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SAR EVALUATION REPORT

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

Date of Testing:
07/24/17 - 08/22/17
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
1M1707240228-07-R1.ZNF

FCC ID: **ZNFLK460**

APPLICANT: **LG ELECTRONICS MOBILECOMM U.S.A., INC.**

DUT Type: Portable Tablet
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model: LG-LK460
Additional Model(s): LGLK460, LK460

Equipment Class	Band & Mode	Tx Frequency	SAR
			1 gm Body W/kg
PCB	CDMA/EVDO BC10 (§90S)	817.90 - 823.10 MHz	0.43
PCB	CDMA/EVDO BC0 (§22H)	824.70 - 848.31 MHz	0.43
PCB	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	0.70
PCB	LTE Band 12	699.7 - 715.3 MHz	0.30
PCB	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.39
PCB	LTE Band 5 (Cell)	824.7 - 848.3 MHz	N/A
PCB	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	0.70
PCB	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.59
PCB	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A
PCB	LTE Band 41	2498.5 - 2687.5 MHz	0.48
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.44
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.34
Simultaneous SAR per KDB 690783 D01v01r03:			1.14

Note: This revised Test Report (S/N: 1M1707240228-07-R1.ZNF) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

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

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

Randy Ortanez
President

The SAR Tick is an initiative of the Mobile Manufacturers Forum (MMF). While a product may be considered eligible, use of the SAR Tick logo requires an agreement with the MMF. Further details can be obtained by emailing: sartick@mmfai.info.

TABLE OF CONTENTS

1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
CDMA/EVDO BC10 (§90S)	Data	817.90 - 823.10 MHz
CDMA/EVDO BC0 (§22H)	Data	824.70 - 848.31 MHz
PCS CDMA/EVDO	Data	1851.25 - 1908.75 MHz
LTE Band 12	Data	699.7 - 715.3 MHz
LTE Band 26 (Cell)	Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Data	824.7 - 848.3 MHz
LTE Band 4 (AWS)	Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Data	1850.7 - 1909.3 MHz
LTE Band 41	Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Data	2412 - 2462 MHz
Bluetooth	Data	2402 - 2480 MHz

1.2 Power Reduction for SAR

This device uses a power reduction mechanism for SAR compliance. The power reduction mechanism is activated when the device is used in close proximity to the user's body. FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device. Detailed descriptions of the power reduction mechanism are included in the operational description.

1.3 Nominal and Maximum Output Power Specifications

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

1.3.1 Maximum Output Powers

Mode / Band		Modulated Average (dBm)
CDMA/EVDO BC10 (§90S)	Maximum	**25.0**
	Nominal	**24.5**
CDMA/EVDO BC0 (§22H)	Maximum	**25.0**
	Nominal	**24.5**
PCS CDMA/EVDO	Maximum	**25.0**
	Nominal	**24.5**

Mode / Band		Modulated Average (dBm)
LTE Band 12	Maximum	**24.7**
	Nominal	**24.2**
LTE Band 26 (Cell)	Maximum	**24.7**
	Nominal	**24.2**
LTE Band 5 (Cell)	Maximum	**24.2**
	Nominal	**23.7**
LTE Band 4 (AWS)	Maximum	**24.2**
	Nominal	**23.7**
LTE Band 25 (PCS)	Maximum	**24.2**
	Nominal	**23.7**
LTE Band 2 (PCS)	Maximum	**24.2**
	Nominal	**23.7**
LTE Band 41	Maximum	**24.2**
	Nominal	**23.7**

Mode / Band		Modulated Average (dBm)		
		Ch. 1	Ch. 2-10	Ch. 11
IEEE 802.11b (2.4 GHz)	Maximum	**18.0**		
	Nominal	**17.0**		
IEEE 802.11g (2.4 GHz)	Maximum	**16.0**	**18.0**	**16.0**
	Nominal	**15.0**	**17.0**	**15.0**
IEEE 802.11n (2.4 GHz)	Maximum	**16.0**	**18.0**	**16.0**
	Nominal	**15.0**	**17.0**	**15.0**

Mode / Band		Modulated Average (dBm)
Bluetooth (1 Mbps)	Maximum	**11.5**
	Nominal	**10.5**
Bluetooth (2 Mbps)	Maximum	**9.0**
	Nominal	**8.0**
Bluetooth (3 Mbps)	Maximum	**9.0**
	Nominal	**8.0**
Bluetooth LE	Maximum	**2.0**

1.3.2 Reduced Output Powers

Mode / Band		Modulated Average (dBm)
CDMA/EVDO BC10 (§90S)	Maximum	**19.0**
	Nominal	**18.5**
CDMA/EVDO BC0 (§22H)	Maximum	**19.0**
	Nominal	**18.5**
PCS CDMA/EVDO	Maximum	**14.0**
	Nominal	**13.5**

Mode / Band		Modulated Average (dBm)
LTE Band 12	Maximum	**18.7**
	Nominal	**18.2**
LTE Band 26 (Cell)	Maximum	**18.7**
	Nominal	**18.2**
LTE Band 5 (Cell)	Maximum	**18.2**
	Nominal	**17.7**
LTE Band 4 (AWS)	Maximum	**13.2**
	Nominal	**12.7**
LTE Band 25 (PCS)	Maximum	**13.2**
	Nominal	**12.7**
LTE Band 2 (PCS)	Maximum	**13.2**
	Nominal	**12.7**
LTE Band 41	Maximum	**14.2**
	Nominal	**13.7**

Mode / Band		Modulated Average (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	**8.0**
	Nominal	**7.0**
IEEE 802.11g (2.4 GHz)	Maximum	**8.0**
	Nominal	**7.0**
IEEE 802.11n (2.4 GHz)	Maximum	**8.0**
	Nominal	**7.0**

1.4 DUT Antenna Locations

The overall dimensions of this device are > 200 mm. A diagram showing the location of the device antennas can be found in Appendix F. Exact antenna dimensions and separation distances are shown in the Technical Descriptions in the FCC filing.

Table 1-1
Device Edges/Sides for SAR Testing

Mode	Back	Top	Bottom	Right	Left
EVDO BC10 (§90S)	Yes	No	Yes	Yes	No
EVDO BC0 (§22H)	Yes	No	Yes	Yes	No
PCS EVDO	Yes	No	Yes	Yes	No
LTE Band 12	Yes	No	Yes	Yes	No
LTE Band 26 (Cell)	Yes	No	Yes	Yes	No
LTE Band 4 (AWS)	Yes	No	Yes	Yes	No
LTE Band 25 (PCS)	Yes	No	Yes	Yes	No
LTE Band 41	Yes	No	Yes	Yes	No
2.4 GHz WLAN	Yes	Yes	No	No	No
Bluetooth	Yes	Yes	No	No	No

Note: Per FCC KDB 616217 D04v01r01, particular DUT edges were not required to be evaluated for SAR based on the SAR exclusion threshold in KDB 447498 D01v06.

1.5 Simultaneous Transmission Capabilities

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

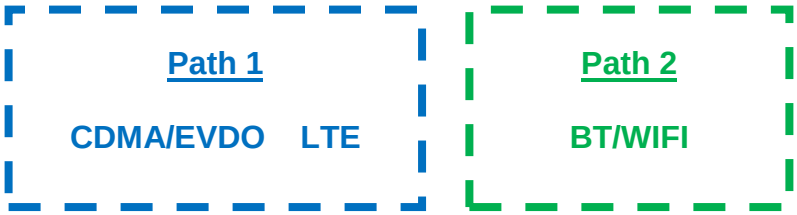

Figure 1-1
Simultaneous Transmission Paths

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

Table 1-2
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Body
1	LTE + 2.4 GHz WI-FI	Yes
2	LTE + 2.4 GHz Bluetooth	Yes
3	CDMA/EVDO data + 2.4 GHz WI-FI	Yes
4	CDMA/EVDO data + 2.4 GHz Bluetooth	Yes

1. 2.4 GHz WLAN and 2.4 GHz Bluetooth share the same antenna path and cannot transmit simultaneously.
2. All licensed modes share the same antenna path and cannot transmit simultaneously.

1.6 Miscellaneous SAR Test Considerations

(A) 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 D05v02r04.

This device supports both LTE Band 5 and LTE Band 26. Since the supported frequency span for LTE Band 5 falls completely within the supported frequency span for LTE Band 26, LTE Band 5 target power is lower than LTE Band 26 target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE Band 26.

This device supports both LTE Band 2 and LTE Band 25. Since the supported frequency span for LTE Band 2 falls completely within the supported frequency span for LTE Band 25, both LTE bands have the same target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE Band 25.

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

1.7 Sound Pack Accessory

This DUT may be used with an optional sound pack attached to the device. Per FCC KDB Publication 648474 D03v01r04, SAR was measured with the sound pack for the worst-case test configurations for each wireless technology, frequency band, and operating mode. Since reported SAR did not exceed 1.2 W/kg, additional testing with the sound pack accessory was not required.

1.8 Guidance Applied

- IEEE 1528-2013
- FCC KDB Publication 941225 D01v03r01, D05v02r04, D05Av01r02 (3G/4G)
- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v06 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 616217 D04v01r02 (Tablet SAR Considerations)
- FCC KDB Publication 648474 D03v01r04 (Accessory Guidance)

1.9 Device Serial Numbers

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

	Maximum Serial Number	Reduced Serial Number
CDMA/EVDO BC10 (§90S)	01979	01961
CDMA/EVDO BC0 (§22H)	01979	01961
PCS CDMA/EVDO	01979	01961
LTE Band 12	01979	01961
LTE Band 26 (Cell)	01979	01972
LTE Band 4 (AWS)	01981	01972
LTE Band 25 (PCS)	01979	01961
LTE Band 41	01979	01961
2.4 GHz WLAN	01976	01980
Bluetooth	01976	-

2 LTE INFORMATION

LTE Information					
FCC ID	**ZNFLK460**				
Form Factor	Portable Tablet				
Frequency Range of each LTE transmission band	LTE Band 12 (699.7 - 715.3 MHz)				
	LTE Band 26 (Cell) (814.7 - 848.3 MHz)				
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)				
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
Channel Bandwidths	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 12: 1.4 MHz	699.7 (23017)		707.5 (23095)	715.3 (23173)	
LTE Band 12: 3 MHz	700.5 (23025)		707.5 (23095)	714.5 (23165)	
LTE Band 12: 5 MHz	701.5 (23035)		707.5 (23095)	713.5 (23155)	
LTE Band 12: 10 MHz	704 (23060)		707.5 (23095)	711 (23130)	
LTE Band 26 (Cell): 1.4 MHz	814.7 (26697)		831.5 (26865)	848.3 (27033)	
LTE Band 26 (Cell): 3 MHz	815.5 (26705)		831.5 (26865)	847.5 (27025)	
LTE Band 26 (Cell): 5 MHz	816.5 (26715)		831.5 (26865)	846.5 (27015)	
LTE Band 26 (Cell): 10 MHz	819 (26740)		831.5 (26865)	844 (26990)	
LTE Band 26 (Cell): 15 MHz	821.5 (26765)		831.5 (26865)	841.5 (26965)	
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)		836.5 (20525)	848.3 (20643)	
LTE Band 5 (Cell): 3 MHz	825.5 (20415)		836.5 (20525)	847.5 (20635)	
LTE Band 5 (Cell): 5 MHz	826.5 (20425)		836.5 (20525)	846.5 (20625)	
LTE Band 5 (Cell): 10 MHz	829 (20450)		836.5 (20525)	844 (20600)	
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)		1732.5 (20175)	1754.3 (20393)	
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)		1732.5 (20175)	1753.5 (20385)	
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)		1732.5 (20175)	1752.5 (20375)	
LTE Band 4 (AWS): 10 MHz	1715 (20000)		1732.5 (20175)	1750 (20350)	
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)		1732.5 (20175)	1747.5 (20325)	
LTE Band 4 (AWS): 20 MHz	1720 (20050)		1732.5 (20175)	1745 (20300)	
LTE Band 25 (PCS): 1.4 MHz	1850.7 (26047)		1882.5 (26365)	1914.3 (26683)	
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)		1882.5 (26365)	1913.5 (26675)	
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)		1882.5 (26365)	1912.5 (26665)	
LTE Band 25 (PCS): 10 MHz	1855 (26090)		1882.5 (26365)	1910 (26640)	
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)		1882.5 (26365)	1907.5 (26615)	
LTE Band 25 (PCS): 20 MHz	1860 (26140)		1882.5 (26365)	1905 (26590)	
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)		1880 (18900)	1909.3 (19193)	
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)		1880 (18900)	1908.5 (19185)	
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)		1880 (18900)	1907.5 (19175)	
LTE Band 2 (PCS): 10 MHz	1855 (18650)		1880 (18900)	1905 (19150)	
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)		1880 (18900)	1902.5 (19125)	
LTE Band 2 (PCS): 20 MHz	1860 (18700)		1880 (18900)	1900 (19100)	
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	6				
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				
LTE Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations				
LTE Release 11 Additional Information	This device does not support full CA features on 3GPP Release 11. It supports a maximum of 2 carriers in the downlink. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. The following LTE Release 11 Features are not supported: Relay, HetNet, Enhanced MIMO, eICIC, WIFI Offloading, MDH, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

3 INTRODUCTION

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

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

3.1 SAR Definition

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

Equation 3-1
SAR Mathematical Equation

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

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

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

where:

σ = conductivity of the tissue-simulating material (S/m)
ρ = mass density of the tissue-simulating material (kg/m^3)
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]

4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

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

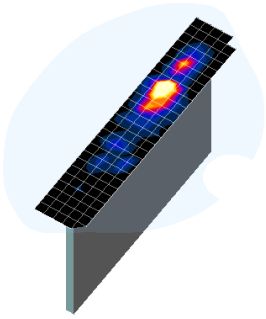

Figure 4-1
Sample SAR Area Scan

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):

   a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 4-1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).

   b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.

   c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

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

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

*Also compliant to IEEE 1528-2013 Table 6

5 TEST CONFIGURATION POSITIONS

5.1 Device Holder

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

5.2 SAR Testing for Tablet per KDB Publication 616217 D04v01r02

Per FCC KDB Publication 616217 D04v01r02, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR Exclusion Threshold in KDB 447498 D01v06 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

5.3 Proximity Sensor Considerations

This device uses a power reduction mechanism to reduce output powers in certain use conditions when the device is used close the user's body.

When the device's antenna is within a certain distance of the user, the sensor activates and reduces the maximum allowed output power. However, the sensor is not active when the device is moved beyond the sensor triggering distance and the maximum output power is no longer limited. Therefore, additional evaluation is needed in the vicinity of the triggering distance to ensure SAR is compliant when the device is allowed to operate at a non-reduced output power level. FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device at these additional test positions. Sensor triggering distance summary data is included in Appendix G.

The sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the sensor entirely covers the antennas.

6 RF EXPOSURE LIMITS

6.1 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.

6.2 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 6-1
SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

HUMAN EXPOSURE LIMITS		
	UNCONTROLLED ENVIRONMENT *General Population* (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT *Occupational* (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.

7 FCC MEASUREMENT PROCEDURES

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

7.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D01v06, when SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as reported SAR. The highest reported SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

7.2 3G SAR Test Reduction Procedure

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

7.3 Procedures Used to Establish RF Signal for SAR

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

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

7.4 SAR Measurement Conditions for CDMA2000

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

7.4.1 Output Power Verification

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

7.4.2 Body SAR Measurements for EVDO

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

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

7.5 SAR Measurement Conditions for LTE

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

7.5.1 Spectrum Plots for RB Configurations

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

7.5.2 MPR

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

7.5.3 A-MPR

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

7.5.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r04:

a. Per Section 5.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
   i. The required channel and offset combination with the highest maximum output power is required for SAR.
   ii. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
   iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
b. Per Section 5.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 5.2.1.

c. Per Section 5.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 0.8 W/kg.
d. Per Section 5.2.4 and 5.3, SAR tests for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sections 5.2.1 through 5.2.3 is less than or equal to ½ dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is <1.45 W/kg.

Per FCC KDB Publication 447498 D01v06, when the reported (scaled) for LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was ≤ 0.6 W/kg, testing 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.

7.5.5 TDD

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

7.5.6 Downlink Only Carrier Aggregation

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

7.6 SAR Testing with 802.11 Transmitters

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

7.6.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters.

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

7.6.2 2.4 GHz SAR Test Requirements

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

1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

2) When the reported SAR is > 0.8 W/kg, SAR is required for that position using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

2.4 GHz 802.11 g/n OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is › 1.2 W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Procedures should be followed.

7.6.3 OFDM Transmission Mode and SAR Test Channel Selection

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

7.6.4 Initial Test Configuration Procedure

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

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is ≤ 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements (See Section 7.6.3).

7.6.5 Subsequent Test Configuration Procedures

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

8 RF CONDUCTED POWERS

8.1 CDMA Conducted Powers

8.1.1 Maximum Conducted Powers

Band	Channel	Rule Part	Frequency	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	564	90S	820.1	24.83	24.84	24.65	24.68
Cellular	1013	22H	824.7	24.86	24.83	24.65	24.62
	384	22H	836.52	24.84	24.83	24.64	24.62
	777	22H	848.31	24.85	24.85	24.67	24.64
PCS	25	24E	1851.25	24.84	24.84	24.62	24.66
	600	24E	1880	24.86	24.83	24.73	24.63
	1175	24E	1908.75	24.84	24.85	24.63	24.63

8.1.2 Reduced Conducted Powers

Band	Channel	Rule Part	Frequency	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	564	90S	820.1	18.84	18.86	18.62	18.65
Cellular	1013	22H	824.7	18.99	18.88	18.69	18.64
	384	22H	836.52	18.95	18.94	18.70	18.66
	777	22H	848.31	18.95	18.92	18.65	18.64
PCS	25	24E	1851.25	13.89	13.94	13.66	13.69
	600	24E	1880	13.91	13.92	13.70	13.64
	1175	24E	1908.75	13.88	13.83	13.74	13.70

Figure 8-1
Power Measurement Setup

Note: For FCC Rule Part 90S, Per FCC KDB Publication 447498 D01v06 4.1.g), only one channel is required since the device operates within the transmission range of 817.90 – 823.10 MHz.

