

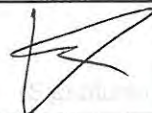
TEST REPORT



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1. Report No : DRRFCC1909-0074(1)
2. Customer
 - Name : LG Electronics USA, Inc.
 - Address : 1000 Sylvan Ave. Englewood Cliffs, New Jersey, United States 07632
3. Use of Report : FCC Original Grant
4. Product Name / Model Name : Mobile Phone / KA1935
FCC ID : ZNFKA1935
5. Test Method Used : IEEE 1528-2013, FCC SAR KDB Publications (Details in test report)
Test Specification : CFR §2.1093
6. Date of Test : 2019.08.05 ~ 2019.08.28, 2019.09.12 ~ 2019.09.13
7. Testing Environment : Refer to appended test report.
8. Test Result : Refer to attached test report.

Affirmation	Tested by	Reviewed by
	Name : BumJun Park 	Name : HakMin Kim 

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Test Report Version

Test Report No.	Date	Description
DRRFCC1909-0074	Sep. 06, 2019	Initial issue
DRRFCC1909-0074(1)	Sep. 17, 2019	Revise of Section 1.1, 9.3, 10, 11, 12 and SAR Summary Table

Table of Contents

1. DESCRIPTION OF DEVICE	5
1.1 General Information	5
1.2 Power Reduction for SAR	7
1.3 Nominal and Maximum Output Power Specifications	7
1.4 DUT Antenna Locations	7
1.5 Simultaneous Transmission Capabilities	7
1.6 Miscellaneous SAR Test Considerations	8
1.7 Guidance Applied	9
1.8 Device Serial Numbers	9
2. LTE INFORMATION	10
3. INTROCUCTION	11
4. DOSIMETRIC ASSESSMENT	12
4.1 Measurement Procedure	12
5. DEFINITION OF REFERENCE POINTS	14
5.1 Ear Reference Point	14
5.2 Handset Reference Points	14
6. TEST CONFIGURATION POSITIONS FOR HANDSETS	15
6.1 Device Holder	15
6.2 Positioning for Cheek/Touch	15
6.3 Positioning for Ear / 15 ° Tilt	15
6.4 Body-Worn Accessory Configurations	16
6.5 Extremity Exposure Configurations	16
6.6 Wireless Router Configurations	17
6.7 Phablet Configurations	17
7. RF EXPOSURE LIMITS	18
8. FCC MEASUREMENT PROCEDURES	19
8.1 Measured and Reported SAR	19
8.2 Procedures Used to Establish RF Signal for SAR	19
8.3 SAR Measurement Conditions for WCDMA (UMTS)	19
8.3.1 Output Power Verification	19
8.3.2 Head SAR Measurements for Handsets	19
8.3.3 Body SAR Measurements	20
8.3.4 Release 5 HSDPA Data Devices	20
8.3.5 Release 6 HSUPA Data Devices	20
8.4 SAR Measurement Conditions for LTE	21
8.4.1 Spectrum Plots for RB Configurations	21
8.4.2 MPR	21
8.4.3 A-MPR	21
8.4.4 Required RB Size and RB Offsets for SAR Testing	21
8.4.5 64QAM uplink	22
8.4.6 LTE TDD Consideration setup for SAR measurement	22
8.4.7 Downlink Only Carrier Aggregation and Downlink Only MIMO	23
8.4.8 May 2017 TCB Workshop notes (LTE Downlink 4x4 MIMO)	23
8.5 SAR Testing with 802.11 Transmitters	23
8.5.1 General Device Setup	23
8.5.2 U-NII and U-NII-2A	24
8.5.3 U-NII-2C and U-NII-3	24
8.5.4 Initial Test Position Procedure	24
8.5.5 2.4 GHz SAR Test Requirements	24
8.5.6 OFDM Transmission Mode and SAR Test Channel Selection	25
8.5.7 Initial Test Configuration Procedure	25
8.5.8 Subsequent Test Configuration Procedures	25
8.5.9 MIMO SAR Considerations	25

9. RF CONDUCTED POWERS	26
9.1 GSM Nominal and Maximum Output Power Spec and Conducted Powers	26
9.2 WCDMA Nominal and Maximum Output Power Spec and Conducted Powers	27
9.3 LTE Nominal and Maximum Output Power Spec and Conducted Powers	28
9.4 WLAN Nominal and Maximum Output Power Spec and Conducted Powers	36
9.5 Bluetooth Conducted Powers	38
10. SYSTEM VERIFICATION	40
10.1 Tissue Verification	40
10.2 Test System Verification	45
11. SAR TEST RESULTS	47
11.1 Head SAR Results	47
11.2 Standalone Body-Worn SAR Worn SAR Results	50
11.3 Standalone Hotspot SAR Results	52
11.4 Standalone Phablet SAR Results	55
11.5 SAR Test Notes	56
12. FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS	59
12.1 Introduction	59
12.2 Simultaneous Transmission Procedures	59
12.3 Simultaneous Transmission Capabilities	59
12.4 Head SAR Simultaneous Transmission Analysis	61
12.5 Body-Worn Simultaneous Transmission Analysis	75
12.6 Hotspot SAR Simultaneous Transmission Analysis	82
12.7 Phablet SAR Simultaneous Transmission Analysis	92
12.8 Simultaneous Transmission Conclusion	92
13. SAR MEASUREMENT VARIABILITY	93
13.1 Measurement Variability	93
13.2 Measurement Uncertainty	93
14. EQUIPMENT LIST	94
15. MEASUREMENT UNCERTAINTIES	95
16. CONCLUSION	117
17. REFERENCES	118
APPENDIX A. – Probe Calibration Data	120
APPENDIX B. – Dipole Calibration Data	162
APPENDIX C. – SAR Tissue Specifications	227
APPENDIX D. – SAR SYSTEM VALIDATION	229
APPENDIX E. – Downlink LTE CA RF Conducted Powers	231
APPENDIX F. – Description of Test Equipment	236

1. DESCRIPTION OF DEVICE

1.1 General Information

EUT type	Mobile Phone				
FCC ID	ZNFKA1935				
Equipment model name	KA1935				
Equipment add model name	N/A				
Equipment serial no.	Identical prototype				
Mode(s) of Operation	GSM 850, GSM 1900, WCDMA 1700, WCDMA 1900, LTE Band 12, 17, 4, 2, 41, 2.4 G W-LAN (802.11b/g/n-HT20/ac-VHT20), 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	Voice/Data	-	824.2 ~ 848.8 MHz
	GSM 1900	GSM/GPRS	Voice/Data	-	1850.2 ~ 1909.8 MHz
	WCDMA 1700	WCDMA	Voice/Data	-	1712.4 ~ 1752.6 MHz
	WCDMA 1900	WCDMA	Voice/Data	-	1852.4 ~ 1907.6 MHz
	LTE Band 12	LTE	Voice/Data	1.4/3/5/10MHz	699.7 ~ 715.3 MHz
	LTE Band 17	LTE	Voice/Data	5/10MHz	706.5 ~ 713.5 MHz
	LTE Band 4	LTE	Voice/Data	1.4/3/5/10/15/20MHz	1710.7 ~ 1754.3 MHz
	LTE Band 2	LTE	Voice/Data	1.4/3/5/10/15/20MHz	1850.7 ~ 1909.3 MHz
	LTE Band 41	LTE	Voice/Data	5/10/15/20MHz	2498.5 ~ 2687.5 MHz
	2.4 GHz W-LAN	802.11b/g/n/ac	Voice/Data	HT20/VHT20	2412 ~ 2462 MHz
	5.2 GHz W-LAN	802.11a/n/ac	Voice/Data	HT20/VHT20	5180 ~ 5240 MHz
		802.11n/ac	Voice/Data	HT40/VHT40	5190 ~ 5230 MHz
		802.11ac	Voice/Data	VHT80	5210 MHz
	5.3 GHz W-LAN	802.11a/n/ac	Voice/Data	HT20/VHT20	5260 ~ 5320 MHz
		802.11n/ac	Voice/Data	HT40/VHT40	5270 ~ 5310 MHz
		802.11ac	Voice/Data	VHT80	5290 MHz
	5.6 GHz W-LAN	802.11a/n/ac	Voice/Data	HT20/VHT20	5500 ~ 5720 MHz
		802.11n/ac	Voice/Data	HT40/VHT40	5510 ~ 5710 MHz
		802.11ac	Voice/Data	VHT80	5530 ~ 5690 MHz
	5.8 GHz W-LAN	802.11a/n/ac	Voice/Data	HT20/VHT20	5745 ~ 5825 MHz
		802.11n/ac	Voice/Data	HT40/VHT40	5755 ~ 5795 MHz
		802.11ac	Voice/Data	VHT80	5775 MHz
	Bluetooth	-	Data	-	2402 ~ 2480 MHz
RX Frequency Range	GSM 850	GSM/GPRS	Voice/Data	-	869.2 ~ 893.8 MHz
	GSM 1900	GSM/GPRS	Voice/Data	-	1930.2 ~ 1989.8 MHz
	WCDMA 1700	WCDMA	Voice/Data	-	2112.4 ~ 2152.6 MHz
	WCDMA 1900	WCDMA	Voice/Data	-	1932.4 ~ 1987.6 MHz
	LTE Band 12	LTE	Voice/Data	1.4/3/5/10MHz	729.7 ~ 745.3 MHz
	LTE Band 17	LTE	Voice/Data	5/10MHz	736.5 ~ 743.5 MHz
	LTE Band 4	LTE	Voice/Data	1.4/3/5/10/15/20MHz	2110.7 ~ 2154.3 MHz
	LTE Band 2	LTE	Voice/Data	1.4/3/5/10/15/20MHz	1930.7 ~ 1989.3 MHz
	LTE Band 41	LTE	Voice/Data	5/10/15/20MHz	2498.5 ~ 2687.5 MHz
	2.4 GHz W-LAN	802.11b/g/n/ac	Voice/Data	HT20/VHT20	2412 ~ 2462 MHz
	5.2 GHz W-LAN	802.11a/n/ac	Voice/Data	HT20/VHT20	5180 ~ 5240 MHz
		802.11n/ac	Voice/Data	HT40/VHT40	5190 ~ 5230 MHz
		802.11ac	Voice/Data	VHT80	5210 MHz
	5.3 GHz W-LAN	802.11a/n/ac	Voice/Data	HT20/VHT200	5260 ~ 5320 MHz
		802.11n/ac	Voice/Data	HT40/VHT40	5270 ~ 5310 MHz
		802.11ac	Voice/Data	VHT80	5290 MHz
	5.6 GHz W-LAN	802.11a/n/ac	Voice/Data	HT20/VHT20	5500 ~ 5720 MHz
		802.11n/ac	Voice/Data	HT40/VHT40	5510 ~ 5710 MHz
		802.11ac	Voice/Data	VHT80	5530 ~ 5690 MHz
	5.8 GHz W-LAN	802.11a/n/ac	Voice/Data	HT20/VHT20	5745 ~ 5825 MHz
		802.11n/ac	Voice/Data	HT40/VHT40	5755 ~ 5795 MHz
		802.11ac	Voice/Data	VHT80	5775 MHz
	Bluetooth	-	Data	-	2402 ~ 2480 MHz

SAR Summary Table

Equipment Class	Band	Reported SAR			
		1g SAR (W/kg)			10g SAR (W/kg)
		Head	Body-Worn	Hotspot	Phablet
PCE	GSM 850	< 0.1	0.45	-	-
PCE	GPRS 850	< 0.1	0.49	0.49	-
PCE	GSM 1900	< 0.1	0.39	-	-
PCE	GPRS 1900	< 0.1	0.50	0.57	-
PCE	WCDMA 1700	0.10	0.57	0.75	-
PCE	WCDMA 1900	< 0.1	0.56	0.77	-
PCE	LTE Band 12	0.10	0.72	0.72	-
PCE	LTE Band 17	-	-	-	-
PCE	LTE Band 4	< 0.1	0.46	0.57	-
PCE	LTE Band 2	< 0.1	0.60	0.87	-
PCE	LTE Band 41	0.11	0.48	1.15	-
DTS(SISO)	2.4 GHz W-LAN	0.61	0.13	0.17	-
DTS(MIMO)	2.4 GHz W-LAN	0.55	0.12	0.16	-
U-NII-1(SISO)	5.2 GHz W-LAN	-	-	< 0.1	-
U-NII-1(MIMO)	5.2 GHz W-LAN	-	-	< 0.1	-
U-NII-2A(SISO)	5.3 GHz W-LAN	0.19	0.14	-	0.66
U-NII-2A(MIMO)	5.3 GHz W-LAN	0.28	0.17	-	0.85
U-NII-2C(SISO)	5.6 GHz W-LAN	0.35	0.18	-	0.82
U-NII-2C(MIMO)	5.6 GHz W-LAN	0.33	0.22	-	1.09
U-NII-3(SISO)	5.8 GHz W-LAN	0.16	0.12	0.12	0.44
U-NII-3(MIMO)	5.8 GHz W-LAN	0.27	0.12	0.12	0.58
DSS	Bluetooth	0.15	< 0.1	< 0.1	-
Simultaneous SAR per KDB 690783 D01v01r03		0.75	0.97	1.15	-
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	2019.08.05 ~ 2019.08.28, 2019.09.12 ~ 2019.09.13				
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 supported Hotspot in UNII B1, B3.				

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 ZNFKA1935_Antenna Location. Since the diagonal dimension of this device is > 160 mm and < 200 mm. it is considered a "phablet".

The SAR tests of the device with dual display accessory were performed by reference to FCC KDB Inquiry (Tracking No. 372568) at the worst SAR for each position.

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

Note 1: Particular DUT edges were not required to be evaluated for Hotspot SAR or Phablet 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: WLAN Hotspot UNII-1, 3 supported.

Note 3: O - Test / X - Not test.

Note 4: This DUT has NFC operations. The NFC antenna is integrated into the back side.

The SAR tests were performed with NFC antenna already incorporated.

A diagram showing the location of the device antenna can be found in ZNFKA1935_Antenna Location.

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/BT

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.

Since Wireless Router operations are not allowed by the chipset firmware using U-NII-2A & U-NII-2C WIFI, only 2.4GHz, U-NII-1, U-NII-3 WIFI Hotspot SAR tests and combinations are considered for SAR with respect to Wireless Router configurations according to FCC KDB 941225 D06v02r01.

Per FCC KDB 447498 D01v06, the 1g SAR exclusion threshold for distances < 50 mm is defined by the following equation:

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

Based on the maximum conducted power of Bluetooth (rounded to the nearest mW) and the antenna to user separation distance, body-worn and hotspot **Bluetooth SAR were not required; [(14/10)*√2.480] = 2.2 (< 3.0)**. Per KDB Publication 447498 D01 v06, the maximum power of the channel was rounded to the nearest mW before calculation.

Per FCC KDB 447498 D01v06, the 10g SAR exclusion threshold for distance < 50 mm is defined by the following equation:

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

Based on the maximum conducted power of Bluetooth (rounded to the nearest mW) and the antenna to user separation distance, phablet **Bluetooth SAR was not required; [(14/5)*√2.480] = 4.4 (< 7.5)**. Per KDB Publication 447498 D01v06, the maximum power of the channel was rounded to the nearest mW before calculation.

Per FCC KDB Publication 648474 D04v01r03, this device is considered a “phablet” since the diagonal dimension is greater than 160 mm and less than 200 mm. Phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Because wireless router operations are not supported for U-NII-2A & U-NII-2C & U-NII-3 WLAN(CH 165), phablet SAR tests were performed.

(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.

Per FCC KDB Publication 648474 D04 v01r03, this device is considered a “phablet” since the diagonal dimension is greater than 160 mm and less than 200 mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg.

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

1.7 Guidance Applied

- IEEE 1528-2013
- 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)
- May 2017 TCB Workshop Notes (LTE 4x4 Downlink MIMO)
- April 2018 TCB Workshop Notes (LTE Carrier Aggregation)
- FCC KDB Inquiry (Tracking No. 372568)

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.

2. LTE INFORMATION

LTE Information					
FCC ID	ZNFKA1935				
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	1710.7 (19957)	N/A	1732.5 (20175)	N/A	1754.3 (20393)
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)	N/A	1732.5 (20175)	N/A	1753.5 (20385)
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)	N/A	1732.5 (20175)	N/A	1752.5 (20375)
LTE Band 4 (AWS): 10 MHz	1715.0 (20000)	N/A	1732.5 (20175)	N/A	1750.0 (20350)
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)	N/A	1732.5 (20175)	N/A	1747.5 (20325)
LTE Band 4 (AWS): 20 MHz	1720.0 (20050)	N/A	1732.5 (20175) ^{Note2}	N/A	1745.0 (20300)
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)	N/A	1880.0 (18900)	N/A	1909.3 (19193)
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)	N/A	1880.0 (18900)	N/A	1908.5 (19185)
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)	N/A	1880.0 (18900)	N/A	1907.5 (19175)
LTE Band 2 (PCS): 10 MHz	1855.0 (18650)	N/A	1880.0 (18900)	N/A	1905.0 (19150)
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)	N/A	1880.0 (18900)	N/A	1902.5 (19125)
LTE Band 2 (PCS): 20 MHz	1860.0 (18700)	N/A	1880.0 (18900)	N/A	1900.0 (19100)
LTE Band 41: 5 MHz	2498.5 (39675)	2545.8 (40148)	2593.0 (40620)	2640.3 (41093)	2687.5 (41565)
LTE Band 41: 10 MHz	2501.0 (39700)	2547.0 (40160)	2593.0 (40620)	2639.0 (41080)	2685.0 (41540)
LTE Band 41: 15 MHz	2503.5 (39725)	2548.3 (40173)	2593.0 (40620)	2637.8 (41068)	2682.5 (41515)
LTE Band 41: 20 MHz	2506.0 (39750)	2549.5 (40185)	2593.0 (40620)	2636.5 (41055)	2680.0 (41490)
UE Category	LTE Rel.14 DL UE Cat 19, UL UE Cat 13				
Modulations Supported in UL	QPSK, 16QAM, 64QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	Yes				
A-MPR (Additional MPR) disabled for SAR Testing?	Yes				
LTE Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations				
LTE Additional Information	This device does not support full CA features on 3GPP Release 14. It supports only downlink carrier aggregation. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. The following LTE Release 14 Features are not supported: Relay, HetNet, Enhanced MIMO, eCIC, WiFi Offloading, MDH, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

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.

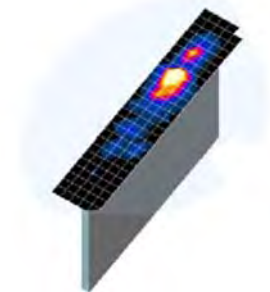


Figure 4.1
Sample SAR Area Scan

			≤ 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*

5.1 Ear Reference Point

5.2 Handset Reference Points

Pages: 14 /243

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).

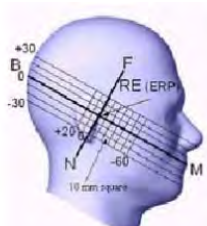


Figure 6.2 Side view w/relevant markings



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.

6.7 Phablet Configurations

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

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	$26336 \cdot T_s$			$7680 \cdot T_s$		
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
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 * (T_s) * # of S + # of U

$T_s = 1/(15000 * 2048)$ seconds

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

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

8.4.7 Downlink Only Carrier Aggregation and Downlink Only MIMO

Conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02, April 2018 TCB Workshop notes (LTE Carrier Aggregation) and May 2017 TCB Workshop (LTE 4x4 Downlink MIMO). The RCC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to specifications when downlink carrier aggregation is inactive on the PCC. For every supported combination of downlink only carrier aggregation, additional conducted output powers are measured with the downlink carrier aggregation active for configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band. Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for carrier aggregation configurations when the average output power with downlink only carrier aggregation active is not more than 0.25 dB higher than the average output power with downlink only carrier aggregation inactive.

8.4.8 May 2017 TCB Workshop notes (LTE Downlink 4x4 MIMO)

This device supports LTE DL 4X4 MIMO. So the SAR test exclusion for LTE DL 4X4 MIMO was determined by using May 2017 TCB Workshop notes (LTE Downlink MIMO).

- 1) SAR test exclusion for LTE DL 4x4 MIMO should be determined by
 - i) UL power measurements with and without DL MIMO
 - ii) Using the highest UL output power configuration without DL MIMO to confirm that UL output with DL MIMO is < ¼ dB higher
 - iii) for DL MIMO with carrier aggregation, the same SAR test exclusion procedure should be considered

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 802.11g 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	32.70	32.70	30.20	28.20	27.20
	Nominal	32.20	32.20	29.70	27.70	26.70
GSM/GPRS 1900	Maximum	29.70	29.70	27.70	25.70	24.70
	Nominal	29.20	29.20	27.20	25.20	24.20

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	32.19	32.48	30.01	28.11	27.18
	190	32.48	32.48	30.10	28.15	27.16
	251	32.68	32.68	30.18	28.14	27.14
PCS 1900	512	29.61	29.61	27.52	25.68	24.68
	661	29.68	29.68	27.66	25.69	24.66
	810	29.66	29.66	27.56	25.67	24.64
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	23.16	23.45	23.99	23.85	24.17
	190	23.45	23.45	24.08	23.89	24.15
	251	23.65	23.65	24.16	23.88	24.13
PCS 1900	512	20.58	20.58	21.50	21.42	21.67
	661	20.65	20.65	21.64	21.43	21.65
	810	20.63	20.63	21.54	21.41	21.63
GSM850	Frame Avg. Targets:	23.67	23.67	24.18	23.94	24.19
PCS 1900		20.67	20.67	21.68	21.44	21.69

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			AWS Band (dBm)		PCS Band (dBm)		3GPP MPR (dB)
99	WCDMA	Voice	Maximum	23.7		23.5		-
			Nominal	23.2		23.0		
5	HSDPA	Subtest 1	Maximum	23.7		23.5		0
			Nominal	23.2		23.0		
5		Subtest 2	Maximum	23.7		23.5		0
			Nominal	23.2		23.0		
5		Subtest 3	Maximum	23.2		23.0		0.5
			Nominal	22.7		22.5		
5		Subtest 4	Maximum	23.2		23.0		0.5
			Nominal	22.7		22.5		
6	HSUPA	Subtest 1	Maximum	23.7		23.5		0
			Nominal	23.2		23.0		
6		Subtest 2	Maximum	21.7		21.5		2
			Nominal	21.2		21.0		
6		Subtest 3	Maximum	22.7		22.5		1
			Nominal	22.2		22.0		
6		Subtest 4	Maximum	21.7		21.5		2
			Nominal	21.2		21.0		
6		Subtest 5	Maximum	23.7		23.5		0
			Nominal	23.2		23.0		

Table 9.2.1 WCDMA Nominal and Maximum Output Power Spec

3GPP Release Version	Mode	3GPP 34.121 Subtest	AWS Band (dBm)			PCS Band (dBm)			3GPP MPR (dB)
99	WCDMA	12.2 kbps RMC	23.27	23.27	23.28	23.14	23.14	23.05	-
99		12.2 kbps AMR	23.26	23.28	23.25	23.12	23.12	23.03	-
5	HSDPA	Subtest 1	23.22	23.25	23.22	23.03	23.05	22.95	0
5		Subtest 2	23.21	23.22	23.20	23.02	23.05	22.95	0
5		Subtest 3	22.70	22.71	22.70	22.64	22.61	22.54	0.5
5		Subtest 4	22.70	22.72	22.70	22.63	22.60	22.52	0.5
6	HSUPA	Subtest 1	22.96	22.98	22.94	22.82	22.80	22.73	0
6		Subtest 2	21.23	21.26	21.22	21.12	21.10	21.03	2
6		Subtest 3	22.24	22.24	22.24	22.12	22.11	21.91	1
6		Subtest 4	21.30	21.26	21.23	21.02	21.00	20.92	2
6		Subtest 5	23.02	23.02	22.97	23.06	22.98	22.92	0

Table 9.2.2 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	25.5
	Nominal	25.0

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	25.12	≤ 1	0
	1	25	25.16		
	1	49	25.04		
	25	0	24.17		1
	25	12	24.15		
	25	25	24.16		
	50	0	24.15		
16QAM	1	0	24.23	≤ 1	1
	1	25	24.29		
	1	49	24.10		
	25	0	23.15	≤ 2	2
	25	12	23.20		
	25	25	23.15		
	50	0	23.18		
64QAM	1	0	22.55	≤ 2	2.5
	1	25	22.60		
	1	49	22.51		
	25	0	21.52	≤ 3	3.5
	25	12	21.62		
	25	25	21.71		
	50	0	21.54		

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
			23035 (701.5 MHz)	23095 (707.5 MHz)	23155 (713.5 MHz)
QPSK	1	0	Conducted Power (dBm)		
			24.86	24.89	24.93
			24.86	25.06	25.02
			24.85	24.97	24.96
			24.04	24.06	24.01
			24.18	24.18	24.08
16QAM	12	6	24.12	24.15	24.08
			23.98	24.13	24.02
			23.96	24.08	24.07
			23.95	24.22	24.14
			23.92	24.14	24.16
			22.89	22.96	22.96
64QAM	12	6	23.04	23.10	23.01
			23.03	23.07	22.98
			22.99	23.08	22.94
			22.39	22.45	22.60
			22.42	22.74	22.66
			22.24	22.66	22.54
64QAM	12	6	21.44	21.67	21.56
			21.51	21.55	21.72
			21.44	21.56	21.65
			21.31	21.68	21.66
			21.44	21.56	21.65
			21.31	21.68	21.66

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	24.85	24.89	24.86	≤ 1	0	
	1	7	24.89	25.11	24.99			
	1	14	24.91	24.98	24.92			
	8	0	24.00	24.03	23.99		1	
	8	4	24.11	24.15	24.10			
	8	7	24.07	24.14	24.08			
	15	0	24.04	24.13	24.04			
	1	0	23.97	24.03	24.03		≤ 1	1
1	7	23.98	24.29	24.18				
1	14	23.87	24.16	24.11				
16QAM	8	0	22.97	23.06	22.97	≤ 2	2	
	8	4	23.05	23.17	23.07			
	8	7	23.08	23.10	23.04			
	15	0	23.02	23.07	22.98		2	
	1	0	22.52	22.57	22.54		≤ 2	2.5
	1	7	22.40	22.80	22.57			
1	14	22.40	22.61	22.57				
64QAM	8	0	21.35	21.71	21.66	≤ 3	3.5	
	8	4	21.55	21.82	21.63			
	8	7	21.43	21.82	21.65			
	15	0	21.36	21.80	21.61		3.5	

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	24.87	24.83	24.81	≤ 1	0	
	1	2	25.00	25.01	24.91			
	1	5	24.88	24.94	24.83			
	3	0	24.89	24.95	24.83		0	
	3	2	24.95	24.95	24.87			
	3	3	24.93	24.92	24.88			
	6	0	24.07	24.03	23.93		1	
	16QAM	1	0	23.96	24.01		23.93	≤ 1
1		2	24.01	24.13	24.02			
1		5	23.97	24.12	24.03			
3		0	23.87	23.90	23.83	1		
3		2	23.91	23.98	23.87			
3		3	23.87	23.94	23.84			
6		0	23.01	23.06	22.93	≤ 2	2	
64QAM		1	0	22.56	22.48	22.48	≤ 2	
	1	2	22.46	22.55	22.58			
	1	5	22.38	22.45	22.51			
	3	0	22.54	22.53	22.51	2.5		
	3	2	22.41	22.56	22.48			
	3	3	22.46	22.53	22.55			
	6	0	21.40	21.45	21.52	≤ 3		3.5

Table 9.3.1.5 LTE Conducted Power

Band & Mode		Modulated Average[dBm]
LTE Band 4	Maximum	23.7
	Nominal	23.2

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 (1732.5 MHz)		
			Conducted Power (dBm)		
QPSK	1	0	23.32	≤ 1	0
	1	50	23.14		
	1	99	23.19		
	50	0	22.36		1
	50	25	22.33		
	50	50	22.30		
	100	0	22.34		1
16QAM	1	0	22.45	≤ 1	1
	1	50	22.32		
	1	99	22.34		
	50	0	21.34	≤ 2	2
	50	25	21.31		
	50	50	21.29		
	100	0	21.30		
64QAM	1	0	21.41	≤ 2	2
	1	50	21.25		
	1	99	21.30		
	50	0	20.36	≤ 3	3
	50	25	20.34		
	50	50	20.29		
	100	0	20.30		

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 (1717.5 MHz)	20175 (1732.5 MHz)	20325 (1747.5 MHz)			
			Conducted Power (dBm)					
QPSK	1	0	23.22	23.24	23.30	≤ 1	0	
	1	36	23.17	23.19	23.20			
	1	74	23.15	23.16	23.25			
	36	0	22.28	22.32	22.32		1	
	36	18	22.29	22.32	22.34			
	36	37	22.23	22.28	22.27			
	75	0	22.27	22.29	22.34			
16QAM	1	0	22.38	22.35	22.39	≤ 1	1	
	1	36	22.32	22.29	22.38			
	1	74	22.31	22.30	22.34			
	36	0	21.27	21.31	21.34		≤ 2	2
	36	18	21.29	21.31	21.35			
	36	37	21.24	21.28	21.30			
	75	0	21.24	21.29	21.31			
64QAM	1	0	21.38	21.40	21.31	≤ 2	2	
	1	36	21.31	21.34	21.30			
	1	74	21.26	21.30	21.29			
	36	0	20.30	20.34	20.36		≤ 3	3
	36	18	20.32	20.36	20.37			
	36	37	20.29	20.31	20.30			
	75	0	20.26	20.32	20.30			

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 (1715.0 MHz)	20175 (1732.5 MHz)	20350 (1750.0 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.05	23.13	23.12	≤ 1	0
	1	25	23.08	23.08	23.12		
	1	49	23.01	23.03	23.05		
	25	0	22.15	22.20	22.23		1
	25	12	22.16	22.18	22.20		
	25	25	22.07	22.11	22.12		
	50	0	22.09	22.18	22.19		1
16QAM	1	0	22.16	22.26	22.30	≤ 1	1
	1	25	22.26	22.20	22.22		
	1	49	22.21	22.16	22.17		
	25	0	21.19	21.22	21.27	≤ 2	2
	25	12	21.21	21.25	21.27		
	25	25	21.12	21.16	21.20		
	50	0	21.16	21.20	21.21		
64QAM	1	0	21.16	21.22	21.29	≤ 2	2
	1	25	21.23	21.13	21.29		
	1	49	21.10	21.06	21.14		
	25	0	20.08	20.16	20.20	≤ 3	3
	25	12	20.08	20.16	20.20		
	25	25	20.01	20.08	20.11		
	50	0	20.04	20.13	20.16		

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 (1712.5 MHz)	20175 (1732.5 MHz)	20375 (1752.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.03	23.04	23.02	≤ 1	0
	1	12	23.12	23.16	23.13		
	1	24	23.05	23.02	23.03		
	12	0	22.03	22.12	22.10		1
	12	6	22.13	22.22	22.22		
	12	13	22.10	22.12	22.15		
	25	0	22.09	22.08	22.11		1
16QAM	1	0	22.18	22.19	22.17	≤ 1	1
	1	12	22.27	22.31	22.27		
	1	24	22.19	22.15	22.14		
	12	0	21.17	21.17	21.23		
	12	6	21.21	21.27	21.27	≤ 2	2
	12	13	21.20	21.26	21.29		
	25	0	21.16	21.19	21.28		
64QAM	1	0	21.13	21.17	21.20	≤ 2	2
	1	12	21.30	21.29	21.23		
	1	24	21.10	21.18	21.18		
	12	0	20.03	20.08	20.11	≤ 3	3
	12	6	20.11	20.17	20.23		
	12	13	20.04	20.12	20.15		
	25	0	20.02	20.04	20.12		

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 (1711.5 MHz)	20175 (1732.5 MHz)	20385 (1753.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.02	23.06	23.04	≤ 1	0
	1	7	23.07	23.12	23.17		
	1	14	23.00	23.08	23.00		
	8	0	22.03	22.06	22.05		1
	8	4	22.13	22.20	22.20		
	8	7	22.08	22.17	22.12		
	15	0	22.09	22.08	22.11		1
16QAM	1	0	22.18	22.25	22.21	≤ 1	1
	1	7	22.21	22.23	22.27		
	1	14	22.18	22.26	22.18		
	8	0	21.23	21.15	21.21		
	8	4	21.24	21.39	21.36	≤ 2	2
	8	7	21.21	21.34	21.31		
	15	0	21.25	21.26	21.29		
64QAM	1	0	21.05	21.12	21.12	≤ 2	2
	1	7	21.17	21.29	21.29		
	1	14	21.10	21.16	21.10		
	8	0	20.03	20.07	20.05		
	8	4	20.12	20.16	20.21	≤ 3	3
	8	7	20.10	20.12	20.11		
	15	0	20.02	20.08	20.13		

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 (1710.7 MHz)	20175 (1732.5 MHz)	20393 (1754.3 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.11	23.08	23.08	≤ 1	0
	1	2	23.09	23.13	23.09		
	1	5	23.08	23.02	23.01		
	3	0	23.01	23.04	23.01		0
	3	2	23.00	23.05	23.04		
	3	3	23.02	23.02	23.00		
	6	0	22.09	22.05	22.04		1
16QAM	1	0	22.27	22.24	22.20	≤ 1	1
	1	2	22.23	22.24	22.28		
	1	5	22.18	22.18	22.19		
	3	0	22.08	22.17	22.11		1
	3	2	22.19	22.24	22.16		
	3	3	22.13	22.18	22.13		
	6	0	21.24	21.20	21.24		≤ 2
64QAM	1	0	21.11	21.11	21.02	≤ 2	2
	1	2	21.16	21.16	21.27		
	1	5	21.05	21.11	21.12		
	3	0	21.01	21.11	21.02		2
	3	2	21.11	21.13	21.17		
	3	3	21.05	21.14	21.18		
	6	0	20.06	20.02	20.05		≤ 3

Table 9.3.2.7 LTE Conducted Power

Band & Mode		Modulated Average[dBm]
LTE Band 2(PCS)	Maximum	23.5
	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 (1860.0 MHz)	18900 (1880.0 MHz)	19100 (1900.0 MHz)			
			Conducted Power (dBm)					
QPSK	1	0	22.96	22.98	22.91	≤ 1	0	
	1	50	22.87	22.90	22.88			
	1	99	22.83	22.90	22.87			
	50	0	22.05	22.09	22.06			
	50	25	22.04	22.07	22.05		1	
	50	50	22.04	22.06	22.05			
	100	0	22.04	22.08	22.05			1
16QAM	1	0	22.13	22.15	22.09	≤ 1	1	
	1	50	21.98	22.08	22.05			
	1	99	22.01	22.07	22.01			
	50	0	21.06	21.11	21.04			
	50	25	21.05	21.12	21.07	≤ 2	2	
	50	50	21.03	21.09	21.06			
	100	0	21.04	21.08	21.04			2
64QAM	1	0	21.14	21.12	21.08	≤ 2	2	
	1	50	21.06	21.08	21.04			
	1	99	21.00	21.07	21.04			
	50	0	20.07	20.14	20.10			
	50	25	20.04	20.11	20.11	≤ 3	3	
	50	50	20.06	20.13	20.09			
	100	0	20.04	20.12	20.08			3

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 (1857.5 MHz)	18900 (1880.0 MHz)	19125 (1902.5 MHz)			
			Conducted Power (dBm)					
QPSK	1	0	22.92	22.97	22.93	≤ 1	0	
	1	36	22.91	22.96	22.92			
	1	74	22.89	22.91	22.89			
	36	0	22.05	22.06	22.02		1	
	36	18	22.04	22.10	22.05			
	36	37	22.04	22.11	22.04			
	75	0	22.03	22.06	22.04		1	
16QAM	1	0	22.05	22.12	22.08	≤ 1	1	
	1	36	22.05	22.10	22.07			
	1	74	22.07	22.11	22.04			
	36	0	21.05	21.07	21.04		≤ 2	2
	36	18	21.06	21.09	21.06			
	36	37	21.02	21.10	21.04			
	75	0	21.03	21.09	21.05			2
64QAM	1	0	21.09	21.15	21.12	≤ 2	2	
	1	36	21.10	21.13	21.03			
	1	74	21.04	21.07	21.06			
	36	0	20.06	20.10	20.05		≤ 3	3
	36	18	20.07	20.14	20.09			
	36	37	20.06	20.14	20.10			
	75	0	20.05	20.11	20.06			3

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 (1855.0 MHz)	18900 (1880.0 MHz)	19150 (1905.0 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.84	22.92	22.97	≤ 1	0
	1	25	22.88	22.93	22.87		
	1	49	22.83	22.88	22.80		
	25	0	22.01	21.98	21.94		1
	25	12	21.99	22.01	21.97		
	25	25	21.92	21.94	21.90		
	50	0	21.96	21.97	21.93		
16QAM	1	0	22.02	22.12	22.11	≤ 1	1
	1	25	22.02	22.12	22.05		
	1	49	21.98	22.02	21.94		
	25	0	21.01	20.99	20.95	≤ 2	2
	25	12	21.00	21.01	20.96		
	25	25	20.92	20.95	20.89		
	50	0	20.98	20.98	20.93		
64QAM	1	0	21.01	21.00	21.10	≤ 2	2
	1	25	21.02	21.10	21.05		
	1	49	21.01	21.02	20.99		
	25	0	20.05	20.03	19.97	≤ 3	3
	25	12	20.02	20.06	20.00		
	25	25	19.96	19.97	19.94		
	50	0	19.99	20.00	19.96		

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 (1852.5 MHz)	18900 (1880.0 MHz)	19175 (1907.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.90	22.83	22.80	≤ 1	0
	1	12	22.95	22.98	22.90		
	1	24	22.83	22.89	22.86		
	12	0	21.98	21.90	21.85		
	12	6	22.04	22.05	21.94		1
	12	13	22.07	22.01	21.96		
	25	0	22.01	21.91	21.90		
	1	0	22.05	21.98	21.96		
1	12	22.10	22.16	22.06			
1	24	22.02	22.05	22.01			
12	0	21.04	20.93	20.87			
12	6	21.09	21.08	20.94	≤ 2	2	
12	13	21.01	21.04	20.96			
25	0	21.06	20.97	20.91			
1	0	21.07	21.01	20.98			≤ 2
1	12	21.10	21.13	21.05			
1	24	20.95	21.03	21.01			
12	0	20.09	19.98	19.95			
12	6	20.11	20.14	19.99	≤ 3	3	
12	13	20.08	20.10	20.06			
25	0	20.07	19.98	19.92			

