



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:

02/03/14 - 02/19/14

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Document Serial No.:

OY1402030264.A3L

FCC ID:

A3LSMG900R4

APPLICANT:

SAMSUNG ELECTRONICS, CO. LTD.

DUT Type:

Portable Handset

Application Type:

Certification

FCC Rule Part(s):

CFR §2.1093

Model(s):

SM-G900R4

Equipment Class	Band & Mode	Tx Frequency	SAR		
			1 gm Head (W/kg)	1 gm Body-Worn (W/kg)	1 gm Hotspot (W/kg)
PCE	Cell. CDMA/EVDO	824.70 - 848.31 MHz	0.61	0.78	0.78
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	0.62	0.82	0.82
PCE	LTE Band 12	701.5 - 713.5 MHz	0.34	0.41	0.52
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	0.36	0.51	0.76
PCE	LTE Band 4 (AWS)	1712.5 - 1752.5 MHz	0.38	0.51	0.59
PCE	LTE Band 2 (PCS)	1852.5 - 1907.5 MHz	0.63	0.22	0.56
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.19	0.26	0.26
DTS	5.8 GHz WLAN	5745 - 5825 MHz	0.17	0.33	0.33
NII	5.2 GHz WLAN	5180 - 5240 MHz	< 0.1	0.24	
NII	5.3 GHz WLAN	5260 - 5320 MHz	< 0.1	0.23	
NII	5.5 GHz WLAN	5500 - 5700 MHz	0.22	0.35	
DSS/DTS	Bluetooth	2402 - 2480 MHz	N/A		
Simultaneous SAR per KDB 690783 D01v01r02:			1.59		

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
Cell. CDMA/EVDO	Voice/Data	824.70 - 848.31 MHz
PCS CDMA/EVDO	Voice/Data	1851.25 - 1908.75 MHz
LTE Band 12	Data	701.5 - 713.5 MHz
LTE Band 17	Data	706.5 - 713.5 MHz
LTE Band 5 (Cell)	Data	824.7 - 848.3 MHz
LTE Band 4 (AWS)	Data	1712.5 - 1752.5 MHz
LTE Band 2 (PCS)	Data	1852.5 - 1907.5 MHz
2.4 GHz WLAN	Data	2412 - 2462 MHz
5.8 GHz WLAN	Data	5745 - 5825 MHz
5.2 GHz WLAN	Data	5180 - 5240 MHz
5.3 GHz WLAN	Data	5260 - 5320 MHz
5.5 GHz WLAN	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

This device uses sensor for WIFI Head SAR compliance. The sensor is activated when the device is held-to-ear with WIFI data modes. The sensor only triggers power reduction for WIFI data modes at held-to-ear RF exposure conditions. Therefore WIFI head SAR was evaluated at reduced power levels.

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		Modulated Average (dBm)
Cell. CDMA/EVDO	Maximum	25.0
	Nominal	24.5
PCS CDMA/EVDO	Maximum	25.0
	Nominal	24.5

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Mode / Band		Modulated Average (dBm)
LTE Band 12	Maximum	23.5
	Nominal	23.0
LTE Band 17	Maximum	23.5
	Nominal	23.0
LTE Band 5 (Cell)	Maximum	23.5
	Nominal	23.0
LTE Band 4 (AWS)	Maximum	23.5
	Nominal	23.0
LTE Band 2 (PCS)	Maximum	23.5
	Nominal	23.0

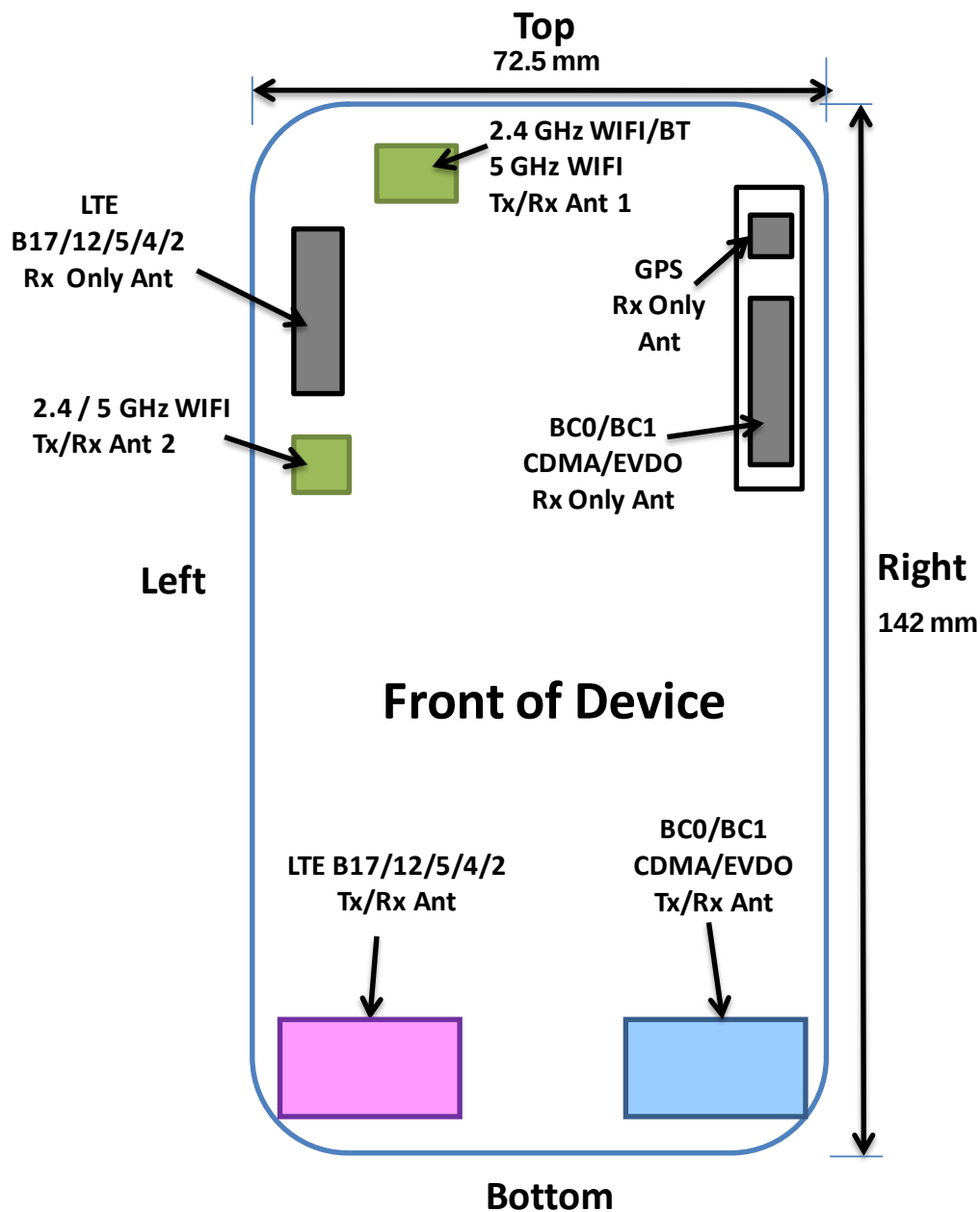
Mode / Band		Modulated Average (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	17.5
	Nominal	17.0
IEEE 802.11g (2.4 GHz)	Maximum	14.5
	Nominal	14.0
IEEE 802.11n (2.4 GHz)	Maximum	14.0
	Nominal	13.5
IEEE 802.11a (5 GHz)	Maximum	14.0
	Nominal	13.5
IEEE 802.11n (5 GHz, 20 MHz Bandwidth)	Maximum	13.5
	Nominal	13.0
IEEE 802.11n (5 GHz, 40 MHz Bandwidth)	Maximum	12.5
	Nominal	12.0
IEEE 802.11ac (5 GHz)	Maximum	11.5
	Nominal	11.0
Bluetooth	Maximum	10.0
	Nominal	9.5
Bluetooth LE	Maximum	8.5
	Nominal	8.0

1.3.1 Reduced Power – Held-to-Ear

Mode / Band		Modulated Average (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	12.5
	Nominal	12.0
IEEE 802.11g (2.4 GHz)	Maximum	12.5
	Nominal	12.0
IEEE 802.11n (2.4 GHz)	Maximum	12.5
	Nominal	12.0
IEEE 802.11a (5 GHz)	Maximum	7.5
	Nominal	7.0
IEEE 802.11n (5 GHz, 20 MHz Bandwidth)	Maximum	7.5
	Nominal	7.0
IEEE 802.11n (5 GHz, 40 MHz Bandwidth)	Maximum	7.5
	Nominal	7.0
IEEE 802.11ac (5 GHz)	Maximum	7.5
	Nominal	7.0

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1.4 DUT Antenna Locations



Note: Exact antenna dimensions and separation distances are shown in the Technical Descriptions in the FCC Filing.

Figure 1-1
DUT Antenna Locations

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Table 1-1
Mobile Hotspot Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
Cell. EVDO	Yes	Yes	No	Yes	Yes	No
PCS EVDO	Yes	Yes	No	Yes	Yes	No
LTE Band 12	Yes	Yes	No	Yes	No	Yes
LTE Band 5 (Cell)	Yes	Yes	No	Yes	No	Yes
LTE Band 4 (AWS)	Yes	Yes	No	Yes	No	Yes
LTE Band 2 (PCS)	Yes	Yes	No	Yes	No	Yes
2.4 GHz WLAN	Yes	Yes	Yes	No	No	Yes
5.8 GHz WLAN	Yes	Yes	Yes	No	No	Yes

Note: Particular DUT edges were not required to be evaluated for Wireless Router SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v01 guidance, page 2.

1.5 Near Field Communications (NFC) Antenna

This DUT has NFC operations. The NFC antenna is integrated into the standard battery. The SAR tests were performed with the standard battery (model: EB-BG900BBE).

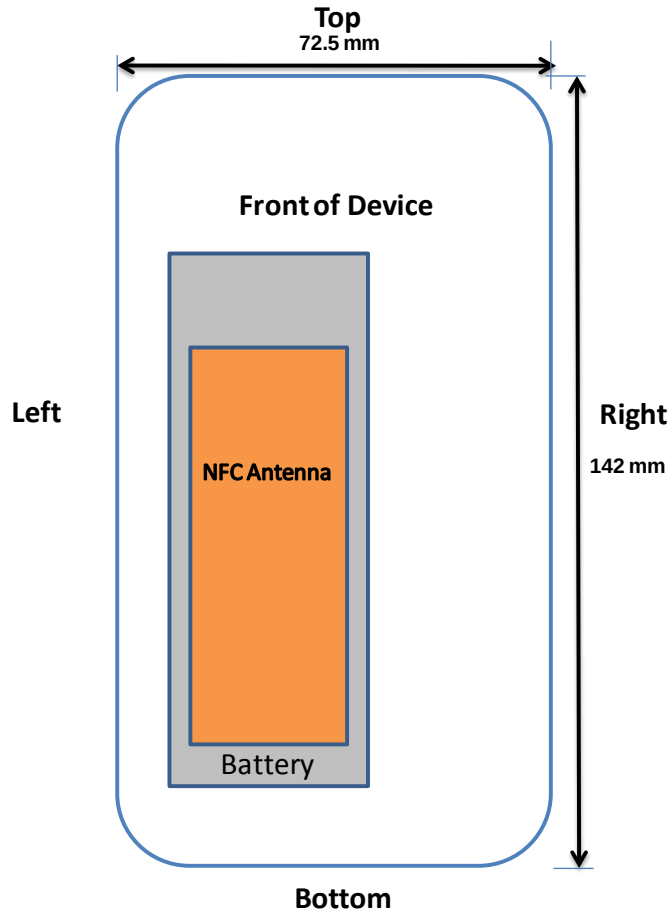


Figure 1-2
NFC Antenna Locations

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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. This device supports MIMO Tx for WLAN 802.11n/ac. Each WLAN antenna can transmit independently or together when operating with MIMO.



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	Notes
1	1x CDMA voice + 2.4 GHz WI-FI	Yes	Yes	N/A	
2	1x CDMA voice + 5 GHz WI-FI	Yes	Yes	N/A	
3	1x CDMA voice + 2.4 GHz Bluetooth	N/A	Yes	N/A	
4	LTE + 2.4 GHz WI-FI	Yes*	Yes*	Yes	*-Pre-installed VOIP applications are considered.
5	LTE + 5 GHz WI-FI	Yes*	Yes*	Yes	*-Pre-installed VOIP applications are considered.
6	LTE + 2.4 GHz Bluetooth	N/A	Yes*	N/A	*-Pre-installed VOIP applications are considered.
7	CDMA/EVDO data + 2.4 GHz WI-FI	Yes*	Yes*	Yes	*-Pre-installed VOIP applications are considered.
8	CDMA/EVDO data + 5 GHz WI-FI	Yes*	Yes*	Yes	*-Pre-installed VOIP applications are considered.
9	CDMA/EVDO data + 2.4 GHz Bluetooth	N/A	Yes*	N/A	*-Pre-installed VOIP applications are considered.
10	1x CDMA voice + LTE	Yes	Yes	N/A	
11	1x CDMA voice + LTE + 2.4 GHz WI-FI	Yes	Yes	Yes	
12	1x CDMA voice + LTE + 5 GHz WI-FI	Yes	Yes	Yes	
13	1x CDMA voice + LTE + 2.4 GHz Bluetooth	N/A	Yes	N/A	
14	1x CDMA voice + CDMA/EVDO data	N/A	N/A	N/A	Not supported by HW
15	CDMA/EVDO data + LTE	N/A	N/A	N/A	Not supported by SW

Note:

1. 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.
2. This device supports 2x2 MIMO Tx for WLAN 802.11n/ac. Each WLAN antenna can transmit independently or together when operating with MIMO.

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 D04, SAR was measured using the standard battery cover and then repeated with the wireless charging battery cover for the highest reported SAR for each wireless technology, frequency band, operating mode, and exposure condition. No other additional test with wireless charging cover was required since all reported SAR were less than 1.2 W/kg.

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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 5.8 GHz WIFI Hotspot SAR tests and combinations are considered for SAR with respect to Wireless Router configurations according to FCC KDB 941225 D06v01.

Per FCC KDB 447498 D01v05, the 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, Bluetooth SAR was not required; $[(10/10) * \sqrt{2.441}] = 1.6 < 3.0$. Per KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mW before calculation.

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

(B) Licensed Transmitter(s)

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.

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.

This Device additionally supports LTE Band 17. LTE Band 12 and LTE Band 17 share the same transmission path. LTE Band 17 was not evaluated for SAR since the supported frequency range falls within the LTE Band 12 supported frequency range.

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1.9 Guidance Applied

- IEEE 1528-2003
- FCC KDB Publication 941225 D01-D06 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v01r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v05 (General SAR Guidance)
- FCC KDB Publication 865664 D01-D02 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D03-D04 (Wireless Charging Cover)
- April 2013 TCB Workshop Notes (1x Advanced, IEEE 802.11ac)

1.10 Device Serial Numbers

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

	Head Serial Number	Body-Worn Serial Number	Hotspot Serial Number
Cell. CDMA/EVDO	32EF0	32EF0	32EF0
PCS CDMA/EVDO	32EC6	32E32	32E32, 32EF0
LTE Band 12	32EC6	32EF0	32EF0
LTE Band 5 (Cell)	32EC6	32EF0	32EF0
LTE Band 4 (AWS)	32EC6	32EC6	32EC6
LTE Band 2 (PCS)	32EC6	32E32	32E32
2.4 GHz WLAN	328C6	00F05	00F05
5 GHz WLAN	31F35	32712, 15ECE	32712, 15ECE

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LTE INFORMATION

LTE Information			
FCC ID	A3LSMG900R4		
Form Factor	Portable Handset		
Frequency Range of each LTE transmission band	LTE Band 12 (701.5 - 713.5 MHz)		
	LTE Band 17 (706.5 - 713.5 MHz)		
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)		
	LTE Band 4 (AWS) (1712.5 - 1752.5 MHz)		
	LTE Band 2 (PCS) (1852.5 - 1907.5 MHz)		
Channel Bandwidths	LTE Band 12: 5 MHz, 10 MHz		
	LTE Band 17: 5 MHz, 10 MHz		
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz		
	LTE Band 4 (AWS): 5 MHz, 10 MHz		
	LTE Band 2 (PCS): 5 MHz, 10 MHz		
Channel Numbers and Frequencies (MHz)	Low	Mid	High
LTE Band 12: 5 MHz	701.5 (23035)	707.5 (23095)	713.5 (23155)
LTE Band 12: 10 MHz	704 (23060)	707.5 (23095)	711 (23130)
LTE Band 17: 5 MHz	706.5 (23755)	710 (23790)	713.5 (23825)
LTE Band 17: 10 MHz	709 (23780)	710 (23790)	711 (23800)
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)	836.5 (20525)	848.3 (20643)
LTE Band 5 (Cell): 3 MHz	825.5 (20415)	836.5 (20525)	847.5 (20635)
LTE Band 5 (Cell): 5 MHz	826.5 (20425)	836.5 (20525)	846.5 (20625)
LTE Band 5 (Cell): 10 MHz	829 (20450)	836.5 (20525)	844 (20600)
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)	1732.5 (20175)	1752.5 (20375)
LTE Band 4 (AWS): 10 MHz	1715 (20000)	1732.5 (20175)	1750 (20350)
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)	1880 (18900)	1907.5 (19175)
LTE Band 2 (PCS): 10 MHz	1855 (18650)	1880 (18900)	1905 (19150)
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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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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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.

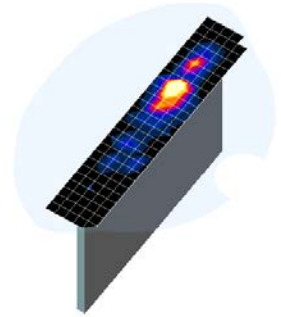


Figure 4-1
Sample SAR Area Scan

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

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

*Also compliant to IEEE 1528-2013 Table 6

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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].

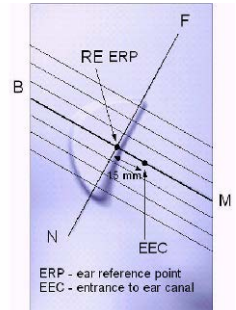


Figure 5-1
Close-Up Side view
of ERP

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

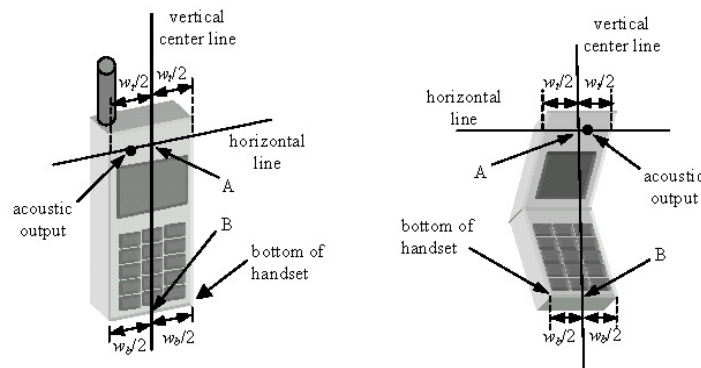


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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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.

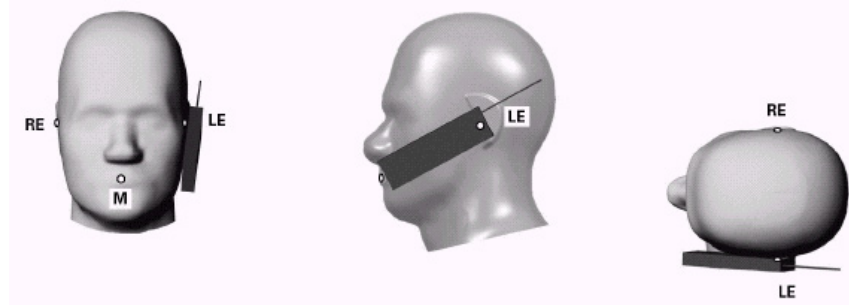


Figure 6-1 Front, Side and Top View of Cheek Position

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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6.5 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6-5). 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.

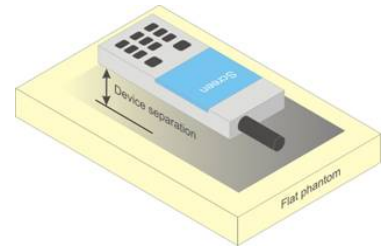


Figure 6-5
Sample Body-Worn Diagram

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.

6.6 Extremity Exposure Configurations

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

Per KDB Publication 44798 D01v05, Cell phones (handsets) are not normally designed to be used on extremities or operated in extremity only exposure conditions. The maximum output power levels of handsets generally do not require extremity SAR testing to show compliance. Therefore, extremity SAR was not evaluated for this device.

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6.7 Wireless Router Configurations

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

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

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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 CDMA2000

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

8.3.1 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.

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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.

8.3.2 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 is required for 1x advanced when 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 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.

8.3.3 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 $\frac{1}{4}$ 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 8.3.5 for EVDO Rev. A configuration parameters.

8.3.4 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 $\frac{1}{4}$ 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 $\frac{1}{4}$ 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.

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8.3.5 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.

8.3.6 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.

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 ¼ 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.

8.4 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).

8.4.1 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.

8.4.2 MPR

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

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8.4.3 A-MPR

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

8.4.4 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 $\frac{1}{2}$ dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is < 1.45 W/kg.

8.5 SAR Testing with 802.11 Transmitters

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

8.5.1 General Device Setup

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

8.5.2 Frequency Channel Configurations [24]

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

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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.

8.5.1 MIMO SAR Considerations

Per KDB 248227, SAR for MIMO was measured with both antennas transmitting simultaneously and was evaluated independently of SISO operation. For 2.4 GHz MIMO, 802.11n was evaluated. For 5 GHz MIMO, 802.11n 20 MHz Bandwidth was evaluated since the maximum allowed output power was the higher than 802.11ac.

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9 RF CONDUCTED POWERS

9.1 CDMA Conducted Powers

Band	Channel	Frequency	SO55 [dBm]	SO55 [dBm]	SO75 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC	MHz	RC1	RC3	RC11	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	1013	824.7	24.43	24.35	24.45	24.32	24.33	24.40	24.39
	384	836.52	24.48	24.40	24.51	24.39	24.37	24.44	24.40
	777	848.31	24.67	24.56	24.69	24.55	24.56	24.61	24.58
PCS	25	1851.25	24.63	24.54	24.60	24.53	24.50	24.55	24.51
	600	1880	24.59	24.49	24.56	24.49	24.46	24.52	24.46
	1175	1908.75	24.65	24.55	24.61	24.54	24.53	24.54	24.52

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

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. Hotspot 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.
4. CDMA 1x-RTT SAR was additionally required to be evaluated for Hotspot exposure conditions to support simultaneous transmission capabilities.
5. 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 8.3.2 for 1x Advanced test set up.



Figure 9-1
Power Measurement Setup

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9.2 LTE Conducted Powers

9.2.1 LTE Band 12

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	707.5	23095	10	QPSK	1	0	23.08	0	0
	707.5	23095	10	QPSK	1	25	23.03	0	0
	707.5	23095	10	QPSK	1	49	23.04	0	0
	707.5	23095	10	QPSK	25	0	22.02	0-1	1
	707.5	23095	10	QPSK	25	12	21.98	0-1	1
	707.5	23095	10	QPSK	25	25	21.97	0-1	1
	707.5	23095	10	QPSK	50	0	21.93	0-1	1
	707.5	23095	10	16QAM	1	0	21.87	0-1	1
	707.5	23095	10	16QAM	1	25	22.03	0-1	1
	707.5	23095	10	16QAM	1	49	21.87	0-1	1
	707.5	23095	10	16QAM	25	0	21.01	0-2	2
	707.5	23095	10	16QAM	25	12	20.88	0-2	2
	707.5	23095	10	16QAM	25	25	20.90	0-2	2
	707.5	23095	10	16QAM	50	0	20.84	0-2	2

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

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	701.5	23035	5	QPSK	1	0	23.24	0	0
	701.5	23035	5	QPSK	1	12	23.22	0	0
	701.5	23035	5	QPSK	1	24	23.18	0	0
	701.5	23035	5	QPSK	12	0	22.05	0-1	1
	701.5	23035	5	QPSK	12	6	22.16	0-1	1
	701.5	23035	5	QPSK	12	13	22.06	0-1	1
	701.5	23035	5	QPSK	25	0	22.00	0-1	1
	701.5	23035	5	16-QAM	1	0	22.20	0-1	1
	701.5	23035	5	16-QAM	1	12	22.27	0-1	1
	701.5	23035	5	16-QAM	1	24	22.16	0-1	1
	701.5	23035	5	16-QAM	12	0	21.00	0-2	2
	701.5	23035	5	16-QAM	12	6	21.11	0-2	2
	701.5	23035	5	16-QAM	12	13	20.95	0-2	2
	701.5	23035	5	16-QAM	25	0	21.03	0-2	2
	707.5	23095	5	QPSK	1	0	23.18	0	0
Mid	707.5	23095	5	QPSK	1	12	23.07	0	0
	707.5	23095	5	QPSK	1	24	23.11	0	0
	707.5	23095	5	QPSK	12	0	21.98	0-1	1
	707.5	23095	5	QPSK	12	6	21.94	0-1	1
	707.5	23095	5	QPSK	12	13	21.99	0-1	1
	707.5	23095	5	QPSK	25	0	21.96	0-1	1
	707.5	23095	5	16-QAM	1	0	22.02	0-1	1
	707.5	23095	5	16-QAM	1	12	22.10	0-1	1
	707.5	23095	5	16-QAM	1	24	22.08	0-1	1
	707.5	23095	5	16-QAM	12	0	20.87	0-2	2
	707.5	23095	5	16-QAM	12	6	20.82	0-2	2
	707.5	23095	5	16-QAM	12	13	20.93	0-2	2
	707.5	23095	5	16-QAM	25	0	20.91	0-2	2
High	713.5	23155	5	QPSK	1	0	23.16	0	0
	713.5	23155	5	QPSK	1	12	23.11	0	0
	713.5	23155	5	QPSK	1	24	22.91	0	0
	713.5	23155	5	QPSK	12	0	21.93	0-1	1
	713.5	23155	5	QPSK	12	6	21.93	0-1	1
	713.5	23155	5	QPSK	12	13	21.86	0-1	1
	713.5	23155	5	QPSK	25	0	21.84	0-1	1
	713.5	23155	5	16-QAM	1	0	21.92	0-1	1
	713.5	23155	5	16-QAM	1	12	21.78	0-1	1
	713.5	23155	5	16-QAM	1	24	21.94	0-1	1
	713.5	23155	5	16-QAM	12	0	20.82	0-2	2
	713.5	23155	5	16-QAM	12	6	20.69	0-2	2
	713.5	23155	5	16-QAM	12	13	20.70	0-2	2
	713.5	23155	5	16-QAM	25	0	20.78	0-2	2

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9.2.2 LTE Band 5 (Cell)

Table 9-3

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	836.5	20525	10	QPSK	1	0	23.11	0	0
	836.5	20525	10	QPSK	1	25	23.26	0	0
	836.5	20525	10	QPSK	1	49	23.30	0	0
	836.5	20525	10	QPSK	25	0	22.14	0-1	1
	836.5	20525	10	QPSK	25	12	22.01	0-1	1
	836.5	20525	10	QPSK	25	25	22.06	0-1	1
	836.5	20525	10	QPSK	50	0	22.00	0-1	1
	836.5	20525	10	16QAM	1	0	22.48	0-1	1
	836.5	20525	10	16QAM	1	25	22.00	0-1	1
	836.5	20525	10	16QAM	1	49	22.12	0-1	1
	836.5	20525	10	16QAM	25	0	21.08	0-2	2
	836.5	20525	10	16QAM	25	12	21.03	0-2	2
	836.5	20525	10	16QAM	25	25	21.12	0-2	2
	836.5	20525	10	16QAM	50	0	21.15	0-2	2

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

Table 9-4

LTE Band 5 (Cell) Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	826.5	20425	5	QPSK	1	0	23.23	0	0
	826.5	20425	5	QPSK	1	12	23.21	0	0
	826.5	20425	5	QPSK	1	24	23.20	0	0
	826.5	20425	5	QPSK	12	0	22.40	0-1	1
	826.5	20425	5	QPSK	12	6	22.17	0-1	1
	826.5	20425	5	QPSK	12	13	22.13	0-1	1
	826.5	20425	5	QPSK	25	0	22.12	0-1	1
	826.5	20425	5	16-QAM	1	0	22.15	0-1	1
	826.5	20425	5	16-QAM	1	12	22.38	0-1	1
	826.5	20425	5	16-QAM	1	24	22.29	0-1	1
	826.5	20425	5	16-QAM	12	0	21.17	0-2	2
	826.5	20425	5	16-QAM	12	6	21.13	0-2	2
	826.5	20425	5	16-QAM	12	13	21.15	0-2	2
	826.5	20425	5	16-QAM	25	0	21.22	0-2	2
Mid	836.5	20525	5	QPSK	1	0	23.18	0	0
	836.5	20525	5	QPSK	1	12	23.26	0	0
	836.5	20525	5	QPSK	1	24	23.21	0	0
	836.5	20525	5	QPSK	12	0	22.10	0-1	1
	836.5	20525	5	QPSK	12	6	22.09	0-1	1
	836.5	20525	5	QPSK	12	13	22.11	0-1	1
	836.5	20525	5	QPSK	25	0	22.11	0-1	1
	836.5	20525	5	16-QAM	1	0	22.13	0-1	1
	836.5	20525	5	16-QAM	1	12	22.08	0-1	1
	836.5	20525	5	16-QAM	1	24	22.23	0-1	1
	836.5	20525	5	16-QAM	12	0	21.09	0-2	2
	836.5	20525	5	16-QAM	12	6	21.05	0-2	2
	836.5	20525	5	16-QAM	12	13	21.03	0-2	2
	836.5	20525	5	16-QAM	25	0	21.05	0-2	2
High	846.5	20625	5	QPSK	1	0	23.17	0	0
	846.5	20625	5	QPSK	1	12	23.19	0	0
	846.5	20625	5	QPSK	1	24	23.02	0	0
	846.5	20625	5	QPSK	12	0	22.22	0-1	1
	846.5	20625	5	QPSK	12	6	22.17	0-1	1
	846.5	20625	5	QPSK	12	13	22.11	0-1	1
	846.5	20625	5	QPSK	25	0	22.04	0-1	1
	846.5	20625	5	16-QAM	1	0	22.30	0-1	1
	846.5	20625	5	16-QAM	1	12	22.25	0-1	1
	846.5	20625	5	16-QAM	1	24	22.22	0-1	1
	846.5	20625	5	16-QAM	12	0	21.18	0-2	2
	846.5	20625	5	16-QAM	12	6	21.14	0-2	2
	846.5	20625	5	16-QAM	12	13	21.11	0-2	2
	846.5	20625	5	16-QAM	25	0	21.08	0-2	2

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Table 9-5

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	825.5	20415	3	QPSK	1	0	23.22	0	0
	825.5	20415	3	QPSK	1	7	23.24	0	0
	825.5	20415	3	QPSK	1	14	23.22	0	0
	825.5	20415	3	QPSK	8	0	22.12	0-1	1
	825.5	20415	3	QPSK	8	4	22.07	0-1	1
	825.5	20415	3	QPSK	8	7	22.19	0-1	1
	825.5	20415	3	QPSK	15	0	22.11	0-1	1
	825.5	20415	3	16-QAM	1	0	22.20	0-1	1
	825.5	20415	3	16-QAM	1	7	22.31	0-1	1
	825.5	20415	3	16-QAM	1	14	22.10	0-1	1
	825.5	20415	3	16-QAM	8	0	21.10	0-2	2
	825.5	20415	3	16-QAM	8	4	21.12	0-2	2
	825.5	20415	3	16-QAM	8	7	21.06	0-2	2
	825.5	20415	3	16-QAM	15	0	21.16	0-2	2
	836.5	20525	3	QPSK	1	0	23.24	0	0
	836.5	20525	3	QPSK	1	7	23.29	0	0
Mid	836.5	20525	3	QPSK	1	14	23.25	0	0
	836.5	20525	3	QPSK	8	0	22.10	0-1	1
	836.5	20525	3	QPSK	8	4	22.16	0-1	1
	836.5	20525	3	QPSK	8	7	22.16	0-1	1
	836.5	20525	3	QPSK	15	0	22.08	0-1	1
	836.5	20525	3	16-QAM	1	0	22.21	0-1	1
	836.5	20525	3	16-QAM	1	7	22.09	0-1	1
	836.5	20525	3	16-QAM	1	14	22.23	0-1	1
	836.5	20525	3	16-QAM	8	0	21.13	0-2	2
	836.5	20525	3	16-QAM	8	4	21.07	0-2	2
	836.5	20525	3	16-QAM	8	7	21.22	0-2	2
	836.5	20525	3	16-QAM	15	0	21.14	0-2	2
	847.5	20635	3	QPSK	1	0	23.29	0	0
	847.5	20635	3	QPSK	1	7	23.15	0	0
	847.5	20635	3	QPSK	1	14	23.10	0	0
	847.5	20635	3	QPSK	8	0	22.16	0-1	1
High	847.5	20635	3	QPSK	8	4	22.20	0-1	1
	847.5	20635	3	QPSK	8	7	22.05	0-1	1
	847.5	20635	3	QPSK	15	0	22.07	0-1	1
	847.5	20635	3	16-QAM	1	0	22.09	0-1	1
	847.5	20635	3	16-QAM	1	7	22.19	0-1	1
	847.5	20635	3	16-QAM	1	14	22.22	0-1	1
	847.5	20635	3	16-QAM	8	0	21.21	0-2	2
	847.5	20635	3	16-QAM	8	4	21.05	0-2	2
	847.5	20635	3	16-QAM	8	7	21.07	0-2	2
	847.5	20635	3	16-QAM	15	0	21.15	0-2	2

Table 9-6

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	824.7	20407	1.4	QPSK	1	0	23.12	0	0
	824.7	20407	1.4	QPSK	1	2	23.14	0	0
	824.7	20407	1.4	QPSK	1	5	23.15	0	0
	824.7	20407	1.4	QPSK	3	0	23.09	0	0
	824.7	20407	1.4	QPSK	3	2	23.05	0	0
	824.7	20407	1.4	QPSK	3	3	23.04	0	0
	824.7	20407	1.4	QPSK	6	0	22.15	0-1	1
	824.7	20407	1.4	16-QAM	1	0	22.15	0-1	1
	824.7	20407	1.4	16-QAM	1	2	22.28	0-1	1
	824.7	20407	1.4	16-QAM	1	5	22.38	0-1	1
	824.7	20407	1.4	16-QAM	3	0	22.17	0-1	1
	824.7	20407	1.4	16-QAM	3	2	22.15	0-1	1
	824.7	20407	1.4	16-QAM	3	3	22.18	0-1	1
	824.7	20407	1.4	16-QAM	6	0	21.17	0-2	2
	836.5	20525	1.4	QPSK	1	0	23.20	0	0
	836.5	20525	1.4	QPSK	1	2	23.20	0	0
Mid	836.5	20525	1.4	QPSK	1	5	23.30	0	0
	836.5	20525	1.4	QPSK	3	0	23.18	0	0
	836.5	20525	1.4	QPSK	3	2	23.11	0	0
	836.5	20525	1.4	QPSK	3	3	23.15	0	0
	836.5	20525	1.4	QPSK	6	0	22.14	0-1	1
	836.5	20525	1.4	16-QAM	1	0	22.09	0-1	1
	836.5	20525	1.4	16-QAM	1	2	22.24	0-1	1
	836.5	20525	1.4	16-QAM	1	5	22.35	0-1	1
	836.5	20525	1.4	16-QAM	3	0	22.21	0-1	1
	836.5	20525	1.4	16-QAM	3	2	22.18	0-1	1
	836.5	20525	1.4	16-QAM	3	3	22.22	0-1	1
	836.5	20525	1.4	16-QAM	6	0	21.16	0-2	2
	848.3	20643	1.4	QPSK	1	0	23.14	0	0
	848.3	20643	1.4	QPSK	1	2	23.17	0	0
	848.3	20643	1.4	QPSK	1	5	23.04	0	0
High	848.3	20643	1.4	QPSK	3	0	23.07	0	0
	848.3	20643	1.4	QPSK	3	2	23.07	0	0
	848.3	20643	1.4	QPSK	3	3	23.05	0	0
	848.3	20643	1.4	QPSK	6	0	22.11	0-1	1
	848.3	20643	1.4	16-QAM	1	0	22.24	0-1	1
	848.3	20643	1.4	16-QAM	1	2	22.20	0-1	1
	848.3	20643	1.4	16-QAM	1	5	22.23	0-1	1
	848.3	20643	1.4	16-QAM	3	0	21.92	0-1	1
	848.3	20643	1.4	16-QAM	3	2	22.02	0-1	1
	848.3	20643	1.4	16-QAM	3	3	22.13	0-1	1
	848.3	20643	1.4	16-QAM	6	0	21.03	0-2	2