8.2 LTE Conducted Powers

8.2.1 LTE Band 12

Table 8-1
LTE Band 12 Maximum Conducted Powers - 10 MHz Bandwidth

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23095 (707.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**24.59**	0	0
	1	25	24.59		0
	1	49	24.59		0
	25	0	23.66	0-1	1
	25	12	23.66		1
	25	25	**23.67**		1
	50	0	23.66		1
16QAM	1	0	23.44	0-1	1
	1	25	23.44		1
	1	49	23.45		1
	25	0	22.67	0-2	2
	25	12	22.67		2
	25	25	22.66		2
	50	0	22.67		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 8-2
LTE Band 12 Maximum Conducted Powers - 5 MHz Bandwidth

LTE Band 12 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23035 (701.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23155 (713.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.53	24.40	24.47	0	0
	1	12	24.53	24.40	24.47		0
	1	24	24.53	24.40	24.47		0
	12	0	23.54	23.61	23.54	0-1	1
	12	6	23.54	23.60	23.54		1
	12	13	23.54	23.59	23.53		1
	25	0	23.59	23.58	23.55		1
16QAM	1	0	23.68	23.69	23.69	0-1	1
	1	12	23.68	23.69	23.68		1
	1	24	23.68	23.69	23.69		1
	12	0	22.49	22.65	22.52	0-2	2
	12	6	22.48	22.64	22.51		2
	12	13	22.48	22.66	22.51		2
	25	0	22.53	22.61	22.56		2

Table 8-3
LTE Band 12 Maximum Conducted Powers - 3 MHz Bandwidth

LTE Band 12 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23025 (700.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23165 (714.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.56	24.54	24.51	0	0
	1	7	24.56	24.54	24.51		0
	1	14	24.56	24.53	24.51		0
	8	0	23.69	23.61	23.67	0-1	1
	8	4	23.68	23.61	23.67		1
	8	7	23.68	23.62	23.67		1
	15	0	23.69	23.62	23.68		1
16QAM	1	0	23.68	23.45	23.69	0-1	1
	1	7	23.68	23.45	23.68		1
	1	14	23.69	23.45	23.69		1
	8	0	22.68	22.63	22.63	0-2	2
	8	4	22.68	22.63	22.63		2
	8	7	22.69	22.63	22.63		2
	15	0	22.60	22.65	22.61		2

Table 8-4
LTE Band 12 Maximum Conducted Powers -1.4 MHz Bandwidth

LTE Band 12 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23017 (699.7 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23173 (715.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.61	24.44	24.56	0	0
	1	2	24.61	24.43	24.56		0
	1	5	24.61	24.44	24.57		0
	3	0	24.65	24.51	24.55		0
	3	2	24.65	24.51	24.55		0
	3	3	24.65	24.51	24.55		0
	6	0	23.61	23.50	23.60	0-1	1
16QAM	1	0	23.63	23.62	23.50	0-1	1
	1	2	23.63	23.64	23.50		1
	1	5	23.64	23.63	23.50		1
	3	0	23.69	23.57	23.54		1
	3	2	23.69	23.58	23.54		1
	3	3	23.68	23.57	23.54		1
	6	0	22.64	22.49	22.60	0-2	2

Table 8-5
LTE Band 12 Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23095 (707.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	18.56	0	0
	1	25	18.21		0
	1	49	**18.58**		0
	25	0	**18.68**	0-1	0
	25	12	18.33		0
	25	25	18.45		0
	50	0	18.29		0
16QAM	1	0	18.54	0-1	0
	1	25	18.31		0
	1	49	18.60		0
	25	0	18.68	0-2	0
	25	12	18.40		0
	25	25	18.34		0
	50	0	18.28		0

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 8-6
LTE Band 12 Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 12 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23035 (701.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23155 (713.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.47	18.29	18.58	0	0
	1	12	18.25	18.42	18.62		0
	1	24	18.45	18.55	18.53		0
	12	0	18.61	18.29	18.45	0-1	0
	12	6	18.69	18.55	18.65		0
	12	13	18.69	18.27	18.29		0
	25	0	18.65	18.41	18.51		0
16QAM	1	0	18.28	18.29	18.22	0-1	0
	1	12	18.29	18.39	18.60		0
	1	24	18.40	18.65	18.55		0
	12	0	18.57	18.28	18.21	0-2	0
	12	6	18.26	18.35	18.34		0
	12	13	18.56	18.58	18.50		0
	25	0	18.38	18.47	18.34		0

Table 8-7
LTE Band 12 Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 12 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23025 (700.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23165 (714.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.41	18.33	18.61	0	0
	1	7	18.25	18.68	18.55		0
	1	14	18.57	18.21	18.59		0
	8	0	18.24	18.57	18.52	0-1	0
	8	4	18.42	18.24	18.41		0
	8	7	18.31	18.48	18.52		0
	15	0	18.70	18.29	18.63		0
16QAM	1	0	18.61	18.31	18.68	0-1	0
	1	7	18.30	18.52	18.24		0
	1	14	18.26	18.54	18.30		0
	8	0	18.67	18.48	18.56	0-2	0
	8	4	18.27	18.61	18.67		0
	8	7	18.43	18.53	18.26		0
	15	0	18.36	18.66	18.58		0

Table 8-8
LTE Band 12 Reduced Conducted Powers -1.4 MHz Bandwidth

LTE Band 12 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23017 (699.7 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23173 (715.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.53	18.63	18.39	0	0
	1	2	18.54	18.27	18.28		0
	1	5	18.68	18.43	18.67		0
	3	0	18.36	18.63	18.21		0
	3	2	18.30	18.53	18.63		0
	3	3	18.32	18.48	18.39		0
	6	0	18.60	18.43	18.34	0-1	0
16QAM	1	0	18.45	18.45	18.66	0-1	0
	1	2	18.29	18.56	18.26		0
	1	5	18.49	18.51	18.26		0
	3	0	18.52	18.24	18.51		0
	3	2	18.32	18.49	18.45		0
	3	3	18.55	18.34	18.34		0
	6	0	18.56	18.22	18.65	0-2	0

8.2.2 LTE Band 26 (Cell)

Table 8-9
LTE Band 26 (Cell) Maximum Conducted Powers - 15 MHz Bandwidth

LTE Band 26 (Cell) 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 26865 (831.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	24.50	0	0
	1	36	24.51		0
	1	74	**24.52**		0
	36	0	**23.52**	0-1	1
	36	18	23.52		1
	36	37	23.52		1
	75	0	23.51		1
16QAM	1	0	23.67	0-1	1
	1	36	23.67		1
	1	74	23.67		1
	36	0	22.56	0-2	2
	36	18	22.55		2
	36	37	22.55		2
	75	0	22.53		2

Note: LTE Band 26 (Cell) at 15 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 8-10
LTE Band 26 (Cell) Maximum Conducted Powers - 10 MHz Bandwidth

LTE Band 26 (Cell) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26740 (819.0 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 26990 (844.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	24.56	24.51	24.51	0	0
	1	25	24.56	24.51	24.50		0
	1	49	24.56	24.51	24.50		0
	25	0	23.49	23.49	23.50	0-1	1
	25	12	23.50	23.49	23.50		1
	25	25	23.51	23.49	23.50		1
	50	0	23.49	23.46	23.47		1
16QAM	1	0	23.68	23.64	23.51	0-1	1
	1	25	23.68	23.64	23.50		1
	1	49	23.68	23.65	23.51		1
	25	0	22.58	22.56	22.67	0-2	2
	25	12	22.57	22.56	22.66		2
	25	25	22.57	22.56	22.66		2
	50	0	22.57	22.52	22.56		2

Table 8-11
LTE Band 26 (Cell) Maximum Conducted Powers - 5 MHz Bandwidth

LTE Band 26 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26715 (816.5 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27015 (846.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.39	24.44	24.37	0	0
	1	12	24.39	24.45	24.36		0
	1	24	24.39	24.44	24.36		0
	12	0	23.44	23.45	23.52	0-1	1
	12	6	23.44	23.46	23.53		1
	12	13	23.44	23.45	23.52		1
	25	0	23.41	23.43	23.47		1
16QAM	1	0	23.20	23.65	23.41	0-1	1
	1	12	23.20	23.66	23.41		1
	1	24	23.20	23.66	23.40		1
	12	0	22.43	22.53	22.51	0-2	2
	12	6	22.44	22.52	22.50		2
	12	13	22.43	22.53	22.51		2
	25	0	22.49	22.45	22.52		2

Table 8-12
LTE Band 26 (Cell) Maximum Conducted Powers - 3 MHz Bandwidth

LTE Band 26 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26705 (815.5 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27025 (847.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.47	24.47	24.53	0	0
	1	7	24.46	24.47	24.53		0
	1	14	24.45	24.47	24.52		0
	8	0	23.53	23.53	23.58	0-1	1
	8	4	23.53	23.53	23.58		1
	8	7	23.53	23.53	23.57		1
	15	0	23.51	23.52	23.56		1
16QAM	1	0	23.69	23.57	23.47	0-1	1
	1	7	23.69	23.57	23.47		1
	1	14	23.69	23.57	23.47		1
	8	0	22.67	22.53	22.59	0-2	2
	8	4	22.67	22.53	22.59		2
	8	7	22.66	22.53	22.59		2
	15	0	22.57	22.50	22.59		2

Table 8-13
LTE Band 26 (Cell) Maximum Conducted Powers -1.4 MHz Bandwidth

LTE Band 26 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26697 (814.7 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27033 (848.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.43	24.46	24.52	0	0
	1	2	24.41	24.45	24.52		0
	1	5	24.42	24.45	24.52		0
	3	0	24.41	24.51	24.54		0
	3	2	24.41	24.51	24.54		0
	3	3	24.42	24.51	24.54		0
	6	0	23.45	23.45	23.48	0-1	1
16QAM	1	0	23.37	23.52	23.45	0-1	1
	1	2	23.38	23.52	23.45		1
	1	5	23.37	23.52	23.46		1
	3	0	23.59	23.43	23.55		1
	3	2	23.58	23.44	23.55		1
	3	3	23.58	23.43	23.55		1
	6	0	22.42	22.51	22.38	0-2	2

Table 8-14
LTE Band 26 (Cell) Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 26 (Cell) 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 26865 (831.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	18.55	0	0
	1	36	**18.69**		0
	1	74	18.66		0
	36	0	**18.60**	0-1	0
	36	18	18.29		0
	36	37	18.22		0
	75	0	18.58		0
16QAM	1	0	18.65	0-1	0
	1	36	18.22		0
	1	74	18.45		0
	36	0	18.65	0-2	0
	36	18	18.23		0
	36	37	18.65		0
	75	0	18.45		0

Note: LTE Band 26 (Cell) at 15 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 8-15
LTE Band 26 (Cell) Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 26 (Cell) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26740 (819.0 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 26990 (844.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.52	18.33	18.43	0	0
	1	25	18.38	18.37	18.43		0
	1	49	18.52	18.68	18.62		0
	25	0	18.28	18.49	18.33	0-1	0
	25	12	18.48	18.39	18.47		0
	25	25	18.68	18.56	18.66		0
	50	0	18.50	18.45	18.38		0
16QAM	1	0	18.62	18.63	18.36	0-1	0
	1	25	18.43	18.28	18.67		0
	1	49	18.50	18.26	18.68		0
	25	0	18.25	18.47	18.33	0-2	0
	25	12	18.51	18.34	18.67		0
	25	25	18.42	18.23	18.29		0
	50	0	18.55	18.53	18.22		0

Table 8-16
LTE Band 26 (Cell) Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 26 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26715 (816.5 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27015 (846.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.44	18.49	18.63	0	0
	1	12	18.68	18.51	18.47		0
	1	24	18.53	18.47	18.40		0
	12	0	18.65	18.40	18.48	0-1	0
	12	6	18.45	18.50	18.62		0
	12	13	18.44	18.51	18.51		0
	25	0	18.48	18.38	18.43		0
16QAM	1	0	18.51	18.29	18.45	0-1	0
	1	12	18.56	18.34	18.20		0
	1	24	18.62	18.64	18.42		0
	12	0	18.44	18.32	18.66	0-2	0
	12	6	18.53	18.58	18.40		0
	12	13	18.37	18.67	18.28		0
	25	0	18.50	18.60	18.23		0

Table 8-17
LTE Band 26 (Cell) Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 26 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26705 (815.5 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27025 (847.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.31	18.26	18.70	0	0
	1	7	18.48	18.54	18.58		0
	1	14	18.21	18.25	18.44		0
	8	0	18.37	18.24	18.53	0-1	0
	8	4	18.42	18.41	18.45		0
	8	7	18.45	18.47	18.49		0
	15	0	18.45	18.41	18.57		0
16QAM	1	0	18.33	18.61	18.43	0-1	0
	1	7	18.55	18.57	18.42		0
	1	14	18.45	18.33	18.67		0
	8	0	18.69	18.44	18.34	0-2	0
	8	4	18.23	18.32	18.42		0
	8	7	18.62	18.22	18.63		0
	15	0	18.23	18.55	18.65		0

Table 8-18
LTE Band 26 (Cell) Reduced Conducted Powers -1.4 MHz Bandwidth

LTE Band 26 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26697 (814.7 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27033 (848.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.29	18.44	18.26	0	0
	1	2	18.44	18.51	18.21		0
	1	5	18.39	18.70	18.47		0
	3	0	18.49	18.59	18.22		0
	3	2	18.40	18.54	18.57		0
	3	3	18.28	18.28	18.66		0
	6	0	18.69	18.66	18.43	0-1	0
16QAM	1	0	18.41	18.69	18.42	0-1	0
	1	2	18.53	18.54	18.32		0
	1	5	18.32	18.59	18.52		0
	3	0	18.52	18.33	18.43		0
	3	2	18.47	18.56	18.45		0
	3	3	18.37	18.32	18.64		0
	6	0	18.29	18.59	18.47	0-2	0

8.2.3 LTE Band 4 (AWS)

Table 8-19
LTE Band 4 (AWS) Maximum Conducted Powers - 20 MHz Bandwidth

LTE Band 4 (AWS) 20 MHzBandwidth					
Modulation	RB Size	RB Offset	Mid Channel 20175 (1732.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**24.18**	0	0
	1	50	24.17		0
	1	99	24.17		0
	50	0	23.10	0-1	1
	50	25	23.11		1
	50	50	**23.11**		1
	100	0	23.04		1
16QAM	1	0	23.16	0-1	1
	1	50	23.16		1
	1	99	23.12		1
	50	0	22.09	0-2	2
	50	25	22.09		2
	50	50	22.09		2
	100	0	22.01		2

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

Table 8-20
LTE Band 4 (AWS) Maximum Conducted Powers - 15 MHz Bandwidth

LTE Band 4 (AWS) 15 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel 20025 (1717.5 MHz)	Mid Channel 20175 (1732.5 MHz)	High Channel 20325 (1747.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.85	24.19	24.14	0	0
	1	36	23.85	24.19	24.14		0
	1	74	23.85	24.19	24.14		0
	36	0	23.00	23.13	23.11	0-1	1
	36	18	23.00	23.13	23.11		1
	36	37	23.00	23.13	23.11		1
	75	0	23.06	23.14	23.02		1
16QAM	1	0	22.88	23.13	23.09	0-1	1
	1	36	22.88	23.13	23.08		1
	1	74	22.88	23.13	23.09		1
	36	0	21.87	22.07	21.95	0-2	2
	36	18	21.87	22.06	21.94		2
	36	37	21.87	22.06	21.95		2
	75	0	21.95	22.05	21.90		2

Table 8-21
LTE Band 4 (AWS) Maximum Conducted Powers - 10 MHz Bandwidth

LTE Band 4 (AWS) 10 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel 20000 (1715.0 MHz)	Mid Channel 20175 (1732.5 MHz)	High Channel 20350 (1750.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.77	24.13	24.04	0	0
	1	25	23.78	24.13	24.04		0
	1	49	23.78	24.13	24.04		0
	25	0	22.67	22.99	22.88	0-1	1
	25	12	22.68	22.99	22.88		1
	25	25	22.68	22.99	22.88		1
	50	0	22.83	22.97	22.83		1
16QAM	1	0	22.83	22.91	23.01	0-1	1
	1	25	22.83	22.91	23.01		1
	1	49	22.83	22.92	23.01		1
	25	0	21.63	21.97	21.85	0-2	2
	25	12	21.63	21.96	21.86		2
	25	25	21.63	21.97	21.85		2
	50	0	21.77	21.95	21.78		2

Table 8-22
LTE Band 4 (AWS) Maximum Conducted Powers - 5 MHz Bandwidth

LTE Band 4 (AWS) 5 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel 19975 (1712.5 MHz)	Mid Channel 20175 (1732.5 MHz)	High Channel 20375 (1752.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.76	23.91	23.91	0	0
	1	12	23.75	23.91	23.91		0
	1	24	23.76	23.91	23.91		0
	12	0	22.69	22.98	22.94	0-1	1
	12	6	22.69	22.98	22.93		1
	12	13	22.69	22.98	22.94		1
	25	0	22.68	22.95	22.87		1
16QAM	1	0	22.73	23.13	23.03	0-1	1
	1	12	22.74	23.13	23.02		1
	1	24	22.74	23.13	23.03		1
	12	0	21.57	21.99	21.83	0-2	2
	12	6	21.56	21.99	21.82		2
	12	13	21.57	21.99	21.81		2
	25	0	21.58	21.94	21.84		2

Table 8-23
LTE Band 4 (AWS) Maximum Conducted Powers - 3 MHz Bandwidth

LTE Band 4 (AWS) 3 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel 19965 (1711.5 MHz)	Mid Channel 20175 (1732.5 MHz)	High Channel 20385 (1753.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.71	24.06	23.91	0	0
	1	7	23.71	24.06	23.91		0
	1	14	23.71	24.07	23.91		0
	8	0	22.82	23.07	23.01	0-1	1
	8	4	22.83	23.07	23.01		1
	8	7	22.83	23.07	23.02		1
	15	0	22.77	23.05	22.97		1
16QAM	1	0	22.80	22.85	23.05	0-1	1
	1	7	22.80	22.87	23.05		1
	1	14	22.79	22.87	23.06		1
	8	0	21.71	22.04	21.94	0-2	2
	8	4	21.71	22.04	21.94		2
	8	7	21.72	22.04	21.93		2
	15	0	21.59	22.02	21.88		2

Table 8-24
LTE Band 4 (AWS) Maximum Conducted Powers -1.4 MHz Bandwidth

LTE Band 4 (AWS) 1.4 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel 19957 (1710.7 MHz)	Mid Channel 20175 (1732.5 MHz)	High Channel 20393 (1754.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.69	23.97	24.00	0	0
	1	2	23.68	23.98	23.99		0
	1	5	23.68	23.98	23.99		0
	3	0	23.61	23.95	23.88		0
	3	2	23.61	23.94	23.89		0
	3	3	23.62	23.95	23.89		0
	6	0	22.78	22.99	22.99	0-1	1
16QAM	1	0	22.73	22.86	22.84	0-1	1
	1	2	22.73	22.85	22.83		1
	1	5	22.73	22.85	22.84		1
	3	0	22.55	22.89	22.99		1
	3	2	22.55	22.89	23.00		1
	3	3	22.55	22.90	22.99		1
	6	0	21.61	21.97	21.91	0-2	2