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 (1851.5 MHz)	18900 (1880.0 MHz)	19185 (1908.5 MHz)			
			Conducted Power (dBm)					
QPSK	1	0	22.93	22.84	22.85	≤ 1	0	
	1	7	22.95	22.89	22.88			
	1	14	22.97	22.94	22.86			
	8	0	22.03	21.91	21.87			
	8	4	22.03	22.03	21.98		1	
	8	7	22.04	22.01	21.95			
	15	0	22.02	21.99	21.94			
	1	0	22.12	22.01	21.98			≤ 1
1	7	22.15	22.03	22.04				
1	14	22.11	22.05	21.98				
8	0	21.07	21.01	20.99				
16QAM	8	4	21.10	21.09	21.00	≤ 2	2	
	8	7	21.06	21.07	21.00			
	15	0	21.10	21.02	20.96			
	1	0	21.12	21.01	21.04			
	1	7	21.08	21.05	21.05			
	1	14	21.16	21.10	21.01			
	8	0	20.09	19.94	19.99	≤ 3	3	
	8	4	20.10	20.13	20.02			
8	7	20.09	20.07	19.99				
15	0	20.01	20.08	19.96				
1	0	20.01	20.01	20.01				

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 (1850.7 MHz)	18900 (1880.0 MHz)	19193 (1909.3 MHz)			
			Conducted Power (dBm)					
QPSK	1	0	22.94	22.87	22.81	≤ 1	0	
	1	2	22.95	22.94	22.87			
	1	5	22.90	22.88	22.83			
	3	0	22.85	22.90	22.80			
	3	2	22.95	22.92	22.81		0	
	3	3	22.89	22.91	22.84			
	6	0	22.00	21.92	21.86			
	1	0	22.02	22.05	21.96			≤ 1
1	2	22.14	22.11	22.02				
1	5	22.02	22.03	22.02				
3	0	21.98	21.91	21.80				
3	2	21.98	21.96	21.88	1			
3	3	21.96	21.94	21.86				
6	0	21.05	20.99	20.90		≤ 2	2	
1	0	21.13	21.02	21.00				
1	2	21.07	21.11	21.05				
1	5	21.08	21.01	21.01				
64QAM	3	0	21.04	21.03	20.99		≤ 2	2
	3	2	21.07	21.02	20.98			
	3	3	21.07	21.09	20.94			
	6	0	19.99	19.96	19.85			
	1	0	19.99	19.96	19.85	≤ 3		3
	1	2	19.99	19.96	19.85			
	1	5	19.99	19.96	19.85			
	3	0	19.99	19.96	19.85			

Table 9.3.3.7 LTE Conducted Power

Band & Mode		Modulated Average[dBm]
LTE Band 41	Maximum	25.2
	Nominal	24.7

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 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power (dBm)						
QPSK	1	0	24.68	24.64	24.60	24.58	24.66	≤ 1	0
	1	50	24.61	24.59	24.52	24.52	24.54		1
	1	99	24.62	24.60	24.53	24.52	24.53		
	50	0	23.84	23.81	23.80	23.76	23.81		
	50	25	23.80	23.80	23.78	23.75	23.78		
	50	50	23.81	23.79	23.74	23.71	23.69		
	100	0	23.84	23.82	23.79	23.76	23.76		1
16QAM	1	0	23.83	23.80	23.76	23.73	23.81	≤ 1	1
	1	50	23.74	23.73	23.68	23.65	23.70		
	1	99	23.75	23.72	23.71	23.70	23.70		
	50	0	22.89	22.86	22.86	22.85	22.90	≤ 2	2
	50	25	22.92	22.90	22.85	22.82	22.85		
	50	50	22.90	22.87	22.77	22.76	22.75		
	100	0	22.87	22.86	22.81	22.80	22.80		
64QAM	1	0	22.82	22.81	22.76	22.74	22.84	≤ 2	2
	1	50	22.80	22.78	22.62	22.60	22.71		
	1	99	22.74	22.74	22.70	22.69	22.68		
	50	0	21.89	21.86	21.88	21.85	21.87	≤ 3	3
	50	25	21.92	21.89	21.85	21.82	21.83		
	50	50	21.92	21.89	21.76	21.72	21.75		
	100	0	21.87	21.84	21.85	21.83	21.80		

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 (2503.5 MHz)	40173 (2548.3 MHz)	40620 (2593.0 MHz)	41068 (2637.8 MHz)	41515 (2682.5 MHz)		
			Conducted Power (dBm)						
QPSK	1	0	24.66	24.65	24.58	24.57	24.65	≤ 1	0
	1	36	24.64	24.61	24.55	24.53	24.53		
	1	74	24.62	24.59	24.50	24.53	24.53		
	36	0	23.82	23.79	23.78	23.76	23.74		1
	36	18	23.83	23.80	23.76	23.74	23.77		
	36	37	23.82	23.81	23.68	23.66	23.71		
	75	0	23.79	23.76	23.75	23.74	23.70		1
16QAM	1	0	23.80	23.78	23.73	23.73	23.76	≤ 1	1
	1	36	23.76	23.75	23.68	23.68	23.66		
	1	74	23.76	23.72	23.66	23.63	23.63		
	36	0	22.81	22.78	22.78	22.75	22.77	≤ 2	2
	36	18	22.84	22.81	22.78	22.77	22.77		
	36	37	22.85	22.84	22.73	22.72	22.72		
	75	0	22.89	22.86	22.79	22.76	22.79		2
64QAM	1	0	22.85	22.82	22.77	22.74	22.81	≤ 2	2
	1	36	22.80	22.79	22.72	22.70	22.71		
	1	74	22.76	22.75	22.67	22.64	22.68		
	36	0	21.86	21.83	21.83	21.79	21.83	≤ 3	3
	36	18	21.88	21.86	21.83	21.83	21.80		
	36	37	21.86	21.83	21.78	21.77	21.75		
	75	0	21.85	21.83	21.80	21.76	21.81		3

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 (2501.0 MHz)	40160 (2547.0 MHz)	40620 (2593.0 MHz)	41080 (2639.0 MHz)	41540 (2685.0 MHz)			
			Conducted Power (dBm)							
QPSK	1	0	24.53	24.53	24.50	24.58	24.52	≤ 1	0	
	1	25	24.50	24.51	24.53	24.51	24.53			
	1	49	24.51	24.50	24.54	24.52	24.55			
	25	0	23.69	23.66	23.65	23.64	23.60		1	
	25	12	23.72	23.69	23.65	23.62	23.57			
	25	25	23.68	23.65	23.61	23.58	23.53			
16QAM	50	0	23.70	23.70	23.63	23.60	23.56	≤ 1	1	
	1	0	23.70	23.67	23.67	23.65	23.66		1	
	1	25	23.66	23.64	23.71	23.69	23.66			
	1	49	23.63	23.63	23.63	23.62	23.60			2
	25	0	22.81	22.77	22.72	22.72	22.65			
	25	12	22.79	22.78	22.74	22.71	22.64			
64QAM	25	25	22.76	22.73	22.66	22.63	22.59	≤ 2	2	
	50	0	22.77	22.76	22.73	22.70	22.62		≤ 2	2
	1	0	22.63	22.59	22.69	22.68	22.63			2
	1	25	22.62	22.59	22.67	22.64	22.58			
	1	49	22.68	22.66	22.62	22.59	22.51			
	25	0	21.85	21.83	21.80	21.79	21.70			3
25	12	21.88	21.86	21.81	21.79	21.73				
25	25	21.79	21.76	21.74	21.74	21.66	≤ 3	3		
50	0	21.77	21.76	21.72	21.69	21.66				

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 (2498.5 MHz)	40148 (2545.8 MHz)	40620 (2593.0 MHz)	41093 (2640.3 MHz)	41565 (2687.5 MHz)		
			Conducted Power (dBm)						
QPSK	1	0	24.59	24.57	24.50	24.52	24.53	≤ 1	0
	1	12	24.65	24.62	24.60	24.59	24.57		
	1	24	24.58	24.54	24.53	24.53	24.52		
	12	0	23.70	23.68	23.66	23.64	23.58		1
	12	6	23.71	23.67	23.67	23.67	23.58		
	12	13	23.71	23.68	23.68	23.66	23.57		
16QAM	25	0	23.74	23.74	23.63	23.61	23.59	≤ 1	1
	1	0	23.76	23.74	23.68	23.66	23.59		1
	1	12	23.81	23.80	23.79	23.76	23.74		
	1	24	23.67	23.65	23.67	23.63	23.68		
	12	0	22.82	22.78	22.71	22.68	22.65		2
	12	6	22.82	22.82	22.74	22.70	22.69		
12	13	22.78	22.78	22.73	22.72	22.70	2		
64QAM	25	0	22.79	22.79	22.74	22.71	22.63	≤ 2	2
	1	0	22.69	22.65	22.69	22.68	22.59		2
	1	12	22.67	22.66	22.74	22.70	22.66		
	1	24	22.63	22.60	22.63	22.62	22.62		
	12	0	21.82	21.78	21.77	21.73	21.66		3
	12	6	21.90	21.86	21.84	21.83	21.74		
	12	13	21.87	21.85	21.77	21.76	21.70		
	25	0	21.88	21.85	21.73	21.71	21.70		

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	16.5	15.5	16.5	15.5	-	-
	802.11g	1~11	15.0	14.0	16.0	15.0	18.5	17.5
	802.11n	1~11	14.0	13.0	15.0	14.0	17.5	16.5
	802.11ac	1~11	14.0	13.0	15.0	14.0	17.5	16.5

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(CDD)	MIMO(SDM)
802.11b	2412	1	16.22	16.25	-	-
	2437	6	16.39	16.28	-	-
	2462	11	16.23	16.21	-	-
802.11g	2412	1	14.92	15.96	18.48	-
	2437	6	14.94	15.97	18.50	-
	2462	11	14.84	15.93	18.43	-
802.11n (HT-20)	2412	1	13.72	14.88	17.35	17.47
	2437	6	13.85	14.93	17.43	17.41
	2472	11	13.68	14.90	17.34	17.46
802.11ac (VHT-20)	2412	1	13.86	14.97	17.46	17.47
	2437	6	13.84	14.99	17.46	17.47
	2472	11	13.81	14.97	17.44	17.43

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	36-165	16.0	15.0	16.0	15.0	19.0	18.0
	802.11n/ac (20MHz)	36-165	15.0	14.0	15.0	14.0	18.0	17.0
	802.11n/ac (40MHz)	38-159	15.0	14.0	15.0	14.0	18.0	17.0
	802.11ac (80MHz)	42-155	15.0	14.0	15.0	14.0	18.0	17.0

Table 9.4.3 Nominal and Maximum Output Power Spec

Mode	Freq. (MHz)	Channel	IEEE 802.11a (5 GHz) Conducted Power[dBm]			
			Ant.1	Ant.2	MIMO(CDD)	MIMO(SDM)
802.11a	5180	36	15.85	15.35	18.62	-
	5200	40	15.59	15.54	18.58	-
	5220	44	15.83	15.66	18.76	-
	5240	48	15.82	15.45	18.65	-
	5260	52	15.73	15.51	18.63	-
	5280	56	15.63	15.42	18.54	-
	5300	60	15.75	15.56	18.67	-
	5320	64	15.65	15.95	18.81	-
	5500	100	15.56	15.56	18.57	-
	5600	120	15.69	15.36	18.54	-
	5660	132	15.96	15.69	18.84	-
	5720	144	15.54	15.77	18.67	-
	5745	149	15.64	15.95	18.81	-
	5785	157	15.93	15.73	18.84	-
	5825	165	15.66	15.72	18.70	-

Table 9.4.4 IEEE 802.11a Average RF Power

Mode	Freq. (MHz)	Channel	IEEE 802.11n HT20 (5 GHz) Conducted Power[dBm]			
			Ant.1	Ant.2	MIMO(CDD)	MIMO(SDM)
802.11n (HT-20)	5180	36	14.46	14.61	17.55	17.71
	5200	40	14.68	14.33	17.52	17.64
	5220	44	14.62	14.43	17.54	17.57
	5240	48	14.55	14.35	17.46	17.61
	5260	52	14.53	14.31	17.43	17.33
	5280	56	14.66	14.56	17.62	17.57
	5300	60	14.63	14.65	17.65	17.62
	5320	64	14.68	14.69	17.70	17.72
	5500	100	14.67	14.71	17.70	17.75
	5600	120	14.84	14.47	17.67	17.57
	5660	132	14.93	14.52	17.74	17.72
	5720	144	14.45	14.55	17.51	17.51
	5745	149	14.59	14.77	17.69	17.70
	5785	157	14.75	14.63	17.70	17.78
	5825	165	14.61	14.66	17.65	17.60

Table 9.4.5 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(CDD)	MIMO(SDM)
802.11ac (VHT-20)	5180	36	14.48	14.65	17.58	17.58
	5200	40	14.40	14.57	17.50	17.51
	5220	44	14.46	14.44	17.46	17.58
	5240	48	14.47	14.31	17.40	17.65
	5260	52	14.65	14.36	17.52	17.47
	5280	56	14.61	14.34	17.49	17.45
	5300	60	14.58	14.63	17.62	17.67
	5320	64	14.43	14.44	17.45	17.54
	5500	100	14.68	14.65	17.68	17.78
	5600	120	14.72	14.45	17.60	17.64
	5660	132	14.98	14.48	17.75	17.55
	5720	144	14.29	14.55	17.43	17.54
	5745	149	14.38	14.86	17.64	17.67
	5785	157	14.49	14.73	17.62	17.62
	5825	165	14.46	14.58	17.53	17.64

Table 9.4.6 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(CDD)	MIMO(SDM)
802.11n (HT-40)	5190	38	14.95	14.88	17.93	17.89
	5230	46	14.93	14.84	17.90	17.83
	5270	54	14.78	14.44	17.62	17.55
	5310	62	14.87	14.93	17.91	17.86
	5510	102	14.95	14.85	17.91	17.93
	5590	118	14.94	14.88	17.92	17.83
	5670	134	14.91	14.81	17.87	17.86
	5710	142	14.83	14.85	17.85	17.89
	5755	151	14.73	14.87	17.81	17.87
	5795	159	14.93	14.84	17.90	17.96

Table 9.4.7 IEEE 802.11n HT40 Average RF Power

Mode	Freq. (MHz)	Channel	IEEE 802.11ac VHT40 (5 GHz) Conducted Power[dBm]			
			Ant.1	Ant.2	MIMO(CDD)	MIMO(SDM)
802.11ac (VHT-40)	5190	38	14.91	14.83	17.88	17.92
	5230	46	14.91	14.76	17.85	17.79
	5270	54	14.89	14.44	17.68	17.61
	5310	62	14.85	14.97	17.92	17.89
	5510	102	14.94	14.84	17.90	17.86
	5590	118	14.85	14.88	17.98	17.88
	5670	134	14.93	14.78	17.87	17.89
	5710	142	14.88	14.72	17.81	17.90
	5755	151	14.83	14.85	17.85	17.87
	5795	159	14.81	14.81	17.82	17.95

Table 9.4.8 IEEE 802.11ac VHT40 Average RF Power

Mode	Freq. (MHz)	Channel	IEEE 802.11ac VHT80 (5 GHz) Conducted Power[dBm]			
			Ant.1	Ant.2	MIMO(CDD)	MIMO(SDM)
802.11ac (VHT-80)	5210	42	14.70	14.64	17.68	17.74
	5290	58	14.95	14.87	17.92	17.81
	5530	106	14.73	14.94	17.85	17.81
	5610	122	14.81	14.77	17.80	17.82
	5690	138	14.71	14.65	17.69	17.74
	5775	155	14.72	14.81	17.78	17.87

Table 9.4.9 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.

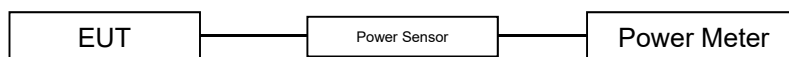


Figure 9.4 Power Measurement Setup

9.5 Bluetooth Conducted Powers

Burst Modulated Average[dBm]		
Bluetooth 1 Mbps	Maximum	11.5
	Nominal	10.5
Bluetooth 2 Mbps	Maximum	10.0
	Nominal	9.0
Bluetooth 3 Mbps	Maximum	10.0
	Nominal	9.0
Bluetooth LE	Maximum	6.0
	Nominal	5.0

Table 9.5.1 Nominal and Maximum Output Power Spec (Burst)

Frame Modulated Average[dBm]		
Bluetooth 1 Mbps	Maximum	10.35
	Nominal	9.35
Bluetooth 2 Mbps	Maximum	8.85
	Nominal	7.85
Bluetooth 3 Mbps	Maximum	8.85
	Nominal	7.85
Bluetooth (LE / 1Mbps)	Maximum	5.32
	Nominal	4.32
Bluetooth (LE / 2Mbps)	Maximum	3.59
	Nominal	2.59

Table 9.5.2 Nominal and Maximum Output Power Spec (Frame)

Channel	Frequency (MHz)	Burst AVG Output Power (1Mbps) (dBm)	Frame AVG Output Power (1Mbps) (dBm)	Burst AVG Output Power (2Mbps) (dBm)	Frame AVG Output Power (2Mbps) (dBm)	Burst AVG Output Power (3Mbps) (dBm)	Frame AVG Output Power (3Mbps) (dBm)
Low	2402	10.58	9.43	9.11	7.96	9.10	7.95
Mid	2441	11.24	10.09	9.67	8.52	9.66	8.51
High	2480	10.52	9.37	9.14	7.99	9.13	7.98

Table 9.5.3 Bluetooth Burst and Frame Average RF Power

Channel	Frequency (MHz)	Burst AVG Output Power(LE / 1Mbps) (dBm)	Frame AVG Output Power(LE / 1Mbps) (dBm)	Burst AVG Output Power(LE / 2Mbps) (dBm)	Frame AVG Output Power(LE / 2Mbps) (dBm)
Low	2402	3.29	2.61	3.31	0.90
Mid	2440	3.92	3.24	4.01	1.60
High	2480	4.36	3.68	4.32	1.91

Table 9.5.4 Bluetooth LE Burst and 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(A).
- 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(B).
- 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.

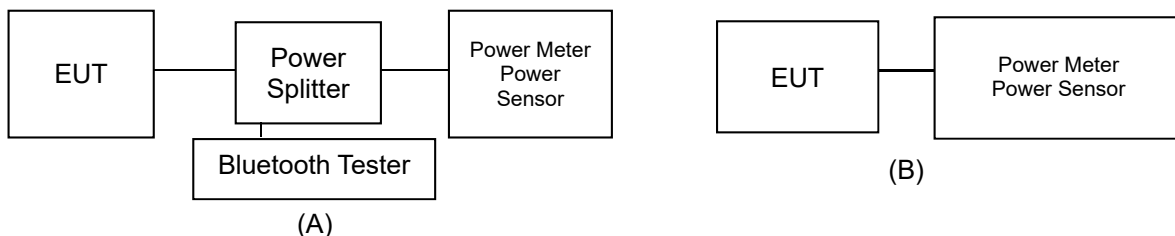


Figure 9.5.1 Average Power Measurement Setup

- Bluetooth Transmission Plot

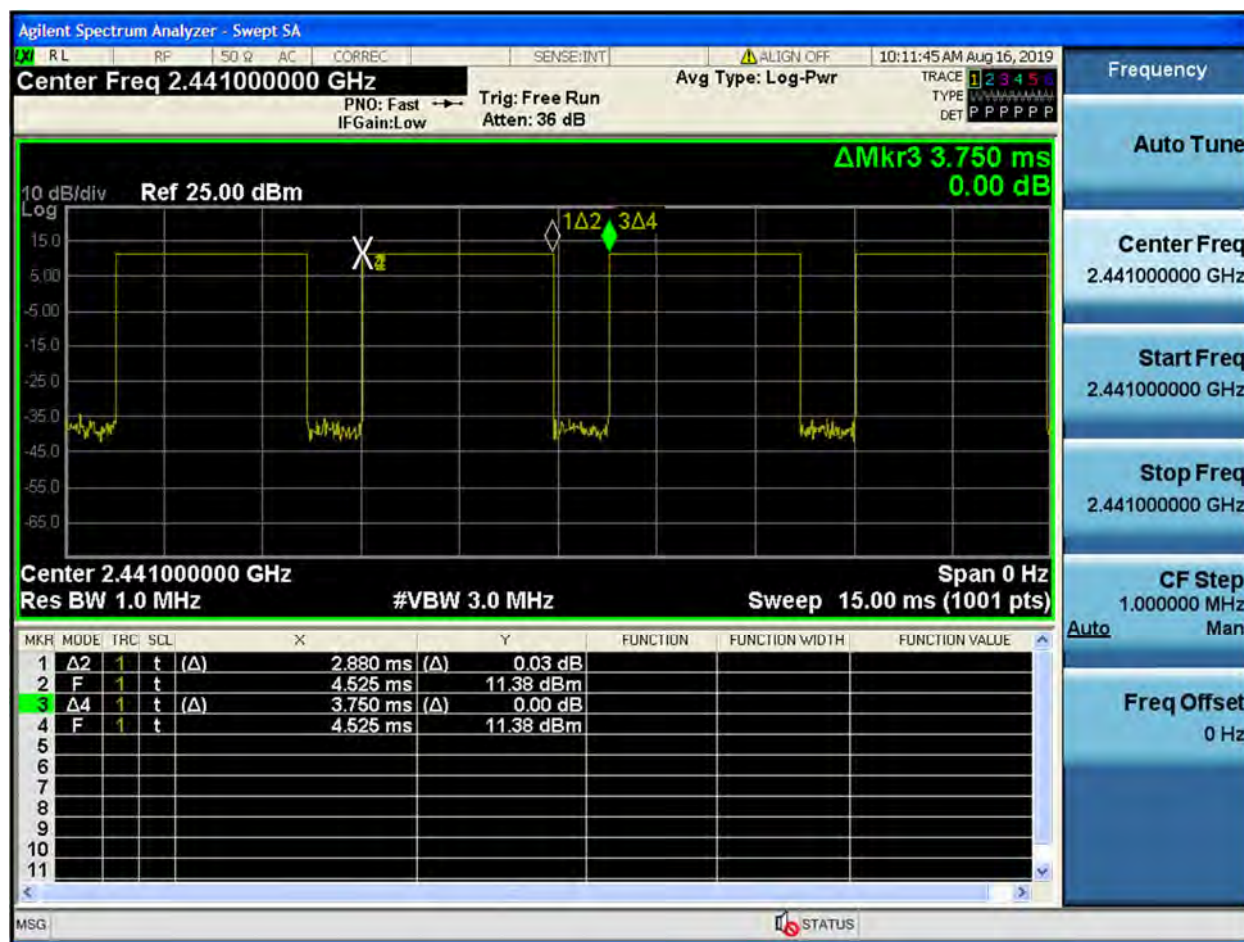


Figure 9.5.2 Bluetooth Transmission Plot

- 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. 14. 2019	750 Head	21.8	22.2	707.5	42.129	0.887	43.782	0.884	3.92	-0.34
				750.0	41.900	0.890	43.273	0.919	3.28	3.26
Aug. 14. 2019	750 Body	21.8	22.5	707.5	55.699	0.960	55.959	0.946	0.47	-1.46
				750.0	55.531	0.963	55.524	0.987	-0.01	2.49
Aug. 05. 2019	835 Head	21.7	21.5	824.2	41.552	0.899	40.897	0.885	-1.58	-1.56
				835.0	41.500	0.900	40.746	0.893	-1.82	-0.78
				836.6	41.500	0.901	40.721	0.894	-1.88	-0.78
				848.8	41.500	0.914	40.587	0.904	-2.20	-1.09
Aug. 05. 2019	835 Body	21.7	21.6	824.2	55.243	0.969	53.732	0.990	-2.74	2.17
				835.0	55.200	0.970	53.629	1.000	-2.85	3.09
				836.6	55.197	0.971	53.620	1.001	-2.86	3.09
				848.8	55.160	0.986	53.515	1.012	-2.98	2.64
Aug. 08. 2019	1800 Head	22.2	21.5	1712.4	40.126	1.350	40.607	1.303	1.20	-3.48
				1732.4	40.097	1.361	40.513	1.320	1.04	-3.01
				1752.6	40.069	1.373	40.414	1.337	0.86	-2.62
				1800.0	40.000	1.400	40.199	1.379	0.50	-1.50
Aug. 08. 2019	1800 Body	22.2	21.8	1712.4	53.596	1.464	53.794	1.431	0.37	-2.25
				1732.4	53.556	1.477	53.719	1.447	0.30	-2.03
				1752.6	53.516	1.489	53.641	1.464	0.23	-1.68
				1800.0	53.300	1.520	53.464	1.503	0.31	-1.12
Aug. 12. 2019	1800 Head	21.7	21.5	1720.0	40.114	1.354	40.676	1.313	1.40	-3.03
				1732.5	40.097	1.361	40.612	1.323	1.28	-2.79
				1745.0	40.079	1.369	40.544	1.334	1.16	-2.56
				1800.0	40.000	1.400	40.281	1.383	0.70	-1.21
Aug. 12. 2019	1800 Body	21.7	21.6	1720.0	53.580	1.469	53.649	1.432	0.13	-2.52
				1732.5	53.556	1.477	53.633	1.441	0.14	-2.44
				1745.0	53.530	1.485	53.607	1.452	0.14	-2.22
				1800.0	53.300	1.520	53.407	1.497	0.20	-1.51
Aug. 06. 2019	1900 Head	22.6	22.2	1850.2	40.000	1.400	39.576	1.363	-1.06	-2.64
				1880.0	40.000	1.400	39.502	1.389	-1.24	-0.79
				1900.0	40.000	1.400	39.429	1.407	-1.43	0.50
				1909.8	40.000	1.400	39.395	1.416	-1.51	1.14
Aug. 06. 2019	1900 Body	22.6	22.1	1850.2	53.300	1.520	52.082	1.466	-2.29	-3.55
				1880.0	53.300	1.520	52.005	1.487	-2.43	-2.17
				1900.0	53.300	1.520	51.959	1.502	-2.52	-1.18
				1909.8	53.300	1.520	51.943	1.510	-2.55	-0.66
Aug. 07. 2019	1900 Head	21.2	20.6	1852.4	40.000	1.400	39.725	1.366	-0.69	-2.43
				1880.0	40.000	1.400	39.638	1.391	-0.91	-0.64
				1900.0	40.000	1.400	39.556	1.409	-1.11	0.64
				1907.6	40.000	1.400	39.526	1.416	-1.18	1.14
Aug. 07. 2019	1900 Body	21.2	20.8	1852.4	53.300	1.520	52.200	1.467	-2.06	-3.49
				1880.0	53.300	1.520	52.114	1.487	-2.23	-2.17
				1900.0	53.300	1.520	52.065	1.502	-2.32	-1.18
				1907.6	53.300	1.520	52.049	1.508	-2.35	-0.79
Aug. 09. 2019	1900 Head	21.9	21.9	1860.0	40.000	1.400	39.740	1.374	-0.65	-1.86
				1880.0	40.000	1.400	39.670	1.392	-0.82	-0.57
				1900.0	40.000	1.400	39.589	1.410	-1.03	0.71
Aug. 09. 2019	1900 Body	21.9	21.6	1860.0	53.300	1.520	51.685	1.471	-3.03	-3.22
				1880.0	53.300	1.520	51.642	1.486	-3.11	-2.24
				1900.0	53.300	1.520	51.604	1.501	-3.18	-1.25

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. 19. 2019	2450 Head	22.1	22.2	2402.0	39.282	1.757	39.096	1.795	-0.47	2.16
				2412.0	39.265	1.766	39.061	1.806	-0.52	2.27
				2437.0	39.222	1.788	38.978	1.835	-0.62	2.63
				2441.0	39.215	1.792	38.964	1.839	-0.64	2.62
				2450.0	39.200	1.800	38.934	1.849	-0.68	2.72
				2462.0	39.184	1.813	38.898	1.862	-0.73	2.70
				2467.0	39.177	1.818	38.880	1.867	-0.76	2.70
				2472.0	39.171	1.823	38.864	1.873	-0.78	2.74
	2450 Body	22.1	22.4	2480.0	39.160	1.832	38.831	1.881	-0.84	2.67
				2402.0	52.764	1.904	51.911	1.868	-1.62	-1.89
				2412.0	52.751	1.914	51.885	1.881	-1.64	-1.72
				2437.0	52.717	1.938	51.819	1.911	-1.70	-1.39
				2441.0	52.712	1.941	51.808	1.916	-1.71	-1.29
				2450.0	52.700	1.950	51.785	1.927	-1.74	-1.18
				2462.0	52.685	1.967	51.758	1.941	-1.76	-1.32
				2467.0	52.678	1.974	51.742	1.947	-1.78	-1.37
Aug. 13. 2019	2600 Head	22.0	21.9	2472.0	52.672	1.981	51.728	1.953	-1.79	-1.41
				2480.0	52.662	1.993	51.707	1.963	-1.81	-1.51
				2506.0	39.125	1.860	40.078	1.904	2.44	2.37
				2549.5	39.068	1.906	39.829	1.949	1.95	2.26
				2593.0	39.009	1.953	39.637	1.990	1.61	1.89
				2600.0	39.000	1.960	39.595	1.998	1.53	1.94
Aug. 13. 2019	2600 Body	22.0	21.7	2636.5	38.955	2.000	39.380	2.037	1.09	1.85
				2680.0	38.900	2.048	39.002	2.072	0.26	1.17
				2506.0	52.629	2.029	53.625	2.055	1.89	1.28
				2549.5	52.574	2.090	53.492	2.107	1.75	0.81
				2593.0	52.518	2.153	53.362	2.159	1.61	0.28
				2600.0	52.509	2.163	53.339	2.168	1.58	0.23
Aug. 21. 2019	5200 Body	21.6	21.3	2636.5	52.463	2.214	53.225	2.213	1.45	-0.05
				2680.0	52.407	2.276	53.098	2.267	1.32	-0.40
				5180.0	49.041	5.276	50.545	5.186	3.07	-1.71
				5190.0	49.028	5.288	50.522	5.202	3.05	-1.63
				5200.0	49.014	5.299	50.504	5.219	3.04	-1.51
				5210.0	49.001	5.311	50.487	5.235	3.03	-1.43
Aug. 26. 2019	5300 Head	21.5	21.9	5220.0	48.987	5.323	50.474	5.250	3.04	-1.37
				5230.0	48.974	5.334	50.455	5.263	3.02	-1.33
				5240.0	48.960	5.346	50.539	5.276	3.23	-1.31
				5260.0	35.940	4.720	36.600	4.585	1.84	-2.86
				5270.0	35.930	4.730	36.588	4.596	1.83	-2.83
				5280.0	35.920	4.740	36.579	4.604	1.83	-2.87
Aug. 20. 2019	5300 Body	22.7	22.0	5290.0	35.910	4.750	36.563	4.611	1.82	-2.93
				5300.0	35.900	4.760	36.532	4.620	1.76	-2.94
				5310.0	35.890	4.770	36.508	4.633	1.72	-2.87
				5320.0	35.880	4.780	36.493	4.644	1.71	-2.85
				5260.0	48.933	5.369	49.721	5.203	1.61	-3.09
				5270.0	48.919	5.381	49.705	5.216	1.61	-3.07
	5300 Head	21.5	21.9	5280.0	48.906	5.393	49.692	5.227	1.61	-3.08
				5290.0	48.892	5.404	49.669	5.238	1.59	-3.07
				5300.0	48.879	5.416	49.641	5.251	1.56	-3.05
				5310.0	48.865	5.428	49.617	5.266	1.54	-2.98
	5300 Body	22.7	22.0	5320.0	48.851	5.439	49.599	5.280	1.53	-2.92

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. 27. 2019	5600 Head	21.8	21.5	5500.0	35.650	4.965	35.867	4.911	0.61	-1.09
				5510.0	35.635	4.976	35.845	4.920	0.59	-1.13
				5530.0	35.605	4.997	35.802	4.945	0.55	-1.04
				5550.0	35.575	5.018	35.777	4.964	0.57	-1.08
				5580.0	35.530	5.049	35.715	5.000	0.52	-0.97
				5600.0	35.500	5.070	35.697	5.022	0.55	-0.95
				5660.0	35.440	5.130	35.594	5.080	0.43	-0.97
				5670.0	35.430	5.140	35.572	5.081	0.40	-1.15
				5690.0	35.410	5.160	35.537	5.117	0.36	-0.83
				5710.0	35.390	5.180	35.523	5.137	0.38	-0.83
Aug. 22. 2019	5600 Body	21.2	20.9	5720.0	35.380	5.190	35.508	5.144	0.36	-0.89
				5800.0	35.300	5.270	35.360	5.233	0.17	-0.70
				5500.0	48.607	5.650	49.157	5.597	1.13	-0.94
				5510.0	48.594	5.661	49.137	5.610	1.12	-0.90
				5530.0	48.566	5.685	49.099	5.641	1.10	-0.77
				5550.0	48.539	5.708	49.064	5.666	1.08	-0.74
				5580.0	48.499	5.743	48.988	5.709	1.01	-0.59
				5600.0	48.471	5.766	48.961	5.738	1.01	-0.49
				5660.0	48.390	5.836	48.858	5.817	0.97	-0.33
				5670.0	48.376	5.848	48.833	5.830	0.94	-0.31
Aug. 28. 2019	5800 Head	21.3	21.6	5690.0	48.349	5.872	48.785	5.859	0.90	-0.22
				5710.0	48.322	5.895	48.759	5.885	0.90	-0.17
				5720.0	48.309	5.907	48.740	5.896	0.89	-0.19
				5800.0	48.200	6.000	48.584	6.003	0.80	0.05
				5745.0	35.355	5.215	36.266	5.173	2.58	-0.81
				5755.0	35.345	5.225	36.248	5.178	2.55	-0.90
Aug. 23. 2019	5800 Body	21.2	20.9	5775.0	35.325	5.245	36.189	5.190	2.45	-1.05
				5785.0	35.315	5.255	36.154	5.206	2.38	-0.93
				5795.0	35.305	5.265	36.130	5.225	2.34	-0.76
				5800.0	35.300	5.270	36.122	5.236	2.33	-0.65
				5825.0	35.275	5.296	36.131	5.269	2.43	-0.51
				5745.0	48.275	5.936	47.596	6.101	-1.41	2.78
				5755.0	48.261	5.947	47.526	6.106	-1.52	2.67
Aug. 23. 2019	5800 Body	21.2	20.9	5775.0	48.234	5.971	47.370	6.114	-1.79	2.39
				5785.0	48.220	5.982	47.295	6.122	-1.92	2.34
				5795.0	48.207	5.994	47.224	6.131	-2.04	2.29
				5800.0	48.200	6.000	47.191	6.136	-2.09	2.27
				5825.0	48.166	6.029	47.024	6.148	-2.37	1.97

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 [%]
Sep. 13. 2019	750 Head	21.1	21.8	707.5	42.129	0.887	43.176	0.857	2.49	-3.38
				750.0	41.900	0.890	42.687	0.895	1.88	0.56
Sep. 13. 2019	750 Body	21.1	21.6	707.5	55.699	0.960	54.203	0.942	-2.69	-1.88
				750.0	55.531	0.963	53.731	0.984	-3.24	2.18
Sep. 13. 2019	835 Head	21.1	21.5	824.2	41.552	0.899	40.921	0.872	-1.52	-3.00
				835.0	41.500	0.900	40.785	0.884	-1.72	-1.78
				836.6	41.500	0.901	40.765	0.885	-1.77	-1.78
				848.8	41.500	0.914	40.627	0.898	-2.10	-1.75
Sep. 13. 2019	835 Body	21.1	21.3	824.2	55.243	0.969	53.843	0.971	-2.53	0.21
				835.0	55.200	0.970	53.747	0.981	-2.63	1.13
				836.6	55.197	0.971	53.737	0.982	-2.65	1.13
				848.8	55.160	0.986	53.622	0.993	-2.79	0.71
Sep. 13. 2019	1800 Head	21.1	21.4	1712.4	40.126	1.350	41.578	1.326	3.62	-1.78
				1720.0	40.114	1.354	41.610	1.320	3.73	-2.51
				1732.4	40.097	1.361	41.509	1.336	3.52	-1.84
				1732.5	40.097	1.361	41.510	1.336	3.52	-1.84
				1745.0	40.079	1.369	41.335	1.352	3.13	-1.24
				1752.6	40.069	1.373	41.423	1.347	3.38	-1.89
				1800.0	40.000	1.400	41.083	1.398	2.71	-0.14
Sep. 13. 2019	1800 Body	21.1	21.6	1712.4	53.596	1.464	52.205	1.477	-2.60	0.89
				1720.0	53.580	1.469	52.234	1.471	-2.51	0.14
				1732.4	53.556	1.477	52.150	1.487	-2.63	0.68
				1732.5	53.556	1.477	52.150	1.487	-2.63	0.68
				1745.0	53.530	1.485	52.066	1.505	-2.73	1.35
				1752.6	53.516	1.489	52.096	1.498	-2.65	0.60
				1800.0	53.300	1.520	51.934	1.547	-2.56	1.78
Sep. 13. 2019	1900 Head	21.1	21.1	1850.2	40.000	1.400	40.678	1.384	1.69	-1.14
				1852.4	40.000	1.400	40.674	1.387	1.69	-0.93
				1860.0	40.000	1.400	40.656	1.396	1.64	-0.29
				1880.0	40.000	1.400	40.589	1.416	1.47	1.14
				1900.0	40.000	1.400	40.511	1.435	1.28	2.50
				1907.6	40.000	1.400	40.481	1.442	1.20	3.00
				1909.8	40.000	1.400	40.475	1.444	1.19	3.14
Sep. 13. 2019	1900 Body	21.1	21.2	1850.2	53.300	1.520	51.612	1.529	-3.17	0.59
				1852.4	53.300	1.520	51.610	1.531	-3.14	0.72
				1860.0	53.300	1.520	51.609	1.537	-3.11	1.12
				1880.0	53.300	1.520	51.607	1.552	-3.18	2.11
				1900.0	53.300	1.520	51.568	1.569	-3.25	3.22
				1907.6	53.300	1.520	51.564	1.577	-3.28	3.75
				1909.8	53.300	1.520	51.560	1.579	-3.26	3.88
Sep. 13. 2019	2600 Head	21.1	21.8	2506.0	39.125	1.860	39.740	1.910	1.57	2.69
				2549.5	39.068	1.906	39.557	1.960	1.25	2.83
				2593.0	39.009	1.953	39.385	2.008	0.96	2.82
				2600.0	39.000	1.960	39.352	2.017	0.90	2.91
				2636.5	38.955	2.000	39.199	2.057	0.63	2.85
				2680.0	38.900	2.048	39.040	2.109	0.36	2.98
				2506.0	52.629	2.029	51.760	1.975	-1.65	-2.66
Sep. 13. 2019	2600 Body	21.1	21.7	2549.5	52.574	2.090	51.676	2.038	-1.71	-2.49
				2593.0	52.518	2.153	51.587	2.086	-1.77	-3.11
				2600.0	52.509	2.163	51.561	2.093	-1.81	-3.24
				2636.5	52.463	2.214	51.398	2.132	-2.03	-3.70
				2680.0	52.407	2.276	51.322	2.195	-2.07	-3.56
				5180.0	49.041	5.276	48.205	5.344	-1.70	1.29
				5190.0	49.028	5.288	48.247	5.364	-1.59	1.44
Sep. 12. 2019	5200 Body	21.4	21.2	5200.0	49.014	5.299	48.248	5.373	-1.56	1.40
				5210.0	49.001	5.311	48.202	5.369	-1.63	1.09
				5220.0	48.987	5.323	48.109	5.357	-1.79	0.64
				5230.0	48.974	5.334	47.985	5.344	-2.02	0.19
				5240.0	48.960	5.346	47.861	5.341	-2.24	-0.09
				5260.0	35.940	4.720	35.567	4.820	-1.04	2.12
				5270.0	35.930	4.730	35.544	4.831	-1.07	2.14
Sep. 12. 2019	5300 Head	21.4	21.1	5280.0	35.920	4.740	35.525	4.839	-1.10	2.09
				5290.0	35.910	4.750	35.502	4.847	-1.14	2.04
				5300.0	35.900	4.760	35.476	4.860	-1.18	2.10
				5310.0	35.890	4.770	35.462	4.877	-1.19	2.24
				5320.0	35.880	4.780	35.461	4.892	-1.17	2.34
				5260.0	48.933	5.369	49.036	5.368	0.21	-0.02
				5270.0	48.919	5.381	49.016	5.382	0.20	0.02
Sep. 12. 2019	5300 Body	21.4	21.5	5280.0	48.906	5.393	49.001	5.395	0.19	0.04
				5290.0	48.892	5.404	48.988	5.406	0.20	0.04
				5300.0	48.879	5.416	48.967	5.417	0.18	0.02
				5310.0	48.865	5.428	48.942	5.431	0.16	0.06
				5320.0	48.851	5.439	48.924	5.445	0.15	0.11

