

TEST REPORT



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1. Report No : DRRFCC2110-0092

2. Customer

- Name : Kyocera Corporation
- Address : Yokohama Office 2-1-1 Kagahara, Tsuzuki-ku Yokohama-shi, Kanagawa, Japan

3. Use of Report : FCC Original Grant

4. Product Name / Model Name : Mobile Phone / EB1073

FCC ID : JOYEB1073

5. FCC Regulation(s) : CFR 47 Part 2 subpart 2.1093

Test Method Used : IEEE 1528-2013, IEC/IEEE 62209-1528

FCC SAR KDB Publications (Details in test report)

6. Date of Test : 2021.08.26 ~ 2021.09.27

7. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing

8. Testing Environment : Refer to appended test report.

9. Test Result : Refer to attached test report.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

This test report is not related to KOLAS accreditation.

Affirmation	Tested by	Reviewed by
	Name : WonJu Ji 	Name : HakMin Kim 

2021 . 10 . 07 .

DT&C Co., Ltd.

If this report is required to confirmation of authenticity, please contact to report@dtnc.net

Test Report Version

Test Report No.	Date	Description	Tested by	Reviewed by
DRRFCC2110-0092	Oct. 7, 2021	Initial issue	WonJu Ji	HakMin Kim

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1. DESCRIPTION OF DEVICE

1.1 General Information

EUT type	Mobile Phone				
FCC ID	JOYEB1073				
Equipment model name	EB1073				
Equipment add model name	N/A				
Equipment serial no.	Identical prototype				
FCC & ISED MRA Designation No.	KR0034				
Mode(s) of Operation	GSM 850, GSM 1900, WCDMA 850, WCDMA 1700, WCDMA 1900, LTE Band 12, 17, 4, 2, 41, 2.4 G W-LAN (802.11b/g/n-HT20), 5 G W-LAN (802.11a/n-HT20/n-HT40/ac-VHT20/ac-VHT40/ac-VHT80), Bluetooth				
TX Frequency Range	Band	Mode	Operating Modes	Bandwidth	Frequency
	GSM 850	GSM/GPRS/EDGE	Voice/Data	-	824.2 MHz ~ 848.8 MHz
	GSM 1900	GSM/GPRS/EDGE	Voice/Data	-	1 850.2 MHz ~ 1 909.8 MHz
	WCDMA 850	WCDMA	Voice/Data	-	826.4 MHz ~ 846.6 MHz
	WCDMA 1700	WCDMA	Voice/Data	-	1 712.4 MHz ~ 1 752.6 MHz
	WCDMA 1900	WCDMA	Voice/Data	-	1 852.4 MHz ~ 1 907.6 MHz
	LTE Band 12	LTE	Voice/Data	1.4/3/5/10MHz	699.7 MHz ~ 715.3 MHz
	LTE Band 17	LTE	Voice/Data	5/10MHz	706.5 MHz ~ 713.5 MHz
	LTE Band 4	LTE	Voice/Data	1.4/3/5/10/15/20MHz	1 710.7 MHz ~ 1 754.3 MHz
	LTE Band 2	LTE	Voice/Data	1.4/3/5/10/15/20MHz	1 850.7 MHz ~ 1 909.3 MHz
	LTE Band 41	LTE	Voice/Data	5/10/15/20MHz	2 498.5 MHz ~ 2 687.5 MHz
	2.4 GHz W-LAN	802.11b/g/n	Voice/Data	HT20	2 412 MHz ~ 2 462 MHz
	5.2 GHz W-LAN	802.11a/n/ac	Voice/Data	HT20/VHT20	5 180 MHz ~ 5 240 MHz
		802.11n/ac	Voice/Data	HT40/VHT40	5 190 MHz ~ 5 230 MHz
		802.11ac	Voice/Data	VHT80	5 210 MHz
	5.3 GHz W-LAN	802.11a/n/ac	Voice/Data	HT20/VHT20	5 260 MHz ~ 5 320 MHz
		802.11n/ac	Voice/Data	HT40/VHT40	5 270 MHz ~ 5 310 MHz
		802.11ac	Voice/Data	VHT80	5 290 MHz
	5.6 GHz W-LAN	802.11a/n/ac	Voice/Data	HT20/VHT20	5 500 MHz ~ 5 720 MHz
		802.11n/ac	Voice/Data	HT40/VHT40	5 510 MHz ~ 5 710 MHz
		802.11ac	Voice/Data	VHT80	5 530 MHz ~ 5 690 MHz
	Bluetooth	-	Data	-	2 402 MHz ~ 2 480 MHz
RX Frequency Range	GSM 850	GSM/GPRS/EDGE	Voice/Data	-	869.2 MHz ~ 893.8 MHz
	GSM 1900	GSM/GPRS/EDGE	Voice/Data	-	1 930.2 MHz ~ 1 989.8 MHz
	WCDMA 850	WCDMA	Voice/Data	-	871.4 MHz ~ 891.6 MHz
	WCDMA 1700	WCDMA	Voice/Data	-	2 112.4 MHz ~ 2 152.6 MHz
	WCDMA 1900	WCDMA	Voice/Data	-	1 932.4 MHz ~ 1 987.6 MHz
	LTE Band 12	LTE	Voice/Data	1.4/3/5/10MHz	729.7 MHz ~ 745.3 MHz
	LTE Band 17	LTE	Voice/Data	5/10MHz	736.5 MHz ~ 743.5 MHz
	LTE Band 4	LTE	Voice/Data	1.4/3/5/10/15/20MHz	2 110.7 MHz ~ 2 154.3 MHz
	LTE Band 2	LTE	Voice/Data	1.4/3/5/10/15/20MHz	1 930.7 MHz ~ 1 989.3 MHz
	LTE Band 41	LTE	Voice/Data	5/10/15/20MHz	2 498.5 MHz ~ 2 687.5 MHz
	2.4 GHz W-LAN	802.11b/g/n	Voice/Data	HT20	2 412 MHz ~ 2 462 MHz
	5.2 GHz W-LAN	802.11a/n/ac	Voice/Data	HT20/VHT20	5 180 MHz ~ 5 240 MHz
		802.11n/ac	Voice/Data	HT40/VHT40	5 190 MHz ~ 5 230 MHz
		802.11ac	Voice/Data	VHT80	5 210 MHz
	5.3 GHz W-LAN	802.11a/n/ac	Voice/Data	HT20/VHT20	5 260 MHz ~ 5 320 MHz
		802.11n/ac	Voice/Data	HT40/VHT40	5 270 MHz ~ 5 310 MHz
		802.11ac	Voice/Data	VHT80	5 290 MHz
	5.6 GHz W-LAN	802.11a/n/ac	Voice/Data	HT20/VHT20	5 500 MHz ~ 5 720 MHz
		802.11n/ac	Voice/Data	HT40/VHT40	5 510 MHz ~ 5 710 MHz
		802.11ac	Voice/Data	VHT80	5 530 MHz ~ 5 690 MHz
	Bluetooth	-	Data	-	2 402 MHz ~ 2 480 MHz

SAR Summary Table

Equipment Class	Band	Reported SAR		
		1g SAR (W/kg)		
		Head	Body-Worn	Hotspot
PCE	GSM 850	0.26	0.35	-
PCE	GPRS 850	0.27	0.36	0.48
PCE	GSM 1900	0.13	0.32	-
PCE	GPRS 1900	0.15	0.34	0.66
PCE	WCDMA 850	0.35	0.39	0.41
PCE	WCDMA 1700	0.13	0.40	0.76
PCE	WCDMA 1900	0.25	0.74	1.00
PCE	LTE Band 12	0.16	0.17	0.17
PCE	LTE Band 17	-	-	-
PCE	LTE Band 4	< 0.1	0.52	1.07
PCE	LTE Band 2	0.28	0.52	1.03
PCE	LTE Band 41	0.14	0.40	0.70
DTS(SISO)	2.4 GHz W-LAN	0.15	0.17	0.21
DTS(MIMO)	2.4 GHz W-LAN	0.18	0.21	0.24
U-NII-1(SISO)	5.2 GHz W-LAN	-	-	-
U-NII-1(MIMO)	5.2 GHz W-LAN	-	-	-
U-NII-2A(SISO)	5.3 GHz W-LAN	< 0.1	0.19	-
U-NII-2A(MIMO)	5.3 GHz W-LAN	< 0.1	0.28	-
U-NII-2C(SISO)	5.6 GHz W-LAN	< 0.1	0.16	-
U-NII-2C(MIMO)	5.6 GHz W-LAN	< 0.1	0.19	-
DSS	Bluetooth	< 0.1	< 0.1	< 0.1
Simultaneous SAR per KDB 690783 D01v01r03		0.44	1.06	1.07
FCC Equipment Class	Licensed Portable Transmitter Held to Ear (PCE) Part 15 Spread Spectrum Transmitter(DSS) Digital Transmission System(DTS) Unlicensed National Information Infrastructure (UNII)			
Date(s) of Tests	2021.08.26 ~ 2021.09.27			
Antenna Type	Internal Antenna			
Functions	- GSM/GPRS (GPRS Class: 12) supported. * DTM not supported. - Simultaneous transmission between [GSM, WCDMA voice & WLAN], [GPRS, WCDMA & WLAN], [LTE & WLAN]. - VoIP is supported. - W-LAN 2.4GHz is supported Hotspot. - W-LAN 5 GHz is not supported Hotspot.			

1.2 Power Reduction for SAR

There is no power reduction used for any band/mode implemented in this device for SAR purposes.

1.3 Nominal and Maximum Output Power Specifications

The Nominal and Maximum Output Power Specifications are in section 9 of this test report.

1.4 DUT Antenna Locations

The overall dimensions of this device are > 9 x 5 cm. A diagram showing the location of the device of the device antenna can be found in JOYEB1073_Antenna Location. Since the overall diagonal dimension of the device is ≤160 mm and the diagonal display is ≤150 mm. A diagram showing the location of the device of the device antenna can be found in Antenna_distance.pdf. It is not considered a "phablet".

Mode	Device Sides for SAR Testing					
	Top	Bottom	Front	Rear	Right	Left
GSM/GPRS 850	X	O	O	O	O	O
GSM/GPRS 1900	X	O	O	O	O	O
WCDMA 850	X	O	O	O	O	O
WCDMA 1700	X	O	O	O	O	O
WCDMA 1900	X	O	O	O	O	O
LTE Band 12	X	O	O	O	O	O
LTE Band 17	X	O	O	O	O	O
LTE Band 4	X	O	O	O	O	O
LTE Band 2	X	O	O	O	O	O
LTE Band 41	X	O	O	O	O	O
2.4G W-LAN Ant.1	O	X	O	O	O	X
2.4G W-LAN Ant.2	O	X	O	O	X	O
2.4G W-LAN MIMO	O	X	O	O	O	O
5G W-LAN Ant.1	X	X	O	O	X	X
5G W-LAN Ant.2	X	X	O	O	X	X
5G W-LAN MIMO	X	X	O	O	X	X
Bluetooth	O	X	O	O	O	X

Note 1: Particular DUT edges were not required to be evaluated for Hotspot SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 648474 D04v01r03. The antenna document shows the distances between the transmit antennas and the edges of the device.

Note 2: O - Test / X - Not test.

1.5 Simultaneous Transmission Capabilities

The Simultaneous Transmission Capabilities are in section 12 of this test report.

1.6 Miscellaneous SAR Test Considerations

(A) WIFI

Since U-NII-1 and U-NII-2A bands have the same maximum output power and the highest reported SAR for U-NII-2A is less than 1.2 W/kg, SAR is not required for U-NII-1 band according to FCC KDB publication 248227 D01v02r02.

(B) Licensed Transmitter(s)

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

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.

1.7 Guidance Applied

- IEEE 1528-2013
- IEC/IEEE 62209-1528
- FCC KDB Publication 941225 D01v03r01 (3G SAR Procedures)
- FCC KDB Publication 941225 D05v02r05 (SAR for LTE Devices)
- FCC KDB Publication 941225 D05Av01r02 (LTE Rel.10 KDB Inquiry Sheet)
- FCC KDB Publication 941225 D06v02r01(Hotspot Mode)
- FCC KDB Publication 248227 D01v02r02 (802.11 Wi-Fi SAR)
- FCC KDB Publication 447498 D01v06 (General RF Exposure Guidance)
- FCC KDB Publication 648474 D04v01r03 (Handset SAR)
- FCC KDB Publication 690783 D01v01r03 (SAR Listings on Grants)
- FCC KDB Publication 865664 D01v01r04 (SAR Measurement 100 MHz to 6 GHz)
- FCC KDB Publication 865664 D02v01r02 (RF Exposure Reporting)
- October 2013 TCB Workshop Notes (GPRS testing criteria)
- April 2015 TCB Workshop Notes (Simultaneous transmission summation clarified)
- October 2016 TCB Workshop Notes (Bluetooth Duty Factor)
- April 2019 TCB Workshop Notes (Tissue Simulating Liquids)

1.8 Device Serial Numbers

Several samples with identical hardware were used to support SAR testing. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units. The serial numbers used for each test are indicated alongside the results in Section 11.

1.9 FCC & ISED MRA test lab designation no. : KR0034

2. LTE INFORMATION

LTE Information					
FCC ID	JOYEB1073				
Form Factor	Mobile Phone				
Frequency Range of each LTE transmission Band	LTE Band 12 (699.7 ~ 715.3 MHz) LTE Band 17 (706.5 ~ 713.5 MHz) LTE Band 4 (AWS) (1710.7 ~ 1754.3 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 17 : 5 MHz, 10 MHz LTE Band 4 : 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 2 : 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 Number and Frequencies(MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 12: 1.4 MHz	699.7 (23017)	N/A	707.5 (23095)	N/A	715.3 (23173)
LTE Band 12: 3 MHz	700.5 (23025)	N/A	707.5 (23095)	N/A	714.5 (23165)
LTE Band 12: 5 MHz	701.5 (23035)	N/A	707.5 (23095)	N/A	713.5 (23155)
LTE Band 12: 10 MHz	704.0 (23060)	N/A	707.5 (23095) ^{Note1}	N/A	711.0 (23130)
LTE Band 17: 5 MHz	706.5(23755)	N/A	710.0(23790)	N/A	713.5(23825)
LTE Band 17: 10 MHz	709.0(23780)	N/A	710.0(23790)	N/A	711.0(23800)
LTE Band 4 (AWS): 1.4 MHz	1 710.7 (19957)	N/A	1 732.5 (20175)	N/A	1 754.3 (20393)
LTE Band 4 (AWS): 3 MHz	1 711.5 (19965)	N/A	1 732.5 (20175)	N/A	1 753.5 (20385)
LTE Band 4 (AWS): 5 MHz	1 712.5 (19975)	N/A	1 732.5 (20175)	N/A	1 752.5 (20375)
LTE Band 4 (AWS): 10 MHz	1 715.0 (20000)	N/A	1 732.5 (20175)	N/A	1 750.0 (20350)
LTE Band 4 (AWS): 15 MHz	1 717.5 (20025)	N/A	1 732.5 (20175)	N/A	1 747.5 (20325)
LTE Band 4 (AWS): 20 MHz	1 720.0 (20050)	N/A	1 732.5 (20175) ^{Note2}	N/A	1 745.0 (20300)
LTE Band 2 (PCS): 1.4 MHz	1 850.7 (18607)	N/A	1 880.0 (18900)	N/A	1 909.3 (19193)
LTE Band 2 (PCS): 3 MHz	1 851.5 (18615)	N/A	1 880.0 (18900)	N/A	1 908.5 (19185)
LTE Band 2 (PCS): 5 MHz	1 852.5 (18625)	N/A	1 880.0 (18900)	N/A	1 907.5 (19175)
LTE Band 2 (PCS): 10 MHz	1 855.0 (18650)	N/A	1 880.0 (18900)	N/A	1 905.0 (19150)
LTE Band 2 (PCS): 15 MHz	1 857.5 (18675)	N/A	1 880.0 (18900)	N/A	1 902.5 (19125)
LTE Band 2 (PCS): 20 MHz	1 860.0 (18700)	N/A	1 880.0 (18900)	N/A	1 900.0 (19100)
LTE Band 41: 5 MHz	2 498.5 (39675)	2 545.8 (40148)	2 593.0 (40620)	2 640.3 (41093)	2 687.5 (41565)
LTE Band 41: 10 MHz	2 501.0 (39700)	2 547.0 (40160)	2 593.0 (40620)	2 639.0 (41080)	2 685.0 (41540)
LTE Band 41: 15 MHz	2 503.5 (39725)	2 548.3 (40173)	2 593.0 (40620)	2 637.8 (41068)	2 682.5 (41515)
LTE Band 41: 20 MHz	2 506.0 (39750)	2 549.5 (40185)	2 593.0 (40620)	2 636.5 (41055)	2 680.0 (41490)
UE Category	UE Cat 4				
Modulations Supported in UL	QPSK, 16QAM, 64QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	Yes				
A-MPR (Additional MPR) disabled for SAR Testing?	Yes				
LTE Additional Information	This device does not support both UL and DL carrier aggregation.				

Note(s)

- LTE B12 can not contain three non-overlapping channels of 10 MHz bandwidth.
Per KDB 941225 D05v02r05, 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.
- LTE B4 (AWS) can not contain three non-overlapping channels of 20 MHz bandwidth.
Per KDB 941225 D05v02r05, 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.

3. INTROCUCTION

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

The FCC has adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on Aug. 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices. 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. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave is used for guidance in measuring 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 National Council on Radiation Protection and Measurements (NCRP) in Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields," NCRP Report No. 86 NCRP, 1986, Bethesda, MD 20814. 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.

SAR Definition

Specific Absorption Rate (SAR) 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 Fig. 3.1)

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

Fig. 3.1 SAR Mathematical Equation

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

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

where:

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

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relations 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.

4. DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

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

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 4.1) and IEEE1528-2013.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See Table 4.1) and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):
 - a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 4.1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).
 - b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.
 - c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

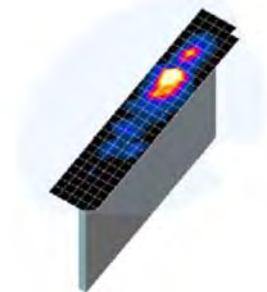


Figure 4.1
Sample SAR Area Scan

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 mm $\pm$ 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2)$ mm $\pm$ 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° $\pm$ 1°	20° $\pm$ 1°
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom} , Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$ mm	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.				
* When zoom scan is required and the <u>reported</u> SAR from the <u>area scan based 1-g SAR estimation</u> procedures of KDB Publication 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

Table 4.1 Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04*

5. DEFINITION OF REFERENCE POINTS

5.1 Ear Reference Point

Figure 5.1 shows the front, back and side views of the SAM Twin Phantom. The point “M” is the reference point for the center of the mouth, “LE” is the left ear reference point(ERP), and “RE” is the right ERP. The ERPs are 15 mm posterior to the entrance to the Ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 5.1. The plane Passing, through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck- Front) is perpendicular to the reference plane and passing through the RE (or LE) is called the Reference Pivoting Line (see Figure 5.1). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning.

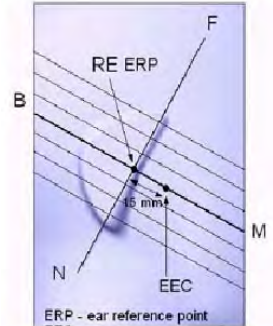


Figure 5.1
Close-up side view
of ERP

5.2 Handset Reference Points

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The test device was placed in a normal operating position with the “test device reference point” located along the “vertical centerline” on the front of the device aligned to the “ear reference point” (See Fig. 5.3). The “test device reference point” was then located at the same level as the center of the ear reference point. The test device was positioned so that the “vertical centerline” was bisecting the front surface of the handset at it’s top and bottom edges, positioning the “ear reference point” on the outer surface of the both the left and right head phantoms on the ear reference point.



Figure 5.2 Front, back and side view SAM Twin Phantom

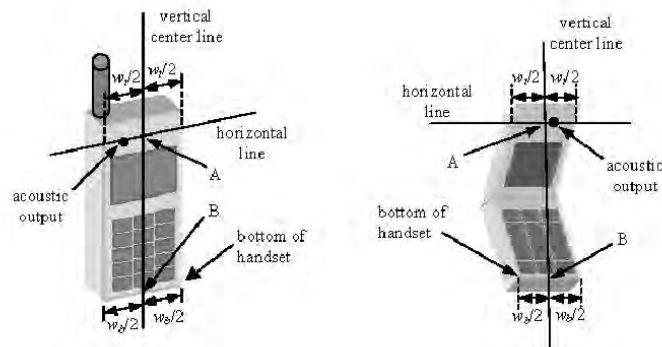


Figure 5.3 Handset Vertical Center & Horizontal Line Reference Points

6. TEST CONFIGURATION POSITIONS FOR HANDSETS

6.1 Device Holder

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

6.2 Positioning for Cheek/Touch

1. The test device was positioned with the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 6.1), such that the plane defined by the vertical center line and the horizontal line of the phone is approximately parallel to the sagittal plane of the phantom.



Figure 6.1 Front, Side and Top View of Cheek/Touch Position

2. The handset was translated towards the phantom along the line passing through RE & LE until the handset touches the ear.
3. While maintaining the handset in this plane, the handset was rotated around the LE-RE line until the vertical centerline was in the plane normal to MB-NF including the line MB (reference plane).
4. The phone was then rotated around the vertical centerline until the phone (horizontal line) was symmetrical with respect to the line NF.
5. While maintaining the vertical centerline in the reference plane, keeping point A on the line passing through RE and LE, and maintaining the phone contact with the ear, the handset was rotated about the line NF until any point on the handset made contact with a phantom point below the ear (cheek). (See Figure 6.2)

6.3 Positioning for Ear / 15 ° Tilt

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

1. While maintaining the orientation of the phone, the phone was retracted parallel to the reference plane far enough to enable a rotation of the phone by 15 degree.
2. The phone was then rotated around the horizontal line by 15 degree.
3. While maintaining the orientation of the phone, the phone was moved parallel to the reference plane until any part of the phone touches the head. (In this position, point A was located on the line RE-LE). The tilted position is obtained when the contact is on the pinna. If the contact was at any location other than the pinna, the angle of the phone would then be reduced. The tilted position was obtained when any part of the phone was in contact of the ear as well as a second part of the phone was in contact with the head (see Figure 6.3).

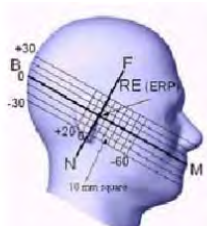


Figure 6.2 Side view w/relevant markings



Figure 6.3 Front, Side and Top View of Ear/15° Position

6.4 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6.4). Per FCC KDB Publication 648474 D04v01r03, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is $> 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

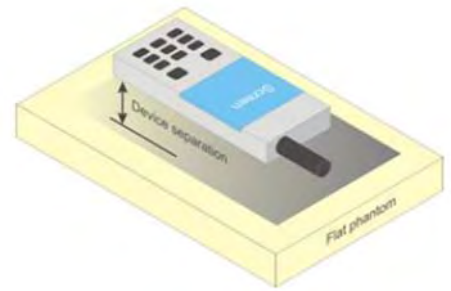


Figure 6.4 Sample Body-Worn Diagram

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

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

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

6.5 Extremity Exposure Configurations

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

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

6.6 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06v02r01 where SAR test considerations for handsets ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) are based on a composite test separation distance of 10 mm from the front, rear and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. When the same wireless transmission configuration is used for testing body-worn accessory and hotspot mode SAR, respectively, in voice and data mode, SAR results for the most conservative test separation distance configuration may be used to support both SAR conditions.

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

7. RF EXPOSURE LIMITS

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.

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 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 8.1.SAR Human Exposure Specified in ANSI/IEEE C95.1-1992

	HUMAN EXPOSURE LIMITS	
	General Public Exposure (W/kg) or (mW/g)	Occupational Exposure (W/kg) or (mW/g)
SPATIAL PEAK SAR * (Brain)	1.60	8.00
SPATIAL AVERAGE SAR ** (Whole Body)	0.08	0.40
SPATIAL PEAK SAR *** (Hands / Feet / Ankle / Wrist)	4.00	20.0

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.

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

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).

8. FCC MEASUREMENT PROCEDURES

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

8.1 Measured and Reported SAR

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

8.2 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB Publication 941225 D01v03r01.

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

8.3 SAR Measurement Conditions for WCDMA (UMTS)

8.3.1 Output Power Verification

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

Maximum output power is verified on the High, Middle and Low channels according to the general, descriptions in section 5.2 of 3GPP TS 34.121 (release 5), using the appropriate RMC with TPC, (transmit power control) set to all “1s” or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

8.3.2 Head SAR Measurements for Handsets

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

8.3.3 Body SAR Measurements

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

8.3.4 Release 5 HSDPA Data Devices

The following procedures are applicable to HSDPA data devices operating under 3GPP Release 5. SAR is required for devices in body-worn accessory and other body exposure conditions, including handsets and data modems operating in various electronic devices. HSDPA operates in conjunction with WCDMA and requires an active DPCCH. The default test configuration is to measure SAR in WCDMA with HSDPA remain inactive, to establish a radio link between the test device and a communication test set using a 12.2 kbps RMC configured in Test Loop Mode 1. SAR for HSDPA is selectively measured using the highest reported SAR configuration in WCDMA, with an FRC in H-set 1 and a 12.2 kbps RMC. SAR is selectively confirmed for other physical channel configurations (DPCCH & DPDCHn) according to exposure conditions, device operating capabilities and maximum output power specified for production units, including tune-up tolerance by applying the 3G SAR test reduction procedures. Maximum output power is verified according to the applicable versions of 3GPP TS 34.121. SAR must be measured based on these maximum output conditions and requirements in KDB Publication 447498, with respect to the UE Categories, and explained in the SAR report. When Maximum Power Reduction (MPR) applies, the implementations must be clearly identified in the SAR report to support test results according to Cubic Metric (CM) and, as appropriate, Enhanced MPR (E-MPR) requirements.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	$\beta_{hs}^{(1)}$	CM (dB) ⁽²⁾
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15 ⁽³⁾	15/15 ⁽³⁾	64	12/15 ⁽³⁾	24/15	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5
Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$ Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. Note 3: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.						

Figure 9.1 Table 1

8.3.5 Release 6 HSUPA Data Devices

The following procedures are applicable to HSPA (HSUPA/HSDPA) data devices operating under 3GPP Release 6. SAR is required for devices in body-worn accessory and other body exposure conditions, including handsets and data modems operating in various electronic devices. HSUPA operates in conjunction with WCDMA and HSDPA. SAR is initially measured in WCDMA test configurations with HSPA remain inactive. The default test configuration is to establish a radio link between the test device and a communication test set to configure a 12.2 kbps RMC in Test Loop Mode 1. SAR for HSPA is selectively measured with HS-DPCCH, E-DPCCH and E-DPDCH, all enabled, along with a 12.2 kbps RMC using the highest reported SAR configuration in WCDMA with 12.2 kbps RMC only.

An FRC is configured according to HS-DPCCH Sub-test 1 using H-set 1 and QPSK. HSPA is configured according to E-DCH Sub-test 5 requirements. SAR for other HSPA sub-test configurations is confirmed selectively according to exposure conditions, E-DCH UE Category and maximum output power of production units, including tune-up tolerance by applying the 3G SAR test reduction procedure. Maximum output power is verified according to procedures in applicable versions of 3GPP TS 34.121. SAR must be measured based on these maximum output conditions and requirements in KDB Publication 447498, with respect to the UE Categories for HS-DPCCH and HSPA, and explained in the SAR report. When Maximum Power Reduction (MPR) applies, the implementations must be clearly identified in the SAR report to support test results according to Cubic Metric (CM) and, as appropriate, Enhanced MPR (E-MPR) requirements.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	$\beta_{hs}^{(1)}$	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM ⁽²⁾ (dB)	MPR (dB)	AG ⁽⁴⁾ Index	E-TFCI
1	11/15 ⁽³⁾	15/15 ⁽³⁾	64	11/15 ⁽³⁾	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}: 47/15$ $\beta_{ed2}: 47/15$	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 ⁽⁴⁾	15/15 ⁽⁴⁾	64	15/15 ⁽⁴⁾	30/15	24/15	134/15	4	1	1.0	0.0	21	81

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

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

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

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

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

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

Figure 9.2 Table 2

8.4 SAR Measurement Conditions for LTE

LTE modes were tested according to FCC KDB 941225 D05v02r05 publication. Please see notes after the tabulated SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR. The call simulator was used for LTE output power measurement and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

8.4.1 Spectrum Plots for RB Configurations

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

8.4.2 MPR

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

8.4.3 A-MPR

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

8.4.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r05:

- Per Section 5.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
 - The required channel and offset combination with the highest maximum output power is required for SAR.
 - When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channel 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.
 - 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.
- 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.
- 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. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
- 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 0.5 dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is < 1.45 W/kg.

8.4.5 64QAM uplink

(1) Per KDB 941225 D05 V02r05, we'll measure conducted powers per Section 5.1 for all uplink modulations (QPSK, 16QAM, 64QAM) and include in the test report.

(2) From these power measurements, we will apply the procedures in Section 5.2.4 ("Higher Order Modulations") to determine SAR test reduction for 16QAM and 64QAM test cases.

8.4.6 LTE TDD Consideration setup for SAR measurement

According to KDB 941225 D05 SAR for LTE Devices v02r05 for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

SAR was tested with the highest transmission duty factor (63.33 %) using Uplink-downlink configuration 0 and Special subframe configuration 6.

LTE TDD Band 41 supports 3GPP TS 36.211 section 4.2 for Type 2 Frame and Table 4.2-2 for uplink-downlink configuration and Table 4.2-1 for Special subframe configurations.

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$			$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			-	-	-
8	$24144 \cdot T_s$			-	-	-

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Calculated Duty Cycle = Extended cyclic prefix in uplink * (Ts) * # of S + # of U

Ts = 1/(15000 * 2048) seconds

Example for calculated Duty Cycle for Uplink-Downlink Configuration 0:

Calculated Duty Cycle = $5120 * [1/(15000 * 2048)] * 2 + 6 \text{ ms} = 63.33 \%$

8.5 SAR Testing with 802.11 Transmitters

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

8.5.1 General Device Setup

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

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

8.5.2 U-NII and U-NII-2A

For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following, with respect to the highest reported SAR and maximum output power specified for production units. The procedures are applied independently to each exposure configuration; for example, head, body, hotspot mode etc.

- 1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.
- 2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, each band is tested independently for SAR.

8.5.3 U-NII-2C and U-NII-3

The frequency range covered by U-NII-2C and U-NII-3 is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements.

When Terminal Doppler Weather Rader (TDWR) restriction applies, the channels at 5.60 – 5.65 GHz in U-NII-2C band must be disabled with acceptable mechanisms and documented in the equipment certification.

Unless band gap channels are permanently disabled, SAR must be considered for these channels. When band gap channels are disabled, each band is tested independently according to the normally required OFDM SAR measurements and probe calibration frequency points requirements.

8.5.4 Initial Test Position Procedure

For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode or UMPC mini-tablet, procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all position in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR position until the reported SAR result is ≤ 0.8 W/kg or all test position are measured.

8.5.5 2.4 GHz SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either a 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 exposure configuration 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.

8.5.6 OFDM Transmission Mode and SAR Test Channel Selection

For the 2.4 GHz and 5 GHz bands, when the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a and 802.11n or 802.11g and 802.11n with the same channel bandwidth, modulation and data rate etc., the lower order 802.11 mode i.e., 802.11a, then 802.11n or 802.11g then 802.11n is used for SAR measurement. When the maximum output power were the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

8.5.7 Initial Test Configuration Procedure

For OFDM, in both 2.4 and 5 GHz bands, 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 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, and lowest data rate. 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.

8.5.8 Subsequent Test Configuration Procedures

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

8.5.9 MIMO SAR Considerations

Per KDB Publication 248227 D01v02r02, the simultaneous SAR provisions in KDB Publication 447498 D01v06 should be applied to determine simultaneous transmission SAR test exclusion for WIFI MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6 W/kg, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation.

9. RF CONDUCTED POWERS

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

9.1 GSM Nominal and Maximum Output Power Spec and Conducted Powers

Band & Mode		Voice[dBm]	Burst Average GMSK [dBm]			
		1 TX Slot	1 TX Slot	2 TX Slot	3 TX Slot	4 TX Slot
GSM/GPRS 850	Maximum	34.0	34.0	31.0	29.2	28.0
	Nominal	32.5	32.5	29.5	27.7	26.5
GSM/GPRS 1900	Maximum	31.0	31.0	28.0	26.2	25.0
	Nominal	29.5	29.5	26.5	24.7	23.5

Table 9.1.1 GSM Nominal and Maximum Output Power Spec

Band	Channel	Maximum Burst-Averaged Output Power(dBm)				
		Voice	GPRS Data (GMSK)			
		GSM CS 1 Slot	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot
GSM850	128	32.95	32.95	29.86	28.09	27.00
	190	33.14	33.14	30.09	28.14	27.13
	251	32.85	32.85	29.85	28.02	26.85
PCS 1900	512	29.92	29.92	26.97	25.19	23.97
	661	30.23	30.23	27.32	25.57	24.33
	810	29.62	29.62	26.72	24.92	23.80
Band	Channel	Calculated Maximum Frame-Averaged Output Power(dBm)				
		Voice	GPRS Data (GMSK)			
		GSM CS 1 Slot	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot
GSM850	128	23.92	23.92	23.84	23.83	23.99
	190	24.11	24.11	24.07	23.88	24.12
	251	23.82	23.82	23.83	23.76	23.84
PCS 1900	512	20.89	20.89	20.95	20.93	20.96
	661	21.20	21.20	21.30	21.31	21.32
	810	20.59	20.59	20.70	20.66	20.79
GSM850	Frame Avg. Targets:	23.47	23.47	23.48	23.44	23.49
PCS 1900	Frame Avg. Targets:	20.47	20.47	20.48	20.44	20.49

Table 9.1.2 GSM Conducted Power

Note:

- Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
- GPRS (GMSK) output powers were measured with coding scheme setting of 1 (CS1) on the base station simulator. CS1 was configured to measure GPRS output power measurements and SAR to ensure GMSK modulation in the signal. Our Investigation has shown that CS1 - CS4 settings do not have any impact on the output levels or modulation in the GPRS modes.

GPRS Multislot class: 12 (max 4 TX Uplink slots)
DTM Multislot Class: N/A



Figure 9.1 Power Measurement Setup

9.2 WCDMA Nominal and Maximum Output Power Spec and Conducted Powers

3GPP Release Version	Mode		Cellular Band (dBm)	AWS Band (dBm)	PCS Band (dBm)	3GPP MPR (dB)
99	WCDMA	Voice	Maximum Nominal	24.5 23.0	24.5 23.0	-
5	HSDPA	Subtest 1	Maximum Nominal	23.5 22.0	23.5 22.0	0
5		Subtest 2	Maximum Nominal	23.5 22.0	23.5 22.0	0
5		Subtest 3	Maximum Nominal	23.0 21.5	23.0 21.5	0.5
5		Subtest 4	Maximum Nominal	23.0 21.5	23.0 21.5	0.5
6		Subtest 1	Maximum Nominal	23.5 22.0	23.5 22.0	0
6		Subtest 2	Maximum Nominal	21.5 20.0	21.5 20.0	2
6		Subtest 3	Maximum Nominal	22.5 21.0	22.5 21.0	1
6		Subtest 4	Maximum Nominal	21.5 20.0	21.0 19.5	2
6	HSUPA	Subtest 5	Maximum Nominal	23.5 22.0	23.5 22.0	0

Table 9.1.1 WCDMA Nominal and Maximum Output Power Spec

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band (dBm)			AWS Band (dBm)			PCS Band (dBm)			3GPP MPR (dB)
			4132	4183	4233	1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	23.49	23.53	23.33	23.81	23.89	23.89	23.94	23.91	23.73	-
99		12.2 kbps AMR	23.49	23.53	23.31	23.81	23.87	23.88	23.92	23.90	23.73	-
5	HSDPA	Subtest 1	22.52	22.53	22.33	22.83	22.89	22.90	22.93	22.92	22.75	0
5		Subtest 2	22.51	22.54	22.33	22.82	22.90	22.88	22.92	22.93	22.75	0
5		Subtest 3	22.01	22.04	21.83	22.34	22.37	22.38	22.43	22.42	22.23	0.5
5		Subtest 4	22.00	22.03	21.83	22.32	22.36	22.40	22.40	22.42	22.25	0.5
6	HSUPA	Subtest 1	22.51	22.54	22.33	22.82	22.90	22.91	22.93	22.92	22.73	0
6		Subtest 2	20.51	20.56	20.33	20.83	20.89	20.90	20.94	20.92	20.75	2
6		Subtest 3	21.50	21.54	21.33	21.81	21.88	21.90	21.91	21.91	21.73	1
6		Subtest 4	20.52	20.55	20.34	20.85	20.90	20.91	20.94	20.92	20.74	2
6		Subtest 5	22.50	22.53	22.33	22.82	22.88	22.90	22.94	22.91	22.74	0

Table 9.1.2 WCDMA Conducted Power

WCDMA SAR was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.