Table 8-25
LTE Band 4 (AWS) Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 4 (AWS) 20 MHzBandwidth					
Modulation	RB Size	RB Offset	Mid Channel 20175 (1732.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**13.13**	0	0
	1	50	13.09		0
	1	99	13.12		0
	50	0	**12.80**	0-1	0
	50	25	12.76		0
	50	50	12.76		0
	100	0	12.79		0
16QAM	1	0	13.14	0-1	0
	1	50	13.11		0
	1	99	13.15		0
	50	0	12.71	0-2	0
	50	25	12.83		0
	50	50	12.77		0
	100	0	12.96		0

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

Table 8-26
LTE Band 4 (AWS) Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 4 (AWS) 15 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel 20025 (1717.5 MHz)	Mid Channel 20175 (1732.5 MHz)	High Channel 20325 (1747.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	12.94	12.87	13.03	0	0
	1	36	13.05	12.79	12.86		0
	1	74	13.07	13.02	13.14		0
	36	0	13.17	12.85	13.02	0-1	0
	36	18	12.70	12.77	12.98		0
	36	37	12.77	13.05	13.16		0
	75	0	13.17	13.01	12.90		0
16QAM	1	0	12.89	12.84	12.82	0-1	0
	1	36	12.82	13.09	13.16		0
	1	74	13.01	13.02	12.76		0
	36	0	13.19	12.96	12.91	0-2	0
	36	18	12.94	12.81	13.01		0
	36	37	12.71	12.76	13.00		0
	75	0	12.78	12.97	12.89		0

Table 8-27
LTE Band 4 (AWS) Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 4 (AWS) 10 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel 20000 (1715.0 MHz)	Mid Channel 20175 (1732.5 MHz)	High Channel 20350 (1750.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	12.96	12.89	12.80	0	0
	1	25	13.06	13.15	12.85		0
	1	49	12.83	12.80	12.88		0
	25	0	13.05	12.77	12.78	0-1	0
	25	12	12.86	13.10	12.94		0
	25	25	13.20	12.93	12.99		0
	50	0	13.19	12.96	12.77		0
16QAM	1	0	12.81	12.96	12.77	0-1	0
	1	25	12.93	12.75	12.86		0
	1	49	13.05	12.88	13.10		0
	25	0	13.17	12.72	12.80	0-2	0
	25	12	12.95	13.16	12.71		0
	25	25	12.97	12.79	13.11		0
	50	0	12.86	12.99	13.09		0

Table 8-28
LTE Band 4 (AWS) Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 4 (AWS) 5 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel 19975 (1712.5 MHz)	Mid Channel 20175 (1732.5 MHz)	High Channel 20375 (1752.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	12.70	12.96	12.72	0	0
	1	12	12.78	12.97	12.94		0
	1	24	12.73	12.82	12.98		0
	12	0	12.73	12.76	13.12	0-1	0
	12	6	12.83	13.00	12.89		0
	12	13	13.11	13.15	12.72		0
	25	0	12.71	13.16	13.08		0
16QAM	1	0	12.94	12.87	13.18	0-1	0
	1	12	12.75	12.85	12.77		0
	1	24	13.15	12.85	13.08		0
	12	0	13.14	13.11	13.09	0-2	0
	12	6	13.01	13.17	13.19		0
	12	13	12.98	12.92	13.16		0
	25	0	12.97	12.94	12.86		0

Table 8-29
LTE Band 4 (AWS) Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 4 (AWS) 3 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel 19965 (1711.5 MHz)	Mid Channel 20175 (1732.5 MHz)	High Channel 20385 (1753.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	13.19	12.79	12.70	0	0
	1	7	13.12	12.75	13.00		0
	1	14	12.88	12.81	13.13		0
	8	0	12.83	12.71	13.06	0-1	0
	8	4	13.15	12.88	12.73		0
	8	7	12.71	12.88	12.82		0
	15	0	13.10	13.02	12.97		0
16QAM	1	0	12.92	13.00	12.83	0-1	0
	1	7	12.85	12.80	13.00		0
	1	14	12.87	12.95	13.04		0
	8	0	12.78	13.03	12.75	0-2	0
	8	4	12.77	13.07	12.86		0
	8	7	13.11	12.81	12.85		0
	15	0	13.20	12.80	13.11		0

Table 8-30
LTE Band 4 (AWS) Reduced Conducted Powers -1.4 MHz Bandwidth

LTE Band 4 (AWS) 1.4 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel 19957 (1710.7 MHz)	Mid Channel 20175 (1732.5 MHz)	High Channel 20393 (1754.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	12.90	13.05	12.84	0	0
	1	2	13.06	12.98	13.09		0
	1	5	13.02	12.93	12.85		0
	3	0	13.15	13.05	12.82		0
	3	2	12.82	12.87	12.90		0
	3	3	12.85	12.83	12.99		0
	6	0	13.01	13.07	12.82	0-1	0
16QAM	1	0	13.11	12.71	12.72	0-1	0
	1	2	12.98	13.06	12.95		0
	1	5	12.82	12.84	12.90		0
	3	0	13.06	12.98	13.16		0
	3	2	13.14	13.20	12.71		0
	3	3	13.17	12.76	13.03		0
	6	0	13.19	13.02	12.71	0-2	0

8.2.4 LTE Band 25 (PCS)

Table 8-31
LTE Band 25 (PCS) Maximum Conducted Powers - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.02	**24.16**	24.13	0	0
	1	50	24.01	24.15	24.14		0
	1	99	24.01	24.16	24.14		0
	50	0	**23.08**	22.90	22.91	0-1	1
	50	25	23.00	22.91	22.91		1
	50	50	23.00	22.90	22.91		1
	100	0	23.05	22.90	22.97		1
16QAM	1	0	23.16	23.02	22.95	0-1	1
	1	50	23.16	23.01	22.95		1
	1	99	23.17	23.02	22.95		1
	50	0	21.94	21.82	21.93	0-2	2
	50	25	21.94	21.82	21.93		2
	50	50	21.93	21.82	21.93		2
	100	0	22.00	21.84	21.96		2

Table 8-32
LTE Band 25 (PCS) Maximum Conducted Powers - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26115 (1857.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26615 (1907.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.96	24.04	24.10	0	0
	1	36	23.96	24.05	24.09		0
	1	74	23.95	24.04	24.10		0
	36	0	22.98	22.99	23.05	0-1	1
	36	18	22.97	22.96	23.04		1
	36	37	22.97	22.97	23.04		1
	75	0	22.96	22.96	23.07		1
16QAM	1	0	23.19	23.18	23.16	0-1	1
	1	36	23.19	23.17	23.15		1
	1	74	23.19	23.19	23.15		1
	36	0	21.92	21.93	22.01	0-2	2
	36	18	21.92	21.92	21.99		2
	36	37	21.92	21.91	22.00		2
	75	0	21.90	21.90	22.04		2

Table 8-33
LTE Band 25 (PCS) Maximum Conducted Powers - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26090 (1855.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26640 (1910.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.90	23.95	24.05	0	0
	1	25	23.90	23.95	24.04		0
	1	49	23.90	23.94	24.03		0
	25	0	22.83	22.94	23.14	0-1	1
	25	12	22.83	22.95	23.15		1
	25	25	22.83	22.95	23.14		1
	50	0	22.86	22.92	23.16		1
16QAM	1	0	23.14	23.17	22.92	0-1	1
	1	25	23.14	23.17	22.92		1
	1	49	23.14	23.16	22.93		1
	25	0	21.82	21.90	22.14	0-2	2
	25	12	21.83	21.90	22.14		2
	25	25	21.83	21.89	22.14		2
	50	0	21.79	21.83	22.16		2

Table 8-34
LTE Band 25 (PCS) Maximum Conducted Powers - 5 MHz Bandwidth

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26065 (1852.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26665 (1912.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.87	23.93	23.89	0	0
	1	12	23.87	23.93	23.90		0
	1	24	23.86	23.93	23.89		0
	12	0	22.87	23.03	23.06	0-1	1
	12	6	22.87	23.03	23.06		1
	12	13	22.86	23.02	23.05		1
	25	0	22.89	22.98	23.13		1
16QAM	1	0	23.13	23.10	23.19	0-1	1
	1	12	23.13	23.10	23.19		1
	1	24	23.13	23.10	23.19		1
	12	0	21.80	21.91	22.10	0-2	2
	12	6	21.80	21.91	22.10		2
	12	13	21.80	21.91	22.10		2
	25	0	21.86	21.86	22.15		2

Table 8-35
LTE Band 25 (PCS) Maximum Conducted Powers - 3 MHz Bandwidth

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26055 (1851.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26675 (1913.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.88	23.96	24.03	0	0
	1	7	23.88	23.96	24.05		0
	1	14	23.88	23.95	24.05		0
	8	0	22.98	23.09	23.10	0-1	1
	8	4	22.98	23.09	23.10		1
	8	7	22.98	23.10	23.10		1
	15	0	23.01	23.06	23.15		1
16QAM	1	0	23.16	23.15	22.97	0-1	1
	1	7	23.16	23.15	22.97		1
	1	14	23.16	23.15	22.96		1
	8	0	21.94	22.02	22.11	0-2	2
	8	4	21.95	22.03	22.12		2
	8	7	21.94	22.04	22.12		2
	15	0	21.94	21.90	22.17		2

Table 8-36
LTE Band 25 (PCS) Maximum Conducted Powers -1.4 MHz Bandwidth

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26047 (1850.7 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26683 (1914.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.95	23.92	23.97	0	0
	1	2	23.95	23.92	23.95		0
	1	5	23.95	23.92	23.96		0
	3	0	23.93	23.90	24.02		0
	3	2	23.92	23.90	24.02		0
	3	3	23.93	23.90	24.01		0
	6	0	22.92	23.04	23.03	0-1	1
16QAM	1	0	22.93	23.08	22.96	0-1	1
	1	2	22.92	23.08	22.97		1
	1	5	22.92	23.08	22.98		1
	3	0	23.07	22.92	23.05		1
	3	2	23.07	22.92	23.04		1
	3	3	23.07	22.92	23.04		1
	6	0	21.94	21.94	22.10	0-2	2

Table 8-37
LTE Band 25 (PCS) Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	13.12	12.99	12.85	0	0
	1	50	13.05	**13.19**	13.10		0
	1	99	13.00	13.13	12.91		0
	50	0	12.80	12.93	12.89	0-1	0
	50	25	12.77	12.87	**13.17**		0
	50	50	12.77	12.88	12.79		0
	100	0	13.13	13.14	13.12		0
16QAM	1	0	12.98	13.09	13.04	0-1	0
	1	50	12.74	13.07	12.75		0
	1	99	12.96	13.18	13.14		0
	50	0	12.92	13.00	12.81	0-2	0
	50	25	12.84	13.15	13.13		0
	50	50	12.83	12.83	13.18		0
	100	0	12.86	13.00	12.87		0

Table 8-38
LTE Band 25 (PCS) Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26115 (1857.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26615 (1907.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	12.96	12.73	13.02	0	0
	1	36	13.08	12.75	13.11		0
	1	74	13.06	12.88	13.00		0
	36	0	12.93	12.90	13.09	0-1	0
	36	18	13.06	13.10	12.74		0
	36	37	12.86	13.06	12.89		0
	75	0	12.92	13.17	12.74		0
16QAM	1	0	12.88	12.78	12.95	0-1	0
	1	36	13.19	13.00	13.02		0
	1	74	13.10	12.94	13.18		0
	36	0	12.81	12.93	12.82	0-2	0
	36	18	13.00	13.16	13.09		0
	36	37	12.94	13.18	13.17		0
	75	0	13.13	13.19	13.14		0

Table 8-39
LTE Band 25 (PCS) Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26090 (1855.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26640 (1910.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	12.79	13.10	13.13	0	0
	1	25	13.09	12.79	13.00		0
	1	49	12.96	12.78	12.75		0
	25	0	12.99	13.08	12.89	0-1	0
	25	12	13.01	12.99	12.70		0
	25	25	12.79	12.93	12.93		0
	50	0	12.98	12.89	13.02		0
16QAM	1	0	13.19	12.88	12.95	0-1	0
	1	25	12.98	12.82	12.90		0
	1	49	12.81	13.06	12.78		0
	25	0	12.89	12.80	12.81	0-2	0
	25	12	13.19	12.85	12.88		0
	25	25	13.05	12.88	12.76		0
	50	0	12.72	12.88	12.70		0

Table 8-40
LTE Band 25 (PCS) Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26065 (1852.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26665 (1912.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	13.19	13.04	13.16	0	0
	1	12	12.71	12.92	12.90		0
	1	24	12.76	13.12	12.99		0
	12	0	13.07	12.87	13.19	0-1	0
	12	6	12.79	12.94	12.85		0
	12	13	13.04	13.14	12.80		0
	25	0	12.93	12.73	13.19		0
16QAM	1	0	13.19	13.13	12.79	0-1	0
	1	12	13.11	13.19	12.71		0
	1	24	13.10	12.72	13.06		0
	12	0	12.86	12.80	12.98	0-2	0
	12	6	12.95	12.85	13.17		0
	12	13	13.10	12.81	12.72		0
	25	0	12.79	12.71	12.92		0

Table 8-41
LTE Band 25 (PCS) Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26055 (1851.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26675 (1913.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	13.05	13.07	12.83	0	0
	1	7	12.99	13.11	12.72		0
	1	14	13.14	13.08	12.99		0
	8	0	12.89	12.75	13.06	0-1	0
	8	4	13.16	12.70	13.18		0
	8	7	13.07	12.90	13.13		0
	15	0	12.97	12.88	12.80		0
16QAM	1	0	12.97	13.07	13.15	0-1	0
	1	7	12.95	12.90	13.10		0
	1	14	12.72	12.99	13.11		0
	8	0	12.83	12.87	13.16	0-2	0
	8	4	12.87	12.88	12.93		0
	8	7	12.73	13.02	12.94		0
	15	0	12.71	13.00	13.15		0

Table 8-42
LTE Band 25 (PCS) Reduced Conducted Powers -1.4 MHz Bandwidth

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26047 (1850.7 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26683 (1914.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	13.05	13.03	13.15	0	0
	1	2	12.99	13.03	13.03		0
	1	5	13.01	12.71	13.02		0
	3	0	12.77	12.94	12.95		0
	3	2	12.98	12.88	12.77		0
	3	3	12.88	12.86	13.12		0
	6	0	13.16	13.15	13.08	0-1	0
16QAM	1	0	12.89	12.81	12.80	0-1	0
	1	2	13.00	12.93	12.94		0
	1	5	13.15	13.03	12.82		0
	3	0	12.80	13.07	12.98		0
	3	2	12.96	12.83	12.85		0
	3	3	13.05	13.02	12.84		0
	6	0	13.02	12.91	12.78	0-2	0

8.2.5 LTE Band 41

Table 8-43
LTE Band 41 Maximum Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	**24.18**	24.09	24.09	24.05	24.10	0	0
	1	50	24.16	24.12	24.11	24.06	24.09		0
	1	99	24.15	24.12	24.10	24.17	24.10		0
	50	0	22.94	23.05	23.04	23.06	22.90	0-1	1
	50	25	22.94	23.08	23.04	23.01	22.90		1
	50	50	**23.09**	22.97	23.04	23.03	22.90		1
	100	0	22.95	22.98	22.98	22.98	22.73		1
16QAM	1	0	23.12	22.98	22.92	22.95	22.62	0-1	1
	1	50	23.12	22.90	22.92	22.97	22.62		1
	1	99	23.13	22.94	22.92	22.84	22.62		1
	50	0	21.91	22.03	22.03	22.07	21.93	0-2	2
	50	25	21.91	22.03	22.03	22.04	21.93		2
	50	50	21.91	21.98	22.03	21.98	21.93		2
	100	0	21.90	22.01	22.03	21.99	21.71		2

Table 8-44
LTE Band 41 Maximum Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	24.08	24.08	24.05	24.02	24.04	0	0
	1	36	24.07	23.95	24.04	23.98	24.04		0
	1	74	24.07	23.98	24.05	24.04	24.05		0
	36	0	23.03	23.03	23.03	22.99	22.84	0-1	1
	36	18	23.03	23.08	23.03	22.99	22.84		1
	36	37	23.03	23.06	23.03	23.00	22.84		1
	75	0	23.03	23.11	23.03	23.12	22.74		1
16QAM	1	0	23.19	23.00	23.00	23.00	22.89	0-1	1
	1	36	23.19	23.06	23.01	23.04	22.89		1
	1	74	23.18	23.03	23.00	23.04	22.89		1
	36	0	21.96	22.05	22.02	22.06	21.77	0-2	2
	36	18	21.95	21.96	22.01	21.98	21.78		2
	36	37	21.95	21.99	22.01	22.07	21.78		2
	75	0	21.97	22.00	22.00	22.01	21.69		2

Table 8-45
LTE Band 41 Maximum Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	23.98	24.02	23.97	23.96	23.73	0	0
	1	25	23.97	23.97	23.97	23.98	23.73		0
	1	49	23.96	24.01	23.97	23.96	23.74		0
	25	0	22.90	22.94	22.95	22.90	22.63	0-1	1
	25	12	22.91	22.97	22.95	22.92	22.63		1
	25	25	22.90	22.89	22.95	23.03	22.63		1
	50	0	22.91	22.95	22.95	22.92	22.55		1
16QAM	1	0	23.14	22.95	22.95	22.90	22.55	0-1	1
	1	25	23.14	22.94	22.95	22.97	22.54		1
	1	49	23.14	22.96	22.95	22.98	22.54		1
	25	0	21.89	22.00	21.98	21.94	21.61	0-2	2
	25	12	21.89	22.02	21.99	21.94	21.61		2
	25	25	21.89	21.92	21.99	21.96	21.62		2
	50	0	21.83	21.90	21.95	21.93	21.55		2

Table 8-46
LTE Band 41 Maximum Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	23.99	24.01	23.95	23.90	23.42	0	0
	1	12	24.00	23.97	23.95	23.95	23.42		0
	1	24	24.00	23.91	23.96	23.94	23.42		0
	12	0	22.95	22.99	22.91	22.91	22.42	0-1	1
	12	6	22.95	22.93	22.91	22.98	22.42		1
	12	13	22.95	22.89	22.91	22.85	22.42		1
	25	0	22.93	22.91	22.94	23.03	22.49		1
16QAM	1	0	23.18	22.96	23.01	23.03	22.65	0-1	1
	1	12	23.19	22.96	23.02	23.02	22.65		1
	1	24	23.19	23.00	23.02	23.01	22.65		1
	12	0	21.86	21.80	21.88	21.89	21.47	0-2	2
	12	6	21.86	21.94	21.86	21.79	21.48		2
	12	13	21.86	21.92	21.87	21.89	21.49		2
	25	0	21.87	21.91	21.93	21.93	21.52		2