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 [%]
Sep. 12. 2019	5600 Head	21.4	21.9	5500.0	35.650	4.965	36.325	4.806	1.89	-3.20
				5510.0	35.635	4.976	36.318	4.814	1.92	-3.26
				5530.0	35.605	4.997	36.275	4.833	1.88	-3.28
				5550.0	35.575	5.018	36.246	4.857	1.89	-3.21
				5580.0	35.530	5.049	36.195	4.889	1.87	-3.17
				5600.0	35.500	5.070	36.165	4.914	1.87	-3.08
				5660.0	35.440	5.130	36.077	4.975	1.80	-3.02
				5670.0	35.430	5.140	36.063	4.985	1.79	-3.02
				5690.0	35.410	5.160	36.030	5.008	1.75	-2.95
				5710.0	35.390	5.180	36.001	5.032	1.73	-2.86
				5720.0	35.380	5.190	35.995	5.043	1.74	-2.83
Sep. 12. 2019	5600 Body	21.4	21.6	5800.0	35.300	5.270	35.864	5.128	1.60	-2.69
				5500.0	48.607	5.650	50.063	5.768	3.00	2.09
				5510.0	48.594	5.661	50.053	5.780	3.00	2.10
				5530.0	48.566	5.685	50.012	5.808	2.98	2.16
				5550.0	48.539	5.708	49.974	5.838	2.96	2.28
				5580.0	48.499	5.743	49.921	5.881	2.93	2.40
				5600.0	48.471	5.766	49.885	5.912	2.92	2.53
				5660.0	48.390	5.836	49.786	5.990	2.88	2.64
				5670.0	48.376	5.848	49.769	6.003	2.88	2.65
				5690.0	48.349	5.872	49.730	6.032	2.86	2.72
				5710.0	48.322	5.895	49.695	6.062	2.84	2.83
Sep. 12. 2019	5800 Head	21.4	21.3	5720.0	48.309	5.907	49.686	6.076	2.85	2.86
				5800.0	48.200	6.000	49.535	6.183	2.77	3.05
				5745.0	35.355	5.215	36.115	5.067	2.15	-2.84
				5755.0	35.345	5.225	36.097	5.080	2.13	-2.78
				5775.0	35.325	5.245	36.077	5.100	2.13	-2.76
				5785.0	35.315	5.255	36.057	5.109	2.10	-2.78
				5795.0	35.305	5.265	36.037	5.121	2.07	-2.74
Sep. 12. 2019	5800 Body	21.4	22.0	5800.0	35.300	5.270	36.028	5.127	2.06	-2.71
				5825.0	35.275	5.296	35.993	5.158	2.04	-2.61
				5745.0	48.275	5.936	50.161	6.155	3.91	3.69
				5755.0	48.261	5.947	50.149	6.171	3.91	3.77
				5775.0	48.234	5.971	50.120	6.198	3.91	3.80
				5785.0	48.220	5.982	50.098	6.211	3.89	3.83
				5795.0	48.207	5.994	50.077	6.225	3.88	3.85
				5800.0	48.200	6.000	50.065	6.233	3.87	3.88
				5825.0	48.166	6.029	50.015	6.271	3.84	4.01

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)	1 W Target SAR _{1g} (W/kg)	Measured SAR _{1g} (W/kg)	1 W Normalized SAR _{1g} (W/kg)	Deviation [%]
C	750	D750V3, SN:1049	Aug. 14. 2019	Head	21.8	22.2	3866	250	8.38	2.23	8.92	6.44
C	750	D750V3, SN:1049	Aug. 14. 2019	Body	21.8	22.5	3866	250	8.70	2.32	9.28	6.67
C	835	D835V2, SN:464	Aug. 05. 2019	Head	21.7	21.5	3866	250	9.59	2.38	9.52	-0.73
C	835	D835V2, SN:464	Aug. 05. 2019	Body	21.7	21.6	3866	250	9.68	2.31	9.24	-4.55
C	1800	D1800V2, SN:2d047	Aug. 08. 2019	Head	22.2	21.5	3866	100	38.1	3.97	39.70	4.20
C	1800	D1800V2, SN:2d047	Aug. 08. 2019	Body	22.2	21.8	3866	100	38.0	4.03	40.30	6.05
C	1800	D1800V2, SN:2d047	Aug. 12. 2019	Head	21.7	21.5	3866	100	38.1	3.74	37.40	-1.84
C	1800	D1800V2, SN:2d047	Aug. 12. 2019	Body	21.7	21.6	3866	100	38.0	3.98	39.80	4.74
C	1900	D1900V2, SN:5d029	Aug. 06. 2019	Head	22.6	22.2	3866	100	40.4	4.12	41.20	1.98
C	1900	D1900V2, SN:5d029	Aug. 06. 2019	Body	22.6	22.1	3866	100	39.9	4.01	40.10	0.50
C	1900	D1900V2, SN:5d029	Aug. 07. 2019	Head	21.2	20.6	3866	100	40.4	4.32	43.20	6.93
C	1900	D1900V2, SN:5d029	Aug. 07. 2019	Body	21.2	20.8	3866	100	39.9	3.89	38.90	-2.51
C	1900	D1900V2, SN:5d029	Aug. 09. 2019	Head	21.9	21.9	3866	100	40.4	3.74	37.40	-7.43
C	1900	D1900V2, SN:5d029	Aug. 09. 2019	Body	21.9	21.6	3866	100	39.9	3.74	37.40	-6.27
C	2450	D2450V2, SN: 920	Aug. 19. 2019	Head	22.1	22.2	3866	100	51.9	5.17	51.70	-0.39
C	2450	D2450V2, SN: 920	Aug. 19. 2019	Body	22.1	22.4	3866	100	52.1	5.32	53.20	2.11
C	2600	D2600V2, SN: 1016	Aug. 13. 2019	Head	22.0	21.9	3866	100	56.6	5.72	57.20	1.06
D	2600	D2600V2, SN: 1016	Aug. 13. 2019	Body	20.9	20.8	7337	100	53.5	5.63	56.30	5.23
C	5200	D5GHZV2, SN:1103	Aug. 21. 2019	Body	21.6	21.3	3866	100	75.5	7.12	71.20	-5.70
A	5300	D5GHZV2, SN:1103	Aug. 26. 2019	Head	21.5	21.9	3930	100	82.4	8.48	84.80	2.91
C	5300	D5GHZV2, SN:1103	Aug. 20. 2019	Body	22.7	22.0	3866	100	74.4	7.46	74.60	0.27
A	5600	D5GHZV2, SN:1103	Aug. 27. 2019	Head	21.8	21.5	3930	100	84.0	8.25	82.50	-1.79
C	5600	D5GHZV2, SN:1103	Aug. 22. 2019	Body	21.2	20.9	3866	100	79.7	7.91	79.10	-0.75
A	5800	D5GHZV2, SN:1103	Aug. 27. 2019	Head	21.8	21.5	3930	100	81.4	8.13	81.30	-0.12
C	5800	D5GHZV2, SN:1103	Aug. 22. 2019	Body	21.2	20.9	3866	100	74.8	6.94	69.40	-7.22
A	5800	D5GHZV2, SN:1103	Aug. 28. 2019	Head	21.3	21.6	3930	100	81.4	7.81	78.10	-4.05
C	5800	D5GHZV2, SN:1103	Aug. 23. 2019	Body	21.2	20.9	3866	100	74.8	7.34	73.40	-1.87

Table 10.2.2 System Verification Results (10g)

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)	1 W Target SAR _{10g} (W/kg)	Measured SAR _{10g} (W/kg)	1 W Normalized SAR _{10g} (W/kg)	Deviation [%]
C	5300	D5GHZV2, SN:1103	Aug. 20. 2019	Body	22.7	22.0	3866	100	20.9	2.11	21.10	0.96
C	5600	D5GHZV2, SN:1103	Aug. 22. 2019	Body	21.2	20.9	3866	100	22.3	2.20	22.00	-1.35
C	5800	D5GHZV2, SN:1103	Aug. 22. 2019	Body	21.2	20.9	3866	100	20.9	1.96	19.60	-6.22
C	5800	D5GHZV2, SN:1103	Aug. 23. 2019	Body	21.2	20.9	3866	100	20.9	2.07	20.70	-0.96

SYSTEM DIPOLE VERIFICATION TARGET & MEASURED

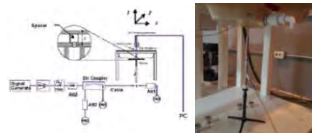
SAR System #	Freq. [MHz]	SAR Dipole kits	Date(s)	Tissue Type	Ambient Temp. [°C]	Liquid Temp. [°C]	Probe S/N	Input Power (mW)	1 W Target SAR _{1g} (W/kg)	Measured SAR _{1g} (W/kg)	1 W Normalized SAR _{1g} (W/kg)	Deviation [%]
C	750	D750V3, SN:1049	Sep. 13. 2019	Head	21.1	21.8	3866	250	8.38	2.17	8.68	3.58
C	750	D750V3, SN:1049	Sep. 13. 2019	Body	21.1	21.6	3866	250	8.70	2.22	8.88	2.07
C	835	D835V2, SN:464	Sep. 13. 2019	Head	21.1	21.5	3866	250	9.59	2.36	9.44	-1.56
C	835	D835V2, SN:464	Sep. 13. 2019	Body	21.1	21.3	3866	250	9.68	2.45	9.80	1.24
C	1800	D1800V2, SN:2d047	Sep. 13. 2019	Head	21.1	21.4	3866	100	38.1	3.99	39.90	4.72
C	1800	D1800V2, SN:2d047	Sep. 13. 2019	Body	21.1	21.6	3866	100	38.0	4.03	40.30	6.05
C	1900	D1900V2, SN:5d029	Sep. 13. 2019	Head	21.1	21.1	3866	100	40.4	3.87	38.70	-4.21
C	1900	D1900V2, SN:5d029	Sep. 13. 2019	Body	21.1	21.2	3866	100	39.9	4.18	41.80	4.76
C	2600	D2600V2, SN: 1016	Sep. 13. 2019	Head	21.1	21.8	3866	100	56.6	5.63	56.30	-0.53
C	2600	D2600V2, SN: 1016	Sep. 13. 2019	Body	21.1	21.7	7337	100	53.5	5.32	53.20	-0.56
C	5200	D5GHZV2, SN:1103	Sep. 12. 2019	Body	21.4	21.2	3866	100	75.5	7.83	78.30	3.71
C	5300	D5GHZV2, SN:1103	Sep. 12. 2019	Head	21.4	21.1	3930	100	82.4	7.58	75.80	-8.01
C	5300	D5GHZV2, SN:1103	Sep. 12. 2019	Body	21.4	21.5	3866	100	74.4	7.51	75.10	0.94
C	5600	D5GHZV2, SN:1103	Sep. 12. 2019	Head	21.4	21.9	3930	100	84.0	8.47	84.70	0.83
C	5600	D5GHZV2, SN:1103	Sep. 12. 2019	Body	21.4	21.6	3866	100	79.7	8.34	83.40	4.64
C	5800	D5GHZV2, SN:1103	Sep. 12. 2019	Head	21.4	21.9	3930	100	81.4	8.27	82.70	1.60
C	5800	D5GHZV2, SN:1103	Sep. 12. 2019	Body	21.4	21.6	3866	100	74.8	7.18	71.80	-4.01
C	5800	D5GHZV2, SN:1103	Sep. 12. 2019	Head	21.4	21.3	3930	100	81.4	8.38	83.80	2.95
C	5800	D5GHZV2, SN:1103	Sep. 12. 2019	Body	21.4	22.0	3866	100	74.8	7.16	71.60	-4.28

Table 10.2.2 System Verification Results (10g)
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)	1 W Target SAR _{10g} (W/kg)	Measured SAR _{10g} (W/kg)	1 W Normalized SAR _{10g} (W/kg)	Deviation [%]
C	5300	D5GHZV2, SN:1103	Sep. 12. 2019	Body	21.4	21.5	3866	100	20.9	2.08	20.80	-0.48
C	5600	D5GHZV2, SN:1103	Sep. 12. 2019	Body	21.4	21.6	3866	100	22.3	2.31	23.10	3.59
C	5800	D5GHZV2, SN:1103	Sep. 12. 2019	Body	21.4	21.6	3866	100	20.9	2.09	20.90	0.00
C	5800	D5GHZV2, SN:1103	Sep. 12. 2019	Body	21.4	22.0	3866	100	20.9	2.06	20.60	-1.44

Note1 : System Verification was measured with input 250 mW, 100 mW and normalized to 1W.

Note2 : Full system validation status and results can be found in Appendix D.


Figure 10.1 Dipole Verification Test Setup Diagram & Photo

11.5 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, 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 Transmission Scenarios

No.	Capable TX Configuration	GSM 850/1900 (Voice)	GPRS 850/1900 (Data)	WCDMA B4/B2 (Voice)	WCDMA B4/B2 (Data)	LTE B12/B17/B4/B2/B41	WiFi 2.4GHz 802.11b/g/n/ac	WiFi 5GHz 802.11a/n/ac	Bluetooth 2.4GHz
1	GSM 850/1900 (Voice)		No	No	No	No	Yes	Yes	Yes
2	GPRS 850/1900 (Data)	No		No	No	No	Yes	Yes	Yes
3	WCDMA B4/B2 (Voice)	No	No		No	No	Yes	Yes	Yes
4	WCDMA B4/B2 (Data)	No	No	No		No	Yes	Yes	Yes
5	LTE B12/B17/B4/B2/B41	No	No	No	No		Yes	Yes	Yes
6	WiFi 2.4GHz 802.11b/g/n/ac	Yes	Yes	Yes	Yes	Yes		Yes	Yes
7	WiFi 5GHz 802.11a/n/ac	Yes	Yes	Yes	Yes	Yes	Yes		Yes
8	Bluetooth 2.4GHz	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

Table 12.3.2 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	
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 + Wi-Fi 2.4 GHz Ant.1 + Wi-Fi 5GHz Ant.2	Yes	Yes	N/A	Yes	
7	GSM Voice + BT 2.4 GHz Ant.1 + Wi-Fi 2.4 GHz Ant.2	Yes	Yes	N/A	Yes	
8	GSM Voice + Bluetooth 2.4 GHz + Wi-Fi 5GHz	Yes	Yes	N/A	Yes	
9	GSM Voice + Bluetooth 2.4 GHz + Wi-Fi 5GHz MIMO	Yes	Yes	N/A	Yes	
10	WCDMA + Wi-Fi 2.4 GHz	Yes	Yes	Yes	Yes	
11	WCDMA + Wi-Fi 5 GHz	Yes	Yes	Yes*	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
12	WCDMA + Bluetooth 2.4 GHz	Yes	Yes	Yes	Yes	
13	WCDMA + Wi-Fi 2.4 GHz MIMO	Yes	Yes	Yes	Yes	
14	WCDMA + Wi-Fi 5 GHz MIMO	Yes	Yes	Yes*	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
15	WCDMA + Wi-Fi 2.4 GHz Ant.1 + Wi-Fi 5GHz Ant.2	Yes	Yes	Yes*	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
16	WCDMA + BT 2.4 GHz Ant.1 + Wi-Fi 2.4 GHz Ant.2	Yes	Yes	Yes*	Yes	
17	WCDMA + Bluetooth 2.4 GHz + Wi-Fi 5GHz	Yes	Yes	Yes*	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
18	WCDMA + Bluetooth 2.4 GHz + Wi-Fi 5GHz MIMO	Yes	Yes	Yes*	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
19	LTE + Wi-Fi 2.4 GHz	Yes	Yes	Yes	Yes	
20	LTE + Wi-Fi 5 GHz	Yes	Yes	Yes*	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
21	LTE + Bluetooth 2.4 GHz	Yes	Yes	Yes	Yes	
22	LTE + Wi-Fi 2.4 GHz MIMO	Yes	Yes	Yes	Yes	
23	LTE + Wi-Fi 5 GHz MIMO	Yes	Yes	Yes*	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
24	LTE + Wi-Fi 2.4 GHz Ant.1 + Wi-Fi 5GHz Ant.2	Yes	Yes	Yes*	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
25	LTE + BT 2.4 GHz Ant.1 + Wi-Fi 2.4 GHz Ant.2	Yes	Yes	Yes*	Yes	
26	LTE + Bluetooth 2.4 GHz + Wi-Fi 5GHz	Yes	Yes	Yes*	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
27	LTE + Bluetooth 2.4 GHz + Wi-Fi 5GHz MIMO	Yes	Yes	Yes*	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
28	GPRS + Wi-Fi 2.4 GHz	Yes	Yes	Yes	Yes	
29	GPRS + Wi-Fi 5 GHz	Yes	Yes	Yes*	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
30	GPRS + Bluetooth 2.4 GHz	Yes	Yes	Yes	Yes	
31	GPRS + Wi-Fi 2.4 GHz MIMO	Yes	Yes	Yes	Yes	
32	GPRS + Wi-Fi 5 GHz MIMO	Yes	Yes	Yes*	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
33	GPRS + Wi-Fi 2.4 GHz Ant.1 + Wi-Fi 5GHz Ant.2	Yes	Yes	Yes*	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
34	GPRS + BT 2.4 GHz Ant.1 + Wi-Fi 2.4 GHz Ant.2	Yes	Yes	Yes*	Yes	
35	GPRS + Bluetooth 2.4 GHz + Wi-Fi 5GHz	Yes	Yes	Yes*	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
36	GPRS + Bluetooth 2.4 GHz + Wi-Fi 5GHz MIMO	Yes	Yes	Yes*	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.

Notes:

- WiFi 2.4GHz is supported Hotspot and WiFi-Direct(GO/GC).
- WiFi 5GHz is supported Hotspot in UNII B1,B3 and WiFi-Direct(GO/GC) in UNII B1,B3.
- 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.
- When the user utilizes multiple services in UMTS 3G mode it uses multi-Radio Access Bearer or multi-RAB. The power control is based on a physical control channel (Dedicated Physical Control Channel [DPCC]) and power control will be adjusted to meet the needs of both services. Therefore, the UMTS+WLAN scenario also represents the UMTS Voice/DATA + WLAN Hotspot scenario.
- Per the manufacturer, WiFi Direct is expected to be used in conjunction with a held-to-ear or body-worn accessory voice call. Simultaneous transmission scenarios involving WiFi direct are included in the above table.
- Simultaneous transmission of Main Band (GSM, WCDMA, LTE) + Bluetooth + Wi-Fi 2.4 GHz + Wi-Fi 5 GHz is not supported.
- Simultaneous transmission of Bluetooth + Wi-Fi 2.4 GHz + Wi-Fi 5 GHz is not supported.

12.4 Head SAR Simultaneous Transmission Analysis

Table 12.4.1 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN Ant.1 + 5.3 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN 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
Head SAR	GSM 850	Left Touch	0.056	0.483	0.067	0.539	0.123	0.606
		Right Touch	0.045	0.129	0.163	0.174	0.208	0.337
		Left Tilt	0.026	0.112	0.074	0.138	0.100	0.212
		Right Tilt	0.027	0.057	0.154	0.084	0.181	0.238
	GPRS 850	Left Touch	0.070	0.483	0.067	0.553	0.137	0.620
		Right Touch	0.057	0.129	0.163	0.186	0.220	0.349
		Left Tilt	0.033	0.112	0.074	0.145	0.107	0.219
		Right Tilt	0.035	0.057	0.154	0.092	0.189	0.246
	GSM 1900	Left Touch	0.015	0.483	0.067	0.498	0.082	0.565
		Right Touch	0.047	0.129	0.163	0.176	0.210	0.339
		Left Tilt	0.017	0.112	0.074	0.129	0.091	0.203
		Right Tilt	0.014	0.057	0.154	0.071	0.168	0.225
	GPRS 1900	Left Touch	0.026	0.483	0.067	0.509	0.093	0.576
		Right Touch	0.070	0.129	0.163	0.199	0.233	0.362
		Left Tilt	0.021	0.112	0.074	0.133	0.095	0.207
		Right Tilt	0.020	0.057	0.154	0.077	0.174	0.231
	WCDMA 1700	Left Touch	0.087	0.483	0.067	0.570	0.154	0.637
		Right Touch	0.103	0.129	0.163	0.232	0.266	0.395
		Left Tilt	0.064	0.112	0.074	0.176	0.138	0.250
		Right Tilt	0.055	0.057	0.154	0.112	0.209	0.266
	WCDMA 1900	Left Touch	0.046	0.483	0.067	0.529	0.113	0.596
		Right Touch	0.089	0.129	0.163	0.218	0.252	0.381
		Left Tilt	0.041	0.112	0.074	0.153	0.115	0.227
		Right Tilt	0.036	0.057	0.154	0.093	0.190	0.247
	LTE Band 12	Left Touch	0.101	0.483	0.067	0.584	0.168	0.651
		Right Touch	0.090	0.129	0.163	0.219	0.253	0.382
		Left Tilt	0.043	0.112	0.074	0.155	0.117	0.229
		Right Tilt	0.054	0.057	0.154	0.111	0.208	0.265
	LTE Band 4	Left Touch	0.080	0.483	0.067	0.563	0.147	0.630
		Right Touch	0.094	0.129	0.163	0.223	0.257	0.386
		Left Tilt	0.049	0.112	0.074	0.161	0.123	0.235
		Right Tilt	0.060	0.057	0.154	0.117	0.214	0.271
	LTE Band 2	Left Touch	0.080	0.483	0.067	0.563	0.147	0.630
		Right Touch	0.096	0.129	0.163	0.225	0.259	0.388
		Left Tilt	0.055	0.112	0.074	0.167	0.129	0.241
		Right Tilt	0.039	0.057	0.154	0.096	0.193	0.250
	LTE Band 41	Left Touch	0.106	0.483	0.067	0.589	0.173	0.656
		Right Touch	0.060	0.129	0.163	0.189	0.223	0.352
		Left Tilt	0.016	0.112	0.074	0.128	0.090	0.202
		Right Tilt	0.030	0.057	0.154	0.087	0.184	0.241

Table 12.4.2 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN Ant.1+ 5.6 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN 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	0.056	0.483	0.093	0.539	0.149	0.632
		Right Touch	0.045	0.129	0.242	0.174	0.287	0.416
		Left Tilt	0.026	0.112	0.103	0.138	0.129	0.241
		Right Tilt	0.027	0.057	0.350	0.084	0.377	0.434
	GPRS 850	Left Touch	0.070	0.483	0.093	0.553	0.163	0.646
		Right Touch	0.057	0.129	0.242	0.186	0.299	0.428
		Left Tilt	0.033	0.112	0.103	0.145	0.136	0.248
		Right Tilt	0.035	0.057	0.350	0.092	0.385	0.442
	GSM 1900	Left Touch	0.015	0.483	0.093	0.498	0.108	0.591
		Right Touch	0.047	0.129	0.242	0.176	0.289	0.418
		Left Tilt	0.017	0.112	0.103	0.129	0.120	0.232
		Right Tilt	0.014	0.057	0.350	0.071	0.364	0.421
	GPRS 1900	Left Touch	0.026	0.483	0.093	0.509	0.119	0.602
		Right Touch	0.070	0.129	0.242	0.199	0.312	0.441
		Left Tilt	0.021	0.112	0.103	0.133	0.124	0.236
		Right Tilt	0.020	0.057	0.350	0.077	0.370	0.427
	WCDMA 1700	Left Touch	0.087	0.483	0.093	0.570	0.180	0.663
		Right Touch	0.103	0.129	0.242	0.232	0.345	0.474
		Left Tilt	0.064	0.112	0.103	0.176	0.167	0.279
		Right Tilt	0.055	0.057	0.350	0.112	0.405	0.462
	WCDMA 1900	Left Touch	0.046	0.483	0.093	0.529	0.139	0.622
		Right Touch	0.089	0.129	0.242	0.218	0.331	0.460
		Left Tilt	0.041	0.112	0.103	0.153	0.144	0.256
		Right Tilt	0.036	0.057	0.350	0.093	0.386	0.443
	LTE Band 12	Left Touch	0.101	0.483	0.093	0.584	0.194	0.677
		Right Touch	0.090	0.129	0.242	0.219	0.332	0.461
		Left Tilt	0.043	0.112	0.103	0.155	0.146	0.258
		Right Tilt	0.054	0.057	0.350	0.111	0.404	0.461
	LTE Band 4	Left Touch	0.080	0.483	0.093	0.563	0.173	0.656
		Right Touch	0.094	0.129	0.242	0.223	0.336	0.465
		Left Tilt	0.049	0.112	0.103	0.161	0.152	0.264
		Right Tilt	0.060	0.057	0.350	0.117	0.410	0.467
	LTE Band 2	Left Touch	0.080	0.483	0.093	0.563	0.173	0.656
		Right Touch	0.096	0.129	0.242	0.225	0.338	0.467
		Left Tilt	0.055	0.112	0.103	0.167	0.158	0.270
		Right Tilt	0.039	0.057	0.350	0.096	0.389	0.446
	LTE Band 41	Left Touch	0.106	0.483	0.093	0.589	0.199	0.682
		Right Touch	0.060	0.129	0.242	0.189	0.302	0.431
		Left Tilt	0.016	0.112	0.103	0.128	0.119	0.231
		Right Tilt	0.030	0.057	0.350	0.087	0.380	0.437

Table 12.4.3 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN Ant.1 + 5.8 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN Ant.1 SAR (W/kg)	5.8G 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	0.056	0.483	0.088	0.539	0.144	0.627
		Right Touch	0.045	0.129	0.132	0.174	0.177	0.306
		Left Tilt	0.026	0.112	0.105	0.138	0.131	0.243
		Right Tilt	0.027	0.057	0.157	0.084	0.184	0.241
	GPRS 850	Left Touch	0.070	0.483	0.088	0.553	0.158	0.641
		Right Touch	0.057	0.129	0.132	0.186	0.189	0.318
		Left Tilt	0.033	0.112	0.105	0.145	0.138	0.250
		Right Tilt	0.035	0.057	0.157	0.092	0.192	0.249
	GSM 1900	Left Touch	0.015	0.483	0.088	0.498	0.103	0.586
		Right Touch	0.047	0.129	0.132	0.176	0.179	0.308
		Left Tilt	0.017	0.112	0.105	0.129	0.122	0.234
		Right Tilt	0.014	0.057	0.157	0.071	0.171	0.228
	GPRS 1900	Left Touch	0.026	0.483	0.088	0.509	0.114	0.597
		Right Touch	0.070	0.129	0.132	0.199	0.202	0.331
		Left Tilt	0.021	0.112	0.105	0.133	0.126	0.238
		Right Tilt	0.020	0.057	0.157	0.077	0.177	0.234
	WCDMA 1700	Left Touch	0.087	0.483	0.088	0.570	0.175	0.658
		Right Touch	0.103	0.129	0.132	0.232	0.235	0.364
		Left Tilt	0.064	0.112	0.105	0.176	0.169	0.281
		Right Tilt	0.055	0.057	0.157	0.112	0.212	0.269
	WCDMA 1900	Left Touch	0.046	0.483	0.088	0.529	0.134	0.617
		Right Touch	0.089	0.129	0.132	0.218	0.221	0.350
		Left Tilt	0.041	0.112	0.105	0.153	0.146	0.258
		Right Tilt	0.036	0.057	0.157	0.093	0.193	0.250
	LTE Band 12	Left Touch	0.101	0.483	0.088	0.584	0.189	0.672
		Right Touch	0.090	0.129	0.132	0.219	0.222	0.351
		Left Tilt	0.043	0.112	0.105	0.155	0.148	0.260
		Right Tilt	0.054	0.057	0.157	0.111	0.211	0.268
	LTE Band 4	Left Touch	0.080	0.483	0.088	0.563	0.168	0.651
		Right Touch	0.094	0.129	0.132	0.223	0.226	0.355
		Left Tilt	0.049	0.112	0.105	0.161	0.154	0.266
		Right Tilt	0.060	0.057	0.157	0.117	0.217	0.274
	LTE Band 2	Left Touch	0.080	0.483	0.088	0.563	0.168	0.651
		Right Touch	0.096	0.129	0.132	0.225	0.228	0.357
		Left Tilt	0.055	0.112	0.105	0.167	0.160	0.272
		Right Tilt	0.039	0.057	0.157	0.096	0.196	0.253
	LTE Band 41	Left Touch	0.106	0.483	0.088	0.589	0.194	0.677
		Right Touch	0.060	0.129	0.132	0.189	0.192	0.321
		Left Tilt	0.016	0.112	0.105	0.128	0.121	0.233
		Right Tilt	0.030	0.057	0.157	0.087	0.187	0.244

Table 12.4.4 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)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 850	Left Touch	0.056	0.147	0.031	0.203	0.087	0.234
		Right Touch	0.045	0.033	0.186	0.078	0.231	0.264
		Left Tilt	0.026	0.041	0.028	0.067	0.054	0.095
		Right Tilt	0.027	0.018	0.069	0.045	0.096	0.114
	GPRS 850	Left Touch	0.070	0.147	0.031	0.217	0.101	0.248
		Right Touch	0.057	0.033	0.186	0.090	0.243	0.276
		Left Tilt	0.033	0.041	0.028	0.074	0.061	0.102
		Right Tilt	0.035	0.018	0.069	0.053	0.104	0.122
	GSM 1900	Left Touch	0.015	0.147	0.031	0.162	0.046	0.193
		Right Touch	0.047	0.033	0.186	0.080	0.233	0.266
		Left Tilt	0.017	0.041	0.028	0.058	0.045	0.086
		Right Tilt	0.014	0.018	0.069	0.032	0.083	0.101
	GPRS 1900	Left Touch	0.026	0.147	0.031	0.173	0.057	0.204
		Right Touch	0.070	0.033	0.186	0.103	0.256	0.289
		Left Tilt	0.021	0.041	0.028	0.062	0.049	0.090
		Right Tilt	0.020	0.018	0.069	0.038	0.089	0.107
	WCDMA 1700	Left Touch	0.087	0.147	0.031	0.234	0.118	0.265
		Right Touch	0.103	0.033	0.186	0.136	0.289	0.322
		Left Tilt	0.064	0.041	0.028	0.105	0.092	0.133
		Right Tilt	0.055	0.018	0.069	0.073	0.124	0.142
	WCDMA 1900	Left Touch	0.046	0.147	0.031	0.193	0.077	0.224
		Right Touch	0.089	0.033	0.186	0.122	0.275	0.308
		Left Tilt	0.041	0.041	0.028	0.082	0.069	0.110
		Right Tilt	0.036	0.018	0.069	0.054	0.105	0.123
	LTE Band 12	Left Touch	0.101	0.147	0.031	0.248	0.132	0.279
		Right Touch	0.090	0.033	0.186	0.123	0.276	0.309
		Left Tilt	0.043	0.041	0.028	0.084	0.071	0.112
		Right Tilt	0.054	0.018	0.069	0.072	0.123	0.141
	LTE Band 4	Left Touch	0.080	0.147	0.031	0.227	0.111	0.258
		Right Touch	0.094	0.033	0.186	0.127	0.280	0.313
		Left Tilt	0.049	0.041	0.028	0.090	0.077	0.118
		Right Tilt	0.060	0.018	0.069	0.078	0.129	0.147
	LTE Band 2	Left Touch	0.080	0.147	0.031	0.227	0.111	0.258
		Right Touch	0.096	0.033	0.186	0.129	0.282	0.315
		Left Tilt	0.055	0.041	0.028	0.096	0.083	0.124
		Right Tilt	0.039	0.018	0.069	0.057	0.108	0.126
	LTE Band 41	Left Touch	0.106	0.147	0.031	0.253	0.137	0.284
		Right Touch	0.060	0.033	0.186	0.093	0.246	0.279
		Left Tilt	0.016	0.041	0.028	0.057	0.044	0.085
		Right Tilt	0.030	0.018	0.069	0.048	0.099	0.117

Table 12.4.5 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)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 850	Left Touch	0.056	0.147	0.067	0.203	0.123	0.270
		Right Touch	0.045	0.033	0.163	0.078	0.208	0.241
		Left Tilt	0.026	0.041	0.074	0.067	0.100	0.141
		Right Tilt	0.027	0.018	0.154	0.045	0.181	0.199
	GPRS 850	Left Touch	0.070	0.147	0.067	0.217	0.137	0.284
		Right Touch	0.057	0.033	0.163	0.090	0.220	0.253
		Left Tilt	0.033	0.041	0.074	0.074	0.107	0.148
		Right Tilt	0.035	0.018	0.154	0.053	0.189	0.207
	GSM 1900	Left Touch	0.015	0.147	0.067	0.162	0.082	0.229
		Right Touch	0.047	0.033	0.163	0.080	0.210	0.243
		Left Tilt	0.017	0.041	0.074	0.058	0.091	0.132
		Right Tilt	0.014	0.018	0.154	0.032	0.168	0.186
	GPRS 1900	Left Touch	0.026	0.147	0.067	0.173	0.093	0.240
		Right Touch	0.070	0.033	0.163	0.103	0.233	0.266
		Left Tilt	0.021	0.041	0.074	0.062	0.095	0.136
		Right Tilt	0.020	0.018	0.154	0.038	0.174	0.192
	WCDMA 1700	Left Touch	0.087	0.147	0.067	0.234	0.154	0.301
		Right Touch	0.103	0.033	0.163	0.136	0.266	0.299
		Left Tilt	0.064	0.041	0.074	0.105	0.138	0.179
		Right Tilt	0.055	0.018	0.154	0.073	0.209	0.227
	WCDMA 1900	Left Touch	0.046	0.147	0.067	0.193	0.113	0.260
		Right Touch	0.089	0.033	0.163	0.122	0.252	0.285
		Left Tilt	0.041	0.041	0.074	0.082	0.115	0.156
		Right Tilt	0.036	0.018	0.154	0.054	0.190	0.208
	LTE Band 12	Left Touch	0.101	0.147	0.067	0.246	0.168	0.315
		Right Touch	0.090	0.033	0.163	0.123	0.253	0.286
		Left Tilt	0.043	0.041	0.074	0.084	0.117	0.158
		Right Tilt	0.054	0.018	0.154	0.072	0.208	0.226
	LTE Band 4	Left Touch	0.080	0.147	0.067	0.227	0.147	0.294
		Right Touch	0.094	0.033	0.163	0.127	0.257	0.290
		Left Tilt	0.049	0.041	0.074	0.090	0.123	0.164
		Right Tilt	0.060	0.018	0.154	0.078	0.214	0.232
	LTE Band 2	Left Touch	0.080	0.147	0.067	0.227	0.147	0.294
		Right Touch	0.096	0.033	0.163	0.129	0.259	0.292
		Left Tilt	0.055	0.041	0.074	0.096	0.129	0.170
		Right Tilt	0.039	0.018	0.154	0.057	0.193	0.211
	LTE Band 41	Left Touch	0.106	0.147	0.067	0.253	0.173	0.320
		Right Touch	0.060	0.033	0.163	0.093	0.223	0.256
		Left Tilt	0.016	0.041	0.074	0.057	0.090	0.131
		Right Tilt	0.030	0.018	0.154	0.048	0.184	0.202

Table 12.4.6 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)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 850	Left Touch	0.056	0.147	0.068	0.203	0.124	0.271
		Right Touch	0.045	0.033	0.282	0.078	0.327	0.360
		Left Tilt	0.026	0.041	0.072	0.067	0.098	0.139
		Right Tilt	0.027	0.018	0.173	0.045	0.200	0.218
	GPRS 850	Left Touch	0.070	0.147	0.068	0.217	0.138	0.285
		Right Touch	0.057	0.033	0.282	0.090	0.339	0.372
		Left Tilt	0.033	0.041	0.072	0.074	0.105	0.146
		Right Tilt	0.035	0.018	0.173	0.053	0.208	0.226
	GSM 1900	Left Touch	0.015	0.147	0.068	0.162	0.083	0.230
		Right Touch	0.047	0.033	0.282	0.080	0.329	0.362
		Left Tilt	0.017	0.041	0.072	0.058	0.089	0.130
		Right Tilt	0.014	0.018	0.173	0.032	0.187	0.205
	GPRS 1900	Left Touch	0.026	0.147	0.068	0.173	0.094	0.241
		Right Touch	0.070	0.033	0.282	0.103	0.352	0.385
		Left Tilt	0.021	0.041	0.072	0.062	0.093	0.134
		Right Tilt	0.020	0.018	0.173	0.038	0.193	0.211
	WCDMA 1700	Left Touch	0.087	0.147	0.068	0.234	0.155	0.302
		Right Touch	0.103	0.033	0.282	0.136	0.385	0.418
		Left Tilt	0.064	0.041	0.072	0.105	0.136	0.177
		Right Tilt	0.055	0.018	0.173	0.073	0.228	0.246
	WCDMA 1900	Left Touch	0.046	0.147	0.068	0.193	0.114	0.261
		Right Touch	0.089	0.033	0.282	0.122	0.371	0.404
		Left Tilt	0.041	0.041	0.072	0.082	0.113	0.154
		Right Tilt	0.036	0.018	0.173	0.054	0.209	0.227
	LTE Band 12	Left Touch	0.101	0.147	0.068	0.246	0.169	0.316
		Right Touch	0.090	0.033	0.282	0.123	0.372	0.405
		Left Tilt	0.043	0.041	0.072	0.084	0.115	0.156
		Right Tilt	0.054	0.018	0.173	0.072	0.227	0.245
	LTE Band 4	Left Touch	0.080	0.147	0.068	0.227	0.148	0.295
		Right Touch	0.094	0.033	0.282	0.127	0.376	0.409
		Left Tilt	0.049	0.041	0.072	0.090	0.121	0.162
		Right Tilt	0.060	0.018	0.173	0.078	0.233	0.251
	LTE Band 2	Left Touch	0.080	0.147	0.068	0.227	0.148	0.295
		Right Touch	0.096	0.033	0.282	0.129	0.378	0.411
		Left Tilt	0.055	0.041	0.072	0.096	0.127	0.168
		Right Tilt	0.039	0.018	0.173	0.057	0.212	0.230
	LTE Band 41	Left Touch	0.106	0.147	0.068	0.253	0.174	0.321
		Right Touch	0.060	0.033	0.282	0.093	0.342	0.375
		Left Tilt	0.016	0.041	0.072	0.057	0.088	0.129
		Right Tilt	0.030	0.018	0.173	0.048	0.203	0.221