The manufacturer declares that the HSDPA and HSUPA transmitter's power will not exceed the R99 maximum transmit power in devices based on Qualcomm's HSPA chipset solutions.



Figure 9.2 Power Measurement Setup

9.3 LTE Nominal and Maximum Output Power Spec and Conducted Powers

Band & Mode		Modulated Average[dBm]
LTE Band 12	Maximum	24.5
	Nominal	23.0

Table 9.3.1.1 Nominal and Maximum Output Power Spec

1) LTE Band 12

LTE Band 12 Conducted Power- 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			23095 (707.5 MHz)		
			Conducted Power (dBm)		
QPSK	1	0	23.31	≤ 1	0
	1	25	23.35		
	1	49	23.30		
	25	0	22.29		1
	25	12	22.33		
	25	25	22.20		
16QAM	50	0	22.23	≤ 1	1
	1	0	22.40		
	1	25	22.43		
	1	49	22.39		2
	25	0	21.30		
	25	12	21.33		
64QAM	25	25	21.28	≤ 2	2
	50	0	21.30		
	1	0	21.30		
	1	25	21.38		3
	1	49	21.28		
	25	0	20.33		
	25	12	20.35	≤ 3	3
	25	25	20.30		
	50	0	20.33		
					3

Table 9.3.1.2 LTE Conducted Power

Note : LTE B12 can not contain three non-overlapping channels of 10 MHz bandwidth.

Per KDB 941225 D05v02r05, 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.

LTE Band 12 Conducted Power- 5 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)	
			23035 (701.5 MHz)	23095 (707.5 MHz)	23155 (713.5 MHz)			
			Conducted Power (dBm)					
QPSK	1	0	23.13	23.07	22.97	≤ 1	0	
	1	12	23.15	23.12	23.00			
	1	24	23.12	23.04	22.95			
	12	0	22.18	22.13	22.14		1	
	12	6	22.20	22.21	22.20			
	12	13	22.14	22.12	22.06			
16QAM	25	0	22.18	22.12	22.00	≤ 1	1	
	1	0	22.17	22.12	22.08			
	1	12	22.25	22.17	22.11			
	1	24	22.13	22.09	22.07		≤ 2	2
	12	0	21.23	21.15	21.10			
	12	6	21.24	21.16	21.18			
64QAM	12	13	21.13	21.10	21.03	≤ 2	2	
	25	0	21.16	21.15	21.11			
	1	0	21.18	21.09	21.07			≤ 2
	1	12	21.23	21.20	21.15			
	1	24	21.17	21.08	21.05			
	12	0	20.28	20.23	20.15		≤ 3	
12	6	20.30	20.26	20.18				
12	13	20.22	20.21	20.10				
64QAM	15	0	20.25	20.18	20.12	≤ 3	3	

Table 9.3.1.3 LTE Conducted Power

LTE Band 12 Conducted Power– 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			23025 (700.5 MHz)	23095 (707.5 MHz)	23165 (714.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.14	23.08	23.02	≤ 1	0
	1	7	23.15	23.10	23.05		
	1	14	23.09	23.07	22.98		
	8	0	22.11	22.01	22.02		1
	8	4	22.15	22.11	22.05		
	8	7	22.05	22.00	22.00		
	15	0	22.11	22.10	22.04		
16QAM	1	0	22.17	22.11	22.10	≤ 1	1
	1	7	22.19	22.16	22.13		
	1	14	22.15	22.10	22.01		
	8	0	21.09	21.05	21.01	≤ 2	2
	8	4	21.17	21.13	21.03		
	8	7	21.05	21.03	21.00		
	15	0	21.16	21.11	21.02		
64QAM	1	0	21.15	21.13	21.07	≤ 2	2
	1	7	21.16	21.15	21.10		
	1	14	21.14	21.10	21.02		
	8	0	20.13	20.10	20.05	≤ 3	3
	8	4	20.19	20.15	20.10		
	8	7	20.04	20.01	20.00		
	15	0	20.18	20.12	20.00		

Table 9.3.1.4 LTE Conducted Power

LTE Band 12 Conducted Power– 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			23017 (699.7 MHz)	23095 (707.5 MHz)	23173 (715.3 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.06	22.95	22.84	≤ 1	0
	1	2	23.12	23.05	22.90		
	1	5	23.00	22.93	22.83		
	3	0	23.00	22.90	22.80		
	3	2	23.03	23.01	22.85		
	3	3	22.98	22.86	22.79		
	6	0	22.17	22.15	21.94	1	
16QAM	1	0	22.04	21.97	21.83	≤ 1	1
	1	2	22.07	22.06	21.89		
	1	5	22.01	21.93	21.81		
	3	0	22.00	21.91	21.76		
	3	2	22.02	22.00	21.81		
	3	3	21.93	21.90	21.72		
	6	0	21.11	21.10	21.01	≤ 2	2
64QAM	1	0	21.13	21.12	20.80	≤ 2	2
	1	2	21.15	21.14	20.85		
	1	5	21.07	21.03	20.79		
	3	0	21.03	21.02	20.77		
	3	2	21.05	21.03	20.83		
	3	3	20.99	20.92	20.75		
	6	0	20.19	20.10	20.03	≤ 3	3

Table 9.3.1.5 LTE Conducted Power

Band & Mode		Modulated Average[dBm]
LTE Band 4	Maximum	24.5
	Nominal	23.0

Table 9.3.2.1 Nominal and Maximum Output Power Spec

2) LTE Band 4

LTE Band 4 (AWS) Conducted Power- 20 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			20175 (1 732.5 MHz)		
			Conducted Power (dBm)		
QPSK	1	0	24.04	≤ 1	0
	1	50	24.05		
	1	99	24.02		
	50	0	23.01		1
	50	25	23.11		
	50	50	23.00		
16QAM	100	0	23.01	≤ 1	1
	1	0	23.18		1
	1	50	23.22		
	1	99	23.11		
	50	0	22.18		2
	50	25	22.20		
64QAM	50	50	22.10		
	100	0	22.18	≤ 2	2
	1	0	22.11		2
	1	50	22.19		
	1	99	22.05		
	50	0	21.19		3
	50	25	21.22		
	50	50	21.11		
	100	0	21.19		3

Table 9.3.2.2 LTE Conducted Power

Note: LTE B4 (AWS) can not contain three non-overlapping channels of 20 MHz bandwidth.
Per KDB 941225 D05v02r05, 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.

LTE Band 4 (AWS) Conducted Power- 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			20025 (1 717.5 MHz)	20175 (1 732.5 MHz)	20325 (1 747.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.89	23.91	23.90	≤ 1	0
	1	36	23.90	23.93	23.91		
	1	74	23.87	23.90	23.88		
	36	0	22.87	22.95	22.90		1
	36	18	22.88	22.99	22.93		
	36	37	22.81	22.90	22.86		
	75	0	22.81	22.95	22.91		
	16QAM	1	0	22.96	23.00		22.99
1		36	22.99	23.01	23.00		
1		74	22.91	22.99	22.95		
36		0	21.83	21.90	21.85	≤ 2	2
36		18	21.84	22.00	21.95		
36		37	21.80	21.88	21.83		
75		0	21.80	21.98	21.94		
64QAM		1	0	21.97	22.01	22.00	≤ 2
	1	36	22.00	22.06	22.03		
	1	74	21.93	22.00	21.96		
	36	0	20.87	20.93	20.89	≤ 3	
	36	18	20.89	20.96	20.97		
	36	37	20.86	20.88	20.85		
	75	0	20.88	20.94	20.93		

Table 9.3.2.3 LTE Conducted Power

LTE Band 4 (AWS) Conducted Power- 10 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)	
			20000 (1 715.0 MHz)	20175 (1 732.5 MHz)	20350 (1 750.0 MHz)			
			Conducted Power (dBm)					
QPSK	1	0	23.88	23.97	23.89	≤ 1	0	
	1	25	23.89	24.00	23.91			
	1	49	23.86	23.93	23.88			
	25	0	22.85	22.88	22.90		1	
	25	12	22.88	22.91	22.92			
	25	25	22.80	22.83	22.86			
	50	0	22.84	22.90	22.88		1	
16QAM	1	0	22.90	23.01	22.93	≤ 1	1	
	1	25	22.91	23.03	22.95			
	1	49	22.85	23.00	22.90			
	25	0	21.87	21.93	21.91		≤ 2	2
	25	12	21.90	22.03	21.94			
	25	25	21.83	21.91	21.90			
	50	0	21.89	21.95	21.91			2
64QAM	1	0	21.96	22.01	22.00	≤ 2	2	
	1	25	22.00	22.08	22.04			
	1	49	21.91	22.00	21.95			
	25	0	20.89	20.99	20.93		≤ 3	3
	25	12	20.90	21.02	21.00			
	25	25	20.88	20.96	20.91			
	50	0	20.82	20.99	20.90			3

Table 9.3.2.4 LTE Conducted Power

LTE Band 4 (AWS) Conducted Power– 5 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)	
			19975 (1 712.5 MHz)	20175 (1 732.5 MHz)	20375 (1 752.5 MHz)			
			Conducted Power (dBm)					
QPSK	1	0	23.87	23.91	23.89	≤ 1	0	
	1	12	23.88	23.93	23.90			
	1	24	23.85	23.88	23.87			
	12	0	22.83	22.95	22.89		1	
	12	6	22.88	22.96	22.93			
	12	13	22.80	22.92	22.81			
	25	0	22.80	22.86	22.86		1	
16QAM	1	0	22.90	23.00	22.91	≤ 1	1	
	1	12	22.93	23.01	22.99			
	1	24	22.87	22.97	22.90			
	12	0	21.85	21.94	21.92		≤ 2	2
	12	6	21.87	21.98	21.93			
	12	13	21.83	21.91	21.90			
	25	0	21.83	21.94	21.89		2	
64QAM	1	0	21.83	21.93	21.90	≤ 2	2	
	1	12	21.90	21.96	21.92			
	1	24	21.80	21.91	21.88			
	12	0	20.81	20.95	20.93		≤ 3	3
	12	6	20.89	20.99	20.97			
	12	13	20.80	20.88	20.83			
	25	0	20.87	20.96	20.91		3	

Table 9.3.2.5 LTE Conducted Power

LTE Band 4 (AWS) Conducted Power– 3 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)	
			19965 (1 711.5 MHz)	20175 (1 732.5 MHz)	20385 (1 753.5 MHz)			
			Conducted Power (dBm)					
QPSK	1	0	23.86	23.93	23.90	≤ 1	0	
	1	7	23.88	23.96	23.94			
	1	14	23.85	23.89	23.87			
	8	0	22.81	22.86	22.84		1	
	8	4	22.82	22.88	22.85			
	8	7	22.80	22.85	22.83			
	15	0	22.80	22.87	22.84		1	
	16QAM	1	0	22.87	22.93		22.90	≤ 1
1		7	22.91	22.97	22.95			
1		14	22.83	22.90	22.88			
8		0	21.95	21.97	21.95	≤ 2	2	
8		4	21.99	22.00	21.99			
8		7	21.91	21.93	21.92			
15		0	21.85	21.93	21.90	2		
64QAM		1	0	21.90	21.96	21.91	≤ 2	
	1	7	21.93	21.97	21.95			
	1	14	21.87	21.93	21.90			
	8	0	20.90	21.04	20.94	≤ 3		3
	8	4	20.92	21.05	20.99			
	8	7	20.87	21.03	20.93			
	15	0	20.80	20.88	20.86	3		

Table 9.3.2.6 LTE Conducted Power

TE Band 4 (AWS) Conducted Power~ 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			19957 (1 710.7 MHz)	20175 (1 732.5 MHz)	20393 (1 754.3 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.83	23.86	23.84	≤ 1	0
	1	2	23.84	23.88	23.85		
	1	5	23.80	23.84	23.81		
	3	0	23.81	23.85	23.82		0
	3	2	23.82	23.87	23.83		
	3	3	23.80	23.83	23.81		
	6	0	22.81	22.88	22.82		1
16QAM	1	0	22.90	22.95	22.93	≤ 1	1
	1	2	22.93	22.97	22.96		
	1	5	22.88	22.94	22.89		
	3	0	22.81	22.88	22.82		1
	3	2	22.82	22.93	22.89		
	3	3	22.80	22.86	22.80		
	6	0	21.84	21.89	21.87		≤ 2
64QAM	1	0	21.93	21.99	21.95	≤ 2	2
	1	2	21.97	22.00	21.98		
	1	5	21.90	21.93	21.90		
	3	0	21.90	21.97	21.93		2
	3	2	21.95	21.99	21.97		
	3	3	21.86	21.89	21.89		
	6	0	20.86	20.92	20.90		≤ 3

Table 9.3.2.7 LTE Conducted Power

Band & Mode		Modulated Average[dBm]
LTE Band 2 (PCS)	Maximum	24.5
	Nominal	23.0

Table 9.3.3.1 Nominal and Maximum Output Power Spec

3) LTE Band 2 (PCS)

LTE Band 2 (PCS) Conducted Power– 20 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)	
			18700 (1 860.0 MHz)	18900 (1 880.0 MHz)	19100 (1 900.0 MHz)			
			Conducted Power (dBm)					
QPSK	1	0	23.40	23.53	23.38	≤ 1	0	
	1	50	23.53	23.55	23.52			
	1	99	23.45	23.54	23.42			
	50	0	22.40	22.48	22.37		1	
	50	25	22.50	22.60	22.42			
	50	50	22.43	22.50	22.40			
	100	0	22.49	22.50	22.31			
16QAM	1	0	22.52	22.66	22.44	≤ 1	1	
	1	50	22.60	22.68	22.58			
	1	99	22.57	22.67	22.49			
	16QAM	50	0	21.50	21.55	21.50	≤ 2	2
		50	25	21.61	21.63	21.60		
		50	50	21.54	21.57	21.53		
		50	50	21.54	21.57	21.53		
100		0	21.55	21.60	21.49			
64QAM	1	0	21.50	21.55	21.48	≤ 2	2	
	1	50	21.55	21.60	21.50			
	1	99	21.53	21.58	21.49			
	64QAM	50	0	20.55	20.58	20.53	≤ 3	3
		50	25	20.57	20.63	20.55		
		50	50	20.56	20.59	20.54		
		50	50	20.56	20.59	20.54		
100		0	20.53	20.60	20.50			

Table 9.3.3.2 LTE Conducted Power

LTE Band 2 (PCS) Conducted Power– 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			18675 (1 857.5 MHz)	18900 (1 880.0 MHz)	19125 (1 902.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.28	23.37	23.27	≤ 1	0
	1	36	23.47	23.50	23.40		
	1	74	23.30	23.38	23.28		
	36	0	22.34	22.38	22.30		1
	36	18	22.44	22.48	22.33		
	36	37	22.43	22.44	22.31		
	75	0	22.42	22.44	22.29		
16QAM	1	0	22.23	22.36	22.20	≤ 1	1
	1	36	22.33	22.55	22.30		
	1	74	22.28	22.43	22.25		
	36	0	21.48	21.50	21.35	≤ 2	2
	36	18	21.53	21.54	21.46		
	36	37	21.50	21.53	21.45		
	75	0	21.48	21.50	21.45	2	
64QAM	1	0	21.30	21.35	21.28	≤ 2	2
	1	36	21.35	21.40	21.31		
	1	74	21.34	21.38	21.29		
	36	0	20.40	20.44	20.33	≤ 3	3
	36	18	20.44	20.48	20.39		
	36	37	20.43	20.47	20.36		
	75	0	20.42	20.47	20.38		

Table 9.3.3.3 LTE Conducted Power

LTE Band 2 (PCS) Conducted Power– 10 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)	
			18650 (1 855.0 MHz)	18900 (1 880.0 MHz)	19150 (1 905.0 MHz)			
			Conducted Power (dBm)					
QPSK	1	0	23.19	23.28	23.10	≤ 1	0	
	1	25	23.28	23.31	23.20			
	1	49	23.22	23.30	23.19			
	25	0	22.25	22.38	22.20		1	
	25	12	22.38	22.43	22.26			
	25	25	22.35	22.40	22.25			
	50	0	22.36	22.39	22.22			
16QAM	1	0	22.23	22.30	22.22	≤ 1	1	
	1	25	22.26	22.33	22.25			
	1	49	22.25	22.31	22.23			
	25	0	21.29	21.35	21.26		≤ 2	2
	25	12	21.32	21.38	21.30			
	25	25	21.30	21.37	21.29			
	50	0	21.30	21.33	21.27			
64QAM	1	0	21.30	21.39	21.27	≤ 2	2	
	1	25	21.37	21.44	21.33			
	1	49	21.33	21.40	21.30			
	25	0	20.30	20.40	20.27		≤ 3.	3
	25	12	20.35	20.47	20.31			
	25	25	20.31	20.43	20.30			
	50	0	20.34	20.45	20.30			

Table 9.3.3.4 LTE Conducted Power

LTE Band 2 (PCS) Conducted Power- 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			18625 (1 852.5 MHz)	18900 (1 880.0 MHz)	19175 (1 907.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.22	23.24	23.10	≤ 1	0
	1	12	23.31	23.37	23.13		
	1	24	23.30	23.34	23.11		
	12	0	22.32	22.37	22.19		1
	12	6	22.38	22.42	22.29		
	12	13	22.37	22.38	22.27		
	25	0	22.33	22.37	22.22		
16QAM	1	0	22.28	22.33	22.16	≤ 1	1
	1	12	22.37	22.39	22.22		
	1	24	22.34	22.35	22.20		
	12	0	21.31	21.36	21.16	≤ 2	2
	12	6	21.36	21.45	21.22		
	12	13	21.35	21.43	21.21		
	25	0	21.34	21.38	21.20		
64QAM	1	0	21.20	21.30	21.15	≤ 2	2
	1	12	21.33	21.36	21.28		
	1	24	21.28	21.33	21.19		
	12	0	20.33	20.38	20.22	≤ 3	3
	12	6	20.40	20.43	20.28		
	12	13	20.35	20.40	20.25		
	25	0	20.38	20.41	20.27		

Table 9.3.3.5 LTE Conducted Power

LTE Band 2 (PCS) Conducted Power- 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			18615 (1 851.5 MHz)	18900 (1 880.0 MHz)	19185 (1 908.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.21	23.22	23.04	≤ 1	0
	1	7	23.29	23.37	23.16		
	1	14	23.25	23.27	23.12		
	8	0	22.32	22.34	22.14		1
	8	4	22.35	22.36	22.17		
	8	7	22.34	22.35	22.15		
	15	0	22.31	22.33	22.15		
16QAM	1	0	22.23	22.29	22.17	≤ 1	1
	1	7	22.33	22.34	22.26		
	1	14	22.30	22.32	22.18		
	8	0	21.39	21.41	21.25	≤ 2	2
	8	4	21.46	21.49	21.30		
	8	7	21.40	21.42	21.27		
	15	0	21.40	21.44	21.29		
64QAM	1	0	21.30	21.32	21.22	≤ 2	2
	1	7	21.33	21.40	21.28		
	1	14	21.31	21.38	21.25		
	8	0	20.36	20.39	20.24	≤ 3	3
	8	4	20.44	20.47	20.28		
	8	7	20.40	20.44	20.25		
	15	0	20.37	20.45	20.27		

Table 9.3.3.6 LTE Conducted Power

LTE Band 2 (PCS) Conducted Power- 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			18607 (1 850.7 MHz)	18900 (1 880.0 MHz)	19193 (1 909.3 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.20	23.21	23.18	≤ 1	0
	1	2	23.33	23.38	23.25		
	1	5	23.28	23.30	23.24		
	3	0	23.13	23.20	23.03		0
	3	2	23.23	23.33	23.10		
	3	3	23.21	23.30	23.06		
	6	0	22.23	22.30	22.12		
16QAM	1	0	22.37	22.40	22.17	≤ 1	1
	1	2	22.43	22.44	22.30		
	1	5	22.41	22.43	22.28		
	3	0	22.31	22.32	22.01		1
	3	2	22.35	22.39	22.10		
	3	3	22.33	22.34	22.08		
	6	0	21.34	21.35	21.17		
64QAM	1	0	21.34	21.36	21.19	≤ 2	2
	1	2	21.39	21.44	21.28		
	1	5	21.35	21.40	21.22		
	3	0	21.30	21.35	21.10		2
	3	2	21.33	21.40	21.20		
	3	3	21.31	21.38	21.11		
	6	0	20.33	20.40	20.22		
					≤ 3	3	

Table 9.3.3.7 LTE Conducted Power

Band & Mode		Modulated Average[dBm]
LTE Band 41	Maximum	24.5
	Nominal	23.0

Table 9.3.4.1 Nominal and Maximum Output Power Spec

4) LTE Band 41

LTE Band 41 Conducted Power– 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			39750 (2 506.0 MHz)	40185 (2 549.5 MHz)	40620 (2 593.0 MHz)	41055 (2 636.5 MHz)	41490 (2 680.0 MHz)		
			Conducted Power (dBm)						
QPSK	1	0	23.63	23.61	23.64	23.59	23.58	≤ 1	0
	1	50	23.69	23.67	23.70	23.65	23.64		
	1	99	23.64	23.63	23.68	23.62	23.60		
	50	0	22.58	22.55	22.73	22.53	22.48		1
	50	25	22.67	22.65	22.79	22.62	22.54		
	50	50	22.66	22.63	22.74	22.58	22.53		
	100	0	22.65	22.63	22.75	22.60	22.52		
16QAM	1	0	22.61	22.60	22.73	22.59	22.57	≤ 1	1
	1	50	22.69	22.68	22.79	22.61	22.59		
	1	99	22.67	22.65	22.75	22.59	22.58		
	50	0	21.63	21.60	21.70	21.55	21.50	≤ 2	2
	50	25	21.73	21.69	21.78	21.67	21.64		
	50	50	21.70	21.67	21.77	21.56	21.53		
	100	0	21.70	21.68	21.75	21.62	21.61		
64QAM	1	0	21.58	21.55	21.70	21.53	21.51	≤ 2	2
	1	50	21.64	21.62	21.72	21.57	21.55		
	1	99	21.60	21.57	21.71	21.55	21.54		
	50	0	20.63	20.60	20.73	20.51	20.49	≤ 3	3
	50	25	20.68	20.65	20.77	20.60	20.53		
	50	50	20.65	20.63	20.75	20.52	20.50		
	100	0	20.66	20.62	20.69	20.59	20.52		

Table 9.3.4.2 LTE Conducted Power

LTE Band 41 Conducted Power~ 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			39725 (2 503.5 MHz)	40173 (2 548.3 MHz)	40620 (2 593.0 MHz)	41068 (2 637.8 MHz)	41515 (2 682.5 MHz)		
			Conducted Power (dBm)						
QPSK	1	0	23.49	23.41	23.55	23.36	23.20	≤ 1	0
	1	36	23.55	23.51	23.58	23.44	23.37		
	1	74	23.52	23.48	23.56	23.40	23.33		
	36	0	22.25	22.20	22.64	22.18	22.10		1
	36	18	22.50	22.48	22.67	22.36	22.20		
	36	37	22.32	22.30	22.66	22.28	22.12		
	75	0	22.31	22.30	22.63	22.26	22.07		
16QAM	1	0	22.42	22.39	22.46	22.35	22.25	≤ 1	1
	1	36	22.47	22.43	22.56	22.41	22.39		
	1	74	22.43	22.40	22.47	22.38	22.35		
	36	0	21.26	21.25	21.58	21.20	21.07	≤ 2	2
	36	18	21.50	21.43	21.64	21.38	21.10		
	36	37	21.33	21.31	21.62	21.30	21.08		
	75	0	21.32	21.29	21.61	21.24	21.08		
64QAM	1	0	21.38	21.35	21.55	21.33	21.30	≤ 2	2
	1	36	21.47	21.46	21.62	21.43	21.44		
	1	74	21.46	21.43	21.57	21.40	21.36		
	36	0	20.26	20.23	20.63	20.19	20.09	≤ 3	3
	36	18	20.53	20.50	20.67	20.40	20.13		
	36	37	20.33	20.32	20.64	20.30	20.10		
	75	0	20.33	20.30	20.64	20.22	20.08		

Table 9.3.4.3 LTE Conducted Power

LTE Band 41 Conducted Power– 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			39700 (2 501.0 MHz)	40160 (2 547.0 MHz)	40620 (2 593.0 MHz)	41080 (2 639.0 MHz)	41540 (2 685.0 MHz)		
			Conducted Power (dBm)						
QPSK	1	0	23.41	23.36	23.52	23.30	23.19	≤ 1	0
	1	25	23.55	23.43	23.62	23.40	23.22		
	1	49	23.43	23.40	23.57	23.33	23.20		
	25	0	22.28	22.27	22.66	22.24	22.10		1
	25	12	22.34	22.33	22.76	22.28	22.15		
	25	25	22.30	22.29	22.70	22.27	22.14		
	50	0	22.31	22.28	22.71	22.19	22.08	1	
16QAM	1	0	22.52	22.43	22.58	22.40	22.24	≤ 1	1
	1	25	22.57	22.52	22.74	22.47	22.33		
	1	49	22.53	22.51	22.60	22.43	22.25		
	25	0	21.30	21.26	21.73	21.22	21.10	≤ 2	2
	25	12	21.38	21.35	21.77	21.31	21.19		
	25	25	21.33	21.30	21.74	21.25	21.12		
	50	0	21.37	21.33	21.71	21.25	21.13		2
64QAM	1	0	21.48	21.45	21.54	21.31	21.15	≤ 2	2
	1	25	21.53	21.50	21.69	21.46	21.26		
	1	49	21.50	21.48	21.63	21.39	21.20		
	25	0	20.35	20.33	20.75	20.30	20.16	≤ 3	3
	25	12	20.42	20.40	20.79	20.33	20.22		
	25	25	20.38	20.35	20.77	20.31	20.19		
	50	0	20.34	20.30	20.71	20.22	20.10		3

Table 9.3.4.4 LTE Conducted Power

LTE Band 41 Conducted Power– 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			39675 (2 498.5 MHz)	40148 (2 545.8 MHz)	40620 (2 593.0 MHz)	41093 (2 640.3 MHz)	41565 (2 687.5 MHz)		
			Conducted Power (dBm)						
QPSK	1	0	23.41	23.39	23.57	23.35	23.30	≤ 1	0
	1	12	23.50	23.47	23.63	23.40	23.39		
	1	24	23.42	23.40	23.61	23.36	23.33		
	12	0	22.30	22.28	22.68	22.25	22.23		1
	12	6	22.40	22.39	22.69	22.37	22.34		
	12	13	22.38	22.37	22.64	22.35	22.33		
	25	0	22.36	22.34	22.67	22.32	22.31		1
16QAM	1	0	22.47	22.43	22.60	22.40	22.39	≤ 1	1
	1	12	22.56	22.53	22.64	22.51	22.42		
	1	24	22.55	22.51	22.61	22.48	22.40		
	12	0	21.35	21.31	21.73	21.30	21.25	≤ 2	2
	12	6	21.38	21.36	21.74	21.33	21.30		
	12	13	21.37	21.33	21.72	21.30	21.28		
	25	0	21.34	21.30	21.70	21.28	21.25	2	
64QAM	1	0	21.43	21.40	21.67	21.37	21.34	≤ 2	2
	1	12	21.50	21.49	21.74	21.48	21.47		
	1	24	21.49	21.48	21.71	21.45	21.44		
	12	0	20.33	20.31	20.70	20.27	20.21	≤ 3	3
	12	6	20.41	20.40	20.76	20.39	20.28		
	12	13	20.39	20.36	20.74	20.34	20.27		
	25	0	20.39	20.36	20.75	20.33	20.22	3	

Table 9.3.4.5 LTE Conducted Power

9.4 WLAN Nominal and Maximum Output Power Spec and Conducted Powers

Band (GHz)	Mode	Ch	Modulated Average[dBm]					
			Ant.1		Ant.2		MIMO(CDD/SDM)	
			Maximum	Nominal	Maximum	Nominal	Maximum	Nominal
2.4	802.11b	1-11	16.0	13.0	16.0	13.0	16.0	13.0
	802.11g	1-11	15.0	12.0	15.0	12.0	15.0	12.0
	802.11n	1-11	15.0	12.0	15.0	12.0	15.0	12.0

Table 9.4.1 Nominal and Maximum Output Power Spec

Mode	Freq. (MHz)	Channel	IEEE 802.11 (2.4 GHz) Conducted Power[dBm]					
			Ant.1		Ant.2		MIMO	
802.11b	2 412	1	13.10		13.46		15.96	
	2 437	6	13.05		13.08		15.60	
	2 462	11	13.32		13.70		15.99	
802.11g	2 412	1	12.07		12.80		14.75	
	2 437	6	12.18		12.12		14.82	
	2 462	11	12.05		12.42		14.69	
802.11n (HT-20)	2 412	1	11.96		12.59		14.89	
	2 437	6	12.07		12.11		14.89	
	2 462	11	11.84		12.26		14.91	

Table 9.4.2 IEEE 802.11 Average RF Power

Band (GHz)	Mode	Ch	Modulated Average[dBm]					
			Ant.1		Ant.2		MIMO(CDD/SDM)	
			Maximum	Nominal	Maximum	Nominal	Maximum	Nominal
5 (UNII)	802.11a	36-144	15.0	12.0	15.0	12.0	15.0	12.0
	802.11n/ac (20MHz)	36-144	15.0	12.0	15.0	12.0	15.0	12.0
	802.11n/ac (40MHz)	38-142	15.0	12.0	15.0	12.0	15.0	12.0
	802.11ac (80MHz)	42-138	15.0	12.0	15.0	12.0	15.0	12.0

Table 9.4.5 Nominal and Maximum Output Power Spec

Mode	Freq. (MHz)	Channel	IEEE 802.11a (5 GHz) Conducted Power[dBm]					
			Ant.1		Ant.2		MIMO	
802.11a	5 180	36	12.67		13.11		14.86	
	5 200	40	12.58		13.03		14.82	
	5 220	44	12.55		12.93		14.76	
	5 240	48	12.53		12.90		14.73	
	5 260	52	12.89		13.07		14.56	
	5 280	56	12.55		12.97		14.75	
	5 300	60	12.34		12.94		14.59	
	5 320	64	12.11		12.66		14.42	
	5 500	100	12.48		13.16		14.69	
	5 580	116	12.52		12.93		14.61	
	5 660	132	12.63		12.89		14.55	
	5 700	140	12.65		13.01		14.64	
	5 720	144	12.54		12.94		14.60	

Table 9.4.6 IEEE 802.11a Average RF Power

Mode	Freq. (MHz)	Channel	IEEE 802.11n HT20 (5 GHz) Conducted Power[dBm]					
			Ant.1		Ant.2		MIMO	
802.11n (HT-20)	5 180	36	12.52		13.01		14.73	
	5 200	40	12.49		12.86		14.74	
	5 220	44	12.44		12.93		14.66	
	5 240	48	12.29		12.91		14.76	
	5 260	52	12.58		12.98		14.75	
	5 280	56	12.44		12.93		14.73	
	5 300	60	12.30		12.69		14.62	
	5 320	64	12.00		12.53		14.57	
	5 500	100	12.38		13.01		14.66	
	5 580	116	12.28		13.12		14.69	
	5 660	132	12.47		13.20		14.61	
	5 700	140	12.91		13.19		14.53	
	5 720	144	12.53		13.13		14.85	

Table 9.4.7 IEEE 802.11n HT20 Average RF Power

Mode	Freq. (MHz)	Channel	IEEE 802.11ac VHT20 (5 GHz) Conducted Power[dBm]					
			Ant.1		Ant.2		MIMO	
802.11ac (VHT-20)	5 180	36	12.46		12.96		14.61	
	5 200	40	12.53		12.93		14.70	
	5 220	44	12.44		12.90		14.72	
	5 240	48	12.21		12.83		14.85	
	5 260	52	12.06		12.94		14.72	
	5 280	56	11.88		13.13		14.80	
	5 300	60	12.34		12.89		14.74	
	5 320	64	11.94		12.92		14.79	
	5 500	100	12.25		12.97		14.78	
	5 580	116	12.43		13.16		14.78	
	5 660	132	12.50		13.21		14.36	
	5 700	140	12.86		13.08		14.42	
	5 720	144	12.09		13.10		14.41	

Table 9.4.8 IEEE 802.11ac VHT20 Average RF Power

Mode	Freq. (MHz)	Channel	IEEE 802.11n HT40 (5 GHz) Conducted Power[dBm]					
			Ant.1		Ant.2		MIMO	
802.11n (HT-40)	5 190	38	12.98		13.73		14.71	
	5 230	46	12.90		13.63		14.49	
	5 270	54	12.49		13.51		14.70	
	5 310	62	12.86		13.37		14.54	
	5 510	102	12.96		13.53		14.79	
	5 550	110	12.54		13.16		14.76	
	5 670	134	13.03		13.54		14.77	
	5 710	142	12.63		13.21		14.68	

Table 9.4.9 IEEE 802.11n HT40 Average RF Power

Mode	Freq.	Channel	IEEE 802.11ac VHT40 (5 GHz) Conducted Power[dBm]		
	(MHz)		Ant.1	Ant.2	MIMO
802.11ac (VHT-40)	5 190	38	12.98	13.42	14.73
	5 230	46	12.90	13.45	14.68
	5 270	54	12.83	13.38	14.34
	5 310	62	12.90	13.41	14.50
	5 510	102	13.01	13.51	14.72
	5 550	110	12.98	13.44	14.72
	5 670	134	13.15	13.59	14.70
	5 710	142	12.84	13.33	14.70

Table 9.4.10 IEEE 802.11ac VHT40 Average RF Power

Mode	Freq.	Channel	IEEE 802.11ac VHT80 (5 GHz) Conducted Power[dBm]		
	(MHz)		Ant.1	Ant.2	MIMO
802.11ac (VHT-80)	5 210	42	12.96	13.57	14.83
	5 290	58	12.98	13.58	14.85
	5 530	106	12.90	13.29	14.94
	5 610	122	12.77	13.20	14.72
	5 690	138	12.56	13.28	14.79

Table 9.4.11 IEEE 802.11ac VHT80 Average RF Power

Justification for reduced test configurations for WIFI channels 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.
- Output Power and SAR is not required for 802.11 g/n HT20/ac VHT20 channels when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjust SAR is ≤ 1.2 W/kg.
- The underlined data rate and channel above were tested for SAR.

The average output powers of this device were tested by below configuration.

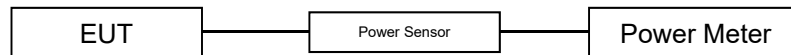


Figure 9.4 Power Measurement Setup

9.5 Bluetooth Conducted Powers

Frame Modulated Average[dBm]		
Bluetooth 1 Mbps	Maximum	15.8
	Nominal	12.2
Bluetooth 2 Mbps	Maximum	13.0
	Nominal	9.4
Bluetooth 3 Mbps	Maximum	13.0
	Nominal	9.4
Bluetooth LE	Maximum	7.9
	Nominal	4.2

Table 9.5.1 Nominal and Maximum Output Power Spec (Frame)

Channel	Frequency	Frame AVG Output Power (1Mbps)	Frame AVG Output Power (2Mbps)	Frame AVG Output Power (3Mbps)
	(MHz)	(dBm)	(dBm)	(dBm)
Low	2 402	13.60	10.43	10.53
Mid	2 441	13.10	9.51	9.66
High	2 480	12.46	10.08	10.15

Table 9.5.2 Bluetooth Frame Average RF Power

Channel	Frequency	Frame AVG Output Power(LE / 1Mbps)	Frame AVG Output Power(LE / 2Mbps)
	(MHz)	(dBm)	(dBm)
Low	2 402	5.55	5.57
Mid	2 440	5.76	5.71
High	2 480	5.21	5.14

Table 9.5.3 Bluetooth LE Frame Average RF Power

Bluetooth Conducted Powers procedures

1. Bluetooth (BDR, EDR)

- 1) Enter DUT mode in EUT and operate it.

When it operating, The EUT is transmitting at maximum power level and duty cycle fixed.

- 2) Instruments and EUT were connected like Figure 9.5.1.

- 3) The maximum output powers of BDR(1 Mbps), EDR(2, 3 Mbps) and each frequency were set by a Bluetooth Tester.