Table 8-47
LTE Band 41 Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	13.80	13.75	13.86	14.05	**14.20**	0	0
	1	50	13.96	14.09	13.88	13.83	13.75		0
	1	99	13.90	13.76	13.95	13.73	13.78		0
	50	0	13.74	13.72	13.99	13.95	14.06	0-1	0
	50	25	13.73	14.02	13.78	13.88	13.90		0
	50	50	14.00	14.06	**14.18**	14.08	14.04		0
	100	0	13.83	14.10	14.14	13.81	13.72		0
16QAM	1	0	13.85	14.14	13.70	14.16	13.96	0-1	0
	1	50	13.93	13.87	13.90	14.01	13.93		0
	1	99	14.11	14.14	13.84	13.76	14.02		0
	50	0	13.82	13.91	14.01	13.84	14.03	0-2	0
	50	25	13.87	13.72	14.15	13.94	13.93		0
	50	50	13.79	14.00	14.15	13.75	14.13		0
	100	0	14.10	14.10	13.71	14.13	13.88		0

Table 8-48
LTE Band 41 Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	13.76	13.75	13.97	14.06	14.16	0	0
	1	36	13.89	13.86	13.92	13.78	13.74		0
	1	74	14.15	14.08	13.91	13.74	14.09		0
	36	0	13.93	14.12	13.74	14.06	13.91	0-1	0
	36	18	13.71	13.82	13.93	13.92	13.91		0
	36	37	13.89	14.12	13.98	14.05	13.77		0
	75	0	13.74	13.93	13.97	14.13	14.00		0
16QAM	1	0	14.06	13.79	14.03	13.72	13.71	0-1	0
	1	36	13.77	13.98	13.90	14.19	13.84		0
	1	74	13.71	14.06	14.19	13.83	14.10		0
	36	0	13.77	13.90	13.98	14.01	13.92	0-2	0
	36	18	13.72	14.07	13.76	13.98	13.72		0
	36	37	13.71	14.06	13.71	13.92	14.05		0
	75	0	13.88	14.07	13.93	13.92	13.71		0

Table 8-49
LTE Band 41 Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	14.10	13.86	13.73	13.92	14.12	0	0
	1	25	14.12	14.19	13.98	13.91	14.19		0
	1	49	13.99	13.93	13.79	13.72	13.77		0
	25	0	14.07	13.80	13.93	14.09	14.07	0-1	0
	25	12	13.74	14.07	14.02	13.72	13.94		0
	25	25	14.05	14.06	13.89	14.19	14.18		0
	50	0	14.14	13.84	14.01	13.81	14.04		0
16QAM	1	0	14.15	13.74	13.89	13.77	13.84	0-1	0
	1	25	13.77	14.08	13.89	13.81	13.70		0
	1	49	13.80	13.86	14.09	13.94	14.00		0
	25	0	13.83	14.18	13.78	14.02	13.77	0-2	0
	25	12	14.08	13.71	13.95	13.70	13.98		0
	25	25	13.90	13.76	13.83	13.94	13.92		0
	50	0	14.09	13.87	14.07	13.93	14.18		0

Table 8-50
LTE Band 41 Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	13.76	14.03	13.95	14.05	13.99	0	0
	1	12	14.14	14.18	13.92	13.94	13.88		0
	1	24	14.04	13.95	13.75	13.84	13.75		0
	12	0	14.16	13.89	13.86	14.02	13.76	0-1	0
	12	6	13.93	14.02	13.93	14.00	13.99		0
	12	13	13.84	14.07	13.93	13.71	14.13		0
	25	0	14.11	14.07	13.92	14.15	14.07		0
16QAM	1	0	13.84	13.75	13.93	14.02	13.97	0-1	0
	1	12	14.01	14.13	14.13	13.83	14.17		0
	1	24	14.04	13.86	14.12	13.97	14.19		0
	12	0	13.88	14.09	14.14	14.13	14.06	0-2	0
	12	6	14.01	13.75	14.11	14.00	14.13		0
	12	13	14.17	13.77	14.14	13.87	14.02		0
	25	0	14.12	13.85	13.95	14.06	14.18		0

8.2.6 LTE Carrier Aggregation Conducted Powers

Table 8-51
Two Component Carrier LTE Carrier Aggregation Maximum Conducted Powers

	PCC									SCC				Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41A-41A	LTE B41	20	39750	2506	QPSK	1	0	39750	2506	LTE B41	5	41565	2687.5	24.05	24.18
CA_41C (1)	LTE B41	20	39750	2506	QPSK	1	0	39750	2506	LTE B41	20	39948	2525.8	24.07	24.18

Table 8-52
Two Component Carrier LTE Carrier Aggregation Reduced Conducted Powers

	PCC									SCC				Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41A-41A	LTE B41	20	41490	2680	QPSK	1	0	41490	2680	LTE B41	5	39675	2498.5	14.20	14.20
CA_41C (1)	LTE B41	20	41490	2680	QPSK	1	0	41490	2680	LTE B41	20	41292	2660.2	14.18	14.20

Notes:

1. The device only supports downlink Carrier Aggregation. Uplink Carrier Aggregation is not supported. For every supported combination of downlink carrier aggregation, power measurements were performed with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.
2. All control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
3. For downlink carrier aggregation combinations, PCC uplink channel was selected based on section C)3)b)ii) of KBD 941225 D05 V01r02. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation. For inter-band CA, the SCC downlink channels were selected near the middle of their transmission bands. For non-contiguous intra-band CA, the downlink channel spacing between the component carriers was set to be larger than the nominal channel spacing and provided maximum separation between the component carriers. All selected downlink channels remained fully within the downlink transmission band of the respective component carrier.

Figure 8-2
Power Measurement Setup

8.3 WLAN Conducted Powers

Table 8-53
2.4 GHz WLAN Maximum Average RF Power

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
2412	1	17.56	15.41	15.42
2437	**6**	**17.90**	17.69	17.66
2462	11	17.75	15.78	15.81

Table 8-54
2.4 GHz WLAN Reduced Average RF Power

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
2412	1	6.69	6.81	6.85
2437	**6**	**7.21**	7.33	7.29
2462	11	7.04	6.99	6.99

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

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

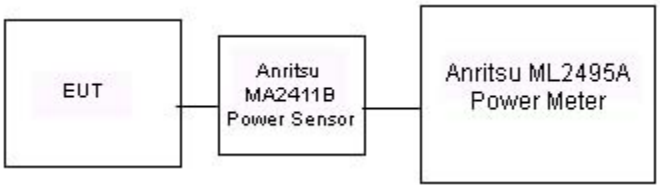

Figure 8-3
Power Measurement Setup

8.4 Bluetooth Conducted Powers

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	9.09	8.111
2441	1.0	39	10.49	11.183
2480	1.0	78	**10.75**	11.895
2402	2.0	0	6.44	4.407
2441	2.0	39	7.99	6.296
2480	2.0	78	8.26	6.692
2402	3.0	0	6.52	4.483
2441	3.0	39	8.06	6.404
2480	3.0	78	8.35	6.838

The bolded data rate and channel above were tested for SAR.

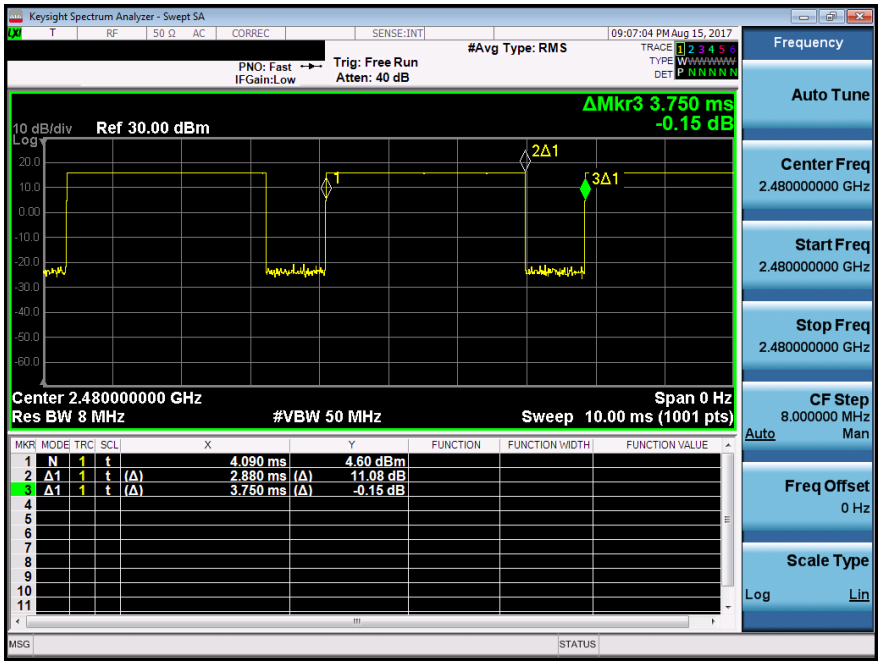

Figure 8-4
Bluetooth Transmission Plot

Equation 8-1
Bluetooth Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.880\ ms}{3.750\ ms} * 100\% = 76.8\%$$

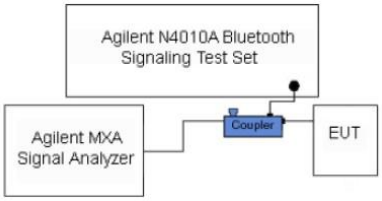

Figure 8-5
Power Measurement Setup

9 SYSTEM VERIFICATION

9.1 Tissue Verification

Table 9-1
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
7/24/2017	750B	23.5	700	0.912	55.492	0.959	55.726	-4.90%	-0.42%
			710	0.921	55.402	0.960	55.687	-4.06%	-0.51%
			720	0.930	55.303	0.961	55.648	-3.23%	-0.62%
			725	0.935	55.256	0.961	55.629	-2.71%	-0.67%
			740	0.949	55.110	0.963	55.570	-1.45%	-0.83%
			755	0.963	54.956	0.964	55.512	-0.10%	-1.00%
7/31/2017	835B	21.5	820	0.989	54.642	0.969	55.258	2.06%	-1.11%
			835	1.005	54.424	0.970	55.200	3.61%	-1.41%
			850	1.020	54.264	0.988	55.154	3.24%	-1.61%
8/7/2017	835B	21.1	820	0.978	54.147	0.969	55.258	0.93%	-2.01%
			835	0.996	54.058	0.970	55.200	2.68%	-2.07%
			850	1.008	53.842	0.988	55.154	2.02%	-2.38%
7/27/2017	1750B	21.5	1710	1.463	51.569	1.463	53.537	0.00%	-3.68%
			1750	1.505	51.397	1.488	53.432	1.14%	-3.81%
			1790	1.550	51.246	1.514	53.326	2.38%	-3.90%
7/27/2017	1900B	22.5	1850	1.518	53.418	1.520	53.300	-0.13%	0.22%
			1880	1.557	53.357	1.520	53.300	2.43%	0.11%
			1910	1.584	53.221	1.520	53.300	4.21%	-0.15%
8/11/2017	1900B	22.2	1850	1.526	52.921	1.520	53.300	0.39%	-0.71%
			1880	1.560	52.900	1.520	53.300	2.63%	-0.75%
			1910	1.585	52.828	1.520	53.300	4.28%	-0.89%
8/5/2017	2450B	22.6	2400	1.964	51.575	1.902	52.767	3.26%	-2.26%
			2450	2.022	51.484	1.950	52.700	3.69%	-2.31%
			2500	2.106	51.230	2.021	52.636	4.21%	-2.67%
8/22/2017	2450B	22.4	2400	1.938	50.942	1.902	52.767	1.89%	-3.46%
			2450	1.990	50.740	1.950	52.700	2.05%	-3.72%
			2500	2.067	50.522	2.021	52.636	2.28%	-4.02%
8/5/2017	2600B	22.6	2550	2.166	51.043	2.092	52.573	3.54%	-2.91%
			2600	2.244	50.786	2.163	52.509	3.74%	-3.28%
			2650	2.312	50.653	2.234	52.445	3.49%	-3.42%
			2700	2.378	50.436	2.305	52.382	3.17%	-3.72%

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

9.2 Test System Verification

Prior to SAR assessment, the system is verified to ±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 9-2
System Verification Results

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR_{1g} (W/kg)	1 W Target SAR_{1g} (W/kg)	1 W Normalized SAR_{1g} (W/kg)	$Deviation_{1g}$ (%)
K	750	BODY	07/24/2017	21.7	22.0	0.200	1054	7406	1.750	8.610	8.750	1.63%
E	835	BODY	07/31/2017	22.7	21.5	0.200	4d180	3319	1.980	9.610	9.900	3.02%
J	835	BODY	08/07/2017	22.3	21.1	0.200	4d180	3209	2.090	9.610	10.450	8.74%
K	1750	BODY	07/27/2017	22.4	21.5	0.100	1092	7406	3.880	37.000	38.800	4.86%
J	1900	BODY	07/27/2017	20.6	21.8	0.100	5d026	3209	4.040	40.300	40.400	0.25%
K	1900	BODY	08/11/2017	21.7	20.5	0.100	5d026	7406	4.000	40.300	40.000	-0.74%
G	2450	BODY	08/05/2017	22.9	22.5	0.100	797	3287	5.490	50.700	54.900	8.28%
E	2450	BODY	08/22/2017	23.1	20.9	0.100	945	3319	5.150	50.200	51.500	2.59%
G	2600	BODY	08/05/2017	23.3	23.0	0.100	1071	3287	5.860	54.200	58.600	8.12%