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9.2.3 LTE Band 4 (AWS)

Table 9-7

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

Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1715	20000	10	QPSK	1	0	23.50	0
	1715	20000	10	QPSK	1	25	23.47	0
	1715	20000	10	QPSK	1	49	23.43	0
	1715	20000	10	QPSK	25	0	22.36	0-1
	1715	20000	10	QPSK	25	12	22.43	0-1
	1715	20000	10	QPSK	25	25	22.31	0-1
	1715	20000	10	QPSK	50	0	22.40	0-1
	1715	20000	10	16QAM	1	0	22.46	0-1
	1715	20000	10	16QAM	1	25	22.44	0-1
	1715	20000	10	16QAM	1	49	22.34	0-1
	1715	20000	10	16QAM	25	0	21.22	0-2
	1715	20000	10	16QAM	25	12	21.32	0-2
	1715	20000	10	16QAM	25	25	21.27	0-2
	1715	20000	10	16QAM	50	0	21.28	0-2
	1732.5	20175	10	QPSK	1	0	23.40	0
	1732.5	20175	10	QPSK	1	25	23.34	0
	1732.5	20175	10	QPSK	1	49	23.42	0
Mid	1732.5	20175	10	QPSK	25	0	22.34	0-1
	1732.5	20175	10	QPSK	25	12	22.22	0-1
	1732.5	20175	10	QPSK	25	25	22.21	0-1
	1732.5	20175	10	QPSK	50	0	22.24	0-1
	1732.5	20175	10	16QAM	1	0	22.33	0-1
	1732.5	20175	10	16QAM	1	25	22.16	0-1
	1732.5	20175	10	16QAM	1	49	22.41	0-1
	1732.5	20175	10	16QAM	25	0	21.20	0-2
	1732.5	20175	10	16QAM	25	12	21.22	0-2
	1732.5	20175	10	16QAM	25	25	21.18	0-2
	1732.5	20175	10	16QAM	50	0	21.26	0-2
High	1750	20350	10	QPSK	1	0	23.49	0
	1750	20350	10	QPSK	1	25	23.33	0
	1750	20350	10	QPSK	1	49	23.31	0
	1750	20350	10	QPSK	25	0	22.30	0-1
	1750	20350	10	QPSK	25	12	22.24	0-1
	1750	20350	10	QPSK	25	25	22.17	0-1
	1750	20350	10	QPSK	50	0	22.33	0-1
	1750	20350	10	16QAM	1	0	22.46	0-1
	1750	20350	10	16QAM	1	25	22.22	0-1
	1750	20350	10	16QAM	1	49	22.36	0-1
	1750	20350	10	16QAM	25	0	21.27	0-2
	1750	20350	10	16QAM	25	12	21.18	0-2
	1750	20350	10	16QAM	25	25	21.14	0-2
	1750	20350	10	16QAM	50	0	21.17	0-2

Table 9-8

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

Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1712.5	19975	5	QPSK	1	0	23.43	0
	1712.5	19975	5	QPSK	1	12	23.47	0
	1712.5	19975	5	QPSK	1	24	23.49	0
	1712.5	19975	5	QPSK	12	0	22.37	0-1
	1712.5	19975	5	QPSK	12	6	22.26	0-1
	1712.5	19975	5	QPSK	12	13	22.32	0-1
	1712.5	19975	5	QPSK	25	0	22.39	0-1
	1712.5	19975	5	16-QAM	1	0	22.41	0-1
	1712.5	19975	5	16-QAM	1	12	22.20	0-1
	1712.5	19975	5	16-QAM	1	24	22.36	0-1
	1712.5	19975	5	16-QAM	12	0	21.24	0-2
	1712.5	19975	5	16-QAM	12	6	21.11	0-2
	1712.5	19975	5	16-QAM	12	13	21.15	0-2
	1712.5	19975	5	16-QAM	25	0	21.31	0-2
Mid	1732.5	20175	5	QPSK	1	0	23.40	0
	1732.5	20175	5	QPSK	1	12	23.34	0
	1732.5	20175	5	QPSK	1	24	23.33	0
	1732.5	20175	5	QPSK	12	0	22.18	0-1
	1732.5	20175	5	QPSK	12	6	22.16	0-1
	1732.5	20175	5	QPSK	12	13	22.24	0-1
	1732.5	20175	5	QPSK	25	0	22.17	0-1
	1732.5	20175	5	16-QAM	1	0	22.37	0-1
	1732.5	20175	5	16-QAM	1	12	22.08	0-1
	1732.5	20175	5	16-QAM	1	24	22.29	0-1
	1732.5	20175	5	16-QAM	12	0	21.18	0-2
	1732.5	20175	5	16-QAM	12	6	21.08	0-2
	1732.5	20175	5	16-QAM	12	13	21.06	0-2
	1732.5	20175	5	16-QAM	25	0	21.01	0-2
High	1752.5	20375	5	QPSK	1	0	23.49	0
	1752.5	20375	5	QPSK	1	12	23.34	0
	1752.5	20375	5	QPSK	1	24	23.39	0
	1752.5	20375	5	QPSK	12	0	22.28	0-1
	1752.5	20375	5	QPSK	12	6	22.16	0-1
	1752.5	20375	5	QPSK	12	13	22.25	0-1
	1752.5	20375	5	QPSK	25	0	22.18	0-1
	1752.5	20375	5	16-QAM	1	0	22.50	0-1
	1752.5	20375	5	16-QAM	1	12	22.10	0-1
	1752.5	20375	5	16-QAM	1	24	22.05	0-1
	1752.5	20375	5	16-QAM	12	0	21.19	0-2
	1752.5	20375	5	16-QAM	12	6	21.11	0-2
	1752.5	20375	5	16-QAM	12	13	21.10	0-2
	1752.5	20375	5	16-QAM	25	0	21.12	0-2

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9.2.4

LTE Band 2 (PCS)

Table 9-9

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

Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1855	18650	10	QPSK	1	0	22.71	0
	1855	18650	10	QPSK	1	25	23.21	0
	1855	18650	10	QPSK	1	49	23.06	0
	1855	18650	10	QPSK	25	0	22.02	0-1
	1855	18650	10	QPSK	25	12	22.09	0-1
	1855	18650	10	QPSK	25	25	22.09	0-1
	1855	18650	10	QPSK	50	0	22.05	0-1
	1855	18650	10	16QAM	1	0	22.08	0-1
	1855	18650	10	16QAM	1	25	21.92	0-1
	1855	18650	10	16QAM	1	49	22.00	0-1
	1855	18650	10	16QAM	25	0	21.03	0-2
	1855	18650	10	16QAM	25	12	21.04	0-2
	1855	18650	10	16QAM	25	25	21.12	0-2
	1855	18650	10	16QAM	50	0	21.07	0-2
	1880.0	18900	10	QPSK	1	0	23.12	0
	1880.0	18900	10	QPSK	1	25	23.15	0
	1880.0	18900	10	QPSK	1	49	23.22	0
	1880.0	18900	10	QPSK	25	0	22.08	0-1
Mid	1880.0	18900	10	QPSK	25	12	22.09	0-1
	1880.0	18900	10	QPSK	25	25	22.14	0-1
	1880.0	18900	10	QPSK	50	0	22.14	0-1
	1880.0	18900	10	16QAM	1	0	22.00	0-1
	1880.0	18900	10	16QAM	1	25	21.98	0-1
	1880.0	18900	10	16QAM	1	49	22.12	0-1
	1880.0	18900	10	16QAM	25	0	21.12	0-2
	1880.0	18900	10	16QAM	25	12	21.14	0-2
	1880.0	18900	10	16QAM	25	25	21.11	0-2
	1880.0	18900	10	16QAM	50	0	21.11	0-2
	1905	19150	10	QPSK	1	0	23.36	0
	1905	19150	10	QPSK	1	25	23.16	0
	1905	19150	10	QPSK	1	49	23.13	0
	1905	19150	10	QPSK	25	0	22.16	0-1
	1905	19150	10	QPSK	25	12	22.07	0-1
	1905	19150	10	QPSK	25	25	22.10	0-1
	1905	19150	10	QPSK	50	0	22.12	0-1
	1905	19150	10	16QAM	1	0	22.06	0-1
	1905	19150	10	16QAM	1	25	22.20	0-1
	1905	19150	10	16QAM	1	49	22.33	0-1
	1905	19150	10	16QAM	25	0	21.23	0-2
	1905	19150	10	16QAM	25	12	21.11	0-2
	1905	19150	10	16QAM	25	25	21.03	0-2
	1905	19150	10	16QAM	50	0	21.18	0-2
High	1905	19150	10	16QAM	50	0	21.18	0-2

Table 9-10

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

Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1852.5	18625	5	QPSK	1	0	22.62	0
	1852.5	18625	5	QPSK	1	12	22.79	0
	1852.5	18625	5	QPSK	1	24	23.14	0
	1852.5	18625	5	QPSK	12	0	21.69	0-1
	1852.5	18625	5	QPSK	12	6	21.85	0-1
	1852.5	18625	5	QPSK	12	13	22.16	0-1
	1852.5	18625	5	QPSK	25	0	21.90	0-1
	1852.5	18625	5	16-QAM	1	0	21.88	0-1
	1852.5	18625	5	16-QAM	1	12	22.06	0-1
	1852.5	18625	5	16-QAM	1	24	21.93	0-1
	1852.5	18625	5	16-QAM	12	0	20.76	0-2
	1852.5	18625	5	16-QAM	12	6	20.84	0-2
	1852.5	18625	5	16-QAM	12	13	21.05	0-2
	1852.5	18625	5	16-QAM	25	0	20.88	0-2
	1880.0	18900	5	QPSK	1	0	23.21	0
	1880.0	18900	5	QPSK	1	12	23.24	0
	1880.0	18900	5	QPSK	1	24	23.26	0
	1880.0	18900	5	QPSK	12	0	22.14	0-1
Mid	1880.0	18900	5	QPSK	12	6	22.13	0-1
	1880.0	18900	5	QPSK	12	13	22.10	0-1
	1880.0	18900	5	QPSK	25	0	22.06	0-1
	1880.0	18900	5	16-QAM	1	0	22.12	0-1
	1880.0	18900	5	16-QAM	1	12	22.11	0-1
	1880.0	18900	5	16-QAM	1	24	22.16	0-1
	1880.0	18900	5	16-QAM	12	0	21.06	0-2
	1880.0	18900	5	16-QAM	12	6	21.10	0-2
	1880.0	18900	5	16-QAM	12	13	21.01	0-2
	1880.0	18900	5	16-QAM	25	0	21.19	0-2
	1907.5	19175	5	QPSK	1	0	23.25	0
	1907.5	19175	5	QPSK	1	12	23.12	0
	1907.5	19175	5	QPSK	1	24	23.09	0
	1907.5	19175	5	QPSK	12	0	22.12	0-1
	1907.5	19175	5	QPSK	12	6	22.08	0-1
	1907.5	19175	5	QPSK	12	13	22.05	0-1
	1907.5	19175	5	QPSK	25	0	22.07	0-1
	1907.5	19175	5	16-QAM	1	0	22.24	0-1
	1907.5	19175	5	16-QAM	1	12	22.00	0-1
	1907.5	19175	5	16-QAM	1	24	22.12	0-1
	1907.5	19175	5	16-QAM	12	0	21.11	0-2
	1907.5	19175	5	16-QAM	12	6	21.08	0-2
	1907.5	19175	5	16-QAM	12	13	21.07	0-2
	1907.5	19175	5	16-QAM	25	0	21.09	0-2

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9.3 WLAN Conducted Powers

9.3.1 Maximum WLAN Conducted Powers

Per KDB 662911 D01v02r01, the individual spectra for each 2x2 MIMO WIFI Antenna were summed mathematically in linear power units for the MIMO output power measurements.

Table 9-11
IEEE 802.11b Average RF Power

Antenna	Freq [MHz]	Channel	802.11b Conducted Power [dBm]			
			Data Rate [Mbps]			
			1	2	5.5	11
Antenna 1	2412	1*	16.57	16.54	16.74	16.62
	2437	6*	17.05	17.02	17.22	17.10
	2462	11*	16.81	16.78	16.98	16.86
Antenna 2	2412	1*	17.07	17.24	17.29	17.17
	2437	6*	16.54	16.71	16.76	16.64
	2462	11*	16.49	16.66	16.71	16.59

Table 9-12
IEEE 802.11g Average RF Power

Antenna	Freq [MHz]	Channel	802.11g Conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
Antenna 1	2412	1	14.09	13.97	14.10	13.92	14.22	14.25	14.21	14.24
	2437	6	13.90	13.78	13.91	13.73	14.03	14.06	14.02	14.05
	2462	11	13.54	13.42	13.55	13.37	13.67	13.70	13.66	13.69
Antenna 2	2412	1	13.82	13.62	13.57	13.61	13.94	14.04	14.12	14.11
	2437	6	13.64	13.44	13.39	13.43	13.76	13.86	13.94	13.93
	2462	11	13.37	13.17	13.12	13.16	13.49	13.59	13.67	13.66

Table 9-13
IEEE 802.11n Average RF Power

Antenna	Freq [MHz]	Channel	802.11n (2.4GHz) Conducted Power [dBm]							
			Data Rate [Mbps]							
			6.5	13	19.5	26	39	52	58.5	65
Antenna 1	2412	1	13.14	13.34	13.17	13.39	13.34	13.42	13.45	13.24
	2437	6	12.95	13.15	12.98	13.20	13.15	13.23	13.26	13.05
	2462	11	12.81	13.01	12.84	13.06	13.01	13.09	13.12	12.91
Antenna 2	2412	1	12.93	12.97	12.82	12.94	13.07	13.12	13.09	13.14
	2437	6	12.85	12.89	12.74	12.86	12.99	13.04	13.01	13.06
	2462	11	12.64	12.68	12.53	12.65	12.78	12.83	12.80	12.85

Table 9-14
MIMO IEEE 802.11n Average RF Power

Antenna	Freq [MHz]	Channel	802.11n (2.4GHz) Conducted Power [dBm]	
			Data Rate [Mbps]	
			13	
MIMO	2412	1	13.87	
	2437	6	13.64	
	2462	11	13.48	

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Table 9-15
IEEE 802.11a Average RF Power

Antenna	Mode	Freq [MHz]	Channel	802.11a Conducted Power [dBm]							
				Data Rate [Mbps]							
				6	9	12	18	24	36	48	54
Antenna 1	802.11a	5180	36*	13.02	12.76	12.89	12.84	13.11	13.18	13.24	13.17
	802.11a	5200	40	13.08	12.82	12.95	12.90	13.17	13.24	13.30	13.23
	802.11a	5220	44	13.12	12.86	12.99	12.94	13.21	13.28	13.34	13.27
	802.11a	5240	48*	12.93	12.67	12.80	12.75	13.02	13.09	13.15	13.08
	802.11a	5260	52*	12.85	12.78	13.04	12.99	12.67	12.54	12.68	12.65
	802.11a	5280	56	12.97	12.90	13.16	13.11	12.79	12.66	12.80	12.77
	802.11a	5300	60	12.57	12.50	12.76	12.71	12.39	12.26	12.40	12.37
	802.11a	5320	64*	12.54	12.47	12.73	12.68	12.36	12.23	12.37	12.34
	802.11a	5500	100	13.33	12.62	13.26	13.19	13.11	13.37	13.32	13.26
	802.11a	5520	104*	13.36	12.65	13.29	13.22	13.14	13.40	13.35	13.29
	802.11a	5540	108	13.41	12.70	13.34	13.27	13.19	13.45	13.40	13.34
	802.11a	5560	112	13.27	12.56	13.20	13.13	13.05	13.31	13.26	13.20
	802.11a	5580	116*	13.40	12.69	13.33	13.26	13.18	13.44	13.39	13.33
	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	13.19	12.48	13.12	13.05	12.97	13.23	13.18	13.12
	802.11a	5680	136*	13.01	12.30	12.94	12.87	12.79	13.05	13.00	12.94
	802.11a	5700	140	13.06	12.35	12.99	12.92	12.84	13.10	13.05	12.99
	802.11a	5745	149*	13.31	13.12	13.33	13.25	12.81	12.63	12.79	12.56
	802.11a	5765	153	13.21	13.02	13.23	13.15	12.71	12.53	12.69	12.46
Antenna 2	802.11a	5785	157*	13.15	12.96	13.17	13.09	12.65	12.47	12.63	12.40
	802.11a	5805	161	13.20	13.01	13.22	13.14	12.70	12.52	12.68	12.45
	802.11a	5825	165*	12.98	12.79	13.00	12.92	12.48	12.30	12.46	12.23
	802.11a	5180	36*	13.94	13.87	13.97	13.37	13.72	13.92	13.34	13.48
	802.11a	5200	40	13.84	13.77	13.87	13.27	13.62	13.82	13.24	13.38
	802.11a	5220	44	13.86	13.79	13.89	13.29	13.64	13.84	13.26	13.40
	802.11a	5240	48*	13.74	13.67	13.77	13.17	13.52	13.72	13.14	13.28
	802.11a	5260	52*	13.21	12.91	12.98	12.92	13.42	13.35	13.10	13.44
	802.11a	5280	56	13.02	12.72	12.79	12.73	13.23	13.16	12.91	13.25
	802.11a	5300	60	13.11	12.81	12.88	12.82	13.32	13.25	13.00	13.34
	802.11a	5320	64*	12.99	12.69	12.76	12.70	13.20	13.13	12.88	13.22
	802.11a	5500	100	13.26	12.98	13.22	13.16	13.44	13.40	13.04	12.94
	802.11a	5520	104*	13.17	12.89	13.13	13.07	13.35	13.31	12.95	12.85
	802.11a	5540	108	13.04	12.76	13.00	12.94	13.22	13.18	12.82	12.72
	802.11a	5560	112	13.21	12.93	13.17	13.11	13.39	13.35	12.99	12.89
	802.11a	5580	116*	12.91	12.63	12.87	12.81	13.09	13.05	12.69	12.59
	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	13.01	12.73	12.97	12.91	13.19	13.15	12.79	12.69
	802.11a	5680	136*	12.81	12.53	12.77	12.71	12.99	12.95	12.59	12.49
	802.11a	5700	140	12.61	12.33	12.57	12.51	12.79	12.75	12.39	12.29
	802.11a	5745	149*	13.37	13.09	12.91	12.95	13.35	13.17	13.24	13.37
	802.11a	5765	153	13.44	13.16	12.98	13.02	13.42	13.24	13.31	13.44
	802.11a	5785	157*	13.31	13.03	12.85	12.89	13.29	13.11	13.18	13.31
	802.11a	5805	161	13.11	12.83	12.65	12.69	13.09	12.91	12.98	13.11
	802.11a	5825	165*	13.25	12.97	12.79	12.83	13.23	13.05	13.12	13.25

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 9-16
IEEE 802.11n Average RF Power – 20 MHz Bandwidth

Antenna	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
Antenna 1	5180	36	12.89	13.27	12.81	12.92	13.24	13.35	13.21	13.28
	5200	40	12.83	13.31	12.75	12.86	13.18	13.32	13.15	13.22
	5220	44	12.92	13.30	12.84	12.95	13.27	13.34	13.24	13.31
	5240	48	12.72	13.20	12.64	12.75	13.07	13.27	13.04	13.11
	5260	52	13.09	12.57	12.75	13.21	13.14	12.92	13.02	13.14
	5280	56	13.02	12.50	12.68	13.20	13.07	12.85	12.95	13.07
	5300	60	12.91	12.39	12.57	13.19	12.96	12.74	12.84	12.96
	5320	64	13.21	12.69	12.87	13.17	13.21	13.04	13.14	13.21
	5500	100	13.14	13.28	13.21	13.39	13.33	12.97	13.02	13.07
	5520	104	13.08	13.22	13.15	13.33	13.27	12.91	12.96	13.01
	5540	108	13.25	13.39	13.32	13.48	13.44	13.08	13.13	13.18
	5560	112	13.29	13.43	13.36	13.44	13.48	13.12	13.17	13.22
	5580	116	13.21	13.35	13.28	13.46	13.40	13.04	13.09	13.14
	5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5660	132	12.82	12.96	12.89	13.07	13.01	12.65	12.70	12.75
	5680	136	13.04	13.18	13.11	13.29	13.23	12.87	12.92	12.97
	5700	140	12.81	12.95	12.88	13.06	13.00	12.64	12.69	12.74
	5745	149	12.74	12.95	13.14	13.21	13.15	13.01	12.94	13.08
	5765	153	12.56	12.77	12.96	13.03	12.97	12.83	12.76	12.90
Antenna 2	5785	157	12.72	12.93	13.12	13.19	13.13	12.99	12.92	13.06
	5805	161	12.52	12.73	12.92	12.99	12.93	12.79	12.72	12.86
	5825	165	12.74	12.95	13.14	13.21	13.15	13.01	12.94	13.08
	5180	36	12.78	12.95	13.02	13.11	13.04	13.07	12.99	13.12
	5200	40	12.96	13.13	13.20	13.29	13.22	13.25	13.17	13.30
	5220	44	12.72	12.89	12.96	13.05	12.98	13.01	12.93	13.06
	5240	48	12.84	13.01	13.08	13.17	13.10	13.13	13.05	13.18
	5260	52	13.15	13.02	13.25	13.37	13.34	13.17	13.27	13.25
	5280	56	13.04	12.91	13.14	13.26	13.23	13.06	13.16	13.14
	5300	60	13.12	12.99	13.22	13.34	13.31	13.14	13.24	13.22
	5320	64	12.89	12.76	12.99	13.11	13.08	12.91	13.01	12.99
	5500	100	13.01	13.18	13.27	13.24	13.28	13.32	13.29	13.32
	5520	104	13.18	13.35	13.44	13.41	13.45	13.44	13.46	13.42
	5540	108	13.01	13.18	13.27	13.24	13.28	13.32	13.29	13.32
	5560	112	13.09	13.26	13.35	13.32	13.36	13.40	13.37	13.40
	5580	116	13.04	13.21	13.30	13.27	13.31	13.35	13.32	13.35
	5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5660	132	12.82	12.99	13.08	13.05	13.09	13.13	13.10	13.13
	5680	136	12.68	12.85	12.94	12.91	12.95	12.99	12.96	12.99
	5700	140	12.60	12.77	12.86	12.83	12.87	12.91	12.88	12.91
	5745	149	13.08	13.12	13.27	13.29	13.25	13.21	13.30	13.24
	5765	153	13.11	13.15	13.30	13.32	13.28	13.24	13.33	13.27
	5785	157	13.21	13.25	13.40	13.42	13.38	13.34	13.43	13.37
	5805	161	13.25	13.29	13.44	13.46	13.42	13.38	13.47	13.41
	5825	165	13.16	13.20	13.35	13.37	13.33	13.29	13.38	13.32

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Table 9-17
MIMO IEEE 802.11n Average RF Power – 20 MHz Bandwidth

Antenna	Freq [MHz]	Channel	20MHz BW 802.11n (5GHz) Conducted Power [dBm]
			Data Rate [Mbps]
			13
MIMO	5180	36	12.63
	5200	40	12.60
	5220	44	12.62
	5240	48	12.55
	5260	52	12.75
	5280	56	12.76
	5300	60	12.77
	5320	64	12.63
	5500	100	12.30
	5520	104	12.28
	5540	108	12.25
	5560	112	12.24
	5580	116	12.18
	5600	120	N/A
	5620	124	N/A
	5640	128	N/A
	5660	132	12.08
	5680	136	12.12
	5700	140	12.06
	5745	149	13.44
	5765	153	13.47
	5785	157	13.44
	5805	161	13.43
	5825	165	13.41

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Table 9-18
IEEE 802.11n Average RF Power – 40 MHz Bandwidth

Antenna	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
Antenna 1	5190	38	11.42	12.05	12.24	12.28	11.93	12.12	12.38	12.24
	5230	46	11.26	11.89	12.08	12.12	11.77	11.96	12.22	12.08
	5270	54	11.29	11.85	12.09	12.35	12.14	12.36	12.04	12.12
	5310	62	11.36	11.92	12.16	12.42	12.21	12.43	12.11	12.19
	5510	102	11.45	11.48	11.65	11.84	11.67	11.95	11.72	11.62
	5550	110	11.69	11.72	11.89	12.08	11.91	12.19	11.96	11.86
	5590	118	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5630	126	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5670	134	11.51	11.54	11.71	11.90	11.73	12.01	11.78	11.68
	5755	151	11.43	11.23	11.42	11.48	11.52	11.46	11.32	11.47
Antenna 2	5795	159	11.29	11.09	11.28	11.34	11.38	11.32	11.18	11.33
	5190	38	12.25	12.38	12.41	12.25	12.34	12.43	12.32	12.29
	5230	46	12.17	12.30	12.33	12.17	12.26	12.35	12.24	12.21
	5270	54	11.54	11.52	11.61	11.79	11.35	11.62	11.55	11.67
	5310	62	11.41	11.39	11.48	11.66	11.22	11.49	11.42	11.54
	5510	102	11.67	11.85	11.58	11.79	11.82	11.98	11.67	11.54
	5550	110	11.61	11.79	11.52	11.73	11.76	11.92	11.61	11.48
	5590	118	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5630	126	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5670	134	11.32	11.50	11.23	11.44	11.47	11.63	11.32	11.19
	5755	151	11.74	11.84	11.81	12.02	12.05	11.98	11.90	11.84
	5795	159	11.77	11.87	11.84	12.05	12.08	12.01	11.93	11.87

Table 9-19
MIMO IEEE 802.11n Average RF Power – 40 MHz Bandwidth

Antenna	Mode	Freq [MHz]	Channel	40MHz BW 802.11n (5GHz) Conducted Power [dBm]
				Data Rate [Mbps]
				27
MIMO	802.11n	5190	38	11.63
	802.11n	5230	46	11.79
	802.11n	5270	54	11.58
	802.11n	5310	62	11.73
	802.11n	5510	102	12.33
	802.11n	5550	110	12.41
	802.11n	5590	118	N/A
	802.11n	5630	126	N/A
	802.11n	5670	134	12.14
	802.11n	5755	151	12.44
	802.11n	5795	159	12.28

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Table 9-20
IEEE 802.11ac Average RF Power – 80 MHz Bandwidth

Antenna	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
Antenna 1	5210	42	10.71	10.76	10.69	10.77	10.94	10.92	10.87	10.91	10.88	10.79
	5290	58	10.77	10.81	10.72	10.60	10.98	10.87	10.91	10.82	10.87	10.97
	5530	106	11.15	11.18	11.11	11.38	11.17	11.32	11.34	11.21	11.25	11.37
	5775	155	11.25	11.14	10.94	11.09	11.32	10.92	11.10	11.17	10.89	10.52
Antenna 2	5210	42	10.78	10.61	10.64	10.59	10.86	10.79	10.81	10.95	11.01	10.98
	5290	58	10.94	10.75	10.74	10.93	11.05	11.01	11.12	11.07	10.95	11.18
	5530	106	10.98	10.84	10.97	10.75	11.14	11.04	11.16	11.07	11.12	11.14
	5775	155	11.26	11.23	11.14	11.24	11.37	11.24	11.42	11.38	11.27	11.35

Table 9-21
MIMO IEEE 802.11ac Average RF Power – 80 MHz Bandwidth

Antenna	Freq [MHz]	Channel	80MHz BW 802.11ac (5GHz) Conducted Power [dBm]
			Data Rate [Mbps]
			58.5
MIMO	5210	42	11.23
	5290	58	11.27
	5530	106	10.89
	5775	155	10.76

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9.3.2 Reduced WLAN Conducted Powers

Per KDB 662911 D01v02r01, the individual spectra for each 2x2 MIMO WIFI Antenna were summed mathematically in linear power units for the MIMO output power measurements.

Table 9-22
IEEE 802.11b Average RF Power

Antenna	Freq [MHz]	Channel	802.11b Conducted Power [dBm]			
			Data Rate [Mbps]			
			1	2	5.5	11
Antenna 1	2412	1*	11.94	12.03	12.09	12.08
	2437	6*	11.23	11.39	11.31	11.33
	2462	11*	11.27	11.36	11.39	11.48
Antenna 2	2412	1*	11.74	11.67	11.75	11.70
	2437	6*	11.50	11.43	11.35	11.44
	2462	11*	11.39	11.35	11.32	11.27

Table 9-23
IEEE 802.11g Average RF Power

Antenna	Freq [MHz]	Channel	802.11g Conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
Antenna 1	2412	1	11.42	11.55	11.52	11.41	11.46	11.44	11.40	11.38
	2437	6	11.87	11.92	11.93	11.87	11.98	11.93	11.92	11.94
	2462	11	11.89	11.71	11.75	11.79	11.82	11.82	11.81	11.81
Antenna 2	2412	1	11.66	11.78	11.61	11.76	11.75	11.73	11.59	11.78
	2437	6	11.63	11.62	11.80	11.77	11.69	11.76	11.75	11.76
	2462	11	11.38	11.51	11.49	11.43	11.44	11.50	11.47	11.45

Table 9-24
IEEE 802.11n Average RF Power

Antenna	Freq [MHz]	Channel	802.11n (2.4GHz) Conducted Power [dBm]							
			Data Rate [Mbps]							
			6.5	13	19.5	26	39	52	58.5	65
Antenna 1	2412	1	11.25	11.25	11.30	11.18	11.24	11.24	11.32	11.31
	2437	6	11.90	11.89	11.90	11.85	11.90	11.79	11.92	11.79
	2462	11	11.66	11.78	11.78	11.64	11.81	11.70	11.75	11.70
Antenna 2	2412	1	11.83	11.97	11.93	11.92	11.81	11.97	11.91	11.81
	2437	6	11.73	11.70	11.69	11.79	11.82	11.78	11.83	11.69
	2462	11	11.69	11.79	11.75	11.77	11.85	11.75	11.70	11.71

Table 9-25
MIMO IEEE 802.11n Average RF Power

Antenna	Freq [MHz]	Channel	802.11n (2.4GHz) Conducted Power [dBm]
			Data Rate [Mbps]
			13
MIMO	2412	1	11.85
	2437	6	11.70
	2462	11	11.34

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Table 9-26
IEEE 802.11a Average RF Power

Antenna	Mode	Freq [MHz]	Channel	802.11a Conducted Power [dBm]							
				Data Rate [Mbps]							
				6	9	12	18	24	36	48	54
Antenna 1	802.11a	5180	36*	6.74	6.47	6.64	6.39	6.48	6.32	6.29	6.47
	802.11a	5200	40	6.66	6.37	6.71	6.56	6.51	6.35	6.43	6.40
	802.11a	5220	44	6.74	6.50	6.78	6.59	6.69	6.43	6.58	6.48
	802.11a	5240	48*	6.32	6.63	6.47	6.22	6.27	6.62	6.39	6.31
	802.11a	5260	52*	6.69	6.55	6.39	6.69	6.59	6.61	6.47	6.64
	802.11a	5280	56	6.58	6.87	6.69	6.87	6.67	6.53	6.77	6.91
	802.11a	5300	60	6.53	6.57	6.79	6.68	6.55	6.91	6.65	6.89
	802.11a	5320	64*	6.63	6.84	6.47	6.63	6.69	6.89	6.86	6.46
	802.11a	5500	100	6.82	6.48	6.44	6.82	6.67	6.67	6.77	6.65
	802.11a	5520	104*	6.74	6.68	6.82	6.88	6.88	6.87	6.69	6.55
	802.11a	5540	108	6.45	6.67	6.40	6.87	6.54	6.65	6.48	6.46
	802.11a	5560	112	6.66	6.59	6.91	6.62	6.89	6.79	6.52	6.46
	802.11a	5580	116*	6.83	6.62	6.45	6.39	6.75	6.63	6.82	6.37
	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	6.39	6.55	6.64	6.73	6.44	6.46	6.82	6.80
	802.11a	5680	136*	6.56	6.44	6.56	6.79	6.38	6.52	6.71	6.59
	802.11a	5700	140	6.33	6.46	6.49	6.36	6.42	6.66	6.31	6.58
	802.11a	5745	149*	6.84	6.88	6.55	6.64	6.92	6.63	6.81	6.78
	802.11a	5765	153	6.53	6.69	6.67	6.41	6.58	6.49	6.69	6.76
Antenna 2	802.11a	5785	157*	6.87	6.79	6.66	6.86	6.70	6.67	6.90	6.75
	802.11a	5805	161	6.56	6.64	6.55	6.66	6.37	6.40	6.76	6.55
	802.11a	5825	165*	6.67	6.70	6.27	6.53	6.56	6.47	6.55	6.25
	802.11a	5180	36*	6.65	6.70	6.75	6.82	6.77	6.70	6.83	6.76
	802.11a	5200	40	6.72	6.84	6.75	6.74	6.79	6.75	6.88	6.79
	802.11a	5220	44	6.86	6.89	6.79	6.86	6.87	6.79	6.93	6.81
	802.11a	5240	48*	6.70	6.63	6.64	6.63	6.74	6.72	6.77	6.81
	802.11a	5260	52*	6.95	7.02	6.99	6.93	6.94	6.88	6.98	6.86
	802.11a	5280	56	6.83	6.91	6.78	6.85	6.92	6.80	6.83	6.81
	802.11a	5300	60	6.83	6.90	6.98	6.95	6.93	6.97	6.87	6.93
	802.11a	5320	64*	6.90	6.90	6.85	6.70	6.83	6.83	6.81	6.90
	802.11a	5500	100	5.71	5.77	5.69	5.76	5.77	5.81	5.75	5.67
	802.11a	5520	104*	5.79	5.75	5.88	5.76	5.82	5.87	5.92	5.73
	802.11a	5540	108	5.81	5.70	5.76	5.86	5.88	5.79	5.69	5.84
	802.11a	5560	112	5.83	5.85	5.92	5.95	6.00	5.99	5.95	5.85
	802.11a	5580	116*	5.86	5.80	5.94	5.96	5.93	5.95	5.90	5.82
	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	5.74	5.86	5.84	5.87	5.87	5.87	5.89	5.77
	802.11a	5680	136*	6.01	5.97	5.85	5.90	6.01	6.00	5.95	6.03
	802.11a	5700	140	5.91	5.93	5.89	5.94	6.01	5.95	5.92	5.94
	802.11a	5745	149*	6.29	6.43	6.31	6.31	6.42	6.25	6.44	6.31
	802.11a	5765	153	6.58	6.66	6.50	6.66	6.57	6.57	6.57	6.62
	802.11a	5785	157*	6.47	6.57	6.47	6.54	6.54	6.42	6.58	6.40
	802.11a	5805	161	6.37	6.40	6.52	6.43	6.42	6.53	6.53	6.50
	802.11a	5825	165*	6.33	6.41	6.44	6.37	6.46	6.47	6.36	6.33

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 9-27
IEEE 802.11n Average RF Power – 20 MHz Bandwidth