Table 12.4.7 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)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 850	Left Touch	0.056	0.147	0.002	0.203	0.058	0.205
		Right Touch	0.045	0.033	0.121	0.078	0.166	0.199
		Left Tilt	0.026	0.041	0.026	0.067	0.052	0.093
		Right Tilt	0.027	0.018	0.072	0.045	0.099	0.117
	GPRS 850	Left Touch	0.070	0.147	0.002	0.217	0.072	0.219
		Right Touch	0.057	0.033	0.121	0.090	0.178	0.211
		Left Tilt	0.033	0.041	0.026	0.074	0.059	0.100
		Right Tilt	0.035	0.018	0.072	0.053	0.107	0.125
	GSM 1900	Left Touch	0.015	0.147	0.002	0.162	0.017	0.164
		Right Touch	0.047	0.033	0.121	0.080	0.168	0.201
		Left Tilt	0.017	0.041	0.026	0.058	0.043	0.084
		Right Tilt	0.014	0.018	0.072	0.032	0.086	0.104
	GPRS 1900	Left Touch	0.026	0.147	0.002	0.173	0.028	0.175
		Right Touch	0.070	0.033	0.121	0.103	0.191	0.224
		Left Tilt	0.021	0.041	0.026	0.062	0.047	0.088
		Right Tilt	0.020	0.018	0.072	0.038	0.092	0.110
	WCDMA 1700	Left Touch	0.087	0.147	0.002	0.234	0.089	0.236
		Right Touch	0.103	0.033	0.121	0.136	0.224	0.257
		Left Tilt	0.064	0.041	0.026	0.105	0.090	0.131
		Right Tilt	0.055	0.018	0.072	0.073	0.127	0.145
	WCDMA 1900	Left Touch	0.046	0.147	0.002	0.193	0.048	0.195
		Right Touch	0.089	0.033	0.121	0.122	0.210	0.243
		Left Tilt	0.041	0.041	0.026	0.082	0.067	0.108
		Right Tilt	0.036	0.018	0.072	0.054	0.108	0.126
	LTE Band 12	Left Touch	0.101	0.147	0.002	0.246	0.103	0.250
		Right Touch	0.090	0.033	0.121	0.123	0.211	0.244
		Left Tilt	0.043	0.041	0.026	0.084	0.069	0.110
		Right Tilt	0.054	0.018	0.072	0.072	0.126	0.144
	LTE Band 4	Left Touch	0.080	0.147	0.002	0.227	0.082	0.229
		Right Touch	0.094	0.033	0.121	0.127	0.215	0.248
		Left Tilt	0.049	0.041	0.026	0.090	0.075	0.116
		Right Tilt	0.060	0.018	0.072	0.078	0.132	0.150
	LTE Band 2	Left Touch	0.080	0.147	0.002	0.227	0.082	0.229
		Right Touch	0.096	0.033	0.121	0.129	0.217	0.250
		Left Tilt	0.055	0.041	0.026	0.096	0.081	0.122
		Right Tilt	0.039	0.018	0.072	0.057	0.111	0.129
	LTE Band 41	Left Touch	0.106	0.147	0.002	0.253	0.108	0.255
		Right Touch	0.060	0.033	0.121	0.093	0.181	0.214
		Left Tilt	0.016	0.041	0.026	0.057	0.042	0.083
		Right Tilt	0.030	0.018	0.072	0.048	0.102	0.120

Table 12.4.8 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	0.056	0.147	0.093	0.203	0.149	0.296
		Right Touch	0.045	0.033	0.242	0.078	0.287	0.320
		Left Tilt	0.026	0.041	0.103	0.067	0.129	0.170
		Right Tilt	0.027	0.018	0.350	0.045	0.377	0.395
	GPRS 850	Left Touch	0.070	0.147	0.093	0.217	0.163	0.310
		Right Touch	0.057	0.033	0.242	0.090	0.299	0.332
		Left Tilt	0.033	0.041	0.103	0.074	0.136	0.177
		Right Tilt	0.035	0.018	0.350	0.053	0.385	0.403
	GSM 1900	Left Touch	0.015	0.147	0.093	0.162	0.108	0.255
		Right Touch	0.047	0.033	0.242	0.080	0.289	0.322
		Left Tilt	0.017	0.041	0.103	0.058	0.120	0.161
		Right Tilt	0.014	0.018	0.350	0.032	0.364	0.382
	GPRS 1900	Left Touch	0.026	0.147	0.093	0.173	0.119	0.266
		Right Touch	0.070	0.033	0.242	0.103	0.312	0.345
		Left Tilt	0.021	0.041	0.103	0.062	0.124	0.165
		Right Tilt	0.020	0.018	0.350	0.038	0.370	0.388
	WCDMA 1700	Left Touch	0.087	0.147	0.093	0.234	0.180	0.327
		Right Touch	0.103	0.033	0.242	0.136	0.345	0.378
		Left Tilt	0.064	0.041	0.103	0.105	0.167	0.208
		Right Tilt	0.055	0.018	0.350	0.073	0.405	0.423
	WCDMA 1900	Left Touch	0.046	0.147	0.093	0.193	0.139	0.286
		Right Touch	0.089	0.033	0.242	0.122	0.331	0.364
		Left Tilt	0.041	0.041	0.103	0.082	0.144	0.185
		Right Tilt	0.036	0.018	0.350	0.054	0.386	0.404
	LTE Band 12	Left Touch	0.101	0.147	0.093	0.246	0.194	0.341
		Right Touch	0.090	0.033	0.242	0.123	0.332	0.365
		Left Tilt	0.043	0.041	0.103	0.084	0.146	0.187
		Right Tilt	0.054	0.018	0.350	0.072	0.404	0.422
	LTE Band 4	Left Touch	0.080	0.147	0.093	0.227	0.173	0.320
		Right Touch	0.094	0.033	0.242	0.127	0.336	0.369
		Left Tilt	0.049	0.041	0.103	0.090	0.152	0.193
		Right Tilt	0.060	0.018	0.350	0.078	0.410	0.428
	LTE Band 2	Left Touch	0.080	0.147	0.093	0.227	0.173	0.320
		Right Touch	0.096	0.033	0.242	0.129	0.338	0.371
		Left Tilt	0.055	0.041	0.103	0.096	0.158	0.199
		Right Tilt	0.039	0.018	0.350	0.057	0.389	0.407
	LTE Band 41	Left Touch	0.106	0.147	0.093	0.253	0.199	0.346
		Right Touch	0.060	0.033	0.242	0.093	0.302	0.335
		Left Tilt	0.016	0.041	0.103	0.057	0.119	0.160
		Right Tilt	0.030	0.018	0.350	0.048	0.380	0.398

Table 12.4.9 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	0.056	0.147	0.108	0.203	0.164	0.311
		Right Touch	0.045	0.033	0.164	0.078	0.209	0.242
		Left Tilt	0.026	0.041	0.100	0.067	0.126	0.167
		Right Tilt	0.027	0.018	0.330	0.045	0.357	0.375
	GPRS 850	Left Touch	0.070	0.147	0.108	0.217	0.178	0.325
		Right Touch	0.057	0.033	0.164	0.090	0.221	0.254
		Left Tilt	0.033	0.041	0.100	0.074	0.133	0.174
		Right Tilt	0.035	0.018	0.330	0.053	0.365	0.383
	GSM 1900	Left Touch	0.015	0.147	0.108	0.162	0.123	0.270
		Right Touch	0.047	0.033	0.164	0.080	0.211	0.244
		Left Tilt	0.017	0.041	0.100	0.058	0.117	0.158
		Right Tilt	0.014	0.018	0.330	0.032	0.344	0.362
	GPRS 1900	Left Touch	0.026	0.147	0.108	0.173	0.134	0.281
		Right Touch	0.070	0.033	0.164	0.103	0.234	0.267
		Left Tilt	0.021	0.041	0.100	0.062	0.121	0.162
		Right Tilt	0.020	0.018	0.330	0.038	0.350	0.368
	WCDMA 1700	Left Touch	0.087	0.147	0.108	0.234	0.195	0.342
		Right Touch	0.103	0.033	0.164	0.136	0.267	0.300
		Left Tilt	0.064	0.041	0.100	0.105	0.164	0.205
		Right Tilt	0.055	0.018	0.330	0.073	0.385	0.403
	WCDMA 1900	Left Touch	0.046	0.147	0.108	0.193	0.154	0.301
		Right Touch	0.089	0.033	0.164	0.122	0.253	0.286
		Left Tilt	0.041	0.041	0.100	0.082	0.141	0.182
		Right Tilt	0.036	0.018	0.330	0.054	0.366	0.384
	LTE Band 12	Left Touch	0.101	0.147	0.108	0.246	0.209	0.356
		Right Touch	0.090	0.033	0.164	0.123	0.254	0.287
		Left Tilt	0.043	0.041	0.100	0.084	0.143	0.184
		Right Tilt	0.054	0.018	0.330	0.072	0.384	0.402
	LTE Band 4	Left Touch	0.080	0.147	0.108	0.227	0.188	0.335
		Right Touch	0.094	0.033	0.164	0.127	0.258	0.291
		Left Tilt	0.049	0.041	0.100	0.090	0.149	0.190
		Right Tilt	0.060	0.018	0.330	0.078	0.390	0.408
	LTE Band 2	Left Touch	0.080	0.147	0.108	0.227	0.188	0.335
		Right Touch	0.096	0.033	0.164	0.129	0.260	0.293
		Left Tilt	0.055	0.041	0.100	0.096	0.155	0.196
		Right Tilt	0.039	0.018	0.330	0.057	0.369	0.387
	LTE Band 41	Left Touch	0.106	0.147	0.108	0.253	0.214	0.361
		Right Touch	0.060	0.033	0.164	0.093	0.224	0.257
		Left Tilt	0.016	0.041	0.100	0.057	0.116	0.157
		Right Tilt	0.030	0.018	0.330	0.048	0.360	0.378

Table 12.4.10 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.8 GHz W-LAN Ant.1 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.8G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 850	Left Touch	0.056	0.147	0.012	0.203	0.068	0.215
		Right Touch	0.045	0.033	0.081	0.078	0.126	0.159
		Left Tilt	0.026	0.041	0.014	0.067	0.040	0.081
		Right Tilt	0.027	0.018	0.067	0.045	0.094	0.112
	GPRS 850	Left Touch	0.070	0.147	0.012	0.217	0.082	0.229
		Right Touch	0.057	0.033	0.081	0.090	0.138	0.171
		Left Tilt	0.033	0.041	0.014	0.074	0.047	0.088
		Right Tilt	0.035	0.018	0.067	0.053	0.102	0.120
	GSM 1900	Left Touch	0.015	0.147	0.012	0.162	0.027	0.174
		Right Touch	0.047	0.033	0.081	0.080	0.128	0.161
		Left Tilt	0.017	0.041	0.014	0.058	0.031	0.072
		Right Tilt	0.014	0.018	0.067	0.032	0.081	0.099
	GPRS 1900	Left Touch	0.026	0.147	0.012	0.173	0.038	0.185
		Right Touch	0.070	0.033	0.081	0.103	0.151	0.184
		Left Tilt	0.021	0.041	0.014	0.062	0.035	0.076
		Right Tilt	0.020	0.018	0.067	0.038	0.087	0.105
	WCDMA 1700	Left Touch	0.087	0.147	0.012	0.234	0.099	0.246
		Right Touch	0.103	0.033	0.081	0.136	0.184	0.217
		Left Tilt	0.064	0.041	0.014	0.105	0.078	0.119
		Right Tilt	0.055	0.018	0.067	0.073	0.122	0.140
	WCDMA 1900	Left Touch	0.046	0.147	0.012	0.193	0.058	0.205
		Right Touch	0.089	0.033	0.081	0.122	0.170	0.203
		Left Tilt	0.041	0.041	0.014	0.082	0.055	0.096
		Right Tilt	0.036	0.018	0.067	0.054	0.103	0.121
	LTE Band 12	Left Touch	0.101	0.147	0.012	0.246	0.113	0.260
		Right Touch	0.090	0.033	0.081	0.123	0.171	0.204
		Left Tilt	0.043	0.041	0.014	0.084	0.057	0.098
		Right Tilt	0.054	0.018	0.067	0.072	0.121	0.139
	LTE Band 4	Left Touch	0.080	0.147	0.012	0.227	0.092	0.239
		Right Touch	0.094	0.033	0.081	0.127	0.175	0.208
		Left Tilt	0.049	0.041	0.014	0.090	0.063	0.104
		Right Tilt	0.060	0.018	0.067	0.078	0.127	0.145
	LTE Band 2	Left Touch	0.080	0.147	0.012	0.227	0.092	0.239
		Right Touch	0.096	0.033	0.081	0.129	0.177	0.210
		Left Tilt	0.055	0.041	0.014	0.096	0.069	0.110
		Right Tilt	0.039	0.018	0.067	0.057	0.106	0.124
	LTE Band 41	Left Touch	0.106	0.147	0.012	0.253	0.118	0.265
		Right Touch	0.060	0.033	0.081	0.093	0.141	0.174
		Left Tilt	0.016	0.041	0.014	0.057	0.030	0.071
		Right Tilt	0.030	0.018	0.067	0.048	0.097	0.115

Table 12.4.11 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.8 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.8G 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	0.056	0.147	0.088	0.203	0.144	0.291
		Right Touch	0.045	0.033	0.132	0.078	0.177	0.210
		Left Tilt	0.026	0.041	0.105	0.067	0.131	0.172
		Right Tilt	0.027	0.018	0.157	0.045	0.184	0.202
	GPRS 850	Left Touch	0.070	0.147	0.088	0.217	0.158	0.305
		Right Touch	0.057	0.033	0.132	0.090	0.189	0.222
		Left Tilt	0.033	0.041	0.105	0.074	0.138	0.179
		Right Tilt	0.035	0.018	0.157	0.053	0.192	0.210
	GSM 1900	Left Touch	0.015	0.147	0.088	0.162	0.103	0.250
		Right Touch	0.047	0.033	0.132	0.080	0.179	0.212
		Left Tilt	0.017	0.041	0.105	0.058	0.122	0.163
		Right Tilt	0.014	0.018	0.157	0.032	0.171	0.189
	GPRS 1900	Left Touch	0.026	0.147	0.088	0.173	0.114	0.261
		Right Touch	0.070	0.033	0.132	0.103	0.202	0.235
		Left Tilt	0.021	0.041	0.105	0.062	0.126	0.167
		Right Tilt	0.020	0.018	0.157	0.038	0.177	0.195
	WCDMA 1700	Left Touch	0.087	0.147	0.088	0.234	0.175	0.322
		Right Touch	0.103	0.033	0.132	0.136	0.235	0.268
		Left Tilt	0.064	0.041	0.105	0.105	0.169	0.210
		Right Tilt	0.055	0.018	0.157	0.073	0.212	0.230
	WCDMA 1900	Left Touch	0.046	0.147	0.088	0.193	0.134	0.281
		Right Touch	0.089	0.033	0.132	0.122	0.221	0.254
		Left Tilt	0.041	0.041	0.105	0.082	0.146	0.187
		Right Tilt	0.036	0.018	0.157	0.054	0.193	0.211
	LTE Band 12	Left Touch	0.101	0.147	0.088	0.246	0.189	0.336
		Right Touch	0.090	0.033	0.132	0.123	0.222	0.255
		Left Tilt	0.043	0.041	0.105	0.084	0.148	0.189
		Right Tilt	0.054	0.018	0.157	0.072	0.211	0.229
	LTE Band 4	Left Touch	0.080	0.147	0.088	0.227	0.168	0.315
		Right Touch	0.094	0.033	0.132	0.127	0.226	0.259
		Left Tilt	0.049	0.041	0.105	0.090	0.154	0.195
		Right Tilt	0.060	0.018	0.157	0.078	0.217	0.235
	LTE Band 2	Left Touch	0.080	0.147	0.088	0.227	0.168	0.315
		Right Touch	0.096	0.033	0.132	0.129	0.228	0.261
		Left Tilt	0.055	0.041	0.105	0.096	0.160	0.201
		Right Tilt	0.039	0.018	0.157	0.057	0.196	0.214
	LTE Band 41	Left Touch	0.106	0.147	0.088	0.253	0.194	0.341
		Right Touch	0.060	0.033	0.132	0.093	0.192	0.225
		Left Tilt	0.016	0.041	0.105	0.057	0.121	0.162
		Right Tilt	0.030	0.018	0.157	0.048	0.187	0.205

Table 12.4.12 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.8 GHz W-LAN MIMO (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.8G 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	0.056	0.147	0.094	0.203	0.150	0.297
		Right Touch	0.045	0.033	0.267	0.078	0.312	0.345
		Left Tilt	0.026	0.041	0.099	0.067	0.125	0.166
		Right Tilt	0.027	0.018	0.192	0.045	0.219	0.237
	GPRS 850	Left Touch	0.070	0.147	0.094	0.217	0.164	0.311
		Right Touch	0.057	0.033	0.267	0.090	0.324	0.357
		Left Tilt	0.033	0.041	0.099	0.074	0.132	0.173
		Right Tilt	0.035	0.018	0.192	0.053	0.227	0.245
	GSM 1900	Left Touch	0.015	0.147	0.094	0.162	0.109	0.256
		Right Touch	0.047	0.033	0.267	0.080	0.314	0.347
		Left Tilt	0.017	0.041	0.099	0.058	0.116	0.157
		Right Tilt	0.014	0.018	0.192	0.032	0.206	0.224
	GPRS 1900	Left Touch	0.026	0.147	0.094	0.173	0.120	0.267
		Right Touch	0.070	0.033	0.267	0.103	0.337	0.370
		Left Tilt	0.021	0.041	0.099	0.062	0.120	0.161
		Right Tilt	0.020	0.018	0.192	0.038	0.212	0.230
	WCDMA 1700	Left Touch	0.087	0.147	0.094	0.234	0.181	0.328
		Right Touch	0.103	0.033	0.267	0.136	0.370	0.403
		Left Tilt	0.064	0.041	0.099	0.105	0.163	0.204
		Right Tilt	0.055	0.018	0.192	0.073	0.247	0.265
	WCDMA 1900	Left Touch	0.046	0.147	0.094	0.193	0.140	0.287
		Right Touch	0.089	0.033	0.267	0.122	0.356	0.389
		Left Tilt	0.041	0.041	0.099	0.082	0.140	0.181
		Right Tilt	0.036	0.018	0.192	0.054	0.228	0.246
	LTE Band 12	Left Touch	0.101	0.147	0.094	0.246	0.195	0.342
		Right Touch	0.090	0.033	0.267	0.123	0.357	0.390
		Left Tilt	0.043	0.041	0.099	0.084	0.142	0.183
		Right Tilt	0.054	0.018	0.192	0.072	0.246	0.264
	LTE Band 4	Left Touch	0.080	0.147	0.094	0.227	0.174	0.321
		Right Touch	0.094	0.033	0.267	0.127	0.361	0.394
		Left Tilt	0.049	0.041	0.099	0.090	0.148	0.189
		Right Tilt	0.060	0.018	0.192	0.078	0.252	0.270
	LTE Band 2	Left Touch	0.080	0.147	0.094	0.227	0.174	0.321
		Right Touch	0.096	0.033	0.267	0.129	0.363	0.396
		Left Tilt	0.055	0.041	0.099	0.096	0.154	0.195
		Right Tilt	0.039	0.018	0.192	0.057	0.231	0.249
	LTE Band 41	Left Touch	0.106	0.147	0.094	0.253	0.200	0.347
		Right Touch	0.060	0.033	0.267	0.093	0.327	0.360
		Left Tilt	0.016	0.041	0.099	0.057	0.115	0.156
		Right Tilt	0.030	0.018	0.192	0.048	0.222	0.240

Table 12.4.13 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 2.4 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	2.4G 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	0.056	0.147	0.148	0.203	0.204	0.351
		Right Touch	0.045	0.033	0.611	0.078	0.656	0.689
		Left Tilt	0.026	0.041	0.082	0.067	0.108	0.149
		Right Tilt	0.027	0.018	0.133	0.045	0.160	0.178
	GPRS 850	Left Touch	0.070	0.147	0.148	0.217	0.218	0.365
		Right Touch	0.057	0.033	0.611	0.090	0.668	0.701
		Left Tilt	0.033	0.041	0.082	0.074	0.115	0.156
		Right Tilt	0.035	0.018	0.133	0.053	0.168	0.186
	GSM 1900	Left Touch	0.015	0.147	0.148	0.162	0.163	0.310
		Right Touch	0.047	0.033	0.611	0.080	0.658	0.691
		Left Tilt	0.017	0.041	0.082	0.058	0.099	0.140
		Right Tilt	0.014	0.018	0.133	0.032	0.147	0.165
	GPRS 1900	Left Touch	0.026	0.147	0.148	0.173	0.174	0.321
		Right Touch	0.070	0.033	0.611	0.103	0.681	0.714
		Left Tilt	0.021	0.041	0.082	0.062	0.103	0.144
		Right Tilt	0.020	0.018	0.133	0.038	0.153	0.171
	WCDMA 1700	Left Touch	0.087	0.147	0.148	0.234	0.235	0.382
		Right Touch	0.103	0.033	0.611	0.136	0.714	0.747
		Left Tilt	0.064	0.041	0.082	0.105	0.146	0.187
		Right Tilt	0.055	0.018	0.133	0.073	0.188	0.206
	WCDMA 1900	Left Touch	0.046	0.147	0.148	0.193	0.194	0.341
		Right Touch	0.089	0.033	0.611	0.122	0.700	0.733
		Left Tilt	0.041	0.041	0.082	0.082	0.123	0.164
		Right Tilt	0.036	0.018	0.133	0.054	0.169	0.187
	LTE Band 12	Left Touch	0.101	0.147	0.148	0.246	0.249	0.396
		Right Touch	0.090	0.033	0.611	0.123	0.701	0.734
		Left Tilt	0.043	0.041	0.082	0.084	0.125	0.166
		Right Tilt	0.054	0.018	0.133	0.072	0.187	0.205
	LTE Band 4	Left Touch	0.080	0.147	0.148	0.227	0.228	0.375
		Right Touch	0.094	0.033	0.611	0.127	0.705	0.738
		Left Tilt	0.049	0.041	0.082	0.090	0.131	0.172
		Right Tilt	0.060	0.018	0.133	0.078	0.193	0.211
	LTE Band 2	Left Touch	0.080	0.147	0.148	0.227	0.228	0.375
		Right Touch	0.096	0.033	0.611	0.129	0.707	0.740
		Left Tilt	0.055	0.041	0.082	0.096	0.137	0.178
		Right Tilt	0.039	0.018	0.133	0.057	0.172	0.190
	LTE Band 41	Left Touch	0.106	0.147	0.148	0.253	0.254	0.401
		Right Touch	0.060	0.033	0.611	0.093	0.671	0.704
		Left Tilt	0.016	0.041	0.082	0.057	0.098	0.139
		Right Tilt	0.030	0.018	0.133	0.048	0.163	0.181

Table 12.4.14 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	0.056	0.483	0.539
		Right Touch	0.045	0.129	0.174
		Left Tilt	0.026	0.112	0.138
		Right Tilt	0.027	0.057	0.084
	GPRS 850	Left Touch	0.070	0.483	0.553
		Right Touch	0.057	0.129	0.186
		Left Tilt	0.033	0.112	0.145
		Right Tilt	0.035	0.057	0.092
	GSM 1900	Left Touch	0.015	0.483	0.498
		Right Touch	0.047	0.129	0.176
		Left Tilt	0.017	0.112	0.129
		Right Tilt	0.014	0.057	0.071
	GPRS 1900	Left Touch	0.026	0.483	0.509
		Right Touch	0.070	0.129	0.199
		Left Tilt	0.021	0.112	0.133
		Right Tilt	0.020	0.057	0.077
	WCDMA 1700	Left Touch	0.087	0.483	0.570
		Right Touch	0.103	0.129	0.232
		Left Tilt	0.064	0.112	0.176
		Right Tilt	0.055	0.057	0.112
	WCDMA 1900	Left Touch	0.046	0.483	0.529
		Right Touch	0.089	0.129	0.218
		Left Tilt	0.041	0.112	0.153
		Right Tilt	0.036	0.057	0.093
	LTE Band 12	Left Touch	0.101	0.483	0.584
		Right Touch	0.090	0.129	0.219
		Left Tilt	0.043	0.112	0.155
		Right Tilt	0.054	0.057	0.111
	LTE Band 4	Left Touch	0.080	0.483	0.563
		Right Touch	0.094	0.129	0.223
		Left Tilt	0.049	0.112	0.161
		Right Tilt	0.060	0.057	0.117
	LTE Band 2	Left Touch	0.080	0.483	0.563
		Right Touch	0.096	0.129	0.225
		Left Tilt	0.055	0.112	0.167
		Right Tilt	0.039	0.057	0.096
	LTE Band 41	Left Touch	0.106	0.483	0.589
		Right Touch	0.060	0.129	0.189
		Left Tilt	0.016	0.112	0.128
		Right Tilt	0.030	0.057	0.087

Table 12.4.15 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)	Σ SAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.056	0.148	0.204
		Right Touch	0.045	0.611	0.656
		Left Tilt	0.026	0.082	0.108
		Right Tilt	0.027	0.133	0.160
	GPRS 850	Left Touch	0.070	0.148	0.218
		Right Touch	0.057	0.611	0.668
		Left Tilt	0.033	0.082	0.115
		Right Tilt	0.035	0.133	0.168
	GSM 1900	Left Touch	0.015	0.148	0.163
		Right Touch	0.047	0.611	0.658
		Left Tilt	0.017	0.082	0.099
		Right Tilt	0.014	0.133	0.147
	GPRS 1900	Left Touch	0.026	0.148	0.174
		Right Touch	0.070	0.611	0.681
		Left Tilt	0.021	0.082	0.103
		Right Tilt	0.020	0.133	0.153
	WCDMA 1700	Left Touch	0.087	0.148	0.235
		Right Touch	0.103	0.611	0.714
		Left Tilt	0.064	0.082	0.146
		Right Tilt	0.055	0.133	0.188
	WCDMA 1900	Left Touch	0.046	0.148	0.194
		Right Touch	0.089	0.611	0.700
		Left Tilt	0.041	0.082	0.123
		Right Tilt	0.036	0.133	0.169
	LTE Band 12	Left Touch	0.101	0.148	0.249
		Right Touch	0.090	0.611	0.701
		Left Tilt	0.043	0.082	0.125
		Right Tilt	0.054	0.133	0.187
	LTE Band 4	Left Touch	0.080	0.148	0.228
		Right Touch	0.094	0.611	0.705
		Left Tilt	0.049	0.082	0.131
		Right Tilt	0.060	0.133	0.193
	LTE Band 2	Left Touch	0.080	0.148	0.228
		Right Touch	0.096	0.611	0.707
		Left Tilt	0.055	0.082	0.137
		Right Tilt	0.039	0.133	0.172
	LTE Band 41	Left Touch	0.106	0.148	0.254
		Right Touch	0.060	0.611	0.671
		Left Tilt	0.016	0.082	0.098
		Right Tilt	0.030	0.133	0.163

Table 12.4.16 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)	Σ SAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.056	0.392	0.448
		Right Touch	0.045	0.552	0.597
		Left Tilt	0.026	0.108	0.134
		Right Tilt	0.027	0.144	0.171
	GPRS 850	Left Touch	0.070	0.392	0.462
		Right Touch	0.057	0.552	0.609
		Left Tilt	0.033	0.108	0.141
		Right Tilt	0.035	0.144	0.179
	GSM 1900	Left Touch	0.015	0.392	0.407
		Right Touch	0.047	0.552	0.599
		Left Tilt	0.017	0.108	0.125
		Right Tilt	0.014	0.144	0.158
	GPRS 1900	Left Touch	0.026	0.392	0.418
		Right Touch	0.070	0.552	0.622
		Left Tilt	0.021	0.108	0.129
		Right Tilt	0.020	0.144	0.164
	WCDMA 1700	Left Touch	0.087	0.392	0.479
		Right Touch	0.103	0.552	0.655
		Left Tilt	0.064	0.108	0.172
		Right Tilt	0.055	0.144	0.199
	WCDMA 1900	Left Touch	0.046	0.392	0.438
		Right Touch	0.089	0.552	0.641
		Left Tilt	0.041	0.108	0.149
		Right Tilt	0.036	0.144	0.180
	LTE Band 12	Left Touch	0.101	0.392	0.493
		Right Touch	0.090	0.552	0.642
		Left Tilt	0.043	0.108	0.151
		Right Tilt	0.054	0.144	0.198
	LTE Band 4	Left Touch	0.080	0.392	0.472
		Right Touch	0.094	0.552	0.646
		Left Tilt	0.049	0.108	0.157
		Right Tilt	0.060	0.144	0.204
	LTE Band 2	Left Touch	0.080	0.392	0.472
		Right Touch	0.096	0.552	0.648
		Left Tilt	0.055	0.108	0.163
		Right Tilt	0.039	0.144	0.183
	LTE Band 41	Left Touch	0.106	0.392	0.498
		Right Touch	0.060	0.552	0.612
		Left Tilt	0.016	0.108	0.124
		Right Tilt	0.030	0.144	0.174

Table 12.4.17 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)	Σ SAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.056	0.031	0.087
		Right Touch	0.045	0.186	0.231
		Left Tilt	0.026	0.028	0.054
		Right Tilt	0.027	0.069	0.096
	GPRS 850	Left Touch	0.070	0.031	0.101
		Right Touch	0.057	0.186	0.243
		Left Tilt	0.033	0.028	0.061
		Right Tilt	0.035	0.069	0.104
	GSM 1900	Left Touch	0.015	0.031	0.046
		Right Touch	0.047	0.186	0.233
		Left Tilt	0.017	0.028	0.045
		Right Tilt	0.014	0.069	0.083
	GPRS 1900	Left Touch	0.026	0.031	0.057
		Right Touch	0.070	0.186	0.256
		Left Tilt	0.021	0.028	0.049
		Right Tilt	0.020	0.069	0.089
	WCDMA 1700	Left Touch	0.087	0.031	0.118
		Right Touch	0.103	0.186	0.289
		Left Tilt	0.064	0.028	0.092
		Right Tilt	0.055	0.069	0.124
	WCDMA 1900	Left Touch	0.046	0.031	0.077
		Right Touch	0.089	0.186	0.275
		Left Tilt	0.041	0.028	0.069
		Right Tilt	0.036	0.069	0.105
	LTE Band 12	Left Touch	0.101	0.031	0.132
		Right Touch	0.090	0.186	0.276
		Left Tilt	0.043	0.028	0.071
		Right Tilt	0.054	0.069	0.123
	LTE Band 4	Left Touch	0.080	0.031	0.111
		Right Touch	0.094	0.186	0.280
		Left Tilt	0.049	0.028	0.077
		Right Tilt	0.060	0.069	0.129
	LTE Band 2	Left Touch	0.080	0.031	0.111
		Right Touch	0.096	0.186	0.282
		Left Tilt	0.055	0.028	0.083
		Right Tilt	0.039	0.069	0.108
	LTE Band 41	Left Touch	0.106	0.031	0.137
		Right Touch	0.060	0.186	0.246
		Left Tilt	0.016	0.028	0.044
		Right Tilt	0.030	0.069	0.099

Table 12.4.18 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)	Σ SAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.056	0.067	0.123
		Right Touch	0.045	0.163	0.208
		Left Tilt	0.026	0.074	0.100
		Right Tilt	0.027	0.154	0.181
	GPRS 850	Left Touch	0.070	0.067	0.137
		Right Touch	0.057	0.163	0.220
		Left Tilt	0.033	0.074	0.107
		Right Tilt	0.035	0.154	0.189
	GSM 1900	Left Touch	0.015	0.067	0.082
		Right Touch	0.047	0.163	0.210
		Left Tilt	0.017	0.074	0.091
		Right Tilt	0.014	0.154	0.168
	GPRS 1900	Left Touch	0.026	0.067	0.093
		Right Touch	0.070	0.163	0.233
		Left Tilt	0.021	0.074	0.095
		Right Tilt	0.020	0.154	0.174
	WCDMA 1700	Left Touch	0.087	0.067	0.154
		Right Touch	0.103	0.163	0.266
		Left Tilt	0.064	0.074	0.138
		Right Tilt	0.055	0.154	0.209
	WCDMA 1900	Left Touch	0.046	0.067	0.113
		Right Touch	0.089	0.163	0.252
		Left Tilt	0.041	0.074	0.115
		Right Tilt	0.036	0.154	0.190
	LTE Band 12	Left Touch	0.101	0.067	0.168
		Right Touch	0.090	0.163	0.253
		Left Tilt	0.043	0.074	0.117
		Right Tilt	0.054	0.154	0.208
	LTE Band 4	Left Touch	0.080	0.067	0.147
		Right Touch	0.094	0.163	0.257
		Left Tilt	0.049	0.074	0.123
		Right Tilt	0.060	0.154	0.214
	LTE Band 2	Left Touch	0.080	0.067	0.147
		Right Touch	0.096	0.163	0.259
		Left Tilt	0.055	0.074	0.129
		Right Tilt	0.039	0.154	0.193
	LTE Band 41	Left Touch	0.106	0.067	0.173
		Right Touch	0.060	0.163	0.223
		Left Tilt	0.016	0.074	0.090
		Right Tilt	0.030	0.154	0.184

Table 12.4.19 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)	Σ SAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.056	0.068	0.124
		Right Touch	0.045	0.282	0.327
		Left Tilt	0.026	0.072	0.098
		Right Tilt	0.027	0.173	0.200
	GPRS 850	Left Touch	0.070	0.068	0.138
		Right Touch	0.057	0.282	0.339
		Left Tilt	0.033	0.072	0.105
		Right Tilt	0.035	0.173	0.208
	GSM 1900	Left Touch	0.015	0.068	0.083
		Right Touch	0.047	0.282	0.329
		Left Tilt	0.017	0.072	0.089
		Right Tilt	0.014	0.173	0.187
	GPRS 1900	Left Touch	0.026	0.068	0.094
		Right Touch	0.070	0.282	0.352
		Left Tilt	0.021	0.072	0.093
		Right Tilt	0.020	0.173	0.193
	WCDMA 1700	Left Touch	0.087	0.068	0.155
		Right Touch	0.103	0.282	0.385
		Left Tilt	0.064	0.072	0.136
		Right Tilt	0.055	0.173	0.228
	WCDMA 1900	Left Touch	0.046	0.068	0.114
		Right Touch	0.089	0.282	0.371
		Left Tilt	0.041	0.072	0.113
		Right Tilt	0.036	0.173	0.209
	LTE Band 12	Left Touch	0.101	0.068	0.169
		Right Touch	0.090	0.282	0.372
		Left Tilt	0.043	0.072	0.115
		Right Tilt	0.054	0.173	0.227
	LTE Band 4	Left Touch	0.080	0.068	0.148
		Right Touch	0.094	0.282	0.376
		Left Tilt	0.049	0.072	0.121
		Right Tilt	0.060	0.173	0.233
	LTE Band 2	Left Touch	0.080	0.068	0.148
		Right Touch	0.096	0.282	0.378
		Left Tilt	0.055	0.072	0.127
		Right Tilt	0.039	0.173	0.212
	LTE Band 41	Left Touch	0.106	0.068	0.174
		Right Touch	0.060	0.282	0.342
		Left Tilt	0.016	0.072	0.088
		Right Tilt	0.030	0.173	0.203

Table 12.4.20 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)	Σ SAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.056	0.002	0.058
		Right Touch	0.045	0.121	0.166
		Left Tilt	0.026	0.026	0.052
		Right Tilt	0.027	0.072	0.099
	GPRS 850	Left Touch	0.070	0.002	0.072
		Right Touch	0.057	0.121	0.178
		Left Tilt	0.033	0.026	0.059
		Right Tilt	0.035	0.072	0.107
	GSM 1900	Left Touch	0.015	0.002	0.017
		Right Touch	0.047	0.121	0.168
		Left Tilt	0.017	0.026	0.043
		Right Tilt	0.014	0.072	0.086
	GPRS 1900	Left Touch	0.026	0.002	0.028
		Right Touch	0.070	0.121	0.191
		Left Tilt	0.021	0.026	0.047
		Right Tilt	0.020	0.072	0.092
	WCDMA 1700	Left Touch	0.087	0.002	0.089
		Right Touch	0.103	0.121	0.224
		Left Tilt	0.064	0.026	0.090
		Right Tilt	0.055	0.072	0.127
	WCDMA 1900	Left Touch	0.046	0.002	0.048
		Right Touch	0.089	0.121	0.210
		Left Tilt	0.041	0.026	0.067
		Right Tilt	0.036	0.072	0.108
	LTE Band 12	Left Touch	0.101	0.002	0.103
		Right Touch	0.090	0.121	0.211
		Left Tilt	0.043	0.026	0.069
		Right Tilt	0.054	0.072	0.126
	LTE Band 4	Left Touch	0.080	0.002	0.082
		Right Touch	0.094	0.121	0.215
		Left Tilt	0.049	0.026	0.075
		Right Tilt	0.060	0.072	0.132
	LTE Band 2	Left Touch	0.080	0.002	0.082
		Right Touch	0.096	0.121	0.217
		Left Tilt	0.055	0.026	0.081
		Right Tilt	0.039	0.072	0.111
	LTE Band 41	Left Touch	0.106	0.002	0.108
		Right Touch	0.060	0.121	0.181
		Left Tilt	0.016	0.026	0.042
		Right Tilt	0.030	0.072	0.102