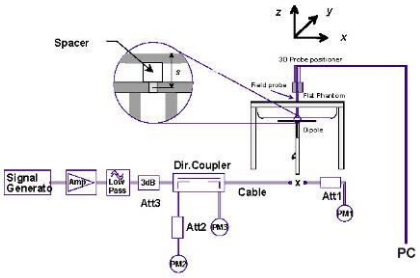

Figure 9-1
System Verification Setup Diagram

Figure 9-2
System Verification Setup Photo

10 SAR DATA SUMMARY

10.1 Standalone Body SAR Data

Table 10-1
CDMA Body SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Accessory	Device Serial Number	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.0	24.65	0.04	31 mm	N/A	01979	1:1	back	0.150	1.084	0.163	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.0	24.65	-0.02	21 mm	N/A	01979	1:1	bottom	0.135	1.084	0.146	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.0	24.65	0.01	8 mm	N/A	01979	1:1	right	0.147	1.084	0.159	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	19.0	18.62	0.06	0 mm	N/A	01961	1:1	back	0.398	1.091	0.434	A1
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	19.0	18.62	0.03	0 mm	Sound Pack	01961	1:1	back	0.165	1.091	0.180	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	19.0	18.62	-0.02	0 mm	N/A	01961	1:1	bottom	0.191	1.091	0.208	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	19.0	18.62	-0.03	0 mm	Sound Pack	01961	1:1	bottom	0.192	1.091	0.209	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	19.0	18.62	0.01	0 mm	N/A	01961	1:1	right	0.100	1.091	0.109	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.0	24.64	0.02	31 mm	N/A	01979	1:1	back	0.156	1.086	0.169	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.0	24.64	0.01	21 mm	N/A	01979	1:1	bottom	0.140	1.086	0.152	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.0	24.64	-0.01	8 mm	N/A	01979	1:1	right	0.164	1.086	0.178	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	19.0	18.70	-0.15	0 mm	N/A	01961	1:1	back	0.400	1.072	0.429	A2
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	19.0	18.70	0.03	0 mm	Sound Pack	01961	1:1	back	0.164	1.072	0.176	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	19.0	18.70	0.06	0 mm	N/A	01961	1:1	bottom	0.205	1.072	0.220	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	19.0	18.70	-0.04	0 mm	Sound Pack	01961	1:1	bottom	0.203	1.072	0.218	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	19.0	18.70	0.01	0 mm	N/A	01961	1:1	right	0.117	1.072	0.125	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.0	24.73	-0.01	31 mm	N/A	01979	1:1	back	0.197	1.064	0.210	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.0	24.73	-0.05	21 mm	N/A	01979	1:1	bottom	0.409	1.064	0.435	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.0	24.73	-0.02	8 mm	N/A	01979	1:1	right	0.654	1.064	**0.696**	A3
1880.00	600	PCS CDMA	EVDO Rev. 0	25.0	24.73	0.00	8 mm	Sound Pack	01979	1:1	right	0.603	1.064	0.642	
1880.00	600	PCS CDMA	EVDO Rev. 0	14.0	13.70	-0.05	0 mm	N/A	01961	1:1	back	0.636	1.072	0.682	
1880.00	600	PCS CDMA	EVDO Rev. 0	14.0	13.70	-0.10	0 mm	N/A	01961	1:1	bottom	0.460	1.072	0.493	
1880.00	600	PCS CDMA	EVDO Rev. 0	14.0	13.70	-0.06	0 mm	N/A	01961	1:1	right	0.174	1.072	0.187	
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 10-2
LTE Band 12 Body SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Accessory	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	24.7	24.59	0.02	0	N/A	01979	QPSK	1	0	31 mm	back	1:1	0.104	1.026	0.107	
707.50	23095	Mid	LTE Band 12	10	23.7	23.67	-0.10	1	N/A	01979	QPSK	25	25	31 mm	back	1:1	0.092	1.007	0.093	
707.50	23095	Mid	LTE Band 12	10	24.7	24.59	-0.15	0	N/A	01979	QPSK	1	0	21 mm	bottom	1:1	0.089	1.026	0.091	
707.50	23095	Mid	LTE Band 12	10	23.7	23.67	0.05	1	N/A	01979	QPSK	25	25	21 mm	bottom	1:1	0.072	1.007	0.073	
707.50	23095	Mid	LTE Band 12	10	24.7	24.59	-0.03	0	N/A	01979	QPSK	1	0	8 mm	right	1:1	0.087	1.026	0.089	
707.50	23095	Mid	LTE Band 12	10	23.7	23.67	0.04	1	N/A	01979	QPSK	25	25	8 mm	right	1:1	0.083	1.007	0.084	
707.50	23095	Mid	LTE Band 12	10	18.7	18.58	0.10	0	N/A	01961	QPSK	1	49	0 mm	back	1:1	0.289	1.028	0.297	A4
707.50	23095	Mid	LTE Band 12	10	18.7	18.58	0.06	0	Sound Pack	01961	QPSK	1	49	0 mm	back	1:1	0.075	1.028	0.077	
707.50	23095	Mid	LTE Band 12	10	18.7	18.68	0.03	0	N/A	01961	QPSK	25	0	0 mm	back	1:1	0.199	1.005	0.200	
707.50	23095	Mid	LTE Band 12	10	18.7	18.58	0.01	0	N/A	01961	QPSK	1	49	0 mm	bottom	1:1	0.201	1.028	0.207	
707.50	23095	Mid	LTE Band 12	10	18.7	18.58	-0.06	0	Sound Pack	01961	QPSK	1	49	0 mm	bottom	1:1	0.203	1.028	0.209	
707.50	23095	Mid	LTE Band 12	10	18.7	18.68	0.02	0	N/A	01961	QPSK	25	0	0 mm	bottom	1:1	0.146	1.005	0.147	
707.50	23095	Mid	LTE Band 12	10	18.7	18.58	0.00	0	N/A	01961	QPSK	1	49	0 mm	right	1:1	0.064	1.028	0.066	
707.50	23095	Mid	LTE Band 12	10	18.7	18.68	-0.05	0	N/A	01961	QPSK	25	0	0 mm	right	1:1	0.047	1.005	0.047	
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 10-3
LTE Band 26 (Cell) Body SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Accessory	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.52	0.03	0	N/A	01979	QPSK	1	74	31 mm	back	1:1	0.173	1.042	0.180	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.7	23.52	0.02	1	N/A	01979	QPSK	36	0	31 mm	back	1:1	0.145	1.042	0.151	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.52	-0.04	0	N/A	01979	QPSK	1	74	21 mm	bottom	1:1	0.144	1.042	0.150	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.7	23.52	0.01	1	N/A	01979	QPSK	36	0	21 mm	bottom	1:1	0.112	1.042	0.117	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.52	0.03	0	N/A	01979	QPSK	1	74	8 mm	right	1:1	0.162	1.042	0.169	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.7	23.52	0.02	1	N/A	01979	QPSK	36	0	8 mm	right	1:1	0.114	1.042	0.119	
831.50	26865	Mid	LTE Band 26 (Cell)	15	18.7	18.69	-0.16	0	N/A	01972	QPSK	1	36	0 mm	back	1:1	0.389	1.002	0.390	A5
831.50	26865	Mid	LTE Band 26 (Cell)	15	18.7	18.69	0.05	0	Sound Pack	01972	QPSK	1	36	0 mm	back	1:1	0.151	1.002	0.151	
831.50	26865	Mid	LTE Band 26 (Cell)	15	18.7	18.60	-0.17	0	N/A	01972	QPSK	36	0	0 mm	back	1:1	0.306	1.023	0.313	
831.50	26865	Mid	LTE Band 26 (Cell)	15	18.7	18.69	-0.02	0	N/A	01972	QPSK	1	36	0 mm	bottom	1:1	0.188	1.002	0.188	
831.50	26865	Mid	LTE Band 26 (Cell)	15	18.7	18.69	0.03	0	Sound Pack	01972	QPSK	1	36	0 mm	bottom	1:1	0.184	1.002	0.184	
831.50	26865	Mid	LTE Band 26 (Cell)	15	18.7	18.60	-0.03	0	N/A	01972	QPSK	36	0	0 mm	bottom	1:1	0.145	1.023	0.148	
831.50	26865	Mid	LTE Band 26 (Cell)	15	18.7	18.69	-0.05	0	N/A	01972	QPSK	1	36	0 mm	right	1:1	0.101	1.002	0.101	
831.50	26865	Mid	LTE Band 26 (Cell)	15	18.7	18.60	-0.01	0	N/A	01972	QPSK	36	0	0 mm	right	1:1	0.074	1.023	0.076	
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 10-4
LTE Band 4 (AWS) Body SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Accessory	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.2	24.18	-0.09	0	N/A	01981	QPSK	1	0	31 mm	back	1:1	0.124	1.005	0.125	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.2	23.11	0.02	1	N/A	01981	QPSK	50	50	31 mm	back	1:1	0.093	1.021	0.095	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.2	24.18	0.01	0	N/A	01981	QPSK	1	0	21 mm	bottom	1:1	0.241	1.005	0.242	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.2	23.11	-0.02	1	N/A	01981	QPSK	50	50	21 mm	bottom	1:1	0.188	1.021	0.192	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.2	24.18	-0.02	0	N/A	01981	QPSK	1	0	8 mm	right	1:1	0.242	1.005	0.243	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.2	23.11	-0.03	1	N/A	01981	QPSK	50	50	8 mm	right	1:1	0.217	1.021	0.222	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	13.2	13.13	-0.01	0	N/A	01972	QPSK	1	0	0 mm	back	1:1	0.686	1.016	**0.697**	A6
1732.50	20175	Mid	LTE Band 4 (AWS)	20	13.2	13.13	0.01	0	Sound Pack	01972	QPSK	1	0	0 mm	back	1:1	0.027	1.016	0.027	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	13.2	12.80	0.00	0	N/A	01972	QPSK	50	0	0 mm	back	1:1	0.548	1.096	0.601	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	13.2	13.13	-0.07	0	N/A	01972	QPSK	1	0	0 mm	bottom	1:1	0.434	1.016	0.441	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	13.2	13.13	-0.21	0	Sound Pack	01972	QPSK	1	0	0 mm	bottom	1:1	0.435	1.016	0.442	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	13.2	12.80	-0.08	0	N/A	01972	QPSK	50	0	0 mm	bottom	1:1	0.342	1.096	0.375	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	13.2	13.13	-0.08	0	N/A	01972	QPSK	1	0	0 mm	right	1:1	0.075	1.016	0.076	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	13.2	12.80	0.01	0	N/A	01972	QPSK	50	0	0 mm	right	1:1	0.062	1.096	0.068	
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 10-5
LTE Band 25 (PCS) Body SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Accessory	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.16	0.03	0	N/A	01979	QPSK	1	0	31 mm	back	1:1	0.201	1.009	0.203	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.2	23.08	-0.01	1	N/A	01979	QPSK	50	0	31 mm	back	1:1	0.135	1.028	0.139	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.16	0.02	0	N/A	01979	QPSK	1	0	21 mm	bottom	1:1	0.393	1.009	0.397	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.2	23.08	-0.03	1	N/A	01979	QPSK	50	0	21 mm	bottom	1:1	0.293	1.028	0.301	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.16	-0.01	0	N/A	01979	QPSK	1	0	8 mm	right	1:1	0.585	1.009	0.590	A7
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.16	-0.09	0	Sound Pack	01979	QPSK	1	0	8 mm	right	1:1	0.504	1.009	0.509	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.2	23.08	0.02	1	N/A	01979	QPSK	50	0	8 mm	right	1:1	0.455	1.028	0.468	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	13.2	13.19	-0.01	0	N/A	01961	QPSK	1	50	0 mm	back	1:1	0.471	1.002	0.472	
1905.00	26590	High	LTE Band 25 (PCS)	20	13.2	13.17	0.03	0	N/A	01961	QPSK	50	25	0 mm	back	1:1	0.374	1.007	0.377	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	13.2	13.19	-0.01	0	N/A	01961	QPSK	1	50	0 mm	bottom	1:1	0.345	1.002	0.346	
1905.00	26590	High	LTE Band 25 (PCS)	20	13.2	13.17	-0.01	0	N/A	01961	QPSK	50	25	0 mm	bottom	1:1	0.273	1.007	0.275	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	13.2	13.19	-0.06	0	N/A	01961	QPSK	1	50	0 mm	right	1:1	0.124	1.002	0.124	
1905.00	26590	High	LTE Band 25 (PCS)	20	13.2	13.17	-0.09	0	N/A	01961	QPSK	50	25	0 mm	right	1:1	0.100	1.007	0.101	
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 10-6
LTE Band 41 Body SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Accessory	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
2506.00	39750	Low	LTE Band 41	20	24.2	24.18	0.00	0	N/A	01979	QPSK	1	0	31 mm	back	1:1.58	0.146	1.005	0.147	
2506.00	39750	Low	LTE Band 41	20	23.2	23.09	0.06	1	N/A	01979	QPSK	50	50	31 mm	back	1:1.58	0.108	1.026	0.111	
2506.00	39750	Low	LTE Band 41	20	24.2	24.18	0.01	0	N/A	01979	QPSK	1	0	21 mm	bottom	1:1.58	0.258	1.005	0.259	
2506.00	39750	Low	LTE Band 41	20	23.2	23.09	-0.04	1	N/A	01979	QPSK	50	50	21 mm	bottom	1:1.58	0.195	1.026	0.200	
2506.00	39750	Low	LTE Band 41	20	24.2	24.18	-0.07	0	N/A	01979	QPSK	1	0	8 mm	right	1:1.58	0.275	1.005	0.276	
2506.00	39750	Low	LTE Band 41	20	23.2	23.09	0.02	1	N/A	01979	QPSK	50	50	8 mm	right	1:1.58	0.191	1.026	0.196	
2680.00	41490	High	LTE Band 41	20	14.2	14.20	0.10	0	N/A	01961	QPSK	1	0	0 mm	back	1:1.58	0.475	1.000	0.475	A8
2680.00	41490	High	LTE Band 41	20	14.2	14.20	0.14	0	Sound Pack	01961	QPSK	1	0	0 mm	back	1:1.58	0.061	1.000	0.061	
2593.00	40620	Mid	LTE Band 41	20	14.2	14.18	0.02	0	N/A	01961	QPSK	50	50	0 mm	back	1:1.58	0.340	1.005	0.342	
2680.00	41490	High	LTE Band 41	20	14.2	14.20	-0.01	0	N/A	01961	QPSK	1	0	0 mm	bottom	1:1.58	0.304	1.000	0.304	
2680.00	41490	High	LTE Band 41	20	14.2	14.20	0.05	0	Sound Pack	01961	QPSK	1	0	0 mm	bottom	1:1.58	0.307	1.000	0.307	
2593.00	40620	Mid	LTE Band 41	20	14.2	14.18	-0.05	0	N/A	01961	QPSK	50	50	0 mm	bottom	1:1.58	0.180	1.005	0.181	
2680.00	41490	High	LTE Band 41	20	14.2	14.20	0.02	0	N/A	01961	QPSK	1	0	0 mm	right	1:1.58	0.025	1.000	0.025	
2593.00	40620	Mid	LTE Band 41	20	14.2	14.18	0.11	0	N/A	01961	QPSK	50	50	0 mm	right	1:1.58	0.021	1.005	0.021	
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 10-7
WLAN Body SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Accessory	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													(W/kg)			(W/kg)	
2437	6	802.11b	DSSS	22	18.0	17.90	-0.02	12 mm	N/A	01976	1	back	99.8	0.259	1.023	1.002	0.265	
2437	6	802.11b	DSSS	22	18.0	17.90	-0.03	9 mm	N/A	01976	1	top	99.8	0.273	1.023	1.002	0.280	
2437	6	802.11b	DSSS	22	18.0	17.90	-0.01	9 mm	Sound Pack	01976	1	top	99.8	0.250	1.023	1.002	0.256	
2437	6	802.11b	DSSS	22	8.0	7.21	-0.11	0 mm	N/A	01980	1	back	99.8	0.366	1.199	1.002	**0.440**	A9
2437	6	802.11b	DSSS	22	8.0	7.21	0.18	0 mm	Sound Pack	01980	1	back	99.8	0.012	1.199	1.002	0.014	
2437	6	802.11b	DSSS	22	8.0	7.21	0.06	0 mm	N/A	01980	1	top	99.8	0.159	1.199	1.002	0.191	
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 10-8
Bluetooth Body SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Accessory	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)			(W/kg)	
2480	78	Bluetooth	FHSS	11.5	10.75	0.11	0 mm	N/A	01976	1	back	76.8	0.220	1.189	1.302	**0.341**	A10
2480	78	Bluetooth	FHSS	11.5	10.75	0.17	0 mm	Sound Pack	01976	1	back	76.8	0.006	1.189	1.302	0.009	
2480	78	Bluetooth	FHSS	11.5	10.75	0.07	0 mm	N/A	01976	1	top	76.8	0.047	1.189	1.302	0.073	
2480	78	Bluetooth	FHSS	11.5	10.75	0.16	0 mm	Sound Pack	01976	1	top	76.8	0.069	1.189	1.302	0.107	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram				

10.2 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in FCC KDB Publication 616217 D04v01r02 and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
6. Per FCC KDB Publication 865664 D01v01r04, variability SAR tests were not required since measured SAR results for all frequency bands were less than 0.8 W/kg.
7. FCC KDB Publication 616217 D04v01r02 Section 4.3, SAR tests are required for the back surface and edges of the tablet with the tablet touching the phantom. The SAR Exclusion Threshold in FCC KDB 447498 D01v06 was applied to determine SAR test exclusion for adjacent edge configurations.

CDMA Notes:

1. CDMA SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 according to KDB 941225 D01v03r01 procedures for data devices. SAR tests for Subtype 2 of Rev.A and 1x RTT configurations were not required per the 3G SAR Test Reduction Policy in KDB Publication 941225 D01v03r01..
2. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel was used.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 7.5.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D01v06, when the reported (scaled) for LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg, testing at the other channels was required for such test configurations.
5. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r04. Testing was performed using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.
6. Per KDB Publication 941225 D05Av01r02, SAR for LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.

WLAN Notes:

1. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 7.6.2 for more information. When the maximum reported 1g averaged SAR is ≤0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg or all test channels were measured.
2. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated EMC test reports.

Bluetooth Notes:

1. Bluetooth Body SAR was measured with the device connected to a call box with hopping disabled with DH5 operation and Tx Tests test mode type. Per October 2016 TCB Workshop Notes, the reported SAR was scaled to the 100% transmission duty factor to determine compliance. See Section 8.4 for the time-domain plot and calculation for the duty factor of the device.

11 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

11.1 Introduction

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

11.2 Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore, simultaneous transmission analysis is required. Per FCC KDB Publication 447498 D01v06 4.3.2 and IEEE 1528-2013 Section 6.3.4.1.2, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤1.6 W/kg. The different test positions in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1-g SAR.

11.3 Body SAR Simultaneous Transmission Analysis

Table 11-1
Simultaneous Transmission Scenario with 2.4 GHz WLAN

Exposure Condition	Mode	EVDO/LTE SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	EVDO BC10 (§90S)	0.434	0.440	0.874
	EVDO BC0 (§22H)	0.429	0.440	0.869
	PCS EVDO	0.696	0.440	1.136
	LTE Band 12	0.297	0.440	0.737
	LTE Band 26 (Cell)	0.390	0.440	0.830
	LTE Band 4 (AWS)	0.697	0.440	**1.137**
	LTE Band 25 (PCS)	0.590	0.440	1.030
	LTE Band 41	0.475	0.440	0.915

Table 11-2
Simultaneous Transmission Scenario with Bluetooth

Exposure Condition	Mode	EVDO/LTE SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
Body SAR	EVDO BC10 (§90S)	0.434	0.341	0.775
	EVDO BC0 (§22H)	0.429	0.341	0.770
	PCS EVDO	0.696	0.341	1.037
	LTE Band 12	0.297	0.341	0.638
	LTE Band 26 (Cell)	0.390	0.341	0.731
	LTE Band 4 (AWS)	0.697	0.341	**1.038**
	LTE Band 25 (PCS)	0.590	0.341	0.931
	LTE Band 41	0.475	0.341	0.816

11.4 Simultaneous Transmission Conclusion

The above numerical summed SAR results for all the worst-case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06 and IEEE 1528-2013 Section 6.3.4.1.2.

12 SAR MEASUREMENT VARIABILITY

12.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01, SAR measurement variability was not assessed for each frequency band since all measured SAR values are < 0.80 W/kg for 1g SAR.

12.2 Measurement Uncertainty

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

13 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	E4432B	ESG-D Series Signal Generator	3/24/2017	Annual	3/24/2018	US40053896
Agilent	E8257D	(250kHz-20GHz) Signal Generator	3/22/2017	Annual	3/22/2018	MY45470194
Agilent	N9020A	MXA Signal Analyzer	10/28/2016	Annual	10/28/2017	US46470561
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Agilent	E5515C	Wireless Communications Test Set	1/8/2015	Triennial	1/8/2018	GB43163447
Agilent	N5182A	MXG Vector Signal Generator	2/28/2017	Annual	2/28/2018	MY47420800
Agilent	N5182A	MXG Vector Signal Generator	10/27/2016	Annual	10/27/2017	MY47420603
Agilent	E4438C	ESG Vector Signal Generator	3/24/2017	Biennial	3/24/2019	MY42082385
Agilent	8753ES	S-Parameter Vector Network Analyzer	8/19/2016	Annual	8/19/2017	MY40003841
Agilent	8753ES	S-Parameter Network Analyzer	10/26/2016	Annual	10/26/2017	US39170118
Agilent	E5515C	8960 Series 10 Wireless Communications Test Set	10/5/2016	Annual	10/5/2017	GB42230325
Agilent	E5515C	Wireless Communications Test Set	12/12/2016	Annual	12/12/2017	GB44400860
Agilent	E5515C	Wireless Communications Test Set	5/31/2017	Annual	5/31/2018	GB43304278
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433972
Anritsu	ML2495A	Power Meter	10/16/2015	Biennial	10/16/2017	941001
Anritsu	MT8820C	Radio Communication Analyzer	5/23/2017	Annual	5/23/2018	6201240328
Anritsu	MT8820C	Radio Communication Analyzer	12/8/2016	Annual	12/8/2017	6201300731
Anritsu	ML2496A	Power Meter	3/28/2017	Annual	3/28/2018	1351001
Anritsu	MA24106A	USB Power Sensor	3/20/2017	Annual	3/20/2018	1349501
Anritsu	MA24106A	USB Power Sensor	10/27/2016	Annual	10/27/2017	1349503
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1339018
COMTech	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M1S5A00-009
Control Company	4352	Ultra Long Stem Thermometer	5/2/2017	Biennial	5/2/2019	170330144
Control Company	4352	Ultra Long Stem Thermometer	5/2/2017	Biennial	5/2/2019	170330174
Control Company	4040	Therm./Clock/Humidity Monitor	3/31/2017	Biennial	3/31/2019	170232394
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mitutoyo	CD-6"CSX	Digital Caliper	3/2/2016	Biennial	3/2/2018	13264162
Mitutoyo	CD-6"CSX	Digital Caliper	3/2/2016	Biennial	3/2/2018	13264165
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	NC-100	Torque Wrench	11/6/2015	Biennial	11/6/2017	N/A
Pasternack	NC-100	Torque Wrench	11/6/2015	Biennial	11/6/2017	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	4/11/2017	Annual	4/11/2018	836371/0079
Rohde & Schwarz	CMW500	Radio Communication Tester	10/20/2016	Annual	10/20/2017	100976
Rohde & Schwarz	CMW500	Radio Communication Tester	5/4/2017	Annual	5/4/2018	112347
Seekonk	NC-100	Torque Wrench (8" lb)	9/1/2016	Biennial	9/1/2018	21053
Seekonk	NC-100	Torque Wrench	11/6/2015	Biennial	11/6/2017	N/A
SPEAG	DAK-3.5	Dielectric Assessment Kit	9/13/2016	Annual	9/13/2017	1091
SPEAG	D750V3	750 MHz Dipole	3/7/2017	Annual	3/7/2018	1054
SPEAG	D835V2	850 MHz SAR Dipole	5/11/2017	Annual	5/11/2018	4d180
SPEAG	D1750V2	1750 MHz SAR Dipole	5/9/2017	Annual	5/9/2018	1092
SPEAG	D1900V2	1900 MHz SAR Dipole	5/10/2017	Annual	5/10/2018	5d026
SPEAG	D2450V2	2450 MHz SAR Dipole	5/9/2017	Annual	5/9/2018	945
SPEAG	D2450V2	2450 MHz SAR Dipole	9/13/2016	Annual	9/13/2017	797
SPEAG	D2600V2	2600 MHz SAR Dipole	9/13/2016	Annual	9/13/2017	1071
SPEAG	EX3DV4	SAR Probe	4/18/2017	Annual	4/18/2018	7406
SPEAG	ES3DV3	SAR Probe	3/14/2017	Annual	3/14/2018	3319
SPEAG	ES3DV3	SAR Probe	3/14/2017	Annual	3/14/2018	3209
SPEAG	ES3DV3	SAR Probe	9/19/2016	Annual	9/19/2017	3287
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/11/2017	Annual	4/11/2018	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/8/2017	Annual	3/8/2018	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/13/2017	Annual	3/13/2018	1415
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/14/2016	Annual	9/14/2017	1408

