TEST REPORT

Dt&C

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1. Report No : DRRFCC1804-0051(2)
2. Customer
   - Name : LG Electronics MobileComm 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 / LM-V350EM
   FCC ID : ZNFV350EM
5. Test Method Used : IEEE 1528-2013, FCC SAR KDB Publications (Details in test report)
   Test Specification : CFR §2.1093
6. Date of Test : 2018.03.23 ~ 2018.04.16, 2018.05.04
7. Testing Environment : Refer to appended test report.
8. Test Result : Refer to attached test report.

Affirmation	Tested by Name : HoSik Sim (Signature)	Reviewed by Name : HakMin Kim (Signature)

2018 . 05 . 11 .

DT&C Co., Ltd.

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

Test Report Version

Test Report No.	Date	Description
DRRFCC1804-0051	Apr. 27, 2018	Initial issue
DRRFCC1804-0051(1)	May. 04, 2018	Add LTE Band 13 Test
DRRFCC1804-0051(2)	May. 11, 2018	Revise Section 13 etc.

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1. DESCRIPTION OF DEVICE

General Information

EUT type	Mobile Phone				
FCC ID	ZNFV350EM				
Equipment model name	LM-V350EM				
Equipment add model name	LMV350EM, V350EM				
Equipment serial no.	Identical prototype				
Mode(s) of Operation	GSM 850, GSM 1900, WCDMA 850, WCDMA 1700, WCDMA 1900, LTE Band 12, 17, 13, 5, 4, 2, 7, 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/EDGE	Voice/Data	-	824.2 ~ 848.8 MHz
	GSM 1900	GSM/GPRS/EDGE	Voice/Data	-	1850.2 ~ 1909.8 MHz
	WCDMA 850	WCDMA	Voice/Data	-	826.4 ~ 846.6 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 13	LTE	Voice/Data	5/10MHz	779.5 ~ 784.5 MHz
	LTE Band 5	LTE	Voice/Data	1.4/3/5/10MHz	824.7 ~ 848.3 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 7	LTE	Voice/Data	5/10/15/20MHz	2502.5 ~ 2567.5 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/EDGE	Voice/Data	-	869.2 ~ 893.8 MHz
	GSM 1900	GSM/GPRS/EDGE	Voice/Data	-	1930.2 ~ 1989.8 MHz
	WCDMA 850	WCDMA	Voice/Data	-	871.4 ~ 891.6 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 13	LTE	Voice/Data	5/10MHz	748.5 ~ 753.5 MHz
	LTE Band 5	LTE	Voice/Data	1.4/3/5/10MHz	869.7 ~ 893.3 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 7	LTE	Voice/Data	5/10/15/20MHz	2622.5 ~ 2687.5 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	0.13	0.44	-	-
PCE	GPRS 850	0.17	0.61	0.61	-
PCE	GSM 1900	< 0.1	0.26	-	-
PCE	GPRS 1900	< 0.1	0.30	0.30	-
PCE	WCDMA 850	0.23	0.89	0.89	-
PCE	WCDMA 1700	0.27	0.90	0.90	-
PCE	WCDMA 1900	0.14	0.63	0.63	-
PCE	LTE Band 12	0.13	0.58	0.58	-
PCE	LTE Band 17	-	-	-	-
PCE	LTE Band 13	0.17	0.54	0.54	
PCE	LTE Band 5	0.23	0.86	0.86	-
PCE	LTE Band 4	0.22	0.89	0.89	-
PCE	LTE Band 2	0.11	0.55	0.55	-
PCE	LTE Band 7	< 0.1	0.77	0.77	-
PCE	LTE Band 41	< 0.1	0.54	0.54	-
DTS(SISO)	2.4 GHz W-LAN	0.53	0.14	0.14	-
DTS(MIMO)	2.4 GHz W-LAN	0.57	0.12	0.12	-
U-NII-1(SISO)	5.2 GHz W-LAN	-	-	0.29	-
U-NII-1(MIMO)	5.2 GHz W-LAN	-	-	0.40	-
U-NII-2A(SISO)	5.3 GHz W-LAN	0.60	0.45	-	1.17
U-NII-2A(MIMO)	5.3 GHz W-LAN	0.66	0.50	-	1.39
U-NII-2C(SISO)	5.6 GHz W-LAN	0.43	0.49	-	1.28
U-NII-2C(MIMO)	5.6 GHz W-LAN	0.56	0.45	-	1.62
U-NII-3(SISO)	5.8 GHz W-LAN	0.59	0.42	0.42	1.21
U-NII-3(MIMO)	5.8 GHz W-LAN	0.56	0.37	0.37	1.35
DSS	Bluetooth	0.37	< 0.1	0.11	-
Simultaneous SAR per KDB 690783 D01v01r03		1.28	1.39	1.32	-

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	2018.03.23 ~ 2018.04.16, 2018.05.04
Antenna Type	Internal Antenna
Functions	● GSM/GPRS/EDGE (GPRS/EDGE Class: 33) supported. * DTM not supported. ● No simultaneous transmission between BT & 2.4GHz WLAN ● 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.

1.1 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)

1.2 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 ZNFV350EM_Antenna Location. Since the diagonal dimension of this device is > 160 mm and < 200 mm. it is considered a “phablet”.

Mode	Device Sides for SAR Testing					
	Top	Bottom	Front	Rear	Right	Left
GSM/GPRS/EDGE 850	X	O	O	O	O	O
GSM/GPRS/EDGE 1900	X	O	O	O	X	O
WCDMA 850	X	O	O	O	O	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	O
LTE Band 17	X	O	O	O	O	O
LTE Band 13	X	O	O	O	O	O
LTE Band 5	X	O	O	O	O	O
LTE Band 4	X	O	O	O	X	O
LTE Band 2	X	O	O	O	X	O
LTE Band 7	X	O	O	O	O	O
LTE Band 41	X	O	O	O	O	O
2.4G W-LAN Ant.1	O	X	O	O	X	O
2.4G W-LAN Ant.2	O	X	O	O	X	O
2.4G W-LAN MIMO	O	X	O	O	X	O
5G W-LAN Ant.1	O	X	O	O	X	O
5G W-LAN Ant.2	O	X	O	O	X	O
5G W-LAN MIMO	O	X	O	O	X	O
Bluetooth	O	X	O	O	X	O

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 means test and X means no testing.

1.3 Near Field Communications (NFC) Antenna

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 ZNFV350EM_Antenna Location.

1.4 SAR Test Exclusions Applied

(A) Licensed Transmitter(s)

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

This device supports both LTE Band 12 and LTE Band 17. Since the supported frequency span for LTE Band 17 falls completely within the supported frequency span for LTE Band 12, LTE Band 17 target power is equal to LTE Band 12 target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE Band 12.

1.5 Power Reduction for SAR

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

1.6 Device Serial Numbers

Band & Mode	Head Serial Number	Body Serial Number	Hotspot Serial Number	Phablet Serial Number
GSM/GPRS/EDGE 850	FCC #1	FCC #1	FCC #1	-
GSM/GPRS/EDGE 1900	FCC #1	FCC #1	FCC #1	-
WCDMA 850	FCC #1	FCC #1	FCC #1	-
WCDMA 1700	FCC #1	FCC #1	FCC #1	-
WCDMA 1900	FCC #1	FCC #1	FCC #1	-
LTE Band 12	FCC #1	FCC #1	FCC #1	-
LTE Band 17	FCC #1	FCC #1	FCC #1	-
LTE Band 13	FCC #1	FCC #1	FCC #1	-
LTE Band 5	FCC #1	FCC #1	FCC #1	-
LTE Band 4	FCC #1	FCC #1	FCC #1	-
LTE Band 2	FCC #1	FCC #1	FCC #1	-
LTE Band 7	FCC #1	FCC #1	FCC #1	-
LTE Band 41	FCC #1	FCC #1	FCC #1	-
2.4 GHz WLAN	FCC #2	FCC #2	FCC #2	-
5 GHz WLAN	FCC #2	FCC #2	FCC #2	FCC #2
Bluetooth	FCC #2	FCC #2	FCC #2	-

1.7 LTE Information

LTE Information					
FCC ID	**ZNFV350EM**				
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 13 (779.5 ~ 784.5 MHz) LTE Band 5 (Cell) (824.7 ~ 848.3 MHz) LTE Band 4 (AWS) (1710.7 ~ 1754.3 MHz) LTE Band 2 (PCS) (1850.7 ~ 1909.3 MHz) LTE Band 7 (2502.5 ~ 2567.5 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 13 : 5 MHz, 10 MHz LTE Band 5 : 1.4 MHz, 3 MHz, 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 7: 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 13: 5 MHz	779.5(23205)	N/A	782.0(23230)[Note2]	N/A	784.5(23255)
LTE Band 13: 10 MHz	N/A	N/A	**782.0(23230)**	N/A	N/A
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)	N/A	836.5 (20525)	N/A	848.3 (20643)
LTE Band 5 (Cell): 3 MHz	825.5 (20415)	N/A	836.5 (20525)	N/A	847.5 (20635)
LTE Band 5 (Cell): 5 MHz	826.5 (20425)	N/A	836.5 (20525)	N/A	846.5 (20625)
LTE Band 5 (Cell): 10 MHz	829.0 (20450)	N/A	**836.5 (20525)**[Note3]	N/A	844.0 (20600)
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)** [Note4]	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 7: 5 MHz	2502.5 (20775)	N/A	2535.0 (21100)	N/A	2567.5 (21425)
LTE Band 7: 10 MHz	2505.0 (20800)	N/A	2535.0 (21100)	N/A	2565.0 (21400)
LTE Band 7: 15 MHz	2507.5 (20825)	N/A	2535.0 (21100)	N/A	2562.5 (21375)
LTE Band 7: 20 MHz	**2510.0 (20850)**	N/A	2535.0 (21100)	N/A	2560.0 (21350)
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.12 DL UE Cat 16, UL UE Cat 5 with only downlink carrier aggregation (not support uplink MIMO and uplink carrier aggregation)				
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 12. 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 12 Features are not supported: Relay, HetNet, Enhanced MIMO, eICIC, WIFI Offloading, MDH, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

Note(s)
1. LTE Band 12 at 10 MHz bandwidth does not support three non-overlapping channels.
   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.
2. LTE Band 13 at 5 MHz bandwidth does not support three non-overlapping channels.
   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. LTE Band 5 (Cell) at 10 MHz bandwidth does not support three non-overlapping channels.
   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.
4. LTE Band 4 (AWS) at 20 MHz bandwidth does not support three non-overlapping channels.
   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.

2. 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. 2.1)

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

Fig. 2.1 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/m^3)

E = Total RMS electric field strength (V/m)

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

3. DESCRIPTION OF TEST EQUIPMENT

3.1 SAR MEASUREMENT SETUP

Measurements are performed using the DASY5 automated dosimetric assessment system. The DASY5 is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland and consists of high precision robotics system (Staubli), robot controller, desktop computer, near-field probe, probe alignment sensor, and the generic twin phantom containing the brain equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF) (see Fig. 3.1).

A cell controller system contains the power supply, robot controller each pendant (Joystick), and a remote control used to drive the robot motors. The PC consists of the Intel Core i7-3770 3.40 GHz desktop computer with Windows 7 system and SAR Measurement Software DASY5,A/D interface card, monitor, mouse, and keyboard. The Staubli Robotis connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit that performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card.

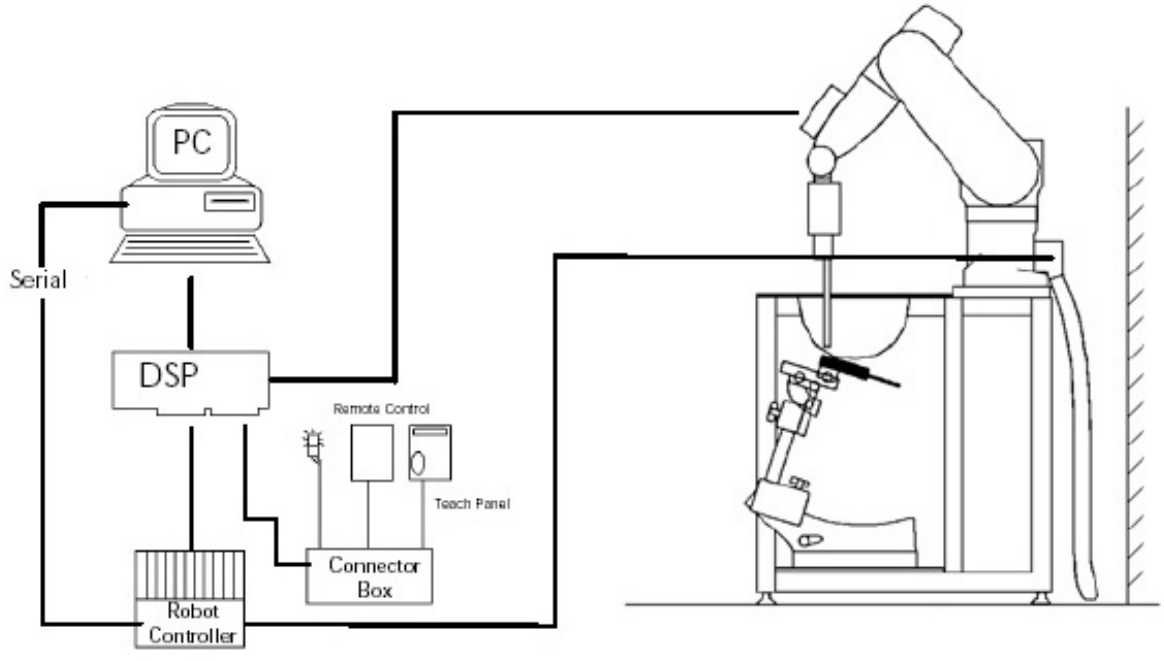

Figure 3.1 SAR Measurement System Setup

The DAE4 consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer. The system is described in detail.

3.2 Probe Specification

Calibration In air from 10 MHz to 6 GHz
In brain and muscle simulating tissue at Frequencies of
2450 MHz, 2600 MHz, 5200 MHz, 5300 MHz, 5500 MHz, 5600 MHz, 5800 MHz /
750 MHz, 835 MHz, 900 MHz, 1750 MHz, 1900 MHz, 2300 MHz, 2450 MHz, 2600 MHz,
3500 MHz, 5200 MHz, 5300 MHz, 5500 MHz, 5600 MHz, 5800 MHz

Frequency 10 MHz to 6 GHz

Linearity ± 0.2 dB(30 MHz to 6 GHz)

Dynamic 10 µW/g to > 100 mW/g

Range Linearity : ±0.2dB

Dimensions Overall length : 337 mm

Tip length 20 mm

Body diameter 12 mm

Tip diameter 2.5 mm

Distance from probe tip to sensor center 1.0 mm

Application SAR Dosimetry Testing
Compliance tests of mobile phones

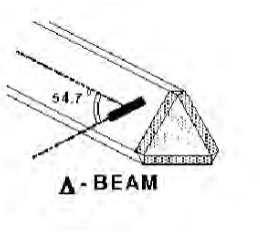

Figure 3.2 Triangular Probe Configurations

Figure 3.3 Probe Thick-Film Technique

DAE System

The SAR measurements were conducted with the dosimetric probe EX3DV4 designed in the classical triangular configuration(see Fig. 3.2) and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multitier line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY5 software reads the reflection during a software approach and looks for the maximum using a 2nd order fitting. The approach is stopped at reaching the maximum.

3.3 Probe Calibration Process

3.3.1 E-Probe Calibration

Dosimetric Assessment Procedure

Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than +/- 10%. The spherical isotropy was evaluated with the procedure and found to be better than +/-0.25dB. The sensitivity parameters (Norm X, Norm Y, Norm Z), the diode compression parameter (DCP) and the conversion factor (Conv F) of the probe is tested.

Free Space Assessment

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies below 1 GHz, and in a waveguide above 1GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity at the proper orientation with the field. The probe is then rotated 360 degrees.

Temperature Assessment *

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium, correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent the remits or based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

where:

Δt = exposure time (30 seconds),

C = heat capacity of tissue (brain or muscle),

ΔT = temperature increase due to RF exposure.

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

where:

σ = simulated tissue conductivity,

ρ = Tissue density (1.25 g/cm^3 for brain tissue)

SAR is proportional to ΔT / Δt , the initial rate of tissue heating, before thermal diffusion takes place. Now it's possible to quantify the electric field in the simulated tissue by equating the thermally derived SAR to the E- field;

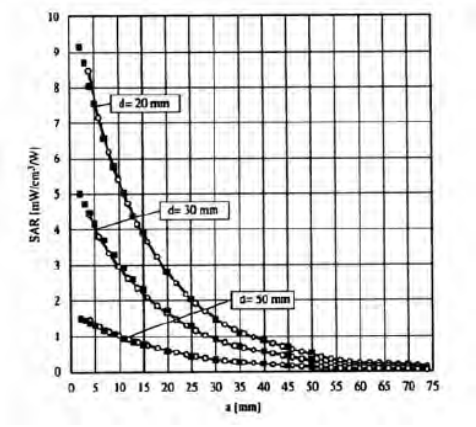

Figure 3.4 E-Field and Temperature Measurements at 900MHz

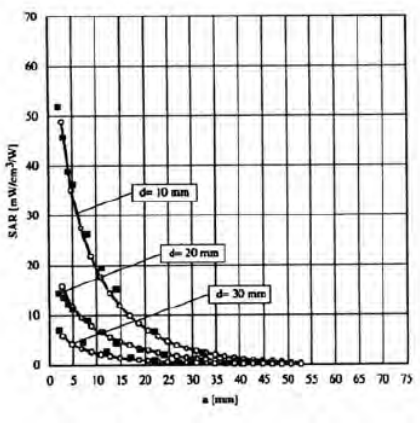

Figure 3.5 E-Field and Temperature Measurements at 1800MHz

3.4 Data Extrapolation

The DASY5 software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given like below;

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

with V_i = compensated signal of channel i (i=x,y,z)
U_i = input signal of channel i (i=x,y,z)
cf = crest factor of exciting field (DASY parameter)
dcp_i = diode compression point (DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

E-field probes:

$$E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}$$

with V_i = compensated signal of channel i (i = x,y,z)
$Norm_i$ = sensor sensitivity of channel i (i = x,y,z)
$\mu V/(V/m)^2$ for E-field probes
ConvF = sensitivity of enhancement in solution
E_i = electric field strength of channel i in V/m

The RSS value of the field components gives the total field strength (Hermetian magnitude):

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

The primary field data are used to calculate the derived field units.

$$SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1000}$$

with SAR = local specific absorption rate in W/g
E_{tot} = total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm^3

The power flow density is calculated assuming the excitation field to be a free space field.

$$P_{pwe} = \frac{E_{tot}^2}{3770}$$

with P_{pwe} = equivalent power density of a plane wave in W/cm^2
E_{tot} = total electric field strength in V/m

3.5 SAM Twin PHANTOM

The SAM Twin Phantom V5.0 is constructed of a fiberglass shell integrated in a wooden table. The shape of the shell is based on data from an anatomical study designed to determine the maximum exposure in at least 90% of all users. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents the evaporation of the liquid.

Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot. (see Fig. 3.6)

Figure 3.6 SAM Twin Phantom

SAM Twin Phantom Specification:

Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot. Twin SAM V5.0 has the same shell geometry and is manufactured from the same material as Twin SAM V4.0, but has reinforced top structure.
Shell Thickness	2 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm Width: 500 mm Height: adjustable feet

Specific Anthropomorphic Mannequin (SAM) Specifications:

The phantom for handset SAR assessment testing is a low-loss dielectric shell, with shape and dimensions derived from the anthropometric data of the 90th percentile adult male head dimensions as tabulated by the US Army. The SAM Twin Phantom shell is bisected along the mid-sagittal plane into right and left halves (see Fig. 3.7). The perimeter sidewalls of each phantom halves are extended to allow filling with liquid to a depth that is sufficient to minimized reflections from the upper surface. The liquid depth is maintained at a minimum depth of 15cm to minimize reflections from the upper surface.

Figure 3.7 Sam Twin Phantom shell

3.6 Device Holder for Transmitters

In combination with the Twin SAM Phantom V4.0/V4.0c, V5.0 or ELI4, the Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Rotation point is the ear opening point. Transmitter devices can be easily and accurately positioned according to IEC, IEEE, FCC or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).

Note: A simulating human hand is not used due to the complex anatomical and geometrical structure of the hand that may produce infinite number of configurations. To produce the worst-case condition (the hand absorbs antenna output power), the hand is omitted during the tests.

Figure 3.8 Mounting Device

3.7 Brain & Muscle Simulation Mixture Characterization

The brain and muscle mixtures consist of a viscous gel using hydrox-ethylcellulose (HEC) gelling agent and saline solution (see Table 3.1). Preservation with a bactericide is added and visual inspection is made to make sure air bubbles are not trapped during the mixing process. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the desired tissue. The mixture characterizations used for the brain and muscle tissue simulating liquids are according to the data by C. Gabriel and G. Harts grove.

Figure 3.9 Simulated Tissue

Table 3.1 Composition of the Tissue Equivalent Matter

Ingredients (% by weight)	Frequency (MHz)							
	835		1900		2450		5200 ~ 5800	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body
Water	40.19	50.75	55.24	70.23	71.88	73.40	65.52	80.00
Salt (NaCl)	1.480	0.940	0.310	0.290	0.160	0.060	-	-
Sugar	57.90	48.21	-	-	-	-	-	-
HEC	0.250	-	-	-	-	-	-	-
Bactericide	0.180	0.100	-	-	-	-	-	-
Triton X-100	-	-	-	-	19.97	-	17.24	-
DGBE	-	-	44.45	29.48	7.990	26.54	-	-
Diethylene glycol hexyl ether	-	-	-	-	-	-	17.24	-
Polysorbate (Tween) 80	-	-	-	-	-	-		20.00
Target for Dielectric Constant	41.5	55.2	40.0	53.3	39.2	52.7	-	-
Target for Conductivity (S/m)	0.90	0.97	1.40	1.52	1.80	1.95	-	-

Salt:	99 % Pure Sodium Chloride	Sugar:	98 % Pure Sucrose
Water:	De-ionized, 16M resistivity	HEC:	Hydroxyethyl Cellulose
DGBE:	99 % Di(ethylene glycol) butyl ether,[2-(2-butoxyethoxy) ethanol]		
Triton X-100(ultra pure):	Polyethylene glycol mono[4-(1,1,3,3-tetramethylbutyl)phenyl] ether		

Table 3.2 HSL/MSL750 (Head and Body liquids for 700 – 800 MHz)

Item	Head Tissue Simulation Liquids HSL750 Muscle (body) Tissue Simulation Liquids MSL750
Type No	SL AAH 075, SL AAM 075
Manufacturer	SPEAG
The item is composed of the following ingredients:	
H^2O	Water, 35 – 58%
Sucrose	Sucrose, 40 – 60%
NaCl	Sodium Chloride, 0 – 6%
Hydroxyethyl-cellulose	Medium Viscosity (CAS# 9004-62-0), < 0.3%
Preventol-D7	Preservative: aqueous preparation, (CAS# 55965-84-9), containing 5-chloro-2-methyl-3(2H)-isothiazolone and 2-methyyl-3(2H)-isothiazolone, 0.1 – 0.6%

Table 3.3 HSL/MSL1750 (Head and Body liquids for 1700 – 1800 MHz)

Item	Head Tissue Simulation Liquids HSL1750 Muscle (body) Tissue Simulation Liquids MSL1750
Type No	SL AAH 175, SL AAM 175
Manufacturer	SPEAG
The item is composed of the following ingredients:	
H^2O	Water, 52 – 75%
C8H18O3	Diethylene glycol monobutyl ether (DGBE), 25 – 48%
NaCl	Sodium Chloride, < 1.0%

3.8 SAR TEST EQUIPMENT

Table 3.4 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
☒	Robot	SCHMID	TX90XL	N/A	N/A	F13/5P9GA1/A/01
☒	Robot	SCHMID	TX90XL	N/A	N/A	F13/5RR2A1/A/01
☒	Robot Controller	SCHMID	CS8C	N/A	N/A	F13/5P9GA1/C/01
☒	Robot Controller	SCHMID	CS8C	N/A	N/A	F13/5RR2A1/C/01
☒	Joystick	SCHMID	N/A	N/A	N/A	S-12450905
☒	Joystick	SCHMID	N/A	N/A	N/A	S-13200990
☒	IntelCorei7-3770 3.40 GHz Windows 7 Professional	N/A	N/A	N/A	N/A	N/A
☒	IntelCorei7-3770 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
☒	Device Holder	SCHMID	Holder	N/A	N/A	SD000H01HA
☒	Device Holder	SCHMID	Holder	N/A	N/A	SD000H01HA
☒	Twin SAM Phantom	SCHMID	QD000P40CD	N/A	N/A	1783
☒	Twin SAM Phantom	SCHMID	QD000P40CD	N/A	N/A	1782
☒	Twin SAM Phantom	SCHMID	QD000P40CD	N/A	N/A	1786
☒	Data Acquisition Electronics	SCHMID	DAE4V1	2017-08-16	2018-08-16	1396
☒	Data Acquisition Electronics	SCHMID	DAE4V1	2017-07-24	2018-07-24	1335
☒	Dosimetric E-Field Probe	SCHMID	EX3DV4	2017-09-28	2018-09-28	3933
☒	Dosimetric E-Field Probe	SCHMID	EX3DV4	2017-07-26	2018-07-26	3930
☒	750MHz SAR Dipole	SCHMID	D750V3	2018-01-18	2020-01-18	1049
☒	835MHz SAR Dipole	SCHMID	D835V2	2017-09-21	2019-09-21	464
☒	1800MHz SAR Dipole	SCHMID	D1800V2	2017-05-23	2019-05-23	2d047
☒	1900MHz SAR Dipole	SCHMID	D1800V2	2017-09-20	2019-09-20	5d029
☒	2450MHz SAR Dipole	SCHMID	D2450V2	2017-09-19	2019-09-19	726
☒	2600MHz SAR Dipole	SCHMID	D2600V2	2018-02-16	2020-02-16	1103
☒	5GHz SAR Dipole	SCHMID	D5GHzV2	2018-02-15	2020-02-15	1212
☒	Network Analyzer	Agilent	E5071C	2018-02-02	2019-02-02	MY46111534
☒	Signal Generator	Agilent	E4438C	2017-09-05	2018-09-05	US41461520
☒	Amplifier	RFBAY.Inc	MPA-40-40	2017-12-28	2018-12-28	21151801
☒	Amplifier	EMPOWER	BBS3Q7ELU	2017-09-06	2018-09-06	1020
☒	High Power RF Amplifier	EMPOWER	BBS3Q8CCJ	2017-09-05	2018-09-05	1005
☒	Power Meter	HP	EPM-442A	2017-12-27	2018-12-27	GB37170267
☒	Power Meter	HP	EPM-442A	2017-12-27	2018-12-27	GB37170413
☒	Power Sensor	HP	8481A	2017-12-27	2018-12-27	US37294267
☒	Power Sensor	HP	8481A	2017-12-27	2018-12-27	3318A96566
☒	Power Sensor	HP	8481A	2017-12-27	2018-12-27	2702A65976
☒	Dual Directional Coupler	Agilent	778D-012	2017-12-27	2018-12-27	50228
☒	Directional Coupler	HP	772D	2017-07-13	2018-07-13	2889A01064
☒	Low Pass Filter 1GHz	Wainwright Instruments	WLK6-1000-1400-9000-60SS	2017-09-05	2018-09-05	165
☒	Low Pass Filter 1.5GHz	Micro LAB	LA-15N	2017-12-27	2018-12-27	N/A
☒	Low Pass Filter 3.0GHz	Micro LAB	LA-30N	2017-09-05	2018-09-05	N/A
☒	Low Pass Filter 6.0GHz	Micro LAB	LA-60N	2017-12-27	2018-12-27	03942
☒	Attenuators(3 dB)	Agilent	8491B	2017-12-27	2018-12-27	MY39260700
☒	Attenuators(10 dB)	WEINSCHEL	23-10-34	2017-12-27	2018-12-27	BP4387
☒	Dielectric Probe kit	SCHMID	DAK-3.5	2017-11-21	2018-11-21	1092
☒	Dielectric Probe kit	SCHMID	DAK-3.5	2017-07-18	2018-07-18	1046
☒	8960 Series 10 Wireless Comms. Test Set	Agilent	E5515C	2017-09-05	2018-09-05	GB41321164
☒	Wideband Radio Communication Tester	Rohde Schwarz	CMW500	2018-03-07	2019-03-07	162709
☒	Wideband Radio Communication Tester	Rohde Schwarz	CMW500	2018-02-05	2019-02-05	101414
☒	Radio Communication Analyzer	KEYSIGHT	E7515A	2017-09-07	2018-09-07	MY55210201
☒	Radio Communication Analyzer	KEYSIGHT	E7515A	2017-12-27	2018-12-27	MY57270113
☒	Power Splitter	Anritsu	K241B	2017-12-27	2018-12-27	1301183
☒	Bluetooth Tester	TESCOM	TC-3000B	2017-12-26	2018-12-26	3000B770243

NOTE: 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.

4. TEST SYSTEM SPECIFICATIONS

Automated TEST SYSTEM SPECIFICATIONS:

Positioner

Robot	Stäubli Unimation Corp. Robot Model: TX90XL
Repeatability	0.02 mm
No. of axis	6

Data Acquisition Electronic (DAE) System

Cell Controller

Processor	Intel Core i7-3770
Clock Speed	3.40 GHz
Operating System	Windows 7 Professional
Data Card	DASY5 PC-Board

Data Converter

Features	Signal, multiplexer, A/D converter. & control logic
Software	DASY5
Connecting Lines	Optical downlink for data and status info Optical uplink for commands and clock

PC Interface Card

Function	24 bit (64 MHz) DSP for real time processing Link to DAE 4 16 bit A/D converter for surface detection system serial link to robot direct emergency stop output for robot

E-Field Probes

Model	EX3DV4 S/N: 3933, 3930
Construction	Triangular core fiber optic detection system
Frequency	10 MHz to 6 GHz
Linearity	± 0.2 dB (30 MHz to 6 GHz)

Phantom

Phantom	SAM Twin Phantom (V5.0)
Shell Material	Composite
Thickness	2.0 ± 0.2 mm

Figure 4.1 DASY5 Test System

5. SAR MEASUREMENT PROCEDURE

5.1 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 5.1) 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.

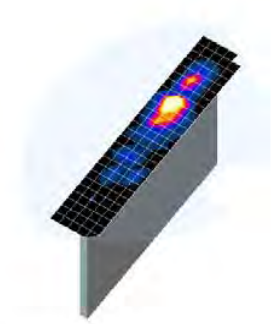

Figure 5.1
Sample SAR Area Scan

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 5.1) 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 5.1. 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.

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 mm ± 1 mm	$½ \cdot \delta \cdot \ln(2)$ mm ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 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 ≤ 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 1st 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	≤ $1.5 \cdot \Delta z_{Zoom}(n-1)$ 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 *reported* SAR from the *area scan based 1-g SAR estimation* 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 5.1 Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04*

6. DEFINITION OF REFERENCE POINTS

6.1 Ear Reference Point

Figure 6.1 shows the front, back and side views of the SAM Twin Phantom. The point"M" is the reference point for the center of the mouth, "LE" is the left ear reference point(ERP), and "RE" is the right ERP. The ERPs are 15mm posterior to the entrance to the Ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 6.1. The plane Passing, through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck- Front) is perpendicular to the reference plane and passing through the RE (or LE) is called the Reference Pivoting Line (see Figure 6.1). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning.

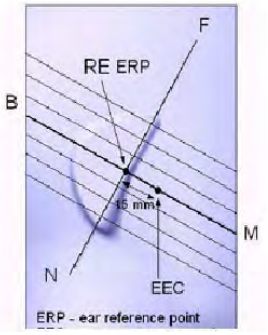

Figure 6.1
Close-up side view of ERP

6.2 Handset Reference Points

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The test device was placed in a normal operating position with the "test device reference point" located along the "vertical centerline" on the front of the device aligned to the "ear reference point" (See Fig. 6.3). The "test device reference point" was than located at the same level as the center of the ear reference point. The test device was positioned so that the "vertical centerline" was bisecting the front surface of the handset at it's top and bottom edges, positioning the "ear reference point" on the outer surface of the both the left and right head phantoms on the ear reference point.

Figure 6.2 Front, back and side view SAM Twin Phantom

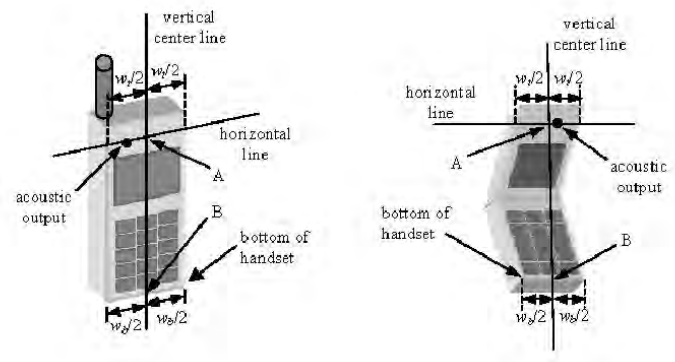

Figure 6.3 Handset Vertical Center & Horizontal Line Reference Points

7. TEST CONFIGURATION POSITIONS FOR HANDSETS

7.1 Device Holder

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

7.2 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 7.1), 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 7.1 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 hen rotated around the vertical centerline until the phone (horizontal line) was symmetrical was 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 7.2)

7.3 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 7.3).

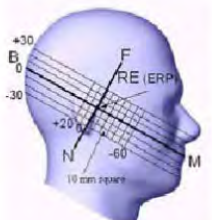

Figure 7.2 Side view w/relevant markings

Figure 7.3 Front, Side and Top View of Ear/15ºPosition

7.4 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 7.4). 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 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.

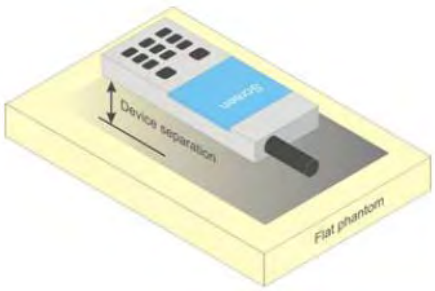

Figure 7.4 Sample Body-Worn Diagram

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.

7.5 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 447498D01v06 should be applied to determine SAR test requirements.

7.6 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 x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10 mm from the front 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.

8. 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).

9. FCC MEASUREMENT PROCEDURES

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

9.1 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.

9.2 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.

9.3 SAR Measurement Conditions for WCDMA (UMTS)

9.3.1 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.

9.3.2 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 in12.2 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.

9.3.3 Body SAR Measurements

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

9.3.4 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	β_{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: 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 β_c/β_d =12/15, β_{hs}/β_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 β_c = 11/15 and β_d = 15/15.

Figure 9.1 Table 1

9.3.5 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	β_{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	β_{ed1}: 47/15 β_{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 β_c/β_d =12/15, β_{hs}/β_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 β_c = 10/15 and β_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 β_c = 14/15 and β_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

9.3.6 SAR Measurement Conditions for DC-HSDPA

In the following DB 941225 D01v03r01 procedures, the mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

9.4 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 R&S CMW500 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).