Antenna	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
Antenna 1	5180	36	6.73	6.95	6.84	6.72	6.70	6.96	6.61	6.49
	5200	40	6.92	6.46	6.87	6.92	6.65	6.80	6.83	6.66
	5220	44	6.70	6.35	6.72	6.46	6.53	6.76	6.77	6.69
	5240	48	6.36	6.36	6.65	6.54	6.33	6.50	6.37	6.55
	5260	52	6.69	6.57	6.22	6.55	6.60	6.65	6.22	6.53
	5280	56	6.56	6.41	6.33	6.60	6.35	6.48	6.61	6.50
	5300	60	6.43	6.38	6.58	6.73	6.41	6.40	6.40	6.35
	5320	64	6.39	6.66	6.74	6.44	6.65	6.60	6.79	6.68
	5500	100	6.73	6.83	6.69	6.99	6.70	6.73	6.94	6.92
	5520	104	6.92	6.66	6.49	6.63	6.60	6.68	6.60	6.96
	5540	108	6.74	6.42	6.63	6.51	6.63	6.68	6.45	6.77
	5560	112	6.58	6.58	7.00	6.92	6.75	6.67	6.82	6.88
	5580	116	6.94	6.75	6.87	6.84	6.79	6.88	6.75	6.91
	5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5660	132	7.07	6.97	7.05	6.87	6.86	6.63	7.07	6.80
	5680	136	6.92	6.90	6.48	6.88	6.45	6.96	6.74	6.47
	5700	140	6.87	6.84	6.62	6.70	6.68	6.56	6.53	6.71
	5745	149	6.49	6.72	6.62	6.54	6.80	6.95	6.56	6.68
	5765	153	6.44	6.70	6.74	6.80	6.69	6.62	6.81	6.71
	5785	157	6.49	6.65	6.64	6.83	6.66	6.59	6.47	6.77
	5805	161	6.20	6.57	6.37	6.25	6.51	6.44	6.66	6.26
	5825	165	6.58	6.63	6.53	6.31	6.70	6.30	6.75	6.59
Antenna 2	5180	36	6.66	6.73	6.58	6.64	6.66	6.57	6.67	6.71
	5200	40	6.84	6.91	6.98	6.99	6.88	6.98	6.86	6.90
	5220	44	6.68	6.76	6.81	6.67	6.74	6.78	6.80	6.84
	5240	48	6.76	6.74	6.81	6.83	6.81	6.77	6.85	6.79
	5260	52	6.74	6.83	6.77	6.75	6.71	6.74	6.89	6.82
	5280	56	6.83	6.67	6.76	6.67	6.71	6.81	6.73	6.70
	5300	60	6.78	6.97	6.78	6.80	6.86	6.91	6.93	6.97
	5320	64	6.69	6.74	6.83	6.79	6.78	6.81	6.84	6.85
	5500	100	5.70	5.63	5.70	5.70	5.74	5.65	5.75	5.71
	5520	104	5.92	5.97	5.90	5.90	5.98	5.90	5.95	5.93
	5540	108	5.76	5.90	5.76	5.84	5.83	5.90	5.86	5.76
	5560	112	6.04	5.97	5.90	5.95	5.96	5.95	5.97	6.02
	5580	116	6.03	5.92	6.01	6.11	5.97	5.92	6.09	6.10
	5600	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5620	124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5640	128	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5660	132	5.91	5.95	5.85	5.88	5.84	5.92	5.82	5.90
	5680	136	5.86	5.94	5.92	5.83	5.89	5.99	5.82	5.98
	5700	140	5.78	5.82	5.93	5.92	5.91	5.90	5.83	5.78
	5745	149	6.44	6.44	6.59	6.47	6.49	6.43	6.46	6.51
	5765	153	6.60	6.61	6.56	6.66	6.65	6.69	6.73	6.69
	5785	157	6.60	6.52	6.70	6.56	6.57	6.60	6.54	6.57
	5805	161	6.65	6.66	6.59	6.63	6.64	6.57	6.60	6.63
	5825	165	6.54	6.39	6.52	6.45	6.47	6.43	6.49	6.53

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Table 9-28
MIMO IEEE 802.11n Average RF Power – 20 MHz Bandwidth

Antenna	Freq [MHz]	Channel	20MHz BW 802.11n (5GHz)
			Conducted Power [dBm]
			Data Rate [Mbps]
			13
MIMO	5180	36	5.98
	5200	40	6.02
	5220	44	6.04
	5240	48	6.06
	5260	52	5.64
	5280	56	5.62
	5300	60	5.67
	5320	64	5.62
	5500	100	7.38
	5520	104	7.31
	5540	108	7.33
	5560	112	7.30
	5580	116	7.36
	5600	120	N/A
	5620	124	N/A
	5640	128	N/A
	5660	132	7.22
	5680	136	7.19
	5700	140	7.29
	5745	149	6.52
	5765	153	6.57
	5785	157	6.54
	5805	161	6.41
	5825	165	6.44

Table 9-29
IEEE 802.11n Average RF Power – 40 MHz Bandwidth

Mode	Freq [MHz]	Channel	40MHz BW 802.11n (5GHz) Conducted Power [dBm]							
			Data Rate [Mbps]							
			13.5	27	40.5	54	81	108	121.5	135
Antenna 1	5190	38	6.57	6.46	6.55	6.31	6.24	6.72	6.49	6.15
	5230	46	6.54	6.97	6.18	6.14	6.91	6.71	6.80	6.66
	5270	54	6.35	6.36	6.25	6.64	6.85	6.33	6.27	6.81
	5310	62	6.39	6.33	6.24	6.84	6.82	6.63	6.02	6.86
	5510	102	6.59	6.84	6.25	6.59	6.87	6.78	6.58	6.35
	5550	110	6.64	6.69	6.85	7.07	6.27	6.69	6.87	7.02
	5590	118	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5630	126	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5670	134	6.69	6.17	6.39	6.42	6.20	6.42	6.82	6.36
	5755	151	6.77	6.74	6.76	6.80	6.25	6.05	5.92	6.29
	5795	159	6.54	6.56	6.36	6.18	6.69	6.07	6.51	6.67
Antenna 2	5190	38	6.63	6.73	6.66	6.80	6.67	6.72	6.69	6.76
	5230	46	6.74	6.62	6.72	6.58	6.62	6.69	6.64	6.72
	5270	54	6.72	6.67	6.58	6.64	6.72	6.65	6.67	6.60
	5310	62	6.92	6.81	6.87	6.75	6.87	6.81	6.75	6.79
	5510	102	5.56	5.67	5.62	5.58	5.52	5.59	5.57	5.52
	5550	110	5.73	5.70	5.76	5.62	5.62	5.77	5.79	5.62
	5590	118	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5630	126	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5670	134	5.63	5.57	5.73	5.71	5.66	5.65	5.58	5.63
	5755	151	6.52	6.53	6.52	6.41	6.40	6.52	6.52	6.44
	5795	159	6.44	6.41	6.40	6.42	6.46	6.30	6.37	6.43

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Table 9-30
MIMO IEEE 802.11n Average RF Power – 40 MHz Bandwidth

Antenna	Freq [MHz]	Channel	40MHz BW 802.11n (5GHz) Conducted Power [dBm]
			Data Rate [Mbps]
			27
MIMO	5190	38	6.06
	5230	46	6.09
	5270	54	6.10
	5310	62	6.08
	5510	102	7.39
	5550	110	7.33
	5590	118	N/A
	5630	126	N/A
	5670	134	7.38
	5755	151	5.90
	5795	159	6.01

Table 9-31
IEEE 802.11ac Average RF Power – 80 MHz Bandwidth

Antenna	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
Antenna 1	5210	42	6.56	6.50	6.64	6.61	6.50	6.46	6.59	6.39	6.40	6.50
	5290	58	6.48	6.32	6.35	6.44	6.35	6.45	6.40	6.42	6.50	6.33
	5530	106	6.51	6.57	6.40	6.33	6.45	6.47	6.50	6.39	6.34	6.54
	5775	155	6.38	6.33	6.47	6.33	6.29	6.41	6.37	6.55	6.46	6.46
Antenna 2	5210	42	6.63	6.58	6.60	6.59	6.54	6.52	6.53	6.52	6.61	6.51
	5290	58	6.55	6.52	6.44	6.46	6.41	6.50	6.52	6.52	6.41	6.54
	5530	106	5.57	5.44	5.50	5.61	5.48	5.53	5.61	5.46	5.60	5.46
	5775	155	6.25	6.13	6.13	6.28	6.21	6.11	6.10	6.11	6.26	6.21

Table 9-32
MIMO IEEE 802.11ac Average RF Power – 80 MHz Bandwidth

Antenna	Freq [MHz]	Channel	80MHz BW 802.11ac (5GHz)
			Data Rate [Mbps]
			58.5
MIMO	5210	42	5.94
	5290	58	5.56
	5530	106	7.27
	5775	155	7.41

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

- For SISO 2.4 GHz, highest average RF output power channel for the lowest data rate for IEEE 802.11b were selected for SAR evaluation. Other 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.
- For SISO 5 GHz, highest average RF output power channel for the lowest data rate for IEEE 802.11a were selected for SAR evaluation. Other IEEE 802.11 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.
- For MIMO 2.4 GHz, highest average RF output power channel for the lowest data rate for IEEE 802.11n were selected for SAR evaluation.
- For MIMO 5 GHz, highest average RF output power channel for the lowest data rate for IEEE 802.11n were selected for SAR evaluation.
- Full 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 was evaluated for the highest IEEE 802.11a position in each 5 GHz band and exposure condition.
- When the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the reported 1g averaged SAR is <0.8 W/kg, SAR testing on other channels is not required. Otherwise, the other default (or corresponding required) test channels were additionally tested using the lowest data rate.
- The bolded data rate and channel above were tested for SAR.

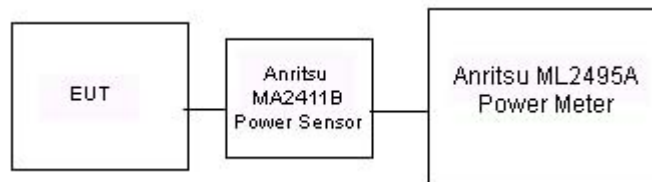


Figure 9-2
Power Measurement Setup for Bandwidths < 50 MHz

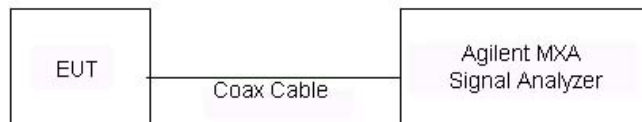


Figure 9-3
Power Measurement Setup for Bandwidths > 50 MHz

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10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured 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
2/17/2014	750H	22.6	695	0.883	44.059	0.889	42.227	-0.67%	4.34%
			710	0.894	43.792	0.890	42.149	0.45%	3.90%
			725	0.904	43.648	0.891	42.071	1.46%	3.75%
			740	0.920	43.468	0.893	41.994	3.02%	3.51%
			755	0.933	43.196	0.894	41.916	4.36%	3.05%
2/17/2014	835H	22.8	820	0.892	41.437	0.899	41.578	-0.78%	-0.34%
			835	0.906	41.195	0.900	41.500	0.67%	-0.73%
			850	0.919	40.975	0.916	41.500	0.33%	-1.27%
2/18/2014	1750H	22.9	1710	1.359	38.666	1.348	40.142	0.82%	-3.68%
			1750	1.400	38.485	1.371	40.079	2.12%	-3.98%
			1790	1.441	38.294	1.394	40.016	3.37%	-4.30%
2/19/2014	1900H	21.9	1850	1.395	38.419	1.400	40.000	-0.36%	-3.95%
			1880	1.427	38.295	1.400	40.000	1.93%	-4.26%
			1910	1.459	38.171	1.400	40.000	4.21%	-4.57%
2/18/2014	2450H	22.8	2401	1.822	38.991	1.756	39.287	3.76%	-0.75%
			2450	1.879	38.816	1.800	39.200	4.39%	-0.98%
			2499	1.935	38.638	1.853	39.138	4.43%	-1.28%
			5180	4.474	36.244	4.635	36.009	-3.47%	0.65%
			5200	4.508	36.214	4.655	35.986	-3.16%	0.63%
2/3/2014	5200H-5800H	23.0	5220	4.522	36.197	4.676	35.963	-3.29%	0.65%
			5240	4.538	36.162	4.696	35.940	-3.36%	0.62%
			5260	4.570	36.130	4.717	35.917	-3.12%	0.59%
			5280	4.590	36.108	4.737	35.894	-3.10%	0.60%
			5300	4.605	36.076	4.758	35.871	-3.22%	0.57%
			5500	4.822	35.798	4.963	35.643	-2.84%	0.43%
			5520	4.842	35.754	4.983	35.620	-2.83%	0.38%
			5540	4.868	35.725	5.004	35.597	-2.72%	0.36%
			5580	4.910	35.706	5.045	35.551	-2.68%	0.44%
			5600	4.925	35.697	5.065	35.529	-2.76%	0.47%
			5680	5.006	35.596	5.147	35.437	-2.74%	0.45%
			5765	5.088	35.493	5.234	35.340	-2.79%	0.43%
			5785	5.101	35.458	5.255	35.317	-2.93%	0.40%
			5800	5.112	35.479	5.270	35.300	-3.00%	0.51%
2/18/2014	750B	21.0	695	0.928	55.021	0.959	55.745	-3.23%	-1.30%
			710	0.941	54.929	0.960	55.687	-1.98%	-1.36%
			725	0.956	54.753	0.961	55.629	-0.52%	-1.57%
			740	0.967	54.564	0.963	55.570	0.42%	-1.81%
			755	0.980	54.460	0.964	55.512	1.66%	-1.90%
2/17/2014	835B	19.9	820	0.958	55.243	0.969	55.258	-1.14%	-0.03%
			835	0.976	55.109	0.970	55.200	0.62%	-0.16%
			850	0.992	54.892	0.988	55.154	0.40%	-0.48%
2/18/2014	1750B	23.0	1710	1.466	54.473	1.463	53.537	0.21%	1.75%
			1750	1.511	54.336	1.488	53.432	1.55%	1.69%
			1790	1.554	54.171	1.514	53.326	2.64%	1.58%
2/17/2014	1900B	23.2	1850	1.489	53.263	1.520	53.300	-2.04%	-0.07%
			1880	1.525	53.183	1.520	53.300	0.33%	-0.22%
			1910	1.558	53.102	1.520	53.300	2.50%	-0.37%
2/12/2014	2450B	24.0	2401	1.872	51.518	1.903	52.765	-1.63%	-2.36%
			2450	1.937	51.331	1.950	52.700	-0.67%	-2.60%
			2499	1.998	51.123	2.019	52.638	-1.04%	-2.88%
			5180	5.116	47.453	5.276	49.041	-3.03%	-3.24%
			5200	5.147	47.331	5.299	49.014	-2.87%	-3.43%
2/6/2014	5200B-5800B	24.3	5220	5.173	47.224	5.323	48.987	-2.82%	-3.60%
			5260	5.256	47.134	5.369	48.933	-2.10%	-3.68%
			5280	5.277	47.164	5.393	48.906	-2.15%	-3.56%
			5300	5.298	47.170	5.416	48.879	-2.18%	-3.50%
			5500	5.600	46.464	5.650	48.607	-0.88%	-4.41%
			5520	5.646	46.503	5.673	48.580	-0.48%	-4.28%
			5540	5.663	46.576	5.696	48.553	-0.58%	-4.07%
			5745	5.980	45.916	5.936	48.275	0.74%	-4.89%
			5765	6.028	45.890	5.959	48.248	1.16%	-4.89%
			5785	6.055	45.952	5.982	48.220	1.22%	-4.70%
			5800	6.062	45.987	6.000	48.200	1.03%	-4.59%

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 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 10-2
System Verification Results

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} (%)
B	750	HEAD	02/17/2014	23.2	22.6	0.100	1054	3288	0.856	8.500	8.560	0.71%
H	835	HEAD	02/17/2014	24.3	22.9	0.100	4d119	3318	0.935	9.680	9.350	-3.41%
B	1750	HEAD	02/18/2014	23.4	22.9	0.100	1008	3288	3.550	36.800	35.500	-3.53%
C	1900	HEAD	02/19/2014	23.7	21.9	0.100	5d141	3263	3.970	40.800	39.700	-2.70%
K	2450	HEAD	02/18/2014	23.5	23.0	0.100	719	3287	5.180	53.200	51.800	-2.63%
A	5200	HEAD	02/03/2014	24.4	23.0	0.100	1007	3920	7.720	77.500	77.200	-0.39%
A	5300	HEAD	02/03/2014	24.4	23.1	0.100	1007	3920	7.900	80.200	79.000	-1.50%
A	5500	HEAD	02/03/2014	24.2	23.2	0.100	1007	3920	7.740	81.400	77.400	-4.91%
A	5600	HEAD	02/03/2014	24.5	23.3	0.100	1007	3920	7.900	80.000	79.000	-1.25%
A	5800	HEAD	02/03/2014	24.3	23.3	0.100	1007	3920	7.680	77.500	76.800	-0.90%
C	750	BODY	02/18/2014	19.9	20.6	0.100	1054	3263	0.882	8.720	8.820	1.15%
C	835	BODY	02/17/2014	19.7	19.7	0.100	4d133	3263	0.953	9.610	9.530	-0.83%
B	1750	BODY	02/18/2014	23.4	23.0	0.100	1008	3288	3.760	38.200	37.600	-1.57%
I	1900	BODY	02/17/2014	23.7	23.2	0.100	5d149	3319	3.830	40.500	38.300	-5.43%
H	2450	BODY	02/12/2014	24.4	24.0	0.100	719	3318	5.410	51.700	54.100	4.64%
E	5200	BODY	02/06/2014	24.0	23.8	0.100	1120	3914	7.700	76.600	77.000	0.52%
E	5300	BODY	02/06/2014	24.0	23.8	0.100	1120	3914	7.650	76.800	76.500	-0.39%
E	5500	BODY	02/06/2014	24.1	23.8	0.100	1120	3914	7.840	79.800	78.400	-1.75%
E	5800	BODY	02/06/2014	24.1	23.7	0.100	1120	3914	7.170	75.500	71.700	-5.03%

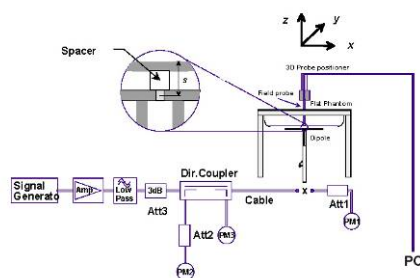


Figure 10-1
System Verification Setup Diagram



Figure 10-2
System Verification Setup Photo

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11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
Cell. CDMA/EVDO 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	Cell. CDMA	RC3 / SO55	25.0	24.40	0.05	Right	Cheek	Standard	32EF0	1:1	0.533	1.148	0.612	A1
836.52	384	Cell. CDMA	RC3 / SO55	25.0	24.40	0.20	Right	Cheek	Wireless Charging	32EF0	1:1	0.512	1.148	0.588	
836.52	384	Cell. CDMA	RC3 / SO55	25.0	24.40	0.01	Right	Tilt	Standard	32EF0	1:1	0.306	1.148	0.351	
836.52	384	Cell. CDMA	RC3 / SO55	25.0	24.40	0.02	Left	Cheek	Standard	32EF0	1:1	0.398	1.148	0.457	
836.52	384	Cell. CDMA	RC3 / SO55	25.0	24.40	-0.02	Left	Tilt	Standard	32EF0	1:1	0.265	1.148	0.304	
836.52	384	Cell. CDMA	EVDO Rev. A	25.0	24.40	-0.04	Right	Cheek	Standard	32EF0	1:1	0.532	1.148	0.611	
836.52	384	Cell. CDMA	EVDO Rev. A	25.0	24.40	-0.06	Right	Cheek	Wireless Charging	32EF0	1:1	0.512	1.148	0.588	
836.52	384	Cell. CDMA	EVDO Rev. A	25.0	24.40	-0.02	Right	Tilt	Standard	32EF0	1:1	0.285	1.148	0.327	
836.52	384	Cell. CDMA	EVDO Rev. A	25.0	24.40	0.01	Left	Cheek	Standard	32EF0	1:1	0.430	1.148	0.494	
836.52	384	Cell. CDMA	EVDO Rev. A	25.0	24.40	-0.01	Left	Tilt	Standard	32EF0	1:1	0.290	1.148	0.333	
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
PCS CDMA/EVDO 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	24.49	0.01	Right	Cheek	Standard	32EC6	1:1	0.439	1.125	0.494	
1880.00	600	PCS CDMA	RC3 / SO55	25.0	24.49	-0.05	Right	Cheek	Wireless Charging	32EC6	1:1	0.500	1.125	0.563	
1880.00	600	PCS CDMA	RC3 / SO55	25.0	24.49	-0.04	Right	Tilt	Standard	32EC6	1:1	0.232	1.125	0.261	
1880.00	600	PCS CDMA	RC3 / SO55	25.0	24.49	-0.07	Left	Cheek	Standard	32EC6	1:1	0.254	1.125	0.286	
1880.00	600	PCS CDMA	RC3 / SO55	25.0	24.49	-0.01	Left	Tilt	Standard	32EC6	1:1	0.179	1.125	0.201	
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	24.46	-0.04	Right	Cheek	Standard	32EC6	1:1	0.465	1.132	0.526	
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	24.46	0.03	Right	Cheek	Wireless Charging	32EC6	1:1	0.543	1.132	0.615	A2
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	24.46	0.03	Right	Tilt	Standard	32EC6	1:1	0.227	1.132	0.257	
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	24.46	-0.02	Left	Cheek	Standard	32EC6	1:1	0.263	1.132	0.298	
1880.00	600	PCS CDMA	EVDO Rev. A	25.0	24.46	0.13	Left	Tilt	Standard	32EC6	1:1	0.188	1.132	0.213	
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
LTE Band 12 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)		
707.50	23095	Mid	LTE Band 12	10	Standard	23.5	23.08	-0.02	0	Right	Cheek	QPSK	1	0	32EC6	1:1	0.238	1.102	0.262	
707.50	23095	Mid	LTE Band 12	10	Standard	22.5	22.02	0.03	1	Right	Cheek	QPSK	25	0	32EC6	1:1	0.167	1.117	0.187	
707.50	23095	Mid	LTE Band 12	10	Standard	23.5	23.08	0.14	0	Right	Tilt	QPSK	1	0	32EC6	1:1	0.167	1.102	0.184	
707.50	23095	Mid	LTE Band 12	10	Standard	22.5	22.02	-0.17	1	Right	Tilt	QPSK	25	0	32EC6	1:1	0.116	1.117	0.130	
707.50	23095	Mid	LTE Band 12	10	Standard	23.5	23.08	0.06	0	Left	Cheek	QPSK	1	0	32EC6	1:1	0.305	1.102	0.336	A3
707.50	23095	Mid	LTE Band 12	10	Wireless Charging	23.5	23.08	0.17	0	Left	Cheek	QPSK	1	0	32EC6	1:1	0.227	1.102	0.250	
707.50	23095	Mid	LTE Band 12	10	Standard	22.5	22.02	0.06	1	Left	Cheek	QPSK	25	0	32EC6	1:1	0.245	1.117	0.274	
707.50	23095	Mid	LTE Band 12	10	Standard	23.5	23.08	0.08	0	Left	Tilt	QPSK	1	0	32EC6	1:1	0.163	1.102	0.180	
707.50	23095	Mid	LTE Band 12	10	Standard	22.5	22.02	0.02	1	Left	Tilt	QPSK	25	0	32EC6	1:1	0.135	1.117	0.151	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Head										
Spatial Peak										1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population										averaged over 1 gram										

Table 11-4
LTE Band 5 (Cell) 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.																			
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.5	23.30	0.21	0	Right	Cheek	QPSK	1	49	32EC6	1:1	0.272	1.047	0.285	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	22.5	22.14	0.06	1	Right	Cheek	QPSK	25	0	32EC6	1:1	0.197	1.086	0.214	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.5	23.30	0.12	0	Right	Tilt	QPSK	1	49	32EC6	1:1	0.182	1.047	0.191	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	22.5	22.14	0.07	1	Right	Tilt	QPSK	25	0	32EC6	1:1	0.129	1.086	0.140	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.5	23.30	0.00	0	Left	Cheek	QPSK	1	49	32EC6	1:1	0.345	1.047	0.361	A4
836.50	20525	Mid	LTE Band 5 (Cell)	10	Wireless Charging	23.5	23.30	-0.09	0	Left	Cheek	QPSK	1	49	32EC6	1:1	0.343	1.047	0.359	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	22.5	22.14	0.03	1	Left	Cheek	QPSK	25	0	32EC6	1:1	0.287	1.086	0.312	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.5	23.30	0.03	0	Left	Tilt	QPSK	1	49	32EC6	1:1	0.200	1.047	0.209	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	22.5	22.14	0.06	1	Left	Tilt	QPSK	25	0	32EC6	1:1	0.147	1.086	0.160	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT												Head								
Spatial Peak												1.6 W/kg (mW/g)								
Uncontrolled Exposure/General Population												averaged over 1 gram								

Table 11-5
LTE Band 4 (AWS) 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)		
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	23.5	23.50	0.00	0	Right	Cheek	QPSK	1	0	32EC6	1:1	0.132	1.000	0.132	
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	22.5	22.43	0.13	1	Right	Cheek	QPSK	25	12	32EC6	1:1	0.147	1.016	0.149	
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	23.5	23.50	0.19	0	Right	Tilt	QPSK	1	0	32EC6	1:1	0.138	1.000	0.138	
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	22.5	22.43	-0.03	1	Right	Tilt	QPSK	25	12	32EC6	1:1	0.141	1.016	0.143	
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	23.5	23.50	-0.04	0	Left	Cheek	QPSK	1	0	32EC6	1:1	0.382	1.000	0.382	A5
1715.00	20000	Low	LTE Band 4 (AWS)	10	Wireless Charging	23.5	23.50	-0.07	0	Left	Cheek	QPSK	1	0	32EC6	1:1	0.294	1.000	0.294	
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	22.5	22.43	-0.01	1	Left	Cheek	QPSK	25	12	32EC6	1:1	0.288	1.016	0.293	
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	23.5	23.50	-0.01	0	Left	Tilt	QPSK	1	0	32EC6	1:1	0.128	1.000	0.128	
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	22.5	22.43	-0.10	1	Left	Tilt	QPSK	25	12	32EC6	1:1	0.122	1.016	0.124	
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 11-6
LTE Band 2 (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) (W/kg)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #	
MHz	Ch.																			
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	23.5	23.36	-0.02	0	Right	Cheek	QPSK	1	0	32EC6	1.1	0.335	1.033	0.346	A6
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	22.5	22.16	0.01	1	Right	Cheek	QPSK	25	0	32EC6	1.1	0.264	1.081	0.285	
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	23.5	23.36	0.01	0	Right	Tilt	QPSK	1	0	32EC6	1.1	0.259	1.033	0.268	
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	22.5	22.16	0.00	1	Right	Tilt	QPSK	25	0	32EC6	1.1	0.200	1.081	0.216	
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	23.5	23.36	0.04	0	Left	Cheek	QPSK	1	0	32EC6	1.1	0.610	1.033	0.630	
1905.00	19150	High	LTE Band 2 (PCS)	10	Wireless Charging	23.5	23.36	0.03	0	Left	Cheek	QPSK	1	0	32EC6	1.1	0.602	1.033	0.622	
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	22.5	22.16	0.02	1	Left	Cheek	QPSK	25	0	32EC6	1.1	0.467	1.081	0.505	
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	23.5	23.36	0.02	0	Left	Tilt	QPSK	1	0	32EC6	1.1	0.214	1.033	0.221	
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	22.5	22.16	0.01	1	Left	Tilt	QPSK	25	0	32EC6	1.1	0.160	1.081	0.173	
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
DTS Head SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna	Cover Type	Device Serial Number	Data Rate (Mbps)	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #
MHz	Ch.																
2412	1	IEEE 802.11b	DSSS	12.5	11.94	0.20	Right	Cheek	1	Standard	328C6	1	1:1	0.163	1.138	0.185	A7
2412	1	IEEE 802.11b	DSSS	12.5	11.94	0.02	Right	Cheek	1	Wireless Charging	328C6	1	1:1	0.156	1.138	0.178	
2412	1	IEEE 802.11b	DSSS	12.5	11.94	-0.04	Right	Tilt	1	Standard	328C6	1	1:1	0.158	1.138	0.180	
2412	1	IEEE 802.11b	DSSS	12.5	11.94	0.02	Left	Cheek	1	Standard	328C6	1	1:1	0.129	1.138	0.147	
2412	1	IEEE 802.11b	DSSS	12.5	11.94	0.03	Left	Tilt	1	Standard	328C6	1	1:1	0.128	1.138	0.146	
2412	1	IEEE 802.11b	DSSS	12.5	11.74	0.10	Right	Cheek	2	Standard	328C6	1	1:1	0.033	1.191	0.039	
2412	1	IEEE 802.11b	DSSS	12.5	11.74	0.12	Right	Tilt	2	Standard	328C6	1	1:1	0.007	1.191	0.008	
2412	1	IEEE 802.11b	DSSS	12.5	11.74	0.06	Left	Cheek	2	Standard	328C6	1	1:1	0.009	1.191	0.011	
2412	1	IEEE 802.11b	DSSS	12.5	11.74	0.20	Left	Tilt	2	Standard	328C6	1	1:1	0.004	1.191	0.005	
2412	1	IEEE 802.11n	OFDM	12.5	11.85	-0.08	Right	Cheek	MIMO	Standard	328C6	13	1:1	0.089	1.161	0.103	
2412	1	IEEE 802.11n	OFDM	12.5	11.85	-0.10	Right	Tilt	MIMO	Standard	328C6	13	1:1	0.078	1.161	0.091	
2412	1	IEEE 802.11n	OFDM	12.5	11.85	0.03	Left	Cheek	MIMO	Standard	328C6	13	1:1	0.104	1.161	0.121	
2412	1	IEEE 802.11n	OFDM	12.5	11.85	0.03	Left	Tilt	MIMO	Standard	328C6	13	1:1	0.107	1.161	0.124	
2412	1	IEEE 802.11n	OFDM	12.5	11.85	-0.02	Left	Tilt	MIMO	Wireless Charging	328C6	13	1:1	0.098	1.161	0.114	
5785	157	IEEE 802.11a	OFDM	7.5	6.87	0.06	Right	Cheek	1	Standard	31F35	6	1:1	0.014	1.156	0.016	
5785	157	IEEE 802.11a	OFDM	7.5	6.87	0.10	Right	Tilt	1	Standard	31F35	6	1:1	0.022	1.156	0.025	
5775	155	IEEE 802.11ac	OFDM	7.5	6.38	0.04	Right	Tilt	1	Standard	31F35	29.3	1:1	0.013	1.294	0.017	
5785	157	IEEE 802.11a	OFDM	7.5	6.87	0.16	Left	Cheek	1	Standard	31F35	6	1:1	0.011	1.156	0.013	
5785	157	IEEE 802.11a	OFDM	7.5	6.87	0.04	Left	Tilt	1	Standard	31F35	6	1:1	0.014	1.156	0.016	
5765	153	IEEE 802.11a	OFDM	7.5	6.58	0.06	Right	Cheek	2	Standard	31F35	6	1:1	0.134	1.236	0.166	A8
5775	155	IEEE 802.11ac	OFDM	7.5	6.25	0.06	Right	Cheek	2	Standard	31F35	29.3	1:1	0.112	1.334	0.149	
5765	153	IEEE 802.11a	OFDM	7.5	6.58	0.06	Right	Tilt	2	Standard	31F35	6	1:1	0.060	1.236	0.074	
5765	153	IEEE 802.11a	OFDM	7.5	6.58	0.04	Left	Cheek	2	Standard	31F35	6	1:1	0.037	1.236	0.046	
5765	153	IEEE 802.11a	OFDM	7.5	6.58	-0.07	Left	Tilt	2	Standard	31F35	6	1:1	0.034	1.236	0.042	
5765	153	IEEE 802.11n	OFDM	7.5	6.57	-0.05	Right	Cheek	MIMO	Standard	31F35	13	1:1	0.019	1.239	0.024	
5765	153	IEEE 802.11n	OFDM	7.5	6.57	0.03	Right	Tilt	MIMO	Standard	31F35	13	1:1	0.014	1.239	0.017	
5765	153	IEEE 802.11n	OFDM	7.5	6.57	0.07	Left	Cheek	MIMO	Standard	31F35	13	1:1	0.016	1.239	0.020	
5765	153	IEEE 802.11n	OFDM	7.5	6.57	0.05	Left	Tilt	MIMO	Standard	31F35	13	1:1	0.011	1.239	0.014	
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Table 11-8
NII Head SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna	Cover Type	Device Serial Number	Data Rate (Mbps)	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #	
MHz	Ch.													(W/kg)		(W/kg)		
5180	36	IEEE 802.11a	OFDM	7.5	6.74	0.08	Right	Cheek	1	Standard	31F35	6	1:1	0.053	1.191	0.063		
5210	42	IEEE 802.11ac	OFDM	7.5	6.56	0.02	Right	Cheek	1	Standard	31F35	29.3	1:1	0.039	1.242	0.048		
5180	36	IEEE 802.11a	OFDM	7.5	6.74	0.12	Right	Tilt	1	Standard	31F35	6	1:1	0.052	1.191	0.062		
5180	36	IEEE 802.11a	OFDM	7.5	6.74	-0.10	Left	Cheek	1	Standard	31F35	6	1:1	0.035	1.191	0.042		
5180	36	IEEE 802.11a	OFDM	7.5	6.74	-0.10	Left	Tilt	1	Standard	31F35	6	1:1	0.038	1.191	0.045		
5220	44	IEEE 802.11a	OFDM	7.5	6.86	0.07	Right	Cheek	2	Standard	31F35	6	1:1	0.022	1.159	0.025		
5210	42	IEEE 802.11ac	OFDM	7.5	6.63	0.04	Right	Cheek	2	Standard	31F35	29.3	1:1	0.021	1.222	0.026		
5220	44	IEEE 802.11a	OFDM	7.5	6.86	0.09	Right	Tilt	2	Standard	31F35	6	1:1	0.011	1.159	0.013		
5220	44	IEEE 802.11a	OFDM	7.5	6.86	0.00	Left	Cheek	2	Standard	31F35	6	1:1	0.000	1.159	0.000		
5220	44	IEEE 802.11a	OFDM	7.5	6.86	0.00	Left	Tilt	2	Standard	31F35	6	1:1	0.000	1.159	0.000		
5240	48	IEEE 802.11n	OFDM	7.5	6.06	0.08	Right	Cheek	MIMO	Standard	31F35	13	1:1	0.032	1.393	0.045		
5240	48	IEEE 802.11n	OFDM	7.5	6.06	0.07	Right	Cheek	MIMO	Wireless Charging	31F35	13	1:1	0.044	1.393	0.061		
5240	48	IEEE 802.11n	OFDM	7.5	6.06	0.11	Right	Tilt	MIMO	Standard	31F35	13	1:1	0.012	1.393	0.017		
5240	48	IEEE 802.11n	OFDM	7.5	6.06	0.21	Left	Cheek	MIMO	Standard	31F35	13	1:1	0.009	1.393	0.013		
5240	48	IEEE 802.11n	OFDM	7.5	6.06	0.06	Left	Tilt	MIMO	Standard	31F35	13	1:1	0.009	1.393	0.013		
5260	52	IEEE 802.11a	OFDM	7.5	6.69	0.08	Right	Cheek	1	Standard	31F35	6	1:1	0.047	1.205	0.057		
5260	52	IEEE 802.11a	OFDM	7.5	6.69	0.12	Right	Tilt	1	Standard	31F35	6	1:1	0.052	1.205	0.063		
5290	58	IEEE 802.11ac	OFDM	7.5	6.48	0.07	Right	Tilt	1	Standard	31F35	29.3	1:1	0.035	1.265	0.044		
5260	52	IEEE 802.11a	OFDM	7.5	6.69	0.06	Left	Cheek	1	Standard	31F35	6	1:1	0.032	1.205	0.039		
5260	52	IEEE 802.11a	OFDM	7.5	6.69	0.06	Left	Tilt	1	Standard	31F35	6	1:1	0.041	1.205	0.049		
5260	52	IEEE 802.11a	OFDM	7.5	6.95	0.07	Right	Cheek	2	Standard	31F35	6	1:1	0.047	1.135	0.053		
5290	58	IEEE 802.11ac	OFDM	7.5	6.55	0.11	Right	Cheek	2	Standard	31F35	29.3	1:1	0.036	1.245	0.045		
5260	52	IEEE 802.11a	OFDM	7.5	6.95	-0.07	Right	Tilt	2	Standard	31F35	6	1:1	0.013	1.135	0.015		
5260	52	IEEE 802.11a	OFDM	7.5	6.95	0.08	Left	Cheek	2	Standard	31F35	6	1:1	0.007	1.135	0.008		
5260	52	IEEE 802.11a	OFDM	7.5	6.95	-0.12	Left	Tilt	2	Standard	31F35	6	1:1	0.006	1.135	0.007		
5300	60	IEEE 802.11n	OFDM	7.5	5.67	0.00	Right	Cheek	MIMO	Standard	31F35	13	1:1	0.009	1.524	0.014		
5300	60	IEEE 802.11n	OFDM	7.5	5.67	0.15	Right	Tilt	MIMO	Standard	31F35	13	1:1	0.010	1.524	0.015		
5300	60	IEEE 802.11n	OFDM	7.5	5.67	0.08	Left	Cheek	MIMO	Standard	31F35	13	1:1	0.009	1.524	0.014		
5300	60	IEEE 802.11n	OFDM	7.5	5.67	0.03	Left	Tilt	MIMO	Standard	31F35	13	1:1	0.009	1.524	0.014		
5580	116	IEEE 802.11a	OFDM	7.5	6.83	0.08	Right	Cheek	1	Standard	31F35	6	1:1	0.022	1.167	0.026		
5580	116	IEEE 802.11a	OFDM	7.5	6.83	0.09	Right	Tilt	1	Standard	31F35	6	1:1	0.029	1.167	0.034		
5530	106	IEEE 802.11ac	OFDM	7.5	6.51	0.05	Right	Tilt	1	Standard	31F35	29.3	1:1	0.044	1.256	0.055		
5580	116	IEEE 802.11a	OFDM	7.5	6.83	0.02	Left	Cheek	1	Standard	31F35	6	1:1	0.016	1.167	0.019		
5580	116	IEEE 802.11a	OFDM	7.5	6.83	0.16	Left	Tilt	1	Standard	31F35	6	1:1	0.019	1.167	0.022		
5680	136	IEEE 802.11a	OFDM	7.5	6.01	0.02	Right	Cheek	2	Standard	31F35	6	1:1	0.154	1.409	0.217	A9	
5680	136	IEEE 802.11a	OFDM	7.5	6.01	0.02	Right	Cheek	2	Wireless Charging	31F35	6	1:1	0.133	1.409	0.187		
5530	106	IEEE 802.11ac	OFDM	7.5	5.57	0.02	Right	Cheek	2	Standard	31F35	29.3	1:1	0.045	1.560	0.070		
5680	136	IEEE 802.11a	OFDM	7.5	6.01	0.06	Right	Tilt	2	Standard	31F35	6	1:1	0.057	1.409	0.080		
5680	136	IEEE 802.11a	OFDM	7.5	6.01	0.14	Left	Cheek	2	Standard	31F35	6	1:1	0.032	1.409	0.045		
5680	136	IEEE 802.11a	OFDM	7.5	6.01	-0.08	Left	Tilt	2	Standard	31F35	6	1:1	0.031	1.409	0.044		
5500	100	IEEE 802.11n	OFDM	7.5	7.38	0.18	Right	Cheek	MIMO	Standard	31F35	13	1:1	0.010	1.028	0.010		
5500	100	IEEE 802.11n	OFDM	7.5	7.38	0.07	Right	Tilt	MIMO	Standard	31F35	13	1:1	0.014	1.028	0.014		
5500	100	IEEE 802.11n	OFDM	7.5	7.38	-0.20	Left	Cheek	MIMO	Standard	31F35	13	1:1	0.012	1.028	0.012		
5500	100	IEEE 802.11n	OFDM	7.5	7.38	0.19	Left	Tilt	MIMO	Standard	31F35	13	1:1	0.011	1.028	0.011		
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Head										
Spatial Peak								1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population								averaged over 1 gram										

