	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. A	25.0	24.72	0.12	Left	Cheek	Standard	F4D33	1:1	0.288	1.067	0.307	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. A	25.0	24.72	-0.04	Left	Cheek	Wireless Charging	F4D33	1:1	0.337	1.067	0.360	A4
836.52	384	CDMA BC0 (S22H)	EVDO Rev. A	25.0	24.72	0.10	Left	Tilt	Standard	F4D33	1:1	0.121	1.067	0.129	
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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	Cover Type	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	30.5	30.50	0.07	Right	Cheek	Standard	F4D34	1:8.3	0.076	1.000	0.076	
1880.00	661	GSM 1900	GSM	30.5	30.50	0.06	Right	Tilt	Standard	F4D34	1:8.3	0.038	1.000	0.038	
1880.00	661	GSM 1900	GSM	30.5	30.50	-0.03	Left	Cheek	Standard	F4D34	1:8.3	0.106	1.000	0.106	A5
1880.00	661	GSM 1900	GSM	30.5	30.50	-0.04	Left	Cheek	Wireless Charging	F4D34	1:8.3	0.105	1.000	0.105	
1880.00	661	GSM 1900	GSM	30.5	30.50	0.00	Left	Tilt	Standard	F4D34	1:8.3	0.016	1.000	0.016	
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
UTMS 1900 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	23.5	23.31	0.07	Right	Cheek	Standard	F4D2A	1:1	0.135	1.045	0.141	
1880.00	9400	UMTS 1900	RMC	23.5	23.31	-0.04	Right	Tilt	Standard	F4D2A	1:1	0.046	1.045	0.048	
1880.00	9400	UMTS 1900	RMC	23.5	23.31	0.17	Left	Cheek	Standard	F4D2A	1:1	0.204	1.045	0.213	
1880.00	9400	UMTS 1900	RMC	23.5	23.31	-0.10	Left	Cheek	Wireless Charging	F4D2A	1:1	0.208	1.045	0.217	A6
1880.00	9400	UMTS 1900	RMC	23.5	23.31	0.03	Left	Tilt	Standard	F4D2A	1:1	0.017	1.045	0.018	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-7
PCS CDMA Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Cover Type	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	600	PCS CDMA	RC3 / SO55	25.0	24.85	-0.03	Right	Cheek	Standard	F4D33	1:1	0.172	1.035	0.178	
1880.00	600	PCS CDMA	RC3 / SO55	25.0	24.85	0.02	Right	Tilt	Standard	F4D33	1:1	0.091	1.035	0.094	
1880.00	600	PCS CDMA	RC3 / SO55	25.0	24.85	-0.07	Left	Cheek	Standard	F4D33	1:1	0.297	1.035	0.307	
1880.00	600	PCS CDMA	RC3 / SO55	25.0	24.85	0.03	Left	Cheek	Wireless Charging	F4D33	1:1	0.328	1.035	0.339	
1880.00	600	PCS CDMA	RC3 / SO55	25.0	24.85	0.01	Left	Tilt	Standard	F4D33	1:1	0.060	1.035	0.062	
1880.00	600	PCS CDMA	EVDO Rev. A	22.0	21.85	0.09	Right	Cheek	Standard	F4D2B	1:1	0.087	1.035	0.090	
1880.00	600	PCS CDMA	EVDO Rev. A	22.0	21.85	0.21	Right	Tilt	Standard	F4D2B	1:1	0.032	1.035	0.033	
1880.00	600	PCS CDMA	EVDO Rev. A	22.0	21.85	-0.14	Left	Cheek	Standard	F4D2B	1:1	0.189	1.035	0.196	
1880.00	600	PCS CDMA	EVDO Rev. A	22.0	21.85	0.09	Left	Tilt	Standard	F4D2B	1:1	0.029	1.035	0.030	
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	24.91	0.07	Right	Cheek	Standard	F4D33	1:1	0.238	1.021	0.243	
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	24.91	0.01	Right	Tilt	Standard	F4D33	1:1	0.082	1.021	0.084	
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	24.91	-0.01	Left	Cheek	Standard	F4D33	1:1	0.379	1.021	0.387	A7
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	24.91	-0.07	Left	Cheek	Wireless Charging	F4D33	1:1	0.349	1.021	0.356	
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	24.91	-0.06	Left	Tilt	Standard	F4D33	1:1	0.060	1.021	0.061	
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Table 11-8
LTE Band 26 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Cover Type	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) (W/kg)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #	
MHz	Ch.																			
844.00	26990	High	LTE Band 26	10	Standard	24.5	24.50	0.07	0	Right	Cheek	QPSK	1	25	F4D31	1:1	0.090	1.000	0.090	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.50	0.08	1	Right	Cheek	QPSK	25	25	F4D31	1:1	0.071	1.000	0.071	
844.00	26990	High	LTE Band 26	10	Standard	24.5	24.50	0.14	0	Right	Tilt	QPSK	1	25	F4D31	1:1	0.061	1.000	0.061	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.50	0.16	1	Right	Tilt	QPSK	25	25	F4D31	1:1	0.049	1.000	0.049	
844.00	26990	High	LTE Band 26	10	Standard	24.5	24.50	0.05	0	Left	Cheek	QPSK	1	25	F4D31	1:1	0.165	1.000	0.165	
844.00	26990	High	LTE Band 26	10	Wireless Charging	24.5	24.50	0.09	0	Left	Cheek	QPSK	1	25	F4D31	1:1	0.178	1.000	0.178	A8
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.50	0.06	1	Left	Cheek	QPSK	25	25	F4D31	1:1	0.140	1.000	0.140	
844.00	26990	High	LTE Band 26	10	Standard	24.5	24.50	0.02	0	Left	Tilt	QPSK	1	25	F4D31	1:1	0.065	1.000	0.065	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.50	0.09	1	Left	Tilt	QPSK	25	25	F4D31	1:1	0.055	1.000	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 11-9
LTE Band 25 (PCS) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR [1g]	Scaling Factor	Scaled SAR [1g]	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	24.5	24.50	-0.03	0	Right	Cheek	QPSK	1	50	F4D30	1:1	0.192	1.000	0.192	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	23.5	23.50	0.06	1	Right	Cheek	QPSK	50	0	F4D30	1:1	0.149	1.000	0.149	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	24.5	24.50	0.12	0	Right	Tilt	QPSK	1	50	F4D30	1:1	0.049	1.000	0.049	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	23.5	23.50	-0.01	1	Right	Tilt	QPSK	50	0	F4D30	1:1	0.045	1.000	0.045	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	24.5	24.50	0.00	0	Left	Cheek	QPSK	1	50	F4D30	1:1	0.233	1.000	0.233	A9
1905.00	26590	High	LTE Band 25 (PCS)	20	Wireless Charging	24.5	24.50	-0.05	0	Left	Cheek	QPSK	1	50	F4D30	1:1	0.197	1.000	0.197	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	23.5	23.50	-0.02	1	Left	Cheek	QPSK	50	0	F4D30	1:1	0.208	1.000	0.208	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	24.5	24.50	0.08	0	Left	Tilt	QPSK	1	50	F4D30	1:1	0.047	1.000	0.047	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	23.5	23.50	0.08	1	Left	Tilt	QPSK	50	0	F4D30	1:1	0.040	1.000	0.040	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	0.12	0	Right	Cheek	QPSK	1	50	F4D32	1:1	0.078	1.000	0.078	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	-0.04	0	Right	Cheek	QPSK	50	25	F4D32	1:1	0.063	1.000	0.063	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	-0.18	0	Right	Tilt	QPSK	1	50	F4D32	1:1	0.031	1.000	0.031	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	0.01	0	Right	Tilt	QPSK	50	25	F4D32	1:1	0.032	1.000	0.032	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	0.00	0	Left	Cheek	QPSK	1	50	F4D32	1:1	0.090	1.000	0.090	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	-0.07	0	Left	Cheek	QPSK	50	25	F4D32	1:1	0.098	1.000	0.098	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	0.03	0	Left	Tilt	QPSK	1	50	F4D32	1:1	0.024	1.000	0.024	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	0.09	0	Left	Tilt	QPSK	50	25	F4D32	1:1	0.026	1.000	0.026	
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Table 11-10
LTE Band 41 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
2680.00	41490	High	LTE Band 41	20	Standard	24.5	24.50	0.02	0	Right	Cheek	QPSK	1	0	F4D29	1:1:58	0.107	1.000	0.107	
2680.00	41490	High	LTE Band 41	20	Standard	23.5	23.50	0.07	1	Right	Cheek	QPSK	50	0	F4D29	1:1:58	0.085	1.000	0.085	
2680.00	41490	High	LTE Band 41	20	Standard	24.5	24.50	0.20	0	Right	Tilt	QPSK	1	0	F4D29	1:1:58	0.023	1.000	0.023	
2680.00	41490	High	LTE Band 41	20	Standard	23.5	23.50	0.04	1	Right	Tilt	QPSK	50	0	F4D29	1:1:58	0.016	1.000	0.016	
2680.00	41490	High	LTE Band 41	20	Standard	24.5	24.50	-0.16	0	Left	Cheek	QPSK	1	0	F4D29	1:1:58	0.111	1.000	0.111	A10
2680.00	41490	High	LTE Band 41	20	Wireless Charging	24.5	24.50	-0.07	0	Left	Cheek	QPSK	1	0	F4D29	1:1:58	0.107	1.000	0.107	
2680.00	41490	High	LTE Band 41	20	Standard	23.5	23.50	0.05	1	Left	Cheek	QPSK	50	0	F4D29	1:1:58	0.089	1.000	0.089	
2680.00	41490	High	LTE Band 41	20	Standard	24.5	24.50	0.06	0	Left	Tilt	QPSK	1	0	F4D29	1:1:58	0.055	1.000	0.055	
2680.00	41490	High	LTE Band 41	20	Standard	23.5	23.50	0.18	1	Left	Tilt	QPSK	50	0	F4D29	1:1:58	0.042	1.000	0.042	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-11
DTS Head SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #
MHz	Ch.													(W/kg)			
2462	11	IEEE 802.11b	DSSS	15.5	15.30	0.16	Right	Cheek	1	Standard	015D8	1	1:1	0.314	1.047	0.329	
2462	11	IEEE 802.11b	DSSS	15.5	15.30	0.06	Right	Tilt	1	Standard	015D8	1	1:1	0.206	1.047	0.216	
2462	11	IEEE 802.11b	DSSS	15.5	15.30	0.12	Left	Cheek	1	Standard	015D8	1	1:1	0.166	1.047	0.174	
2462	11	IEEE 802.11b	DSSS	15.5	15.30	0.12	Left	Tilt	1	Standard	015D8	1	1:1	0.090	1.047	0.094	
2462	11	IEEE 802.11b	DSSS	15.5	14.80	-0.05	Right	Cheek	2	Standard	01FC3	1	1:1	0.573	1.175	0.673	A11
2462	11	IEEE 802.11b	DSSS	15.5	14.80	0.02	Right	Cheek	2	Wireless Charging	01FC3	1	1:1	0.544	1.175	0.639	
2462	11	IEEE 802.11b	DSSS	15.5	14.80	0.07	Right	Tilt	2	Standard	01FC3	1	1:1	0.330	1.175	0.388	
2462	11	IEEE 802.11b	DSSS	15.5	14.80	0.05	Left	Cheek	2	Standard	01FC3	1	1:1	0.442	1.175	0.519	
2462	11	IEEE 802.11b	DSSS	15.5	14.80	0.08	Left	Tilt	2	Standard	01FC3	1	1:1	0.312	1.175	0.367	
2462	11	IEEE 802.11n	OFDM	15.5	15.34	-0.10	Right	Cheek	MIMO	Standard	01FC3	13	1:1	0.405	1.038	0.420	
2462	11	IEEE 802.11n	OFDM	15.5	15.34	-0.12	Right	Cheek	MIMO	Wireless Charging	01FC3	13	1:1	0.400	1.038	0.415	
2462	11	IEEE 802.11n	OFDM	15.5	15.34	0.09	Right	Tilt	MIMO	Standard	01FC3	13	1:1	0.301	1.038	0.312	
2462	11	IEEE 802.11n	OFDM	15.5	15.34	0.04	Left	Cheek	MIMO	Standard	01FC3	13	1:1	0.280	1.038	0.291	
2462	11	IEEE 802.11n	OFDM	15.5	15.34	0.16	Left	Tilt	MIMO	Standard	01FC3	13	1:1	0.183	1.038	0.190	
5825	165	IEEE 802.11a	OFDM	12.5	11.88	0.11	Right	Cheek	1	Standard	015D8	6	1:1	0.074	1.153	0.085	
5775	155	IEEE 802.11ac	OFDM	10.5	9.62	0.16	Right	Cheek	1	Standard	015D8	29.3	1:1	0.045	1.225	0.055	
5825	165	IEEE 802.11a	OFDM	12.5	11.88	0.17	Right	Tilt	1	Standard	015D8	6	1:1	0.038	1.153	0.044	
5825	165	IEEE 802.11a	OFDM	12.5	11.88	-0.15	Left	Cheek	1	Standard	015D8	6	1:1	0.035	1.153	0.040	
5825	165	IEEE 802.11a	OFDM	12.5	11.88	0.19	Left	Tilt	1	Standard	015D8	6	1:1	0.000	1.153	0.000	
5765	153	IEEE 802.11a	OFDM	12.5	12.41	-0.08	Right	Cheek	2	Standard	015D8	6	1:1	0.025	1.021	0.026	
5765	153	IEEE 802.11a	OFDM	12.5	12.41	0.16	Right	Tilt	2	Standard	015D8	6	1:1	0.034	1.021	0.035	
5765	153	IEEE 802.11a	OFDM	12.5	12.41	0.13	Left	Cheek	2	Standard	015D8	6	1:1	0.039	1.021	0.040	
5775	155	IEEE 802.11ac	OFDM	10.5	10.31	-0.12	Left	Cheek	2	Standard	015D8	29.3	1:1	0.012	1.045	0.013	
5765	153	IEEE 802.11a	OFDM	12.5	12.41	0.07	Left	Tilt	2	Standard	015D8	6	1:1	0.035	1.021	0.036	
5745	149	IEEE 802.11n	OFDM	15.5	14.85	0.12	Right	Cheek	MIMO	Standard	015D8	13	1:1	0.169	1.161	0.196	A12
5745	149	IEEE 802.11n	OFDM	15.5	14.85	0.14	Right	Tilt	MIMO	Standard	015D8	13	1:1	0.080	1.161	0.093	
5745	149	IEEE 802.11n	OFDM	15.5	14.85	-0.16	Left	Cheek	MIMO	Standard	015D8	13	1:1	0.029	1.161	0.034	
5745	149	IEEE 802.11n	OFDM	15.5	14.85	0.12	Left	Tilt	MIMO	Standard	015D8	13	1:1	0.029	1.161	0.034	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram									

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**Table 11-12
NII Head SAR**

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #
MHz	Ch.																
5240	48	IEEE 802.11a	OFDM	12.5	11.59	-0.12	Right	Cheek	1	Standard	015D8	6	1:1	0.019	1.233	0.023	
5210	42	IEEE 802.11ac	OFDM	10.5	9.88	0.10	Right	Cheek	1	Standard	015D8	29.3	1:1	0.010	1.153	0.012	
5240	48	IEEE 802.11a	OFDM	12.5	11.59	0.16	Right	Tilt	1	Standard	015D8	6	1:1	0.007	1.233	0.009	
5240	48	IEEE 802.11a	OFDM	12.5	11.59	0.19	Left	Cheek	1	Standard	015D8	6	1:1	0.000	1.233	0.000	
5240	48	IEEE 802.11a	OFDM	12.5	11.59	0.10	Left	Tilt	1	Standard	015D8	6	1:1	0.000	1.233	0.000	
5320	64	IEEE 802.11a	OFDM	12.5	11.94	-0.14	Right	Cheek	1	Standard	015D8	6	1:1	0.015	1.138	0.017	
5290	58	IEEE 802.11ac	OFDM	10.5	9.96	-0.12	Right	Cheek	1	Standard	015D8	29.3	1:1	0.016	1.132	0.018	
5320	64	IEEE 802.11a	OFDM	12.5	11.94	0.14	Right	Tilt	1	Standard	015D8	6	1:1	0.011	1.138	0.013	
5320	64	IEEE 802.11a	OFDM	12.5	11.94	0.10	Left	Cheek	1	Standard	015D8	6	1:1	0.000	1.138	0.000	
5320	64	IEEE 802.11a	OFDM	12.5	11.94	0.19	Left	Tilt	1	Standard	015D8	6	1:1	0.000	1.138	0.000	
5580	116	IEEE 802.11a	OFDM	12.5	12.00	-0.03	Right	Cheek	1	Standard	015D8	6	1:1	0.086	1.122	0.096	
5530	106	IEEE 802.11ac	OFDM	10.5	9.92	0.13	Right	Cheek	1	Standard	015D8	29.3	1:1	0.033	1.143	0.038	
5580	116	IEEE 802.11a	OFDM	12.5	12.00	0.11	Right	Tilt	1	Standard	015D8	6	1:1	0.043	1.122	0.048	
5580	116	IEEE 802.11a	OFDM	12.5	12.00	0.12	Left	Cheek	1	Standard	015D8	6	1:1	0.035	1.122	0.039	
5580	116	IEEE 802.11a	OFDM	12.5	12.00	0.10	Left	Tilt	1	Standard	015D8	6	1:1	0.000	1.122	0.000	
5200	40	IEEE 802.11a	OFDM	12.5	11.92	0.16	Right	Cheek	2	Standard	015D8	6	1:1	0.096	1.143	0.110	
5200	40	IEEE 802.11a	OFDM	12.5	11.92	0.11	Right	Tilt	2	Standard	015D8	6	1:1	0.073	1.143	0.083	
5200	40	IEEE 802.11a	OFDM	12.5	11.92	0.13	Left	Cheek	2	Standard	015D8	6	1:1	0.139	1.143	0.159	
5200	40	IEEE 802.11a	OFDM	12.5	11.92	0.12	Left	Cheek	2	Wireless Charging	015D8	6	1:1	0.140	1.143	0.160	
5210	42	IEEE 802.11ac	OFDM	10.5	10.04	0.14	Left	Cheek	2	Standard	015D8	29.3	1:1	0.058	1.112	0.064	
5200	40	IEEE 802.11a	OFDM	12.5	11.92	0.13	Left	Tilt	2	Standard	015D8	6	1:1	0.118	1.143	0.135	
5260	52	IEEE 802.11a	OFDM	12.5	11.54	0.18	Right	Cheek	2	Standard	015D8	6	1:1	0.075	1.247	0.094	
5260	52	IEEE 802.11a	OFDM	12.5	11.54	0.14	Right	Tilt	2	Standard	015D8	6	1:1	0.062	1.247	0.077	
5260	52	IEEE 802.11a	OFDM	12.5	11.54	0.12	Left	Cheek	2	Standard	015D8	6	1:1	0.115	1.247	0.143	
5290	58	IEEE 802.11ac	OFDM	10.5	9.59	0.14	Left	Cheek	2	Standard	015D8	29.3	1:1	0.046	1.233	0.057	
5260	52	IEEE 802.11a	OFDM	12.5	11.54	-0.02	Left	Tilt	2	Standard	015D8	6	1:1	0.097	1.247	0.121	
5700	140	IEEE 802.11a	OFDM	12.5	11.92	-0.15	Right	Cheek	2	Standard	015D8	6	1:1	0.026	1.143	0.030	
5700	140	IEEE 802.11a	OFDM	12.5	11.92	0.15	Right	Tilt	2	Standard	015D8	6	1:1	0.037	1.143	0.042	
5700	140	IEEE 802.11a	OFDM	12.5	11.92	0.13	Left	Cheek	2	Standard	015D8	6	1:1	0.050	1.143	0.057	
5530	106	IEEE 802.11ac	OFDM	10.5	9.50	0.14	Left	Cheek	2	Standard	015D8	29.3	1:1	0.032	1.259	0.040	
5700	140	IEEE 802.11a	OFDM	12.5	11.92	0.16	Left	Tilt	2	Standard	015D8	6	1:1	0.046	1.143	0.053	
5180	36	IEEE 802.11n	OFDM	15.5	14.78	0.12	Right	Cheek	MIMO	Standard	015D8	13	1:1	0.011	1.180	0.013	
5180	36	IEEE 802.11n	OFDM	15.5	14.78	0.16	Right	Tilt	MIMO	Standard	015D8	13	1:1	0.005	1.180	0.006	
5180	36	IEEE 802.11n	OFDM	15.5	14.78	-0.19	Left	Cheek	MIMO	Standard	015D8	13	1:1	0.106	1.180	0.125	
5180	36	IEEE 802.11n	OFDM	15.5	14.78	0.17	Left	Tilt	MIMO	Standard	015D8	13	1:1	0.085	1.180	0.100	
5280	56	IEEE 802.11n	OFDM	15.5	14.67	0.21	Right	Cheek	MIMO	Standard	015D8	13	1:1	0.039	1.211	0.047	
5280	56	IEEE 802.11n	OFDM	15.5	14.67	0.12	Right	Tilt	MIMO	Standard	015D8	13	1:1	0.018	1.211	0.022	
5280	56	IEEE 802.11n	OFDM	15.5	14.67	0.10	Left	Cheek	MIMO	Standard	015D8	13	1:1	0.076	1.211	0.092	
5280	56	IEEE 802.11n	OFDM	15.5	14.67	0.10	Left	Tilt	MIMO	Standard	015D8	13	1:1	0.061	1.211	0.074	
5680	136	IEEE 802.11n	OFDM	15.5	14.80	0.13	Right	Cheek	MIMO	Standard	015D8	13	1:1	0.187	1.175	0.220	
5680	136	IEEE 802.11n	OFDM	15.5	14.80	0.08	Right	Cheek	MIMO	Wireless Charging	015D8	13	1:1	0.212	1.175	0.249	A13
5680	136	IEEE 802.11n	OFDM	15.5	14.80	0.16	Right	Tilt	MIMO	Standard	015D8	13	1:1	0.122	1.175	0.143	
5680	136	IEEE 802.11n	OFDM	15.5	14.80	-0.13	Left	Cheek	MIMO	Standard	015D8	13	1:1	0.035	1.175	0.041	
5680	136	IEEE 802.11n	OFDM	15.5	14.80	0.12	Left	Tilt	MIMO	Standard	015D8	13	1:1	0.037	1.175	0.043	
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11.2 Standalone Body-Worn SAR Data

Table 11-13
CDMA/GSM/UMTS Body-Worn SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Cover Type	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	33.5	33.00	-0.01	15 mm	Standard	F4D34	1	1:8.3	back	0.211	1.122	0.237	
836.60	190	GSM 850	GSM	33.5	33.00	0.03	15 mm	Wireless Charging	F4D34	1	1:8.3	back	0.310	1.122	0.348	A14
836.60	4183	UMTS 850	RMC	23.5	23.43	-0.03	15 mm	Standard	F4D2A	N/A	1:1	back	0.246	1.016	0.250	A16
836.60	4183	UMTS 850	RMC	23.5	23.43	0.08	15 mm	Wireless Charging	F4D2A	N/A	1:1	back	0.230	1.016	0.234	
820.10	564	CDMA BC10 (S90S)	TDSO / SO32	25.0	24.94	0.04	15 mm	Standard	F4D33	N/A	1:1	back	0.500	1.014	0.507	A18
820.10	564	CDMA BC10 (S90S)	TDSO / SO32	25.0	24.94	-0.06	15 mm	Wireless Charging	F4D33	N/A	1:1	back	0.414	1.014	0.420	
836.52	384	CDMA BC0 (S22H)	TDSO / SO32	25.0	24.94	-0.10	15 mm	Standard	F4D33	N/A	1:1	back	0.677	1.014	0.686	A20
836.52	384	CDMA BC0 (S22H)	TDSO / SO32	25.0	24.94	0.04	15 mm	Wireless Charging	F4D33	N/A	1:1	back	0.569	1.014	0.577	
1880.00	661	GSM 1900	GSM	30.5	30.50	0.04	15 mm	Standard	F4D34	1	1:8.3	back	0.290	1.000	0.290	A22
1880.00	661	GSM 1900	GSM	30.5	30.50	0.01	15 mm	Wireless Charging	F4D34	1	1:8.3	back	0.221	1.000	0.221	
1880.00	9400	UMTS 1900	RMC	23.5	23.31	-0.02	15 mm	Standard	F4D2A	N/A	1:1	back	0.199	1.045	0.208	A24
1880.00	9400	UMTS 1900	RMC	23.5	23.31	0.09	15 mm	Wireless Charging	F4D2A	N/A	1:1	back	0.184	1.045	0.192	
1880.00	600	PCS CDMA	TDSO / SO32	25.0	24.87	0.02	15 mm	Standard	F4D33	N/A	1:1	back	0.283	1.030	0.291	A26
1880.00	600	PCS CDMA	TDSO / SO32	25.0	24.87	-0.01	15 mm	Wireless Charging	F4D33	N/A	1:1	back	0.254	1.030	0.262	
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 11-14
LTE Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
844.00	26990	High	LTE Band 26	10	Standard	24.5	24.50	-0.06	0	F4D31	QPSK	1	25	15 mm	back	1:1	0.405	1.000	0.405	A28
844.00	26990	High	LTE Band 26	10	Wireless Charging	24.5	24.50	0.03	0	F4D31	QPSK	1	25	15 mm	back	1:1	0.366	1.000	0.366	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.50	0.02	1	F4D31	QPSK	25	25	15 mm	back	1:1	0.326	1.000	0.326	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	24.5	24.50	-0.01	0	F4D30	QPSK	1	50	15 mm	back	1:1	0.285	1.000	0.285	A30
1905.00	26590	High	LTE Band 25 (PCS)	20	Wireless Charging	24.5	24.50	0.10	0	F4D30	QPSK	1	50	15 mm	back	1:1	0.267	1.000	0.267	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	23.5	23.50	0.15	1	F4D30	QPSK	50	0	15 mm	back	1:1	0.242	1.000	0.242	
2680.00	41490	High	LTE Band 41	20	Standard	24.5	24.50	0.17	0	F4D29	QPSK	1	0	15 mm	back	1:1.58	0.143	1.000	0.143	A32
2680.00	41490	High	LTE Band 41	20	Wireless Charging	24.5	24.50	0.12	0	F4D29	QPSK	1	0	15 mm	back	1:1.58	0.132	1.000	0.132	
2680.00	41490	High	LTE Band 41	20	Standard	23.5	23.50	0.13	1	F4D29	QPSK	50	0	15 mm	back	1:1.58	0.110	1.000	0.110	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram							

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Table 11-15
DTS Body-Worn SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.													(W/kg)		(W/kg)	
2462	11	IEEE 802.11b	DSSS	15.5	15.30	0.06	10 mm	1	Standard	015D8	1	back	1:1	0.128	1.047	0.134	A34
2462	11	IEEE 802.11b	DSSS	15.5	15.30	0.18	10 mm	1	Wireless Charging	015D8	1	back	1:1	0.086	1.047	0.090	
2462	11	IEEE 802.11b	DSSS	15.5	14.80	0.08	10 mm	2	Standard	015D8	1	back	1:1	0.118	1.175	0.139	
2462	11	IEEE 802.11n	OFDM	15.5	15.34	0.19	10 mm	MIMO	Standard	015D8	13	back	1:1	0.060	1.038	0.062	
2462	11	IEEE 802.11n	OFDM	15.5	15.34	0.12	10 mm	MIMO	Wireless Charging	015D8	13	back	1:1	0.045	1.038	0.047	
5825	165	IEEE 802.11a	OFDM	12.5	11.88	0.15	10 mm	1	Standard	015D8	6	back	1:1	0.048	1.153	0.055	
5775	155	IEEE 802.11ac	OFDM	10.5	9.62	0.12	10 mm	1	Standard	015D8	29.3	back	1:1	0.030	1.225	0.037	
5765	153	IEEE 802.11a	OFDM	12.5	12.41	-0.13	10 mm	2	Standard	015D8	6	back	1:1	0.214	1.021	0.218	
5775	155	IEEE 802.11ac	OFDM	10.5	10.31	-0.12	10 mm	2	Standard	015D8	29.3	back	1:1	0.092	1.045	0.096	
5745	149	IEEE 802.11n	OFDM	15.5	14.85	-0.13	10 mm	MIMO	Standard	015D8	13	back	1:1	0.292	1.161	0.369	A35
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-16
NII Body-Worn SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.													(W/kg)		(W/kg)	
5240	48	IEEE 802.11a	OFDM	12.5	11.59	0.16	10 mm	1	Standard	015D8	6	back	1:1	0.022	1.233	0.027	
5210	42	IEEE 802.11ac	OFDM	10.5	9.88	0.15	10 mm	1	Standard	015D8	29.3	back	1:1	0.019	1.153	0.022	
5320	64	IEEE 802.11a	OFDM	12.5	11.94	0.10	10 mm	1	Standard	015D8	6	back	1:1	0.026	1.138	0.030	
5290	58	IEEE 802.11ac	OFDM	10.5	9.96	0.12	10 mm	1	Standard	015D8	29.3	back	1:1	0.018	1.132	0.020	
5580	116	IEEE 802.11a	OFDM	12.5	12.00	0.17	10 mm	1	Standard	015D8	6	back	1:1	0.046	1.122	0.052	
5530	106	IEEE 802.11ac	OFDM	10.5	9.92	0.16	10 mm	1	Standard	015D8	29.3	back	1:1	0.025	1.143	0.029	
5200	40	IEEE 802.11a	OFDM	12.5	11.92	-0.14	10 mm	2	Standard	015D8	6	back	1:1	0.092	1.143	0.105	
5210	42	IEEE 802.11ac	OFDM	10.5	10.04	-0.16	10 mm	2	Standard	015D8	29.3	back	1:1	0.059	1.112	0.066	
5260	52	IEEE 802.11a	OFDM	12.5	11.54	-0.04	10 mm	2	Standard	015D8	6	back	1:1	0.092	1.247	0.115	
5290	58	IEEE 802.11ac	OFDM	10.5	9.59	-0.13	10 mm	2	Standard	015D8	29.3	back	1:1	0.063	1.233	0.078	
5700	140	IEEE 802.11a	OFDM	12.5	11.92	-0.10	10 mm	2	Standard	015D8	6	back	1:1	0.272	1.143	0.311	
5700	140	IEEE 802.11a	OFDM	12.5	11.92	-0.12	10 mm	2	Wireless Charging	015D8	6	back	1:1	0.321	1.143	0.367	
5530	106	IEEE 802.11ac	OFDM	10.5	9.50	-0.19	10 mm	2	Standard	015D8	29.3	back	1:1	0.157	1.259	0.198	
5180	36	IEEE 802.11n	OFDM	15.5	14.78	-0.14	10 mm	MIMO	Standard	015D8	13	back	1:1	0.127	1.180	0.150	
5280	56	IEEE 802.11n	OFDM	15.5	14.67	-0.17	10 mm	MIMO	Standard	015D8	13	back	1:1	0.147	1.211	0.178	
5540	108	IEEE 802.11n	OFDM	15.5	14.62	-0.12	10 mm	MIMO	Standard	015D8	13	back	1:1	0.385	1.225	0.472	
5580	116	IEEE 802.11n	OFDM	15.5	14.75	-0.15	10 mm	MIMO	Standard	015D8	13	back	1:1	0.428	1.189	0.509	
5680	136	IEEE 802.11n	OFDM	15.5	14.80	-0.12	10 mm	MIMO	Standard	015D8	13	back	1:1	0.454	1.175	0.533	A36
5680	136	IEEE 802.11n	OFDM	15.5	14.80	-0.10	10 mm	MIMO	Wireless Charging	015D8	13	back	1:1	0.325	1.175	0.382	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram										

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11.3 Standalone Wireless Router SAR Data

Table 11-17
CDMA/GPRS/UMTS Hotspot SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Cover Type	Device Serial Number	# of GPRS Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.60	190	GSM 850	GPRS	32.0	31.02	0.00	10 mm	Standard	F4D34	2	1:4.15	back	0.446	1.253	0.559	
836.60	190	GSM 850	GPRS	32.0	31.02	-0.11	10 mm	Standard	F4D34	2	1:4.15	front	0.602	1.253	0.754	
836.60	190	GSM 850	GPRS	32.0	31.02	0.03	10 mm	Wireless Charging	F4D34	2	1:4.15	front	0.670	1.253	0.840	A15
836.60	190	GSM 850	GPRS	32.0	31.02	0.21	10 mm	Standard	F4D34	2	1:4.15	bottom	0.375	1.253	0.470	
836.60	190	GSM 850	GPRS	32.0	31.02	-0.02	10 mm	Standard	F4D34	2	1:4.15	right	0.324	1.253	0.406	
836.60	190	GSM 850	GPRS	32.0	31.02	-0.04	10 mm	Standard	F4D34	2	1:4.15	left	0.126	1.253	0.158	
836.60	4183	UMTS 850	RMC	23.5	23.43	-0.07	10 mm	Standard	F4D2A	N/A	1:1	back	0.439	1.016	0.446	
836.60	4183	UMTS 850	RMC	23.5	23.43	-0.03	10 mm	Standard	F4D2A	N/A	1:1	front	0.460	1.016	0.467	A17
836.60	4183	UMTS 850	RMC	23.5	23.43	0.00	10 mm	Wireless Charging	F4D2A	N/A	1:1	front	0.447	1.016	0.454	
836.60	4183	UMTS 850	RMC	23.5	23.43	0.04	10 mm	Standard	F4D2A	N/A	1:1	bottom	0.239	1.016	0.243	
836.60	4183	UMTS 850	RMC	23.5	23.43	-0.02	10 mm	Standard	F4D2A	N/A	1:1	right	0.261	1.016	0.265	
836.60	4183	UMTS 850	RMC	23.5	23.43	-0.02	10 mm	Standard	F4D2A	N/A	1:1	left	0.238	1.016	0.242	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	22.0	21.96	-0.21	10 mm	Standard	F4D2B	N/A	1:1	back	0.450	1.009	0.454	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	22.0	21.96	0.01	10 mm	Standard	F4D2B	N/A	1:1	front	0.478	1.009	0.482	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	22.0	21.96	-0.03	10 mm	Wireless Charging	F4D2B	N/A	1:1	front	0.494	1.009	0.498	A19
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	22.0	21.96	-0.11	10 mm	Standard	F4D2B	N/A	1:1	bottom	0.193	1.009	0.195	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	22.0	21.96	-0.18	10 mm	Standard	F4D2B	N/A	1:1	right	0.245	1.009	0.247	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	22.0	21.96	-0.21	10 mm	Standard	F4D2B	N/A	1:1	left	0.228	1.009	0.230	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	22.0	21.84	0.01	10 mm	Standard	F4D2B	N/A	1:1	back	0.478	1.038	0.496	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	22.0	21.84	0.06	10 mm	Standard	F4D2B	N/A	1:1	front	0.479	1.038	0.497	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	22.0	21.84	0.15	10 mm	Wireless Charging	F4D2B	N/A	1:1	front	0.577	1.038	0.599	A21
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	22.0	21.84	-0.09	10 mm	Standard	F4D2B	N/A	1:1	bottom	0.293	1.038	0.304	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	22.0	21.84	0.03	10 mm	Standard	F4D2B	N/A	1:1	right	0.223	1.038	0.231	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	22.0	21.84	-0.19	10 mm	Standard	F4D2B	N/A	1:1	left	0.250	1.038	0.260	
1880.00	661	GSM 1900	GPRS	26.0	25.88	-0.05	10 mm	Standard	F4D34	4	1:2.076	back	0.481	1.028	0.494	
1880.00	661	GSM 1900	GPRS	26.0	25.88	-0.14	10 mm	Standard	F4D34	4	1:2.076	front	0.753	1.028	0.774	
1850.20	512	GSM 1900	GPRS	26.0	25.99	-0.03	10 mm	Standard	F4D34	4	1:2.076	bottom	1.070	1.002	1.072	A23
1880.00	661	GSM 1900	GPRS	26.0	25.88	-0.04	10 mm	Standard	F4D34	4	1:2.076	bottom	1.030	1.028	1.059	
1909.80	810	GSM 1900	GPRS	26.0	25.90	-0.10	10 mm	Standard	F4D34	4	1:2.076	bottom	0.893	1.023	0.914	
1850.20	512	GSM 1900	GPRS	26.0	25.99	-0.06	10 mm	Wireless Charging	F4D34	4	1:2.076	bottom	0.952	1.002	0.954	
1880.00	661	GSM 1900	GPRS	26.0	25.88	0.00	10 mm	Standard	F4D34	4	1:2.076	right	0.081	1.028	0.083	
1880.00	661	GSM 1900	GPRS	26.0	25.88	0.00	10 mm	Standard	F4D34	4	1:2.076	left	0.209	1.028	0.215	
1850.20	512	GSM 1900	GPRS	26.0	25.99	0.02	10 mm	Standard	F4D34	4	1:2.076	bottom	0.992	1.002	0.994	
1880.00	9400	UMTS 1900	RMC	20.5	20.26	-0.04	10 mm	Standard	F4D35	N/A	1:1	back	0.265	1.057	0.280	
1880.00	9400	UMTS 1900	RMC	20.5	20.26	-0.05	10 mm	Standard	F4D35	N/A	1:1	front	0.346	1.057	0.366	
1880.00	9400	UMTS 1900	RMC	20.5	20.26	0.00	10 mm	Standard	F4D35	N/A	1:1	bottom	0.489	1.057	0.517	A25
1880.00	9400	UMTS 1900	RMC	20.5	20.26	-0.03	10 mm	Wireless Charging	F4D35	N/A	1:1	bottom	0.441	1.057	0.466	
1880.00	9400	UMTS 1900	RMC	20.5	20.26	0.04	10 mm	Standard	F4D35	N/A	1:1	right	0.100	1.057	0.106	
1880.00	9400	UMTS 1900	RMC	20.5	20.26	0.00	10 mm	Standard	F4D35	N/A	1:1	left	0.102	1.057	0.108	
1880.00	600	PCS CDMA	EVDO Rev. 0	22.0	21.95	-0.03	10 mm	Standard	F4D2B	N/A	1:1	back	0.412	1.012	0.417	
1880.00	600	PCS CDMA	EVDO Rev. 0	22.0	21.95	0.01	10 mm	Standard	F4D2B	N/A	1:1	front	0.725	1.012	0.734	
1851.25	25	PCS CDMA	EVDO Rev. 0	22.0	21.80	0.02	10 mm	Standard	F4D2B	N/A	1:1	bottom	0.887	1.047	0.929	
1880.00	600	PCS CDMA	EVDO Rev. 0	22.0	21.95	-0.08	10 mm	Standard	F4D2B	N/A	1:1	bottom	0.908	1.012	0.919	
1908.75	1175	PCS CDMA	EVDO Rev. 0	22.0	22.00	-0.10	10 mm	Standard	F4D2B	N/A	1:1	bottom	1.050	1.000	1.050	A27
1908.75	1175	PCS CDMA	EVDO Rev. 0	22.0	22.00	0.03	10 mm	Wireless Charging	F4D2B	N/A	1:1	bottom	1.020	1.000	1.020	
1880.00	600	PCS CDMA	EVDO Rev. 0	22.0	21.95	0.06	10 mm	Standard	F4D2B	N/A	1:1	right	0.101	1.012	0.102	
1880.00	600	PCS CDMA	EVDO Rev. 0	22.0	21.95	0.02	10 mm	Standard	F4D2B	N/A	1:1	left	0.154	1.012	0.156	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT							Body									
Spatial Peak							1.6 W/kg (mW/g)									
Uncontrolled Exposure/General Population							averaged over 1 gram									

Variability test is highlighted in blue

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Table 11-18
LTE Band 26 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
844.00	26990	High	LTE Band 26	10	Standard	24.5	24.50	0.02	0	F4D31	QPSK	1	25	10 mm	back	1:1	0.683	1.000	0.683	A29
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.50	0.09	1	F4D31	QPSK	25	25	10 mm	back	1:1	0.553	1.000	0.553	
844.00	26990	High	LTE Band 26	10	Standard	24.5	24.50	0.09	0	F4D31	QPSK	1	25	10 mm	front	1:1	0.760	1.000	0.760	
844.00	26990	High	LTE Band 26	10	Wireless Charging	24.5	24.50	0.06	0	F4D31	QPSK	1	25	10 mm	front	1:1	0.688	1.000	0.688	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.50	0.05	1	F4D31	QPSK	25	25	10 mm	front	1:1	0.623	1.000	0.623	
844.00	26990	High	LTE Band 26	10	Standard	24.5	24.50	-0.02	0	F4D31	QPSK	1	25	10 mm	bottom	1:1	0.275	1.000	0.275	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.50	0.02	1	F4D31	QPSK	25	25	10 mm	bottom	1:1	0.221	1.000	0.221	
844.00	26990	High	LTE Band 26	10	Standard	24.5	24.50	-0.08	0	F4D31	QPSK	1	25	10 mm	right	1:1	0.215	1.000	0.215	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.50	0.07	1	F4D31	QPSK	25	25	10 mm	right	1:1	0.180	1.000	0.180	
844.00	26990	High	LTE Band 26	10	Standard	24.5	24.50	-0.05	0	F4D31	QPSK	1	25	10 mm	left	1:1	0.371	1.000	0.371	
844.00	26990	High	LTE Band 26	10	Standard	23.5	23.50	0.03	1	F4D31	QPSK	25	25	10 mm	left	1:1	0.290	1.000	0.290	
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 11-19
LTE Band 25 (PCS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	-0.03	0	F4D32	QPSK	1	50	10 mm	back	1:1	0.305	1.000	0.305	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	-0.05	0	F4D32	QPSK	50	25	10 mm	back	1:1	0.309	1.000	0.309	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	-0.05	0	F4D32	QPSK	1	50	10 mm	front	1:1	0.313	1.000	0.313	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	-0.01	0	F4D32	QPSK	50	25	10 mm	front	1:1	0.319	1.000	0.319	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	-0.02	0	F4D32	QPSK	1	50	10 mm	bottom	1:1	0.485	1.000	0.485	A31
1905.00	26590	High	LTE Band 25 (PCS)	20	Wireless Charging	21.5	21.50	0.03	0	F4D32	QPSK	1	50	10 mm	bottom	1:1	0.484	1.000	0.484	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	-0.10	0	F4D32	QPSK	50	25	10 mm	bottom	1:1	0.473	1.000	0.473	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	-0.04	0	F4D32	QPSK	1	50	10 mm	right	1:1	0.036	1.000	0.036	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	0.14	0	F4D32	QPSK	50	25	10 mm	right	1:1	0.036	1.000	0.036	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	0.00	0	F4D32	QPSK	1	50	10 mm	left	1:1	0.129	1.000	0.129	
1905.00	26590	High	LTE Band 25 (PCS)	20	Standard	21.5	21.50	0.15	0	F4D32	QPSK	50	25	10 mm	left	1:1	0.127	1.000	0.127	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT									Body											
Spatial Peak									1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population									averaged over 1 gram											

Table 11-20
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Cover Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
2680.00	41490	High	LTE Band 41	20	Standard	24.5	24.50	0.01	0	F4D29	QPSK	1	0	10 mm	back	1:1.58	0.349	1.000	0.349	
2680.00	41490	High	LTE Band 41	20	Standard	23.5	23.50	0.06	1	F4D29	QPSK	50	0	10 mm	back	1:1.58	0.277	1.000	0.277	
2680.00	41490	High	LTE Band 41	20	Standard	24.5	24.50	0.06	0	F4D29	QPSK	1	0	10 mm	front	1:1.58	0.293	1.000	0.293	
2680.00	41490	High	LTE Band 41	20	Standard	23.5	23.50	0.07	1	F4D29	QPSK	50	0	10 mm	front	1:1.58	0.232	1.000	0.232	
2680.00	41490	High	LTE Band 41	20	Standard	24.5	24.50	0.08	0	F4D29	QPSK	1	0	10 mm	bottom	1:1.58	0.412	1.000	0.412	A33
2680.00	41490	High	LTE Band 41	20	Wireless Charging	24.5	24.50	0.02	0	F4D29	QPSK	1	0	10 mm	bottom	1:1.58	0.386	1.000	0.386	
2680.00	41490	High	LTE Band 41	20	Standard	23.5	23.50	0.01	1	F4D29	QPSK	50	0	10 mm	bottom	1:1.58	0.321	1.000	0.321	
2680.00	41490	High	LTE Band 41	20	Standard	24.5	24.50	0.08	0	F4D29	QPSK	1	0	10 mm	right	1:1.58	0.093	1.000	0.093	
2680.00	41490	High	LTE Band 41	20	Standard	23.5	23.50	0.03	1	F4D29	QPSK	50	0	10 mm	right	1:1.58	0.070	1.000	0.070	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Body										
Spatial Peak										1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population										averaged over 1 gram										

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Table 11-21
WLAN Hotspot SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.													(W/kg)		(W/kg)	
2462	11	IEEE 802.11b	DSSS	15.5	15.30	0.06	10 mm	1	Standard	015D8	1	back	1:1	0.128	1.047	0.134	A34
2462	11	IEEE 802.11b	DSSS	15.5	15.30	0.18	10 mm	1	Wireless Charging	015D8	1	back	1:1	0.086	1.047	0.090	
2462	11	IEEE 802.11b	DSSS	15.5	15.30	-0.09	10 mm	1	Standard	015D8	1	front	1:1	0.067	1.047	0.070	
2462	11	IEEE 802.11b	DSSS	15.5	15.30	0.10	10 mm	1	Standard	015D8	1	top	1:1	0.025	1.047	0.026	
2462	11	IEEE 802.11b	DSSS	15.5	15.30	0.12	10 mm	1	Standard	015D8	1	left	1:1	0.046	1.047	0.048	
2462	11	IEEE 802.11b	DSSS	15.5	14.80	0.08	10 mm	2	Standard	015D8	1	back	1:1	0.118	1.175	0.139	
2462	11	IEEE 802.11b	DSSS	15.5	14.80	-0.15	10 mm	2	Standard	015D8	1	front	1:1	0.064	1.175	0.075	
2462	11	IEEE 802.11b	DSSS	15.5	14.80	-0.12	10 mm	2	Standard	015D8	1	top	1:1	0.052	1.175	0.061	
2462	11	IEEE 802.11n	OFDM	15.5	15.34	0.19	10 mm	MIMO	Standard	015D8	13	back	1:1	0.060	1.038	0.062	
2462	11	IEEE 802.11n	OFDM	15.5	15.34	0.12	10 mm	MIMO	Wireless Charging	015D8	13	back	1:1	0.045	1.038	0.047	
2462	11	IEEE 802.11n	OFDM	15.5	15.34	0.12	10 mm	MIMO	Standard	015D8	13	front	1:1	0.038	1.038	0.039	
2462	11	IEEE 802.11n	OFDM	15.5	15.34	0.18	10 mm	MIMO	Standard	015D8	13	top	1:1	0.018	1.038	0.019	
2462	11	IEEE 802.11n	OFDM	15.5	15.34	0.13	10 mm	MIMO	Standard	015D8	13	left	1:1	0.017	1.038	0.018	
5825	165	IEEE 802.11a	OFDM	12.5	11.88	0.15	10 mm	1	Standard	015D8	6	back	1:1	0.048	1.153	0.055	
5775	155	IEEE 802.11ac	OFDM	10.5	9.62	0.12	10 mm	1	Standard	015D8	29.3	back	1:1	0.030	1.225	0.037	
5825	165	IEEE 802.11a	OFDM	12.5	11.88	0.12	10 mm	1	Standard	015D8	6	front	1:1	0.011	1.153	0.013	
5825	165	IEEE 802.11a	OFDM	12.5	11.88	0.13	10 mm	1	Standard	015D8	6	top	1:1	0.020	1.153	0.023	
5825	165	IEEE 802.11a	OFDM	12.5	11.88	0.14	10 mm	1	Standard	015D8	6	left	1:1	0.022	1.153	0.025	
5765	153	IEEE 802.11a	OFDM	12.5	12.41	-0.13	10 mm	2	Standard	015D8	6	back	1:1	0.214	1.021	0.218	
5765	153	IEEE 802.11a	OFDM	12.5	12.41	-0.13	10 mm	2	Wireless Charging	015D8	6	back	1:1	0.453	1.021	0.463	
5775	155	IEEE 802.11ac	OFDM	10.5	10.31	-0.12	10 mm	2	Standard	015D8	29.3	back	1:1	0.092	1.045	0.096	
5765	153	IEEE 802.11a	OFDM	12.5	12.41	-0.15	10 mm	2	Standard	015D8	6	front	1:1	0.030	1.021	0.031	
5765	153	IEEE 802.11a	OFDM	12.5	12.41	0.12	10 mm	2	Standard	015D8	6	top	1:1	0.058	1.021	0.059	
5745	149	IEEE 802.11n	OFDM	15.5	14.85	-0.13	10 mm	MIMO	Standard	015D8	13	back	1:1	0.292	1.161	0.339	
5745	149	IEEE 802.11n	OFDM	15.5	14.85	0.14	10 mm	MIMO	Wireless Charging	015D8	13	back	1:1	0.482	1.161	0.560	A37
5745	149	IEEE 802.11n	OFDM	15.5	14.85	-0.15	10 mm	MIMO	Standard	015D8	13	front	1:1	0.023	1.161	0.027	
5745	149	IEEE 802.11n	OFDM	15.5	14.85	-0.13	10 mm	MIMO	Standard	015D8	13	top	1:1	0.136	1.161	0.158	
5745	149	IEEE 802.11n	OFDM	15.5	14.85	0.19	10 mm	MIMO	Standard	015D8	13	left	1:1	0.076	1.161	0.088	
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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11.4 Standalone Hand SAR Data

Table 11-22
PCE Hand SAR – PCS CDMA

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Cover Type	Device Serial Number	Duty Cycle	Side	SAR (10g)	Scaling Factor	Scaled SAR (10g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.0	24.92	-0.02	0 mm	Standard	F4D33	1:1	front	1.900	1.019	1.936	
1851.25	25	PCS CDMA	EVDO Rev. 0	25.0	24.96	-0.09	0 mm	Standard	F4D33	1:1	bottom	2.460	1.009	2.482	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.0	24.92	0.02	0 mm	Standard	F4D33	1:1	bottom	2.320	1.019	2.364	
1908.75	1175	PCS CDMA	EVDO Rev. 0	25.0	25.00	0.05	0 mm	Standard	F4D33	1:1	bottom	3.110	1.000	3.110	
1908.75	1175	PCS CDMA	EVDO Rev. 0	25.0	25.00	0.09	0 mm	Wireless Charging	F4D33	1:1	bottom	3.280	1.000	3.280	A38
1908.75	1175	PCS CDMA	EVDO Rev. 0	25.0	25.00	0.04	0 mm	Wireless Charging	F4D33	1:1	bottom	2.970	1.000	2.970	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Hand 4.0 W/kg (mW/g) averaged over 10 grams								

Please note that the following 10g SAR data was measured for configurations where 1g hotspot SAR scaled up to the maximum output power tolerances exceeded a 1g SAR level of 1.2 W/kg.