9.4.1 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.

9.4.2 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.

9.4.3 A-MPR

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

9.4.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r05:

a. Per Section 5.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
   i. The required channel and offset combination with the highest maximum output power is required for SAR.
   ii. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test 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.
   iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
b. Per Section 5.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 5.2.1.
c. Per Section 5.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 0.8 W/kg. 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.
d. Per Section 5.2.4 and 5.3, SAR tests for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sections 5.2.1 through 5.2.3 is less than or equal to 0.5 dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is < 1.45 W/kg.

9.4.5 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	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			-	-	-
8	$24144 \cdot T_s$			-	-	-

Table 4.2-2: Uplink-downlink configurations.

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

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

Ts = 1/(15000 * 2048) seconds

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

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

9.4.6 Downlink Only Carrier Aggregation

Conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02, 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.

9.4.6.1 May 2017 TCB Workshop notes (LTE 4x4 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

9.5 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.

9.5.1 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 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.

9.5.2 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.

9.5.3 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.

9.5.4 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.

9.5.5 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.

9.5.6 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 80211n or 802.11g then 802.11n is used for SAR measurement. When the maximum output power ware 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.

9.5.7 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.

9.5.8 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.

9.5.9 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.

10. 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

10.1 GSM Nominal and Maximum Output Power Spec and Conducted Powers

Band & Mode		Voice[dBm]	Burst Average GMSK [dBm]				Burst Average GMSK [dBm]			
		1 TX Slot	1 TX Slot	2 TX Slot	3 TX Slot	4 TX Slot	1 TX Slot	2 TX Slot	3 TX Slot	4 TX Slot
GSM/GPRS/EDGE 850	Maximum	33.9	33.9	**32.2**	29.7	28.2	27.2	26.2	24.7	23.7
	Nominal	33.4	33.4	**31.7**	29.2	27.7	26.7	25.7	24.2	23.2
GSM/GPRSEDGE 1900	Maximum	30.7	30.7	**28.7**	26.2	24.7	25.7	25.7	24.2	23.2
	Nominal	30.2	30.2	**28.2**	25.7	24.2	25.2	25.2	23.7	22.7

Table 10.1.1 GSM Nominal and Maximum Output Power Spec

Band	Channel	Maximum Burst-Averaged Output Power(dBm)								
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
		GSM CS 1 Slot	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	EDGE 1 TX Slot	EDGE 2 TX Slot	EDGE 3 TX Slot	EDGE 4 TX Slot
GSM850	128	33.3	33.3	**31.4**	29.3	27.9	27.0	25.8	24.2	23.1
	190	33.5	33.5	**31.5**	29.3	28.1	27.0	25.7	24.2	23.1
	251	33.4	33.4	**31.4**	29.3	28.0	27.0	25.7	24.2	23.0
PCS 1900	512	30.3	30.3	**28.4**	25.9	24.6	25.4	25.2	23.9	22.6
	661	30.3	30.3	**28.4**	25.9	24.7	25.4	25.2	23.9	22.6
	810	30.3	30.3	**28.5**	26.0	24.5	25.4	25.1	23.9	22.5
Band	**Channel**	**Calculated Maximum Frame-Averaged Output Power(dBm)**								
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
		GSM CS 1 Slot	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	EDGE 1 TX Slot	EDGE 2 TX Slot	EDGE 3 TX Slot	EDGE 4 TX Slot
GSM850	128	24.27	24.27	**25.38**	25.04	24.89	17.97	19.78	19.94	20.09
	190	24.47	24.47	**25.48**	25.04	25.09	17.97	19.68	19.94	20.09
	251	24.37	24.37	**25.38**	25.04	24.99	17.97	19.68	19.94	19.99
PCS 1900	512	21.27	21.27	**22.38**	21.64	21.59	16.37	19.18	19.64	19.59
	661	21.27	21.27	**22.38**	21.64	21.69	16.37	19.18	19.64	19.59
	810	21.27	21.27	**22.48**	21.74	21.49	16.37	19.08	19.64	19.49
GSM850	**Frame Avg. Targets:**	24.37	24.37	**25.68**	24.94	24.69	17.67	19.68	19.94	20.19
PCS 1900		21.17	21.17	**22.18**	21.44	21.19	16.17	19.18	19.44	19.69

Table 10.1.2 GSM Conducted Power

Note:

1. 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.
2. 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.
3. EDGE (8-PSK) output powers were measured with MCS7 on the base station simulator. MCS7 coding scheme was used to measure the output powers for EDGE since investigation has shown that choosing MCS7 coding scheme will ensure 8-PSK modulation. It has been shown that MCS levels that produce 8PSK modulation do not have an impact on output power.

GPRS Multislot class: 33 (max 4 TX Uplink slots)
EDGE Multislot class: 33 (max 4 TX Uplink slots)
DTM Multislot Class: N/A

Figure 10.1 Power Measurement Setup

10.2 WCDMA Nominal and Maximum Output Power Spec and Conducted Powers

Band & Mode		Modulated Average [dBm]			
		3GPP WCDMA (Rel.99)	3GPP HSDPA	3GPP HSUPA	3GPP DC-HSDPA
WCDMA 850 (Cell)	Maximum	25.5	25.5	25.5	25.5
	Nominal	25.0	25.0	25.0	25.0
WCDMA 1700 (AWS)	Maximum	24.7	24.7	24.7	24.7
	Nominal	24.2	24.2	24.2	24.2
WCDMA 1900 (PCS)	Maximum	24.7	24.7	24.7	24.7
	Nominal	24.2	24.2	24.2	24.2

Table 10.2.1 WCDMA Nominal and Maximum Output Power Spec

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band (dBm)			AWS Band (dBm)			PCS Band (dBm)			3GPP MPR (dB)
			4132	4183	4233	1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	**24.95**	**24.91**	**24.93**	**24.20**	**24.18**	**24.20**	24.26	**24.23**	24.28	-
99		12.2 kbps AMR	24.94	24.90	24.90	24.18	24.17	24.19	24.24	24.22	24.26	-
5	HSDPA	Subtest 1	24.94	24.89	24.89	24.15	24.13	24.18	24.19	24.14	24.21	0
5		Subtest 2	24.93	24.90	24.92	24.17	24.15	24.19	24.20	24.19	24.20	0
5		Subtest 3	24.48	24.43	24.47	23.68	23.64	23.68	23.69	23.69	23.72	0.5
5		Subtest 4	24.46	24.43	24.47	23.66	23.63	23.70	23.71	23.69	23.70	0.5
6	HSUPA	Subtest 1	24.81	24.80	24.80	23.87	23.82	23.87	23.85	23.89	23.91	0
6		Subtest 2	22.97	22.91	22.96	22.18	22.13	22.18	22.19	22.17	22.24	2
6		Subtest 3	23.95	23.92	23.93	23.17	23.14	23.19	23.18	23.15	23.20	1
6		Subtest 4	22.95	22.90	22.94	22.18	22.12	22.16	22.19	22.15	22.21	2
6		Subtest 5	24.94	24.90	24.92	24.18	24.14	24.18	24.19	24.18	24.22	0
8	DC-HSDPA	Subtest 1	24.92	24.88	24.85	24.14	24.11	24.16	24.17	24.12	24.19	0
8		Subtest 2	24.91	24.87	24.83	24.13	24.10	24.15	24.18	24.16	24.18	0
8		Subtest 3	24.45	24.41	24.46	23.65	23.61	23.63	23.66	23.68	23.71	0.5
8		Subtest 4	24.44	24.42	24.45	23.64	23.60	23.64	23.68	23.67	23.68	0.5

Table 10.2.2 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, HSUPA and DC-HSDPA transmitter's power will not exceed the R99 maximum transmit power in devices based on Qualcomm's HSPA chipset solutions.

DC-HSDPA considerations

- 3GPP Specification 34.121-1 Release 8 Ver 8.10.0 was used for DC-HSDPA guidance.
- H-Set 12 (QPSK) was confirmed to be used during DC-HSDPA measurements.
- The DUT supports UE category 24 for HSDPA.

Figure 10.2 Power Measurement Setup

10.3 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 10.3.1 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 23095 (707.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	**1**	**0**	**25.03**	0	0
	1	25	24.82		
	1	49	24.80		
	25	**0**	**23.86**	0-1	1
	25	12	23.84		
	25	25	23.69		
	50	0	23.81	0-1	1
16QAM	1	0	24.10	0-1	1
	1	25	24.01		
	1	49	24.00		
	25	0	22.95	0-2	2
	25	12	22.91		
	25	25	22.87		
	50	0	22.94	0-2	2
64QAM	1	0	22.93	0-2	2
	1	25	22.90		
	1	49	22.89		
	25	0	21.95	0-3	3
	25	12	21.94		
	25	25	21.88		
	50	0	22.00	0-3	3

Table 10.3.2 LTE Conducted Power

Note 1: LTE Band 12 at 10 MHz bandwidth does not support three non-overlapping channels.
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 23035 (701.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23155 (713.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	24.75	24.87	24.84	0	0
	1	12	25.02	24.91	24.94		
	1	24	24.84	24.97	24.86		
	12	0	23.99	23.92	23.83	0-1	1
	12	6	24.00	23.91	23.91		
	12	13	23.94	23.87	23.88		
	25	0	23.96	23.87	23.80	0-1	1
16QAM	1	0	23.93	24.00	23.97	0-1	1
	1	12	24.21	24.11	24.12		
	1	24	24.03	24.10	24.01		
	12	0	23.09	23.01	22.90	0-2	2
	12	6	23.06	23.01	23.02		
	12	13	23.00	22.99	22.96		
	25	0	23.11	22.97	22.93	0-2	2
64QAM	1	0	22.88	23.03	22.94	0-2	2
	1	12	23.07	23.04	23.03		
	1	24	22.89	23.01	22.85		
	12	0	22.16	22.06	21.95	0-3	3
	12	6	22.17	22.09	22.04		
	12	13	22.10	22.05	22.05		
	15	0	22.07	22.01	21.90	0-3	3

Table 10.3.3 LTE Conducted Power

LTE Band 12 Conducted Power– 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23025 (700.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23165 (714.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	24.78	24.93	24.86	0	0
	1	7	24.89	24.87	24.87		
	1	14	24.97	25.02	24.83		
	8	0	23.90	23.87	23.86	0-1	1
	8	4	24.00	23.88	23.90		
	8	7	23.99	23.83	23.86		
	15	0	23.93	23.87	23.84	0-1	1
16QAM	1	0	23.98	24.11	24.04	0-1	1
	1	7	24.08	24.06	24.06		
	1	14	24.15	24.12	24.03		
	8	0	23.03	23.00	23.00	0-2	2
	8	4	23.18	23.05	23.07		
	8	7	23.09	23.02	23.02		
	15	0	23.12	23.06	23.02	0-2	2
64QAM	1	0	22.81	22.99	22.95	0-2	2
	1	7	22.96	22.94	23.06		
	1	14	23.04	23.06	22.91		
	8	0	22.08	22.02	22.04	0-3	3
	8	4	22.18	22.01	22.01		
	8	7	22.18	22.01	22.05		
	15	0	22.12	22.02	21.98	0-3	3

Table 10.3.4 LTE Conducted Power

LTE Band 12 Conducted Power– 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23017 (699.7 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23173 (715.3 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	24.75	24.84	24.77	0	0
	1	2	24.95	24.96	24.91		
	1	5	24.84	24.80	24.82		
	3	0	24.89	24.83	24.82	0	0
	3	2	24.97	24.93	24.85		
	3	3	24.86	24.84	24.82		
	6	0	23.85	23.85	23.80	0-1	1
16QAM	1	0	23.88	24.01	23.91	0-1	1
	1	2	24.08	24.15	24.03		
	1	5	23.98	23.98	23.95		
	3	0	23.97	23.96	23.94	0-1	1
	3	2	24.02	24.02	23.98		
	3	3	23.94	23.96	23.93		
	6	0	23.02	23.04	23.00	0-2	2
64QAM	1	0	22.73	22.87	22.87	0-2	2
	1	2	22.93	22.97	22.92		
	1	5	22.83	22.90	22.84		
	3	0	23.07	23.01	23.01	0-2	2
	3	2	23.15	23.02	23.02		
	3	3	23.02	23.02	23.01		
	6	0	22.01	22.01	21.99	0-3	3

Table 10.3.5 LTE Conducted Power

Band & Mode		Modulated Average[dBm]
LTE Band 13	Maximum	25.5
	Nominal	25.0

Table 10.3.6 Nominal and Maximum Output Power Spec

2) LTE Band 13

LTE Band 13 Conducted Power– 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	**1**	**0**	**24.93**	0	0
	1	25	24.91		
	1	49	24.77		
	25	**0**	**23.90**	0-1	1
	25	12	23.88		
	25	25	23.78		
	50	0	23.85	0-1	1
16QAM	1	0	23.98	0-1	1
	1	25	23.95		
	1	49	23.89		
	25	0	22.94	0-2	2
	25	12	22.91		
	25	25	22.95		
	50	0	22.91	0-2	2
64QAM	1	0	23.07	0-2	2
	1	25	22.84		
	1	49	22.85		
	25	0	21.98	0-3	3
	25	12	21.91		
	25	25	21.79		
	50	0	21.90	0-3	3

Table 10.3.7 LTE Conducted Power

Note 1: LTE Band 13 at 5 MHz bandwidth does not support three non-overlapping channels.
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 13 Conducted Power– 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	1	0	24.79	0	0
	1	12	24.84		
	1	24	24.80		
	12	0	23.85	0-1	1
	12	6	23.79		
	12	13	23.85		
	25	0	23.90	0-1	1
16QAM	1	0	23.70	0-1	1
	1	12	23.75		
	1	24	23.67		
	12	0	22.87	0-2	2
	12	6	22.84		
	12	13	22.90		
	25	0	22.90	0-2	2
64QAM	1	0	22.76	0-2	2
	1	12	22.82		
	1	24	22.73		
	12	0	21.95	0-3	3
	12	6	21.93		
	12	13	21.89		
	15	0	21.92	0-3	3

Table 10.3.8 LTE Conducted Power

Band & Mode		Modulated Average[dBm]
LTE Band 5	Maximum	25.5
	Nominal	25.0

Table 10.3.9 Nominal and Maximum Output Power Spec

3) LTE Band 5 (Cell)

LTE Band 5 (Cell) Conducted Power– 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 20525 (836.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	1	0	24.57	0	0
	1	**25**	**24.62**		
	1	49	24.61		
	25	**0**	**23.64**	0-1	1
	25	12	23.61		
	25	25	23.55		
	50	**0**	**23.61**	0-1	1
16QAM	1	0	23.75	0-1	1
	1	25	23.82		
	1	49	23.74		
	25	0	22.78	0-2	2
	25	12	22.74		
	25	25	22.67		
	50	0	22.72	0-2	2
64QAM	1	0	22.67	0-2	2
	1	25	22.67		
	1	49	22.67		
	25	0	21.82	0-3	3
	25	12	21.78		
	25	25	21.72		
	50	0	21.80	0-3	3

Table 10.3.10 LTE Conducted Power

Note: LTE Band 5(Cell) at 10 MHz bandwidth does not support three non-overlapping channels.
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 5 (Cell) Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20425 (826.5 MHz)	Mid Channel 20525 (836.5 MHz)	High Channel 20625 (846.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	1	0	24.65	24.50	24.58	0	0
	1	12	24.59	24.68	24.57		
	1	24	24.65	24.55	24.53		
	12	0	23.67	23.68	23.56	0-1	1
	12	6	23.62	23.60	23.52		
	12	13	23.64	23.58	23.53		
	25	0	23.70	23.64	23.54	0-1	1
16QAM	1	0	23.85	23.69	23.75	0-1	1
	1	12	23.78	23.88	23.77		
	1	24	23.83	23.75	23.71		
	12	0	22.82	22.76	22.69	0-2	2
	12	6	22.75	22.78	22.65		
	12	13	22.78	22.70	22.64		
	25	0	22.83	22.70	22.63	0-2	2
64QAM	1	0	22.77	22.63	22.65	0-2	2
	1	12	22.66	22.73	22.64		
	1	24	22.64	22.59	22.60		
	12	0	21.85	21.81	21.74	0-3	3
	12	6	21.80	21.79	21.71		
	12	13	21.83	21.77	21.68		
	25	0	21.76	21.71	21.65	0-3	3

Table 10.3.11 LTE Conducted Power

LTE Band 5 (Cell) Conducted Power– 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			20415 (825.5 MHz)	20525 (836.5 MHz)	20635 (847.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	24.71	24.55	24.52	0	0
	1	7	24.56	24.63	24.57		
	1	14	24.52	24.59	24.56		
	8	0	23.71	23.60	23.51	0-1	1
	8	4	23.59	23.67	23.57		
	8	7	23.56	23.61	23.62		
	15	0	23.72	23.60	23.55	0-1	1
16QAM	1	0	23.87	23.70	23.71	0-1	1
	1	7	23.75	23.78	23.75		
	1	14	23.70	23.77	23.75		
	8	0	22.86	22.77	22.66	0-2	2
	8	4	22.76	22.85	22.70		
	8	7	22.71	22.75	22.79		
	15	0	22.88	22.79	22.72	0-2	2
64QAM	1	0	22.75	22.59	22.54	0-2	2
	1	7	22.64	22.63	22.63		
	1	14	22.63	22.69	22.62		
	8	0	21.88	21.66	21.66	0-3	3
	8	4	21.77	21.86	21.76		
	8	7	21.75	21.75	21.79		
	15	0	21.83	21.76	21.65	0-3	3

Table 10.3.12 LTE Conducted Power

LTE Band 5 (Cell) Conducted Power– 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			20407 (824.7 MHz)	20525 (836.5 MHz)	20643 (848.3 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	24.67	24.58	24.59	0	0
	1	2	24.77	24.70	24.64		
	1	5	24.53	24.59	24.54		
	3	0	24.69	24.63	24.62	0	0
	3	2	24.70	24.67	24.64		
	3	3	24.70	24.63	24.60		
	6	0	23.68	23.64	23.58	0-1	1
16QAM	1	0	23.80	23.75	23.68	0-1	1
	1	2	23.90	23.81	23.81		
	1	5	23.70	23.70	23.68		
	3	0	23.75	23.69	23.68	0-1	1
	3	2	23.77	23.73	23.72		
	3	3	23.75	23.62	23.65		
	6	0	22.88	22.82	22.78	0-2	2
64QAM	1	0	22.69	22.56	22.57	0-2	2
	1	2	22.75	22.68	22.68		
	1	5	22.56	22.56	22.50		
	3	0	22.88	22.81	22.81	0-2	2
	3	2	22.78	22.85	22.83		
	3	3	22.86	22.79	22.79		
	6	0	21.82	21.82	21.69	0-3	3

Table 10.3.13 LTE Conducted Power

Band & Mode		Modulated Average[dBm]
LTE Band 4	Maximum	24.7
	Nominal	24.2

Table 10.3.14 Nominal and Maximum Output Power Spec

4) LTE Band 4

LTE Band 4 (AWS) Conducted Power– 20 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 20175 (1732.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	**1**	**0**	**24.50**	0	0
	1	50	24.18		
	1	99	24.16		
	50	**0**	**23.33**	0-1	1
	50	25	23.25		
	50	50	23.13		
	100	**0**	**23.29**	0-1	1
16QAM	1	0	23.65	0-1	1
	1	50	23.37		
	1	99	23.33		
	50	0	22.51	0-2	2
	50	25	22.40		
	50	50	22.28		
	100	0	22.36	0-2	2
64QAM	1	0	22.43	0-2	2
	1	50	22.19		
	1	99	22.08		
	50	0	21.41	0-3	3
	50	25	21.29		
	50	50	21.20		
	100	0	21.32	0-3	3

Table 10.3.15 LTE Conducted Power

Note: LTE Band 4(AWS) at 20 MHz bandwidth does not support three non-overlapping channels.
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 20025 (1717.5 MHz)	Mid Channel 20175 (1732.5 MHz)	High Channel 20325 (1747.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	24.35	24.43	24.45	0	0
	1	36	24.13	24.21	24.07		
	1	74	24.22	24.19	24.07		
	36	0	23.16	23.25	23.30	0-1	1
	36	18	23.16	23.24	23.05		
	36	37	23.17	23.16	23.06		
	75	0	23.24	23.20	23.11	0-1	1
16QAM	1	0	23.54	23.62	23.65	0-1	1
	1	36	23.30	23.40	23.25		
	1	74	23.40	23.37	23.24		
	36	0	22.36	22.43	22.44	0-2	2
	36	18	22.33	22.34	22.22		
	36	37	22.29	22.28	22.16		
	75	0	22.41	22.36	22.30	0-2	2
64QAM	1	0	22.32	22.40	22.38	0-2	2
	1	36	22.06	22.16	22.06		
	1	74	22.14	22.12	22.02		
	36	0	21.22	21.35	21.36	0-3	3
	36	18	21.27	21.28	21.18		
	36	37	21.19	21.19	21.07		
	75	0	21.29	21.27	21.17	0-3	3

Table 10.3.16 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	24.21	24.28	24.24	0	0
	1	25	24.15	24.18	24.10		
	1	49	24.09	24.05	24.06		
	25	0	23.17	23.26	23.10	0-1	1
	25	12	23.07	23.18	23.11		
	25	25	23.10	23.19	23.04		
	50	0	23.12	23.21	23.08	0-1	1
16QAM	1	0	23.38	23.45	23.41	0-1	1
	1	25	23.30	23.33	23.28		
	1	49	23.23	23.21	23.24		
	25	0	22.32	22.38	22.29	0-2	2
	25	12	22.27	22.36	22.28		
	25	25	22.24	22.31	22.20		
	50	0	22.25	22.33	22.23	0-2	2
64QAM	1	0	22.17	22.25	22.19	0-2	2
	1	25	22.06	22.16	22.08		
	1	49	21.99	22.02	22.00		
	25	0	21.19	21.28	21.17	0-3	3
	25	12	21.17	21.27	21.15		
	25	25	21.08	21.22	21.10		
	50	0	21.16	21.25	21.15	0-3	3

Table 10.3.17 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	24.23	24.22	24.13	0	0
	1	12	24.13	24.23	24.00		
	1	24	24.11	24.19	24.03		
	12	0	23.07	23.22	23.08	0-1	1
	12	6	23.09	23.19	23.07		
	12	13	23.10	23.15	23.04		
	25	0	23.05	23.19	23.01	0-1	1
16QAM	1	0	23.35	23.40	23.33	0-1	1
	1	12	23.31	23.43	23.18		
	1	24	23.29	23.34	23.23		
	12	0	22.22	22.31	22.19	0-2	2
	12	6	22.23	22.30	22.18		
	12	13	22.18	22.28	22.17		
	25	0	22.23	22.34	22.21	0-2	2
64QAM	1	0	22.15	22.24	22.07	0-2	2
	1	12	22.13	22.22	22.00		
	1	24	21.97	22.07	22.00		
	12	0	21.21	21.28	21.15	0-3	3
	12	6	21.20	21.28	21.18		
	12	13	21.15	21.24	21.14		
	25	0	21.12	21.18	21.10	0-3	3

Table 10.3.18 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	24.15	24.17	23.99	0	0
	1	7	24.05	24.14	24.04		
	1	14	24.12	24.12	24.04		
	8	0	23.08	23.18	23.05	0-1	1
	8	4	23.09	23.18	23.06		
	8	7	23.06	23.10	23.04		
	15	0	23.10	23.15	23.03	0-1	1
16QAM	1	0	23.30	23.36	23.16	0-1	1
	1	7	23.24	23.31	23.21		
	1	14	23.28	23.28	23.23		
	8	0	22.28	22.38	22.20	0-2	2
	8	4	22.25	22.33	22.25		
	8	7	22.25	22.27	22.21		
	15	0	22.25	22.31	22.23	0-2	2
64QAM	1	0	22.05	22.13	21.88	0-2	2
	1	7	22.05	22.14	22.03		
	1	14	22.06	22.06	21.98		
	8	0	21.11	21.28	21.16	0-3	3
	8	4	21.22	21.31	21.15		
	8	7	21.22	21.27	21.15		
	15	0	21.12	21.17	21.11	0-3	3

Table 10.3.19 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	24.00	24.06	23.96	0	0
	1	2	24.09	24.16	24.06		
	1	5	23.97	24.05	23.99		
	3	0	24.02	24.08	23.98	0	0
	3	2	24.04	24.16	24.04		
	3	3	23.99	24.09	23.97		
	6	0	23.01	23.10	22.99	0-1	1
16QAM	1	0	23.18	23.25	23.15	0-1	1
	1	2	23.27	23.33	23.26		
	1	5	23.15	23.24	23.14		
	3	0	23.18	23.25	23.17	0-1	1
	3	2	23.23	23.29	23.16		
	3	3	23.18	23.25	23.12		
	6	0	22.18	22.26	22.18	0-2	2
64QAM	1	0	22.01	22.02	21.98	0-2	2
	1	2	22.05	22.15	22.04		
	1	5	21.94	21.97	21.91		
	3	0	22.20	22.26	22.16	0-2	2
	3	2	22.21	22.35	22.15		
	3	3	22.18	22.23	22.14		
	6	0	21.12	21.21	21.05	0-3	3

Table 10.3.20 LTE Conducted Power

Band & Mode		Modulated Average [dBm]
LTE Band 2(PCS)	Maximum	24.7
	Nominal	24.2

Table 10.3.21 Nominal and Maximum Output Power Spec

5) LTE Band 2 (PCS)

LTE Band 2 (PCS) Conducted Power– 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18700 (1860.0 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19100 (1900.0 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	**1**	**0**	23.88	23.89	**24.25**	0	0
	1	50	23.64	23.75	23.85		
	1	99	23.63	23.62	23.76		
	50	**0**	22.81	22.86	**23.02**	0-1	1
	50	25	22.73	22.83	22.98		
	50	50	22.67	22.70	22.90		
	100	0	22.83	22.77	23.01	0-1	1
16QAM	1	0	23.05	23.00	23.44	0-1	1
	1	50	22.81	22.94	22.99		
	1	99	22.77	22.80	22.94		
	50	0	21.93	22.01	22.17	0-2	2
	50	25	21.84	21.90	22.07		
	50	50	21.80	21.78	21.97		
	100	0	21.91	21.90	22.07	0-2	2
64QAM	1	0	21.90	21.93	22.33	0-2	2
	1	50	21.66	21.79	21.92		
	1	99	21.61	21.63	21.78		
	50	0	20.92	21.05	21.18	0-3	3
	50	25	20.79	20.94	21.13		
	50	50	20.84	20.82	21.02		
	100	0	20.91	20.90	21.06	0-3	3

Table 10.3.22 LTE Conducted Power

LTE Band 2 (PCS) Conducted Power– 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18675 (1857.5 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19125 (1902.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	23.89	23.83	24.09	0	0
	1	36	23.63	23.73	23.86		
	1	74	23.58	23.68	23.82		
	36	0	22.76	22.89	22.95	0-1	1
	36	18	22.70	22.80	22.86		
	36	37	22.59	22.68	22.85		
	75	0	22.72	22.84	22.89	0-1	1
16QAM	1	0	23.05	22.98	23.26	0-1	1
	1	36	22.81	22.93	22.99		
	1	74	22.77	22.84	22.98		
	36	0	21.86	21.97	22.04	0-2	2
	36	18	21.82	21.91	22.03		
	36	37	21.74	21.81	21.96		
	75	0	21.76	21.90	22.04	0-2	2
64QAM	1	0	21.91	21.93	22.11	0-2	2
	1	36	21.67	21.76	21.84		
	1	74	21.59	21.65	21.83		
	36	0	20.87	20.97	21.08	0-3	3
	36	18	20.84	20.95	21.02		
	36	37	20.78	20.86	21.01		
	75	0	20.79	20.94	21.02	0-3	3

Table 10.3.23 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	23.73	23.75	23.92	0	0
	1	25	23.60	23.72	23.81		
	1	49	23.58	23.66	23.76		
	25	0	22.72	22.85	22.93	0-1	1
	25	12	22.71	22.82	22.90		
	25	25	22.59	22.75	22.79		
	50	0	22.72	22.79	22.90	0-1	1
16QAM	1	0	22.88	22.86	23.09	0-1	1
	1	25	22.79	22.91	23.00		
	1	49	22.72	22.83	22.96		
	25	0	21.85	21.94	22.02	0-2	2
	25	12	21.78	21.95	22.00		
	25	25	21.77	21.84	21.96		
	50	0	21.78	21.90	21.98	0-2	2
64QAM	1	0	21.75	21.71	21.94	0-2	2
	1	25	21.64	21.69	21.87		
	1	49	21.52	21.65	21.79		
	25	0	20.90	20.97	21.01	0-3	3
	25	12	20.81	20.90	21.01		
	25	25	20.71	20.89	20.93		
	50	0	20.81	20.89	20.98	0-3	3

Table 10.3.24 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	23.67	23.68	23.87	0	0
	1	12	23.68	23.79	23.85		
	1	24	23.57	23.70	23.77		
	12	0	22.71	22.75	22.86	0-1	1
	12	6	22.67	22.73	22.87		
	12	13	22.66	22.74	22.80		
	25	0	22.67	22.75	22.81	0-1	1
16QAM	1	0	22.87	22.87	23.04	0-1	1
	1	12	22.85	22.94	23.04		
	1	24	22.75	22.90	22.94		
	12	0	21.75	21.89	21.95	0-2	2
	12	6	21.75	21.84	21.93		
	12	13	21.72	21.84	21.91		
	25	0	21.73	21.90	21.91	0-2	2
64QAM	1	0	21.72	21.70	21.88	0-2	2
	1	12	21.73	21.77	21.87		
	1	24	21.51	21.67	21.73		
	12	0	20.88	20.88	21.01	0-3	3
	12	6	20.79	20.92	21.04		
	12	13	20.84	20.92	20.98		
	25	0	20.76	20.80	20.94	0-3	3

Table 10.3.25 LTE Conducted Power

LTE Band 2 (PCS) Conducted Power– 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18615 (1851.5 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19185 (1908.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	23.64	23.75	23.77	0	0
	1	7	23.63	23.73	23.76		
	1	14	23.57	23.67	23.72		
	8	0	22.67	22.70	22.84	0-1	1
	8	4	22.65	22.78	22.84		
	8	7	22.65	22.74	22.76		
	15	0	22.64	22.73	22.83	0-1	1
16QAM	1	0	22.83	22.94	22.95	0-1	1
	1	7	22.80	22.89	22.89		
	1	14	22.74	22.86	22.92		
	8	0	21.78	21.88	21.93	0-2	2
	8	4	21.81	21.94	21.99		
	8	7	21.84	21.87	21.94		
	15	0	21.82	21.92	21.98	0-2	2
64QAM	1	0	21.62	21.73	21.73	0-2	2
	1	7	21.62	21.70	21.78		
	1	14	21.55	21.68	21.78		
	8	0	20.81	20.88	21.01	0-3	3
	8	4	20.82	20.96	20.99		
	8	7	20.83	20.91	20.88		
	15	0	20.77	20.86	20.91	0-3	3

Table 10.3.26 LTE Conducted Power

LTE Band 2 (PCS) Conducted Power– 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18607 (1850.7 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19193 (1909.3 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	23.56	23.65	23.72	0	0
	1	2	23.69	23.76	23.78		
	1	5	23.52	23.63	23.69		
	3	0	23.58	23.67	23.71	0	0
	3	2	23.64	23.71	23.81		
	3	3	23.56	23.66	23.73		
	6	0	22.57	22.71	22.71	0-1	1
16QAM	1	0	22.74	22.80	22.89	0-1	1
	1	2	22.82	22.93	22.96		
	1	5	22.72	22.79	22.88		
	3	0	22.68	22.78	22.86	0-1	1
	3	2	22.67	22.82	22.90		
	3	3	22.67	22.76	22.80		
	6	0	21.75	21.89	21.89	0-2	2
64QAM	1	0	21.54	21.68	21.68	0-2	2
	1	2	21.60	21.71	21.78		
	1	5	21.50	21.63	21.63		
	3	0	21.75	21.85	21.89	0-2	2
	3	2	21.76	21.88	21.97		
	3	3	21.73	21.84	21.88		
	6	0	20.69	20.90	20.88	0-3	3

Table 10.3.27 LTE Conducted Power

Band & Mode		Modulated Average [dBm]
LTE Band 7	Maximum	24.7
	Nominal	24.2

Table 10.3.28 Nominal and Maximum Output Power Spec

6) LTE Band 7

LTE Band 7 Conducted Power– 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20850 (2510.0 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21350 (2560.0 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	**1**	**0**	**24.19**	23.97	24.02	0	0
	1	50	23.95	23.92	23.88		
	1	99	23.89	23.91	23.87		
	50	**0**	**23.10**	23.02	22.96	0-1	1
	50	25	22.99	22.97	22.92		
	50	50	22.96	22.91	22.90		
	100	0	23.03	22.92	22.96	0-1	1
16QAM	1	0	23.33	23.15	23.21	0-1	1
	1	50	23.14	23.08	23.08		
	1	99	23.08	23.09	23.07		
	50	0	22.23	22.17	22.11	0-2	2
	50	25	22.17	22.15	22.10		
	50	50	22.15	22.10	22.05		
	100	0	22.20	22.09	22.10	0-2	2
64QAM	1	0	22.32	22.14	22.20	0-2	2
	1	50	22.11	22.06	21.99		
	1	99	22.05	22.07	22.03		
	50	0	21.22	21.21	21.15	0-3	3
	50	25	21.18	21.11	21.11		
	50	50	21.15	21.09	21.04		
	100	0	21.22	21.08	21.15	0-3	3

Table 10.3.29 LTE Conducted Power

LTE Band 7 Conducted Power– 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20825 (2507.5 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21375 (2562.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	24.17	23.97	24.00	0	0
	1	36	23.92	23.94	23.92		
	1	74	24.03	23.91	23.93		
	36	0	23.07	22.97	22.97	0-1	1
	36	18	22.91	22.98	22.91		
	36	37	23.00	22.92	22.85		
	75	0	23.05	22.99	22.94	0-1	1
16QAM	1	0	23.35	23.15	23.18	0-1	1
	1	36	23.12	23.11	23.11		
	1	74	23.21	23.10	23.09		
	36	0	22.23	22.09	22.07	0-2	2
	36	18	22.11	22.12	22.03		
	36	37	22.07	22.03	22.03		
	75	0	22.17	22.08	22.10	0-2	2
64QAM	1	0	22.28	22.10	22.15	0-2	2
	1	36	22.05	22.08	22.03		
	1	74	22.12	22.08	22.04		
	36	0	21.24	21.16	21.15	0-3	3
	36	18	21.10	21.13	21.09		
	36	37	21.18	21.10	21.01		
	75	0	21.21	21.14	21.10	0-3	3