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

14 MEASUREMENT UNCERTAINTIES

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

15 CONCLUSION

15.1 Measurement Conclusion

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

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

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APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFLK460; Type: Portable Tablet; Serial: 01961

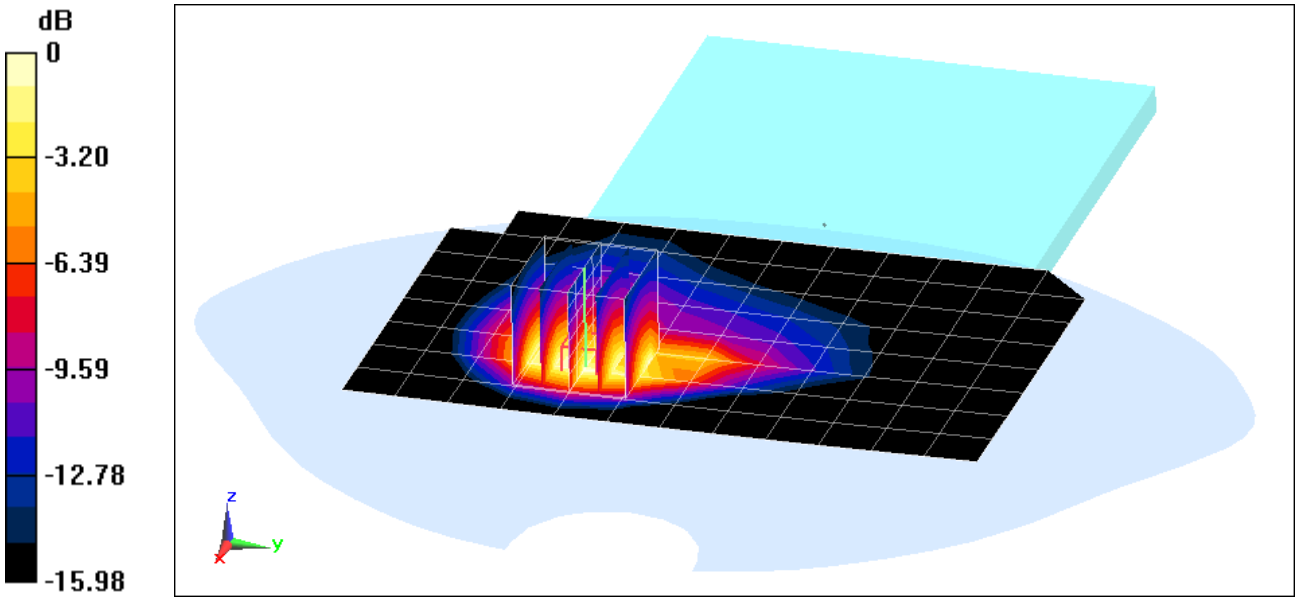
Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.978 S/m; ε_r = 54.146; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-07-2017; Ambient Temp: 22.3°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Cell. BC10 EVDO Rev. 0, Body SAR, Back side, Mid.ch

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.81 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.957 W/kg
SAR(1 g) = 0.398 W/kg



0 dB = 0.522 W/kg = -2.82 dBW/kg

DUT: ZNFLK460; Type: Portable Tablet; Serial: 01961

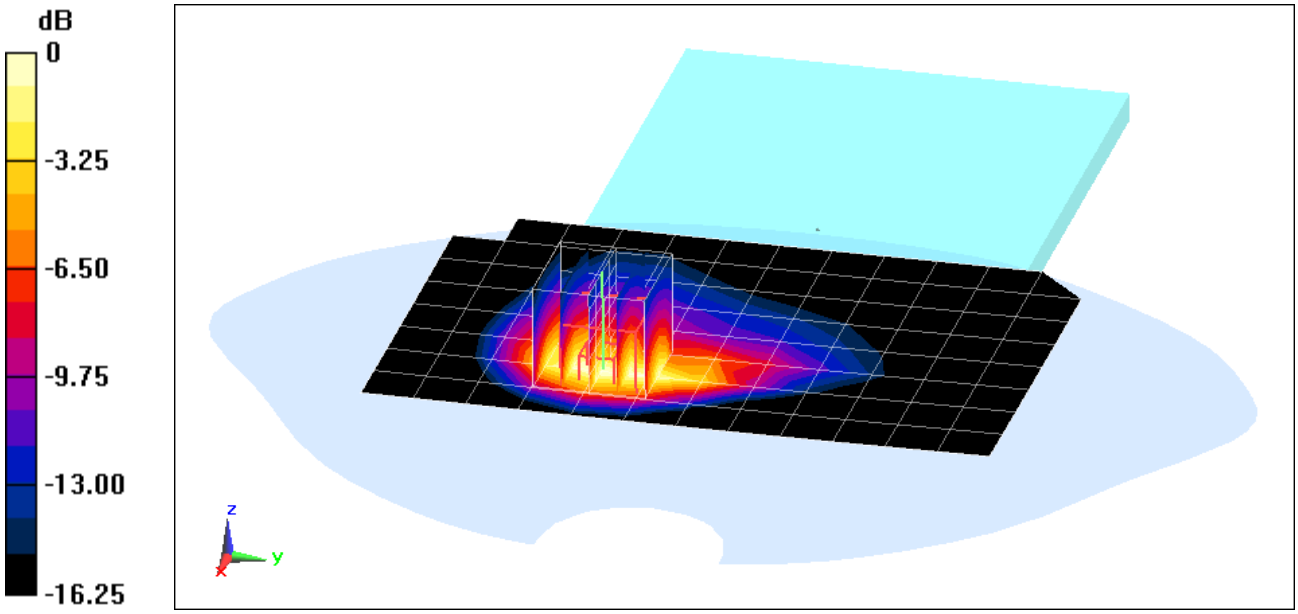
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.997 S/m; ε_r = 54.036; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-07-2017; Ambient Temp: 22.3°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.32 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.864 W/kg
SAR(1 g) = 0.400 W/kg



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

DUT: ZNFLK460; Type: Portable Tablet; Serial: 01979

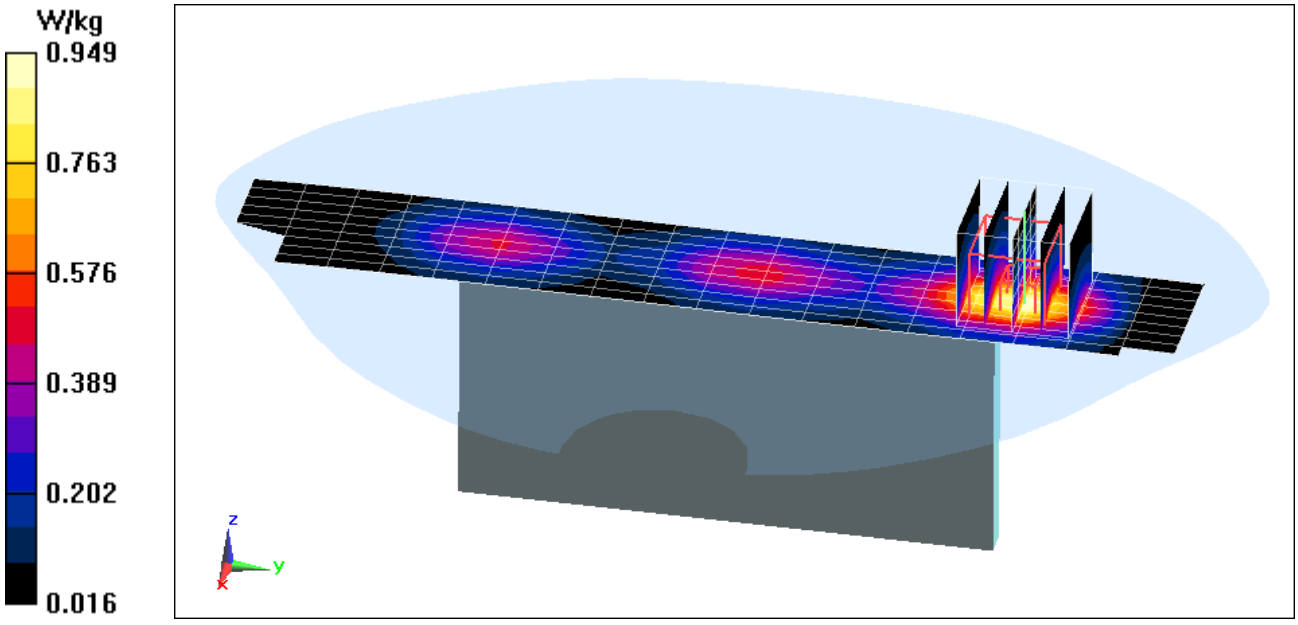
Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.56 S/m; ε_r = 52.9; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.8 cm

Test Date: 08-11-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7406; ConvF(7.81, 7.81, 7.81); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: PCS EVDO Rev. 0, Body SAR, Right Edge, Mid.ch

Area Scan (10x19x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.44 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.11 W/kg
SAR(1 g) = 0.654 W/kg



DUT: ZNFLK460; Type: Portable Tablet; Serial: 01961

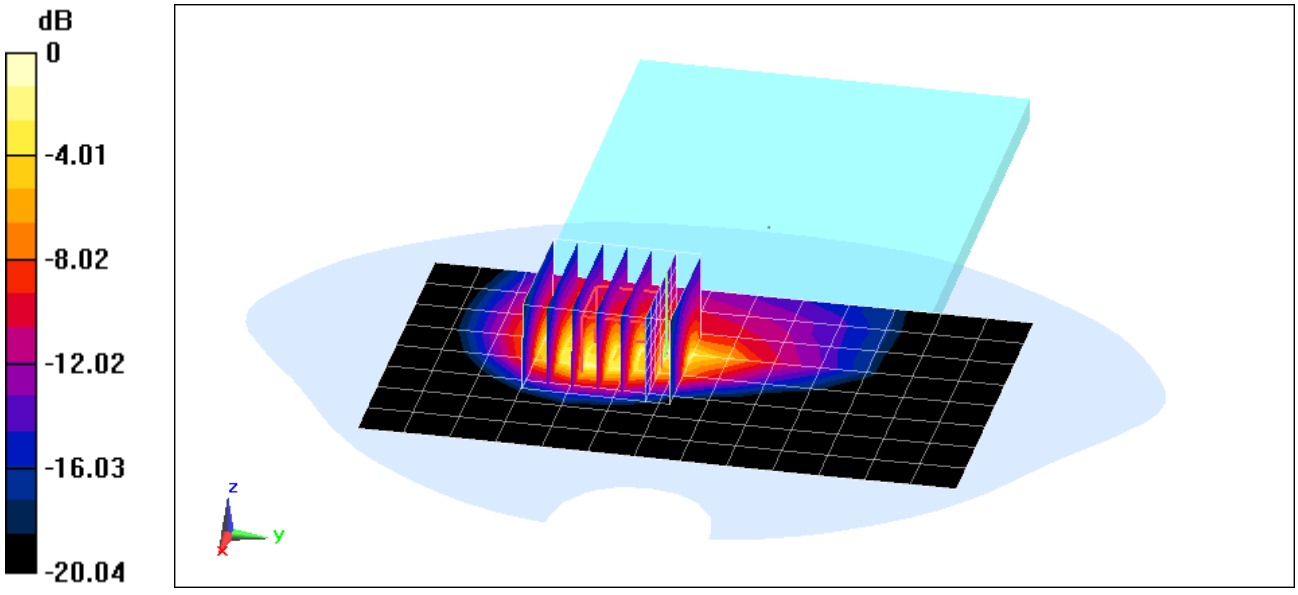
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.919 S/m; ε_r = 55.425; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

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

Probe: EX3DV4 - SN7406; ConvF(9.9, 9.9, 9.9); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.8540 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.848 W/kg
SAR(1 g) = 0.289 W/kg



0 dB = 0.586 W/kg = -2.32 dBW/kg

DUT: ZNFLK460; Type: Portable Tablet; Serial: 01972

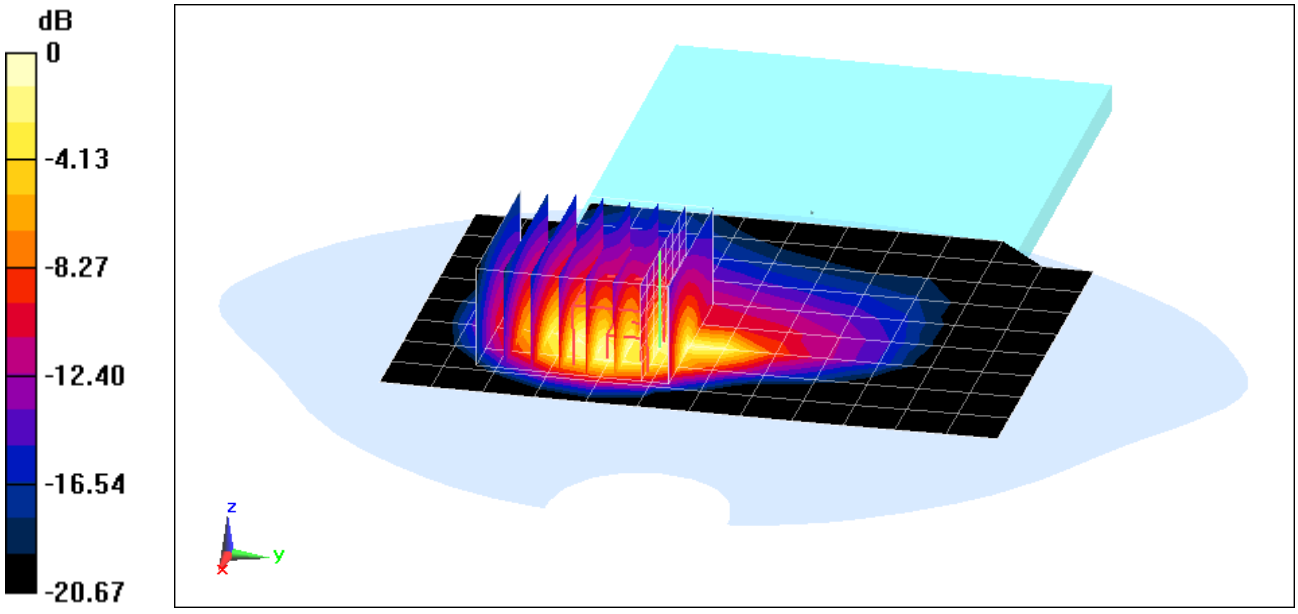
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 831.5 MHz; σ = 1.001 S/m; ε_r = 54.475; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-31-2017; Ambient Temp: 22.7°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(6.29, 6.29, 6.29); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/8/2017
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 26 (Cell.), Body SAR, Back side, Mid.ch, 15 MHz Bandwidth, QPSK, 1 RB, 36 RB Offset

Area Scan (11x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.97 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.892 W/kg
SAR(1 g) = 0.389 W/kg



0 dB = 0.516 W/kg = -2.87 dBW/kg

DUT: ZNFLK460; Type: Portable Tablet; Serial: 01972

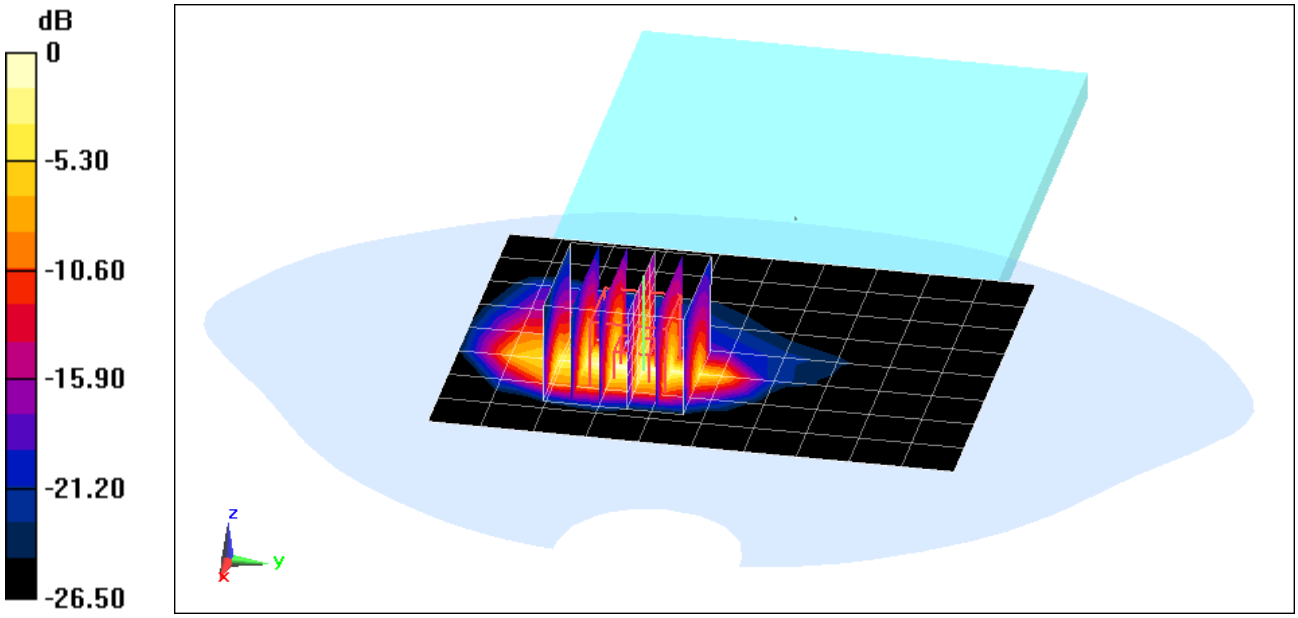
Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
$f = 1732.5$ MHz; $\sigma = 1.487$ S/m; $\varepsilon_r = 51.472$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-27-2017; Ambient Temp: 22.4°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7406; ConvF(8.08, 8.08, 8.08); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Left; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 4 (AWS), Body SAR, Back side, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.82 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.55 W/kg
SAR(1 g) = 0.686 W/kg