Variability test is highlighted in blue

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**Table 11-23
WLAN Hand SAR**

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Cover Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (10g)	Scaling Factor	Scaled SAR (10g)	Plot #
MHz	Ch.													(W/kg)		(W/kg)	
5240	48	IEEE 802.11a	OFDM	12.5	11.59	0.12	0 mm	1	Standard	015D7	6	back	1:1	0.100	1.233	0.123	
5210	42	IEEE 802.11ac	OFDM	10.5	9.88	0.12	0 mm	1	Standard	015D7	29.3	back	1:1	0.069	1.153	0.080	
5240	48	IEEE 802.11a	OFDM	12.5	11.59	0.12	0 mm	1	Standard	015D7	6	front	1:1	0.042	1.233	0.052	
5240	48	IEEE 802.11a	OFDM	12.5	11.59	0.19	0 mm	1	Standard	015D7	6	top	1:1	0.029	1.233	0.036	
5240	48	IEEE 802.11a	OFDM	12.5	11.59	-0.17	0 mm	1	Standard	015D7	6	left	1:1	0.058	1.233	0.072	
5320	64	IEEE 802.11a	OFDM	12.5	11.94	0.06	0 mm	1	Standard	015D7	6	back	1:1	0.105	1.138	0.119	
5290	58	IEEE 802.11ac	OFDM	10.5	9.96	0.13	0 mm	1	Standard	015D7	29.3	back	1:1	0.057	1.132	0.065	
5320	64	IEEE 802.11a	OFDM	12.5	11.94	0.16	0 mm	1	Standard	015D7	6	front	1:1	0.046	1.138	0.052	
5320	64	IEEE 802.11a	OFDM	12.5	11.94	0.14	0 mm	1	Standard	015D7	6	top	1:1	0.005	1.138	0.006	
5320	64	IEEE 802.11a	OFDM	12.5	11.94	-0.03	0 mm	1	Standard	015D7	6	left	1:1	0.099	1.138	0.113	
5580	116	IEEE 802.11a	OFDM	12.5	12.00	0.04	0 mm	1	Standard	015D7	6	back	1:1	0.136	1.122	0.153	
5580	116	IEEE 802.11a	OFDM	12.5	12.00	0.16	0 mm	1	Standard	015D7	6	front	1:1	0.046	1.122	0.052	
5580	116	IEEE 802.11a	OFDM	12.5	12.00	0.10	0 mm	1	Standard	015D7	6	top	1:1	0.004	1.122	0.004	
5580	116	IEEE 802.11a	OFDM	12.5	12.00	-0.13	0 mm	1	Standard	015D7	6	left	1:1	0.194	1.122	0.218	
5530	106	IEEE 802.11ac	OFDM	10.5	9.92	0.14	0 mm	1	Standard	015D7	29.3	left	1:1	0.191	1.143	0.218	
5200	40	IEEE 802.11a	OFDM	12.5	11.92	0.08	0 mm	2	Standard	015D7	6	back	1:1	0.305	1.143	0.349	
5210	42	IEEE 802.11ac	OFDM	10.5	10.04	-0.12	0 mm	2	Standard	015D7	29.3	back	1:1	0.176	1.112	0.196	
5200	40	IEEE 802.11a	OFDM	12.5	11.92	0.16	0 mm	2	Standard	015D7	6	front	1:1	0.068	1.143	0.078	
5200	40	IEEE 802.11a	OFDM	12.5	11.92	-0.02	0 mm	2	Standard	015D7	6	top	1:1	0.106	1.143	0.121	
5260	52	IEEE 802.11a	OFDM	12.5	11.54	-0.10	0 mm	2	Standard	015D7	6	back	1:1	0.297	1.247	0.370	
5290	58	IEEE 802.11ac	OFDM	10.5	9.59	-0.18	0 mm	2	Standard	015D7	29.3	back	1:1	0.164	1.233	0.202	
5260	52	IEEE 802.11a	OFDM	12.5	11.54	0.17	0 mm	2	Standard	015D7	6	front	1:1	0.050	1.247	0.062	
5260	52	IEEE 802.11a	OFDM	12.5	11.54	0.14	0 mm	2	Standard	015D7	6	top	1:1	0.099	1.247	0.123	
5700	140	IEEE 802.11a	OFDM	12.5	11.92	0.15	0 mm	2	Standard	015D7	6	back	1:1	0.595	1.143	0.680	A39
5700	140	IEEE 802.11a	OFDM	12.5	11.92	-0.13	0 mm	2	Wireless Charging	015D7	6	back	1:1	0.500	1.143	0.572	
5530	106	IEEE 802.11ac	OFDM	10.5	9.50	-0.12	0 mm	2	Standard	015D7	29.3	back	1:1	0.225	1.259	0.283	
5700	140	IEEE 802.11a	OFDM	12.5	11.92	0.16	0 mm	2	Standard	015D7	6	front	1:1	0.047	1.143	0.054	
5700	140	IEEE 802.11a	OFDM	12.5	11.92	0.20	0 mm	2	Standard	015D7	6	top	1:1	0.136	1.143	0.155	
5180	36	IEEE 802.11n	OFDM	15.5	14.78	0.12	0 mm	MIMO	Standard	015D7	13	back	1:1	0.304	1.180	0.359	
5180	36	IEEE 802.11n	OFDM	15.5	14.78	0.03	0 mm	MIMO	Wireless Charging	015D7	13	back	1:1	0.243	1.180	0.287	
5180	36	IEEE 802.11n	OFDM	15.5	14.78	0.12	0 mm	MIMO	Standard	015D7	13	front	1:1	0.096	1.180	0.113	
5180	36	IEEE 802.11n	OFDM	15.5	14.78	0.05	0 mm	MIMO	Standard	015D7	13	top	1:1	0.102	1.180	0.120	
5180	36	IEEE 802.11n	OFDM	15.5	14.78	-0.02	0 mm	MIMO	Standard	015D7	13	left	1:1	0.066	1.180	0.078	
5280	56	IEEE 802.11n	OFDM	15.5	14.67	0.12	0 mm	MIMO	Standard	015D7	13	back	1:1	0.303	1.211	0.367	
5280	56	IEEE 802.11n	OFDM	15.5	14.67	0.13	0 mm	MIMO	Standard	015D7	13	front	1:1	0.072	1.211	0.087	
5280	56	IEEE 802.11n	OFDM	15.5	14.67	0.13	0 mm	MIMO	Standard	015D7	13	top	1:1	0.090	1.211	0.109	
5280	56	IEEE 802.11n	OFDM	15.5	14.67	0.14	0 mm	MIMO	Standard	015D7	13	left	1:1	0.084	1.211	0.102	
5680	136	IEEE 802.11n	OFDM	15.5	14.80	0.18	0 mm	MIMO	Standard	015D7	13	back	1:1	0.285	1.175	0.335	
5680	136	IEEE 802.11n	OFDM	15.5	14.80	0.12	0 mm	MIMO	Standard	015D7	13	front	1:1	0.070	1.175	0.082	
5680	136	IEEE 802.11n	OFDM	15.5	14.80	0.15	0 mm	MIMO	Standard	015D7	13	top	1:1	0.134	1.175	0.157	
5680	136	IEEE 802.11n	OFDM	15.5	14.80	0.15	0 mm	MIMO	Standard	015D7	13	left	1:1	0.181	1.175	0.213	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Extremity 4.0 W/kg (mW/g) averaged over 10 grams										

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11.5 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2003, and FCC KDB Publication 447498 D01v05.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v05.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 15 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance. A test separation distance of 10 mm was used for 2.4/5 GHz WLAN as it is more conservative.
7. Per FCC KDB Publication 648474 D04v01, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.6 for more details).
9. This device utilizes power reduction for CDMA BC10/0/1, UMTS Band 2 and LTE Bands 25 under some portable hotspot conditions for SAR compliance. Therefore, these wireless router configurations were tested at reduced output power levels.
10. Per FCC KDB Publication 648474 D04v01r01, this device is considered a "phablet" since the diagonal dimension is > 160 mm and < 200 mm. Therefore, hand SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg when scaled up to the maximum output power tolerances.
11. Per FCC KDB 865664 D01 v01, variability SAR tests were performed when the measured 1 gram SAR results for a frequency band were greater than 0.8 W/kg or when the measured 10 gram SAR results for a frequency band were greater than 2.0 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 13 for variability analysis.
12. Per FCC KDB Publication 648474 D03, SAR was measured using the standard battery cover and then repeated with the wireless charging battery cover for the configuration with the highest measured SAR for each wireless technology, frequency band, operating mode, and exposure condition. Since reported 1 gram SAR did not exceed 1.2 W/kg, additional testing with the wireless charging battery cover was not required.

GSM Test Notes:

1. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
2. Justification for reduced test configurations per KDB Publication 941225 D03v01 and October 2013 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all GPRS/EDGE slot configurations. The configuration with the highest target frame averaged output power was evaluated for hotspot SAR. When the maximum frame-averaged powers are equivalent across two or more slots (within 0.25 dB), the configuration with the most number of time slots was tested.
3. Per FCC KDB Publication 447498 D01v05, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.

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UMTS Notes:

1. UMTS mode in was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v02. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.
2. Per FCC KDB Publication 447498 D01v05, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used
3. This device applies power reduction for UMTS band 2 modes when Hotspot is ON. Therefore UMTS band 2 modes were evaluated at hotspot reduced power levels. There is no power reduction applied to UMTS B5.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r01. The general test procedures used for testing can be found in Section 8.4.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D01v05r01, since the reported (scaled) LTE Band 41 SAR measured at the highest output power channel for each test configuration is ≤ 0.6 W/kg, testing at the other channels is not required for such test configuration(s).
5. TDD LTE was tested per FCC KDB 941225 D05v02r03 and using the guidance provided in April 2013 TCB workshop notes. 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. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.
6. This device applies power reduction for LTE band 25 (PCS) modes when Hotspot is ON. Therefore LTE band 25 (PCS) modes were evaluated at hotspot reduced power levels. There is no power reduction applied to LTE Bands 26 and 41.

CDMA Notes:

1. Head SAR for CDMA2000 mode was tested under RC3/SO55 per FCC KDB Publication 941225 D01v02.
2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. EVDO and TDSO / SO32 FCH+SCH SAR tests were not required since the average output power was not more than 0.25 dB higher than the TDSO / SO32 FCH only powers, per FCC KDB Publication 941225 D01v02.
3. CDMA Wireless router (hotspot)/extremity SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 according to KDB 941225 D01 procedures for data devices. Since the average output power of Subtype 2 for Rev. A is less than the Rev. 0 power levels, EVDO Rev. A SAR is not required. SAR is not required for 1x RTT for Ev-Do hotspot devices when the maximum average output of each channel is less than $\frac{1}{4}$ dB higher than that measured in Subtype 0/1 Physical Layer configurations for Rev. 0.
4. Per FCC KDB Publication 447498 D01v05, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1 g and ≤ 2 W/kg for 10 g 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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5. Head SAR was additionally evaluated using EVDO Rev. A to determine compliance for VoIP operations.
6. This device applies power reduction for CDMA modes when Hotspot is ON. Therefore Cellular and PCS CDMA/EVDO modes were evaluated at hotspot reduced power levels.

WLAN Notes:

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

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12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

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

12.2 Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 D01v05 IV.C.1.iii and IEEE 1528-2013 Section 6.3.4.1.2, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤ 1.6 W/kg. When standalone SAR is not required to be measured, per FCC KDB 447498 D01v05 4.3.2 2), the following equation must be used to estimate the standalone 1g and 10 g SAR for simultaneous transmission assessment involving that transmitter.

$$\text{Estimated 1g SAR} = \frac{\sqrt{f(\text{GHz})}}{7.5} * \frac{(\text{Max Power of channel, mW})}{\text{Min. Separation Distance, mm}}$$

$$\text{Estimated 10g SAR} = \frac{\sqrt{f(\text{GHz})}}{18.75} * \frac{(\text{Max Power of channel, mW})}{\text{Min. Separation Distance, mm}}$$

Table 12-1
Estimated SAR

Mode	Frequency	Maximum Allowed Power	Configuration	Separation Distance (Body)	Estimated SAR (Body)	Estimated SAR (Hand)
	[MHz]	[dBm]		[mm]	[W/kg]	[W/kg]
Bluetooth	2480	12.00	Bodyworn	15	0.224	-
Bluetooth	2480	12.00	Front Side Touching*	5	-	0.269

Notes:

1. Held-to ear configurations are not applicable to Bluetooth operations and therefore were not considered for simultaneous transmission. Per KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mW before calculation.
3. (*) – Per FCC KDB 447498, when the test separation distance is < 5 mm, a distance of 5 mm is applied to determine estimated SAR.

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12.3 Head SAR Simultaneous Transmission Analysis

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

Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.059	0.329	0.388	Head SAR	Right Cheek	0.049	0.329	0.378
	Right Tilt	0.046	0.216	0.262		Right Tilt	0.033	0.216	0.249
	Left Cheek	0.123	0.174	0.297		Left Cheek	0.112	0.174	0.286
	Left Tilt	0.036	0.094	0.130		Left Tilt	0.034	0.094	0.128
Simult Tx	Configuration	CDMA BC10 (\$90S) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC10 (\$90S) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.105	0.329	0.434	Head SAR	Right Cheek	0.072	0.329	0.401
	Right Tilt	0.077	0.216	0.293		Right Tilt	0.048	0.216	0.264
	Left Cheek	0.241	0.174	0.415		Left Cheek	0.127	0.174	0.301
	Left Tilt	0.082	0.094	0.176		Left Tilt	0.056	0.094	0.150
Simult Tx	Configuration	CDMA BC0 (\$22H) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC0 (\$22H) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.160	0.329	0.489	Head SAR	Right Cheek	0.068	0.329	0.397
	Right Tilt	0.097	0.216	0.313		Right Tilt	0.037	0.216	0.253
	Left Cheek	0.286	0.174	0.460		Left Cheek	0.138	0.174	0.312
	Left Tilt	0.112	0.094	0.206		Left Tilt	0.056	0.094	0.150
Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.076	0.329	0.405	Head SAR	Right Cheek	0.141	0.329	0.470
	Right Tilt	0.038	0.216	0.254		Right Tilt	0.048	0.216	0.264
	Left Cheek	0.106	0.174	0.280		Left Cheek	0.217	0.174	0.391
	Left Tilt	0.016	0.094	0.110		Left Tilt	0.018	0.094	0.112
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.178	0.329	0.507	Head SAR	Right Cheek	0.090	0.329	0.419
	Right Tilt	0.094	0.216	0.310		Right Tilt	0.033	0.216	0.249
	Left Cheek	0.339	0.174	0.513		Left Cheek	0.196	0.174	0.370
	Left Tilt	0.062	0.094	0.156		Left Tilt	0.030	0.094	0.124
Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	2.4 GHz WLAN Ant 1 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)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.090	0.329	0.419	Head SAR	Right Cheek	0.078	0.329	0.407
	Right Tilt	0.061	0.216	0.277		Right Tilt	0.032	0.216	0.248
	Left Cheek	0.178	0.174	0.352		Left Cheek	0.098	0.174	0.272
	Left Tilt	0.065	0.094	0.159		Left Tilt	0.026	0.094	0.120
Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)					
Head SAR	Right Cheek	0.107	0.329	0.436					
	Right Tilt	0.023	0.216	0.239					
	Left Cheek	0.111	0.174	0.285					
	Left Tilt	0.055	0.094	0.149					

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

Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.059	0.673	0.732	Head SAR	Right Cheek	0.049	0.673	0.722
	Right Tilt	0.046	0.388	0.434		Right Tilt	0.033	0.388	0.421
	Left Cheek	0.123	0.519	0.642		Left Cheek	0.112	0.519	0.631
	Left Tilt	0.036	0.367	0.403		Left Tilt	0.034	0.367	0.401
Simult Tx	Configuration	CDMA BC10 (\$90S) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC10 (\$90S) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.105	0.673	0.778	Head SAR	Right Cheek	0.072	0.673	0.745
	Right Tilt	0.077	0.388	0.465		Right Tilt	0.048	0.388	0.436
	Left Cheek	0.241	0.519	0.760		Left Cheek	0.127	0.519	0.646
	Left Tilt	0.082	0.367	0.449		Left Tilt	0.056	0.367	0.423
Simult Tx	Configuration	CDMA BC0 (\$22H) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC0 (\$22H) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.160	0.673	0.833	Head SAR	Right Cheek	0.068	0.673	0.741
	Right Tilt	0.097	0.388	0.485		Right Tilt	0.037	0.388	0.425
	Left Cheek	0.286	0.519	0.805		Left Cheek	0.138	0.519	0.657
	Left Tilt	0.112	0.367	0.479		Left Tilt	0.056	0.367	0.423
Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.076	0.673	0.749	Head SAR	Right Cheek	0.141	0.673	0.814
	Right Tilt	0.038	0.388	0.426		Right Tilt	0.048	0.388	0.436
	Left Cheek	0.106	0.519	0.625		Left Cheek	0.217	0.519	0.736
	Left Tilt	0.016	0.367	0.383		Left Tilt	0.018	0.367	0.385
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.178	0.673	0.851	Head SAR	Right Cheek	0.090	0.673	0.763
	Right Tilt	0.094	0.388	0.482		Right Tilt	0.033	0.388	0.421
	Left Cheek	0.339	0.519	0.858		Left Cheek	0.196	0.519	0.715
	Left Tilt	0.062	0.367	0.429		Left Tilt	0.030	0.367	0.397
Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	2.4 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 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.090	0.673	0.763	Head SAR	Right Cheek	0.078	0.673	0.751
	Right Tilt	0.061	0.388	0.449		Right Tilt	0.032	0.388	0.420
	Left Cheek	0.178	0.519	0.697		Left Cheek	0.098	0.519	0.617
	Left Tilt	0.065	0.367	0.432		Left Tilt	0.026	0.367	0.393
		Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)			
		Head SAR	Right Cheek	0.107	0.673	0.780			
			Right Tilt	0.023	0.388	0.411			
			Left Cheek	0.111	0.519	0.630			
			Left Tilt	0.055	0.367	0.422			

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

Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.059	0.420	0.479	Head SAR	Right Cheek	0.049	0.420	0.469
	Right Tilt	0.046	0.312	0.358		Right Tilt	0.033	0.312	0.345
	Left Cheek	0.123	0.291	0.414		Left Cheek	0.112	0.291	0.403
	Left Tilt	0.036	0.190	0.226		Left Tilt	0.034	0.190	0.224
Simult Tx	Configuration	CDMA BC10 (\$90S) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC10 (\$90S) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.105	0.420	0.525	Head SAR	Right Cheek	0.072	0.420	0.492
	Right Tilt	0.077	0.312	0.389		Right Tilt	0.048	0.312	0.360
	Left Cheek	0.241	0.291	0.532		Left Cheek	0.127	0.291	0.418
	Left Tilt	0.082	0.190	0.272		Left Tilt	0.056	0.190	0.246
Simult Tx	Configuration	CDMA BC0 (\$22H) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC0 (\$22H) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.160	0.420	0.580	Head SAR	Right Cheek	0.068	0.420	0.488
	Right Tilt	0.097	0.312	0.409		Right Tilt	0.037	0.312	0.349
	Left Cheek	0.286	0.291	0.577		Left Cheek	0.138	0.291	0.429
	Left Tilt	0.112	0.190	0.302		Left Tilt	0.056	0.190	0.246
Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.076	0.420	0.496	Head SAR	Right Cheek	0.141	0.420	0.561
	Right Tilt	0.038	0.312	0.350		Right Tilt	0.048	0.312	0.360
	Left Cheek	0.106	0.291	0.397		Left Cheek	0.217	0.291	0.508
	Left Tilt	0.016	0.190	0.206		Left Tilt	0.018	0.190	0.208
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.178	0.420	0.598	Head SAR	Right Cheek	0.090	0.420	0.510
	Right Tilt	0.094	0.312	0.406		Right Tilt	0.033	0.312	0.345
	Left Cheek	0.339	0.291	0.630		Left Cheek	0.196	0.291	0.487
	Left Tilt	0.062	0.220	0.282		Left Tilt	0.030	0.190	0.220
Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.090	0.420	0.510	Head SAR	Right Cheek	0.078	0.420	0.498
	Right Tilt	0.061	0.312	0.373		Right Tilt	0.032	0.312	0.344
	Left Cheek	0.178	0.291	0.469		Left Cheek	0.098	0.291	0.389
	Left Tilt	0.065	0.190	0.255		Left Tilt	0.026	0.190	0.216
		Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)			
		Head SAR	Right Cheek	0.107	0.420	0.527			
			Right Tilt	0.023	0.312	0.335			
			Left Cheek	0.111	0.291	0.402			
			Left Tilt	0.055	0.190	0.245			

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

Simult Tx	Configuration	GSM 850 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.059	0.096	0.155	Head SAR	Right Cheek	0.049	0.096	0.145
	Right Tilt	0.046	0.048	0.094		Right Tilt	0.033	0.048	0.081
	Left Cheek	0.123	0.040	0.163		Left Cheek	0.112	0.040	0.152
	Left Tilt	0.036	0.000	0.036		Left Tilt	0.034	0.000	0.034
Simult Tx	Configuration	CDMA BC10 (\$90S) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC10 (\$90S) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.105	0.096	0.201	Head SAR	Right Cheek	0.072	0.096	0.168
	Right Tilt	0.077	0.048	0.125		Right Tilt	0.048	0.048	0.096
	Left Cheek	0.241	0.040	0.281		Left Cheek	0.127	0.040	0.167
	Left Tilt	0.082	0.000	0.082		Left Tilt	0.056	0.000	0.056
Simult Tx	Configuration	CDMA BC0 (\$22H) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC0 (\$22H) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.160	0.096	0.256	Head SAR	Right Cheek	0.068	0.096	0.164
	Right Tilt	0.097	0.048	0.145		Right Tilt	0.037	0.048	0.085
	Left Cheek	0.286	0.040	0.326		Left Cheek	0.138	0.040	0.178
	Left Tilt	0.112	0.000	0.112		Left Tilt	0.056	0.000	0.056
Simult Tx	Configuration	GSM 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.076	0.096	0.172	Head SAR	Right Cheek	0.141	0.096	0.237
	Right Tilt	0.038	0.048	0.086		Right Tilt	0.048	0.048	0.096
	Left Cheek	0.106	0.040	0.146		Left Cheek	0.217	0.040	0.257
	Left Tilt	0.016	0.000	0.016		Left Tilt	0.018	0.000	0.018
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.178	0.096	0.274	Head SAR	Right Cheek	0.090	0.096	0.186
	Right Tilt	0.094	0.048	0.142		Right Tilt	0.033	0.048	0.081
	Left Cheek	0.339	0.040	0.379		Left Cheek	0.196	0.040	0.236
	Left Tilt	0.062	0.000	0.062		Left Tilt	0.030	0.000	0.030
Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.090	0.096	0.186	Head SAR	Right Cheek	0.078	0.096	0.174
	Right Tilt	0.061	0.048	0.109		Right Tilt	0.032	0.048	0.080
	Left Cheek	0.178	0.040	0.218		Left Cheek	0.098	0.040	0.138
	Left Tilt	0.065	0.000	0.065		Left Tilt	0.026	0.000	0.026
		Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)			
		Head SAR	Right Cheek	0.107	0.096	0.203			
			Right Tilt	0.023	0.048	0.071			
			Left Cheek	0.111	0.040	0.151			
			Left Tilt	0.055	0.000	0.055			

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

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

Simult Tx	Configuration	GSM 850 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.059	0.110	0.169	Head SAR	Right Cheek	0.049	0.110	0.159
	Right Tilt	0.046	0.083	0.129		Right Tilt	0.033	0.083	0.116
	Left Cheek	0.123	0.160	0.283		Left Cheek	0.112	0.160	0.272
	Left Tilt	0.036	0.135	0.171		Left Tilt	0.034	0.135	0.169
Simult Tx	Configuration	CDMA BC10 (\$90S) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC10 (\$90S) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.105	0.110	0.215	Head SAR	Right Cheek	0.072	0.110	0.182
	Right Tilt	0.077	0.083	0.160		Right Tilt	0.048	0.083	0.131
	Left Cheek	0.241	0.160	0.401		Left Cheek	0.127	0.160	0.287
	Left Tilt	0.082	0.135	0.217		Left Tilt	0.056	0.135	0.191
Simult Tx	Configuration	CDMA BC0 (\$22H) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC0 (\$22H) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.160	0.110	0.270	Head SAR	Right Cheek	0.068	0.110	0.178
	Right Tilt	0.097	0.083	0.180		Right Tilt	0.037	0.083	0.120
	Left Cheek	0.286	0.160	0.446		Left Cheek	0.138	0.160	0.298
	Left Tilt	0.112	0.135	0.247		Left Tilt	0.056	0.135	0.191
Simult Tx	Configuration	GSM 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.076	0.110	0.186	Head SAR	Right Cheek	0.141	0.110	0.251
	Right Tilt	0.038	0.083	0.121		Right Tilt	0.048	0.083	0.131
	Left Cheek	0.106	0.160	0.266		Left Cheek	0.217	0.160	0.377
	Left Tilt	0.016	0.135	0.151		Left Tilt	0.018	0.135	0.153
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.178	0.110	0.288	Head SAR	Right Cheek	0.090	0.110	0.200
	Right Tilt	0.094	0.083	0.177		Right Tilt	0.033	0.083	0.116
	Left Cheek	0.339	0.160	0.499		Left Cheek	0.196	0.160	0.356
	Left Tilt	0.062	0.135	0.197		Left Tilt	0.030	0.135	0.165
Simult Tx	Configuration	LTE Band 26 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)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.090	0.110	0.200	Head SAR	Right Cheek	0.078	0.110	0.188
	Right Tilt	0.061	0.083	0.144		Right Tilt	0.032	0.083	0.115
	Left Cheek	0.178	0.160	0.338		Left Cheek	0.098	0.160	0.258
	Left Tilt	0.065	0.135	0.200		Left Tilt	0.026	0.135	0.161
		Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)			
		Head SAR	Right Cheek	0.107	0.110	0.217			
			Right Tilt	0.023	0.083	0.106			
			Left Cheek	0.111	0.160	0.271			
			Left Tilt	0.055	0.135	0.190			

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

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

Simult Tx	Configuration	GSM 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.059	0.249	0.308	Head SAR	Right Cheek	0.049	0.249	0.298
	Right Tilt	0.046	0.143	0.189		Right Tilt	0.033	0.143	0.176
	Left Cheek	0.123	0.125	0.248		Left Cheek	0.112	0.125	0.237
	Left Tilt	0.036	0.100	0.136		Left Tilt	0.034	0.100	0.134
Simult Tx	Configuration	CDMA BC10 (\$90S) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC10 (\$90S) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.105	0.249	0.354	Head SAR	Right Cheek	0.072	0.249	0.321
	Right Tilt	0.077	0.143	0.220		Right Tilt	0.048	0.143	0.191
	Left Cheek	0.241	0.125	0.366		Left Cheek	0.127	0.125	0.252
	Left Tilt	0.082	0.100	0.182		Left Tilt	0.056	0.100	0.156
Simult Tx	Configuration	CDMA BC0 (\$22H) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC0 (\$22H) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.160	0.249	0.409	Head SAR	Right Cheek	0.068	0.249	0.317
	Right Tilt	0.097	0.143	0.240		Right Tilt	0.037	0.143	0.180
	Left Cheek	0.286	0.125	0.411		Left Cheek	0.138	0.125	0.263
	Left Tilt	0.112	0.100	0.212		Left Tilt	0.056	0.100	0.156
Simult Tx	Configuration	GSM 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.076	0.249	0.325	Head SAR	Right Cheek	0.141	0.249	0.390
	Right Tilt	0.038	0.143	0.181		Right Tilt	0.048	0.143	0.191
	Left Cheek	0.106	0.125	0.231		Left Cheek	0.217	0.125	0.342
	Left Tilt	0.016	0.100	0.116		Left Tilt	0.018	0.100	0.118
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.178	0.249	0.427	Head SAR	Right Cheek	0.090	0.249	0.339
	Right Tilt	0.094	0.143	0.237		Right Tilt	0.033	0.143	0.176
	Left Cheek	0.339	0.125	0.464		Left Cheek	0.196	0.125	0.321
	Left Tilt	0.062	0.100	0.162		Left Tilt	0.030	0.100	0.130
Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.090	0.249	0.339	Head SAR	Right Cheek	0.078	0.249	0.327
	Right Tilt	0.061	0.143	0.204		Right Tilt	0.032	0.143	0.175
	Left Cheek	0.178	0.125	0.303		Left Cheek	0.098	0.125	0.223
	Left Tilt	0.065	0.100	0.165		Left Tilt	0.026	0.100	0.126
		Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)			
		Head SAR	Right Cheek	0.107	0.249	0.356			
			Right Tilt	0.023	0.143	0.166			
			Left Cheek	0.111	0.125	0.236			
			Left Tilt	0.055	0.100	0.155			

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

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12.4 Body-Worn Simultaneous Transmission Analysis

Note: For SAR summations for body-worn back side at 15 mm, WLAN SAR values for 1.0 cm were used since the 1.0 cm test distance for WLAN was more conservative. "<" denotes that the 1.0 cm WLAN SAR values were used for summation purposes.

For SAR summation for body-worn back side at 15 mm, LTE Band 25 SAR values at maximum output power were used since it was more conservative than the reduced power scenario, regardless of whether the scenario is only supported in hotspot mode. "<" denotes that the maximum output power LTE Band 25 SAR values were used for summation purposes.

Table 12-8

Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 1 (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	0.348	< 0.134	< 0.482
Back Side	UMTS 850	0.250	< 0.134	< 0.384
Back Side	CDMA BC10 (\$90S)	0.507	< 0.134	< 0.641
Back Side	CDMA BC0 (\$22H)	0.686	< 0.134	< 0.82
Back Side	GSM 1900	0.290	< 0.134	< 0.424
Back Side	UMTS 1900	0.208	< 0.134	< 0.342
Back Side	PCS CDMA	0.291	< 0.134	< 0.425
Back Side	LTE Band 26	0.405	< 0.134	< 0.539
Back Side	LTE Band 25 (PCS)	< 0.285	< 0.134	< 0.419
Back Side	LTE Band 41	0.143	< 0.134	< 0.277

Table 12-9

Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2 (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	0.348	< 0.139	< 0.487
Back Side	UMTS 850	0.250	< 0.139	< 0.389
Back Side	CDMA BC10 (\$90S)	0.507	< 0.139	< 0.646
Back Side	CDMA BC0 (\$22H)	0.686	< 0.139	< 0.825
Back Side	GSM 1900	0.290	< 0.139	< 0.429
Back Side	UMTS 1900	0.208	< 0.139	< 0.347
Back Side	PCS CDMA	0.291	< 0.139	< 0.43
Back Side	LTE Band 26	0.405	< 0.139	< 0.544
Back Side	LTE Band 25 (PCS)	< 0.285	< 0.139	< 0.424
Back Side	LTE Band 41	0.143	< 0.139	< 0.282

Table 12-10

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	0.348	< 0.062	< 0.41
Back Side	UMTS 850	0.250	< 0.062	< 0.312
Back Side	CDMA BC10 (\$90S)	0.507	< 0.062	< 0.569
Back Side	CDMA BC0 (\$22H)	0.686	< 0.062	< 0.748
Back Side	GSM 1900	0.290	< 0.062	< 0.352
Back Side	UMTS 1900	0.208	< 0.062	< 0.27
Back Side	PCS CDMA	0.291	< 0.062	< 0.353
Back Side	LTE Band 26	0.405	< 0.062	< 0.467
Back Side	LTE Band 25 (PCS)	< 0.285	< 0.062	< 0.347
Back Side	LTE Band 41	0.143	< 0.062	< 0.205

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	0.348	< 0.055	< 0.403
Back Side	UMTS 850	0.250	< 0.055	< 0.305
Back Side	CDMA BC10 (\$90S)	0.507	< 0.055	< 0.562
Back Side	CDMA BC0 (\$22H)	0.686	< 0.055	< 0.741
Back Side	GSM 1900	0.290	< 0.055	< 0.345
Back Side	UMTS 1900	0.208	< 0.055	< 0.263
Back Side	PCS CDMA	0.291	< 0.055	< 0.346
Back Side	LTE Band 26	0.405	< 0.055	< 0.46
Back Side	LTE Band 25 (PCS)	< 0.285	< 0.055	< 0.34
Back Side	LTE Band 41	0.143	< 0.055	< 0.198

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

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	0.348	< 0.367	< 0.715
Back Side	UMTS 850	0.250	< 0.367	< 0.617
Back Side	CDMA BC10 (\$90S)	0.507	< 0.367	< 0.874
Back Side	CDMA BC0 (\$22H)	0.686	< 0.367	< 1.053
Back Side	GSM 1900	0.290	< 0.367	< 0.657
Back Side	UMTS 1900	0.208	< 0.367	< 0.575
Back Side	PCS CDMA	0.291	< 0.367	< 0.658
Back Side	LTE Band 26	0.405	< 0.367	< 0.772
Back Side	LTE Band 25 (PCS)	< 0.285	< 0.367	< 0.652
Back Side	LTE Band 41	0.143	< 0.367	< 0.51

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

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	0.348	< 0.533	< 0.881
Back Side	UMTS 850	0.250	< 0.533	< 0.783
Back Side	CDMA BC10 (\$90S)	0.507	< 0.533	< 1.04
Back Side	CDMA BC0 (\$22H)	0.686	< 0.533	< 1.219
Back Side	GSM 1900	0.290	< 0.533	< 0.823
Back Side	UMTS 1900	0.208	< 0.533	< 0.741
Back Side	PCS CDMA	0.291	< 0.533	< 0.824
Back Side	LTE Band 26	0.405	< 0.533	< 0.938
Back Side	LTE Band 25 (PCS)	< 0.285	< 0.533	< 0.818
Back Side	LTE Band 41	0.143	< 0.533	< 0.676

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

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
Back Side	GSM 850	0.348	0.224	0.572
Back Side	UMTS 850	0.250	0.224	0.474
Back Side	CDMA BC10 (\$90S)	0.507	0.224	0.731
Back Side	CDMA BC0 (\$22H)	0.686	0.224	0.91
Back Side	GSM 1900	0.290	0.224	0.514
Back Side	UMTS 1900	0.208	0.224	0.432
Back Side	PCS CDMA	0.291	0.224	0.515
Back Side	LTE Band 26	0.405	0.224	0.629
Back Side	LTE Band 25 (PCS)	0.285	0.224	0.509
Back Side	LTE Band 41	0.143	0.224	0.367

Note: Bluetooth SAR was not required to be measured per FCC KDB 447498. Estimated SAR results were used in the above table to determine simultaneous transmission SAR test exclusion.

12.5 Hotspot SAR Simultaneous Transmission Analysis

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

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

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.559	0.134	0.693	Body SAR	Back	0.446	0.134	0.580
	Front	0.840	0.070	0.910		Front	0.467	0.070	0.537
	Top	-	0.026	0.026		Top	-	0.026	0.026
	Bottom	0.470	-	0.470		Bottom	0.243	-	0.243
	Right	0.406	-	0.406		Right	0.265	-	0.265
	Left	0.158	0.048	0.206		Left	0.242	0.048	0.290
Simult Tx	Configuration	EVDO BC10 (\$90S) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC0 (\$22H) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.454	0.134	0.588	Body SAR	Back	0.496	0.134	0.630
	Front	0.498	0.070	0.568		Front	0.599	0.070	0.669
	Top	-	0.026	0.026		Top	-	0.026	0.026
	Bottom	0.195	-	0.195		Bottom	0.304	-	0.304
	Right	0.247	-	0.247		Right	0.231	-	0.231
	Left	0.230	0.048	0.278		Left	0.260	0.048	0.308
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.494	0.134	0.628	Body SAR	Back	0.280	0.134	0.414
	Front	0.774	0.070	0.844		Front	0.366	0.070	0.436
	Top	-	0.026	0.026		Top	-	0.026	0.026
	Bottom	1.072	-	1.072		Bottom	0.517	-	0.517
	Right	0.083	-	0.083		Right	0.106	-	0.106
	Left	0.215	0.048	0.263		Left	0.108	0.048	0.156

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Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.417	0.134	0.551	Body SAR	Back	0.683	0.134	0.817
	Front	0.734	0.070	0.804		Front	0.760	0.070	0.830
	Top	-	0.026	0.026		Top	-	0.026	0.026
	Bottom	1.050	-	1.050		Bottom	0.275	-	0.275
	Right	0.102	-	0.102		Right	0.215	-	0.215
	Left	0.156	0.048	0.204		Left	0.371	0.048	0.419
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.309	0.134	0.443	Body SAR	Back	0.349	0.134	0.483
	Front	0.319	0.070	0.389		Front	0.293	0.070	0.363
	Top	-	0.026	0.026		Top	-	0.026	0.026
	Bottom	0.485	-	0.485		Bottom	0.412	-	0.412
	Right	0.036	-	0.036		Right	0.093	-	0.093
	Left	0.129	0.048	0.177		Left	-	0.048	0.048

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

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.559	0.139	0.698	Body SAR	Back	0.446	0.139	0.585
	Front	0.840	0.075	0.915		Front	0.467	0.075	0.542
	Top	-	0.061	0.061		Top	-	0.061	0.061
	Bottom	0.470	-	0.470		Bottom	0.243	-	0.243
	Right	0.406	-	0.406		Right	0.265	-	0.265
	Left	0.158	-	0.158		Left	0.242	-	0.242
Simult Tx	Configuration	EVDO BC10 (\$90S) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC0 (\$22H) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.454	0.139	0.593	Body SAR	Back	0.496	0.139	0.635
	Front	0.498	0.075	0.573		Front	0.599	0.075	0.674
	Top	-	0.061	0.061		Top	-	0.061	0.061
	Bottom	0.195	-	0.195		Bottom	0.304	-	0.304
	Right	0.247	-	0.247		Right	0.231	-	0.231
	Left	0.230	-	0.230		Left	0.260	-	0.260
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.494	0.139	0.633	Body SAR	Back	0.280	0.139	0.419
	Front	0.774	0.075	0.849		Front	0.366	0.075	0.441
	Top	-	0.061	0.061		Top	-	0.061	0.061
	Bottom	1.072	-	1.072		Bottom	0.517	-	0.517
	Right	0.083	-	0.083		Right	0.106	-	0.106
	Left	0.215	-	0.215		Left	0.108	-	0.108

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Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.417	0.139	0.556	Body SAR	Back	0.683	0.139	0.822
	Front	0.734	0.075	0.809		Front	0.760	0.075	0.835
	Top	-	0.061	0.061		Top	-	0.061	0.061
	Bottom	1.050	-	1.050		Bottom	0.275	-	0.275
	Right	0.102	-	0.102		Right	0.215	-	0.215
	Left	0.156	-	0.156		Left	0.371	-	0.371
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.309	0.139	0.448	Body SAR	Back	0.349	0.139	0.488
	Front	0.319	0.075	0.394		Front	0.293	0.075	0.368
	Top	-	0.061	0.061		Top	-	0.061	0.061
	Bottom	0.485	-	0.485		Bottom	0.412	-	0.412
	Right	0.036	-	0.036		Right	0.093	-	0.093
	Left	0.129	-	0.129		Left	-	-	0.000

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

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.559	0.062	0.621	Body SAR	Back	0.446	0.062	0.508
	Front	0.840	0.039	0.879		Front	0.467	0.039	0.506
	Top	-	0.019	0.019		Top	-	0.019	0.019
	Bottom	0.470	-	0.470		Bottom	0.243	-	0.243
	Right	0.406	-	0.406		Right	0.265	-	0.265
	Left	0.158	0.018	0.176		Left	0.242	0.018	0.260
Simult Tx	Configuration	EVDO BC10 (\$90S) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC0 (\$22H) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.454	0.062	0.516	Body SAR	Back	0.496	0.062	0.558
	Front	0.498	0.039	0.537		Front	0.599	0.039	0.638
	Top	-	0.019	0.019		Top	-	0.019	0.019
	Bottom	0.195	-	0.195		Bottom	0.304	-	0.304
	Right	0.247	-	0.247		Right	0.231	-	0.231
	Left	0.230	0.018	0.248		Left	0.260	0.018	0.278

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Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.494	0.062	0.556	Body SAR	Back	0.280	0.062	0.342
	Front	0.774	0.039	0.813		Front	0.366	0.039	0.405
	Top	-	0.019	0.019		Top	-	0.019	0.019
	Bottom	1.072	-	1.072		Bottom	0.517	-	0.517
	Right	0.083	-	0.083		Right	0.106	-	0.106
	Left	0.215	0.018	0.233		Left	0.108	0.018	0.126
Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.417	0.062	0.479	Body SAR	Back	0.683	0.062	0.745
	Front	0.734	0.039	0.773		Front	0.760	0.039	0.799
	Top	-	0.019	0.019		Top	-	0.019	0.019
	Bottom	1.050	-	1.050		Bottom	0.275	-	0.275
	Right	0.102	-	0.102		Right	0.215	-	0.215
	Left	0.156	0.018	0.174		Left	0.371	0.018	0.389
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.309	0.062	0.371	Body SAR	Back	0.349	0.062	0.411
	Front	0.319	0.039	0.358		Front	0.293	0.039	0.332
	Top	-	0.019	0.019		Top	-	0.019	0.019
	Bottom	0.485	-	0.485		Bottom	0.412	-	0.412
	Right	0.036	-	0.036		Right	0.093	-	0.093
	Left	0.129	0.018	0.147		Left	-	0.018	0.018

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

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.559	0.055	0.614	Body SAR	Back	0.446	0.055	0.501
	Front	0.840	0.013	0.853		Front	0.467	0.013	0.480
	Top	-	0.023	0.023		Top	-	0.023	0.023
	Bottom	0.470	-	0.470		Bottom	0.243	-	0.243
	Right	0.406	-	0.406		Right	0.265	-	0.265
	Left	0.158	0.025	0.183		Left	0.242	0.025	0.267
Simult Tx	Configuration	EVDO BC10 (\$90S) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC0 (\$22H) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.454	0.055	0.509	Body SAR	Back	0.496	0.055	0.551
	Front	0.498	0.013	0.511		Front	0.599	0.013	0.612
	Top	-	0.023	0.023		Top	-	0.023	0.023
	Bottom	0.195	-	0.195		Bottom	0.304	-	0.304
	Right	0.247	-	0.247		Right	0.231	-	0.231
	Left	0.230	0.025	0.255		Left	0.260	0.025	0.285

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Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.494	0.055	0.549	Body SAR	Back	0.280	0.055	0.335
	Front	0.774	0.013	0.787		Front	0.366	0.013	0.379
	Top	-	0.023	0.023		Top	-	0.023	0.023
	Bottom	1.072	-	1.072		Bottom	0.517	-	0.517
	Right	0.083	-	0.083		Right	0.106	-	0.106
	Left	0.215	0.025	0.240		Left	0.108	0.025	0.133
Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.417	0.055	0.472	Body SAR	Back	0.683	0.055	0.738
	Front	0.734	0.013	0.747		Front	0.760	0.013	0.773
	Top	-	0.023	0.023		Top	-	0.023	0.023
	Bottom	1.050	-	1.050		Bottom	0.275	-	0.275
	Right	0.102	-	0.102		Right	0.215	-	0.215
	Left	0.156	0.025	0.181		Left	0.371	0.025	0.396
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.309	0.055	0.364	Body SAR	Back	0.349	0.055	0.404
	Front	0.319	0.013	0.332		Front	0.293	0.013	0.306
	Top	-	0.023	0.023		Top	-	0.023	0.023
	Bottom	0.485	-	0.485		Bottom	0.412	-	0.412
	Right	0.036	-	0.036		Right	0.093	-	0.093
	Left	0.129	0.025	0.154		Left	-	0.025	0.025

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

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.559	0.463	1.022	Body SAR	Back	0.446	0.463	0.909
	Front	0.840	0.031	0.871		Front	0.467	0.031	0.498
	Top	-	0.059	0.059		Top	-	0.059	0.059
	Bottom	0.470	-	0.470		Bottom	0.243	-	0.243
	Right	0.406	-	0.406		Right	0.265	-	0.265
	Left	0.158	-	0.158		Left	0.242	-	0.242
Simult Tx	Configuration	EVDO BC10 (\$90S) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC0 (\$22H) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.454	0.463	0.917	Body SAR	Back	0.496	0.463	0.959
	Front	0.498	0.031	0.529		Front	0.599	0.031	0.630
	Top	-	0.059	0.059		Top	-	0.059	0.059
	Bottom	0.195	-	0.195		Bottom	0.304	-	0.304
	Right	0.247	-	0.247		Right	0.231	-	0.231
	Left	0.230	-	0.230		Left	0.260	-	0.260

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Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.494	0.463	0.957	Body SAR	Back	0.280	0.463	0.743
	Front	0.774	0.031	0.805		Front	0.366	0.031	0.397
	Top	-	0.059	0.059		Top	-	0.059	0.059
	Bottom	1.072	-	1.072		Bottom	0.517	-	0.517
	Right	0.083	-	0.083		Right	0.106	-	0.106
	Left	0.215	-	0.215		Left	0.108	-	0.108
Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.417	0.463	0.880	Body SAR	Back	0.683	0.463	1.146
	Front	0.734	0.031	0.765		Front	0.760	0.031	0.791
	Top	-	0.059	0.059		Top	-	0.059	0.059
	Bottom	1.050	-	1.050		Bottom	0.275	-	0.275
	Right	0.102	-	0.102		Right	0.215	-	0.215
	Left	0.156	-	0.156		Left	0.371	-	0.371
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.309	0.463	0.772	Body SAR	Back	0.349	0.463	0.812
	Front	0.319	0.031	0.350		Front	0.293	0.031	0.324
	Top	-	0.059	0.059		Top	-	0.059	0.059
	Bottom	0.485	-	0.485		Bottom	0.412	-	0.412
	Right	0.036	-	0.036		Right	0.093	-	0.093
	Left	0.129	-	0.129		Left	-	-	0.000

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

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.559	0.560	1.119	Body SAR	Back	0.446	0.560	1.006
	Front	0.840	0.027	0.867		Front	0.467	0.027	0.494
	Top	-	0.158	0.158		Top	-	0.158	0.158
	Bottom	0.470	-	0.470		Bottom	0.243	-	0.243
	Right	0.406	-	0.406		Right	0.265	-	0.265
	Left	0.158	0.088	0.246		Left	0.242	0.088	0.330
Simult Tx	Configuration	EVDO BC10 (\$90S) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	EVDO BC0 (\$22H) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.454	0.560	1.014	Body SAR	Back	0.496	0.560	1.056
	Front	0.498	0.027	0.525		Front	0.599	0.027	0.626
	Top	-	0.158	0.158		Top	-	0.158	0.158
	Bottom	0.195	-	0.195		Bottom	0.304	-	0.304
	Right	0.247	-	0.247		Right	0.231	-	0.231
	Left	0.230	0.088	0.318		Left	0.260	0.088	0.348

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Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.494	0.560	1.054	Body SAR	Back	0.280	0.560	0.840
	Front	0.774	0.027	0.801		Front	0.366	0.027	0.393
	Top	-	0.158	0.158		Top	-	0.158	0.158
	Bottom	1.072	-	1.072		Bottom	0.517	-	0.517
	Right	0.083	-	0.083		Right	0.106	-	0.106
	Left	0.215	0.088	0.303		Left	0.108	0.088	0.196
Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 26 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.417	0.560	0.977	Body SAR	Back	0.683	0.560	1.243
	Front	0.734	0.027	0.761		Front	0.760	0.027	0.787
	Top	-	0.158	0.158		Top	-	0.158	0.158
	Bottom	1.050	-	1.050		Bottom	0.275	-	0.275
	Right	0.102	-	0.102		Right	0.215	-	0.215
	Left	0.156	0.088	0.244		Left	0.371	0.088	0.459
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 41 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.309	0.560	0.869	Body SAR	Back	0.349	0.560	0.909
	Front	0.319	0.027	0.346		Front	0.293	0.027	0.320
	Top	-	0.158	0.158		Top	-	0.158	0.158
	Bottom	0.485	-	0.485		Bottom	0.412	-	0.412
	Right	0.036	-	0.036		Right	0.093	-	0.093
	Left	0.129	0.088	0.217		Left	-	0.088	0.088

12.6 Extremity SAR Simultaneous Transmission Analysis

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

Table 12-21
Simultaneous Transmission Scenario (2.4 GHz WLAN Extremity 10 gram SAR at 0 mm)

Configuration	Mode	3G SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Bottom Edge	PCS CDMA	3.280	-	3.280
Front Side	PCS CDMA	1.936	-	1.936

Note:

- Per FCC KDB Publication 941225 D06v01, 2.4 GHz WLAN SAR is not required to be evaluated for Bottom Edge SAR ("") since the antenna is greater than 2.5 cm from the edge.
- Per FCC KDB Publication 648474 D04v01r01, 2.4 GHz Hand Front side Hand SAR ("") was excluded since 2.4 GHz Hotspot SAR was <1.2 W/kg.