Table 10.3.30 LTE Conducted Power

LTE Band 7 Conducted Power– 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			20800 (2505.0 MHz)	21100 (2535.0 MHz)	21400 (2565.0 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	24.10	23.88	23.93	0	0
	1	25	23.94	24.00	23.91		
	1	49	23.88	23.85	23.85		
	25	0	23.00	22.97	22.94	0-1	1
	25	12	22.90	22.92	22.88		
	25	25	22.87	22.90	22.82		
	50	0	23.01	22.92	22.86	0-1	1
16QAM	1	0	23.30	23.08	23.08	0-1	1
	1	25	23.12	23.16	23.06		
	1	49	23.05	23.01	22.99		
	25	0	22.20	22.14	22.06	0-2	2
	25	12	22.07	22.11	22.04		
	25	25	22.03	22.05	21.97		
	50	0	22.14	22.09	22.04	0-2	2
64QAM	1	0	22.23	22.00	22.06	0-2	2
	1	25	22.06	22.08	22.01		
	1	49	22.02	22.04	22.00		
	25	0	21.19	21.12	21.10	0-3	3
	25	12	21.08	21.11	21.05		
	25	25	21.05	21.09	20.99		
	50	0	21.07	21.07	20.97	0-3	3

Table 10.3.31 LTE Conducted Power

LTE Band 7 Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			20775 (2502.5 MHz)	21100 (2535.0 MHz)	21425 (2567.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.98	23.84	23.88	0	0
	1	12	23.95	23.99	23.92		
	1	24	23.87	23.88	23.86		
	12	0	22.98	22.95	22.91	0-1	1
	12	6	23.06	22.93	22.92		
	12	13	22.89	22.92	22.89		
	25	0	22.96	22.92	22.90	0-1	1
16QAM	1	0	23.15	23.02	23.04	0-1	1
	1	12	23.11	23.16	23.06		
	1	24	23.06	23.07	23.00		
	12	0	22.11	22.04	22.02	0-2	2
	12	6	22.16	22.07	22.05		
	12	13	21.99	22.02	22.02		
	25	0	22.16	22.04	22.02	0-2	2
64QAM	1	0	22.11	21.95	22.02	0-2	2
	1	12	22.12	22.12	22.09		
	1	24	22.00	22.00	21.99		
	12	0	21.09	21.14	21.08	0-3	3
	12	6	21.19	21.12	21.08		
	12	13	21.05	21.08	21.07		
	25	0	21.15	21.08	21.09	0-3	3

Table 10.3.32 LTE Conducted Power

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

Table 10.3.33 Nominal and Maximum Output Power Spec

7) 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**	**24.57**	24.43	24.55	24.52	24.56	0	0
	1	50	24.56	24.44	24.54	24.44	24.54		
	1	99	24.54	24.47	24.53	24.42	24.48		
	50	0	23.55	23.44	23.55	23.44	23.53	0-1	1
	50	**25**	**23.63**	23.49	23.61	23.56	23.55		
	50	50	23.58	23.46	23.55	23.50	23.48		
	100	0	23.61	23.54	23.60	23.46	23.56	0-1	1
16QAM	1	0	23.68	23.58	23.61	23.61	23.60	0-1	1
	1	50	23.53	23.42	23.57	23.45	23.62		
	1	99	23.63	23.50	23.58	23.51	23.60		
	50	0	22.64	22.56	22.58	22.57	22.66	0-2	2
	50	25	22.68	22.62	22.71	22.58	22.60		
	50	50	22.68	22.63	22.65	22.60	22.68		
	100	0	22.65	22.60	22.71	22.57	22.60	0-2	2
64QAM	1	0	22.56	22.43	22.52	22.49	22.50	0-2	2
	1	50	22.39	22.28	22.44	22.34	22.43		
	1	99	22.52	22.47	22.49	22.47	22.52		
	50	0	21.66	21.54	21.60	21.53	21.63	0-3	3
	50	25	21.67	21.58	21.71	21.57	21.62		
	50	50	21.68	21.57	21.65	21.59	21.62		
	100	0	21.66	21.51	21.70	21.53	21.62	0-3	3

Table 10.3.34 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	24.45	24.44	24.53	24.46	24.53	0	0
	1	36	24.40	24.45	24.52	24.42	24.53		
	1	74	24.51	24.45	24.47	24.44	24.54		
	36	0	23.48	23.49	23.49	23.48	23.44	0-1	1
	36	18	23.48	23.48	23.60	23.58	23.57		
	36	37	23.48	23.44	23.58	23.48	23.48		
	75	0	23.56	23.54	23.52	23.52	23.43	0-1	1
16QAM	1	0	23.56	23.61	23.56	23.60	23.56	0-1	1
	1	36	23.49	23.47	23.61	23.47	23.59		
	1	74	23.59	23.57	23.57	23.55	23.55		
	36	0	22.54	22.57	22.54	22.50	22.54	0-2	2
	36	18	22.56	22.61	22.67	22.63	22.63		
	36	37	22.62	22.59	22.61	22.60	22.53		
	75	0	22.70	22.58	22.71	22.55	22.60	0-2	2
64QAM	1	0	22.42	22.47	22.50	22.51	22.48	0-2	2
	1	36	22.38	22.32	22.49	22.29	22.49		
	1	74	22.51	22.44	22.53	22.38	22.46		
	36	0	21.64	21.57	21.59	21.51	21.63	0-3	3
	36	18	21.58	21.54	21.74	21.55	21.69		
	36	37	21.62	21.61	21.62	21.56	21.63		
	75	0	21.69	21.54	21.71	21.55	21.56	0-3	3

Table 10.3.35 LTE Conducted Power

LTE Band 41 Conducted Power– 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39700 (2501.0 MHz)	Low-Mid Channel 40160 (2547.0 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41080 (2639.0 MHz)	High Channel 41540 (2685.0 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)						
QPSK	1	0	24.41	24.45	24.42	24.52	24.55	0	0
	1	25	24.36	24.48	24.53	24.51	24.48		
	1	49	24.31	24.43	24.43	24.49	24.46		
	25	0	23.42	23.47	23.44	23.43	23.54	0-1	1
	25	12	23.38	23.56	23.59	23.54	23.51		
	25	25	23.41	23.45	23.52	23.46	23.50		
	50	0	23.47	23.54	23.58	23.49	23.48	0-1	1
16QAM	1	0	23.58	23.63	23.54	23.63	23.68	0-1	1
	1	25	23.50	23.38	23.60	23.42	23.56		
	1	49	23.50	23.49	23.56	23.49	23.57		
	25	0	22.58	22.50	22.62	22.54	22.69	0-2	2
	25	12	22.55	22.54	22.67	22.60	22.60		
	25	25	22.59	22.54	22.71	22.58	22.58		
	50	0	22.58	22.53	22.71	22.51	22.66	0-2	2
64QAM	1	0	22.41	22.42	22.42	22.46	22.57	0-2	2
	1	25	22.36	22.31	22.50	22.32	22.47		
	1	49	22.38	22.41	22.47	22.38	22.47		
	25	0	21.61	21.58	21.62	21.61	21.70	0-3	3
	25	12	21.55	21.53	21.72	21.55	21.69		
	25	25	21.60	21.55	21.69	21.55	21.63		
	50	0	21.52	21.60	21.71	21.57	21.61	0-3	3

Table 10.3.36 LTE Conducted Power

LTE Band 41 Conducted Power– 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39675 (2498.5 MHz)	Low-Mid Channel 40148 (2545.8 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41093 (2640.3 MHz)	High Channel 41565 (2687.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)						
QPSK	1	0	24.37	24.43	24.37	24.49	24.48	0	0
	1	12	24.40	24.44	24.51	24.51	24.54		
	1	24	24.29	24.49	24.43	24.49	24.45		
	12	0	23.46	23.48	23.43	23.43	23.49	0-1	1
	12	6	23.41	23.58	23.50	23.55	23.46		
	12	13	23.38	23.52	23.48	23.51	23.45		
	25	0	23.43	23.53	23.57	23.53	23.49	0-1	1
16QAM	1	0	23.43	23.62	23.48	23.60	23.52	0-1	1
	1	12	23.49	23.48	23.64	23.45	23.61		
	1	24	23.38	23.48	23.50	23.48	23.54		
	12	0	22.52	22.49	22.53	22.56	22.58	0-2	2
	12	6	22.57	22.54	22.68	22.63	22.64		
	12	13	22.49	22.57	22.62	22.58	22.59		
	25	0	22.59	22.51	22.72	22.52	22.66	0-2	2
64QAM	1	0	22.35	22.48	22.32	22.47	22.40	0-2	2
	1	12	22.44	22.27	22.57	22.33	22.52		
	1	24	22.35	22.42	22.50	22.45	22.38		
	12	0	21.58	21.61	21.60	21.52	21.65	0-3	3
	12	6	21.53	21.60	21.68	21.52	21.62		
	12	13	21.55	21.61	21.66	21.61	21.64		
	25	0	21.60	21.55	21.70	21.57	21.68	0-3	3

Table 10.3.37 LTE Conducted Power

8) LTE DL Carrier Aggregation Conducted Powers

- **Below downlink CA configurations were determined based on Manufacturer's information.**

CA BW Class

Class	ATBC		Maximum number of CC
	$N_{RB,agg}$	MHz	
A	N <= 100	20	1
B	25 < N <= 100	20	2
C	100 < N <= 200	40	2
D	200 < N <= 300	60	3
E	300 < N <= 400	80	4
F	400 < N <= 500	100	5
I	700 < N <= 800	160	8

Table 10.3.38 Inter-band DL CA Configuration

2 bands / 2CC	2 bands / 3CC	2 bands / 4CC
CA_2A-7A (0) Table 10.3.39	CA_2A-7C (0) Table 10.3.40	N/A
CA_5A-7A (0)(1) Table 10.3.41	N/A	N/A

Table 10.3.39 LTE DL Carrier Aggregation Conducted Power for Inter-band DL CA Configuration [CA_2A-7A (0)]

PCC									SCC				Power	
PCC Band	PCC BW (MHz)	PCC (UL) CH.	PCC (UL) Freq. (MHz)	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) CH.	PCC (DL) Freq. (MHz)	SCC Band	SCC BW (MHz)	SCC (DL) CH.	SCC (DL) Freq. (MHz)	LTE Tx. Power with DL CA Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)
LTE B2	20	19100	1900	QPSK	1	0	1100	1980	LTE B7	20	3100	2655	24.22<	24.25
LTE B2	20	19100	1900	QPSK	1	0	1100	1980	LTE B7	15	3100	2655	24.20<	24.25
LTE B2	20	19100	1900	QPSK	1	0	1100	1980	LTE B7	10	3100	2655	24.18<	24.25
LTE B2	20	19100	1900	QPSK	1	0	1100	1980	LTE B7	5	3100	2655	24.17<	24.25

Table 10.3.40 LTE DL Carrier Aggregation Conducted Power for Inter-band DL CA Configuration [CA_2A-7C (0)]

PCC									SCC				SCC				Power	
PCC Band	PCC BW (MHz)	PCC (UL) CH.	PCC (UL) Freq. (MHz)	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) CH.	PCC (DL) Freq. (MHz)	SCC Band	SCC BW (MHz)	SCC (DL) CH.	SCC (DL) Freq. (MHz)	SCC Band	SCC BW (MHz)	SCC (DL) CH.	SCC (DL) Freq. (MHz)	LTE Tx. Power with DL CA Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)
LTE B2	20	19100	1900	QPSK	1	0	1100	1980	LTE B7	20	3100	2655	LTE B7	20	3298	2674.8	24.22<	24.25
LTE B2	20	19100	1900	QPSK	1	0	1100	1980	LTE B7	20	3100	2655	LTE B7	15	3271	2672.1	24.21<	24.25
LTE B2	20	19100	1900	QPSK	1	0	1100	1980	LTE B7	20	3100	2655	LTE B7	10	3244	2669.4	24.18<	24.25
LTE B2	20	19100	1900	QPSK	1	0	1100	1980	LTE B7	15	3100	2655	LTE B7	20	3271	2672.1	24.17<	24.25
LTE B2	20	19100	1900	QPSK	1	0	1100	1980	LTE B7	15	3100	2655	LTE B7	15	3250	2670.0	24.15<	24.25
LTE B2	20	19100	1900	QPSK	1	0	1100	1980	LTE B7	15	3100	2655	LTE B7	10	3220	2667.0	24.14<	24.25
LTE B2	20	19100	1900	QPSK	1	0	1100	1980	LTE B7	10	3100	2655	LTE B7	20	3244	2669.4	24.11<	24.25

Table 10.3.41 LTE DL Carrier Aggregation Conducted Power for Inter-band DL CA Configuration [CA_5A-7A (0)(1)]

PCC									SCC				Power	
PCC Band	PCC BW (MHz)	PCC (UL) CH.	PCC (UL) Freq. (MHz)	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) CH.	PCC (DL) Freq. (MHz)	SCC Band	SCC BW (MHz)	SCC (DL) CH.	SCC (DL) Freq. (MHz)	LTE Tx. Power with DL CA Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B7	20	3100	2655	24.60<	24.62
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B7	15	3100	2655	24.58<	24.62
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B7	10	3100	2655	24.57<	24.62

Table 10.3.42 Intra-band (contiguous) DL CA Configuration

1 bands / 2CC	1 bands / 3CC	1 bands / 4CC
CA_7C (0)(1)(2) Table 10.3.43	N/A	N/A

Table 10.3.43 LTE DL Carrier Aggregation Conducted Power for Intra-band (contiguous) DL CA Configuration [CA_7C (0)(1)(2)]

PCC									SCC				Power	
PCC Band	PCC BW (MHz)	PCC (UL) CH.	PCC (UL) Freq. (MHz)	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) CH.	PCC (DL) Freq. (MHz)	SCC Band	SCC BW (MHz)	SCC (DL) CH.	SCC (DL) Freq. (MHz)	LTE Tx. Power with DL CA Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	LTE B7	20	3048	2649.8	24.16<	24.19
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	LTE B7	15	3021	2647.1	24.13<	24.19
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	LTE B7	10	2994	2644.4	24.11<	24.19

Table 10.3.44 Intra-band (non-contiguous) DL CA Configuration

1 bands / 2CC	1 bands / 3CC	1 bands / 4CC
CA_7A-7A (2) Table 10.3.45	N/A	N/A
CA_7A-7A (0)(1)(3) Table 10.3.45	N/A	N/A

Table 10.3.45 LTE DL Carrier Aggregation Conducted Power for Intra-band (non-contiguous) DL CA Configuration [CA_7A-7A (0)(1)(2)(3)]

PCC									SCC				Power	
PCC Band	PCC BW (MHz)	PCC (UL) CH.	PCC (UL) Freq. (MHz)	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) CH.	PCC (DL) Freq. (MHz)	SCC Band	SCC BW (MHz)	SCC (DL) CH.	SCC (DL) Freq. (MHz)	LTE Tx. Power with DL CA Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	LTE B7	20	3350	2680.0	24.16<	24.19
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	LTE B7	15	3375	2682.5	24.15<	24.19
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	LTE B7	10	3400	2685.0	24.11<	24.19
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	LTE B7	5	3425	2687.5	24.08<	24.19

Table 10.3.46 LTE DL Carrier Aggregation Conducted Powers for comparing B7 DL 4X4 MIMO and B7 DL Intra-band CA

LTE Band	Maximum DL 4X4 MIMO Power (dBm)	Maximum DL Intra-band Contiguous DL CA Power (dBm)	Maximum DL Intra-band Non-Contiguous DL CA Power (dBm)
B7	24.11 <	24.16	24.16

Note(s):
1. The device only supports downlink Carrier Aggregation. Uplink Carrier Aggregation is not supported. The DL carrier aggregation powers were measured according to the 941225 D05Av01r02. Per FCC KDB Publication 941225 D05Av01r02, no further power measurements and SAR measurements are required for DL 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.
2. For downlink carrier aggregation combinations, PCC uplink channel was selected based on section C.3)b)ii) of KDB 941225 D05Av01r02.

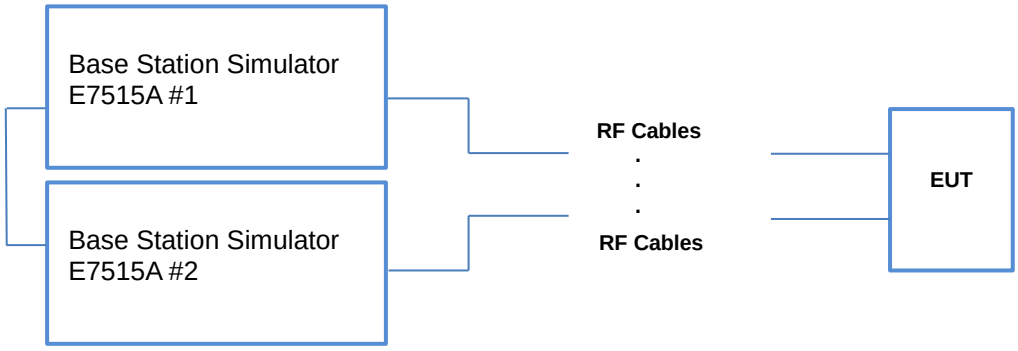

Figure 10.3.1 DL 4CA Power Measurement Setup

9) LTE 4x4 DL MIMO , LTE 4x4 DL MIMO with DL Carrier Aggregation Conducted Powers

- **Below DL MIMO and DL CA configurations were determined based on Manufacturer's information.**

Table 10.3.47 DL 4X4 MIMO Configuration

LTE B7
7A[4X4] Table 10.3.48

Table 10.3.48 LTE DL 4X4 MIMO Conducted Power

PCC / DL 4X4 MIMO									Power	
PCC Band	PCC BW (MHz)	PCC (UL) CH.	PCC (UL) Freq. (MHz)	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) CH.	PCC (DL) Freq. (MHz)	LTE Tx. Power with DL4X4 MIMO Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	24.11<	24.19
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	24.10<	24.19
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	24.09<	24.19
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	24.08<	24.19

Note(s):
1. The device supports downlink 4X4 MIMO. The 4X4 MIMO powers were measured applying the May 2017 TCB Workshop Notes (LTE 4x4 Downlink MIMO). Per May 2017 TCB Workshop Notes (LTE 4x4 Downlink MIMO) and FCC KDB Publication 941225 D05Av01r02, no further power measurements and SAR measurements are required for DL MIMO configurations when the average output power with downlink MIMO active is not more than 0.25 dB higher than the average output power with downlink MIMO inactive.
2. PCC uplink channel was selected based on section C.3)b)ii) of KDB 941225 D05Av01r02.

Table 10.3.49 DL 4x4 MIMO with Intra-band (contiguous) DL CA Configuration

1 bands / 2CC	1 bands / 3CC	1 bands / 4CC
CA_7C[4x4] (0)(1)(2) Table 10.3.50	N/A	N/A

Table 10.3.50 DL 4x4 MIMO with Intra-band (contiguous) DL CA Configuration Powers [CA_7C (0)(1)(2)]

PCC									SCC				Power	
PCC Band	PCC BW (MHz)	PCC (UL) CH.	PCC (UL) Freq. (MHz)	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) CH.	PCC (DL) Freq. (MHz)	SCC Band	SCC BW (MHz)	SCC (DL) CH.	SCC (DL) Freq. (MHz)	LTE Tx. Power with DL CA Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	LTE B7	20	3048	2649.8	24.13<	24.19
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	LTE B7	15	3021	2647.1	24.10<	24.19
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	LTE B7	10	2994	2644.4	24.07<	24.19

Table 10.3.51 DL 4x4 MIMO with Intra-band (non-contiguous) DL CA Configuration

1 bands / 2CC	1 bands / 3CC	1 bands / 4CC
CA_7A[4x4]-7A (2) Table 10.3.52	N/A	N/A
CA_7A[4x4]-7A (0)(1)(3) Table 10.3.52	N/A	N/A

Table 10.3.52 DL 4x4 MIMO with Intra-band (non-contiguous) DL CA Configuration Powers [CA_7A[4x4]-7A (0)(1)(2)(3)]

PCC									SCC				Power	
PCC Band	PCC BW (MHz)	PCC (UL) CH.	PCC (UL) Freq. (MHz)	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) CH.	PCC (DL) Freq. (MHz)	SCC Band	SCC BW (MHz)	SCC (DL) CH.	SCC (DL) Freq. (MHz)	LTE Tx. Power with DL CA Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	LTE B7	20	3350	2680.0	24.13<	24.19
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	LTE B7	15	3375	2682.5	24.11<	24.19
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	LTE B7	10	3400	2685.0	24.10<	24.19
LTE B7	20	20850	2510	QPSK	1	0	2850	2630	LTE B7	5	3425	2687.5	24.09<	24.19

Note(s):

1. The device supports downlink 4X4 MIMO. The 4X4 MIMO powers were measured applying the May 2017 TCB Workshop Notes (LTE 4x4 Downlink MIMO). And Per May 2017 TCB Workshop Notes (LTE 4x4 Downlink MIMO) and FCC KDB Publication 941225 D05Av01r02, **no further power measurements and SAR measurements are required for DL MIMO configurations** when the average output power with downlink MIMO active is **not more than 0.25 dB higher than** the average output power with downlink MIMO inactive.
2 PCC uplink channel was selected based on section C.3)b)ii) of KDB 941225 D05Av01r02.

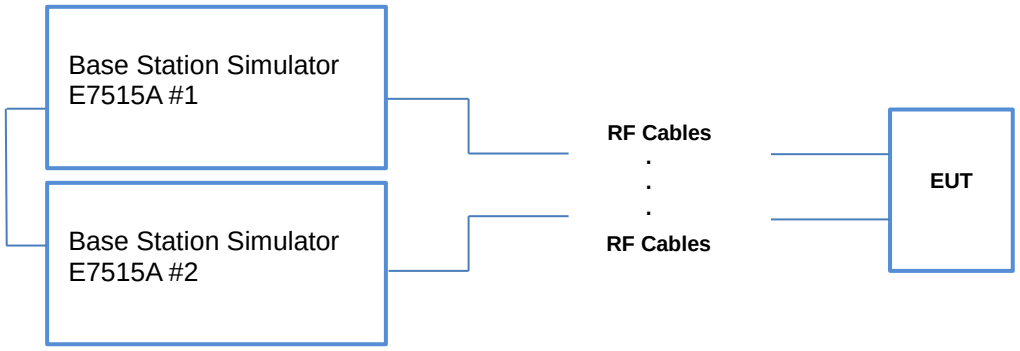

Figure 10.3.2 DL 4x4 MIMO, DL 4x4 MIMO with DL 4CA Power Measurement Setup

10) 64QAM uplink : Applying KDB inquiry # 331653

According to the Response to Inquiry to FCC (KDB Inquiry Tracking Number: 331653), the SAR Power Measurement Plan is as follows.

(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.

11) LAA downlink only : Applying KDB inquiry # 331653

According to the Response to Inquiry to FCC (KDB Inquiry Tracking Number: 331653), the SAR Power Measurement Plan is as follows.

(1) We propose to apply the test procedure in KDB 941225 D05A v01r02 for devices with downlink carrier aggregation only. Per C.3)b), the uplink maximum output power is measured with downlink carrier aggregation active, only for the channel with highest measured maximum output power when downlink carrier aggregation is in active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than 1/4 dB higher than the maximum output power measured when downlink carrier aggregation is inactive.

10.4 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	1~2	16.0	15.0	16.0	15.0	-	-
		3~9	16.0	15.0	16.0	15.0	-	-
		10~11	16.0	15.0	16.0	15.0	-	-
	802.11g	1~2	15.5	14.5	15.5	14.5	18.5	17.5
		3~9	15.5	14.5	15.5	14.5	18.5	17.5
		10~11	15.5	14.5	15.5	14.5	18.5	17.5
	802.11n	1~2	14.5	13.5	14.5	13.5	17.5	16.5
		3~9	14.5	13.5	14.5	13.5	17.5	16.5
		10~11	14.5	13.5	14.5	13.5	17.5	16.5
	802.11ac	1~2	14.5	13.5	14.5	13.5	17.5	16.5
		3~9	14.5	13.5	14.5	13.5	17.5	16.5
		10~11	14.5	13.5	14.5	13.5	17.5	16.5

Table 10.4.1 Nominal and Maximum Output Power Spec

Mode	Freq.	Channel	IEEE 802.11 (2.4 GHz) Conducted Power[dBm]			
	(MHz)		Ant.1	Ant.2	MIMO(CDD)	MIMO(SDM)
802.11b	2412	1	15.12	15.03	-	-
	2437	**6**	**15.21**	**15.04**	-	-
	2462	**11**	**15.33**	15.03	-	-
802.11g	**2412**	**1**	14.15	14.23	**17.20**	-
	2437	6	14.21	14.06	17.15	-
	2462	11	14.17	14.09	17.14	-
802.11n (HT-20)	2412	1	12.59	12.64	15.63	15.62
	2437	6	12.57	12.61	15.60	15.59
	2462	11	12.68	12.61	15.66	15.74
802.11ac (VHT-20)	2412	1	12.55	12.60	15.59	15.66
	2437	6	12.63	12.55	15.60	15.65
	2462	11	12.57	12.56	15.58	15.73

Table 10.4.2 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	802.11a	36	15.5	14.5	15.5	14.5	18.5	17.5
		40-48	15.5	14.5	15.5	14.5	18.5	17.5
		52-60	15.5	14.5	15.5	14.5	18.5	17.5
		64	15.5	14.5	15.5	14.5	18.5	17.5
		100	15.5	14.5	15.5	14.5	18.5	17.5
		104-144	15.5	14.5	15.5	14.5	18.5	17.5
		149-161	15.5	14.5	15.5	14.5	18.5	17.5
		165	15.5	14.5	15.5	14.5	18.5	17.5
	802.11n/ac (20MHz)	36	14.5	13.5	14.5	13.5	17.5	16.5
		40-48	14.5	13.5	14.5	13.5	17.5	16.5
		52-60	14.5	13.5	14.5	13.5	17.5	16.5
		64	14.5	13.5	14.5	13.5	17.5	16.5
		100	14.5	13.5	14.5	13.5	17.5	16.5
		104-144	14.5	13.5	14.5	13.5	17.5	16.5
		149-161	14.5	13.5	14.5	13.5	17.5	16.5
		165	14.5	13.5	14.5	13.5	17.5	16.5
	802.11n/ac (40MHz)	38	13.5	12.5	13.5	12.5	16.5	15.5
		46	13.5	12.5	13.5	12.5	16.5	15.5
		54	13.5	12.5	13.5	12.5	16.5	15.5
		62	13.5	12.5	13.5	12.5	16.5	15.5
		102	13.5	12.5	13.5	12.5	16.5	15.5
		110	13.5	12.5	13.5	12.5	16.5	15.5
		134	13.5	12.5	13.5	12.5	16.5	15.5
		142	13.5	12.5	13.5	12.5	16.5	15.5
		151	13.5	12.5	13.5	12.5	16.5	15.5
		159	13.5	12.5	13.5	12.5	16.5	15.5
	802.11ac (80MHz)	42	11.5	10.5	11.5	10.5	14.5	13.5
		58	11.5	10.5	11.5	10.5	14.5	13.5
		106	11.5	10.5	11.5	10.5	14.5	13.5
		138	11.5	10.5	11.5	10.5	14.5	13.5
		155	11.5	10.5	11.5	10.5	14.5	13.5

Table 10.4.3 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**	**14.61**	**14.58**	**17.61**	-
	5200	40	14.57	14.50	17.55	-
	5220	44	14.60	14.42	17.52	-
	5240	48	14.55	14.33	17.45	-
	5260	**52**	14.72	**14.69**	**17.72**	-
	5280	56	14.56	14.37	17.48	-
	5300	**60**	**14.76**	14.39	17.59	-
	5320	64	14.74	14.41	17.59	-
	5500	100	14.66	14.53	17.61	-
	5600	120	14.77	14.57	17.68	-
	5660	**132**	14.77	**14.69**	**17.74**	-
	5720	**144**	**14.78**	14.63	17.72	-
	5745	149	14.68	14.58	17.64	-
	5785	**157**	**14.79**	**14.65**	**17.73**	-
	5825	**165**	**14.73**	**14.52**	**17.64**	-

Table 10.4.4 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	13.93	14.03	16.99	17.09
	5200	40	13.95	14.01	16.99	16.96
	5220	44	13.91	13.96	16.95	16.99
	5240	48	13.90	14.03	16.98	17.02
	5260	52	14.11	14.05	17.09	16.90
	5280	56	13.97	14.08	17.04	16.78
	5300	60	14.01	13.88	16.96	16.82
	5320	64	14.48	13.91	17.21	16.82
	5500	100	14.02	13.93	16.99	17.00
	5600	120	14.06	14.06	17.07	16.96
	5660	132	14.00	14.26	17.14	16.92
	5720	144	14.36	14.11	17.25	16.90
	5745	149	13.94	13.96	16.96	16.97
	5785	157	14.14	14.03	17.10	16.91
	5825	165	14.09	14.07	17.09	16.80

Table 10.4.5 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	13.87	13.97	16.93	17.10
	5200	40	13.85	13.92	16.90	16.91
	5220	44	13.92	13.98	16.96	17.02
	5240	48	13.89	14.05	16.98	17.00
	5260	52	13.83	14.10	16.98	17.04
	5280	56	13.85	13.99	16.93	16.93
	5300	60	13.93	14.01	16.98	17.02
	5320	64	14.56	14.04	17.32	17.00
	5500	100	14.05	14.06	17.07	16.95
	5600	120	14.02	13.96	17.00	17.06
	5660	132	14.15	13.98	17.08	17.12
	5720	144	14.06	14.07	17.08	17.10
	5745	149	14.04	14.01	17.04	17.01
	5785	157	14.00	14.03	17.03	17.03
	5825	165	14.06	14.17	17.13	16.95

Table 10.4.6 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	12.59	12.76	15.69	15.74
	5230	46	12.77	12.87	15.83	15.83
	5270	54	12.75	12.77	15.77	15.72
	5310	62	12.68	12.63	15.67	15.78
	5510	102	12.92	12.95	15.95	15.96
	5590	118	12.56	12.94	15.76	15.65
	5670	134	12.56	12.92	15.75	15.65
	5710	142	12.88	12.89	15.90	15.73
	5755	151	12.97	12.85	15.92	15.80
	5795	159	12.85	12.96	15.92	15.71

Table 10.4.7 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	12.68	12.68	15.69	15.83
	5230	46	12.88	12.81	15.86	15.97
	5270	54	12.85	12.74	15.81	15.81
	5310	62	12.83	12.60	15.73	15.72
	5510	102	12.88	12.99	15.95	15.93
	5590	118	12.77	12.80	15.80	15.74
	5670	134	12.75	12.93	15.85	15.68
	5710	142	12.75	12.85	15.81	15.72
	5755	151	12.88	12.84	15.87	15.76
	5795	159	12.93	12.99	15.97	15.82

Table 10.4.8 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	10.98	10.88	13.94	13.96
	5290	58	10.91	10.66	13.80	13.77
	5530	106	10.85	10.98	13.93	13.83
	5610	122	10.74	10.98	13.87	13.77
	5690	138	10.65	10.96	13.82	13.73
	5775	155	10.69	10.83	13.77	13.75

Table 10.4.9 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, duo to an even number of channels, both channels were measured.
- Output Power and SAR is not required for 802.11 g/n HT20 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.

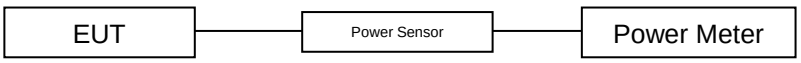

Figure 10.4 Power Measurement Setup

10.5 Bluetooth Conducted Powers

Modulated Average[dBm]		
Bluetooth 1 Mbps	Maximum	13.0
	Nominal	12.0
Bluetooth 2 Mbps	Maximum	12.0
	Nominal	11.0
Bluetooth 3 Mbps	Maximum	12.0
	Nominal	11.0
Bluetooth LE	Maximum	5.5
	Nominal	4.5

Table 10.5.1 Nominal and Maximum Output Power Spec

Channel	Frequency	Burst AVG Output Power (1Mbps)	Frame AVG Output Power (1Mbps)	Burst AVG Output Power (2Mbps)	Frame AVG Output Power (2Mbps)	Burst AVG Output Power (3Mbps)	Frame AVG Output Power (3Mbps)
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)
Low	2402	12.00	10.85	10.93	9.78	10.94	9.79
Mid	2441	12.25	11.10	11.21	10.06	11.21	10.06
High	2480	11.27	10.12	10.13	8.98	10.13	8.98

Table 10.5.2 Bluetooth Frame Average RF Power

Channel	Frequency	Burst AVG Output Power(LE / 1Mbps)	Frame AVG Output Power(LE / 1Mbps)	Burst AVG Output Power(LE / 2Mbps)	Frame AVG Output Power(LE / 2Mbps)
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)
Low	2402	5.28	3.22	5.20	0.36
Mid	2440	4.85	2.79	4.85	0.01
High	2480	4.11	2.05	4.05	-0.79

Table 10.5.3 Bluetooth LE Frame Average RF Power

- **Bluetooth Conducted Powers procedures**

1. Bluetooth (BDR, EDR)
   1) Enter DUT mode in EUT and operate it.
      When it operating, The EUT is transmitting at maximum power level and duty cycle fixed.
   2) Instruments and EUT were connected like Figure 10.5.1(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 10.5.1(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.

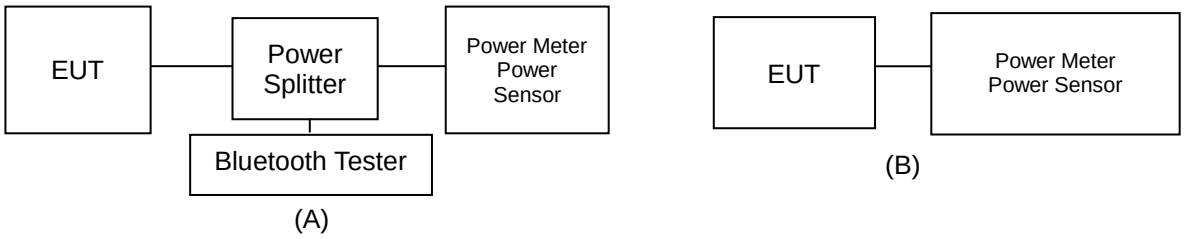

Figure 10.5.1 Average Power Measurement Setup

The average conducted output powers of Bluetooth were measured using above test setup and a wideband gated RF power meter when the EUT is transmitting at its maximum power level.