Table 12.4.21 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)	Σ SAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.056	0.093	0.149
		Right Touch	0.045	0.242	0.287
		Left Tilt	0.026	0.103	0.129
		Right Tilt	0.027	0.350	0.377
	GPRS 850	Left Touch	0.070	0.093	0.163
		Right Touch	0.057	0.242	0.299
		Left Tilt	0.033	0.103	0.136
		Right Tilt	0.035	0.350	0.385
	GSM 1900	Left Touch	0.015	0.093	0.108
		Right Touch	0.047	0.242	0.289
		Left Tilt	0.017	0.103	0.120
		Right Tilt	0.014	0.350	0.364
	GPRS 1900	Left Touch	0.026	0.093	0.119
		Right Touch	0.070	0.242	0.312
		Left Tilt	0.021	0.103	0.124
		Right Tilt	0.020	0.350	0.370
	WCDMA 1700	Left Touch	0.087	0.093	0.180
		Right Touch	0.103	0.242	0.345
		Left Tilt	0.064	0.103	0.167
		Right Tilt	0.055	0.350	0.405
	WCDMA 1900	Left Touch	0.046	0.093	0.139
		Right Touch	0.089	0.242	0.331
		Left Tilt	0.041	0.103	0.144
		Right Tilt	0.036	0.350	0.386
	LTE Band 12	Left Touch	0.101	0.093	0.194
		Right Touch	0.090	0.242	0.332
		Left Tilt	0.043	0.103	0.146
		Right Tilt	0.054	0.350	0.404
	LTE Band 4	Left Touch	0.080	0.093	0.173
		Right Touch	0.094	0.242	0.336
		Left Tilt	0.049	0.103	0.152
		Right Tilt	0.060	0.350	0.410
	LTE Band 2	Left Touch	0.080	0.093	0.173
		Right Touch	0.096	0.242	0.338
		Left Tilt	0.055	0.103	0.158
		Right Tilt	0.039	0.350	0.389
	LTE Band 41	Left Touch	0.106	0.093	0.199
		Right Touch	0.060	0.242	0.302
		Left Tilt	0.016	0.103	0.119
		Right Tilt	0.030	0.350	0.380

Table 12.4.22 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)	Σ SAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.056	0.108	0.164
		Right Touch	0.045	0.164	0.209
		Left Tilt	0.026	0.100	0.126
		Right Tilt	0.027	0.330	0.357
	GPRS 850	Left Touch	0.070	0.108	0.178
		Right Touch	0.057	0.164	0.221
		Left Tilt	0.033	0.100	0.133
		Right Tilt	0.035	0.330	0.365
	GSM 1900	Left Touch	0.015	0.108	0.123
		Right Touch	0.047	0.164	0.211
		Left Tilt	0.017	0.100	0.117
		Right Tilt	0.014	0.330	0.344
	GPRS 1900	Left Touch	0.026	0.108	0.134
		Right Touch	0.070	0.164	0.234
		Left Tilt	0.021	0.100	0.121
		Right Tilt	0.020	0.330	0.350
	WCDMA 1700	Left Touch	0.087	0.108	0.195
		Right Touch	0.103	0.164	0.267
		Left Tilt	0.064	0.100	0.164
		Right Tilt	0.055	0.330	0.385
	WCDMA 1900	Left Touch	0.046	0.108	0.154
		Right Touch	0.089	0.164	0.253
		Left Tilt	0.041	0.100	0.141
		Right Tilt	0.036	0.330	0.366
	LTE Band 12	Left Touch	0.101	0.108	0.209
		Right Touch	0.090	0.164	0.254
		Left Tilt	0.043	0.100	0.143
		Right Tilt	0.054	0.330	0.384
	LTE Band 4	Left Touch	0.080	0.108	0.188
		Right Touch	0.094	0.164	0.258
		Left Tilt	0.049	0.100	0.149
		Right Tilt	0.060	0.330	0.390
	LTE Band 2	Left Touch	0.080	0.108	0.188
		Right Touch	0.096	0.164	0.260
		Left Tilt	0.055	0.100	0.155
		Right Tilt	0.039	0.330	0.369
	LTE Band 41	Left Touch	0.106	0.108	0.214
		Right Touch	0.060	0.164	0.224
		Left Tilt	0.016	0.100	0.116
		Right Tilt	0.030	0.330	0.360

Table 12.4.23 Simultaneous Transmission Scenario : 2G/3G/4G + 5.8 GHz W-LAN Ant.1 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.8G W-LAN Ant.1 SAR (W/kg)	Σ SAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.056	0.012	0.068
		Right Touch	0.045	0.081	0.126
		Left Tilt	0.026	0.014	0.040
		Right Tilt	0.027	0.067	0.094
	GPRS 850	Left Touch	0.070	0.012	0.082
		Right Touch	0.057	0.081	0.138
		Left Tilt	0.033	0.014	0.047
		Right Tilt	0.035	0.067	0.102
	GSM 1900	Left Touch	0.015	0.012	0.027
		Right Touch	0.047	0.081	0.128
		Left Tilt	0.017	0.014	0.031
		Right Tilt	0.014	0.067	0.081
	GPRS 1900	Left Touch	0.026	0.012	0.038
		Right Touch	0.070	0.081	0.151
		Left Tilt	0.021	0.014	0.035
		Right Tilt	0.020	0.067	0.087
	WCDMA 1700	Left Touch	0.087	0.012	0.099
		Right Touch	0.103	0.081	0.184
		Left Tilt	0.064	0.014	0.078
		Right Tilt	0.055	0.067	0.122
	WCDMA 1900	Left Touch	0.046	0.012	0.058
		Right Touch	0.089	0.081	0.170
		Left Tilt	0.041	0.014	0.055
		Right Tilt	0.036	0.067	0.103
	LTE Band 12	Left Touch	0.101	0.012	0.113
		Right Touch	0.090	0.081	0.171
		Left Tilt	0.043	0.014	0.057
		Right Tilt	0.054	0.067	0.121
	LTE Band 4	Left Touch	0.080	0.012	0.092
		Right Touch	0.094	0.081	0.175
		Left Tilt	0.049	0.014	0.063
		Right Tilt	0.060	0.067	0.127
	LTE Band 2	Left Touch	0.080	0.012	0.092
		Right Touch	0.096	0.081	0.177
		Left Tilt	0.055	0.014	0.069
		Right Tilt	0.039	0.067	0.106
	LTE Band 41	Left Touch	0.106	0.012	0.118
		Right Touch	0.060	0.081	0.141
		Left Tilt	0.016	0.014	0.030
		Right Tilt	0.030	0.067	0.097

Table 12.4.24 Simultaneous Transmission Scenario : 2G/3G/4G + 5.8 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.8G W-LAN Ant.2 SAR (W/kg)	Σ SAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.056	0.088	0.144
		Right Touch	0.045	0.132	0.177
		Left Tilt	0.026	0.105	0.131
		Right Tilt	0.027	0.157	0.184
	GPRS 850	Left Touch	0.070	0.088	0.158
		Right Touch	0.057	0.132	0.189
		Left Tilt	0.033	0.105	0.138
		Right Tilt	0.035	0.157	0.192
	GSM 1900	Left Touch	0.015	0.088	0.103
		Right Touch	0.047	0.132	0.179
		Left Tilt	0.017	0.105	0.122
		Right Tilt	0.014	0.157	0.171
	GPRS 1900	Left Touch	0.026	0.088	0.114
		Right Touch	0.070	0.132	0.202
		Left Tilt	0.021	0.105	0.126
		Right Tilt	0.020	0.157	0.177
	WCDMA 1700	Left Touch	0.087	0.088	0.175
		Right Touch	0.103	0.132	0.235
		Left Tilt	0.064	0.105	0.169
		Right Tilt	0.055	0.157	0.212
	WCDMA 1900	Left Touch	0.046	0.088	0.134
		Right Touch	0.089	0.132	0.221
		Left Tilt	0.041	0.105	0.146
		Right Tilt	0.036	0.157	0.193
	LTE Band 12	Left Touch	0.101	0.088	0.189
		Right Touch	0.090	0.132	0.222
		Left Tilt	0.043	0.105	0.148
		Right Tilt	0.054	0.157	0.211
	LTE Band 4	Left Touch	0.080	0.088	0.168
		Right Touch	0.094	0.132	0.226
		Left Tilt	0.049	0.105	0.154
		Right Tilt	0.060	0.157	0.217
	LTE Band 2	Left Touch	0.080	0.088	0.168
		Right Touch	0.096	0.132	0.228
		Left Tilt	0.055	0.105	0.160
		Right Tilt	0.039	0.157	0.196
	LTE Band 41	Left Touch	0.106	0.088	0.194
		Right Touch	0.060	0.132	0.192
		Left Tilt	0.016	0.105	0.121
		Right Tilt	0.030	0.157	0.187

Table 12.4.25 Simultaneous Transmission Scenario : 2G/3G/4G + 5.8 GHz W-LAN MIMO (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.8G W-LAN MIMO SAR (W/kg)	Σ SAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.056	0.094	0.150
		Right Touch	0.045	0.267	0.312
		Left Tilt	0.026	0.099	0.125
		Right Tilt	0.027	0.192	0.219
	GPRS 850	Left Touch	0.070	0.094	0.164
		Right Touch	0.057	0.267	0.324
		Left Tilt	0.033	0.099	0.132
		Right Tilt	0.035	0.192	0.227
	GSM 1900	Left Touch	0.015	0.094	0.109
		Right Touch	0.047	0.267	0.314
		Left Tilt	0.017	0.099	0.116
		Right Tilt	0.014	0.192	0.206
	GPRS 1900	Left Touch	0.026	0.094	0.120
		Right Touch	0.070	0.267	0.337
		Left Tilt	0.021	0.099	0.120
		Right Tilt	0.020	0.192	0.212
	WCDMA 1700	Left Touch	0.087	0.094	0.181
		Right Touch	0.103	0.267	0.370
		Left Tilt	0.064	0.099	0.163
		Right Tilt	0.055	0.192	0.247
	WCDMA 1900	Left Touch	0.046	0.094	0.140
		Right Touch	0.089	0.267	0.356
		Left Tilt	0.041	0.099	0.140
		Right Tilt	0.036	0.192	0.228
	LTE Band 12	Left Touch	0.101	0.094	0.195
		Right Touch	0.090	0.267	0.357
		Left Tilt	0.043	0.099	0.142
		Right Tilt	0.054	0.192	0.246
	LTE Band 4	Left Touch	0.080	0.094	0.174
		Right Touch	0.094	0.267	0.361
		Left Tilt	0.049	0.099	0.148
		Right Tilt	0.060	0.192	0.252
	LTE Band 2	Left Touch	0.080	0.094	0.174
		Right Touch	0.096	0.267	0.363
		Left Tilt	0.055	0.099	0.154
		Right Tilt	0.039	0.192	0.231
	LTE Band 41	Left Touch	0.106	0.094	0.200
		Right Touch	0.060	0.267	0.327
		Left Tilt	0.016	0.099	0.115
		Right Tilt	0.030	0.192	0.222

Table 12.4.26 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.056	0.147	0.203
		Right Touch	0.045	0.033	0.078
		Left Tilt	0.026	0.041	0.067
		Right Tilt	0.027	0.018	0.045
	GPRS 850	Left Touch	0.070	0.147	0.217
		Right Touch	0.057	0.033	0.090
		Left Tilt	0.033	0.041	0.074
		Right Tilt	0.035	0.018	0.053
	GSM 1900	Left Touch	0.015	0.147	0.162
		Right Touch	0.047	0.033	0.080
		Left Tilt	0.017	0.041	0.058
		Right Tilt	0.014	0.018	0.032
	GPRS 1900	Left Touch	0.026	0.147	0.173
		Right Touch	0.070	0.033	0.103
		Left Tilt	0.021	0.041	0.062
		Right Tilt	0.020	0.018	0.038
	WCDMA 1700	Left Touch	0.087	0.147	0.234
		Right Touch	0.103	0.033	0.136
		Left Tilt	0.064	0.041	0.105
		Right Tilt	0.055	0.018	0.073
	WCDMA 1900	Left Touch	0.046	0.147	0.193
		Right Touch	0.089	0.033	0.122
		Left Tilt	0.041	0.041	0.082
		Right Tilt	0.036	0.018	0.054
	LTE Band 12	Left Touch	0.101	0.147	0.248
		Right Touch	0.090	0.033	0.123
		Left Tilt	0.043	0.041	0.084
		Right Tilt	0.054	0.018	0.072
	LTE Band 4	Left Touch	0.080	0.147	0.227
		Right Touch	0.094	0.033	0.127
		Left Tilt	0.049	0.041	0.090
		Right Tilt	0.060	0.018	0.078
	LTE Band 2	Left Touch	0.080	0.147	0.227
		Right Touch	0.096	0.033	0.129
		Left Tilt	0.055	0.041	0.096
		Right Tilt	0.039	0.018	0.057
	LTE Band 41	Left Touch	0.106	0.147	0.253
		Right Touch	0.060	0.033	0.093
		Left Tilt	0.016	0.041	0.057
		Right Tilt	0.030	0.018	0.048

Table 12.4.27 Simultaneous Transmission Scenario : 2.4 GHz W-LAN Ant.1 + 5 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	2.4G W-LAN Ant.1 SAR (W/kg) 1	5G W-LAN Ant.2 SAR (W/kg) 2	Σ SAR (W/kg) 1+2
Head SAR	5.3G W-LAN Ant.2	Left Touch	0.483	0.067	0.550
		Right Touch	0.129	0.163	0.292
		Left Tilt	0.112	0.074	0.186
		Right Tilt	0.057	0.154	0.211
	5.6G W-LAN Ant.2	Left Touch	0.483	0.093	0.576
		Right Touch	0.129	0.242	0.371
		Left Tilt	0.112	0.103	0.215
		Right Tilt	0.057	0.350	0.407
	5.8G W-LAN Ant.2	Left Touch	0.483	0.088	0.571
		Right Touch	0.129	0.132	0.261
		Left Tilt	0.112	0.105	0.217
		Right Tilt	0.057	0.157	0.214

Table 12.4.28 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) 1	5G W-LAN Ant.1 SAR (W/kg) 2	Σ SAR (W/kg) 1+2
Head SAR	5.3G W-LAN Ant.1	Left Touch	0.147	0.031	0.178
		Right Touch	0.033	0.186	0.219
		Left Tilt	0.041	0.028	0.069
		Right Tilt	0.018	0.069	0.087
	5.6G W-LAN Ant.1	Left Touch	0.147	0.002	0.149
		Right Touch	0.033	0.121	0.154
		Left Tilt	0.041	0.026	0.067
		Right Tilt	0.018	0.072	0.090
	5.8G W-LAN Ant.1	Left Touch	0.147	0.012	0.159
		Right Touch	0.033	0.081	0.114
		Left Tilt	0.041	0.014	0.055
		Right Tilt	0.018	0.067	0.085

Table 12.4.29 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) 1	5G W-LAN Ant.2 SAR (W/kg) 2	Σ SAR (W/kg) 1+2
Head SAR	5.3G W-LAN Ant.2	Left Touch	0.147	0.067	0.214
		Right Touch	0.033	0.163	0.196
		Left Tilt	0.041	0.074	0.115
		Right Tilt	0.018	0.154	0.172
	5.6G W-LAN Ant.2	Left Touch	0.147	0.093	0.240
		Right Touch	0.033	0.242	0.275
		Left Tilt	0.041	0.103	0.144
		Right Tilt	0.018	0.350	0.368
	5.8G W-LAN Ant.2	Left Touch	0.147	0.088	0.235
		Right Touch	0.033	0.132	0.165
		Left Tilt	0.041	0.105	0.146
		Right Tilt	0.018	0.157	0.175

Table 12.4.30 Simultaneous Transmission Scenario : Bluetooth Ant.1 + 5 GHz W-LAN MIMO (Held to Ear)

Exposure Condition	Mode	Configuration	Bluetooth Ant.1 SAR (W/kg) 1	5G W-LAN MIMO SAR (W/kg) 2	Σ SAR (W/kg) 1+2
Head SAR	5.3G W-LAN MIMO	Left Touch	0.147	0.068	0.215
		Right Touch	0.033	0.282	0.315
		Left Tilt	0.041	0.072	0.113
		Right Tilt	0.018	0.173	0.191
	5.6G W-LAN MIMO	Left Touch	0.147	0.108	0.255
		Right Touch	0.033	0.164	0.197
		Left Tilt	0.041	0.100	0.141
		Right Tilt	0.018	0.330	0.348
	5.8G W-LAN MIMO	Left Touch	0.147	0.094	0.241
		Right Touch	0.033	0.267	0.300
		Left Tilt	0.041	0.099	0.140
		Right Tilt	0.018	0.192	0.210

Table 12.4.31 Simultaneous Transmission Scenario : Bluetooth Ant.1 + 2.4 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	Bluetooth Ant.1 SAR (W/kg) 1	2.4G W-LAN Ant.2 SAR (W/kg) 2	Σ SAR (W/kg) 1+2
Head SAR	2.4G W-LAN Ant.2	Left Touch	0.147	0.148	0.295
		Right Touch	0.033	0.611	0.644
		Left Tilt	0.041	0.082	0.123
		Right Tilt	0.018	0.133	0.151

Table 12.5.5 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	0.327	0.022	0.015	0.349	0.342	0.364
		Rear	0.452	0.035	0.037	0.487	0.489	0.524
	GPRS 850	Front	0.249	0.022	0.015	0.271	0.264	0.286
		Rear	0.493	0.035	0.037	0.528	0.530	0.565
	GSM 1900	Front	0.302	0.022	0.015	0.324	0.317	0.339
		Rear	0.387	0.035	0.037	0.422	0.424	0.459
	GPRS 1900	Front	0.390	0.022	0.015	0.412	0.405	0.427
		Rear	0.498	0.035	0.037	0.533	0.535	0.570
	WCDMA 1700	Front	0.439	0.022	0.015	0.461	0.454	0.476
		Rear	0.565	0.035	0.037	0.600	0.602	0.637
	WCDMA 1900	Front	0.439	0.022	0.015	0.461	0.454	0.476
		Rear	0.557	0.035	0.037	0.592	0.594	0.629
	LTE Band 12	Front	0.379	0.022	0.015	0.401	0.394	0.416
		Rear	0.717	0.035	0.037	0.752	0.754	0.789
	LTE Band 4	Front	0.369	0.022	0.015	0.391	0.384	0.406
		Rear	0.458	0.035	0.037	0.493	0.495	0.530
	LTE Band 2	Front	0.476	0.022	0.015	0.498	0.491	0.513
		Rear	0.600	0.035	0.037	0.635	0.637	0.672
	LTE Band 41	Front	0.251	0.022	0.015	0.273	0.266	0.288
		Rear	0.480	0.035	0.037	0.515	0.517	0.552

Table 12.5.6 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	0.327	0.022	0.023	0.349	0.350	0.372
		Rear	0.452	0.035	0.169	0.487	0.621	0.656
	GPRS 850	Front	0.249	0.022	0.023	0.271	0.272	0.294
		Rear	0.493	0.035	0.169	0.528	0.662	0.697
	GSM 1900	Front	0.302	0.022	0.023	0.324	0.325	0.347
		Rear	0.387	0.035	0.169	0.422	0.556	0.591
	GPRS 1900	Front	0.390	0.022	0.023	0.412	0.413	0.435
		Rear	0.498	0.035	0.169	0.533	0.667	0.702
	WCDMA 1700	Front	0.439	0.022	0.023	0.461	0.462	0.484
		Rear	0.565	0.035	0.169	0.600	0.734	0.769
	WCDMA 1900	Front	0.439	0.022	0.023	0.461	0.462	0.484
		Rear	0.557	0.035	0.169	0.592	0.726	0.761
	LTE Band 12	Front	0.379	0.022	0.023	0.401	0.402	0.424
		Rear	0.717	0.035	0.169	0.752	0.886	0.921
	LTE Band 4	Front	0.369	0.022	0.023	0.391	0.392	0.414
		Rear	0.458	0.035	0.169	0.493	0.627	0.662
	LTE Band 2	Front	0.476	0.022	0.023	0.498	0.499	0.521
		Rear	0.600	0.035	0.169	0.635	0.769	0.804
	LTE Band 41	Front	0.251	0.022	0.023	0.273	0.274	0.296
		Rear	0.480	0.035	0.169	0.515	0.649	0.684

Table 12.5.7 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	0.327	0.022	0.023	0.349	0.350	0.372
		Rear	0.452	0.035	0.177	0.487	0.629	0.664
	GPRS 850	Front	0.249	0.022	0.023	0.271	0.272	0.294
		Rear	0.493	0.035	0.177	0.528	0.670	0.705
	GSM 1900	Front	0.302	0.022	0.023	0.324	0.325	0.347
		Rear	0.387	0.035	0.177	0.422	0.564	0.599
	GPRS 1900	Front	0.390	0.022	0.023	0.412	0.413	0.435
		Rear	0.498	0.035	0.177	0.533	0.675	0.710
	WCDMA 1700	Front	0.439	0.022	0.023	0.461	0.462	0.484
		Rear	0.565	0.035	0.177	0.600	0.742	0.777
	WCDMA 1900	Front	0.439	0.022	0.023	0.461	0.462	0.484
		Rear	0.557	0.035	0.177	0.592	0.734	0.769
	LTE Band 12	Front	0.379	0.022	0.023	0.401	0.402	0.424
		Rear	0.717	0.035	0.177	0.752	0.894	0.929
	LTE Band 4	Front	0.369	0.022	0.023	0.391	0.392	0.414
		Rear	0.458	0.035	0.177	0.493	0.635	0.670
	LTE Band 2	Front	0.476	0.022	0.023	0.498	0.499	0.521
		Rear	0.600	0.035	0.177	0.635	0.777	0.812
	LTE Band 41	Front	0.251	0.022	0.023	0.273	0.274	0.296
		Rear	0.480	0.035	0.177	0.515	0.657	0.692

Table 12.5.8 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)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Body-Worn SAR	GSM 850	Front	0.327	0.022	0.018	0.349	0.345	0.367
		Rear	0.452	0.035	0.046	0.487	0.498	0.533
	GPRS 850	Front	0.249	0.022	0.018	0.271	0.267	0.289
		Rear	0.493	0.035	0.046	0.528	0.539	0.574
	GSM 1900	Front	0.302	0.022	0.018	0.324	0.320	0.342
		Rear	0.387	0.035	0.046	0.422	0.433	0.468
	GPRS 1900	Front	0.390	0.022	0.018	0.412	0.408	0.430
		Rear	0.498	0.035	0.046	0.533	0.544	0.579
	WCDMA 1700	Front	0.439	0.022	0.018	0.461	0.457	0.479
		Rear	0.565	0.035	0.046	0.600	0.611	0.646
	WCDMA 1900	Front	0.439	0.022	0.018	0.461	0.457	0.479
		Rear	0.557	0.035	0.046	0.592	0.603	0.638
	LTE Band 12	Front	0.379	0.022	0.018	0.401	0.397	0.419
		Rear	0.717	0.035	0.046	0.752	0.763	0.798
	LTE Band 4	Front	0.369	0.022	0.018	0.391	0.387	0.409
		Rear	0.458	0.035	0.046	0.493	0.504	0.539
	LTE Band 2	Front	0.476	0.022	0.018	0.498	0.494	0.516
		Rear	0.600	0.035	0.046	0.635	0.646	0.681
	LTE Band 41	Front	0.251	0.022	0.018	0.273	0.269	0.291
		Rear	0.480	0.035	0.046	0.515	0.526	0.561

Table 12.5.9 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)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Body-Worn SAR	GSM 850	Front	0.327	0.022	0.029	0.349	0.356	0.378
		Rear	0.452	0.035	0.218	0.487	0.670	0.705
	GPRS 850	Front	0.249	0.022	0.029	0.271	0.278	0.300
		Rear	0.493	0.035	0.218	0.528	0.711	0.746
	GSM 1900	Front	0.302	0.022	0.029	0.324	0.331	0.353
		Rear	0.387	0.035	0.218	0.422	0.605	0.640
	GPRS 1900	Front	0.390	0.022	0.029	0.412	0.419	0.441
		Rear	0.498	0.035	0.218	0.533	0.716	0.751
	WCDMA 1700	Front	0.439	0.022	0.029	0.461	0.468	0.490
		Rear	0.565	0.035	0.218	0.600	0.783	0.818
	WCDMA 1900	Front	0.439	0.022	0.029	0.461	0.468	0.490
		Rear	0.557	0.035	0.218	0.592	0.775	0.810
	LTE Band 12	Front	0.379	0.022	0.029	0.401	0.408	0.430
		Rear	0.717	0.035	0.218	0.752	0.935	0.970
	LTE Band 4	Front	0.369	0.022	0.029	0.391	0.398	0.420
		Rear	0.458	0.035	0.218	0.493	0.676	0.711
	LTE Band 2	Front	0.476	0.022	0.029	0.498	0.505	0.527
		Rear	0.600	0.035	0.218	0.635	0.818	0.853
	LTE Band 41	Front	0.251	0.022	0.029	0.273	0.280	0.302
		Rear	0.480	0.035	0.218	0.515	0.698	0.733

Table 12.5.10 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.8 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)	5.8G 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	0.327	0.022	0.015	0.349	0.342	0.364
		Rear	0.452	0.035	0.122	0.487	0.574	0.609
	GPRS 850	Front	0.249	0.022	0.015	0.271	0.264	0.286
		Rear	0.493	0.035	0.122	0.528	0.615	0.650
	GSM 1900	Front	0.302	0.022	0.015	0.324	0.317	0.339
		Rear	0.387	0.035	0.122	0.422	0.509	0.544
	GPRS 1900	Front	0.390	0.022	0.015	0.412	0.405	0.427
		Rear	0.498	0.035	0.122	0.533	0.620	0.655
	WCDMA 1700	Front	0.439	0.022	0.015	0.461	0.454	0.476
		Rear	0.565	0.035	0.122	0.600	0.687	0.722
	WCDMA 1900	Front	0.439	0.022	0.015	0.461	0.454	0.476
		Rear	0.557	0.035	0.122	0.592	0.679	0.714
	LTE Band 12	Front	0.379	0.022	0.015	0.401	0.394	0.416
		Rear	0.717	0.035	0.122	0.752	0.839	0.874
	LTE Band 4	Front	0.369	0.022	0.015	0.391	0.384	0.406
		Rear	0.458	0.035	0.122	0.493	0.580	0.615
	LTE Band 2	Front	0.476	0.022	0.015	0.498	0.491	0.513
		Rear	0.600	0.035	0.122	0.635	0.722	0.757
	LTE Band 41	Front	0.251	0.022	0.015	0.273	0.266	0.288
		Rear	0.480	0.035	0.122	0.515	0.602	0.637

Table 12.5.11 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.8 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)	5.8G 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	0.327	0.022	0.012	0.349	0.339	0.361
		Rear	0.452	0.035	0.030	0.487	0.482	0.517
	GPRS 850	Front	0.249	0.022	0.012	0.271	0.261	0.283
		Rear	0.493	0.035	0.030	0.528	0.523	0.558
	GSM 1900	Front	0.302	0.022	0.012	0.324	0.314	0.336
		Rear	0.387	0.035	0.030	0.422	0.417	0.452
	GPRS 1900	Front	0.390	0.022	0.012	0.412	0.402	0.424
		Rear	0.498	0.035	0.030	0.533	0.528	0.563
	WCDMA 1700	Front	0.439	0.022	0.012	0.461	0.451	0.473
		Rear	0.565	0.035	0.030	0.600	0.595	0.630
	WCDMA 1900	Front	0.439	0.022	0.012	0.461	0.451	0.473
		Rear	0.557	0.035	0.030	0.592	0.587	0.622
	LTE Band 12	Front	0.379	0.022	0.012	0.401	0.391	0.413
		Rear	0.717	0.035	0.030	0.752	0.747	0.782
	LTE Band 4	Front	0.369	0.022	0.012	0.391	0.381	0.403
		Rear	0.458	0.035	0.030	0.493	0.488	0.523
	LTE Band 2	Front	0.476	0.022	0.012	0.498	0.488	0.510
		Rear	0.600	0.035	0.030	0.635	0.630	0.665
	LTE Band 41	Front	0.251	0.022	0.012	0.273	0.263	0.285
		Rear	0.480	0.035	0.030	0.515	0.510	0.545

Table 12.5.12 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.8 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)	5.8G 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	0.327	0.022	0.010	0.349	0.337	0.359
		Rear	0.452	0.035	0.123	0.487	0.575	0.610
	GPRS 850	Front	0.249	0.022	0.010	0.271	0.259	0.281
		Rear	0.493	0.035	0.123	0.528	0.616	0.651
	GSM 1900	Front	0.302	0.022	0.010	0.324	0.312	0.334
		Rear	0.387	0.035	0.123	0.422	0.510	0.545
	GPRS 1900	Front	0.390	0.022	0.010	0.412	0.400	0.422
		Rear	0.498	0.035	0.123	0.533	0.621	0.656
	WCDMA 1700	Front	0.439	0.022	0.010	0.461	0.449	0.471
		Rear	0.565	0.035	0.123	0.600	0.688	0.723
	WCDMA 1900	Front	0.439	0.022	0.010	0.461	0.449	0.471
		Rear	0.557	0.035	0.123	0.592	0.680	0.715
	LTE Band 12	Front	0.379	0.022	0.010	0.401	0.389	0.411
		Rear	0.717	0.035	0.123	0.752	0.840	0.875
	LTE Band 4	Front	0.369	0.022	0.010	0.391	0.379	0.401
		Rear	0.458	0.035	0.123	0.493	0.581	0.616
	LTE Band 2	Front	0.476	0.022	0.010	0.498	0.486	0.508
		Rear	0.600	0.035	0.123	0.635	0.723	0.758
	LTE Band 41	Front	0.251	0.022	0.010	0.273	0.261	0.283
		Rear	0.480	0.035	0.123	0.515	0.603	0.638

Table 12.5.13 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 2.4 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)	2.4G 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	0.327	0.022	0.096	0.349	0.423	0.445
		Rear	0.452	0.035	0.125	0.487	0.577	0.612
	GPRS 850	Front	0.249	0.022	0.096	0.271	0.345	0.367
		Rear	0.493	0.035	0.125	0.528	0.618	0.653
	GSM 1900	Front	0.302	0.022	0.096	0.324	0.398	0.420
		Rear	0.387	0.035	0.125	0.422	0.512	0.547
	GPRS 1900	Front	0.390	0.022	0.096	0.412	0.486	0.508
		Rear	0.498	0.035	0.125	0.533	0.623	0.658
	WCDMA 1700	Front	0.439	0.022	0.096	0.461	0.535	0.557
		Rear	0.565	0.035	0.125	0.600	0.690	0.725
	WCDMA 1900	Front	0.439	0.022	0.096	0.461	0.535	0.557
		Rear	0.557	0.035	0.125	0.592	0.682	0.717
	LTE Band 12	Front	0.379	0.022	0.096	0.401	0.475	0.497
		Rear	0.717	0.035	0.125	0.752	0.842	0.877
	LTE Band 4	Front	0.369	0.022	0.096	0.391	0.465	0.487
		Rear	0.458	0.035	0.125	0.493	0.583	0.618
	LTE Band 2	Front	0.476	0.022	0.096	0.498	0.572	0.594
		Rear	0.600	0.035	0.125	0.635	0.725	0.760
	LTE Band 41	Front	0.251	0.022	0.096	0.273	0.347	0.369
		Rear	0.480	0.035	0.125	0.515	0.605	0.640

Table 12.5.14 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)
			1	2	1+2
Body-Worn SAR	GSM 850	Front	0.327	0.074	0.401
		Rear	0.452	0.126	0.578
	GPRS 850	Front	0.249	0.074	0.323
		Rear	0.493	0.126	0.619
	GSM 1900	Front	0.302	0.074	0.376
		Rear	0.387	0.126	0.513
	GPRS 1900	Front	0.390	0.074	0.464
		Rear	0.498	0.126	0.624
	WCDMA 1700	Front	0.439	0.074	0.513
		Rear	0.565	0.126	0.691
	WCDMA 1900	Front	0.439	0.074	0.513
		Rear	0.557	0.126	0.683
	LTE Band 12	Front	0.379	0.074	0.453
		Rear	0.717	0.126	0.843
	LTE Band 4	Front	0.369	0.074	0.443
		Rear	0.458	0.126	0.584
	LTE Band 2	Front	0.476	0.074	0.550
		Rear	0.600	0.126	0.726
	LTE Band 41	Front	0.251	0.074	0.325
		Rear	0.480	0.126	0.606

Table 12.5.15 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)
			1	2	1+2
Body-Worn SAR	GSM 850	Front	0.327	0.096	0.423
		Rear	0.452	0.125	0.577
	GPRS 850	Front	0.249	0.096	0.345
		Rear	0.493	0.125	0.618
	GSM 1900	Front	0.302	0.096	0.398
		Rear	0.387	0.125	0.512
	GPRS 1900	Front	0.390	0.096	0.486
		Rear	0.498	0.125	0.623
	WCDMA 1700	Front	0.439	0.096	0.535
		Rear	0.565	0.125	0.690
	WCDMA 1900	Front	0.439	0.096	0.535
		Rear	0.557	0.125	0.682
	LTE Band 12	Front	0.379	0.096	0.475
		Rear	0.717	0.125	0.842
	LTE Band 4	Front	0.369	0.096	0.465
		Rear	0.458	0.125	0.583
	LTE Band 2	Front	0.476	0.096	0.572
		Rear	0.600	0.125	0.725
	LTE Band 41	Front	0.251	0.096	0.347
		Rear	0.480	0.125	0.605

Table 12.5.16 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	0.327	0.087	0.414
		Rear	0.452	0.120	0.572
	GPRS 850	Front	0.249	0.087	0.336
		Rear	0.493	0.120	0.613
	GSM 1900	Front	0.302	0.087	0.389
		Rear	0.387	0.120	0.507
	GPRS 1900	Front	0.390	0.087	0.477
		Rear	0.498	0.120	0.618
	WCDMA 1700	Front	0.439	0.087	0.526
		Rear	0.565	0.120	0.685
	WCDMA 1900	Front	0.439	0.087	0.526
		Rear	0.557	0.120	0.677
	LTE Band 12	Front	0.379	0.087	0.466
		Rear	0.717	0.120	0.837
	LTE Band 4	Front	0.369	0.087	0.456
		Rear	0.458	0.120	0.578
	LTE Band 2	Front	0.476	0.087	0.563
		Rear	0.600	0.120	0.720
	LTE Band 41	Front	0.251	0.087	0.338
		Rear	0.480	0.120	0.600

Table 12.5.17 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	0.327	0.018	0.345
		Rear	0.452	0.141	0.593
	GPRS 850	Front	0.249	0.018	0.267
		Rear	0.493	0.141	0.634
	GSM 1900	Front	0.302	0.018	0.320
		Rear	0.387	0.141	0.528
	GPRS 1900	Front	0.390	0.018	0.408
		Rear	0.498	0.141	0.639
	WCDMA 1700	Front	0.439	0.018	0.457
		Rear	0.565	0.141	0.706
	WCDMA 1900	Front	0.439	0.018	0.457
		Rear	0.557	0.141	0.698
	LTE Band 12	Front	0.379	0.018	0.397
		Rear	0.717	0.141	0.858
	LTE Band 4	Front	0.369	0.018	0.387
		Rear	0.458	0.141	0.599
	LTE Band 2	Front	0.476	0.018	0.494
		Rear	0.600	0.141	0.741
	LTE Band 41	Front	0.251	0.018	0.269
		Rear	0.480	0.141	0.621

Table 12.5.18 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	0.327	0.015	0.342
		Rear	0.452	0.037	0.489
	GPRS 850	Front	0.249	0.015	0.264
		Rear	0.493	0.037	0.530
	GSM 1900	Front	0.302	0.015	0.317
		Rear	0.387	0.037	0.424
	GPRS 1900	Front	0.390	0.015	0.405
		Rear	0.498	0.037	0.535
	WCDMA 1700	Front	0.439	0.015	0.454
		Rear	0.565	0.037	0.602
	WCDMA 1900	Front	0.439	0.015	0.454
		Rear	0.557	0.037	0.594
	LTE Band 12	Front	0.379	0.015	0.394
		Rear	0.717	0.037	0.754
	LTE Band 4	Front	0.369	0.015	0.384
		Rear	0.458	0.037	0.495
	LTE Band 2	Front	0.476	0.015	0.491
		Rear	0.600	0.037	0.637
	LTE Band 41	Front	0.251	0.015	0.266
		Rear	0.480	0.037	0.517

Table 12.5.19 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	0.327	0.023	0.350
		Rear	0.452	0.169	0.621
	GPRS 850	Front	0.249	0.023	0.272
		Rear	0.493	0.169	0.662
	GSM 1900	Front	0.302	0.023	0.325
		Rear	0.387	0.169	0.556
	GPRS 1900	Front	0.390	0.023	0.413
		Rear	0.498	0.169	0.667
	WCDMA 1700	Front	0.439	0.023	0.462
		Rear	0.565	0.169	0.734
	WCDMA 1900	Front	0.439	0.023	0.462
		Rear	0.557	0.169	0.726
	LTE Band 12	Front	0.379	0.023	0.402
		Rear	0.717	0.169	0.886
	LTE Band 4	Front	0.369	0.023	0.392
		Rear	0.458	0.169	0.627
	LTE Band 2	Front	0.476	0.023	0.499
		Rear	0.600	0.169	0.769
	LTE Band 41	Front	0.251	0.023	0.274
		Rear	0.480	0.169	0.649

Table 12.5.20 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	0.327	0.023	0.350
		Rear	0.452	0.177	0.629
	GPRS 850	Front	0.249	0.023	0.272
		Rear	0.493	0.177	0.670
	GSM 1900	Front	0.302	0.023	0.325
		Rear	0.387	0.177	0.564
	GPRS 1900	Front	0.390	0.023	0.413
		Rear	0.498	0.177	0.675
	WCDMA 1700	Front	0.439	0.023	0.462
		Rear	0.565	0.177	0.742
	WCDMA 1900	Front	0.439	0.023	0.462
		Rear	0.557	0.177	0.734
	LTE Band 12	Front	0.379	0.023	0.402
		Rear	0.717	0.177	0.894
	LTE Band 4	Front	0.369	0.023	0.392
		Rear	0.458	0.177	0.635
	LTE Band 2	Front	0.476	0.023	0.499
		Rear	0.600	0.177	0.777
	LTE Band 41	Front	0.251	0.023	0.274
		Rear	0.480	0.177	0.657