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Table 12-22
Simultaneous Transmission Scenario (5 GHz WLAN Extremity 10 gram SAR at 0 mm)

Configuration	Mode	3G SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Bottom Edge	PCS CDMA	3.280	-	3.280
Front Side	PCS CDMA	1.936	0.113	2.049

Note: Per FCC KDB Publication 941225 D06v01, 5 GHz WLAN SAR is not required to be evaluated for Bottom Edge SAR ("-") since the antenna is greater than 2.5 cm from the edge.

Table 12-23
Simultaneous Transmission Scenario (Bluetooth Extremity 10 gram SAR at 0 mm)

Configuration	Mode	3G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
Bottom Edge	PCS CDMA	3.280	-	3.280
Front Side	PCS CDMA	1.936	0.269	2.205

Note: Per FCC KDB Publication 941225 D06v01, Bluetooth SAR is not required to be evaluated for Bottom Edge SAR ("-") since the antenna is greater than 2.5 cm from the edge.

For configurations and operating modes not required for extremity exposure conditions per FCC KDB 648474, no further analysis was required to determine that possible simultaneous scenarios would not exceed the SAR limit.

12.7 Simultaneous Transmission Conclusion

The above numerical summed SAR results for all the worst-case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v05 and IEEE 1528-2013 Section 6.3.4.1.2.

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13 SAR MEASUREMENT VARIABILITY

13.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

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

- 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
- 2) A second repeated measurement was 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 1-g SAR limit).
- 3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .
- 4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg
- 5) 10 g Extremity SAR measurement variability analysis applies a factor of 2.5 to the procedures outlined above.

Table 13-1
Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS															
Band	FREQUENCY		Mode	Service	Cover Type	# of Time Slots	Side	Spacing	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.							(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1900	1850.20	512	GSM 1900	GPRS	Standard	4	bottom	10 mm	1.070	0.992	1.08	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							

Table 13-2
Extremity SAR Measurement Variability Results

Entremity VARIABILITY RESULTS														
Band	FREQUENCY		Mode	Service	Cover Type	Side	Spacing	Measured SAR (10g)	1st Repeated SAR (10g)	Ratio	2nd Repeated SAR (10g)	Ratio	3rd Repeated SAR (10g)	Ratio
	MHz	Ch.						(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1900	1908.75	1175	PCS CDMA	EVDO Rev. 0	Wireless Charging	bottom	0 mm	3.280	2.970	1.10	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT							Hand							
Spatial Peak							4.0 W/kg (mW/g)							
Uncontrolled Exposure/General Population							averaged over 10 grams							

13.2 Measurement Uncertainty

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

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14 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	8648D	(9kHz-4GHz) Signal Generator	4/15/2014	Annual	4/15/2015	3629J00687
Agilent	E4438C	ESG Vector Signal Generator	4/1/2014	Annual	4/1/2015	MY47270002
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/15/2014	Annual	4/15/2015	MY45470194
Agilent	N5182A	MXG Vector Signal Generator	4/15/2014	Annual	4/15/2015	MY47420651
Agilent	E5515C	Wireless Communications Test Set	3/18/2014	Annual	3/18/2015	GB46110872
Agilent	N9020A	MXA Signal Analyzer	10/29/2013	Annual	10/29/2014	US46470561
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	433971
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	433978
Anritsu	MA24106A	USB Power Sensor	5/14/2014	Annual	5/14/2015	1231535
Anritsu	MA24106A	USB Power Sensor	5/14/2014	Annual	5/14/2015	1231538
Anritsu	MA2411B	Pulse Power Sensor	11/14/2013	Annual	11/14/2014	1126066
Anritsu	MA2411B	Pulse Power Sensor	3/25/2014	Annual	3/25/2015	1207470
Anritsu	ML2469A	Power Meter	3/14/2014	Annual	3/14/2015	1306009
Anritsu	ML2495A	Power Meter	10/31/2013	Annual	10/31/2014	1039008
Anritsu	MT8820C	Radio Communication Analyzer	12/12/2013	Annual	12/12/2014	6200901190
Anritsu	MT8820C	Radio Communication Analyzer	12/12/2013	Annual	12/12/2014	6201300731
COMTECH	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M155A00-009
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
Control Company	4052	Long Stem Thermometer	9/27/2013	Biennial	9/27/2015	130567447
Control Company	36934-158	Wall-Mounted Thermometer	4/29/2014	Biennial	4/29/2016	122014488
Control Company	61220-416	Long-Stem Thermometer	4/29/2014	Biennial	4/29/2016	111331323
Fisher Scientific	15-077-960	Digital Thermometer	11/6/2012	Biennial	11/6/2014	122640025
Fisher Scientific	S407993	Long Stem Thermometer	11/4/2013	Biennial	11/4/2015	130671826
Fisher Scientific	S97611	Thermometer	4/12/2013	Biennial	4/12/2015	130219304
Gigatronics	80701A	(0.05-18GHz) Power Sensor	10/30/2013	Annual	10/30/2014	1833460
Gigatronics	8651A	Universal Power Meter	10/30/2013	Annual	10/30/2014	8650319
MCL	BW-N6W5+	GdB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mitutoyo	CD-6°CSX	Digital Caliper	5/8/2014	Biennial	5/8/2016	13264162
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	6/6/2014	Annual	6/6/2015	109892
Rohde & Schwarz	CMW500	Radio Communication Tester	10/18/2013	Annual	10/18/2014	100976
Rohde & Schwarz	CMW500	Radio Communication Tester	6/3/2014	Annual	6/3/2015	108843
Rohde & Schwarz	CMW500	Radio Communication Tester	12/9/2013	Annual	12/9/2014	109366
Rohde & Schwarz	CMW500	Radio Communication Tester	2/20/2014	Annual	2/20/2015	128633
Rohde & Schwarz	NRVD	Dual Channel Power Meter	10/12/2012	Biennial	10/12/2014	101695
Rohde & Schwarz	NRVS	Single Channel Power Meter	10/31/2013	Annual	10/31/2014	835360/0079
Rohde & Schwarz	NRV-232	Peak Power Sensor	10/12/2012	Biennial	10/12/2014	836019/013
Rohde & Schwarz	SME06	Signal Generator	10/30/2013	Annual	10/30/2014	832026
Seekonk	NC-100	Torque Wrench	3/18/2014	Biennial	3/18/2016	22313
Seekonk	NC-100	Torque Wrench	3/18/2014	Biennial	3/18/2016	N/A
SPEAG	D835V2	835 MHz SAR Dipole	4/7/2014	Annual	4/7/2015	4d119
SPEAG	D1900V2	1900 MHz SAR Dipole	4/9/2014	Annual	4/9/2015	5d141
SPEAG	D2450V2	2450 MHz SAR Dipole	1/21/2014	Annual	1/21/2015	797
SPEAG	D2600V2	2600 MHz SAR Dipole	4/8/2014	Annual	4/8/2015	1004
SPEAG	D5GHZV2	5 GHz SAR Dipole	9/23/2013	Annual	9/23/2014	1007
SPEAG	D5GHZV2	5 GHz SAR Dipole	1/27/2014	Annual	1/27/2015	1057
SPEAG	DAE4	Dasy Data Acquisition Electronics	12/12/2013	Annual	12/12/2014	649
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/21/2013	Annual	8/21/2014	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/19/2013	Annual	11/19/2014	1333
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/17/2014	Annual	3/17/2015	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/19/2013	Annual	11/19/2014	1408
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/26/2014	Annual	2/26/2015	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/11/2014	Annual	4/11/2015	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/14/2014	Annual	5/14/2015	859
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/6/2014	Annual	5/6/2015	1070
SPEAG	DAK-3.5	Dielectric Assessment Kit	11/13/2013	Annual	11/13/2014	1091
SPEAG	ES3DV2	SAR Probe	8/22/2013	Annual	8/22/2014	3022
SPEAG	ES3DV3	SAR Probe	11/20/2013	Annual	11/20/2014	3287
SPEAG	ES3DV3	SAR Probe	4/17/2014	Annual	4/17/2015	3319
SPEAG	EX3DV4	SAR Probe	1/29/2014	Annual	1/29/2015	3589
SPEAG	EX3DV4	SAR Probe	10/23/2013	Annual	10/23/2014	3914
SPEAG	EX3DV4	SAR Probe	12/18/2013	Annual	12/18/2014	3920
SPEAG	ES3DV3	SAR Probe	2/25/2014	Annual	2/25/2015	3258
SPEAG	ES3DV3	SAR Probe	5/15/2014	Annual	5/15/2015	3263
Tektronix	RS46114A	Real Time Spectrum Analyzer	4/16/2014	Annual	4/16/2015	8010177
VWR	36934-158	Wall-Mounted Thermometer	4/29/2014	Biennial	4/29/2016	111859323

Note: 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

Applicable for frequencies less than 3000 MHz.

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

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

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Applicable for frequencies up to 6 GHz.

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

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

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16 CONCLUSION

16.1 Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Industry Canada, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables. [3]

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APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT:A3LSMN910P; Type: Portable Handset; Serial: F4D34

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.925 \text{ S/m}$; $\epsilon_r = 41.641$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 07-31-2014; Ambient Temp: 24.3°C; Tissue Temp: 23.5°C

Probe: ES3DV3 - SN3319; ConvF(6.27, 6.27, 6.27); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

Mode: GSM 850, Left Head, Cheek, Mid.ch; Standard Cover

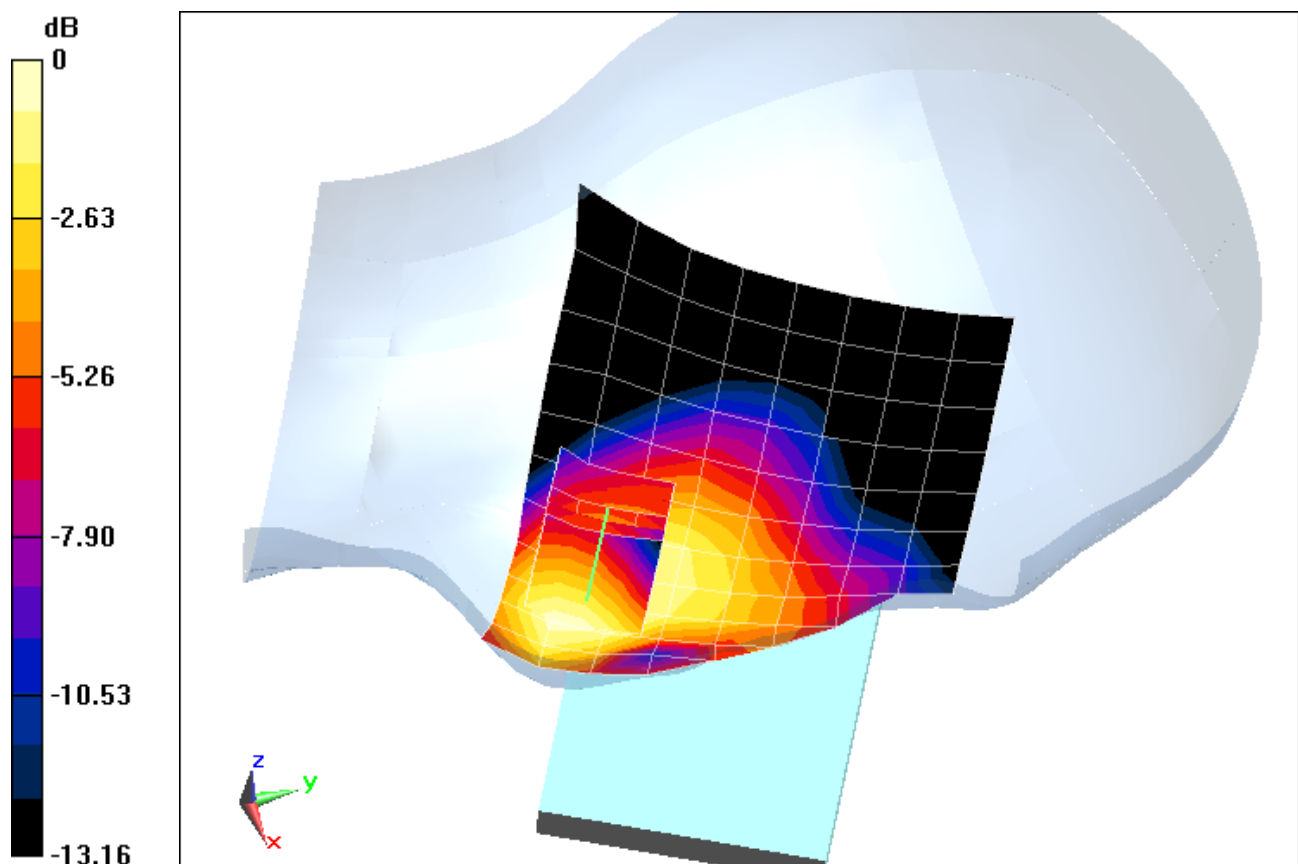
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 11.16 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.138 W/kg

SAR(1 g) = 0.110 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D2A

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.925 \text{ S/m}$; $\epsilon_r = 41.641$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 07-31-2014; Ambient Temp: 24.3°C; Tissue Temp: 23.5°C

Probe: ES3DV3 - SN3319; ConvF(6.27, 6.27, 6.27); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

Mode: UMTS 850, Left Head, Cheek, Mid.Ch; Wireless Charging Cover

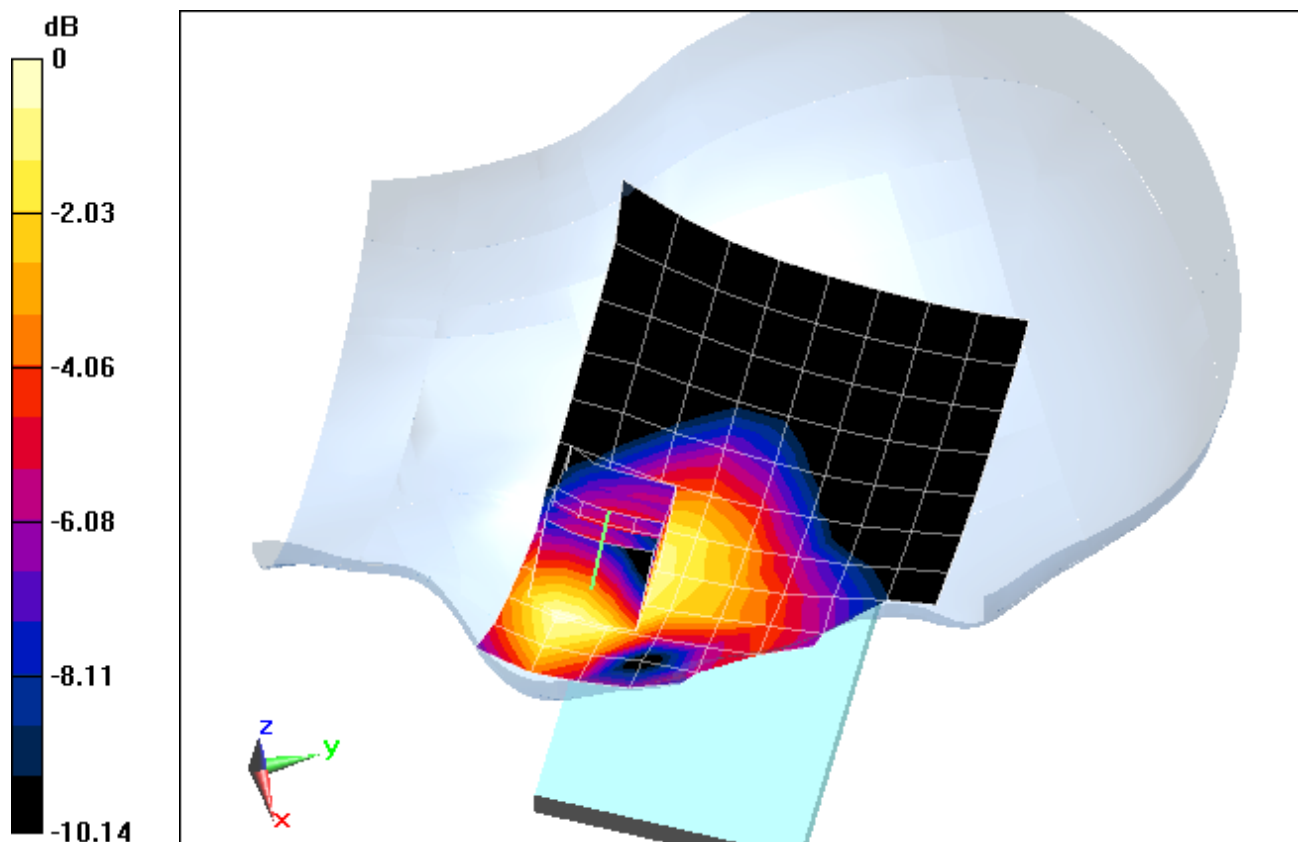
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 11.31 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.144 W/kg

SAR(1 g) = 0.110 W/kg



0 dB = 0.122 W/kg = -9.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D33

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 820.1 \text{ MHz}$; $\sigma = 0.909 \text{ S/m}$; $\epsilon_r = 41.868$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 07-31-2014; Ambient Temp: 24.3°C; Tissue Temp: 23.5°C

Probe: ES3DV3 - SN3319; ConvF(6.27, 6.27, 6.27); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

Mode: BC10 Cell. EVDO Rev A, Left Head, Cheek, Mid.ch; Wireless Charging Cover

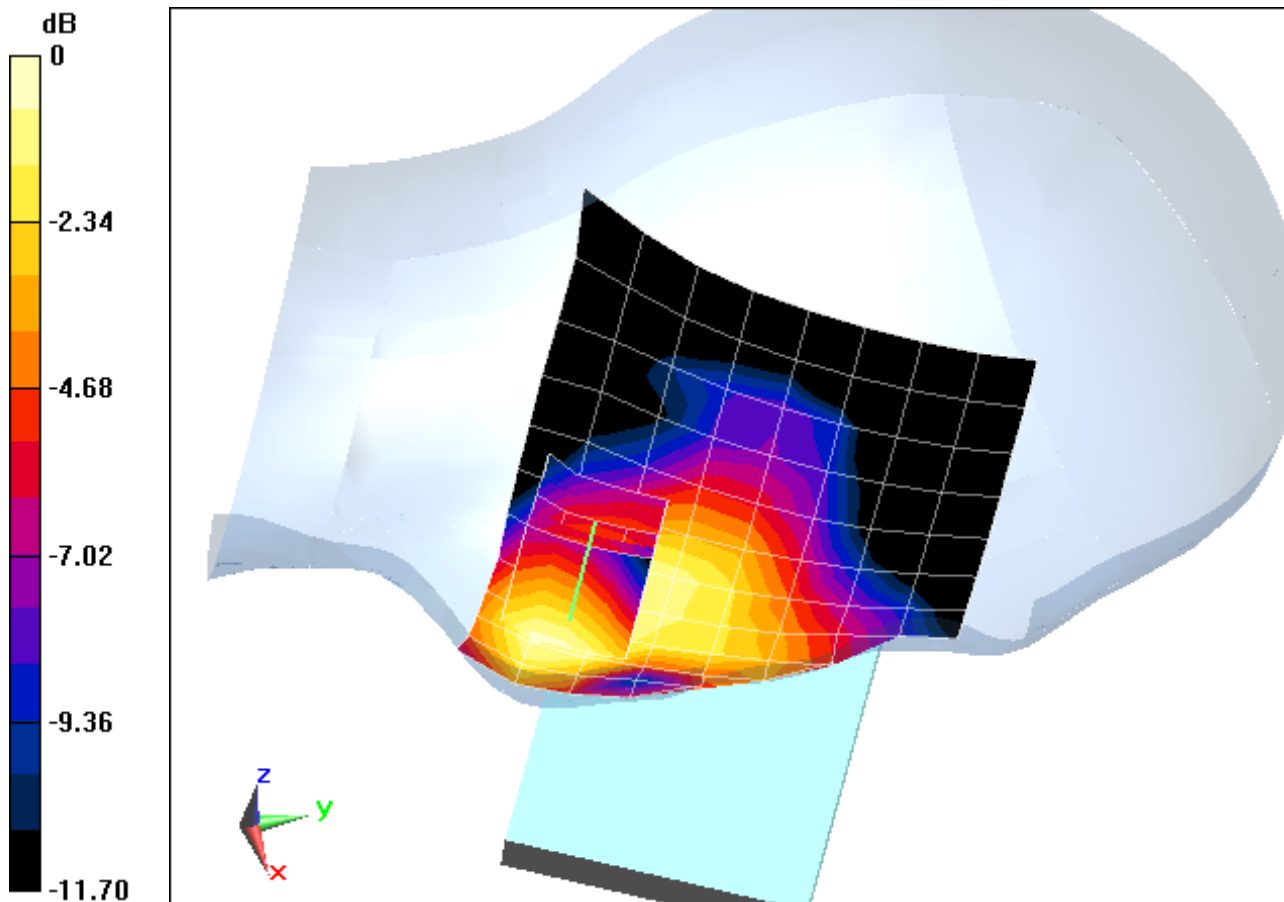
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 17.54 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.333 W/kg

SAR(1 g) = 0.252 W/kg



0 dB = 0.314 W/kg = -5.03 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D33

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.52$ MHz; $\sigma = 0.925$ S/m; $\epsilon_r = 41.642$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Test Date: 07-31-2014; Ambient Temp: 24.3°C; Tissue Temp: 23.5°C

Probe: ES3DV3 - SN3319; ConvF(6.27, 6.27, 6.27); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

Mode: BC0 Cell. EVDO RevA, Left Head,Cheek,Mid.ch;Wireless Charging Cover

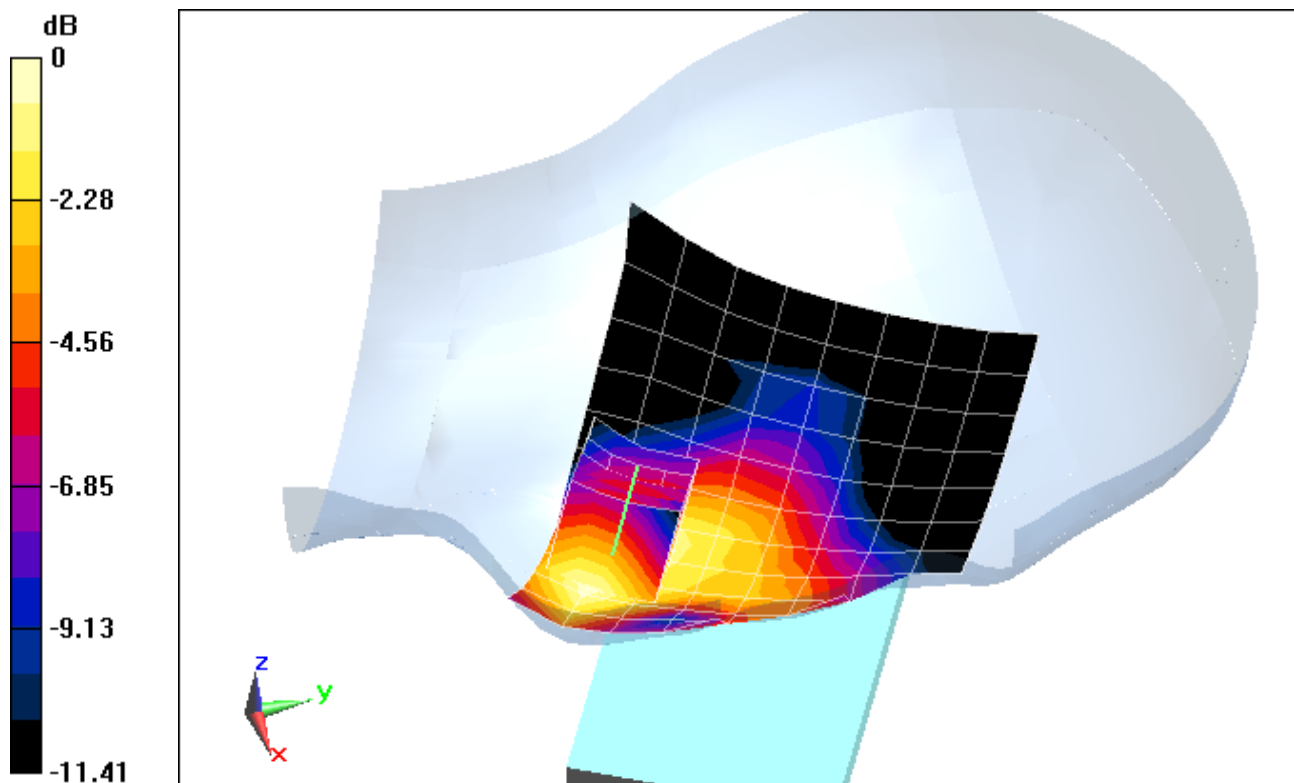
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 20.35 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.485 W/kg

SAR(1 g) = 0.337 W/kg



0 dB = 0.380 W/kg = -4.20 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D34

Communication System: UID 0, GSM1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: 1900 Head Medium parameters used:

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

Phantom section: Left Section

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

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

Mode: GSM 1900, Left Head, Cheek, Mid.ch; Standard Cover

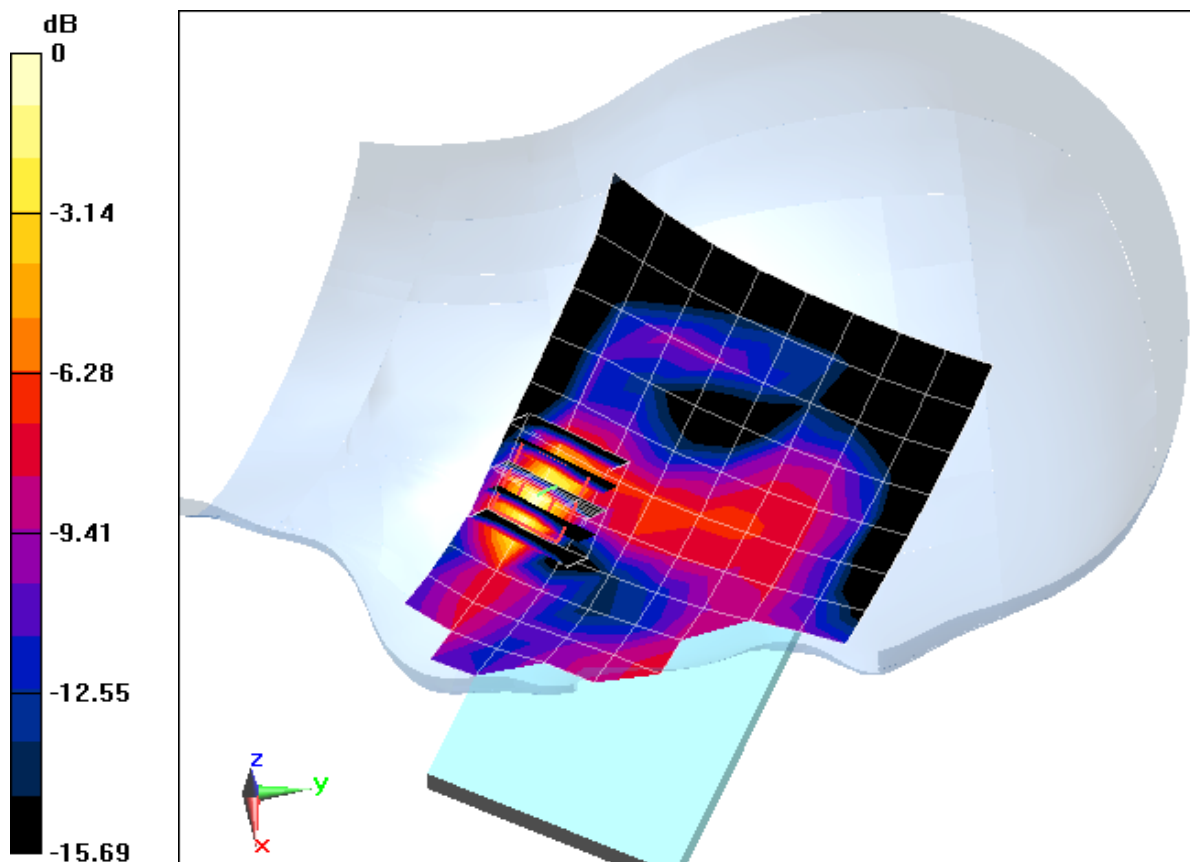
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 10.28 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.234 W/kg

SAR(1 g) = 0.106 W/kg



0 dB = 0.152 W/kg = -8.18 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D2A

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

Medium: 1900 Head Medium parameters used:

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

Phantom section: Left Section

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

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

Mode: UMTS 1900, Left Head, Cheek, Mid.ch; Wireless Charging Cover

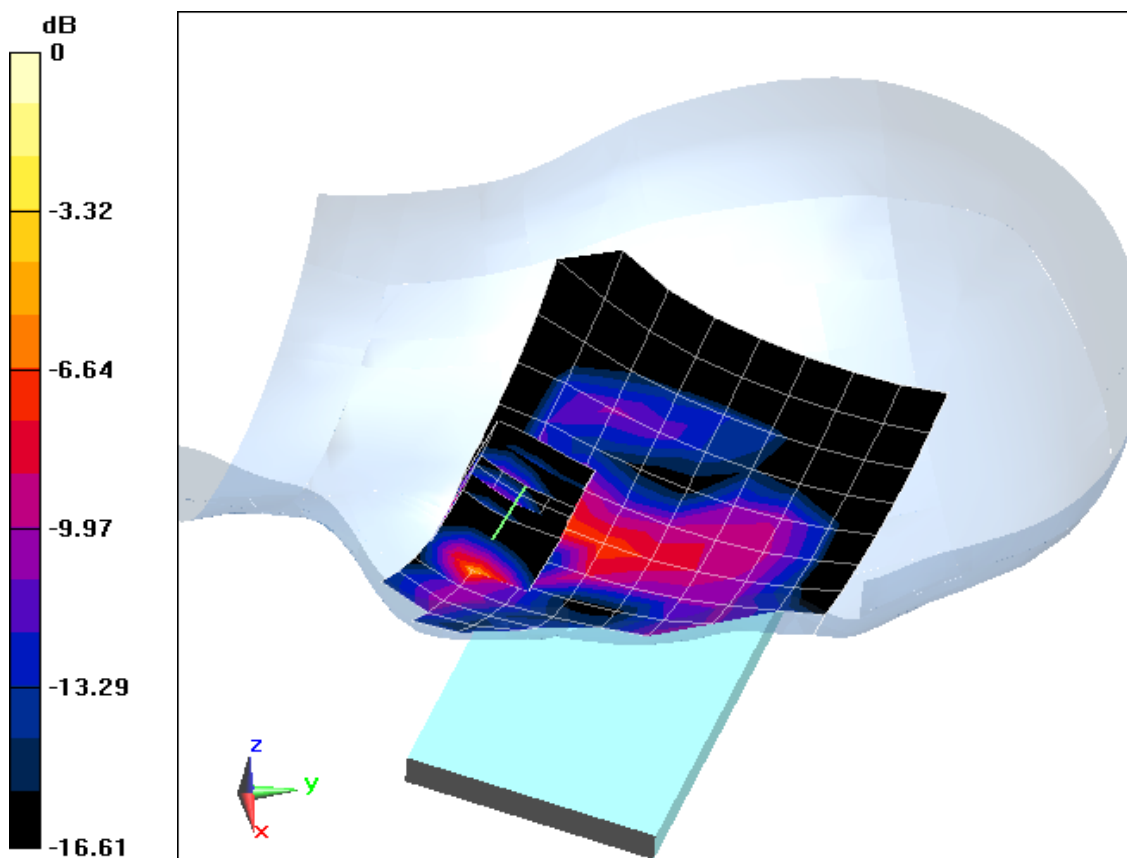
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 14.23 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 0.447 W/kg

SAR(1 g) = 0.208 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D33

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

Medium: 1900 Head Medium parameters used:

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

Phantom section: Left Section

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

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

Mode: PCS EVDO RevA, Left Head, Cheek, Mid.ch; Standard Cover

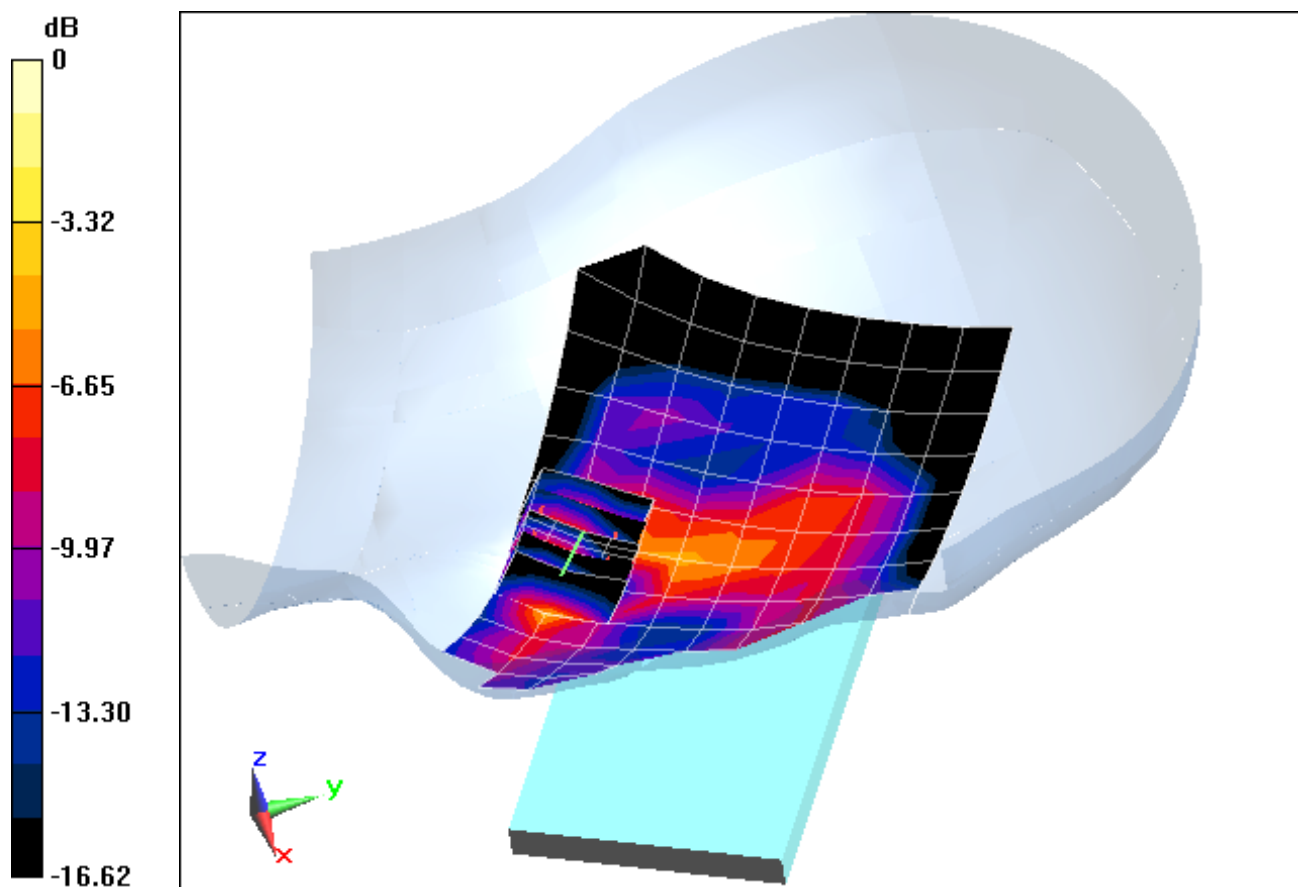
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 18.36 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.794 W/kg

SAR(1 g) = 0.379 W/kg



0 dB = 0.524 W/kg = -2.81 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D31

Communication System: UID 0, LTE Band 26; Frequency: 844 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 844 \text{ MHz}$; $\sigma = 0.932 \text{ S/m}$; $\epsilon_r = 41.541$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 07-31-2014; Ambient Temp: 24.3°C; Tissue Temp: 23.5°C

Probe: ES3DV3 - SN3319; ConvF(6.27, 6.27, 6.27); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

Mode: LTE Band 26 (Cell), Left Head, Cheek, High.ch.
QPSK, 10 MHz Bandwidth, 1 RB, 25 RB Offset; Wireless Charging Cover

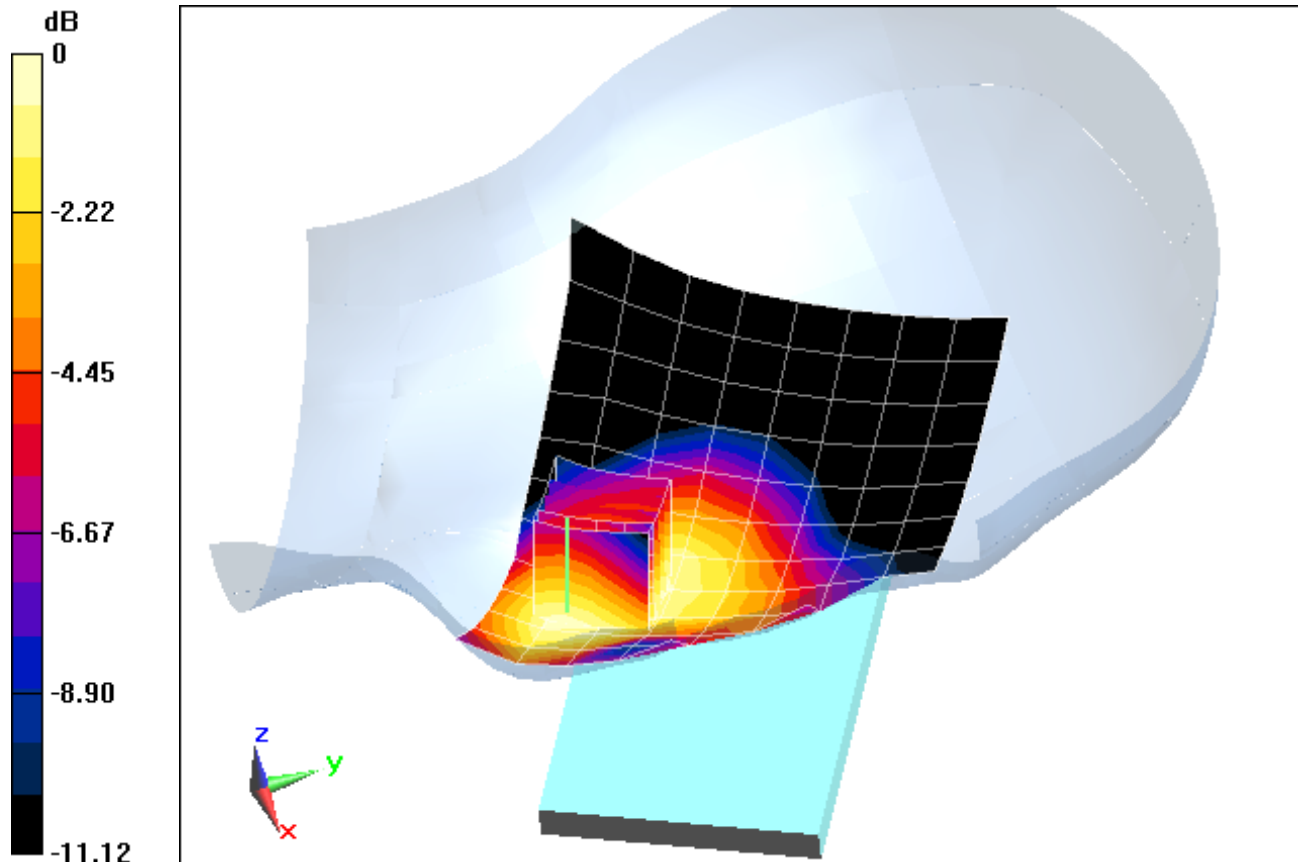
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 14.25 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.228 W/kg

SAR(1 g) = 0.178 W/kg



0 dB = 0.192 W/kg = -7.17 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D30

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

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1905 \text{ MHz}$; $\sigma = 1.41 \text{ S/m}$; $\epsilon_r = 39.24$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

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

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

**Mode: LTE Band 25 (PCS), Left Head, Cheek, High.ch.
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset; Standard Cover**