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11.2 Standalone Body-Worn SAR Data

Table 11-9
CDMA 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	Duty Cycle	Side	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.52	384	Cell. CDMA	TDSO / SO32	25.0	24.37	-0.04	10 mm	Standard	32EF0	1:1	back	0.670	1.156	0.775	A10
836.52	384	Cell. CDMA	TDSO / SO32	25.0	24.37	0.01	10 mm	Wireless Charging	32EF0	1:1	back	0.560	1.156	0.647	
1851.25	25	PCS CDMA	TDSO / SO32	25.0	24.50	0.00	10 mm	Standard	32E32	1:1	back	0.611	1.122	0.686	
1880.00	600	PCS CDMA	TDSO / SO32	25.0	24.46	-0.02	10 mm	Standard	32E32	1:1	back	0.721	1.132	0.816	
1908.75	1175	PCS CDMA	TDSO / SO32	25.0	24.53	-0.04	10 mm	Standard	32E32	1:1	back	0.724	1.114	0.807	A12
1908.75	1175	PCS CDMA	TDSO / SO32	25.0	24.53	0.00	10 mm	Wireless Charging	32E32	1:1	back	0.621	1.114	0.692	
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 11-10
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)		
707.50	23095	Mid	LTE Band 12	10	Standard	23.5	23.08	0.01	0	32EF0	QPSK	1	0	10 mm	back	1:1	0.369	1.102	0.407	A13
707.50	23095	Mid	LTE Band 12	10	Wireless Charging	23.5	23.08	0.01	0	32EF0	QPSK	1	0	10 mm	back	1:1	0.243	1.102	0.268	
707.50	23095	Mid	LTE Band 12	10	Standard	22.5	22.02	0.03	1	32EF0	QPSK	25	0	10 mm	back	1:1	0.271	1.117	0.303	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.5	23.30	0.00	0	32EF0	QPSK	1	49	10 mm	back	1:1	0.486	1.047	0.509	A15
836.50	20525	Mid	LTE Band 5 (Cell)	10	Wireless Charging	23.5	23.30	0.00	0	32EF0	QPSK	1	49	10 mm	back	1:1	0.362	1.047	0.379	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	22.5	22.14	0.03	1	32EF0	QPSK	25	0	10 mm	back	1:1	0.359	1.086	0.390	
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	23.5	23.50	0.00	0	32EC6	QPSK	1	0	10 mm	back	1:1	0.509	1.000	0.509	A17
1715.00	20000	Low	LTE Band 4 (AWS)	10	Wireless Charging	23.5	23.50	0.05	0	32EC6	QPSK	1	0	10 mm	back	1:1	0.252	1.000	0.252	
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	22.5	22.43	-0.09	1	32EC6	QPSK	25	12	10 mm	back	1:1	0.321	1.016	0.326	
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	23.5	23.36	-0.02	0	32E32	QPSK	1	0	10 mm	back	1:1	0.181	1.033	0.187	
1905.00	19150	High	LTE Band 2 (PCS)	10	Wireless Charging	23.5	23.36	0.01	0	32E32	QPSK	1	0	10 mm	back	1:1	0.208	1.033	0.215	A19
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	22.5	22.16	0.09	1	32E32	QPSK	25	0	10 mm	back	1:1	0.176	1.081	0.190	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak										Body 1.6 W/kg (mW/g) averaged over 1 gram										
Uncontrolled Exposure/General Population																				

Table 11-11
DTS Body-Worn SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna	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)	
2437	6	IEEE 802.11b	DSSS	17.5	17.05	-0.08	10 mm	1	Standard	00F05	1	back	1:1	0.235	1.109	0.261	A21
2437	6	IEEE 802.11b	DSSS	17.5	17.05	0.16	10 mm	1	Wireless Charging	00F05	1	back	1:1	0.103	1.109	0.114	
2412	1	IEEE 802.11b	DSSS	17.5	17.07	0.04	10 mm	2	Standard	00F05	1	back	1:1	0.087	1.104	0.096	
2412	1	IEEE 802.11n	OFDM	14.0	13.87	0.11	10 mm	MIMO	Standard	00F05	13	back	1:1	0.066	1.030	0.068	
2412	1	IEEE 802.11n	OFDM	14.0	13.87	0.10	10 mm	MIMO	Wireless Charging	00F05	13	back	1:1	0.053	1.030	0.055	
5745	149	IEEE 802.11a	OFDM	14.0	13.31	0.06	10 mm	1	Standard	32712	6	back	1:1	0.138	1.172	0.162	
5775	155	IEEE 802.11ac	OFDM	11.5	11.25	0.09	10 mm	1	Standard	32712	29.3	back	1:1	0.041	1.059	0.043	
5765	153	IEEE 802.11a	OFDM	14.0	13.44	0.10	10 mm	2	Standard	15ECE	6	back	1:1	0.287	1.138	0.327	A22
5775	155	IEEE 802.11ac	OFDM	11.5	11.26	0.03	10 mm	2	Standard	15ECE	29.3	back	1:1	0.128	1.057	0.135	
5765	153	IEEE 802.11n	OFDM	13.5	13.47	0.16	10 mm	MIMO	Standard	15ECE	13	back	1:1	0.220	1.007	0.222	
5765	153	IEEE 802.11n	OFDM	13.5	13.47	0.00	10 mm	MIMO	Wireless Charging	15ECE	13	back	1:1	0.121	1.007	0.122	
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 11-12
NII Body-Worn SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna	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)	
5220	44	IEEE 802.11a	OFDM	14.0	13.12	0.06	10 mm	1	Standard	32712	6	back	1:1	0.196	1.225	0.240	
5210	42	IEEE 802.11ac	OFDM	11.5	10.71	0.09	10 mm	1	Standard	32712	29.3	back	1:1	0.079	1.199	0.095	
5180	36	IEEE 802.11a	OFDM	14.0	13.94	-0.12	10 mm	2	Standard	15ECE	6	back	1:1	0.104	1.014	0.105	
5210	42	IEEE 802.11ac	OFDM	11.5	10.78	0.18	10 mm	2	Standard	15ECE	29.3	back	1:1	0.056	1.180	0.066	
5180	36	IEEE 802.11n	OFDM	13.5	12.63	0.07	10 mm	MIMO	Standard	15ECE	13	back	1:1	0.065	1.222	0.079	
5280	56	IEEE 802.11a	OFDM	14.0	12.97	0.10	10 mm	1	Standard	32712	6	back	1:1	0.162	1.268	0.205	
5290	58	IEEE 802.11ac	OFDM	11.5	10.77	0.04	10 mm	1	Standard	32712	29.3	back	1:1	0.080	1.183	0.095	
5260	52	IEEE 802.11a	OFDM	14.0	13.21	-0.04	10 mm	2	Standard	15ECE	6	back	1:1	0.195	1.199	0.234	
5290	58	IEEE 802.11ac	OFDM	11.5	10.94	0.08	10 mm	2	Standard	15ECE	29.3	back	1:1	0.074	1.138	0.084	
5300	60	IEEE 802.11n	OFDM	13.5	12.77	0.09	10 mm	MIMO	Standard	15ECE	13	back	1:1	0.060	1.183	0.071	
5540	108	IEEE 802.11a	OFDM	14.0	13.41	0.05	10 mm	1	Standard	32712	6	back	1:1	0.235	1.146	0.269	
5530	106	IEEE 802.11ac	OFDM	11.5	11.15	0.03	10 mm	1	Standard	32712	29.3	back	1:1	0.119	1.084	0.129	
5500	100	IEEE 802.11a	OFDM	14.0	13.26	0.03	10 mm	2	Standard	15ECE	6	back	1:1	0.296	1.186	0.351	A23
5500	100	IEEE 802.11a	OFDM	14.0	13.26	0.03	10 mm	2	Wireless Charging	15ECE	6	back	1:1	0.167	1.186	0.198	
5530	106	IEEE 802.11ac	OFDM	11.5	10.98	-0.03	10 mm	2	Standard	15ECE	29.3	back	1:1	0.099	1.127	0.112	
5500	100	IEEE 802.11n	OFDM	13.5	12.30	0.06	10 mm	MIMO	Standard	15ECE	13	back	1:1	0.075	1.318	0.099	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram										

11.3 Standalone Wireless Router SAR Data

Table 11-13
CDMA/EVDO Hotspot SAR Data

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 (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.52	384	Cell. CDMA	TDSS / SO32	25.0	24.37	-0.04	10 mm	Standard	32EF0	1:1	back	0.670	1.156	0.775	
836.52	384	Cell. CDMA	TDSS / SO32	25.0	24.37	0.03	10 mm	Standard	32EF0	1:1	front	0.596	1.156	0.689	
836.52	384	Cell. CDMA	TDSS / SO32	25.0	24.37	0.04	10 mm	Standard	32EF0	1:1	bottom	0.442	1.156	0.511	
836.52	384	Cell. CDMA	TDSS / SO32	25.0	24.37	-0.02	10 mm	Standard	32EF0	1:1	right	0.673	1.156	0.778	A11
836.52	384	Cell. CDMA	TDSS / SO32	25.0	24.37	0.05	10 mm	Wireless Charging	32EF0	1:1	right	0.664	1.156	0.768	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.0	24.44	-0.02	10 mm	Standard	32EF0	1:1	back	0.673	1.138	0.766	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.0	24.44	0.01	10 mm	Wireless Charging	32EF0	1:1	back	0.560	1.138	0.637	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.0	24.44	-0.01	10 mm	Standard	32EF0	1:1	front	0.600	1.138	0.683	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.0	24.44	-0.04	10 mm	Standard	32EF0	1:1	bottom	0.457	1.138	0.520	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.0	24.44	0.00	10 mm	Standard	32EF0	1:1	right	0.672	1.138	0.765	
1851.25	25	PCS CDMA	TDSS / SO32	25.0	24.50	0.00	10 mm	Standard	32E32	1:1	back	0.611	1.122	0.686	
1880.00	600	PCS CDMA	TDSS / SO32	25.0	24.46	-0.02	10 mm	Standard	32E32	1:1	back	0.721	1.132	0.816	
1908.75	1175	PCS CDMA	TDSS / SO32	25.0	24.53	-0.04	10 mm	Standard	32E32	1:1	back	0.724	1.114	0.807	A12
1908.75	1175	PCS CDMA	TDSS / SO32	25.0	24.53	0.00	10 mm	Wireless Charging	32E32	1:1	back	0.621	1.114	0.692	
1880.00	600	PCS CDMA	TDSS / SO32	25.0	24.46	-0.02	10 mm	Standard	32E32	1:1	front	0.425	1.132	0.481	
1880.00	600	PCS CDMA	TDSS / SO32	25.0	24.46	-0.02	10 mm	Standard	32E32	1:1	bottom	0.688	1.132	0.779	
1880.00	600	PCS CDMA	TDSS / SO32	25.0	24.46	0.00	10 mm	Standard	32E32	1:1	right	0.632	1.132	0.715	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.0	24.52	-0.02	10 mm	Standard	32EF0	1:1	back	0.649	1.117	0.725	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.0	24.52	0.00	10 mm	Standard	32EF0	1:1	front	0.403	1.117	0.450	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.0	24.52	-0.04	10 mm	Standard	32EF0	1:1	bottom	0.689	1.117	0.770	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.0	24.52	0.01	10 mm	Wireless Charging	32EF0	1:1	bottom	0.684	1.117	0.764	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.0	24.52	-0.02	10 mm	Standard	32EF0	1:1	right	0.585	1.117	0.653	
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 11-14
LTE Band 12 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) (W/kg)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #	
MHz	Ch.																			
707.50	23095	Mid	LTE Band 12	10	Standard	23.5	23.08	0.01	0	32EF0	QPSK	1	0	10 mm	back	1:1	0.369	1.102	0.407	A14
707.50	23095	Mid	LTE Band 12	10	Standard	22.5	22.02	0.03	1	32EF0	QPSK	25	0	10 mm	back	1:1	0.271	1.117	0.303	
707.50	23095	Mid	LTE Band 12	10	Standard	23.5	23.08	0.01	0	32EF0	QPSK	1	0	10 mm	front	1:1	0.467	1.102	0.515	
707.50	23095	Mid	LTE Band 12	10	Wireless Charging	23.5	23.08	-0.01	0	32EF0	QPSK	1	0	10 mm	front	1:1	0.382	1.102	0.421	
707.50	23095	Mid	LTE Band 12	10	Standard	22.5	22.02	0.02	1	32EF0	QPSK	25	0	10 mm	front	1:1	0.347	1.117	0.388	
707.50	23095	Mid	LTE Band 12	10	Standard	23.5	23.08	-0.03	0	32EF0	QPSK	1	0	10 mm	bottom	1:1	0.313	1.102	0.345	
707.50	23095	Mid	LTE Band 12	10	Standard	22.5	22.02	-0.03	1	32EF0	QPSK	25	0	10 mm	bottom	1:1	0.233	1.117	0.260	
707.50	23095	Mid	LTE Band 12	10	Standard	23.5	23.08	0.00	0	32EF0	QPSK	1	0	10 mm	left	1:1	0.316	1.102	0.348	
707.50	23095	Mid	LTE Band 12	10	Standard	22.5	22.02	0.05	1	32EF0	QPSK	25	0	10 mm	left	1:1	0.239	1.117	0.267	
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 11-15
LTE Band 5 (Cell) 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)		
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.5	23.30	0.00	0	32EF0	QPSK	1	49	10 mm	back	1:1	0.486	1.047	0.509	A16
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	22.5	22.14	0.03	1	32EF0	QPSK	25	0	10 mm	back	1:1	0.359	1.086	0.390	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.5	23.30	0.00	0	32EF0	QPSK	1	49	10 mm	front	1:1	0.721	1.047	0.755	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Wireless Charging	23.5	23.30	0.09	0	32EF0	QPSK	1	49	10 mm	front	1:1	0.525	1.047	0.550	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	22.5	22.14	-0.03	1	32EF0	QPSK	25	0	10 mm	front	1:1	0.565	1.086	0.614	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.5	23.30	-0.03	0	32EF0	QPSK	1	49	10 mm	bottom	1:1	0.445	1.047	0.466	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	22.5	22.14	0.01	1	32EF0	QPSK	25	0	10 mm	bottom	1:1	0.321	1.086	0.349	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	23.5	23.30	-0.01	0	32EF0	QPSK	1	49	10 mm	left	1:1	0.470	1.047	0.492	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Standard	22.5	22.14	0.04	1	32EF0	QPSK	25	0	10 mm	left	1:1	0.337	1.086	0.366	
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
LTE Band 4 (AWS) 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) (W/kg)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #	
MHz	Ch.																			
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	23.5	23.50	0.00	0	32EC6	QPSK	1	0	10 mm	back	1:1	0.509	1.000	0.509	A18
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	22.5	22.43	-0.09	1	32EC6	QPSK	25	12	10 mm	back	1:1	0.321	1.016	0.326	
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	23.5	23.50	-0.01	0	32EC6	QPSK	1	0	10 mm	front	1:1	0.586	1.000	0.586	
1715.00	20000	Low	LTE Band 4 (AWS)	10	Wireless Charging	23.5	23.50	0.02	0	32EC6	QPSK	1	0	10 mm	front	1:1	0.338	1.000	0.338	
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	22.5	22.43	0.02	1	32EC6	QPSK	25	12	10 mm	front	1:1	0.389	1.016	0.395	
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	23.5	23.50	-0.04	0	32EC6	QPSK	1	0	10 mm	bottom	1:1	0.140	1.000	0.140	
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	22.5	22.43	-0.03	1	32EC6	QPSK	25	12	10 mm	bottom	1:1	0.141	1.016	0.143	
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	23.5	23.50	-0.05	0	32EC6	QPSK	1	0	10 mm	left	1:1	0.183	1.000	0.183	
1715.00	20000	Low	LTE Band 4 (AWS)	10	Standard	22.5	22.43	0.03	1	32EC6	QPSK	25	12	10 mm	left	1:1	0.148	1.016	0.150	
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 11-17
LTE Band 2 (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	19150	High	LTE Band 2 (PCS)	10	Standard	23.5	23.36	-0.02	0	32E32	QPSK	1	0	10 mm	back	1:1	0.181	1.033	0.187	
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	22.5	22.16	0.09	1	32E32	QPSK	25	0	10 mm	back	1:1	0.176	1.081	0.190	
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	23.5	23.36	-0.04	0	32E32	QPSK	1	0	10 mm	front	1:1	0.392	1.033	0.405	
1905.00	19150	High	LTE Band 2 (PCS)	10	Wireless Charging	23.5	23.36	0.00	0	32E32	QPSK	1	0	10 mm	front	1:1	0.545	1.033	0.563	A20
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	22.5	22.16	-0.02	1	32E32	QPSK	25	0	10 mm	front	1:1	0.357	1.081	0.386	
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	23.5	23.36	0.05	0	32E32	QPSK	1	0	10 mm	bottom	1:1	0.098	1.033	0.101	
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	22.5	22.16	0.11	1	32E32	QPSK	25	0	10 mm	bottom	1:1	0.079	1.081	0.085	
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	23.5	23.36	-0.05	0	32E32	QPSK	1	0	10 mm	left	1:1	0.238	1.033	0.246	
1905.00	19150	High	LTE Band 2 (PCS)	10	Standard	22.5	22.16	0.04	1	32E32	QPSK	25	0	10 mm	left	1:1	0.243	1.081	0.263	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-18
WLAN Hotspot SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna	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)		
2437	6	IEEE 802.11b	DSSS	17.5	17.05	-0.08	10 mm	1	Standard	00F05	1	back	1:1	0.235	1.109	0.261	A21	
2437	6	IEEE 802.11b	DSSS	17.5	17.05	0.16	10 mm	1	Wireless Charging	00F05	1	back	1:1	0.103	1.109	0.114		
2437	6	IEEE 802.11b	DSSS	17.5	17.05	0.06	10 mm	1	Standard	00F05	1	front	1:1	0.193	1.109	0.214		
2437	6	IEEE 802.11b	DSSS	17.5	17.05	0.04	10 mm	1	Standard	00F05	1	top	1:1	0.114	1.109	0.126		
2437	6	IEEE 802.11b	DSSS	17.5	17.05	0.04	10 mm	1	Standard	00F05	1	left	1:1	0.111	1.109	0.123		
2412	1	IEEE 802.11b	DSSS	17.5	17.07	0.04	10 mm	2	Standard	00F05	1	back	1:1	0.087	1.104	0.096		
2412	1	IEEE 802.11b	DSSS	17.5	17.07	0.09	10 mm	2	Standard	00F05	1	front	1:1	0.053	1.104	0.059		
2412	1	IEEE 802.11b	DSSS	17.5	17.07	0.06	10 mm	2	Standard	00F05	1	top	1:1	0.022	1.104	0.024		
2412	1	IEEE 802.11b	DSSS	17.5	17.07	0.05	10 mm	2	Standard	00F05	1	left	1:1	0.077	1.104	0.085		
2412	1	IEEE 802.11n	OFDM	14.0	13.87	0.11	10 mm	MIMO	Standard	00F05	13	back	1:1	0.066	1.030	0.068		
2412	1	IEEE 802.11n	OFDM	14.0	13.87	0.10	10 mm	MIMO	Wireless Charging	00F05	13	back	1:1	0.053	1.030	0.055		
2412	1	IEEE 802.11n	OFDM	14.0	13.87	0.04	10 mm	MIMO	Standard	00F05	13	front	1:1	0.056	1.030	0.058		
2412	1	IEEE 802.11n	OFDM	14.0	13.87	0.04	10 mm	MIMO	Standard	00F05	13	top	1:1	0.037	1.030	0.038		
2412	1	IEEE 802.11n	OFDM	14.0	13.87	0.15	10 mm	MIMO	Standard	00F05	13	left	1:1	0.029	1.030	0.030		
5745	149	IEEE 802.11a	OFDM	14.0	13.31	0.06	10 mm	1	Standard	32712	6	back	1:1	0.138	1.172	0.162		
5745	149	IEEE 802.11a	OFDM	14.0	13.31	0.12	10 mm	1	Standard	32712	6	front	1:1	0.089	1.172	0.104		
5745	149	IEEE 802.11a	OFDM	14.0	13.31	-0.02	10 mm	1	Standard	32712	6	top	1:1	0.260	1.172	0.305		
5775	155	IEEE 802.11ac	OFDM	11.5	11.25	0.02	10 mm	1	Standard	32712	29.3	top	1:1	0.104	1.059	0.110		
5745	149	IEEE 802.11a	OFDM	14.0	13.31	0.05	10 mm	1	Standard	32712	6	left	1:1	0.025	1.172	0.029		
5765	153	IEEE 802.11a	OFDM	14.0	13.44	0.10	10 mm	2	Standard	15ECE	6	back	1:1	0.287	1.138	0.327	A22	
5765	153	IEEE 802.11a	OFDM	14.0	13.44	0.17	10 mm	2	Wireless Charging	15ECE	6	back	1:1	0.204	1.138	0.232		
5775	155	IEEE 802.11ac	OFDM	11.5	11.26	0.03	10 mm	2	Standard	15ECE	29.3	back	1:1	0.128	1.057	0.135		
5765	153	IEEE 802.11a	OFDM	14.0	13.44	0.04	10 mm	2	Standard	15ECE	6	front	1:1	0.078	1.138	0.089		
5765	153	IEEE 802.11a	OFDM	14.0	13.44	0.04	10 mm	2	Standard	15ECE	6	top	1:1	0.066	1.138	0.075		
5765	153	IEEE 802.11a	OFDM	14.0	13.44	0.02	10 mm	2	Standard	15ECE	6	left	1:1	0.173	1.138	0.197		
5765	153	IEEE 802.11n	OFDM	13.5	13.47	0.16	10 mm	MIMO	Standard	15ECE	13	back	1:1	0.220	1.007	0.222		
5765	153	IEEE 802.11n	OFDM	13.5	13.47	0.00	10 mm	MIMO	Wireless Charging	15ECE	13	back	1:1	0.121	1.007	0.122		
5765	153	IEEE 802.11n	OFDM	13.5	13.47	-0.01	10 mm	MIMO	Standard	15ECE	13	front	1:1	0.032	1.007	0.032		
5765	153	IEEE 802.11n	OFDM	13.5	13.47	0.06	10 mm	MIMO	Standard	15ECE	13	top	1:1	0.097	1.007	0.098		
5765	153	IEEE 802.11n	OFDM	13.5	13.47	0.03	10 mm	MIMO	Standard	15ECE	13	left	1:1	0.060	1.007	0.060		
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram											

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11.4 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. A specialized battery was used for all 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 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB Publication 648474 D04v01, SAR was evaluated without a headset connected to the device. Since the standalone reported SAR was ≤ 1.2 W/kg, no additional SAR evaluations using a headset cable were required.
8. Per FCC KDB 865664 D01 v01, variability SAR tests were not required since the measured SAR results for all frequency bands were less than 0.8 W/kg. Please see Section 13 for more information.
9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.7 for more details).
10. This DUT may be used with a wireless charging cover. Per FCC KDB Publication 648474 D04, SAR was measured using the standard battery cover and then repeated with the wireless charging cover for the highest reported SAR for each wireless technology, frequency band, operating mode, and exposure condition. No other additional testing with the wireless charging battery cover was required since all reported SAR was under 1.2 W/kg.

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 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.
4. Head SAR was additionally evaluated using EVDO Rev. A to determine compliance for VoIP operations.
5. 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.
6. CDMA 1x-RTT SAR was required to be evaluated for Hotspot exposure conditions to support simultaneous transmission capabilities.

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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).

WLAN Notes:

1. Justification for reduced test configurations for SISO WIFI channels per KDB Publication 248227 D01v01r02 and October 2012 FCC/TCB Meeting Notes for 2.4 GHz WIFI: Highest average RF output power channel for the lowest data rate was selected for SAR evaluation in 802.11b. Other 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 SISO WIFI channels per KDB Publication 248227 D01v01r02 and October 2012 FCC/TCB Meeting Notes for 5 GHz WIFI: Highest average RF output power channel for the lowest data rate was selected for SAR evaluation in 802.11a. Other IEEE 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 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 was evaluated for the highest IEEE 802.11a position in each 5 GHz band and exposure condition.
4. WIFI transmission was verified using an uncalibrated spectrum analyzer.
5. This device only supports Hotspot for 2.4 GHz and 5.8 GHz bands. Therefore all other bands were not evaluated for Hotspot SAR conditions.
6. Since 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.
7. Per KDB 248227, SAR for MIMO was measured with both antennas transmitting simultaneously and was evaluated independently of SISO operation. For 2.4 GHz MIMO, 802.11n mode was evaluated for SAR. For 5 GHz MIMO, 802.11n 20 MHz Bandwidth mode was evaluated since the maximum allowed output power was higher than 802.11ac mode powers.
8. This device requires WIFI power reduction for SAR compliance. It always applies power reduction on the WIFI transmitter in voice or VOIP held-to-ear scenarios, and does not impact any other transmitter in the device. Therefore WIFI head SAR was evaluated at reduced power levels.

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12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

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

12.2 Simultaneous Transmission Procedures

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

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

Table 12-1
Estimated SAR

Mode	Frequency	Maximum Allowed Power	Separation Distance (Body)	Estimated SAR (Body)
	[MHz]	[dBm]	[mm]	[W/kg]
Bluetooth	2441	10.00	10	0.208

Note: Held-to ear configurations are not applicable to Bluetooth operations and therefore were not considered for simultaneous transmission. Per KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mW before calculation.

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12.3 Head SAR Simultaneous Transmission Analysis

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

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.612	0.185	0.797	Head SAR	Right Cheek	0.611	0.185	0.796
	Right Tilt	0.351	0.180	0.531		Right Tilt	0.327	0.180	0.507
	Left Cheek	0.457	0.147	0.604		Left Cheek	0.494	0.147	0.641
	Left Tilt	0.304	0.146	0.450		Left Tilt	0.333	0.146	0.479
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.563	0.185	0.748	Head SAR	Right Cheek	0.615	0.185	0.800
	Right Tilt	0.261	0.180	0.441		Right Tilt	0.257	0.180	0.437
	Left Cheek	0.286	0.147	0.433		Left Cheek	0.298	0.147	0.445
	Left Tilt	0.201	0.146	0.347		Left Tilt	0.213	0.146	0.359
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.262	0.185	0.447	Head SAR	Right Cheek	0.285	0.185	0.470
	Right Tilt	0.184	0.180	0.364		Right Tilt	0.191	0.180	0.371
	Left Cheek	0.336	0.147	0.483		Left Cheek	0.361	0.147	0.508
	Left Tilt	0.180	0.146	0.326		Left Tilt	0.209	0.146	0.355
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.149	0.185	0.334	Head SAR	Right Cheek	0.346	0.185	0.531
	Right Tilt	0.143	0.180	0.323		Right Tilt	0.268	0.180	0.448
	Left Cheek	0.382	0.147	0.529		Left Cheek	0.630	0.147	0.777
	Left Tilt	0.128	0.146	0.274		Left Tilt	0.221	0.146	0.367

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

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.612	0.039	0.651	Head SAR	Right Cheek	0.611	0.039	0.650
	Right Tilt	0.351	0.008	0.359		Right Tilt	0.327	0.008	0.335
	Left Cheek	0.457	0.011	0.468		Left Cheek	0.494	0.011	0.505
	Left Tilt	0.304	0.005	0.309		Left Tilt	0.333	0.005	0.338
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.563	0.039	0.602	Head SAR	Right Cheek	0.615	0.039	0.654
	Right Tilt	0.261	0.008	0.269		Right Tilt	0.257	0.008	0.265
	Left Cheek	0.286	0.011	0.297		Left Cheek	0.298	0.011	0.309
	Left Tilt	0.201	0.005	0.206		Left Tilt	0.213	0.005	0.218

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Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.262	0.039	0.301	Head SAR	Right Cheek	0.285	0.039	0.324
	Right Tilt	0.184	0.008	0.192		Right Tilt	0.191	0.008	0.199
	Left Cheek	0.336	0.011	0.347		Left Cheek	0.361	0.011	0.372
	Left Tilt	0.180	0.005	0.185		Left Tilt	0.209	0.005	0.214
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.149	0.039	0.188	Head SAR	Right Cheek	0.346	0.039	0.385
	Right Tilt	0.143	0.008	0.151		Right Tilt	0.268	0.008	0.276
	Left Cheek	0.382	0.011	0.393		Left Cheek	0.630	0.011	0.641
	Left Tilt	0.128	0.005	0.133		Left Tilt	0.221	0.005	0.226

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

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.612	0.103	0.715	Head SAR	Right Cheek	0.611	0.103	0.714
	Right Tilt	0.351	0.091	0.442		Right Tilt	0.327	0.091	0.418
	Left Cheek	0.457	0.121	0.578		Left Cheek	0.494	0.121	0.615
	Left Tilt	0.304	0.124	0.428		Left Tilt	0.333	0.124	0.457
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	0.563	0.103	0.666	Head SAR	Right Cheek	0.615	0.103	0.718
	Right Tilt	0.261	0.091	0.352		Right Tilt	0.257	0.091	0.348
	Left Cheek	0.286	0.121	0.407		Left Cheek	0.298	0.121	0.419
	Left Tilt	0.201	0.124	0.325		Left Tilt	0.213	0.124	0.337
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.262	0.103	0.365	Head SAR	Right Cheek	0.285	0.103	0.388
	Right Tilt	0.184	0.091	0.275		Right Tilt	0.191	0.091	0.282
	Left Cheek	0.336	0.121	0.457		Left Cheek	0.361	0.121	0.482
	Left Tilt	0.180	0.124	0.304		Left Tilt	0.209	0.124	0.333
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.149	0.103	0.252	Head SAR	Right Cheek	0.346	0.103	0.449
	Right Tilt	0.143	0.091	0.234		Right Tilt	0.268	0.091	0.359
	Left Cheek	0.382	0.121	0.503		Left Cheek	0.630	0.121	0.751
	Left Tilt	0.128	0.124	0.252		Left Tilt	0.221	0.124	0.345

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

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.612	0.063	0.675	Head SAR	Right Cheek	0.611	0.063	0.674
	Right Tilt	0.351	0.063	0.414		Right Tilt	0.327	0.063	0.390
	Left Cheek	0.457	0.042	0.499		Left Cheek	0.494	0.042	0.536
	Left Tilt	0.304	0.049	0.353		Left Tilt	0.333	0.049	0.382
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.563	0.063	0.626	Head SAR	Right Cheek	0.615	0.063	0.678
	Right Tilt	0.261	0.063	0.324		Right Tilt	0.257	0.063	0.320
	Left Cheek	0.286	0.042	0.328		Left Cheek	0.298	0.042	0.340
	Left Tilt	0.201	0.049	0.250		Left Tilt	0.213	0.049	0.262
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.262	0.063	0.325	Head SAR	Right Cheek	0.285	0.063	0.348
	Right Tilt	0.184	0.063	0.247		Right Tilt	0.191	0.063	0.254
	Left Cheek	0.336	0.042	0.378		Left Cheek	0.361	0.042	0.403
	Left Tilt	0.180	0.049	0.229		Left Tilt	0.209	0.049	0.258
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.149	0.063	0.212	Head SAR	Right Cheek	0.346	0.063	0.409
	Right Tilt	0.143	0.063	0.206		Right Tilt	0.268	0.063	0.331
	Left Cheek	0.382	0.042	0.424		Left Cheek	0.630	0.042	0.672
	Left Tilt	0.128	0.049	0.177		Left Tilt	0.221	0.049	0.270

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.

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

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.612	0.217	0.829	Head SAR	Right Cheek	0.611	0.217	0.828
	Right Tilt	0.351	0.080	0.431		Right Tilt	0.327	0.080	0.407
	Left Cheek	0.457	0.046	0.503		Left Cheek	0.494	0.046	0.540
	Left Tilt	0.304	0.044	0.348		Left Tilt	0.333	0.044	0.377
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.563	0.217	0.780	Head SAR	Right Cheek	0.615	0.217	0.832
	Right Tilt	0.261	0.080	0.341		Right Tilt	0.257	0.080	0.337
	Left Cheek	0.286	0.046	0.332		Left Cheek	0.298	0.046	0.344
	Left Tilt	0.201	0.044	0.245		Left Tilt	0.213	0.044	0.257

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Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.262	0.217	0.479	Head SAR	Right Cheek	0.285	0.217	0.502
	Right Tilt	0.184	0.080	0.264		Right Tilt	0.191	0.080	0.271
	Left Cheek	0.336	0.046	0.382		Left Cheek	0.361	0.046	0.407
	Left Tilt	0.180	0.044	0.224		Left Tilt	0.209	0.044	0.253
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.149	0.217	0.366	Head SAR	Right Cheek	0.346	0.217	0.563
	Right Tilt	0.143	0.080	0.223		Right Tilt	0.268	0.080	0.348
	Left Cheek	0.382	0.046	0.428		Left Cheek	0.630	0.046	0.676
	Left Tilt	0.128	0.044	0.172		Left Tilt	0.221	0.044	0.265

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.