- **Bluetooth Transmission Plot**

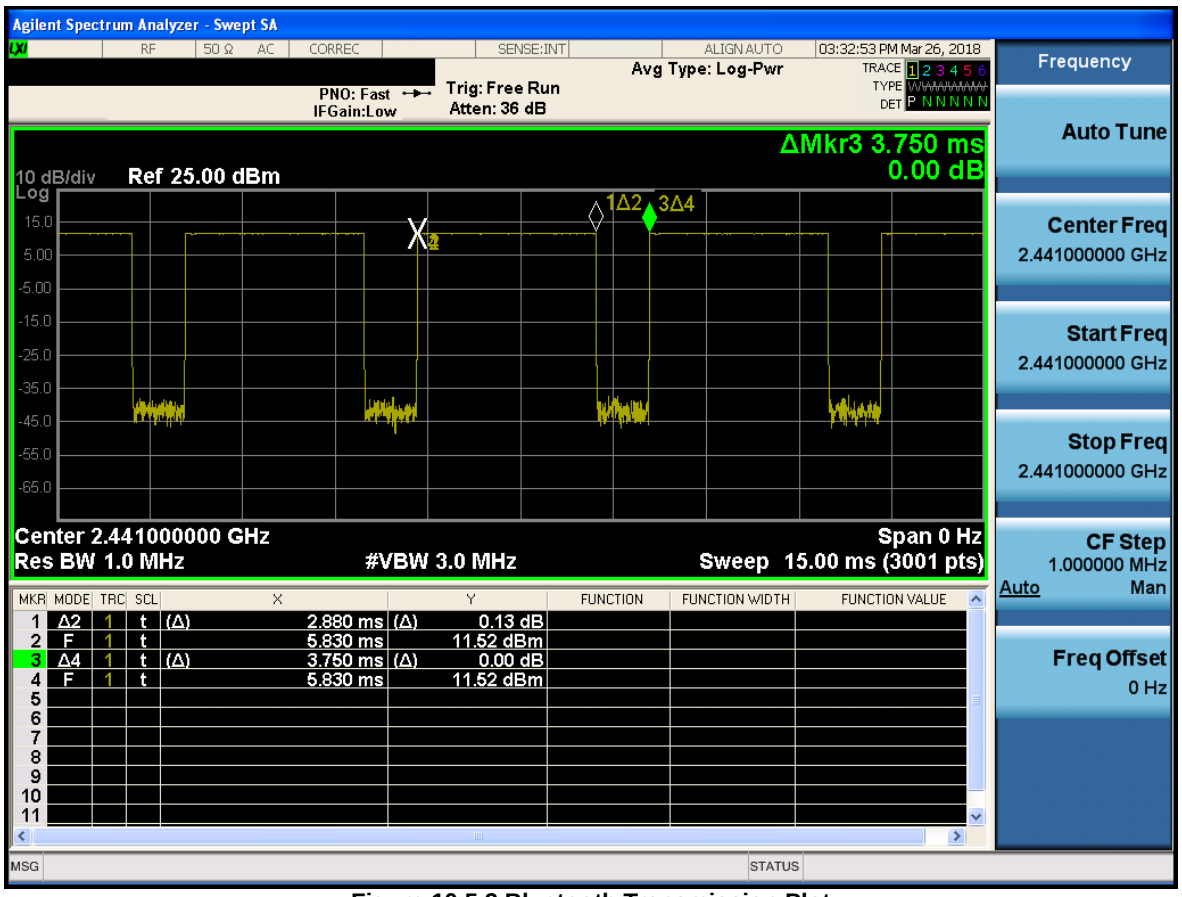

Figure 10.5.2 Bluetooth Transmission Plot

- **Bluetooth Duty Cycle Calculation**

Duty Cycle = Pulse/Period * 100% = (2.880/3.750) * 100 = 76.8%

11. SYSTEM VERIFICATION

11.1 Tissue Verification

MEASURED TISSUE PARAMETERS										
Date(s)	Tissue Type	Ambient Temp.[°C]	Liquid Temp.[°C]	Measured Frequency [MHz]	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	Er Deviation [%]	σ Deviation [%]
Apr. 16. 2018	750 Head	20.2	20.4	707.5	42.129	0.887	43.409	0.870	3.04	-1.92
				750.0	41.900	0.890	42.868	0.908	2.31	2.02
Apr. 16. 2018	750 Body	20.2	20.5	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
Apr. 02. 2018	835 Head	21.2	21.0	824.2	41.552	0.899	42.112	0.876	1.35	-2.56
				826.4	41.542	0.899	42.092	0.878	1.32	-2.34
				835.0	41.500	0.900	42.006	0.886	1.22	-1.56
				836.5	41.500	0.901	41.995	0.887	1.19	-1.55
				836.6	41.500	0.901	41.993	0.887	1.19	-1.55
				846.6	41.500	0.912	41.896	0.897	0.95	-1.64
				848.8	41.500	0.914	41.875	0.899	0.90	-1.64
Apr. 03. 2018	835 Body	21.2	20.9	824.2	55.243	0.969	55.191	0.966	-0.09	-0.31
				826.4	55.235	0.969	55.169	0.969	-0.12	0.00
				835.0	55.200	0.970	55.070	0.979	-0.24	0.93
				836.5	55.197	0.971	55.053	0.980	-0.26	0.93
				836.6	55.197	0.971	55.050	0.981	-0.27	1.03
				846.6	55.166	0.984	54.954	0.991	-0.38	0.71
				848.8	55.160	0.986	54.925	0.994	-0.43	0.81
Apr. 04. 2018	1800 Head	21.4	21.5	1712.4	40.126	1.350	40.985	1.335	2.14	-1.11
				1720.0	40.114	1.354	40.952	1.341	2.09	-0.96
				1732.4	40.097	1.361	40.873	1.352	1.94	-0.66
				1732.5	40.097	1.361	40.872	1.353	1.93	-0.59
				1745.0	40.079	1.369	40.781	1.363	1.75	-0.44
				1752.6	40.069	1.373	40.731	1.370	1.65	-0.22
				1800.0	40.000	1.400	40.454	1.415	1.14	1.07
Apr. 05. 2018	1800 Body	21.6	21.4	1712.4	53.596	1.464	52.199	1.414	-2.61	-3.42
				1720.0	53.580	1.469	52.178	1.421	-2.62	-3.27
				1732.4	53.556	1.477	52.137	1.432	-2.65	-3.05
				1732.5	53.556	1.477	52.136	1.432	-2.65	-3.05
				1745.0	53.530	1.485	52.095	1.443	-2.68	-2.83
				1752.6	53.516	1.489	52.073	1.449	-2.70	-2.69
				1800.0	53.300	1.520	51.961	1.491	-2.51	-1.91
Apr. 06. 2018	1900 Head	21.2	21.1	1850.2	40.000	1.400	41.468	1.352	3.67	-3.43
				1852.4	40.000	1.400	41.465	1.354	3.66	-3.29
				1860.0	40.000	1.400	41.453	1.362	3.63	-2.71
				1880.0	40.000	1.400	41.407	1.380	3.52	-1.43
				1900.0	40.000	1.400	41.348	1.398	3.37	-0.14
				1907.6	40.000	1.400	41.321	1.405	3.30	0.36
				1909.8	40.000	1.400	41.313	1.407	3.28	0.50
Apr. 09. 2018	1900 Body	20.3	20.2	1850.2	53.300	1.520	54.260	1.466	1.80	-3.55
				1852.4	53.300	1.520	54.254	1.469	1.79	-3.36
				1860.0	53.300	1.520	54.237	1.477	1.76	-2.83
				1880.0	53.300	1.520	54.176	1.497	1.64	-1.51
				1900.0	53.300	1.520	54.115	1.516	1.53	-0.26
				1907.6	53.300	1.520	54.092	1.524	1.49	0.26
				1909.8	53.300	1.520	54.087	1.526	1.48	0.39
Mar. 23. 2018	2450 Head	21.2	22.2	2402.0	39.282	1.757	38.278	1.752	-2.56	-0.28
				2412.0	39.265	1.766	38.246	1.763	-2.60	-0.17
				2437.0	39.222	1.788	38.154	1.791	-2.72	0.17
				2441.0	39.215	1.792	38.138	1.795	-2.75	0.17
				2450.0	39.200	1.800	38.103	1.806	-2.80	0.33
				2462.0	39.184	1.813	38.067	1.820	-2.85	0.39
				2472.0	39.171	1.823	38.034	1.831	-2.90	0.44
				2480.0	39.160	1.832	38.004	1.840	-2.95	0.44
Mar. 26. 2018	2450 Body	20.5	21.6	2402.0	52.764	1.904	50.748	1.852	-3.82	-2.73
				2412.0	52.751	1.914	50.733	1.868	-3.83	-2.40
				2437.0	52.717	1.938	50.700	1.903	-3.83	-1.81
				2441.0	52.712	1.941	50.692	1.907	-3.83	-1.75
				2450.0	52.700	1.950	50.674	1.918	-3.84	-1.64
				2462.0	52.685	1.967	50.651	1.929	-3.86	-1.93
				2472.0	52.672	1.981	50.619	1.937	-3.90	-2.22
				2480.0	52.662	1.993	50.586	1.944	-3.94	-2.46

MEASURED TISSUE PARAMETERS										
Date(s)	Tissue Type	Ambient Temp.[°C]	Liquid Temp.[°C]	Measured Frequency [MHz]	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	Er Deviation [%]	σ Deviation [%]
Apr. 10. 2018	2600 Head	20.4	20.3	2506.0	39.125	1.860	39.313	1.899	0.48	2.10
				2510.0	39.120	1.864	39.299	1.904	0.46	2.15
				2535.0	39.087	1.891	39.222	1.935	0.35	2.33
				2549.5	39.068	1.906	39.183	1.953	0.29	2.47
				2560.0	39.053	1.917	39.153	1.966	0.26	2.56
				2593.0	39.009	1.953	39.050	2.000	0.11	2.41
				2600.0	39.000	1.960	39.023	2.007	0.06	2.40
				2636.5	38.955	2.000	38.876	2.047	-0.20	2.35
				2680.0	38.900	2.048	38.745	2.103	-0.40	2.69
Apr. 11. 2018	2600 Body	20.6	20.4	2506.0	52.629	2.029	52.343	1.999	-0.54	-1.48
				2510.0	52.624	2.035	52.335	2.004	-0.55	-1.52
				2535.0	52.592	2.071	52.280	2.033	-0.59	-1.83
				2549.5	52.574	2.090	52.239	2.050	-0.64	-1.91
				2560.0	52.560	2.106	52.214	2.063	-0.66	-2.04
				2593.0	52.518	2.153	52.122	2.104	-0.75	-2.28
				2600.0	52.509	2.163	52.105	2.113	-0.77	-2.31
				2636.5	52.463	2.214	52.010	2.159	-0.86	-2.48
				2680.0	52.407	2.276	51.894	2.212	-0.98	-2.81
Mar. 27. 2018	5200 Body	20.6	21.5	5180.0	49.041	5.276	47.221	5.201	-3.71	-1.42
				5190.0	49.028	5.288	47.200	5.210	-3.73	-1.48
				5200.0	49.014	5.299	47.173	5.223	-3.76	-1.43
				5210.0	49.001	5.311	47.156	5.238	-3.77	-1.37
				5220.0	48.987	5.323	47.141	5.251	-3.77	-1.35
				5230.0	48.974	5.334	47.126	5.263	-3.77	-1.33
				5240.0	48.960	5.346	47.106	5.275	-3.79	-1.33
Mar. 28. 2018	5300 Head	20.2	21.4	5260.0	35.940	4.720	35.021	4.799	-2.56	1.67
				5270.0	35.930	4.730	34.985	4.810	-2.63	1.69
				5280.0	35.920	4.740	34.961	4.821	-2.67	1.71
				5290.0	35.910	4.750	34.940	4.828	-2.70	1.64
				5300.0	35.900	4.760	34.906	4.835	-2.77	1.58
				5310.0	35.890	4.770	34.866	4.846	-2.85	1.59
				5320.0	35.880	4.780	34.837	4.861	-2.91	1.69
Mar. 29. 2018	5300 Body	20.8	21.7	5260.0	48.933	5.369	47.437	5.315	-3.06	-1.01
				5270.0	48.919	5.381	47.418	5.329	-3.07	-0.97
				5280.0	48.906	5.393	47.410	5.342	-3.06	-0.95
				5290.0	48.892	5.404	47.395	5.350	-3.06	-1.00
				5300.0	48.879	5.416	47.373	5.360	-3.08	-1.03
				5310.0	48.865	5.428	47.341	5.374	-3.12	-0.99
				5320.0	48.851	5.439	47.320	5.388	-3.13	-0.94

MEASURED TISSUE PARAMETERS										
Date(s)	Tissue Type	Ambient Temp.[°C]	Liquid Temp.[°C]	Measured Frequency [MHz]	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	Er Deviation [%]	σ Deviation [%]
Mar. 30. 2018	5600 Head	21.1	21.9	5500.0	35.650	4.965	35.378	4.975	-0.76	0.20
				5510.0	35.635	4.976	35.366	4.983	-0.75	0.14
				5530.0	35.605	4.997	35.309	5.003	-0.83	0.12
				5550.0	35.575	5.018	35.274	5.027	-0.85	0.18
				5580.0	35.530	5.049	35.206	5.059	-0.91	0.20
				5600.0	35.500	5.070	35.157	5.086	-0.97	0.32
				5660.0	35.440	5.130	35.041	5.148	-1.13	0.35
				5670.0	35.430	5.140	35.020	5.157	-1.16	0.33
				5690.0	35.410	5.160	34.962	5.180	-1.27	0.39
				5710.0	35.390	5.180	34.915	5.210	-1.34	0.58
				5720.0	35.380	5.190	34.908	5.223	-1.33	0.64
				5800.0	35.300	5.270	34.712	5.301	-1.67	0.59
Apr. 02. 2018	5600 Body	20.3	20.5	5500.0	48.607	5.650	48.206	5.777	-0.82	2.25
				5510.0	48.594	5.661	48.199	5.788	-0.81	2.24
				5530.0	48.566	5.685	48.148	5.814	-0.86	2.27
				5550.0	48.539	5.708	48.120	5.842	-0.86	2.35
				5580.0	48.499	5.743	48.061	5.882	-0.90	2.42
				5600.0	48.471	5.766	48.019	5.914	-0.93	2.57
				5660.0	48.390	5.836	47.917	5.994	-0.98	2.71
				5670.0	48.376	5.848	47.899	6.005	-0.99	2.68
				5690.0	48.349	5.872	47.857	6.033	-1.02	2.74
				5710.0	48.322	5.895	47.820	6.065	-1.04	2.88
				5720.0	48.309	5.907	47.812	6.077	-1.03	2.88
				5800.0	48.200	6.000	47.657	6.190	-1.13	3.17
Apr. 03. 2018	5800 Head	20.8	21.0	5745.0	35.355	5.215	35.629	5.362	0.77	2.82
				5755.0	35.345	5.225	35.601	5.375	0.72	2.87
				5775.0	35.325	5.245	35.563	5.394	0.67	2.84
				5785.0	35.315	5.255	35.534	5.403	0.62	2.82
				5795.0	35.305	5.265	35.503	5.416	0.56	2.87
				5800.0	35.300	5.270	35.488	5.423	0.53	2.90
				5825.0	35.275	5.296	35.437	5.459	0.46	3.08
Apr. 04. 2018	5800 Body	21.2	21.7	5745.0	48.275	5.936	48.140	6.106	-0.28	2.86
				5755.0	48.261	5.947	48.120	6.122	-0.29	2.94
				5775.0	48.234	5.971	48.090	6.147	-0.30	2.95
				5785.0	48.220	5.982	48.071	6.158	-0.31	2.94
				5795.0	48.207	5.994	48.046	6.172	-0.33	2.97
				5800.0	48.200	6.000	48.035	6.180	-0.34	3.00
				5825.0	48.166	6.029	47.997	6.218	-0.35	3.13
May. 04. 2018	750 Head	21.7	22.0	750.0	41.900	0.890	40.851	0.869	-2.50	-2.36
				782.0	41.749	0.894	40.412	0.898	-3.20	0.45
May. 04. 2018	750 Body	21.7	22.1	750.0	55.531	0.963	54.083	0.927	-2.61	-3.74
				782.0	55.406	0.966	53.721	0.960	-3.04	-0.62

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):

$$Y = \frac{j2\omega\varepsilon_r\varepsilon_0}{\left[\ln(b/a)\right]^2}\int_a^b\int_a^b\int_0^\pi \cos\phi' \frac{\exp\left[-j\omega r(\mu_0\varepsilon_r'\varepsilon_0)^{1/2}\right]}{r} d\phi' d\rho' d\rho$$

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 $j = \sqrt{-1}$.

11.2 Test System Verification

Prior to assessment, the system is verified to the ± 10 % of the specifications at 750 MHz, 835 MHz, 1800 MHz, 1900 MHz, 2450 MHz, 2600 MHz and 5GHz by using the SAR Dipole kit(s). (Graphic Plots Attached)

Table 11.2.1 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	Apr. 16. 2018	Head	20.2	20.4	3933	250	8.32	2.25	9.00	8.17
C	750	D750V3, SN:1049	Apr. 16. 2018	Body	20.2	20.5	3933	250	8.70	2.28	9.12	4.83
C	835	D835V2, SN:464	Apr. 02. 2018	Head	21.2	21.0	3933	250	9.38	2.19	8.76	-6.61
C	835	D835V2, SN:464	Apr. 03. 2018	Body	21.0	20.9	3933	250	9.45	2.33	9.32	-1.38
C	1800	D1800V2, SN:2d047	Apr. 04. 2018	Head	21.4	21.5	3933	250	39.9	9.33	37.32	-6.47
C	1800	D1800V2, SN:2d047	Apr. 05. 2018	Body	21.6	21.4	3933	250	39.2	9.20	36.80	-6.12
C	1900	D1900V2, SN:5d029	Apr. 06. 2018	Head	21.2	21.1	3993	250	39.2	9.98	39.92	1.84
C	1900	D1900V2, SN:5d029	Apr. 09. 2018	Body	20.3	20.2	3993	250	39.6	9.71	38.84	-1.92
D	2450	D2450V2, SN: 726	Mar. 23. 2018	Head	21.2	22.2	3930	100	51.9	4.96	49.60	-4.43
D	2450	D2450V2, SN: 726	Mar. 26. 2018	Body	20.5	21.6	3930	100	50.3	5.24	52.40	4.17
C	2600	D2600V2, SN: 1103	Apr. 10. 2018	Head	20.4	20.3	3933	100	56.4	5.93	59.30	5.14
C	2600	D2600V2, SN: 1103	Apr. 11. 2018	Body	20.6	20.4	3933	100	55.7	5.49	54.90	-1.44
D	5200	D5GHzV2, SN:1212	Mar. 27. 2018	Body	20.6	21.5	3930	100	72.7	7.09	70.90	-2.48
D	5300	D5GHzV2, SN:1212	Mar. 28. 2018	Head	20.2	21.4	3930	100	81.1	8.02	80.20	-1.11
D	5300	D5GHzV2, SN:1212	Mar. 29. 2018	Body	20.8	21.7	3930	100	75.2	7.59	75.90	0.93
D	5600	D5GHzV2, SN:1212	Mar. 30. 2018	Head	21.1	21.9	3930	100	83.6	8.35	83.50	-0.12
D	5600	D5GHzV2, SN:1212	Apr. 02. 2018	Body	20.3	20.5	3930	100	78.9	7.71	77.10	-2.28
D	5800	D5GHzV2, SN:1212	Mar. 30. 2018	Head	21.1	21.9	3930	100	79.5	8.04	80.40	1.13
D	5800	D5GHzV2, SN:1212	Apr. 02. 2018	Body	20.3	20.5	3930	100	75.7	7.50	75.00	-0.92
D	5800	D5GHzV2, SN:1212	Apr. 03. 2018	Head	20.8	21.0	3930	100	79.5	7.92	79.20	-0.38
D	5800	D5GHzV2, SN:1212	Apr. 04. 2018	Body	21.2	21.7	3930	100	75.7	7.82	78.20	3.30
C	750	D750V3, SN:1049	May. 04. 2018	Head	21.7	22.0	3933	250	8.32	2.02	8.08	-2.88
C	750	D750V3, SN:1049	May. 04. 2018	Body	21.7	22.1	3933	250	8.70	2.07	8.28	-4.83

Table 11.2.2 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 [%]
D	5300	D5GHzV2, SN:1212	Mar. 29. 2018	Body	20.8	21.7	3930	100	20.9	2.11	21.10	0.96
D	5600	D5GHzV2, SN:1212	Apr. 02. 2018	Body	20.3	20.5	3930	100	21.8	2.13	21.30	-2.29
D	5800	D5GHzV2, SN:1212	Apr. 02. 2018	Body	20.3	20.5	3930	100	20.8	2.07	20.70	-0.48
D	5800	D5GHzV2, SN:1212	Apr. 04. 2018	Body	21.2	21.7	3930	100	20.8	2.16	21.60	3.85

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 Attachment 3.

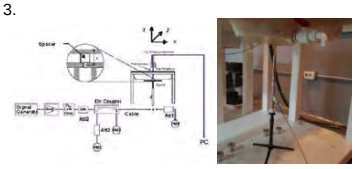

Figure 11.1 Dipole Verification Test Setup Diagram & Photo

12. SAR TEST RESULTS

12.1 Head SAR Results

Table 12.1.1 GSM/GPRS 850 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	# of Time Slots	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
836.6	190	GSM850	GSM	33.90	33.50	0.190	Left Touch	FCC #1	1	1:8.3	0.114	1.096	**0.125**	A1
836.6	190	GSM850	GSM	33.90	33.50	-0.160	Right Touch	FCC #1	1	1:8.3	0.078	1.096	0.085	
836.6	190	GSM850	GSM	33.90	33.50	-0.010	Left Tilt	FCC #1	1	1:8.3	0.047	1.096	0.052	
836.6	190	GSM850	GSM	33.90	33.50	-0.100	Right Tilt	FCC #1	1	1:8.3	0.046	1.096	0.050	
836.6	190	GSM850	GPRS	32.20	31.50	-0.030	Left Touch	FCC #1	2	1:4.15	0.148	1.175	**0.174**	A2
836.6	190	GSM850	GPRS	32.20	31.50	-0.050	Right Touch	FCC #1	2	1:4.15	0.104	1.175	0.122	
836.6	190	GSM850	GPRS	32.20	31.50	-0.120	Left Tilt	FCC #1	2	1:4.15	0.062	1.175	0.073	
836.6	190	GSM850	GPRS	32.20	31.50	0.020	Right Tilt	FCC #1	2	1:4.15	0.060	1.175	0.071	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Head 1.6 W/kg (mW/g) averaged over 1 gram**						

Table 12.1.2 PCS/GPRS 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	# of Time Slots	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
1880.0	661	PCS1900	PCS	30.70	30.30	-0.180	Left Touch	FCC #1	1	1:8.3	0.035	1.096	**0.038**	A3
1880.0	661	PCS1900	PCS	30.70	30.30	-0.170	Right Touch	FCC #1	1	1:8.3	0.034	1.096	0.037	
1880.0	661	PCS1900	PCS	30.70	30.30	0.020	Left Tilt	FCC #1	1	1:8.3	0.017	1.096	0.019	
1880.0	661	PCS1900	PCS	30.70	30.30	-0.050	Right Tilt	FCC #1	1	1:8.3	0.017	1.096	0.019	
1880.0	661	PCS1900	GPRS	28.70	28.40	-0.000	Left Touch	FCC #1	2	1:4.15	0.040	1.072	**0.043**	A4
1880.0	661	PCS1900	GPRS	28.70	28.40	-0.030	Right Touch	FCC #1	2	1:4.15	0.037	1.072	0.040	
1880.0	661	PCS1900	GPRS	28.70	28.40	0.100	Left Tilt	FCC #1	2	1:4.15	0.021	1.072	0.023	
1880.0	661	PCS1900	GPRS	28.70	28.40	0.110	Right Tilt	FCC #1	2	1:4.15	0.021	1.072	0.023	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Head 1.6 W/kg (mW/g) averaged over 1 gram**						

Table 12.1.3 WCDMA 850 Head SAR

MEASUREMENT RESULTS													
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch												
836.6	4183	WCDMA 850	RMC	25.50	24.91	-0.110	Left Touch	FCC #1	1:1	0.199	1.146	**0.228**	A5
836.6	4183	WCDMA 850	RMC	25.50	24.91	-0.150	Right Touch	FCC #1	1:1	0.133	1.146	0.152	
836.6	4183	WCDMA 850	RMC	25.50	24.91	-0.080	Left Tilt	FCC #1	1:1	0.089	1.146	0.102	
836.6	4183	WCDMA 850	RMC	25.50	24.91	-0.170	Right Tilt	FCC #1	1:1	0.085	1.146	0.097	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Head 1.6 W/kg (mW/g) **averaged over 1 gram					

Table 12.1.4 WCDMA 1700 Head SAR

MEASUREMENT RESULTS													
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch												
1732.4	1412	WCDMA 1700	RMC	24.70	24.18	-0.100	Left Touch	FCC #1	1:1	0.235	1.127	**0.265**	A6
1732.4	1412	WCDMA 1700	RMC	24.70	24.18	-0.010	Right Touch	FCC #1	1:1	0.152	1.127	0.171	
1732.4	1412	WCDMA 1700	RMC	24.70	24.18	-0.050	Left Tilt	FCC #1	1:1	0.119	1.127	0.134	
1732.4	1412	WCDMA 1700	RMC	24.70	24.18	0.190	Right Tilt	FCC #1	1:1	0.106	1.127	0.119	
ANSI / IEEE C95.1-2005– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Head 1.6 W/kg (mW/g) **averaged over 1 gram					

Table 12.1.5 WCDMA 1900 Head SAR

MEASUREMENT RESULTS													
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch												
1880.0	9400	WCDMA 1900	RMC	24.70	24.23	0.040	Left Touch	FCC #1	1:1	0.124	1.114	**0.138**	A7
1880.0	9400	WCDMA 1900	RMC	24.70	24.23	-0.170	Right Touch	FCC #1	1:1	0.113	1.114	0.126	
1880.0	9400	WCDMA 1900	RMC	24.70	24.23	-0.180	Left Tilt	FCC #1	1:1	0.068	1.114	0.076	
1880.0	9400	WCDMA 1900	RMC	24.70	24.23	0.060	Right Tilt	FCC #1	1:1	0.049	1.114	0.055	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Head 1.6 W/kg (mW/g) **averaged over 1 gram					

Table 12.1.6 LTE Band 12/LTE Band 13 Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
707.5	23095	LTE B12	10	25.50	25.03	0.160	0	Left Touch	FCC #1	QPSK	1	0	1:1	0.118	1.114	**0.131**	A8
707.5	23095	LTE B12	10	24.50	23.86	-0.060	1	Left Touch	FCC #1	QPSK	25	0	1:1	0.070	1.159	0.081	
707.5	23095	LTE B12	10	25.50	25.03	-0.030	0	Right Touch	FCC #1	QPSK	1	0	1:1	0.095	1.114	0.106	
707.5	23095	LTE B12	10	24.50	23.86	-0.100	1	Right Touch	FCC #1	QPSK	25	0	1:1	0.066	1.159	0.076	
707.5	23095	LTE B12	10	25.50	25.03	-0.150	0	Left Tilt	FCC #1	QPSK	1	0	1:1	0.054	1.114	0.060	
707.5	23095	LTE B12	10	24.50	23.86	0.020	1	Left Tilt	FCC #1	QPSK	25	0	1:1	0.032	1.159	0.037	
707.5	23095	LTE B12	10	25.50	25.03	0.150	0	Right Tilt	FCC #1	QPSK	1	0	1:1	0.058	1.114	0.065	
707.5	23095	LTE B12	10	24.50	23.86	0.190	1	Right Tilt	FCC #1	QPSK	25	0	1:1	0.042	1.159	0.049	
782.0	23230	LTE B13	10	25.50	24.93	0.130	0	Left Touch	FCC #1	QPSK	1	0	1:1	0.099	1.140	0.113	
782.0	23230	LTE B13	10	24.50	23.90	0.040	1	Left Touch	FCC #1	QPSK	25	0	1:1	0.073	1.148	0.084	
782.0	23230	LTE B13	10	25.50	24.93	0.150	0	Right Touch	FCC #1	QPSK	1	0	1:1	0.146	1.140	**0.166**	A69
782.0	23230	LTE B13	10	24.50	23.90	0.180	1	Right Touch	FCC #1	QPSK	25	0	1:1	0.104	1.148	0.119	
782.0	23230	LTE B13	10	25.50	24.93	0.000	0	Left Tilt	FCC #1	QPSK	1	0	1:1	0.052	1.140	0.059	
782.0	23230	LTE B13	10	24.50	23.90	0.060	1	Left Tilt	FCC #1	QPSK	25	0	1:1	0.029	1.148	0.033	
782.0	23230	LTE B13	10	25.50	24.93	0.190	0	Right Tilt	FCC #1	QPSK	1	0	1:1	0.065	1.140	0.074	
782.0	23230	LTE B13	10	24.50	23.90	-0.070	1	Right Tilt	FCC #1	QPSK	25	0	1:1	0.045	1.148	0.052	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									**Head 1.6 W/kg (mW/g) averaged over 1 gram**								

Table 12.1.7 LTE Band 5 (Cell) Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
836.5	20525	LTE B5	10	25.50	24.62	0.140	0	Left Touch	FCC #1	QPSK	1	25	1:1	0.188	1.225	**0.230**	A9
836.5	20525	LTE B5	10	24.50	23.64	-0.090	1	Left Touch	FCC #1	QPSK	25	0	1:1	0.134	1.219	0.163	
836.5	20525	LTE B5	10	25.50	24.62	0.160	0	Right Touch	FCC #1	QPSK	1	25	1:1	0.130	1.225	0.159	
836.5	20525	LTE B5	10	24.50	23.64	-0.140	1	Right Touch	FCC #1	QPSK	25	0	1:1	0.079	1.219	0.096	
836.5	20525	LTE B5	10	25.50	24.62	0.050	0	Left Tilt	FCC #1	QPSK	1	25	1:1	0.089	1.225	0.109	
836.5	20525	LTE B5	10	24.50	23.64	-0.050	1	Left Tilt	FCC #1	QPSK	25	0	1:1	0.060	1.219	0.073	
836.5	20525	LTE B5	10	25.50	24.62	0.140	0	Right Tilt	FCC #1	QPSK	1	25	1:1	0.088	1.225	0.108	
836.5	20525	LTE B5	10	24.50	23.64	-0.180	1	Right Tilt	FCC #1	QPSK	25	0	1:1	0.056	1.219	0.068	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									**Head 1.6 W/kg (mW/g) averaged over 1 gram**								

Table 12.1.8 LTE Band 4 (AWS) Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
1732.5	20175	LTE B4	20	24.70	24.50	0.060	0	Left Touch	FCC #1	QPSK	1	0	1:1	0.205	1.047	**0.215**	A10
1732.5	20175	LTE B4	20	23.70	23.33	0.190	1	Left Touch	FCC #1	QPSK	50	0	1:1	0.165	1.089	0.180	
1732.5	20175	LTE B4	20	24.70	24.50	-0.040	0	Right Touch	FCC #1	QPSK	1	0	1:1	0.193	1.047	0.202	
1732.5	20175	LTE B4	20	23.70	23.33	-0.140	1	Right Touch	FCC #1	QPSK	50	0	1:1	0.147	1.089	0.160	
1732.5	20175	LTE B4	20	24.70	24.50	0.080	0	Left Tilt	FCC #1	QPSK	1	0	1:1	0.112	1.047	0.117	
1732.5	20175	LTE B4	20	23.70	23.33	0.070	1	Left Tilt	FCC #1	QPSK	50	0	1:1	0.086	1.089	0.094	
1732.5	20175	LTE B4	20	24.70	24.50	-0.100	0	Right Tilt	FCC #1	QPSK	1	0	1:1	0.117	1.047	0.122	
1732.5	20175	LTE B4	20	23.70	23.33	-0.160	1	Right Tilt	FCC #1	QPSK	50	0	1:1	0.083	1.089	0.090	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									**Head 1.6 W/kg (mW/g) averaged over 1 gram**								

Table 12.1.9 LTE Band 2 (PCS) Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
1900.0	19100	LTE B2	20	24.70	24.25	0.190	0	Left Touch	FCC #1	QPSK	1	0	1:1	0.095	1.109	**0.105**	A11
1900.0	19100	LTE B2	20	23.70	23.02	-0.150	1	Left Touch	FCC #1	QPSK	50	0	1:1	0.080	1.169	0.094	
1900.0	19100	LTE B2	20	24.70	24.25	0.030	0	Right Touch	FCC #1	QPSK	1	0	1:1	0.088	1.109	0.098	
1900.0	19100	LTE B2	20	23.70	23.02	-0.190	1	Right Touch	FCC #1	QPSK	50	0	1:1	0.079	1.169	0.092	
1900.0	19100	LTE B2	20	24.70	24.25	-0.050	0	Left Tilt	FCC #1	QPSK	1	0	1:1	0.043	1.109	0.048	
1900.0	19100	LTE B2	20	23.70	23.02	0.010	1	Left Tilt	FCC #1	QPSK	50	0	1:1	0.037	1.169	0.043	
1900.0	19100	LTE B2	20	24.70	24.25	0.040	0	Right Tilt	FCC #1	QPSK	1	0	1:1	0.035	1.109	0.039	
1900.0	19100	LTE B2	20	23.70	23.02	-0.060	1	Right Tilt	FCC #1	QPSK	50	0	1:1	0.032	1.169	0.037	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									**Head 1.6 W/kg (mW/g) averaged over 1 gram**								

Table 12.1.10 LTE Band 7 Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
2510.0	20850	LTE B7	20	24.70	24.19	0.050	0	Left Touch	FCC #1	QPSK	1	0	1:1	0.060	1.125	**0.068**	A12
2510.0	20850	LTE B7	20	23.70	23.10	0.160	1	Left Touch	FCC #1	QPSK	50	0	1:1	0.047	1.148	0.054	
2510.0	20850	LTE B7	20	24.70	24.19	0.070	0	Right Touch	FCC #1	QPSK	1	0	1:1	0.044	1.125	0.050	
2510.0	20850	LTE B7	20	23.70	23.10	0.170	1	Right Touch	FCC #1	QPSK	50	0	1:1	0.033	1.148	0.038	
2510.0	20850	LTE B7	20	24.70	24.19	-0.120	0	Left Tilt	FCC #1	QPSK	1	0	1:1	0.020	1.125	0.023	
2510.0	20850	LTE B7	20	23.70	23.10	0.170	1	Left Tilt	FCC #1	QPSK	50	0	1:1	0.015	1.148	0.017	
2510.0	20850	LTE B7	20	24.70	24.19	-0.080	0	Right Tilt	FCC #1	QPSK	1	0	1:1	0.020	1.125	0.023	
2510.0	20850	LTE B7	20	23.70	23.10	-0.150	1	Right Tilt	FCC #1	QPSK	50	0	1:1	0.013	1.148	0.015	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									**Head 1.6 W/kg (mW/g) averaged over 1 gram**								

Table 12.1.11 LTE Band 41 Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
2506.0	39750	LTE B41	20	25.20	24.57	0.030	0	Left Touch	FCC #1	QPSK	1	0	1:1	0.030	1.156	0.035	
2506.0	39750	LTE B41	20	24.20	23.63	-0.040	1	Left Touch	FCC #1	QPSK	50	0	1:1	0.021	1.140	0.024	
2506.0	39750	LTE B41	20	25.20	24.57	0.000	0	Right Touch	FCC #1	QPSK	1	0	1:1	0.033	1.156	**0.038**	A13
2506.0	39750	LTE B41	20	24.20	23.63	0.000	1	Right Touch	FCC #1	QPSK	50	0	1:1	0.023	1.140	0.026	
2506.0	39750	LTE B41	20	25.20	24.57	-0.100	0	Left Tilt	FCC #1	QPSK	1	0	1:1	0.011	1.156	0.013	
2506.0	39750	LTE B41	20	24.20	23.63	0.110	1	Left Tilt	FCC #1	QPSK	50	0	1:1	0.007	1.140	0.008	
2506.0	39750	LTE B41	20	25.20	24.57	0.030	0	Right Tilt	FCC #1	QPSK	1	0	1:1	0.011	1.156	0.013	
2506.0	39750	LTE B41	20	24.20	23.63	0.110	1	Right Tilt	FCC #1	QPSK	50	0	1:1	0.006	1.140	0.007	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									**Head 1.6 W/kg (mW/g) averaged over 1 gram**								