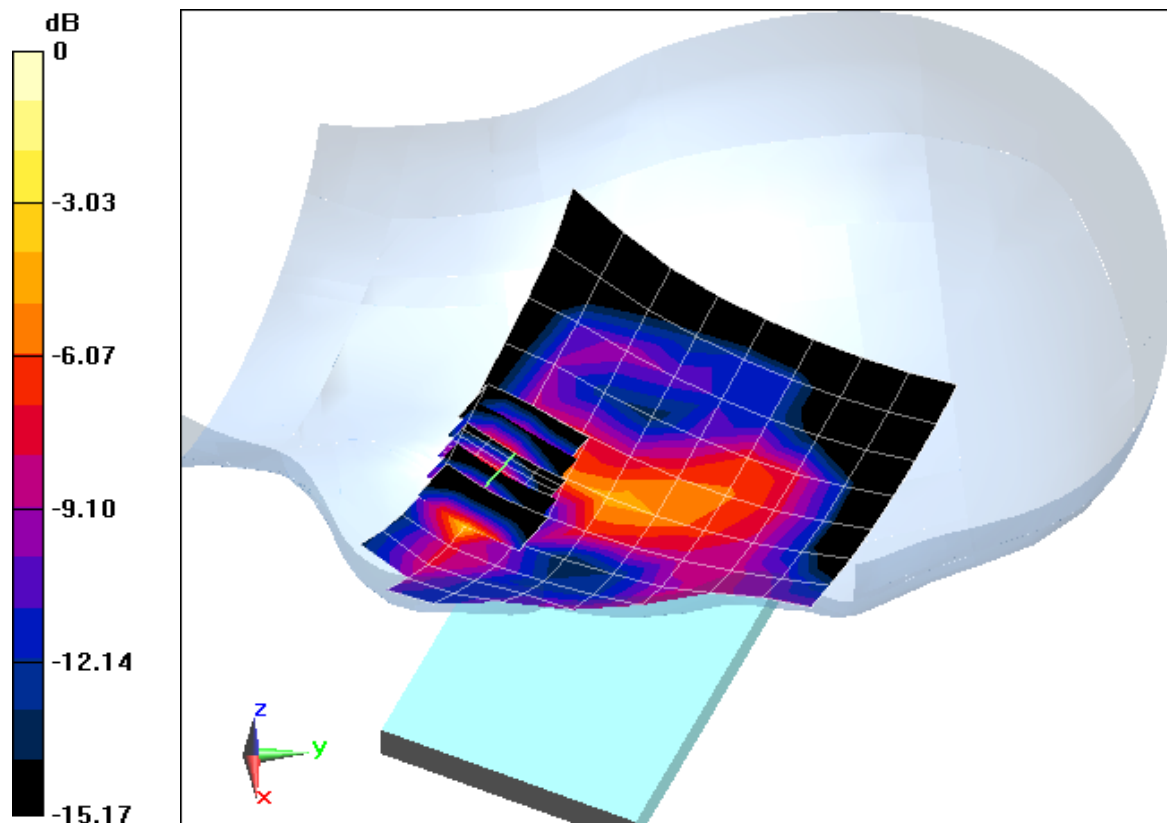
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 15.90 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.510 W/kg

SAR(1 g) = 0.233 W/kg



0 dB = 0.291 W/kg = -5.36 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P ;Type: Portable Handset; Serial: F4D29

Communication System: UID 0, LTE Band 41; Frequency: 2680 MHz;Duty Cycle: 1:1.58

Medium: 2600 Head Medium parameters used (interpolated):

$f = 2680 \text{ MHz}$; $\sigma = 2 \text{ S/m}$; $\epsilon_r = 40.113$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section ; Space: 1.0 cm

Test Date: 08-04-2014; Ambient Temp: 23.7°C; Tissue Temp: 23.7°C

Probe: ES3DV3 - SN3319; ConvF(4.29, 4.29, 4.29); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

Mode: LTE Band 41, Left Head, Cheek, High.ch
QPSK, 20 MHz Bandwidth, 1 RB, 0 RB Offset; Standard Cover

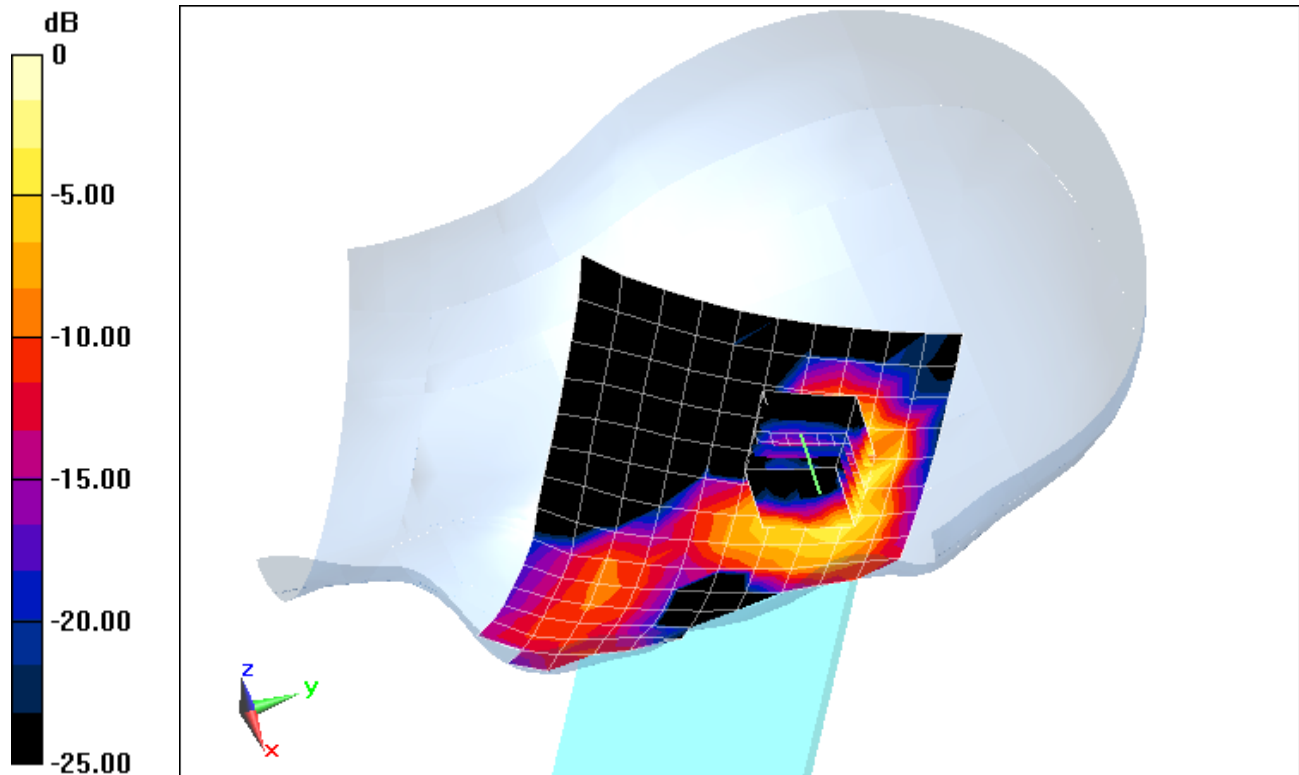
Area Scan (11x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 13.62 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 0.262 W/kg

SAR(1 g) = 0.111 W/kg



0 dB = 0.150 W/kg = -8.24 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: 01FC3

Communication System: UID 0, IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
 $f = 2462 \text{ MHz}$; $\sigma = 1.872 \text{ S/m}$; $\epsilon_r = 38.098$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Right Section

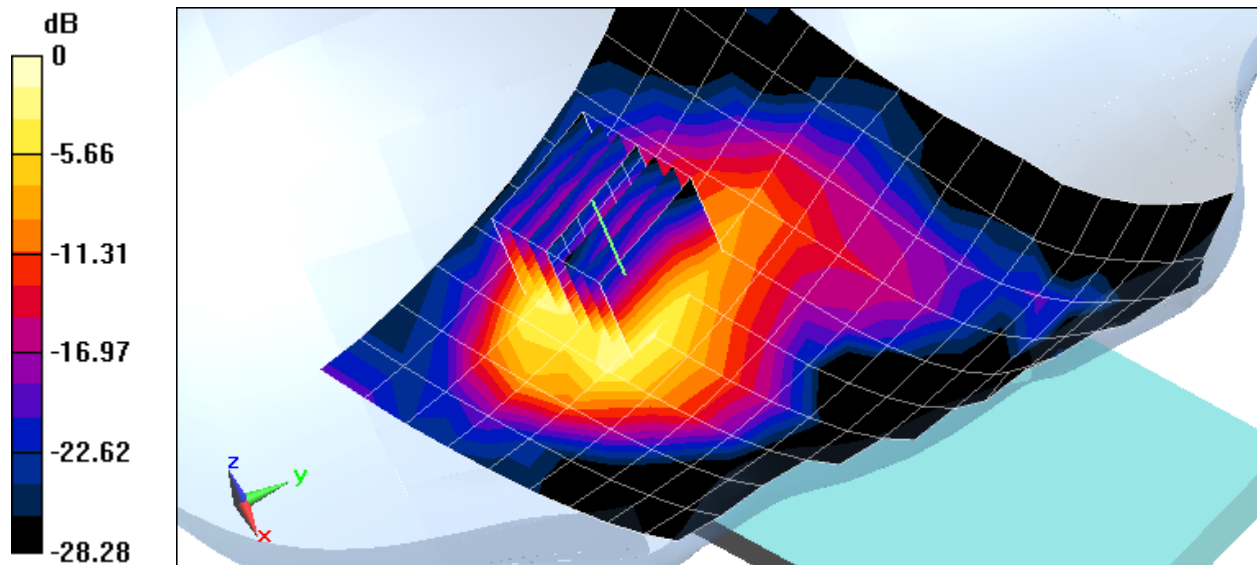
Test Date: 08-28-2014; Ambient Temp: 24.1°C; Tissue Temp: 22.2°C

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

**Mode: IEEE 802.11b, Right Head, Cheek, Ch 11, 1 Mbps,
Antenna 2, Standard Cover**

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

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 20.063 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.48 W/kg
SAR(1 g) = 0.573 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: 015D8

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

Medium: 5 GHz Head Medium parameters used:

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

Phantom section: Right Section

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

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

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

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

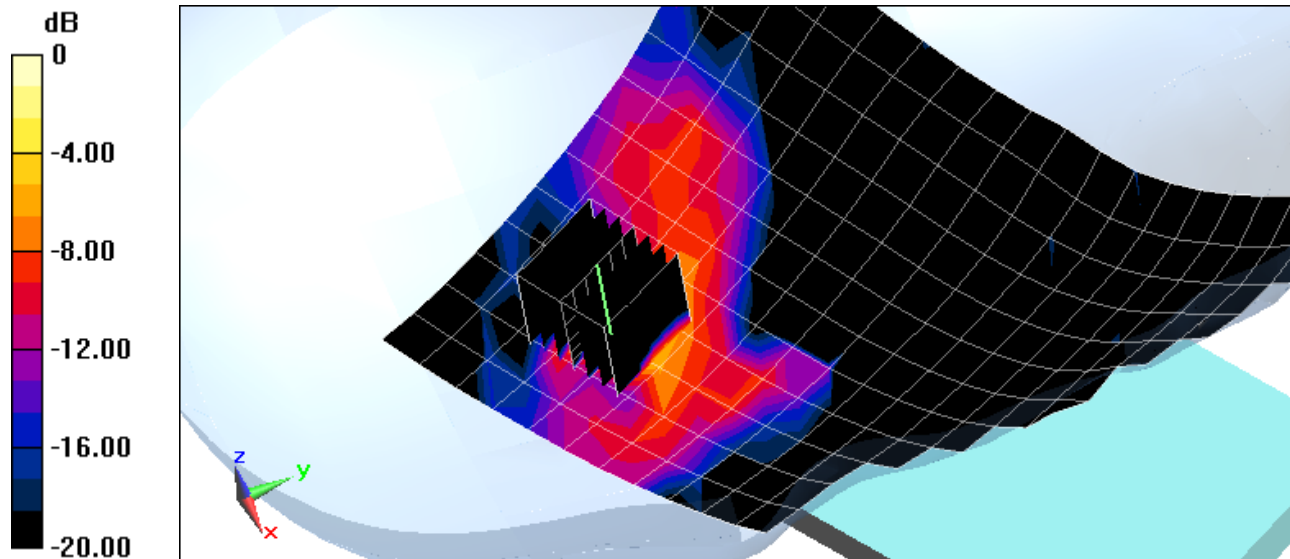
Area Scan (13x22x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

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

Peak SAR (extrapolated) = 0.840 W/kg

SAR(1 g) = 0.169 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: 015D8

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

Medium: 5 GHz Head Medium parameters used:

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

Phantom section: Right Section

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

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

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

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

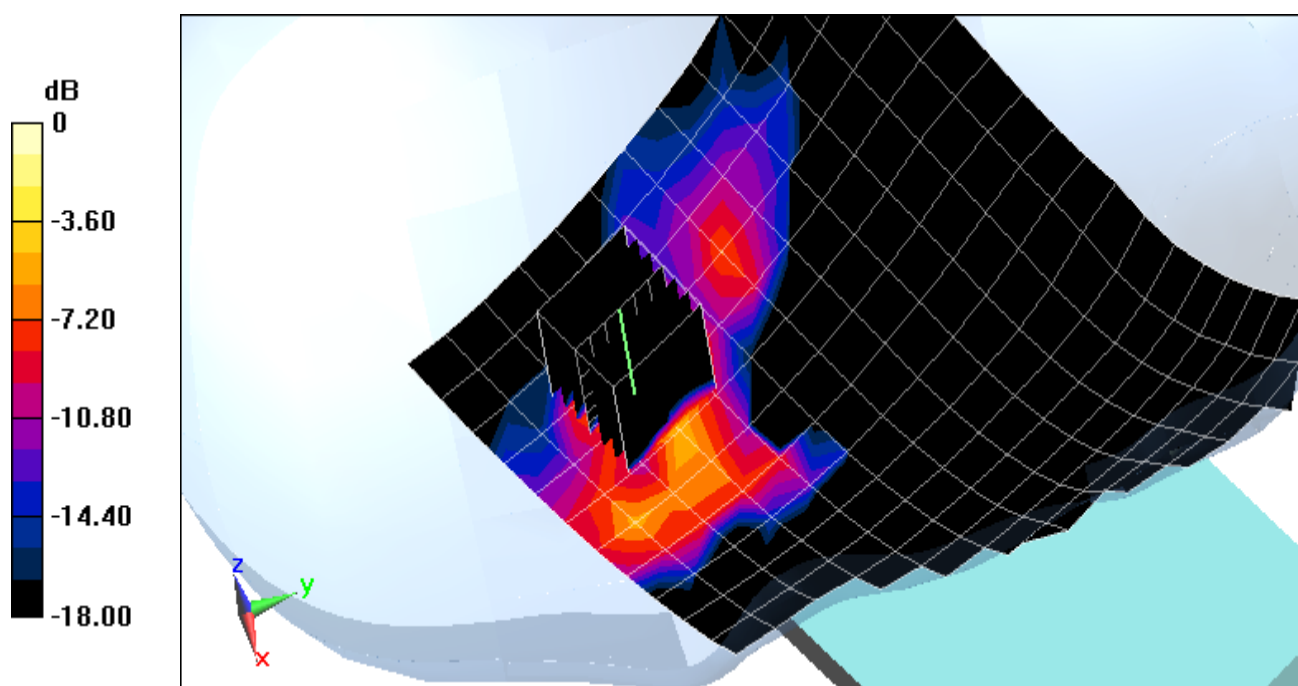
Area Scan (13x19x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

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

Peak SAR (extrapolated) = 0.966 W/kg

SAR(1 g) = 0.212 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D34

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.004 \text{ S/m}$; $\epsilon_r = 53.344$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-04-2014; Ambient Temp: 23.8°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(5.91, 5.91, 5.91); Calibrated: 8/22/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/21/2013

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

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

Mode: GSM 850, Body SAR, Back side, Mid.ch; Wireless Charging Cover

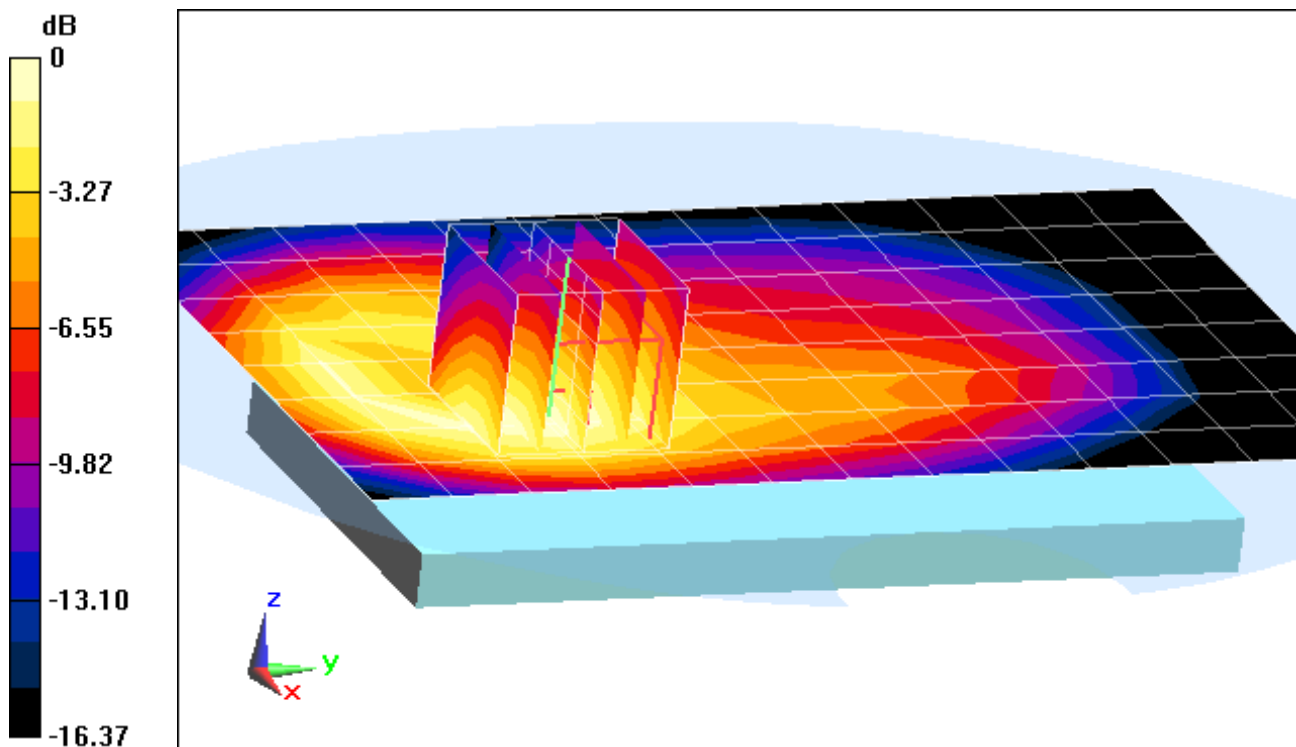
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 18.35 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.457 W/kg

SAR(1 g) = 0.310 W/kg



0 dB = 0.362 W/kg = -4.41 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset ; Serial: F4D34

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):

$f = 836.6$ MHz; $\sigma = 1.01$ S/m; $\epsilon_r = 53.967$; $\rho = 1000$ kg/m³

Phantom section: Flat Section: 1.0 cm

Test Date: 08-29-2014; Ambient Temp: 24.4°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3263; ConvF(6.16, 6.16, 6.16); Calibrated: 5/15/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/14/2014

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

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

Mode: GPRS 850, Body SAR, Front side, Mid.ch, 2 Tx Slots; Wireless Charging Cover

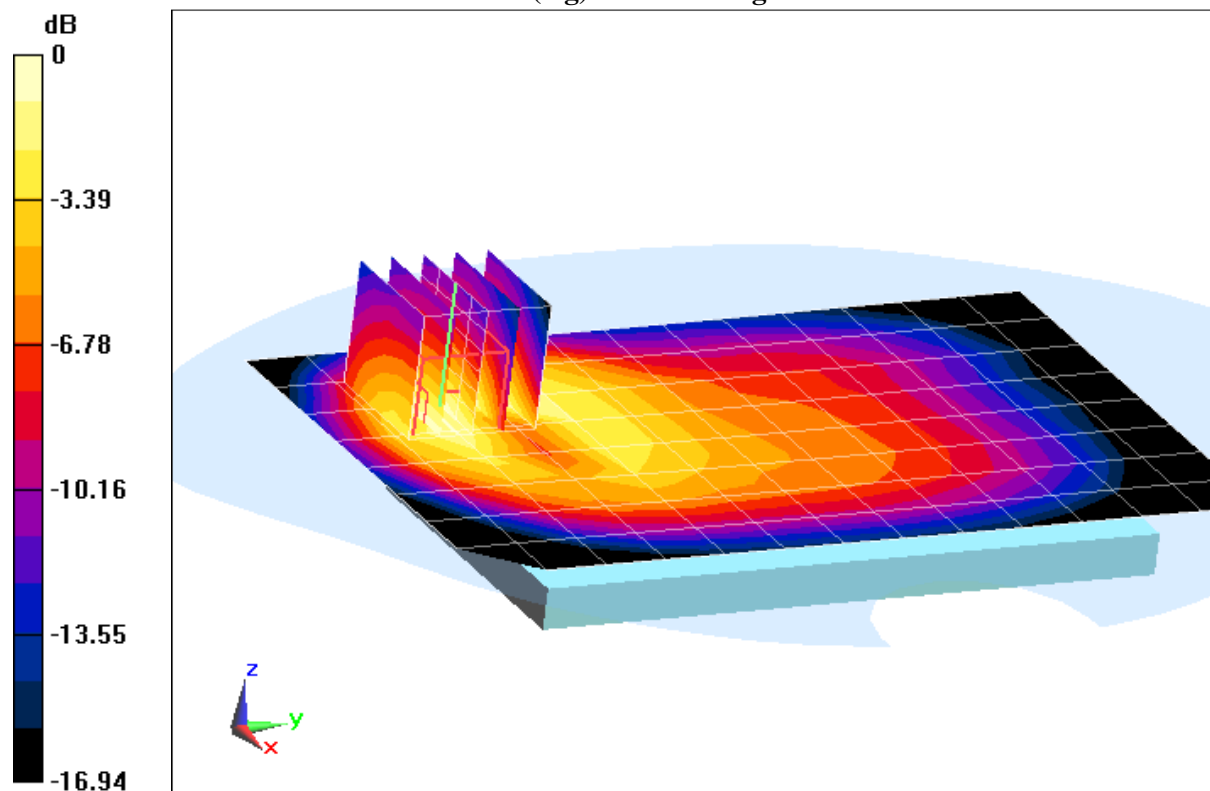
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 26.86 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 1.15 W/kg

SAR(1 g) = 0.670 W/kg



0 dB = 0.826 W/kg = -0.83 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D2A

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.015 \text{ S/m}$; $\epsilon_r = 53.927$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Space: 1.5 cm

Test Date: 08-01-2014; Ambient Temp: 24.9°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(5.91, 5.91, 5.91); Calibrated: 8/22/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/21/2013

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

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

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

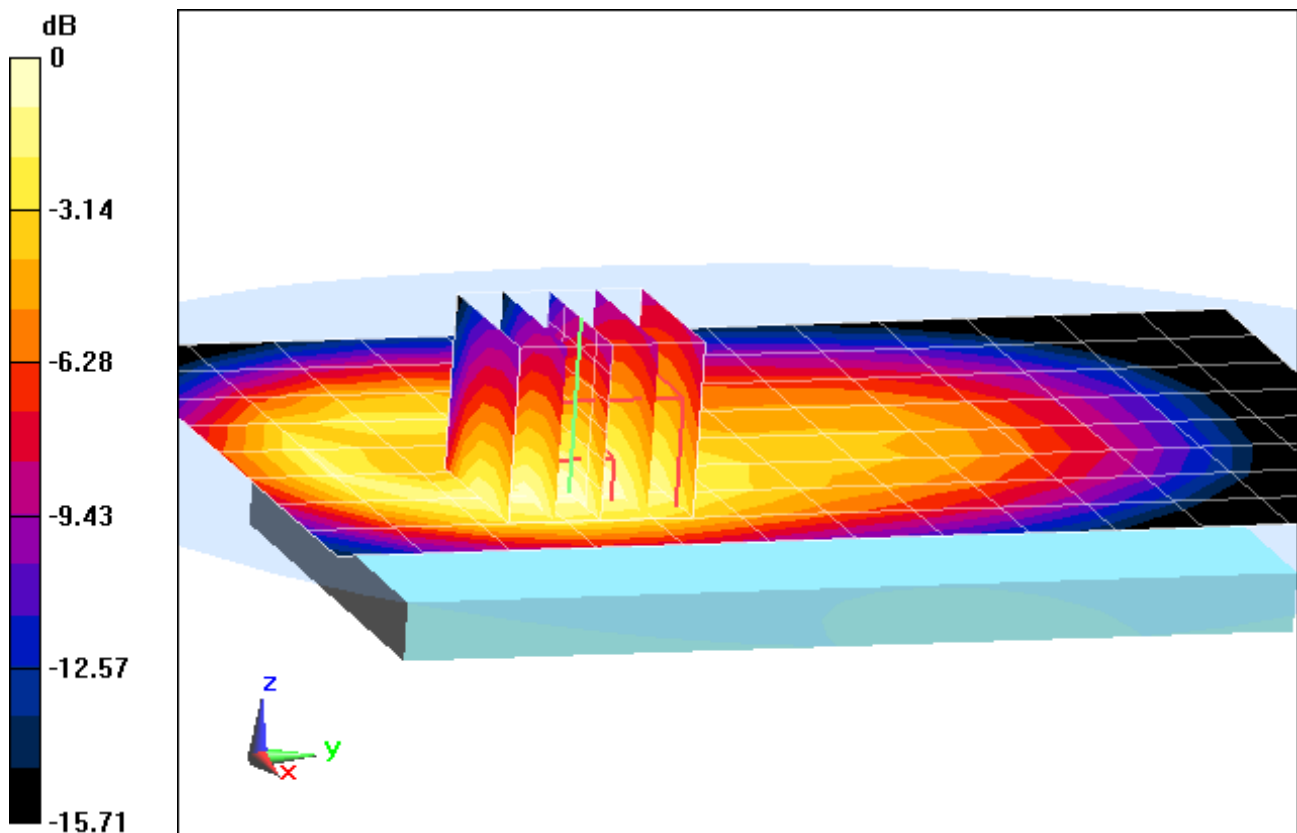
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 16.14 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.350 W/kg

SAR(1 g) = 0.246 W/kg



0 dB = 0.285 W/kg = -5.45 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D2A

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 1.015 \text{ S/m}$; $\epsilon_r = 53.927$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-01-2014; Ambient Temp: 24.9°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(5.91, 5.91, 5.91); Calibrated: 8/22/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/21/2013

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

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

Mode: UMTS 850, Body SAR, Front side, Mid.ch; Standard Cover

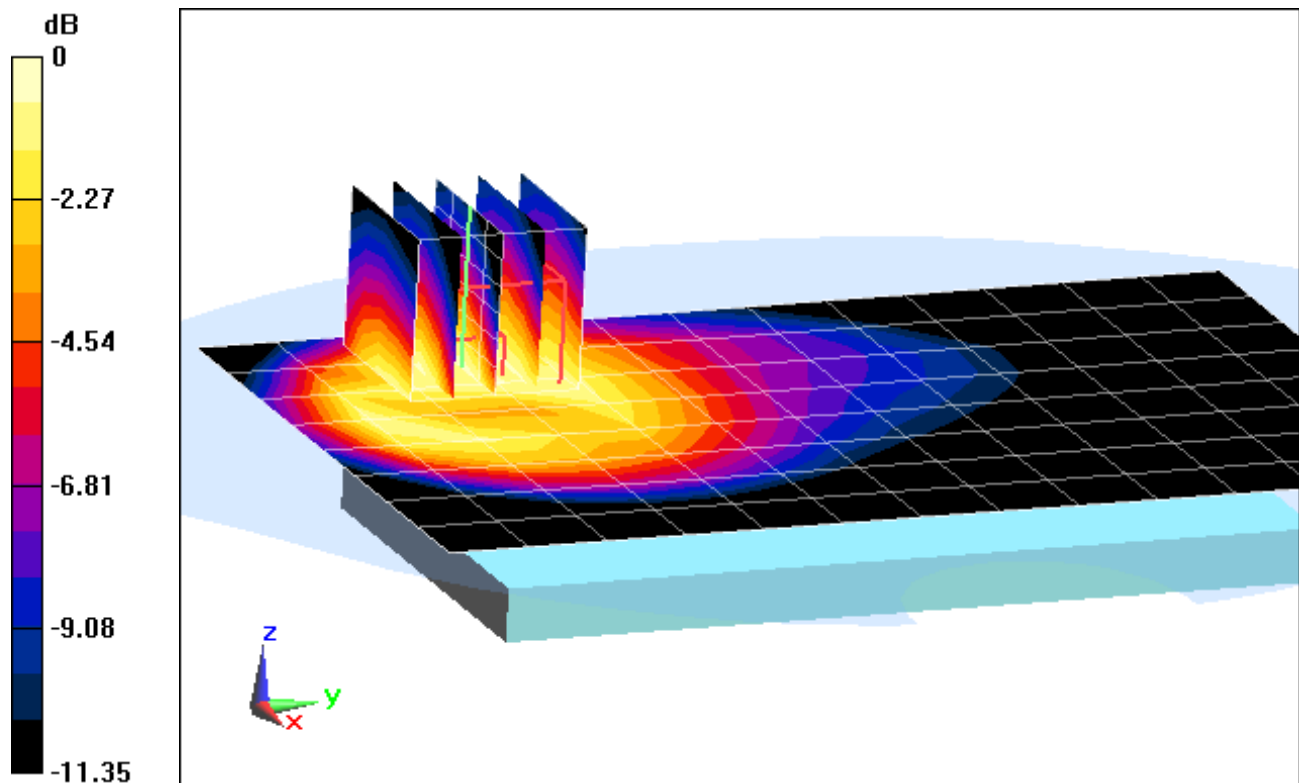
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.89 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.690 W/kg

SAR(1 g) = 0.460 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D33

Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
 $f = 820.1 \text{ MHz}$; $\sigma = 0.988 \text{ S/m}$; $\epsilon_r = 53.542$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-04-2014; Ambient Temp: 23.8°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(5.91, 5.91, 5.91); Calibrated: 8/22/2013;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/21/2013
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: BC10 Cell. CDMA, Body SAR, Back side, Mid.ch; Standard Cover

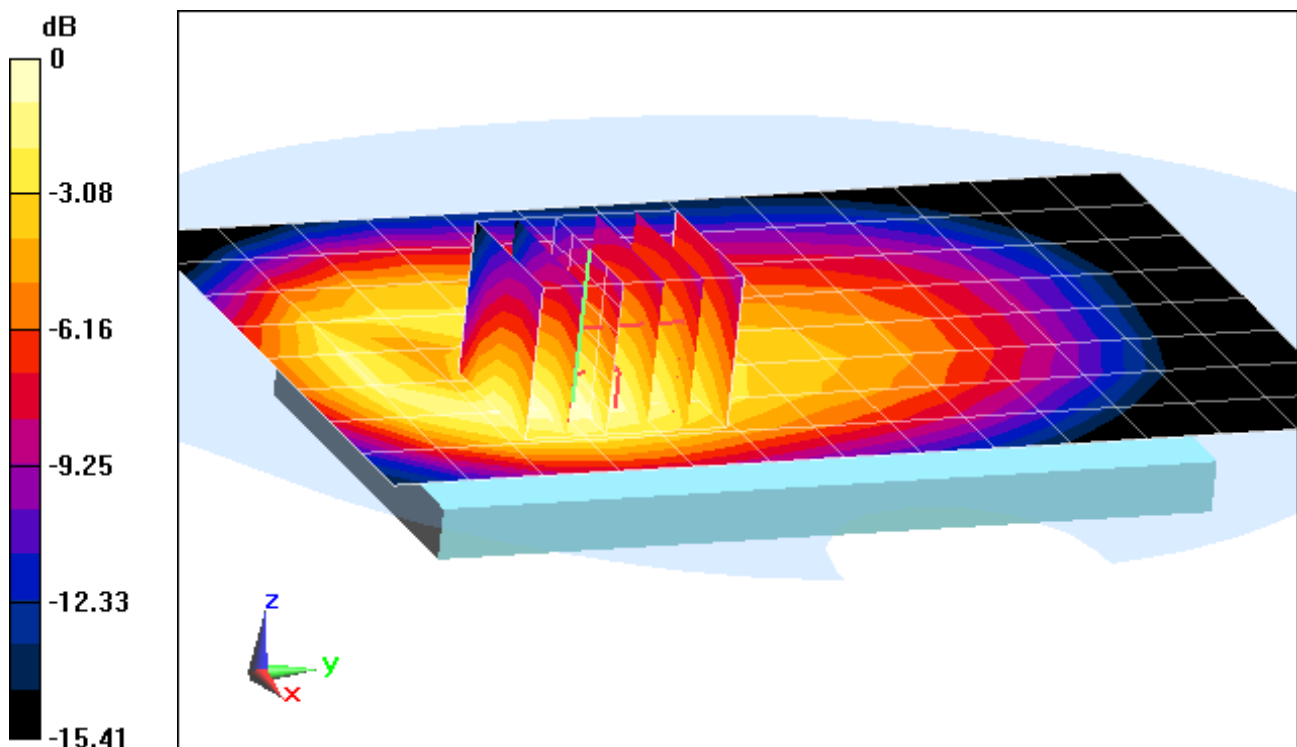
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.14 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.700 W/kg

SAR(1 g) = 0.500 W/kg



0 dB = 0.573 W/kg = -2.42 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D2B

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 820.1$ MHz; $\sigma = 0.988$ S/m; $\epsilon_r = 53.542$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-04-2014; Ambient Temp: 23.8°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(5.91, 5.91, 5.91); Calibrated: 8/22/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/21/2013

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

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

Mode: BC10 Cell. EVDO, Body SAR, Front side, Mid.ch; Wireless Charging Cover

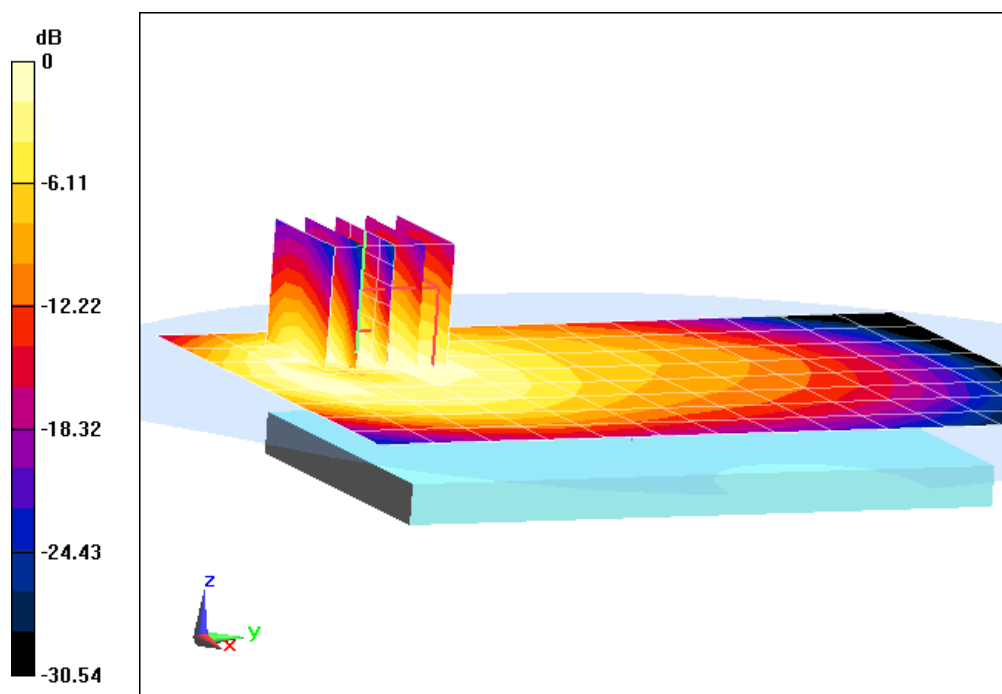
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 23.11 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.736 W/kg

SAR(1 g) = 0.494 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D33

Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
 $f = 836.52 \text{ MHz}$; $\sigma = 1.004 \text{ S/m}$; $\epsilon_r = 53.345$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-04-2014; Ambient Temp: 23.8°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(5.91, 5.91, 5.91); Calibrated: 8/22/2013;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 8/21/2013
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: BC0 Cell. CDMA, Body SAR, Back side, Mid.ch; Standard Cover

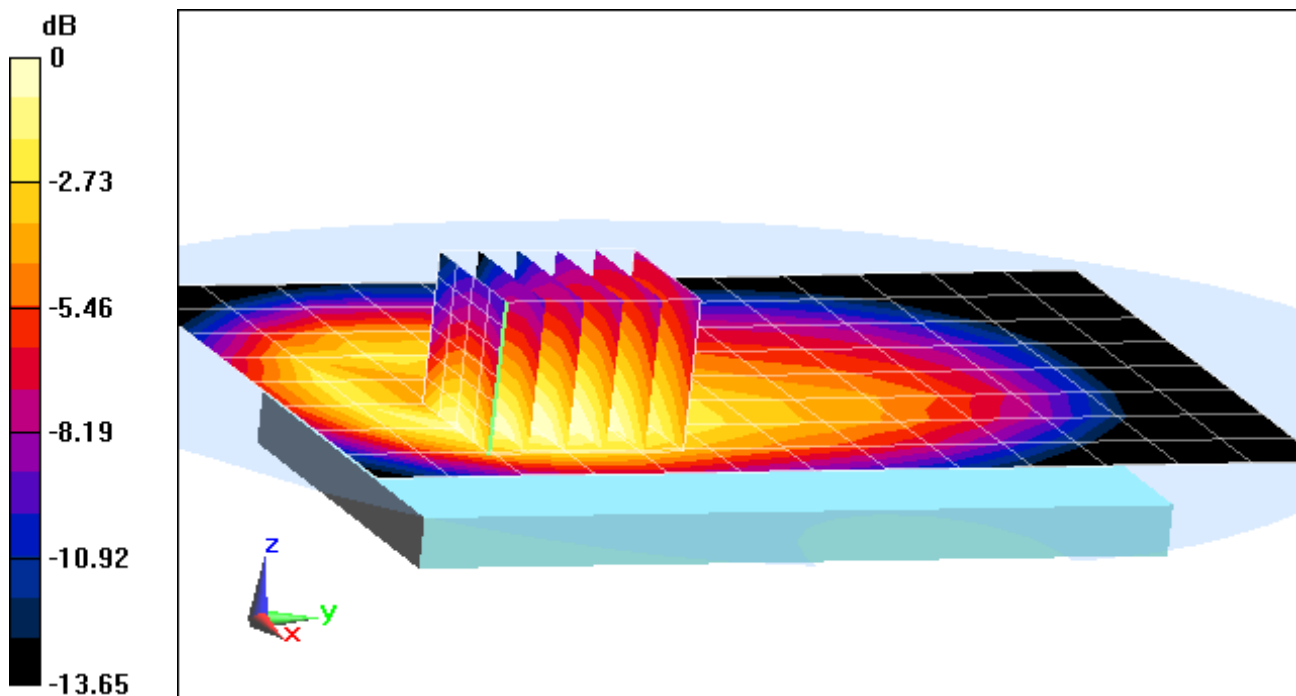
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 26.95 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 0.965 W/kg

SAR(1 g) = 0.677 W/kg



0 dB = 0.638 W/kg = -1.95 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D2B

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 1.004 \text{ S/m}$; $\epsilon_r = 53.345$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-04-2014; Ambient Temp: 23.8°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(5.91, 5.91, 5.91); Calibrated: 8/22/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/21/2013

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

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

Mode: BC0 Cell. EVDO, Body SAR, Front side, Mid.ch; Wireless Charging Cover

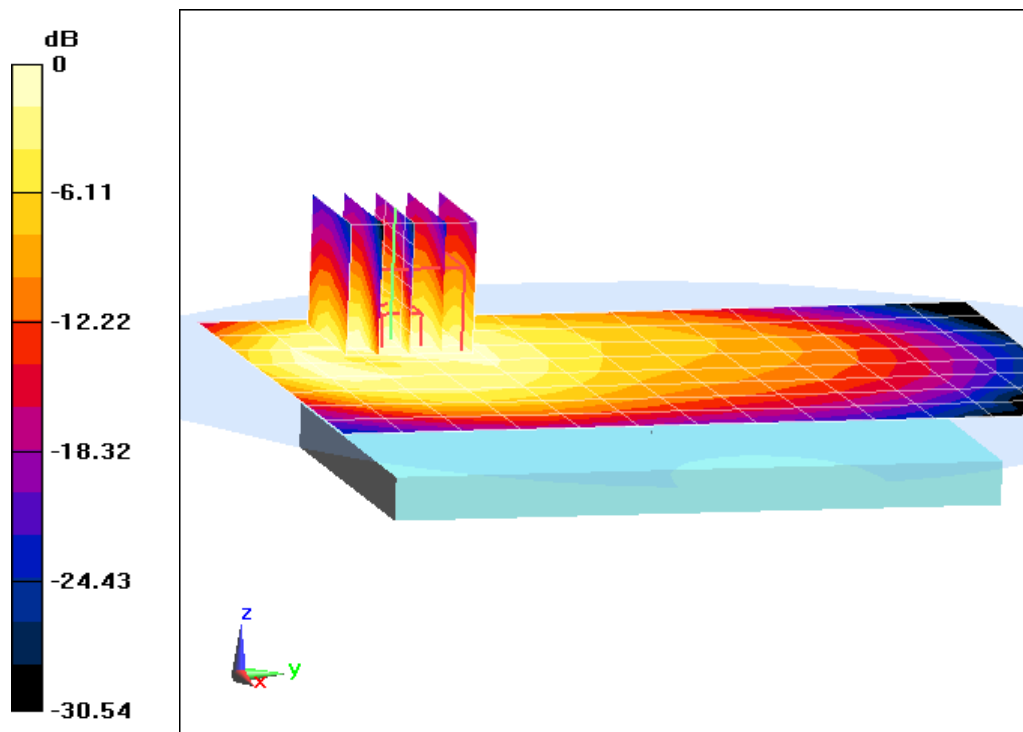
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 24.30 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.873 W/kg

SAR(1 g) = 0.577 W/kg



0 dB = 0.557 W/kg = -2.54 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D34

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.485 \text{ S/m}$; $\epsilon_r = 53.252$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Space: 1.5 cm

Test Date: 08-04-2014; Ambient Temp: 24.0°C; Tissue Temp: 22.6°C

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

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

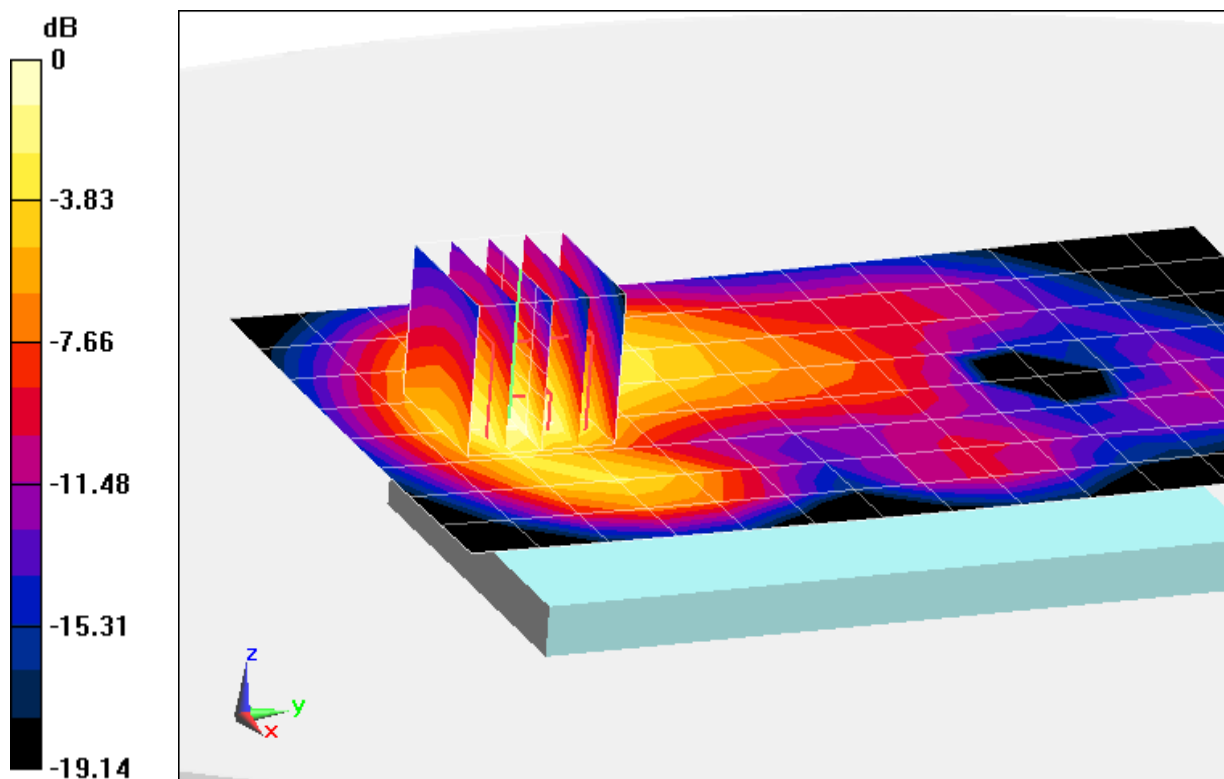
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 13.97 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.481 W/kg

SAR(1 g) = 0.290 W/kg



0 dB = 0.350 W/kg = -4.56 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D34

Communication System: UID 0, GSM GPRS; 4 Tx slots; Frequency: 1850.2 MHz; Duty Cycle: 1:2.076

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1850.2$ MHz; $\sigma = 1.454$ S/m; $\epsilon_r = 52.228$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