Table 12.5.21 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	0.327	0.018	0.345
		Rear	0.452	0.046	0.498
	GPRS 850	Front	0.249	0.018	0.267
		Rear	0.493	0.046	0.539
	GSM 1900	Front	0.302	0.018	0.320
		Rear	0.387	0.046	0.433
	GPRS 1900	Front	0.390	0.018	0.408
		Rear	0.498	0.046	0.544
	WCDMA 1700	Front	0.439	0.018	0.457
		Rear	0.565	0.046	0.611
	WCDMA 1900	Front	0.439	0.018	0.457
		Rear	0.557	0.046	0.603
	LTE Band 12	Front	0.379	0.018	0.397
		Rear	0.717	0.046	0.763
	LTE Band 4	Front	0.369	0.018	0.387
		Rear	0.458	0.046	0.504
	LTE Band 2	Front	0.476	0.018	0.494
		Rear	0.600	0.046	0.646
	LTE Band 41	Front	0.251	0.018	0.269
		Rear	0.480	0.046	0.526

Table 12.5.22 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	0.327	0.029	0.356
		Rear	0.452	0.218	0.670
	GPRS 850	Front	0.249	0.029	0.278
		Rear	0.493	0.218	0.711
	GSM 1900	Front	0.302	0.029	0.331
		Rear	0.387	0.218	0.605
	GPRS 1900	Front	0.390	0.029	0.419
		Rear	0.498	0.218	0.716
	WCDMA 1700	Front	0.439	0.029	0.468
		Rear	0.565	0.218	0.783
	WCDMA 1900	Front	0.439	0.029	0.468
		Rear	0.557	0.218	0.775
	LTE Band 12	Front	0.379	0.029	0.408
		Rear	0.717	0.218	0.935
	LTE Band 4	Front	0.369	0.029	0.398
		Rear	0.458	0.218	0.676
	LTE Band 2	Front	0.476	0.029	0.505
		Rear	0.600	0.218	0.818
	LTE Band 41	Front	0.251	0.029	0.280
		Rear	0.480	0.218	0.698

Table 12.5.23 Simultaneous Transmission Scenario : 2G/3G/4G + 5.8 GHz W-LAN Ant.1 (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.8G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Body-Worn SAR	GSM 850	Front	0.327	0.015	0.342
		Rear	0.452	0.122	0.574
	GPRS 850	Front	0.249	0.015	0.264
		Rear	0.493	0.122	0.615
	GSM 1900	Front	0.302	0.015	0.317
		Rear	0.387	0.122	0.509
	GPRS 1900	Front	0.390	0.015	0.405
		Rear	0.498	0.122	0.620
	WCDMA 1700	Front	0.439	0.015	0.454
		Rear	0.565	0.122	0.687
	WCDMA 1900	Front	0.439	0.015	0.454
		Rear	0.557	0.122	0.679
	LTE Band 12	Front	0.379	0.015	0.394
		Rear	0.717	0.122	0.839
	LTE Band 4	Front	0.369	0.015	0.384
		Rear	0.458	0.122	0.580
	LTE Band 2	Front	0.476	0.015	0.491
		Rear	0.600	0.122	0.722
	LTE Band 41	Front	0.251	0.015	0.266
		Rear	0.480	0.122	0.602

Table 12.5.24 Simultaneous Transmission Scenario : 2G/3G/4G + 5.8 GHz W-LAN Ant.2 (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.8G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Body-Worn SAR	GSM 850	Front	0.327	0.012	0.339
		Rear	0.452	0.030	0.482
	GPRS 850	Front	0.249	0.012	0.261
		Rear	0.493	0.030	0.523
	GSM 1900	Front	0.302	0.012	0.314
		Rear	0.387	0.030	0.417
	GPRS 1900	Front	0.390	0.012	0.402
		Rear	0.498	0.030	0.528
	WCDMA 1700	Front	0.439	0.012	0.451
		Rear	0.565	0.030	0.595
	WCDMA 1900	Front	0.439	0.012	0.451
		Rear	0.557	0.030	0.587
	LTE Band 12	Front	0.379	0.012	0.391
		Rear	0.717	0.030	0.747
	LTE Band 4	Front	0.369	0.012	0.381
		Rear	0.458	0.030	0.488
	LTE Band 2	Front	0.476	0.012	0.488
		Rear	0.600	0.030	0.630
	LTE Band 41	Front	0.251	0.012	0.263
		Rear	0.480	0.030	0.510

Table 12.5.25 Simultaneous Transmission Scenario : 2G/3G/4G + 5.8 GHz W-LAN MIMO (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.8G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Body-Worn SAR	GSM 850	Front	0.327	0.010	0.337
		Rear	0.452	0.123	0.575
	GPRS 850	Front	0.249	0.010	0.259
		Rear	0.493	0.123	0.616
	GSM 1900	Front	0.302	0.010	0.312
		Rear	0.387	0.123	0.510
	GPRS 1900	Front	0.390	0.010	0.400
		Rear	0.498	0.123	0.621
	WCDMA 1700	Front	0.439	0.010	0.449
		Rear	0.565	0.123	0.688
	WCDMA 1900	Front	0.439	0.010	0.449
		Rear	0.557	0.123	0.680
	LTE Band 12	Front	0.379	0.010	0.389
		Rear	0.717	0.123	0.840
	LTE Band 4	Front	0.369	0.010	0.379
		Rear	0.458	0.123	0.581
	LTE Band 2	Front	0.476	0.010	0.486
		Rear	0.600	0.123	0.723
	LTE Band 41	Front	0.251	0.010	0.261
		Rear	0.480	0.123	0.603

Table 12.5.26 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	0.327	0.022	0.349
		Rear	0.452	0.035	0.487
	GPRS 850	Front	0.249	0.022	0.271
		Rear	0.493	0.035	0.528
	GSM 1900	Front	0.302	0.022	0.324
		Rear	0.387	0.035	0.422
	GPRS 1900	Front	0.390	0.022	0.412
		Rear	0.498	0.035	0.533
	WCDMA 1700	Front	0.439	0.022	0.461
		Rear	0.565	0.035	0.600
	WCDMA 1900	Front	0.439	0.022	0.461
		Rear	0.557	0.035	0.592
	LTE Band 12	Front	0.379	0.022	0.401
		Rear	0.717	0.035	0.752
	LTE Band 4	Front	0.369	0.022	0.391
		Rear	0.458	0.035	0.493
	LTE Band 2	Front	0.476	0.022	0.498
		Rear	0.600	0.035	0.635
	LTE Band 41	Front	0.251	0.022	0.273
		Rear	0.480	0.035	0.515

Table 12.5.27 Simultaneous Transmission Scenario : 2.4 GHz W-LAN Ant.1 + 5 GHz W-LAN Ant.2 (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2.4G W-LAN 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	0.074	0.015	0.089
		Rear	0.126	0.037	0.163
	5.6G W-LAN Ant.2	Front	0.074	0.018	0.092
		Rear	0.126	0.046	0.172
	5.8G W-LAN Ant.2	Front	0.074	0.012	0.086
		Rear	0.126	0.030	0.156

Table 12.5.28 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	0.022	0.018	0.040
		Rear	0.035	0.141	0.176
	5.6G W-LAN Ant.1	Front	0.022	0.023	0.045
		Rear	0.035	0.177	0.212
	5.8G W-LAN Ant.1	Front	0.022	0.015	0.037
		Rear	0.035	0.122	0.157

Table 12.5.29 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	0.022	0.015	0.037
		Rear	0.035	0.037	0.072
	5.6G W-LAN Ant.2	Front	0.022	0.018	0.040
		Rear	0.035	0.046	0.081
	5.8G W-LAN Ant.2	Front	0.022	0.012	0.034
		Rear	0.035	0.030	0.065

Table 12.5.30 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	0.022	0.023	0.045
		Rear	0.035	0.169	0.204
	5.6G W-LAN MIMO	Front	0.022	0.029	0.051
		Rear	0.035	0.218	0.253
	5.8G W-LAN MIMO	Front	0.022	0.010	0.032
		Rear	0.035	0.123	0.158

Table 12.5.31 Simultaneous Transmission Scenario : Bluetooth Ant.1 + 2.4 GHz W-LAN Ant.2 (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	Bluetooth Ant.1 SAR (W/kg)	2.4G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Body-Worn SAR	2.4G W-LAN Ant.2	Front	0.022	0.096	0.118
		Rear	0.035	0.125	0.160

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+ 5.2 GHz W-LAN Ant.2 (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN Ant.1 SAR (W/kg)	5.2G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	Top	-	0.026	0.011	0.026	0.011	0.037
		Bottom	0.153	-	-	0.153	0.153	0.153
		Front	0.249	0.074	0.014	0.323	0.263	0.337
		Rear	0.493	0.126	0.031	0.619	0.524	0.650
		Right	0.152	0.166	-	0.318	0.152	0.318
		Left	-	-	0.055	-	0.055	0.055
	GPRS 1900	Top	-	0.026	0.011	0.026	0.011	0.037
		Bottom	0.573	-	-	0.573	0.573	0.573
		Front	0.390	0.074	0.014	0.464	0.404	0.478
		Rear	0.498	0.126	0.031	0.624	0.529	0.655
		Right	-	0.166	-	0.166	-	0.166
		Left	0.087	-	0.055	0.087	0.142	0.142
	WCDMA 1700	Top	-	0.026	0.011	0.026	0.011	0.037
		Bottom	0.752	-	-	0.752	0.752	0.752
		Front	0.439	0.074	0.014	0.513	0.453	0.527
		Rear	0.565	0.126	0.031	0.691	0.596	0.722
		Right	-	0.166	-	0.166	-	0.166
		Left	0.134	-	0.055	0.134	0.189	0.189
	WCDMA 1900	Top	-	0.026	0.011	0.026	0.011	0.037
		Bottom	0.771	-	-	0.771	0.771	0.771
		Front	0.439	0.074	0.014	0.513	0.453	0.527
		Rear	0.557	0.126	0.031	0.683	0.588	0.714
		Right	-	0.166	-	0.166	-	0.166
		Left	0.206	-	0.055	0.206	0.261	0.261
	LTE Band 12	Top	-	0.026	0.011	0.026	0.011	0.037
		Bottom	0.213	-	-	0.213	0.213	0.213
		Front	0.379	0.074	0.014	0.453	0.393	0.467
		Rear	0.717	0.126	0.031	0.843	0.748	0.874
		Right	0.269	0.166	-	0.435	0.269	0.435
		Left	-	-	0.055	-	0.055	0.055
	LTE Band 4	Top	-	0.026	0.011	0.026	0.011	0.037
		Bottom	0.570	-	-	0.570	0.570	0.570
		Front	0.369	0.074	0.014	0.443	0.383	0.457
		Rear	0.458	0.126	0.031	0.584	0.489	0.615
		Right	-	0.166	-	0.166	-	0.166
		Left	0.094	-	0.055	0.094	0.149	0.149
	LTE Band 2	Top	-	0.026	0.011	0.026	0.011	0.037
		Bottom	0.865	-	-	0.865	0.865	0.865
		Front	0.476	0.074	0.014	0.550	0.490	0.564
		Rear	0.600	0.126	0.031	0.726	0.631	0.757
		Right	-	0.166	-	0.166	-	0.166
		Left	0.139	-	0.055	0.139	0.194	0.194
	LTE Band 41	Top	-	0.026	0.011	0.026	0.011	0.037
		Bottom	1.152	-	-	1.152	1.152	1.152
		Front	0.251	0.074	0.014	0.325	0.265	0.339
		Rear	0.480	0.126	0.031	0.606	0.511	0.637
		Right	-	0.166	-	0.166	-	0.166
		Left	0.122	-	0.055	0.122	0.177	0.177

Table 12.6.2 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN Ant.1 + 5.8 GHz W-LAN Ant.2 (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN Ant.1 SAR (W/kg)	5.8G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	Top	-	0.026	0.013	0.026	0.013	0.039
		Bottom	0.153	-	-	0.153	0.153	0.153
		Front	0.249	0.074	0.012	0.323	0.261	0.335
		Rear	0.493	0.126	0.030	0.619	0.523	0.649
		Right	0.152	0.166	-	0.318	0.152	0.318
		Left	-	-	0.067	-	0.067	0.067
	GPRS 1900	Top	-	0.026	0.013	0.026	0.013	0.039
		Bottom	0.573	-	-	0.573	0.573	0.573
		Front	0.390	0.074	0.012	0.464	0.402	0.476
		Rear	0.498	0.126	0.030	0.624	0.528	0.654
		Right	-	0.166	-	0.166	-	0.166
		Left	0.087	-	0.067	0.087	0.154	0.154
	WCDMA 1700	Top	-	0.026	0.013	0.026	0.013	0.039
		Bottom	0.752	-	-	0.752	0.752	0.752
		Front	0.439	0.074	0.012	0.513	0.451	0.525
		Rear	0.565	0.126	0.030	0.691	0.595	0.721
		Right	-	0.166	-	0.166	-	0.166
		Left	0.134	-	0.067	0.134	0.201	0.201
	WCDMA 1900	Top	-	0.026	0.013	0.026	0.013	0.039
		Bottom	0.771	-	-	0.771	0.771	0.771
		Front	0.439	0.074	0.012	0.513	0.451	0.525
		Rear	0.557	0.126	0.030	0.683	0.587	0.713
		Right	-	0.166	-	0.166	-	0.166
		Left	0.206	-	0.067	0.206	0.273	0.273
	LTE Band 12	Top	-	0.026	0.013	0.026	0.013	0.039
		Bottom	0.213	-	-	0.213	0.213	0.213
		Front	0.379	0.074	0.012	0.453	0.391	0.465
		Rear	0.717	0.126	0.030	0.843	0.747	0.873
		Right	0.269	0.166	-	0.435	0.269	0.435
		Left	-	-	0.067	-	0.067	0.067
	LTE Band 4	Top	-	0.026	0.013	0.026	0.013	0.039
		Bottom	0.570	-	-	0.570	0.570	0.570
		Front	0.369	0.074	0.012	0.443	0.381	0.455
		Rear	0.458	0.126	0.030	0.584	0.488	0.614
		Right	-	0.166	-	0.166	-	0.166
		Left	0.094	-	0.067	0.094	0.161	0.161
	LTE Band 2	Top	-	0.026	0.013	0.026	0.013	0.039
		Bottom	0.865	-	-	0.865	0.865	0.865
		Front	0.476	0.074	0.012	0.550	0.488	0.562
		Rear	0.600	0.126	0.030	0.726	0.630	0.756
		Right	-	0.166	-	0.166	-	0.166
		Left	0.139	-	0.067	0.139	0.206	0.206
	LTE Band 41	Top	-	0.026	0.013	0.026	0.013	0.039
		Bottom	1.152	-	-	1.152	1.152	1.152
		Front	0.251	0.074	0.012	0.325	0.263	0.337
		Rear	0.480	0.126	0.030	0.606	0.510	0.636
		Right	-	0.166	-	0.166	-	0.166
		Left	0.122	-	0.067	0.122	0.189	0.189

Table 12.6.3 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.2 GHz W-LAN Ant.1 (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.2G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	Top	-	0.004	-	0.004	-	0.004
		Bottom	0.153	-	-	0.153	0.153	0.153
		Front	0.249	0.022	0.012	0.271	0.261	0.283
		Rear	0.493	0.035	0.059	0.528	0.552	0.587
		Right	0.152	0.047	-	0.199	0.152	0.199
		Left	-	-	0.028	-	0.028	0.028
	GPRS 1900	Top	-	0.004	-	0.004	-	0.004
		Bottom	0.573	-	-	0.573	0.573	0.573
		Front	0.390	0.022	0.012	0.412	0.402	0.424
		Rear	0.498	0.035	0.059	0.533	0.557	0.592
		Right	-	0.047	-	0.047	-	0.047
		Left	0.087	-	0.028	0.087	0.115	0.115
	WCDMA 1700	Top	-	0.004	-	0.004	-	0.004
		Bottom	0.752	-	-	0.752	0.752	0.752
		Front	0.439	0.022	0.012	0.461	0.451	0.473
		Rear	0.565	0.035	0.059	0.600	0.624	0.659
		Right	-	0.047	-	0.047	-	0.047
		Left	0.134	-	0.028	0.134	0.162	0.162
	WCDMA 1900	Top	-	0.004	-	0.004	-	0.004
		Bottom	0.771	-	-	0.771	0.771	0.771
		Front	0.439	0.022	0.012	0.461	0.451	0.473
		Rear	0.557	0.035	0.059	0.592	0.616	0.651
		Right	-	0.047	-	0.047	-	0.047
		Left	0.206	-	0.028	0.206	0.234	0.234
	LTE Band 12	Top	-	0.004	-	0.004	-	0.004
		Bottom	0.213	-	-	0.213	0.213	0.213
		Front	0.379	0.022	0.012	0.401	0.391	0.413
		Rear	0.717	0.035	0.059	0.752	0.776	0.811
		Right	0.269	0.047	-	0.316	0.269	0.316
		Left	-	-	0.028	-	0.028	0.028
	LTE Band 4	Top	-	0.004	-	0.004	-	0.004
		Bottom	0.570	-	-	0.570	0.570	0.570
		Front	0.369	0.022	0.012	0.391	0.381	0.403
		Rear	0.458	0.035	0.059	0.493	0.517	0.552
		Right	-	0.047	-	0.047	-	0.047
		Left	0.094	-	0.028	0.094	0.122	0.122
	LTE Band 2	Top	-	0.004	-	0.004	-	0.004
		Bottom	0.865	-	-	0.865	0.865	0.865
		Front	0.476	0.022	0.012	0.498	0.488	0.510
		Rear	0.600	0.035	0.059	0.635	0.659	0.694
		Right	-	0.047	-	0.047	-	0.047
		Left	0.139	-	0.028	0.139	0.167	0.167
	LTE Band 41	Top	-	0.004	-	0.004	-	0.004
		Bottom	1.152	-	-	1.152	1.152	1.152
		Front	0.251	0.022	0.012	0.273	0.263	0.285
		Rear	0.480	0.035	0.059	0.515	0.539	0.574
		Right	-	0.047	-	0.047	-	0.047
		Left	0.122	-	0.028	0.122	0.150	0.150

Table 12.6.4 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.2 GHz W-LAN Ant.2 (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.2G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	Top	-	0.004	0.011	0.004	0.011	0.015
		Bottom	0.153	-	-	0.153	0.153	0.153
		Front	0.249	0.022	0.014	0.271	0.263	0.285
		Rear	0.493	0.035	0.031	0.528	0.524	0.559
		Right	0.152	0.047	-	0.199	0.152	0.199
		Left	-	-	0.055	-	0.055	0.055
	GPRS 1900	Top	-	0.004	0.011	0.004	0.011	0.015
		Bottom	0.573	-	-	0.573	0.573	0.573
		Front	0.390	0.022	0.014	0.412	0.404	0.426
		Rear	0.498	0.035	0.031	0.533	0.529	0.564
		Right	-	0.047	-	0.047	-	0.047
		Left	0.087	-	0.055	0.087	0.142	0.142
	WCDMA 1700	Top	-	0.004	0.011	0.004	0.011	0.015
		Bottom	0.752	-	-	0.752	0.752	0.752
		Front	0.439	0.022	0.014	0.461	0.453	0.475
		Rear	0.565	0.035	0.031	0.600	0.596	0.631
		Right	-	0.047	-	0.047	-	0.047
		Left	0.134	-	0.055	0.134	0.189	0.189
	WCDMA 1900	Top	-	0.004	0.011	0.004	0.011	0.015
		Bottom	0.771	-	-	0.771	0.771	0.771
		Front	0.439	0.022	0.014	0.461	0.453	0.475
		Rear	0.557	0.035	0.031	0.592	0.588	0.623
		Right	-	0.047	-	0.047	-	0.047
		Left	0.206	-	0.055	0.206	0.261	0.261
	LTE Band 12	Top	-	0.004	0.011	0.004	0.011	0.015
		Bottom	0.213	-	-	0.213	0.213	0.213
		Front	0.379	0.022	0.014	0.401	0.393	0.415
		Rear	0.717	0.035	0.031	0.752	0.748	0.783
		Right	0.269	0.047	-	0.316	0.269	0.316
		Left	-	-	0.055	-	0.055	0.055
	LTE Band 4	Top	-	0.004	0.011	0.004	0.011	0.015
		Bottom	0.570	-	-	0.570	0.570	0.570
		Front	0.369	0.022	0.014	0.391	0.383	0.405
		Rear	0.458	0.035	0.031	0.493	0.489	0.524
		Right	-	0.047	-	0.047	-	0.047
		Left	0.094	-	0.055	0.094	0.149	0.149
	LTE Band 2	Top	-	0.004	0.011	0.004	0.011	0.015
		Bottom	0.865	-	-	0.865	0.865	0.865
		Front	0.476	0.022	0.014	0.498	0.490	0.512
		Rear	0.600	0.035	0.031	0.635	0.631	0.666
		Right	-	0.047	-	0.047	-	0.047
		Left	0.139	-	0.055	0.139	0.194	0.194
	LTE Band 41	Top	-	0.004	0.011	0.004	0.011	0.015
		Bottom	1.152	-	-	1.152	1.152	1.152
		Front	0.251	0.022	0.014	0.273	0.265	0.287
		Rear	0.480	0.035	0.031	0.515	0.511	0.546
		Right	-	0.047	-	0.047	-	0.047
		Left	0.122	-	0.055	0.122	0.177	0.177

Table 12.6.5 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.2 GHz W-LAN MIMO (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.2G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	Top	-	0.004	0.011	0.004	0.011	0.015
		Bottom	0.153	-	-	0.153	0.153	0.153
		Front	0.249	0.022	0.008	0.271	0.257	0.279
		Rear	0.493	0.035	0.093	0.528	0.586	0.621
		Right	0.152	0.047	-	0.199	0.152	0.199
		Left	-	-	0.059	-	0.059	0.059
	GPRS 1900	Top	-	0.004	0.011	0.004	0.011	0.015
		Bottom	0.573	-	-	0.573	0.573	0.573
		Front	0.390	0.022	0.008	0.412	0.396	0.420
		Rear	0.498	0.035	0.093	0.533	0.591	0.626
		Right	-	0.047	-	0.047	-	0.047
		Left	0.087	-	0.059	0.087	0.146	0.146
	WCDMA 1700	Top	-	0.004	0.011	0.004	0.011	0.015
		Bottom	0.752	-	-	0.752	0.752	0.752
		Front	0.439	0.022	0.008	0.461	0.447	0.469
		Rear	0.565	0.035	0.093	0.600	0.658	0.693
		Right	-	0.047	-	0.047	-	0.047
		Left	0.134	-	0.059	0.134	0.193	0.193
	WCDMA 1900	Top	-	0.004	0.011	0.004	0.011	0.015
		Bottom	0.771	-	-	0.771	0.771	0.771
		Front	0.439	0.022	0.008	0.461	0.447	0.469
		Rear	0.557	0.035	0.093	0.592	0.650	0.685
		Right	-	0.047	-	0.047	-	0.047
		Left	0.206	-	0.059	0.206	0.265	0.265
	LTE Band 12	Top	-	0.004	0.011	0.004	0.011	0.015
		Bottom	0.213	-	-	0.213	0.213	0.213
		Front	0.379	0.022	0.008	0.401	0.387	0.409
		Rear	0.717	0.035	0.093	0.752	0.810	0.845
		Right	0.269	0.047	-	0.316	0.269	0.316
		Left	-	-	0.059	-	0.059	0.059
	LTE Band 4	Top	-	0.004	0.011	0.004	0.011	0.015
		Bottom	0.570	-	-	0.570	0.570	0.570
		Front	0.369	0.022	0.008	0.391	0.377	0.399
		Rear	0.458	0.035	0.093	0.493	0.551	0.586
		Right	-	0.047	-	0.047	-	0.047
		Left	0.094	-	0.059	0.094	0.153	0.153
	LTE Band 2	Top	-	0.004	0.011	0.004	0.011	0.015
		Bottom	0.865	-	-	0.865	0.865	0.865
		Front	0.476	0.022	0.008	0.498	0.484	0.506
		Rear	0.600	0.035	0.093	0.635	0.693	0.728
		Right	-	0.047	-	0.047	-	0.047
		Left	0.139	-	0.059	0.139	0.198	0.198
	LTE Band 41	Top	-	0.004	0.011	0.004	0.011	0.015
		Bottom	1.152	-	-	1.152	1.152	1.152
		Front	0.251	0.022	0.008	0.273	0.259	0.281
		Rear	0.480	0.035	0.093	0.515	0.573	0.608
		Right	-	0.047	-	0.047	-	0.047
		Left	0.122	-	0.059	0.122	0.181	0.181

Table 12.6.6 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.8 GHz W-LAN Ant.1 (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.8G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	Top	-	0.004	-	0.004	-	0.004
		Bottom	0.153	-	-	0.153	0.153	0.153
		Front	0.249	0.022	0.015	0.271	0.264	0.286
		Rear	0.493	0.035	0.122	0.528	0.615	0.650
		Right	0.152	0.047	-	0.199	0.152	0.199
		Left	-	-	0.037	-	0.037	0.037
	GPRS 1900	Top	-	0.004	-	0.004	-	0.004
		Bottom	0.573	-	-	0.573	0.573	0.573
		Front	0.390	0.022	0.015	0.412	0.405	0.427
		Rear	0.498	0.035	0.122	0.533	0.620	0.655
		Right	-	0.047	-	0.047	-	0.047
		Left	0.087	-	0.037	0.087	0.124	0.124
	WCDMA 1700	Top	-	0.004	-	0.004	-	0.004
		Bottom	0.752	-	-	0.752	0.752	0.752
		Front	0.439	0.022	0.015	0.461	0.454	0.476
		Rear	0.565	0.035	0.122	0.600	0.687	0.722
		Right	-	0.047	-	0.047	-	0.047
		Left	0.134	-	0.037	0.134	0.171	0.171
	WCDMA 1900	Top	-	0.004	-	0.004	-	0.004
		Bottom	0.771	-	-	0.771	0.771	0.771
		Front	0.439	0.022	0.015	0.461	0.454	0.476
		Rear	0.557	0.035	0.122	0.592	0.679	0.714
		Right	-	0.047	-	0.047	-	0.047
		Left	0.206	-	0.037	0.206	0.243	0.243
	LTE Band 12	Top	-	0.004	-	0.004	-	0.004
		Bottom	0.213	-	-	0.213	0.213	0.213
		Front	0.379	0.022	0.015	0.401	0.394	0.416
		Rear	0.717	0.035	0.122	0.752	0.839	0.874
		Right	0.269	0.047	-	0.316	0.269	0.316
		Left	-	-	0.037	-	0.037	0.037
	LTE Band 4	Top	-	0.004	-	0.004	-	0.004
		Bottom	0.570	-	-	0.570	0.570	0.570
		Front	0.369	0.022	0.015	0.391	0.384	0.406
		Rear	0.458	0.035	0.122	0.493	0.580	0.615
		Right	-	0.047	-	0.047	-	0.047
		Left	0.094	-	0.037	0.094	0.131	0.131
	LTE Band 2	Top	-	0.004	-	0.004	-	0.004
		Bottom	0.865	-	-	0.865	0.865	0.865
		Front	0.476	0.022	0.015	0.498	0.491	0.513
		Rear	0.600	0.035	0.122	0.635	0.722	0.757
		Right	-	0.047	-	0.047	-	0.047
		Left	0.139	-	0.037	0.139	0.176	0.176
	LTE Band 41	Top	-	0.004	-	0.004	-	0.004
		Bottom	1.152	-	-	1.152	1.152	1.152
		Front	0.251	0.022	0.015	0.273	0.266	0.288
		Rear	0.480	0.035	0.122	0.515	0.602	0.637
		Right	-	0.047	-	0.047	-	0.047
		Left	0.122	-	0.037	0.122	0.159	0.159

Table 12.6.7 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.8 GHz W-LAN Ant.2 (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.8G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	Top	-	0.004	0.013	0.004	0.013	0.017
		Bottom	0.153	-	-	0.153	0.153	0.153
		Front	0.249	0.022	0.012	0.271	0.261	0.283
		Rear	0.493	0.035	0.030	0.528	0.523	0.558
		Right	0.152	0.047	-	0.199	0.152	0.199
		Left	-	-	0.067	-	0.067	0.067
	GPRS 1900	Top	-	0.004	0.013	0.004	0.013	0.017
		Bottom	0.573	-	-	0.573	0.573	0.573
		Front	0.390	0.022	0.012	0.412	0.402	0.424
		Rear	0.498	0.035	0.030	0.533	0.528	0.563
		Right	-	0.047	-	0.047	-	0.047
		Left	0.087	-	0.067	0.087	0.154	0.154
	WCDMA 1700	Top	-	0.004	0.013	0.004	0.013	0.017
		Bottom	0.752	-	-	0.752	0.752	0.752
		Front	0.439	0.022	0.012	0.461	0.451	0.473
		Rear	0.565	0.035	0.030	0.600	0.595	0.630
		Right	-	0.047	-	0.047	-	0.047
		Left	0.134	-	0.067	0.134	0.201	0.201
	WCDMA 1900	Top	-	0.004	0.013	0.004	0.013	0.017
		Bottom	0.771	-	-	0.771	0.771	0.771
		Front	0.439	0.022	0.012	0.461	0.451	0.473
		Rear	0.557	0.035	0.030	0.592	0.587	0.622
		Right	-	0.047	-	0.047	-	0.047
		Left	0.206	-	0.067	0.206	0.273	0.273
	LTE Band 12	Top	-	0.004	0.013	0.004	0.013	0.017
		Bottom	0.213	-	-	0.213	0.213	0.213
		Front	0.379	0.022	0.012	0.401	0.391	0.413
		Rear	0.717	0.035	0.030	0.752	0.747	0.782
		Right	0.269	0.047	-	0.316	0.269	0.316
		Left	-	-	0.067	-	0.067	0.067
	LTE Band 4	Top	-	0.004	0.013	0.004	0.013	0.017
		Bottom	0.570	-	-	0.570	0.570	0.570
		Front	0.369	0.022	0.012	0.391	0.381	0.403
		Rear	0.458	0.035	0.030	0.493	0.488	0.523
		Right	-	0.047	-	0.047	-	0.047
		Left	0.094	-	0.067	0.094	0.161	0.161
	LTE Band 2	Top	-	0.004	0.013	0.004	0.013	0.017
		Bottom	0.865	-	-	0.865	0.865	0.865
		Front	0.476	0.022	0.012	0.498	0.488	0.510
		Rear	0.600	0.035	0.030	0.635	0.630	0.665
		Right	-	0.047	-	0.047	-	0.047
		Left	0.139	-	0.067	0.139	0.206	0.206
	LTE Band 41	Top	-	0.004	0.013	0.004	0.013	0.017
		Bottom	1.152	-	-	1.152	1.152	1.152
		Front	0.251	0.022	0.012	0.273	0.263	0.285
		Rear	0.480	0.035	0.030	0.515	0.510	0.545
		Right	-	0.047	-	0.047	-	0.047
		Left	0.122	-	0.067	0.122	0.189	0.189

Table 12.6.8 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 5.8 GHz W-LAN MIMO (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	5.8G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	Top	-	0.004	0.014	0.004	0.014	0.018
		Bottom	0.153	-	-	0.153	0.153	0.153
		Front	0.249	0.022	0.010	0.271	0.259	0.281
		Rear	0.493	0.035	0.123	0.528	0.616	0.651
		Right	0.152	0.047	-	0.199	0.152	0.199
		Left	-	-	0.074	-	0.074	0.074
	GPRS 1900	Top	-	0.004	0.014	0.004	0.014	0.018
		Bottom	0.573	-	-	0.573	0.573	0.573
		Front	0.390	0.022	0.010	0.412	0.400	0.422
		Rear	0.498	0.035	0.123	0.533	0.621	0.656
		Right	-	0.047	-	0.047	-	0.047
		Left	0.087	-	0.074	0.087	0.161	0.161
	WCDMA 1700	Top	-	0.004	0.014	0.004	0.014	0.018
		Bottom	0.752	-	-	0.752	0.752	0.752
		Front	0.439	0.022	0.010	0.461	0.449	0.471
		Rear	0.565	0.035	0.123	0.600	0.688	0.723
		Right	-	0.047	-	0.047	-	0.047
		Left	0.134	-	0.074	0.134	0.208	0.208
	WCDMA 1900	Top	-	0.004	0.014	0.004	0.014	0.018
		Bottom	0.771	-	-	0.771	0.771	0.771
		Front	0.439	0.022	0.010	0.461	0.449	0.471
		Rear	0.557	0.035	0.123	0.592	0.680	0.715
		Right	-	0.047	-	0.047	-	0.047
		Left	0.206	-	0.074	0.206	0.280	0.280
	LTE Band 12	Top	-	0.004	0.014	0.004	0.014	0.018
		Bottom	0.213	-	-	0.213	0.213	0.213
		Front	0.379	0.022	0.010	0.401	0.389	0.411
		Rear	0.717	0.035	0.123	0.752	0.840	0.875
		Right	0.269	0.047	-	0.316	0.269	0.316
		Left	-	-	0.074	-	0.074	0.074
	LTE Band 4	Top	-	0.004	0.014	0.004	0.014	0.018
		Bottom	0.570	-	-	0.570	0.570	0.570
		Front	0.369	0.022	0.010	0.391	0.379	0.401
		Rear	0.458	0.035	0.123	0.493	0.581	0.616
		Right	-	0.047	-	0.047	-	0.047
		Left	0.094	-	0.074	0.094	0.168	0.168
	LTE Band 2	Top	-	0.004	0.014	0.004	0.014	0.018
		Bottom	0.865	-	-	0.865	0.865	0.865
		Front	0.476	0.022	0.010	0.498	0.486	0.508
		Rear	0.600	0.035	0.123	0.635	0.723	0.758
		Right	-	0.047	-	0.047	-	0.047
		Left	0.139	-	0.074	0.139	0.213	0.213
	LTE Band 41	Top	-	0.004	0.014	0.004	0.014	0.018
		Bottom	1.152	-	-	1.152	1.152	1.152
		Front	0.251	0.022	0.010	0.273	0.261	0.283
		Rear	0.480	0.035	0.123	0.515	0.603	0.638
		Right	-	0.047	-	0.047	-	0.047
		Left	0.122	-	0.074	0.122	0.196	0.196

Table 12.6.9 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth Ant.1 + 2.4 GHz W-LAN Ant.2 (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth Ant.1 SAR (W/kg)	2.4G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	Top	-	0.004	0.045	0.004	0.045	0.049
		Bottom	0.153	-	-	0.153	0.153	0.153
		Front	0.249	0.022	0.096	0.271	0.345	0.367
		Rear	0.493	0.035	0.125	0.528	0.618	0.653
		Right	0.152	0.047	-	0.199	0.152	0.199
		Left	-	-	0.153	-	0.153	0.153
	GPRS 1900	Top	-	0.004	0.045	0.004	0.045	0.049
		Bottom	0.573	-	-	0.573	0.573	0.573
		Front	0.390	0.022	0.096	0.412	0.486	0.508
		Rear	0.498	0.035	0.125	0.533	0.623	0.658
		Right	-	0.047	-	0.047	-	0.047
		Left	0.087	-	0.153	0.087	0.240	0.240
	WCDMA 1700	Top	-	0.004	0.045	0.004	0.045	0.049
		Bottom	0.752	-	-	0.752	0.752	0.752
		Front	0.439	0.022	0.096	0.461	0.535	0.557
		Rear	0.565	0.035	0.125	0.600	0.690	0.725
		Right	-	0.047	-	0.047	-	0.047
		Left	0.134	-	0.153	0.134	0.287	0.287
	WCDMA 1900	Top	-	0.004	0.045	0.004	0.045	0.049
		Bottom	0.771	-	-	0.771	0.771	0.771
		Front	0.439	0.022	0.096	0.461	0.535	0.557
		Rear	0.557	0.035	0.125	0.592	0.682	0.717
		Right	-	0.047	-	0.047	-	0.047
		Left	0.206	-	0.153	0.206	0.359	0.359
	LTE Band 12	Top	-	0.004	0.045	0.004	0.045	0.049
		Bottom	0.213	-	-	0.213	0.213	0.213
		Front	0.379	0.022	0.096	0.401	0.475	0.497
		Rear	0.717	0.035	0.125	0.752	0.842	0.877
		Right	0.269	0.047	-	0.316	0.269	0.316
		Left	-	-	0.153	-	0.153	0.153
	LTE Band 4	Top	-	0.004	0.045	0.004	0.045	0.049
		Bottom	0.570	-	-	0.570	0.570	0.570
		Front	0.369	0.022	0.096	0.391	0.465	0.487
		Rear	0.458	0.035	0.125	0.493	0.583	0.618
		Right	-	0.047	-	0.047	-	0.047
		Left	0.094	-	0.153	0.094	0.247	0.247
	LTE Band 2	Top	-	0.004	0.045	0.004	0.045	0.049
		Bottom	0.865	-	-	0.865	0.865	0.865
		Front	0.476	0.022	0.096	0.498	0.572	0.594
		Rear	0.600	0.035	0.125	0.635	0.725	0.760
		Right	-	0.047	-	0.047	-	0.047
		Left	0.139	-	0.153	0.139	0.292	0.292
	LTE Band 41	Top	-	0.004	0.045	0.004	0.045	0.049
		Bottom	1.152	-	-	1.152	1.152	1.152
		Front	0.251	0.022	0.096	0.273	0.347	0.369
		Rear	0.480	0.035	0.125	0.515	0.605	0.640
		Right	-	0.047	-	0.047	-	0.047
		Left	0.122	-	0.153	0.122	0.275	0.275

Table 12.6.10 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)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	0.026	0.026
		Bottom	0.153	-	0.153
		Front	0.249	0.074	0.323
		Rear	0.493	0.126	0.619
		Right	0.152	0.166	0.318
		Left	-	-	-
	GPRS 1900	Top	-	0.026	0.026
		Bottom	0.573	-	0.573
		Front	0.390	0.074	0.464
		Rear	0.498	0.126	0.624
		Right	-	0.166	0.166
		Left	0.087	-	0.087
	WCDMA 1700	Top	-	0.026	0.026
		Bottom	0.752	-	0.752
		Front	0.439	0.074	0.513
		Rear	0.565	0.126	0.691
		Right	-	0.166	0.166
		Left	0.134	-	0.134
	WCDMA 1900	Top	-	0.026	0.026
		Bottom	0.771	-	0.771
		Front	0.439	0.074	0.513
		Rear	0.557	0.126	0.683
		Right	-	0.166	0.166
		Left	0.206	-	0.206
	LTE Band 12	Top	-	0.026	0.026
		Bottom	0.213	-	0.213
		Front	0.379	0.074	0.453
		Rear	0.717	0.126	0.843
		Right	0.269	0.166	0.435
		Left	-	-	-
	LTE Band 4	Top	-	0.026	0.026
		Bottom	0.570	-	0.570
		Front	0.369	0.074	0.443
		Rear	0.458	0.126	0.584
		Right	-	0.166	0.166
		Left	0.094	-	0.094
	LTE Band 2	Top	-	0.026	0.026
		Bottom	0.865	-	0.865
		Front	0.476	0.074	0.550
		Rear	0.600	0.126	0.726
		Right	-	0.166	0.166
		Left	0.139	-	0.139
	LTE Band 41	Top	-	0.026	0.026
		Bottom	1.152	-	1.152
		Front	0.251	0.074	0.325
		Rear	0.480	0.126	0.606
		Right	-	0.166	0.166
		Left	0.122	-	0.122