- 4) Power levels were measured by a Power Meter.

2. Bluetooth (LE)

- 1) Enter LE mode in EUT and operate it.

When it operating, The EUT is transmitting at maximum power level and duty cycle fixed.

- 2) Instruments and EUT were connected like Figure 9.5.1.

- 3) The average conducted output powers of LE and each frequency can measurement according to setting program in EUT.

- 4) Power levels were measured by a Power Meter.

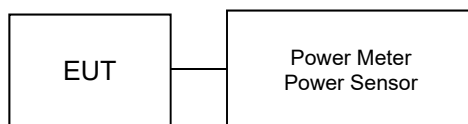


Figure 9.5.1 Average Power Measurement Setup

- Bluetooth Transmission Plot

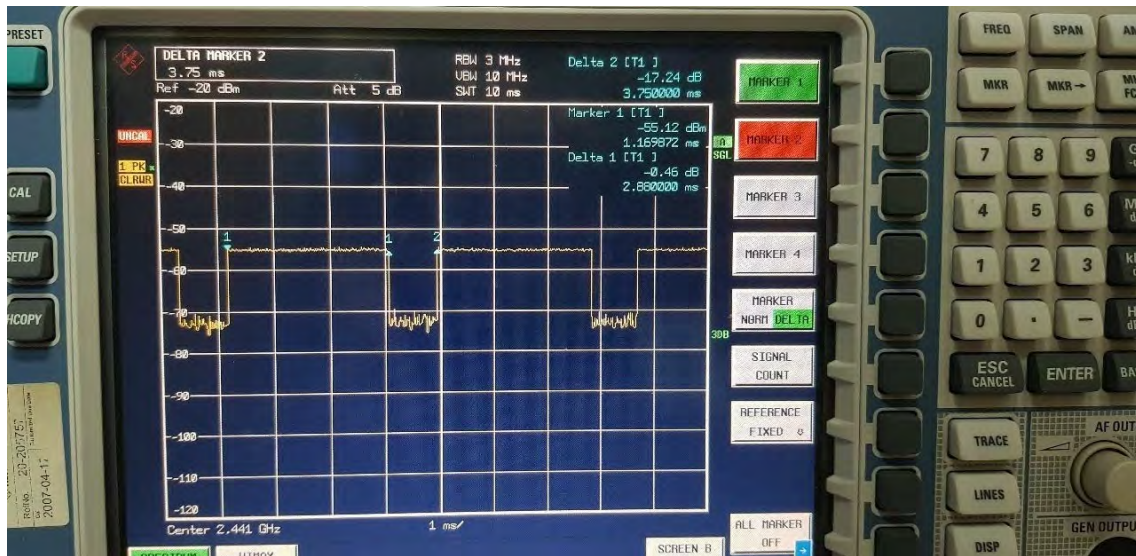


Figure 9.5.2 Bluetooth Transmission Plot

- Bluetooth Duty Cycle Calculation

$$\text{Duty Cycle} = \text{Pulse/Period} * 100\% = (2.880/3.750) * 100 = 76.8\%$$

10. SYSTEM VERIFICATION

10.1 Tissue Verification

MEASURED TISSUE PARAMETERS										
Date(s)	Tissue Type	Ambient Temp.[°C]	Liquid Temp.[°C]	Measured Frequency [MHz]	Target Dielectric Constant, ϵ_r	Target Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ_r	Measured Conductivity, σ (S/m)	Er Deviation [%]	σ Deviation [%]
Aug. 26. 2021	750 Head	21.4	21.2	707.5	42.129	0.887	42.902	0.866	1.83	-2.37
				750.0	41.900	0.890	42.356	0.905	1.09	1.69
				782.0	41.749	0.894	41.949	0.927	0.48	3.69
Aug. 30. 2021	835 Head	21.4	21.3	824.2	41.552	0.899	40.690	0.889	-2.07	-3.34
				826.4	41.542	0.899	40.661	0.871	-2.12	-3.11
				829.0	41.528	0.899	40.633	0.873	-2.16	-2.89
				835.0	41.500	0.900	40.564	0.878	-2.26	-2.44
				836.5	41.500	0.901	40.545	0.880	-2.30	-2.33
				836.6	41.500	0.901	40.545	0.880	-2.30	-2.33
				844.0	41.500	0.910	40.464	0.886	-2.50	-2.64
				846.6	41.500	0.912	40.434	0.888	-2.57	-2.63
				848.8	41.500	0.914	40.416	0.890	-2.61	-2.63
Aug. 31. 2021	1 800 Head	20.8	20.7	1 712.4	40.126	1.350	39.802	1.317	-0.81	-2.44
				1 720.0	40.114	1.354	39.758	1.323	-0.89	-2.29
				1 732.4	40.097	1.361	39.684	1.332	-1.03	-2.13
				1 732.5	40.097	1.361	39.684	1.332	-1.03	-2.13
				1 745.0	40.079	1.369	39.621	1.343	-1.14	-1.90
				1 752.6	40.069	1.373	39.589	1.349	-1.20	-1.75
				1 770.0	40.043	1.383	39.524	1.367	-1.30	-1.16
				1 800.0	40.000	1.400	39.422	1.397	-1.45	-0.21
Sep. 1. 2021	1 900 Head	21.5	21.4	1 850.2	40.000	1.400	40.287	1.350	0.72	-3.57
				1 852.4	40.000	1.400	40.274	1.352	0.69	-3.43
				1 860.0	40.000	1.400	40.249	1.360	0.62	-2.86
				1 880.0	40.000	1.400	40.176	1.382	0.44	-1.29
				1 900.0	40.000	1.400	40.111	1.404	0.28	0.29
				1 907.6	40.000	1.400	40.089	1.412	0.22	0.86
				1 909.8	40.000	1.400	40.085	1.414	0.21	1.00
				1 909.8	40.000	1.400	39.507	1.396	-1.23	-0.29
Sep. 2. 2021	1 900 Head	20.4	20.3	1 850.2	40.000	1.400	39.659	1.347	-0.85	-3.79
				1 852.4	40.000	1.400	39.656	1.349	-0.86	-3.64
				1 860.0	40.000	1.400	39.637	1.356	-0.91	-3.14
				1 880.0	40.000	1.400	39.586	1.372	-1.04	-2.00
				1 900.0	40.000	1.400	39.541	1.388	-1.15	-0.86
				1 907.6	40.000	1.400	39.515	1.394	-1.21	-0.43
				1 909.8	40.000	1.400	39.507	1.396	-1.23	-0.29
Sep. 6. 2021	2 450 Head	20.7	20.6	2 412.0	39.265	1.766	38.585	1.802	-1.73	2.04
				2 437.0	39.222	1.788	38.518	1.832	-1.79	2.46
				2 450.0	39.200	1.800	38.483	1.846	-1.83	2.56
				2 462.0	39.184	1.813	38.449	1.856	-1.88	2.37
				2 472.0	39.171	1.823	38.409	1.865	-1.95	2.30
Sep. 27. 2021	2 450 Head	20.8	20.7	2 402.0	39.282	1.757	38.586	1.744	-1.77	-0.74
				2 441.0	39.215	1.792	38.475	1.790	-1.89	-0.11
				2 450.0	39.200	1.800	38.444	1.800	-1.93	0.00
				2 480.0	39.160	1.832	38.329	1.831	-2.12	-0.05
				2 506.0	39.125	1.860	38.630	1.906	-1.27	2.47
Sep. 7. 2021	2 600 Head	21.0	20.8	2 549.5	39.068	1.906	38.481	1.953	-1.50	2.47
				2 593.0	39.009	1.953	38.332	1.998	-1.74	2.30
				2 600.0	39.000	1.960	38.308	2.006	-1.77	2.35
				2 636.5	38.955	2.000	38.186	2.046	-1.97	2.30
				2 680.0	38.900	2.048	38.036	2.096	-2.22	2.34
				5 260.0	35.940	4.720	35.852	4.847	-0.24	2.69
				5 270.0	35.930	4.730	35.839	4.859	-0.25	2.73
Sep. 13. 2021	5 300 Head	21.0	20.9	5 280.0	35.920	4.740	35.829	4.869	-0.25	2.72
				5 290.0	35.910	4.750	35.810	4.878	-0.28	2.69
				5 300.0	35.900	4.760	35.785	4.890	-0.32	2.73
				5 310.0	35.890	4.770	35.723	4.903	-0.47	2.79
				5 320.0	35.880	4.780	35.748	4.916	-0.37	2.85
				5 500.0	35.650	4.965	35.201	5.035	-1.26	1.41
Sep. 14. 2021	5 600 Head	21.2	21.0	5 510.0	35.635	4.976	35.180	5.044	-1.28	1.37
				5 530.0	35.605	4.997	35.135	5.069	-1.32	1.44
				5 550.0	35.575	5.018	35.104	5.089	-1.32	1.41
				5 580.0	35.530	5.049	35.042	5.127	-1.37	1.54
				5 600.0	35.500	5.070	35.025	5.151	-1.34	1.60
				5 610.0	35.490	5.080	35.014	5.158	-1.34	1.54
				5 660.0	35.440	5.130	34.915	5.212	-1.48	1.60
				5 670.0	35.430	5.140	34.890	5.223	-1.52	1.61
				5 690.0	35.410	5.160	34.850	5.252	-1.58	1.78
				5 710.0	35.390	5.180	34.835	5.275	-1.57	1.83
				5 720.0	35.380	5.190	34.823	5.283	-1.57	1.79
				5 800.0	35.300	5.270	34.664	5.377	-1.80	2.03

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

Measurement Procedure for Tissue verification:

- 1) The network analyzer and probe system was configured and calibrated.
- 2) The probe was immersed in the sample which was placed in a nonmetallic container. Trapped air bubbles beneath the flange were minimized by placing the probe at a slight angle.
- 3) The complex admittance with respect to the probe aperture was measured
- 4) The complex relative permittivity, for example from the below equation (Pournaropoulos and Misra):

$$Y = \frac{j2\omega\epsilon_r\epsilon_0}{[\ln(b/a)]^2} \int_a^b \int_a^b \int_0^\pi \cos\phi' \frac{\exp[-j\omega r'(\mu_0\epsilon_r\epsilon_0)^{1/2}]}{r} d\phi' d\rho' d\rho$$

where Y is the admittance of the probe in contact with the sample, the primed and unprimed coordinates refer to source and observation points, respectively, $r^2 = \rho^2 + \rho'^2 - 2\rho\rho'\cos\phi'$, ω is the angular frequency, and $j = \sqrt{-1}$.

10.2 Test System Verification

Prior to assessment, the system is verified to the $\pm 10\%$ of the specifications at using the SAR Dipole kit(s). (Graphic Plots Attached)

Table 10.2.1 System Verification Results (1g)

SYSTEM DIPOLE VERIFICATION TARGET & MEASURED												
SAR System #	Freq. [MHz]	SAR Dipole kits	Date(s)	Tissue Type	Ambient Temp. [°C]	Liquid Temp. [°C]	Probe S/N	Input Power (mW)	1W Target SAR _{1g} (W/kg)	Measured SAR _{1g} (W/kg)	1W Normalized SAR _{1g} (W/kg)	Deviation [%]
E	750	D750V3, SN:1049	Aug. 26. 2021	Head	21.4	21.2	7337	250	8.39	2.08	8.32	-0.83
E	835	D835V2, SN:464	Aug. 30. 2021	Head	21.4	21.3	7337	250	9.75	2.53	10.12	3.79
D	1 800	D1800V2, SN:2d047	Aug. 31. 2021	Head	20.8	20.7	3327	100	39.3	3.83	38.30	-2.54
D	1 900	D1900V2, SN:5d029	Sep. 1. 2021	Head	21.5	21.4	3327	100	40.5	3.98	39.80	-1.73
C	1 900	D1900V2, SN:5d029	Sep. 2. 2021	Head	20.4	20.3	7368	100	40.5	3.95	39.50	-2.47
C	2 450	D2450V2, SN: 716	Sep. 6. 2021	Head	20.7	20.6	7368	100	54.1	5.50	55.00	1.66
D	2 450	D2450V2, SN: 716	Sep. 27. 2021	Head	20.8	20.7	3327	100	54.1	5.35	53.50	-1.11
C	2 600	D2600V2, SN: 1016	Sep. 7. 2021	Head	21.0	20.8	7368	100	55.9	5.88	58.80	5.19
C	5 300	D5GHZV2, SN:1103	Sep. 13. 2021	Head	21.0	20.9	7368	100	84.7	8.47	84.70	0.00
C	5 500	D5GHZV2, SN:1103	Sep. 14. 2021	Head	21.2	21.0	7368	100	87.7	8.88	88.80	1.25

Note(s)

1. System Verification was measured with input 250 mW, 100 mW and normalized to 1W.
2. Full system validation status and results can be found in Appendix D.

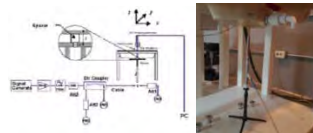


Figure 10.1 Dipole Verification Test Setup Diagram & Photo

11. SAR TEST RESULTS

11.1 Standalone Head SAR Results

Table 11.1.1 GSM/GPRS 850 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	# of Time Slots	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
836.6	190	GSM850	GSM	34.00	33.14	-0.050	Left Touch	FCC #1	1	1:8.3	0.216	1.219	0.263	A1
836.6	190	GSM850	GSM	34.00	33.14	0.120	Right Touch	FCC #1	1	1:8.3	0.150	1.219	0.183	
836.6	190	GSM850	GSM	34.00	33.14	0.100	Left Tilt	FCC #1	1	1:8.3	0.107	1.219	0.130	
836.6	190	GSM850	GSM	34.00	33.14	-0.110	Right Tilt	FCC #1	1	1:8.3	0.107	1.219	0.130	
836.6	190	GSM850	GPRS	28.00	27.13	0.030	Left Touch	FCC #1	4	1:2.075	0.222	1.222	0.271	A2
836.6	190	GSM850	GPRS	28.00	27.13	-0.110	Right Touch	FCC #1	4	1:2.075	0.158	1.222	0.193	
836.6	190	GSM850	GPRS	28.00	27.13	0.050	Left Tilt	FCC #1	4	1:2.075	0.108	1.222	0.132	
836.6	190	GSM850	GPRS	28.00	27.13	0.080	Right Tilt	FCC #1	4	1:2.075	0.136	1.222	0.166	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak								Head						
Uncontrolled Exposure/General Population Exposure								1.6 W/kg (mW/g) averaged over 1 gram						

Table 11.1.2 PCS/GPRS 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	# of Time Slots	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
1880.0	661	PCS1900	PCS	31.00	30.23	-0.070	Left Touch	FCC #1	1	1:8.3	0.107	1.194	0.128	A3
1880.0	661	PCS1900	PCS	31.00	30.23	0.000	Right Touch	FCC #1	1	1:8.3	0.060	1.194	0.072	
1880.0	661	PCS1900	PCS	31.00	30.23	-0.080	Left Tilt	FCC #1	1	1:8.3	0.068	1.194	0.081	
1880.0	661	PCS1900	PCS	31.00	30.23	0.000	Right Tilt	FCC #1	1	1:8.3	0.046	1.194	0.055	
1880.0	661	PCS1900	GPRS	25.00	24.33	0.010	Left Touch	FCC #1	4	1:2.075	0.124	1.167	0.145	A4
1880.0	661	PCS1900	GPRS	25.00	24.33	0.190	Right Touch	FCC #1	4	1:2.075	0.065	1.167	0.076	
1880.0	661	PCS1900	GPRS	25.00	24.33	-0.030	Left Tilt	FCC #1	4	1:2.075	0.082	1.167	0.096	
1880.0	661	PCS1900	GPRS	25.00	24.33	0.180	Right Tilt	FCC #1	4	1:2.075	0.059	1.167	0.069	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak								Head 1.6 W/kg (mW/g) averaged over 1 gram						
Uncontrolled Exposure/General Population Exposure														

Table 11.1.3 WCDMA 850 Head SAR

MEASUREMENT RESULTS													
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch												
836.6	4183	WCDMA 850	RMC	24.50	23.53	0.150	Left Touch	FCC #1	1:1	0.280	1.250	0.350	A5
836.6	4183	WCDMA 850	RMC	24.50	23.53	-0.110	Right Touch	FCC #1	1:1	0.204	1.250	0.255	
836.6	4183	WCDMA 850	RMC	24.50	23.53	0.100	Left Tilt	FCC #1	1:1	0.140	1.250	0.175	
836.6	4183	WCDMA 850	RMC	24.50	23.53	-0.100	Right Tilt	FCC #1	1:1	0.130	1.250	0.163	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Head 1.6 W/kg (mW/g) averaged over 1 gram					

Table 11.1.4 WCDMA 1700 Head SAR

MEASUREMENT RESULTS													
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch												
1 732.4	1412	WCDMA 1700	RMC	24.50	23.89	-0.060	Left Touch	FCC #1	1:1	0.116	1.151	0.134	A6
1 732.4	1412	WCDMA 1700	RMC	24.50	23.89	0.000	Right Touch	FCC #1	1:1	0.063	1.151	0.073	
1 732.4	1412	WCDMA 1700	RMC	24.50	23.89	0.180	Left Tilt	FCC #1	1:1	0.109	1.151	0.125	
1 732.4	1412	WCDMA 1700	RMC	24.50	23.89	0.000	Right Tilt	FCC #1	1:1	0.011	1.151	0.013	
ANSI / IEEE C95.1-1992- SAFETY LIMIT								Head					
Spatial Peak								1.6 W/kg (mW/g)					
Uncontrolled Exposure/General Population Exposure								averaged over 1 gram					

Table 11.1.5 WCDMA 1900 Head SAR

MEASUREMENT RESULTS													
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch												
1880.0	9400	WCDMA 1900	RMC	24.50	23.91	-0.000	Left Touch	FCC #1	1:1	0.216	1.146	0.248	A7
1880.0	9400	WCDMA 1900	RMC	24.50	23.91	0.080	Right Touch	FCC #1	1:1	0.115	1.146	0.132	
1880.0	9400	WCDMA 1900	RMC	24.50	23.91	0.160	Left Tilt	FCC #1	1:1	0.146	1.146	0.167	
1880.0	9400	WCDMA 1900	RMC	24.50	23.91	0.010	Right Tilt	FCC #1	1:1	0.099	1.146	0.113	
ANSI / IEEE C95.1-1992- SAFETY LIMIT								Head					
Spatial Peak								1.6 W/kg (mW/g)					
Uncontrolled Exposure/General Population Exposure								averaged over 1 gram					

Table 11.1.6 LTE Band 12 Head SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
707.5	23095	LTE B12	10	24.50	23.35	-0.070	0	Left Touch	FCC #1	QPSK	1	25	1:1	0.123	1.303	0.160	A8
707.5	23095	LTE B12	10	23.50	22.33	0.090	1	Left Touch	FCC #1	QPSK	25	12	1:1	0.104	1.309	0.136	
707.5	23095	LTE B12	10	24.50	23.35	-0.070	0	Right Touch	FCC #1	QPSK	1	25	1:1	0.099	1.303	0.129	
707.5	23095	LTE B12	10	23.50	22.33	0.030	1	Right Touch	FCC #1	QPSK	25	12	1:1	0.072	1.309	0.094	
707.5	23095	LTE B12	10	24.50	23.35	-0.070	0	Left Tilt	FCC #1	QPSK	1	25	1:1	0.066	1.303	0.086	
707.5	23095	LTE B12	10	23.50	22.33	0.080	1	Left Tilt	FCC #1	QPSK	25	12	1:1	0.052	1.309	0.068	
707.5	23095	LTE B12	10	24.50	23.35	0.070	0	Right Tilt	FCC #1	QPSK	1	25	1:1	0.053	1.303	0.069	
707.5	23095	LTE B12	10	23.50	22.33	0.050	1	Right Tilt	FCC #1	QPSK	25	12	1:1	0.044	1.309	0.058	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure										Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11.1.7 LTE Band 4 Head SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
1 732.5	20175	LTE B4	20	24.50	24.05	0.000	0	Left Touch	FCC #1	QPSK	1	50	1:1	0.053	1.109	0.059	A9
1 732.5	20175	LTE B4	20	23.50	23.11	0.000	1	Left Touch	FCC #1	QPSK	50	25	1:1	0.012	1.094	0.013	
1 732.5	20175	LTE B4	20	24.50	24.05	0.000	0	Right Touch	FCC #1	QPSK	1	50	1:1	0.040	1.109	0.044	
1 732.5	20175	LTE B4	20	23.50	23.11	0.000	1	Right Touch	FCC #1	QPSK	50	25	1:1	0.018	1.094	0.020	
1 732.5	20175	LTE B4	20	24.50	24.05	0.000	0	Left Tilt	FCC #1	QPSK	1	50	1:1	0.012	1.109	0.013	
1 732.5	20175	LTE B4	20	23.50	23.11	0.000	1	Left Tilt	FCC #1	QPSK	50	25	1:1	0.009	1.094	0.010	
1 732.5	20175	LTE B4	20	24.50	24.05	0.000	0	Right Tilt	FCC #1	QPSK	1	50	1:1	0.011	1.109	0.012	
1 732.5	20175	LTE B4	20	23.50	23.11	0.000	1	Right Tilt	FCC #1	QPSK	50	25	1:1	0.009	1.094	0.010	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure										Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11.1.8 LTE Band 2 (PCS) Head SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
1 880.0	18900	LTE B2	20	24.50	23.55	-0.060	0	Left Touch	FCC #1	QPSK	1	50	1:1	0.221	1.245	0.275	A10
1 880.0	18900	LTE B2	20	23.50	22.60	-0.070	1	Left Touch	FCC #1	QPSK	50	25	1:1	0.200	1.230	0.246	
1 880.0	18900	LTE B2	20	24.50	23.55	-0.020	0	Right Touch	FCC #1	QPSK	1	50	1:1	0.138	1.245	0.172	
1 880.0	18900	LTE B2	20	23.50	22.60	-0.150	1	Right Touch	FCC #1	QPSK	50	25	1:1	0.113	1.230	0.139	
1 880.0	18900	LTE B2	20	24.50	23.55	-0.010	0	Left Tilt	FCC #1	QPSK	1	50	1:1	0.107	1.245	0.133	
1 880.0	18900	LTE B2	20	23.50	22.60	0.050	1	Left Tilt	FCC #1	QPSK	50	25	1:1	0.087	1.230	0.107	
1 880.0	18900	LTE B2	20	24.50	23.55	0.140	0	Right Tilt	FCC #1	QPSK	1	50	1:1	0.086	1.245	0.107	
1 880.0	18900	LTE B2	20	23.50	22.60	-0.180	1	Right Tilt	FCC #1	QPSK	50	25	1:1	0.070	1.230	0.086	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11.1.9 LTE Band 41 Head SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
2 593.0	40620	LTE B41	20	24.50	23.70	0.000	0	Left Touch	FCC #1	QPSK	1	50	1:1.58	0.118	1.202	0.142	A11
2 593.0	40620	LTE B41	20	23.50	22.79	0.000	1	Left Touch	FCC #1	QPSK	50	25	1:1.58	0.090	1.178	0.106	
2 593.0	40620	LTE B41	20	24.50	23.70	0.000	0	Right Touch	FCC #1	QPSK	1	50	1:1.58	0.048	1.202	0.058	
2 593.0	40620	LTE B41	20	23.50	22.79	0.000	1	Right Touch	FCC #1	QPSK	50	25	1:1.58	0.027	1.178	0.032	
2 593.0	40620	LTE B41	20	24.50	23.70	0.160	0	Left Tilt	FCC #1	QPSK	1	50	1:1.58	0.017	1.202	0.020	
2 593.0	40620	LTE B41	20	23.50	22.79	0.160	1	Left Tilt	FCC #1	QPSK	50	25	1:1.58	0.011	1.178	0.013	
2 593.0	40620	LTE B41	20	24.50	23.70	0.000	0	Right Tilt	FCC #1	QPSK	1	50	1:1.58	0.020	1.202	0.024	
2 593.0	40620	LTE B41	20	23.50	22.79	0.000	1	Right Tilt	FCC #1	QPSK	50	25	1:1.58	0.017	1.178	0.020	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure										Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11.1.10 DTS Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode (Antenna)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
2 462.0	11	802.11b (Ant.1)	16.00	13.32	0.000	Left Touch	FCC #2	0.023	1	90.4	0.014	1.854	1.106	0.029	A12
2 462.0	11	802.11b (Ant.1)	16.00	13.32	0.000	Right Touch	FCC #2	0.019	1	90.4	0.007	1.854	1.106	0.014	
2 462.0	11	802.11b (Ant.1)	16.00	13.32	0.000	Left Tilt	FCC #2	0.007	1	90.4	0.004	1.854	1.106	0.008	
2 462.0	11	802.11b (Ant.1)	16.00	13.32	0.000	Right Tilt	FCC #2	0.001	1	90.4	0.008	1.854	1.106	0.016	
2 462.0	11	802.11b (Ant.2)	16.00	13.70	0.030	Left Touch	FCC #2	0.041	1	90.8	0.030	1.698	1.101	0.056	
2 462.0	11	802.11b (Ant.2)	16.00	13.70	0.030	Right Touch	FCC #2	0.092	1	90.8	0.080	1.698	1.101	0.150	A13
2 462.0	11	802.11b (Ant.2)	16.00	13.70	0.190	Left Tilt	FCC #2	0.042	1	90.8	0.031	1.698	1.101	0.058	
2 462.0	11	802.11b (Ant.2)	16.00	13.70	-0.100	Right Tilt	FCC #2	0.039	1	90.8	0.038	1.698	1.101	0.071	
2 462.0	11	802.11b (MIMO)	16.00	15.99	-0.070	Left Touch	FCC #2	0.060	1	90.8	0.038	1.854	1.101	0.078	
2 462.0	11	802.11b (MIMO)	16.00	15.99	-0.010	Right Touch	FCC #2	0.094	1	90.8	0.086	1.854	1.101	0.176	A14
2 462.0	11	802.11b (MIMO)	16.00	15.99	0.010	Left Tilt	FCC #2	0.043	1	90.8	0.034	1.854	1.101	0.069	
2 462.0	11	802.11b (MIMO)	16.00	15.99	-0.140	Right Tilt	FCC #2	0.047	1	90.8	0.036	1.854	1.101	0.074	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									Head 1.6 W/kg (mW/g) averaged over 1 gram						

Adjusted SAR results for OFDM SAR												
FREQUENCY		Mode/ Antenna	Service	Maximum Allowed Power [dBm]	1g Scaled SAR (W/kg)	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm]	Ratio of OFDM to DSSS	1g Adjusted SAR (W/kg)	Determine OFDM SAR
MHz	Ch											
2462.0	11	802.11b (Ant.1)	DSSS	16.00	0.029	2462.0	802.11g	OFDM	15.00	0.794	0.023	X
2462.0	11	802.11b (Ant.1)	DSSS	16.00	0.029	2462.0	802.11n	OFDM	15.00	0.794	0.023	X
2462.0	11	802.11b (Ant.2)	DSSS	16.00	0.150	2462.0	802.11g	OFDM	15.00	0.794	0.119	X
2462.0	11	802.11b (Ant.2)	DSSS	16.00	0.150	2462.0	802.11n	OFDM	15.00	0.794	0.119	X
2462.0	11	802.11b (MIMO)	DSSS	16.00	0.176	2462.0	802.11g	OFDM	15.00	0.794	0.140	X
2462.0	11	802.11b (MIMO)	DSSS	16.00	0.176	2462.0	802.11n	OFDM	15.00	0.794	0.140	X
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure										Head 1.6 W/kg (mW/g) averaged over 1 gram		

Note: SAR is not required for the following 2.4 GHz OFDM conditions. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Table 11.1.11 UNII Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode (Antenna)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5 290.0	58	802.11ac (Ant.1)	15.00	12.98	0.000	Left Touch	FCC #2	0.062	6	89.6	0.040	1.592	1.116	0.071	A15
5 290.0	58	802.11ac (Ant.1)	15.00	12.98	0.000	Right Touch	FCC #2	0.057	6	89.6	0.035	1.592	1.116	0.062	
5 290.0	58	802.11ac (Ant.1)	15.00	12.98	0.000	Left Tilt	FCC #2	0.038	6	89.6	0.031	1.592	1.116	0.055	
5 290.0	58	802.11ac (Ant.1)	15.00	12.98	0.000	Right Tilt	FCC #2	0.059	6	89.6	0.033	1.592	1.116	0.059	
5 290.0	58	802.11ac (Ant.2)	15.00	13.58	0.000	Left Touch	FCC #2	0.040	6	89.6	0.017	1.387	1.116	0.026	A16
5 290.0	58	802.11ac (Ant.2)	15.00	13.58	0.000	Right Touch	FCC #2	0.013	6	89.6	0.022	1.387	1.116	0.034	
5 290.0	58	802.11ac (Ant.2)	15.00	13.58	0.000	Left Tilt	FCC #2	0.024	6	89.6	0.017	1.387	1.116	0.026	
5 290.0	58	802.11ac (Ant.2)	15.00	13.58	0.000	Right Tilt	FCC #2	0.026	6	89.6	0.018	1.387	1.116	0.028	
5 290.0	58	802.11ac (MIMO)	15.00	14.85	0.000	Left Touch	FCC #2	0.080	6	89.6	0.036	1.592	1.116	0.064	A17
5 290.0	58	802.11ac (MIMO)	15.00	14.85	0.090	Right Touch	FCC #2	0.083	6	89.6	0.045	1.592	1.116	0.080	
5 290.0	58	802.11ac (MIMO)	15.00	14.85	0.000	Left Tilt	FCC #2	0.054	6	89.6	0.023	1.592	1.116	0.041	
5 290.0	58	802.11ac (MIMO)	15.00	14.85	0.000	Right Tilt	FCC #2	0.050	6	89.6	0.040	1.592	1.116	0.071	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									Head 1.6 W/kg (mW/g) averaged over 1 gram						

Adjusted SAR results for UNII-1 and UNII-2A SAR													
FREQUENCY		Mode/ Antenna	Service	Maximum Allowed Power [dBm]	1g Scaled SAR (W/kg)	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm]	Adjusted Factor	1g Adjusted SAR (W/kg)	SAR for the band with lower maximum output power	
MHz	Ch												
5 290.0	58	802.11ac (Ant.1)	OFDM	15.00	0.071	5 210.0	802.11ac	OFDM	15.00	1.000	0.071		X
5 290.0	58	802.11ac (Ant.2)	OFDM	15.00	0.034	5 210.0	802.11ac	OFDM	15.00	1.000	0.034		X
5 290.0	58	802.11ac (MIMO)	OFDM	15.00	0.080	5 210.0	802.11ac	OFDM	15.00	1.000	0.080		X
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure						Head 1.6 W/kg (mW/g) averaged over 1 gram							

Note: U-NII-1 and U-NII-2A Bands: When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration.

Table 11.1.12 UNII Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode (Antenna)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5 530.0	106	802.11ac (Ant.1)	15.00	12.90	0.110	Left Touch	FCC #2	0.041	6	89.6	0.023	1.622	1.116	0.042	A18
5 530.0	106	802.11ac (Ant.1)	15.00	12.90	-0.060	Right Touch	FCC #2	0.039	6	89.6	0.022	1.622	1.116	0.040	
5 530.0	106	802.11ac (Ant.1)	15.00	12.90	-0.020	Left Tilt	FCC #2	0.029	6	89.6	0.022	1.622	1.116	0.040	
5 530.0	106	802.11ac (Ant.1)	15.00	12.90	0.002	Right Tilt	FCC #2	0.040	6	89.6	0.021	1.622	1.116	0.038	
5 530.0	106	802.11ac (Ant.2)	15.00	13.29	0.000	Left Touch	FCC #2	0.044	6	89.6	0.019	1.483	1.116	0.031	A19
5 530.0	106	802.11ac (Ant.2)	15.00	13.29	0.000	Right Touch	FCC #2	0.014	6	89.6	0.025	1.483	1.116	0.041	
5 530.0	106	802.11ac (Ant.2)	15.00	13.29	0.000	Left Tilt	FCC #2	0.026	6	89.6	0.019	1.483	1.116	0.031	
5 530.0	106	802.11ac (Ant.2)	15.00	13.29	0.000	Right Tilt	FCC #2	0.028	6	89.6	0.021	1.483	1.116	0.035	
5 530.0	106	802.11ac (MIMO)	15.00	14.94	0.000	Left Touch	FCC #2	0.087	6	89.6	0.040	1.622	1.116	0.072	A20
5 530.0	106	802.11ac (MIMO)	15.00	14.94	0.000	Right Touch	FCC #2	0.091	6	89.6	0.051	1.622	1.116	0.092	
5 530.0	106	802.11ac (MIMO)	15.00	14.94	0.000	Left Tilt	FCC #2	0.059	6	89.6	0.026	1.622	1.116	0.047	
5 530.0	106	802.11ac (MIMO)	15.00	14.94	0.000	Right Tilt	FCC #2	0.055	6	89.6	0.045	1.622	1.116	0.081	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									Head 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11.1.13 Bluetooth Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Rate [Mbps]	Duty Cycle (%)	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
2 441.0	39	Bluetooth	15.80	13.10	0.000	Left Touch	FCC #2	1	76.8	0.007	1.862	1.302	0.018	A21
2 441.0	39	Bluetooth	15.80	13.10	0.000	Right Touch	FCC #2	1	76.8	0.003	1.862	1.302	0.007	
2 441.0	39	Bluetooth	15.80	13.10	0.000	Left Tilt	FCC #2	1	76.8	0.003	1.862	1.302	0.007	
2 441.0	39	Bluetooth	15.80	13.10	0.000	Right Tilt	FCC #2	1	76.8	0.001	1.862	1.302	0.002	
ANSI / IEEE C95.1-1992- SAFETY LIMIT											Head			
Spatial Peak											1.6 W/kg (mW/g)			
Uncontrolled Exposure/General Population Exposure											averaged over 1 gram			