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

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

Mode: GPRS 1900, Body SAR, Bottom Edge, Low ch, 4 Tx Slots; Standard Cover

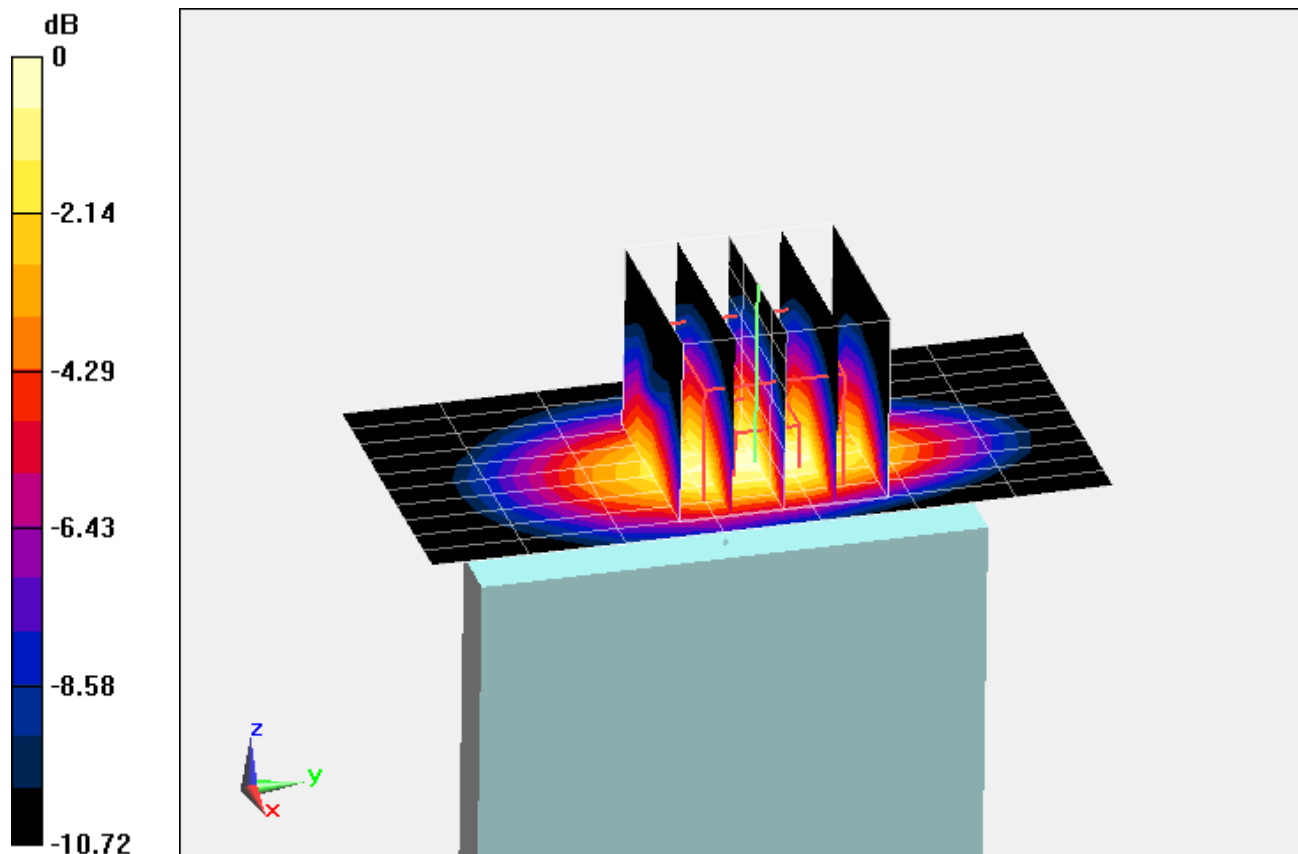
Area Scan (11x8x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 29.21 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.73 W/kg

SAR(1 g) = 1.07 W/kg



0 dB = 1.30 W/kg = 1.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D2A

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.485 \text{ S/m}$; $\epsilon_r = 53.252$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-04-2014; Ambient Temp: 24.0°C; Tissue Temp: 22.6°C

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

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

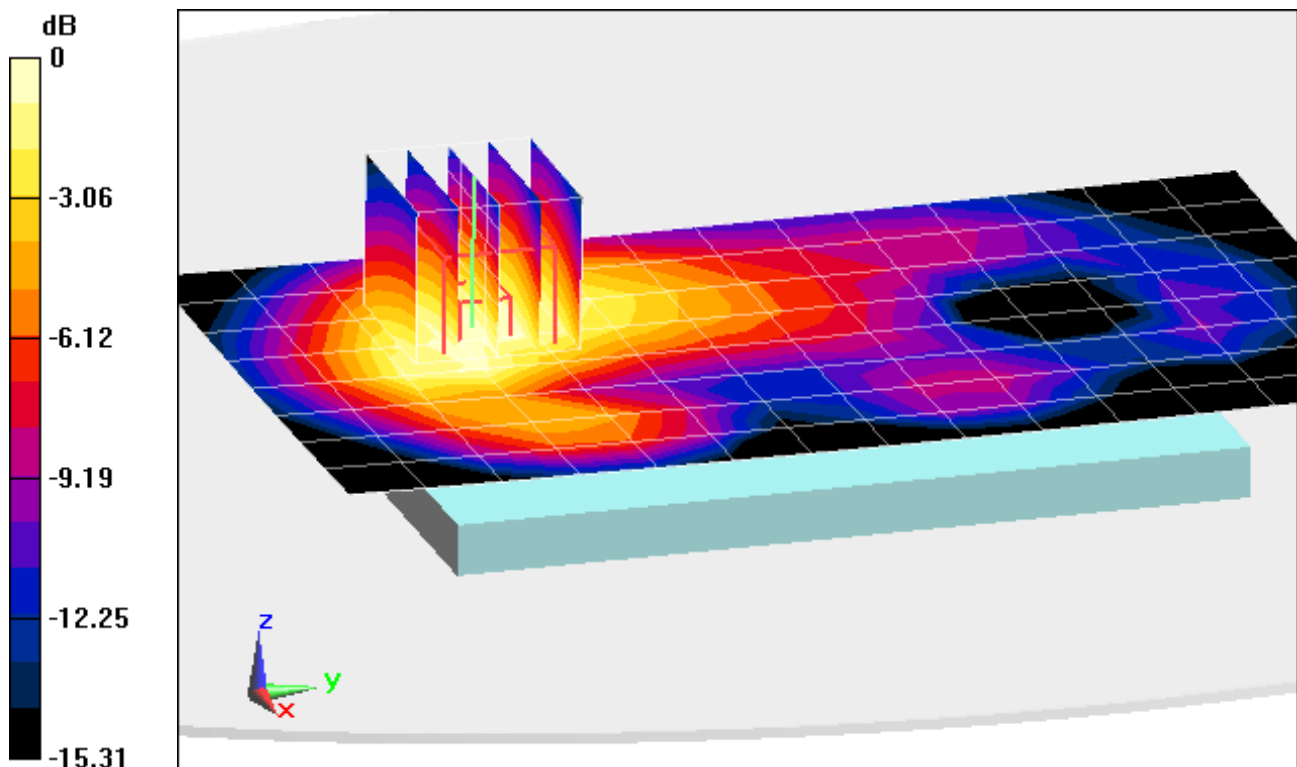
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 12.08 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.299 W/kg

SAR(1 g) = 0.199 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D35

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

Medium: 1900 Body Medium parameters used:

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

Phantom section: Flat Section; Space: 1.0 cm

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

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

UMTS 1900, Body SAR, Bottom Edge, Mid.ch; Standard Cover

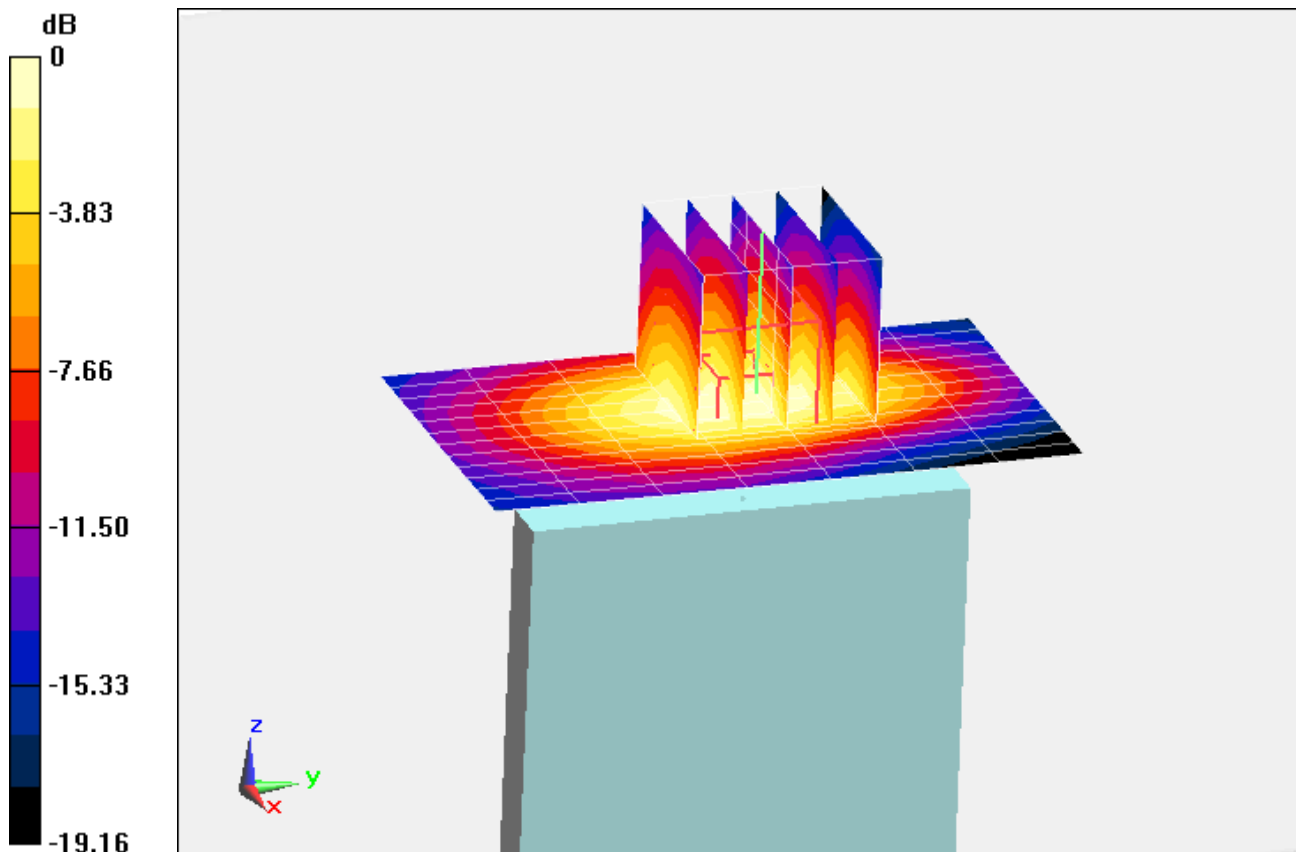
Area Scan (13x8x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 19.47 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.787 W/kg

SAR(1 g) = 0.489 W/kg



0 dB = 0.563 W/kg = -2.49 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D33

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

Medium: 1900 Body Medium parameters used:

$f = 1880$ MHz; $\sigma = 1.502$ S/m; $\epsilon_r = 52.007$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.5 cm

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

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

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

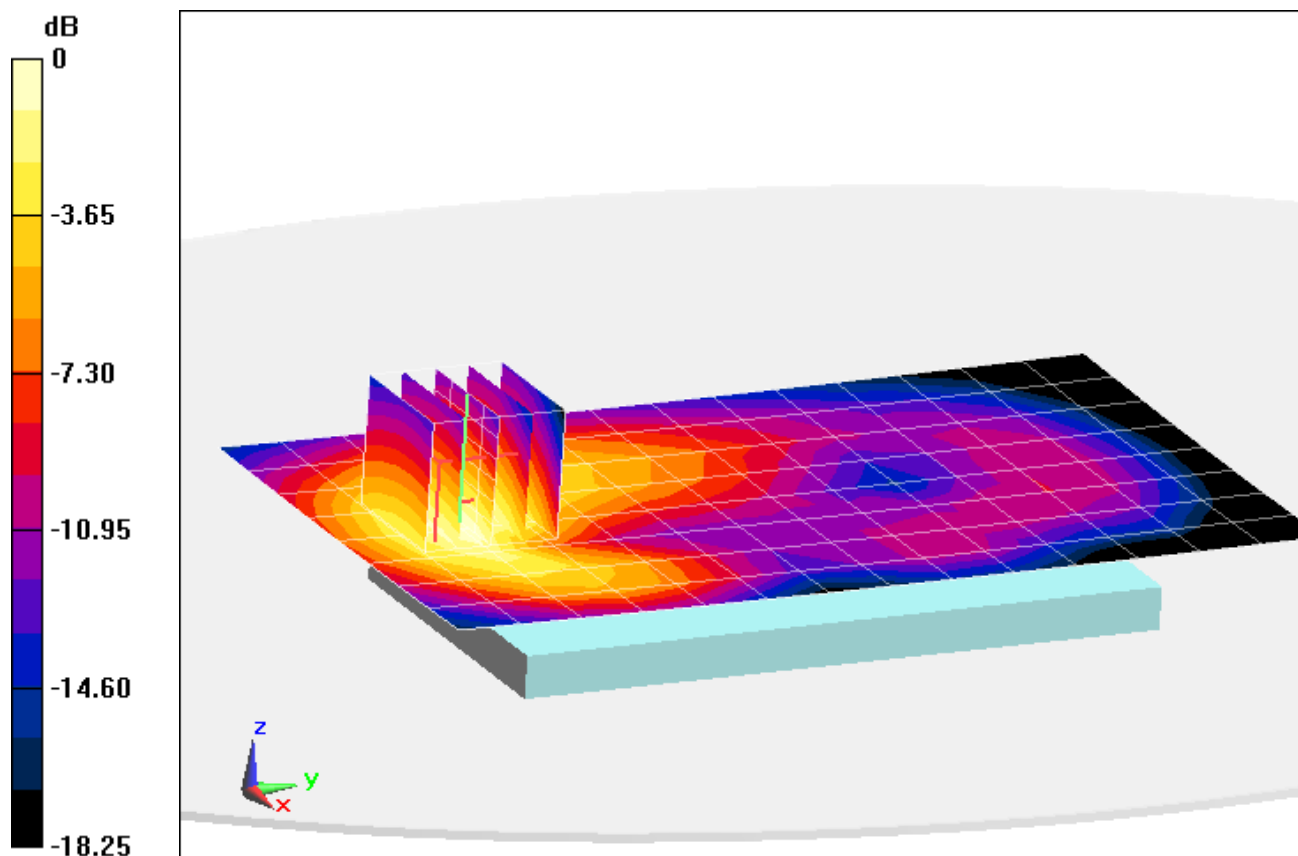
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 14.65 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.434 W/kg

SAR(1 g) = 0.283 W/kg



0 dB = 0.336 W/kg = -4.74 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D2B

Communication System: UID 0, CDMA; Frequency: 1908.75 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
 $f = 1908.75$ MHz; $\sigma = 1.531$ S/m; $\epsilon_r = 52.379$; $\rho = 1000$ kg/m³
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-25-2014; Ambient Temp: 22.6°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3319; ConvF(4.67, 4.67, 4.67); Calibrated: 4/17/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 4/11/2014
Phantom: ELI left; Type: QDOVA002AA; Serial: TP:1202
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Mode: PCS EVDO, Body SAR, Bottom Edge
High ch.; Standard Cover**

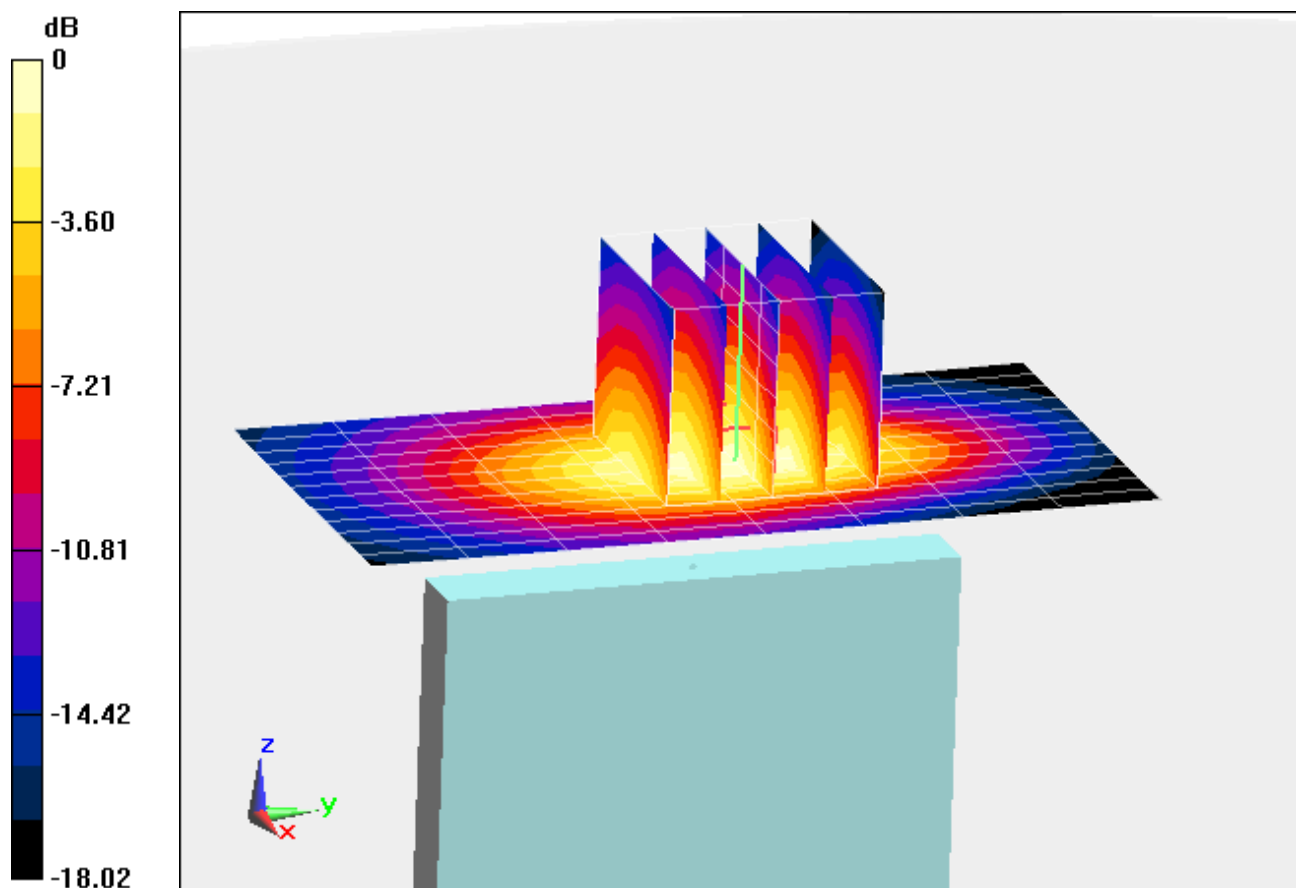
Area Scan (13x9x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 27.40 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 1.68 W/kg

SAR(1 g) = 1.05 W/kg



0 dB = 1.26 W/kg = 1.00 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D31

Communication System: UID 0, LTE Band 26; Frequency: 844 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 844 \text{ MHz}$; $\sigma = 1.022 \text{ S/m}$; $\epsilon_r = 53.858$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Space: 1.5 cm

Test Date: 08-01-2014; Ambient Temp: 24.9°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(5.91, 5.91, 5.91); Calibrated: 8/22/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/21/2013

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

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

Mode: LTE Band 26, Body SAR, Back side, High.ch.
10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset; Standard Cover

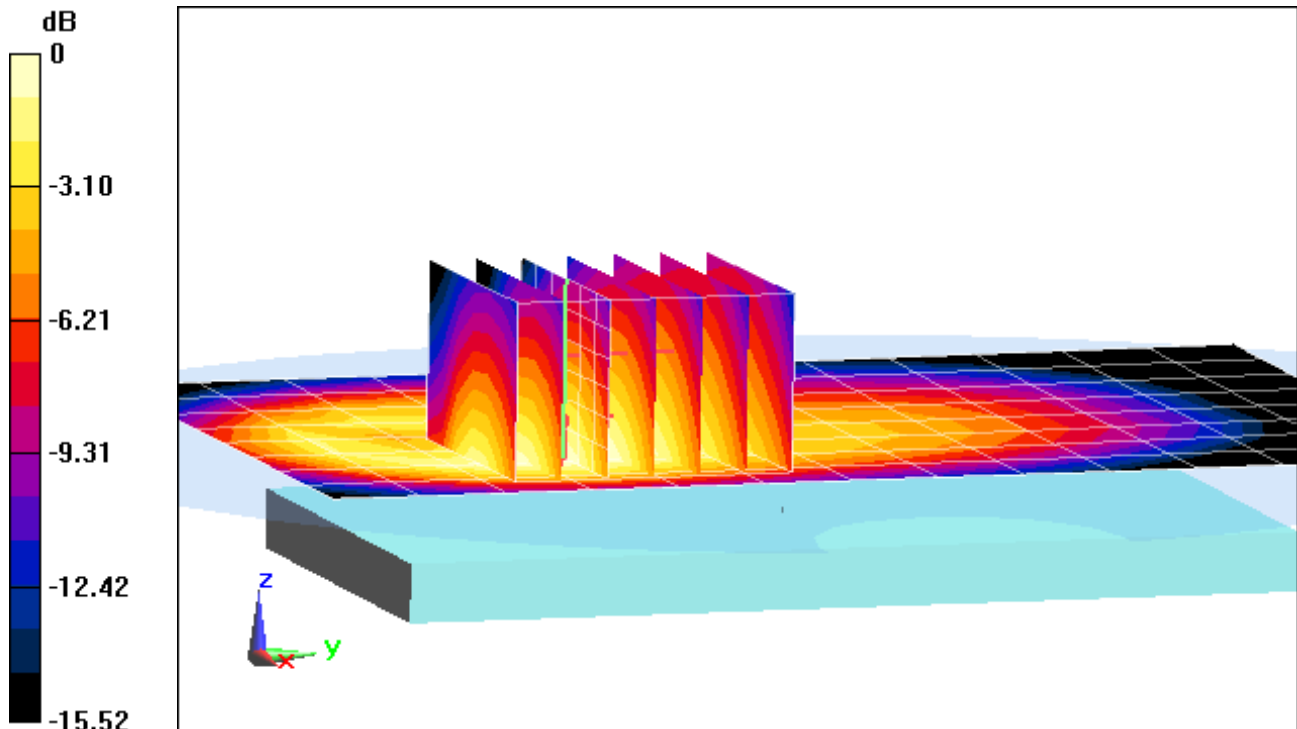
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 21.70 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.581 W/kg

SAR(1 g) = 0.405 W/kg



0 dB = 0.456 W/kg = -3.41 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D31

Communication System: UID 0, LTE Band 26; Frequency: 844 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 844 \text{ MHz}$; $\sigma = 1.022 \text{ S/m}$; $\epsilon_r = 53.858$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 08-01-2014; Ambient Temp: 24.9°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(5.91, 5.91, 5.91); Calibrated: 8/22/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/21/2013

Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687

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

Mode: LTE Band 26, Body SAR, Front side, High.ch.
10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset; Standard Cover

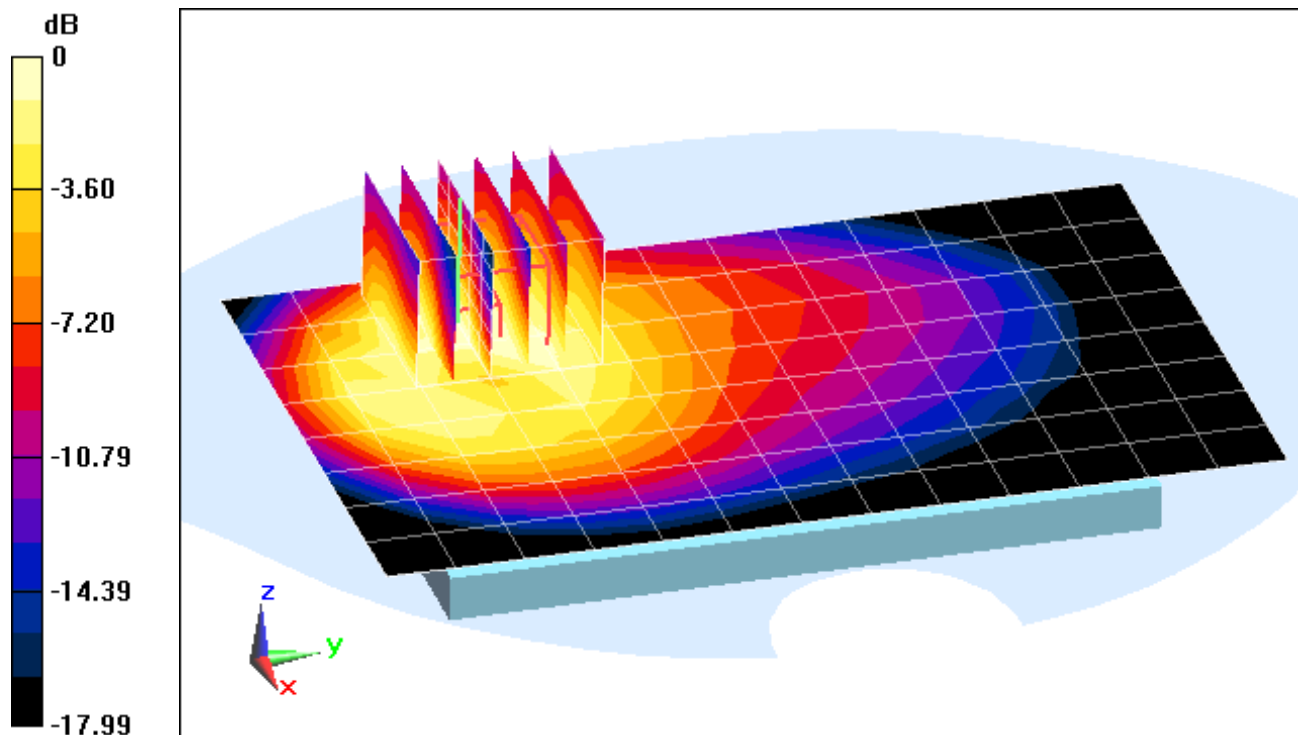
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 28.60 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 1.16 W/kg

SAR(1 g) = 0.760 W/kg



0 dB = 0.881 W/kg = -0.55 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D30

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

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1905 \text{ MHz}$; $\sigma = 1.539 \text{ S/m}$; $\epsilon_r = 52.857$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-07-2014; Ambient Temp: 24.2°C; Tissue Temp: 22.9°C

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

**Mode: LTE Band 25 (PCS), Body SAR, Back Side, High.ch.
QPSK, 20 MHz Bandwidth, 1 RB, 50 RB Offset; Standard Cover**

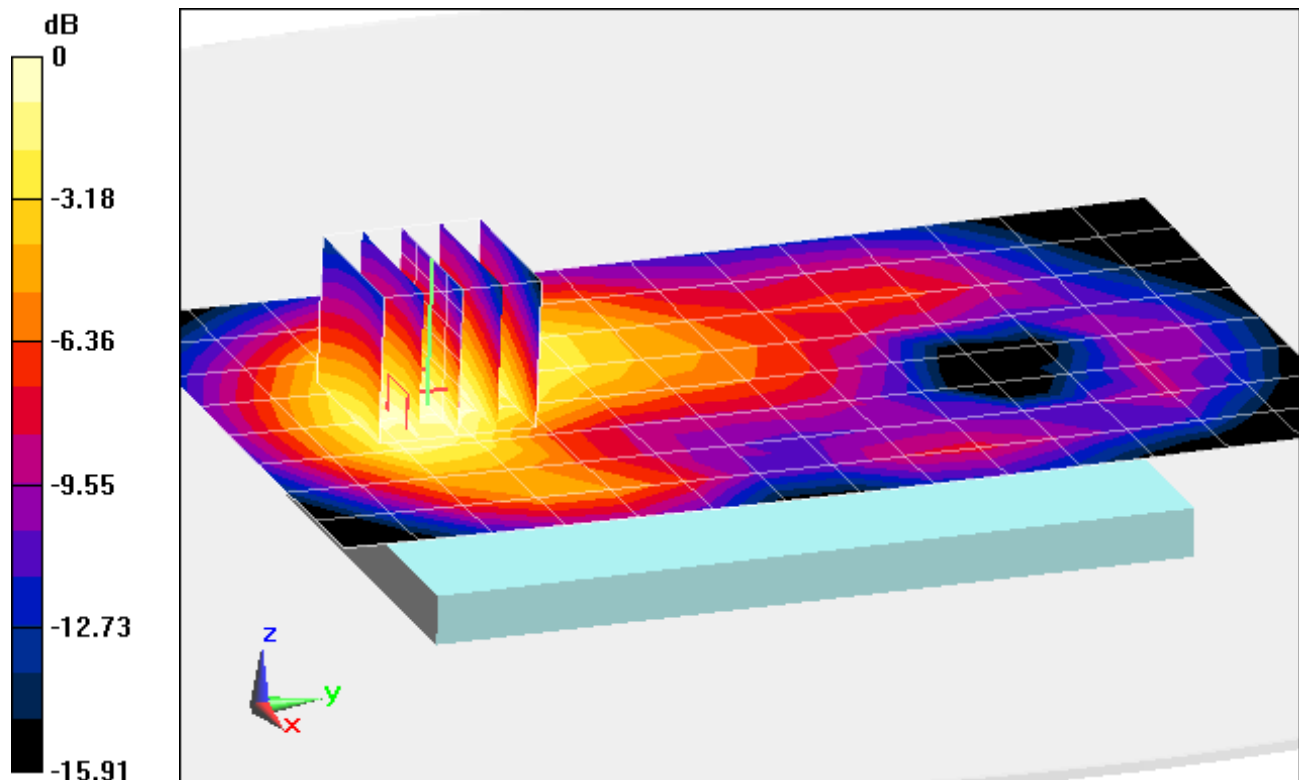
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 14.02 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.450 W/kg

SAR(1 g) = 0.285 W/kg



0 dB = 0.327 W/kg = -4.85 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D32

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

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1905 \text{ MHz}$; $\sigma = 1.514 \text{ S/m}$; $\epsilon_r = 53.153$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-04-2014; Ambient Temp: 24.0°C; Tissue Temp: 22.6°C

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

**Mode: LTE Band 25 (PCS), Body SAR, Bottom Edge
High.ch, QPSK, 1 RB, 50 RB Offset; Standard Cover**

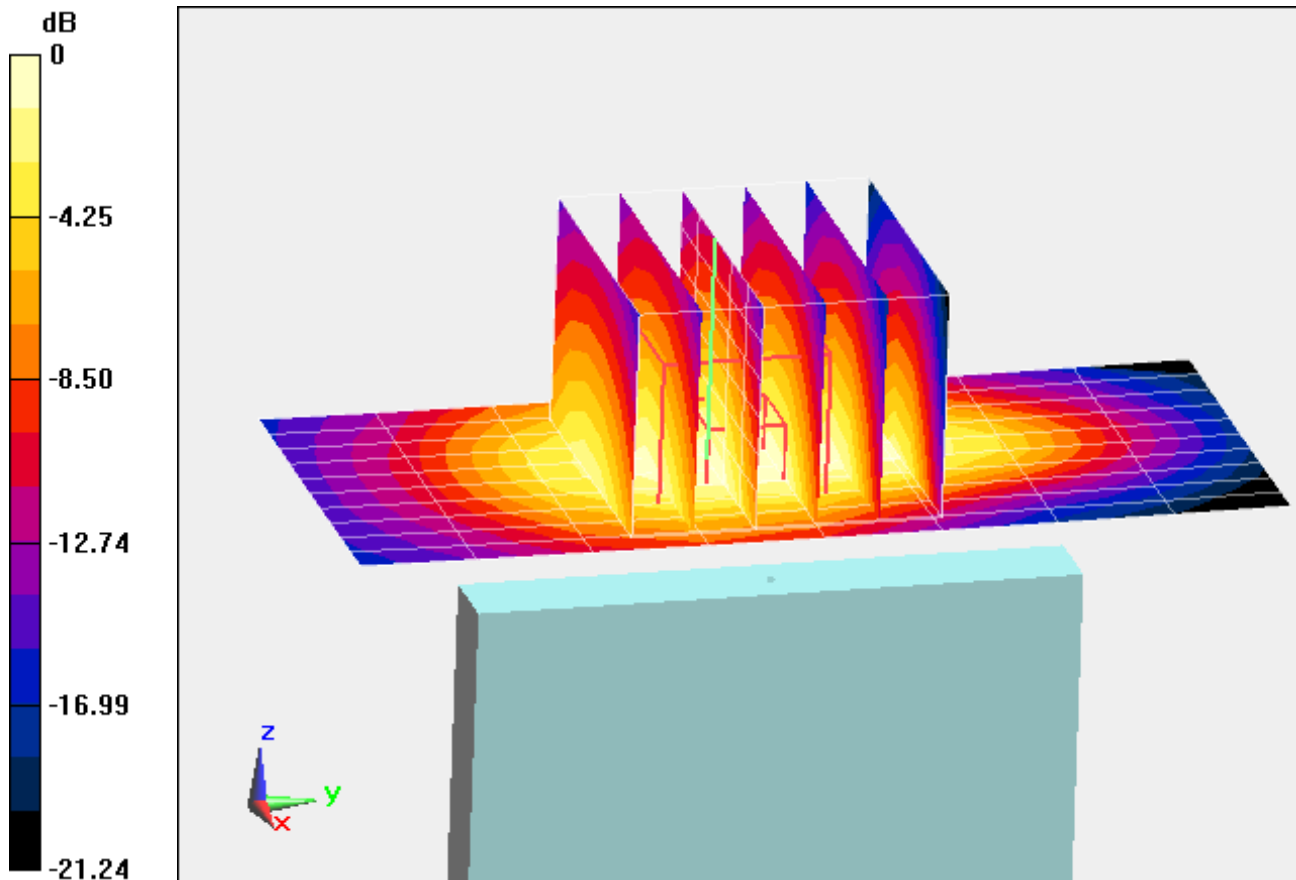
Area Scan (11x9x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 18.34 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.776 W/kg

SAR(1 g) = 0.485 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D29

Communication System: UID 0, LTE Band 41; Frequency: 2680 MHz; Duty Cycle: 1:1.58

Medium: 2600 Body Medium parameters used (interpolated):

$f = 2680 \text{ MHz}$; $\sigma = 2.337 \text{ S/m}$; $\epsilon_r = 50.757$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-29-2014; Ambient Temp: 24.0°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3258; ConvF(3.91, 3.91, 3.91); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

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

**Mode: LTE Band 41, Body SAR, Back side, High.ch, 20 MHz Bandwidth,
QPSK, 1 RB, 0 RB Offset; Standard Cover**

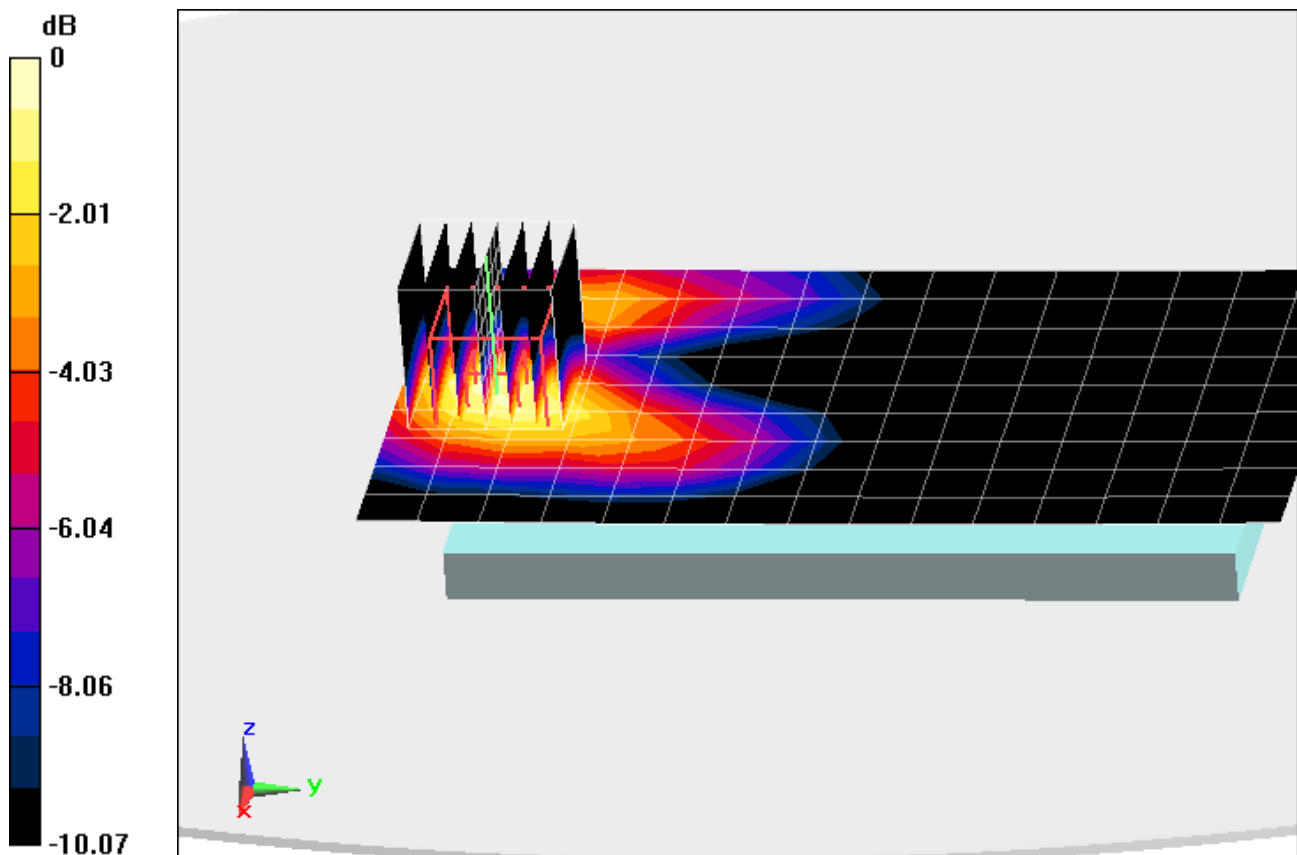
Area Scan (10x16x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 8.144 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 0.299 W/kg

SAR(1 g) = 0.143 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D29

Communication System: UID 0, LTE Band 41; Frequency: 2680 MHz; Duty Cycle: 1:1.58

Medium: 2600 Body Medium parameters used (interpolated):

$f = 2680 \text{ MHz}$; $\sigma = 2.337 \text{ S/m}$; $\epsilon_r = 50.757$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-29-2014; Ambient Temp: 24.0°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3258; ConvF(3.91, 3.91, 3.91); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

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

**Mode: LTE Band 41, Body SAR, Bottom Edge, High.ch, 20 MHz Bandwidth,
QPSK, 1 RB, 0 RB Offset; Standard Cover**

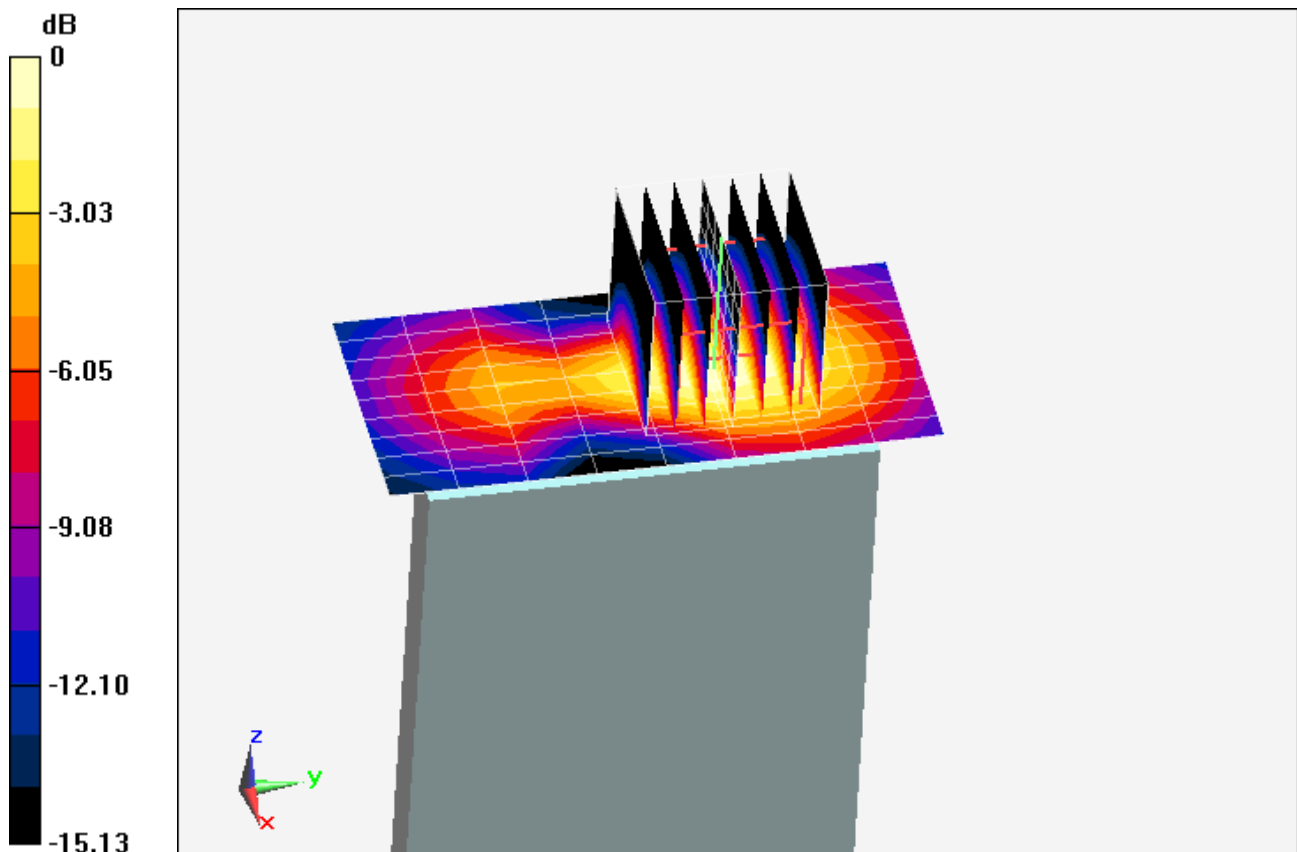
Area Scan (10x9x1): Measurement grid: dx=5mm, dy=12mm

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

Reference Value = 7.674 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.868 W/kg

SAR(1 g) = 0.412 W/kg



0 dB = 0.533 W/kg = -2.73 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: 015D8

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

Medium: 2450 Body Medium parameters used (interpolated):

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

Phantom section: Flat Section; Space: 1.0 cm

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

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

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

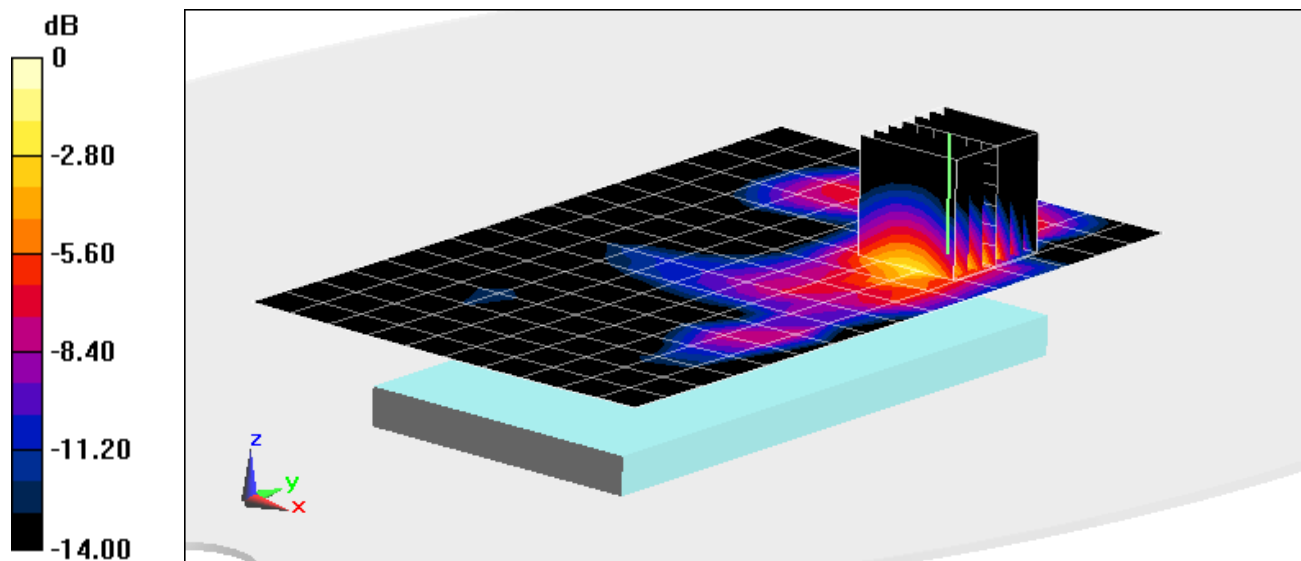
Area Scan (11x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

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

Peak SAR (extrapolated) = 0.270 W/kg

SAR(1 g) = 0.128 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: 015D8

Communication System: UID 0, IEEE 802.11n 5.2-5.8 GHz Band; Frequency: 5745 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
 $f = 5745 \text{ MHz}$; $\sigma = 5.988 \text{ S/m}$; $\epsilon_r = 46.411$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section; Space: 1.0 cm

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

Probe: EX3DV4 - SN3920; ConvF(4, 4, 4); Calibrated: 12/18/2013;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn649; Calibrated: 12/12/2013
Phantom: SAM Sub; Type: SAM 4.0; Serial: TP-1357
Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7331)

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

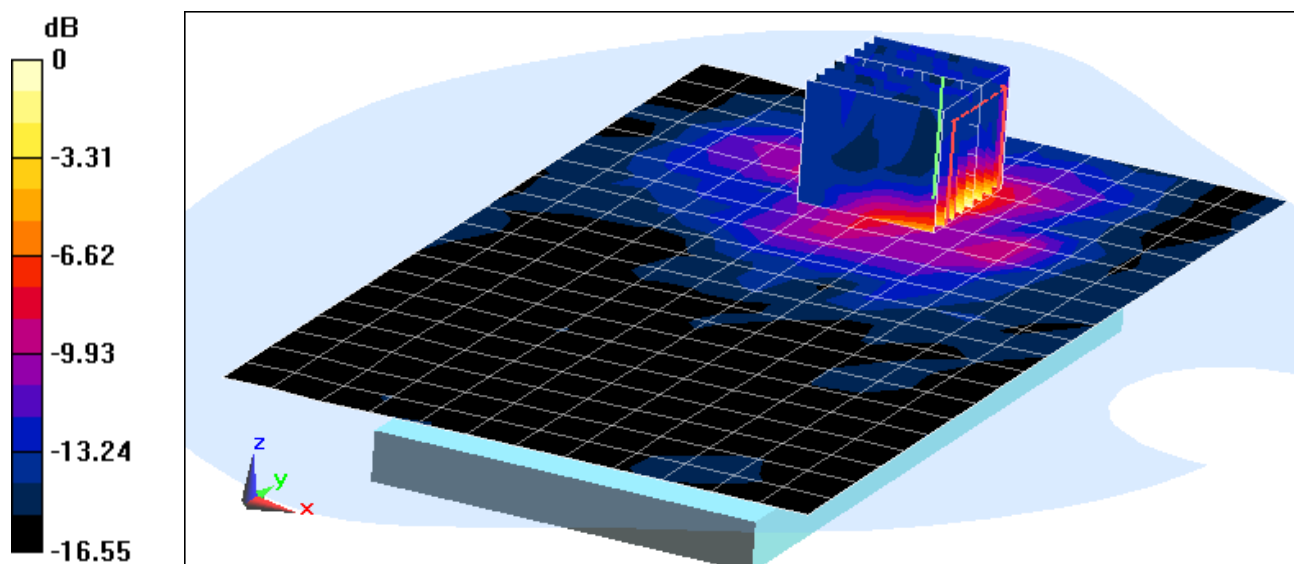
Area Scan (13x21x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