Table 12.1.12 DTS Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode (Antenna)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
2462.0	11	802.11b (Ant.1)	16.00	15.33	-0.040	Left Touch	FCC #2	0.127	1	98.8	0.119	1.167	1.012	0.141	
2462.0	11	802.11b (Ant.1)	16.00	15.33	-0.030	Right Touch	FCC #2	0.345	1	98.8	0.405	1.167	1.012	**0.478**	A14
2462.0	11	802.11b (Ant.1)	16.00	15.33	0.130	Left Tilt	FCC #2	0.062	1	98.8	0.061	1.167	1.012	0.072	
2462.0	11	802.11b (Ant.1)	16.00	15.33	0.130	Right Tilt	FCC #2	0.216	1	98.8	0.213	1.167	1.012	0.252	
2437.0	6	802.11b (Ant.2)	16.00	15.04	0.040	Left Touch	FCC #2	0.214	1	98.8	0.208	1.247	1.012	0.263	
2437.0	6	802.11b (Ant.2)	16.00	15.04	0.170	Right Touch	FCC #2	0.430	1	98.8	0.380	1.247	1.012	0.480	
2437.0	6	802.11b (Ant.2)	16.00	15.04	0.060	Left Tilt	FCC #2	0.240	1	98.8	0.258	1.247	1.012	0.326	
2437.0	6	802.11b (Ant.2)	16.00	15.04	-0.040	Right Tilt	FCC #2	0.440	1	98.8	0.421	1.247	1.012	**0.531**	A15
2412.0	1	802.11g (MIMO)	18.50	17.20	-0.090	Left Touch	FCC #2	0.177	1	98.2	0.188	1.349	1.018	0.258	
2412.0	1	802.11g (MIMO)	18.50	17.20	-0.070	Right Touch	FCC #2	0.391	1	98.2	0.409	1.349	1.018	0.562	
2412.0	1	802.11g (MIMO)	18.50	17.20	0.130	Left Tilt	FCC #2	0.189	1	98.2	0.175	1.349	1.018	0.240	
2412.0	1	802.11g (MIMO)	18.50	17.20	-0.060	Right Tilt	FCC #2	0.362	1	98.2	0.416	1.349	1.018	**0.571**	A16
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Head 1.6 W/kg (mW/g) averaged over 1 gram**							

Adjusted SAR results for OFDM SAR											
FREQUENCY		Mode/ Antenna	Service	Maximum Allowed Power [dBm]	1g Scaled SAR (W/kg)	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm	Ratio of OFDM to DSSS	1g Adjusted SAR (W/kg)	Determine OFDM SAR
MHz	Ch											
2462.0	11	802.11b (Ant.1)	DSSS	16.0	0.478	2437	802.11g	OFDM	15.5	0.891	0.426	X
2462.0	11	802.11b (Ant.1)	DSSS	16.0	0.478	2437	802.11n	OFDM	14.5	0.708	0.338	X
2462.0	11	802.11b (Ant.1)	DSSS	16.0	0.478	2437	802.11ac	OFDM	14.5	0.708	0.338	X
2437.0	6	802.11b (Ant.2)	DSSS	16.0	0.531	2437	802.11g	OFDM	15.5	0.891	0.473	X
2437.0	6	802.11b (Ant.2)	DSSS	16.0	0.531	2437	802.11n	OFDM	14.5	0.708	0.376	X
2437.0	6	802.11b (Ant.2)	DSSS	16.0	0.531	2437	802.11ac	OFDM	14.5	0.708	0.376	X
2412.0	1	802.11g (MIMO)	DSSS	18.5	0.571	2437	802.11n	OFDM	17.5	0.794	0.453	X
2412.0	1	802.11g (MIMO)	DSSS	18.5	0.571	2437	802.11ac	OFDM	17.5	0.794	0.453	X
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure							**Head 1.6 W/kg (mW/g) averaged over 1 gram**					

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

Table 12.1.13 UNII Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode (Antenna)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5300.0	60	802.11a (Ant.1)	15.50	14.76	-0.190	Left Touch	FCC #2	0.133	1	98.1	0.126	1.186	1.019	0.152	
5300.0	60	802.11a (Ant.1)	15.50	14.76	0.090	Right Touch	FCC #2	0.191	1	98.1	0.208	1.186	1.019	**0.251**	A17
5300.0	60	802.11a (Ant.1)	15.50	14.76	-0.160	Left Tilt	FCC #2	0.143	1	98.1	0.135	1.186	1.019	0.163	
5300.0	60	802.11a (Ant.1)	15.50	14.76	-0.110	Right Tilt	FCC #2	0.190	1	98.1	0.197	1.186	1.019	0.238	
5260.0	52	802.11a (Ant.2)	15.50	14.69	0.090	Left Touch	FCC #2	0.198	1	98.1	0.183	1.205	1.019	0.225	
5260.0	52	802.11a (Ant.2)	15.50	14.69	-0.050	Right Touch	FCC #2	0.439	1	98.1	0.490	1.205	1.019	**0.602**	A18
5260.0	52	802.11a (Ant.2)	15.50	14.69	-0.010	Left Tilt	FCC #2	0.195	1	98.1	0.198	1.205	1.019	0.243	
5260.0	52	802.11a (Ant.2)	15.50	14.69	0.130	Right Tilt	FCC #2	0.426	1	98.1	0.477	1.205	1.019	0.586	
5260.0	52	802.11a (MIMO)	18.50	17.72	0.130	Left Touch	FCC #2	0.314	1	98.1	0.295	1.205	1.019	0.362	
5260.0	52	802.11a (MIMO)	18.50	17.72	0.060	Right Touch	FCC #2	0.511	1	98.1	0.538	1.205	1.019	**0.661**	A19
5260.0	52	802.11a (MIMO)	18.50	17.72	0.180	Left Tilt	FCC #2	0.327	1	98.1	0.335	1.205	1.019	0.411	
5260.0	52	802.11a (MIMO)	18.50	17.72	-0.140	Right Tilt	FCC #2	0.456	1	98.1	0.523	1.205	1.019	0.642	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Head 1.6 W/kg (mW/g) averaged over 1 gram**							

Adjusted SAR results for UNII-1 and UNII-2A SAR											
FREQUENCY		Mode/ Antenna	Service	Maximum Allowed Power [dBm]	1g Scaled SAR (W/kg)	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm	Adjusted Factor	1g Adjusted SAR (W/kg)	SAR for the band with lower maximum output power
MHz	Ch											
5300.0	60	802.11a (Ant.1)	OFDM	15.5	0.251	5300	802.11a	OFDM	15.5	1.000	0.251	X
5260.0	52	802.11a (Ant.2)	OFDM	15.5	0.602	5300	802.11a	OFDM	15.5	1.000	0.602	X
5260.0	52	802.11a (MIMO)	OFDM	18.5	0.661	5300	802.11a	OFDM	18.5	1.000	0.661	X
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Head 1.6 W/kg (mW/g) averaged over 1 gram**				

Note(s):

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

Table 12.1.14 UNII Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode (Antenna)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5720.0	144	802.11a (Ant.1)	15.50	14.78	0.190	Left Touch	FCC #2	0.080	1	98.1	0.047	1.180	1.019	0.057	
5720.0	144	802.11a (Ant.1)	15.50	14.78	0.020	Right Touch	FCC #2	0.301	1	98.1	0.357	1.180	1.019	**0.429**	A20
5720.0	144	802.11a (Ant.1)	15.50	14.78	0.000	Left Tilt	FCC #2	0.050	1	98.1	0.035	1.180	1.019	0.042	
5720.0	144	802.11a (Ant.1)	15.50	14.78	0.020	Right Tilt	FCC #2	0.120	1	98.1	0.113	1.180	1.019	0.136	
5660.0	132	802.11a (Ant.2)	15.50	14.69	0.030	Left Touch	FCC #2	0.074	1	98.1	0.081	1.205	1.019	0.099	
5660.0	132	802.11a (Ant.2)	15.50	14.69	0.190	Right Touch	FCC #2	0.329	1	98.1	0.343	1.205	1.019	**0.421**	A21
5660.0	132	802.11a (Ant.2)	15.50	14.69	0.000	Left Tilt	FCC #2	0.091	1	98.1	0.086	1.205	1.019	0.106	
5660.0	132	802.11a (Ant.2)	15.50	14.69	-0.020	Right Tilt	FCC #2	0.258	1	98.1	0.304	1.205	1.019	0.373	
5660.0	132	802.11a (MIMO)	18.50	17.74	0.170	Left Touch	FCC #2	0.160	1	98.1	0.142	1.205	1.019	0.174	
5660.0	132	802.11a (MIMO)	18.50	17.74	0.190	Right Touch	FCC #2	0.454	1	98.1	0.458	1.205	1.019	**0.563**	A22
5660.0	132	802.11a (MIMO)	18.50	17.74	-0.110	Left Tilt	FCC #2	0.140	1	98.1	0.139	1.205	1.019	0.171	
5660.0	132	802.11a (MIMO)	18.50	17.74	0.020	Right Tilt	FCC #2	0.346	1	98.1	0.373	1.205	1.019	0.458	
5785.0	157	802.11a (Ant.1)	15.50	14.79	0.120	Left Touch	FCC #2	0.095	1	98.1	0.070	1.178	1.019	0.084	
5785.0	157	802.11a (Ant.1)	15.50	14.79	0.100	Right Touch	FCC #2	0.333	1	98.1	0.372	1.178	1.019	**0.447**	A23
5785.0	157	802.11a (Ant.1)	15.50	14.79	0.180	Left Tilt	FCC #2	0.047	1	98.1	0.037	1.178	1.019	0.044	
5785.0	157	802.11a (Ant.1)	15.50	14.79	-0.190	Right Tilt	FCC #2	0.155	1	98.1	0.158	1.178	1.019	0.190	
5785.0	157	802.11a (Ant.2)	15.50	14.65	-0.180	Left Touch	FCC #2	0.183	1	98.1	0.135	1.216	1.019	0.167	
5785.0	157	802.11a (Ant.2)	15.50	14.65	0.170	Right Touch	FCC #2	0.463	1	98.1	0.478	1.216	1.019	**0.593**	A24
5785.0	157	802.11a (Ant.2)	15.50	14.65	0.150	Left Tilt	FCC #2	0.135	1	98.1	0.116	1.216	1.019	0.144	
5785.0	157	802.11a (Ant.2)	15.50	14.65	0.050	Right Tilt	FCC #2	0.365	1	98.1	0.402	1.216	1.019	0.498	
5785.0	157	802.11a (MIMO)	18.50	17.73	0.100	Left Touch	FCC #2	0.197	1	98.1	0.190	1.216	1.019	0.236	
5785.0	157	802.11a (MIMO)	18.50	17.73	-0.010	Right Touch	FCC #2	0.370	1	98.1	0.451	1.216	1.019	**0.559**	A25
5785.0	157	802.11a (MIMO)	18.50	17.73	-0.160	Left Tilt	FCC #2	0.156	1	98.1	0.172	1.216	1.019	0.213	
5785.0	157	802.11a (MIMO)	18.50	17.73	-0.050	Right Tilt	FCC #2	0.453	1	98.1	0.436	1.216	1.019	0.540	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Head 1.6 W/kg (mW/g) averaged over 1 gram**							

Table 12.1.15 Bluetooth Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Rate [Mbps]	Duty Cycle (%)	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
2441.0	39	Bluetooth	13.00	11.10	0.110	Left Touch	FCC #2	1	76.8	0.032	1.549	1.302	0.065	
2441.0	39	Bluetooth	13.00	11.10	0.070	Right Touch	FCC #2	1	76.8	0.182	1.549	1.302	**0.367**	A26
2441.0	39	Bluetooth	13.00	11.10	-0.120	Left Tilt	FCC #2	1	76.8	0.022	1.549	1.302	0.044	
2441.0	39	Bluetooth	13.00	11.10	0.140	Right Tilt	FCC #2	1	76.8	0.061	1.549	1.302	0.123	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Head 1.6 W/kg (mW/g) averaged over 1 gram**						

12.2 Standalone Body-Worn SAR Worn SAR Results

Table 12.2.1 GSM/PCS/GPRS/WCDMA Body-Worn SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Spacing [Side]	Device Serial Number	# of Time Slots	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
836.6	190	GSM850	GSM	33.90	33.50	-0.070	10 mm [Front]	FCC #1	1	1:8.3	0.367	1.096	0.402	
836.6	190	GSM850	GSM	33.90	33.50	0.010	10 mm [Rear]	FCC #1	1	1:8.3	0.400	1.096	**0.438**	A27
836.6	190	GSM850	GPRS	32.20	31.50	-0.040	10 mm [Front]	FCC #1	2	1:4.15	0.452	1.175	0.531	
836.6	190	GSM850	GPRS	32.20	31.50	-0.060	10 mm [Rear]	FCC #1	2	1:4.15	0.522	1.175	**0.613**	A28
1880.0	661	PCS1900	PCS	30.70	30.30	-0.000	10 mm [Front]	FCC #1	1	1:8.3	0.241	1.096	**0.264**	A29
1880.0	661	PCS1900	PCS	30.70	30.30	0.040	10 mm [Rear]	FCC #1	1	1:8.3	0.235	1.096	0.258	
1880.0	661	PCS1900	GPRS	28.70	28.40	0.000	10 mm [Front]	FCC #1	2	1:4.15	0.283	1.072	0.303	
1880.0	661	PCS1900	GPRS	28.70	28.40	0.000	10 mm [Rear]	FCC #1	2	1:4.15	0.283	1.072	**0.303**	A30
836.6	4183	WCDMA 850	RMC	25.50	24.91	-0.010	10 mm [Front]	FCC #1	N/A	1:1	0.639	1.146	0.732	
826.4	4132	WCDMA 850	RMC	25.50	24.95	-0.030	10 mm [Rear]	FCC #1	N/A	1:1	0.708	1.135	0.804	
836.6	4183	WCDMA 850	RMC	25.50	24.91	-0.030	10 mm [Rear]	FCC #1	N/A	1:1	0.750	1.146	0.860	
846.6	4233	WCDMA 850	RMC	25.50	24.93	-0.010	10 mm [Rear]	FCC #1	N/A	1:1	0.784	1.140	**0.894**	A31
1712.4	1312	WCDMA 1700	RMC	24.70	24.20	-0.050	10 mm [Front]	FCC #1	N/A	1:1	0.707	1.122	0.793	
1732.4	1412	WCDMA 1700	RMC	24.70	24.18	-0.050	10 mm [Front]	FCC #1	N/A	1:1	0.794	1.127	**0.895**	A32
1752.6	1513	WCDMA 1700	RMC	24.70	24.20	-0.050	10 mm [Front]	FCC #1	N/A	1:1	0.789	1.122	0.885	
1732.4	1412	WCDMA 1700	RMC	24.70	24.18	-0.010	10 mm [Rear]	FCC #1	N/A	1:1	0.622	1.127	0.701	
1880.0	9400	WCDMA 1900	RMC	24.70	24.23	0.040	10 mm [Front]	FCC #1	N/A	1:1	0.562	1.114	**0.626**	A33
1880.0	9400	WCDMA 1900	RMC	24.70	24.23	-0.030	10 mm [Rear]	FCC #1	N/A	1:1	0.556	1.114	0.619	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Body 1.6 W/kg (mW/g) averaged over 1 gram**						

Table 12.2.2 LTE B12, B13, B5, B4 Body-Worn SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
707.5	23095	LTE B12	10	25.50	25.03	0.000	0	10 mm [Front]	FCC #1	QPSK	1	0	1:1	0.477	1.114	0.531	
707.5	23095	LTE B12	10	24.50	23.86	-0.050	1	10 mm [Front]	FCC #1	QPSK	25	0	1:1	0.330	1.159	0.382	
707.5	23095	LTE B12	10	25.50	25.03	-0.020	0	10 mm [Rear]	FCC #1	QPSK	1	0	1:1	0.523	1.114	**0.583**	A34
707.5	23095	LTE B12	10	24.50	23.86	-0.010	1	10 mm [Rear]	FCC #1	QPSK	25	0	1:1	0.358	1.159	0.415	
782.0	23230	LTE B13	10	25.50	24.93	-0.010	0	10 mm [Front]	FCC #1	QPSK	1	0	1:1	0.428	1.140	0.488	
782.0	23230	LTE B13	10	24.50	23.90	-0.010	1	10 mm [Front]	FCC #1	QPSK	25	0	1:1	0.293	1.148	0.336	
782.0	23230	LTE B13	10	25.50	24.93	-0.080	0	10 mm [Rear]	FCC #1	QPSK	1	0	1:1	0.474	1.140	**0.540**	A70
782.0	23230	LTE B13	10	24.50	23.90	-0.040	1	10 mm [Rear]	FCC #1	QPSK	25	0	1:1	0.320	1.148	0.367	
836.5	20525	LTE B5	10	25.50	24.62	0.010	0	10 mm [Front]	FCC #1	QPSK	1	25	1:1	0.602	1.225	0.737	
836.5	20525	LTE B5	10	24.50	23.64	0.000	1	10 mm [Front]	FCC #1	QPSK	25	0	1:1	0.404	1.219	0.492	
836.5	20525	LTE B5	10	25.50	24.62	-0.040	0	10 mm [Rear]	FCC #1	QPSK	1	25	1:1	0.704	1.225	**0.862**	A35
836.5	20525	LTE B5	10	24.50	23.64	-0.080	1	10 mm [Rear]	FCC #1	QPSK	25	0	1:1	0.515	1.219	0.628	
836.5	20525	LTE B5	10	24.50	23.61	-0.020	1	10 mm [Rear]	FCC #1	QPSK	50	0	1:1	0.528	1.227	0.648	
1732.5	20175	LTE B4	20	24.70	24.50	-0.030	0	10 mm [Front]	FCC #1	QPSK	1	0	1:1	0.849	1.047	**0.889**	A36
1732.5	20175	LTE B4	20	23.70	23.33	0.070	1	10 mm [Front]	FCC #1	QPSK	50	0	1:1	0.656	1.089	0.714	
1732.5	20175	LTE B4	20	23.70	23.29	-0.050	1	10 mm [Front]	FCC #1	QPSK	100	0	1:1	0.505	1.099	0.555	
1732.5	20175	LTE B4	20	24.70	24.50	-0.010	0	10 mm [Rear]	FCC #1	QPSK	1	0	1:1	0.609	1.047	0.638	
1732.5	20175	LTE B4	20	23.70	23.33	0.010	1	10 mm [Rear]	FCC #1	QPSK	50	0	1:1	0.465	1.089	0.506	
1732.5	20175	LTE B4	20	24.70	24.50	-0.010	0	10 mm [Front]	FCC #1	QPSK	1	0	1:1	0.815	1.047	0.853	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure										**Body 1.6 W/kg (mW/g) averaged over 1 gram**							

Note: Blue entries represent variability measurements.

Table 12.2.3 LTE B2/B7/B41 Body-Worn SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
1900.0	19100	LTE B2	20	24.70	24.25	0.010	0	10 mm [Front]	FCC #1	QPSK	1	0	1:1	0.496	1.109	**0.550**	A37
1900.0	19100	LTE B2	20	23.70	23.02	-0.170	1	10 mm [Front]	FCC #1	QPSK	50	0	1:1	0.409	1.169	0.478	
1900.0	19100	LTE B2	20	24.70	24.25	0.040	0	10 mm [Rear]	FCC #1	QPSK	1	0	1:1	0.450	1.109	0.499	
1900.0	19100	LTE B2	20	23.70	23.02	0.030	1	10 mm [Rear]	FCC #1	QPSK	50	0	1:1	0.375	1.169	0.438	
2510.0	20850	LTE B7	20	24.70	24.19	-0.050	0	10 mm [Front]	FCC #1	QPSK	1	0	1:1	0.560	1.125	0.630	
2510.0	20850	LTE B7	20	23.70	23.10	-0.040	1	10 mm [Front]	FCC #1	QPSK	50	0	1:1	0.449	1.148	0.515	
2510.0	20850	LTE B7	20	24.70	24.19	-0.160	0	10 mm [Rear]	FCC #1	QPSK	1	0	1:1	0.685	1.125	**0.771**	A38
2510.0	20850	LTE B7	20	23.70	23.10	-0.100	1	10 mm [Rear]	FCC #1	QPSK	50	0	1:1	0.556	1.148	0.638	
2506.0	39750	LTE B41	20	25.20	24.57	-0.070	0	10 mm [Front]	FCC #1	QPSK	1	0	1:1	0.323	1.156	0.373	
2506.0	39750	LTE B41	20	24.20	23.63	-0.030	1	10 mm [Front]	FCC #1	QPSK	50	0	1:1	0.154	1.140	0.176	
2506.0	39750	LTE B41	20	25.20	24.57	-0.070	0	10 mm [Rear]	FCC #1	QPSK	1	0	1:1	0.471	1.156	**0.544**	A39
2506.0	39750	LTE B41	20	24.20	23.63	-0.030	1	10 mm [Rear]	FCC #1	QPSK	50	0	1:1	0.296	1.140	0.337	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure										**Body 1.6 W/kg (mW/g) averaged over 1 gram**							

Table 12.2.4 DTS Body-Worn SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	SAR (W/kg)	Plots #
MHz	Ch														
2462.0	11	802.11b (Ant.1)	16.00	15.33	-0.150	10 mm [Front]	FCC #2	0.094	1	98.8	0.094	1.167	1.012	0.111	
2462.0	11	802.11b (Ant.1)	16.00	15.33	-0.080	10 mm [Rear]	FCC #2	0.108	1	98.8	0.119	1.167	1.012	**0.141**	A40
2437.0	6	802.11b (Ant.2)	16.00	15.04	-0.090	10 mm [Front]	FCC #2	0.068	1	98.8	0.056	1.247	1.012	**0.071**	A41
2437.0	6	802.11b (Ant.2)	16.00	15.04	-0.010	10 mm [Rear]	FCC #2	0.046	1	98.8	0.045	1.247	1.012	0.057	
2412.0	1	802.11g (MIMO)	18.50	17.20	-0.100	10 mm [Front]	FCC #2	0.066	1	98.2	0.065	1.349	1.018	0.089	
2412.0	1	802.11g (MIMO)	18.50	17.20	-0.150	10 mm [Rear]	FCC #2	0.082	1	98.2	0.084	1.349	1.018	**0.115**	A42
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Body 1.6 W/kg (mW/g) averaged over 1 gram**							

Adjusted SAR results for OFDM SAR											
FREQUENCY		Mode/ Antenna	Service	Maximum Allowed Power [dBm]	1g Scaled SAR (W/kg)	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm	Ratio of OFDM to DSSS	1g Adjusted SAR (W/kg)	Determine OFDM SAR
MHz	Ch											
2462.0	11	802.11b (Ant.1)	DSSS	16.0	0.141	2437	802.11g	OFDM	15.5	0.891	0.126	X
2462.0	11	802.11b (Ant.1)	DSSS	16.0	0.141	2437	802.11n	OFDM	14.5	0.708	0.100	X
2462.0	11	802.11b (Ant.1)	DSSS	16.0	0.141	2437	802.11ac	OFDM	14.5	0.708	0.100	X
2437.0	6	802.11b (Ant.2)	DSSS	16.0	0.071	2437	802.11g	OFDM	15.5	0.891	0.063	X
2437.0	6	802.11b (Ant.2)	DSSS	16.0	0.071	2437	802.11n	OFDM	14.5	0.708	0.050	X
2437.0	6	802.11b (Ant.2)	DSSS	16.0	0.071	2437	802.11ac	OFDM	14.5	0.708	0.050	X
2412.0	1	802.11g (MIMO)	DSSS	18.5	0.115	2437	802.11n	OFDM	17.5	0.794	0.091	X
2412.0	1	802.11g (MIMO)	DSSS	18.5	0.115	2437	802.11ac	OFDM	17.5	0.794	0.091	X
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure							**Body 1.6 W/kg (mW/g) averaged over 1 gram**					

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

Table 12.2.5 UNII Body-Worn SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5300.0	60	802.11a (Ant.1)	15.50	14.76	-0.030	10 mm [Front]	FCC #2	0.041	1	98.1	0.033	1.186	1.019	0.040	
5300.0	60	802.11a (Ant.1)	15.50	14.76	0.140	10 mm [Rear]	FCC #2	0.344	1	98.1	0.369	1.186	1.019	**0.446**	A43
5260.0	52	802.11a (Ant.2)	15.50	14.69	0.050	10 mm [Front]	FCC #2	0.063	1	98.1	0.055	1.205	1.019	0.068	
5260.0	52	802.11a (Ant.2)	15.50	14.69	-0.080	10 mm [Rear]	FCC #2	0.257	1	98.1	0.256	1.205	1.019	**0.314**	A44
5260.0	52	802.11a (MIMO)	18.50	17.72	-0.120	10 mm [Front]	FCC #2	0.079	1	98.1	0.076	1.205	1.019	0.093	
5260.0	52	802.11a (MIMO)	18.50	17.72	-0.150	10 mm [Rear]	FCC #2	0.410	1	98.1	0.403	1.205	1.019	**0.495**	A45
ANSI / IEEE C95.1-2005– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Body 1.6 W/kg (mW/g) averaged over 1 gram**							

Adjusted SAR results for UNII-1 and UNII-2A SAR												
FREQUENCY		Mode/ Antenna	Service	Maximum Allowed Power [dBm]	1g Scaled SAR (W/kg)	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm	Adjusted Factor	1g Adjusted SAR (W/kg)	SAR for the band with lower maximum output power
MHz	Ch											
5300.0	60	802.11a (Ant.1)	OFDM	15.5	0.446	5300	802.11a	OFDM	15.5	1.000	0.446	X
5260.0	52	802.11a (Ant.2)	OFDM	15.5	0.314	5300	802.11a	OFDM	15.5	1.000	0.314	X
5260.0	52	802.11a (MIMO)	OFDM	18.5	0.495	5300	802.11a	OFDM	18.5	1.000	0.495	X
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure							**Head 1.6 W/kg (mW/g) averaged over 1 gram**					

Note(s):

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

Table 12.2.6 UNII Body-Worn SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5720.0	144	802.11a (Ant.1)	15.50	14.78	0.130	10 mm [Front]	FCC #2	0.053	1	98.1	0.049	1.180	1.019	0.059	
5720.0	144	802.11a (Ant.1)	15.50	14.78	0.150	10 mm [Rear]	FCC #2	0.360	1	98.1	0.404	1.180	1.019	**0.486**	A46
5660.0	132	802.11a (Ant.2)	15.50	14.69	-0.070	10 mm [Front]	FCC #2	0.031	1	98.1	0.022	1.205	1.019	0.027	
5660.0	132	802.11a (Ant.2)	15.50	14.69	-0.130	10 mm [Rear]	FCC #2	0.188	1	98.1	0.194	1.205	1.019	**0.238**	A47
5660.0	132	802.11a (MIMO)	18.50	17.74	0.020	10 mm [Front]	FCC #2	0.054	1	98.1	0.041	1.205	1.019	0.050	
5660.0	132	802.11a (MIMO)	18.50	17.74	-0.190	10 mm [Rear]	FCC #2	0.338	1	98.1	0.362	1.205	1.019	**0.445**	A48
5785.0	157	802.11a (Ant.1)	15.50	14.79	-0.080	10 mm [Front]	FCC #2	0.067	1	98.1	0.057	1.178	1.019	0.068	
5785.0	157	802.11a (Ant.1)	15.50	14.79	0.140	10 mm [Rear]	FCC #2	0.326	1	98.1	0.353	1.178	1.019	**0.424**	A49
5785.0	157	802.11a (Ant.2)	15.50	14.65	-0.190	10 mm [Front]	FCC #2	0.038	1	98.1	0.026	1.216	1.019	0.032	
5785.0	157	802.11a (Ant.2)	15.50	14.65	-0.110	10 mm [Rear]	FCC #2	0.178	1	98.1	0.173	1.216	1.019	**0.214**	A50
5785.0	157	802.11a (MIMO)	18.50	17.73	-0.100	10 mm [Front]	FCC #2	0.052	1	98.1	0.046	1.216	1.019	0.057	
5785.0	157	802.11a (MIMO)	18.50	17.73	-0.190	10 mm [Rear]	FCC #2	0.284	1	98.1	0.302	1.216	1.019	**0.374**	A51
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Body 1.6 W/kg (mW/g) averaged over 1 gram**							

Table 12.2.7 Bluetooth Body-Worn SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Rate [Mbps]	Duty Cycle (%)	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
2441.0	39	Bluetooth	13.00	11.10	-0.100	10 mm [Front]	FCC #2	1	76.8	0.043	1.549	1.302	0.087	
2441.0	39	Bluetooth	13.00	11.10	-0.140	10 mm [Rear]	FCC #2	1	76.8	0.045	1.549	1.302	**0.091**	A52
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**						

12.3 Standalone Hotspot SAR Results

Table 12.3.1 GPRS/WCDMA Hotspot SAR

MEASUREMENT RESULTS													
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Spacing [Side]	Device Serial Number	# of Time Slots	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
836.6	190	GSM850	GPRS	32.20	31.50	0.000	10 mm [Bottom]	FCC #1	2	1:4.15	0.273	1.175	0.321	
836.6	190	GSM850	GPRS	32.20	31.50	-0.040	10 mm [Front]	FCC #1	2	1:4.15	0.452	1.175	0.531	
836.6	190	GSM850	GPRS	32.20	31.50	-0.060	10 mm [Rear]	FCC #1	2	1:4.15	0.522	1.175	**0.613**	A28
836.6	190	GSM850	GPRS	32.20	31.50	-0.170	10 mm [Right]	FCC #1	2	1:4.15	0.079	1.175	0.093	
836.6	190	GSM850	GPRS	32.20	31.50	0.002	10 mm [Left]	FCC #1	2	1:4.15	0.243	1.175	0.286	
1880.0	661	PCS1900	GPRS	28.70	28.40	0.000	10 mm [Bottom]	FCC #1	2	1:4.15	0.260	1.072	0.279	
1880.0	661	PCS1900	GPRS	28.70	28.40	0.000	10 mm [Front]	FCC #1	2	1:4.15	0.283	1.072	0.303	
1880.0	661	PCS1900	GPRS	28.70	28.40	0.000	10 mm [Rear]	FCC #1	2	1:4.15	0.283	1.072	**0.303**	A30
1880.0	661	PCS1900	GPRS	28.70	28.40	-0.110	10 mm [Left]	FCC #1	2	1:4.15	0.107	1.072	0.115	
836.6	4183	WCDMA 850	RMC	25.50	24.91	-0.070	10 mm [Bottom]	FCC #1	N/A	1:1	0.325	1.146	0.372	
836.6	4183	WCDMA 850	RMC	25.50	24.91	-0.010	10 mm [Front]	FCC #1	N/A	1:1	0.639	1.146	0.732	
826.4	4132	WCDMA 850	RMC	25.50	24.95	-0.030	10 mm [Rear]	FCC #1	N/A	1:1	0.708	1.135	0.804	
836.6	4183	WCDMA 850	RMC	25.50	24.91	-0.030	10 mm [Rear]	FCC #1	N/A	1:1	0.750	1.146	0.860	
846.6	4233	WCDMA 850	RMC	25.50	24.93	-0.010	10 mm [Rear]	FCC #1	N/A	1:1	0.784	1.140	**0.894**	A31
836.6	4183	WCDMA 850	RMC	25.50	24.91	-0.150	10 mm [Right]	FCC #1	N/A	1:1	0.113	1.146	0.129	
836.6	4183	WCDMA 850	RMC	25.50	24.91	-0.050	10 mm [Left]	FCC #1	N/A	1:1	0.315	1.146	0.361	
1732.4	1412	WCDMA 1700	RMC	24.70	24.18	0.010	10 mm [Bottom]	FCC #1	N/A	1:1	0.695	1.127	0.783	
1712.4	1312	WCDMA 1700	RMC	24.70	24.20	-0.050	10 mm [Front]	FCC #1	N/A	1:1	0.707	1.122	0.793	
1732.4	1412	WCDMA 1700	RMC	24.70	24.18	-0.050	10 mm [Front]	FCC #1	N/A	1:1	0.794	1.127	**0.895**	A32
1752.6	1513	WCDMA 1700	RMC	24.70	24.20	-0.050	10 mm [Front]	FCC #1	N/A	1:1	0.789	1.122	0.885	
1732.4	1412	WCDMA 1700	RMC	24.70	24.18	-0.010	10 mm [Rear]	FCC #1	N/A	1:1	0.622	1.127	0.701	
1732.4	1412	WCDMA 1700	RMC	24.70	24.18	-0.130	10 mm [Left]	FCC #1	N/A	1:1	0.383	1.127	0.432	
1880.0	9400	WCDMA 1900	RMC	24.70	24.23	-0.020	10 mm [Bottom]	FCC #1	N/A	1:1	0.536	1.114	0.597	
1880.0	9400	WCDMA 1900	RMC	24.70	24.23	0.040	10 mm [Front]	FCC #1	N/A	1:1	0.562	1.114	**0.626**	A33
1880.0	9400	WCDMA 1900	RMC	24.70	24.23	-0.030	10 mm [Rear]	FCC #1	N/A	1:1	0.556	1.114	0.619	
1880.0	9400	WCDMA 1900	RMC	24.70	24.23	-0.130	10 mm [Left]	FCC #1	N/A	1:1	0.210	1.114	0.234	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Body 1.6 W/kg (mW/g) averaged over 1 gram**						