11.2 Standalone Body-Worn SAR Worn SAR Results

Table 11.2.1 GSM/PCS/GPRS/WCDMA Body-Worn SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Spacing [Side]	Device Serial Number	# of Time Slots	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
836.6	190	GSM850	GSM	34.00	33.14	0.040	10 mm [Front]	FCC #1	1	1:8.3	0.230	1.219	0.280	A22
836.6	190	GSM850	GSM	34.00	33.14	0.060	10 mm [Rear]	FCC #1	1	1:8.3	0.283	1.219	0.345	
836.6	190	GSM850	GPRS	28.00	27.13	0.060	10 mm [Front]	FCC #1	4	1:2.075	0.236	1.222	0.288	
836.6	190	GSM850	GPRS	28.00	27.13	0.130	10 mm [Rear]	FCC #1	4	1:2.075	0.293	1.222	0.358	
1880.0	661	PCS1900	PCS	31.00	30.23	0.060	10 mm [Front]	FCC #1	1	1:8.3	0.183	1.194	0.219	A24
1880.0	661	PCS1900	PCS	31.00	30.23	0.000	10 mm [Rear]	FCC #1	1	1:8.3	0.264	1.194	0.315	
1880.0	661	PCS1900	GPRS	25.00	24.33	0.040	10 mm [Front]	FCC #1	4	1:2.075	0.216	1.167	0.252	
1880.0	661	PCS1900	GPRS	25.00	24.33	0.020	10 mm [Rear]	FCC #1	4	1:2.075	0.291	1.167	0.340	
836.6	4183	WCDMA 850	RMC	24.50	23.53	0.000	10 mm [Front]	FCC #1	N/A	1:1	0.236	1.250	0.295	A26
836.6	4183	WCDMA 850	RMC	24.50	23.53	0.020	10 mm [Rear]	FCC #1	N/A	1:1	0.309	1.250	0.386	
1732.4	1412	WCDMA 1700	RMC	24.50	23.89	-0.060	10 mm [Front]	FCC #1	N/A	1:1	0.294	1.151	0.338	
1732.4	1412	WCDMA 1700	RMC	24.50	23.89	0.100	10 mm [Rear]	FCC #1	N/A	1:1	0.345	1.151	0.397	
1880.0	9400	WCDMA 1900	RMC	24.50	23.91	0.080	10 mm [Front]	FCC #1	N/A	1:1	0.324	1.146	0.371	A27
1880.0	9400	WCDMA 1900	RMC	24.50	23.91	-0.020	10 mm [Rear]	FCC #1	N/A	1:1	0.646	1.146	0.740	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11.2.2 LTE B12, B4 Body-Worn SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
707.5	23095	LTE B12	10	24.50	23.35	0.070	0	10 mm [Front]	FCC #1	QPSK	1	25	1:1	0.117	1.303	0.152	A29
707.5	23095	LTE B12	10	23.50	22.33	0.070	1	10 mm [Front]	FCC #1	QPSK	25	12	1:1	0.098	1.309	0.128	
707.5	23095	LTE B12	10	24.50	23.35	0.030	0	10 mm [Rear]	FCC #1	QPSK	1	25	1:1	0.130	1.303	0.169	
707.5	23095	LTE B12	10	23.50	22.33	0.030	1	10 mm [Rear]	FCC #1	QPSK	25	12	1:1	0.105	1.309	0.137	
1732.5	20175	LTE B4	20	24.50	24.05	0.060	0	10 mm [Front]	FCC #1	QPSK	1	50	1:1	0.245	1.109	0.272	A30
1732.5	20175	LTE B4	20	23.50	23.11	0.090	1	10 mm [Front]	FCC #1	QPSK	50	25	1:1	0.212	1.094	0.232	
1732.5	20175	LTE B4	20	24.50	24.05	-0.010	0	10 mm [Rear]	FCC #1	QPSK	1	50	1:1	0.472	1.109	0.523	
1732.5	20175	LTE B4	20	23.50	23.11	-0.040	1	10 mm [Rear]	FCC #1	QPSK	50	25	1:1	0.410	1.094	0.449	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									Body 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11.2.3 LTE B2, B41 Body-Worn SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
1 880.0	18900	LTE B2	20	24.50	23.55	0.010	0	10 mm [Front]	FCC #1	QPSK	1	50	1:1	0.317	1.245	0.395	A31
1 880.0	18900	LTE B2	20	23.50	22.60	-0.020	1	10 mm [Front]	FCC #1	QPSK	50	25	1:1	0.252	1.230	0.310	
1 880.0	18900	LTE B2	20	24.50	23.55	-0.050	0	10 mm [Rear]	FCC #1	QPSK	1	50	1:1	0.416	1.245	0.518	
1 880.0	18900	LTE B2	20	23.50	22.60	-0.020	1	10 mm [Rear]	FCC #1	QPSK	50	25	1:1	0.344	1.230	0.423	
2 593.0	40620	LTE B41	20	24.50	23.70	0.010	0	10 mm [Front]	FCC #1	QPSK	1	50	1:1.58	0.334	1.202	0.401	A32
2 593.0	40620	LTE B41	20	23.50	22.79	-0.060	1	10 mm [Front]	FCC #1	QPSK	50	25	1:1.58	0.258	1.178	0.304	
2 593.0	40620	LTE B41	20	24.50	23.70	-0.000	0	10 mm [Rear]	FCC #1	QPSK	1	50	1:1.58	0.171	1.202	0.206	
2 593.0	40620	LTE B41	20	23.50	22.79	-0.030	1	10 mm [Rear]	FCC #1	QPSK	50	25	1:1.58	0.130	1.178	0.153	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									Body 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11.2.4 DTS Body-Worn SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	SAR (W/kg)	Plots #	
MHz	Ch															
2 462.0	11	802.11b (Ant.1)	16.00	13.32	0.000	10 mm [Front]	FCC #2	0.014	1	90.4	0.012	1.854	1.106	0.025	A33	
2 462.0	11	802.11b (Ant.1)	16.00	13.32	0.060	10 mm [Rear]	FCC #2	0.053	1	90.4	0.049	1.854	1.106	0.100		
2 462.0	11	802.11b (Ant.2)	16.00	13.70	0.090	10 mm [Front]	FCC #2	0.019	1	90.8	0.013	1.698	1.101	0.024		
2 462.0	11	802.11b (Ant.2)	16.00	13.70	0.030	10 mm [Rear]	FCC #2	0.094	1	90.8	0.091	1.698	1.101	0.170		
2 462.0	11	802.11b (MIMO)	16.00	15.99	0.080	10 mm [Front]	FCC #2	0.019	1	90.8	0.014	1.854	1.101	0.029	A35	
2 462.0	11	802.11b (MIMO)	16.00	15.99	0.080	10 mm [Rear]	FCC #2	0.098	1	90.8	0.103	1.854	1.101	0.210		
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									Body 1.6 W/kg (mW/g) averaged over 1 gram							

Adjusted SAR results for OFDM SAR												
FREQUENCY		Mode/ Antenna	Service	Maximum Allowed Power [dBm]	1g Scaled SAR (W/kg)	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm]	Ratio of OFDM to DSSS	1g Adjusted SAR (W/kg)	Determine OFDM SAR
MHz	Ch											
2462.0	11	802.11b (Ant.1)	DSSS	16.00	0.100	2462.0	802.11g	OFDM	15.00	0.794	0.079	X
2462.0	11	802.11b (Ant.1)	DSSS	16.00	0.100	2462.0	802.11n	OFDM	15.00	0.794	0.079	X
2462.0	11	802.11b (Ant.2)	DSSS	16.00	0.170	2462.0	802.11g	OFDM	15.00	0.794	0.135	X
2462.0	11	802.11b (Ant.2)	DSSS	16.00	0.170	2462.0	802.11n	OFDM	15.00	0.794	0.135	X
2462.0	11	802.11b (MIMO)	DSSS	16.00	0.210	2462.0	802.11g	OFDM	15.00	0.794	0.167	X
2462.0	11	802.11b (MIMO)	DSSS	16.00	0.210	2462.0	802.11n	OFDM	15.00	0.794	0.167	X
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									Body 1.6 W/kg (mW/g) averaged over 1 gram			

Note: SAR is not required for the following 2.4 GHz OFDM conditions. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Table 11.2.5 UNII Body-Worn SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5 290.0	58	802.11ac (Ant.1)	15.00	12.98	0.110	10 mm [Front]	FCC #2	0.026	6	89.6	0.021	1.592	1.116	0.037	A36
5 290.0	58	802.11ac (Ant.1)	15.00	12.98	0.160	10 mm [Rear]	FCC #2	0.037	6	89.6	0.029	1.592	1.116	0.052	
5 290.0	58	802.11ac (Ant.2)	15.00	13.58	0.170	10 mm [Front]	FCC #2	0.038	6	89.6	0.040	1.387	1.116	0.062	
5 290.0	58	802.11ac (Ant.2)	15.00	13.58	-0.020	10 mm [Rear]	FCC #2	0.119	6	89.6	0.123	1.387	1.116	0.190	A37
5 290.0	58	802.11ac (MIMO)	15.00	14.85	-0.020	10 mm [Front]	FCC #2	0.038	6	89.6	0.045	1.592	1.116	0.080	A38
5 290.0	58	802.11ac (MIMO)	15.00	14.85	-0.150	10 mm [Rear]	FCC #2	0.168	6	89.6	0.156	1.592	1.116	0.277	
ANSI / IEEE C95.1-2005- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Body 1.6 W/kg (mW/g) averaged over 1 gram							

Adjusted SAR results for UNII-1 and UNII-2A SAR												
FREQUENCY		Mode/ Antenna	Service	Maximum Allowed Power [dBm]	1g Scaled SAR [W/kg]	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm]	Adjusted Factor	1g Adjusted SAR [W/kg]	SAR for the band with lower maximum output power
MHz	Ch											
5 290.0	58	802.11ac (Ant.1)	OFDM	15.00	0.052	5 210.0	802.11ac	OFDM	15.00	1.000	0.052	X
5 290.0	58	802.11ac (Ant.2)	OFDM	15.00	0.190	5 210.0	802.11ac	OFDM	15.00	1.000	0.190	X
5 290.0	58	802.11ac (MIMO)	OFDM	15.00	0.277	5 210.0	802.11ac	OFDM	15.00	1.000	0.277	X
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure						Body 1.6 W/kg (mW/g) averaged over 1 gram						

Note: U-NII-1 and U-NII-2A Bands: When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration.

Table 11.2.6 UNII Body-Worn SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5 530.0	106	802.11ac (Ant.1)	15.00	12.90	0.130	10 mm [Front]	FCC #2	0.028	6	89.6	0.024	1.622	1.116	0.043	A39
5 530.0	106	802.11ac (Ant.1)	15.00	12.90	-0.080	10 mm [Rear]	FCC #2	0.040	6	89.6	0.039	1.622	1.116	0.071	
5 530.0	106	802.11ac (Ant.2)	15.00	13.29	0.110	10 mm [Front]	FCC #2	0.041	6	89.6	0.045	1.483	1.116	0.074	
5 530.0	106	802.11ac (Ant.2)	15.00	13.29	0.010	10 mm [Rear]	FCC #2	0.011	6	89.6	0.099	1.483	1.116	0.164	A40
5 530.0	106	802.11ac (MIMO)	15.00	14.94	-0.090	10 mm [Front]	FCC #2	0.063	6	89.6	0.049	1.622	1.116	0.089	A41
5 530.0	106	802.11ac (MIMO)	15.00	14.94	-0.080	10 mm [Rear]	FCC #2	0.132	6	89.6	0.104	1.622	1.116	0.188	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Body 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11.2.7 Bluetooth Body-Worn SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Rate [Mbps]	Duty Cycle (%)	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
2 441.0	39	Bluetooth	15.80	13.10	0.000	10 mm [Front]	FCC #2	1	76.8	0.003	1.862	1.302	0.007	A42
2 441.0	39	Bluetooth	15.80	13.10	-0.120	10 mm [Rear]	FCC #2	1	76.8	0.016	1.862	1.302	0.039	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Body 1.6 W/kg (mW/g) averaged over 1 gram						

11.3 Standalone Hotspot SAR Results

Table 11.3.1 GPRS/WCDMA Hotspot SAR

FREQUENCY		MEASUREMENT RESULTS												
MHz	Ch	Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Spacing [Side]	Device Serial Number	# of Time Slots	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
836.6	190	GSM850	GPRS	28.00	27.13	-0.100	10 mm [Bottom]	FCC #1	4	1.2.075	0.083	1.222	0.101	
836.6	190	GSM850	GPRS	28.00	27.13	0.110	10 mm [Bottom]	FCC #1	4	1.2.075	0.090	1.222	0.110	
836.6	190	GSM850	GPRS	28.00	27.13	-0.090	10 mm [Bottom]	FCC #1	4	1.2.075	0.140	1.222	0.171	
836.6	190	GSM850	GPRS	28.00	27.13	-0.030	10 mm [Bottom]	FCC #1	4	1.2.075	0.134	1.222	0.164	
836.6	190	GSM850	GPRS	28.00	27.13	0.060	10 mm [Front]	FCC #1	4	1.2.075	0.236	1.222	0.288	
836.6	190	GSM850	GPRS	28.00	27.13	0.130	10 mm [Rear]	FCC #1	4	1.2.075	0.293	1.222	0.358	
836.6	190	GSM850	GPRS	28.00	27.13	0.060	10 mm [Right]	FCC #1	4	1.2.075	0.245	1.222	0.299	
836.6	190	GSM850	GPRS	28.00	27.13	-0.090	10 mm [Left]	FCC #1	4	1.2.075	0.391	1.222	0.478	A43
836.6	190	GSM850	GPRS	28.00	27.13	0.070	10 mm [Left]	FCC #1	4	1.2.075	0.351	1.222	0.429	
836.6	190	GSM850	GPRS	28.00	27.13	-0.030	10 mm [Left]	FCC #1	4	1.2.075	0.388	1.222	0.474	
1 880.0	661	PCS1900	GPRS	25.00	24.33	-0.060	10 mm [Bottom]	FCC #1	4	1.2.075	0.383	1.167	0.447	
1 880.0	661	PCS1900	GPRS	25.00	24.33	0.040	10 mm [Bottom]	FCC #1	4	1.2.075	0.425	1.167	0.496	
1 880.0	661	PCS1900	GPRS	25.00	24.33	0.000	10 mm [Bottom]	FCC #1	4	1.2.075	0.562	1.167	0.656	A44
1 880.0	661	PCS1900	GPRS	25.00	24.33	0.180	10 mm [Bottom]	FCC #1	4	1.2.075	0.067	1.167	0.078	
1 880.0	661	PCS1900	GPRS	25.00	24.33	0.040	10 mm [Front]	FCC #1	4	1.2.075	0.216	1.167	0.252	
1 880.0	661	PCS1900	GPRS	25.00	24.33	0.020	10 mm [Rear]	FCC #1	4	1.2.075	0.291	1.167	0.340	
1 880.0	661	PCS1900	GPRS	25.00	24.33	0.010	10 mm [Right]	FCC #1	4	1.2.075	0.015	1.167	0.018	
1 880.0	661	PCS1900	GPRS	25.00	24.33	0.090	10 mm [Left]	FCC #1	4	1.2.075	0.089	1.167	0.104	
1 880.0	661	PCS1900	GPRS	25.00	24.33	0.130	10 mm [Left]	FCC #1	4	1.2.075	0.069	1.167	0.081	
1 880.0	661	PCS1900	GPRS	25.00	24.33	0.180	10 mm [Left]	FCC #1	4	1.2.075	0.077	1.167	0.090	
836.6	4183	WCDMA 850	RMC	24.50	23.53	-0.080	10 mm [Bottom]	FCC #1	N/A	1:1	0.083	1.250	0.104	
836.6	4183	WCDMA 850	RMC	24.50	23.53	0.070	10 mm [Bottom]	FCC #1	N/A	1:1	0.111	1.250	0.139	
836.6	4183	WCDMA 850	RMC	24.50	23.53	-0.010	10 mm [Bottom]	FCC #1	N/A	1:1	0.222	1.250	0.278	
836.6	4183	WCDMA 850	RMC	24.50	23.53	0.080	10 mm [Bottom]	FCC #1	N/A	1:1	0.215	1.250	0.269	
836.6	4183	WCDMA 850	RMC	24.50	23.53	0.000	10 mm [Front]	FCC #1	N/A	1:1	0.236	1.250	0.295	
836.6	4183	WCDMA 850	RMC	24.50	23.53	0.020	10 mm [Rear]	FCC #1	N/A	1:1	0.309	1.250	0.386	
836.6	4183	WCDMA 850	RMC	24.50	23.53	0.010	10 mm [Right]	FCC #1	N/A	1:1	0.195	1.250	0.244	
836.6	4183	WCDMA 850	RMC	24.50	23.53	-0.010	10 mm [Left]	FCC #1	N/A	1:1	0.331	1.250	0.414	A45
836.6	4183	WCDMA 850	RMC	24.50	23.53	-0.010	10 mm [Left]	FCC #1	N/A	1:1	0.319	1.250	0.399	
836.6	4183	WCDMA 850	RMC	24.50	23.53	0.020	10 mm [Left]	FCC #1	N/A	1:1	0.325	1.250	0.406	
1 732.4	1412	WCDMA 1700	RMC	24.50	23.89	-0.060	10 mm [Bottom]	FCC #1	N/A	1:1	0.539	1.151	0.620	
1 732.4	1412	WCDMA 1700	RMC	24.50	23.89	-0.050	10 mm [Bottom]	FCC #1	N/A	1:1	0.635	1.151	0.731	
1 732.4	1412	WCDMA 1700	RMC	24.50	23.89	-0.180	10 mm [Bottom]	FCC #1	N/A	1:1	0.656	1.151	0.755	A46
1 732.4	1412	WCDMA 1700	RMC	24.50	23.89	0.120	10 mm [Bottom]	FCC #1	N/A	1:1	0.043	1.151	0.049	
1 732.4	1412	WCDMA 1700	RMC	24.50	23.89	-0.060	10 mm [Front]	FCC #1	N/A	1:1	0.294	1.151	0.338	
1 732.4	1412	WCDMA 1700	RMC	24.50	23.89	0.100	10 mm [Rear]	FCC #1	N/A	1:1	0.345	1.151	0.397	
1 732.4	1412	WCDMA 1700	RMC	24.50	23.89	-0.010	10 mm [Right]	FCC #1	N/A	1:1	0.013	1.151	0.015	
1 732.4	1412	WCDMA 1700	RMC	24.50	23.89	-0.040	10 mm [Left]	FCC #1	N/A	1:1	0.064	1.151	0.074	
1 732.4	1412	WCDMA 1700	RMC	24.50	23.89	0.090	10 mm [Left]	FCC #1	N/A	1:1	0.053	1.151	0.061	
1 732.4	1412	WCDMA 1700	RMC	24.50	23.89	0.170	10 mm [Left]	FCC #1	N/A	1:1	0.061	1.151	0.070	
1 880.0	9400	WCDMA 1900	RMC	24.50	23.91	-0.140	10 mm [Bottom]	FCC #1	N/A	1:1	0.628	1.146	0.717	
1 852.4	9262	WCDMA 1900	RMC	24.50	23.94	-0.140	10 mm [Bottom]	FCC #1	N/A	1:1	0.734	1.138	0.835	
1 880.0	9400	WCDMA 1900	RMC	24.50	23.91	0.000	10 mm [Bottom]	FCC #1	N/A	1:1	0.767	1.146	0.879	
1 907.6	9538	WCDMA 1900	RMC	24.50	23.73	0.170	10 mm [Bottom]	FCC #1	N/A	1:1	0.530	1.194	0.633	
1 852.4	9262	WCDMA 1900	RMC	24.50	23.94	0.150	10 mm [Bottom]	FCC #1	N/A	1:1	0.837	1.138	0.953	
1 880.0	9400	WCDMA 1900	RMC	24.50	23.91	0.090	10 mm [Bottom]	FCC #1	N/A	1:1	0.874	1.146	1.002	A47
1 907.6	9538	WCDMA 1900	RMC	24.50	23.73	-0.140	10 mm [Bottom]	FCC #1	N/A	1:1	0.731	1.194	0.873	
1 880.0	9400	WCDMA 1900	RMC	24.50	23.91	0.030	10 mm [Bottom]	FCC #1	N/A	1:1	0.164	1.146	0.188	
1 880.0	9400	WCDMA 1900	RMC	24.50	23.91	0.080	10 mm [Front]	FCC #1	N/A	1:1	0.324	1.146	0.371	
1 880.0	9400	WCDMA 1900	RMC	24.50	23.91	-0.020	10 mm [Rear]	FCC #1	N/A	1:1	0.646	1.146	0.740	
1 880.0	9400	WCDMA 1900	RMC	24.50	23.91	0.020	10 mm [Right]	FCC #1	N/A	1:1	0.043	1.146	0.049	
1 880.0	9400	WCDMA 1900	RMC	24.50	23.91	-0.110	10 mm [Left]	FCC #1	N/A	1:1	0.221	1.146	0.253	
1 880.0	9400	WCDMA 1900	RMC	24.50	23.91	-0.030	10 mm [Left]	FCC #1	N/A	1:1	0.197	1.146	0.226	
1 880.0	9400	WCDMA 1900	RMC	24.50	23.91	0.070	10 mm [Left]	FCC #1	N/A	1:1	0.218	1.146	0.250	
1 880.0	9400	WCDMA 1900	RMC	24.50	23.91	0.090	10 mm [Bottom]	FCC #1	N/A	1:1	0.874	1.146	1.002	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Body 1.6 W/kg (mW/g) averaged over 1 gram						

Note(s):

1. Purple entries represent Bottom #1 measurements. Please refer to the test photo.
2. Gray entries represent Bottom #2 measurements. Please refer to the test photo.
3. Blue entries represent Bottom Left Edge Curve measurements. Please refer to the test photo.
4. Green entries represent Left #1 measurements. Please refer to the test photo.
5. Orange entries represent Left #2 measurements. Please refer to the test photo.
6. Yellow entries represent variability measurements.

Table 11.3.2 LTE B12, B4, B2, B41 Hotspot SAR

MEASUREMENT RESULTS

MEASUREMENT RESULTS																	
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
707.5	23095	LTE B12	10	24.50	23.35	-0.120	0	10 mm [Bottom]	FCC #1	QPSK	1	25	1:1	0.084	1.303	0.109	
707.5	23095	LTE B12	10	23.50	22.33	-0.170	1	10 mm [Bottom]	FCC #1	QPSK	25	12	1:1	0.063	1.309	0.082	
707.5	23095	LTE B12	10	24.50	23.35	-0.020	0	10 mm [Bottom]	FCC #1	QPSK	1	25	1:1	0.042	1.303	0.055	
707.5	23095	LTE B12	10	23.50	22.33	-0.050	1	10 mm [Bottom]	FCC #1	QPSK	25	12	1:1	0.034	1.309	0.045	
707.5	23095	LTE B12	10	24.50	23.35	-0.030	0	10 mm [Bottom]	FCC #1	QPSK	1	25	1:1	0.117	1.303	0.152	
707.5	23095	LTE B12	10	23.50	22.33	-0.020	1	10 mm [Bottom]	FCC #1	QPSK	25	12	1:1	0.098	1.309	0.128	
707.5	23095	LTE B12	10	24.50	23.35	-0.150	0	10 mm [Bottom]	FCC #1	QPSK	1	25	1:1	0.103	1.303	0.134	
707.5	23095	LTE B12	10	23.50	22.33	0.120	1	10 mm [Bottom]	FCC #1	QPSK	25	12	1:1	0.087	1.309	0.114	
707.5	23095	LTE B12	10	24.50	23.35	0.070	0	10 mm [Front]	FCC #1	QPSK	1	25	1:1	0.117	1.303	0.152	
707.5	23095	LTE B12	10	23.50	22.33	0.070	1	10 mm [Front]	FCC #1	QPSK	25	12	1:1	0.098	1.309	0.128	
707.5	23095	LTE B12	10	24.50	23.35	0.030	0	10 mm [Rear]	FCC #1	QPSK	1	25	1:1	0.130	1.303	0.169	A29
707.5	23095	LTE B12	10	23.50	22.33	0.030	1	10 mm [Rear]	FCC #1	QPSK	25	12	1:1	0.105	1.309	0.137	
707.5	23095	LTE B12	10	24.50	23.35	0.110	0	10 mm [Right]	FCC #1	QPSK	1	25	1:1	0.060	1.303	0.078	
707.5	23095	LTE B12	10	23.50	22.33	-0.050	1	10 mm [Right]	FCC #1	QPSK	25	12	1:1	0.046	1.309	0.060	
707.5	23095	LTE B12	10	24.50	23.35	0.010	0	10 mm [Left]	FCC #1	QPSK	1	25	1:1	0.104	1.303	0.136	
707.5	23095	LTE B12	10	23.50	22.33	-0.040	1	10 mm [Left]	FCC #1	QPSK	25	12	1:1	0.081	1.309	0.106	
707.5	23095	LTE B12	10	24.50	23.35	0.130	0	10 mm [Left]	FCC #1	QPSK	1	25	1:1	0.100	1.303	0.130	
707.5	23095	LTE B12	10	23.50	22.33	0.190	1	10 mm [Left]	FCC #1	QPSK	25	12	1:1	0.073	1.309	0.096	
707.5	23095	LTE B12	10	24.50	23.35	0.100	0	10 mm [Left]	FCC #1	QPSK	1	25	1:1	0.101	1.303	0.132	
707.5	23095	LTE B12	10	23.50	22.33	-0.130	1	10 mm [Left]	FCC #1	QPSK	25	12	1:1	0.076	1.309	0.099	
1732.5	20175	LTE B4	20	24.50	24.05	-0.030	0	10 mm [Bottom]	FCC #1	QPSK	1	50	1:1	0.645	1.109	0.715	
1732.5	20175	LTE B4	20	23.50	23.11	-0.190	1	10 mm [Bottom]	FCC #1	QPSK	50	25	1:1	0.550	1.094	0.602	
1732.5	20175	LTE B4	20	24.50	24.05	-0.190	0	10 mm [Bottom]	FCC #1	QPSK	1	50	1:1	0.838	1.109	0.929	
1732.5	20175	LTE B4	20	23.50	23.11	-0.190	1	10 mm [Bottom]	FCC #1	QPSK	50	25	1:1	0.724	1.094	0.792	
1732.5	20175	LTE B4	20	23.50	23.01	-0.150	1	10 mm [Bottom]	FCC #1	QPSK	100	0	1:1	0.710	1.119	0.794	
1732.5	20175	LTE B4	20	24.50	24.05	-0.050	0	10 mm [Bottom]	FCC #1	QPSK	1	50	1:1	0.966	1.109	1.071	A48
1732.5	20175	LTE B4	20	23.50	23.11	-0.070	1	10 mm [Bottom]	FCC #1	QPSK	50	25	1:1	0.825	1.094	0.903	
1732.5	20175	LTE B4	20	23.50	23.01	-0.080	1	10 mm [Bottom]	FCC #1	QPSK	100	0	1:1	0.810	1.119	0.906	
1732.5	20175	LTE B4	20	24.50	24.05	-0.010	0	10 mm [Bottom]	FCC #1	QPSK	1	50	1:1	0.061	1.109	0.068	
1732.5	20175	LTE B4	20	23.50	23.11	0.060	1	10 mm [Bottom]	FCC #1	QPSK	50	25	1:1	0.040	1.094	0.044	
1732.5	20175	LTE B4	20	24.50	24.05	0.060	0	10 mm [Front]	FCC #1	QPSK	1	50	1:1	0.245	1.109	0.272	
1732.5	20175	LTE B4	20	23.50	23.11	0.090	1	10 mm [Front]	FCC #1	QPSK	50	25	1:1	0.212	1.094	0.232	
1732.5	20175	LTE B4	20	24.50	24.05	-0.010	0	10 mm [Rear]	FCC #1	QPSK	1	50	1:1	0.472	1.109	0.523	
1732.5	20175	LTE B4	20	23.50	23.11	-0.040	1	10 mm [Rear]	FCC #1	QPSK	50	25	1:1	0.410	1.094	0.449	
1732.5	20175	LTE B4	20	24.50	24.05	-0.070	0	10 mm [Right]	FCC #1	QPSK	1	50	1:1	0.009	1.109	0.010	
1732.5	20175	LTE B4	20	23.50	23.11	-0.120	1	10 mm [Right]	FCC #1	QPSK	50	25	1:1	0.008	1.094	0.009	
1732.5	20175	LTE B4	20	24.50	24.05	-0.040	0	10 mm [Left]	FCC #1	QPSK	1	50	1:1	0.111	1.109	0.123	
1732.5	20175	LTE B4	20	23.50	23.11	-0.020	1	10 mm [Left]	FCC #1	QPSK	50	25	1:1	0.098	1.094	0.107	
1732.5	20175	LTE B4	20	24.50	24.05	0.120	0	10 mm [Left]	FCC #1	QPSK	1	50	1:1	0.083	1.109	0.092	
1732.5	20175	LTE B4	20	23.50	23.11	0.190	1	10 mm [Left]	FCC #1	QPSK	50	25	1:1	0.075	1.094	0.082	
1732.5	20175	LTE B4	20	24.50	24.05	-0.190	0	10 mm [Left]	FCC #1	QPSK	1	50	1:1	0.097	1.109	0.108	
1732.5	20175	LTE B4	20	23.50	23.11	0.130	1	10 mm [Left]	FCC #1	QPSK	50	25	1:1	0.091	1.094	0.100	
1732.5	20175	LTE B4	20	24.50	24.05	-0.130	0	10 mm [Bottom]	FCC #1	QPSK	1	50	1:1	0.963	1.109	1.068	
1860.0	18700	LTE B2	20	24.50	23.53	0.110	0	10 mm [Bottom]	FCC #1	QPSK	1	50	1:1	0.728	1.250	0.910	
1860.0	18700	LTE B2	20	23.50	22.50	0.000	1	10 mm [Bottom]	FCC #1	QPSK	50	25	1:1	0.571	1.259	0.719	
1860.0	18900	LTE B2	20	24.50	23.55	0.110	0	10 mm [Bottom]	FCC #1	QPSK	1	50	1:1	0.549	1.245	0.684	
1860.0	18900	LTE B2	20	23.50	22.60	0.090	1	10 mm [Bottom]	FCC #1	QPSK	50	25	1:1	0.466	1.230	0.573	
1860.0	18900	LTE B2	20	24.50	23.55	0.080	0	10 mm [Bottom]	FCC #1	QPSK	1	50	1:1	0.579	1.245	0.721	
1860.0	18900	LTE B2	20	23.50	22.60	0.150	1	10 mm [Bottom]	FCC #1	QPSK	50	25	1:1	0.562	1.230	0.691	
1860.0	18900	LTE B2	20	24.50	23.55	0.110	0	10 mm [Bottom]	FCC #1	QPSK	1	50	1:1	0.823	1.245	1.025	A49
1860.0	18900	LTE B2	20	23.50	22.60	0.120	1	10 mm [Bottom]	FCC #1	QPSK	50	25	1:1	0.748	1.230	0.920	
1860.0	18900	LTE B2	20	23.50	22.50	0.030	1	10 mm [Bottom]	FCC #1	QPSK	100	0	1:1	0.654	1.259	0.823	
1900.0	19100	LTE B2	20	24.50	23.52	-0.010	0	10 mm [Bottom]	FCC #1	QPSK	1	50	1:1	0.816	1.253	1.022	
1900.0	19100	LTE B2	20	23.50	22.42	0.020	1	10 mm [Bottom]	FCC #1	QPSK	50	25	1:1	0.741	1.282	0.950	
1880.0	18900	LTE B2	20	24.50	23.55	-0.080	0	10 mm [Bottom]	FCC #1	QPSK	1	50	1:1	0.114	1.245	0.142	
1880.0	18900	LTE B2	20	23.50	22.60	-0.130	1	10 mm [Bottom]	FCC #1	QPSK	50	25	1:1	0.098	1.230	0.121	
1880.0	18900	LTE B2	20	24.50	23.55	0.010	0	10 mm [Front]	FCC #1	QPSK	1	50	1:1	0.317	1.245	0.395	
1880.0	18900	LTE B2	20	23.50	22.60	-0.020	1	10 mm [Front]	FCC #1	QPSK	50	25	1:1	0.252	1.230	0.310	
1880.0	18900	LTE B2	20	24.50	23.55	-0.050	0	10 mm [Rear]	FCC #1	QPSK	1	50	1:1	0.416	1.245	0.518	
1880.0	18900	LTE B2	20	23.50	22.60	-0.020	1	10 mm [Rear]	FCC #1	QPSK	50	25	1:1	0.344	1.230	0.423	
1880.0	18900	LTE B2	20	24.50	23.55	0.140	0	10 mm [Right]	FCC #1	QPSK	1	50	1:1	0.023	1.245	0.029	
1880.0	18900	LTE B2	20	23.50	22.60	-0.110	1	10 mm [Right]	FCC #								

Table 11.3.3 DTS Hotspot SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	SAR (W/kg)	Plots #
MHz	Ch														
2 462.0	11	802.11b (Ant.1)	16.00	13.32	-0.090	10 mm [Top]	FCC #2	0.012	1	90.4	0.010	1.854	1.106	0.021	A33
2 462.0	11	802.11b (Ant.1)	16.00	13.32	0.000	10 mm [Front]	FCC #2	0.014	1	90.4	0.012	1.854	1.106	0.025	
2 462.0	11	802.11b (Ant.1)	16.00	13.32	0.060	10 mm [Rear]	FCC #2	0.053	1	90.4	0.049	1.854	1.106	0.160	
2 462.0	11	802.11b (Ant.1)	16.00	13.32	-0.150	10 mm [Right]	FCC #2	0.044	1	90.4	0.040	1.854	1.106	0.082	
2 462.0	11	802.11b (Ant.1)	16.00	13.32	0.000	10 mm [Right]	FCC #2	0.023	1	90.4	0.021	1.854	1.106	0.043	A51
2 462.0	11	802.11b (Ant.1)	16.00	13.32	-0.170	10 mm [Right]	FCC #2	0.039	1	90.4	0.035	1.854	1.106	0.072	
2 462.0	11	802.11b (Ant.2)	16.00	13.70	-0.130	10 mm [Top]	FCC #2	0.012	1	90.8	0.011	1.698	1.101	0.021	
2 462.0	11	802.11b (Ant.2)	16.00	13.70	0.090	10 mm [Front]	FCC #2	0.019	1	90.8	0.013	1.698	1.101	0.024	
2 462.0	11	802.11b (Ant.2)	16.00	13.70	0.030	10 mm [Rear]	FCC #2	0.094	1	90.8	0.091	1.698	1.101	0.170	A52
2 462.0	11	802.11b (Ant.2)	16.00	13.70	-0.060	10 mm [Left]	FCC #2	0.114	1	90.8	0.110	1.698	1.101	0.206	
2 462.0	11	802.11b (Ant.2)	16.00	13.70	0.050	10 mm [Left]	FCC #2	0.066	1	90.8	0.060	1.698	1.101	0.112	
2 462.0	11	802.11b (Ant.2)	16.00	13.70	0.000	10 mm [Left]	FCC #2	0.105	1	90.8	0.099	1.698	1.101	0.185	
2 462.0	11	802.11b (MIMO)	16.00	15.99	0.030	10 mm [Top]	FCC #2	0.020	1	90.8	0.017	1.854	1.101	0.035	
2 462.0	11	802.11b (MIMO)	16.00	15.99	0.080	10 mm [Front]	FCC #2	0.019	1	90.8	0.014	1.854	1.101	0.029	
2 462.0	11	802.11b (MIMO)	16.00	15.99	0.080	10 mm [Rear]	FCC #2	0.098	1	90.8	0.103	1.854	1.101	0.210	
2 462.0	11	802.11b (MIMO)	16.00	15.99	-0.120	10 mm [Right]	FCC #2	0.062	1	90.8	0.058	1.854	1.101	0.118	
2 462.0	11	802.11b (MIMO)	16.00	15.99	0.090	10 mm [Right]	FCC #2	0.025	1	90.8	0.024	1.854	1.101	0.049	A52
2 462.0	11	802.11b (MIMO)	16.00	15.99	-0.170	10 mm [Right]	FCC #2	0.041	1	90.8	0.037	1.854	1.101	0.076	
2 462.0	11	802.11b (MIMO)	16.00	15.99	0.060	10 mm [Left]	FCC #2	0.126	1	90.8	0.116	1.854	1.101	0.237	
2 462.0	11	802.11b (MIMO)	16.00	15.99	0.190	10 mm [Left]	FCC #2	0.071	1	90.8	0.067	1.854	1.101	0.137	
2 412.0	11	802.11b (MIMO)	16.00	15.99	0.180	10 mm [Left]	FCC #2	0.109	1	90.8	0.106	1.854	1.101	0.216	
ANSI / IEEE C95.1-1992- SAFETY LIMIT									Body 1.6 W/kg (mW/g) averaged over 1 gram						
Uncontrolled Exposure/General Population Exposure															

Note(s):

1. Red entries represent Right #1 measurements.Please refer to the test photo.
2. Brown entries represent Right #2 measurements.Please refer to the test photo.
3. Green entries represent Left #1 measurements.Please refer to the test photo.
4. Orange entries represent Left #2 measurements.Please refer to the test photo.

Adjusted SAR results for OFDM SAR												
FREQUENCY		Mode/ Antenna	Service	Maximum Allowed Power [dBm]	1g Scaled SAR (W/kg)	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm]	Ratio of OFDM to DSSS	1g Adjusted SAR (W/kg)	Determine OFDM SAR
MHz	Ch											
2 462.0	11	802.11b (Ant.1)	DSSS	16.00	0.100	2 462.0	802.11g	OFDM	15.00	0.794	0.079	X
2 462.0	11	802.11b (Ant.1)	DSSS	16.00	0.100	2 462.0	802.11n	OFDM	15.00	0.794	0.079	X
2 462.0	11	802.11b (Ant.2)	DSSS	16.00	0.206	2 462.0	802.11g	OFDM	15.00	0.794	0.164	X
2 462.0	11	802.11b (Ant.2)	DSSS	16.00	0.206	2 462.0	802.11n	OFDM	15.00	0.794	0.164	X
2 462.0	11	802.11b (MIMO)	DSSS	16.00	0.237	2 462.0	802.11g	OFDM	15.00	0.794	0.188	X
2 462.0	11	802.11b (MIMO)	DSSS	16.00	0.237	2 462.0	802.11n	OFDM	15.00	0.794	0.188	X
ANSI / IEEE C95.1-1992- SAFETY LIMIT						Body 1.6 W/kg (mW/g) averaged over 1 gram						
Uncontrolled Exposure/General Population Exposure												

Note: SAR is not required for the following 2.4 GHz OFDM conditions. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Table 11.3.4 Bluetooth Hotspot SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Rate [Mbps]	Duty Cycle (%)	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
2 441.0	39	Bluetooth	15.80	13.10	0.000	10 mm [Top]	FCC #2	1	76.8	0.003	1.862	1.302	0.007	A42
2 441.0	39	Bluetooth	15.80	13.10	0.000	10 mm [Front]	FCC #2	1	76.8	0.003	1.862	1.302	0.007	
2 441.0	39	Bluetooth	15.80	13.10	-0.120	10 mm [Rear]	FCC #2	1	76.8	0.016	1.862	1.302	0.039	
2 441.0	39	Bluetooth	15.80	13.10	-0.020	10 mm [Right]	FCC #2	1	76.8	0.010	1.862	1.302	0.024	
2 441.0	39	Bluetooth	15.80	13.10	0.190	10 mm [Right]	FCC #2	1	76.8	0.009	1.862	1.302	0.022	
2 441.0	39	Bluetooth	15.80	13.10	0.010	10 mm [Right]	FCC #2	1	76.8	0.009	1.862	1.302	0.022	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak									Body 1.6 W/kg (mW/g) averaged over 1 gram					
Uncontrolled Exposure/General Population Exposure														

Note(s):

1. Red entries represent Right #1 measurements.Please refer to the test photo.
2. Brown entries represent Right #2 measurements.Please refer to the test photo.