0 dB = 1.27 W/kg = 1.04 dBW/kg

DUT: ZNFLK460; Type: Portable Tablet; Serial: 01979

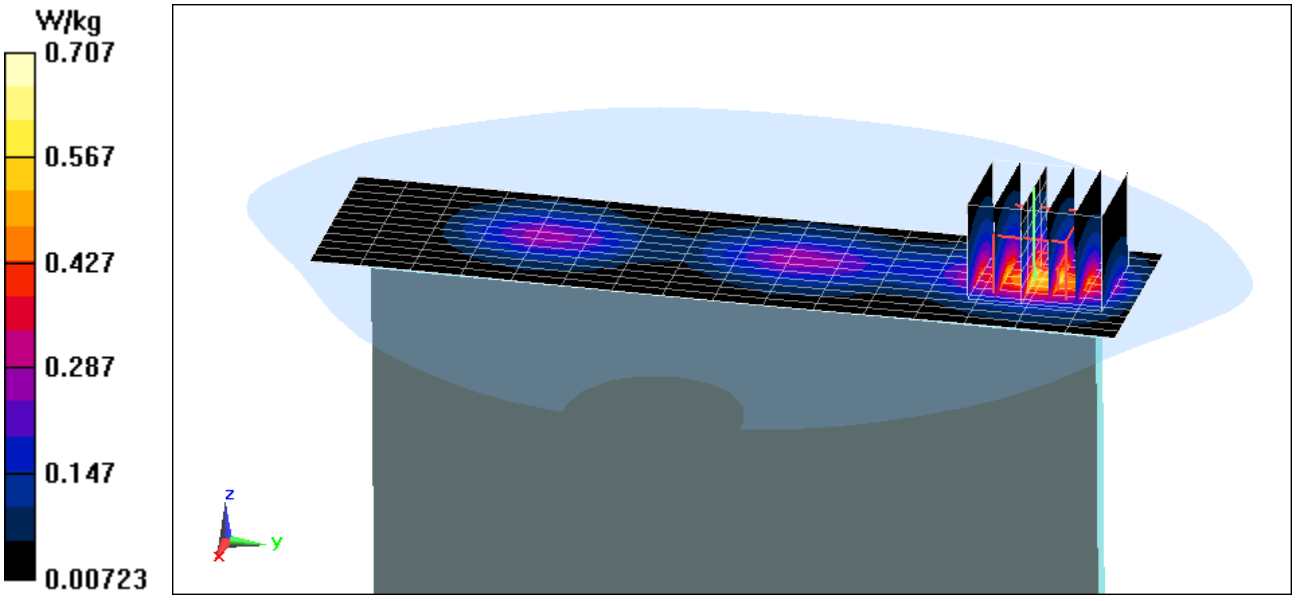
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
$f = 1882.5$ MHz; $\sigma = 1.559$ S/m; $\varepsilon_r = 53.346$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 0.8 cm

Test Date: 07-27-2017; Ambient Temp: 20.6°C; Tissue Temp: 21.8°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 25 (PCS), Body SAR, Right Edge, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (13x17x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.42 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.965 W/kg
SAR(1 g) = 0.585 W/kg



DUT: ZNFLK460; Type: Portable Tablet; Serial: 01961

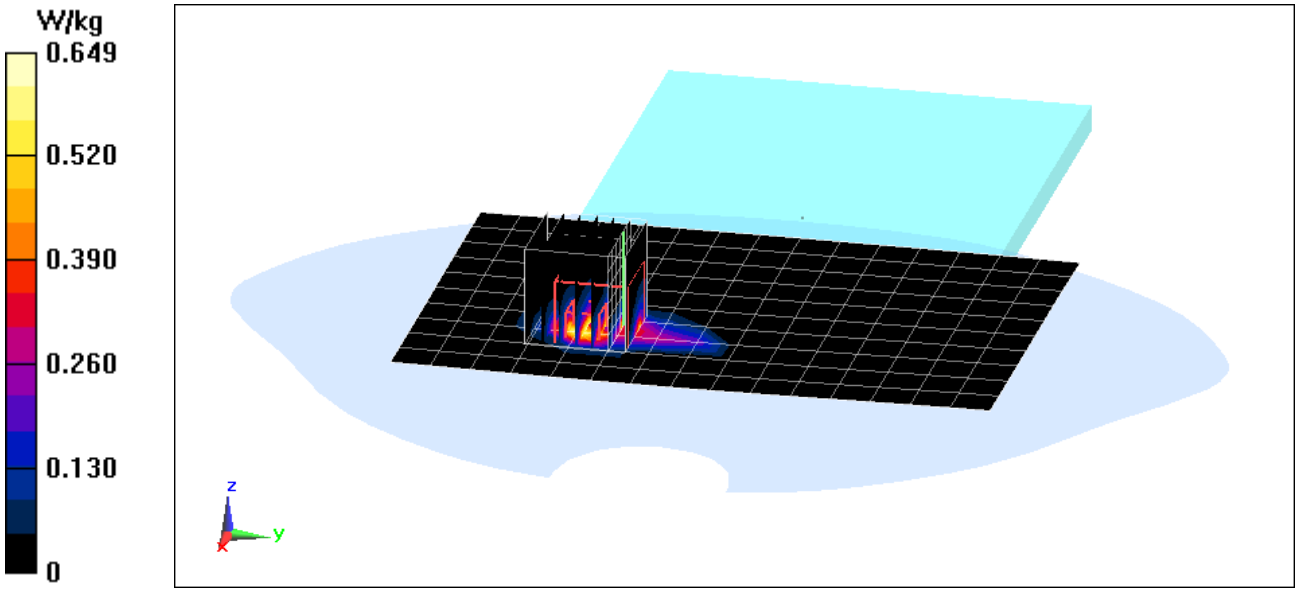
Communication System: UID 0, LTE Band 41; Frequency: 2680 MHz; Duty Cycle: 1:1.58
Medium: 2600 Body Medium parameters used (interpolated):
$f = 2680$ MHz; $\sigma = 2.352$ S/m; $\varepsilon_r = 50.523$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-05-2017; Ambient Temp: 23.3°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3287; ConvF(4.12, 4.12, 4.12); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (11x16x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.89 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 1.39 W/kg
SAR(1 g) = 0.475 W/kg



DUT: ZNFLK460; Type: Portable Tablet; Serial: 01980

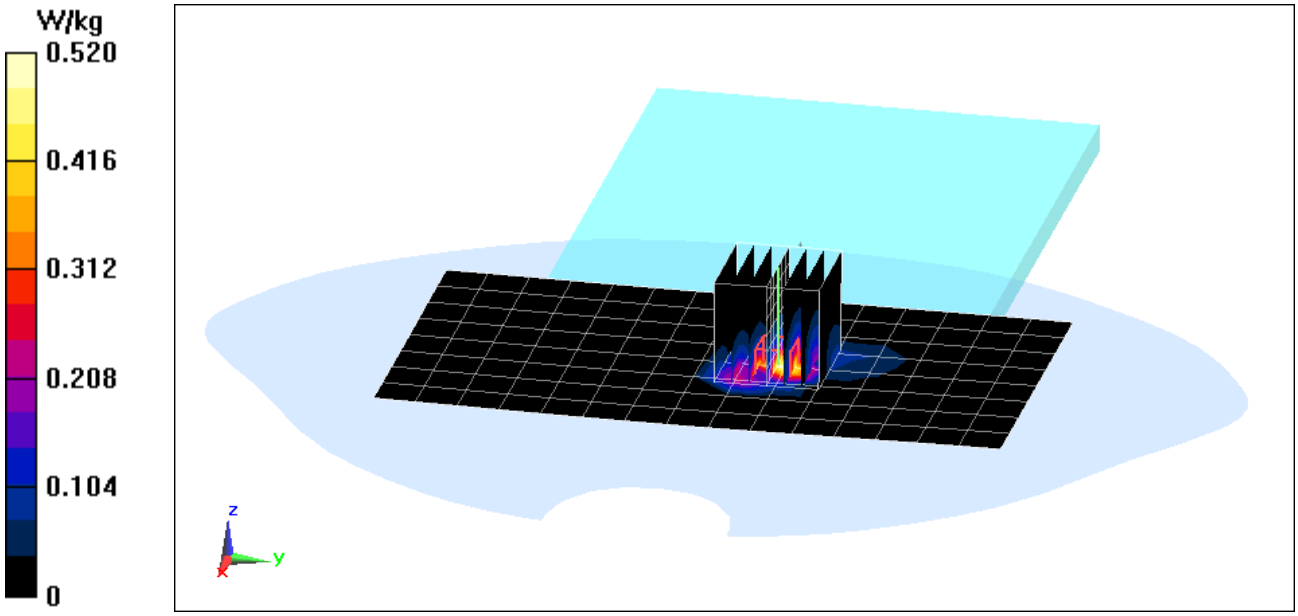
Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
$f = 2437$ MHz; $\sigma = 2.007$ S/m; $\varepsilon_r = 51.508$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-05-2017; Ambient Temp: 22.9°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3287; ConvF(4.35, 4.35, 4.35); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11b, 22 MHz Bandwidth, Body SAR, Ch 06, 1 Mbps, Back Side

Area Scan (9x16x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.87 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.366 W/kg



DUT: ZNFLK460; Type: Portable Tablet; Serial: 01976

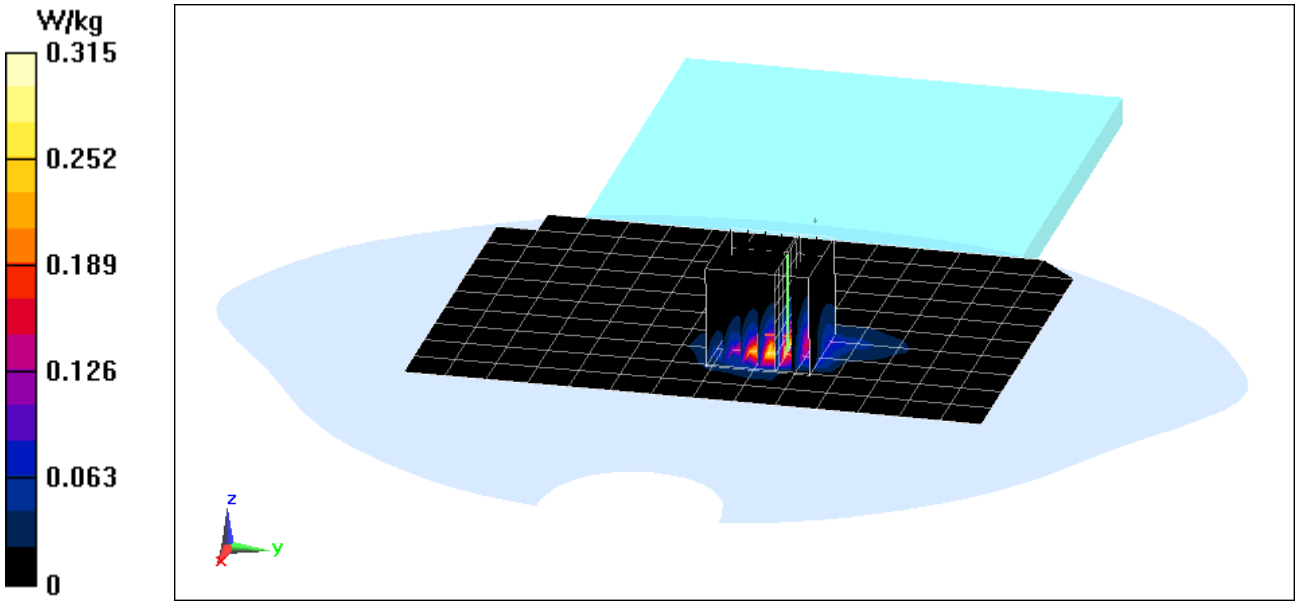
Communication System: UID 0, Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1.302
Medium: 2450 Body Medium parameters used (interpolated):
$f = 2480$ MHz; $\sigma = 2.036$ S/m; $\varepsilon_r = 50.609$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-22-2017; Ambient Temp: 23.1°C; Tissue Temp: 20.9°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/8/2017
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Bluetooth, Body SAR, Ch 78, 1 Mbps, Back Side

Area Scan (11x15x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.78 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.608 W/kg
SAR(1 g) = 0.220 W/kg



APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054

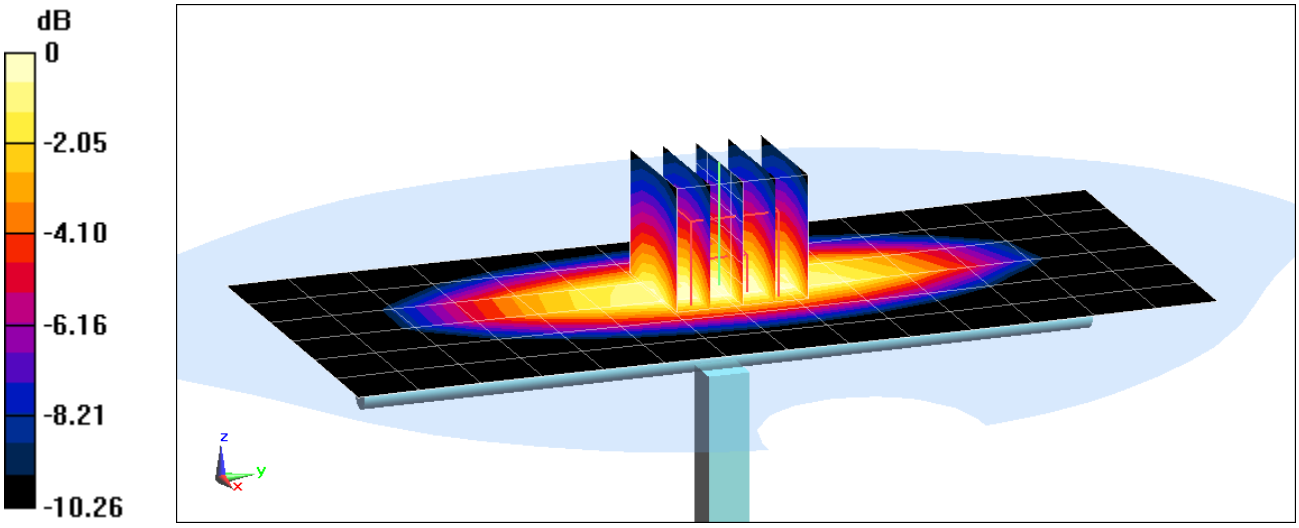
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
$f = 750$ MHz; $\sigma = 0.958$ S/m; $\varepsilon_r = 55.007$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

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

Probe: EX3DV4 - SN7406; ConvF(9.9, 9.9, 9.9); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.70 W/kg
SAR(1 g) = 1.75 W/kg
Deviation(1 g) = 1.63%



0 dB = 2.36 W/kg = 3.73 dBW/kg

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d180

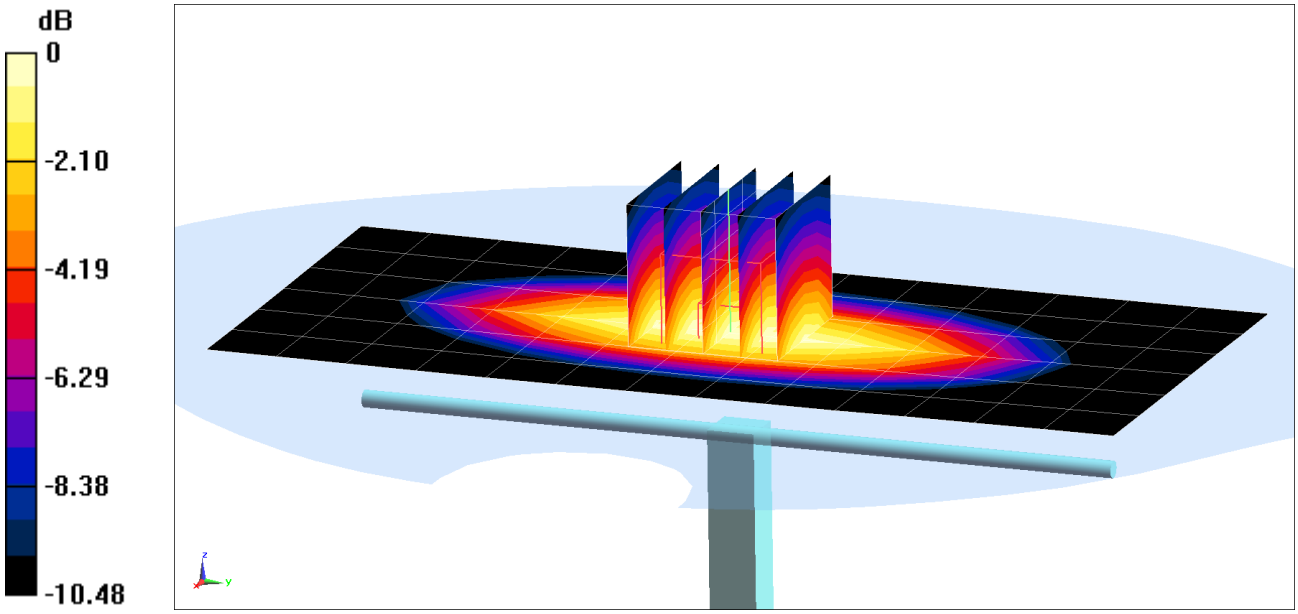
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 1.005 S/m; ε_r = 54.424; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-31-2017; Ambient Temp: 22.7°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(6.29, 6.29, 6.29); Calibrated: 03/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 03/08/2017
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.92 W/kg
SAR(1 g) = 1.98 W/kg
Deviation(1 g) = 3.02%