Table 12.3.2 LTE B12, B13, B5 Hotspot SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
707.5	23095	LTE B12	10	25.50	25.03	-0.130	0	10 mm [Bottom]	FCC #1	QPSK	1	25	1:1	0.310	1.114	0.345	
707.5	23095	LTE B12	10	24.50	23.86	-0.160	1	10 mm [Bottom]	FCC #1	QPSK	25	0	1:1	0.208	1.159	0.241	
707.5	23095	LTE B12	10	25.50	25.03	0.000	0	10 mm [Front]	FCC #1	QPSK	1	25	1:1	0.477	1.114	0.531	
707.5	23095	LTE B12	10	24.50	23.86	-0.050	1	10 mm [Front]	FCC #1	QPSK	25	0	1:1	0.330	1.159	0.382	
707.5	23095	LTE B12	10	25.50	25.03	-0.020	0	10 mm [Rear]	FCC #1	QPSK	1	25	1:1	0.523	1.114	**0.583**	A34
707.5	23095	LTE B12	10	24.50	23.86	-0.010	1	10 mm [Rear]	FCC #1	QPSK	25	0	1:1	0.358	1.159	0.415	
707.5	23095	LTE B12	10	25.50	25.03	-0.090	1	10 mm [Right]	FCC #1	QPSK	1	25	1:1	0.165	1.114	0.184	
707.5	23095	LTE B12	10	24.50	23.86	-0.150	0	10 mm [Right]	FCC #1	QPSK	25	0	1:1	0.114	1.159	0.132	
707.5	23095	LTE B12	10	25.50	25.03	0.140	0	10 mm [Left]	FCC #1	QPSK	1	25	1:1	0.156	1.114	0.174	
707.5	23095	LTE B12	10	24.50	23.86	-0.010	1	10 mm [Left]	FCC #1	QPSK	25	0	1:1	0.101	1.159	0.117	
782.0	23230	LTE B13	10	25.50	24.93	-0.070	0	10 mm [Bottom]	FCC #1	QPSK	1	0	1:1	0.267	1.140	0.304	
782.0	23230	LTE B13	10	24.50	23.90	-0.070	1	10 mm [Bottom]	FCC #1	QPSK	25	0	1:1	0.183	1.148	0.210	
782.0	23230	LTE B13	10	25.50	24.93	-0.010	0	10 mm [Front]	FCC #1	QPSK	1	0	1:1	0.428	1.140	0.488	
782.0	23230	LTE B13	10	24.50	23.90	-0.010	1	10 mm [Front]	FCC #1	QPSK	25	0	1:1	0.293	1.148	0.336	
782.0	23230	LTE B13	10	25.50	24.93	-0.080	0	10 mm [Rear]	FCC #1	QPSK	1	0	1:1	0.474	1.140	**0.540**	A70
782.0	23230	LTE B13	10	24.50	23.90	-0.040	1	10 mm [Rear]	FCC #1	QPSK	25	0	1:1	0.320	1.148	0.367	
782.0	23230	LTE B13	10	25.50	24.93	0.180	0	10 mm [Right]	FCC #1	QPSK	1	0	1:1	0.096	1.140	0.109	
782.0	23230	LTE B13	10	24.50	23.90	0.120	1	10 mm [Right]	FCC #1	QPSK	25	0	1:1	0.062	1.148	0.071	
782.0	23230	LTE B13	10	25.50	24.93	0.080	0	10 mm [Left]	FCC #1	QPSK	1	0	1:1	0.241	1.140	0.275	
782.0	23230	LTE B13	10	24.50	23.90	0.050	1	10 mm [Left]	FCC #1	QPSK	25	0	1:1	0.165	1.148	0.189	
836.5	20525	LTE B5	10	25.50	24.62	-0.090	0	10 mm [Bottom]	FCC #1	QPSK	1	0	1:1	0.314	1.225	0.385	
836.5	20525	LTE B5	10	24.50	23.64	-0.080	1	10 mm [Bottom]	FCC #1	QPSK	25	0	1:1	0.224	1.219	0.273	
836.5	20525	LTE B5	10	25.50	24.62	0.010	0	10 mm [Front]	FCC #1	QPSK	1	0	1:1	0.602	1.225	0.737	
836.5	20525	LTE B5	10	24.50	23.64	0.000	1	10 mm [Front]	FCC #1	QPSK	25	0	1:1	0.404	1.219	0.492	
836.5	20525	LTE B5	10	25.50	24.62	-0.040	0	10 mm [Rear]	FCC #1	QPSK	1	0	1:1	0.704	1.225	**0.862**	A35
836.5	20525	LTE B5	10	24.50	23.64	-0.080	1	10 mm [Rear]	FCC #1	QPSK	25	0	1:1	0.515	1.219	0.628	
836.5	20525	LTE B5	10	24.50	23.61	-0.020	1	10 mm [Rear]	FCC #1	QPSK	50	0	1:1	0.528	1.227	0.648	
836.5	20525	LTE B5	10	25.50	24.62	0.180	0	10 mm [Right]	FCC #1	QPSK	1	0	1:1	0.105	1.225	0.129	
836.5	20525	LTE B5	10	24.50	23.64	-0.110	1	10 mm [Right]	FCC #1	QPSK	25	0	1:1	0.072	1.219	0.088	
836.5	20525	LTE B5	10	25.50	24.62	-0.060	0	10 mm [Left]	FCC #1	QPSK	1	0	1:1	0.329	1.225	0.403	
836.5	20525	LTE B5	10	24.50	23.64	-0.080	1	10 mm [Left]	FCC #1	QPSK	25	0	1:1	0.220	1.219	0.268	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure										**Body 1.6 W/kg (mW/g) averaged over 1 gram**							

Table 12.3.3 LTE B4 Hotspot SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
1732.5	20175	LTE B4	20	24.70	24.50	0.010	0	10 mm [Bottom]	FCC #1	QPSK	1	0	1:1	0.619	1.047	0.648	
1732.5	20175	LTE B4	20	23.70	23.33	0.040	1	10 mm [Bottom]	FCC #1	QPSK	50	50	1:1	0.505	1.089	0.550	
1732.5	20175	LTE B4	20	24.70	24.50	-0.030	0	10 mm [Front]	FCC #1	QPSK	1	0	1:1	0.849	1.047	**0.889**	A36
1732.5	20175	LTE B4	20	23.70	23.33	0.070	1	10 mm [Front]	FCC #1	QPSK	50	50	1:1	0.656	1.089	0.714	
1732.5	20175	LTE B4	20	23.70	23.29	-0.050	1	10 mm [Front]	FCC #1	QPSK	100	0	1:1	0.505	1.099	0.555	
1732.5	20175	LTE B4	20	24.70	24.50	-0.010	0	10 mm [Rear]	FCC #1	QPSK	1	0	1:1	0.609	1.047	0.638	
1732.5	20175	LTE B4	20	23.70	23.33	0.010	1	10 mm [Rear]	FCC #1	QPSK	50	50	1:1	0.465	1.089	0.506	
1732.5	20175	LTE B4	20	24.70	24.50	0.140	0	10 mm [Left]	FCC #1	QPSK	1	0	1:1	0.383	1.047	0.401	
1732.5	20175	LTE B4	20	23.70	23.33	0.130	1	10 mm [Left]	FCC #1	QPSK	50	50	1:1	0.296	1.089	0.322	
1732.5	20175	LTE B4	20	24.70	24.50	-0.010	0	10 mm [Front]	FCC #1	QPSK	1	0	1:1	0.815	1.047	0.853	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure										**Body 1.6 W/kg (mW/g) averaged over 1 gram**							

Note: Blue entries represent variability measurements.

Table 12.3.4 LTE B2 Hotspot SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
1860.0	18700	LTE B2	20	24.70	24.25	0.040	0	10 mm [Bottom]	FCC #1	QPSK	1	0	1:1	0.421	1.109	0.467	
1860.0	18700	LTE B2	20	23.70	23.02	0.050	1	10 mm [Bottom]	FCC #1	QPSK	50	0	1:1	0.332	1.169	0.388	
1860.0	18700	LTE B2	20	24.70	24.25	0.010	0	10 mm [Front]	FCC #1	QPSK	1	0	1:1	0.496	1.109	**0.550**	A37
1860.0	18700	LTE B2	20	23.70	23.02	-0.170	1	10 mm [Front]	FCC #1	QPSK	50	0	1:1	0.409	1.169	0.478	
1860.0	18700	LTE B2	20	24.70	24.25	0.040	0	10 mm [Rear]	FCC #1	QPSK	1	0	1:1	0.450	1.109	0.499	
1860.0	18700	LTE B2	20	23.70	23.02	0.030	1	10 mm [Rear]	FCC #1	QPSK	50	0	1:1	0.375	1.169	0.438	
1860.0	18700	LTE B2	20	24.70	24.25	0.180	0	10 mm [Left]	FCC #1	QPSK	1	0	1:1	0.154	1.109	0.171	
1860.0	18700	LTE B2	20	23.70	23.02	0.130	1	10 mm [Left]	FCC #1	QPSK	50	0	1:1	0.131	1.169	0.153	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure										**Body 1.6 W/kg (mW/g) averaged over 1 gram**							

Table 12.3.5 LTE B7 Hotspot SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
2560.0	21350	LTE B7	20	24.70	24.19	-0.010	0	10 mm [Bottom]	FCC #1	QPSK	1	0	1:1	0.611	1.125	0.687	
2560.0	21350	LTE B7	20	23.70	23.10	-0.030	1	10 mm [Bottom]	FCC #1	QPSK	50	0	1:1	0.488	1.148	0.560	
2560.0	21350	LTE B7	20	24.70	24.19	-0.050	0	10 mm [Front]	FCC #1	QPSK	1	0	1:1	0.560	1.125	0.630	
2560.0	21350	LTE B7	20	23.70	23.10	-0.040	1	10 mm [Front]	FCC #1	QPSK	50	0	1:1	0.449	1.148	0.515	
2560.0	21350	LTE B7	20	24.70	24.19	-0.160	0	10 mm [Rear]	FCC #1	QPSK	1	0	1:1	0.685	1.125	**0.771**	A38
2560.0	21350	LTE B7	20	23.70	23.10	-0.100	1	10 mm [Rear]	FCC #1	QPSK	50	0	1:1	0.556	1.148	0.638	
2560.0	21350	LTE B7	20	24.70	24.19	-0.040	0	10 mm [Left]	FCC #1	QPSK	1	0	1:1	0.107	1.125	0.120	
2560.0	21350	LTE B7	20	23.70	23.10	0.020	1	10 mm [Left]	FCC #1	QPSK	50	0	1:1	0.081	1.148	0.093	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure										**Body 1.6 W/kg (mW/g) averaged over 1 gram**							

Table 12.3.6 LTE B41 Hotspot SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
2506.0	39750	LTE B41	20	25.20	24.57	0.050	0	10 mm [Bottom]	FCC #1	QPSK	1	0	1:1	0.416	1.156	0.481	
2506.0	39750	LTE B41	20	24.20	23.63	0.120	1	10 mm [Bottom]	FCC #1	QPSK	50	0	1:1	0.202	1.140	0.230	
2506.0	39750	LTE B41	20	25.20	24.57	-0.070	0	10 mm [Front]	FCC #1	QPSK	1	0	1:1	0.323	1.156	0.373	
2506.0	39750	LTE B41	20	24.20	23.63	-0.030	1	10 mm [Front]	FCC #1	QPSK	50	0	1:1	0.154	1.140	0.176	
2506.0	39750	LTE B41	20	25.20	24.57	-0.070	0	10 mm [Rear]	FCC #1	QPSK	1	0	1:1	0.471	1.156	**0.544**	A39
2506.0	39750	LTE B41	20	24.20	23.63	-0.030	1	10 mm [Rear]	FCC #1	QPSK	50	0	1:1	0.296	1.140	0.337	
2506.0	39750	LTE B41	20	25.20	24.57	-0.020	0	10 mm [Left]	FCC #1	QPSK	1	0	1:1	0.081	1.156	0.094	
2506.0	39750	LTE B41	20	24.20	23.63	-0.070	1	10 mm [Left]	FCC #1	QPSK	50	0	1:1	0.053	1.140	0.060	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure										**Body 1.6 W/kg (mW/g) averaged over 1 gram**							

Table 12.3.7 DTS Hotspot SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	SAR (W/kg)	Plots #
MHz	Ch														
2462.0	11	802.11b (Ant.1)	16.00	15.33	0.140	10 mm [Top]	FCC #2	0.033	1	98.8	0.033	1.167	1.012	0.039	
2462.0	11	802.11b (Ant.1)	16.00	15.33	-0.150	10 mm [Front]	FCC #2	0.094	1	98.8	0.094	1.167	1.012	0.111	
2462.0	11	802.11b (Ant.1)	16.00	15.33	-0.080	10 mm [Rear]	FCC #2	0.108	1	98.8	0.119	1.167	1.012	0.141	
2462.0	11	802.11b (Ant.1)	16.00	15.33	0.180	10 mm [Left]	FCC #2	0.109	1	98.8	0.122	1.167	1.012	**0.144**	A53
2437.0	6	802.11b (Ant.2)	16.00	15.04	-0.150	10 mm [Top]	FCC #2	0.074	1	98.8	0.071	1.247	1.012	**0.090**	A54
2437.0	6	802.11b (Ant.2)	16.00	15.04	-0.090	10 mm [Front]	FCC #2	0.068	1	98.8	0.056	1.247	1.012	0.071	
2437.0	6	802.11b (Ant.2)	16.00	15.04	-0.010	10 mm [Rear]	FCC #2	0.046	1	98.8	0.045	1.247	1.012	0.057	
2437.0	6	802.11b (Ant.2)	16.00	15.04	0.150	10 mm [Left]	FCC #2	0.006	1	98.8	0.005	1.247	1.012	0.006	
2412.0	1	802.11g (MIMO)	18.50	17.20	-0.060	10 mm [Top]	FCC #2	0.066	1	98.2	0.068	1.349	1.018	0.093	
2412.0	1	802.11g (MIMO)	18.50	17.20	-0.100	10 mm [Front]	FCC #2	0.066	1	98.2	0.065	1.349	1.018	0.089	
2412.0	1	802.11g (MIMO)	18.50	17.20	-0.150	10 mm [Rear]	FCC #2	0.082	1	98.2	0.084	1.349	1.018	0.115	
2412.0	1	802.11g (MIMO)	18.50	17.20	0.140	10 mm [Left]	FCC #2	0.075	1	98.2	0.085	1.349	1.018	**0.117**	A55
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Body 1.6 W/kg (mW/g) averaged over 1 gram**							

Adjusted SAR results for OFDM SAR												
FREQUENCY		Mode/ Antenna	Service	Maximum Allowed Power [dBm]	1g Scaled SAR (W/kg)	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm	Ratio of OFDM to DSSS	1g Adjusted SAR (W/kg)	Determine OFDM SAR
MHz	Ch											
2462.0	11	802.11b (Ant.1)	DSSS	16.0	0.144	2437	802.11g	OFDM	15.5	0.891	0.128	X
2462.0	11	802.11b (Ant.1)	DSSS	16.0	0.144	2437	802.11n	OFDM	14.5	0.708	0.102	X
2462.0	11	802.11b (Ant.1)	DSSS	16.0	0.144	2437	802.11ac	OFDM	14.5	0.708	0.102	X
2437.0	6	802.11b (Ant.2)	DSSS	16.0	0.090	2437	802.11g	OFDM	15.5	0.891	0.080	X
2437.0	6	802.11b (Ant.2)	DSSS	16.0	0.090	2437	802.11n	OFDM	14.5	0.708	0.064	X
2437.0	6	802.11b (Ant.2)	DSSS	16.0	0.090	2437	802.11ac	OFDM	14.5	0.708	0.064	X
2412.0	1	802.11g (MIMO)	DSSS	18.5	0.117	2437	802.11n	OFDM	17.5	0.794	0.093	X
2412.0	1	802.11g (MIMO)	DSSS	18.5	0.117	2437	802.11ac	OFDM	17.5	0.794	0.093	X
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure							**Body 1.6 W/kg (mW/g) averaged over 1 gram**					

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

Table 12.3.8 UNII Hotspot SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5180.0	36	802.11a (Ant.1)	15.50	14.61	-0.020	10 mm [Top]	FCC #2	0.044	1	98.1	0.036	1.227	1.019	0.045	
5180.0	36	802.11a (Ant.1)	15.50	14.61	0.030	10 mm [Front]	FCC #2	0.025	1	98.1	0.016	1.227	1.019	0.020	
5180.0	36	802.11a (Ant.1)	15.50	14.61	0.170	10 mm [Rear]	FCC #2	0.216	1	98.1	0.233	1.227	1.019	**0.291**	A56
5180.0	36	802.11a (Ant.1)	15.50	14.61	-0.160	10 mm [Left]	FCC #2	0.132	1	98.1	0.127	1.227	1.019	0.159	
5180.0	36	802.11a (Ant.2)	15.50	14.58	0.090	10 mm [Top]	FCC #2	0.071	1	98.1	0.066	1.236	1.019	0.083	
5180.0	36	802.11a (Ant.2)	15.50	14.58	-0.150	10 mm [Front]	FCC #2	0.055	1	98.1	0.051	1.236	1.019	0.064	
5180.0	36	802.11a (Ant.2)	15.50	14.58	-0.130	10 mm [Rear]	FCC #2	0.190	1	98.1	0.185	1.236	1.019	**0.233**	A57
5180.0	36	802.11a (Ant.2)	15.50	14.58	0.170	10 mm [Left]	FCC #2	0.031	1	98.1	0.022	1.236	1.019	0.028	
5180.0	36	802.11a (MIMO)	18.50	17.61	0.040	10 mm [Top]	FCC #2	0.100	1	98.1	0.095	1.236	1.019	0.120	
5180.0	36	802.11a (MIMO)	18.50	17.61	-0.020	10 mm [Front]	FCC #2	0.062	1	98.1	0.061	1.236	1.019	0.077	
5180.0	36	802.11a (MIMO)	18.50	17.61	-0.160	10 mm [Rear]	FCC #2	0.299	1	98.1	0.315	1.236	1.019	**0.397**	A58
5180.0	36	802.11a (MIMO)	18.50	17.61	-0.020	10 mm [Left]	FCC #2	0.141	1	98.1	0.139	1.236	1.019	0.175	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Body 1.6 W/kg (mW/g) averaged over 1 gram**							

Table 12.3.9 UNII Hotspot SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5785.0	157	802.11a (Ant.1)	15.50	14.79	-0.100	10 mm [Top]	FCC #2	0.059	1	98.1	0.046	1.178	1.019	0.055	
5785.0	157	802.11a (Ant.1)	15.50	14.79	-0.080	10 mm [Front]	FCC #2	0.067	1	98.1	0.057	1.178	1.019	0.068	
5785.0	157	802.11a (Ant.1)	15.50	14.79	0.140	10 mm [Rear]	FCC #2	0.326	1	98.1	0.353	1.178	1.019	**0.424**	A49
5785.0	157	802.11a (Ant.1)	15.50	14.79	-0.060	10 mm [Left]	FCC #2	0.206	1	98.1	0.207	1.178	1.019	0.249	
5785.0	157	802.11a (Ant.2)	15.50	14.65	-0.110	10 mm [Top]	FCC #2	0.107	1	98.1	0.093	1.216	1.019	0.115	
5785.0	157	802.11a (Ant.2)	15.50	14.65	-0.190	10 mm [Front]	FCC #2	0.038	1	98.1	0.026	1.216	1.019	0.032	
5785.0	157	802.11a (Ant.2)	15.50	14.65	-0.110	10 mm [Rear]	FCC #2	0.178	1	98.1	0.173	1.216	1.019	**0.214**	A50
5785.0	157	802.11a (Ant.2)	15.50	14.65	0.150	10 mm [Left]	FCC #2	0.039	1	98.1	0.026	1.216	1.019	0.032	
5785.0	157	802.11a (MIMO)	18.50	17.73	-0.050	10 mm [Top]	FCC #2	0.134	1	98.1	0.123	1.216	1.019	0.152	
5785.0	157	802.11a (MIMO)	18.50	17.73	-0.100	10 mm [Front]	FCC #2	0.052	1	98.1	0.046	1.216	1.019	0.057	
5785.0	157	802.11a (MIMO)	18.50	17.73	-0.190	10 mm [Rear]	FCC #2	0.284	1	98.1	0.302	1.216	1.019	**0.374**	A51
5785.0	157	802.11a (MIMO)	18.50	17.73	0.030	10 mm [Left]	FCC #2	0.180	1	98.1	0.180	1.216	1.019	0.223	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Body 1.6 W/kg (mW/g) averaged over 1 gram**							

Note : UNII-3 Band CH 165(5825 MHz) is not support Hotspot mode as described on operational description, so other required CHs are tested.

Table 12.3.10 Bluetooth Hotspot SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Rate [Mbps]	Duty Cycle (%)	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
2441.0	39	Bluetooth	13.00	11.10	0.160	10 mm [Top]	FCC #2	1	76.8	0.014	1.549	1.302	0.028	
2441.0	39	Bluetooth	13.00	11.10	-0.100	10 mm [Front]	FCC #2	1	76.8	0.043	1.549	1.302	0.087	
2441.0	39	Bluetooth	13.00	11.10	-0.140	10 mm [Rear]	FCC #2	1	76.8	0.045	1.549	1.302	0.091	
2441.0	39	Bluetooth	13.00	11.10	-0.020	10 mm [Left]	FCC #2	1	76.8	0.055	1.549	1.302	**0.111**	A59
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**						

12.4 Standalone Phablet SAR Results

Per FCC KDB Publication 648474 D04 Handset SAR, Phablet SAR tests were not required when Hotspot 1g SAR (scaled to maximum output power including tolerance) < 1.2 W/kg.

Table 12.4.1 UNII Phablet SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	10g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	10g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5300.0	60	802.11a (Ant.1)	15.50	14.76	0.080	0 mm [Top]	FCC #2	0.181	1	98.1	0.179	1.186	1.019	0.216	
5300.0	60	802.11a (Ant.1)	15.50	14.76	-0.050	0 mm [Front]	FCC #2	0.123	1	98.1	0.119	1.330	1.019	0.161	
5300.0	60	802.11a (Ant.1)	15.50	14.76	0.050	0 mm [Rear]	FCC #2	0.760	1	98.1	0.967	1.186	1.019	**1.169**	A60
5300.0	60	802.11a (Ant.1)	15.50	14.76	0.110	0 mm [Left]	FCC #2	0.557	1	98.1	0.524	1.186	1.019	0.634	
5260.0	52	802.11a (Ant.2)	15.50	14.69	-0.190	0 mm [Top]	FCC #2	0.230	1	98.1	0.270	1.205	1.019	0.332	
5260.0	52	802.11a (Ant.2)	15.50	14.69	-0.140	0 mm [Front]	FCC #2	0.189	1	98.1	0.181	1.205	1.019	0.222	
5260.0	52	802.11a (Ant.2)	15.50	14.69	0.160	0 mm [Rear]	FCC #2	0.504	1	98.1	0.523	1.205	1.019	**0.642**	A61
5260.0	52	802.11a (Ant.2)	15.50	14.69	0.090	0 mm [Left]	FCC #2	0.058	1	98.1	0.053	1.205	1.019	0.065	
5260.0	52	802.11a (MIMO)	18.50	17.72	-0.180	0 mm [Top]	FCC #2	0.361	1	98.1	0.375	1.205	1.019	0.461	
5260.0	52	802.11a (MIMO)	18.50	17.72	-0.180	0 mm [Front]	FCC #2	0.239	1	98.1	0.275	1.205	1.019	0.338	
5260.0	52	802.11a (MIMO)	18.50	17.72	-0.150	0 mm [Rear]	FCC #2	1.150	1	98.1	1.130	1.205	1.019	**1.388**	A62
5260.0	52	802.11a (MIMO)	18.50	17.72	0.100	0 mm [Left]	FCC #2	0.388	1	98.1	0.400	1.205	1.019	0.491	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Phablet 4.0 W/kg (mW/g) averaged over 10 gram**							

Table 12.4.2 UNII Phablet SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	10g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	10g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5720.0	144	802.11a (Ant.1)	15.50	14.78	-0.060	0 mm [Top]	FCC #2	0.075	1	98.1	0.068	1.180	1.019	0.082	
5720.0	144	802.11a (Ant.1)	15.50	14.78	-0.170	0 mm [Front]	FCC #2	0.190	1	98.1	0.175	1.180	1.019	0.210	
5720.0	144	802.11a (Ant.1)	15.50	14.78	0.050	0 mm [Rear]	FCC #2	0.829	1	98.1	1.060	1.180	1.019	**1.275**	A63
5720.0	144	802.11a (Ant.1)	15.50	14.78	0.150	0 mm [Left]	FCC #2	0.588	1	98.1	0.625	1.180	1.019	0.752	
5660.0	132	802.11a (Ant.2)	15.50	14.69	-0.130	0 mm [Top]	FCC #2	0.146	1	98.1	0.162	1.205	1.019	0.199	
5660.0	132	802.11a (Ant.2)	15.50	14.69	0.030	0 mm [Front]	FCC #2	0.189	1	98.1	0.161	1.205	1.019	0.198	
5660.0	132	802.11a (Ant.2)	15.50	14.69	-0.060	0 mm [Rear]	FCC #2	0.557	1	98.1	0.560	1.205	1.019	**0.688**	A64
5660.0	132	802.11a (Ant.2)	15.50	14.69	-0.100	0 mm [Left]	FCC #2	0.034	1	98.1	0.028	1.205	1.019	0.034	
5660.0	132	802.11a (MIMO)	18.50	17.74	0.190	0 mm [Top]	FCC #2	0.220	1	98.1	0.222	1.205	1.019	0.273	
5660.0	132	802.11a (MIMO)	18.50	17.74	-0.040	0 mm [Front]	FCC #2	0.294	1	98.1	0.263	1.205	1.019	0.323	
5660.0	132	802.11a (MIMO)	18.50	17.74	0.000	0 mm [Rear]	FCC #2	1.260	1	98.1	1.320	1.205	1.019	**1.621**	A65
5660.0	132	802.11a (MIMO)	18.50	17.74	0.170	0 mm [Left]	FCC #2	0.490	1	98.1	0.513	1.205	1.019	0.630	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Phablet 4.0 W/kg (mW/g) averaged over 10 gram**							

Table 12.4.3 UNII Phablet SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	10g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	10g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5825.0	165	802.11a (Ant.1)	15.50	14.73	0.160	0 mm [Top]	FCC #2	0.104	1	98.1	0.104	1.194	1.019	0.127	
5825.0	165	802.11a (Ant.1)	15.50	14.73	-0.070	0 mm [Front]	FCC #2	0.193	1	98.1	0.204	1.194	1.019	0.248	
5825.0	165	802.11a (Ant.1)	15.50	14.73	-0.020	0 mm [Rear]	FCC #2	0.558	1	98.1	0.993	1.194	1.019	**1.209**	A73
5825.0	165	802.11a (Ant.1)	15.50	14.73	-0.030	0 mm [Left]	FCC #2	0.552	1	98.1	0.671	1.194	1.019	0.817	
5825.0	165	802.11a (Ant.2)	15.50	14.52	-0.060	0 mm [Top]	FCC #2	0.153	1	98.1	0.160	1.253	1.019	0.204	
5825.0	165	802.11a (Ant.2)	15.50	14.52	0.000	0 mm [Front]	FCC #2	0.186	1	98.1	0.199	1.253	1.019	0.254	
5825.0	165	802.11a (Ant.2)	15.50	14.52	0.060	0 mm [Rear]	FCC #2	0.662	1	98.1	0.636	1.253	1.019	**0.812**	A74
5825.0	165	802.11a (Ant.2)	15.50	14.52	-0.170	0 mm [Left]	FCC #2	0.044	1	98.1	0.041	1.253	1.019	0.052	
5825.0	165	802.11a (MIMO)	18.50	17.64	0.120	0 mm [Top]	FCC #2	0.221	1	98.1	0.257	1.282	1.019	0.336	
5825.0	165	802.11a (MIMO)	18.50	17.64	-0.060	0 mm [Front]	FCC #2	0.323	1	98.1	0.303	1.282	1.019	0.396	
5825.0	165	802.11a (MIMO)	18.50	17.64	-0.090	0 mm [Rear]	FCC #2	0.952	1	98.1	1.029	1.282	1.019	**1.345**	A75
5825.0	165	802.11a (MIMO)	18.50	17.64	-0.150	0 mm [Left]	FCC #2	0.412	1	98.1	0.495	1.282	1.019	0.647	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Phablet 4.0 W/kg (mW/g) averaged over 10 gram**							

Note : UNII-3 Band CH 165 (5825 MHz) is not support Hotspot mode as described on operational description of this device, so phablet SAR is tested on this CH..

12.5 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/EDGE 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 > ½ 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 > ½ dB, instead of the middle channel, the highest output power channel was used.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r05. The general test procedures used for testing can be found in Section 5.
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 not > 0.6 W/kg for 1g evaluations, testing at the other channels was not 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 duo 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.
   Per October 2016 TCB Workshop Notes, the reported SAR was scaled to the 100% transmission duty factor to determine compliance. Refer to section 10.5 for the time-domain plot and calculation for the duty factor of the device.

13. FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

13.1 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.

13.2 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 a physical test configuration is $\leq$ 1.6 W/kg. The different test positon in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1-g or 10-g SAR.

13.3 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. Possible transmission paths for the DUT are shown in Figure 13.1 and are color-coded to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.

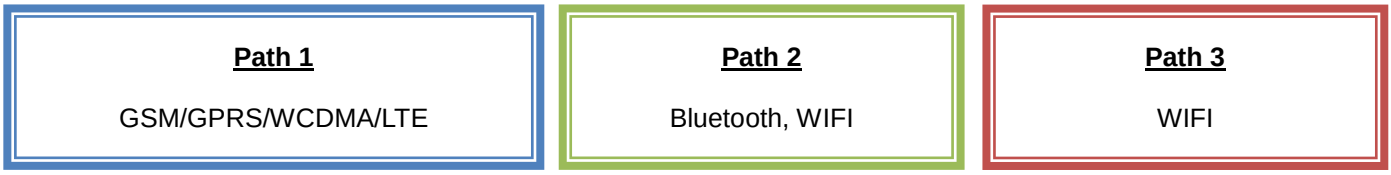

Figure 13.1 Simultaneous Transmission Paths

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

Table 13.3.1 Simultaneous Transmission Scenarios

No.	Capable TX Configuration	GSM 850/1900 (Voice)	GPRS 850/1900 (Data)	WCDMA B5/B4/B2 (Voice)	WCDMA B5/B4/B2 (Data)	LTE B12/B17/B13/B5/B4/ B2/B7/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 B5/B4/B2 (Voice)	No	No		No	No	Yes	Yes	Yes
4	WCDMA B5/B4/B2 (Data)	No	No	No		No	Yes	Yes	Yes
5	LTE B12/B17/B13/B5/B4/ B2/B7/B41	No	No	No	No		Yes	Yes	Yes
6	WIFI 2.4GHz 802.11b/g/n/ac	Yes	Yes	Yes	Yes	Yes		Yes	No
7	WIFI 5GHz 802.11a/n/ac	Yes	Yes	Yes	Yes	Yes	Yes		No
8	Bluetooth 2.4GHz	Yes	Yes	Yes	Yes	Yes	No	No	

Table 13.3.2 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	WCDMA + Wi-Fi 2.4 GHz	Yes	Yes	Yes	Yes	
8	WCDMA + Wi-Fi 5 GHz	Yes	Yes	Yes	Yes	
9	WCDMA + Bluetooth 2.4 GHz	Yes	Yes	Yes	Yes	
10	WCDMA + Wi-Fi 2.4 GHz MIMO	Yes	Yes	Yes	Yes	
11	WCDMA + Wi-Fi 5 GHz MIMO	Yes	Yes	Yes	Yes	
12	WCMDA + Wi-Fi 2.4 GHz Ant.1 + Wi-Fi 5GHz Ant.2	Yes	Yes	Yes	Yes	
13	LTE + Wi-Fi 2.4 GHz	Yes	Yes	Yes	Yes	
14	LTE + Wi-Fi 5 GHz	Yes	Yes	Yes	Yes	
15	LTE + Bluetooth 2.4 GHz	Yes	Yes	Yes	Yes	
16	LTE + Wi-Fi 2.4 GHz MIMO	Yes	Yes	Yes	Yes	
17	LTE + Wi-Fi 5 GHz MIMO	Yes	Yes	Yes	Yes	
18	LTE + Wi-Fi 2.4 GHz Ant.1 + Wi-Fi 5GHz Ant.2	Yes	Yes	Yes	Yes	
19	GPRS/EDGE + Wi-Fi 2.4 GHz	Yes	Yes	Yes	Yes	
20	GPRS/EDGE + Wi-Fi 5 GHz	Yes	Yes	Yes	Yes	
21	GPRS/EDGE + Bluetooth 2.4 GHz	Yes	Yes	Yes	Yes	
22	GPRS/EDGE + Wi-Fi 2.4 GHz MIMO	Yes	Yes	Yes	Yes	
23	GPRS/EDGE + Wi-Fi 5 GHz MIMO	Yes	Yes	Yes	Yes	
24	GPRS/EDGE + Wi-Fi 2.4 GHz Ant.1 + Wi-Fi 5GHz Ant.2	Yes	Yes	Yes	Yes	

Notes:

1. WiFi 2.4GHz is supported Hotspot and WiFi-Direct(GO/GC).
2. WiFi 5GHz is supported Hotspot in UNII B1,B3 and WiFi-Direct(GO/GC) in UNII B1,B3.
3. WiFi 2.GHz and 5GHz are supported in the same time(DBS)
4. LTE, WCDMA, GPRS/EDGE is supported Hotspot.
5. VoIP is supported in LTE, WCDMA, GSM
6. Bluetooth and WiFi can not transmit simultaneously at 2.4G band.
7. GSM, WCDMA and LTE can not transmit simultaneously since they share the same antenna path.
8. When the user utilizes multiple services in UMTS 3G mode it uses multi-Radio Access Bearer or multi-RAB. The power control is based on a physical control channel (Dedicated Physical Control Channel [DPCCH]) and power control will be adjusted to meet the needs of both services. Therefore, the UMTS+WLAN scenario also represents the UMTS Voice/DATA + WLAN Hotspot scenario.
9. 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.