11.4 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements. A standard battery was used for all SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported boy-worn SAR was not > 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were performed.
8. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v02r01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated.
9. SAR measurements were performed using the DASY5 automated system. The procedure for spatial peak SAR evaluation has been implemented according to the IEEE 1528 standard. During a maximum search, global and local maxima searches are automatically performed in 2-D after each area scan measurement. The algorithm will find the global maximum and all local maxima within 2 dB of the global maxima for all SAR distributions. All local maxima within 2 dB of the global maximum were searched and passed for the Zoom Scan measurement.

GSM Notes:

1. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
2. This device supports GSM VOIP in the head and body-worn configurations; therefore GPRS was additionally evaluated for head and body-worn compliance.
3. Justification for reduced test configurations per KDB Publication 941225 D01v03r01 and October2013 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all GPRS slot configurations. The configuration with the highest target frame averaged output power was evaluated for hotspot SAR.
4. 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). Since the maximum output power variation across the required test channels is not > $\frac{1}{2}$ dB, the middle channel was used for testing.

WCDMA (UMTS) Notes:

1. WCDMA (UMTS) mode in was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. AMR and HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.
2. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r05. The general test procedures used for testing can be found in Section 8.4.4.
2. According to FCC KDB 941225 D05v02r05, when the reported SAR is ≤ 0.8 W/kg, testing of the 100% RB allocation and required test channels is not required.
Otherwise, SAR is required for the remaining required test channels using the 1 RB, 50% RB and 100% RB allocation with highest output power for that channel.
Only one channel, and as reported SAR values for 1 RB allocation and 50% RB allocation were less than 1.45 W/kg only the highest power RB offset for each allocation was required.
3. 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.
4. A-MPR was disabled for all SAR tests by setting NS=1 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).
5. 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.
6. 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 for 1g evaluations, testing at the other channels was required for such test configurations.
7. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r05. Testing was performed using UL-DL configuration 0 with 6 UL sub frames and 2S sub frames using extended cyclic prefix only and special sub frame configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Sec. 4, the duty factor using extended cyclic prefix is 0.633 (cf=1.58).
8. SAR test reduction is applied using the following criteria:
Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is > 0.8 W/kg, testing for other channels is performed at the highest output power level for 1 RB, and 50% RB configuration for that channel. Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High channel when the highest reported SAR for 1 RB and 50% RB are > 0.8 W/kg, Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg. Testing for 16QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/kg and its output power is not more than 0.5 dB higher than that a QPSK. Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

WLAN Notes:

1. The initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS 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 when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output and the adjust SAR is ≤ 1.2 W/kg.
3. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg.
4. When the maximum reported 1g averaged SAR ≤ 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.
5. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor to determine compliance.
6. Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D01v06 by making a SAR measurement with both antennas transmitting simultaneously.

Bluetooth Notes:

1. Bluetooth SAR was measured with the device connected to a call with hopping disabled with DH5 operation and Tx test mode type. Per October 2016 TCB Workshop Notes, the reported SAR was scaled to the 100% transmission duty factor to determine compliance. Refer to section 9.5 for the time-domain plot and calculation for the duty factor of the device.
2. Head and hotspot Bluetooth SAR were evaluated for BT tethering applications.

12. FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

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

12.2 Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 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 sum 1-g SAR for all the simultaneous transmitting antennas in a specific physical test configuration is ≤ 1.6 W/kg. The different test position in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1-g or 10-g SAR.

12.3 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D01v06, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds.

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

Table 12.3.1 Simultaneous SAR Cases

No.	Capable Transmit Configuration	Head SAR	Body-Worn SAR	Hotspot SAR	Phablet SAR	Note
1	GSM Voice + Wi-Fi 2.4 GHz	Yes	Yes	N/A	Yes	
2	GSM Voice + Wi-Fi 5 GHz	Yes	Yes	N/A	Yes	
3	GSM Voice + Bluetooth 2.4 GHz	Yes^	Yes	N/A	Yes	^Bluetooth Tethering is considered.
4	GSM Voice + Wi-Fi 2.4 GHz MIMO	Yes	Yes	N/A	Yes	
5	GSM Voice + Wi-Fi 5 GHz MIMO	Yes	Yes	N/A	Yes	
6	GSM Voice + Bluetooth 2.4 GHz + Wi-Fi 5 GHz	Yes^	Yes	N/A	Yes	^Bluetooth Tethering is considered.
7	GSM Voice + Bluetooth 2.4 GHz + Wi-Fi 5 GHz MIMO	Yes^	Yes	N/A	Yes	^Bluetooth Tethering is considered.
8	WCDMA + Wi-Fi 2.4 GHz	Yes	Yes	Yes	Yes	
9	WCDMA + Wi-Fi 5 GHz	Yes	Yes	Yes	Yes	
10	WCDMA + Bluetooth 2.4 GHz	Yes^	Yes	Yes	Yes	^Bluetooth Tethering is considered.
11	WCDMA + Wi-Fi 2.4 GHz MIMO	Yes	Yes	Yes	Yes	
12	WCDMA + Wi-Fi 5 GHz MIMO	Yes	Yes	Yes	Yes	
13	WCDMA + Bluetooth 2.4 GHz + Wi-Fi 5 GHz	Yes^	Yes	Yes	Yes	^Bluetooth Tethering is considered.
14	WCDMA + Bluetooth 2.4 GHz + Wi-Fi 5 GHz MIMO	Yes^	Yes	Yes	Yes	^Bluetooth Tethering is considered.
15	LTE + Wi-Fi 2.4 GHz	Yes	Yes	Yes	Yes	
16	LTE + Wi-Fi 5 GHz	Yes	Yes	Yes	Yes	
17	LTE + Bluetooth 2.4 GHz	Yes^	Yes	Yes	Yes	^Bluetooth Tethering is considered.
18	LTE + Wi-Fi 2.4 GHz MIMO	Yes	Yes	Yes	Yes	
19	LTE + Wi-Fi 5 GHz MIMO	Yes	Yes	Yes	Yes	
20	LTE + Bluetooth 2.4 GHz + Wi-Fi 5GHz	Yes^	Yes	Yes	Yes	^Bluetooth Tethering is considered.
21	LTE + Bluetooth 2.4 GHz + Wi-Fi 5GHz MIMO	Yes^	Yes	Yes	Yes	^Bluetooth Tethering is considered.
22	GPRS + Wi-Fi 2.4 GHz	Yes*	Yes*	Yes	Yes	*Pre-installed VOIP applications are considered.
23	GPRS + Wi-Fi 5 GHz	Yes*	Yes*	Yes	Yes	*Pre-installed VOIP applications are considered.
24	GPRS + Bluetooth 2.4 GHz	Yes^	Yes*	Yes	Yes	*Pre-installed VOIP applications are considered. ^Bluetooth Tethering is considered.
25	GPRS + Wi-Fi 2.4 GHz MIMO	Yes*	Yes*	Yes	Yes	*Pre-installed VOIP applications are considered.
26	GPRS + Wi-Fi 5 GHz MIMO	Yes*	Yes*	Yes	Yes	*Pre-installed VOIP applications are considered.
27	GPRS + Bluetooth 2.4 GHz + Wi-Fi 5 GHz	Yes^	Yes*	Yes	Yes	*Pre-installed VOIP applications are considered. ^Bluetooth Tethering is considered.
28	GPRS + Bluetooth 2.4 GHz + Wi-Fi 5 GHz MIMO	Yes^	Yes*	Yes	Yes	*Pre-installed VOIP applications are considered. ^Bluetooth Tethering is considered.
29	Bluetooth 2.4 GHz + Wi-Fi 5 GHz	Yes^	Yes	N/A	Yes	^Bluetooth Tethering is considered.
30	Bluetooth 2.4 GHz + Wi-Fi 5 GHz MIMO	Yes^	Yes	N/A	Yes	^Bluetooth Tethering is considered.

Notes:

- WiFi 2.4GHz is supported Hotspot.
- WiFi 5GHz is not supported Hotspot.
- LTE, WCDMA, GPRS is supported Hotspot.
- VoIP is supported in LTE, WCDMA, GSM.
- GSM, WCDMA and LTE can not transmit simultaneously since they share the same chip.

12.4 Head SAR Simultaneous Transmission Analysis

Table 12.4.1 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.3 GHz W-LAN Ant.1 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.3G W-LAN Ant.1 SAR (W/kg)	1+2	1+3	1+2+3
Head SAR	GSM 850	Left Touch	0.263	0.018	0.071	0.281	0.334	0.352
		Right Touch	0.193	0.007	0.062	0.190	0.245	0.252
		Left Tilt	0.130	0.007	0.055	0.137	0.185	0.192
		Right Tilt	0.130	0.002	0.059	0.132	0.189	0.191
	GPRS 850	Left Touch	0.271	0.018	0.071	0.289	0.342	0.360
		Right Touch	0.193	0.007	0.062	0.200	0.255	0.262
		Left Tilt	0.132	0.007	0.055	0.139	0.187	0.194
		Right Tilt	0.166	0.002	0.059	0.168	0.225	0.227
	GSM 1900	Left Touch	0.128	0.018	0.071	0.146	0.199	0.217
		Right Touch	0.072	0.007	0.062	0.079	0.134	0.141
		Left Tilt	0.081	0.007	0.055	0.088	0.136	0.143
		Right Tilt	0.055	0.002	0.059	0.057	0.114	0.116
	GPRS 1900	Left Touch	0.145	0.018	0.071	0.163	0.216	0.234
		Right Touch	0.076	0.007	0.062	0.083	0.138	0.145
		Left Tilt	0.096	0.007	0.055	0.103	0.151	0.158
		Right Tilt	0.069	0.002	0.059	0.071	0.128	0.130
	WCDMA 850	Left Touch	0.350	0.018	0.071	0.368	0.421	0.439
		Right Touch	0.255	0.007	0.062	0.262	0.317	0.324
		Left Tilt	0.175	0.007	0.055	0.182	0.230	0.237
		Right Tilt	0.163	0.002	0.059	0.165	0.222	0.224
	WCDMA 1700	Left Touch	0.134	0.018	0.071	0.152	0.205	0.223
		Right Touch	0.073	0.007	0.062	0.080	0.135	0.142
		Left Tilt	0.125	0.007	0.055	0.132	0.180	0.187
		Right Tilt	0.013	0.002	0.059	0.015	0.072	0.074
	WCDMA 1900	Left Touch	0.248	0.018	0.071	0.266	0.319	0.337
		Right Touch	0.132	0.007	0.062	0.139	0.194	0.201
		Left Tilt	0.167	0.007	0.055	0.174	0.222	0.229
		Right Tilt	0.113	0.002	0.059	0.115	0.172	0.174
	LTE Band 12	Left Touch	0.160	0.018	0.071	0.178	0.231	0.248
		Right Touch	0.129	0.007	0.062	0.136	0.191	0.198
		Left Tilt	0.086	0.007	0.055	0.093	0.141	0.148
		Right Tilt	0.069	0.002	0.059	0.071	0.128	0.130
	LTE Band 4	Left Touch	0.059	0.018	0.071	0.077	0.130	0.148
		Right Touch	0.044	0.007	0.062	0.051	0.106	0.113
		Left Tilt	0.013	0.007	0.055	0.020	0.068	0.075
		Right Tilt	0.012	0.002	0.059	0.014	0.071	0.073
	LTE Band 2	Left Touch	0.275	0.018	0.071	0.293	0.346	0.364
		Right Touch	0.172	0.007	0.062	0.179	0.231	0.241
		Left Tilt	0.133	0.007	0.055	0.140	0.188	0.195
		Right Tilt	0.107	0.002	0.059	0.109	0.166	0.168
	LTE Band 41	Left Touch	0.142	0.018	0.071	0.160	0.213	0.231
		Right Touch	0.058	0.007	0.062	0.065	0.120	0.127
		Left Tilt	0.020	0.007	0.055	0.027	0.075	0.082
		Right Tilt	0.024	0.002	0.059	0.026	0.083	0.085

Table 12.4.2 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.3 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.3G W-LAN Ant.2 SAR (W/kg)	1+2	1+3	1+2+3
Head SAR	GSM 850	Left Touch	0.263	0.018	0.026	0.281	0.289	0.307
		Right Touch	0.193	0.007	0.034	0.190	0.217	0.224
		Left Tilt	0.130	0.007	0.026	0.137	0.156	0.163
		Right Tilt	0.130	0.002	0.026	0.132	0.158	0.160
	GPRS 850	Left Touch	0.271	0.018	0.026	0.289	0.297	0.315
		Right Touch	0.193	0.007	0.034	0.200	0.227	0.234
		Left Tilt	0.132	0.007	0.026	0.139	0.158	0.165
		Right Tilt	0.166	0.002	0.026	0.168	0.194	0.196
	GSM 1900	Left Touch	0.128	0.018	0.026	0.146	0.154	0.172
		Right Touch	0.072	0.007	0.034	0.079	0.106	0.113
		Left Tilt	0.081	0.007	0.026	0.088	0.107	0.114
		Right Tilt	0.055	0.002	0.026	0.057	0.083	0.085
	GPRS 1900	Left Touch	0.145	0.018	0.026	0.163	0.171	0.189
		Right Touch	0.076	0.007	0.034	0.083	0.110	0.117
		Left Tilt	0.096	0.007	0.026	0.103	0.122	0.129
		Right Tilt	0.069	0.002	0.026	0.071	0.097	0.099
	WCDMA 850	Left Touch	0.350	0.018	0.026	0.368	0.376	0.394
		Right Touch	0.255	0.007	0.034	0.262	0.289	0.296
		Left Tilt	0.175	0.007	0.026	0.182	0.201	0.208
		Right Tilt	0.163	0.002	0.026	0.165	0.191	0.193
	WCDMA 1700	Left Touch	0.134	0.018	0.026	0.152	0.160	0.178
		Right Touch	0.073	0.007	0.034	0.080	0.107	0.114
		Left Tilt	0.125	0.007	0.026	0.132	0.151	0.158
		Right Tilt	0.013	0.002	0.026	0.015	0.041	0.043
	WCDMA 1900	Left Touch	0.248	0.018	0.026	0.266	0.274	0.292
		Right Touch	0.132	0.007	0.034	0.139	0.166	0.173
		Left Tilt	0.167	0.007	0.026	0.174	0.193	0.200
		Right Tilt	0.113	0.002	0.026	0.115	0.141	0.143
	LTE Band 12	Left Touch	0.160	0.018	0.026	0.178	0.186	0.204
		Right Touch	0.129	0.007	0.034	0.136	0.163	0.170
		Left Tilt	0.086	0.007	0.026	0.093	0.112	0.119
		Right Tilt	0.069	0.002	0.026	0.071	0.097	0.099
	LTE Band 4	Left Touch	0.059	0.018	0.026	0.077	0.085	0.103
		Right Touch	0.044	0.007	0.034	0.051	0.078	0.085
		Left Tilt	0.013	0.007	0.026	0.020	0.039	0.046
		Right Tilt	0.012	0.002	0.026	0.014	0.040	0.042
	LTE Band 2	Left Touch	0.275	0.018	0.026	0.293	0.301	0.319
		Right Touch	0.172	0.007	0.034	0.179	0.206	0.213
		Left Tilt	0.133	0.007	0.026	0.140	0.159	0.166
		Right Tilt	0.107	0.002	0.026	0.109	0.135	0.137
	LTE Band 41	Left Touch	0.142	0.018	0.026	0.160	0.168	0.186
		Right Touch	0.058	0.007	0.034	0.065	0.092	0.099
		Left Tilt	0.020	0.007	0.026	0.027	0.046	0.053
		Right Tilt	0.024	0.002	0.026	0.026	0.052	0.054

Table 12.4.3 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.3 GHz W-LAN MIMO (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.3G W-LAN MIMO SAR (W/kg)	1+2	2SAR (W/kg)	1+2+3
Head SAR	GSM 850	Left Touch	0.263	0.018	0.064	0.281	0.327	0.345
		Right Touch	0.183	0.007	0.080	0.190	0.263	0.270
		Left Tilt	0.130	0.007	0.041	0.137	0.171	0.178
		Right Tilt	0.130	0.002	0.071	0.132	0.201	0.203
	GPRS 850	Left Touch	0.271	0.018	0.064	0.289	0.335	0.353
		Right Touch	0.193	0.007	0.080	0.200	0.273	0.280
		Left Tilt	0.132	0.007	0.041	0.139	0.173	0.180
		Right Tilt	0.166	0.002	0.071	0.168	0.237	0.239
	GSM 1900	Left Touch	0.128	0.018	0.064	0.146	0.192	0.210
		Right Touch	0.072	0.007	0.080	0.079	0.152	0.159
		Left Tilt	0.081	0.007	0.041	0.088	0.122	0.129
		Right Tilt	0.055	0.002	0.071	0.057	0.126	0.128
	GPRS 1900	Left Touch	0.145	0.018	0.064	0.163	0.209	0.227
		Right Touch	0.076	0.007	0.080	0.083	0.156	0.163
		Left Tilt	0.096	0.007	0.041	0.103	0.137	0.144
		Right Tilt	0.069	0.002	0.071	0.071	0.140	0.142
	WCDMA 850	Left Touch	0.350	0.018	0.064	0.368	0.414	0.432
		Right Touch	0.255	0.007	0.080	0.262	0.335	0.342
		Left Tilt	0.175	0.007	0.041	0.182	0.216	0.223
		Right Tilt	0.163	0.002	0.071	0.165	0.234	0.236
	WCDMA 1700	Left Touch	0.134	0.018	0.064	0.152	0.198	0.216
		Right Touch	0.073	0.007	0.080	0.080	0.153	0.160
		Left Tilt	0.125	0.007	0.041	0.132	0.166	0.173
		Right Tilt	0.013	0.002	0.071	0.015	0.084	0.086
	WCDMA 1900	Left Touch	0.248	0.018	0.064	0.266	0.312	0.330
		Right Touch	0.132	0.007	0.080	0.139	0.212	0.219
		Left Tilt	0.167	0.007	0.041	0.174	0.208	0.215
		Right Tilt	0.113	0.002	0.071	0.115	0.184	0.186
	LTE Band 12	Left Touch	0.160	0.018	0.064	0.178	0.224	0.242
		Right Touch	0.129	0.007	0.080	0.136	0.209	0.216
		Left Tilt	0.086	0.007	0.041	0.093	0.127	0.134
		Right Tilt	0.069	0.002	0.071	0.071	0.140	0.142
	LTE Band 4	Left Touch	0.059	0.018	0.064	0.077	0.123	0.141
		Right Touch	0.044	0.007	0.080	0.051	0.124	0.131
		Left Tilt	0.013	0.007	0.041	0.020	0.054	0.061
		Right Tilt	0.012	0.002	0.071	0.014	0.083	0.085
	LTE Band 2	Left Touch	0.275	0.018	0.064	0.293	0.339	0.357
		Right Touch	0.172	0.007	0.080	0.179	0.252	0.259
		Left Tilt	0.133	0.007	0.041	0.140	0.174	0.181
		Right Tilt	0.107	0.002	0.071	0.109	0.178	0.180
	LTE Band 41	Left Touch	0.142	0.018	0.064	0.160	0.206	0.224
		Right Touch	0.058	0.007	0.080	0.065	0.138	0.145
		Left Tilt	0.020	0.007	0.041	0.027	0.061	0.068
		Right Tilt	0.024	0.002	0.071	0.026	0.095	0.097

Table 12.4.4 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.6 GHz W-LAN Ant.1 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.6G W-LAN Ant.1 SAR (W/kg)	1+2	2SAR (W/kg)	1+2+3
Head SAR	GSM 850	Left Touch	0.263	0.018	0.042	0.281	0.305	0.323
		Right Touch	0.183	0.007	0.040	0.190	0.223	0.230
		Left Tilt	0.130	0.007	0.040	0.137	0.170	0.177
		Right Tilt	0.130	0.002	0.038	0.132	0.168	0.170
	GPRS 850	Left Touch	0.271	0.018	0.042	0.289	0.313	0.331
		Right Touch	0.193	0.007	0.040	0.200	0.233	0.240
		Left Tilt	0.132	0.007	0.040	0.139	0.172	0.179
		Right Tilt	0.166	0.002	0.038	0.168	0.204	0.206
	GSM 1900	Left Touch	0.128	0.018	0.042	0.146	0.170	0.188
		Right Touch	0.072	0.007	0.040	0.079	0.112	0.119
		Left Tilt	0.081	0.007	0.040	0.088	0.121	0.128
		Right Tilt	0.055	0.002	0.038	0.057	0.093	0.095
	GPRS 1900	Left Touch	0.145	0.018	0.042	0.163	0.187	0.205
		Right Touch	0.076	0.007	0.040	0.083	0.116	0.123
		Left Tilt	0.096	0.007	0.040	0.103	0.136	0.143
		Right Tilt	0.069	0.002	0.038	0.071	0.107	0.109
	WCDMA 850	Left Touch	0.350	0.018	0.042	0.368	0.392	0.410
		Right Touch	0.255	0.007	0.040	0.262	0.295	0.302
		Left Tilt	0.175	0.007	0.040	0.182	0.215	0.222
		Right Tilt	0.163	0.002	0.038	0.165	0.201	0.203
	WCDMA 1700	Left Touch	0.134	0.018	0.042	0.152	0.176	0.194
		Right Touch	0.073	0.007	0.040	0.080	0.113	0.120
		Left Tilt	0.125	0.007	0.040	0.132	0.165	0.172
		Right Tilt	0.013	0.002	0.038	0.015	0.051	0.053
	WCDMA 1900	Left Touch	0.248	0.018	0.042	0.266	0.290	0.308
		Right Touch	0.132	0.007	0.040	0.139	0.172	0.179
		Left Tilt	0.167	0.007	0.040	0.174	0.207	0.214
		Right Tilt	0.113	0.002	0.038	0.115	0.151	0.153
	LTE Band 12	Left Touch	0.160	0.018	0.042	0.178	0.202	0.220
		Right Touch	0.129	0.007	0.040	0.136	0.169	0.176
		Left Tilt	0.086	0.007	0.040	0.093	0.126	0.133
		Right Tilt	0.069	0.002	0.038	0.071	0.107	0.109
	LTE Band 4	Left Touch	0.059	0.018	0.042	0.077	0.101	0.119
		Right Touch	0.044	0.007	0.040	0.051	0.084	0.091
		Left Tilt	0.013	0.007	0.040	0.020	0.053	0.060
		Right Tilt	0.012	0.002	0.038	0.014	0.050	0.052
	LTE Band 2	Left Touch	0.275	0.018	0.042	0.293	0.317	0.335
		Right Touch	0.172	0.007	0.040	0.179	0.212	0.219
		Left Tilt	0.133	0.007	0.040	0.140	0.173	0.180
		Right Tilt	0.107	0.002	0.038	0.109	0.145	0.147
	LTE Band 41	Left Touch	0.142	0.018	0.042	0.160	0.184	0.202
		Right Touch	0.058	0.007	0.040	0.065	0.098	0.105
		Left Tilt	0.020	0.007	0.040	0.027	0.060	0.067
		Right Tilt	0.024	0.002	0.038	0.026	0.062	0.064

Table 12.4.5 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.6 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.6G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 850	Left Touch	0.263	0.018	0.031	0.281	0.294	0.312
		Right Touch	0.183	0.007	0.041	0.190	0.224	0.231
		Left Tilt	0.130	0.007	0.031	0.137	0.161	0.168
		Right Tilt	0.130	0.002	0.035	0.132	0.165	0.167
	GPRS 850	Left Touch	0.271	0.018	0.031	0.289	0.302	0.320
		Right Touch	0.193	0.007	0.041	0.200	0.234	0.241
		Left Tilt	0.132	0.007	0.031	0.139	0.163	0.170
		Right Tilt	0.166	0.002	0.035	0.168	0.201	0.203
	GSM 1900	Left Touch	0.128	0.018	0.031	0.146	0.159	0.177
		Right Touch	0.072	0.007	0.041	0.079	0.113	0.120
		Left Tilt	0.081	0.007	0.031	0.088	0.112	0.119
		Right Tilt	0.055	0.002	0.035	0.057	0.090	0.092
	GPRS 1900	Left Touch	0.145	0.018	0.031	0.163	0.176	0.194
		Right Touch	0.076	0.007	0.041	0.083	0.117	0.124
		Left Tilt	0.096	0.007	0.031	0.103	0.127	0.134
		Right Tilt	0.069	0.002	0.035	0.071	0.104	0.106
	WCDMA 850	Left Touch	0.350	0.018	0.031	0.368	0.381	0.399
		Right Touch	0.255	0.007	0.041	0.262	0.296	0.303
		Left Tilt	0.175	0.007	0.031	0.182	0.206	0.213
		Right Tilt	0.163	0.002	0.035	0.165	0.198	0.200
	WCDMA 1700	Left Touch	0.134	0.018	0.031	0.152	0.165	0.183
		Right Touch	0.073	0.007	0.041	0.080	0.114	0.121
		Left Tilt	0.125	0.007	0.031	0.132	0.156	0.163
		Right Tilt	0.013	0.002	0.035	0.015	0.048	0.050
	WCDMA 1900	Left Touch	0.248	0.018	0.031	0.266	0.279	0.297
		Right Touch	0.132	0.007	0.041	0.139	0.173	0.180
		Left Tilt	0.167	0.007	0.031	0.174	0.198	0.205
		Right Tilt	0.113	0.002	0.035	0.115	0.148	0.150
	LTE Band 12	Left Touch	0.160	0.018	0.031	0.178	0.191	0.209
		Right Touch	0.129	0.007	0.041	0.136	0.170	0.177
		Left Tilt	0.086	0.007	0.031	0.093	0.117	0.124
		Right Tilt	0.069	0.002	0.035	0.071	0.104	0.106
	LTE Band 4	Left Touch	0.059	0.018	0.031	0.077	0.090	0.108
		Right Touch	0.044	0.007	0.041	0.051	0.085	0.092
		Left Tilt	0.013	0.007	0.031	0.020	0.044	0.051
		Right Tilt	0.012	0.002	0.035	0.014	0.047	0.049
	LTE Band 2	Left Touch	0.275	0.018	0.031	0.293	0.306	0.324
		Right Touch	0.172	0.007	0.041	0.179	0.213	0.220
		Left Tilt	0.133	0.007	0.031	0.140	0.164	0.171
		Right Tilt	0.107	0.002	0.035	0.109	0.142	0.144
	LTE Band 41	Left Touch	0.142	0.018	0.031	0.160	0.173	0.191
		Right Touch	0.058	0.007	0.041	0.065	0.099	0.106
		Left Tilt	0.020	0.007	0.031	0.027	0.051	0.058
		Right Tilt	0.024	0.002	0.035	0.026	0.059	0.061

Table 12.4.6 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.6 GHz W-LAN MIMO (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.6G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 850	Left Touch	0.263	0.018	0.072	0.281	0.335	0.353
		Right Touch	0.183	0.007	0.092	0.190	0.275	0.282
		Left Tilt	0.130	0.007	0.047	0.137	0.177	0.184
		Right Tilt	0.130	0.002	0.081	0.132	0.211	0.213
	GPRS 850	Left Touch	0.271	0.018	0.072	0.289	0.343	0.361
		Right Touch	0.193	0.007	0.092	0.200	0.285	0.292
		Left Tilt	0.132	0.007	0.047	0.139	0.179	0.186
		Right Tilt	0.166	0.002	0.081	0.168	0.247	0.249
	GSM 1900	Left Touch	0.128	0.018	0.072	0.146	0.200	0.218
		Right Touch	0.072	0.007	0.092	0.079	0.164	0.171
		Left Tilt	0.081	0.007	0.047	0.088	0.128	0.135
		Right Tilt	0.055	0.002	0.081	0.057	0.136	0.138
	GPRS 1900	Left Touch	0.145	0.018	0.072	0.163	0.217	0.235
		Right Touch	0.076	0.007	0.092	0.083	0.168	0.175
		Left Tilt	0.096	0.007	0.047	0.103	0.143	0.150
		Right Tilt	0.069	0.002	0.081	0.071	0.150	0.152
	WCDMA 850	Left Touch	0.350	0.018	0.072	0.368	0.422	0.440
		Right Touch	0.255	0.007	0.092	0.262	0.347	0.354
		Left Tilt	0.175	0.007	0.047	0.182	0.222	0.229
		Right Tilt	0.163	0.002	0.081	0.165	0.244	0.246
	WCDMA 1700	Left Touch	0.134	0.018	0.072	0.152	0.206	0.224
		Right Touch	0.073	0.007	0.092	0.080	0.165	0.172
		Left Tilt	0.125	0.007	0.047	0.132	0.172	0.179
		Right Tilt	0.013	0.002	0.081	0.015	0.094	0.096
	WCDMA 1900	Left Touch	0.248	0.018	0.072	0.266	0.320	0.338
		Right Touch	0.132	0.007	0.092	0.139	0.224	0.231
		Left Tilt	0.167	0.007	0.047	0.174	0.214	0.221
		Right Tilt	0.113	0.002	0.081	0.115	0.194	0.196
	LTE Band 12	Left Touch	0.160	0.018	0.072	0.178	0.232	0.250
		Right Touch	0.129	0.007	0.092	0.136	0.221	0.228
		Left Tilt	0.086	0.007	0.047	0.093	0.133	0.140
		Right Tilt	0.069	0.002	0.081	0.071	0.150	0.152
	LTE Band 4	Left Touch	0.059	0.018	0.072	0.077	0.131	0.149
		Right Touch	0.044	0.007	0.092	0.051	0.136	0.143
		Left Tilt	0.013	0.007	0.047	0.020	0.060	0.067
		Right Tilt	0.012	0.002	0.081	0.014	0.093	0.095
	LTE Band 2	Left Touch	0.275	0.018	0.072	0.293	0.347	0.365
		Right Touch	0.172	0.007	0.092	0.179	0.264	0.271
		Left Tilt	0.133	0.007	0.047	0.140	0.180	0.187
		Right Tilt	0.107	0.002	0.081	0.109	0.188	0.190
	LTE Band 41	Left Touch	0.142	0.018	0.072	0.160	0.214	0.232
		Right Touch	0.058	0.007	0.092	0.065	0.150	0.157
		Left Tilt	0.020	0.007	0.047	0.027	0.067	0.074
		Right Tilt	0.024	0.002	0.081	0.026	0.105	0.107

Table 12.4.7 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN Ant.1 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.263	0.029	0.292
		Right Touch	0.193	0.014	0.197
		Left Tilt	0.130	0.008	0.138
		Right Tilt	0.130	0.016	0.146
	GPRS 850	Left Touch	0.271	0.029	0.300
		Right Touch	0.193	0.014	0.207
		Left Tilt	0.132	0.008	0.140
		Right Tilt	0.166	0.016	0.182
	GSM 1900	Left Touch	0.128	0.029	0.157
		Right Touch	0.072	0.014	0.086
		Left Tilt	0.081	0.008	0.089
		Right Tilt	0.055	0.016	0.071
	GPRS 1900	Left Touch	0.145	0.029	0.174
		Right Touch	0.076	0.014	0.090
		Left Tilt	0.096	0.008	0.104
		Right Tilt	0.069	0.016	0.085
	WCDMA 850	Left Touch	0.350	0.029	0.379
		Right Touch	0.255	0.014	0.269
		Left Tilt	0.175	0.008	0.183
		Right Tilt	0.163	0.016	0.179
	WCDMA 1700	Left Touch	0.134	0.029	0.163
		Right Touch	0.073	0.014	0.087
		Left Tilt	0.125	0.008	0.133
		Right Tilt	0.013	0.016	0.029
	WCDMA 1900	Left Touch	0.248	0.029	0.277
		Right Touch	0.132	0.014	0.146
		Left Tilt	0.167	0.008	0.175
		Right Tilt	0.113	0.016	0.129
	LTE Band 12	Left Touch	0.160	0.029	0.189
		Right Touch	0.129	0.014	0.143
		Left Tilt	0.086	0.008	0.094
		Right Tilt	0.069	0.016	0.085
	LTE Band 4	Left Touch	0.059	0.029	0.088
		Right Touch	0.044	0.014	0.058
		Left Tilt	0.013	0.008	0.021
		Right Tilt	0.012	0.016	0.028
	LTE Band 2	Left Touch	0.275	0.029	0.304
		Right Touch	0.172	0.014	0.186
		Left Tilt	0.133	0.008	0.141
		Right Tilt	0.107	0.016	0.123
	LTE Band 41	Left Touch	0.142	0.029	0.171
		Right Touch	0.058	0.014	0.072
		Left Tilt	0.020	0.008	0.028
		Right Tilt	0.024	0.016	0.040

Table 12.4.8 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.263	0.056	0.319
		Right Touch	0.183	0.150	0.333
		Left Tilt	0.130	0.058	0.188
		Right Tilt	0.130	0.071	0.201
	GPRS 850	Left Touch	0.271	0.056	0.327
		Right Touch	0.193	0.150	0.343
		Left Tilt	0.132	0.058	0.190
		Right Tilt	0.166	0.071	0.237
	GSM 1900	Left Touch	0.128	0.056	0.184
		Right Touch	0.072	0.150	0.222
		Left Tilt	0.081	0.058	0.139
		Right Tilt	0.055	0.071	0.126
	GPRS 1900	Left Touch	0.145	0.056	0.201
		Right Touch	0.076	0.150	0.226
		Left Tilt	0.096	0.058	0.154
		Right Tilt	0.069	0.071	0.140
	WCDMA 850	Left Touch	0.350	0.056	0.406
		Right Touch	0.255	0.150	0.405
		Left Tilt	0.175	0.058	0.233
		Right Tilt	0.163	0.071	0.234
	WCDMA 1700	Left Touch	0.134	0.056	0.190
		Right Touch	0.073	0.150	0.223
		Left Tilt	0.125	0.058	0.183
		Right Tilt	0.013	0.071	0.084
	WCDMA 1900	Left Touch	0.248	0.056	0.304
		Right Touch	0.132	0.150	0.282
		Left Tilt	0.167	0.058	0.225
		Right Tilt	0.113	0.071	0.184
	LTE Band 12	Left Touch	0.160	0.056	0.216
		Right Touch	0.129	0.150	0.279
		Left Tilt	0.086	0.058	0.144
		Right Tilt	0.069	0.071	0.140
	LTE Band 4	Left Touch	0.059	0.056	0.115
		Right Touch	0.044	0.150	0.194
		Left Tilt	0.013	0.058	0.071
		Right Tilt	0.012	0.071	0.083
	LTE Band 2	Left Touch	0.275	0.056	0.331
		Right Touch	0.172	0.150	0.322
		Left Tilt	0.133	0.058	0.191
		Right Tilt	0.107	0.071	0.178
	LTE Band 41	Left Touch	0.142	0.056	0.198
		Right Touch	0.058	0.150	0.208
		Left Tilt	0.020	0.058	0.078
		Right Tilt	0.024	0.071	0.095