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

Peak SAR (extrapolated) = 1.44 W/kg

SAR(1 g) = 0.292 W/kg



0 dB = 0.652 W/kg = -1.86 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: 015D8

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

Medium: 5 GHz Body Medium parameters used:

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

Phantom section: Flat Section; Space: 1.0 cm

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

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

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

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

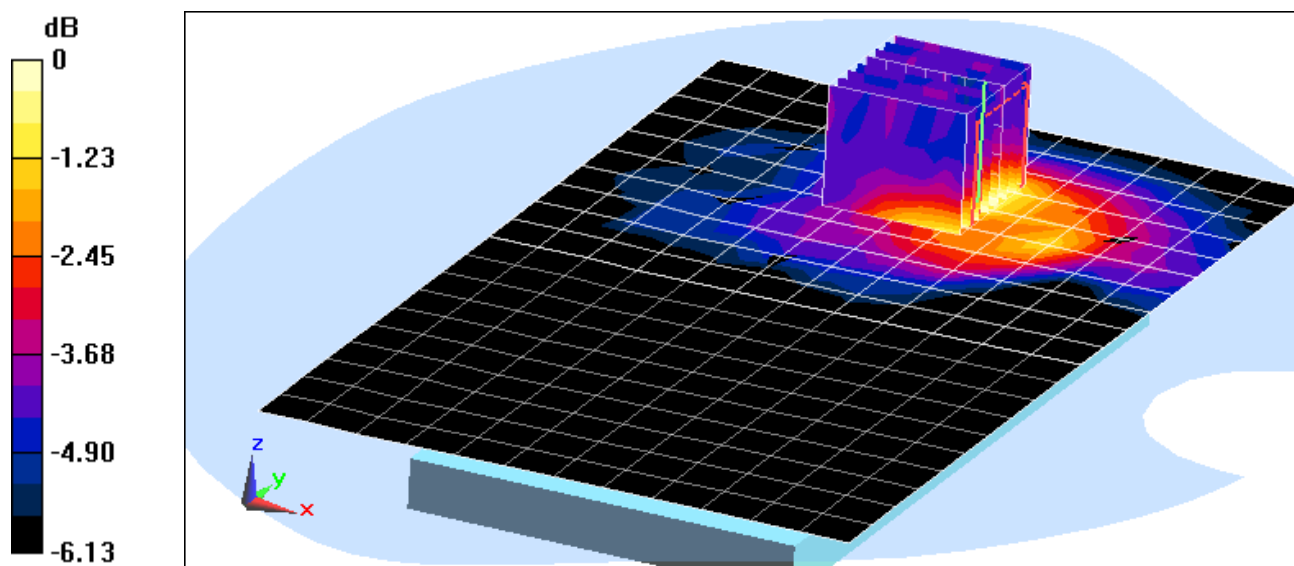
Area Scan (13x21x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

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

Peak SAR (extrapolated) = 2.06 W/kg

SAR(1 g) = 0.454 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: 015D8

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

Medium: 5 GHz Body Medium parameters used:

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

Phantom section: Flat Section; Space: 1.0 cm

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

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

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

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

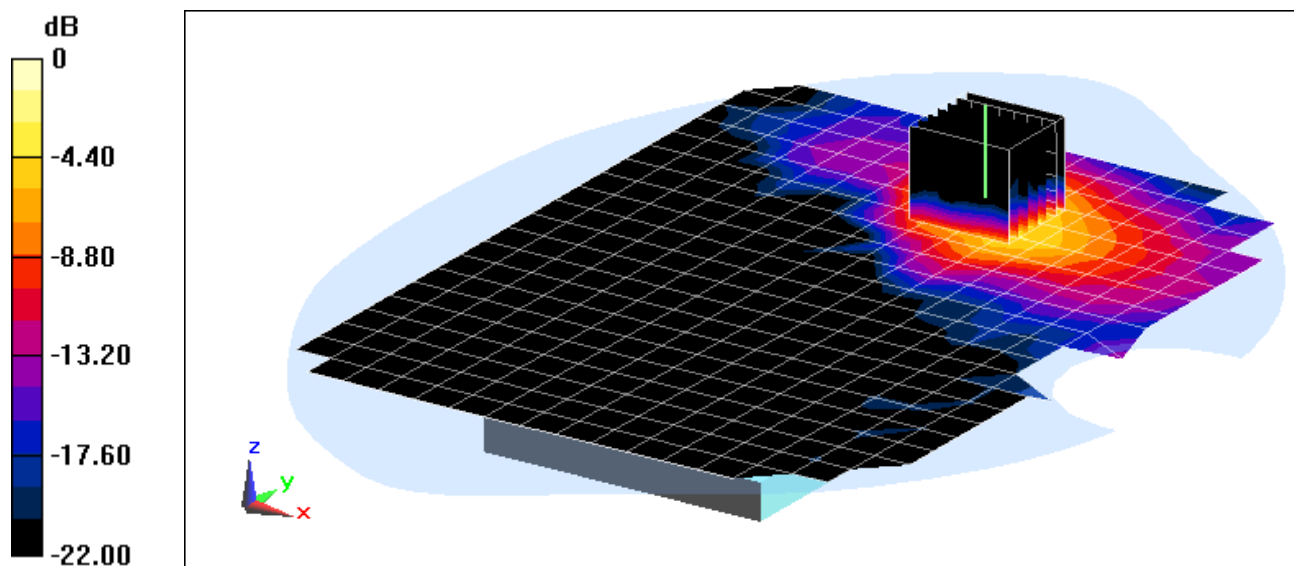
Area Scan (17x22x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Reference Value = 7.354 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 2.21 W/kg

SAR(1 g) = 0.482 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: F4D33

Communication System: UID 0, CDMA; Frequency: 1908.75 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
 $f = 1908.75$ MHz; $\sigma = 1.535$ S/m; $\epsilon_r = 51.91$; $\rho = 1000$ kg/m³
Phantom section: Flat Section; Space: 0 cm

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

Probe: ES3DV3 - SN3319; ConvF(4.67, 4.67, 4.67); Calibrated: 4/17/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 4/11/2014
Phantom: ELI left; Type: QDOVA002AA; Serial: TP:1202
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: PCS EVDO, Extremity SAR, Bottom Edge
High ch; Wireless Charging Cover

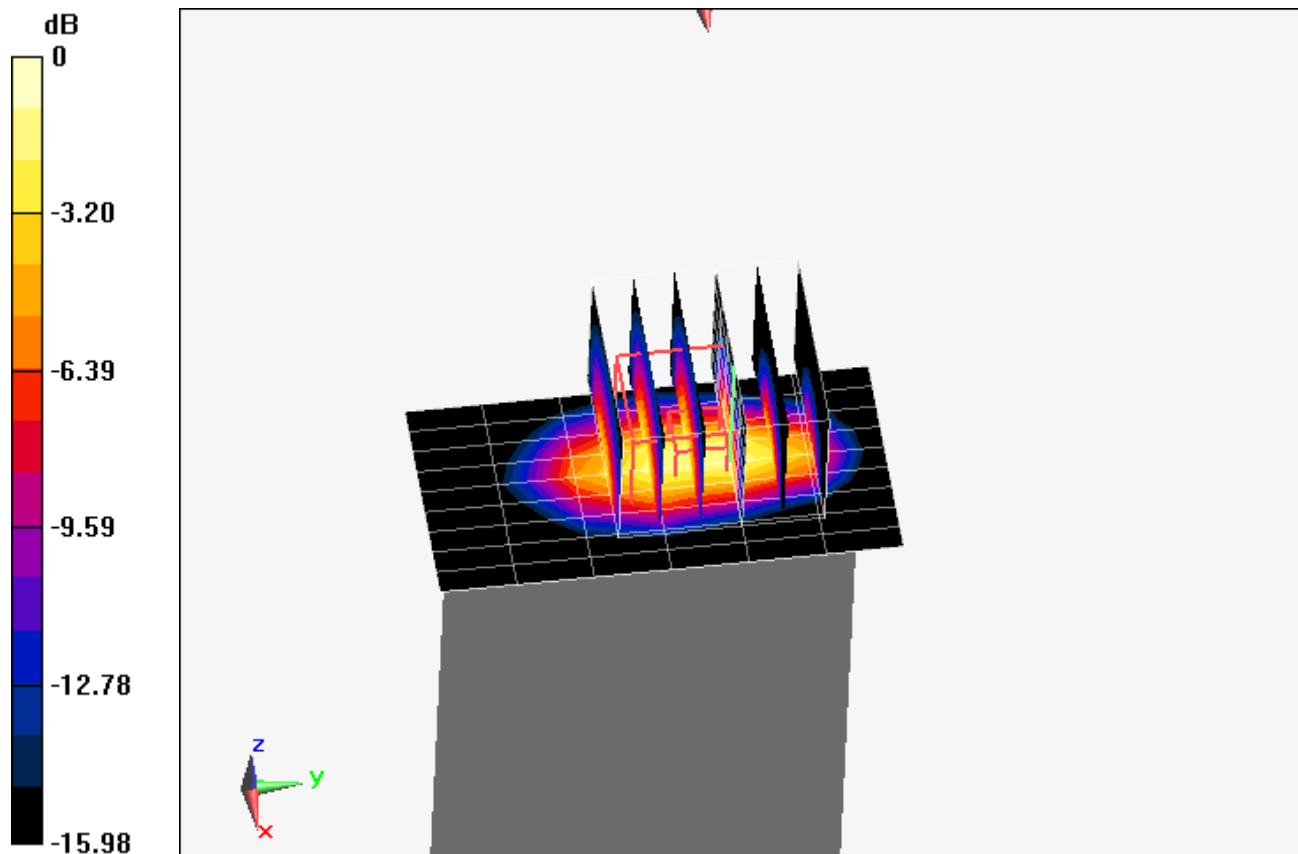
Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 70.72 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 14.9 W/kg

SAR(10 g) = 3.28 W/kg



0 dB = 8.67 W/kg = 9.38 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN910P; Type: Portable Handset; Serial: 015D7

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

Medium: 5 GHz Body Medium parameters used:

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

Phantom section: Flat Section; Space: 0.0 cm

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

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

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

**Mode: IEEE 802.11a, 5.5 GHz, Extremity SAR, Ch 140, 6 Mbps, Back Side,
Antenna 2, Standard Cover**

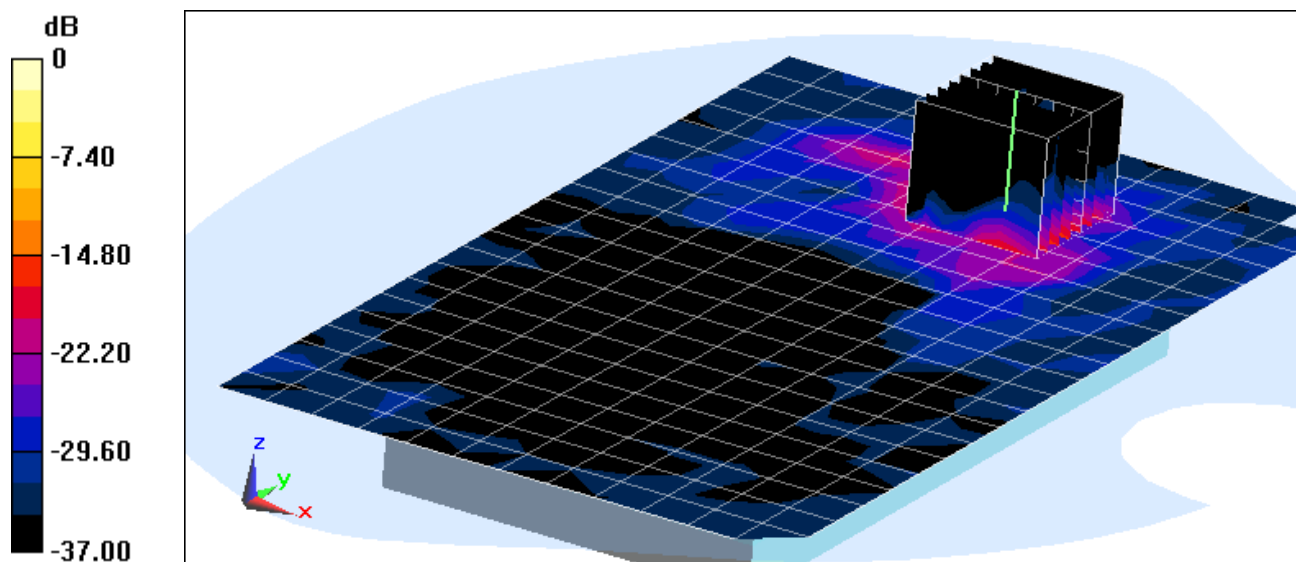
Area Scan (13x22x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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 = 24.200 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 32.0 W/kg

SAR(10 g) = 0.595 W/kg



0 dB = 14.5 W/kg = 11.61 dBW/kg

APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.923 \text{ S/m}$; $\epsilon_r = 41.662$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-31-2014; Ambient Temp: 24.3°C; Tissue Temp: 23.5°C

Probe: ES3DV3 - SN3319; ConvF(6.27, 6.27, 6.27); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

835 MHz System Verification

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

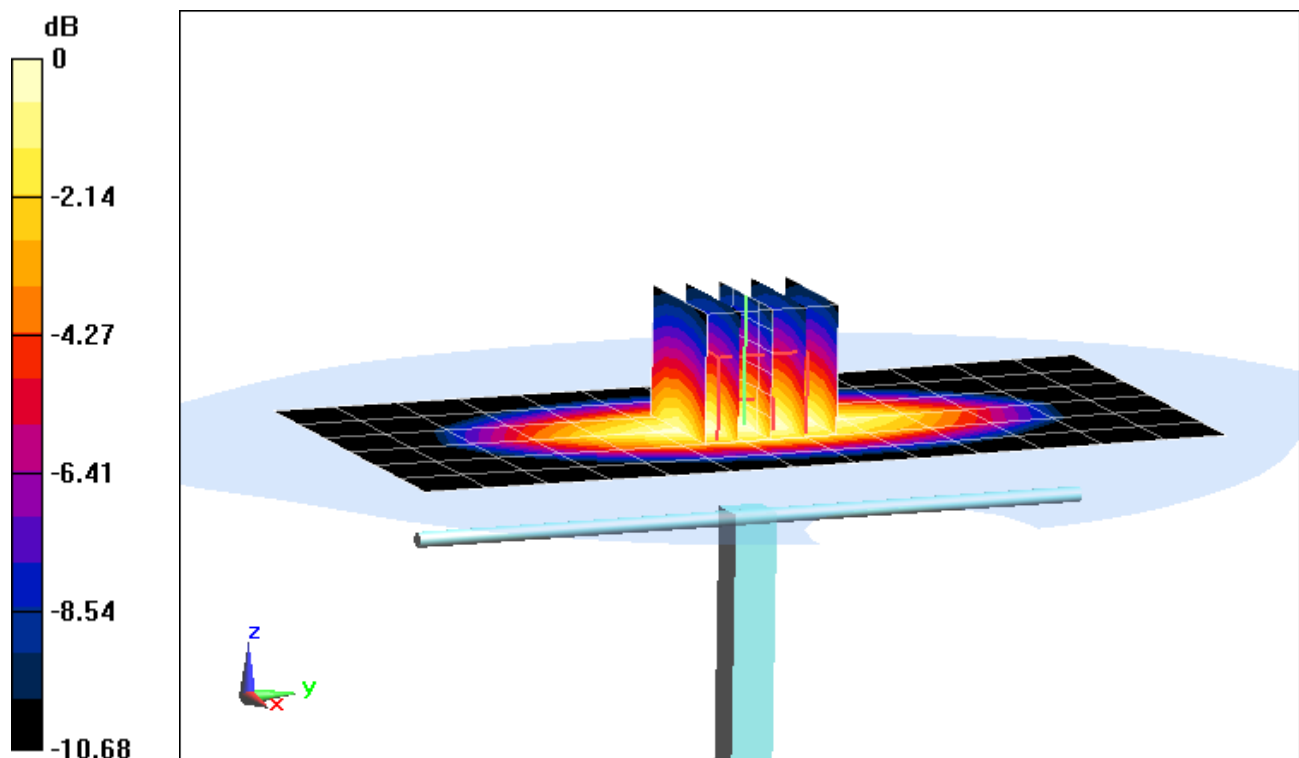
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 1.43 W/kg

SAR(1 g) = 0.961 W/kg

Deviation: 4.23%



0 dB = 1.13 W/kg = 0.53 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.405 \text{ S/m}$; $\epsilon_r = 39.261$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

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

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

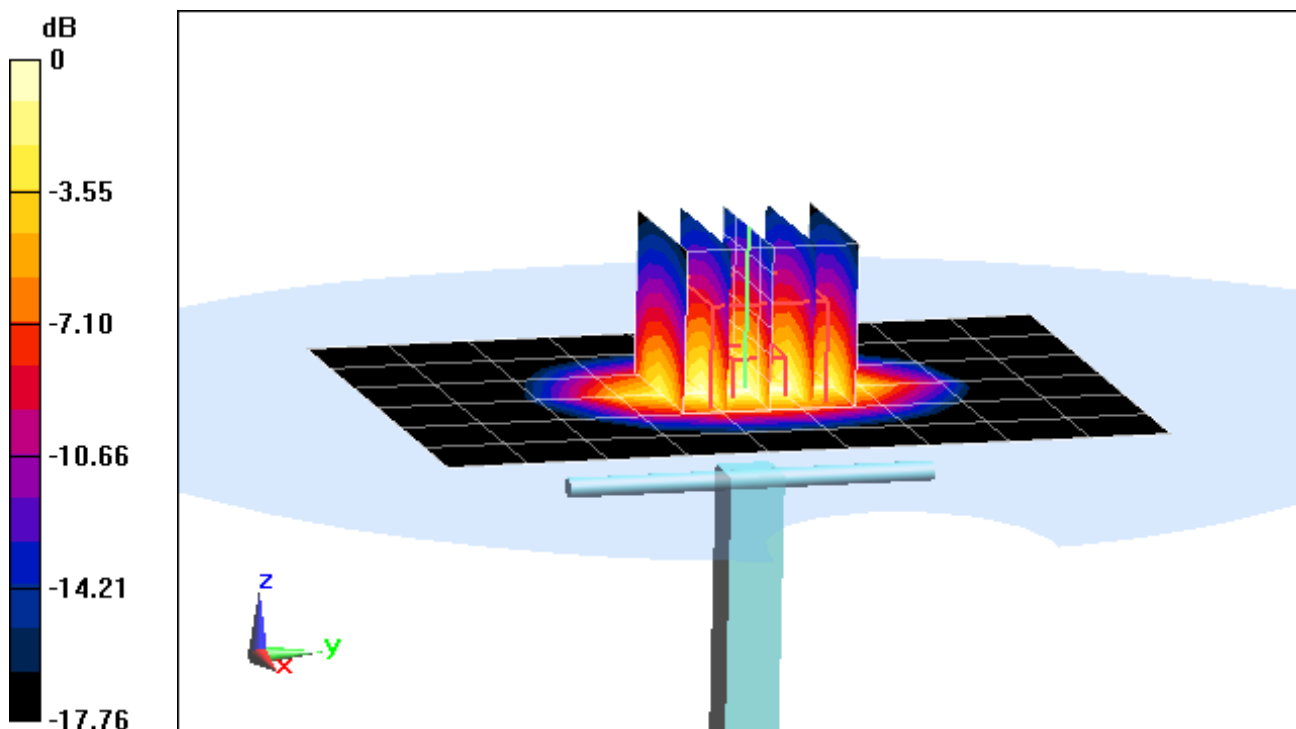
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 7.04 W/kg

SAR(1 g) = 3.91 W/kg

Deviation: -2.49%



0 dB = 4.96 W/kg = 6.95 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.861 \text{ S/m}$; $\epsilon_r = 38.157$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-28-2014; Ambient Temp: 24.1°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3258; ConvF(4.52, 4.52, 4.52); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

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

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

2450 MHz System Verification

Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

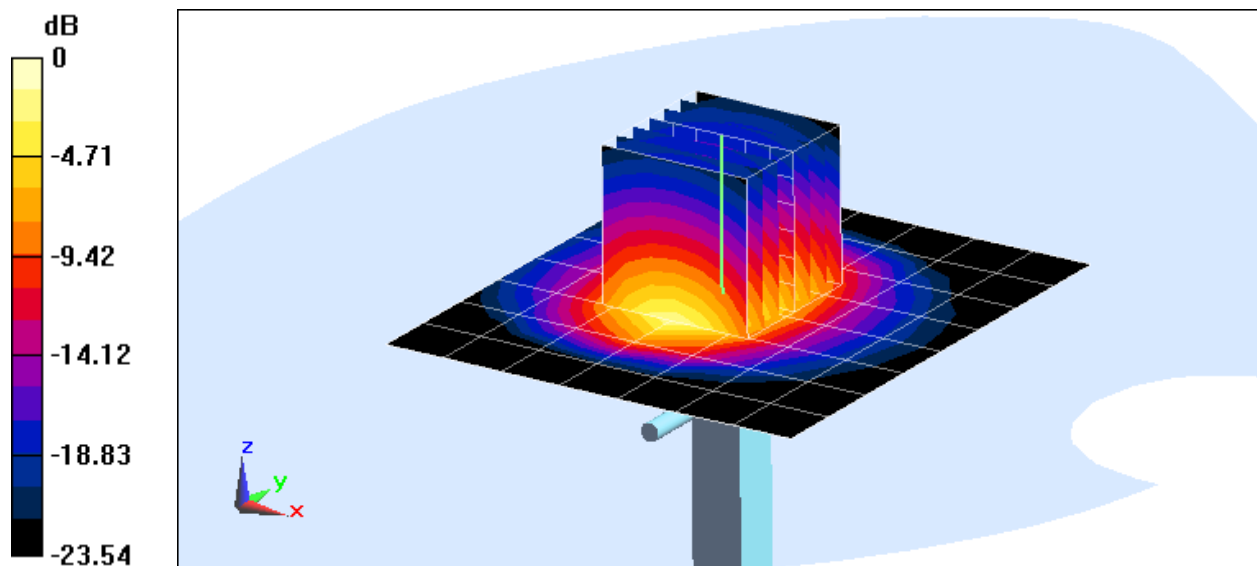
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 10.3 W/kg

SAR(1 g) = 4.82 W/kg

Deviation: -6.95%



0 dB = 6.36 W/kg = 8.03 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1004

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: 2600 Head Medium parameters used:

$f = 2600 \text{ MHz}$; $\sigma = 1.911 \text{ S/m}$; $\epsilon_r = 40.407$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-04-2014; Ambient Temp: 23.7°C; Tissue Temp: 23.7°C

Probe: ES3DV3 - SN3319; ConvF(4.29, 4.29, 4.29); Calibrated: 4/17/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

2600 MHz System Verification

Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

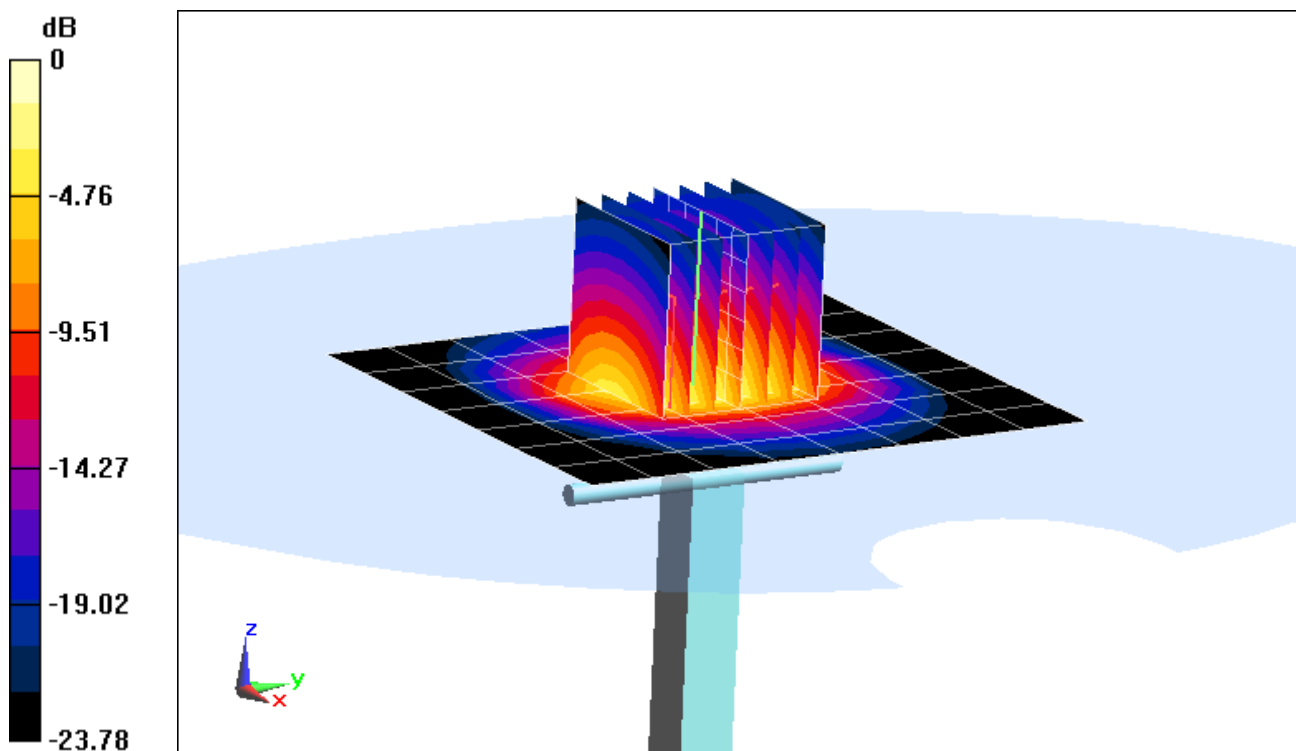
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 12.0 W/kg

SAR(1 g) = 5.74 W/kg

Deviation: 0.17%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5200 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5200 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head Medium parameters used:

$f = 5200 \text{ MHz}$; $\sigma = 4.724 \text{ S/m}$; $\epsilon_r = 35.49$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-12-2014; Ambient Temp: 24.2°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN3914; ConvF(4.99, 4.99, 4.99); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5200 MHz System Verification

Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

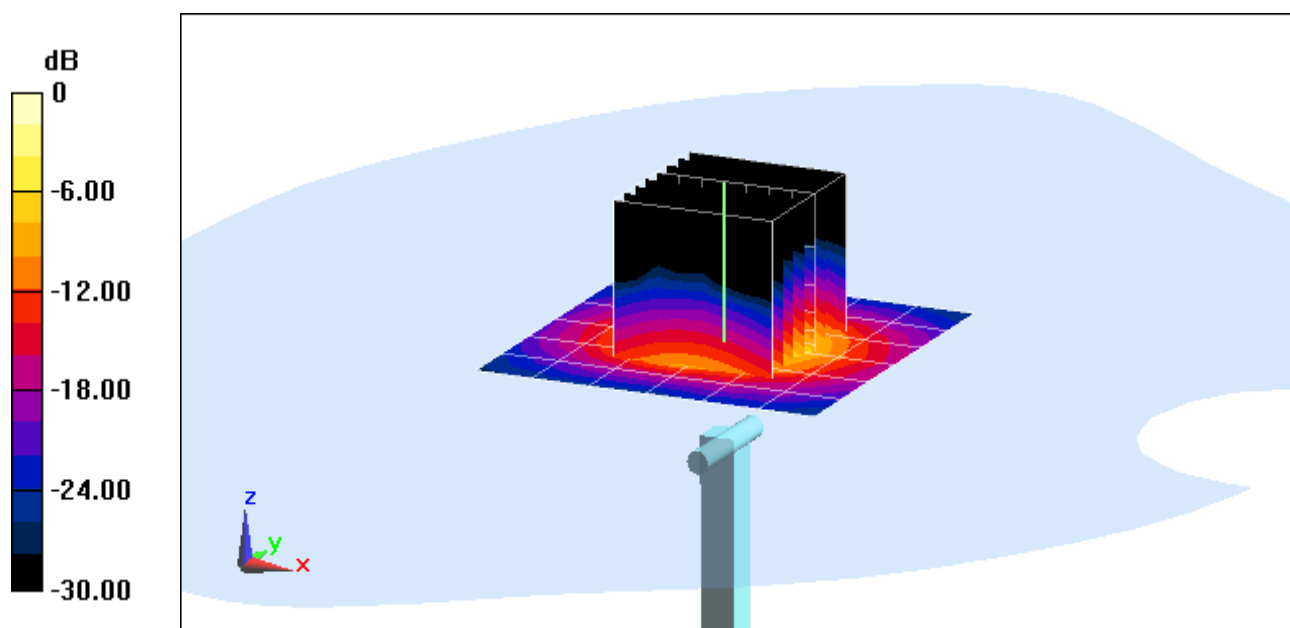
Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 31.6 W/kg

SAR(1 g) = 7.57 W/kg

Deviation: -2.95%



0 dB = 17.6 W/kg = 12.46 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5300 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5300 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head Medium parameters used:

$f = 5300 \text{ MHz}$; $\sigma = 4.826 \text{ S/m}$; $\epsilon_r = 35.388$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

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

Probe: EX3DV4 - SN3914; ConvF(4.82, 4.82, 4.82); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5300 MHz System Verification

Area Scan (7x8x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

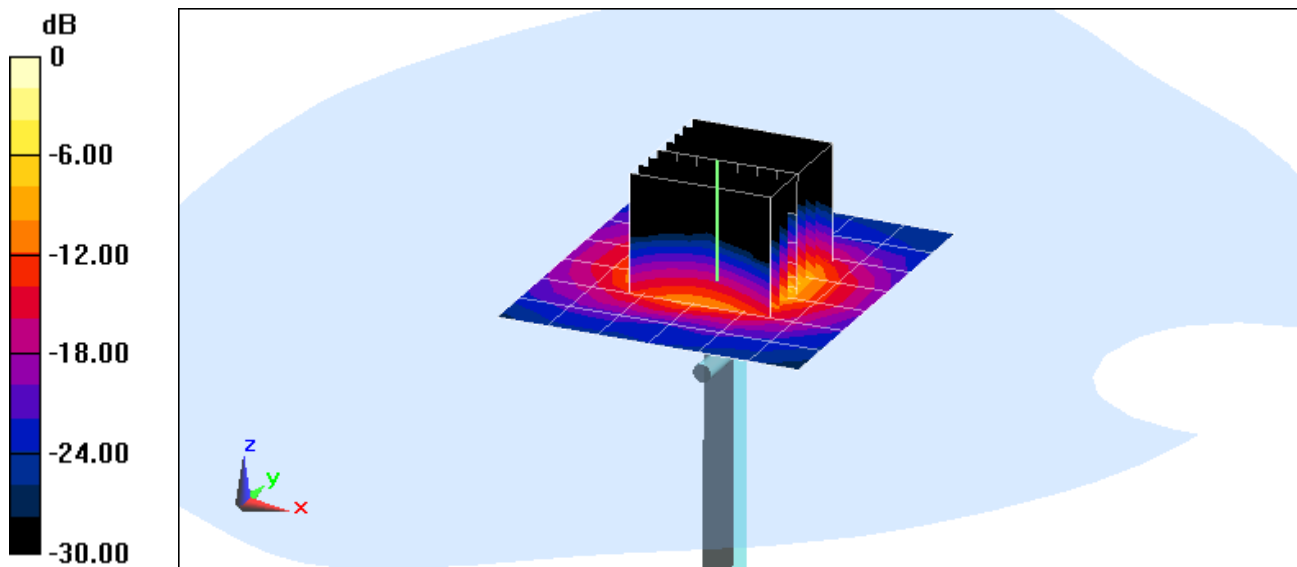
Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 35.5 W/kg

SAR(1 g) = 8.18 W/kg

Deviation: -1.45%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 5.059 \text{ S/m}$; $\epsilon_r = 35.124$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-12-2014; Ambient Temp: 24.3°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN3914; ConvF(4.55, 4.55, 4.55); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5500 MHz System Verification

Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

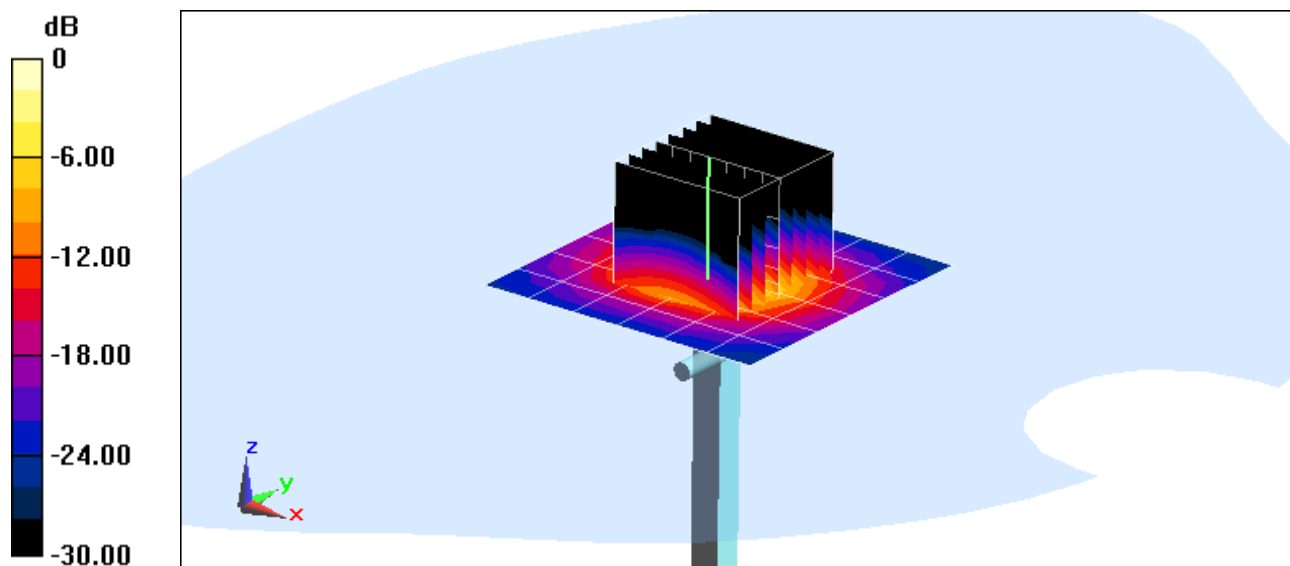
Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 34.8 W/kg

SAR(1 g) = 7.92 W/kg

Deviation: -6.05%



0 dB = 18.9 W/kg = 12.76 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5600 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 5.129 \text{ S/m}$; $\epsilon_r = 34.965$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

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

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

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5600 MHz System Verification

Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

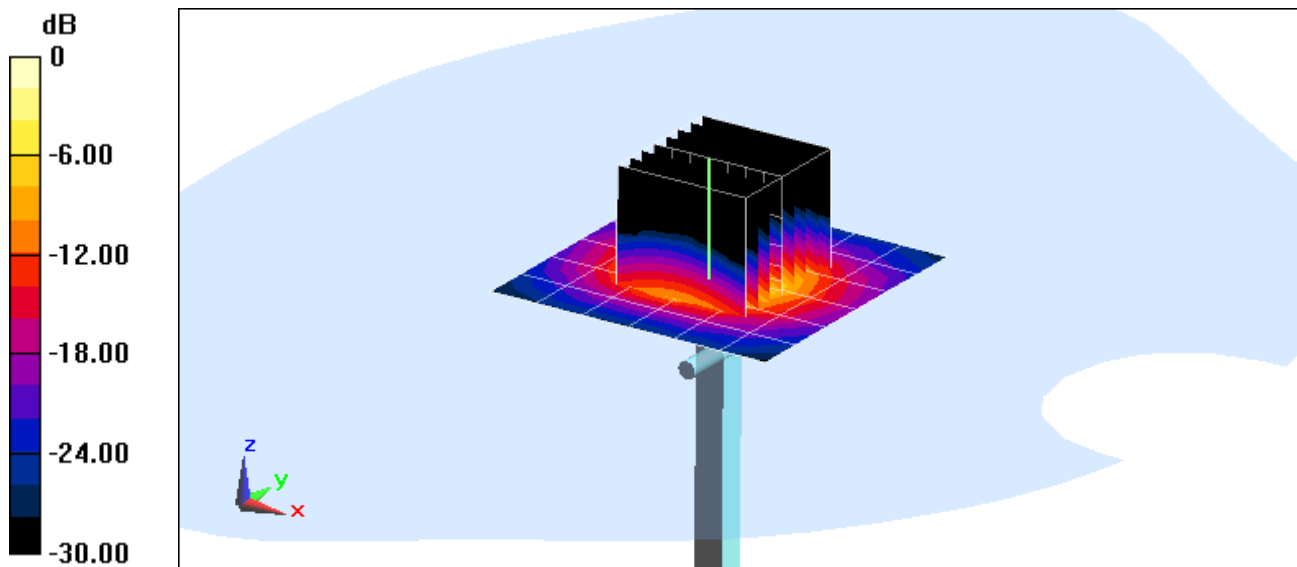
Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 38.1 W/kg

SAR(1 g) = 8.5 W/kg

Deviation: 1.80%



0 dB = 20.6 W/kg = 13.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head Medium parameters used:

$f = 5800 \text{ MHz}$; $\sigma = 5.343 \text{ S/m}$; $\epsilon_r = 34.693$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

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

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

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5800 MHz System Verification

Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

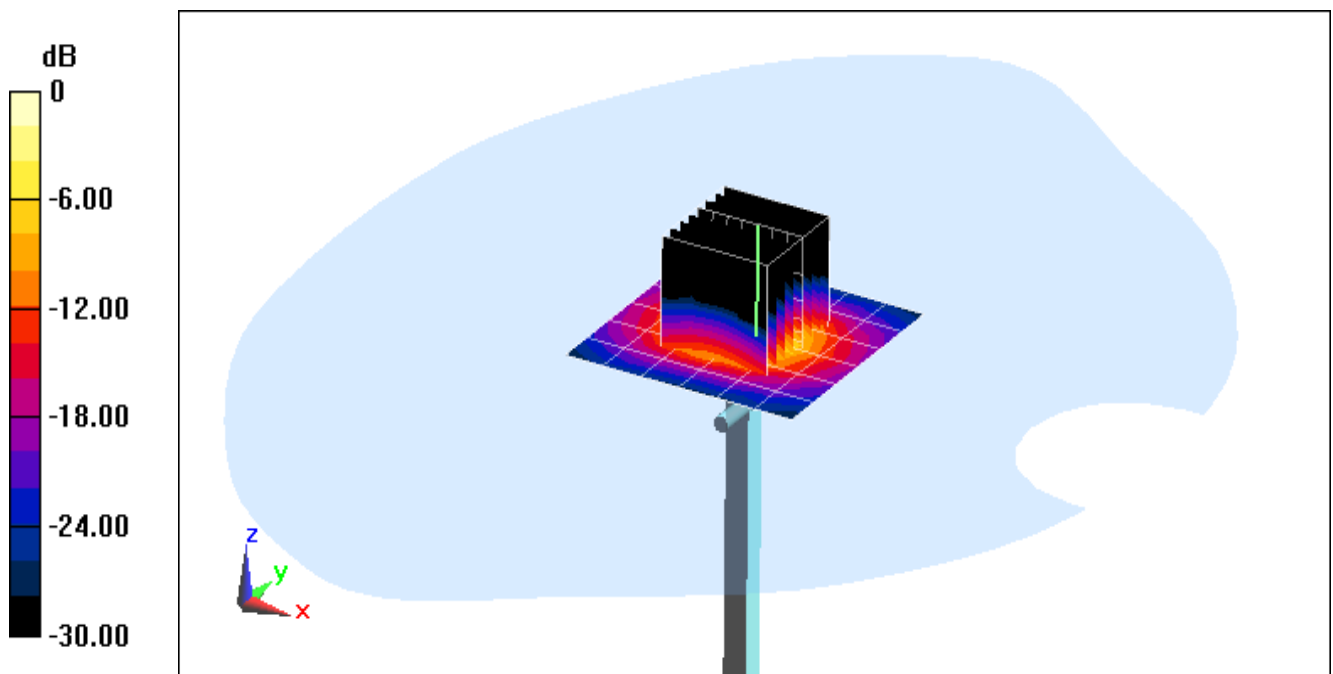
Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 36.2 W/kg

SAR(1 g) = 7.7 W/kg

Deviation: -2.90%



0 dB = 19.0 W/kg = 12.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 1.003 \text{ S/m}$; $\epsilon_r = 53.359$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-04-2014; Ambient Temp: 23.8°C; Tissue Temp: 23.0°C

Probe: ES3DV2 - SN3022; ConvF(5.91, 5.91, 5.91); Calibrated: 8/22/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 8/21/2013

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

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

835 MHz System Verification

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

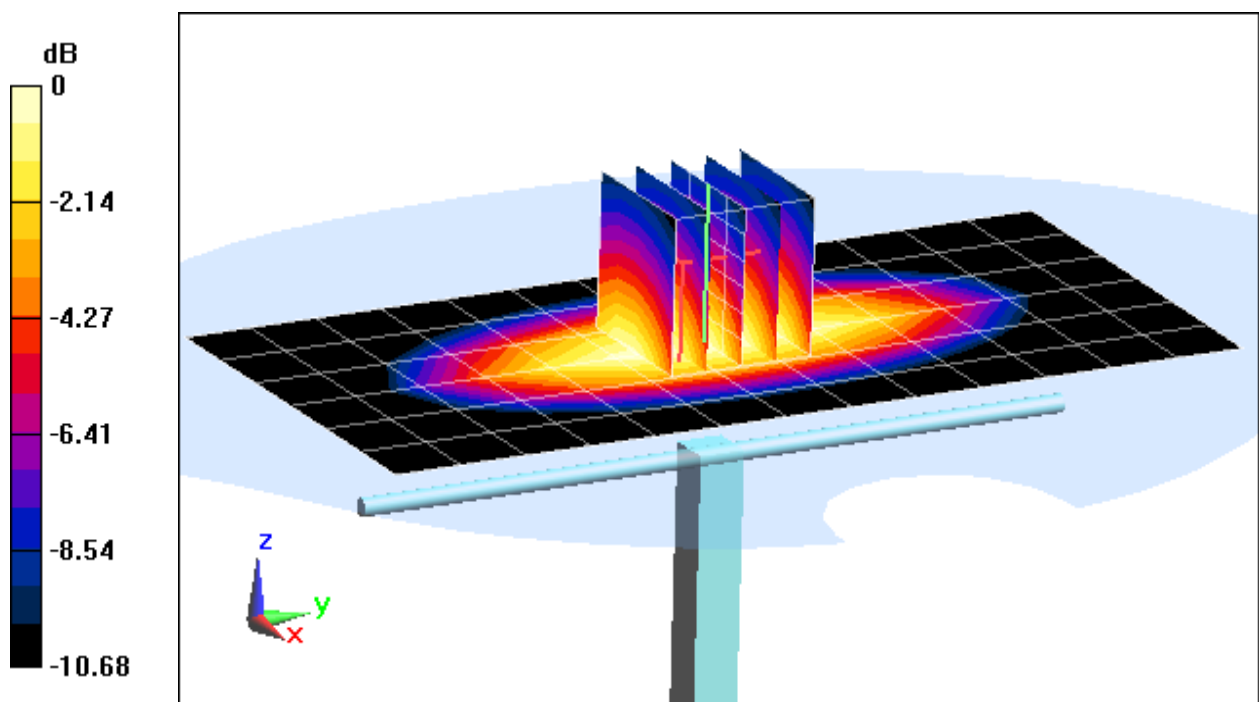
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 1.46 W/kg

SAR(1 g) = 0.995 W/kg

Deviation: 6.53%



0 dB = 1.12 W/kg = 0.49 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 1.009 \text{ S/m}$; $\epsilon_r = 53.98$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-29-2014; Ambient Temp: 24.4°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3263; ConvF(6.16, 6.16, 6.16); Calibrated: 5/15/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/14/2014

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

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

835 MHz System Verification

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

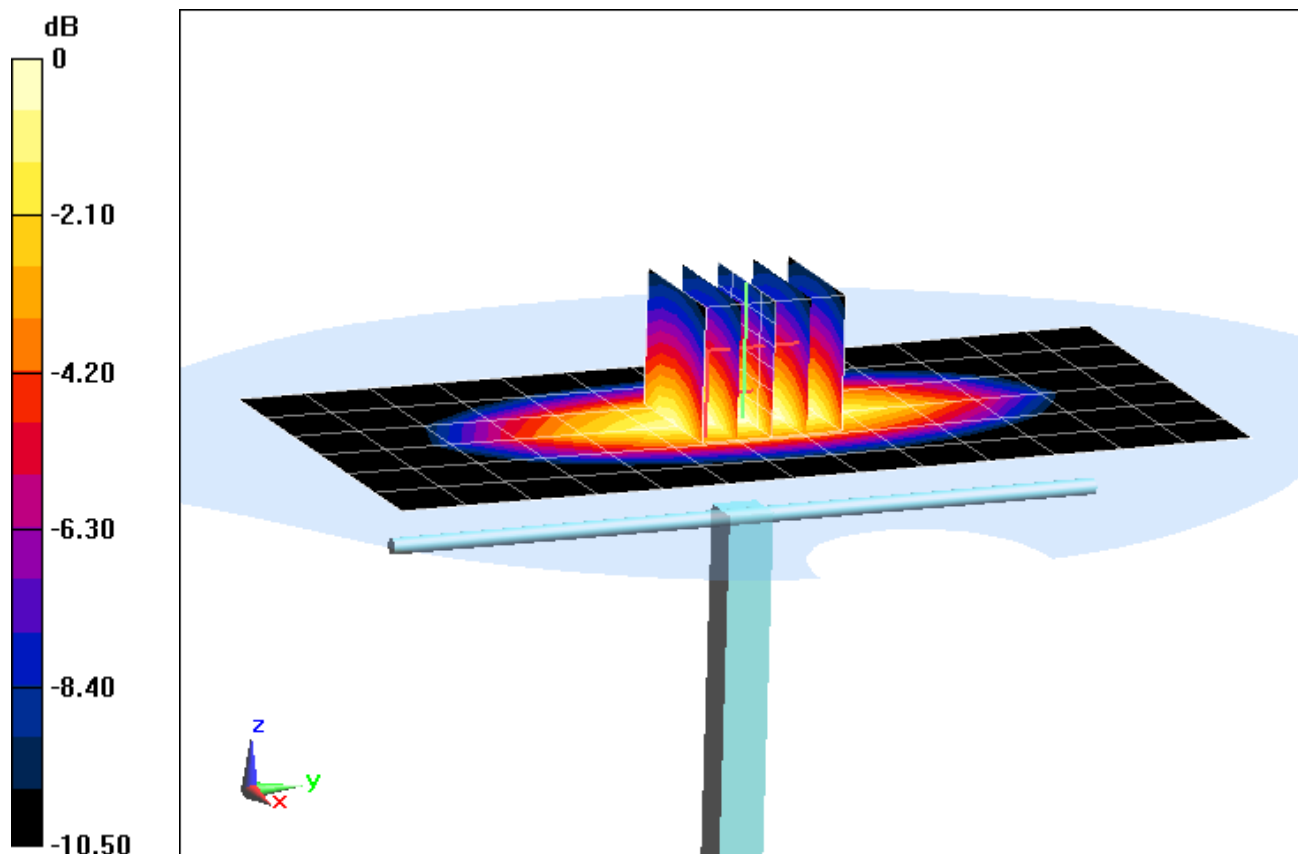
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 1.45 W/kg