13.4 Head SAR Simultaneous Transmission Analysis

Table 13.4.1 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	0.125	0.141	0.225	0.266	0.350	0.490
		Right Touch	0.085	0.478	0.602	0.564	0.687	**1.166**
		Left Tilt	0.052	0.072	0.243	0.124	0.295	0.367
		Right Tilt	0.050	0.252	0.586	0.302	0.636	0.888
	GPRS 850	Left Touch	0.174	0.141	0.225	0.314	0.399	0.539
		Right Touch	0.122	0.478	0.602	0.601	0.724	**1.202**
		Left Tilt	0.073	0.072	0.243	0.145	0.316	0.388
		Right Tilt	0.071	0.252	0.586	0.322	0.656	0.908
	GSM 1900	Left Touch	0.038	0.141	0.225	0.179	0.263	0.404
		Right Touch	0.037	0.478	0.602	0.516	0.639	**1.118**
		Left Tilt	0.019	0.072	0.243	0.091	0.262	0.334
		Right Tilt	0.019	0.252	0.586	0.270	0.605	0.856
	GPRS 1900	Left Touch	0.043	0.141	0.225	0.183	0.268	0.408
		Right Touch	0.040	0.478	0.602	0.518	0.642	**1.120**
		Left Tilt	0.023	0.072	0.243	0.095	0.266	0.338
		Right Tilt	0.023	0.252	0.586	0.274	0.608	0.860
	WCDMA 850	Left Touch	0.228	0.141	0.225	0.369	0.453	0.593
		Right Touch	0.152	0.478	0.602	0.631	0.754	**1.233**
		Left Tilt	0.102	0.072	0.243	0.174	0.345	0.417
		Right Tilt	0.097	0.252	0.586	0.349	0.683	0.935
	WCDMA 1700	Left Touch	0.265	0.141	0.225	0.405	0.490	0.630
		Right Touch	0.171	0.478	0.602	0.650	0.773	**1.252**
		Left Tilt	0.134	0.072	0.243	0.206	0.377	0.449
		Right Tilt	0.119	0.252	0.586	0.371	0.705	0.957
	WCDMA 1900	Left Touch	0.138	0.141	0.225	0.279	0.363	0.503
		Right Touch	0.126	0.478	0.602	0.604	0.728	**1.206**
		Left Tilt	0.076	0.072	0.243	0.148	0.319	0.391
		Right Tilt	0.055	0.252	0.586	0.306	0.641	0.892
	LTE Band 12	Left Touch	0.131	0.141	0.225	0.272	0.356	0.497
		Right Touch	0.106	0.478	0.602	0.584	0.708	**1.186**
		Left Tilt	0.060	0.072	0.243	0.132	0.303	0.375
		Right Tilt	0.065	0.252	0.586	0.316	0.651	0.902
	LTE Band 13	Left Touch	0.113	0.141	0.225	0.253	0.338	0.478
		Right Touch	0.166	0.478	0.602	0.645	0.768	**1.247**
		Left Tilt	0.059	0.072	0.243	0.131	0.302	0.375
		Right Tilt	0.074	0.252	0.586	0.326	0.660	0.912
	LTE Band 5	Left Touch	0.230	0.141	0.225	0.371	0.455	0.596
		Right Touch	0.159	0.478	0.602	0.638	0.761	**1.240**
		Left Tilt	0.109	0.072	0.243	0.181	0.352	0.424
		Right Tilt	0.108	0.252	0.586	0.359	0.694	0.945
	LTE Band 4	Left Touch	0.215	0.141	0.225	0.355	0.439	0.580
		Right Touch	0.202	0.478	0.602	0.680	0.804	**1.282**
		Left Tilt	0.117	0.072	0.243	0.189	0.360	0.433
		Right Tilt	0.122	0.252	0.586	0.374	0.708	0.960
	LTE Band 2	Left Touch	0.105	0.141	0.225	0.246	0.330	0.471
		Right Touch	0.098	0.478	0.602	0.576	0.699	**1.178**
		Left Tilt	0.048	0.072	0.243	0.120	0.291	0.363
		Right Tilt	0.039	0.252	0.586	0.290	0.625	0.876
	LTE Band 7	Left Touch	0.068	0.141	0.225	0.208	0.292	0.433
		Right Touch	0.050	0.478	0.602	0.528	0.651	**1.130**
		Left Tilt	0.023	0.072	0.243	0.095	0.266	0.338
		Right Tilt	0.023	0.252	0.586	0.274	0.608	0.860
	LTE Band 41	Left Touch	0.035	0.141	0.225	0.175	0.259	0.400
		Right Touch	0.038	0.478	0.602	0.517	0.640	**1.118**
		Left Tilt	0.013	0.072	0.243	0.085	0.256	0.328
		Right Tilt	0.013	0.252	0.586	0.264	0.599	0.850

Table 13.4.2 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	0.125	0.141	0.099	0.266	0.224	0.365
		Right Touch	0.085	0.478	0.421	0.564	0.507	**0.985**
		Left Tilt	0.052	0.072	0.106	0.124	0.157	0.229
		Right Tilt	0.050	0.252	0.373	0.302	0.424	0.675
	GPRS 850	Left Touch	0.174	0.141	0.099	0.314	0.273	0.414
		Right Touch	0.122	0.478	0.421	0.601	0.544	**1.022**
		Left Tilt	0.073	0.072	0.106	0.145	0.178	0.251
		Right Tilt	0.071	0.252	0.373	0.322	0.444	0.696
	GSM 1900	Left Touch	0.038	0.141	0.099	0.179	0.138	0.278
		Right Touch	0.037	0.478	0.421	0.516	0.459	**0.937**
		Left Tilt	0.019	0.072	0.106	0.091	0.124	0.196
		Right Tilt	0.019	0.252	0.373	0.270	0.392	0.644
	GPRS 1900	Left Touch	0.043	0.141	0.099	0.183	0.142	0.283
		Right Touch	0.040	0.478	0.421	0.518	0.461	**0.939**
		Left Tilt	0.023	0.072	0.106	0.095	0.128	0.200
		Right Tilt	0.023	0.252	0.373	0.274	0.396	0.648
	WCDMA 850	Left Touch	0.228	0.141	0.099	0.369	0.328	0.468
		Right Touch	0.152	0.478	0.421	0.631	0.574	**1.052**
		Left Tilt	0.102	0.072	0.106	0.174	0.208	0.280
		Right Tilt	0.097	0.252	0.373	0.349	0.471	0.722
	WCDMA 1700	Left Touch	0.265	0.141	0.099	0.405	0.364	0.505
		Right Touch	0.171	0.478	0.421	0.650	0.593	**1.071**
		Left Tilt	0.134	0.072	0.106	0.206	0.240	0.312
		Right Tilt	0.119	0.252	0.373	0.371	0.493	0.744
	WCDMA 1900	Left Touch	0.138	0.141	0.099	0.279	0.238	0.378
		Right Touch	0.126	0.478	0.421	0.604	0.547	**1.026**
		Left Tilt	0.076	0.072	0.106	0.148	0.181	0.253
		Right Tilt	0.055	0.252	0.373	0.306	0.428	0.680
	LTE Band 12	Left Touch	0.131	0.141	0.099	0.272	0.231	0.372
		Right Touch	0.106	0.478	0.421	0.584	0.527	**1.006**
		Left Tilt	0.060	0.072	0.106	0.132	0.166	0.238
		Right Tilt	0.065	0.252	0.373	0.316	0.438	0.690
	LTE Band 13	Left Touch	0.113	0.141	0.099	0.253	0.212	0.353
		Right Touch	0.166	0.478	0.421	0.645	0.588	**1.066**
		Left Tilt	0.059	0.072	0.106	0.131	0.165	0.237
		Right Tilt	0.074	0.252	0.373	0.326	0.448	0.699
	LTE Band 5	Left Touch	0.230	0.141	0.099	0.371	0.330	0.470
		Right Touch	0.159	0.478	0.421	0.638	0.581	**1.059**
		Left Tilt	0.109	0.072	0.106	0.181	0.215	0.287
		Right Tilt	0.108	0.252	0.373	0.359	0.481	0.733
	LTE Band 4	Left Touch	0.215	0.141	0.099	0.355	0.314	0.455
		Right Touch	0.202	0.478	0.421	0.680	0.623	**1.102**
		Left Tilt	0.117	0.072	0.106	0.189	0.223	0.295
		Right Tilt	0.122	0.252	0.373	0.374	0.496	0.748
	LTE Band 2	Left Touch	0.105	0.141	0.099	0.246	0.205	0.345
		Right Touch	0.098	0.478	0.421	0.576	0.519	**0.997**
		Left Tilt	0.048	0.072	0.106	0.120	0.153	0.225
		Right Tilt	0.039	0.252	0.373	0.290	0.412	0.664
	LTE Band 7	Left Touch	0.068	0.141	0.099	0.208	0.167	0.308
		Right Touch	0.050	0.478	0.421	0.528	0.471	**0.949**
		Left Tilt	0.023	0.072	0.106	0.095	0.128	0.200
		Right Tilt	0.023	0.252	0.373	0.274	0.396	0.648
	LTE Band 41	Left Touch	0.035	0.141	0.099	0.175	0.134	0.275
		Right Touch	0.038	0.478	0.421	0.517	0.459	**0.938**
		Left Tilt	0.013	0.072	0.106	0.085	0.118	0.190
		Right Tilt	0.013	0.252	0.373	0.264	0.386	0.638

Table 13.4.3 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	0.125	0.141	0.167	0.266	0.292	0.433
		Right Touch	0.085	0.478	0.593	0.564	0.678	**1.156**
		Left Tilt	0.052	0.072	0.144	0.124	0.195	0.267
		Right Tilt	0.050	0.252	0.498	0.302	0.549	0.800
	GPRS 850	Left Touch	0.174	0.141	0.167	0.314	0.341	0.482
		Right Touch	0.122	0.478	0.593	0.601	0.715	**1.193**
		Left Tilt	0.073	0.072	0.144	0.145	0.217	0.289
		Right Tilt	0.071	0.252	0.498	0.322	0.569	0.820
	GSM 1900	Left Touch	0.038	0.141	0.167	0.179	0.206	0.346
		Right Touch	0.037	0.478	0.593	0.516	0.630	**1.108**
		Left Tilt	0.019	0.072	0.144	0.091	0.162	0.234
		Right Tilt	0.019	0.252	0.498	0.270	0.517	0.769
	GPRS 1900	Left Touch	0.043	0.141	0.167	0.183	0.210	0.351
		Right Touch	0.040	0.478	0.593	0.518	0.632	**1.111**
		Left Tilt	0.023	0.072	0.144	0.095	0.166	0.238
		Right Tilt	0.023	0.252	0.498	0.274	0.521	0.772
	WCDMA 850	Left Touch	0.228	0.141	0.167	0.369	0.395	0.536
		Right Touch	0.152	0.478	0.593	0.631	0.745	**1.223**
		Left Tilt	0.102	0.072	0.144	0.174	0.246	0.318
		Right Tilt	0.097	0.252	0.498	0.349	0.596	0.847
	WCDMA 1700	Left Touch	0.265	0.141	0.167	0.405	0.432	0.573
		Right Touch	0.171	0.478	0.593	0.650	0.764	**1.242**
		Left Tilt	0.134	0.072	0.144	0.206	0.278	0.350
		Right Tilt	0.119	0.252	0.498	0.371	0.618	0.869
	WCDMA 1900	Left Touch	0.138	0.141	0.167	0.279	0.305	0.446
		Right Touch	0.126	0.478	0.593	0.604	0.718	**1.197**
		Left Tilt	0.076	0.072	0.144	0.148	0.220	0.292
		Right Tilt	0.055	0.252	0.498	0.306	0.553	0.804
	LTE Band 12	Left Touch	0.131	0.141	0.167	0.272	0.299	0.439
		Right Touch	0.106	0.478	0.593	0.584	0.698	**1.177**
		Left Tilt	0.060	0.072	0.144	0.132	0.204	0.276
		Right Tilt	0.065	0.252	0.498	0.316	0.563	0.815
	LTE Band 13	Left Touch	0.113	0.141	0.167	0.253	0.280	0.421
		Right Touch	0.166	0.478	0.593	0.645	0.759	**1.237**
		Left Tilt	0.059	0.072	0.144	0.131	0.203	0.275
		Right Tilt	0.074	0.252	0.498	0.326	0.572	0.824
	LTE Band 5	Left Touch	0.230	0.141	0.167	0.371	0.398	0.538
		Right Touch	0.159	0.478	0.593	0.638	0.752	**1.230**
		Left Tilt	0.109	0.072	0.144	0.181	0.253	0.325
		Right Tilt	0.108	0.252	0.498	0.359	0.606	0.858
	LTE Band 4	Left Touch	0.215	0.141	0.167	0.355	0.382	0.523
		Right Touch	0.202	0.478	0.593	0.680	0.795	**1.273**
		Left Tilt	0.117	0.072	0.144	0.189	0.261	0.333
		Right Tilt	0.122	0.252	0.498	0.374	0.621	0.872
	LTE Band 2	Left Touch	0.105	0.141	0.167	0.246	0.273	0.413
		Right Touch	0.098	0.478	0.593	0.576	0.690	**1.168**
		Left Tilt	0.048	0.072	0.144	0.120	0.191	0.264
		Right Tilt	0.039	0.252	0.498	0.290	0.537	0.789
	LTE Band 7	Left Touch	0.068	0.141	0.167	0.208	0.235	0.375
		Right Touch	0.050	0.478	0.593	0.528	0.642	**1.120**
		Left Tilt	0.023	0.072	0.144	0.095	0.166	0.238
		Right Tilt	0.023	0.252	0.498	0.274	0.521	0.772
	LTE Band 41	Left Touch	0.035	0.141	0.167	0.175	0.202	0.343
		Right Touch	0.038	0.478	0.593	0.517	0.631	**1.109**
		Left Tilt	0.013	0.072	0.144	0.085	0.157	0.229
		Right Tilt	0.013	0.252	0.498	0.264	0.511	0.763

Table 13.4.4 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	0.125	0.141	0.266
		Right Touch	0.085	0.478	**0.564**
		Left Tilt	0.052	0.072	0.124
		Right Tilt	0.050	0.252	0.302
	GPRS 850	Left Touch	0.174	0.141	0.314
		Right Touch	0.122	0.478	**0.601**
		Left Tilt	0.073	0.072	0.145
		Right Tilt	0.071	0.252	0.322
	GSM 1900	Left Touch	0.038	0.141	0.179
		Right Touch	0.037	0.478	**0.516**
		Left Tilt	0.019	0.072	0.091
		Right Tilt	0.019	0.252	0.270
	GPRS 1900	Left Touch	0.043	0.141	0.183
		Right Touch	0.040	0.478	0.518
		Left Tilt	0.023	0.072	0.095
		Right Tilt	0.023	0.252	0.274
	WCDMA 850	Left Touch	0.228	0.141	0.369
		Right Touch	0.152	0.478	**0.631**
		Left Tilt	0.102	0.072	0.174
		Right Tilt	0.097	0.252	0.349
	WCDMA 1700	Left Touch	0.265	0.141	0.405
		Right Touch	0.171	0.478	**0.650**
		Left Tilt	0.134	0.072	0.206
		Right Tilt	0.119	0.252	0.371
	WCDMA 1900	Left Touch	0.138	0.141	0.279
		Right Touch	0.126	0.478	**0.604**
		Left Tilt	0.076	0.072	0.148
		Right Tilt	0.055	0.252	0.306
	LTE Band 12	Left Touch	0.131	0.141	0.272
		Right Touch	0.106	0.478	**0.584**
		Left Tilt	0.060	0.072	0.132
		Right Tilt	0.065	0.252	0.316
	LTE Band 13	Left Touch	0.113	0.141	0.253
		Right Touch	0.166	0.478	**0.645**
		Left Tilt	0.059	0.072	0.131
		Right Tilt	0.074	0.252	0.326
	LTE Band 5	Left Touch	0.230	0.141	0.371
		Right Touch	0.159	0.478	**0.638**
		Left Tilt	0.109	0.072	0.181
		Right Tilt	0.108	0.252	0.359
	LTE Band 4	Left Touch	0.215	0.141	0.355
		Right Touch	0.202	0.478	**0.680**
		Left Tilt	0.117	0.072	0.189
		Right Tilt	0.122	0.252	0.374
	LTE Band 2	Left Touch	0.105	0.141	0.246
		Right Touch	0.098	0.478	**0.576**
		Left Tilt	0.048	0.072	0.120
		Right Tilt	0.039	0.252	0.290
	LTE Band 7	Left Touch	0.068	0.141	0.208
		Right Touch	0.050	0.478	**0.528**
		Left Tilt	0.023	0.072	0.095
		Right Tilt	0.023	0.252	0.274
	LTE Band 41	Left Touch	0.035	0.141	0.175
		Right Touch	0.038	0.478	**0.517**
		Left Tilt	0.013	0.072	0.085
		Right Tilt	0.013	0.252	0.264

Table 13.4.5 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.125	0.263	0.387
		Right Touch	0.085	0.480	0.565
		Left Tilt	0.052	0.326	0.377
		Right Tilt	0.050	0.531	**0.582**
	GPRS 850	Left Touch	0.174	0.263	0.436
		Right Touch	0.122	0.480	0.602
		Left Tilt	0.073	0.326	0.398
		Right Tilt	0.071	0.531	**0.602**
	GSM 1900	Left Touch	0.038	0.263	0.301
		Right Touch	0.037	0.480	0.517
		Left Tilt	0.019	0.326	0.344
		Right Tilt	0.019	0.531	**0.550**
	GPRS 1900	Left Touch	0.043	0.263	0.305
		Right Touch	0.040	0.480	0.519
		Left Tilt	0.023	0.326	0.348
		Right Tilt	0.023	0.531	0.554
	WCDMA 850	Left Touch	0.228	0.263	0.491
		Right Touch	0.152	0.480	**0.632**
		Left Tilt	0.102	0.326	0.428
		Right Tilt	0.097	0.531	0.629
	WCDMA 1700	Left Touch	0.265	0.263	0.527
		Right Touch	0.171	0.480	**0.651**
		Left Tilt	0.134	0.326	0.460
		Right Tilt	0.119	0.531	0.651
	WCDMA 1900	Left Touch	0.138	0.263	0.401
		Right Touch	0.126	0.480	**0.605**
		Left Tilt	0.076	0.326	0.401
		Right Tilt	0.055	0.531	0.586
	LTE Band 12	Left Touch	0.131	0.263	0.394
		Right Touch	0.106	0.480	0.585
		Left Tilt	0.060	0.326	0.386
		Right Tilt	0.065	0.531	**0.596**
	LTE Band 13	Left Touch	0.113	0.263	0.375
		Right Touch	0.166	0.480	**0.646**
		Left Tilt	0.059	0.326	0.385
		Right Tilt	0.074	0.531	0.605
	LTE Band 5	Left Touch	0.230	0.263	0.493
		Right Touch	0.159	0.480	0.639
		Left Tilt	0.109	0.326	0.435
		Right Tilt	0.108	0.531	**0.639**
	LTE Band 4	Left Touch	0.215	0.263	0.477
		Right Touch	0.202	0.480	**0.682**
		Left Tilt	0.117	0.326	0.443
		Right Tilt	0.122	0.531	0.654
	LTE Band 2	Left Touch	0.105	0.263	0.368
		Right Touch	0.098	0.480	**0.577**
		Left Tilt	0.048	0.326	0.373
		Right Tilt	0.039	0.531	0.570
	LTE Band 7	Left Touch	0.068	0.263	0.330
		Right Touch	0.050	0.480	0.529
		Left Tilt	0.023	0.326	0.348
		Right Tilt	0.023	0.531	**0.554**
	LTE Band 41	Left Touch	0.035	0.263	0.297
		Right Touch	0.038	0.480	0.518
		Left Tilt	0.013	0.326	0.338
		Right Tilt	0.013	0.531	**0.544**

Table 13.4.6 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN MIMO (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.125	0.258	0.383
		Right Touch	0.085	0.562	**0.647**
		Left Tilt	0.052	0.240	0.292
		Right Tilt	0.050	0.571	0.622
	GPRS 850	Left Touch	0.174	0.258	0.432
		Right Touch	0.122	0.562	**0.684**
		Left Tilt	0.073	0.240	0.313
		Right Tilt	0.071	0.571	0.642
	GSM 1900	Left Touch	0.038	0.258	0.297
		Right Touch	0.037	0.562	**0.599**
		Left Tilt	0.019	0.240	0.259
		Right Tilt	0.019	0.571	0.590
	GPRS 1900	Left Touch	0.043	0.258	0.301
		Right Touch	0.040	0.562	0.602
		Left Tilt	0.023	0.240	0.263
		Right Tilt	0.023	0.571	0.594
	WCDMA 850	Left Touch	0.228	0.258	0.486
		Right Touch	0.152	0.562	**0.714**
		Left Tilt	0.102	0.240	0.342
		Right Tilt	0.097	0.571	0.669
	WCDMA 1700	Left Touch	0.265	0.258	0.523
		Right Touch	0.171	0.562	**0.733**
		Left Tilt	0.134	0.240	0.375
		Right Tilt	0.119	0.571	0.691
	WCDMA 1900	Left Touch	0.138	0.258	0.396
		Right Touch	0.126	0.562	**0.688**
		Left Tilt	0.076	0.240	0.316
		Right Tilt	0.055	0.571	0.626
	LTE Band 12	Left Touch	0.131	0.258	0.390
		Right Touch	0.106	0.562	**0.668**
		Left Tilt	0.060	0.240	0.301
		Right Tilt	0.065	0.571	0.636
	LTE Band 13	Left Touch	0.113	0.258	0.371
		Right Touch	0.166	0.562	**0.728**
		Left Tilt	0.059	0.240	0.300
		Right Tilt	0.074	0.571	0.646
	LTE Band 5	Left Touch	0.230	0.258	0.489
		Right Touch	0.159	0.562	**0.721**
		Left Tilt	0.109	0.240	0.349
		Right Tilt	0.108	0.571	0.679
	LTE Band 4	Left Touch	0.215	0.258	0.473
		Right Touch	0.202	0.562	**0.764**
		Left Tilt	0.117	0.240	0.358
		Right Tilt	0.122	0.571	0.694
	LTE Band 2	Left Touch	0.105	0.258	0.364
		Right Touch	0.098	0.562	**0.659**
		Left Tilt	0.048	0.240	0.288
		Right Tilt	0.039	0.571	0.610
	LTE Band 7	Left Touch	0.068	0.258	0.326
		Right Touch	0.050	0.562	**0.611**
		Left Tilt	0.023	0.240	0.263
		Right Tilt	0.023	0.571	0.594
	LTE Band 41	Left Touch	0.035	0.258	0.293
		Right Touch	0.038	0.562	**0.600**
		Left Tilt	0.013	0.240	0.253
		Right Tilt	0.013	0.571	0.584

Table 13.4.7 Simultaneous Transmission Scenario : 2G/3G/4G + 5.3 GHz W-LAN Ant.1 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.3G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.125	0.152	0.277
		Right Touch	0.085	0.251	**0.337**
		Left Tilt	0.052	0.163	0.215
		Right Tilt	0.050	0.238	0.289
	GPRS 850	Left Touch	0.174	0.152	0.326
		Right Touch	0.122	0.251	**0.374**
		Left Tilt	0.073	0.163	0.236
		Right Tilt	0.071	0.238	0.309
	GSM 1900	Left Touch	0.038	0.152	0.191
		Right Touch	0.037	0.251	**0.289**
		Left Tilt	0.019	0.163	0.182
		Right Tilt	0.019	0.238	0.257
	GPRS 1900	Left Touch	0.043	0.152	0.195
		Right Touch	0.040	0.251	0.291
		Left Tilt	0.023	0.163	0.186
		Right Tilt	0.023	0.238	0.261
	WCDMA 850	Left Touch	0.228	0.152	0.380
		Right Touch	0.152	0.251	**0.404**
		Left Tilt	0.102	0.163	0.265
		Right Tilt	0.097	0.238	0.336
	WCDMA 1700	Left Touch	0.265	0.152	0.417
		Right Touch	0.171	0.251	**0.423**
		Left Tilt	0.134	0.163	0.297
		Right Tilt	0.119	0.238	0.358
	WCDMA 1900	Left Touch	0.138	0.152	0.290
		Right Touch	0.126	0.251	**0.377**
		Left Tilt	0.076	0.163	0.239
		Right Tilt	0.055	0.238	0.293
	LTE Band 12	Left Touch	0.131	0.152	0.284
		Right Touch	0.106	0.251	**0.357**
		Left Tilt	0.060	0.163	0.223
		Right Tilt	0.065	0.238	0.303
	LTE Band 13	Left Touch	0.113	0.152	0.265
		Right Touch	0.166	0.251	**0.418**
		Left Tilt	0.059	0.163	0.222
		Right Tilt	0.074	0.238	0.312
	LTE Band 5	Left Touch	0.230	0.152	0.383
		Right Touch	0.159	0.251	**0.411**
		Left Tilt	0.109	0.163	0.272
		Right Tilt	0.108	0.238	0.346
	LTE Band 4	Left Touch	0.215	0.152	0.367
		Right Touch	0.202	0.251	**0.454**
		Left Tilt	0.117	0.163	0.280
		Right Tilt	0.122	0.238	0.361
	LTE Band 2	Left Touch	0.105	0.152	0.258
		Right Touch	0.098	0.251	**0.349**
		Left Tilt	0.048	0.163	0.211
		Right Tilt	0.039	0.238	0.277
	LTE Band 7	Left Touch	0.068	0.152	0.220
		Right Touch	0.050	0.251	**0.301**
		Left Tilt	0.023	0.163	0.186
		Right Tilt	0.023	0.238	0.261
	LTE Band 41	Left Touch	0.035	0.152	0.187
		Right Touch	0.038	0.251	**0.290**
		Left Tilt	0.013	0.163	0.176
		Right Tilt	0.013	0.238	0.251

Table 13.4.8 Simultaneous Transmission Scenario : 2G/3G/4G + 5.3 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.3G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.125	0.225	0.350
		Right Touch	0.085	0.602	**0.687**
		Left Tilt	0.052	0.243	0.295
		Right Tilt	0.050	0.586	0.636
	GPRS 850	Left Touch	0.174	0.225	0.399
		Right Touch	0.122	0.602	**0.724**
		Left Tilt	0.073	0.243	0.316
		Right Tilt	0.071	0.586	0.656
	GSM 1900	Left Touch	0.038	0.225	0.263
		Right Touch	0.037	0.602	**0.639**
		Left Tilt	0.019	0.243	0.262
		Right Tilt	0.019	0.586	0.605
	GPRS 1900	Left Touch	0.043	0.225	0.268
		Right Touch	0.040	0.602	0.642
		Left Tilt	0.023	0.243	0.266
		Right Tilt	0.023	0.586	0.608
	WCDMA 850	Left Touch	0.228	0.225	0.453
		Right Touch	0.152	0.602	**0.754**
		Left Tilt	0.102	0.243	0.345
		Right Tilt	0.097	0.586	0.683
	WCDMA 1700	Left Touch	0.265	0.225	0.490
		Right Touch	0.171	0.602	**0.773**
		Left Tilt	0.134	0.243	0.377
		Right Tilt	0.119	0.586	0.705
	WCDMA 1900	Left Touch	0.138	0.225	0.363
		Right Touch	0.126	0.602	**0.728**
		Left Tilt	0.076	0.243	0.319
		Right Tilt	0.055	0.586	0.641
	LTE Band 12	Left Touch	0.131	0.225	0.356
		Right Touch	0.106	0.602	**0.708**
		Left Tilt	0.060	0.243	0.303
		Right Tilt	0.065	0.586	0.651
	LTE Band 13	Left Touch	0.113	0.225	0.338
		Right Touch	0.166	0.602	**0.768**
		Left Tilt	0.059	0.243	0.302
		Right Tilt	0.074	0.586	0.660
	LTE Band 5	Left Touch	0.230	0.225	0.455
		Right Touch	0.159	0.602	**0.761**
		Left Tilt	0.109	0.243	0.352
		Right Tilt	0.108	0.586	0.694
	LTE Band 4	Left Touch	0.215	0.225	0.439
		Right Touch	0.202	0.602	**0.804**
		Left Tilt	0.117	0.243	0.360
		Right Tilt	0.122	0.586	0.708
	LTE Band 2	Left Touch	0.105	0.225	0.330
		Right Touch	0.098	0.602	**0.699**
		Left Tilt	0.048	0.243	0.291
		Right Tilt	0.039	0.586	0.625
	LTE Band 7	Left Touch	0.068	0.225	0.292
		Right Touch	0.050	0.602	**0.651**
		Left Tilt	0.023	0.243	0.266
		Right Tilt	0.023	0.586	0.608
	LTE Band 41	Left Touch	0.035	0.225	0.259
		Right Touch	0.038	0.602	**0.640**
		Left Tilt	0.013	0.243	0.256
		Right Tilt	0.013	0.586	0.599

Table 13.4.9 Simultaneous Transmission Scenario: 2G/3G/4G + 5.3 GHz W-LAN MIMO (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.3G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.125	0.362	0.487
		Right Touch	0.085	0.661	**0.746**
		Left Tilt	0.052	0.411	0.463
		Right Tilt	0.050	0.642	0.693
	GPRS 850	Left Touch	0.174	0.362	0.536
		Right Touch	0.122	0.661	**0.783**
		Left Tilt	0.073	0.411	0.484
		Right Tilt	0.071	0.642	0.713
	GSM 1900	Left Touch	0.038	0.362	0.401
		Right Touch	0.037	0.661	**0.698**
		Left Tilt	0.019	0.411	0.430
		Right Tilt	0.019	0.642	0.661
	GPRS 1900	Left Touch	0.043	0.362	0.405
		Right Touch	0.040	0.661	0.701
		Left Tilt	0.023	0.411	0.434
		Right Tilt	0.023	0.642	0.665
	WCDMA 850	Left Touch	0.228	0.362	0.590
		Right Touch	0.152	0.661	**0.813**
		Left Tilt	0.102	0.411	0.513
		Right Tilt	0.097	0.642	0.740
	WCDMA 1700	Left Touch	0.265	0.362	0.627
		Right Touch	0.171	0.661	**0.832**
		Left Tilt	0.134	0.411	0.546
		Right Tilt	0.119	0.642	0.762
	WCDMA 1900	Left Touch	0.138	0.362	0.500
		Right Touch	0.126	0.661	**0.787**
		Left Tilt	0.076	0.411	0.487
		Right Tilt	0.055	0.642	0.697
	LTE Band 12	Left Touch	0.131	0.362	0.494
		Right Touch	0.106	0.661	**0.767**
		Left Tilt	0.060	0.411	0.472
		Right Tilt	0.065	0.642	0.707
	LTE Band 13	Left Touch	0.113	0.362	0.475
		Right Touch	0.166	0.661	**0.827**
		Left Tilt	0.059	0.411	0.471
		Right Tilt	0.074	0.642	0.717
	LTE Band 5	Left Touch	0.230	0.362	0.593
		Right Touch	0.159	0.661	**0.820**
		Left Tilt	0.109	0.411	0.521
		Right Tilt	0.108	0.642	0.750
	LTE Band 4	Left Touch	0.215	0.362	0.577
		Right Touch	0.202	0.661	**0.863**
		Left Tilt	0.117	0.411	0.529
		Right Tilt	0.122	0.642	0.765
	LTE Band 2	Left Touch	0.105	0.362	0.468
		Right Touch	0.098	0.661	**0.758**
		Left Tilt	0.048	0.411	0.459
		Right Tilt	0.039	0.642	0.681
	LTE Band 7	Left Touch	0.068	0.362	0.430
		Right Touch	0.050	0.661	**0.710**
		Left Tilt	0.023	0.411	0.434
		Right Tilt	0.023	0.642	0.665
	LTE Band 41	Left Touch	0.035	0.362	0.397
		Right Touch	0.038	0.661	**0.699**
		Left Tilt	0.013	0.411	0.424
		Right Tilt	0.013	0.642	0.655

Table 13.4.10 Simultaneous Transmission Scenario : 2G/3G/4G + 5.6 GHz W-LAN Ant.1 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.6G W-LAN Ant.1 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.125	0.057	0.181
		Right Touch	0.085	0.429	**0.515**
		Left Tilt	0.052	0.042	0.094
		Right Tilt	0.050	0.136	0.186
	GPRS 850	Left Touch	0.174	0.057	0.230
		Right Touch	0.122	0.429	**0.552**
		Left Tilt	0.073	0.042	0.115
		Right Tilt	0.071	0.136	0.206
	GSM 1900	Left Touch	0.038	0.057	0.095
		Right Touch	0.037	0.429	**0.467**
		Left Tilt	0.019	0.042	0.061
		Right Tilt	0.019	0.136	0.155
	GPRS 1900	Left Touch	0.043	0.057	0.099
		Right Touch	0.040	0.429	0.469
		Left Tilt	0.023	0.042	0.065
		Right Tilt	0.023	0.136	0.158
	WCDMA 850	Left Touch	0.228	0.057	0.285
		Right Touch	0.152	0.429	**0.582**
		Left Tilt	0.102	0.042	0.144
		Right Tilt	0.097	0.136	0.233
	WCDMA 1700	Left Touch	0.265	0.057	0.321
		Right Touch	0.171	0.429	**0.601**
		Left Tilt	0.134	0.042	0.176
		Right Tilt	0.119	0.136	0.255
	WCDMA 1900	Left Touch	0.138	0.057	0.195
		Right Touch	0.126	0.429	**0.555**
		Left Tilt	0.076	0.042	0.118
		Right Tilt	0.055	0.136	0.191
	LTE Band 12	Left Touch	0.131	0.057	0.188
		Right Touch	0.106	0.429	**0.535**
		Left Tilt	0.060	0.042	0.102
		Right Tilt	0.065	0.136	0.201
	LTE Band 13	Left Touch	0.113	0.057	0.169
		Right Touch	0.166	0.429	**0.596**
		Left Tilt	0.059	0.042	0.101
		Right Tilt	0.074	0.136	0.210
	LTE Band 5	Left Touch	0.230	0.057	0.287
		Right Touch	0.159	0.429	**0.589**
		Left Tilt	0.109	0.042	0.151
		Right Tilt	0.108	0.136	0.244
	LTE Band 4	Left Touch	0.215	0.057	0.271
		Right Touch	0.202	0.429	**0.631**
		Left Tilt	0.117	0.042	0.159
		Right Tilt	0.122	0.136	0.258
	LTE Band 2	Left Touch	0.105	0.057	0.162
		Right Touch	0.098	0.429	**0.527**
		Left Tilt	0.048	0.042	0.090
		Right Tilt	0.039	0.136	0.175
	LTE Band 7	Left Touch	0.068	0.057	0.124
		Right Touch	0.050	0.429	**0.479**
		Left Tilt	0.023	0.042	0.065
		Right Tilt	0.023	0.136	0.158
	LTE Band 41	Left Touch	0.035	0.057	0.091
		Right Touch	0.038	0.429	**0.468**
		Left Tilt	0.013	0.042	0.055
		Right Tilt	0.013	0.136	0.149

Table 13.4.11 Simultaneous Transmission Scenario : 2G/3G/4G + 5.6 GHz W-LAN Ant.2 (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.6G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.125	0.099	0.224
		Right Touch	0.085	0.421	**0.507**
		Left Tilt	0.052	0.106	0.157
		Right Tilt	0.050	0.373	0.424
	GPRS 850	Left Touch	0.174	0.099	0.273
		Right Touch	0.122	0.421	**0.544**
		Left Tilt	0.073	0.106	0.178
		Right Tilt	0.071	0.373	0.444
	GSM 1900	Left Touch	0.038	0.099	0.138
		Right Touch	0.037	0.421	**0.459**
		Left Tilt	0.019	0.106	0.124
		Right Tilt	0.019	0.373	0.392
	GPRS 1900	Left Touch	0.043	0.099	0.142
		Right Touch	0.040	0.421	0.461
		Left Tilt	0.023	0.106	0.128
		Right Tilt	0.023	0.373	0.396
	WCDMA 850	Left Touch	0.228	0.099	0.328
		Right Touch	0.152	0.421	**0.574**
		Left Tilt	0.102	0.106	0.208
		Right Tilt	0.097	0.373	0.471
	WCDMA 1700	Left Touch	0.265	0.099	0.364
		Right Touch	0.171	0.421	**0.593**
		Left Tilt	0.134	0.106	0.240
		Right Tilt	0.119	0.373	0.493
	WCDMA 1900	Left Touch	0.138	0.099	0.238
		Right Touch	0.126	0.421	**0.547**
		Left Tilt	0.076	0.106	0.181
		Right Tilt	0.055	0.373	0.428
	LTE Band 12	Left Touch	0.131	0.099	0.231
		Right Touch	0.106	0.421	**0.527**
		Left Tilt	0.060	0.106	0.166
		Right Tilt	0.065	0.373	0.438
	LTE Band 13	Left Touch	0.113	0.099	0.212
		Right Touch	0.166	0.421	**0.588**
		Left Tilt	0.059	0.106	0.165
		Right Tilt	0.074	0.373	0.448
	LTE Band 5	Left Touch	0.230	0.099	0.330
		Right Touch	0.159	0.421	**0.581**
		Left Tilt	0.109	0.106	0.215
		Right Tilt	0.108	0.373	0.481
	LTE Band 4	Left Touch	0.215	0.099	0.314
		Right Touch	0.202	0.421	**0.623**
		Left Tilt	0.117	0.106	0.223
		Right Tilt	0.122	0.373	0.496
	LTE Band 2	Left Touch	0.105	0.099	0.205
		Right Touch	0.098	0.421	**0.519**
		Left Tilt	0.048	0.106	0.153
		Right Tilt	0.039	0.373	0.412
	LTE Band 7	Left Touch	0.068	0.099	0.167
		Right Touch	0.050	0.421	**0.471**
		Left Tilt	0.023	0.106	0.128
		Right Tilt	0.023	0.373	0.396
	LTE Band 41	Left Touch	0.035	0.099	0.134
		Right Touch	0.038	0.421	**0.459**
		Left Tilt	0.013	0.106	0.118
		Right Tilt	0.013	0.373	0.386