Table 12.4.9 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN MIMO (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.263	0.078	0.341
		Right Touch	0.193	0.176	0.369
		Left Tilt	0.130	0.069	0.199
		Right Tilt	0.130	0.074	0.204
	GPRS 850	Left Touch	0.271	0.078	0.349
		Right Touch	0.193	0.176	0.369
		Left Tilt	0.132	0.069	0.201
		Right Tilt	0.166	0.074	0.240
	GSM 1900	Left Touch	0.128	0.078	0.206
		Right Touch	0.072	0.176	0.248
		Left Tilt	0.081	0.069	0.150
		Right Tilt	0.055	0.074	0.129
	GPRS 1900	Left Touch	0.145	0.078	0.223
		Right Touch	0.076	0.176	0.252
		Left Tilt	0.096	0.069	0.165
		Right Tilt	0.069	0.074	0.143
	WCDMA 850	Left Touch	0.350	0.078	0.428
		Right Touch	0.255	0.176	0.431
		Left Tilt	0.175	0.069	0.244
		Right Tilt	0.163	0.074	0.237
	WCDMA 1700	Left Touch	0.134	0.078	0.212
		Right Touch	0.073	0.176	0.249
		Left Tilt	0.125	0.069	0.194
		Right Tilt	0.013	0.074	0.087
	WCDMA 1900	Left Touch	0.248	0.078	0.326
		Right Touch	0.132	0.176	0.308
		Left Tilt	0.167	0.069	0.236
		Right Tilt	0.113	0.074	0.187
	LTE Band 12	Left Touch	0.160	0.078	0.238
		Right Touch	0.129	0.176	0.305
		Left Tilt	0.086	0.069	0.155
		Right Tilt	0.069	0.074	0.143
	LTE Band 4	Left Touch	0.059	0.078	0.137
		Right Touch	0.044	0.176	0.220
		Left Tilt	0.013	0.069	0.082
		Right Tilt	0.012	0.074	0.086
	LTE Band 2	Left Touch	0.275	0.078	0.353
		Right Touch	0.172	0.176	0.348
		Left Tilt	0.133	0.069	0.202
		Right Tilt	0.107	0.074	0.181
	LTE Band 41	Left Touch	0.142	0.078	0.220
		Right Touch	0.058	0.176	0.234
		Left Tilt	0.020	0.069	0.089
		Right Tilt	0.024	0.074	0.098

Table 12.4.10 Simultaneous Transmission Scenario : 2G/3G/4G + 5.3 GHz W-LAN Ant.1 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.3G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.263	0.071	0.334
		Right Touch	0.183	0.062	0.245
		Left Tilt	0.130	0.055	0.185
		Right Tilt	0.130	0.059	0.189
	GPRS 850	Left Touch	0.271	0.071	0.342
		Right Touch	0.193	0.062	0.255
		Left Tilt	0.132	0.055	0.187
		Right Tilt	0.166	0.059	0.225
	GSM 1900	Left Touch	0.128	0.071	0.199
		Right Touch	0.072	0.062	0.134
		Left Tilt	0.081	0.055	0.136
		Right Tilt	0.055	0.059	0.114
	GPRS 1900	Left Touch	0.145	0.071	0.216
		Right Touch	0.076	0.062	0.138
		Left Tilt	0.096	0.055	0.151
		Right Tilt	0.069	0.059	0.128
	WCDMA 850	Left Touch	0.350	0.071	0.421
		Right Touch	0.255	0.062	0.317
		Left Tilt	0.175	0.055	0.230
		Right Tilt	0.163	0.059	0.222
	WCDMA 1700	Left Touch	0.134	0.071	0.205
		Right Touch	0.073	0.062	0.135
		Left Tilt	0.125	0.055	0.180
		Right Tilt	0.013	0.059	0.072
	WCDMA 1900	Left Touch	0.248	0.071	0.319
		Right Touch	0.132	0.062	0.194
		Left Tilt	0.167	0.055	0.222
		Right Tilt	0.113	0.059	0.172
	LTE Band 12	Left Touch	0.160	0.071	0.231
		Right Touch	0.129	0.062	0.191
		Left Tilt	0.086	0.055	0.141
		Right Tilt	0.069	0.059	0.128
	LTE Band 4	Left Touch	0.059	0.071	0.130
		Right Touch	0.044	0.062	0.106
		Left Tilt	0.013	0.055	0.068
		Right Tilt	0.012	0.059	0.071
	LTE Band 2	Left Touch	0.275	0.071	0.346
		Right Touch	0.172	0.062	0.234
		Left Tilt	0.133	0.055	0.188
		Right Tilt	0.107	0.059	0.166
	LTE Band 41	Left Touch	0.142	0.071	0.213
		Right Touch	0.058	0.062	0.120
		Left Tilt	0.020	0.055	0.075
		Right Tilt	0.024	0.059	0.083

Table 12.4.11 Simultaneous Transmission Scenario : 2G/3G/4G + 5.3 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.3G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
Head SAR	GSM 850	Left Touch	0.263	0.026	0.289
		Right Touch	0.193	0.034	0.217
		Left Tilt	0.130	0.026	0.156
		Right Tilt	0.130	0.028	0.158
	GPRS 850	Left Touch	0.271	0.026	0.297
		Right Touch	0.193	0.034	0.227
		Left Tilt	0.132	0.026	0.158
		Right Tilt	0.166	0.028	0.194
	GSM 1900	Left Touch	0.128	0.026	0.154
		Right Touch	0.072	0.034	0.106
		Left Tilt	0.081	0.026	0.107
		Right Tilt	0.055	0.028	0.083
	GPRS 1900	Left Touch	0.145	0.026	0.171
		Right Touch	0.076	0.034	0.110
		Left Tilt	0.096	0.026	0.122
		Right Tilt	0.069	0.028	0.097
	WCDMA 850	Left Touch	0.350	0.026	0.376
		Right Touch	0.255	0.034	0.289
		Left Tilt	0.175	0.026	0.201
		Right Tilt	0.163	0.028	0.191
	WCDMA 1700	Left Touch	0.134	0.026	0.160
		Right Touch	0.073	0.034	0.107
		Left Tilt	0.125	0.026	0.151
		Right Tilt	0.013	0.028	0.041
	WCDMA 1900	Left Touch	0.248	0.026	0.274
		Right Touch	0.132	0.034	0.166
		Left Tilt	0.167	0.026	0.193
		Right Tilt	0.113	0.028	0.141
	LTE Band 12	Left Touch	0.160	0.026	0.186
		Right Touch	0.129	0.034	0.163
		Left Tilt	0.086	0.026	0.112
		Right Tilt	0.069	0.028	0.097
	LTE Band 4	Left Touch	0.059	0.026	0.085
		Right Touch	0.044	0.034	0.078
		Left Tilt	0.013	0.026	0.039
		Right Tilt	0.012	0.028	0.040
	LTE Band 2	Left Touch	0.275	0.026	0.301
		Right Touch	0.172	0.034	0.206
		Left Tilt	0.133	0.026	0.159
		Right Tilt	0.107	0.028	0.135
	LTE Band 41	Left Touch	0.142	0.026	0.168
		Right Touch	0.058	0.034	0.092
		Left Tilt	0.020	0.026	0.046
		Right Tilt	0.024	0.028	0.052

Table 12.4.12 Simultaneous Transmission Scenario: 2G/3G/4G + 5.3 GHz W-LAN MIMO (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.3G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)
Head SAR	GSM 850	Left Touch	0.263	0.064	0.327
		Right Touch	0.183	0.080	0.263
		Left Tilt	0.130	0.041	0.171
		Right Tilt	0.130	0.071	0.201
	GPRS 850	Left Touch	0.271	0.064	0.335
		Right Touch	0.193	0.080	0.273
		Left Tilt	0.132	0.041	0.173
		Right Tilt	0.166	0.071	0.237
	GSM 1900	Left Touch	0.128	0.064	0.192
		Right Touch	0.072	0.080	0.152
		Left Tilt	0.081	0.041	0.122
		Right Tilt	0.055	0.071	0.126
	GPRS 1900	Left Touch	0.145	0.064	0.209
		Right Touch	0.076	0.080	0.156
		Left Tilt	0.096	0.041	0.137
		Right Tilt	0.069	0.071	0.140
	WCDMA 850	Left Touch	0.350	0.064	0.414
		Right Touch	0.255	0.080	0.335
		Left Tilt	0.175	0.041	0.216
		Right Tilt	0.163	0.071	0.234
	WCDMA 1700	Left Touch	0.134	0.064	0.198
		Right Touch	0.073	0.080	0.153
		Left Tilt	0.125	0.041	0.166
		Right Tilt	0.013	0.071	0.084
	WCDMA 1900	Left Touch	0.248	0.064	0.312
		Right Touch	0.132	0.080	0.212
		Left Tilt	0.167	0.041	0.208
		Right Tilt	0.113	0.071	0.184
	LTE Band 12	Left Touch	0.160	0.064	0.224
		Right Touch	0.129	0.080	0.209
		Left Tilt	0.086	0.041	0.127
		Right Tilt	0.069	0.071	0.140
	LTE Band 4	Left Touch	0.059	0.064	0.123
		Right Touch	0.044	0.080	0.124
		Left Tilt	0.013	0.041	0.054
		Right Tilt	0.012	0.071	0.083
	LTE Band 2	Left Touch	0.275	0.064	0.339
		Right Touch	0.172	0.080	0.252
		Left Tilt	0.133	0.041	0.174
		Right Tilt	0.107	0.071	0.178
	LTE Band 41	Left Touch	0.142	0.064	0.206
		Right Touch	0.058	0.080	0.138
		Left Tilt	0.020	0.041	0.061
		Right Tilt	0.024	0.071	0.095

Table 12.4.13 Simultaneous Transmission Scenario : 2G/3G/4G + 5.6 GHz W-LAN Ant.1 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.6G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.263	0.042	0.305
		Right Touch	0.193	0.040	0.233
		Left Tilt	0.130	0.040	0.170
		Right Tilt	0.130	0.038	0.168
	GPRS 850	Left Touch	0.271	0.042	0.313
		Right Touch	0.193	0.040	0.233
		Left Tilt	0.132	0.040	0.172
		Right Tilt	0.166	0.038	0.204
	GSM 1900	Left Touch	0.128	0.042	0.170
		Right Touch	0.072	0.040	0.112
		Left Tilt	0.081	0.040	0.121
		Right Tilt	0.055	0.038	0.093
	GPRS 1900	Left Touch	0.145	0.042	0.187
		Right Touch	0.076	0.040	0.116
		Left Tilt	0.096	0.040	0.136
		Right Tilt	0.069	0.038	0.107
	WCDMA 850	Left Touch	0.350	0.042	0.392
		Right Touch	0.255	0.040	0.295
		Left Tilt	0.175	0.040	0.215
		Right Tilt	0.163	0.038	0.201
	WCDMA 1700	Left Touch	0.134	0.042	0.176
		Right Touch	0.073	0.040	0.113
		Left Tilt	0.125	0.040	0.165
		Right Tilt	0.013	0.038	0.051
	WCDMA 1900	Left Touch	0.248	0.042	0.290
		Right Touch	0.132	0.040	0.172
		Left Tilt	0.167	0.040	0.207
		Right Tilt	0.113	0.038	0.151
	LTE Band 12	Left Touch	0.160	0.042	0.202
		Right Touch	0.129	0.040	0.169
		Left Tilt	0.086	0.040	0.126
		Right Tilt	0.069	0.038	0.107
	LTE Band 4	Left Touch	0.059	0.042	0.101
		Right Touch	0.044	0.040	0.084
		Left Tilt	0.013	0.040	0.053
		Right Tilt	0.012	0.038	0.050
	LTE Band 2	Left Touch	0.275	0.042	0.317
		Right Touch	0.172	0.040	0.212
		Left Tilt	0.133	0.040	0.173
		Right Tilt	0.107	0.038	0.145
	LTE Band 41	Left Touch	0.142	0.042	0.184
		Right Touch	0.058	0.040	0.098
		Left Tilt	0.020	0.040	0.060
		Right Tilt	0.024	0.038	0.062

Table 12.4.14 Simultaneous Transmission Scenario : 2G/3G/4G + 5.6 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.6G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.263	0.031	0.294
		Right Touch	0.183	0.041	0.224
		Left Tilt	0.130	0.031	0.161
		Right Tilt	0.130	0.035	0.165
	GPRS 850	Left Touch	0.271	0.031	0.302
		Right Touch	0.193	0.041	0.234
		Left Tilt	0.132	0.031	0.163
		Right Tilt	0.166	0.035	0.201
	GSM 1900	Left Touch	0.128	0.031	0.159
		Right Touch	0.072	0.041	0.113
		Left Tilt	0.081	0.031	0.112
		Right Tilt	0.055	0.035	0.090
	GPRS 1900	Left Touch	0.145	0.031	0.176
		Right Touch	0.076	0.041	0.117
		Left Tilt	0.096	0.031	0.127
		Right Tilt	0.069	0.035	0.104
	WCDMA 850	Left Touch	0.350	0.031	0.381
		Right Touch	0.255	0.041	0.296
		Left Tilt	0.175	0.031	0.206
		Right Tilt	0.163	0.035	0.198
	WCDMA 1700	Left Touch	0.134	0.031	0.165
		Right Touch	0.073	0.041	0.114
		Left Tilt	0.125	0.031	0.156
		Right Tilt	0.013	0.035	0.048
	WCDMA 1900	Left Touch	0.248	0.031	0.279
		Right Touch	0.132	0.041	0.173
		Left Tilt	0.167	0.031	0.198
		Right Tilt	0.113	0.035	0.148
	LTE Band 12	Left Touch	0.160	0.031	0.191
		Right Touch	0.129	0.041	0.170
		Left Tilt	0.086	0.031	0.117
		Right Tilt	0.069	0.035	0.104
	LTE Band 4	Left Touch	0.059	0.031	0.090
		Right Touch	0.044	0.041	0.085
		Left Tilt	0.013	0.031	0.044
		Right Tilt	0.012	0.035	0.047
	LTE Band 2	Left Touch	0.275	0.031	0.306
		Right Touch	0.172	0.041	0.213
		Left Tilt	0.133	0.031	0.164
		Right Tilt	0.107	0.035	0.142
	LTE Band 41	Left Touch	0.142	0.031	0.173
		Right Touch	0.058	0.041	0.099
		Left Tilt	0.020	0.031	0.051
		Right Tilt	0.024	0.035	0.059

Table 12.4.15 Simultaneous Transmission Scenario : 2G/3G/4G + 5.6 GHz W-LAN MIMO (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.6G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.263	0.072	0.335
		Right Touch	0.193	0.092	0.275
		Left Tilt	0.130	0.047	0.177
		Right Tilt	0.130	0.081	0.211
	GPRS 850	Left Touch	0.271	0.072	0.343
		Right Touch	0.193	0.092	0.285
		Left Tilt	0.132	0.047	0.179
		Right Tilt	0.166	0.081	0.247
	GSM 1900	Left Touch	0.128	0.072	0.200
		Right Touch	0.072	0.092	0.164
		Left Tilt	0.081	0.047	0.128
		Right Tilt	0.055	0.081	0.136
	GPRS 1900	Left Touch	0.145	0.072	0.217
		Right Touch	0.076	0.092	0.168
		Left Tilt	0.096	0.047	0.143
		Right Tilt	0.069	0.081	0.150
	WCDMA 850	Left Touch	0.350	0.072	0.422
		Right Touch	0.255	0.092	0.347
		Left Tilt	0.175	0.047	0.222
		Right Tilt	0.163	0.081	0.244
	WCDMA 1700	Left Touch	0.134	0.072	0.206
		Right Touch	0.073	0.092	0.165
		Left Tilt	0.125	0.047	0.172
		Right Tilt	0.013	0.081	0.094
	WCDMA 1900	Left Touch	0.248	0.072	0.320
		Right Touch	0.132	0.092	0.224
		Left Tilt	0.167	0.047	0.214
		Right Tilt	0.113	0.081	0.194
	LTE Band 12	Left Touch	0.160	0.072	0.232
		Right Touch	0.129	0.092	0.221
		Left Tilt	0.086	0.047	0.133
		Right Tilt	0.069	0.081	0.150
	LTE Band 4	Left Touch	0.059	0.072	0.131
		Right Touch	0.044	0.092	0.136
		Left Tilt	0.013	0.047	0.060
		Right Tilt	0.012	0.081	0.093
	LTE Band 2	Left Touch	0.275	0.072	0.347
		Right Touch	0.172	0.092	0.264
		Left Tilt	0.133	0.047	0.180
		Right Tilt	0.107	0.081	0.188
	LTE Band 41	Left Touch	0.142	0.072	0.214
		Right Touch	0.058	0.092	0.150
		Left Tilt	0.020	0.047	0.067
		Right Tilt	0.024	0.081	0.105

Table 12.4.16 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.263	0.018	0.281
		Right Touch	0.183	0.007	0.190
		Left Tilt	0.130	0.007	0.137
		Right Tilt	0.130	0.002	0.132
	GPRS 850	Left Touch	0.271	0.018	0.289
		Right Touch	0.193	0.007	0.200
		Left Tilt	0.132	0.007	0.139
		Right Tilt	0.166	0.002	0.168
	GSM 1900	Left Touch	0.128	0.018	0.146
		Right Touch	0.072	0.007	0.079
		Left Tilt	0.081	0.007	0.088
		Right Tilt	0.055	0.002	0.057
	GPRS 1900	Left Touch	0.145	0.018	0.163
		Right Touch	0.076	0.007	0.083
		Left Tilt	0.096	0.007	0.103
		Right Tilt	0.069	0.002	0.071
	WCDMA 850	Left Touch	0.350	0.018	0.368
		Right Touch	0.255	0.007	0.262
		Left Tilt	0.175	0.007	0.182
		Right Tilt	0.163	0.002	0.165
	WCDMA 1700	Left Touch	0.134	0.018	0.152
		Right Touch	0.073	0.007	0.080
		Left Tilt	0.125	0.007	0.132
		Right Tilt	0.013	0.002	0.015
	WCDMA 1900	Left Touch	0.248	0.018	0.266
		Right Touch	0.132	0.007	0.139
		Left Tilt	0.167	0.007	0.174
		Right Tilt	0.113	0.002	0.115
	LTE Band 12	Left Touch	0.160	0.018	0.178
		Right Touch	0.129	0.007	0.136
		Left Tilt	0.086	0.007	0.093
		Right Tilt	0.069	0.002	0.071
	LTE Band 4	Left Touch	0.059	0.018	0.077
		Right Touch	0.044	0.007	0.051
		Left Tilt	0.013	0.007	0.020
		Right Tilt	0.012	0.002	0.014
	LTE Band 2	Left Touch	0.275	0.018	0.293
		Right Touch	0.172	0.007	0.179
		Left Tilt	0.133	0.007	0.140
		Right Tilt	0.107	0.002	0.109
	LTE Band 41	Left Touch	0.142	0.018	0.160
		Right Touch	0.058	0.007	0.065
		Left Tilt	0.020	0.007	0.027
		Right Tilt	0.024	0.002	0.026

Table 12.4.17 Simultaneous Transmission Scenario : Bluetooth Ant.1 + 5 GHz W-LAN Ant.1 (Held to Ear)

Exposure Condition	Mode	Configuration	Bluetooth Ant.1 SAR (W/kg)	5G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	5.3G W-LAN Ant.1	Left Touch	0.018	0.071	0.089
		Right Touch	0.007	0.062	0.069
		Left Tilt	0.007	0.055	0.062
		Right Tilt	0.002	0.059	0.061
	5.6G W-LAN Ant.1	Left Touch	0.018	0.042	0.060
		Right Touch	0.007	0.040	0.047
		Left Tilt	0.007	0.040	0.047
		Right Tilt	0.002	0.038	0.040

Table 12.4.18 Simultaneous Transmission Scenario : Bluetooth Ant.1 + 5 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	Bluetooth Ant.1 SAR (W/kg)	5G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	5.3G W-LAN Ant.2	Left Touch	0.018	0.026	0.044
		Right Touch	0.007	0.034	0.041
		Left Tilt	0.007	0.026	0.033
		Right Tilt	0.002	0.028	0.030
	5.6G W-LAN Ant.2	Left Touch	0.018	0.031	0.049
		Right Touch	0.007	0.041	0.048
		Left Tilt	0.007	0.031	0.038
		Right Tilt	0.002	0.035	0.037

Table 12.4.19 Simultaneous Transmission Scenario : Bluetooth Ant.1 + 5 GHz W-LAN MIMO (Held to Ear)

Exposure Condition	Mode	Configuration	Bluetooth Ant.1 SAR (W/kg)	5G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	5.3G W-LAN MIMO	Left Touch	0.018	0.064	0.082
		Right Touch	0.007	0.080	0.087
		Left Tilt	0.007	0.041	0.048
		Right Tilt	0.002	0.071	0.073
	5.6G W-LAN MIMO	Left Touch	0.018	0.072	0.090
		Right Touch	0.007	0.092	0.099
		Left Tilt	0.007	0.047	0.054
		Right Tilt	0.002	0.081	0.083

12.5 Body-Worn Simultaneous Transmission Analysis

Table 12.5.1 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.3 GHz W-LAN Ant.1 (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.3G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Body-Worn SAR	GSM 850	Front	0.280	0.007	0.037	0.287	0.317	0.324
		Rear	0.345	0.039	0.052	0.384	0.397	0.436
	GPRS 850	Front	0.288	0.007	0.037	0.295	0.325	0.332
		Rear	0.358	0.039	0.052	0.397	0.410	0.449
	GSM 1900	Front	0.219	0.007	0.037	0.226	0.256	0.263
		Rear	0.315	0.039	0.052	0.354	0.387	0.406
	GPRS 1900	Front	0.252	0.007	0.037	0.259	0.289	0.296
		Rear	0.340	0.039	0.052	0.379	0.392	0.431
	WCDMA 850	Front	0.295	0.007	0.037	0.302	0.332	0.339
		Rear	0.386	0.039	0.052	0.425	0.438	0.477
	WCDMA 1700	Front	0.338	0.007	0.037	0.345	0.375	0.382
		Rear	0.397	0.039	0.052	0.436	0.449	0.488
	WCDMA 1900	Front	0.371	0.007	0.037	0.378	0.408	0.415
		Rear	0.740	0.039	0.052	0.779	0.792	0.831
	LTE Band 12	Front	0.152	0.007	0.037	0.159	0.189	0.196
		Rear	0.169	0.039	0.052	0.208	0.221	0.260
	LTE Band 4	Front	0.272	0.007	0.037	0.279	0.309	0.316
		Rear	0.523	0.039	0.052	0.582	0.575	0.614
	LTE Band 2	Front	0.395	0.007	0.037	0.402	0.432	0.439
		Rear	0.518	0.039	0.052	0.557	0.570	0.609
	LTE Band 41	Front	0.401	0.007	0.037	0.408	0.438	0.445
		Rear	0.206	0.039	0.052	0.245	0.258	0.297

Table 12.5.2 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.3 GHz W-LAN Ant.2 (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.3G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Body-Worn SAR	GSM 850	Front	0.280	0.007	0.062	0.287	0.342	0.349
		Rear	0.345	0.039	0.190	0.384	0.535	0.574
	GPRS 850	Front	0.288	0.007	0.062	0.295	0.350	0.357
		Rear	0.358	0.039	0.190	0.397	0.548	0.587
	GSM 1900	Front	0.219	0.007	0.062	0.226	0.281	0.288
		Rear	0.315	0.039	0.190	0.354	0.505	0.544
	GPRS 1900	Front	0.252	0.007	0.062	0.259	0.314	0.321
		Rear	0.340	0.039	0.190	0.379	0.530	0.569
	WCDMA 850	Front	0.295	0.007	0.062	0.302	0.357	0.364
		Rear	0.386	0.039	0.190	0.425	0.576	0.615
	WCDMA 1700	Front	0.338	0.007	0.062	0.345	0.400	0.407
		Rear	0.397	0.039	0.190	0.436	0.587	0.626
	WCDMA 1900	Front	0.371	0.007	0.062	0.378	0.433	0.440
		Rear	0.740	0.039	0.190	0.779	0.930	0.969
	LTE Band 12	Front	0.152	0.007	0.062	0.159	0.214	0.221
		Rear	0.169	0.039	0.190	0.208	0.359	0.398
	LTE Band 4	Front	0.272	0.007	0.062	0.279	0.334	0.341
		Rear	0.523	0.039	0.190	0.562	0.713	0.752
	LTE Band 2	Front	0.395	0.007	0.062	0.402	0.457	0.464
		Rear	0.518	0.039	0.190	0.557	0.708	0.747
	LTE Band 41	Front	0.401	0.007	0.062	0.408	0.463	0.470
		Rear	0.206	0.039	0.190	0.245	0.396	0.435

Table 12.5.3 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.3 GHz W-LAN MIMO (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.3G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Body-Worn SAR	GSM 850	Front	0.280	0.007	0.080	0.287	0.360	0.367
		Rear	0.345	0.039	0.277	0.384	0.622	0.661
	GPRS 850	Front	0.288	0.007	0.080	0.295	0.368	0.375
		Rear	0.358	0.039	0.277	0.397	0.635	0.674
	GSM 1900	Front	0.219	0.007	0.080	0.226	0.299	0.306
		Rear	0.315	0.039	0.277	0.354	0.592	0.631
	GPRS 1900	Front	0.252	0.007	0.080	0.259	0.332	0.339
		Rear	0.340	0.039	0.277	0.379	0.617	0.656
	WCDMA 850	Front	0.295	0.007	0.080	0.302	0.375	0.382
		Rear	0.386	0.039	0.277	0.425	0.663	0.702
	WCDMA 1700	Front	0.338	0.007	0.080	0.345	0.418	0.425
		Rear	0.397	0.039	0.277	0.436	0.674	0.713
	WCDMA 1900	Front	0.371	0.007	0.080	0.378	0.451	0.458
		Rear	0.740	0.039	0.277	0.779	1.017	1.056
	LTE Band 12	Front	0.152	0.007	0.080	0.159	0.232	0.239
		Rear	0.169	0.039	0.277	0.208	0.446	0.485
	LTE Band 4	Front	0.272	0.007	0.080	0.279	0.352	0.359
		Rear	0.523	0.039	0.277	0.562	0.800	0.839
	LTE Band 2	Front	0.395	0.007	0.080	0.402	0.475	0.482
		Rear	0.518	0.039	0.277	0.557	0.795	0.834
	LTE Band 41	Front	0.401	0.007	0.080	0.408	0.481	0.488
		Rear	0.206	0.039	0.277	0.245	0.483	0.522

Table 12.5.4 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.6 GHz W-LAN Ant.1 (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.6G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Body-Worn SAR	GSM 850	Front	0.280	0.007	0.043	0.287	0.323	0.330
		Rear	0.345	0.039	0.071	0.384	0.416	0.455
	GPRS 850	Front	0.288	0.007	0.043	0.295	0.331	0.338
		Rear	0.358	0.039	0.071	0.397	0.429	0.468
	GSM 1900	Front	0.219	0.007	0.043	0.226	0.262	0.269
		Rear	0.315	0.039	0.071	0.354	0.386	0.425
	GPRS 1900	Front	0.252	0.007	0.043	0.259	0.295	0.302
		Rear	0.340	0.039	0.071	0.379	0.411	0.460
	WCDMA 850	Front	0.295	0.007	0.043	0.302	0.338	0.345
		Rear	0.386	0.039	0.071	0.425	0.457	0.496
	WCDMA 1700	Front	0.338	0.007	0.043	0.345	0.381	0.388
		Rear	0.397	0.039	0.071	0.436	0.468	0.507
	WCDMA 1900	Front	0.371	0.007	0.043	0.378	0.414	0.421
		Rear	0.740	0.039	0.071	0.779	0.811	0.850
	LTE Band 12	Front	0.152	0.007	0.043	0.159	0.195	0.202
		Rear	0.169	0.039	0.071	0.208	0.240	0.279
	LTE Band 4	Front	0.272	0.007	0.043	0.279	0.315	0.322
		Rear	0.523	0.039	0.071	0.562	0.594	0.633
	LTE Band 2	Front	0.395	0.007	0.043	0.402	0.438	0.445
		Rear	0.518	0.039	0.071	0.557	0.589	0.628
	LTE Band 41	Front	0.401	0.007	0.043	0.408	0.444	0.451
		Rear	0.206	0.039	0.071	0.245	0.277	0.316

Table 12.5.5 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.6 GHz W-LAN Ant.2 (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.6G W-LAN Ant.2 SAR (W/kg)	1+2	ΣSAR (W/kg)	1+2+3
Body-Worn SAR	GSM 850	Front	0.280	0.007	0.074	0.287	0.354	0.361
		Rear	0.345	0.039	0.164	0.384	0.509	0.548
	GPRS 850	Front	0.288	0.007	0.074	0.295	0.362	0.369
		Rear	0.358	0.039	0.164	0.397	0.522	0.561
	GSM 1900	Front	0.219	0.007	0.074	0.226	0.293	0.300
		Rear	0.315	0.039	0.164	0.354	0.479	0.518
	GPRS 1900	Front	0.252	0.007	0.074	0.259	0.326	0.333
		Rear	0.340	0.039	0.164	0.379	0.504	0.543
	WCDMA 850	Front	0.295	0.007	0.074	0.302	0.369	0.376
		Rear	0.386	0.039	0.164	0.425	0.550	0.589
	WCDMA 1700	Front	0.338	0.007	0.074	0.345	0.412	0.419
		Rear	0.397	0.039	0.164	0.436	0.561	0.600
	WCDMA 1900	Front	0.371	0.007	0.074	0.378	0.445	0.452
		Rear	0.740	0.039	0.164	0.779	0.904	0.943
	LTE Band 12	Front	0.152	0.007	0.074	0.159	0.226	0.233
		Rear	0.169	0.039	0.164	0.208	0.333	0.372
	LTE Band 4	Front	0.272	0.007	0.074	0.279	0.346	0.353
		Rear	0.523	0.039	0.164	0.562	0.687	0.726
	LTE Band 2	Front	0.395	0.007	0.074	0.402	0.469	0.476
		Rear	0.518	0.039	0.164	0.557	0.682	0.721
	LTE Band 41	Front	0.401	0.007	0.074	0.408	0.475	0.482
		Rear	0.206	0.039	0.164	0.245	0.370	0.409

Table 12.5.6 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.6 GHz W-LAN MIMO (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.6G W-LAN MIMO SAR (W/kg)	1+2	ΣSAR (W/kg)	1+2+3
Body-Worn SAR	GSM 850	Front	0.280	0.007	0.089	0.287	0.369	0.376
		Rear	0.345	0.039	0.188	0.384	0.533	0.572
	GPRS 850	Front	0.288	0.007	0.089	0.295	0.377	0.384
		Rear	0.358	0.039	0.188	0.397	0.546	0.585
	GSM 1900	Front	0.219	0.007	0.089	0.226	0.308	0.315
		Rear	0.315	0.039	0.188	0.354	0.503	0.542
	GPRS 1900	Front	0.252	0.007	0.089	0.259	0.341	0.348
		Rear	0.340	0.039	0.188	0.379	0.528	0.567
	WCDMA 850	Front	0.295	0.007	0.089	0.302	0.384	0.391
		Rear	0.386	0.039	0.188	0.425	0.574	0.613
	WCDMA 1700	Front	0.338	0.007	0.089	0.345	0.427	0.434
		Rear	0.397	0.039	0.188	0.436	0.585	0.624
	WCDMA 1900	Front	0.371	0.007	0.089	0.378	0.460	0.467
		Rear	0.740	0.039	0.188	0.779	0.928	0.967
	LTE Band 12	Front	0.152	0.007	0.089	0.159	0.241	0.248
		Rear	0.169	0.039	0.188	0.208	0.357	0.396
	LTE Band 4	Front	0.272	0.007	0.089	0.279	0.361	0.368
		Rear	0.523	0.039	0.188	0.562	0.711	0.750
	LTE Band 2	Front	0.395	0.007	0.089	0.402	0.484	0.491
		Rear	0.518	0.039	0.188	0.557	0.706	0.745
	LTE Band 41	Front	0.401	0.007	0.089	0.408	0.490	0.497
		Rear	0.206	0.039	0.188	0.245	0.394	0.433

Table 12.5.7 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN Ant.1 (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)
Body-Worn SAR	GSM 850	Front	0.280	0.025	0.305
		Rear	0.345	0.100	0.445
	GPRS 850	Front	0.288	0.025	0.313
		Rear	0.358	0.100	0.458
	GSM 1900	Front	0.219	0.025	0.244
		Rear	0.315	0.100	0.415
	GPRS 1900	Front	0.252	0.025	0.277
		Rear	0.340	0.100	0.440
	WCDMA 850	Front	0.295	0.025	0.320
		Rear	0.386	0.100	0.486
	WCDMA 1700	Front	0.338	0.025	0.363
		Rear	0.397	0.100	0.497
	WCDMA 1900	Front	0.371	0.025	0.396
		Rear	0.740	0.100	0.840
	LTE Band 12	Front	0.152	0.025	0.177
		Rear	0.169	0.100	0.269
	LTE Band 4	Front	0.272	0.025	0.297
		Rear	0.523	0.100	0.623
	LTE Band 2	Front	0.395	0.025	0.420
		Rear	0.518	0.100	0.618
	LTE Band 41	Front	0.401	0.025	0.426
		Rear	0.206	0.100	0.306

Table 12.5.8 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN Ant.2 (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
Body-Worn SAR	GSM 850	Front	0.280	0.024	0.304
		Rear	0.345	0.170	0.515
	GPRS 850	Front	0.288	0.024	0.312
		Rear	0.358	0.170	0.528
	GSM 1900	Front	0.219	0.024	0.243
		Rear	0.315	0.170	0.485
	GPRS 1900	Front	0.252	0.024	0.276
		Rear	0.340	0.170	0.510
	WCDMA 850	Front	0.295	0.024	0.319
		Rear	0.386	0.170	0.556
	WCDMA 1700	Front	0.338	0.024	0.362
		Rear	0.397	0.170	0.567
	WCDMA 1900	Front	0.371	0.024	0.395
		Rear	0.740	0.170	0.910
	LTE Band 12	Front	0.152	0.024	0.176
		Rear	0.169	0.170	0.339
	LTE Band 4	Front	0.272	0.024	0.296
		Rear	0.523	0.170	0.693
	LTE Band 2	Front	0.395	0.024	0.419
		Rear	0.518	0.170	0.688
	LTE Band 41	Front	0.401	0.024	0.425
		Rear	0.206	0.170	0.376

Table 12.5.9 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN MIMO (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Body-Worn SAR	GSM 850	Front	0.280	0.029	0.309
		Rear	0.345	0.210	0.555
	GPRS 850	Front	0.288	0.029	0.317
		Rear	0.358	0.210	0.568
	GSM 1900	Front	0.219	0.029	0.248
		Rear	0.315	0.210	0.525
	GPRS 1900	Front	0.252	0.029	0.281
		Rear	0.340	0.210	0.550
	WCDMA 850	Front	0.295	0.029	0.324
		Rear	0.386	0.210	0.596
	WCDMA 1700	Front	0.338	0.029	0.367
		Rear	0.397	0.210	0.607
	WCDMA 1900	Front	0.371	0.029	0.400
		Rear	0.740	0.210	0.950
	LTE Band 12	Front	0.152	0.029	0.181
		Rear	0.169	0.210	0.379
	LTE Band 4	Front	0.272	0.029	0.301
		Rear	0.523	0.210	0.733
	LTE Band 2	Front	0.395	0.029	0.424
		Rear	0.518	0.210	0.728
	LTE Band 41	Front	0.401	0.029	0.430
		Rear	0.206	0.210	0.416

Table 12.5.10 Simultaneous Transmission Scenario : 2G/3G/4G + 5.3 GHz W-LAN Ant.1 (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.3G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Body-Worn SAR	GSM 850	Front	0.280	0.037	0.317
		Rear	0.345	0.052	0.397
	GPRS 850	Front	0.288	0.037	0.325
		Rear	0.358	0.052	0.410
	GSM 1900	Front	0.219	0.037	0.256
		Rear	0.315	0.052	0.367
	GPRS 1900	Front	0.252	0.037	0.289
		Rear	0.340	0.052	0.392
	WCDMA 850	Front	0.295	0.037	0.332
		Rear	0.386	0.052	0.438
	WCDMA 1700	Front	0.338	0.037	0.375
		Rear	0.397	0.052	0.449
	WCDMA 1900	Front	0.371	0.037	0.408
		Rear	0.740	0.052	0.792
	LTE Band 12	Front	0.152	0.037	0.189
		Rear	0.169	0.052	0.221
	LTE Band 4	Front	0.272	0.037	0.309
		Rear	0.523	0.052	0.575
	LTE Band 2	Front	0.395	0.037	0.432
		Rear	0.518	0.052	0.570
	LTE Band 41	Front	0.401	0.037	0.438
		Rear	0.206	0.052	0.258

Table 12.5.11 Simultaneous Transmission Scenario : 2G/3G/4G + 5.3 GHz W-LAN Ant.2 (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.3G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Body-Worn SAR	GSM 850	Front	0.280	0.062	0.342
		Rear	0.345	0.190	0.535
	GPRS 850	Front	0.288	0.062	0.350
		Rear	0.358	0.190	0.548
	GSM 1900	Front	0.219	0.062	0.281
		Rear	0.315	0.190	0.505
	GPRS 1900	Front	0.252	0.062	0.314
		Rear	0.340	0.190	0.530
	WCDMA 850	Front	0.295	0.062	0.357
		Rear	0.386	0.190	0.576
	WCDMA 1700	Front	0.338	0.062	0.400
		Rear	0.397	0.190	0.587
	WCDMA 1900	Front	0.371	0.062	0.433
		Rear	0.740	0.190	0.930
	LTE Band 12	Front	0.152	0.062	0.214
		Rear	0.169	0.190	0.359
	LTE Band 4	Front	0.272	0.062	0.334
		Rear	0.523	0.190	0.713
	LTE Band 2	Front	0.395	0.062	0.457
		Rear	0.518	0.190	0.708
	LTE Band 41	Front	0.401	0.062	0.463
		Rear	0.206	0.190	0.396