SAR(1 g) = 0.979 W/kg

Deviation: 4.82%



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

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.532 \text{ S/m}$; $\epsilon_r = 52.877$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 08-07-2014; Ambient Temp: 24.2°C; Tissue Temp: 22.9°C

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

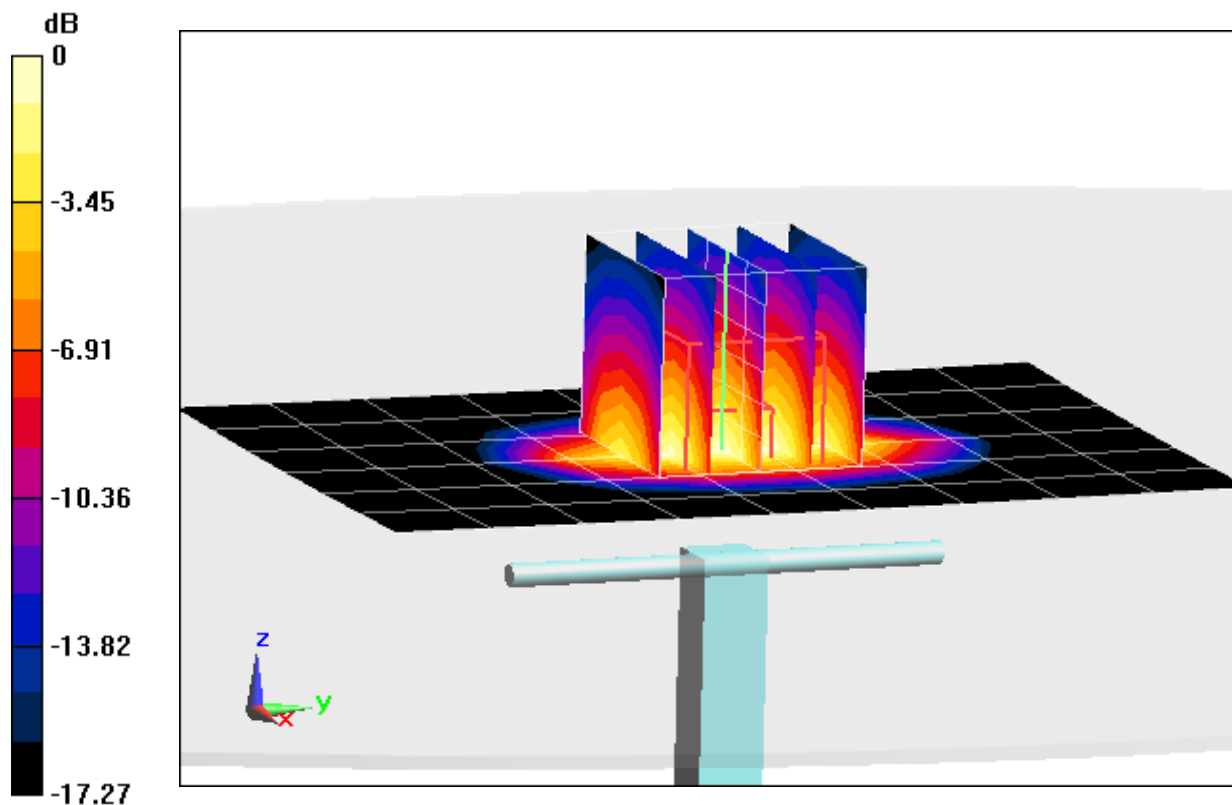
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 7.40 W/kg

SAR(1 g) = 4.2 W/kg

Deviation (1 g): 3.45%



0 dB = 5.30 W/kg = 7.24 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.525 \text{ S/m}$; $\epsilon_r = 51.94$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

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

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

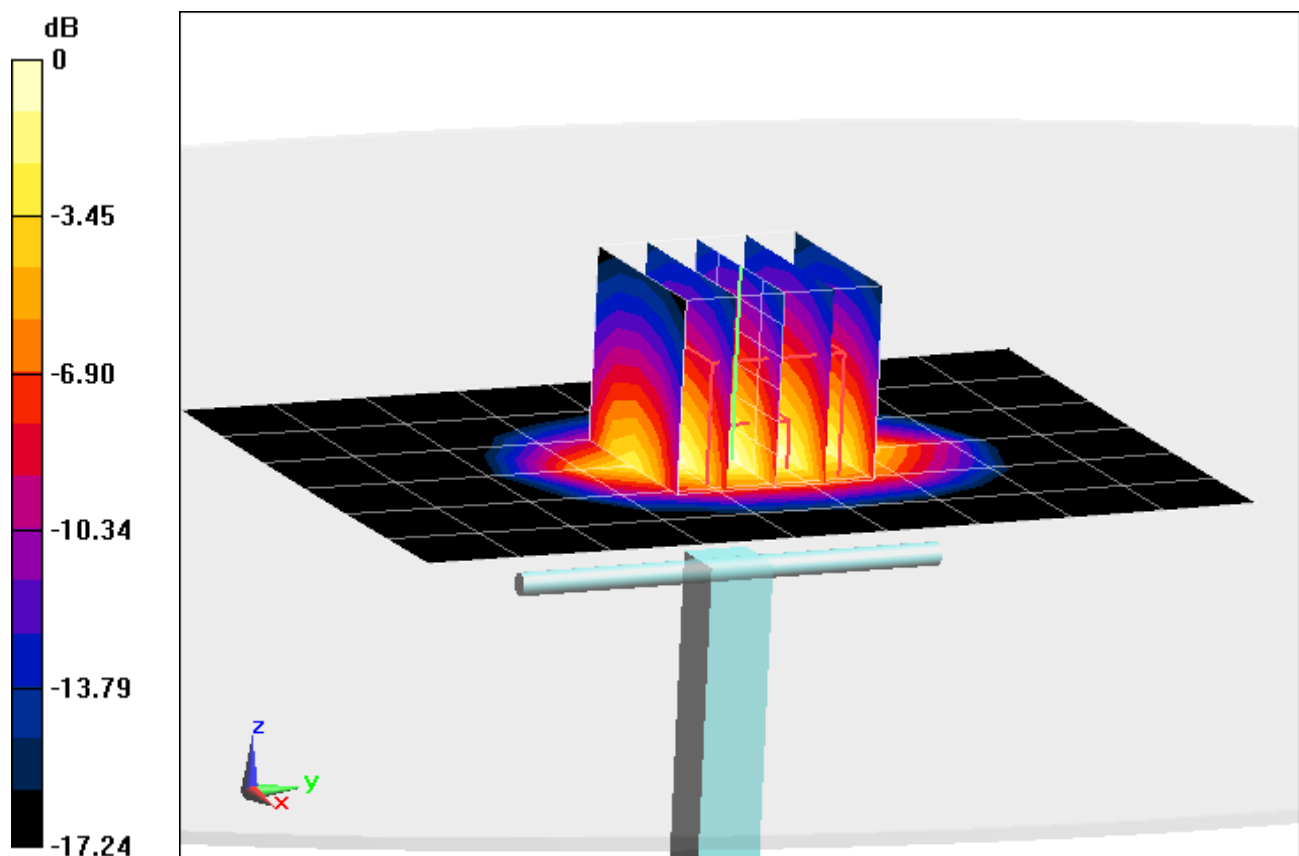
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 6.80 W/kg

SAR(1 g) = 3.92 W/kg; SAR(10 g) = 2.09 W/kg

Deviation (1 g): -3.45%; (10 g): -3.24%



0 dB = 4.92 W/kg = 6.92 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.903 \text{ S/m}$; $\epsilon_r = 50.849$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

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

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

Sensor-Surface: 3mm (Mechanical Surface Detection)

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

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

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

2450 MHz System Verification

Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

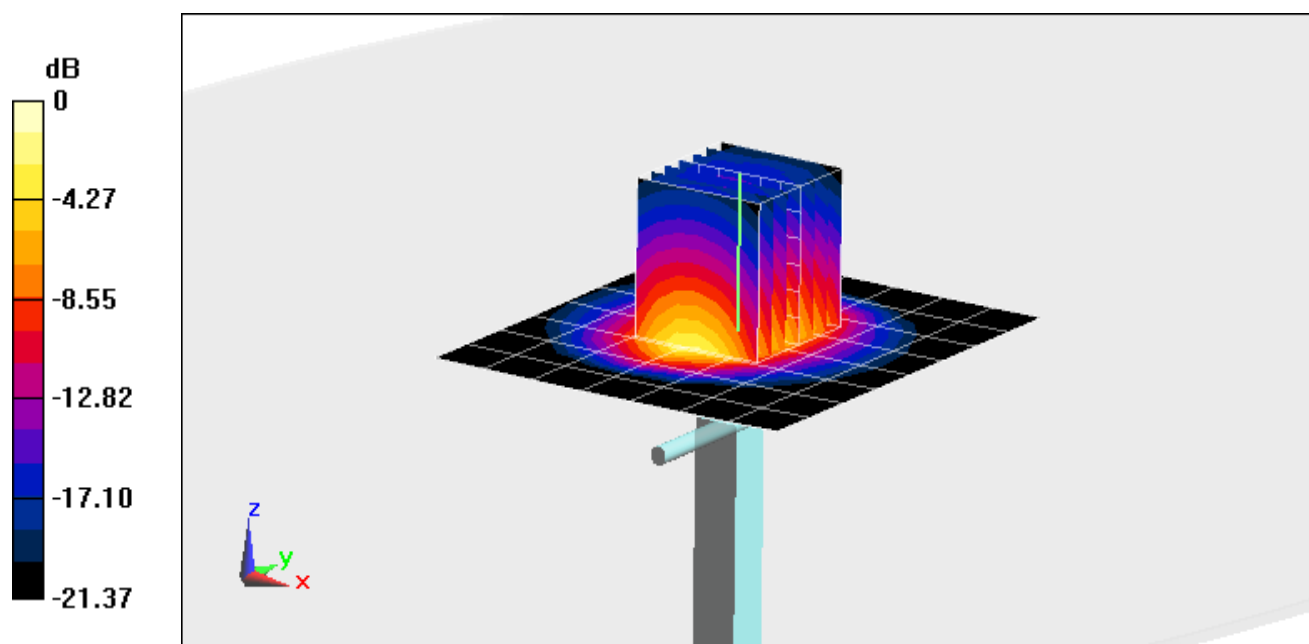
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 11.0 W/kg

SAR(1 g) = 5.24 W/kg

Deviation: 6.07%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1004

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: 2600 Body Medium parameters used:

$f = 2600 \text{ MHz}$; $\sigma = 2.22 \text{ S/m}$; $\epsilon_r = 51.095$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-29-2014; Ambient Temp: 24.0°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3258; ConvF(3.91, 3.91, 3.91); Calibrated: 2/25/2014;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/26/2014

Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP-1158

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

2600 MHz System Verification

Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

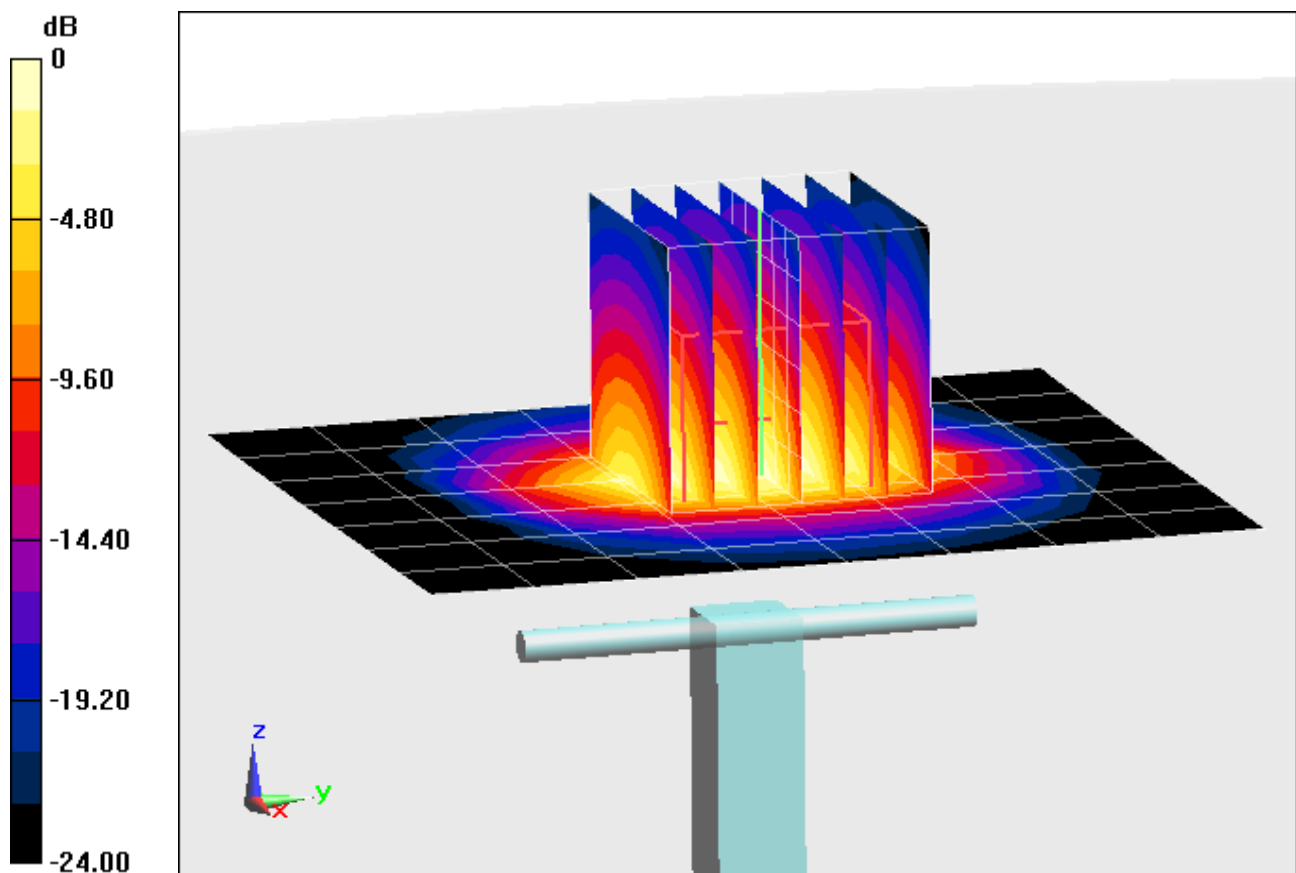
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 12.9 W/kg

SAR(1 g) = 5.75 W/kg

Deviation: 1.41%



0 dB = 7.50 W/kg = 8.75 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5200 MHz; Type: D5GHzV2; Serial: 1007

Communication System: UID 0, CW; Frequency: 5200 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5200 \text{ MHz}$; $\sigma = 5.365 \text{ S/m}$; $\epsilon_r = 47.684$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

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

Probe: EX3DV4 - SN3920; ConvF(4.23, 4.23, 4.23); Calibrated: 12/18/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5200 MHz System Verification

Area Scan (7x9x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

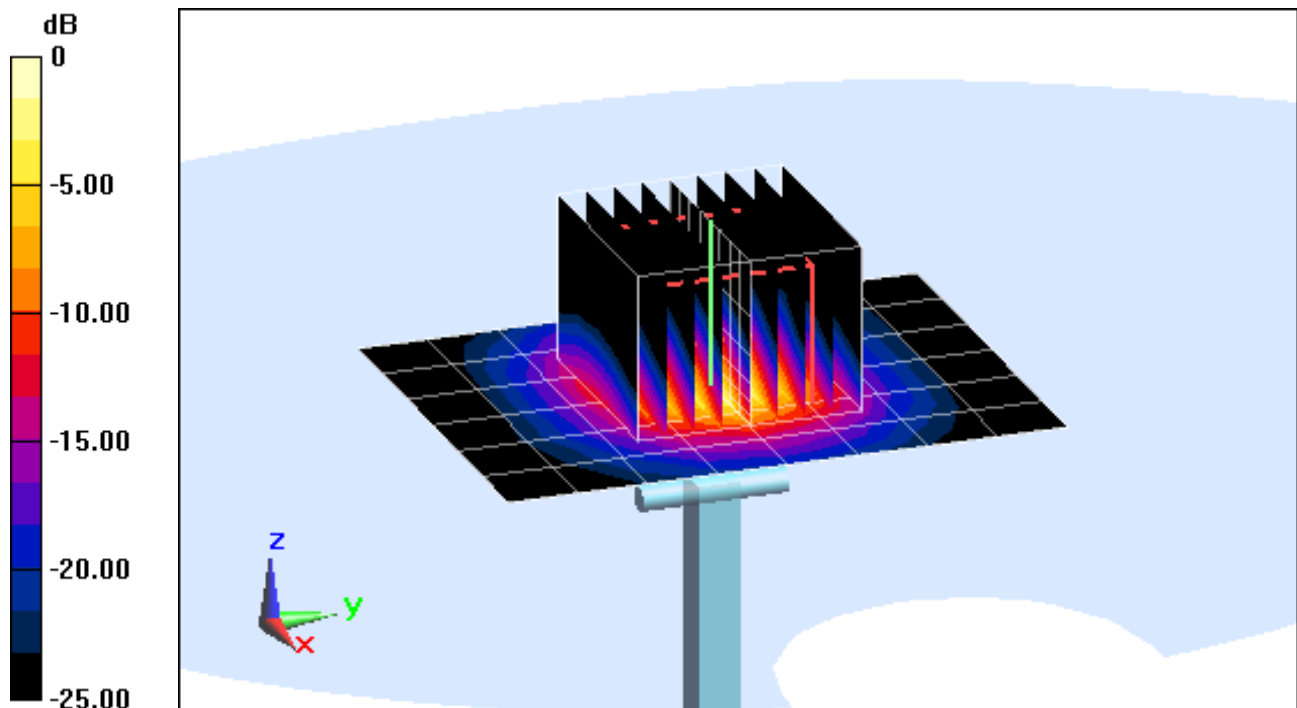
Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Power Input: 20 dBm (100 mW)

Peak SAR (extrapolated) = 28.6 W/kg

SAR(1 g) = 7.51 W/kg

Deviation(1 g): 3.44%



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5200 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5200 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5200 \text{ MHz}$; $\sigma = 5.262 \text{ S/m}$; $\epsilon_r = 48.246$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

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

Probe: EX3DV4 - SN3589; ConvF(4.19, 4.19, 4.19); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5200 MHz System Verification

Area Scan (7x8x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

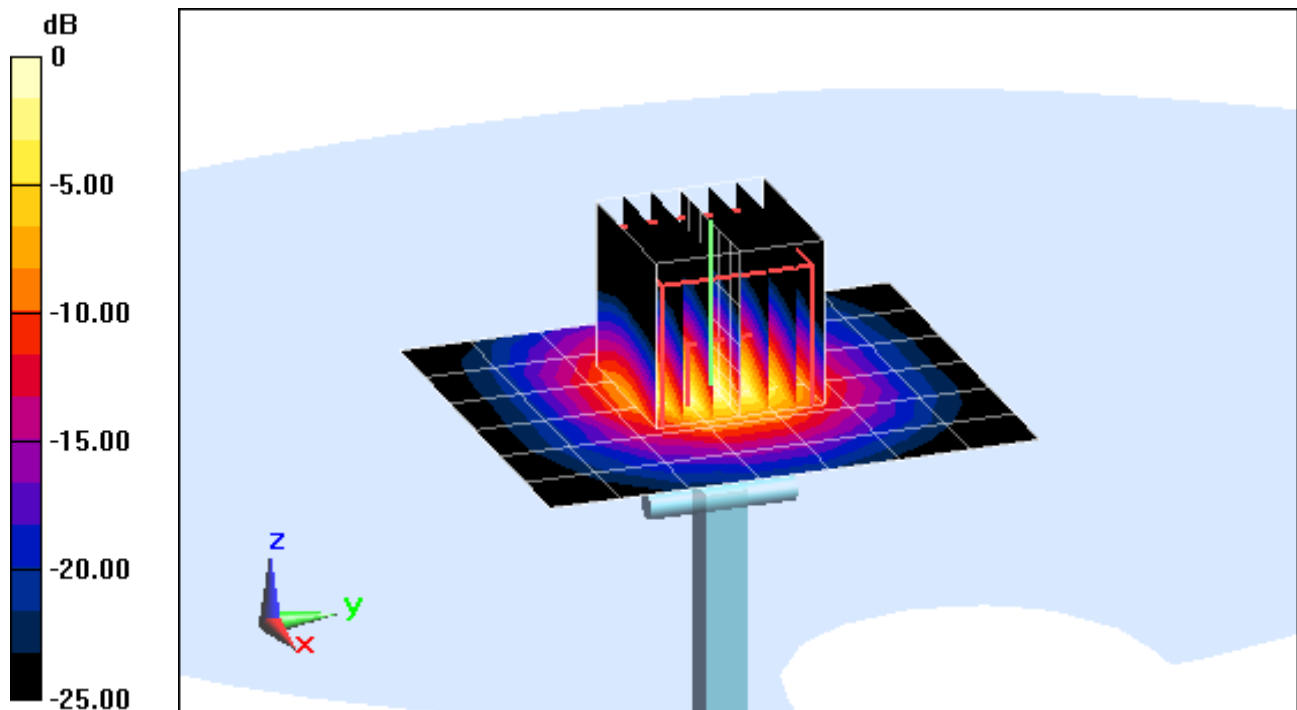
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 33.8 W/kg

SAR(10 g) = 2.25 W/kg

Deviation(10 g): 7.14%



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5300 MHz; Type: D5GHzV2; Serial: 1007

Communication System: UID 0, CW; Frequency: 5300 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5300 \text{ MHz}$; $\sigma = 5.483 \text{ S/m}$; $\epsilon_r = 47.707$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

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

Probe: EX3DV4 - SN3920; ConvF(4.11, 4.11, 4.11); Calibrated: 12/18/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5300 MHz System Verification

Area Scan (7x9x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

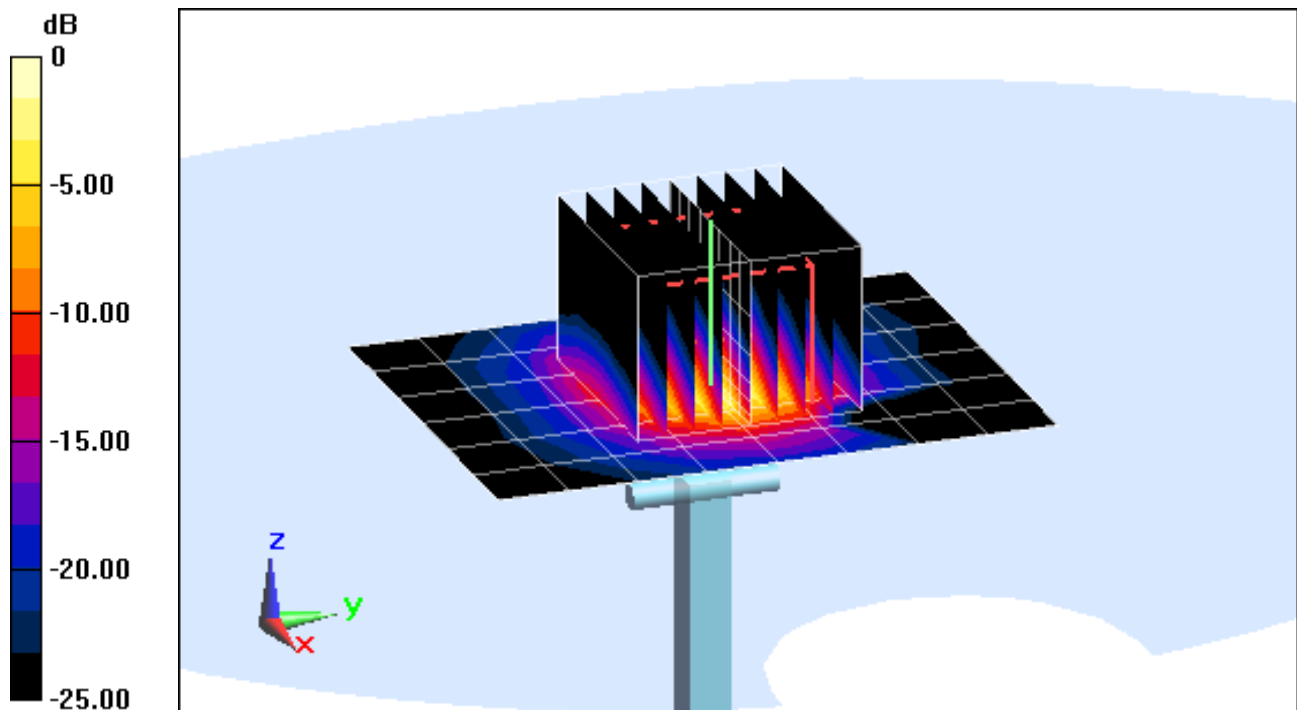
Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Power Input: 20 dBm (100 mW)

Peak SAR (extrapolated) = 29.5 W/kg

SAR(1 g) = 7.72 W/kg

Deviation(1 g): 3.35%



0 dB = 18.9 W/kg = 12.76 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5300 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5300 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5300 \text{ MHz}$; $\sigma = 5.427 \text{ S/m}$; $\epsilon_r = 48.087$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-13-2014; Ambient Temp: 24.4°C; Tissue Temp: 24.1°C

Probe: EX3DV4 - SN3589; ConvF(3.98, 3.98, 3.98); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5300 MHz System Verification

Area Scan (7x8x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

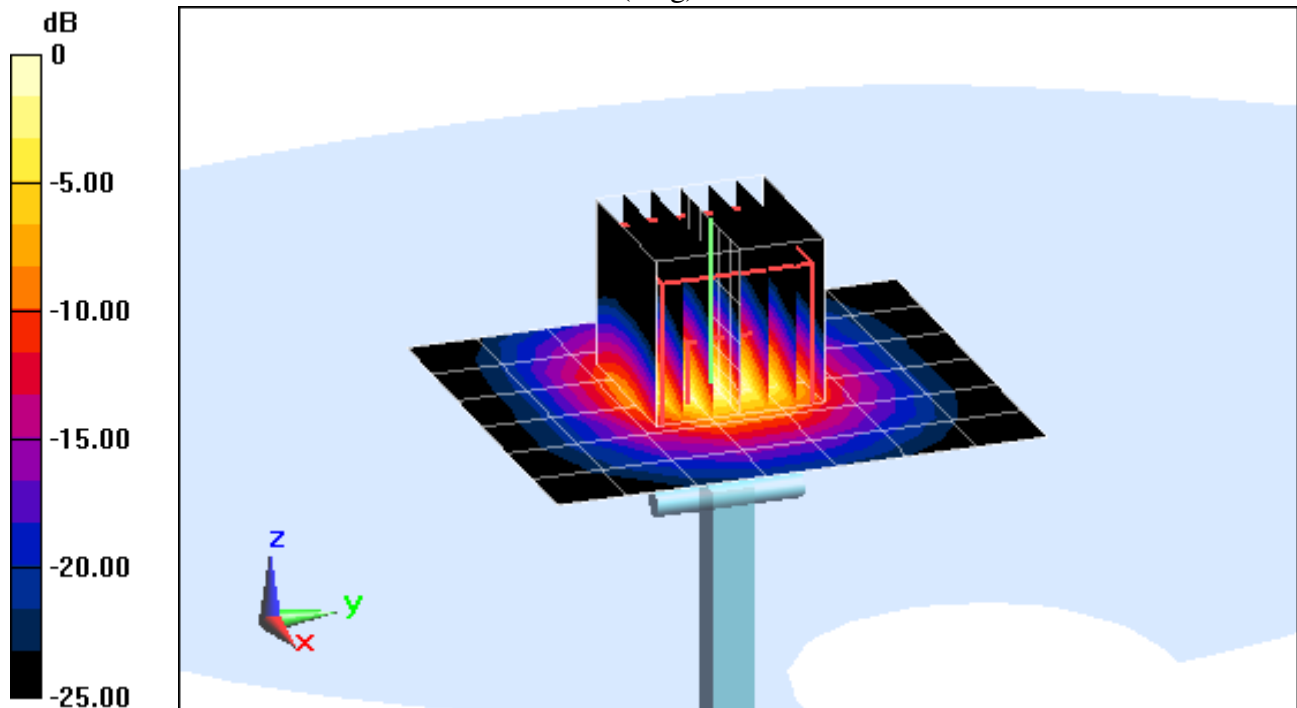
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 36.7 W/kg

SAR(10 g) = 2.33 W/kg

Deviation(10 g): 8.37%



0 dB = 21.7 W/kg = 13.36 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1007

Communication System: UID 0, CW; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 5.726 \text{ S/m}$; $\epsilon_r = 47.237$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

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

Probe: EX3DV4 - SN3920; ConvF(3.8, 3.8, 3.8); Calibrated: 12/18/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5500 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

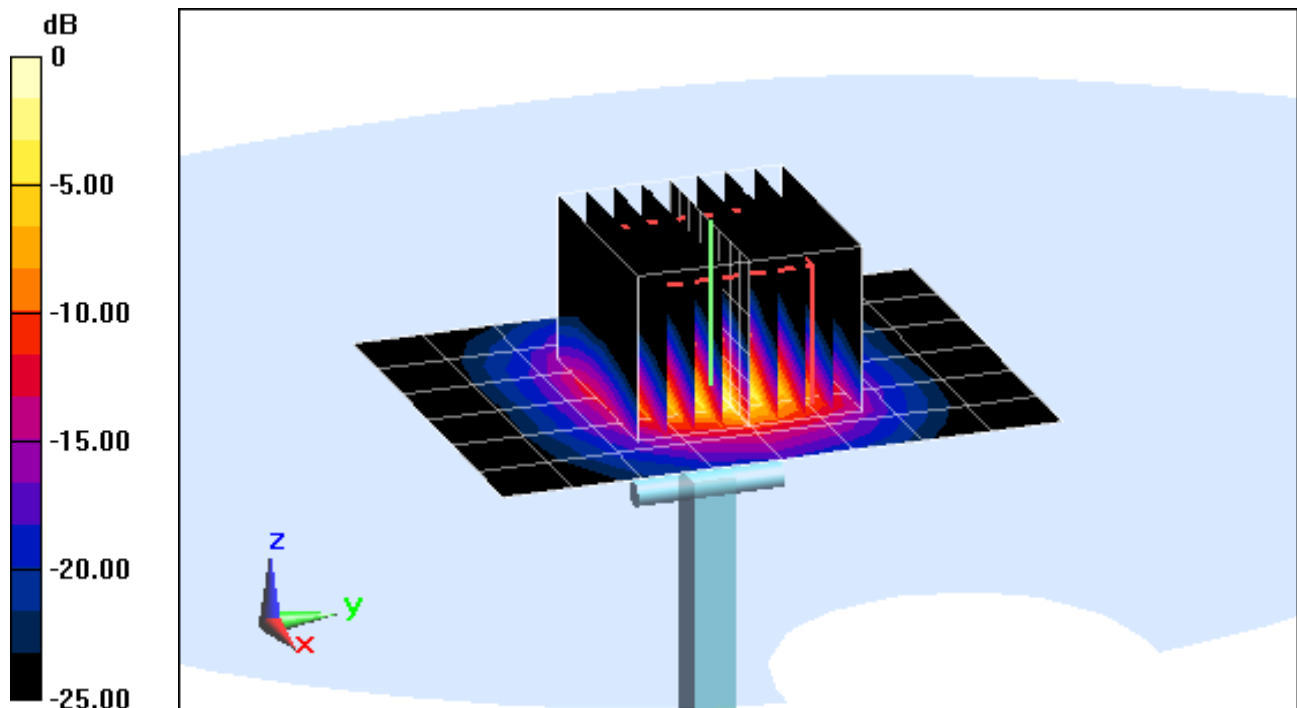
Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Power Input: 20 dBm (100 mW)

Peak SAR (extrapolated) = 30.7 W/kg

SAR(1 g) = 7.81 W/kg

Deviation(1 g): 2.90%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 5.733 \text{ S/m}$; $\epsilon_r = 47.55$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-13-2014; Ambient Temp: 24.3°C; Tissue Temp: 23.9°C

Probe: EX3DV4 - SN3589; ConvF(3.76, 3.76, 3.76); Calibrated: 1/29/2014;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5500 MHz System Verification

Area Scan (7x8x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

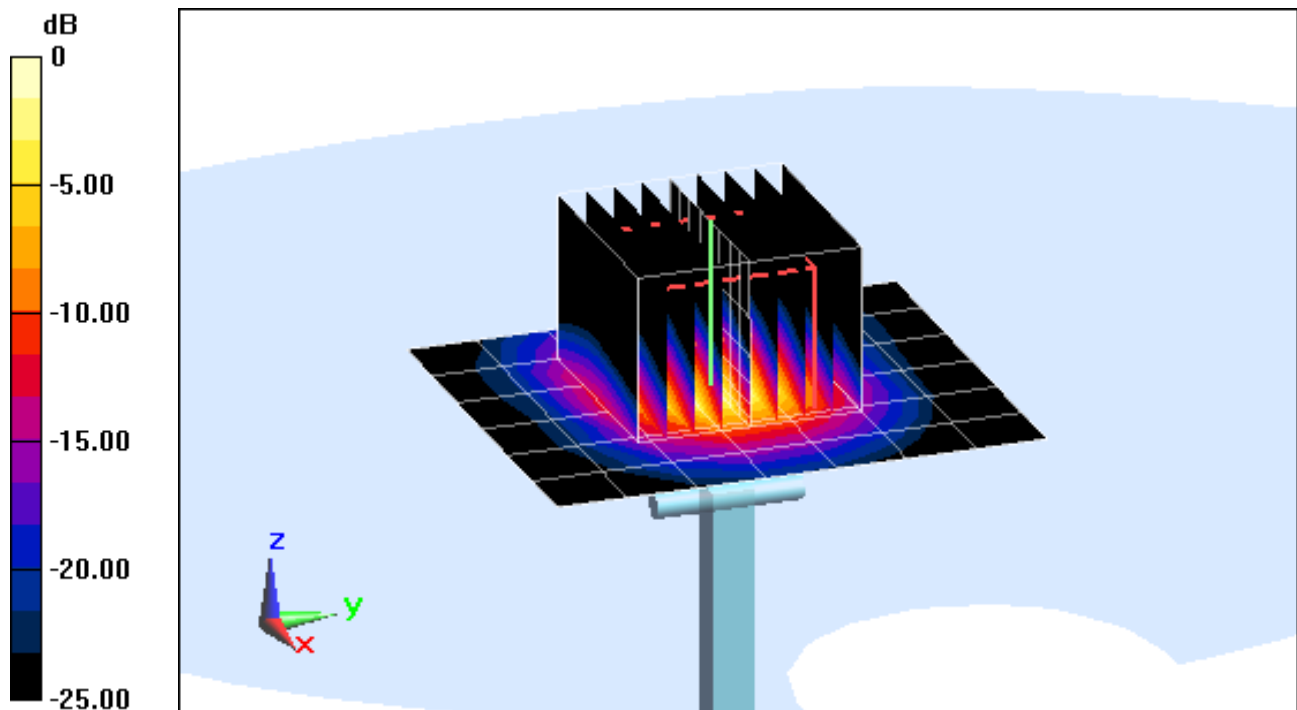
Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 37.5 W/kg

SAR(10 g) = 2.30 W/kg

Deviation(10 g): 4.55%



0 dB = 21.7 W/kg = 13.36 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5600 MHz; Type: D5GHzV2; Serial: 1007

Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 5.861 \text{ S/m}$; $\epsilon_r = 46.839$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

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

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

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5600 MHz System Verification

Area Scan (7x9x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

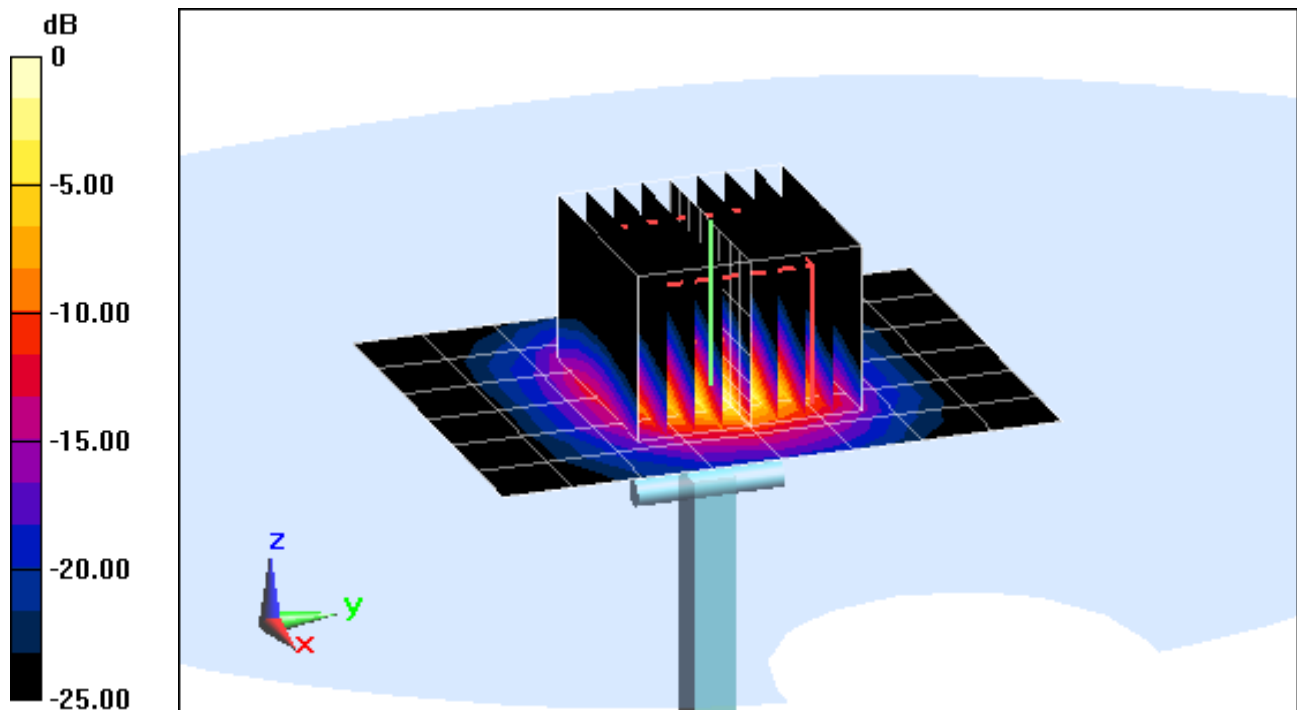
Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Power Input: 20 dBm (100 mW)

Peak SAR (extrapolated) = 32.1 W/kg

SAR(1 g) = 7.66 W/kg

Deviation(1 g): -0.91%



0 dB = 19.6 W/kg = 12.92 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5600 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 5.871 \text{ S/m}$; $\epsilon_r = 47.349$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

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

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

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5600 MHz System Verification

Area Scan (7x8x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

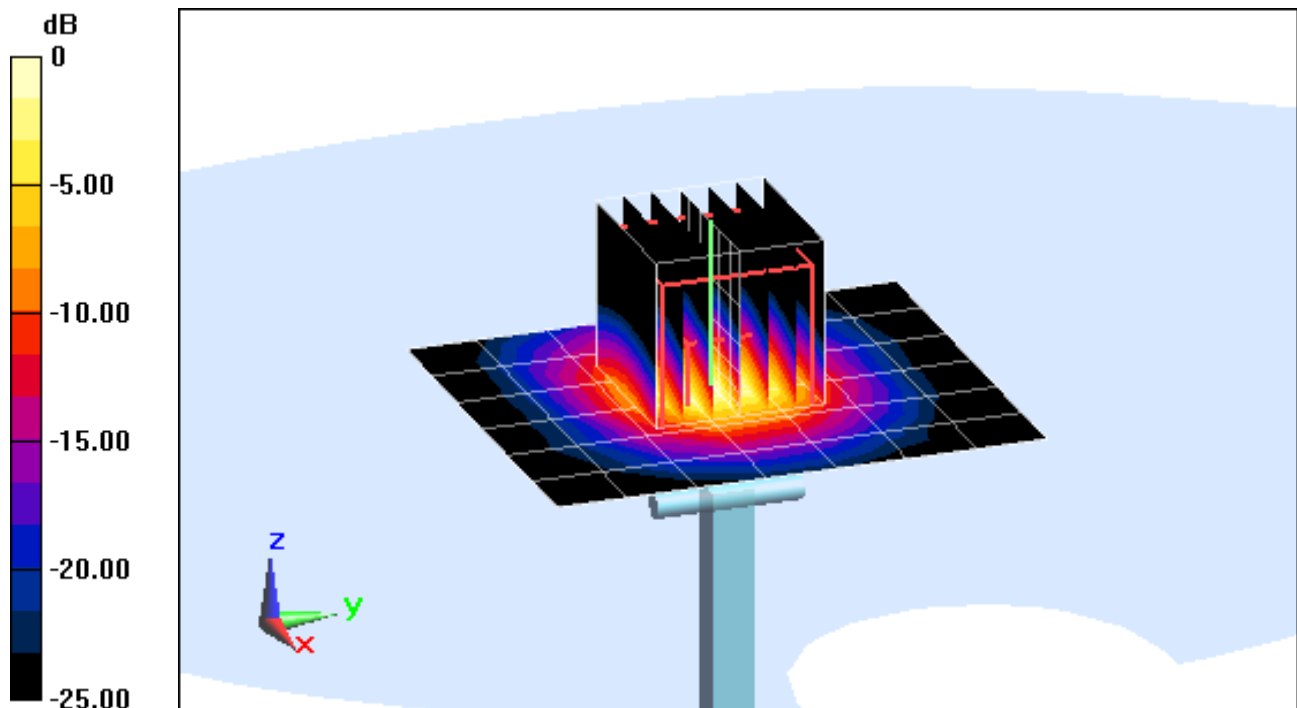
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 40.4 W/kg

SAR(10 g) = 2.24 W/kg

Deviation(10 g): 0.90%



0 dB = 21.6 W/kg = 13.34 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1007

Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used:

$f = 5800 \text{ MHz}$; $\sigma = 6.062 \text{ S/m}$; $\epsilon_r = 45.948$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

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

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

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5800MHz System Verification

Area Scan (7x9x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

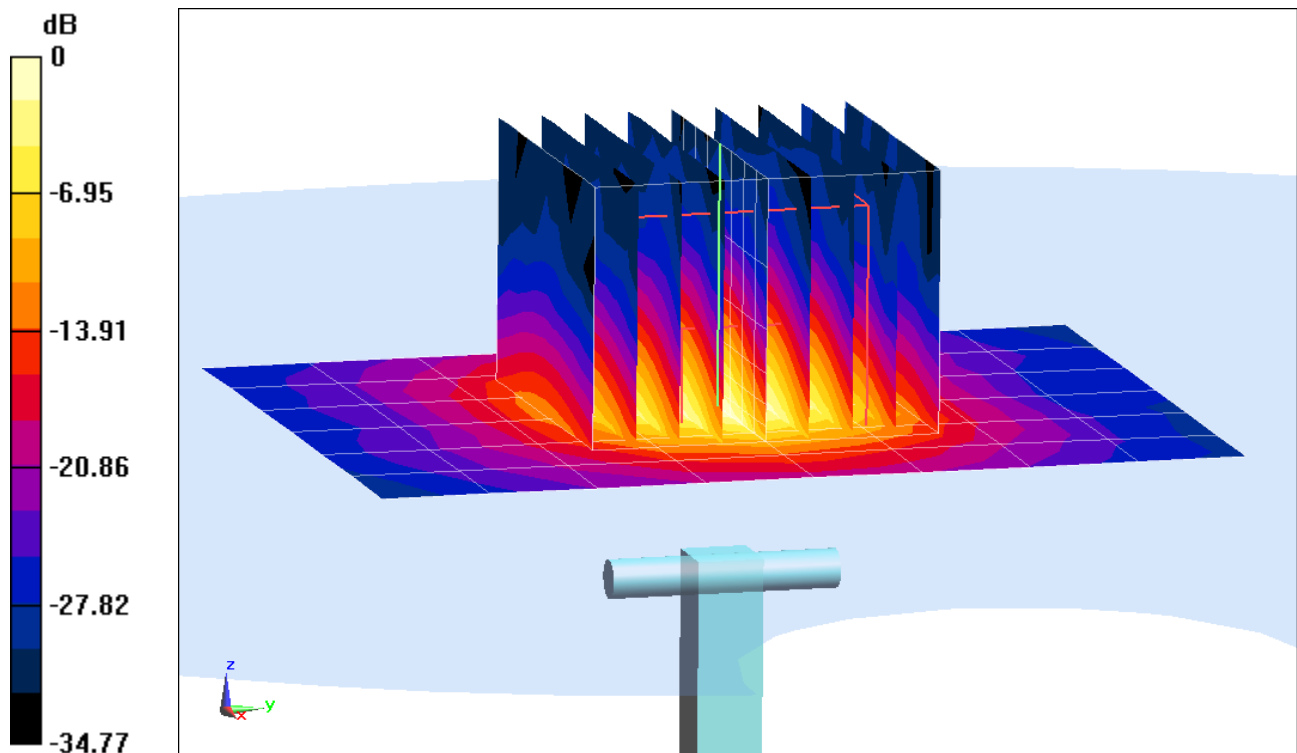
Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 35.4 W/kg

SAR(1 g) = 7.23 W/kg

Deviation: -0.82%



0 dB = 18.7 W/kg = 12.72 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body, Medium parameters used:

$f = 5800 \text{ MHz}$; $\sigma = 6.186 \text{ S/m}$; $\epsilon_r = 46.881$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

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

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

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

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

5800 MHz System Verification

Area Scan (7x8x1): Measurement grid: dx=10mm, dy=10mm

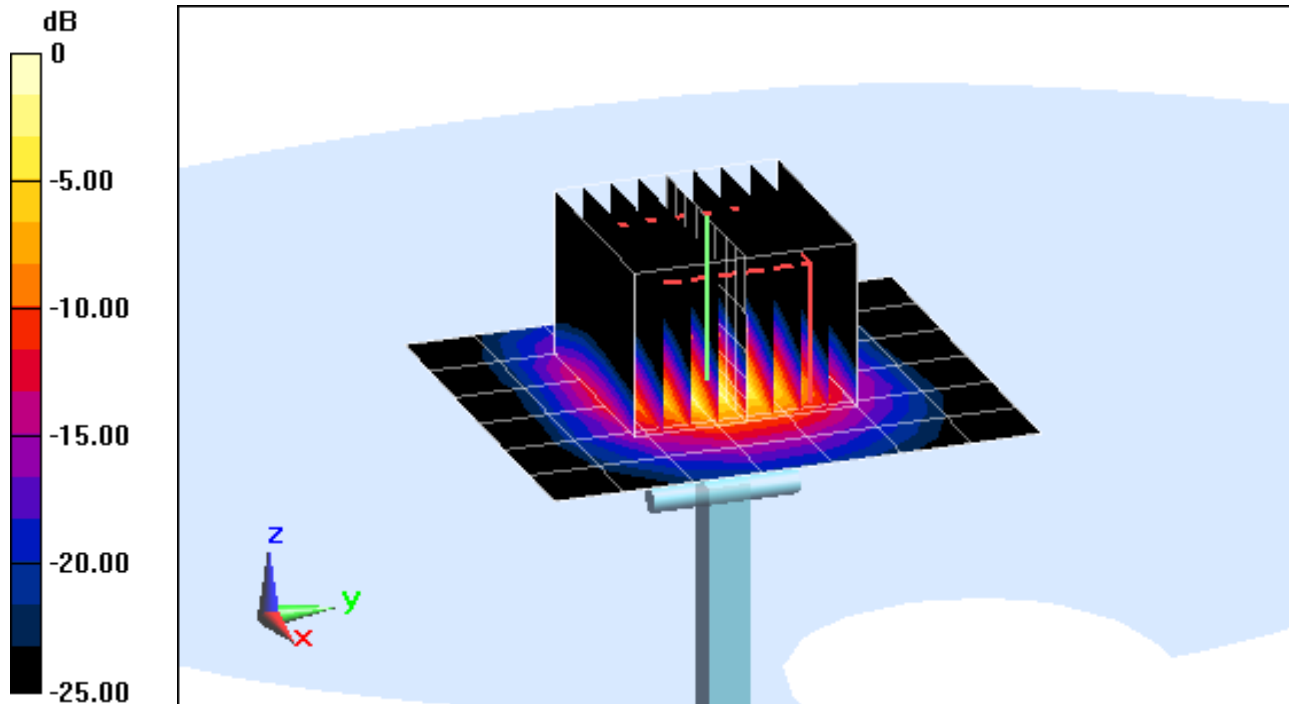
Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Input Power: 20 dBm (100 mW)

Peak SAR (extrapolated) = 35.8 W/kg

SAR(1 g) = 7.35 W/kg

Deviation(1 g): -1.08%



0 dB = 19.8 W/kg = 12.97 dBW/kg

APPENDIX C: PROBE CALIBRATION



Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **PC Test**

Certificate No: **D835V2-4d119_Apr14**

CALIBRATION CERTIFICATE

Object **D835V2 - SN: 4d119**

Calibration procedure(s) **QA CAL-05.v9**
Calibration procedure for dipole validation kits above 700 MHz

CCV
4/25/14

Calibration date: **April 07, 2014**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	US37292783	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	MY41092317	09-Oct-13 (No. 217-01828)	Oct-14
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-13 (No. ES3-3205_Dec13)	Dec-14
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-13)	In house check: Oct-14

Calibrated by: **Name** **Function**
Leif Klysner **Laboratory Technician**

Signature

Approved by: **Katja Pokovic** **Technical Manager**

Issued: April 9, 2014

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	41.6 $\pm$ 6 %	0.94 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.38 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	9.22 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.53 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	5.97 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	53.6 $\pm$ 6 %	1.02 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.44 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	9.34 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.59 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	6.15 W/kg $\pm$ 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.2 Ω - 1.6 j Ω
Return Loss	- 34.0 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.3 Ω - 4.5 j Ω
Return Loss	- 24.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.386 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	June 29, 2010

DASY5 Validation Report for Head TSL

Date: 07.04.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d119

Communication System: UID 0 - CW; Frequency: 835 MHz

Medium parameters used: $f = 835$ MHz; $\sigma = 0.94$ S/m; $\epsilon_r = 41.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.22, 6.22, 6.22); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

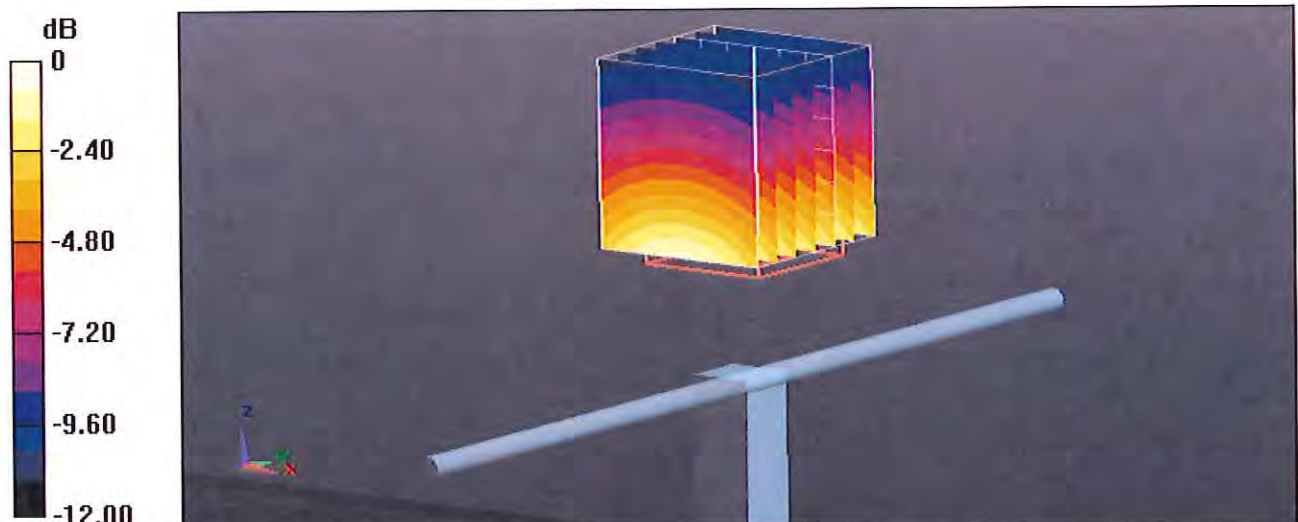
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.289 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 3.59 W/kg

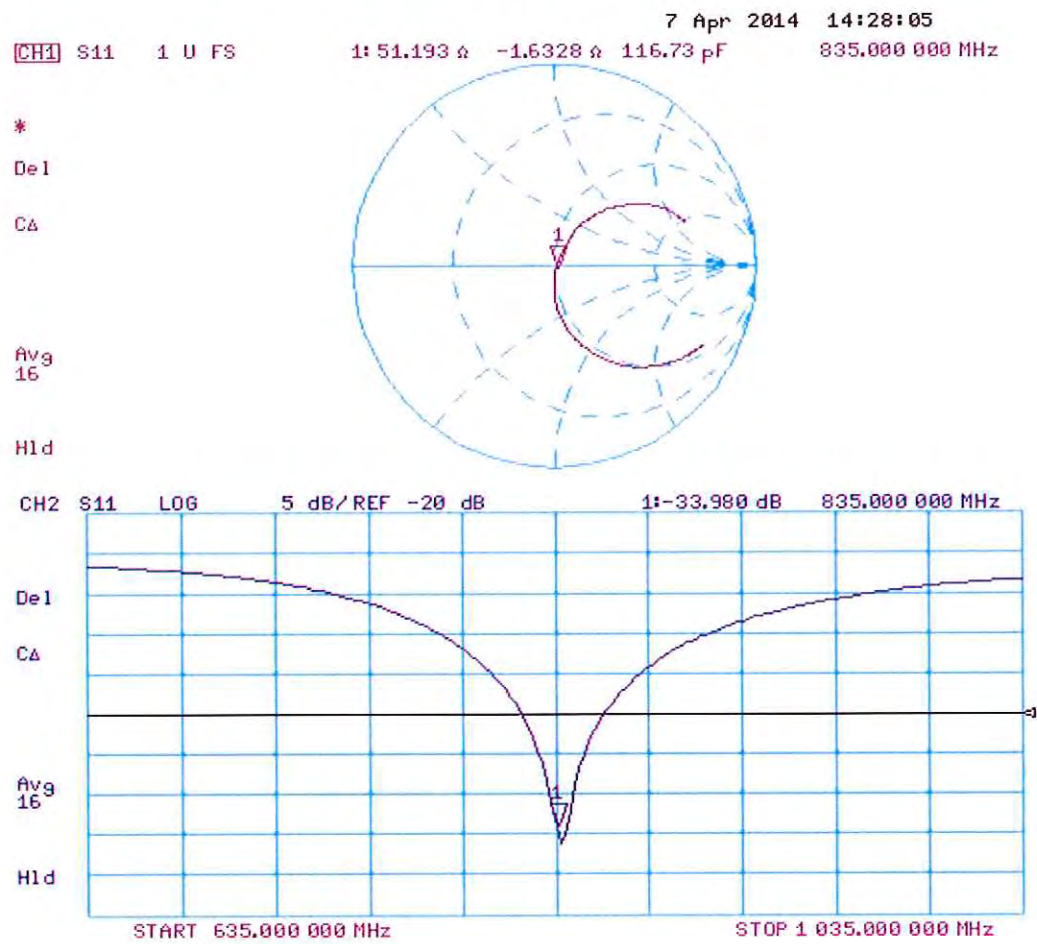
SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.53 W/kg

Maximum value of SAR (measured) = 2.80 W/kg



0 dB = 2.80 W/kg = 4.47 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 07.04.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d119

Communication System: UID 0 - CW; Frequency: 835 MHz

Medium parameters used: $f = 835$ MHz; $\sigma = 1.02$ S/m; $\epsilon_r = 53.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.09, 6.09, 6.09); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

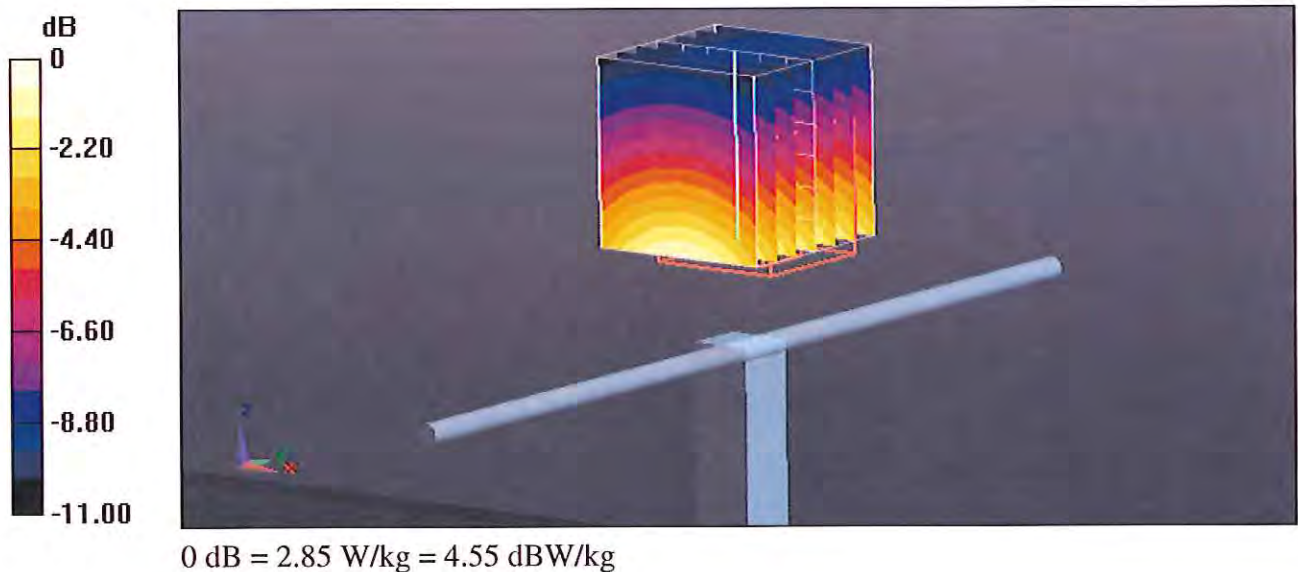
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 54.594 V/m; Power Drift = -0.01 dB

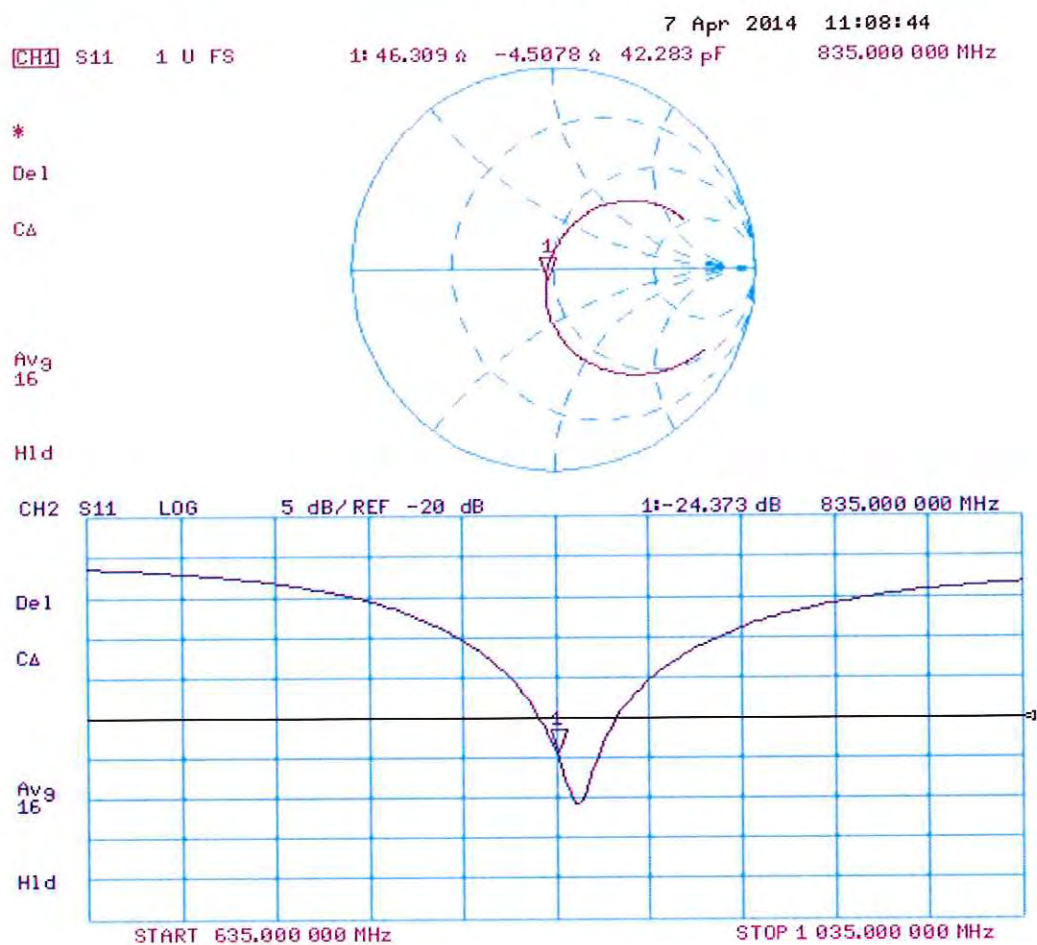
Peak SAR (extrapolated) = 3.61 W/kg

SAR(1 g) = 2.44 W/kg; SAR(10 g) = 1.59 W/kg

Maximum value of SAR (measured) = 2.85 W/kg



Impedance Measurement Plot for Body TSL





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 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **PC Test**

Certificate No: **D1900V2-5d141_Apr14**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 5d141**

Calibration procedure(s) **QA CAL-05.v9**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **April 09, 2014**

✓
KOK
5/7/14

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
 The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^{\circ}\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	US37292783	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	MY41092317	09-Oct-13 (No. 217-01828)	Oct-14
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-13 (No. ES3-3205_Dec13)	Dec-14
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-13)	In house check: Oct-14

Calibrated by: **Claudio Leubler** Name: **Claudio Leubler** Function: **Laboratory Technician**

Approved by: **Katja Pokovic** Name: **Katja Pokovic** Function: **Technical Manager**

Signature




Issued: April 9, 2014

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Accreditation No.: **SCS 108**

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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:* SAR measured at the stated antenna input power.
- SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	39.1 $\pm$ 6 %	1.36 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.91 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	40.1 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.17 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	20.8 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	52.4 $\pm$ 6 %	1.52 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.2 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	40.6 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.41 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	21.6 W/kg $\pm$ 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$52.8 \Omega + 5.5 j\Omega$
Return Loss	- 24.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$48.8 \Omega + 6.3 j\Omega$
Return Loss	- 23.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.199 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 11, 2011

DASY5 Validation Report for Head TSL

Date: 09.04.2014

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.36$ S/m; $\epsilon_r = 39.1$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.06, 5.06, 5.06); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

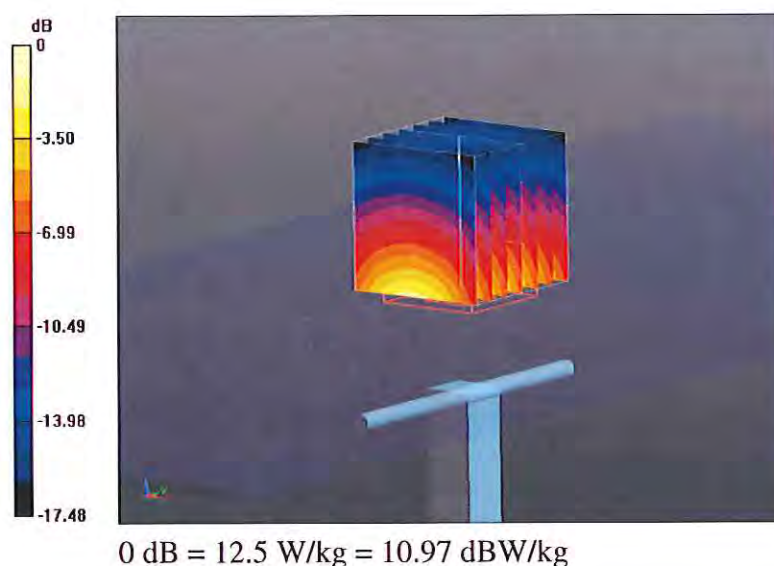
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 99.080 V/m; Power Drift = 0.01 dB

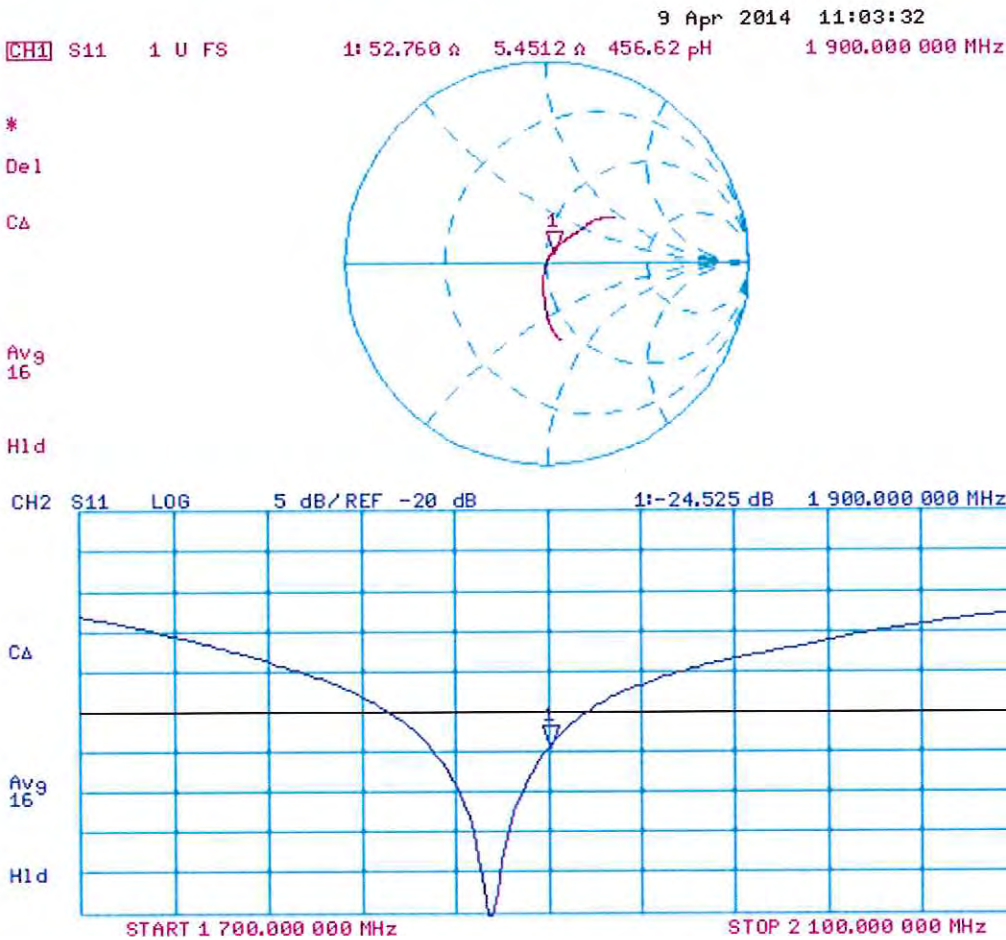
Peak SAR (extrapolated) = 18.2 W/kg

SAR(1 g) = 9.91 W/kg; SAR(10 g) = 5.17 W/kg

Maximum value of SAR (measured) = 12.5 W/kg



Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 09.04.2014

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.52$ S/m; $\epsilon_r = 52.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.76, 4.76, 4.76); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

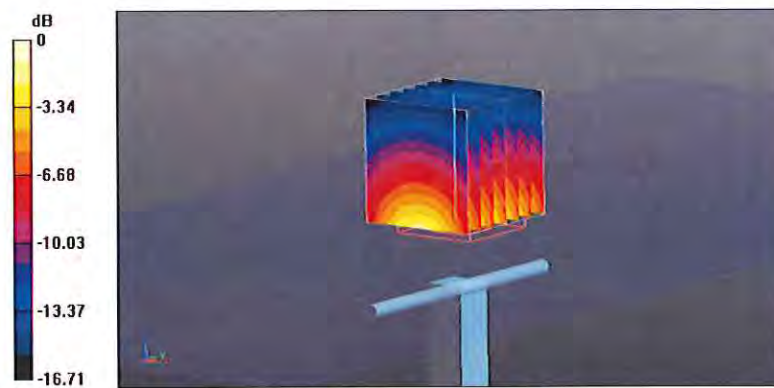
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 95.820 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 17.9 W/kg

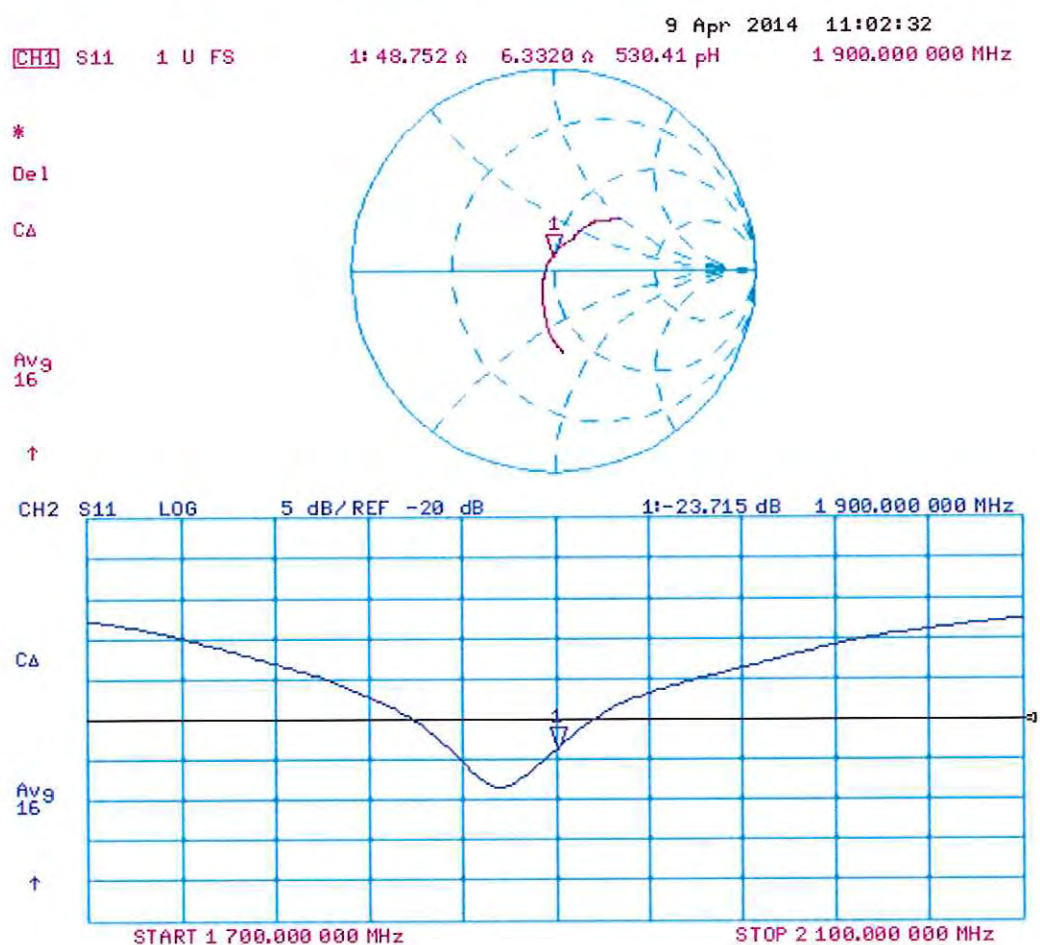
SAR(1 g) = 10.2 W/kg; SAR(10 g) = 5.41 W/kg

Maximum value of SAR (measured) = 12.9 W/kg



0 dB = 12.9 W/kg = 11.11 dBW/kg

Impedance Measurement Plot for Body TSL





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Accreditation No.: **SCS 108**

Client **PC Test**

Certificate No: **D2450V2-797_Jan14**

CALIBRATION CERTIFICATE

Object **D2450V2 - SN: 797**

Calibration procedure(s) **QA CAL-05.v9**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **January 21, 2014**

CC ✓
2/5/14

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^{\circ}\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	US37292783	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	MY41092317	09-Oct-13 (No. 217-01828)	Oct-14
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-13 (No. 217-01736)	Apr-14
Type-N mismatch combination	SN: 5047.3 / 06327	04-Apr-13 (No. 217-01739)	Apr-14
Reference Probe ES3DV3	SN: 3205	30-Dec-13 (No. ES3-3205_Dec13)	Dec-14
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-13)	In house check: Oct-14

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 21, 2014

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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	38.7 $\pm$ 6 %	1.86 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.2 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	51.8 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.13 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.3 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	51.3 $\pm$ 6 %	2.04 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.7 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	49.4 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.86 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	23.1 W/kg $\pm$ 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$53.5 \Omega + 3.2 j\Omega$
Return Loss	- 26.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$50.0 \Omega + 4.9 j\Omega$
Return Loss	- 26.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.151 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	January 24, 2006

DASY5 Validation Report for Head TSL

Date: 21.01.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 797

Communication System: UID 0 - CW; Frequency: 2450 MHz

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.86$ S/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.53, 4.53, 4.53); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

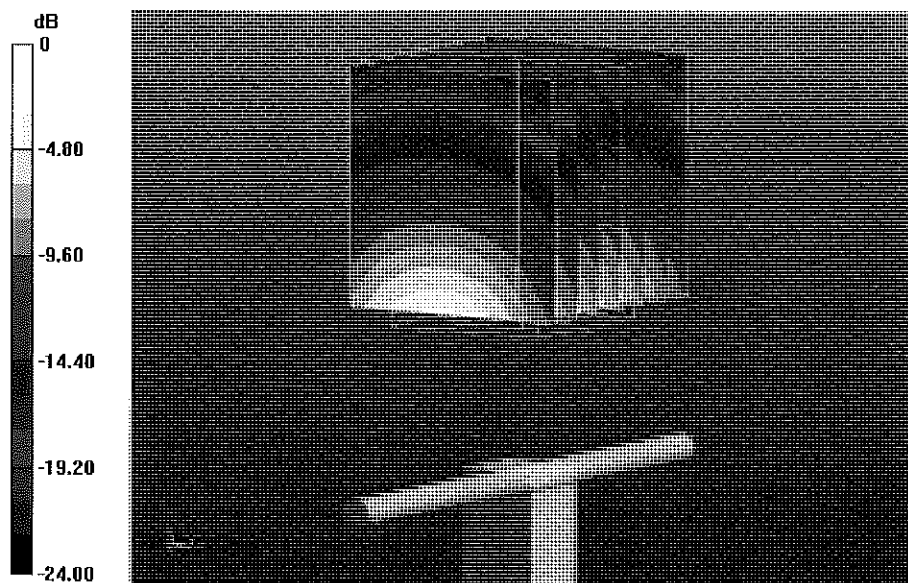
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 99.151 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 27.5 W/kg

SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.13 W/kg

Maximum value of SAR (measured) = 16.9 W/kg



0 dB = 16.9 W/kg = 12.28 dBW/kg

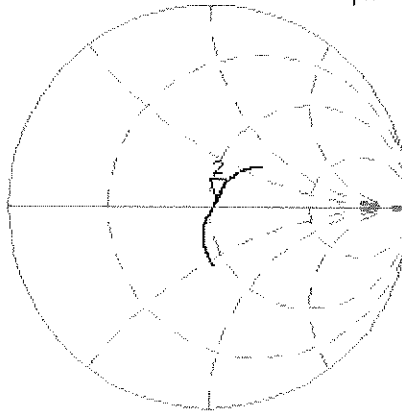
Impedance Measurement Plot for Head TSL

21 Jan 2014 11:31:52
 CH1 S11 1 U FS 2: 53.512 $\angle$ 3.2285 $\angle$ 209.73 pH 2 450.000 000 MHz

*
 Del
 CA

Avg
 16

H1d

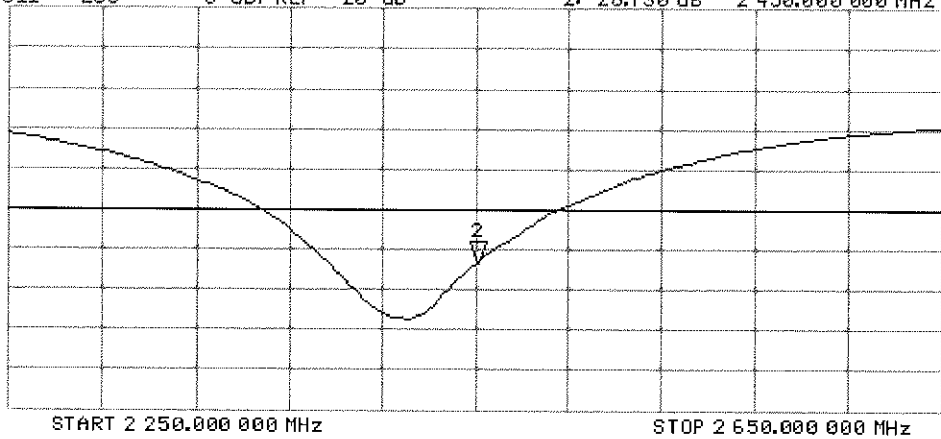


CH2 S11 LOG 5 dB/REF -20 dB 2:-26.730 dB 2 450.000 000 MHz

CA

Avg
 16

H1d



DASY5 Validation Report for Body TSL

Date: 21.01.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 797

Communication System: UID 0 - CW; Frequency: 2450 MHz

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.04$ S/m; $\epsilon_r = 51.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.35, 4.35, 4.35); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

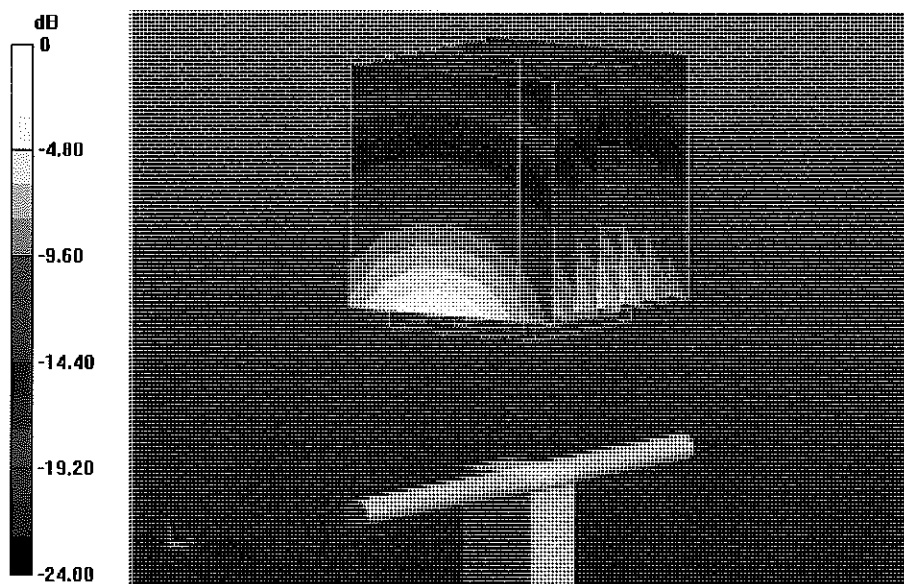
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.709 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 26.4 W/kg

SAR(1 g) = 12.7 W/kg; SAR(10 g) = 5.86 W/kg

Maximum value of SAR (measured) = 16.8 W/kg



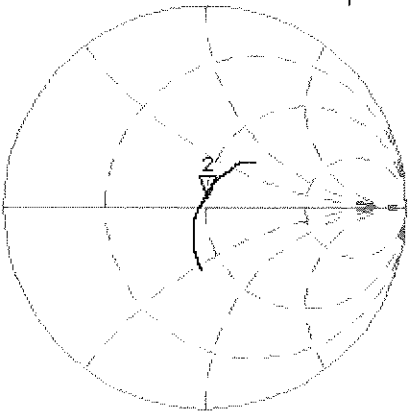
0 dB = 16.8 W/kg = 12.25 dBW/kg

Impedance Measurement Plot for Body TSL

21 Jan 2014 11:31:29

CH1 S11 1 U FS 2: 49.994 Ω 4.9258 Ω 319.98 μ H 2 450.000 000 MHz

*
Del
CA



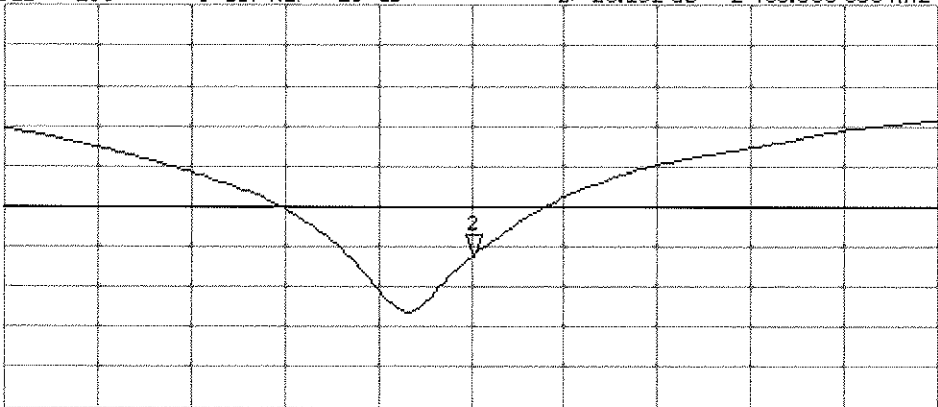
Avg
16
H1d

CH2 S11 LOG 5 dB/REF -20 dB 2:-26.162 dB 2 450.000 000 MHz

CA

Avg
16

H1d



START 2 250.000 000 MHz

STOP 2 450.000 000 MHz



Accredited by the Swiss Accreditation Service (SAS)
 The Swiss Accreditation Service is one of the signatories to the EA
 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **PC Test**

Certificate No: **D2600V2-1004_Apr14**

CALIBRATION CERTIFICATE

Object **D2600V2 - SN: 1004**

Calibration procedure(s) **QA CAL-05.v9**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **April 08, 2014**

✓ KOK
5/7/14

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
 The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	US37292783	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	MY41092317	09-Oct-13 (No. 217-01828)	Oct-14
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-13 (No. ES3-3205_Dec13)	Dec-14
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-13)	In house check: Oct-14

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 9, 2014

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



Accredited by the Swiss Accreditation Service (SAS)

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	37.7 $\pm$ 6 %	1.98 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.5 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	57.3 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.44 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	25.6 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.5	2.16 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	50.2 $\pm$ 6 %	2.19 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	14.4 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	56.7 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.38 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	25.2 W/kg $\pm$ 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.4 Ω - 4.8 j Ω
Return Loss	- 26.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.4 Ω - 3.3 j Ω
Return Loss	- 25.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.149 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 23, 2006

DASY5 Validation Report for Head TSL

Date: 08.04.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1004

Communication System: UID 0 - CW; Frequency: 2600 MHz

Medium parameters used: $f = 2600$ MHz; $\sigma = 1.98$ S/m; $\epsilon_r = 37.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.46, 4.46, 4.46); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

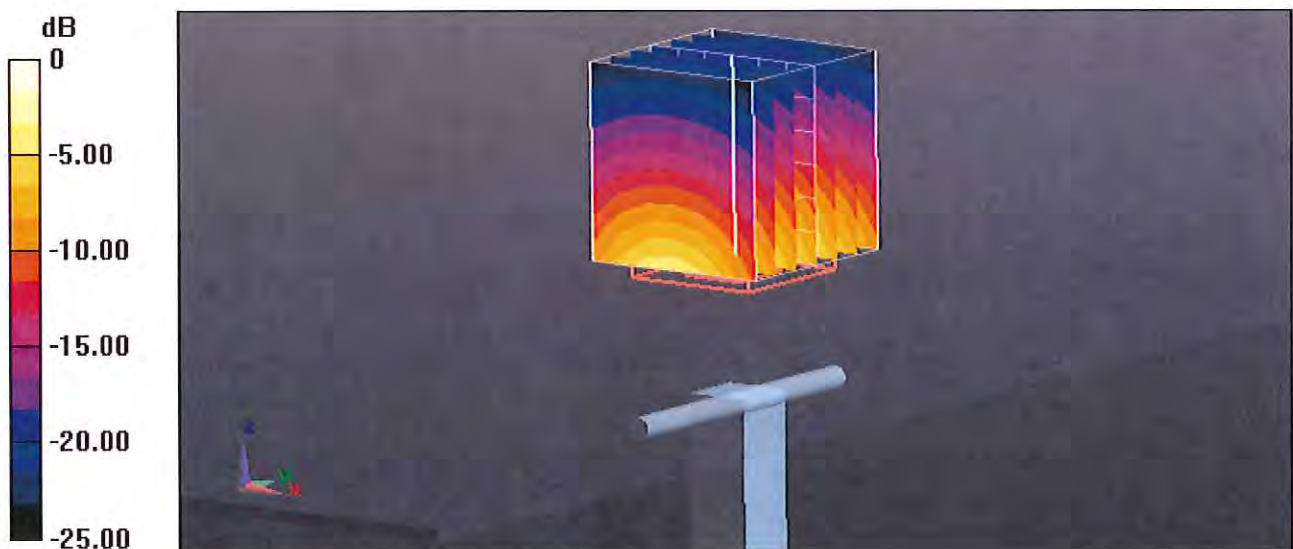
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 103.0 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 30.7 W/kg

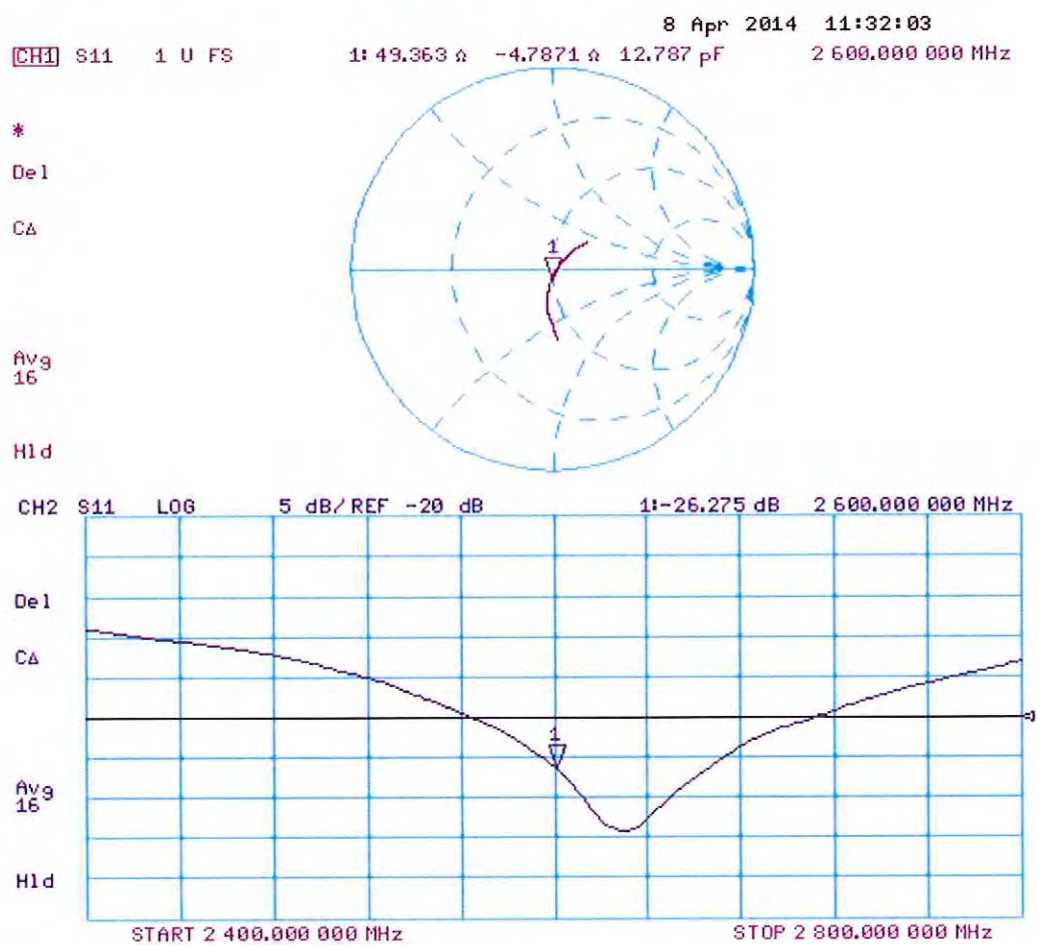
SAR(1 g) = 14.5 W/kg; SAR(10 g) = 6.44 W/kg

Maximum value of SAR (measured) = 19.3 W/kg



0 dB = 19.3 W/kg = 12.86 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 08.04.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1004

Communication System: UID 0 - CW; Frequency: 2600 MHz

Medium parameters used: $f = 2600$ MHz; $\sigma = 2.19$ S/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.24, 4.24, 4.24); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

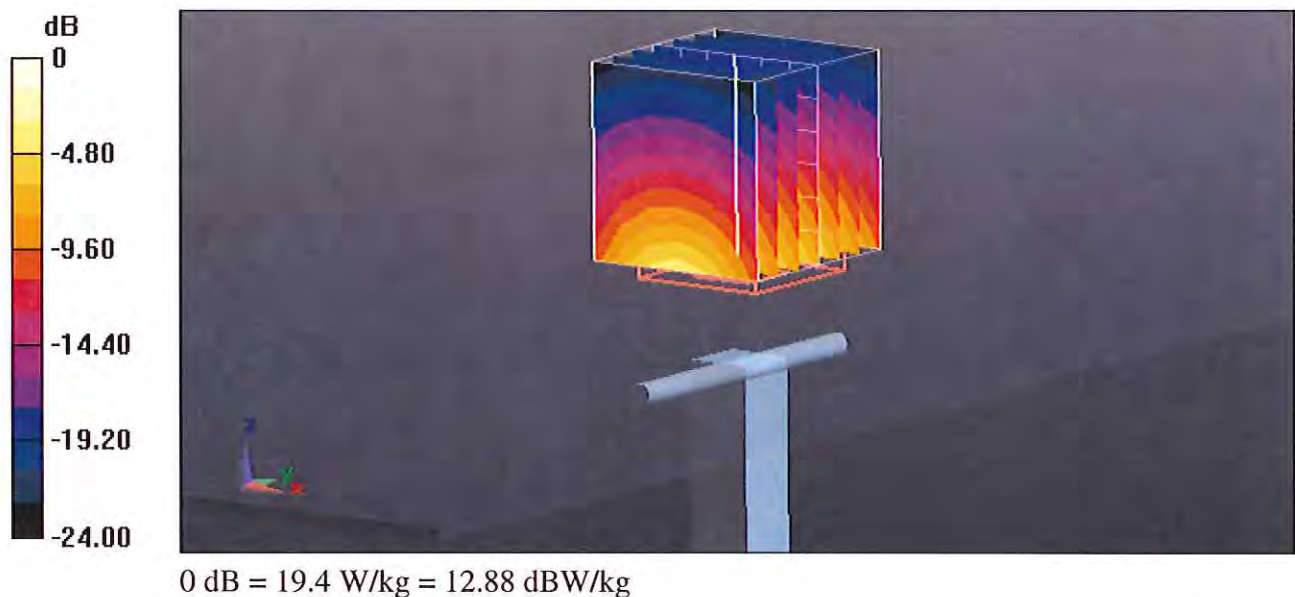
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.472 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 31.1 W/kg

SAR(1 g) = 14.4 W/kg; SAR(10 g) = 6.38 W/kg

Maximum value of SAR (measured) = 19.4 W/kg



Impedance Measurement Plot for Body TSL