0 dB = 2.31 W/kg = 3.64 dBW/kg

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d180

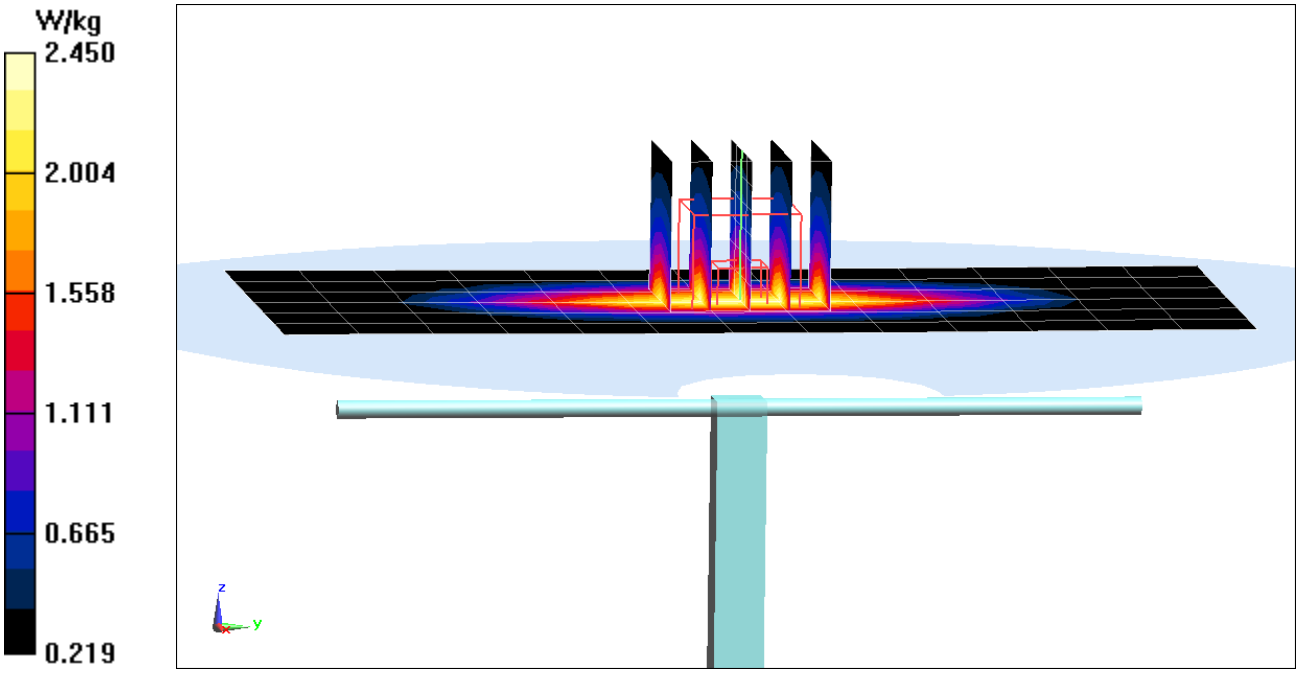
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.996 S/m; ε_r = 54.058; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-07-2017; Ambient Temp: 22.3°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 3.07 W/kg
SAR(1 g) = 2.09 W/kg
Deviation(1 g) = 8.74%



DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1092

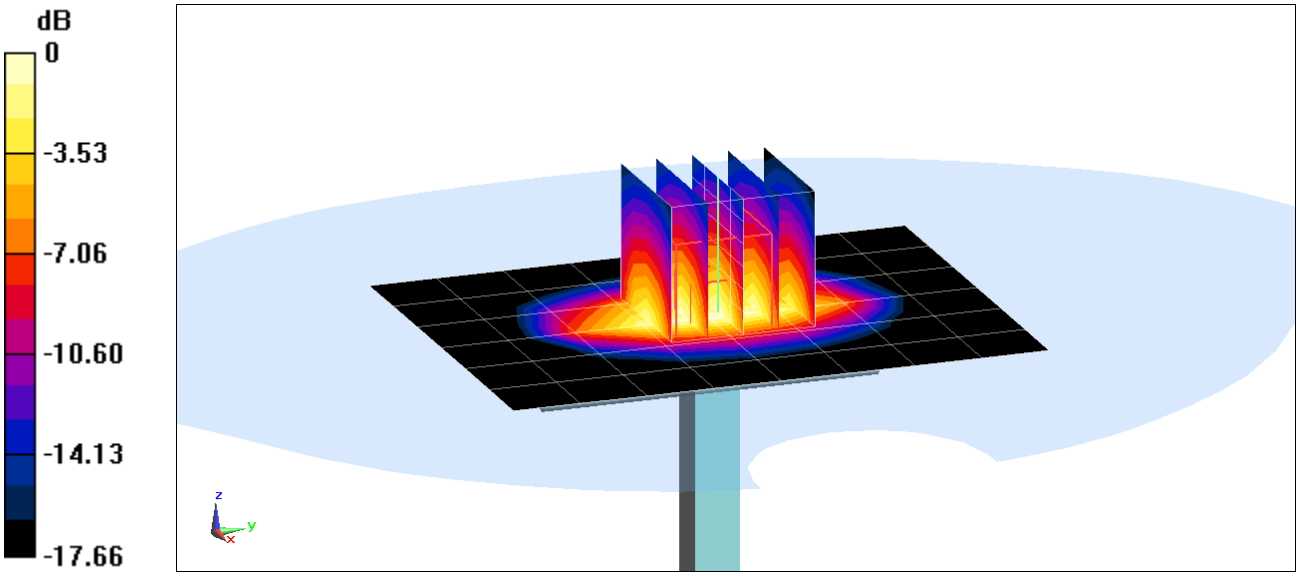
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.505 S/m; ε_r = 51.397; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-27-2017; Ambient Temp: 22.4°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7406; ConvF(8.08, 8.08, 8.08); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Left; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.06 W/kg
SAR(1 g) = 3.88 W/kg
Deviation(1 g) = 4.86%



0 dB = 5.93 W/kg = 7.73 dBW/kg

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d026

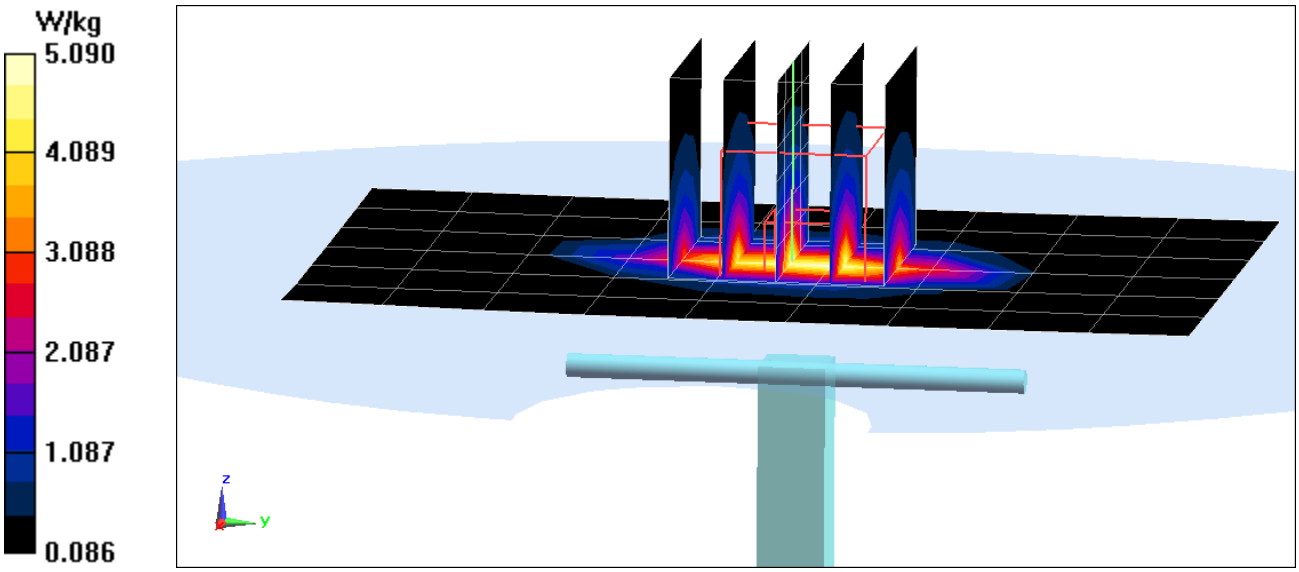
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.575 S/m; ε_r = 53.266; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-27-2017; Ambient Temp: 20.6°C; Tissue Temp: 21.8°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.14 W/kg
SAR(1 g) = 4.04 W/kg
Deviation(1 g) = 0.25%



DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d026

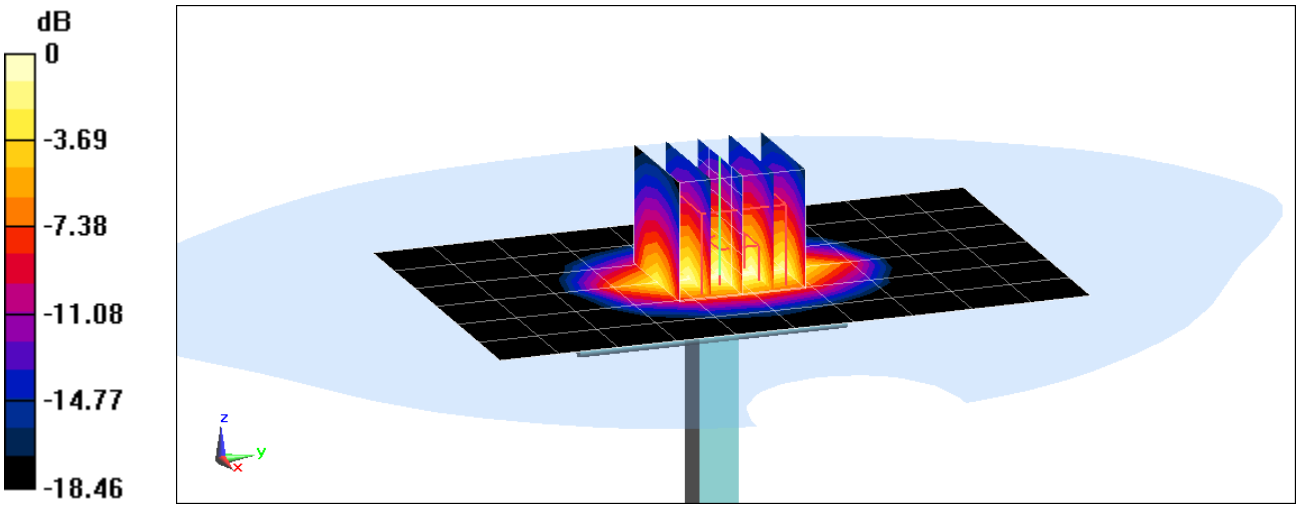
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.577 S/m; ε_r = 52.852; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-11-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7406; ConvF(7.81, 7.81, 7.81); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.51 W/kg
SAR(1 g) = 4.00 W/kg
Deviation(1 g) = -0.74%



0 dB = 6.22 W/kg = 7.94 dBW/kg

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

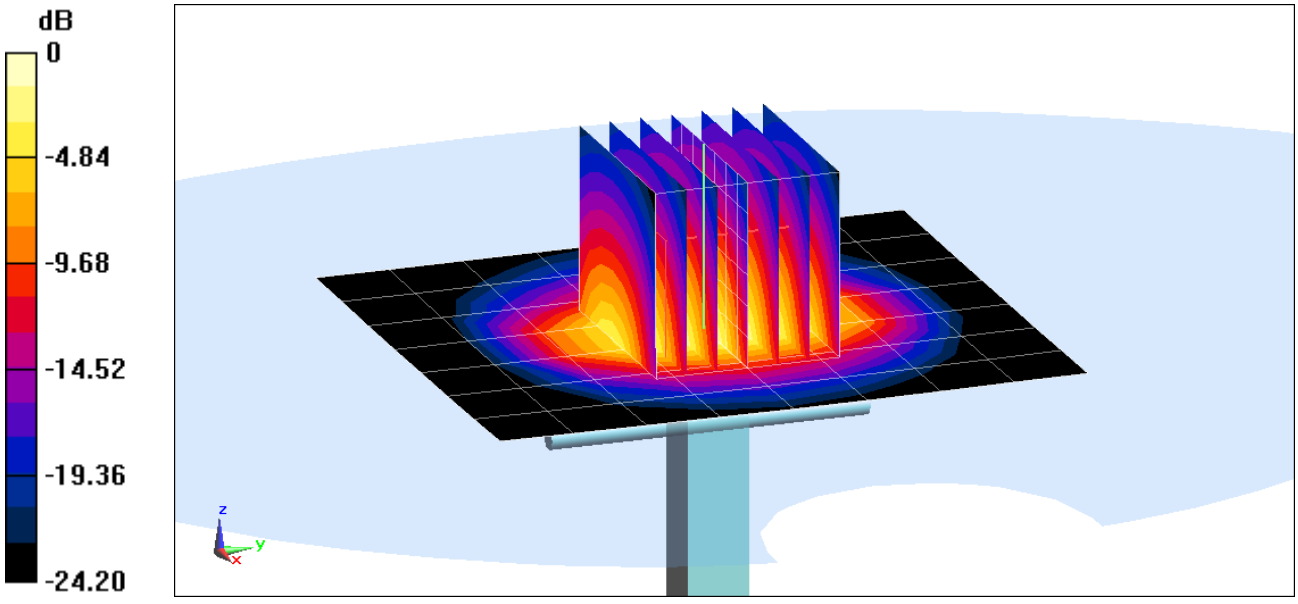
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 2.022 S/m; ε_r = 51.484; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-05-2017; Ambient Temp: 22.9°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3287; ConvF(4.35, 4.35, 4.35); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.5 W/kg
SAR(1 g) = 5.49 W/kg
Deviation(1 g) = 8.28%



0 dB = 7.26 W/kg = 8.61 dBW/kg

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 945

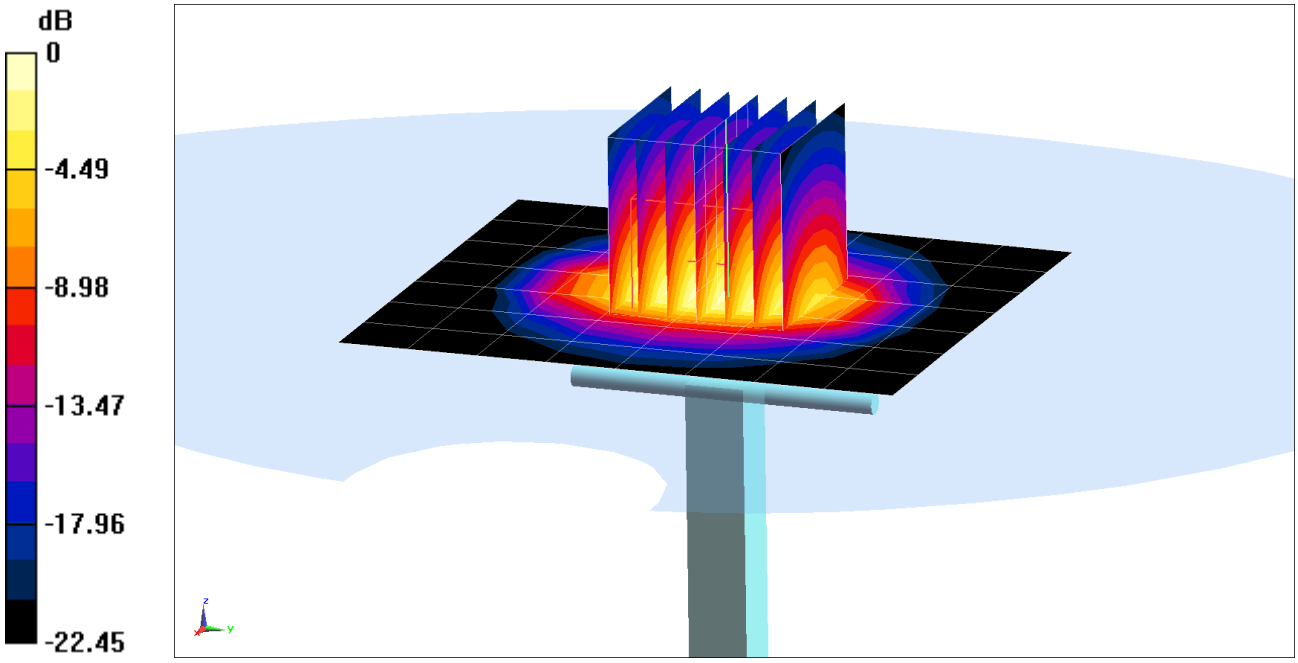
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 1.99 S/m; ε_r = 50.74; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-22-2017; Ambient Temp: 23.1°C; Tissue Temp: 20.9°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/8/2017
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.6 W/kg
SAR(1 g) = 5.15 W/kg
Deviation(1 g) = 2.59%



0 dB = 6.74 W/kg = 8.29 dBW/kg

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1071

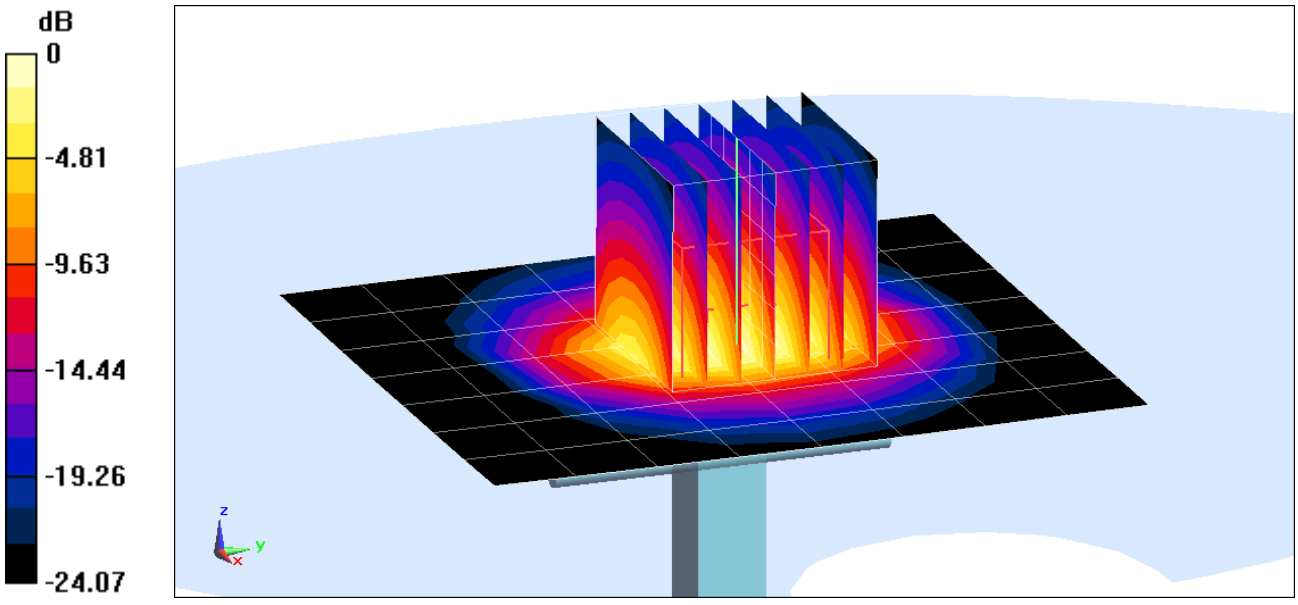
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2600 Body Medium parameters used:
f = 2600 MHz; σ = 2.244 S/m; ε_r = 50.786; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-05-2017; Ambient Temp: 23.3°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3287; ConvF(4.12, 4.12, 4.12); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 13.0 W/kg
SAR(1 g) = 5.86 W/kg
Deviation(1 g) = 8.12%



0 dB = 7.88 W/kg = 8.97 dBW/kg