Table 12.5.12 Simultaneous Transmission Scenario : 2G/3G/4G + 5.3 GHz W-LAN MIMO (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.3G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Body-Worn SAR	GSM 850	Front	0.280	0.080	0.360
		Rear	0.345	0.277	0.622
	GPRS 850	Front	0.288	0.080	0.368
		Rear	0.358	0.277	0.635
	GSM 1900	Front	0.219	0.080	0.299
		Rear	0.315	0.277	0.592
	GPRS 1900	Front	0.252	0.080	0.332
		Rear	0.340	0.277	0.617
	WCDMA 850	Front	0.295	0.080	0.375
		Rear	0.386	0.277	0.663
	WCDMA 1700	Front	0.338	0.080	0.418
		Rear	0.397	0.277	0.674
	WCDMA 1900	Front	0.371	0.080	0.451
		Rear	0.740	0.277	1.017
	LTE Band 12	Front	0.152	0.080	0.232
		Rear	0.169	0.277	0.446
	LTE Band 4	Front	0.272	0.080	0.352
		Rear	0.523	0.277	0.800
	LTE Band 2	Front	0.395	0.080	0.475
		Rear	0.518	0.277	0.795
	LTE Band 41	Front	0.401	0.080	0.481
		Rear	0.206	0.277	0.483

Table 12.5.13 Simultaneous Transmission Scenario : 2G/3G/4G + 5.6 GHz W-LAN Ant.1 (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.6G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Body-Worn SAR	GSM 850	Front	0.280	0.043	0.323
		Rear	0.345	0.071	0.416
	GPRS 850	Front	0.288	0.043	0.331
		Rear	0.358	0.071	0.429
	GSM 1900	Front	0.219	0.043	0.262
		Rear	0.315	0.071	0.386
	GPRS 1900	Front	0.252	0.043	0.295
		Rear	0.340	0.071	0.411
	WCDMA 850	Front	0.295	0.043	0.338
		Rear	0.386	0.071	0.457
	WCDMA 1700	Front	0.338	0.043	0.381
		Rear	0.397	0.071	0.468
	WCDMA 1900	Front	0.371	0.043	0.414
		Rear	0.740	0.071	0.811
	LTE Band 12	Front	0.152	0.043	0.195
		Rear	0.169	0.071	0.240
	LTE Band 4	Front	0.272	0.043	0.315
		Rear	0.523	0.071	0.594
	LTE Band 2	Front	0.395	0.043	0.438
		Rear	0.518	0.071	0.589
	LTE Band 41	Front	0.401	0.043	0.444
		Rear	0.206	0.071	0.277

Table 12.5.14 Simultaneous Transmission Scenario : 2G/3G/4G + 5.6 GHz W-LAN Ant.2 (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.6G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Body-Worn SAR	GSM 850	Front	0.280	0.074	0.354
		Rear	0.345	0.164	0.509
	GPRS 850	Front	0.288	0.074	0.362
		Rear	0.358	0.164	0.522
	GSM 1900	Front	0.219	0.074	0.293
		Rear	0.315	0.164	0.479
	GPRS 1900	Front	0.252	0.074	0.326
		Rear	0.340	0.164	0.504
	WCDMA 850	Front	0.295	0.074	0.369
		Rear	0.386	0.164	0.550
	WCDMA 1700	Front	0.338	0.074	0.412
		Rear	0.397	0.164	0.561
	WCDMA 1900	Front	0.371	0.074	0.445
		Rear	0.740	0.164	0.904
	LTE Band 12	Front	0.152	0.074	0.226
		Rear	0.169	0.164	0.333
	LTE Band 4	Front	0.272	0.074	0.346
		Rear	0.523	0.164	0.687
	LTE Band 2	Front	0.395	0.074	0.469
		Rear	0.518	0.164	0.682
	LTE Band 41	Front	0.401	0.074	0.475
		Rear	0.206	0.164	0.370

Table 12.5.15 Simultaneous Transmission Scenario : 2G/3G/4G + 5.6 GHz W-LAN MIMO (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.6G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Body-Worn SAR	GSM 850	Front	0.280	0.089	0.369
		Rear	0.345	0.188	0.533
	GPRS 850	Front	0.288	0.089	0.377
		Rear	0.358	0.188	0.546
	GSM 1900	Front	0.219	0.089	0.308
		Rear	0.315	0.188	0.503
	GPRS 1900	Front	0.252	0.089	0.341
		Rear	0.340	0.188	0.528
	WCDMA 850	Front	0.295	0.089	0.384
		Rear	0.386	0.188	0.574
	WCDMA 1700	Front	0.338	0.089	0.427
		Rear	0.397	0.188	0.585
	WCDMA 1900	Front	0.371	0.089	0.460
		Rear	0.740	0.188	0.928
	LTE Band 12	Front	0.152	0.089	0.241
		Rear	0.169	0.188	0.357
	LTE Band 4	Front	0.272	0.089	0.361
		Rear	0.523	0.188	0.711
	LTE Band 2	Front	0.395	0.089	0.484
		Rear	0.518	0.188	0.706
	LTE Band 41	Front	0.401	0.089	0.490
		Rear	0.206	0.188	0.394

Table 12.5.16 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Body-Worn SAR	GSM 850	Front	0.280	0.007	0.287
		Rear	0.345	0.039	0.384
	GPRS 850	Front	0.288	0.007	0.295
		Rear	0.358	0.039	0.397
	GSM 1900	Front	0.219	0.007	0.226
		Rear	0.315	0.039	0.354
	GPRS 1900	Front	0.252	0.007	0.259
		Rear	0.340	0.039	0.379
	WCDMA 850	Front	0.295	0.007	0.302
		Rear	0.386	0.039	0.425
	WCDMA 1700	Front	0.338	0.007	0.345
		Rear	0.397	0.039	0.436
	WCDMA 1900	Front	0.371	0.007	0.378
		Rear	0.740	0.039	0.779
	LTE Band 12	Front	0.152	0.007	0.159
		Rear	0.169	0.039	0.208
	LTE Band 4	Front	0.272	0.007	0.279
		Rear	0.523	0.039	0.562
	LTE Band 2	Front	0.395	0.007	0.402
		Rear	0.518	0.039	0.557
	LTE Band 41	Front	0.401	0.007	0.408
		Rear	0.206	0.039	0.245

Table 12.5.17 Simultaneous Transmission Scenario : Bluetooth Ant.1 + 5 GHz W-LAN Ant.1 (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	Bluetooth Ant.1 SAR (W/kg)	5G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Body-Worn SAR	5.3G W-LAN Ant.1	Front	0.007	0.037	0.044
		Rear	0.039	0.052	0.091
	5.6G W-LAN Ant.1	Front	0.007	0.043	0.050
		Rear	0.039	0.071	0.110

Table 12.5.18 Simultaneous Transmission Scenario : Bluetooth Ant.1 + 5 GHz W-LAN Ant.2 (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	Bluetooth Ant.1 SAR (W/kg)	5G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Body-Worn SAR	5.3G W-LAN Ant.2	Front	0.007	0.062	0.069
		Rear	0.039	0.190	0.229
	5.6G W-LAN Ant.2	Front	0.007	0.037	0.044
		Rear	0.039	0.052	0.091

Table 12.5.19 Simultaneous Transmission Scenario : Bluetooth Ant.1 + 5 GHz W-LAN MIMO (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	Bluetooth Ant.1 SAR (W/kg)	5G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Body-Worn SAR	5.3G W-LAN MIMO	Front	0.007	0.080	0.087
		Rear	0.039	0.277	0.316
	5.6G W-LAN MIMO	Front	0.007	0.089	0.096
		Rear	0.039	0.188	0.227

12.6 Hotspot SAR Simultaneous Transmission Analysis

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

Table 12.6.1 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN Ant.1 (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)
Hotspot SAR	GPRS 850	Top	-	0.021	0.021
		Bottom	0.171	-	0.171
		Front	0.288	0.025	0.313
		Rear	0.358	0.100	0.458
		Right	0.299	0.082	0.381
		Left	0.478	-	0.478
	GPRS 1900	Top	-	0.021	0.021
		Bottom	0.656	-	0.656
		Front	0.252	0.025	0.277
		Rear	0.340	0.100	0.440
		Right	0.018	0.082	0.100
		Left	0.104	-	0.104
	WCDMA 850	Top	-	0.021	0.021
		Bottom	0.278	-	0.278
		Front	0.295	0.025	0.320
		Rear	0.386	0.100	0.486
		Right	0.244	0.082	0.326
		Left	0.414	-	0.414
	WCDMA 1700	Top	-	0.021	0.021
		Bottom	0.755	-	0.755
		Front	0.338	0.025	0.363
		Rear	0.397	0.100	0.497
		Right	0.015	0.082	0.097
		Left	0.074	-	0.074
	WCDMA 1900	Top	-	0.021	0.021
		Bottom	1.002	-	1.002
		Front	0.371	0.025	0.396
		Rear	0.740	0.100	0.840
		Right	0.049	0.082	0.131
		Left	0.253	-	0.253
	LTE Band 12	Top	-	0.021	0.021
		Bottom	0.152	-	0.152
		Front	0.152	0.025	0.177
		Rear	0.169	0.100	0.269
		Right	0.078	0.082	0.160
		Left	0.136	-	0.136
	LTE Band 4	Top	-	0.021	0.021
		Bottom	1.071	-	1.071
		Front	0.272	0.025	0.297
		Rear	0.523	0.100	0.623
		Right	0.010	0.082	0.092
		Left	0.123	-	0.123
	LTE Band 2	Top	-	0.021	0.021
		Bottom	1.025	-	1.025
		Front	0.395	0.025	0.420
		Rear	0.518	0.100	0.618
		Right	0.029	0.082	0.111
		Left	0.306	-	0.306
	LTE Band 41	Top	-	0.021	0.021
		Bottom	0.701	-	0.701
		Front	0.401	0.025	0.426
		Rear	0.206	0.100	0.306
		Right	0.040	0.082	0.122
		Left	0.212	-	0.212

Table 12.6.2 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN Ant.2 (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
Hotspot SAR	GPRS 850	Top	-	0.021	0.021
		Bottom	0.171	-	0.171
		Front	0.288	0.024	0.312
		Rear	0.358	0.170	0.528
		Right	0.299	-	0.299
		Left	0.478	0.206	0.684
	GPRS 1900	Top	-	0.021	0.021
		Bottom	0.656	-	0.656
		Front	0.252	0.024	0.276
		Rear	0.340	0.170	0.510
		Right	0.018	0.206	0.224
		Left	0.104	-	0.104
	WCDMA 850	Top	-	0.021	0.021
		Bottom	0.278	-	0.278
		Front	0.295	0.024	0.319
		Rear	0.386	0.170	0.556
		Right	0.244	-	0.244
		Left	0.414	0.206	0.620
	WCDMA 1700	Top	-	0.021	0.021
		Bottom	0.755	-	0.755
		Front	0.338	0.024	0.362
		Rear	0.397	0.170	0.567
		Right	0.015	-	0.015
		Left	0.074	0.206	0.280
	WCDMA 1900	Top	-	0.021	0.021
		Bottom	1.002	-	1.002
		Front	0.371	0.024	0.395
		Rear	0.740	0.170	0.910
		Right	0.049	0.206	0.255
		Left	0.253	-	0.253
	LTE Band 12	Top	-	0.021	0.021
		Bottom	0.152	-	0.152
		Front	0.152	0.024	0.176
		Rear	0.169	0.170	0.339
		Right	0.078	-	0.078
		Left	0.136	0.206	0.342
	LTE Band 4	Top	-	0.021	0.021
		Bottom	1.071	-	1.071
		Front	0.272	0.024	0.296
		Rear	0.523	0.170	0.693
		Right	0.010	-	0.010
		Left	0.123	0.206	0.329
	LTE Band 2	Top	-	0.021	0.021
		Bottom	1.025	-	1.025
		Front	0.395	0.024	0.419
		Rear	0.518	0.170	0.688
		Right	0.029	0.206	0.235
		Left	0.306	-	0.306
	LTE Band 41	Top	-	0.021	0.021
		Bottom	0.701	-	0.701
		Front	0.401	0.024	0.425
		Rear	0.206	0.170	0.376
		Right	0.040	-	0.040
		Left	0.212	0.206	0.418

Table 12.6.3 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN MIMO (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)
Hotspot SAR	GPRS 850	Top	-	0.035	0.035
		Bottom	0.171	-	0.171
		Front	0.288	0.029	0.317
		Rear	0.358	0.210	0.568
		Right	0.299	0.118	0.417
		Left	0.478	0.237	0.715
	GPRS 1900	Top	-	0.035	0.035
		Bottom	0.656	-	0.656
		Front	0.252	0.029	0.281
		Rear	0.340	0.210	0.550
		Right	0.018	0.118	0.136
		Left	0.104	0.237	0.341
	WCDMA 850	Top	-	0.035	0.035
		Bottom	0.278	-	0.278
		Front	0.295	0.029	0.324
		Rear	0.386	0.210	0.596
		Right	0.244	0.118	0.362
		Left	0.414	0.237	0.651
	WCDMA 1700	Top	-	0.035	0.035
		Bottom	0.755	-	0.755
		Front	0.338	0.029	0.367
		Rear	0.397	0.210	0.607
		Right	0.015	0.118	0.133
		Left	0.074	0.237	0.311
	WCDMA 1900	Top	-	0.035	0.035
		Bottom	1.002	-	1.002
		Front	0.371	0.029	0.400
		Rear	0.740	0.210	0.950
		Right	0.049	0.118	0.167
		Left	0.253	0.237	0.490
	LTE Band 12	Top	-	0.035	0.035
		Bottom	0.152	-	0.152
		Front	0.152	0.029	0.181
		Rear	0.169	0.210	0.379
		Right	0.078	0.118	0.196
		Left	0.136	0.237	0.373
	LTE Band 4	Top	-	0.035	0.035
		Bottom	1.071	-	1.071
		Front	0.272	0.029	0.301
		Rear	0.523	0.210	0.733
		Right	0.010	0.118	0.128
		Left	0.123	0.237	0.360
	LTE Band 2	Top	-	0.035	0.035
		Bottom	1.025	-	1.025
		Front	0.395	0.029	0.424
		Rear	0.518	0.210	0.728
		Right	0.029	0.118	0.147
		Left	0.306	0.237	0.543
	LTE Band 41	Top	-	0.035	0.035
		Bottom	0.701	-	0.701
		Front	0.401	0.029	0.430
		Rear	0.206	0.210	0.416
		Right	0.040	0.118	0.158
		Left	0.212	0.237	0.449

Table 12.6.4 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	ΣSAR (W/kg)
Hotspot SAR	GPRS 850	Top	-	0.007	0.007
		Bottom	0.171	-	0.171
		Front	0.288	0.007	0.295
		Rear	0.358	0.039	0.397
		Right	0.299	0.024	0.323
		Left	0.478	0.024	0.478
	GPRS 1900	Top	-	0.007	0.007
		Bottom	0.656	-	0.656
		Front	0.252	0.007	0.259
		Rear	0.340	0.039	0.379
		Right	0.018	0.024	0.042
		Left	0.104	-	0.104
	WCDMA 850	Top	-	0.007	0.007
		Bottom	0.278	-	0.278
		Front	0.295	0.007	0.302
		Rear	0.386	0.039	0.425
		Right	0.244	0.024	0.268
		Left	0.414	0.024	0.414
	WCDMA 1700	Top	-	0.007	0.007
		Bottom	0.755	-	0.755
		Front	0.338	0.007	0.345
		Rear	0.397	0.039	0.436
		Right	0.015	0.024	0.039
		Left	0.074	-	0.074
	WCDMA 1900	Top	-	0.007	0.007
		Bottom	1.002	-	1.002
		Front	0.371	0.007	0.378
		Rear	0.740	0.039	0.779
		Right	0.049	0.024	0.073
		Left	0.253	-	0.253
	LTE Band 12	Top	-	0.007	0.007
		Bottom	0.152	-	0.152
		Front	0.152	0.007	0.159
		Rear	0.169	0.039	0.208
		Right	0.078	0.024	0.102
		Left	0.136	-	0.136
	LTE Band 4	Top	-	0.007	0.007
		Bottom	1.071	-	1.071
		Front	0.272	0.007	0.279
		Rear	0.523	0.039	0.562
		Right	0.010	0.024	0.034
		Left	0.123	-	0.123
	LTE Band 2	Top	-	0.007	0.007
		Bottom	1.025	-	1.025
		Front	0.395	0.007	0.402
		Rear	0.518	0.039	0.557
		Right	0.029	0.024	0.053
		Left	0.306	-	0.306
	LTE Band 41	Top	-	0.007	0.007
		Bottom	0.701	-	0.701
		Front	0.401	0.007	0.408
		Rear	0.206	0.039	0.245
		Right	0.040	0.024	0.064
		Left	0.212	-	0.212

12.7 Simultaneous Transmission Conclusion

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

13. SAR MEASUREMENT VARIABILITY

13.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01r04, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

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

1. When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
2. A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~10% from the 1-g SAR limit).
3. A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .
4. Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg
5. The same procedures should be adapted for measurements according to extremity exposure limits by applying a factor of 2.5 for extremity exposure to the corresponding SAR thresholds.

Table 13.1 Hotspot SAR Measurement Variability Results

Frequency		Mode	Service	# of Time Slots	Spacing [Side]	Measured SAR (1g)	1st Repeated SAR(1g)	Ratio	2nd Repeated SAR(1g)	Ratio	3rd Repeated SAR(1g)	Ratio
MHz	Ch.					(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1880.0	9400	WCDMA 1900	RMC	-	10 mm [Bottom]	0.874	0.874	1.00	-	-	-	-
1732.5	20175	LTE B4	-	-	10 mm [Bottom]	0.966	0.963	1.00	-	-	-	-
1880.0	18900	LTE B2	-	-	10 mm [Bottom]	0.823	0.823	1.00	-	-	-	-
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure							Body 1.6 W/kg (mW/g) averaged over 1 gram					

13.2 Measurement Uncertainty

The measured SAR was < 1.5 W/kg for 1g and < 3.75 W/kg for 10g for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis per IEEE 1528-2013 was not required.

14. EQUIPMENT LIST

Table 14.1.1 Test Equipment Calibration

Type	Manufacturer	Model	Cal.Date	Next.Cal.Date	S/N
☒ SEMITEC Engineering	SEMITEC	N/A	N/A	N/A	Shield Room
☒ SEMITEC Engineering	SEMITEC	N/A	N/A	N/A	Shield Room
☒ SEMITEC Engineering	SEMITEC	N/A	N/A	N/A	Shield Room
☒ Robot	SPEAG	TX90XL	N/A	N/A	F13/5P9GA1/A/01
☒ Robot	SPEAG	TX90XL	N/A	N/A	F13/5RR2A1/A/01
☒ Robot	SPEAG	TX60L	N/A	N/A	F15/50NHA1/A/01
☒ Robot Controller	SPEAG	CS8C	N/A	N/A	F13/5P9GA1/C/01
☒ Robot Controller	SPEAG	CS8C	N/A	N/A	F13/5RR2A1/C/01
☒ Robot Controller	SPEAG	CS8C	N/A	N/A	F15/50NHA1/C/01
☒ Joystick	SPEAG	N/A	N/A	N/A	S-12450905
☒ Joystick	SPEAG	N/A	N/A	N/A	S-13200990
☒ Joystick	SPEAG	N/A	N/A	N/A	D21142605A
☒ Intel Core i7-3 770 3.40 GHz Windows 7 Professional	N/A	N/A	N/A	N/A	N/A
☒ Intel Core i7-3 770 3.40 GHz Windows 7 Professional	N/A	N/A	N/A	N/A	N/A
☒ Intel Core i7-8 700K 3.70 GHz Window 10 Pro	N/A	N/A	N/A	N/A	N/A
☒ Probe Alignment Unit LB	N/A	N/A	N/A	N/A	SE UKS 030 AA
☒ Probe Alignment Unit LB	N/A	N/A	N/A	N/A	SE UKS 030 AA
☒ Probe Alignment Unit LB	N/A	N/A	N/A	N/A	SE UKS 030 AA
☒ Device Holder	SPEAG	SD000H01HA	N/A	N/A	N/A
☒ Device Holder	SPEAG	SD000H01HA	N/A	N/A	N/A
☒ Device Holder	SPEAG	SD000H01HA	N/A	N/A	N/A
☒ Twin SAM Phantom	SPEAG	QD000P40CD	N/A	N/A	1782
☒ Twin SAM Phantom	SPEAG	QD000P40CD	N/A	N/A	1785
☒ Twin SAM Phantom	SPEAG	QD000P40CD	N/A	N/A	1786
☒ Twin SAM Phantom	SPEAG	QD000P40CD	N/A	N/A	1895
☒ Data Acquisition Electronics	SPEAG	DAE4V1	2021-04-26	2022-04-26	1485
☒ Data Acquisition Electronics	SPEAG	DAE3V1	2020-11-24	2021-11-24	520
☒ Data Acquisition Electronics	SPEAG	DAE4V1	2021-07-27	2022-07-27	1335
☒ Dosimetric E-Field Probe	SPEAG	EX3DV4	2020-11-27	2021-11-27	7368
☒ Dosimetric E-Field Probe	SPEAG	ES3DV3	2021-01-27	2022-01-27	3327
☒ Dosimetric E-Field Probe	SPEAG	EX3DV4	2021-06-23	2022-06-23	7337
☒ 750MHz SAR Dipole	SPEAG	D750V3	2021-01-21	2023-01-21	1049
☒ 835MHz SAR Dipole	SPEAG	D835V2	2021-07-21	2023-07-21	464
☒ 1800MHz SAR Dipole	SPEAG	D1800V2	2021-04-23	2023-04-23	2d047
☒ 1 900MHz SAR Dipole	SPEAG	D1900V2	2021-07-23	2023-07-23	5d029
☒ 2 450MHz SAR Dipole	SPEAG	D2450V2	2021-05-27	2023-05-27	716
☒ 2600MHz SAR Dipole	SPEAG	D2600V2	2021-02-18	2023-02-18	1016
☒ 5GHz SAR Dipole	SPEAG	D5GHzV2	2021-02-23	2023-02-23	1103
☒ Network Analyzer	Agilent	E5071C	2021-06-24	2022-06-24	MY46106970
☒ Signal Generator	Agilent	E4438C	2021-06-24	2022-06-24	US41461520
☒ Amplifier	RFBAY,Inc	MPA-40-40	2020-12-16	2021-12-16	21151801
☒ Amplifier	EMPOWER	BBS3Q7ELU	2021-06-24	2022-06-24	1020
☒ High Power RF Amplifier	EMPOWER	BBS3Q8CCJ	2021-06-24	2022-06-24	1005
☒ Power Meter	HP	EPM-442A	2020-12-16	2021-12-16	GB37170267
☒ Power Meter	HP	EPM-442A	2020-12-16	2021-12-16	GB37170413
☒ Power Sensor	HP	8481A	2020-12-16	2021-12-16	US37294267
☒ Power Sensor	HP	8481A	2020-12-16	2021-12-16	2702A61707
☒ Power Sensor	HP	8481A	2020-12-16	2021-12-16	2702A65976
☒ Dual Directional Coupler	Agilent	778D-012	2020-12-16	2021-12-16	50228
☒ Directional Coupler	HP	772D	2021-06-24	2022-06-24	2889A01064
☒ Low Pass Filter 1GHz	Wainwright Instruments	WLK6-1000-1400-9000-60SS	2021-06-24	2022-06-24	165
☒ Low Pass Filter 1.5GHz	Micro LAB	LA-15N	2021-06-24	2022-06-24	2
☒ Low Pass Filter 3.0GHz	Micro LAB	LA-30N	2021-06-24	2022-06-24	2
☒ Low Pass Filter 6.0GHz	Micro LAB	LA-60N	2020-12-16	2021-12-16	03942
☒ Attenuators(10 dB)	WEINSCHIEL	23-10-34	2020-12-16	2021-12-16	BP4387
☒ Step Attenuator	H/P	8494A	2021-06-24	2022-06-24	3308A33341
☒ Dielectric Probe kit	SPEAG	DAK-3.5	2020-11-25	2021-11-25	1092
☒ 8960 Series 10 Wireless Comms. Test Set	Agilent	E5515C	2021-06-24	2022-06-24	GB41321164
☒ Wideband Radio Communication Tester	Rohde Schwarz	CMW500	2020-12-16	2021-12-16	101414
☒ Wideband Radio Communication Tester	Rohde Schwarz	CMW500	2021-04-23	2022-04-23	166448
☒ Power Splitter	Anritsu	K241B	2020-12-16	2021-12-16	1301183
☒ Bluetooth Tester	TESCOM	TC-3000C	2021-06-24	2022-06-24	3000C000563

NOTE(S):

- The E-field probe was calibrated by SPEAG, by temperature measurement procedure. Dipole Verification measurement is performed by DT&C before each test. The brain and muscle simulating material are calibrated by DT&C using the dielectric probe system and network analyzer to determine the conductivity and permittivity (dielectric constant) of the brain and muscle-equivalent material. Each equipment item was used solely within its respective calibration period.
- 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. 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.

15. MEASUREMENT UNCERTAINTIES

750 ~ 2 600 MHz Head (SN: 7337)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (± %)	Standard 10 g (± %)	vi 2 or Veff
Measurement System								
Probe calibration	6.0	Normal	1	1	1	6.0	6.0	∞
Axial isotropy	4.7	Rectangular	√3	1	1	2.7	2.7	∞
Hemispherical isotropy	9.6	Rectangular	√3	1	1	5.5	5.5	∞
Boundary Effects	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Probe Linearity	4.7	Rectangular	√3	1	1	2.7	2.7	∞
Probe modulation response	2.4	Rectangular	√3	1	1	1.4	1.4	∞
Detection limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Readout Electronics	1.0	Normal	1	1	1	1.0	1.0	∞
Response time	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	√3	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner	0.4	Rectangular	√3	1	1	0.23	0.23	∞
Probe Positioning	2.9	Rectangular	√3	1	1	1.7	1.7	∞
Algorithms for Max. SAR Eval.	1.0	Rectangular	√3	1	1	0.58	0.58	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	√3	1	1	2.9	2.9	∞
SAR Scaling	2.0	Rectangular	√3	1	1	1.2	1.2	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	√3	1	1	4.4	4.4	∞
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	4.0	Normal	1	0.78	0.71	3.1	2.8	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	4.0	Normal	1	0.23	0.26	0.92	1.0	10
Temp. unc. - Conductivity	2.0	Rectangular	√3	0.78	0.71	0.90	0.82	∞
Temp. unc. - Permittivity	2.0	Rectangular	√3	0.23	0.26	0.27	0.30	∞
Combined Standard Uncertainty						13	13	330
Expanded Uncertainty (k=2)						26	26	

$$U(1\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

$$= 26\% \text{ (The confidence level is about } 95\% \text{ } k = 2)$$

$$U(10\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

$$= 26\% \text{ (The confidence level is about } 95\% \text{ } k = 2)$$

1 800 MHz Head (SN: 3327)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g ($\pm\%$)	Standard 10 g ($\pm\%$)	vi 2 or Veff
Measurement System								
Probe calibration	6.0	Normal	1	1	1	6.0	6.0	∞
Axial isotropy	4.7	Rectangular	$\sqrt{3}$	1	1	2.7	2.7	∞
Hemispherical isotropy	9.6	Rectangular	$\sqrt{3}$	1	1	5.5	5.5	∞
Boundary Effects	0.8	Rectangular	$\sqrt{3}$	1	1	0.46	0.46	∞
Probe Linearity	4.7	Rectangular	$\sqrt{3}$	1	1	2.7	2.7	∞
Probe modulation response	2.4	Rectangular	$\sqrt{3}$	1	1	1.4	1.4	∞
Detection limits	0.25	Rectangular	$\sqrt{3}$	1	1	0.14	0.14	∞
Readout Electronics	1.0	Normal	1	1	1	1.0	1.0	∞
Response time	0.8	Rectangular	$\sqrt{3}$	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	$\sqrt{3}$	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	$\sqrt{3}$	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	$\sqrt{3}$	1	1	1.7	1.7	∞
Probe Positioner	0.4	Rectangular	$\sqrt{3}$	1	1	0.23	0.23	∞
Probe Positioning	2.9	Rectangular	$\sqrt{3}$	1	1	1.7	1.7	∞
Algorithms for Max. SAR Eval.	1.0	Rectangular	$\sqrt{3}$	1	1	0.58	0.58	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	$\sqrt{3}$	1	1	2.9	2.9	∞
SAR Scaling	2.0	Rectangular	$\sqrt{3}$	1	1	1.2	1.2	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	$\sqrt{3}$	1	1	4.4	4.4	∞
Liquid conductivity (Target)	5.0	Rectangular	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	3.9	Normal	1	0.78	0.71	3.0	2.8	10
Liquid permittivity (Target)	5.0	Rectangular	$\sqrt{3}$	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	4.0	Normal	1	0.23	0.26	0.92	1.0	10
Temp. unc. - Conductivity	1.9	Rectangular	$\sqrt{3}$	0.78	0.71	0.86	0.78	∞
Temp. unc. - Permittivity	1.8	Rectangular	$\sqrt{3}$	0.23	0.26	0.24	0.27	∞
Combined Standard Uncertainty						13	13	330
Expanded Uncertainty (k=2)						26	26	

$$U(1\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

$$= 26\% \text{ (The confidence level is about 95 \% } k = 2)$$

$$U(10\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

$$= 26\% \text{ (The confidence level is about 95 \% } k = 2)$$

1 900 MHz Head (SN: 3327)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g ($\pm\%$)	Standard 10 g ($\pm\%$)	vi 2 or Veff
Measurement System								
Probe calibration	6.0	Normal	1	1	1	6.0	6.0	∞
Axial isotropy	4.7	Rectangular	$\sqrt{3}$	1	1	2.7	2.7	∞
Hemispherical isotropy	9.6	Rectangular	$\sqrt{3}$	1	1	5.5	5.5	∞
Boundary Effects	0.8	Rectangular	$\sqrt{3}$	1	1	0.46	0.46	∞
Probe Linearity	4.7	Rectangular	$\sqrt{3}$	1	1	2.7	2.7	∞
Probe modulation response	2.4	Rectangular	$\sqrt{3}$	1	1	1.4	1.4	∞
Detection limits	0.25	Rectangular	$\sqrt{3}$	1	1	0.14	0.14	∞
Readout Electronics	1.0	Normal	1	1	1	1.0	1.0	∞
Response time	0.8	Rectangular	$\sqrt{3}$	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	$\sqrt{3}$	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	$\sqrt{3}$	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	$\sqrt{3}$	1	1	1.7	1.7	∞
Probe Positioner	0.4	Rectangular	$\sqrt{3}$	1	1	0.23	0.23	∞
Probe Positioning	2.9	Rectangular	$\sqrt{3}$	1	1	1.7	1.7	∞
Algorithms for Max. SAR Eval.	1.0	Rectangular	$\sqrt{3}$	1	1	0.58	0.58	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	$\sqrt{3}$	1	1	2.9	2.9	∞
SAR Scaling	2.0	Rectangular	$\sqrt{3}$	1	1	1.2	1.2	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	$\sqrt{3}$	1	1	4.4	4.4	∞
Liquid conductivity (Target)	5.0	Rectangular	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	4.0	Normal	1	0.78	0.71	3.1	2.8	10
Liquid permittivity (Target)	5.0	Rectangular	$\sqrt{3}$	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	3.8	Normal	1	0.23	0.26	0.87	1.0	10
Temp. unc. - Conductivity	1.9	Rectangular	$\sqrt{3}$	0.78	0.71	0.86	0.78	∞
Temp. unc. - Permittivity	2.0	Rectangular	$\sqrt{3}$	0.23	0.26	0.27	0.30	∞
Combined Standard Uncertainty						13	13	330
Expanded Uncertainty (k=2)						26	26	

$$U(1\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

= 26 % (The confidence level is about 95 % $k = 2$)

$$U(10\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

= 26 % (The confidence level is about 95 % $k = 2$)

1 900 MHz Head (SN: 7368)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (± %)	Standard 10 g (± %)	vi 2 or Veff
Measurement System								
Probe calibration	6.0	Normal	1	1	1	6.0	6.0	∞
Axial isotropy	4.7	Rectangular	√3	1	1	2.7	2.7	∞
Hemispherical isotropy	9.6	Rectangular	√3	1	1	5.5	5.5	∞
Boundary Effects	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Probe Linearity	4.7	Rectangular	√3	1	1	2.7	2.7	∞
Probe modulation response	2.4	Rectangular	√3	1	1	1.4	1.4	∞
Detection limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Readout Electronics	1.0	Normal	1	1	1	1.0	1.0	∞
Response time	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	√3	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner	0.4	Rectangular	√3	1	1	0.23	0.23	∞
Probe Positioning	2.9	Rectangular	√3	1	1	1.7	1.7	∞
Algorithms for Max. SAR Eval.	1.0	Rectangular	√3	1	1	0.58	0.58	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	√3	1	1	2.9	2.9	∞
SAR Scaling	2.0	Rectangular	√3	1	1	1.2	1.2	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	√3	1	1	4.4	4.4	∞
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	3.9	Normal	1	0.78	0.71	3.0	2.8	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	4.0	Normal	1	0.23	0.26	0.92	1.0	10
Temp. unc. - Conductivity	2.0	Rectangular	√3	0.78	0.71	0.90	0.82	∞
Temp. unc. - Permittivity	1.9	Rectangular	√3	0.23	0.26	0.25	0.29	∞
Combined Standard Uncertainty						13	13	330
Expanded Uncertainty (k=2)						26	26	

$$U(1\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

$$= 26\% \text{ (The confidence level is about 95 \% } k = 2 \text{)}$$

$$U(10\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

$$= 26\% \text{ (The confidence level is about 95 \% } k = 2 \text{)}$$

2 450 MHz Head (SN: 3327)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (± %)	Standard 10 g (± %)	vi 2 or Veff
Measurement System								
Probe calibration	6.0	Normal	1	1	1	6.0	6.0	∞
Axial isotropy	4.7	Rectangular	√3	1	1	2.7	2.7	∞
Hemispherical isotropy	9.6	Rectangular	√3	1	1	5.5	5.5	∞
Boundary Effects	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Probe Linearity	4.7	Rectangular	√3	1	1	2.7	2.7	∞
Probe modulation response	2.4	Rectangular	√3	1	1	1.4	1.4	∞
Detection limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Readout Electronics	1.0	Normal	1	1	1	1.0	1.0	∞
Response time	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	√3	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner	0.4	Rectangular	√3	1	1	0.23	0.23	∞
Probe Positioning	2.9	Rectangular	√3	1	1	1.7	1.7	∞
Algorithms for Max. SAR Eval.	1.0	Rectangular	√3	1	1	0.58	0.58	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	√3	1	1	2.9	2.9	∞
SAR Scaling	2.0	Rectangular	√3	1	1	1.2	1.2	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	√3	1	1	4.4	4.4	∞
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	4.0	Normal	1	0.78	0.71	3.1	2.8	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	3.9	Normal	1	0.23	0.26	0.90	1.0	10
Temp. unc. - Conductivity	1.8	Rectangular	√3	0.78	0.71	0.81	0.74	∞
Temp. unc. - Permittivity	1.9	Rectangular	√3	0.23	0.26	0.25	0.29	∞
Combined Standard Uncertainty						13	13	330
Expanded Uncertainty (k=2)						26	26	

$$U(1\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

= 26 % (The confidence level is about 95 % k = 2)

$$U(10\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

= 26 % (The confidence level is about 95 % k = 2)