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

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.612	0.061	0.673	Head SAR	Right Cheek	0.611	0.061	0.672
	Right Tilt	0.351	0.017	0.368		Right Tilt	0.327	0.017	0.344
	Left Cheek	0.457	0.020	0.477		Left Cheek	0.494	0.020	0.514
	Left Tilt	0.304	0.014	0.318		Left Tilt	0.333	0.014	0.347
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	0.563	0.061	0.624	Head SAR	Right Cheek	0.615	0.061	0.676
	Right Tilt	0.261	0.017	0.278		Right Tilt	0.257	0.017	0.274
	Left Cheek	0.286	0.020	0.306		Left Cheek	0.298	0.020	0.318
	Left Tilt	0.201	0.014	0.215		Left Tilt	0.213	0.014	0.227
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.262	0.061	0.323	Head SAR	Right Cheek	0.285	0.061	0.346
	Right Tilt	0.184	0.017	0.201		Right Tilt	0.191	0.017	0.208
	Left Cheek	0.336	0.020	0.356		Left Cheek	0.361	0.020	0.381
	Left Tilt	0.180	0.014	0.194		Left Tilt	0.209	0.014	0.223
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.149	0.061	0.210	Head SAR	Right Cheek	0.346	0.061	0.407
	Right Tilt	0.143	0.017	0.160		Right Tilt	0.268	0.017	0.285
	Left Cheek	0.382	0.020	0.402		Left Cheek	0.630	0.020	0.650
	Left Tilt	0.128	0.014	0.142		Left Tilt	0.221	0.014	0.235

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

Table 12-8

Simultaneous Transmission Scenario with Antenna 1 2.4 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	CDMA/LTE SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Back Side	Cell. CDMA	0.775	0.261	1.036
Back Side	PCS CDMA	0.816	0.261	1.077
Back Side	LTE Band 12	0.407	0.261	0.668
Back Side	LTE Band 5 (Cell)	0.509	0.261	0.770
Back Side	LTE Band 4 (AWS)	0.509	0.261	0.770
Back Side	LTE Band 2 (PCS)	0.215	0.261	0.476

Table 12-9

Simultaneous Transmission Scenario with Antenna 2 2.4 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	CDMA/LTE SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Back Side	Cell. CDMA	0.775	0.096	0.871
Back Side	PCS CDMA	0.816	0.096	0.912
Back Side	LTE Band 12	0.407	0.096	0.503
Back Side	LTE Band 5 (Cell)	0.509	0.096	0.605
Back Side	LTE Band 4 (AWS)	0.509	0.096	0.605
Back Side	LTE Band 2 (PCS)	0.215	0.096	0.311

Table 12-10

Simultaneous Transmission Scenario with MIMO 2.4 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	CDMA/LTE SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Back Side	Cell. CDMA	0.775	0.068	0.843
Back Side	PCS CDMA	0.816	0.068	0.884
Back Side	LTE Band 12	0.407	0.068	0.475
Back Side	LTE Band 5 (Cell)	0.509	0.068	0.577
Back Side	LTE Band 4 (AWS)	0.509	0.068	0.577
Back Side	LTE Band 2 (PCS)	0.215	0.068	0.283

Table 12-11

Simultaneous Transmission Scenario with Antenna 1 5 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	CDMA/LTE SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Back Side	Cell. CDMA	0.775	0.269	1.044
Back Side	PCS CDMA	0.816	0.269	1.085
Back Side	LTE Band 12	0.407	0.269	0.676
Back Side	LTE Band 5 (Cell)	0.509	0.269	0.778
Back Side	LTE Band 4 (AWS)	0.509	0.269	0.778
Back Side	LTE Band 2 (PCS)	0.215	0.269	0.484

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 12-12
Simultaneous Transmission Scenario with Antenna 2 5 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	CDMA/LTE SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Back Side	Cell. CDMA	0.775	0.351	1.126
Back Side	PCS CDMA	0.816	0.351	1.167
Back Side	LTE Band 12	0.407	0.351	0.758
Back Side	LTE Band 5 (Cell)	0.509	0.351	0.860
Back Side	LTE Band 4 (AWS)	0.509	0.351	0.860
Back Side	LTE Band 2 (PCS)	0.215	0.351	0.566

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 MIMO 5 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	CDMA/LTE SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Back Side	Cell. CDMA	0.775	0.222	0.997
Back Side	PCS CDMA	0.816	0.222	1.038
Back Side	LTE Band 12	0.407	0.222	0.629
Back Side	LTE Band 5 (Cell)	0.509	0.222	0.731
Back Side	LTE Band 4 (AWS)	0.509	0.222	0.731
Back Side	LTE Band 2 (PCS)	0.215	0.222	0.437

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 12-14
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.0 cm)

Configuration	Mode	CDMA/LTE SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
Back Side	Cell. CDMA	0.775	0.208	0.983
Back Side	PCS CDMA	0.816	0.208	1.024
Back Side	LTE Band 12	0.407	0.208	0.615
Back Side	LTE Band 5 (Cell)	0.509	0.208	0.717
Back Side	LTE Band 4 (AWS)	0.509	0.208	0.717
Back Side	LTE Band 2 (PCS)	0.215	0.208	0.423

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.

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12.5 Hotspot SAR Simultaneous Transmission Analysis

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

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

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.775	0.261	1.036	Body SAR	Back	0.766	0.261	1.027
	Front	0.689	0.214	0.903		Front	0.683	0.214	0.897
	Top	-	0.126	0.126		Top	-	0.126	0.126
	Bottom	0.511	-	0.511		Bottom	0.520	-	0.520
	Right	0.778	-	0.778		Right	0.765	-	0.765
	Left	-	0.123	0.123		Left	-	0.123	0.123
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.816	0.261	1.077	Body SAR	Back	0.725	0.261	0.986
	Front	0.481	0.214	0.695		Front	0.450	0.214	0.664
	Top	-	0.126	0.126		Top	-	0.126	0.126
	Bottom	0.779	-	0.779		Bottom	0.770	-	0.770
	Right	0.715	-	0.715		Right	0.653	-	0.653
	Left	-	0.123	0.123		Left	-	0.123	0.123
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.407	0.261	0.668	Body SAR	Back	0.509	0.261	0.770
	Front	0.515	0.214	0.729		Front	0.755	0.214	0.969
	Top	-	0.126	0.126		Top	-	0.126	0.126
	Bottom	0.345	-	0.345		Bottom	0.466	-	0.466
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.348	0.123	0.471		Left	0.492	0.123	0.615
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.509	0.261	0.770	Body SAR	Back	0.190	0.261	0.451
	Front	0.586	0.214	0.800		Front	0.563	0.214	0.777
	Top	-	0.126	0.126		Top	-	0.126	0.126
	Bottom	0.143	-	0.143		Bottom	0.101	-	0.101
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.183	0.123	0.306		Left	0.263	0.123	0.386

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

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.775	0.096	0.871	Body SAR	Back	0.766	0.096	0.862
	Front	0.689	0.059	0.748		Front	0.683	0.059	0.742
	Top	-	0.024	0.024		Top	-	0.024	0.024
	Bottom	0.511	-	0.511		Bottom	0.520	-	0.520
	Right	0.778	-	0.778		Right	0.765	-	0.765
	Left	-	0.085	0.085		Left	-	0.085	0.085

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Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.816	0.096	0.912	Body SAR	Back	0.725	0.096	0.821
	Front	0.481	0.059	0.540		Front	0.450	0.059	0.509
	Top	-	0.024	0.024		Top	-	0.024	0.024
	Bottom	0.779	-	0.779		Bottom	0.770	-	0.770
	Right	0.715	-	0.715		Right	0.653	-	0.653
	Left	-	0.085	0.085		Left	-	0.085	0.085
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.407	0.096	0.503	Body SAR	Back	0.509	0.096	0.605
	Front	0.515	0.059	0.574		Front	0.755	0.059	0.814
	Top	-	0.024	0.024		Top	-	0.024	0.024
	Bottom	0.345	-	0.345		Bottom	0.466	-	0.466
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.348	0.085	0.433		Left	0.492	0.085	0.577
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.509	0.096	0.605	Body SAR	Back	0.190	0.096	0.286
	Front	0.586	0.059	0.645		Front	0.563	0.059	0.622
	Top	-	0.024	0.024		Top	-	0.024	0.024
	Bottom	0.143	-	0.143		Bottom	0.101	-	0.101
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.183	0.085	0.268		Left	0.263	0.085	0.348

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

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.775	0.068	0.843	Body SAR	Back	0.766	0.068	0.834
	Front	0.689	0.058	0.747		Front	0.683	0.058	0.741
	Top	-	0.038	0.038		Top	-	0.038	0.038
	Bottom	0.511	-	0.511		Bottom	0.520	-	0.520
	Right	0.778	-	0.778		Right	0.765	-	0.765
	Left	-	0.030	0.030		Left	-	0.030	0.030
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)
Body SAR	Back	0.816	0.068	0.884	Body SAR	Back	0.725	0.068	0.793
	Front	0.481	0.058	0.539		Front	0.450	0.058	0.508
	Top	-	0.038	0.038		Top	-	0.038	0.038
	Bottom	0.779	-	0.779		Bottom	0.770	-	0.770
	Right	0.715	-	0.715		Right	0.653	-	0.653
	Left	-	0.030	0.030		Left	-	0.030	0.030
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.407	0.068	0.475	Body SAR	Back	0.509	0.068	0.577
	Front	0.515	0.058	0.573		Front	0.755	0.058	0.813
	Top	-	0.038	0.038		Top	-	0.038	0.038
	Bottom	0.345	-	0.345		Bottom	0.466	-	0.466
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.348	0.030	0.378		Left	0.492	0.030	0.522

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Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.509	0.068	0.577	Body SAR	Back	0.190	0.068	0.258
	Front	0.586	0.058	0.644		Front	0.563	0.058	0.621
	Top	-	0.038	0.038		Top	-	0.038	0.038
	Bottom	0.143	-	0.143		Bottom	0.101	-	0.101
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.183	0.030	0.213		Left	0.263	0.030	0.293

Table 12-18
Simultaneous Transmission Scenario (Antenna 1 5.8 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	5.8 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	5.8 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.775	0.162	0.937	Body SAR	Back	0.766	0.162	0.928
	Front	0.689	0.104	0.793		Front	0.683	0.104	0.787
	Top	-	0.305	0.305		Top	-	0.305	0.305
	Bottom	0.511	-	0.511		Bottom	0.520	-	0.520
	Right	0.778	-	0.778		Right	0.765	-	0.765
	Left	-	0.029	0.029		Left	-	0.029	0.029
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	5.8 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5.8 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.816	0.162	0.978	Body SAR	Back	0.725	0.162	0.887
	Front	0.481	0.104	0.585		Front	0.450	0.104	0.554
	Top	-	0.305	0.305		Top	-	0.305	0.305
	Bottom	0.779	-	0.779		Bottom	0.770	-	0.770
	Right	0.715	-	0.715		Right	0.653	-	0.653
	Left	-	0.029	0.029		Left	-	0.029	0.029
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5.8 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5.8 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.407	0.162	0.569	Body SAR	Back	0.509	0.162	0.671
	Front	0.515	0.104	0.619		Front	0.755	0.104	0.859
	Top	-	0.305	0.305		Top	-	0.305	0.305
	Bottom	0.345	-	0.345		Bottom	0.466	-	0.466
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.348	0.029	0.377		Left	0.492	0.029	0.521
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5.8 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5.8 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.509	0.162	0.671	Body SAR	Back	0.190	0.162	0.352
	Front	0.586	0.104	0.690		Front	0.563	0.104	0.667
	Top	-	0.305	0.305		Top	-	0.305	0.305
	Bottom	0.143	-	0.143		Bottom	0.101	-	0.101
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.183	0.029	0.212		Left	0.263	0.029	0.292

Table 12-19
Simultaneous Transmission Scenario (Antenna 2 5.8 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	5.8 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	5.8 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.775	0.327	1.102	Body SAR	Back	0.766	0.327	1.093
	Front	0.689	0.089	0.778		Front	0.683	0.089	0.772
	Top	-	0.075	0.075		Top	-	0.075	0.075
	Bottom	0.511	-	0.511		Bottom	0.520	-	0.520
	Right	0.778	-	0.778		Right	0.765	-	0.765
	Left	-	0.197	0.197		Left	-	0.197	0.197

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Simult Tx	Configuration	PCS CDMA SAR (W/kg)	5.8 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5.8 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.816	0.327	1.143	Body SAR	Back	0.725	0.327	1.052
	Front	0.481	0.089	0.570		Front	0.450	0.089	0.539
	Top	-	0.075	0.075		Top	-	0.075	0.075
	Bottom	0.779	-	0.779		Bottom	0.770	-	0.770
	Right	0.715	-	0.715		Right	0.653	-	0.653
	Left	-	0.197	0.197		Left	-	0.197	0.197
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5.8 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5.8 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.407	0.327	0.734	Body SAR	Back	0.509	0.327	0.836
	Front	0.515	0.089	0.604		Front	0.755	0.089	0.844
	Top	-	0.075	0.075		Top	-	0.075	0.075
	Bottom	0.345	-	0.345		Bottom	0.466	-	0.466
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.348	0.197	0.545		Left	0.492	0.197	0.689
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5.8 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5.8 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.509	0.327	0.836	Body SAR	Back	0.190	0.327	0.517
	Front	0.586	0.089	0.675		Front	0.563	0.089	0.652
	Top	-	0.075	0.075		Top	-	0.075	0.075
	Bottom	0.143	-	0.143		Bottom	0.101	-	0.101
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.183	0.197	0.380		Left	0.263	0.197	0.460

Table 12-20
Simultaneous Transmission Scenario (MIMO 5.8 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	5.8 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	5.8 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.775	0.222	0.997	Body SAR	Back	0.766	0.222	0.988
	Front	0.689	0.032	0.721		Front	0.683	0.032	0.715
	Top	-	0.098	0.098		Top	-	0.098	0.098
	Bottom	0.511	-	0.511		Bottom	0.520	-	0.520
	Right	0.778	-	0.778		Right	0.765	-	0.765
	Left	-	0.060	0.060		Left	-	0.060	0.060
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	5.8 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5.8 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.816	0.222	1.038	Body SAR	Back	0.725	0.222	0.947
	Front	0.481	0.032	0.513		Front	0.450	0.032	0.482
	Top	-	0.098	0.098		Top	-	0.098	0.098
	Bottom	0.779	-	0.779		Bottom	0.770	-	0.770
	Right	0.715	-	0.715		Right	0.653	-	0.653
	Left	-	0.060	0.060		Left	-	0.060	0.060
Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	5.8 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	5.8 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.407	0.222	0.629	Body SAR	Back	0.509	0.222	0.731
	Front	0.515	0.032	0.547		Front	0.755	0.032	0.787
	Top	-	0.098	0.098		Top	-	0.098	0.098
	Bottom	0.345	-	0.345		Bottom	0.466	-	0.466
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.348	0.060	0.408		Left	0.492	0.060	0.552

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Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5.8 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5.8 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.509	0.222	0.731	Body SAR	Back	0.190	0.222	0.412
	Front	0.586	0.032	0.618		Front	0.563	0.032	0.595
	Top	-	0.098	0.098		Top	-	0.098	0.098
	Bottom	0.143	-	0.143		Bottom	0.101	-	0.101
	Right	-	-	0.000		Right	-	-	0.000
	Left	0.183	0.060	0.243		Left	0.263	0.060	0.323

12.6 SVLTE Simultaneous Transmission Analysis

Table 12-21
Simultaneous Transmission Scenario with Antenna 1 2.4 GHz WLAN (Held to Ear)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)		Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3		Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.262	0.185	0.874	1.059	Head SAR	Right Cheek	0.563	0.262	0.185	0.825	1.010
	Right Tilt	0.351	0.184	0.180	0.535	0.715		Right Tilt	0.261	0.184	0.180	0.445	0.625
	Left Cheek	0.457	0.336	0.147	0.793	0.940		Left Cheek	0.286	0.336	0.147	0.622	0.769
	Left Tilt	0.304	0.180	0.146	0.484	0.630		Left Tilt	0.201	0.180	0.146	0.381	0.527
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)		Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3		Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.285	0.185	0.897	1.082	Head SAR	Right Cheek	0.563	0.285	0.185	0.848	1.033
	Right Tilt	0.351	0.191	0.180	0.542	0.722		Right Tilt	0.261	0.191	0.180	0.452	0.632
	Left Cheek	0.457	0.361	0.147	0.818	0.965		Left Cheek	0.286	0.361	0.147	0.647	0.794
	Left Tilt	0.304	0.209	0.146	0.513	0.659		Left Tilt	0.201	0.209	0.146	0.410	0.556
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)		Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3		Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.149	0.185	0.761	0.946	Head SAR	Right Cheek	0.563	0.149	0.185	0.712	0.897
	Right Tilt	0.351	0.143	0.180	0.494	0.674		Right Tilt	0.261	0.143	0.180	0.404	0.584
	Left Cheek	0.457	0.382	0.147	0.839	0.986		Left Cheek	0.286	0.382	0.147	0.668	0.815
	Left Tilt	0.304	0.128	0.146	0.432	0.578		Left Tilt	0.201	0.128	0.146	0.329	0.475
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)		Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3		Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.346	0.185	0.958	1.143	Head SAR	Right Cheek	0.563	0.346	0.185	0.909	1.094
	Right Tilt	0.351	0.268	0.180	0.619	0.799		Right Tilt	0.261	0.268	0.180	0.529	0.709
	Left Cheek	0.457	0.630	0.147	1.087	1.234		Left Cheek	0.286	0.630	0.147	0.916	1.063
	Left Tilt	0.304	0.221	0.146	0.525	0.671		Left Tilt	0.201	0.221	0.146	0.422	0.568

Table 12-22
Simultaneous Transmission Scenario with Antenna 2 2.4 GHz WLAN (Held to Ear)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)		Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3		Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.262	0.039	0.874	0.913	Head SAR	Right Cheek	0.563	0.262	0.039	0.825	0.864
	Right Tilt	0.351	0.184	0.008	0.535	0.543		Right Tilt	0.261	0.184	0.008	0.445	0.453
	Left Cheek	0.457	0.336	0.011	0.793	0.804		Left Cheek	0.286	0.336	0.011	0.622	0.633
	Left Tilt	0.304	0.180	0.005	0.484	0.489		Left Tilt	0.201	0.180	0.005	0.381	0.386
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)		Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3		Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.285	0.039	0.897	0.936	Head SAR	Right Cheek	0.563	0.285	0.039	0.848	0.887
	Right Tilt	0.351	0.191	0.008	0.542	0.550		Right Tilt	0.261	0.191	0.008	0.452	0.460
	Left Cheek	0.457	0.361	0.011	0.818	0.829		Left Cheek	0.286	0.361	0.011	0.647	0.658
	Left Tilt	0.304	0.209	0.005	0.513	0.518		Left Tilt	0.201	0.209	0.005	0.410	0.415

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Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.149	0.039	0.761	0.800
	Right Tilt	0.351	0.143	0.008	0.494	0.502
	Left Cheek	0.457	0.382	0.011	0.839	0.850
	Left Tilt	0.304	0.128	0.005	0.432	0.437
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.346	0.039	0.958	0.997
	Right Tilt	0.351	0.268	0.008	0.619	0.627
	Left Cheek	0.457	0.630	0.011	1.087	1.098
	Left Tilt	0.304	0.221	0.005	0.525	0.530

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.149	0.039	0.712	0.751
	Right Tilt	0.261	0.143	0.008	0.404	0.412
	Left Cheek	0.286	0.382	0.011	0.668	0.679
	Left Tilt	0.201	0.128	0.005	0.329	0.334
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.346	0.039	0.909	0.948
	Right Tilt	0.261	0.268	0.008	0.529	0.537
	Left Cheek	0.286	0.630	0.011	0.916	0.927
	Left Tilt	0.201	0.221	0.005	0.422	0.427

Table 12-23
Simultaneous Transmission Scenario with MIMO 2.4 GHz WLAN (Held to Ear)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.262	0.103	0.874	0.977
	Right Tilt	0.351	0.184	0.091	0.535	0.626
	Left Cheek	0.457	0.336	0.121	0.793	0.914
	Left Tilt	0.304	0.180	0.124	0.484	0.608
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.285	0.103	0.897	1.000
	Right Tilt	0.351	0.191	0.091	0.542	0.633
	Left Cheek	0.457	0.361	0.121	0.818	0.939
	Left Tilt	0.304	0.209	0.124	0.513	0.637
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.149	0.103	0.761	0.864
	Right Tilt	0.351	0.143	0.091	0.494	0.585
	Left Cheek	0.457	0.382	0.121	0.839	0.960
	Left Tilt	0.304	0.128	0.124	0.432	0.556
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.346	0.103	0.958	1.061
	Right Tilt	0.351	0.268	0.091	0.619	0.710
	Left Cheek	0.457	0.630	0.121	1.087	1.208
	Left Tilt	0.304	0.221	0.124	0.525	0.649

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.262	0.103	0.825	0.928
	Right Tilt	0.261	0.184	0.091	0.445	0.536
	Left Cheek	0.286	0.336	0.121	0.622	0.743
	Left Tilt	0.201	0.180	0.124	0.381	0.505
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.285	0.103	0.848	0.951
	Right Tilt	0.261	0.191	0.091	0.452	0.543
	Left Cheek	0.286	0.361	0.121	0.647	0.768
	Left Tilt	0.201	0.209	0.124	0.410	0.534
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.149	0.103	0.712	0.815
	Right Tilt	0.261	0.143	0.091	0.404	0.495
	Left Cheek	0.286	0.382	0.121	0.668	0.789
	Left Tilt	0.201	0.128	0.124	0.329	0.453
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.346	0.103	0.909	1.012
	Right Tilt	0.261	0.268	0.091	0.529	0.620
	Left Cheek	0.286	0.630	0.121	0.916	1.037
	Left Tilt	0.201	0.221	0.124	0.422	0.546

Table 12-24
Simultaneous Transmission Scenario with Antenna 1 5 GHz WLAN (Held to Ear)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.262	0.063	0.874	0.937
	Right Tilt	0.351	0.184	0.063	0.535	0.598
	Left Cheek	0.457	0.336	0.042	0.793	0.835
	Left Tilt	0.304	0.180	0.049	0.484	0.533
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.262	0.063	0.825	0.888
	Right Tilt	0.261	0.184	0.063	0.445	0.508
	Left Cheek	0.286	0.336	0.042	0.622	0.664
	Left Tilt	0.201	0.180	0.049	0.381	0.430

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Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.285	0.063	0.897	0.960
	Right Tilt	0.351	0.191	0.063	0.542	0.605
	Left Cheek	0.457	0.361	0.042	0.818	0.860
	Left Tilt	0.304	0.209	0.049	0.513	0.562
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.149	0.063	0.761	0.824
	Right Tilt	0.351	0.143	0.063	0.494	0.557
	Left Cheek	0.457	0.382	0.042	0.839	0.881
	Left Tilt	0.304	0.128	0.049	0.432	0.481
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.346	0.063	0.958	1.021
	Right Tilt	0.351	0.268	0.063	0.619	0.682
	Left Cheek	0.457	0.630	0.042	1.087	1.129
	Left Tilt	0.304	0.221	0.049	0.525	0.574

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.285	0.063	0.848	0.911
	Right Tilt	0.261	0.191	0.063	0.452	0.515
	Left Cheek	0.286	0.361	0.042	0.647	0.689
	Left Tilt	0.201	0.209	0.049	0.410	0.459
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.149	0.063	0.712	0.775
	Right Tilt	0.261	0.143	0.063	0.404	0.467
	Left Cheek	0.286	0.382	0.042	0.668	0.710
	Left Tilt	0.201	0.128	0.049	0.329	0.378
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.346	0.063	0.909	0.972
	Right Tilt	0.261	0.268	0.063	0.529	0.592
	Left Cheek	0.286	0.630	0.042	0.916	0.958
	Left Tilt	0.201	0.221	0.049	0.422	0.471

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.

Table 12-25
Simultaneous Transmission Scenario with Antenna 2 5 GHz WLAN (Held to Ear)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.262	0.217	0.874	1.091
	Right Tilt	0.351	0.184	0.080	0.535	0.615
	Left Cheek	0.457	0.336	0.046	0.793	0.839
	Left Tilt	0.304	0.180	0.044	0.484	0.528
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.285	0.217	0.897	1.114
	Right Tilt	0.351	0.191	0.080	0.542	0.622
	Left Cheek	0.457	0.361	0.046	0.818	0.864
	Left Tilt	0.304	0.209	0.044	0.513	0.557
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.149	0.217	0.761	0.978
	Right Tilt	0.351	0.143	0.080	0.494	0.574
	Left Cheek	0.457	0.382	0.046	0.839	0.885
	Left Tilt	0.304	0.128	0.044	0.432	0.476
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.346	0.217	0.958	1.175
	Right Tilt	0.351	0.268	0.080	0.619	0.699
	Left Cheek	0.457	0.630	0.046	1.087	1.133
	Left Tilt	0.304	0.221	0.044	0.525	0.569

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.262	0.217	0.825	1.042
	Right Tilt	0.261	0.184	0.080	0.445	0.525
	Left Cheek	0.286	0.336	0.046	0.622	0.668
	Left Tilt	0.201	0.180	0.044	0.381	0.425
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.285	0.217	0.848	1.065
	Right Tilt	0.261	0.191	0.080	0.452	0.532
	Left Cheek	0.286	0.361	0.046	0.647	0.693
	Left Tilt	0.201	0.209	0.044	0.410	0.454
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.149	0.217	0.712	0.929
	Right Tilt	0.261	0.143	0.080	0.404	0.484
	Left Cheek	0.286	0.382	0.046	0.668	0.714
	Left Tilt	0.201	0.128	0.044	0.329	0.373
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.346	0.217	0.909	1.126
	Right Tilt	0.261	0.268	0.080	0.529	0.609
	Left Cheek	0.286	0.630	0.046	0.916	0.962
	Left Tilt	0.201	0.221	0.044	0.422	0.466

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 12-26
Simultaneous Transmission Scenario with MIMO 5 GHz WLAN (Held to Ear)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.262	0.061	0.874	0.935
	Right Tilt	0.351	0.184	0.017	0.535	0.552
	Left Cheek	0.457	0.336	0.020	0.793	0.813
	Left Tilt	0.304	0.180	0.014	0.484	0.498
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.285	0.061	0.897	0.958
	Right Tilt	0.351	0.191	0.017	0.542	0.559
	Left Cheek	0.457	0.361	0.020	0.818	0.838
	Left Tilt	0.304	0.209	0.014	0.513	0.527
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.149	0.061	0.761	0.822
	Right Tilt	0.351	0.143	0.017	0.494	0.511
	Left Cheek	0.457	0.382	0.020	0.839	0.859
	Left Tilt	0.304	0.128	0.014	0.432	0.446
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.612	0.346	0.061	0.958	1.019
	Right Tilt	0.351	0.268	0.017	0.619	0.636
	Left Cheek	0.457	0.630	0.020	1.087	1.107
	Left Tilt	0.304	0.221	0.014	0.525	0.539

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.262	0.061	0.825	0.886
	Right Tilt	0.261	0.184	0.017	0.445	0.462
	Left Cheek	0.286	0.336	0.020	0.622	0.642
	Left Tilt	0.201	0.180	0.014	0.381	0.395
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.285	0.061	0.848	0.909
	Right Tilt	0.261	0.191	0.017	0.452	0.469
	Left Cheek	0.286	0.361	0.020	0.647	0.667
	Left Tilt	0.201	0.209	0.014	0.410	0.424
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.149	0.061	0.712	0.773
	Right Tilt	0.261	0.143	0.017	0.404	0.421
	Left Cheek	0.286	0.382	0.020	0.668	0.688
	Left Tilt	0.201	0.128	0.014	0.329	0.343
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Head SAR	Right Cheek	0.563	0.346	0.061	0.909	0.970
	Right Tilt	0.261	0.268	0.017	0.529	0.546
	Left Cheek	0.286	0.630	0.020	0.916	0.936
	Left Tilt	0.201	0.221	0.014	0.422	0.436

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.

Table 12-27
Simultaneous Transmission Scenario with Antenna 1 2.4 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.407	0.261	1.182	1.443	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.407	0.261	1.223	1.484	N/A	N/A	N/A
Configuration	Mode	CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.509	0.261	1.284	1.545	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.509	0.261	1.325	1.586	N/A	N/A	N/A
Configuration	Mode	CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.509	0.261	1.284	1.545	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.509	0.261	1.325	1.586	N/A	N/A	N/A

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Configuration	Mode	CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.215	0.261	0.990	1.251	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.215	0.261	1.031	1.292	N/A	N/A	N/A

Table 12-28
Simultaneous Transmission Scenario with Antenna 2 2.4 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.407	0.096	1.182	1.278	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.407	0.096	1.223	1.319	N/A	N/A	N/A
Configuration	Mode	CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.509	0.096	1.284	1.380	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.509	0.096	1.325	1.421	N/A	N/A	N/A
Configuration	Mode	CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.509	0.096	1.284	1.380	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.509	0.096	1.325	1.421	N/A	N/A	N/A
Configuration	Mode	CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.215	0.096	0.990	1.086	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.215	0.096	1.031	1.127	N/A	N/A	N/A

Table 12-29
Simultaneous Transmission Scenario with MIMO 2.4 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.407	0.068	1.182	1.250	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.407	0.068	1.223	1.291	N/A	N/A	N/A
Configuration	Mode	CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.509	0.068	1.284	1.352	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.509	0.068	1.325	1.393	N/A	N/A	N/A

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Configuration	Mode	CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.509	0.068	1.284	1.352	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.509	0.068	1.325	1.393	N/A	N/A	N/A

Configuration	Mode	CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.215	0.068	0.990	1.058	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.215	0.068	1.031	1.099	N/A	N/A	N/A

Table 12-30

Simultaneous Transmission Scenario with Antenna 1 5 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.407	0.269	1.182	1.451	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.407	0.269	1.223	1.492	N/A	N/A	N/A

Configuration	Mode	CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.509	0.269	1.284	1.553	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.509	0.269	1.325	1.594	N/A	N/A	N/A

Configuration	Mode	CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.509	0.269	1.284	1.553	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.509	0.269	1.325	1.594	N/A	N/A	N/A

Configuration	Mode	CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.215	0.269	0.990	1.259	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.215	0.269	1.031	1.300	N/A	N/A	N/A

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 12-31

Simultaneous Transmission Scenario with Antenna 2 5 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.407	0.351	1.182	1.533	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.407	0.351	1.223	1.574	N/A	N/A	N/A
Configuration	Mode	CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.509	0.351	1.284	See note 1	0.02	0.03	0.01
Back Side	PCS CDMA	0.816	0.509	0.351	1.325	See note 1	0.04	0.01	0.01
Configuration	Mode	CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.509	0.351	1.284	See note 1	0.02	0.03	0.01
Back Side	PCS CDMA	0.816	0.509	0.351	1.325	See note 1	0.04	0.01	0.01
Configuration	Mode	CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.215	0.351	0.990	1.341	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.215	0.351	1.031	1.382	N/A	N/A	N/A

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 12-32

Simultaneous Transmission Scenario with MIMO 5 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.407	0.222	1.182	1.404	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.407	0.222	1.223	1.445	N/A	N/A	N/A
Configuration	Mode	CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.509	0.222	1.284	1.506	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.509	0.222	1.325	1.547	N/A	N/A	N/A

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Configuration	Mode	CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.509	0.222	1.284	1.506	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.509	0.222	1.325	1.547	N/A	N/A	N/A
Configuration	Mode	CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)		SPLSR		
	Tx Antenna	1	2	3	1+2	1+2+3	1+2	1+3	2+3
Back Side	Cell. CDMA	0.775	0.215	0.222	0.990	1.212	N/A	N/A	N/A
Back Side	PCS CDMA	0.816	0.215	0.222	1.031	1.253	N/A	N/A	N/A

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 12-33
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.0 cm)

Configuration	Mode	CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Back Side	Cell. CDMA	0.775	0.407	0.208	1.182	1.390
Back Side	PCS CDMA	0.816	0.407	0.208	1.223	1.431
Configuration	Mode	CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)	
	Tx Antenna	1	2	3	1+2	1+2+3
Back Side	Cell. CDMA	0.775	0.509	0.208	1.284	1.492
Back Side	PCS CDMA	0.816	0.509	0.208	1.325	1.533

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.