Table 12.6.11 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)	Σ SAR (W/kg)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	0.045	0.045
		Bottom	0.153	-	0.153
		Front	0.249	0.096	0.345
		Rear	0.493	0.125	0.618
		Right	0.152	-	0.152
		Left	-	0.153	0.153
	GPRS 1900	Top	-	0.045	0.045
		Bottom	0.573	-	0.573
		Front	0.390	0.096	0.486
		Rear	0.498	0.125	0.623
		Right	-	-	-
		Left	0.087	0.153	0.240
	WCDMA 1700	Top	-	0.045	0.045
		Bottom	0.752	-	0.752
		Front	0.439	0.096	0.535
		Rear	0.565	0.125	0.690
		Right	-	-	-
		Left	0.134	0.153	0.287
	WCDMA 1900	Top	-	0.045	0.045
		Bottom	0.771	-	0.771
		Front	0.439	0.096	0.535
		Rear	0.557	0.125	0.682
		Right	-	-	-
		Left	0.206	0.153	0.359
	LTE Band 12	Top	-	0.045	0.045
		Bottom	0.213	-	0.213
		Front	0.379	0.096	0.475
		Rear	0.717	0.125	0.842
		Right	0.269	-	0.269
		Left	-	0.153	0.153
	LTE Band 4	Top	-	0.045	0.045
		Bottom	0.570	-	0.570
		Front	0.369	0.096	0.465
		Rear	0.458	0.125	0.583
		Right	-	-	-
		Left	0.094	0.153	0.247
	LTE Band 2	Top	-	0.045	0.045
		Bottom	0.865	-	0.865
		Front	0.476	0.096	0.572
		Rear	0.600	0.125	0.725
		Right	-	-	-
		Left	0.139	0.153	0.292
	LTE Band 41	Top	-	0.045	0.045
		Bottom	1.152	-	1.152
		Front	0.251	0.096	0.347
		Rear	0.480	0.125	0.605
		Right	-	-	-
		Left	0.122	0.153	0.275

Table 12.6.12 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)	Σ SAR (W/kg)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	0.066	0.066
		Bottom	0.153	-	0.153
		Front	0.249	0.087	0.336
		Rear	0.493	0.120	0.613
		Right	0.152	0.158	0.310
		Left	-	0.157	0.157
	GPRS 1900	Top	-	0.066	0.066
		Bottom	0.573	-	0.573
		Front	0.390	0.087	0.477
		Rear	0.498	0.120	0.618
		Right	-	0.158	0.158
		Left	0.087	0.157	0.244
	WCDMA 1700	Top	-	0.066	0.066
		Bottom	0.752	-	0.752
		Front	0.439	0.087	0.526
		Rear	0.565	0.120	0.685
		Right	-	0.158	0.158
		Left	0.134	0.157	0.291
	WCDMA 1900	Top	-	0.066	0.066
		Bottom	0.771	-	0.771
		Front	0.439	0.087	0.526
		Rear	0.557	0.120	0.677
		Right	-	0.158	0.158
		Left	0.206	0.157	0.363
	LTE Band 12	Top	-	0.066	0.066
		Bottom	0.213	-	0.213
		Front	0.379	0.087	0.466
		Rear	0.717	0.120	0.837
		Right	0.269	0.158	0.427
		Left	-	0.157	0.157
	LTE Band 4	Top	-	0.066	0.066
		Bottom	0.570	-	0.570
		Front	0.369	0.087	0.456
		Rear	0.458	0.120	0.578
		Right	-	0.158	0.158
		Left	0.094	0.157	0.251
	LTE Band 2	Top	-	0.066	0.066
		Bottom	0.865	-	0.865
		Front	0.476	0.087	0.563
		Rear	0.600	0.120	0.720
		Right	-	0.158	0.158
		Left	0.139	0.157	0.296
	LTE Band 41	Top	-	0.066	0.066
		Bottom	1.152	-	1.152
		Front	0.251	0.087	0.338
		Rear	0.480	0.120	0.600
		Right	-	0.158	0.158
		Left	0.122	0.157	0.279

Table 12.6.13 Simultaneous Transmission Scenario : 2G/3G/4G + 5.2 GHz W-LAN Ant.1 (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.2G W-LAN Ant.1 SAR (W/kg)	Σ SAR (W/kg)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	-	-
		Bottom	0.153	-	0.153
		Front	0.249	0.012	0.261
		Rear	0.493	0.059	0.552
		Right	0.152	-	0.152
		Left	-	0.028	0.028
	GPRS 1900	Top	-	-	-
		Bottom	0.573	-	0.573
		Front	0.390	0.012	0.402
		Rear	0.498	0.059	0.557
		Right	-	-	-
		Left	0.087	0.028	0.115
	WCDMA 1700	Top	-	-	-
		Bottom	0.752	-	0.752
		Front	0.439	0.012	0.451
		Rear	0.565	0.059	0.624
		Right	-	-	-
		Left	0.134	0.028	0.162
	WCDMA 1900	Top	-	-	-
		Bottom	0.771	-	0.771
		Front	0.439	0.012	0.451
		Rear	0.557	0.059	0.616
		Right	-	-	-
		Left	0.206	0.028	0.234
	LTE Band 12	Top	-	-	-
		Bottom	0.213	-	0.213
		Front	0.379	0.012	0.391
		Rear	0.717	0.059	0.776
		Right	0.269	-	0.269
		Left	-	0.028	0.028
	LTE Band 4	Top	-	-	-
		Bottom	0.570	-	0.570
		Front	0.369	0.012	0.381
		Rear	0.458	0.059	0.517
		Right	-	-	-
		Left	0.094	0.028	0.122
	LTE Band 2	Top	-	-	-
		Bottom	0.865	-	0.865
		Front	0.476	0.012	0.488
		Rear	0.600	0.059	0.659
		Right	-	-	-
		Left	0.139	0.028	0.167
	LTE Band 41	Top	-	0.003	0.003
		Bottom	1.152	-	1.152
		Front	0.251	0.012	0.263
		Rear	0.480	0.059	0.539
		Right	-	-	-
		Left	0.122	0.028	0.150

Table 12.6.14 Simultaneous Transmission Scenario : 2G/3G/4G + 5.2 GHz W-LAN Ant.2 (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.2G W-LAN Ant.2 SAR (W/kg)	Σ SAR (W/kg)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	0.011	0.011
		Bottom	0.153	-	0.153
		Front	0.249	0.014	0.263
		Rear	0.493	0.031	0.524
		Right	0.152	-	0.152
		Left	-	0.055	0.055
	GPRS 1900	Top	-	0.011	0.011
		Bottom	0.573	-	0.573
		Front	0.390	0.014	0.404
		Rear	0.498	0.031	0.529
		Right	-	-	-
		Left	0.087	0.055	0.142
	WCDMA 1700	Top	-	0.011	0.011
		Bottom	0.752	-	0.752
		Front	0.439	0.014	0.453
		Rear	0.565	0.031	0.596
		Right	-	-	-
		Left	0.134	0.055	0.189
	WCDMA 1900	Top	-	0.011	0.011
		Bottom	0.771	-	0.771
		Front	0.439	0.014	0.453
		Rear	0.557	0.031	0.588
		Right	-	-	-
		Left	0.206	0.055	0.261
	LTE Band 12	Top	-	0.011	0.011
		Bottom	0.213	-	0.213
		Front	0.379	0.014	0.393
		Rear	0.717	0.031	0.748
		Right	0.269	-	0.269
		Left	-	0.055	0.055
	LTE Band 4	Top	-	0.011	0.011
		Bottom	0.570	-	0.570
		Front	0.369	0.014	0.383
		Rear	0.458	0.031	0.489
		Right	-	-	-
		Left	0.094	0.055	0.149
	LTE Band 2	Top	-	0.011	0.011
		Bottom	0.865	-	0.865
		Front	0.476	0.014	0.490
		Rear	0.600	0.031	0.631
		Right	-	-	-
		Left	0.139	0.055	0.194
	LTE Band 41	Top	-	0.011	0.011
		Bottom	1.152	-	1.152
		Front	0.251	0.014	0.265
		Rear	0.480	0.031	0.511
		Right	-	-	-
		Left	0.122	0.055	0.177

Table 12.6.15 Simultaneous Transmission Scenario : 2G/3G/4G + 5.2 GHz W-LAN MIMO (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.2G W-LAN MIMO SAR (W/kg)	Σ SAR (W/kg)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	0.011	0.011
		Bottom	0.153	-	0.153
		Front	0.249	0.008	0.257
		Rear	0.493	0.093	0.586
		Right	0.152	-	0.152
		Left	-	0.059	0.059
	GPRS 1900	Top	-	0.011	0.011
		Bottom	0.573	-	0.573
		Front	0.390	0.008	0.398
		Rear	0.498	0.093	0.591
		Right	-	-	-
		Left	0.087	0.059	0.146
	WCDMA 1700	Top	-	0.011	0.011
		Bottom	0.752	-	0.752
		Front	0.439	0.008	0.447
		Rear	0.565	0.093	0.658
		Right	-	-	-
		Left	0.134	0.059	0.193
	WCDMA 1900	Top	-	0.011	0.011
		Bottom	0.771	-	0.771
		Front	0.439	0.008	0.447
		Rear	0.557	0.093	0.650
		Right	-	-	-
		Left	0.206	0.059	0.265
	LTE Band 12	Top	-	0.011	0.011
		Bottom	0.213	-	0.213
		Front	0.379	0.008	0.387
		Rear	0.717	0.093	0.810
		Right	0.269	-	0.269
		Left	-	0.059	0.059
	LTE Band 4	Top	-	0.011	0.011
		Bottom	0.570	-	0.570
		Front	0.369	0.008	0.377
		Rear	0.458	0.093	0.551
		Right	-	-	-
		Left	0.094	0.059	0.153
	LTE Band 2	Top	-	0.011	0.011
		Bottom	0.865	-	0.865
		Front	0.476	0.008	0.484
		Rear	0.600	0.093	0.693
		Right	-	-	-
		Left	0.139	0.059	0.198
	LTE Band 41	Top	-	0.011	0.011
		Bottom	1.152	-	1.152
		Front	0.251	0.008	0.259
		Rear	0.480	0.093	0.573
		Right	-	-	-
		Left	0.122	0.059	0.181

Table 12.6.16 Simultaneous Transmission Scenario : 2G/3G/4G + 5.8 GHz W-LAN Ant.1 (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.8G W-LAN Ant.1 SAR (W/kg)	Σ SAR (W/kg)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	-	-
		Bottom	0.153	-	0.153
		Front	0.249	0.015	0.264
		Rear	0.493	0.122	0.615
		Right	0.152	-	0.152
		Left	-	0.037	0.037
	GPRS 1900	Top	-	-	-
		Bottom	0.573	-	0.573
		Front	0.390	0.015	0.405
		Rear	0.498	0.122	0.620
		Right	-	-	-
		Left	0.087	0.037	0.124
	WCDMA 1700	Top	-	-	-
		Bottom	0.752	-	0.752
		Front	0.439	0.015	0.454
		Rear	0.565	0.122	0.687
		Right	-	-	-
		Left	0.134	0.037	0.171
	WCDMA 1900	Top	-	-	-
		Bottom	0.771	-	0.771
		Front	0.439	0.015	0.454
		Rear	0.557	0.122	0.679
		Right	-	-	-
		Left	0.206	0.037	0.243
	LTE Band 12	Top	-	-	-
		Bottom	0.213	-	0.213
		Front	0.379	0.015	0.394
		Rear	0.717	0.122	0.839
		Right	0.269	-	0.269
		Left	-	0.037	0.037
	LTE Band 4	Top	-	-	-
		Bottom	0.570	-	0.570
		Front	0.369	0.015	0.384
		Rear	0.458	0.122	0.580
		Right	-	-	-
		Left	0.094	0.037	0.131
	LTE Band 2	Top	-	-	-
		Bottom	0.865	-	0.865
		Front	0.476	0.015	0.491
		Rear	0.600	0.122	0.722
		Right	-	-	-
		Left	0.139	0.037	0.176
	LTE Band 41	Top	-	0.003	0.003
		Bottom	1.152	-	1.152
		Front	0.251	0.015	0.266
		Rear	0.480	0.122	0.602
		Right	-	-	-
		Left	0.122	0.037	0.159

Table 12.6.17 Simultaneous Transmission Scenario : 2G/3G/4G + 5.8 GHz W-LAN Ant.2 (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.8G W-LAN Ant.2 SAR (W/kg)	Σ SAR (W/kg)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	0.013	0.013
		Bottom	0.153	-	0.153
		Front	0.249	0.012	0.261
		Rear	0.493	0.030	0.523
		Right	0.152	-	0.152
		Left	-	0.067	0.067
	GPRS 1900	Top	-	0.013	0.013
		Bottom	0.573	-	0.573
		Front	0.390	0.012	0.402
		Rear	0.498	0.030	0.528
		Right	-	-	-
		Left	0.087	0.067	0.154
	WCDMA 1700	Top	-	0.013	0.013
		Bottom	0.752	-	0.752
		Front	0.439	0.012	0.451
		Rear	0.565	0.030	0.595
		Right	-	-	-
		Left	0.134	0.067	0.201
	WCDMA 1900	Top	-	0.013	0.013
		Bottom	0.771	-	0.771
		Front	0.439	0.012	0.451
		Rear	0.557	0.030	0.587
		Right	-	-	-
		Left	0.206	0.067	0.273
	LTE Band 12	Top	-	0.013	0.013
		Bottom	0.213	-	0.213
		Front	0.379	0.012	0.391
		Rear	0.717	0.030	0.747
		Right	0.269	-	0.269
		Left	-	0.067	0.067
	LTE Band 4	Top	-	0.013	0.013
		Bottom	0.570	-	0.570
		Front	0.369	0.012	0.381
		Rear	0.458	0.030	0.488
		Right	-	-	-
		Left	0.094	0.067	0.161
	LTE Band 2	Top	-	0.013	0.013
		Bottom	0.865	-	0.865
		Front	0.476	0.012	0.488
		Rear	0.600	0.030	0.630
		Right	-	-	-
		Left	0.139	0.067	0.206
	LTE Band 41	Top	-	0.013	0.013
		Bottom	1.152	-	1.152
		Front	0.251	0.012	0.263
		Rear	0.480	0.030	0.510
		Right	-	-	-
		Left	0.122	0.067	0.189

Table 12.6.18 Simultaneous Transmission Scenario : 2G/3G/4G + 5.8 GHz W-LAN MIMO (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.8G W-LAN MIMO SAR (W/kg)	Σ SAR (W/kg)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	0.014	0.014
		Bottom	0.153	-	0.153
		Front	0.249	0.010	0.259
		Rear	0.493	0.123	0.616
		Right	0.152	-	0.152
		Left	-	0.074	0.074
	GPRS 1900	Top	-	0.014	0.014
		Bottom	0.573	-	0.573
		Front	0.390	0.010	0.400
		Rear	0.498	0.123	0.621
		Right	-	-	-
		Left	0.087	0.074	0.161
	WCDMA 1700	Top	-	0.014	0.014
		Bottom	0.752	-	0.752
		Front	0.439	0.010	0.449
		Rear	0.565	0.123	0.688
		Right	-	-	-
		Left	0.134	0.074	0.208
	WCDMA 1900	Top	-	0.014	0.014
		Bottom	0.771	-	0.771
		Front	0.439	0.010	0.449
		Rear	0.557	0.123	0.680
		Right	-	-	-
		Left	0.206	0.074	0.280
	LTE Band 12	Top	-	0.014	0.014
		Bottom	0.213	-	0.213
		Front	0.379	0.010	0.389
		Rear	0.717	0.123	0.840
		Right	0.269	-	0.269
		Left	-	0.074	0.074
	LTE Band 4	Top	-	0.014	0.014
		Bottom	0.570	-	0.570
		Front	0.369	0.010	0.379
		Rear	0.458	0.123	0.581
		Right	-	-	-
		Left	0.094	0.074	0.168
	LTE Band 2	Top	-	0.014	0.014
		Bottom	0.865	-	0.865
		Front	0.476	0.010	0.486
		Rear	0.600	0.123	0.723
		Right	-	-	-
		Left	0.139	0.074	0.213
	LTE Band 41	Top	-	0.014	0.014
		Bottom	1.152	-	1.152
		Front	0.251	0.010	0.261
		Rear	0.480	0.123	0.603
		Right	-	-	-
		Left	0.122	0.074	0.196

Table 12.6.19 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)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	0.004	0.004
		Bottom	0.153	-	0.153
		Front	0.249	0.022	0.271
		Rear	0.493	0.035	0.528
		Right	0.152	0.047	0.199
		Left	-	-	-
	GPRS 1900	Top	-	0.004	0.004
		Bottom	0.573	-	0.573
		Front	0.390	0.022	0.412
		Rear	0.498	0.035	0.533
		Right	-	0.047	0.047
		Left	0.087	-	0.087
	WCDMA 1700	Top	-	0.004	0.004
		Bottom	0.752	-	0.752
		Front	0.439	0.022	0.461
		Rear	0.565	0.035	0.600
		Right	-	0.047	0.047
		Left	0.134	-	0.134
	WCDMA 1900	Top	-	0.004	0.004
		Bottom	0.771	-	0.771
		Front	0.439	0.022	0.461
		Rear	0.557	0.035	0.592
		Right	-	0.047	0.047
		Left	0.206	-	0.206
	LTE Band 12	Top	-	0.004	0.004
		Bottom	0.213	-	0.213
		Front	0.379	0.022	0.401
		Rear	0.717	0.035	0.752
		Right	0.269	0.047	0.316
		Left	-	-	-
	LTE Band 4	Top	-	0.004	0.004
		Bottom	0.570	-	0.570
		Front	0.369	0.022	0.391
		Rear	0.458	0.035	0.493
		Right	-	0.047	0.047
		Left	0.094	-	0.094
	LTE Band 2	Top	-	0.004	0.004
		Bottom	0.865	-	0.865
		Front	0.476	0.022	0.498
		Rear	0.600	0.035	0.635
		Right	-	0.047	0.047
		Left	0.139	-	0.139
	LTE Band 41	Top	-	0.004	0.004
		Bottom	1.152	-	1.152
		Front	0.251	0.022	0.273
		Rear	0.480	0.035	0.515
		Right	-	0.047	0.047
		Left	0.122	-	0.122

Table 12.6.20 Simultaneous Transmission Scenario : 2.4 GHz W-LAN Ant.1+ 5 GHz W-LAN Ant.2 (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2.4G W-LAN Ant.1 SAR (W/kg)	5G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Hotspot SAR	5.2G W-LAN Ant.2	Top	0.026	0.011	0.037
		Bottom	-	-	-
		Front	0.074	0.014	0.088
		Rear	0.126	0.031	0.157
		Right	0.166	-	0.166
		Left	-	0.055	0.055
	5.8G W-LAN Ant.2	Top	0.026	0.013	0.039
		Bottom	-	-	-
		Front	0.074	0.012	0.086
		Rear	0.126	0.030	0.156
		Right	0.166	-	0.166
		Left	-	0.067	0.067

Table 12.6.21 Simultaneous Transmission Scenario : Bluetooth Ant.1 + 5 GHz W-LAN Ant.1 (Hotspot 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
Hotspot SAR	5.2G W-LAN Ant.1	Top	0.004	0.003	0.007
		Bottom	-	-	-
		Front	0.022	0.012	0.034
		Rear	0.035	0.059	0.094
		Right	0.047	-	0.047
		Left	-	0.028	0.028
	5.8G W-LAN Ant.1	Top	0.004	0.003	0.007
		Bottom	-	-	-
		Front	0.022	0.015	0.037
		Rear	0.035	0.122	0.157
		Right	0.047	-	0.047
		Left	-	0.037	0.037

Table 12.6.22 Simultaneous Transmission Scenario : Bluetooth Ant.1 + 5 GHz W-LAN Ant.2 (Hotspot 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
Hotspot SAR	5.2G W-LAN Ant.2	Top	0.004	0.011	0.015
		Bottom	-	-	-
		Front	0.022	0.014	0.036
		Rear	0.035	0.031	0.066
		Right	0.047	-	0.047
		Left	-	0.055	0.055
	5.8G W-LAN Ant.2	Top	0.004	0.013	0.017
		Bottom	-	-	-
		Front	0.022	0.012	0.034
		Rear	0.035	0.030	0.065
		Right	0.047	-	0.047
		Left	-	0.067	0.067

Table 12.6.23 Simultaneous Transmission Scenario : Bluetooth Ant.1 + 5 GHz W-LAN MIMO (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	Bluetooth Ant.1 SAR (W/kg)	5G W-LAN MIMO SAR (W/kg)	Σ SAR (W/kg)
			1	2	1+2
Hotspot SAR	5.2G W-LAN MIMO	Top	0.004	0.011	0.015
		Bottom	-	-	-
		Front	0.022	0.008	0.030
		Rear	0.035	0.093	0.128
		Right	0.047	-	0.047
		Left	-	0.059	0.059
	5.8G W-LAN MIMO	Top	0.004	0.014	0.018
		Bottom	-	-	-
		Front	0.022	0.010	0.032
		Rear	0.035	0.123	0.158
		Right	0.047	-	0.047
		Left	-	0.074	0.074

Table 12.6.24 Simultaneous Transmission Scenario : Bluetooth Ant.1 + 2.4 GHz W-LAN Ant.2 (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	Bluetooth Ant.1 SAR (W/kg)	2.4G W-LAN Ant.2 SAR (W/kg)	Σ SAR (W/kg)
			1	2	1+2
Hotspot SAR	2.4G W-LAN Ant.2	Top	0.004	0.045	0.049
		Bottom	-	-	-
		Front	0.022	0.096	0.118
		Rear	0.035	0.125	0.160
		Right	0.047	-	0.047
		Left	-	0.153	0.153

12.7 Phablet SAR Simultaneous Transmission Analysis

Per FCC KDB Publication 648474 D04 Handset SAR, Phablet SAR tests were not required of Hotspot 1g SAR (scaled to maximum output power, including tolerance) < 1.2 W/kg. Therefore no further analysis was required to for Phablet Simultaneous Transmission Analysis.

12.8 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 Body 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)	
2636.5	41055	LTE B41	-	-	10 mm [Bottom]	0.999	0.999	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 15.1.1 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	TX60L	N/A	N/A	F12/5LP5A1/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	F12/5LP5A1/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-12030401
☒	Joystick	SPEAG	P21142605A	N/A	N/A	005695
☒	Intel Core i7-3770 3.40 GHz Windows 7 Professional	N/A	N/A	N/A	N/A	N/A
☒	Intel Core i7-2600 3.40 GHz Windows 7 Professional	N/A	N/A	N/A	N/A	N/A
☒	Intel Core i7-3770 3.40 GHz Windows 7 Professional	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	1783
☒	Twin SAM Phantom	SPEAG	QD000P40CD	N/A	N/A	1679
☒	Twin SAM Phantom	SPEAG	QD000P40CD	N/A	N/A	1895
☒	Data Acquisition Electronics	SPEAG	DAE4V1	2019-03-20	2020-03-20	1394
☒	Data Acquisition Electronics	SPEAG	DAE3V1	2019-01-24	2020-01-24	519
☒	Data Acquisition Electronics	SPEAG	DAE4V1	2018-09-19	2019-09-19	1453
☒	Dosimetric E-Field Probe	SPEAG	EX3DV4	2019-05-28	2020-05-28	3866
☒	Dosimetric E-Field Probe	SPEAG	EX3DV4	2019-07-24	2020-07-24	3930
☒	Dosimetric E-Field Probe	SPEAG	EX3DV4	2018-11-22	2019-11-22	7337
☒	750MHz SAR Dipole	SPEAG	D750V3	2019-01-25	2021-01-25	1049
☒	835MHz SAR Dipole	SPEAG	D835V2	2019-07-18	2020-07-18	464
☒	1800MHz SAR Dipole	SPEAG	D1800V2	2019-04-24	2021-04-24	2d047
☒	1900MHz SAR Dipole	SPEAG	D1900V2	2019-07-17	2020-07-17	5d029
☒	2450MHz SAR Dipole	SPEAG	D2450V2	2018-08-24	2020-08-24	920
☒	2600MHz SAR Dipole	SPEAG	D2600V2	2019-02-27	2021-02-27	1016
☒	5GHz SAR Dipole	SPEAG	D5GHzV2	2019-02-28	2021-02-28	1103
☒	Network Analyzer	Agilent	E5071C	2018-12-19	2019-12-19	MY46111534
☒	Signal Generator	Agilent	E4438C	2019-06-24	2020-06-24	US41461520
☒	Amplifier	RFBAY,Inc	MPA-40-40	2018-12-20	2019-12-20	21151801
☒	Amplifier	EMPOWER	BBS3Q7ELU	2019-06-24	2020-06-24	1020
☒	High Power RF Amplifier	EMPOWER	BBS3Q8CCJ	2019-06-24	2020-06-24	1005
☒	Power Meter	HP	EPM-442A	2018-12-19	2019-12-19	GB37170267
☒	Power Meter	HP	EPM-442A	2018-12-18	2019-12-18	GB37170413
☒	Power Sensor	HP	8481A	2018-12-18	2019-12-18	US37294267
☒	Power Sensor	HP	8481A	2018-12-19	2019-12-19	3318A96566
☒	Power Sensor	HP	8481A	2018-12-19	2019-12-19	2702A65976
☒	Dual Directional Coupler	Agilent	778D-012	2018-12-19	2019-12-19	50228
☒	Directional Coupler	HP	772D	2019-06-24	2020-06-24	2889A01064
☒	Low Pass Filter 1GHz	Wainwright Instruments	WLK6-1000-1400-9000-60SS	2019-06-24	2020-06-24	165
☒	Low Pass Filter 1.5GHz	Micro LAB	LA-15N	2019-06-24	2020-06-24	2
☒	Low Pass Filter 3.0GHz	Micro LAB	LA-30N	2019-06-24	2020-06-24	2
☒	Low Pass Filter 6.0GHz	Micro LAB	LA-60N	2018-12-19	2019-12-19	03942
☒	Attenuators(10 dB)	WEINSCHEL	23-10-34	2018-12-19	2019-12-19	BP4387
☒	Attenuators	Cernexwave	CFADC2603U5	2019-06-27	2020-06-27	C11740
☒	Dielectric Probe kit	SPEAG	DAK-3.5	2018-11-20	2019-11-20	1092
☒	8960 Series 10 Wireless Comms. Test Set	Agilent	E5515C	2019-06-28	2020-06-28	GB41321164
☒	Wideband Radio Communication Tester	Rohde Schwarz	CMW500	2018-12-19	2019-12-19	101414
☒	Radio Communication Analyzer	KEYSIGHT	E7515A	2019-07-05	2020-07-05	MY55210201
☒	Radio Communication Analyzer	KEYSIGHT	E7515A	2018-12-19	2019-12-19	MY57270113
☒	Power Splitter	Anritsu	K241B	2018-12-18	2019-12-18	1301183
☒	Bluetooth Tester	TESCOM	TC-3000B	2018-12-18	2019-12-18	3000B770243

NOTE(S):

1. 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.

2. 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 MHz Head (SN: 3866)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.0	Normal	1	1	1	$\pm 6.0 \%$	$\pm 6.0 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 3.9	Normal	1	0.78	0.71	$\pm 3.0 \%$	$\pm 2.8 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 4.0	Normal	1	0.23	0.26	$\pm 0.9 \%$	$\pm 1.0 \%$	10
Temp. unc. - Conductivity	± 1.7	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.8 \%$	$\pm 0.7 \%$	∞
Temp. unc. - Permittivity	± 1.9	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.6 \%$	$\pm 11.4 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.2 \%$	$\pm 22.8 \%$	

The above measurement uncertainties are according to IEEE Std 1528

750 MHz Body (SN: 3866)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.0	Normal	1	1	1	$\pm 6.0 \%$	$\pm 6.0 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 3.7	Normal	1	0.78	0.71	$\pm 2.9 \%$	$\pm 2.6 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 3.9	Normal	1	0.23	0.26	$\pm 0.9 \%$	$\pm 1.0 \%$	10
Temp. unc. - Conductivity	± 1.8	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.8 \%$	$\pm 0.7 \%$	∞
Temp. unc. - Permittivity	± 1.8	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.2 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.6 \%$	$\pm 11.4 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.2 \%$	$\pm 22.8 \%$	

The above measurement uncertainties are according to IEEE Std 1528

835 MHz Head (SN: 3866)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.0	Normal	1	1	1	$\pm 6.0 \%$	$\pm 6.0 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 4.0	Normal	1	0.78	0.71	$\pm 3.1 \%$	$\pm 2.8 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 3.8	Normal	1	0.23	0.26	$\pm 0.9 \%$	$\pm 1.0 \%$	10
Temp. unc. - Conductivity	± 2.0	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.9 \%$	$\pm 0.8 \%$	∞
Temp. unc. - Permittivity	± 1.8	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.2 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.6 \%$	$\pm 11.4 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.2 \%$	$\pm 22.8 \%$	

The above measurement uncertainties are according to IEEE Std 1528

835 MHz Body (SN: 3866)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.0	Normal	1	1	1	$\pm 6.0 \%$	$\pm 6.0 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 4.1	Normal	1	0.78	0.71	$\pm 3.2 \%$	$\pm 2.9 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 3.9	Normal	1	0.23	0.26	$\pm 0.9 \%$	$\pm 1.0 \%$	10
Temp. unc. - Conductivity	± 1.8	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.8 \%$	$\pm 0.7 \%$	∞
Temp. unc. - Permittivity	± 1.8	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.2 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.6 \%$	$\pm 11.4 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.2 \%$	$\pm 22.8 \%$	

The above measurement uncertainties are according to IEEE Std 1528

1800 MHz Head (SN: 3866)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.0	Normal	1	1	1	$\pm 6.0 \%$	$\pm 6.0 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 3.7	Normal	1	0.78	0.71	$\pm 2.9 \%$	$\pm 2.6 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 4.2	Normal	1	0.23	0.26	$\pm 1.0 \%$	$\pm 1.1 \%$	10
Temp. unc. - Conductivity	± 1.9	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.9 \%$	$\pm 0.8 \%$	∞
Temp. unc. - Permittivity	± 2.0	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.6 \%$	$\pm 11.4 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.2 \%$	$\pm 22.8 \%$	

The above measurement uncertainties are according to IEEE Std 1528

1800 MHz Body (SN: 3866)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.0	Normal	1	1	1	$\pm 6.0 \%$	$\pm 6.0 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 3.9	Normal	1	0.78	0.71	$\pm 3.0 \%$	$\pm 2.8 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 4.1	Normal	1	0.23	0.26	$\pm 0.9 \%$	$\pm 1.1 \%$	10
Temp. unc. - Conductivity	± 1.8	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.8 \%$	$\pm 0.7 \%$	∞
Temp. unc. - Permittivity	± 1.7	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.2 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.6 \%$	$\pm 11.4 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.2 \%$	$\pm 22.8 \%$	

The above measurement uncertainties are according to IEEE Std 1528

1900 MHz Head (SN: 3866)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.0	Normal	1	1	1	$\pm 6.0 \%$	$\pm 6.0 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 3.8	Normal	1	0.78	0.71	$\pm 3.0 \%$	$\pm 2.7 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 3.9	Normal	1	0.23	0.26	$\pm 0.9 \%$	$\pm 1.0 \%$	10
Temp. unc. - Conductivity	± 1.8	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.8 \%$	$\pm 0.7 \%$	∞
Temp. unc. - Permittivity	± 1.8	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.2 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.6 \%$	$\pm 11.4 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.2 \%$	$\pm 22.8 \%$	

The above measurement uncertainties are according to IEEE Std 1528

1900 MHz Body (SN: 3866)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.0	Normal	1	1	1	$\pm 6.0 \%$	$\pm 6.0 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 4.2	Normal	1	0.78	0.71	$\pm 3.3 \%$	$\pm 3.0 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 3.7	Normal	1	0.23	0.26	$\pm 0.9 \%$	$\pm 1.0 \%$	10
Temp. unc. - Conductivity	± 1.7	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.8 \%$	$\pm 0.7 \%$	∞
Temp. unc. - Permittivity	± 1.8	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.2 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.6 \%$	$\pm 11.4 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.2 \%$	$\pm 22.8 \%$	

The above measurement uncertainties are according to IEEE Std 1528

2450 MHz Head (SN: 3866)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.0	Normal	1	1	1	$\pm 6.0 \%$	$\pm 6.0 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 4.0	Normal	1	0.78	0.71	$\pm 3.1 \%$	$\pm 2.8 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 4.1	Normal	1	0.23	0.26	$\pm 0.9 \%$	$\pm 1.1 \%$	10
Temp. unc. - Conductivity	± 1.9	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.9 \%$	$\pm 0.8 \%$	∞
Temp. unc. - Permittivity	± 1.8	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.2 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.6 \%$	$\pm 11.4 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.2 \%$	$\pm 22.8 \%$	

The above measurement uncertainties are according to IEEE Std 1528

2450 MHz Body (SN: 3866)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.0	Normal	1	1	1	$\pm 6.0 \%$	$\pm 6.0 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 3.8	Normal	1	0.78	0.71	$\pm 3.0 \%$	$\pm 2.7 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 4.1	Normal	1	0.23	0.26	$\pm 0.9 \%$	$\pm 1.1 \%$	10
Temp. unc. - Conductivity	± 1.6	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.7 \%$	$\pm 0.7 \%$	∞
Temp. unc. - Permittivity	± 1.7	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.2 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.6 \%$	$\pm 11.4 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.2 \%$	$\pm 22.8 \%$	

The above measurement uncertainties are according to IEEE Std 1528

2600 MHz Head (SN: 3866)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.0	Normal	1	1	1	$\pm 6.0 \%$	$\pm 6.0 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 4.0	Normal	1	0.78	0.71	$\pm 3.1 \%$	$\pm 2.8 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 3.9	Normal	1	0.23	0.26	$\pm 0.9 \%$	$\pm 1.0 \%$	10
Temp. unc. - Conductivity	± 1.8	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.8 \%$	$\pm 0.7 \%$	∞
Temp. unc. - Permittivity	± 1.9	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.6 \%$	$\pm 11.4 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.2 \%$	$\pm 22.8 \%$	

The above measurement uncertainties are according to IEEE Std 1528

2600 MHz Body (SN: 7337)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.0	Normal	1	1	1	$\pm 6.0 \%$	$\pm 6.0 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 4.0	Normal	1	0.78	0.71	$\pm 3.1 \%$	$\pm 2.8 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 4.1	Normal	1	0.23	0.26	$\pm 0.9 \%$	$\pm 1.1 \%$	10
Temp. unc. - Conductivity	± 1.8	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.8 \%$	$\pm 0.7 \%$	∞
Temp. unc. - Permittivity	± 1.8	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.2 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.6 \%$	$\pm 11.4 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.2 \%$	$\pm 22.8 \%$	

The above measurement uncertainties are according to IEEE Std 1528

5200 MHz Head (SN: 3930)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.55	Normal	1	1	1	$\pm 6.6\%$	$\pm 6.6\%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3\%$	$\pm 1.3\%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2\%$	$\pm 1.2\%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3\%$	$\pm 0.3\%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0\%$	$\pm 0.0\%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14\%$	$\pm 0.14\%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3\%$	$\pm 0.3\%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46\%$	$\pm 0.46\%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5\%$	$\pm 1.5\%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7\%$	$\pm 1.7\%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7\%$	$\pm 1.7\%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46\%$	$\pm 0.46\%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9\%$	$\pm 3.9\%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3\%$	$\pm 2.3\%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9\%$	$\pm 2.9\%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6\%$	$\pm 3.6\%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9\%$	$\pm 2.9\%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0\%$	$\pm 0.0\%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4\%$	$\pm 4.4\%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0\%$	$\pm 0.0\%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8\%$	$\pm 1.2\%$	∞
Liquid conductivity (Meas.)	± 4.1	Normal	1	0.78	0.71	$\pm 3.2\%$	$\pm 2.9\%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7\%$	$\pm 1.4\%$	∞
Liquid permittivity (Meas.)	± 3.8	Normal	1	0.23	0.26	$\pm 0.9\%$	$\pm 1.0\%$	10
Temp. unc. - Conductivity	± 1.8	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.8\%$	$\pm 0.7\%$	∞
Temp. unc. - Permittivity	± 1.9	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.3\%$	$\pm 0.3\%$	∞
Combined Standard Uncertainty						$\pm 11.9\%$	$\pm 11.7\%$	330
Expanded Uncertainty (k=2)						$\pm 23.8\%$	$\pm 23.4\%$	

The above measurement uncertainties are according to IEEE Std 1528

5200 MHz Body (SN: 3866)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.55	Normal	1	1	1	$\pm 6.6\%$	$\pm 6.6\%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3\%$	$\pm 1.3\%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2\%$	$\pm 1.2\%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3\%$	$\pm 0.3\%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0\%$	$\pm 0.0\%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14\%$	$\pm 0.14\%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3\%$	$\pm 0.3\%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46\%$	$\pm 0.46\%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5\%$	$\pm 1.5\%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7\%$	$\pm 1.7\%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7\%$	$\pm 1.7\%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46\%$	$\pm 0.46\%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9\%$	$\pm 3.9\%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3\%$	$\pm 2.3\%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9\%$	$\pm 2.9\%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6\%$	$\pm 3.6\%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9\%$	$\pm 2.9\%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0\%$	$\pm 0.0\%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4\%$	$\pm 4.4\%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0\%$	$\pm 0.0\%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8\%$	$\pm 1.2\%$	∞
Liquid conductivity (Meas.)	± 4.0	Normal	1	0.78	0.71	$\pm 3.1\%$	$\pm 2.8\%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7\%$	$\pm 1.4\%$	∞
Liquid permittivity (Meas.)	± 3.9	Normal	1	0.23	0.26	$\pm 0.9\%$	$\pm 1.0\%$	10
Temp. unc. - Conductivity	± 1.9	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.9\%$	$\pm 0.8\%$	∞
Temp. unc. - Permittivity	± 1.8	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.2\%$	$\pm 0.3\%$	∞
Combined Standard Uncertainty						$\pm 11.9\%$	$\pm 11.7\%$	330
Expanded Uncertainty (k=2)						$\pm 23.8\%$	$\pm 23.4\%$	