2 450 MHz Head (SN: 7368)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (± %)	Standard 10 g (± %)	vi 2 or Veff
Measurement System								
Probe calibration	6.0	Normal	1	1	1	6.0	6.0	∞
Axial isotropy	4.7	Rectangular	√3	1	1	2.7	2.7	∞
Hemispherical isotropy	9.6	Rectangular	√3	1	1	5.5	5.5	∞
Boundary Effects	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Probe Linearity	4.7	Rectangular	√3	1	1	2.7	2.7	∞
Probe modulation response	2.4	Rectangular	√3	1	1	1.4	1.4	∞
Detection limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Readout Electronics	1.0	Normal	1	1	1	1.0	1.0	∞
Response time	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	√3	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner	0.4	Rectangular	√3	1	1	0.23	0.23	∞
Probe Positioning	2.9	Rectangular	√3	1	1	1.7	1.7	∞
Algorithms for Max. SAR Eval.	1.0	Rectangular	√3	1	1	0.58	0.58	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	√3	1	1	2.9	2.9	∞
SAR Scaling	2.0	Rectangular	√3	1	1	1.2	1.2	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	√3	1	1	4.4	4.4	∞
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	4.2	Normal	1	0.78	0.71	3.3	3.0	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	4.0	Normal	1	0.23	0.26	0.92	1.0	10
Temp. unc. - Conductivity	1.9	Rectangular	√3	0.78	0.71	0.86	0.78	∞
Temp. unc. - Permittivity	1.9	Rectangular	√3	0.23	0.26	0.25	0.29	∞
Combined Standard Uncertainty						13	13	330
Expanded Uncertainty (k=2)						26	26	

$$U(1\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

= 26 % (The confidence level is about 95 % k = 2)

$$U(10\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

= 26 % (The confidence level is about 95 % k = 2)

2 600 MHz Head (SN: 7368)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g ($\pm\%$)	Standard 10 g ($\pm\%$)	vi 2 or Veff
Measurement System								
Probe calibration	6.0	Normal	1	1	1	6.0	6.0	∞
Axial isotropy	4.7	Rectangular	$\sqrt{3}$	1	1	2.7	2.7	∞
Hemispherical isotropy	9.6	Rectangular	$\sqrt{3}$	1	1	5.5	5.5	∞
Boundary Effects	0.8	Rectangular	$\sqrt{3}$	1	1	0.46	0.46	∞
Probe Linearity	4.7	Rectangular	$\sqrt{3}$	1	1	2.7	2.7	∞
Probe modulation response	2.4	Rectangular	$\sqrt{3}$	1	1	1.4	1.4	∞
Detection limits	0.25	Rectangular	$\sqrt{3}$	1	1	0.14	0.14	∞
Readout Electronics	1.0	Normal	1	1	1	1.0	1.0	∞
Response time	0.8	Rectangular	$\sqrt{3}$	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	$\sqrt{3}$	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	$\sqrt{3}$	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	$\sqrt{3}$	1	1	1.7	1.7	∞
Probe Positioner	0.4	Rectangular	$\sqrt{3}$	1	1	0.23	0.23	∞
Probe Positioning	2.9	Rectangular	$\sqrt{3}$	1	1	1.7	1.7	∞
Algorithms for Max. SAR Eval.	1.0	Rectangular	$\sqrt{3}$	1	1	0.58	0.58	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	$\sqrt{3}$	1	1	2.9	2.9	∞
SAR Scaling	2.0	Rectangular	$\sqrt{3}$	1	1	1.2	1.2	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	$\sqrt{3}$	1	1	4.4	4.4	∞
Liquid conductivity (Target)	5.0	Rectangular	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	4.1	Normal	1	0.78	0.71	3.2	2.9	10
Liquid permittivity (Target)	5.0	Rectangular	$\sqrt{3}$	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	3.9	Normal	1	0.23	0.26	0.90	1.0	10
Temp. unc. - Conductivity	2.0	Rectangular	$\sqrt{3}$	0.78	0.71	0.90	0.82	∞
Temp. unc. - Permittivity	2.0	Rectangular	$\sqrt{3}$	0.23	0.26	0.27	0.30	∞
Combined Standard Uncertainty						13	13	330
Expanded Uncertainty (k=2)						26	26	

$$U(1\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

$$= 26\% \text{ (The confidence level is about 95 \% } k = 2)$$

$$U(10\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

$$= 26\% \text{ (The confidence level is about 95 \% } k = 2)$$

5 300 MHz Head (SN: 7368)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g ($\pm\%$)	Standard 10 g ($\pm\%$)	vi 2 or Veff
Measurement System								
Probe calibration	6.5	Normal	1	1	1	6.5	6.5	∞
Axial isotropy	4.7	Rectangular	$\sqrt{3}$	1	1	2.7	2.7	∞
Hemispherical isotropy	9.6	Rectangular	$\sqrt{3}$	1	1	5.5	5.5	∞
Boundary Effects	0.8	Rectangular	$\sqrt{3}$	1	1	0.46	0.46	∞
Probe Linearity	4.7	Rectangular	$\sqrt{3}$	1	1	2.7	2.7	∞
Probe modulation response	2.4	Rectangular	$\sqrt{3}$	1	1	1.4	1.4	∞
Detection limits	0.25	Rectangular	$\sqrt{3}$	1	1	0.14	0.14	∞
Readout Electronics	1.0	Normal	1	1	1	1.0	1.0	∞
Response time	0.8	Rectangular	$\sqrt{3}$	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	$\sqrt{3}$	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	$\sqrt{3}$	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	$\sqrt{3}$	1	1	1.7	1.7	∞
Probe Positioner	0.4	Rectangular	$\sqrt{3}$	1	1	0.23	0.23	∞
Probe Positioning	2.9	Rectangular	$\sqrt{3}$	1	1	1.7	1.7	∞
Algorithms for Max. SAR Eval.	1.0	Rectangular	$\sqrt{3}$	1	1	0.58	0.58	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	$\sqrt{3}$	1	1	2.9	2.9	∞
SAR Scaling	2.0	Rectangular	$\sqrt{3}$	1	1	1.2	1.2	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	$\sqrt{3}$	1	1	4.4	4.4	∞
Liquid conductivity (Target)	5.0	Rectangular	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	4.0	Normal	1	0.78	0.71	3.1	2.8	10
Liquid permittivity (Target)	5.0	Rectangular	$\sqrt{3}$	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	4.0	Normal	1	0.23	0.26	0.92	1.0	10
Temp. unc. - Conductivity	1.9	Rectangular	$\sqrt{3}$	0.78	0.71	0.86	0.78	∞
Temp. unc. - Permittivity	2.0	Rectangular	$\sqrt{3}$	0.23	0.26	0.27	0.30	∞
Combined Standard Uncertainty						13	13	330
Expanded Uncertainty (k=2)						26	26	

$$U(1\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

$$= 26\% \text{ (The confidence level is about 95 \% } k = 2)$$

$$U(10\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

$$= 26\% \text{ (The confidence level is about 95 \% } k = 2)$$

5 500 MHz Head (SN: 7368)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g ($\pm\%$)	Standard 10 g ($\pm\%$)	vi 2 or Veff
Measurement System								
Probe calibration	6.5	Normal	1	1	1	6.5	6.5	∞
Axial isotropy	4.7	Rectangular	$\sqrt{3}$	1	1	2.7	2.7	∞
Hemispherical isotropy	9.6	Rectangular	$\sqrt{3}$	1	1	5.5	5.5	∞
Boundary Effects	0.8	Rectangular	$\sqrt{3}$	1	1	0.46	0.46	∞
Probe Linearity	4.7	Rectangular	$\sqrt{3}$	1	1	2.7	2.7	∞
Probe modulation response	2.4	Rectangular	$\sqrt{3}$	1	1	1.4	1.4	∞
Detection limits	0.25	Rectangular	$\sqrt{3}$	1	1	0.14	0.14	∞
Readout Electronics	1.0	Normal	1	1	1	1.0	1.0	∞
Response time	0.8	Rectangular	$\sqrt{3}$	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	$\sqrt{3}$	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	$\sqrt{3}$	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	$\sqrt{3}$	1	1	1.7	1.7	∞
Probe Positioner	0.4	Rectangular	$\sqrt{3}$	1	1	0.23	0.23	∞
Probe Positioning	2.9	Rectangular	$\sqrt{3}$	1	1	1.7	1.7	∞
Algorithms for Max. SAR Eval.	1.0	Rectangular	$\sqrt{3}$	1	1	0.58	0.58	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	$\sqrt{3}$	1	1	2.9	2.9	∞
SAR Scaling	2.0	Rectangular	$\sqrt{3}$	1	1	1.2	1.2	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	$\sqrt{3}$	1	1	4.4	4.4	∞
Liquid conductivity (Target)	5.0	Rectangular	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	4.2	Normal	1	0.78	0.71	3.3	3.0	10
Liquid permittivity (Target)	5.0	Rectangular	$\sqrt{3}$	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	4.1	Normal	1	0.23	0.26	0.94	1.1	10
Temp. unc. - Conductivity	1.8	Rectangular	$\sqrt{3}$	0.78	0.71	0.81	0.74	∞
Temp. unc. - Permittivity	1.9	Rectangular	$\sqrt{3}$	0.23	0.26	0.25	0.29	∞
Combined Standard Uncertainty						13	13	330
Expanded Uncertainty (k=2)						26	26	

$$U(1\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

$$= 26\% \text{ (The confidence level is about 95 \% } k = 2)$$

$$U(10\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 13\%$$

$$= 26\% \text{ (The confidence level is about 95 \% } k = 2)$$

16. CONCLUSION

Measurement Conclusion

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

Please note that the absorption and distribution of electromagnetic energy in the body are every 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 impossible biological effect 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 innumerable factors may interact to determine the specific biological outcome of an exposure to electromagnetic fields, any protection guide shall consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables.

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APPENDIX A. – Probe Calibration Data

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland



S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
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Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates.

Accreditation No.: SCS 0108

Client DT&C (Dymstec)

Certificate No: EX3-7337_Jun21

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:7337

Calibration procedure(s) QA CAL-01.v9, QA CAL-14.v6, QA CAL-23.v5, QA CAL-25.v7
Calibration procedure for dosimetric E-field probes

Calibration date: June 23, 2021

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^{\circ}\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	09-Apr-21 (No. 217-03291/03292)	Apr-22
Power sensor NRP-Z91	SN: 103244	09-Apr-21 (No. 217-03291)	Apr-22
Power sensor NRP-Z91	SN: 103245	09-Apr-21 (No. 217-03292)	Apr-22
Reference 20 dB Attenuator	SN: CC2552 (20x)	09-Apr-21 (No. 217-03343)	Apr-22
DAE4	SN: 660	23-Dec-20 (No. DAE4-660_Dec20)	Dec-21
Reference Probe ES3DV2	SN: 3013	30-Dec-20 (No. ES3-3013_Dec20)	Dec-21
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-20)	In house check: Jun-22
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-20)	In house check: Jun-22
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-20)	In house check: Jun-22
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-20)	In house check: Jun-22
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-20)	In house check: Oct-21

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	
			Issued: June 24, 2021
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			

**Calibration Laboratory of
Schmid & Partner
Engineering AG**
Zeughausstrasse 43, 8004 Zurich, Switzerland



S Schweizerischer Kalibrierdienst
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S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: SCS 0108

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization ϕ	ϕ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z}** = NORM_{x,y,z} * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; D_{x,y,z}; VR_{x,y,z}**: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM_x (no uncertainty required).

EX3DV4 – SN:7337

June 23, 2021

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7337

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.62	0.59	0.56	$\pm 10.1 \%$
DCP (mV) ^B	104.8	106.3	99.8	

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Max dev.	Max Unc ^E (k=2)
0	CW	X	0.00	0.00	1.00	0.00	146.4	$\pm 3.3 \%$	$\pm 4.7 \%$
		Y	0.00	0.00	1.00		151.6		
		Z	0.00	0.00	1.00		150.6		
10352-AAA	Pulse Waveform (200Hz, 10%)	X	1.58	60.99	6.72	10.00	60.0	$\pm 2.9 \%$	$\pm 9.6 \%$
		Y	1.39	60.03	6.18		60.0		
		Z	20.00	93.10	21.57		60.0		
10353-AAA	Pulse Waveform (200Hz, 20%)	X	0.83	60.00	5.19	6.99	80.0	$\pm 2.3 \%$	$\pm 9.6 \%$
		Y	0.81	60.00	5.05		80.0		
		Z	20.00	95.78	21.76		80.0		
10354-AAA	Pulse Waveform (200Hz, 40%)	X	66.00	78.00	9.00	3.98	95.0	$\pm 1.7 \%$	$\pm 9.6 \%$
		Y	0.42	60.00	3.90		95.0		
		Z	20.00	101.71	23.27		95.0		
10355-AAA	Pulse Waveform (200Hz, 60%)	X	12.67	150.15	7.23	2.22	120.0	$\pm 1.7 \%$	$\pm 9.6 \%$
		Y	9.99	81.79	3.47		120.0		
		Z	20.00	108.07	24.97		120.0		
10387-AAA	QPSK Waveform, 1 MHz	X	0.61	63.55	12.46	1.00	150.0	$\pm 3.4 \%$	$\pm 9.6 \%$
		Y	0.72	67.15	14.54		150.0		
		Z	1.72	64.85	14.44		150.0		
10388-AAA	QPSK Waveform, 10 MHz	X	1.38	65.48	13.88	0.00	150.0	$\pm 1.4 \%$	$\pm 9.6 \%$
		Y	1.52	67.62	15.01		150.0		
		Z	2.22	66.95	15.01		150.0		
10396-AAA	64-QAM Waveform, 100 kHz	X	1.71	64.26	15.55	3.01	150.0	$\pm 0.9 \%$	$\pm 9.6 \%$
		Y	1.77	65.39	16.39		150.0		
		Z	2.83	69.77	18.39		150.0		
10399-AAA	64-QAM Waveform, 40 MHz	X	2.86	66.11	15.00	0.00	150.0	$\pm 1.4 \%$	$\pm 9.6 \%$
		Y	2.95	66.98	15.54		150.0		
		Z	3.37	65.97	15.07		150.0		
10414-AAA	WLAN CCDF, 64-QAM, 40MHz	X	3.86	65.77	15.17	0.00	150.0	$\pm 2.6 \%$	$\pm 9.6 \%$
		Y	3.93	66.45	15.57		150.0		
		Z	4.82	64.97	15.06		150.0		

Note: For details on UID parameters see Appendix

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of Norm X,Y,Z do not affect the E²-field uncertainty inside TSL (see Pages 5, 6 and 7).

^B Numerical linearization parameter: uncertainty not required.

^E Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

EX3DV4– SN:7337

June 23, 2021

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7337

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $ms.V^{-2}$	T2 $ms.V^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	10.6	75.80	32.66	4.23	0.00	4.90	0.56	0.00	1.00
Y	10.0	71.27	32.89	3.27	0.00	4.90	0.50	0.00	1.00
Z	54.8	404.12	34.68	10.78	0.00	5.06	1.33	0.15	1.01

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-174
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Note: Measurement distance from surface can be increased to 3-4 mm for an *Area Scan* job.

EX3DV4- SN:7337

June 23, 2021

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7337

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^c	Relative Permittivity ^f	Conductivity (S/m) ^f	ConvF X	ConvF Y	ConvF Z	Alpha ^g	Depth ^g (mm)	Unc (k=2)
750	41.9	0.89	10.05	10.05	10.05	0.49	0.87	± 12.0 %
835	41.5	0.90	9.76	9.76	9.76	0.50	0.80	± 12.0 %
900	41.5	0.97	9.56	9.56	9.56	0.39	0.95	± 12.0 %
1750	40.1	1.37	8.47	8.47	8.47	0.40	0.88	± 12.0 %
1900	40.0	1.40	8.17	8.17	8.17	0.38	0.86	± 12.0 %
2450	39.2	1.80	7.48	7.48	7.48	0.39	0.90	± 12.0 %
2600	39.0	1.96	7.33	7.33	7.33	0.37	0.90	± 12.0 %
3300	38.2	2.71	6.77	6.77	6.77	0.25	1.35	± 13.1 %
3500	37.9	2.91	6.70	6.70	6.70	0.30	1.35	± 13.1 %
3700	37.7	3.12	6.50	6.50	6.50	0.30	1.35	± 13.1 %
3900	37.5	3.32	6.37	6.37	6.37	0.30	1.50	± 13.1 %
4100	37.2	3.53	6.26	6.26	6.26	0.30	1.50	± 13.1 %
4200	37.1	3.63	6.20	6.20	6.20	0.35	1.50	± 13.1 %
4400	36.9	3.84	5.70	5.70	5.70	0.35	1.70	± 13.1 %
4600	36.7	4.04	5.61	5.61	5.61	0.35	1.70	± 13.1 %
4800	36.4	4.25	5.56	5.56	5.56	0.38	1.80	± 13.1 %
4950	36.3	4.40	5.52	5.52	5.52	0.36	1.80	± 13.1 %
5200	36.0	4.66	5.50	5.50	5.50	0.40	1.80	± 13.1 %
5300	35.9	4.76	5.46	5.46	5.46	0.40	1.80	± 13.1 %
5500	35.6	4.96	5.10	5.10	5.10	0.40	1.80	± 13.1 %
5600	35.5	5.07	5.05	5.05	5.05	0.40	1.80	± 13.1 %
5800	35.3	5.27	5.00	5.00	5.00	0.40	1.80	± 13.1 %

^c Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz.

^f At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^g Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:7337

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) ^c	Relative Permittivity ^f	Conductivity (S/m) ^f	ConvF X	ConvF Y	ConvF Z	Alpha ^g	Depth ^g (mm)	Unc (k=2)
3300	51.6	3.08	6.46	6.46	6.46	0.40	1.35	± 13.1 %
3900	50.8	3.78	6.17	6.17	6.17	0.40	1.60	± 13.1 %
4100	50.5	4.01	5.97	5.97	5.97	0.40	1.60	± 13.1 %
4200	50.4	4.13	5.85	5.85	5.85	0.40	1.60	± 13.1 %
4400	50.1	4.37	5.73	5.73	5.73	0.40	1.80	± 13.1 %
4600	49.8	4.60	5.71	5.71	5.71	0.40	1.80	± 13.1 %
4800	49.6	4.83	5.65	5.65	5.65	0.45	1.90	± 13.1 %
4950	49.4	5.01	5.37	5.37	5.37	0.50	1.90	± 13.1 %

^c Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz.

^f At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^g Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:7337**Calibration Parameter Determined in Head Tissue Simulating Media**

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
6500	34.5	6.07	5.50	5.50	5.50	0.25	2.50	± 18.6 %

^C Frequency validity above 6GHz is ± 700 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

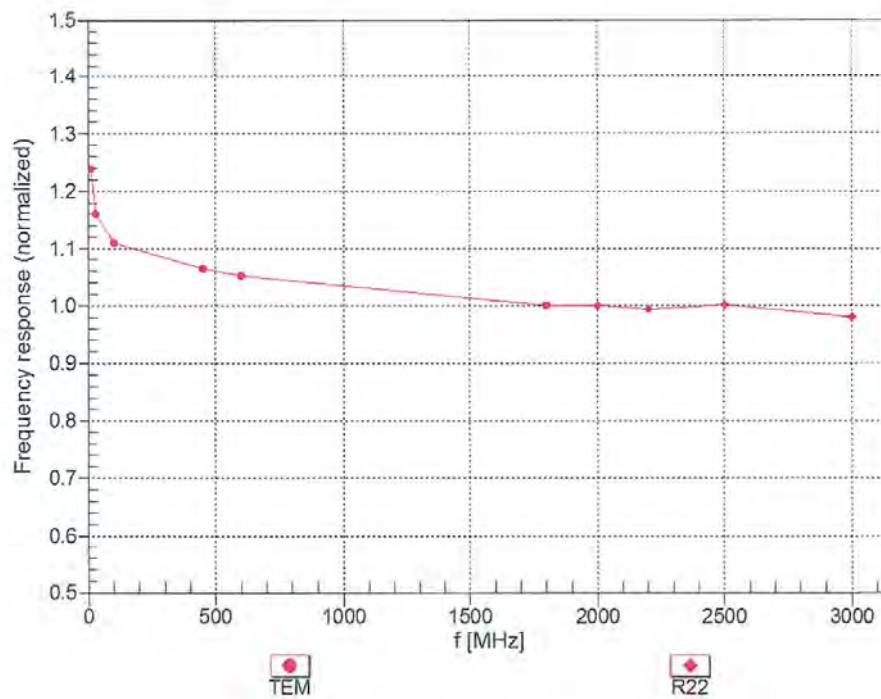
^F At frequencies 6-10 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^G Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz; below ± 2% for frequencies between 3-6 GHz; and below ± 4% for frequencies between 6-10 GHz at any distance larger than half the probe tip diameter from the boundary.

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Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

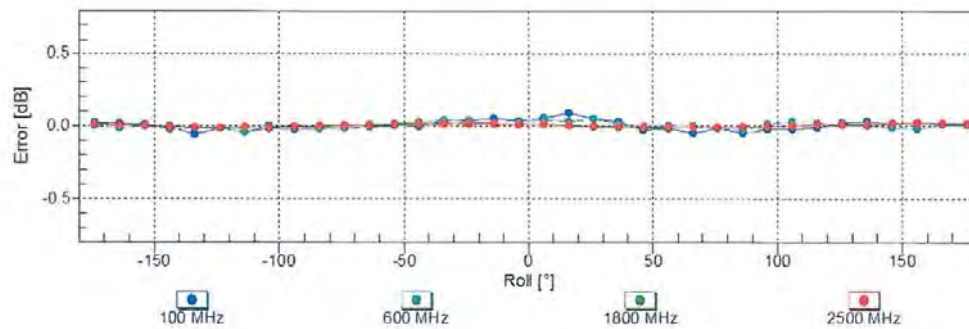
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Receiving Pattern (ϕ), $\theta = 0^\circ$

f=600 MHz,TEM

f=1800 MHz,R22

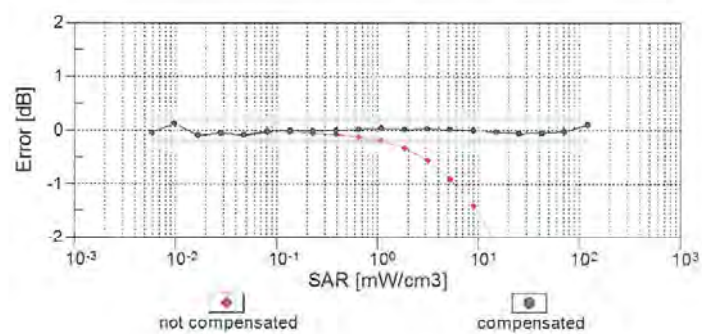
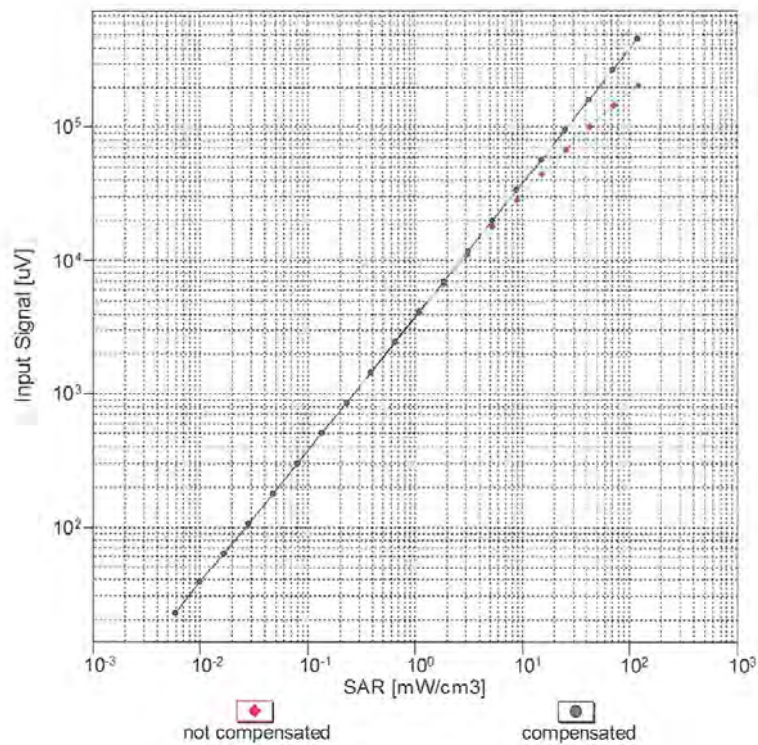


Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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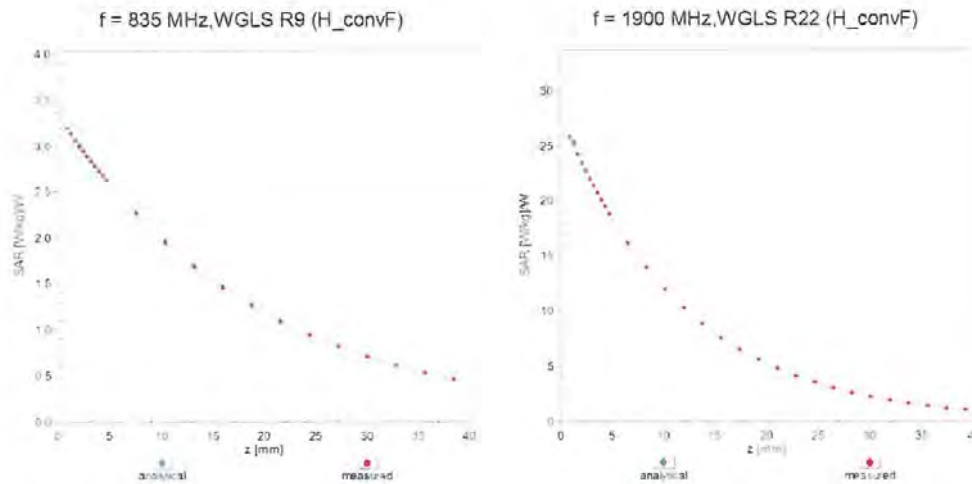
Dynamic Range $f(\text{SAR}_{\text{head}})$ (TEM cell, $f_{\text{eval}} = 1900 \text{ MHz}$)

Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

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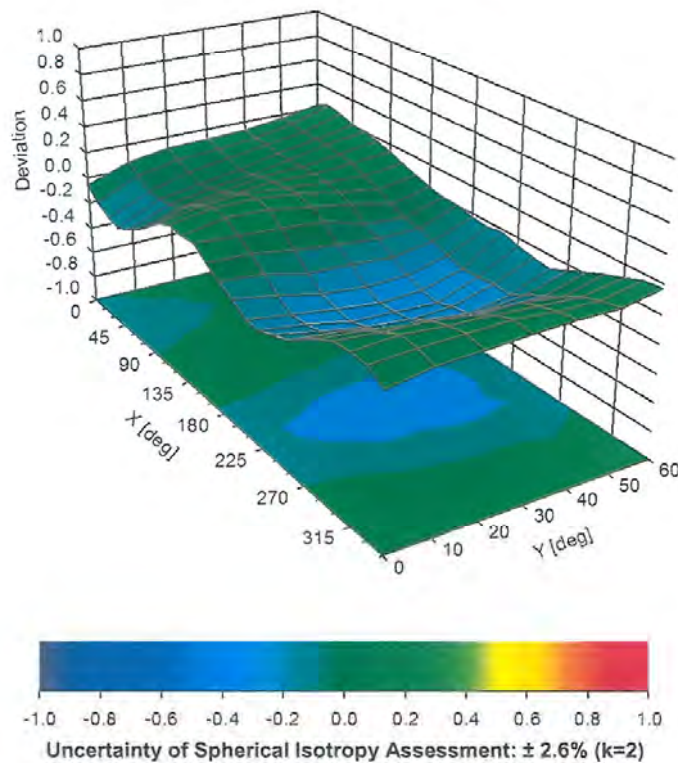
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Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), $f = 900 \text{ MHz}$



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Appendix: Modulation Calibration Parameters

UID	Rev	Communication System Name	Group	PAR (dB)	Unc ^E (k=2)
0		CW	CW	0.00	± 4.7 %
10010	CAA	SAR Validation (Square, 100ms, 10ms)	Test	10.00	± 9.6 %
10011	CAB	UMTS-FDD (WCDMA)	WCDMA	2.91	± 9.6 %
10012	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	WLAN	1.87	± 9.6 %
10013	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	WLAN	9.46	± 9.6 %
10021	DAC	GSM-FDD (TDMA, GMSK)	GSM	9.39	± 9.6 %
10023	DAC	GPRS-FDD (TDMA, GMSK, TN 0)	GSM	9.57	± 9.6 %
10024	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	GSM	6.56	± 9.6 %
10025	DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	GSM	12.62	± 9.6 %
10026	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	GSM	9.55	± 9.6 %
10027	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	GSM	4.80	± 9.6 %
10028	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	GSM	3.55	± 9.6 %
10029	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	GSM	7.78	± 9.6 %
10030	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	Bluetooth	5.30	± 9.6 %
10031	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	Bluetooth	1.87	± 9.6 %
10032	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	Bluetooth	1.16	± 9.6 %
10033	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	Bluetooth	7.74	± 9.6 %
10034	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	Bluetooth	4.53	± 9.6 %
10035	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	Bluetooth	3.83	± 9.6 %
10036	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	Bluetooth	8.01	± 9.6 %
10037	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	Bluetooth	4.77	± 9.6 %
10038	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	Bluetooth	4.10	± 9.6 %
10039	CAB	CDMA2000 (1xRTT, RC1)	CDMA2000	4.57	± 9.6 %
10042	CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	AMPS	7.78	± 9.6 %
10044	CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	AMPS	0.00	± 9.6 %
10048	CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	DECT	13.80	± 9.6 %
10049	CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	DECT	10.79	± 9.6 %
10056	CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	TD-SCDMA	11.01	± 9.6 %
10058	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	GSM	6.52	± 9.6 %
10059	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	WLAN	2.12	± 9.6 %
10060	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	WLAN	2.83	± 9.6 %
10061	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	WLAN	3.60	± 9.6 %
10062	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	WLAN	8.68	± 9.6 %
10063	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	WLAN	8.63	± 9.6 %
10064	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	WLAN	9.09	± 9.6 %
10065	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	WLAN	9.00	± 9.6 %
10066	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	WLAN	9.38	± 9.6 %
10067	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	WLAN	10.12	± 9.6 %
10068	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	WLAN	10.24	± 9.6 %
10069	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	WLAN	10.56	± 9.6 %
10071	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	WLAN	9.83	± 9.6 %
10072	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	WLAN	9.62	± 9.6 %
10073	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	WLAN	9.94	± 9.6 %
10074	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	WLAN	10.30	± 9.6 %
10075	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	WLAN	10.77	± 9.6 %
10076	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	WLAN	10.94	± 9.6 %
10077	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	WLAN	11.00	± 9.6 %
10081	CAB	CDMA2000 (1xRTT, RC3)	CDMA2000	3.97	± 9.6 %
10082	CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	AMPS	4.77	± 9.6 %
10090	DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	GSM	6.56	± 9.6 %
10097	CAC	UMTS-FDD (HSDPA)	WCDMA	3.98	± 9.6 %
10098	DAC	UMTS-FDD (HSUPA, Subtest 2)	WCDMA	3.98	± 9.6 %

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10099	CAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	GSM	9.55	± 9.6 %
10100	CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-FDD	5.67	± 9.6 %
10101	CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-FDD	6.42	± 9.6 %
10102	CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-FDD	6.60	± 9.6 %
10103	DAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-TDD	9.29	± 9.6 %
10104	CAE	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-TDD	9.97	± 9.6 %
10105	CAE	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-TDD	10.01	± 9.6 %
10108	CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	LTE-FDD	5.80	± 9.6 %
10109	CAG	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	LTE-FDD	6.43	± 9.6 %
10110	CAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	LTE-FDD	5.75	± 9.6 %
10111	CAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	LTE-FDD	6.44	± 9.6 %
10112	CAG	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	LTE-FDD	6.59	± 9.6 %
10113	CAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	LTE-FDD	6.62	± 9.6 %
10114	CAG	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	WLAN	8.10	± 9.6 %
10115	CAG	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	WLAN	8.46	± 9.6 %
10116	CAG	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	WLAN	8.15	± 9.6 %
10117	CAG	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	WLAN	8.07	± 9.6 %
10118	CAD	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	WLAN	8.59	± 9.6 %
10119	CAD	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	WLAN	8.13	± 9.6 %
10140	CAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	LTE-FDD	6.49	± 9.6 %
10141	CAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	LTE-FDD	6.53	± 9.6 %
10142	CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10143	CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	LTE-FDD	6.35	± 9.6 %
10144	CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	LTE-FDD	6.65	± 9.6 %
10145	CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	LTE-FDD	5.76	± 9.6 %
10146	CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.41	± 9.6 %
10147	CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.72	± 9.6 %
10149	CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	LTE-FDD	6.42	± 9.6 %
10150	CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	LTE-FDD	6.60	± 9.6 %
10151	CAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	LTE-TDD	9.28	± 9.6 %
10152	CAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	LTE-TDD	9.92	± 9.6 %
10153	CAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	LTE-TDD	10.05	± 9.6 %
10154	CAF	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	LTE-FDD	5.75	± 9.6 %
10155	CAF	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	LTE-FDD	6.43	± 9.6 %
10156	CAF	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	LTE-FDD	5.79	± 9.6 %
10157	CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	LTE-FDD	6.49	± 9.6 %
10158	CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	LTE-FDD	6.62	± 9.6 %
10159	CAG	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	LTE-FDD	6.56	± 9.6 %
10160	CAG	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	LTE-FDD	5.82	± 9.6 %
10161	CAG	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	LTE-FDD	6.43	± 9.6 %
10162	CAG	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	LTE-FDD	6.58	± 9.6 %
10166	CAG	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	LTE-FDD	5.46	± 9.6 %
10167	CAG	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.21	± 9.6 %
10168	CAG	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.79	± 9.6 %
10169	CAG	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10170	CAG	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10171	CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	LTE-FDD	6.49	± 9.6 %
10172	CAE	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	LTE-TDD	9.21	± 9.6 %
10173	CAE	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10174	CAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10175	CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	LTE-FDD	5.72	± 9.6 %
10176	CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10177	CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10178	CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10179	AAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10180	CAG	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %

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10181	CAG	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	LTE-FDD	5.72	± 9.6 %
10182	CAG	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10183	CAG	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10184	CAG	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10185	CAI	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	LTE-FDD	6.51	± 9.6 %
10186	CAG	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10187	CAG	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10188	CAG	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10189	CAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10193	CAE	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	WLAN	8.09	± 9.6 %
10194	AAD	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	WLAN	8.12	± 9.6 %
10195	CAE	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	WLAN	8.21	± 9.6 %
10196	CAE	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	WLAN	8.10	± 9.6 %
10197	AAE	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	WLAN	8.13	± 9.6 %
10198	CAF	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	WLAN	8.27	± 9.6 %
10219	CAF	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	WLAN	8.03	± 9.6 %
10220	AAF	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	WLAN	8.13	± 9.6 %
10221	CAC	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	WLAN	8.27	± 9.6 %
10222	CAC	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	WLAN	8.06	± 9.6 %
10223	CAD	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	WLAN	8.48	± 9.6 %
10224	CAD	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	WLAN	8.08	± 9.6 %
10225	CAD	UMTS-FDD (HSPA+)	WCDMA	5.97	± 9.6 %
10226	CAD	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	LTE-TDD	9.49	± 9.6 %
10227	CAD	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	LTE-TDD	10.26	± 9.6 %
10228	CAD	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	LTE-TDD	9.22	± 9.6 %
10229	DAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10230	CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10231	CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	LTE-TDD	9.19	± 9.6 %
10232	CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10233	CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10234	CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	LTE-TDD	9.21	± 9.6 %
10235	CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10236	CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10237	CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	LTE-TDD	9.21	± 9.6 %
10238	CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10239	CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10240	CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	LTE-TDD	9.21	± 9.6 %
10241	CAB	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	LTE-TDD	9.82	± 9.6 %
10242	CAD	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	LTE-TDD	9.86	± 9.6 %
10243	CAD	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	LTE-TDD	9.46	± 9.6 %
10244	CAD	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	LTE-TDD	10.06	± 9.6 %
10245	CAG	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	LTE-TDD	10.06	± 9.6 %
10246	CAG	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	LTE-TDD	9.30	± 9.6 %
10247	CAG	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	LTE-TDD	9.91	± 9.6 %
10248	CAG	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	LTE-TDD	10.09	± 9.6 %
10249	CAG	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	LTE-TDD	9.29	± 9.6 %
10250	CAG	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	LTE-TDD	9.81	± 9.6 %
10251	CAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	LTE-TDD	10.17	± 9.6 %
10252	CAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	LTE-TDD	9.24	± 9.6 %
10253	CAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	LTE-TDD	9.90	± 9.6 %
10254	CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	LTE-TDD	10.14	± 9.6 %
10255	CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	LTE-TDD	9.20	± 9.6 %
10256	CAB	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	LTE-TDD	9.96	± 9.6 %
10257	CAD	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	LTE-TDD	10.08	± 9.6 %
10258	CAD	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	LTE-TDD	9.34	± 9.6 %
10259	CAD	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	LTE-TDD	9.98	± 9.6 %

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