Table 12-34
Simultaneous Transmission Scenario with Antenna 1 2.4 GHz WLAN (Hotspot at 1.0 cm)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.407	0.261	1.443	N/A	N/A	N/A
	Front	0.689	0.515	0.214	1.418	N/A	N/A	N/A
	Top	-	-	0.126	0.126	N/A	N/A	N/A
	Bottom	0.511	0.345	-	0.856	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.348	0.123	0.471	N/A	N/A	N/A
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.509	0.261	1.545	N/A	N/A	N/A
	Front	0.689	0.755	0.214	See note 1	0.02	0.01	0.01
	Top	-	-	0.126	0.126	N/A	N/A	N/A
	Bottom	0.511	0.466	-	0.977	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.492	0.123	0.615	N/A	N/A	N/A
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.509	0.261	1.545	N/A	N/A	N/A
	Front	0.689	0.586	0.214	1.489	N/A	N/A	N/A
	Top	-	-	0.126	0.126	N/A	N/A	N/A
	Bottom	0.511	0.143	-	0.654	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.183	0.123	0.306	N/A	N/A	N/A

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Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.190	0.261	1.226	N/A	N/A	N/A
	Front	0.689	0.563	0.214	1.466	N/A	N/A	N/A
	Top	-	-	0.126	0.126	N/A	N/A	N/A
	Bottom	0.511	0.101	-	0.612	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.263	0.123	0.386	N/A	N/A	N/A

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.816	0.190	0.261	1.267	N/A	N/A	N/A
	Front	0.481	0.563	0.214	1.258	N/A	N/A	N/A
	Top	-	-	0.126	0.126	N/A	N/A	N/A
	Bottom	0.779	0.101	-	0.880	N/A	N/A	N/A
	Right	0.715	-	-	0.715	N/A	N/A	N/A
	Left	-	0.263	0.123	0.386	N/A	N/A	N/A

Table 12-35

Simultaneous Transmission Scenario with Antenna 2 2.4 GHz WLAN (Hotspot at 1.0 cm)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.407	0.096	1.278	N/A	N/A	N/A
	Front	0.689	0.515	0.059	1.263	N/A	N/A	N/A
	Top	-	-	0.024	0.024	N/A	N/A	N/A
	Bottom	0.511	0.345	-	0.856	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.348	0.085	0.433	N/A	N/A	N/A

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.816	0.407	0.096	1.319	N/A	N/A	N/A
	Front	0.481	0.515	0.059	1.055	N/A	N/A	N/A
	Top	-	-	0.024	0.024	N/A	N/A	N/A
	Bottom	0.779	0.345	-	1.124	N/A	N/A	N/A
	Right	0.715	-	-	0.715	N/A	N/A	N/A
	Left	-	0.348	0.085	0.433	N/A	N/A	N/A

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.509	0.096	1.380	N/A	N/A	N/A
	Front	0.689	0.755	0.059	1.503	N/A	N/A	N/A
	Top	-	-	0.024	0.024	N/A	N/A	N/A
	Bottom	0.511	0.466	-	0.977	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.492	0.085	0.577	N/A	N/A	N/A

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.509	0.096	1.380	N/A	N/A	N/A
	Front	0.689	0.586	0.059	1.334	N/A	N/A	N/A
	Top	-	-	0.024	0.024	N/A	N/A	N/A
	Bottom	0.511	0.143	-	0.654	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.183	0.085	0.268	N/A	N/A	N/A

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.190	0.096	1.061	N/A	N/A	N/A
	Front	0.689	0.563	0.059	1.311	N/A	N/A	N/A
	Top	-	-	0.024	0.024	N/A	N/A	N/A
	Bottom	0.511	0.101	-	0.612	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.263	0.085	0.348	N/A	N/A	N/A

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.816	0.190	0.096	1.102	N/A	N/A	N/A
	Front	0.481	0.563	0.059	1.103	N/A	N/A	N/A
	Top	-	-	0.024	0.024	N/A	N/A	N/A
	Bottom	0.779	0.101	-	0.880	N/A	N/A	N/A
	Right	0.715	-	-	0.715	N/A	N/A	N/A
	Left	-	0.263	0.085	0.348	N/A	N/A	N/A

Table 12-36

Simultaneous Transmission Scenario with MIMO 2.4 GHz WLAN (Hotspot at 1.0 cm)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.407	0.068	1.250	N/A	N/A	N/A
	Front	0.689	0.515	0.058	1.262	N/A	N/A	N/A
	Top	-	-	0.038	0.038	N/A	N/A	N/A
	Bottom	0.511	0.345	-	0.856	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.348	0.030	0.378	N/A	N/A	N/A

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.816	0.407	0.068	1.291	N/A	N/A	N/A
	Front	0.481	0.515	0.058	1.054	N/A	N/A	N/A
	Top	-	-	0.038	0.038	N/A	N/A	N/A
	Bottom	0.779	0.345	-	1.124	N/A	N/A	N/A
	Right	0.715	-	-	0.715	N/A	N/A	N/A
	Left	-	0.348	0.030	0.378	N/A	N/A	N/A

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.509	0.068	1.352	N/A	N/A	N/A
	Front	0.689	0.755	0.058	1.502	N/A	N/A	N/A
	Top	-	-	0.038	0.038	N/A	N/A	N/A
	Bottom	0.511	0.466	-	0.977	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.492	0.030	0.522	N/A	N/A	N/A

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.816	0.509	0.068	1.393	N/A	N/A	N/A
	Front	0.481	0.755	0.058	1.294	N/A	N/A	N/A
	Top	-	-	0.038	0.038	N/A	N/A	N/A
	Bottom	0.779	0.466	-	1.245	N/A	N/A	N/A
	Right	0.715	-	-	0.715	N/A	N/A	N/A
	Left	-	0.492	0.030	0.522	N/A	N/A	N/A

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Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.509	0.068	1.352	N/A	N/A	N/A
	Front	0.689	0.586	0.058	1.333	N/A	N/A	N/A
	Top	-	-	0.038	0.038	N/A	N/A	N/A
	Bottom	0.511	0.143	-	0.654	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.183	0.030	0.213	N/A	N/A	N/A
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.190	0.068	1.033	N/A	N/A	N/A
	Front	0.689	0.563	0.058	1.310	N/A	N/A	N/A
	Top	-	-	0.038	0.038	N/A	N/A	N/A
	Bottom	0.511	0.101	-	0.612	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.263	0.030	0.293	N/A	N/A	N/A

Table 12-37

Simultaneous Transmission Scenario (Antenna 1 5.8 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	5.8 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.407	0.162	1.344	N/A	N/A	N/A
	Front	0.689	0.515	0.104	1.308	N/A	N/A	N/A
	Top	-	-	0.305	0.305	N/A	N/A	N/A
	Bottom	0.511	0.345	-	0.856	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.348	0.029	0.377	N/A	N/A	N/A
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	5.8 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.509	0.162	1.446	N/A	N/A	N/A
	Front	0.689	0.755	0.104	1.548	N/A	N/A	N/A
	Top	-	-	0.305	0.305	N/A	N/A	N/A
	Bottom	0.511	0.466	-	0.977	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.492	0.029	0.521	N/A	N/A	N/A
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5.8 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.509	0.162	1.446	N/A	N/A	N/A
	Front	0.689	0.586	0.104	1.379	N/A	N/A	N/A
	Top	-	-	0.305	0.305	N/A	N/A	N/A
	Bottom	0.511	0.143	-	0.654	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.183	0.029	0.212	N/A	N/A	N/A
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	5.8 GHz WLAN Antenna 1 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.190	0.162	1.127	N/A	N/A	N/A
	Front	0.689	0.563	0.104	1.356	N/A	N/A	N/A
	Top	-	-	0.305	0.305	N/A	N/A	N/A
	Bottom	0.511	0.101	-	0.612	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.263	0.029	0.292	N/A	N/A	N/A

Table 12-38

Simultaneous Transmission Scenario (Antenna 2 5.8 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	5.8 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.407	0.327	1.509	N/A	N/A	N/A
	Front	0.689	0.515	0.089	1.293	N/A	N/A	N/A
	Top	-	-	0.075	0.075	N/A	N/A	N/A
	Bottom	0.511	0.345	-	0.856	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.348	0.197	0.545	N/A	N/A	N/A

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Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	5.8 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.509	0.327	See note 1	0.02	0.03	0.01
	Front	0.689	0.755	0.089	1.533	N/A	N/A	N/A
	Top	-	-	0.075	0.075	N/A	N/A	N/A
	Bottom	0.511	0.466	-	0.977	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.492	0.197	0.689	N/A	N/A	N/A
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5.8 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.509	0.327	See note 1	0.02	0.03	0.01
	Front	0.689	0.586	0.089	1.364	N/A	N/A	N/A
	Top	-	-	0.075	0.075	N/A	N/A	N/A
	Bottom	0.511	0.143	-	0.654	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.183	0.197	0.380	N/A	N/A	N/A
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	5.8 GHz WLAN Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.190	0.327	1.292	N/A	N/A	N/A
	Front	0.689	0.563	0.089	1.341	N/A	N/A	N/A
	Top	-	-	0.075	0.075	N/A	N/A	N/A
	Bottom	0.511	0.101	-	0.612	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.263	0.197	0.460	N/A	N/A	N/A

Table 12-39
Simultaneous Transmission Scenario (MIMO 5.8 GHz Hotspot at 1.0 cm)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 12 SAR (W/kg)	5.8 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.407	0.222	1.404	N/A	N/A	N/A
	Front	0.689	0.515	0.032	1.236	N/A	N/A	N/A
	Top	-	-	0.098	0.098	N/A	N/A	N/A
	Bottom	0.511	0.345	-	0.856	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.348	0.060	0.408	N/A	N/A	N/A
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 5 (Cell) SAR (W/kg)	5.8 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.509	0.222	1.506	N/A	N/A	N/A
	Front	0.689	0.755	0.032	1.476	N/A	N/A	N/A
	Top	-	-	0.098	0.098	N/A	N/A	N/A
	Bottom	0.511	0.466	-	0.977	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.492	0.060	0.552	N/A	N/A	N/A
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	5.8 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.509	0.222	1.506	N/A	N/A	N/A
	Front	0.689	0.586	0.032	1.307	N/A	N/A	N/A
	Top	-	-	0.098	0.098	N/A	N/A	N/A
	Bottom	0.511	0.143	-	0.654	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.183	0.060	0.243	N/A	N/A	N/A
Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	5.8 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
	Tx Antenna	1	2	3	1+2+3	1+2	1+3	2+3
Body SAR	Back	0.775	0.190	0.222	1.187	N/A	N/A	N/A
	Front	0.689	0.563	0.032	1.284	N/A	N/A	N/A
	Top	-	-	0.098	0.098	N/A	N/A	N/A
	Bottom	0.511	0.101	-	0.612	N/A	N/A	N/A
	Right	0.778	-	-	0.778	N/A	N/A	N/A
	Left	-	0.263	0.060	0.323	N/A	N/A	N/A

Notes:

1. No evaluation was performed to determine the aggregate 1g SAR for these configurations as the SPLS ratio between the antenna pairs was not higher than 0.04 per FCC KDB Publication 447498 D01v05r01. See Section 12.7 for SPLS ratio analysis.

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12.7 SPLSR Evaluation and Analysis

Per FCC KDB Publication 447498 D01v05, when the sum of the standalone transmitters is more than 1.6 W/kg, the SAR sum to peak locations can be analyzed to determine SAR distribution overlaps. When the SAR peak to location ratio (shown below) for each pair of antennas is ≤ 0.04 , simultaneous SAR evaluation is not required. The distance between the transmitters was calculated using the following formula.

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

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

The sum of the standalone SAR values was above 1.6 W/kg for the body-worn back side configuration at a separation distance of 10 mm for Cell. CDMA and LTE Band 5 operating with 5 GHz WIFI Antenna 2.

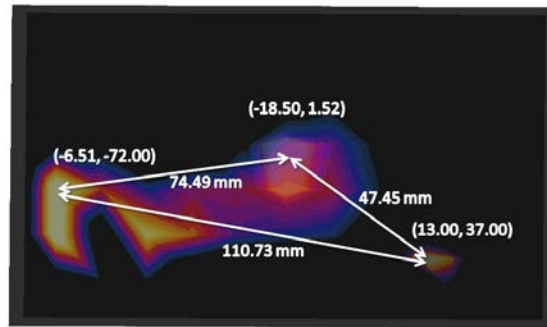


Figure 12-1
Peak SAR Location Plot of Cell. CDMA, LTE Band 5, and 5 GHz WLAN Antenna 2

Table 12-40
Peak SAR Locations for Body Back Side at 1.0 cm Cell. CDMA, LTE Band 5, and 5 GHz WLAN Antenna 2

Mode/Band	x (mm)	y (mm)
Cell. CDMA	-18.50	1.52
LTE Band 5	-6.51	-72.00
5 GHz WLAN Antenna 2	13.00	37.00

Table 12-41
SAR Sum to Peak Location Separation Ratio Calculation

Antenna Pair		Standalone 1g SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio
Ant "a"	Ant "b"	a	b	a+b	D _{a-b}	(a+b) ^{1.5} /D _{a-b}
Cell. CDMA	LTE Band 5	0.775	0.509	1.284	74.49	0.02
LTE Band 5	5 GHz WLAN Antenna 2	0.509	0.351	0.86	110.73	0.01
5 GHz WLAN Antenna 2	Cell. CDMA	0.351	0.775	1.126	47.45	0.03

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The sum of the standalone SAR values was above 1.6 W/kg for the body-worn back side configuration at a separation distance of 10 mm for PCS CDMA and LTE Band 5 operating with 5 GHz WIFI Antenna 2.

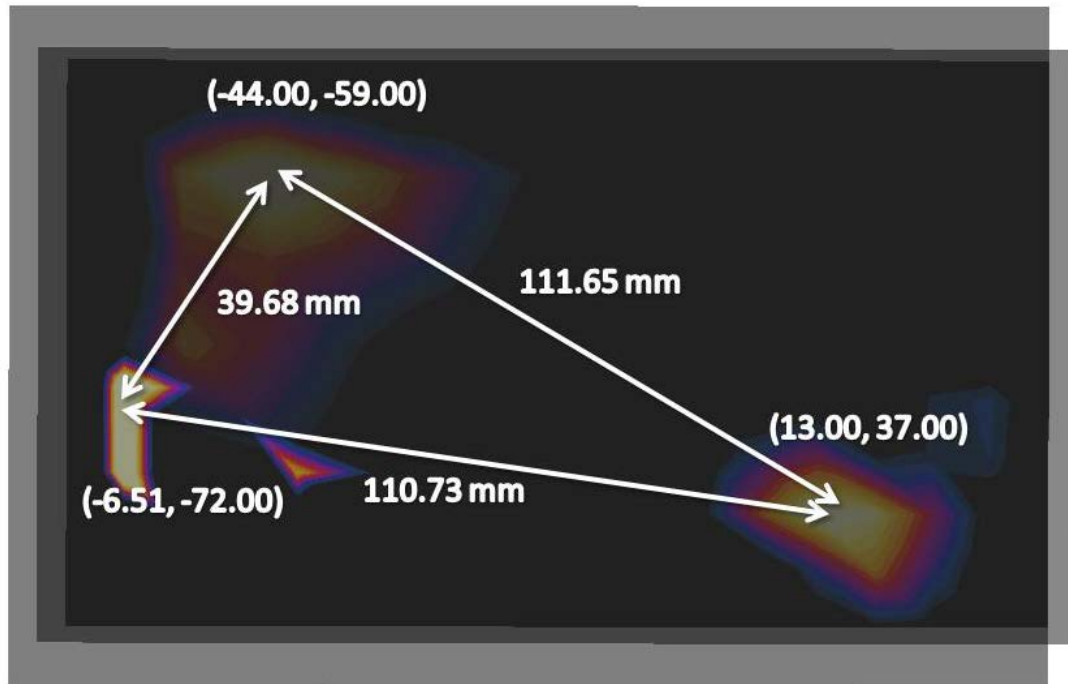


Figure 12-2
Peak SAR Location Plot of PCS CDMA, LTE Band 5, and 5 GHz WLAN Antenna 2

Table 12-42
Peak SAR Locations for Body Back Side at 1.0 cm PCS CDMA, LTE Band 5, and 5 GHz WLAN Antenna 2

Mode/Band	x (mm)	y (mm)
PCS CDMA	-44.00	-59.00
LTE Band 5	-6.51	-72.00
5 GHz WLAN Antenna 2	13.00	37.00

Table 12-43
SAR Sum to Peak Location Separation Ratio Calculation

Antenna Pair		Standalone 1g SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio
Ant "a"	Ant "b"	a	b	a+b	D_{a-b}	$(a+b)^{1.5}/D_{a-b}$
PCS CDMA	LTE Band 5	0.816	0.509	1.325	39.68	0.04
LTE Band 5	5 GHz WLAN Antenna 2	0.509	0.351	0.86	110.73	0.01
5 GHz WLAN Antenna 2	PCS CDMA	0.351	0.816	1.167	111.65	0.01

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The sum of the standalone SAR values was above 1.6 W/kg for the body-worn back side configuration at a separation distance of 10 mm for Cell. CDMA and LTE Band 4 operating with 5 GHz WIFI Antenna 2.

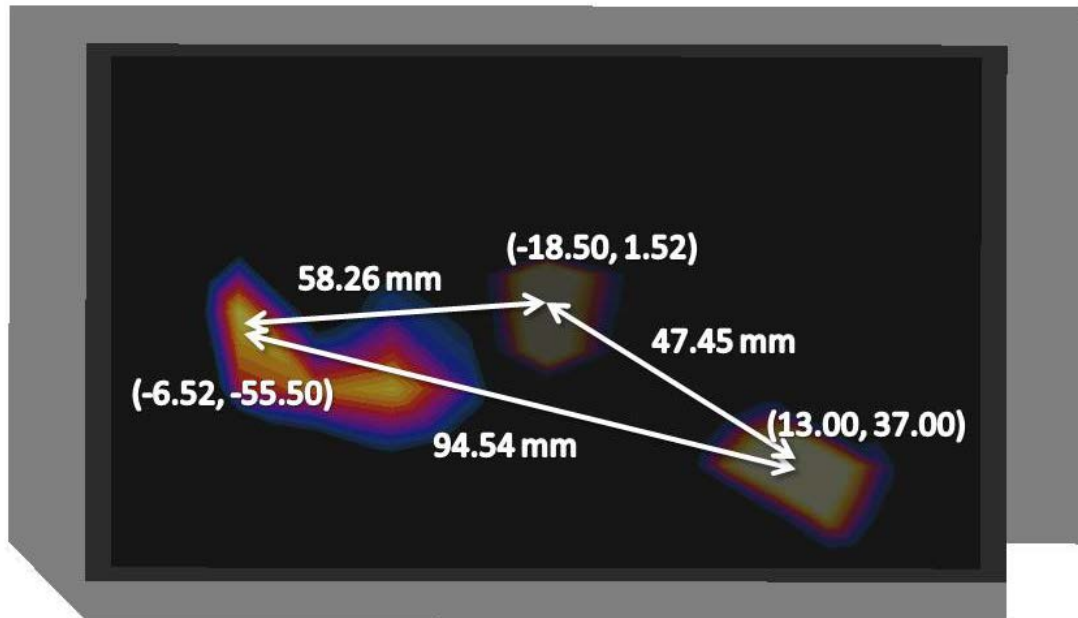


Figure 12-3
Peak SAR Location Plot of Cell. CDMA, LTE Band 4, and 5 GHz WLAN Antenna 2

Table 12-44
Peak SAR Locations for Body Back Side at 1.0 cm Cell. CDMA, LTE Band 4, and 5 GHz WLAN Antenna 2

Mode/Band	x (mm)	y (mm)
Cell. CDMA	-18.50	1.52
LTE Band 4	-6.52	-55.50
5 GHz WLAN Antenna 2	13.00	37.00

Table 12-45
SAR Sum to Peak Location Separation Ratio Calculation

Antenna Pair		Standalone 1g SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio
Ant "a"	Ant "b"	a	b	a+b	D_{a-b}	$(a+b)^{1.5}/D_{a-b}$
Cell. CDMA	LTE Band 4	0.775	0.509	1.284	58.26	0.02
LTE Band 4	5 GHz WLAN Antenna 2	0.509	0.351	0.86	94.54	0.01
5 GHz WLAN Antenna 2	Cell. CDMA	0.351	0.775	1.126	47.45	0.03

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The sum of the standalone SAR values was above 1.6 W/kg for the body-worn back side configuration at a separation distance of 10 mm for PCS CDMA and LTE Band 4 operating with 5 GHz WIFI Antenna 2.

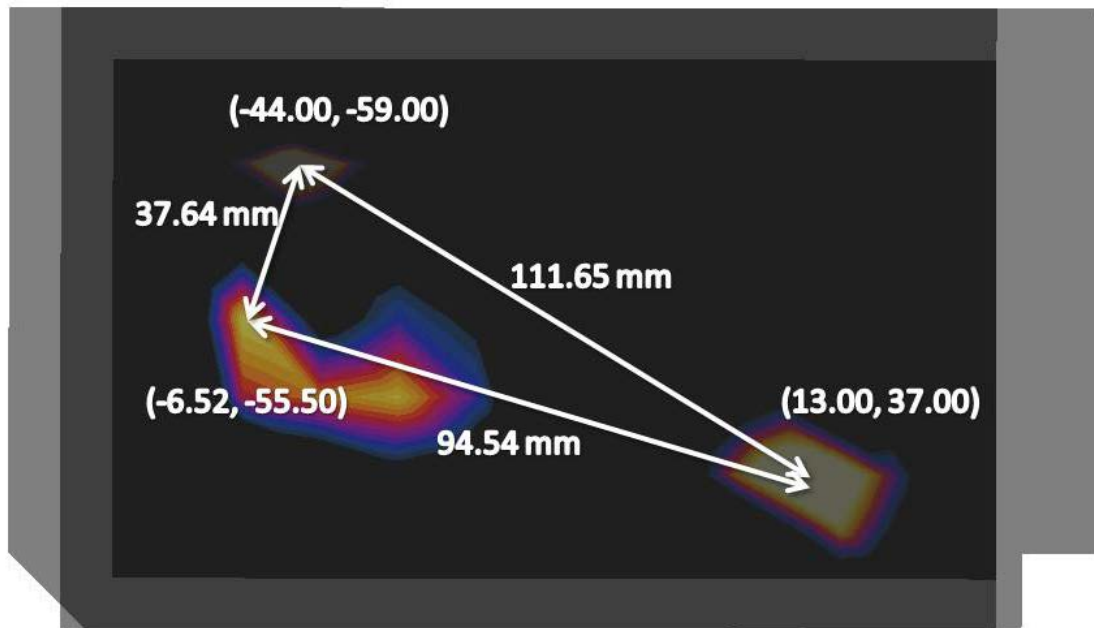


Figure 12-4
Peak SAR Location Plot of PCS CDMA, LTE Band 4, and 5 GHz WLAN Antenna 2

Table 12-46
Peak SAR Locations for Body Back Side at 1.0 cm PCS CDMA, LTE Band 4, and 5 GHz WLAN Antenna 2

Mode/Band	x (mm)	y (mm)
PCS CDMA	-44.00	-59.00
LTE Band 4	-6.52	-55.50
5 GHz WLAN Antenna 2	13.00	37.00

Table 12-47
SAR Sum to Peak Location Separation Ratio Calculation

Antenna Pair		Standalone 1g SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio
Ant "a"	Ant "b"	a	b	a+b	D_{a-b}	$(a+b)^{1.5}/D_{a-b}$
PCS CDMA	LTE Band 4	0.816	0.509	1.325	37.64	0.04
LTE Band 4	5 GHz WLAN Antenna 2	0.509	0.351	0.86	94.54	0.01
5 GHz WLAN Antenna 2	PCS CDMA	0.351	0.816	1.167	111.65	0.01

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The sum of the standalone SAR values was above 1.6 W/kg for the hotspot front side configuration at a separation distance of 10 mm for Cell. CDMA and LTE Band 5 operating with 2.4 GHz WIFI Antenna 1.

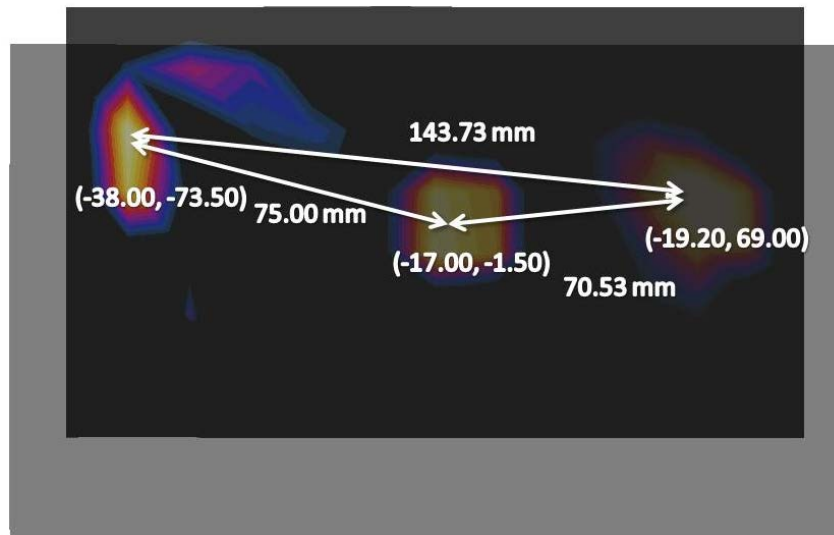


Figure 12-5
Peak SAR Location Plot of Cell. CDMA, LTE Band 5, and 2.4 GHz WLAN Antenna 1

Table 12-48
Peak SAR Locations for Body Front Side at 1.0 cm Cell. CDMA, LTE Band 5, and 2.4 GHz WLAN Antenna 1

Mode/Band	x (mm)	y (mm)
Cell. CDMA	-17.00	-1.50
LTE Band 5	-38.00	-73.50
2.4 GHz WLAN Antenna 1	-19.20	69.00

Table 12-49
SAR Sum to Peak Location Separation Ratio Calculation

Antenna Pair		Standalone 1g SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio
Ant "a"	Ant "b"	a	b	a+b	D_{a-b}	$(a+b)^{1.5}/D_{a-b}$
Cell. CDMA	LTE Band 5	0.689	0.755	1.444	75.00	0.02
LTE Band 5	2.4 GHz WLAN Antenna 1	0.755	0.214	0.969	143.73	0.01
2.4 GHz WLAN Antenna 1	Cell. CDMA	0.214	0.689	0.903	70.53	0.01

12.8 Simultaneous Transmission Conclusion

The above numerical summed SAR and SPLSR analysis 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 is assessed when measured SAR is > 0.80 W/kg. Since highest measured SAR for this device was < 0.80 W/kg, measurement variability was not assessed.

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
SPEAG	ES3DV3	SAR Probe	9/23/2013	Annual	9/23/2014	3288
SPEAG	ES3DV3	SAR Probe	4/29/2013	Annual	4/29/2014	3318
SPEAG	ES3DV3	SAR Probe	5/16/2013	Annual	5/16/2014	3263
SPEAG	ES3DV3	SAR Probe	11/20/2013	Annual	11/20/2014	3287
SPEAG	EX3DV4	SAR Probe	12/18/2013	Annual	12/18/2014	3920
SPEAG	ES3DV3	SAR Probe	4/29/2013	Annual	4/29/2014	3319
SPEAG	EX3DV4	SAR Probe	10/23/2013	Annual	10/23/2014	3914
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/17/2013	Annual	9/17/2014	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/22/2013	Annual	4/22/2014	1364
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/13/2013	Annual	5/13/2014	859
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/19/2013	Annual	11/19/2014	1408
SPEAG	DAE4	Dasy Data Acquisition Electronics	12/12/2013	Annual	12/12/2014	649
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/22/2013	Annual	4/22/2014	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/19/2013	Annual	11/19/2014	1333
SPEAG	D75DV3	750 MHz Dipole	3/18/2013	Annual	3/18/2014	1054
SPEAG	D835V2	835 MHz SAR Dipole	4/25/2013	Annual	4/25/2014	4d119
SPEAG	D176SV2	1765 MHz SAR Dipole	5/14/2013	Annual	5/14/2014	1008
SPEAG	D190V2	1900 MHz SAR Dipole	5/2/2013	Annual	5/2/2014	5d141
SPEAG	D245V2	2450 MHz SAR Dipole	8/23/2013	Annual	8/23/2014	719
SPEAG	D5GHV2	5 GHz SAR Dipole	9/23/2013	Annual	9/23/2014	1007
SPEAG	D835V2	835 MHz SAR Dipole	7/17/2013	Annual	7/17/2014	4d133
SPEAG	D190V2	1900 MHz SAR Dipole	7/22/2013	Annual	7/22/2014	5d149
SPEAG	DAK-3.5	Dielectric Assessment Kit	11/13/2013	Annual	11/13/2014	1091
SPEAG	D5GHV2	5 GHz SAR Dipole	2/14/2013	Annual	2/14/2014	1120
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	8/18/2013	Annual	8/18/2014	1008
Agilent	E5515C	Wireless Communications Test Set	5/9/2013	Biennial	5/9/2015	GB43304447
Agilent	8648D	(9kHz-4GHz) Signal Generator	4/17/2013	Annual	4/17/2014	3629U00687
Agilent	85047A	S-Parameter Test Set	N/A	N/A	N/A	2904A00579
Agilent	8753E	(30kHz-6GHz) Network Analyzer	7/23/2013	Annual	7/23/2014	US37390350
Agilent	N5182A	MXG Vector Signal Generator	10/28/2013	Annual	10/28/2014	US46240505
Agilent	8753ES	S-Parameter Network Analyzer	10/29/2013	Annual	10/29/2014	US39170122
Agilent	E5515C	Wireless Communications Test Set	10/18/2012	Biennial	10/18/2014	GB43193563
Agilent	8753E	(30kHz-6GHz) Network Analyzer	4/16/2013	Annual	4/16/2014	JP38020182
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/16/2013	Annual	4/16/2014	MY45470194
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	N9020A	MXA Signal Analyzer	10/29/2013	Annual	10/29/2014	US46470561
Amplifier Research	SS1G4	SW, 800MHz-4.2GHz	CBT	N/A	CBT	21910
Anritsu	MA2481A	Power Sensor	2/14/2013	Annual	2/14/2014	5821
Anritsu	MA2481A	Power Sensor	10/30/2013	Annual	10/30/2014	5605
Anritsu	ML2438A	Power Meter	2/14/2013	Annual	2/14/2014	98150041
Anritsu	MA24106A	USB Power Sensor	1/3/2014	Annual	1/3/2015	1344557
Anritsu	MT8820C	Radio Communication Analyzer	12/12/2013	Annual	12/12/2014	6200901190
Anritsu	MA2481A	Power Sensor	2/14/2013	Annual	2/14/2014	5318
Anritsu	ML2495A	Power Meter	10/31/2013	Annual	10/31/2014	1039008
Anritsu	MA24106A	USB Power Sensor	1/3/2014	Annual	1/3/2015	1349514
Anritsu	MT8820C	Radio Communication Analyzer	12/12/2013	Annual	12/12/2014	6201300731
Anritsu	MT8820C	Radio Communication Analyzer	6/28/2013	Annual	6/28/2014	6201240328
Anritsu	MA2411B	Pulse Power Sensor	11/14/2013	Annual	11/14/2014	1126066
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
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	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
MiniCircuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
MiniCircuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
MiniCircuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Narda	BW-53W2	Attenuator (3dB)	CBT	N/A	CBT	120
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	SME06	Signal Generator	10/30/2013	Annual	10/30/2014	832026
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	10/4/2013	Annual	10/4/2014	108798
Rohde & Schwarz	SMI003B	Signal Generator	4/17/2013	Annual	4/17/2014	DE27259
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	8/5/2011	Annual	8/5/2012	112347
Rohde & Schwarz	NRVD	Dual Channel Power Meter	10/12/2012	Biennial	10/12/2014	101695
Rohde & Schwarz	NRV-232	Peak Power Sensor	10/12/2012	Biennial	10/12/2014	836019/013
Rohde & Schwarz	NRVS	Single Channel Power Meter	10/31/2013	Annual	10/31/2014	835360/0079
Seekonk	NC-100	Torque Wrench (8" lb)	11/29/2011	Triennial	11/29/2014	21053
Seekonk	NC-100	Torque Wrench (8" lb)	3/5/2012	Triennial	3/5/2015	N/A
Seekonk	NC-100	Torque Wrench (8" lb)	3/5/2012	Triennial	3/5/2015	N/A
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/14/2013	Annual	5/14/2014	1070
Tektronix	RSA6114A	Real Time Spectrum Analyzer	4/17/2013	Annual	4/17/2014	8010177
VWR	23226-658	Long Stem Thermometer	6/27/2012	Biennial	6/27/2014	122363923
VWR	23226-658	Long Stem Thermometer	3/30/2012	Biennial	3/30/2014	122179874
VWR	23226-658	Long Stem Thermometer	7/11/2012	Biennial	7/11/2014	122389334
VWR	36934-158	Wall-Mounted Thermometer	8/8/2013	Annual	8/8/2014	130258636
VWR	36934-158	Wall-Mounted Thermometer	8/8/2013	Annual	8/8/2014	130477877

Note:

1. CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.
2. Each equipment was used solely within its valid 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 (95% CONFIDENCE LEVEL)							k=2	24.2	23.5
									299

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: A3LSMG900R4; Type: Portable Handset; Serial: 32EF0

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.907 \text{ S/m}$; $\epsilon_r = 41.173$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 02-17-2014; Ambient Temp: 24.3°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3318; ConvF(6.33, 6.33, 6.33); Calibrated: 4/29/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1364; Calibrated: 4/22/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Mode: Cell. CDMA, Right Head, Cheek, Mid.ch, Standard Cover

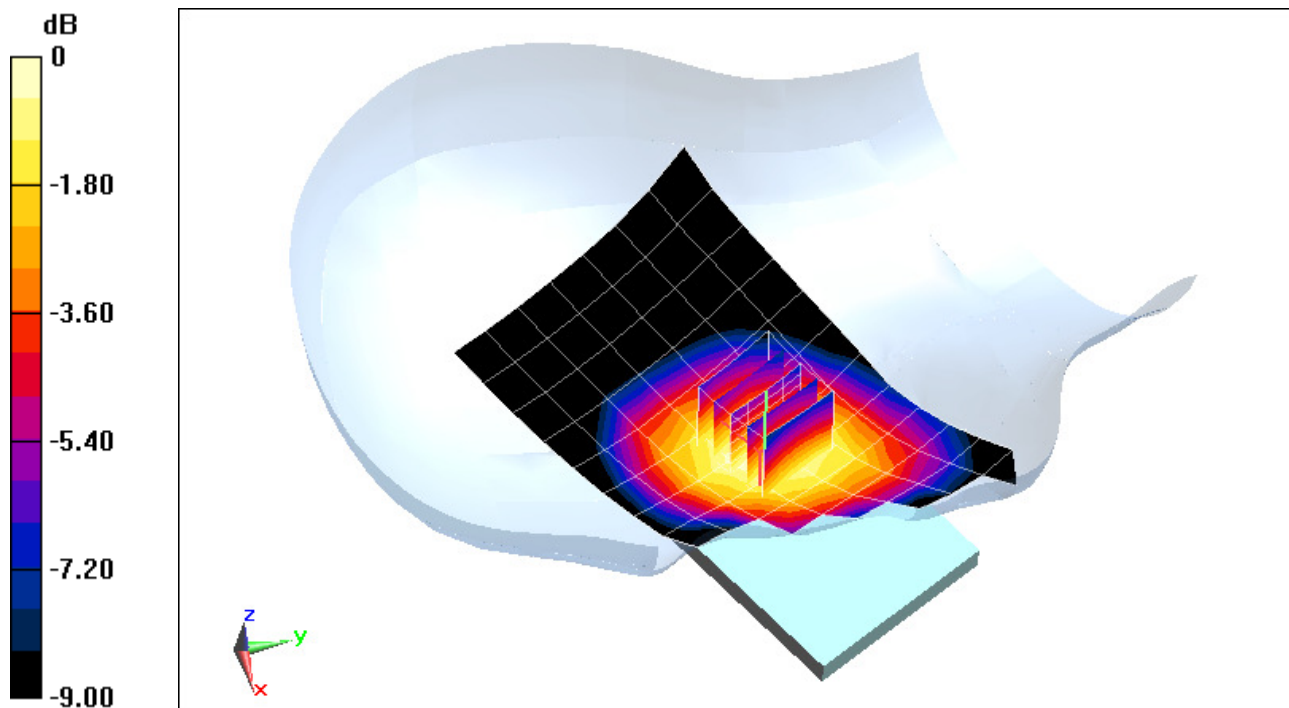
Area Scan (8x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 24.868 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.664 W/kg

SAR(1 g) = 0.533 W/kg



0 dB = 0.561 W/kg = -2.51 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 32EC6

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

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.427 \text{ S/m}$; $\epsilon_r = 38.295$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 02-19-2014; Ambient Temp: 23.7°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3263; ConvF(5.11, 5.11, 5.11); Calibrated: 5/16/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/13/2013

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

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

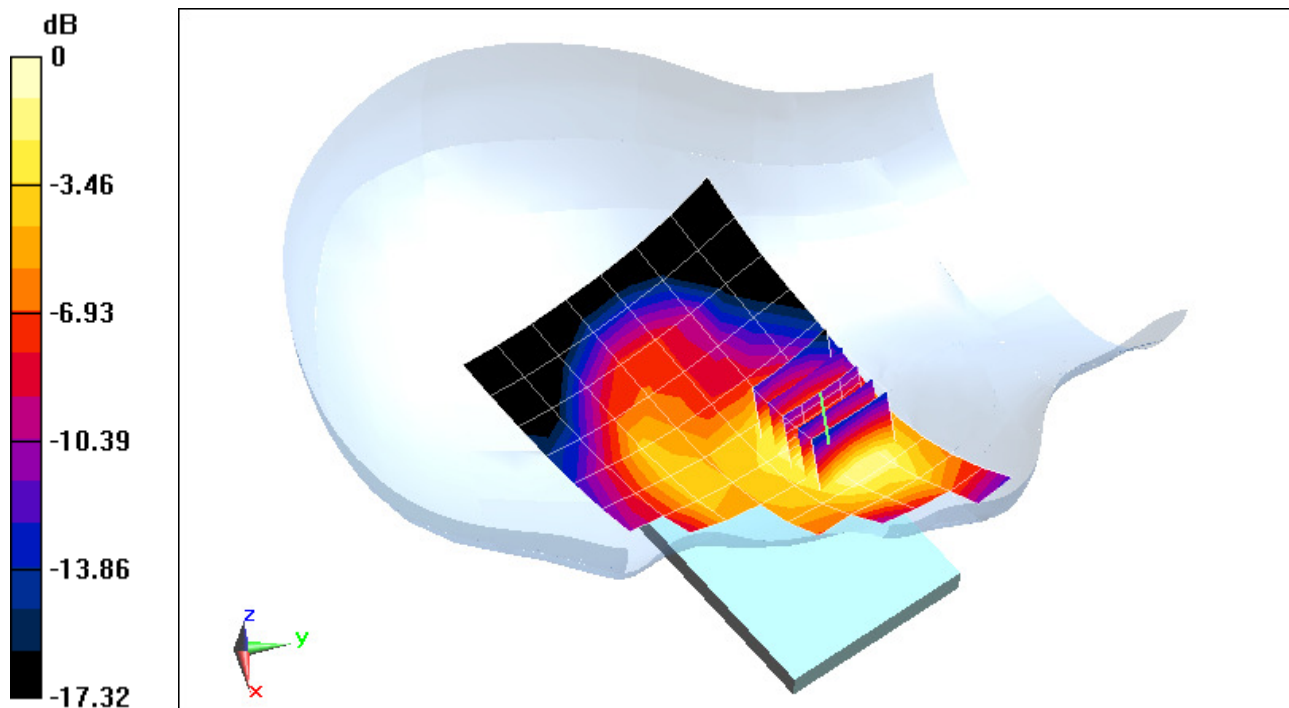
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.433 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.870 W/kg

SAR(1 g) = 0.543 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 32EC6

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

Medium: 750 Head Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.892 \text{ S/m}$; $\epsilon_r = 43.837$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 02-17-2014; Ambient Temp: 23.2°C; Tissue Temp: 22.6°C

Probe: ES3DV3 - SN3288; ConvF(6.56, 6.56, 6.56); Calibrated: 9/23/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/17/2013