The above measurement uncertainties are according to IEEE Std 1528

5300 MHz Head (SN: 3930)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.55	Normal	1	1	1	$\pm 6.6 \%$	$\pm 6.6 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 4.0	Normal	1	0.78	0.71	$\pm 3.1 \%$	$\pm 2.8 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 3.8	Normal	1	0.23	0.26	$\pm 0.9 \%$	$\pm 1.0 \%$	10
Temp. unc. - Conductivity	± 1.9	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.9 \%$	$\pm 0.8 \%$	∞
Temp. unc. - Permittivity	± 1.8	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.2 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.9 \%$	$\pm 11.7 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.8 \%$	$\pm 23.4 \%$	

The above measurement uncertainties are according to IEEE Std 1528

5300 MHz Body (SN: 3866)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.55	Normal	1	1	1	$\pm 6.6\%$	$\pm 6.6\%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3\%$	$\pm 1.3\%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2\%$	$\pm 1.2\%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3\%$	$\pm 0.3\%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0\%$	$\pm 0.0\%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14\%$	$\pm 0.14\%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3\%$	$\pm 0.3\%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46\%$	$\pm 0.46\%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5\%$	$\pm 1.5\%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7\%$	$\pm 1.7\%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7\%$	$\pm 1.7\%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46\%$	$\pm 0.46\%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9\%$	$\pm 3.9\%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3\%$	$\pm 2.3\%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9\%$	$\pm 2.9\%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6\%$	$\pm 3.6\%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9\%$	$\pm 2.9\%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0\%$	$\pm 0.0\%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4\%$	$\pm 4.4\%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0\%$	$\pm 0.0\%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8\%$	$\pm 1.2\%$	∞
Liquid conductivity (Meas.)	± 3.8	Normal	1	0.78	0.71	$\pm 3.0\%$	$\pm 2.7\%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7\%$	$\pm 1.4\%$	∞
Liquid permittivity (Meas.)	± 4.1	Normal	1	0.23	0.26	$\pm 0.9\%$	$\pm 1.1\%$	10
Temp. unc. - Conductivity	± 1.8	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.8\%$	$\pm 0.7\%$	∞
Temp. unc. - Permittivity	± 1.7	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.2\%$	$\pm 0.3\%$	∞
Combined Standard Uncertainty						$\pm 11.9\%$	$\pm 11.7\%$	330
Expanded Uncertainty (k=2)						$\pm 23.8\%$	$\pm 23.4\%$	

The above measurement uncertainties are according to IEEE Std 1528

5500 MHz Head (SN: 3930)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.55	Normal	1	1	1	$\pm 6.6 \%$	$\pm 6.6 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 3.9	Normal	1	0.78	0.71	$\pm 3.0 \%$	$\pm 2.8 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 4.3	Normal	1	0.23	0.26	$\pm 1.0 \%$	$\pm 1.1 \%$	10
Temp. unc. - Conductivity	± 1.7	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.8 \%$	$\pm 0.7 \%$	∞
Temp. unc. - Permittivity	± 1.9	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.9 \%$	$\pm 11.7 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.8 \%$	$\pm 23.4 \%$	

The above measurement uncertainties are according to IEEE Std 1528

5500 MHz Body (SN: 3866)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.55	Normal	1	1	1	$\pm 6.6\%$	$\pm 6.6\%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3\%$	$\pm 1.3\%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2\%$	$\pm 1.2\%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3\%$	$\pm 0.3\%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0\%$	$\pm 0.0\%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14\%$	$\pm 0.14\%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3\%$	$\pm 0.3\%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46\%$	$\pm 0.46\%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5\%$	$\pm 1.5\%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7\%$	$\pm 1.7\%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7\%$	$\pm 1.7\%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46\%$	$\pm 0.46\%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9\%$	$\pm 3.9\%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3\%$	$\pm 2.3\%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9\%$	$\pm 2.9\%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6\%$	$\pm 3.6\%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9\%$	$\pm 2.9\%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0\%$	$\pm 0.0\%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4\%$	$\pm 4.4\%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0\%$	$\pm 0.0\%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8\%$	$\pm 1.2\%$	∞
Liquid conductivity (Meas.)	± 4.1	Normal	1	0.78	0.71	$\pm 3.2\%$	$\pm 2.9\%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7\%$	$\pm 1.4\%$	∞
Liquid permittivity (Meas.)	± 3.9	Normal	1	0.23	0.26	$\pm 0.9\%$	$\pm 1.0\%$	10
Temp. unc. - Conductivity	± 1.8	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.8\%$	$\pm 0.7\%$	∞
Temp. unc. - Permittivity	± 1.8	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.2\%$	$\pm 0.3\%$	∞
Combined Standard Uncertainty						$\pm 11.9\%$	$\pm 11.7\%$	330
Expanded Uncertainty (k=2)						$\pm 23.8\%$	$\pm 23.4\%$	

The above measurement uncertainties are according to IEEE Std 1528

5600 MHz Head (SN: 3930)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.55	Normal	1	1	1	$\pm 6.6 \%$	$\pm 6.6 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 3.8	Normal	1	0.78	0.71	$\pm 3.0 \%$	$\pm 2.7 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 4.1	Normal	1	0.23	0.26	$\pm 0.9 \%$	$\pm 1.1 \%$	10
Temp. unc. - Conductivity	± 1.9	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.9 \%$	$\pm 0.8 \%$	∞
Temp. unc. - Permittivity	± 1.7	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.2 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.9 \%$	$\pm 11.7 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.8 \%$	$\pm 23.4 \%$	

The above measurement uncertainties are according to IEEE Std 1528

5600 MHz Body (SN: 3866)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.55	Normal	1	1	1	$\pm 6.6 \%$	$\pm 6.6 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 4.1	Normal	1	0.78	0.71	$\pm 3.2 \%$	$\pm 2.9 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 4.2	Normal	1	0.23	0.26	$\pm 1.0 \%$	$\pm 1.1 \%$	10
Temp. unc. - Conductivity	± 1.9	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.9 \%$	$\pm 0.8 \%$	∞
Temp. unc. - Permittivity	± 1.9	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.9 \%$	$\pm 11.7 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.8 \%$	$\pm 23.4 \%$	

The above measurement uncertainties are according to IEEE Std 1528

5800 MHz Head (SN: 3930)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.55	Normal	1	1	1	$\pm 6.6 \%$	$\pm 6.6 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 3.9	Normal	1	0.78	0.71	$\pm 3.0 \%$	$\pm 2.8 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 3.7	Normal	1	0.23	0.26	$\pm 0.9 \%$	$\pm 1.0 \%$	10
Temp. unc. - Conductivity	± 1.7	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.8 \%$	$\pm 0.7 \%$	∞
Temp. unc. - Permittivity	± 1.9	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.9 \%$	$\pm 11.7 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.8 \%$	$\pm 23.4 \%$	

The above measurement uncertainties are according to IEEE Std 1528

5800 MHz Body (SN: 3866)

Error Description	Uncertainty value $\pm\%$	Probability Distribution	Divisor	(Ci) 1g	(Ci) 10g	Standard (1g)	Standard (10g)	vi 2 or Veff
Measurement System								
Probe calibration	± 6.55	Normal	1	1	1	$\pm 6.6 \%$	$\pm 6.6 \%$	∞
Isotropy	± 1.3	Normal	1	1	1	$\pm 1.3 \%$	$\pm 1.3 \%$	∞
Boundary Effects	± 2.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2 \%$	$\pm 1.2 \%$	∞
Probe Linearity	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Probe modulation response	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Detection limits	± 0.25	Rectangular	$\sqrt{3}$	1	1	$\pm 0.14 \%$	$\pm 0.14 \%$	∞
Readout Electronics	± 0.3	Normal	1	1	1	$\pm 0.3 \%$	$\pm 0.3 \%$	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	1	$\pm 0.46 \%$	$\pm 0.46 \%$	∞
Probe Positioning	± 6.7	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9 \%$	$\pm 3.9 \%$	∞
Algorithms for Max. SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Test Sample Related								
Device Positioning	± 2.9	Normal	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	145
Device Holder	± 3.6	Normal	1	1	1	$\pm 3.6 \%$	$\pm 3.6 \%$	5
Power Drift	± 5.0	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
SAR Scaling	± 0.0	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Physical Parameters								
Phantom Shell	± 7.6	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4 \%$	$\pm 4.4 \%$	∞
SAR correction	± 0.0	Normal	1	1	0.84	$\pm 0.0 \%$	$\pm 0.0 \%$	∞
Liquid conductivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid conductivity (Meas.)	± 3.8	Normal	1	0.78	0.71	$\pm 3.0 \%$	$\pm 2.7 \%$	10
Liquid permittivity (Target)	± 5.0	Rectangular	$\sqrt{3}$	0.60	0.49	$\pm 1.7 \%$	$\pm 1.4 \%$	∞
Liquid permittivity (Meas.)	± 3.9	Normal	1	0.23	0.26	$\pm 0.9 \%$	$\pm 1.0 \%$	10
Temp. unc. - Conductivity	± 1.9	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.9 \%$	$\pm 0.8 \%$	∞
Temp. unc. - Permittivity	± 1.7	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.2 \%$	$\pm 0.3 \%$	∞
Combined Standard Uncertainty						$\pm 11.9 \%$	$\pm 11.7 \%$	330
Expanded Uncertainty (k=2)						$\pm 23.8 \%$	$\pm 23.4 \%$	

The above measurement uncertainties are according to IEEE Std 1528

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



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C Service suisse d'étalonnage
S Servizio svizzero di taratura
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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **DT&C (Dymstec)**

Certificate No: EX3-7337_Nov18

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:7337**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6**
Calibration procedure for dosimetric E-field probes

Calibration date: **November 22, 2018**

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

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-18 (No. 217-02682)	Apr-19
Reference Probe ES3DV2	SN: 3013	30-Dec-17 (No. ES3-3013_Dec17)	Dec-18
DAE4	SN: 660	21-Dec-17 (No. DAE4-660_Dec17)	Dec-18
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-18)	In house check: Jun-20
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

Calibrated by:	Name Jeton Kastrati	Function Laboratory Technician	Signature 
Approved by:	Name Katja Pokovic	Function Technical Manager	Signature 

Issued: November 22, 2018

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

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Accreditation No.: SCS 0108

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 E^2 -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

November 22, 2018

Probe EX3DV4

SN:7337

Manufactured: July 23, 2014
Calibrated: November 22, 2018

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

EX3DV4– SN:7337

November 22, 2018

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

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V/m})^2$) ^A	0.53	0.59	0.56	± 10.1 %
DCP (mV) ^B	98.7	97.6	100.6	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	148.8	±3.5 %
		Y	0.0	0.0	1.0		159.0	
		Z	0.0	0.0	1.0		150.6	

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 and 6).

^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

November 22, 2018

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)
835	41.5	0.90	10.16	10.16	10.16	0.60	0.80	± 12.0 %
900	41.5	0.97	10.04	10.04	10.04	0.38	1.02	± 12.0 %
1750	40.1	1.37	8.96	8.96	8.96	0.37	0.87	± 12.0 %
1900	40.0	1.40	8.49	8.49	8.49	0.38	0.85	± 12.0 %
2450	39.2	1.80	7.66	7.66	7.66	0.42	0.86	± 12.0 %
2600	39.0	1.96	7.43	7.43	7.43	0.36	0.96	± 12.0 %
5200	36.0	4.66	5.67	5.67	5.67	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	5.05	5.05	5.05	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.86	4.86	4.86	0.40	1.80	± 13.1 %
5800	35.3	5.27	5.06	5.06	5.06	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. 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.

EX3DV4– SN:7337

November 22, 2018

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)
835	55.2	0.97	10.23	10.23	10.23	0.51	0.80	± 12.0 %
900	55.0	1.05	10.13	10.13	10.13	0.43	0.80	± 12.0 %
1750	53.4	1.49	8.42	8.42	8.42	0.41	0.83	± 12.0 %
1900	53.3	1.52	8.03	8.03	8.03	0.43	0.86	± 12.0 %
2450	52.7	1.95	7.74	7.74	7.74	0.39	0.95	± 12.0 %
2600	52.5	2.16	7.59	7.59	7.59	0.23	1.05	± 12.0 %
5200	49.0	5.30	5.15	5.15	5.15	0.50	1.90	± 13.1 %
5300	48.9	5.42	4.95	4.95	4.95	0.50	1.90	± 13.1 %
5500	48.6	5.65	4.45	4.45	4.45	0.50	1.90	± 13.1 %
5600	48.5	5.77	4.28	4.28	4.28	0.50	1.90	± 13.1 %
5800	48.2	6.00	4.55	4.55	4.55	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. Above 5 GHz frequency validity can be extended to ± 110 MHz.

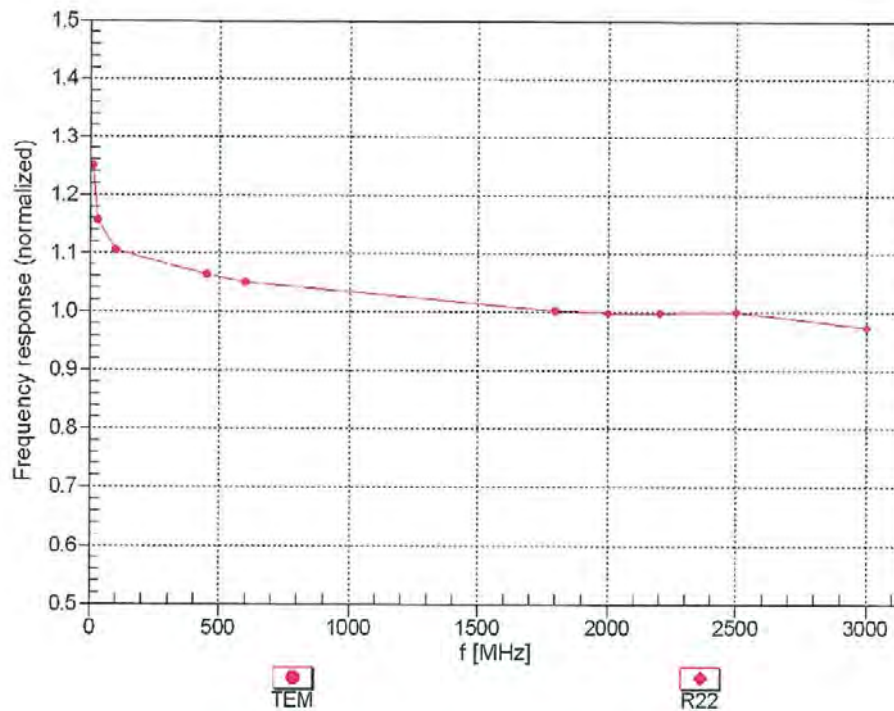
^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty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

EX3DV4-- SN:7337

November 22, 2018

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



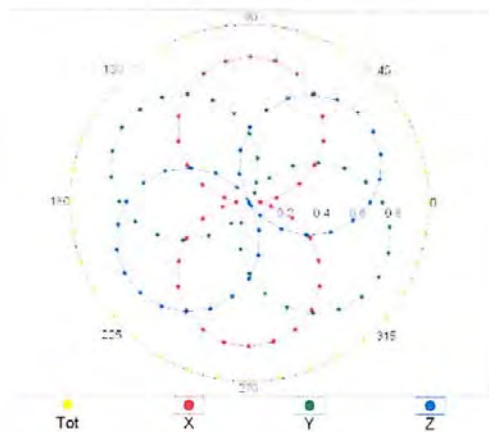
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

EX3DV4- SN:7337

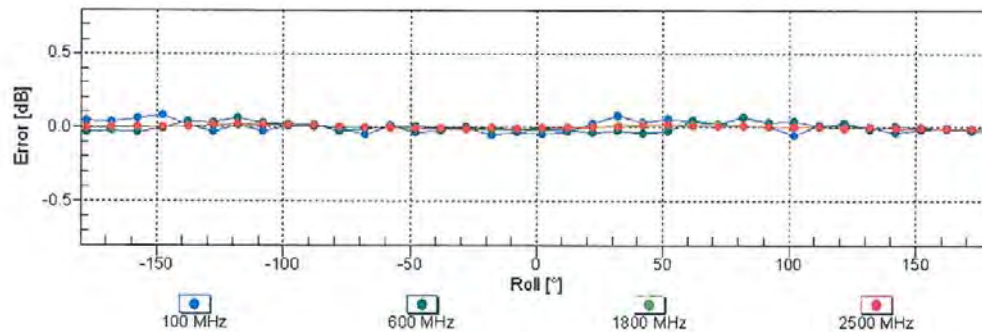
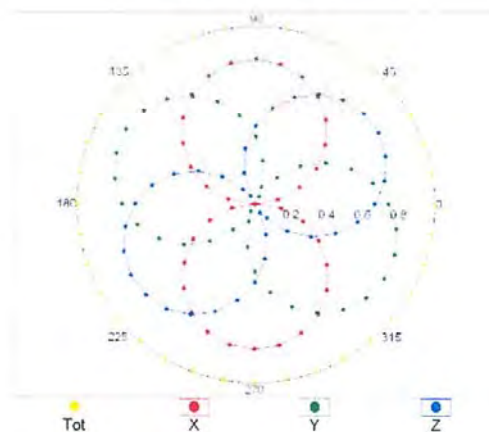
November 22, 2018

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

f=600 MHz,TEM



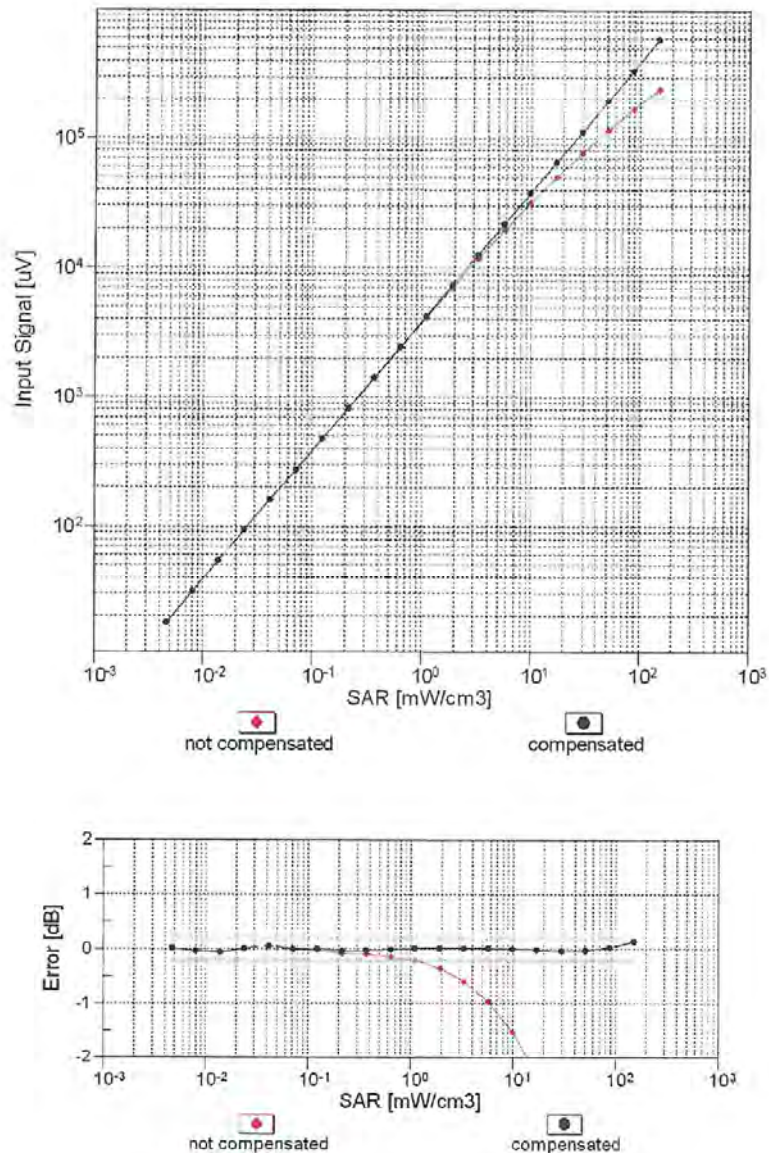
f=1800 MHz,R22

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

EX3DV4- SN:7337

November 22, 2018

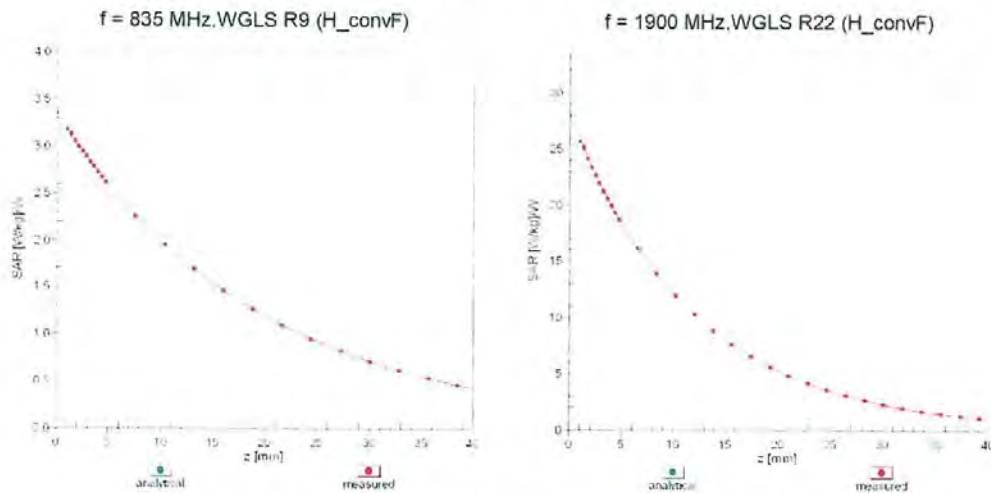
Dynamic Range $f(\text{SAR}_{\text{head}})$ (TEM cell, $f_{\text{eval}} = 1900 \text{ MHz}$)

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

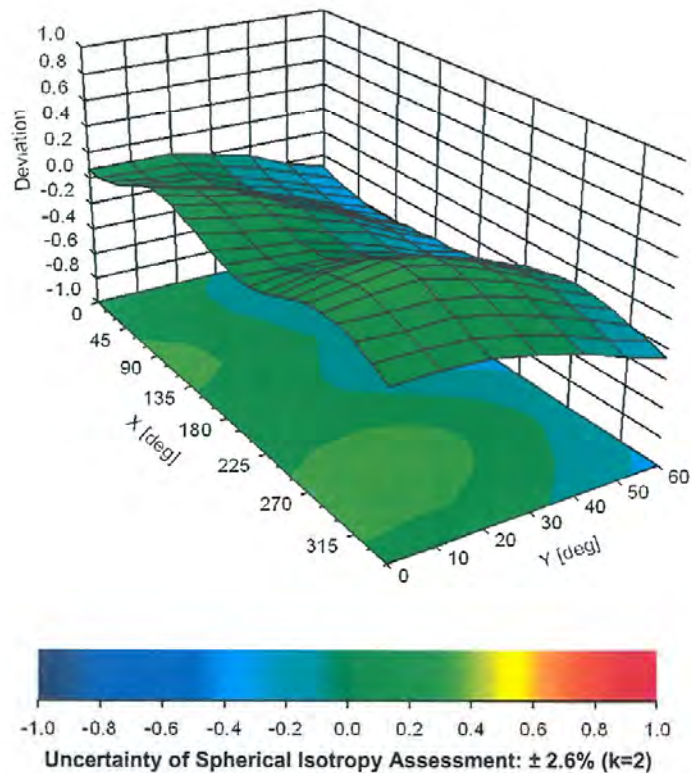
EX3DV4- SN:7337

November 22, 2018

Conversion Factor Assessment



Deviation from Isotropy in Liquid Error (ϕ, θ), $f = 900 \text{ MHz}$



EX3DV4– SN:7337

November 22, 2018

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

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	62.1
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

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Accreditation No.: SCS 0108

Client **DT&C (Dymstec)**

Certificate No: EX3-3866_May19

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3866**

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

Calibration date: **May 28, 2019**

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	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-19 (No. 217-02894)	Apr-20
DAE4	SN: 660	19-Dec-18 (No. DAE4-660_Dec18)	Dec-19
Reference Probe ES3DV2	SN: 3013	31-Dec-18 (No. ES3-3013_Dec18)	Dec-19
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-18)	In house check: Jun-20
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	
Issued: May 28, 2019			
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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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 E^2 -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:3866

May 28, 2019

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3866

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^{2.5}$) ^A	0.42	0.34	0.35	± 10.1 %
DCP (mV) ^B	101.4	101.3	107.0	

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB μV	C	D dB	VR mV	Max dev.	Max Unc ^E (k=2)
0	CW	X	0.00	0.00	1.00	0.00	146.0	± 2.7 %	± 4.7 %
		Y	0.00	0.00	1.00		144.1		
		Z	0.00	0.00	1.00		151.9		
10352-AAA	Pulse Waveform (200Hz, 10%)	X	15.00	88.53	21.84	10.00	60.0	± 2.3 %	± 9.6 %
		Y	2.09	62.78	10.07		60.0		
		Z	3.73	69.03	12.60		60.0		
10353-AAA	Pulse Waveform (200Hz, 20%)	X	15.00	88.88	20.67	6.99	80.0	± 1.5 %	± 9.6 %
		Y	2.20	65.88	10.01		80.0		
		Z	3.37	70.42	12.03		80.0		
10354-AAA	Pulse Waveform (200Hz, 40%)	X	15.00	92.50	20.94	3.98	95.0	± 1.1 %	± 9.6 %
		Y	0.89	62.21	6.94		95.0		
		Z	7.63	78.90	13.40		95.0		
10355-AAA	Pulse Waveform (200Hz, 60%)	X	15.00	98.84	22.56	2.22	120.0	± 1.1 %	± 9.6 %
		Y	0.37	60.00	4.53		120.0		
		Z	15.00	84.32	13.70		120.0		
10387-AAA	QPSK Waveform, 1 MHz	X	1.74	72.67	16.56	0.00	150.0	± 3.5 %	± 9.6 %
		Y	0.47	60.00	6.23		150.0		
		Z	0.53	60.67	7.47		150.0		
10388-AAA	QPSK Waveform, 10 MHz	X	2.99	72.82	18.15	0.00	150.0	± 1.1 %	± 9.6 %
		Y	1.98	67.42	15.30		150.0		
		Z	2.28	69.76	16.64		150.0		
10396-AAA	64-QAM Waveform, 100 kHz	X	4.14	74.35	20.29	3.01	150.0	± 0.7 %	± 9.6 %
		Y	2.62	68.26	17.43		150.0		
		Z	3.39	73.92	19.87		150.0		
10399-AAA	64-QAM Waveform, 40 MHz	X	3.85	68.88	16.82	0.00	150.0	± 2.4 %	± 9.6 %
		Y	3.30	66.77	15.54		150.0		
		Z	3.51	67.91	16.16		150.0		
10414-AAA	WLAN CCDF, 64-QAM, 40MHz	X	5.18	66.40	16.03	0.00	150.0	± 4.5 %	± 9.6 %
		Y	4.79	66.04	15.72		150.0		
		Z	4.77	66.16	15.75		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 and 6).

^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:3866

May 28, 2019

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3866

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	66.9	491.57	34.81	23.11	1.20	5.07	0.82	0.63	1.01
Y	37.9	284.11	35.86	8.51	0.98	4.99	0.05	0.53	1.01
Z	36.7	262.72	33.13	9.53	0.70	4.98	2.00	0.10	1.00

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	58.9
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

EX3DV4- SN:3866

May 28, 2019

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3866

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	9.85	9.85	9.85	0.29	1.09	± 12.0 %
835	41.5	0.90	9.39	9.39	9.39	0.45	0.81	± 12.0 %
900	41.5	0.97	9.12	9.12	9.12	0.27	1.12	± 12.0 %
1750	40.1	1.37	8.10	8.10	8.10	0.38	0.80	± 12.0 %
1900	40.0	1.40	7.85	7.85	7.85	0.33	0.80	± 12.0 %
2300	39.5	1.67	7.58	7.58	7.58	0.32	0.86	± 12.0 %
2450	39.2	1.80	7.24	7.24	7.24	0.32	0.86	± 12.0 %
2600	39.0	1.96	7.03	7.03	7.03	0.36	0.90	± 12.0 %
5200	36.0	4.66	5.10	5.10	5.10	0.40	1.80	± 13.1 %
5300	35.9	4.76	4.92	4.92	4.92	0.40	1.80	± 13.1 %
5500	35.6	4.96	4.55	4.55	4.55	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.46	4.46	4.46	0.40	1.80	± 13.1 %
5800	35.3	5.27	4.62	4.62	4.62	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.

EX3DV4- SN:3866

May 28, 2019

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3866

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)
750	55.5	0.96	9.45	9.45	9.45	0.48	0.80	± 12.0 %
835	55.2	0.97	9.27	9.27	9.27	0.39	0.80	± 12.0 %
900	55.0	1.05	9.23	9.23	9.23	0.46	0.81	± 12.0 %
1750	53.4	1.49	7.74	7.74	7.74	0.42	0.80	± 12.0 %
1900	53.3	1.52	7.51	7.51	7.51	0.35	0.80	± 12.0 %
2300	52.9	1.81	7.43	7.43	7.43	0.30	0.86	± 12.0 %
2450	52.7	1.95	7.27	7.27	7.27	0.41	0.88	± 12.0 %
2600	52.5	2.16	7.10	7.10	7.10	0.29	0.98	± 12.0 %
5200	49.0	5.30	4.62	4.62	4.62	0.50	1.90	± 13.1 %
5300	48.9	5.42	4.43	4.43	4.43	0.50	1.90	± 13.1 %
5500	48.6	5.65	3.93	3.93	3.93	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.81	3.81	3.81	0.50	1.90	± 13.1 %
5800	48.2	6.00	4.05	4.05	4.05	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.

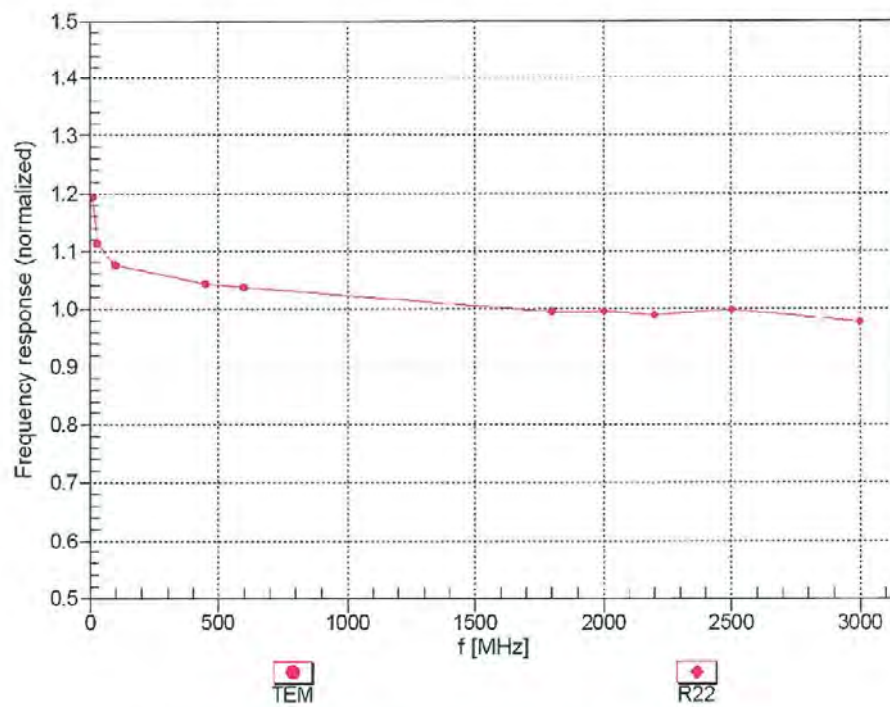
^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty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

EX3DV4- SN:3866

May 28, 2019

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

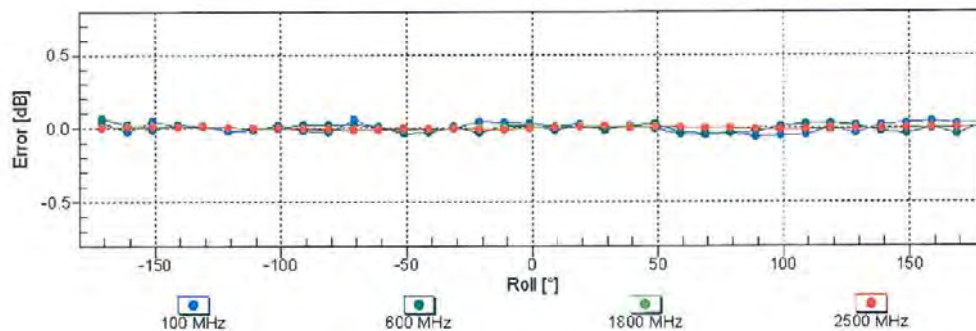
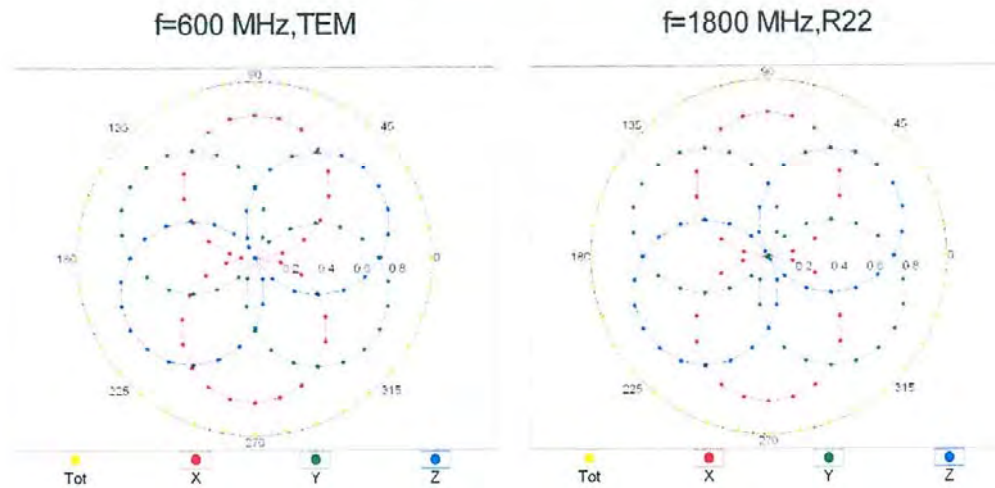


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

EX3DV4- SN:3866

May 28, 2019

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

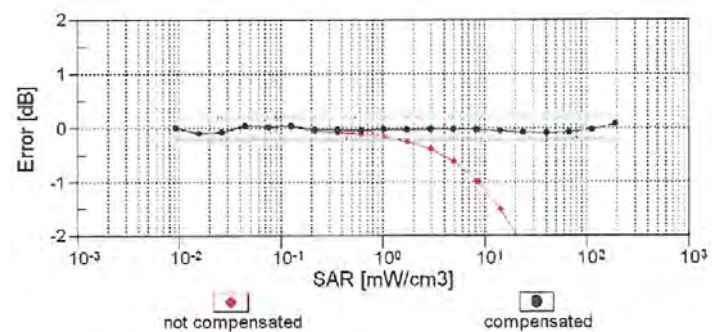
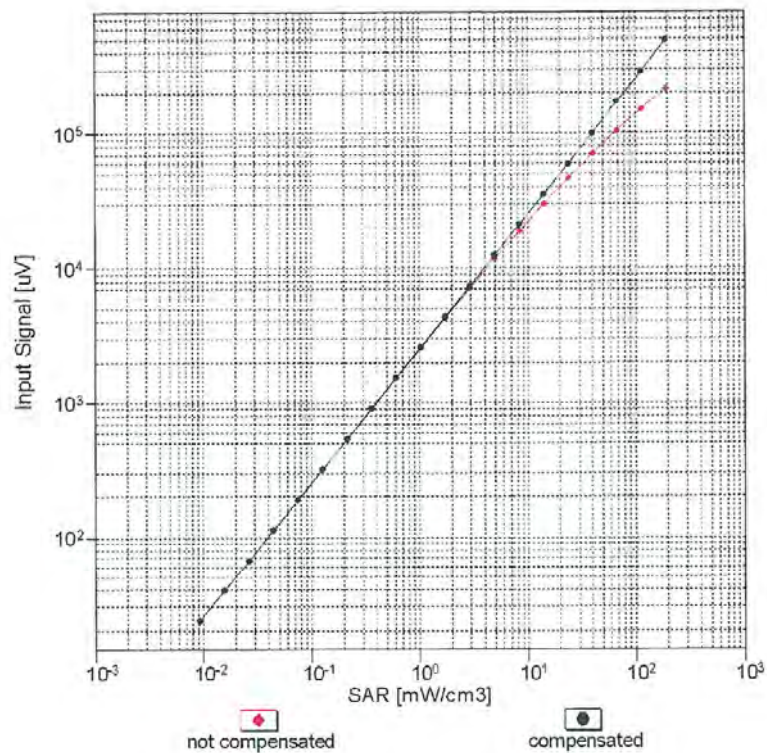


Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

EX3DV4- SN:3866

May 28, 2019

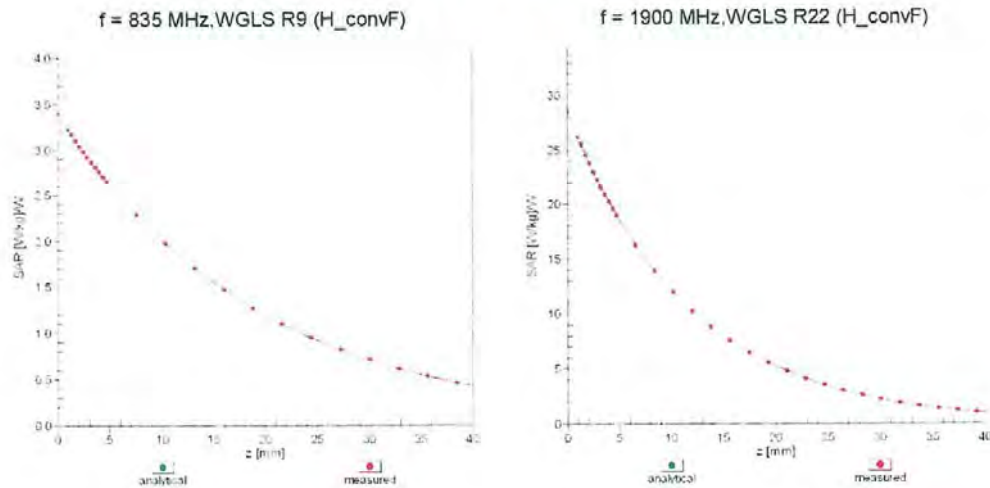
Dynamic Range $f(\text{SAR}_{\text{head}})$ (TEM cell, $f_{\text{eval}} = 1900 \text{ MHz}$)

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

EX3DV4-- SN:3866

May 28, 2019

Conversion Factor Assessment



Deviation from Isotropy in Liquid Error (ϕ, θ), f = 900 MHz