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

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

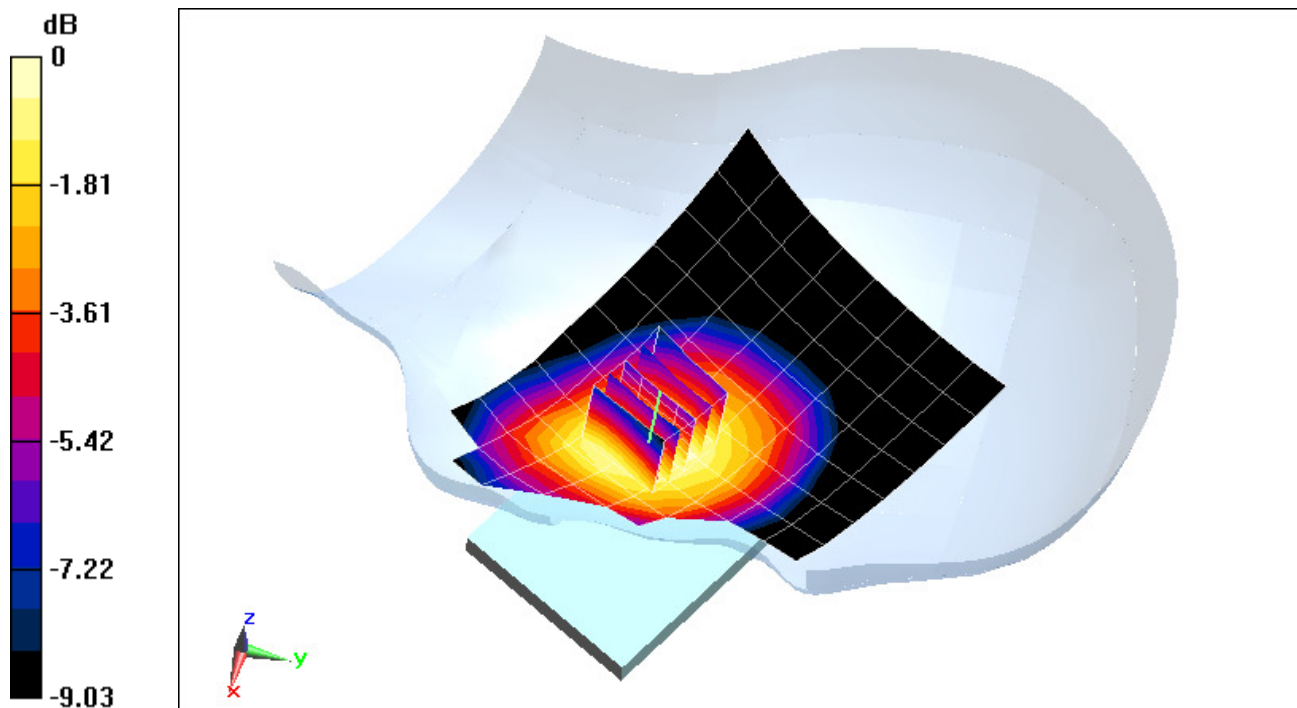
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 19.836 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.365 W/kg

SAR(1 g) = 0.305 W/kg



0 dB = 0.319 W/kg = -4.96 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 32EC6

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

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 0.907 \text{ S/m}$; $\epsilon_r = 41.173$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 02-17-2014; Ambient Temp: 24.3°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3318; ConvF(6.33, 6.33, 6.33); Calibrated: 4/29/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1364; Calibrated: 4/22/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**Mode: LTE Band 5 (Cell.), Left Head, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset, Standard Cover**

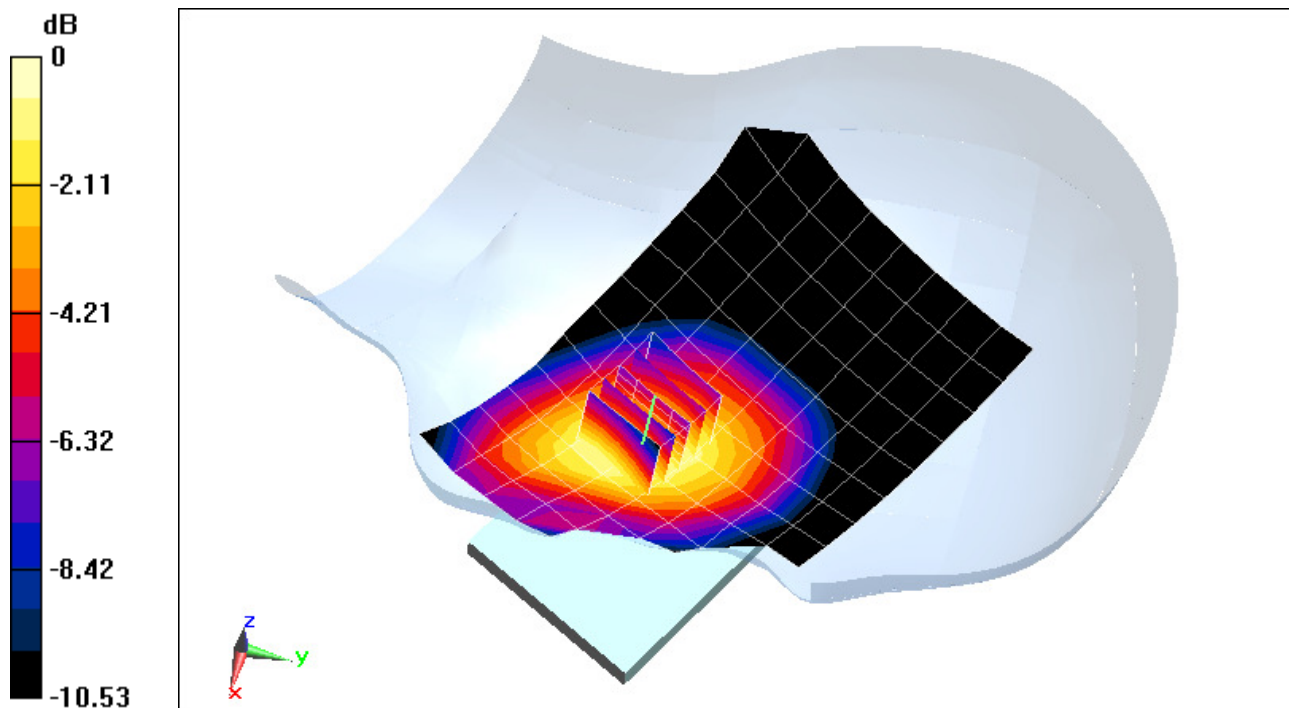
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 20.871 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.455 W/kg

SAR(1 g) = 0.345 W/kg



0 dB = 0.360 W/kg = -4.44 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 32EC6

Communication System: UID 0, LTE RF; Frequency: 1715 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1715 \text{ MHz}$; $\sigma = 1.364 \text{ S/m}$; $\epsilon_r = 38.643$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 02-18-2014; Ambient Temp: 23.4°C; Tissue Temp: 22.9°C

Probe: ES3DV3 - SN3288; ConvF(5.67, 5.67, 5.67); Calibrated: 9/23/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/17/2013

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

**Mode: LTE Band 4 (AWS), Left Head, Cheek, Low.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset, Standard Cover**

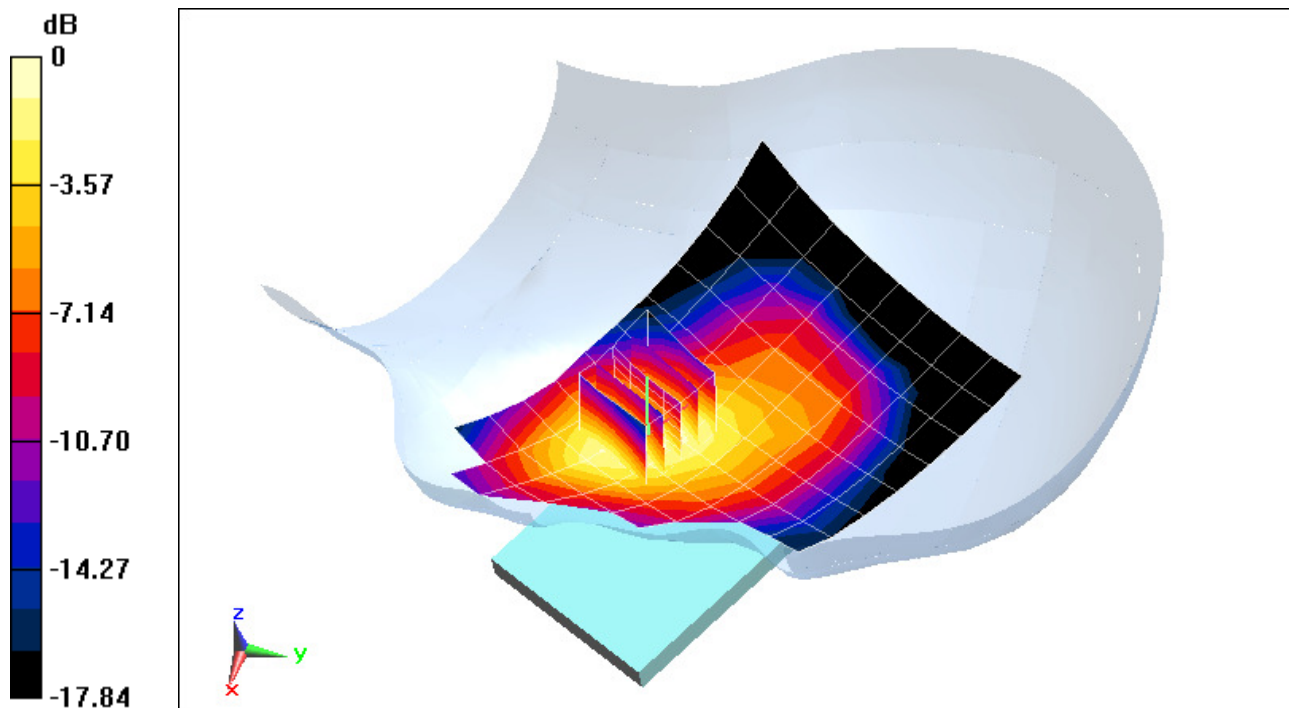
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 18.145 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.563 W/kg

SAR(1 g) = 0.382 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 32EC6

Communication System: UID 0, LTE PCS 10 Mhz; Frequency: 1905 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1905 \text{ MHz}$; $\sigma = 1.454 \text{ S/m}$; $\epsilon_r = 38.192$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 02-19-2014; Ambient Temp: 23.7°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3263; ConvF(5.11, 5.11, 5.11); Calibrated: 5/16/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/13/2013

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1406

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

**Mode: LTE Band 2 (PCS), Left Head, Cheek, High.Ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset, Standard Cover**

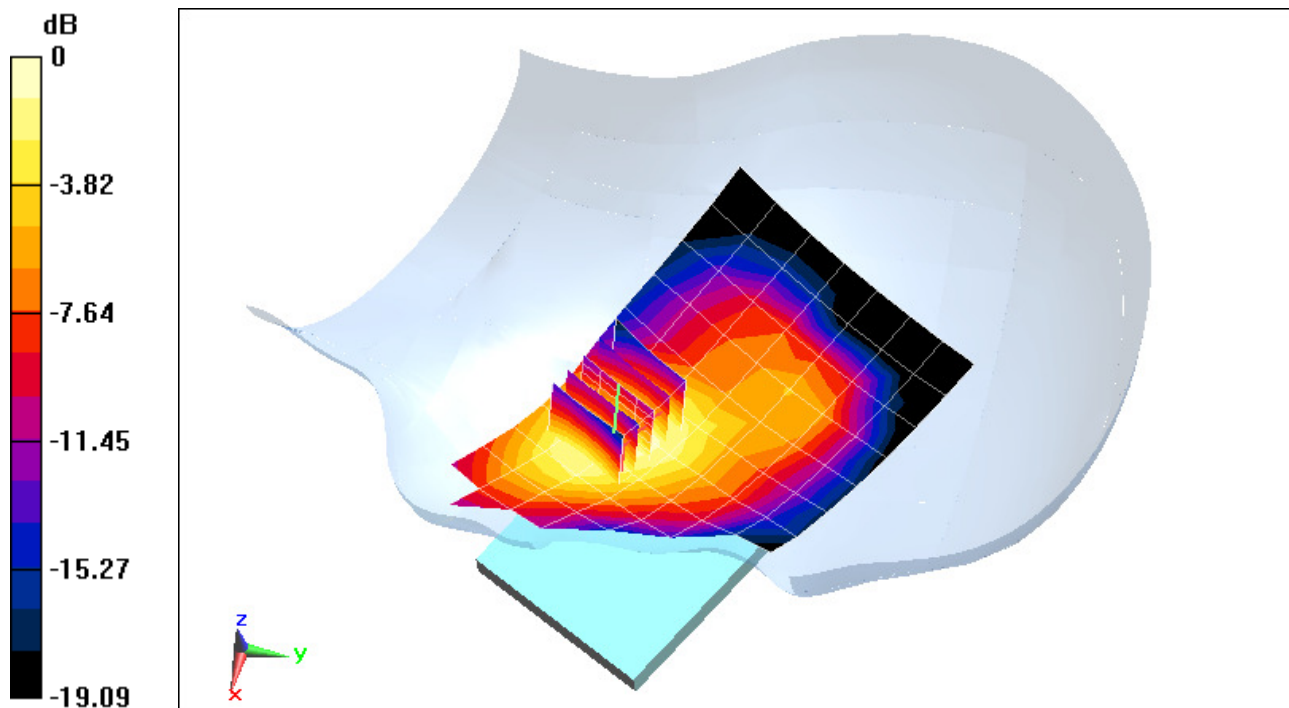
Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 22.001 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.942 W/kg

SAR(1 g) = 0.610 W/kg



0 dB = 0.663 W/kg = -1.78 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 328C6

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

Medium: 2450 Head; Medium parameters used (interpolated):

$f = 2412 \text{ MHz}$; $\sigma = 1.835 \text{ S/m}$; $\epsilon_r = 38.952$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 02-18-2014; Ambient Temp: 23.5°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3287; ConvF(4.43, 4.43, 4.43); 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 (7); SEMCAD X Version 14.6.10 (7164)

**Mode: IEEE 802.11b, Right Head, Cheek, Ch 01, 1 Mbps,
Antenna 1, Standard Cover**

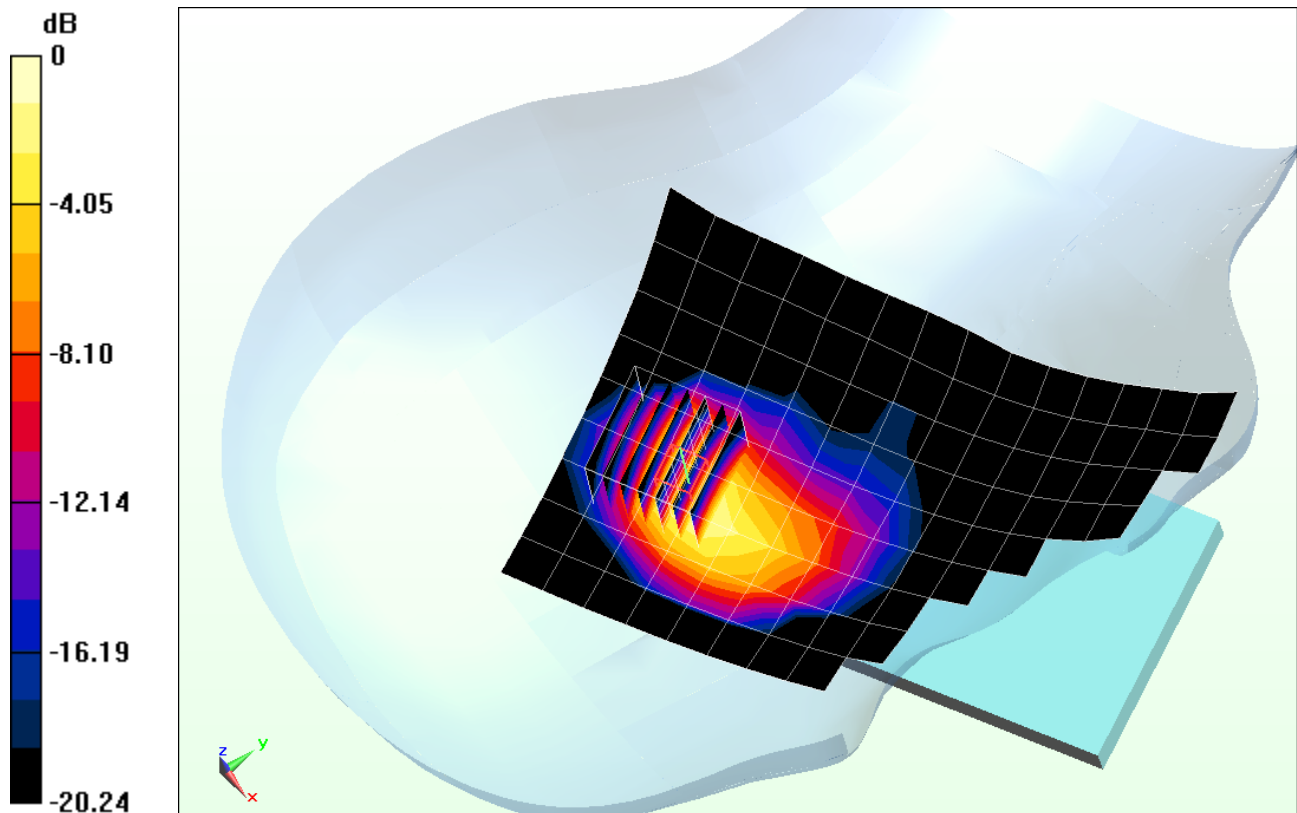
Area Scan (10x16x1): Measurement grid: dx=12mm, dy=12mm

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

Reference Value = 9.492 V/m; Power Drift = 0.20 dB

Peak SAR (extrapolated) = 0.349 W/kg

SAR(1 g) = 0.163 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 31F35

Communication System: UID 0, IEEE 802.11a; Frequency: 5765 MHz; Duty Cycle: 1:1

Medium: 5 GHz Head; Medium parameters used:

$f = 5765 \text{ MHz}$; $\sigma = 5.088 \text{ S/m}$; $\epsilon_r = 35.493$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 02-03-2014; Ambient Temp: 24.3°C; Tissue Temp: 23.3°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 Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

**Mode: IEEE 802.11a 5.8 GHz, Right Head, Cheek, Ch 153, 6 Mbps,
Antenna 2, Standard Cover**

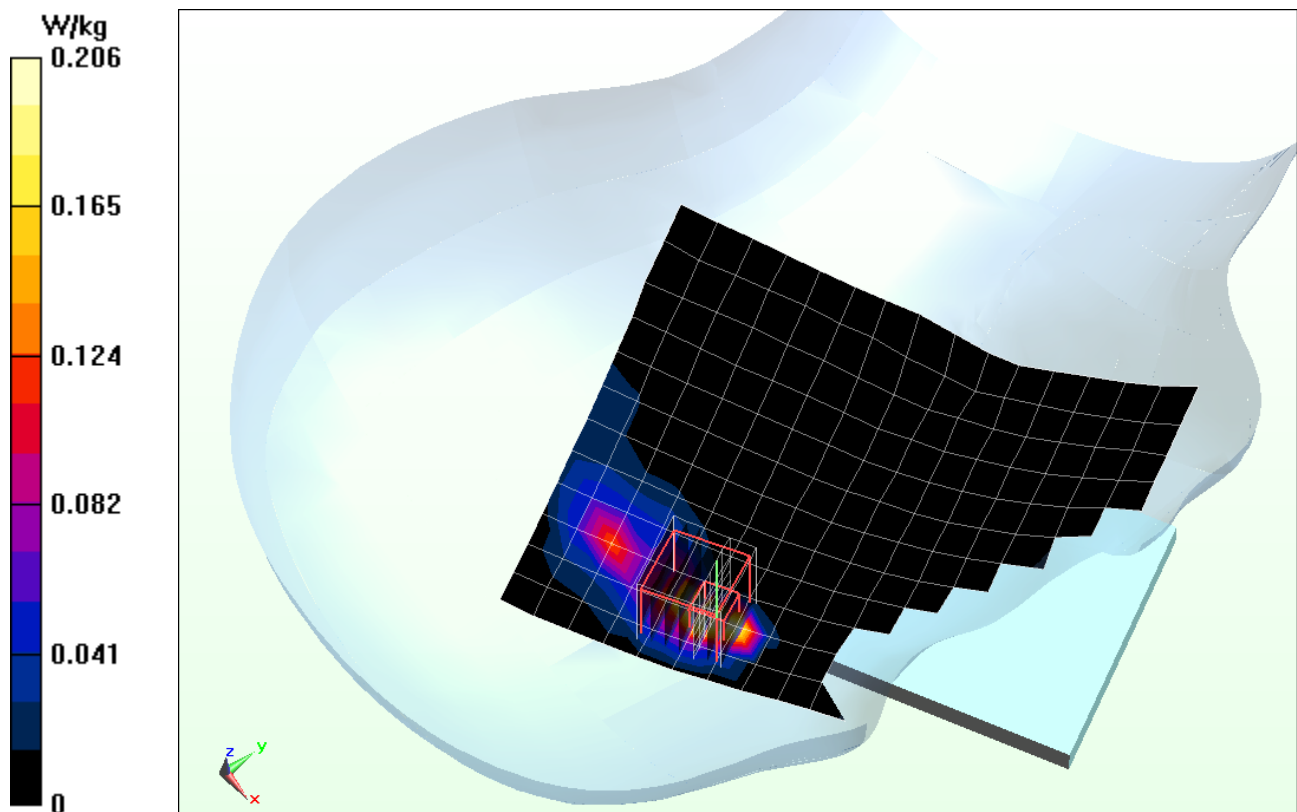
Area Scan (13x16x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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 = 5.548 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.650 W/kg

SAR(1 g) = 0.134 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 31F35

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

Medium: 5 GHz Head; Medium parameters used:

$f = 5680 \text{ MHz}$; $\sigma = 5.006 \text{ S/m}$; $\epsilon_r = 35.596$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 02-03-2014; Ambient Temp: 24.5°C; Tissue Temp: 23.3°C

Probe: EX3DV4 - SN3920; ConvF(4.37, 4.37, 4.37); Calibrated: 12/18/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

**Mode: IEEE 802.11a 5.5 - 5.7 GHz, Right Head, Cheek, Ch 136, 6 Mbps,
Antenna 2, Standard Cover**

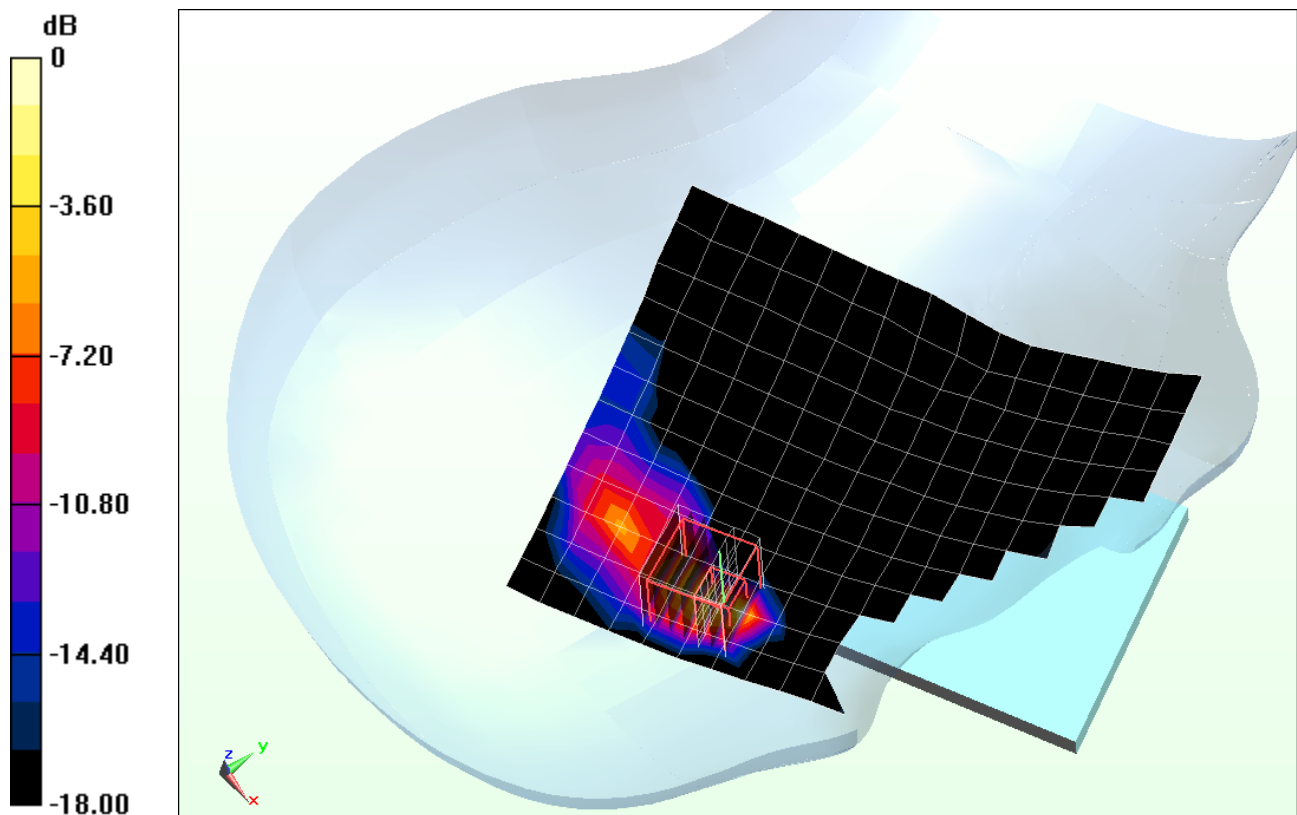
Area Scan (13x16x1): Measurement grid: dx=10mm, dy=10mm

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

Reference Value = 5.743 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.55 W/kg

SAR(1 g) = 0.154 W/kg



0 dB = 0.437 W/kg = -3.60 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 32EF0

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.978 \text{ S/m}$; $\epsilon_r = 55.087$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-17-2014; Ambient Temp: 19.7°C; Tissue Temp: 19.7°C

Probe: ES3DV3 - SN3263; ConvF(6.29, 6.29, 6.29); Calibrated: 5/16/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/13/2013

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

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

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

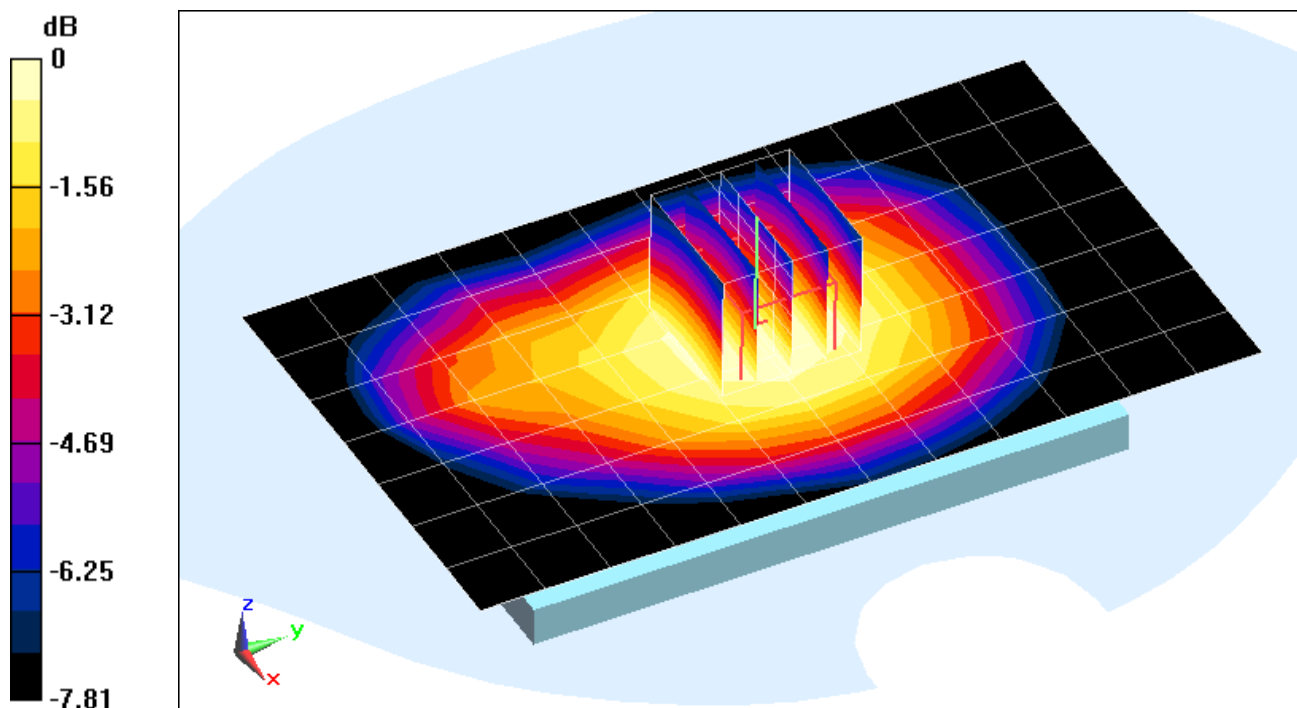
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 28.284 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.816 W/kg

SAR(1 g) = 0.670 W/kg



0 dB = 0.702 W/kg = -1.54 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 32EF0

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.978 \text{ S/m}$; $\epsilon_r = 55.087$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-17-2014; Ambient Temp: 19.7°C; Tissue Temp: 19.7°C

Probe: ES3DV3 - SN3263; ConvF(6.29, 6.29, 6.29); Calibrated: 5/16/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/13/2013

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

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

Mode: Cell. CDMA, Body SAR, Right Edge, Mid.ch, Standard Cover

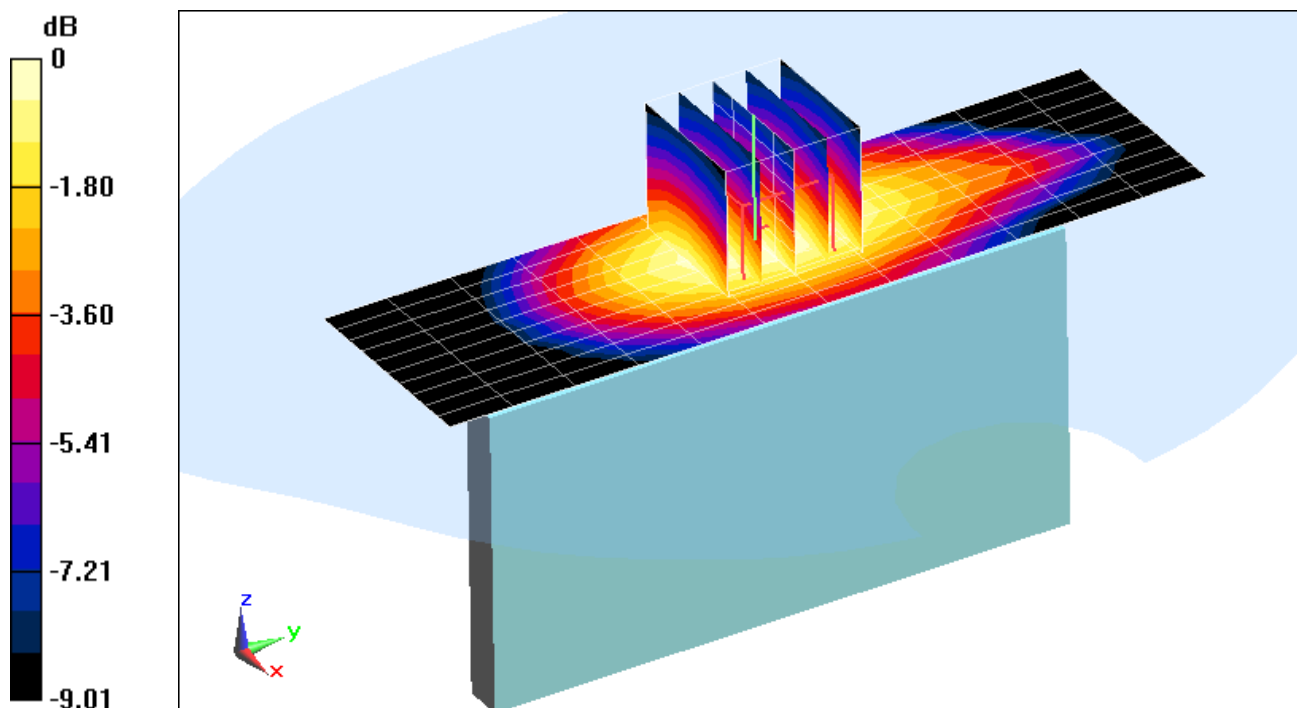
Area Scan (11x13x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 29.196 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.904 W/kg

SAR(1 g) = 0.673 W/kg



0 dB = 0.719 W/kg = -1.43 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 32E32

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

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1908.75 \text{ MHz}$; $\sigma = 1.557 \text{ S/m}$; $\epsilon_r = 53.105$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-17-2014; Ambient Temp: 23.7°C; Tissue Temp: 23.2°C

Probe: ES3DV3 - SN3319; ConvF(4.85, 4.85, 4.85); Calibrated: 4/29/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/22/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

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

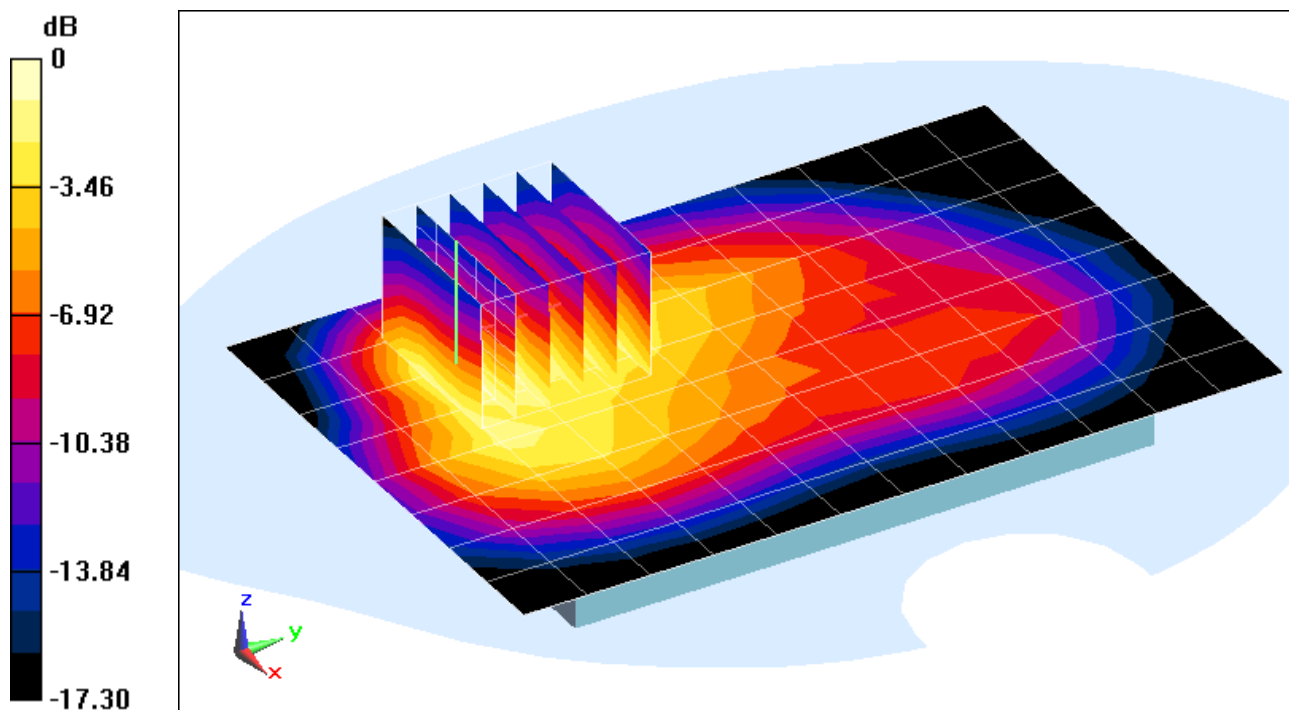
Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 22.648 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.25 W/kg

SAR(1 g) = 0.724 W/kg



0 dB = 0.775 W/kg = -1.11 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 32EF0

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

Medium: 750 Body Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.939 \text{ S/m}$; $\epsilon_r = 54.944$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-18-2014; Ambient Temp: 19.9°C; Tissue Temp: 20.6°C

Probe: ES3DV3 - SN3263; ConvF(6.37, 6.37, 6.37); Calibrated: 5/16/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/13/2013

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

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

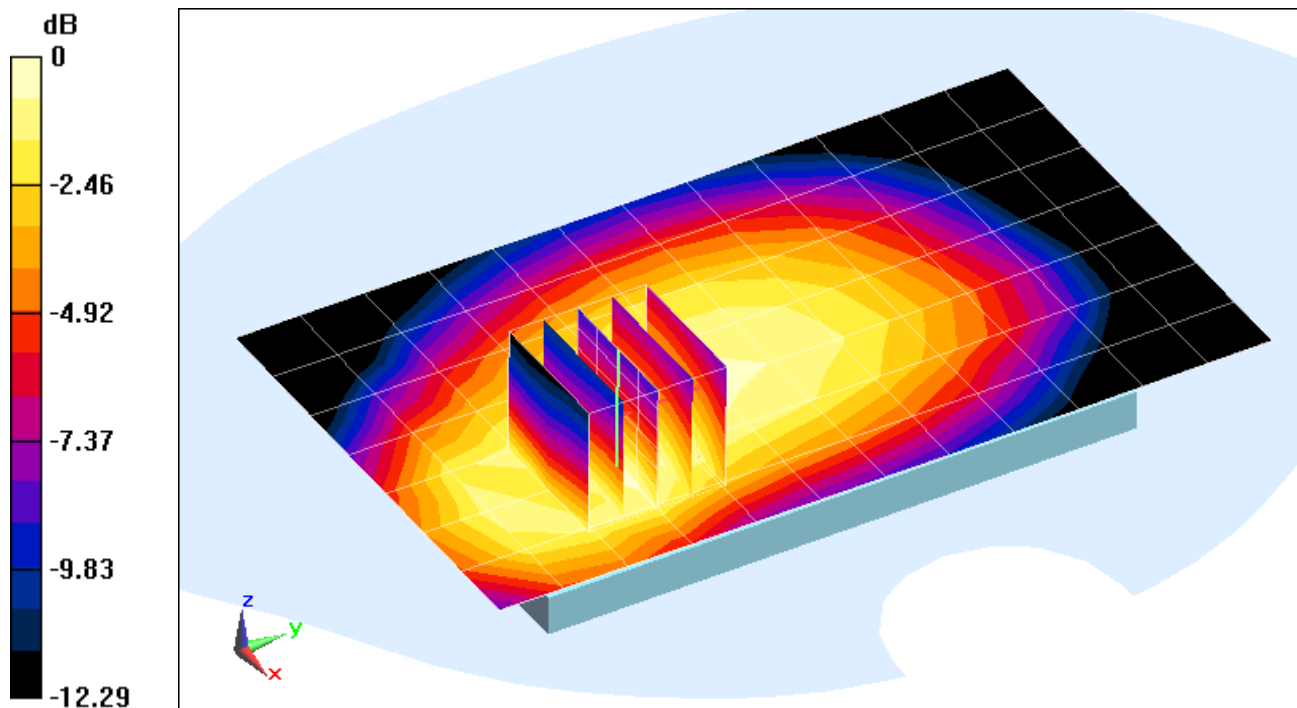
Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 20.675 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.515 W/kg

SAR(1 g) = 0.369 W/kg



0 dB = 0.390 W/kg = -4.09 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 32EF0

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

Medium: 750 Body Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.939 \text{ S/m}$; $\epsilon_r = 54.944$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-18-2014; Ambient Temp: 19.9°C; Tissue Temp: 20.6°C

Probe: ES3DV3 - SN3263; ConvF(6.37, 6.37, 6.37); Calibrated: 5/16/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/13/2013

Phantom: SAM Main; Type: SAM 4.0; Serial: TP-1114

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

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

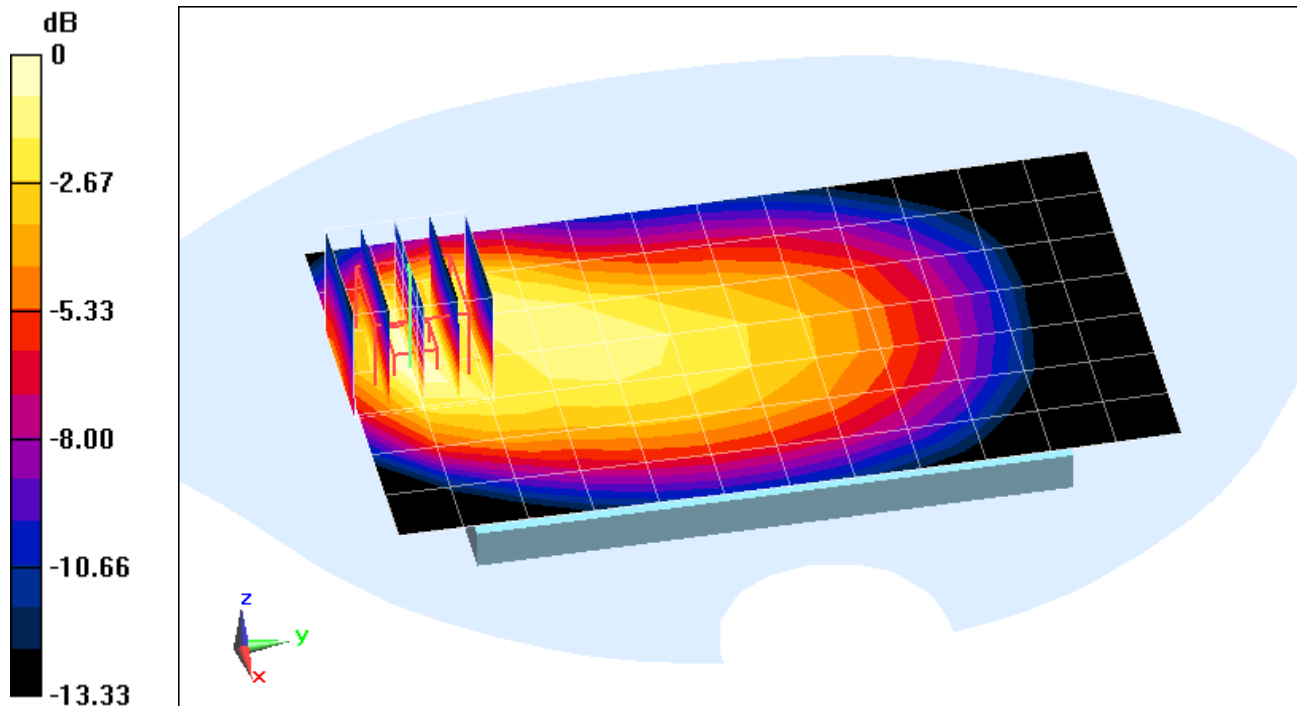
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.722 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.817 W/kg

SAR(1 g) = 0.467 W/kg



0 dB = 0.518 W/kg = -2.86 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 32EF0

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 0.978 \text{ S/m}$; $\epsilon_r = 55.087$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-17-2014; Ambient Temp: 19.7°C; Tissue Temp: 19.7°C

Probe: ES3DV3 - SN3263; ConvF(6.29, 6.29, 6.29); Calibrated: 5/16/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/13/2013

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

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

**Mode: LTE Band 5 (Cell.), Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset, Standard Cover**

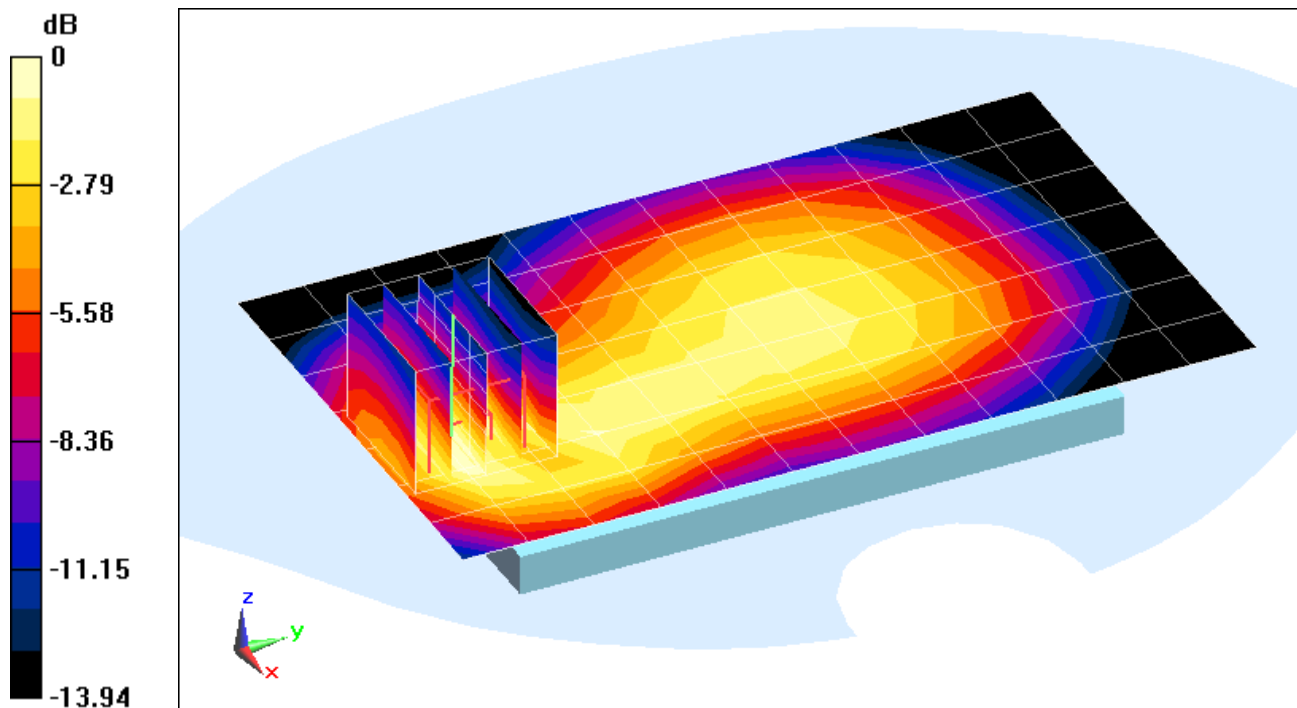
Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 22.390 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.832 W/kg

SAR(1 g) = 0.486 W/kg



0 dB = 0.531 W/kg = -2.75 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 32EF0

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

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 0.978 \text{ S/m}$; $\epsilon_r = 55.087$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-17-2014; Ambient Temp: 19.7°C; Tissue Temp: 19.7°C

Probe: ES3DV3 - SN3263; ConvF(6.29, 6.29, 6.29); Calibrated: 5/16/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/13/2013

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

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

**Mode: LTE Band 5 (Cell.), Body SAR, Front side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset, Standard Cover**

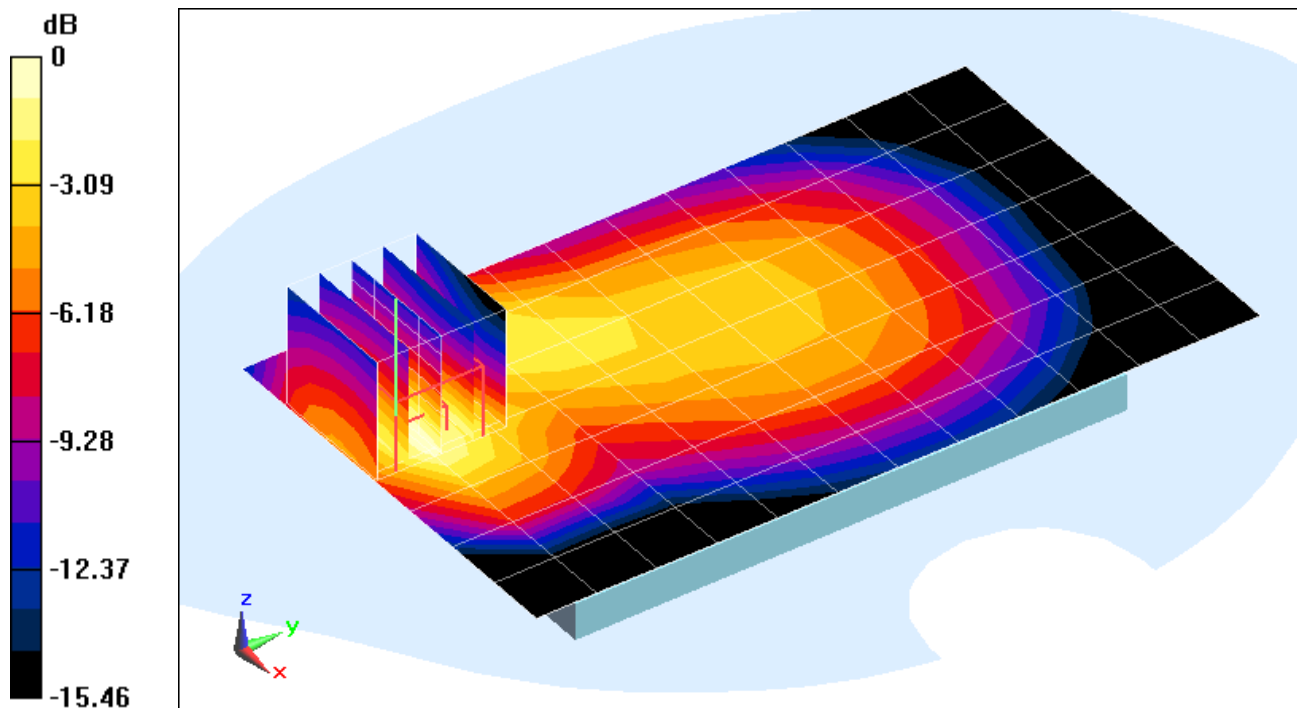
Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 28.268 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 1.25 W/kg

SAR(1 g) = 0.721 W/kg



0 dB = 0.793 W/kg = -1.01 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 32EC6

Communication System: UID 0, LTE RF; Frequency: 1715 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1715 \text{ MHz}$; $\sigma = 1.472 \text{ S/m}$; $\epsilon_r = 54.456$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-18-2014; Ambient Temp: 23.4°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3288; ConvF(5.1, 5.1, 5.1); Calibrated: 9/23/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/17/2013

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

**Mode: LTE Band 4 (AWS), Body SAR, Back side, Low.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset, Standard Cover**

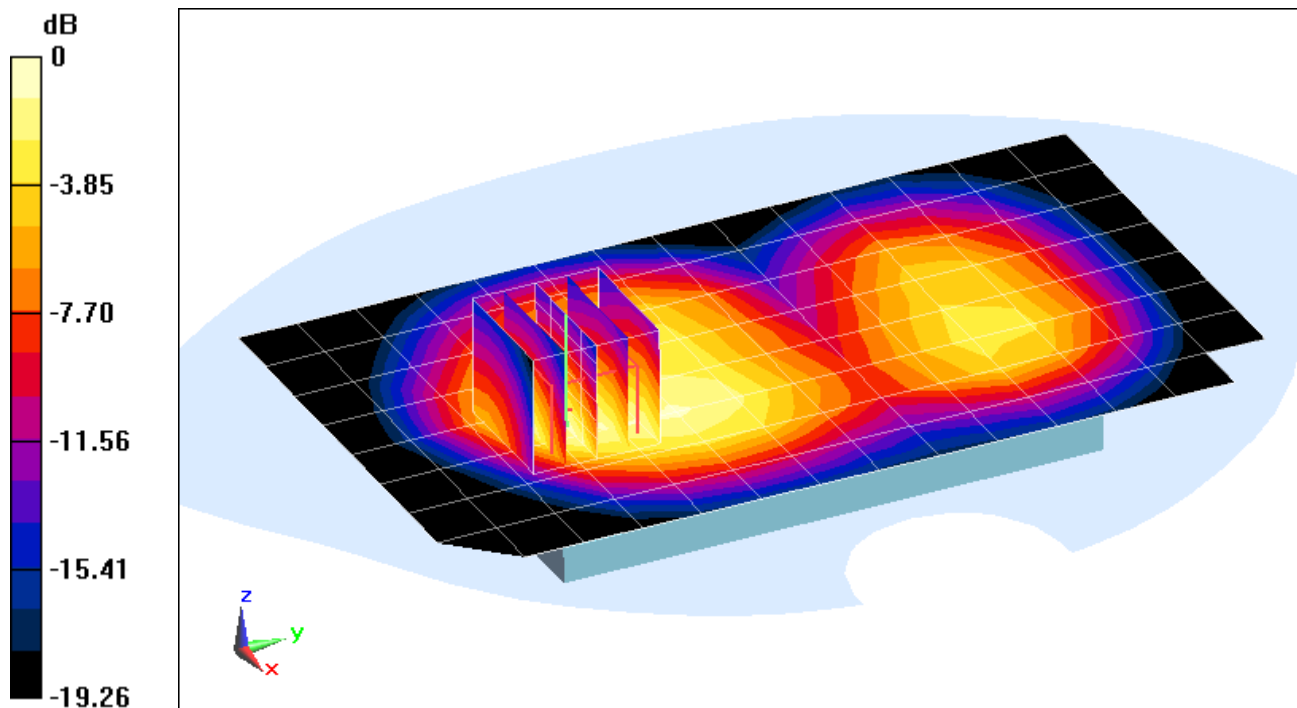
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 18.160 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.908 W/kg

SAR(1 g) = 0.509 W/kg



0 dB = 0.576 W/kg = -2.40 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 32EC6

Communication System: UID 0, LTE RF; Frequency: 1715 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1715 \text{ MHz}$; $\sigma = 1.472 \text{ S/m}$; $\epsilon_r = 54.456$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-18-2014; Ambient Temp: 23.4°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3288; ConvF(5.1, 5.1, 5.1); Calibrated: 9/23/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/17/2013

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.10 (7164)

**Mode: LTE Band 4 (AWS), Body SAR, Front side, Low.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset, Standard Cover**

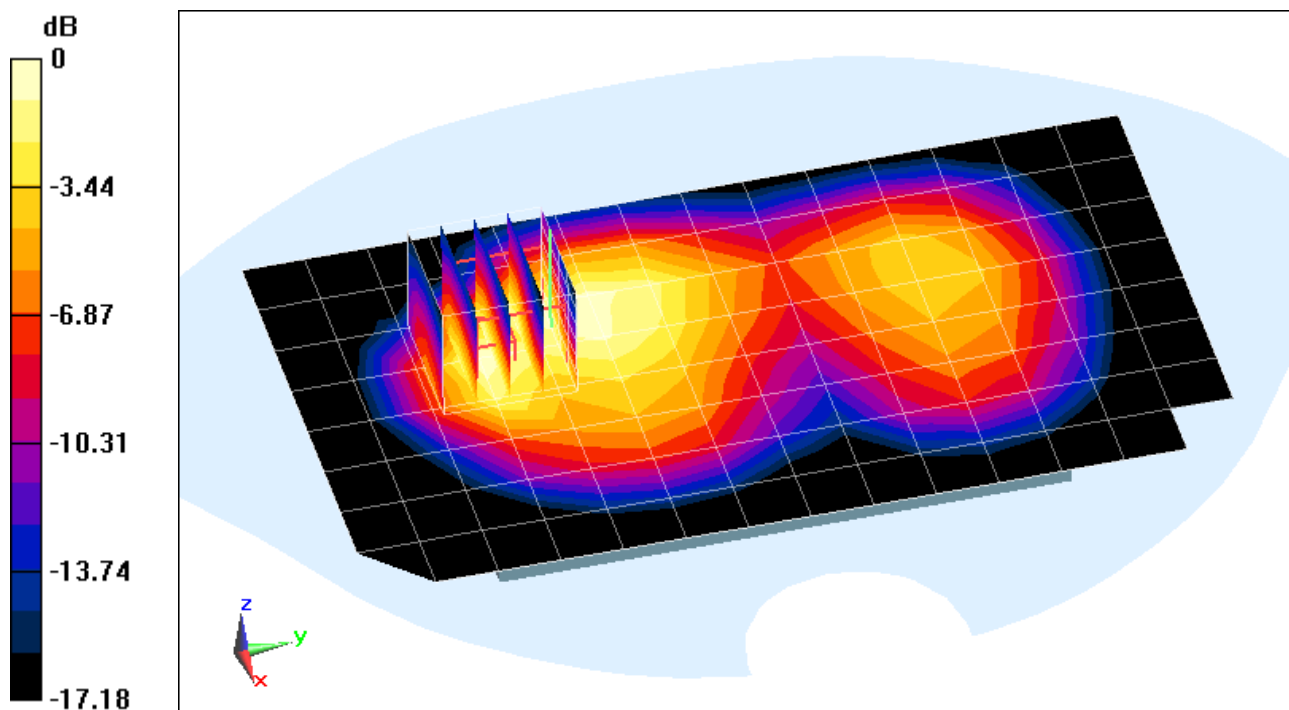
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 21.174 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.09 W/kg

SAR(1 g) = 0.586 W/kg



0 dB = 0.651 W/kg = -1.86 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 32E32

Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1905 \text{ MHz}$; $\sigma = 1.553 \text{ S/m}$; $\epsilon_r = 53.115$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section: Space: 1.0 cm

Test Date: 02-17-2014; Ambient Temp: 23.7°C; Tissue Temp: 23.2°C

Probe: ES3DV3 - SN3319; ConvF(4.85, 4.85, 4.85); Calibrated: 4/29/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/22/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**Mode: LTE Band 2 (PCS), Body SAR, Back side, High.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset, Wireless Charging Cover**

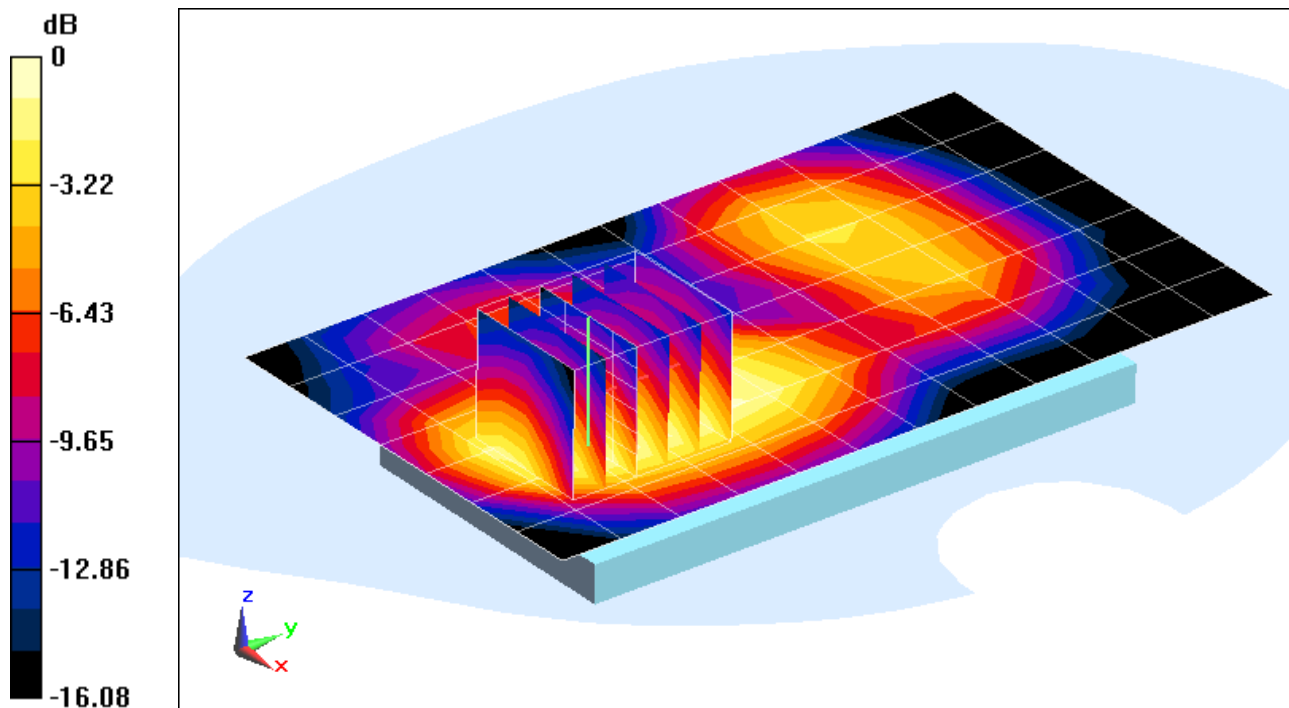
Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 12.275 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.329 W/kg

SAR(1 g) = 0.208 W/kg



0 dB = 0.225 W/kg = -6.48 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 32E32

Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1905 \text{ MHz}$; $\sigma = 1.553 \text{ S/m}$; $\epsilon_r = 53.115$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-17-2014; Ambient Temp: 23.7°C; Tissue Temp: 23.2°C

Probe: ES3DV3 - SN3319; ConvF(4.85, 4.85, 4.85); Calibrated: 4/29/2013;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 4/22/2013

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**Mode: LTE Band 2 (PCS), Body SAR, Front side, High.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset, Wireless Charging Cover**

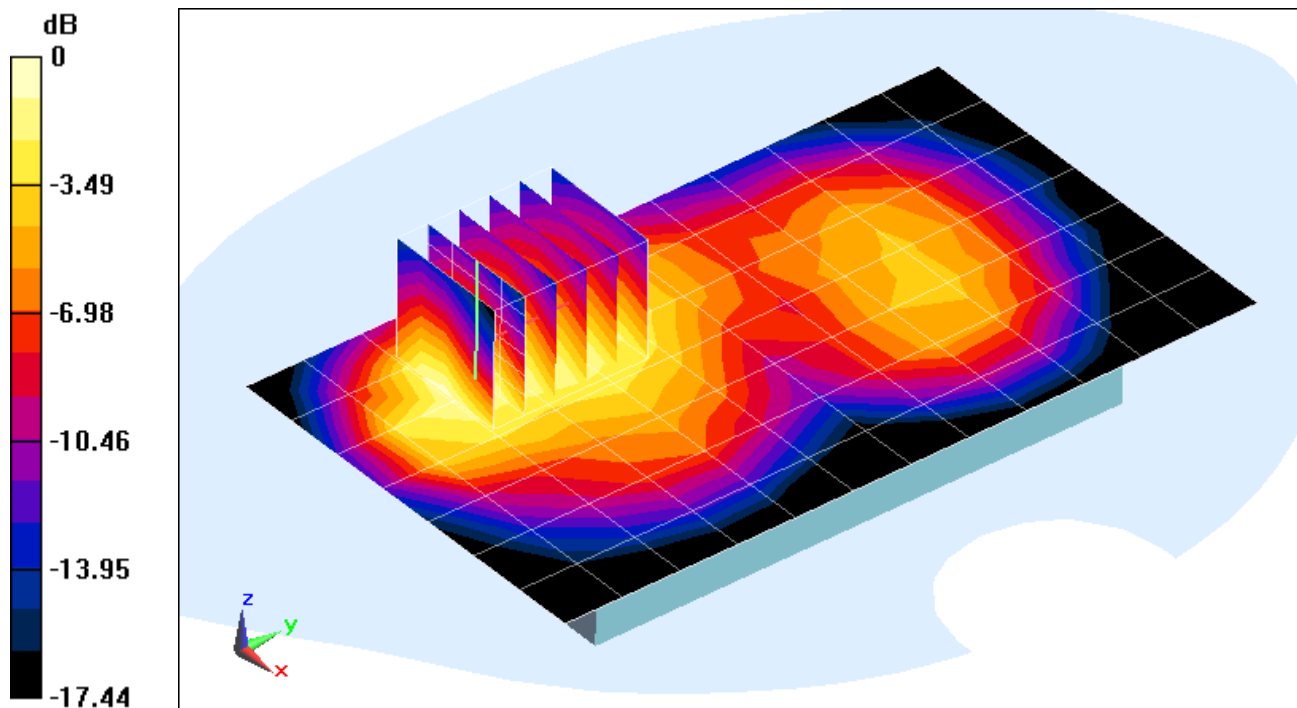
Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 19.255 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.829 W/kg

SAR(1 g) = 0.545 W/kg



0 dB = 0.600 W/kg = -2.22 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 00F05

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

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

$f = 2437 \text{ MHz}$; $\sigma = 1.92 \text{ S/m}$; $\epsilon_r = 51.381$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-12-2014; Ambient Temp: 24.4°C; Tissue Temp: 24.0°C

Probe: ES3DV3 - SN3318; ConvF(4.31, 4.31, 4.31); Calibrated: 4/29/2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1364; Calibrated: 4/22/2013

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

Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

**Mode: IEEE 802.11b, Body SAR, Ch 06, 1 Mbps, Back Side,
Antenna 1, Standard Cover**

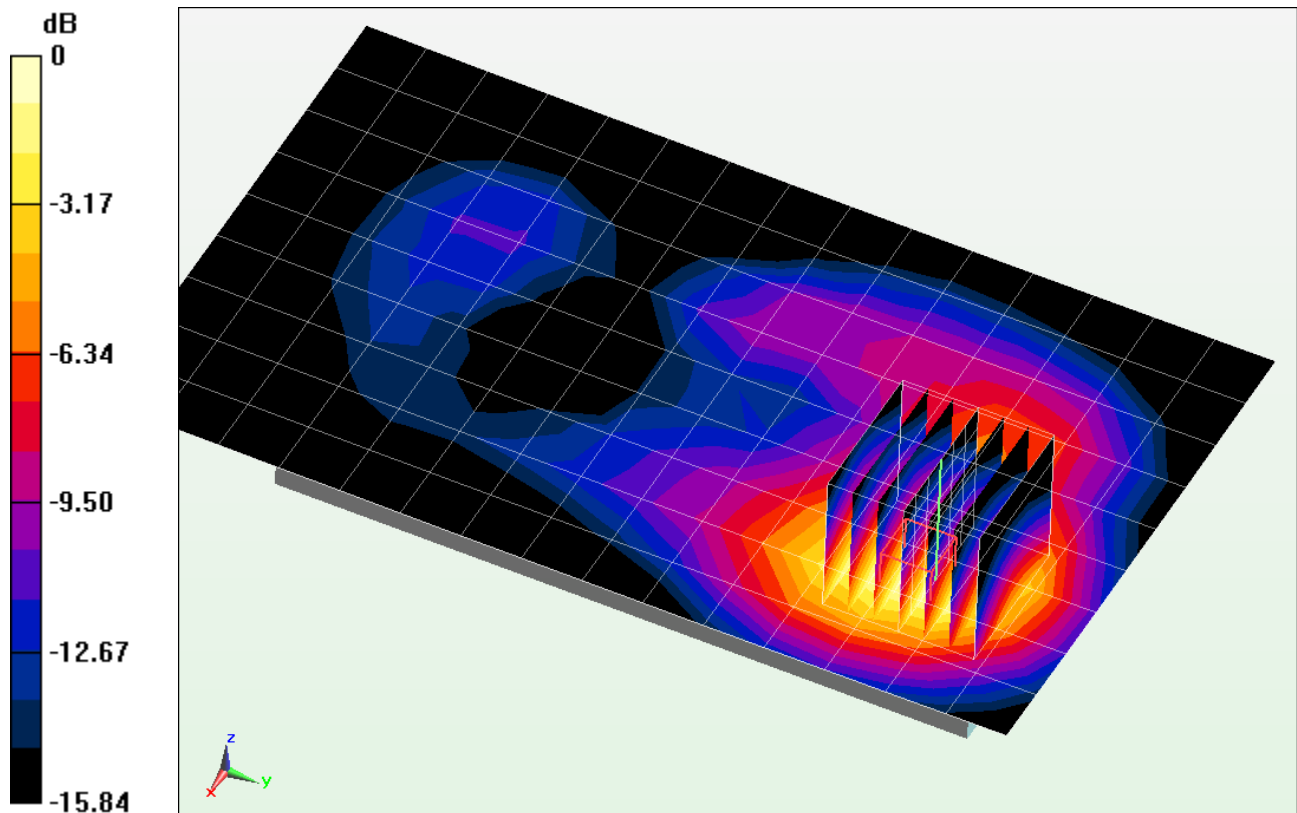
Area Scan (10x16x1): Measurement grid: dx=12mm, dy=12mm

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

Reference Value = 10.646 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.434 W/kg

SAR(1 g) = 0.235 W/kg



0 dB = 0.289 W/kg = -5.39 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 15ECE

Communication System: UID 0, IEEE 802.11a; Frequency: 5765 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body; Medium parameters used:

$f = 5765 \text{ MHz}$; $\sigma = 6.028 \text{ S/m}$; $\epsilon_r = 45.89$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-06-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.7°C

Probe: EX3DV4 - SN3914; ConvF(4.14, 4.14, 4.14); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**Mode: IEEE 802.11a, 5.8 GHz, Body SAR, Ch 153, 6 Mbps, Back Side,
Antenna 2, Standard Cover**

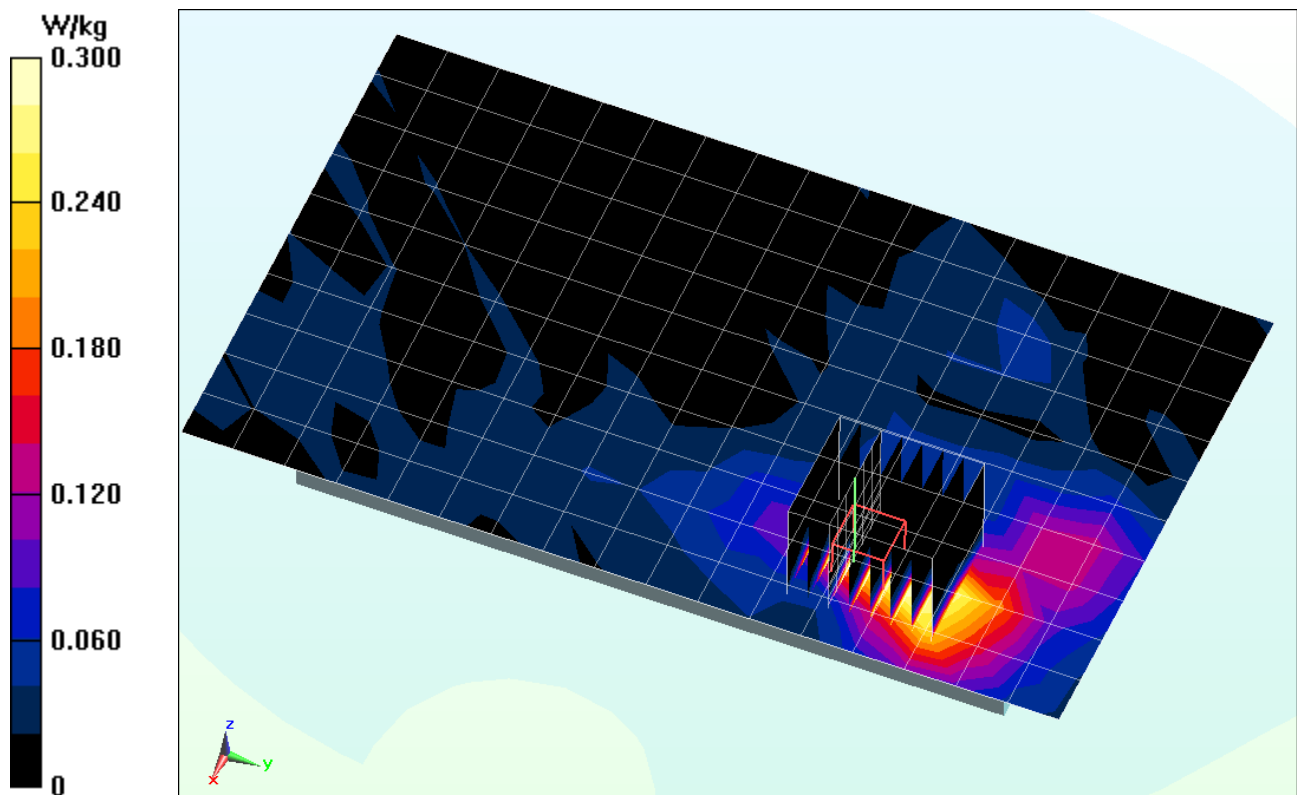
Area Scan (11x18x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 6.488 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 1.47 W/kg

SAR(1 g) = 0.287 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG900R4; Type: Portable Handset; Serial: 15ECE

Communication System: UID 0, IEEE 802.11a; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body; Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 5.6 \text{ S/m}$; $\epsilon_r = 46.464$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-06-2014; Ambient Temp: 24.1°C; Tissue Temp: 23.8°C

Probe: EX3DV4 - SN3914; ConvF(4.07, 4.07, 4.07); Calibrated: 10/23/2013;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

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

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

Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

**Mode: IEEE 802.11a, 5.5 - 5.7 GHz, Body SAR, Ch 100, 6 Mbps, Back Side,
Antenna 2, Standard Cover**

Area Scan (11x18x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 6.249 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 1.49 W/kg

SAR(1 g) = 0.296 W/kg