Table 13.4.12 Simultaneous Transmission Scenario : 2G/3G/4G + 5.6 GHz W-LAN MIMO (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.6G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.125	0.174	0.299
		Right Touch	0.085	0.563	**0.648**
		Left Tilt	0.052	0.171	0.222
		Right Tilt	0.050	0.458	0.509
	GPRS 850	Left Touch	0.174	0.174	0.348
		Right Touch	0.122	0.563	**0.685**
		Left Tilt	0.073	0.171	0.244
		Right Tilt	0.071	0.458	0.529
	GSM 1900	Left Touch	0.038	0.174	0.213
		Right Touch	0.037	0.563	**0.600**
		Left Tilt	0.019	0.171	0.189
		Right Tilt	0.019	0.458	0.477
	GPRS 1900	Left Touch	0.043	0.174	0.217
		Right Touch	0.040	0.563	0.602
		Left Tilt	0.023	0.171	0.193
		Right Tilt	0.023	0.458	0.481
	WCDMA 850	Left Touch	0.228	0.174	0.402
		Right Touch	0.152	0.563	**0.715**
		Left Tilt	0.102	0.171	0.273
		Right Tilt	0.097	0.458	0.556
	WCDMA 1700	Left Touch	0.265	0.174	0.439
		Right Touch	0.171	0.563	**0.734**
		Left Tilt	0.134	0.171	0.305
		Right Tilt	0.119	0.458	0.578
	WCDMA 1900	Left Touch	0.138	0.174	0.313
		Right Touch	0.126	0.563	**0.688**
		Left Tilt	0.076	0.171	0.246
		Right Tilt	0.055	0.458	0.513
	LTE Band 12	Left Touch	0.131	0.174	0.306
		Right Touch	0.106	0.563	**0.668**
		Left Tilt	0.060	0.171	0.231
		Right Tilt	0.065	0.458	0.523
	LTE Band 13	Left Touch	0.113	0.174	0.287
		Right Touch	0.166	0.563	**0.729**
		Left Tilt	0.059	0.171	0.230
		Right Tilt	0.074	0.458	0.532
	LTE Band 5	Left Touch	0.230	0.174	0.405
		Right Touch	0.159	0.563	**0.722**
		Left Tilt	0.109	0.171	0.280
		Right Tilt	0.108	0.458	0.566
	LTE Band 4	Left Touch	0.215	0.174	0.389
		Right Touch	0.202	0.563	**0.765**
		Left Tilt	0.117	0.171	0.288
		Right Tilt	0.122	0.458	0.581
	LTE Band 2	Left Touch	0.105	0.174	0.280
		Right Touch	0.098	0.563	**0.660**
		Left Tilt	0.048	0.171	0.218
		Right Tilt	0.039	0.458	0.497
	LTE Band 7	Left Touch	0.068	0.174	0.242
		Right Touch	0.050	0.563	**0.612**
		Left Tilt	0.023	0.171	0.193
		Right Tilt	0.023	0.458	0.481
	LTE Band 41	Left Touch	0.035	0.174	0.209
		Right Touch	0.038	0.563	**0.601**
		Left Tilt	0.013	0.171	0.183
		Right Tilt	0.013	0.458	0.471

Table 13.4.13 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)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.125	0.084	0.209
		Right Touch	0.085	0.447	**0.532**
		Left Tilt	0.052	0.044	0.096
		Right Tilt	0.050	0.190	0.240
	GPRS 850	Left Touch	0.174	0.084	0.258
		Right Touch	0.122	0.447	**0.569**
		Left Tilt	0.073	0.044	0.117
		Right Tilt	0.071	0.190	0.260
	GSM 1900	Left Touch	0.038	0.084	0.122
		Right Touch	0.037	0.447	**0.484**
		Left Tilt	0.019	0.044	0.063
		Right Tilt	0.019	0.190	0.208
	GPRS 1900	Left Touch	0.043	0.084	0.127
		Right Touch	0.040	0.447	0.486
		Left Tilt	0.023	0.044	0.067
		Right Tilt	0.023	0.190	0.212
	WCDMA 850	Left Touch	0.228	0.084	0.312
		Right Touch	0.152	0.447	**0.599**
		Left Tilt	0.102	0.044	0.146
		Right Tilt	0.097	0.190	0.287
	WCDMA 1700	Left Touch	0.265	0.084	0.349
		Right Touch	0.171	0.447	**0.618**
		Left Tilt	0.134	0.044	0.179
		Right Tilt	0.119	0.190	0.309
	WCDMA 1900	Left Touch	0.138	0.084	0.222
		Right Touch	0.126	0.447	**0.573**
		Left Tilt	0.076	0.044	0.120
		Right Tilt	0.055	0.190	0.244
	LTE Band 12	Left Touch	0.131	0.084	0.216
		Right Touch	0.106	0.447	**0.553**
		Left Tilt	0.060	0.044	0.105
		Right Tilt	0.065	0.190	0.254
	LTE Band 13	Left Touch	0.113	0.084	0.197
		Right Touch	0.166	0.447	**0.613**
		Left Tilt	0.059	0.044	0.104
		Right Tilt	0.074	0.190	0.264
	LTE Band 5	Left Touch	0.230	0.084	0.314
		Right Touch	0.159	0.447	**0.606**
		Left Tilt	0.109	0.044	0.153
		Right Tilt	0.108	0.190	0.298
	LTE Band 4	Left Touch	0.215	0.084	0.299
		Right Touch	0.202	0.447	**0.649**
		Left Tilt	0.117	0.044	0.162
		Right Tilt	0.122	0.190	0.312
	LTE Band 2	Left Touch	0.105	0.084	0.189
		Right Touch	0.098	0.447	**0.544**
		Left Tilt	0.048	0.044	0.092
		Right Tilt	0.039	0.190	0.229
	LTE Band 7	Left Touch	0.068	0.084	0.152
		Right Touch	0.050	0.447	**0.496**
		Left Tilt	0.023	0.044	0.067
		Right Tilt	0.023	0.190	0.212
	LTE Band 41	Left Touch	0.035	0.084	0.119
		Right Touch	0.038	0.447	**0.485**
		Left Tilt	0.013	0.044	0.057
		Right Tilt	0.013	0.190	0.202

Table 13.4.14 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)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.125	0.167	0.292
		Right Touch	0.085	0.593	**0.678**
		Left Tilt	0.052	0.144	0.195
		Right Tilt	0.050	0.498	0.549
	GPRS 850	Left Touch	0.174	0.167	0.341
		Right Touch	0.122	0.593	**0.715**
		Left Tilt	0.073	0.144	0.217
		Right Tilt	0.071	0.498	0.569
	GSM 1900	Left Touch	0.038	0.167	0.206
		Right Touch	0.037	0.593	**0.630**
		Left Tilt	0.019	0.144	0.162
		Right Tilt	0.019	0.498	0.517
	GPRS 1900	Left Touch	0.043	0.167	0.210
		Right Touch	0.040	0.593	0.632
		Left Tilt	0.023	0.144	0.166
		Right Tilt	0.023	0.498	0.521
	WCDMA 850	Left Touch	0.228	0.167	0.395
		Right Touch	0.152	0.593	**0.745**
		Left Tilt	0.102	0.144	0.246
		Right Tilt	0.097	0.498	0.596
	WCDMA 1700	Left Touch	0.265	0.167	0.432
		Right Touch	0.171	0.593	**0.764**
		Left Tilt	0.134	0.144	0.278
		Right Tilt	0.119	0.498	0.618
	WCDMA 1900	Left Touch	0.138	0.167	0.305
		Right Touch	0.126	0.593	**0.718**
		Left Tilt	0.076	0.144	0.220
		Right Tilt	0.055	0.498	0.553
	LTE Band 12	Left Touch	0.131	0.167	0.299
		Right Touch	0.106	0.593	**0.698**
		Left Tilt	0.060	0.144	0.204
		Right Tilt	0.065	0.498	0.563
	LTE Band 13	Left Touch	0.113	0.167	0.280
		Right Touch	0.166	0.593	**0.759**
		Left Tilt	0.059	0.144	0.203
		Right Tilt	0.074	0.498	0.572
	LTE Band 5	Left Touch	0.230	0.167	0.398
		Right Touch	0.159	0.593	**0.752**
		Left Tilt	0.109	0.144	0.253
		Right Tilt	0.108	0.498	0.606
	LTE Band 4	Left Touch	0.215	0.167	0.382
		Right Touch	0.202	0.593	**0.795**
		Left Tilt	0.117	0.144	0.261
		Right Tilt	0.122	0.498	0.621
	LTE Band 2	Left Touch	0.105	0.167	0.273
		Right Touch	0.098	0.593	**0.690**
		Left Tilt	0.048	0.144	0.191
		Right Tilt	0.039	0.498	0.537
	LTE Band 7	Left Touch	0.068	0.167	0.235
		Right Touch	0.050	0.593	**0.642**
		Left Tilt	0.023	0.144	0.166
		Right Tilt	0.023	0.498	0.521
	LTE Band 41	Left Touch	0.035	0.167	0.202
		Right Touch	0.038	0.593	**0.631**
		Left Tilt	0.013	0.144	0.157
		Right Tilt	0.013	0.498	0.511

Table 13.4.15 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)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.125	0.236	0.360
		Right Touch	0.085	0.559	**0.645**
		Left Tilt	0.052	0.213	0.265
		Right Tilt	0.050	0.540	0.591
	GPRS 850	Left Touch	0.174	0.236	0.409
		Right Touch	0.122	0.559	**0.681**
		Left Tilt	0.073	0.213	0.286
		Right Tilt	0.071	0.540	0.611
	GSM 1900	Left Touch	0.038	0.236	0.274
		Right Touch	0.037	0.559	**0.596**
		Left Tilt	0.019	0.213	0.232
		Right Tilt	0.019	0.540	0.559
	GPRS 1900	Left Touch	0.043	0.236	0.278
		Right Touch	0.040	0.559	0.599
		Left Tilt	0.023	0.213	0.236
		Right Tilt	0.023	0.540	0.563
	WCDMA 850	Left Touch	0.228	0.236	0.464
		Right Touch	0.152	0.559	**0.711**
		Left Tilt	0.102	0.213	0.315
		Right Tilt	0.097	0.540	0.638
	WCDMA 1700	Left Touch	0.265	0.236	0.500
		Right Touch	0.171	0.559	**0.730**
		Left Tilt	0.134	0.213	0.347
		Right Tilt	0.119	0.540	0.660
	WCDMA 1900	Left Touch	0.138	0.236	0.374
		Right Touch	0.126	0.559	**0.685**
		Left Tilt	0.076	0.213	0.289
		Right Tilt	0.055	0.540	0.595
	LTE Band 12	Left Touch	0.131	0.236	0.367
		Right Touch	0.106	0.559	**0.665**
		Left Tilt	0.060	0.213	0.273
		Right Tilt	0.065	0.540	0.605
	LTE Band 13	Left Touch	0.113	0.236	0.348
		Right Touch	0.166	0.559	**0.725**
		Left Tilt	0.059	0.213	0.272
		Right Tilt	0.074	0.540	0.615
	LTE Band 5	Left Touch	0.230	0.236	0.466
		Right Touch	0.159	0.559	**0.718**
		Left Tilt	0.109	0.213	0.322
		Right Tilt	0.108	0.540	0.648
	LTE Band 4	Left Touch	0.215	0.236	0.450
		Right Touch	0.202	0.559	**0.761**
		Left Tilt	0.117	0.213	0.330
		Right Tilt	0.122	0.540	0.663
	LTE Band 2	Left Touch	0.105	0.236	0.341
		Right Touch	0.098	0.559	**0.657**
		Left Tilt	0.048	0.213	0.261
		Right Tilt	0.039	0.540	0.579
	LTE Band 7	Left Touch	0.068	0.236	0.303
		Right Touch	0.050	0.559	**0.609**
		Left Tilt	0.023	0.213	0.236
		Right Tilt	0.023	0.540	0.563
	LTE Band 41	Left Touch	0.035	0.236	0.270
		Right Touch	0.038	0.559	**0.597**
		Left Tilt	0.013	0.213	0.226
		Right Tilt	0.013	0.540	0.553

Table 13.4.16 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth (Held to Ear)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	GSM 850	Left Touch	0.125	0.065	0.189
		Right Touch	0.085	0.367	**0.453**
		Left Tilt	0.052	0.044	0.096
		Right Tilt	0.050	0.123	0.173
	GPRS 850	Left Touch	0.174	0.065	0.238
		Right Touch	0.122	0.367	**0.489**
		Left Tilt	0.073	0.044	0.117
		Right Tilt	0.071	0.123	0.194
	GSM 1900	Left Touch	0.038	0.065	0.103
		Right Touch	0.037	0.367	**0.404**
		Left Tilt	0.019	0.044	0.063
		Right Tilt	0.019	0.123	0.142
	GPRS 1900	Left Touch	0.043	0.065	0.107
		Right Touch	0.040	0.367	0.407
		Left Tilt	0.023	0.044	0.067
		Right Tilt	0.023	0.123	0.146
	WCDMA 850	Left Touch	0.228	0.065	0.293
		Right Touch	0.152	0.367	**0.519**
		Left Tilt	0.102	0.044	0.146
		Right Tilt	0.097	0.123	0.220
	WCDMA 1700	Left Touch	0.265	0.065	0.329
		Right Touch	0.171	0.367	**0.538**
		Left Tilt	0.134	0.044	0.178
		Right Tilt	0.119	0.123	0.242
	WCDMA 1900	Left Touch	0.138	0.065	0.203
		Right Touch	0.126	0.367	**0.493**
		Left Tilt	0.076	0.044	0.120
		Right Tilt	0.055	0.123	0.178
	LTE Band 12	Left Touch	0.131	0.065	0.196
		Right Touch	0.106	0.367	**0.473**
		Left Tilt	0.060	0.044	0.105
		Right Tilt	0.065	0.123	0.188
	LTE Band 13	Left Touch	0.113	0.065	0.177
		Right Touch	0.166	0.367	**0.534**
		Left Tilt	0.059	0.044	0.104
		Right Tilt	0.074	0.123	0.197
	LTE Band 5	Left Touch	0.230	0.065	0.295
		Right Touch	0.159	0.367	**0.526**
		Left Tilt	0.109	0.044	0.153
		Right Tilt	0.108	0.123	0.231
	LTE Band 4	Left Touch	0.215	0.065	0.279
		Right Touch	0.202	0.367	**0.569**
		Left Tilt	0.117	0.044	0.162
		Right Tilt	0.122	0.123	0.246
	LTE Band 2	Left Touch	0.105	0.065	0.170
		Right Touch	0.098	0.367	**0.465**
		Left Tilt	0.048	0.044	0.092
		Right Tilt	0.039	0.123	0.162
	LTE Band 7	Left Touch	0.068	0.065	0.132
		Right Touch	0.050	0.367	**0.417**
		Left Tilt	0.023	0.044	0.067
		Right Tilt	0.023	0.123	0.146
	LTE Band 41	Left Touch	0.035	0.065	0.099
		Right Touch	0.038	0.367	**0.405**
		Left Tilt	0.013	0.044	0.057
		Right Tilt	0.013	0.123	0.136

Table 13.4.17 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)	5G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Head SAR	5.3G W-LAN Ant.2	Left Touch	0.141	0.225	0.365
		Right Touch	0.478	0.602	**1.080**
		Left Tilt	0.072	0.243	0.315
		Right Tilt	0.252	0.586	0.838
	5.6G W-LAN Ant.2	Left Touch	0.141	0.099	0.240
		Right Touch	0.478	0.421	**0.900**
		Left Tilt	0.072	0.106	0.178
		Right Tilt	0.252	0.373	0.625
	5.8G W-LAN Ant.2	Left Touch	0.141	0.167	0.308
		Right Touch	0.478	0.593	**1.071**
		Left Tilt	0.072	0.144	0.216
		Right Tilt	0.252	0.498	0.750

13.5 Body-Worn Simultaneous Transmission Analysis

Table 13.5.1 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN Ant.1 + 5.3 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.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	0.402	0.111	0.068	0.513	0.470	0.581
		Rear	0.438	0.141	0.314	0.579	0.753	**0.893**
	GPRS 850	Front	0.531	0.111	0.068	0.642	0.599	0.710
		Rear	0.613	0.141	0.314	0.754	0.928	**1.068**
	GSM 1900	Front	0.264	0.111	0.068	0.375	0.332	0.443
		Rear	0.258	0.141	0.314	0.398	0.572	**0.713**
	GPRS 1900	Front	0.303	0.111	0.068	0.414	0.371	0.482
		Rear	0.303	0.141	0.314	0.444	0.618	**0.758**
	WCDMA 850	Front	0.732	0.111	0.068	0.843	0.800	0.911
		Rear	0.894	0.141	0.314	1.034	1.208	**1.349**
	WCDMA 1700	Front	0.895	0.111	0.068	1.006	0.962	1.073
		Rear	0.701	0.141	0.314	0.842	1.015	**1.156**
	WCDMA 1900	Front	0.626	0.111	0.068	0.737	0.694	0.805
		Rear	0.619	0.141	0.314	0.760	0.934	**1.074**
	LTE Band 12	Front	0.531	0.111	0.068	0.642	0.599	0.710
		Rear	0.583	0.141	0.314	0.723	0.897	**1.038**
	LTE Band 13	Front	0.488	0.111	0.068	0.599	0.555	0.667
		Rear	0.540	0.141	0.314	0.681	0.855	**0.995**
	LTE Band 5	Front	0.737	0.111	0.068	0.848	0.805	0.916
		Rear	0.862	0.141	0.314	1.003	1.177	**1.317**
	LTE Band 4	Front	0.889	0.111	0.068	1.000	0.956	1.067
		Rear	0.638	0.141	0.314	0.778	0.952	**1.093**
	LTE Band 2	Front	0.550	0.111	0.068	0.661	0.618	0.729
		Rear	0.499	0.141	0.314	0.640	0.814	**0.954**
	LTE Band 7	Front	0.630	0.111	0.068	0.741	0.698	0.809
		Rear	0.771	0.141	0.314	0.911	1.085	**1.226**
	LTE Band 41	Front	0.373	0.111	0.068	0.484	0.441	0.552
		Rear	0.544	0.141	0.314	0.685	0.859	**0.999**

Table 13.5.2 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN Ant.1 + 5.6 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.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	0.402	0.111	0.027	0.513	0.429	0.540
		Rear	0.438	0.141	0.238	0.579	0.677	**0.817**
	GPRS 850	Front	0.531	0.111	0.027	0.642	0.558	0.669
		Rear	0.613	0.141	0.238	0.754	0.852	**0.992**
	GSM 1900	Front	0.264	0.111	0.027	0.375	0.291	0.402
		Rear	0.258	0.141	0.238	0.398	0.496	**0.636**
	GPRS 1900	Front	0.303	0.111	0.027	0.414	0.330	0.441
		Rear	0.303	0.141	0.238	0.444	0.542	**0.682**
	WCDMA 850	Front	0.732	0.111	0.027	0.843	0.759	0.870
		Rear	0.894	0.141	0.238	1.034	1.132	**1.273**
	WCDMA 1700	Front	0.895	0.111	0.027	1.006	0.922	1.033
		Rear	0.701	0.141	0.238	0.842	0.939	**1.080**
	WCDMA 1900	Front	0.626	0.111	0.027	0.737	0.653	0.764
		Rear	0.619	0.141	0.238	0.760	0.858	**0.998**
	LTE Band 12	Front	0.531	0.111	0.027	0.642	0.558	0.669
		Rear	0.583	0.141	0.238	0.723	0.821	**0.961**
	LTE Band 13	Front	0.488	0.111	0.027	0.599	0.515	0.626
		Rear	0.540	0.141	0.238	0.681	0.779	**0.919**
	LTE Band 5	Front	0.737	0.111	0.027	0.848	0.764	0.876
		Rear	0.862	0.141	0.238	1.003	1.101	**1.241**
	LTE Band 4	Front	0.889	0.111	0.027	1.000	0.916	**1.027**
		Rear	0.638	0.141	0.238	0.778	0.876	1.016
	LTE Band 2	Front	0.550	0.111	0.027	0.661	0.577	0.688
		Rear	0.499	0.141	0.238	0.640	0.737	**0.878**
	LTE Band 7	Front	0.630	0.111	0.027	0.741	0.657	0.768
		Rear	0.771	0.141	0.238	0.911	1.009	**1.149**
	LTE Band 41	Front	0.373	0.111	0.027	0.484	0.400	0.511
		Rear	0.544	0.141	0.238	0.685	0.783	**0.923**

Table 13.5.3 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN Ant.1 + 5.8 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.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	0.402	0.111	0.032	0.513	0.434	0.545
		Rear	0.438	0.141	0.214	0.579	0.653	**0.793**
	GPRS 850	Front	0.531	0.111	0.032	0.642	0.563	0.674
		Rear	0.613	0.141	0.214	0.754	0.828	**0.968**
	GSM 1900	Front	0.264	0.111	0.032	0.375	0.296	0.407
		Rear	0.258	0.141	0.214	0.398	0.472	**0.613**
	GPRS 1900	Front	0.303	0.111	0.032	0.414	0.336	0.447
		Rear	0.303	0.141	0.214	0.444	0.518	**0.658**
	WCDMA 850	Front	0.732	0.111	0.032	0.843	0.765	0.876
		Rear	0.894	0.141	0.214	1.034	1.108	**1.249**
	WCDMA 1700	Front	0.895	0.111	0.032	1.006	0.927	1.038
		Rear	0.701	0.141	0.214	0.842	0.915	**1.056**
	WCDMA 1900	Front	0.626	0.111	0.032	0.737	0.658	0.769
		Rear	0.619	0.141	0.214	0.760	0.834	**0.974**
	LTE Band 12	Front	0.531	0.111	0.032	0.642	0.564	0.675
		Rear	0.583	0.141	0.214	0.723	0.797	**0.938**
	LTE Band 13	Front	0.488	0.111	0.032	0.599	0.520	0.631
		Rear	0.540	0.141	0.214	0.681	0.755	**0.895**
	LTE Band 5	Front	0.737	0.111	0.032	0.848	0.770	0.881
		Rear	0.862	0.141	0.214	1.003	1.077	**1.217**
	LTE Band 4	Front	0.889	0.111	0.032	1.000	0.921	**1.032**
		Rear	0.638	0.141	0.214	0.778	0.852	0.993
	LTE Band 2	Front	0.550	0.111	0.032	0.661	0.582	0.693
		Rear	0.499	0.141	0.214	0.640	0.713	**0.854**
	LTE Band 7	Front	0.630	0.111	0.032	0.741	0.662	0.773
		Rear	0.771	0.141	0.214	0.911	0.985	**1.126**
	LTE Band 41	Front	0.373	0.111	0.032	0.484	0.406	0.517
		Rear	0.544	0.141	0.214	0.685	0.759	**0.899**

Table 13.5.4 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	0.402	0.111	0.513
		Rear	0.438	0.141	**0.579**
	GPRS 850	Front	0.531	0.111	0.642
		Rear	0.613	0.141	**0.754**
	GSM 1900	Front	0.264	0.111	0.375
		Rear	0.258	0.141	**0.398**
	GPRS 1900	Front	0.303	0.111	0.414
		Rear	0.303	0.141	0.444
	WCDMA 850	Front	0.732	0.111	0.843
		Rear	0.894	0.141	**1.034**
	WCDMA 1700	Front	0.895	0.111	**1.006**
		Rear	0.701	0.141	0.842
	WCDMA 1900	Front	0.626	0.111	0.737
		Rear	0.619	0.141	**0.760**
	LTE Band 12	Front	0.531	0.111	0.642
		Rear	0.583	0.141	**0.723**
	LTE Band 13	Front	Front	0.488	0.111
		Rear	Rear	0.540	**0.141**
	LTE Band 5	Front	0.737	0.111	0.848
		Rear	0.862	0.141	**1.003**
	LTE Band 4	Front	0.889	0.111	**1.000**
		Rear	0.638	0.141	0.778
	LTE Band 2	Front	0.550	0.111	**0.661**
		Rear	0.499	0.141	0.640
	LTE Band 7	Front	0.630	0.111	0.741
		Rear	0.771	0.141	**0.911**
	LTE Band 41	Front	0.373	0.111	0.484
		Rear	0.544	0.141	**0.685**

Table 13.5.5 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	0.402	0.071	0.473
		Rear	0.438	0.057	**0.495**
	GPRS 850	Front	0.531	0.071	0.602
		Rear	0.613	0.057	**0.670**
	GSM 1900	Front	0.264	0.071	**0.335**
		Rear	0.258	0.057	0.314
	GPRS 1900	Front	0.303	0.071	0.374
		Rear	0.303	0.057	0.360
	WCDMA 850	Front	0.732	0.071	0.803
		Rear	0.894	0.057	**0.951**
	WCDMA 1700	Front	0.895	0.071	**0.966**
		Rear	0.701	0.057	0.758
	WCDMA 1900	Front	0.626	0.071	**0.697**
		Rear	0.619	0.057	0.676
	LTE Band 12	Front	0.531	0.071	0.602
		Rear	0.583	0.057	**0.639**
	LTE Band 13	Front	0.488	0.071	0.559
		Rear	0.540	0.057	**0.597**
	LTE Band 5	Front	0.737	0.071	0.808
		Rear	0.862	0.057	**0.919**
	LTE Band 4	Front	0.889	0.071	**0.960**
		Rear	0.638	0.057	0.694
	LTE Band 2	Front	0.550	0.071	**0.621**
		Rear	0.499	0.057	0.556
	LTE Band 7	Front	0.630	0.071	0.701
		Rear	0.771	0.057	**0.827**
	LTE Band 41	Front	0.373	0.071	0.444
		Rear	0.544	0.057	**0.601**

Table 13.5.6 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	0.402	0.089	0.492
		Rear	0.438	0.115	**0.554**
	GPRS 850	Front	0.531	0.089	0.620
		Rear	0.613	0.115	**0.729**
	GSM 1900	Front	0.264	0.089	0.353
		Rear	0.258	0.115	**0.373**
	GPRS 1900	Front	0.303	0.089	0.393
		Rear	0.303	0.115	0.419
	WCDMA 850	Front	0.732	0.089	0.822
		Rear	0.894	0.115	**1.009**
	WCDMA 1700	Front	0.895	0.089	**0.984**
		Rear	0.701	0.115	0.816
	WCDMA 1900	Front	0.626	0.089	0.715
		Rear	0.619	0.115	**0.735**
	LTE Band 12	Front	0.531	0.089	0.621
		Rear	0.583	0.115	**0.698**
	LTE Band 13	Front	0.488	0.089	0.577
		Rear	0.540	0.115	**0.656**
	LTE Band 5	Front	0.737	0.089	0.827
		Rear	0.862	0.115	**0.978**
	LTE Band 4	Front	0.889	0.089	**0.978**
		Rear	0.638	0.115	0.753
	LTE Band 2	Front	0.550	0.089	**0.639**
		Rear	0.499	0.115	0.614
	LTE Band 7	Front	0.630	0.089	0.719
		Rear	0.771	0.115	**0.886**
	LTE Band 41	Front	0.373	0.089	0.463
		Rear	0.544	0.115	**0.660**

Table 13.5.7 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	0.402	0.040	0.442
		Rear	0.438	0.446	**0.885**
	GPRS 850	Front	0.531	0.040	0.571
		Rear	0.613	0.446	**1.059**
	GSM 1900	Front	0.264	0.040	0.304
		Rear	0.258	0.446	**0.704**
	GPRS 1900	Front	0.303	0.040	0.343
		Rear	0.303	0.446	0.749
	WCDMA 850	Front	0.732	0.040	0.772
		Rear	0.894	0.446	**1.340**
	WCDMA 1700	Front	0.895	0.040	0.935
		Rear	0.701	0.446	**1.147**
	WCDMA 1900	Front	0.626	0.040	0.666
		Rear	0.619	0.446	**1.065**
	LTE Band 12	Front	0.531	0.040	0.571
		Rear	0.583	0.446	**1.029**
	LTE Band 13	Front	0.488	0.040	0.528
		Rear	0.540	0.446	**0.986**
	LTE Band 5	Front	0.737	0.040	0.777
		Rear	0.862	0.446	**1.309**
	LTE Band 4	Front	0.889	0.040	0.929
		Rear	0.638	0.446	**1.084**
	LTE Band 2	Front	0.550	0.040	0.590
		Rear	0.499	0.446	**0.945**
	LTE Band 7	Front	0.630	0.040	0.670
		Rear	0.771	0.446	**1.217**
	LTE Band 41	Front	0.373	0.040	0.413
		Rear	0.544	0.446	**0.991**

Table 13.5.8 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	0.402	0.068	0.470
		Rear	0.438	0.314	**0.753**
	GPRS 850	Front	0.531	0.068	0.599
		Rear	0.613	0.314	**0.928**
	GSM 1900	Front	0.264	0.068	0.332
		Rear	0.258	0.314	**0.572**
	GPRS 1900	Front	0.303	0.068	0.371
		Rear	0.303	0.314	0.618
	WCDMA 850	Front	0.732	0.068	0.800
		Rear	0.894	0.314	**1.208**
	WCDMA 1700	Front	0.895	0.068	0.962
		Rear	0.701	0.314	**1.015**
	WCDMA 1900	Front	0.626	0.068	0.694
		Rear	0.619	0.314	**0.934**
	LTE Band 12	Front	0.531	0.068	0.599
		Rear	0.583	0.314	**0.897**
	LTE Band 13	Front	0.488	0.068	0.555
		Rear	0.540	0.314	**0.855**
	LTE Band 5	Front	0.737	0.068	0.805
		Rear	0.862	0.314	**1.177**
	LTE Band 4	Front	0.889	0.068	**0.956**
		Rear	0.638	0.314	0.952
	LTE Band 2	Front	0.550	0.068	0.618
		Rear	0.499	0.314	**0.814**
	LTE Band 7	Front	0.630	0.068	0.698
		Rear	0.771	0.314	**1.085**
	LTE Band 41	Front	0.373	0.068	0.441
		Rear	0.544	0.314	**0.859**

Table 13.5.9 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	0.402	0.093	0.496
		Rear	0.438	0.495	**0.933**
	GPRS 850	Front	0.531	0.093	0.624
		Rear	0.613	0.495	**1.108**
	GSM 1900	Front	0.264	0.093	0.357
		Rear	0.258	0.495	**0.753**
	GPRS 1900	Front	0.303	0.093	0.397
		Rear	0.303	0.495	0.798
	WCDMA 850	Front	0.732	0.093	0.826
		Rear	0.894	0.495	**1.389**
	WCDMA 1700	Front	0.895	0.093	0.988
		Rear	0.701	0.495	**1.196**
	WCDMA 1900	Front	0.626	0.093	0.719
		Rear	0.619	0.495	**1.114**
	LTE Band 12	Front	0.531	0.093	0.625
		Rear	0.583	0.495	**1.078**
	LTE Band 13	Front	0.488	0.093	0.581
		Rear	0.540	0.495	**1.035**
	LTE Band 5	Front	0.737	0.093	0.831
		Rear	0.862	0.495	**1.357**
	LTE Band 4	Front	0.889	0.093	0.982
		Rear	0.638	0.495	**1.133**
	LTE Band 2	Front	0.550	0.093	0.643
		Rear	0.499	0.495	**0.994**
	LTE Band 7	Front	0.630	0.093	0.723
		Rear	0.771	0.495	**1.266**
	LTE Band 41	Front	0.373	0.093	0.467
		Rear	0.544	0.495	**1.039**

Table 13.5.10 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	0.402	0.059	0.461
		Rear	0.438	0.486	**0.924**
	GPRS 850	Front	0.531	0.059	0.590
		Rear	0.613	0.486	**1.099**
	GSM 1900	Front	0.264	0.059	0.323
		Rear	0.258	0.486	**0.744**
	GPRS 1900	Front	0.303	0.059	0.362
		Rear	0.303	0.486	0.789
	WCDMA 850	Front	0.732	0.059	0.791
		Rear	0.894	0.486	**1.380**
	WCDMA 1700	Front	0.895	0.059	0.954
		Rear	0.701	0.486	**1.187**
	WCDMA 1900	Front	0.626	0.059	0.685
		Rear	0.619	0.486	**1.105**
	LTE Band 12	Front	0.531	0.059	0.590
		Rear	0.583	0.486	**1.069**
	LTE Band 13	Front	0.488	0.059	0.547
		Rear	0.540	0.486	**1.026**
	LTE Band 5	Front	0.737	0.059	0.796
		Rear	0.862	0.486	**1.348**
	LTE Band 4	Front	0.889	0.059	0.948
		Rear	0.638	0.486	**1.124**
	LTE Band 2	Front	0.550	0.059	0.609
		Rear	0.499	0.486	**0.985**
	LTE Band 7	Front	0.630	0.059	0.689
		Rear	0.771	0.486	**1.257**
	LTE Band 41	Front	0.373	0.059	0.432
		Rear	0.544	0.486	**1.030**

Table 13.5.11 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	0.402	0.027	0.429
		Rear	0.438	0.238	**0.677**
	GPRS 850	Front	0.531	0.027	0.558
		Rear	0.613	0.238	**0.852**
	GSM 1900	Front	0.264	0.027	0.291
		Rear	0.258	0.238	**0.496**
	GPRS 1900	Front	0.303	0.027	0.330
		Rear	0.303	0.238	0.542
	WCDMA 850	Front	0.732	0.027	0.759
		Rear	0.894	0.238	**1.132**
	WCDMA 1700	Front	0.895	0.027	0.922
		Rear	0.701	0.238	**0.939**
	WCDMA 1900	Front	0.626	0.027	0.653
		Rear	0.619	0.238	**0.858**
	LTE Band 12	Front	0.531	0.027	0.558
		Rear	0.583	0.238	**0.821**
	LTE Band 13	Front	0.488	0.027	0.515
		Rear	0.540	0.238	**0.779**
	LTE Band 5	Front	0.737	0.027	0.764
		Rear	0.862	0.238	**1.101**
	LTE Band 4	Front	0.889	0.027	**0.916**
		Rear	0.638	0.238	0.876
	LTE Band 2	Front	0.550	0.027	0.577
		Rear	0.499	0.238	**0.737**
	LTE Band 7	Front	0.630	0.027	0.657
		Rear	0.771	0.238	**1.009**
	LTE Band 41	Front	0.373	0.027	0.400
		Rear	0.544	0.238	**0.783**

Table 13.5.12 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	0.402	0.050	0.453
		Rear	0.438	0.445	**0.883**
	GPRS 850	Front	0.531	0.050	0.581
		Rear	0.613	0.445	**1.058**
	GSM 1900	Front	0.264	0.050	0.314
		Rear	0.258	0.445	**0.702**
	GPRS 1900	Front	0.303	0.050	0.354
		Rear	0.303	0.445	0.748
	WCDMA 850	Front	0.732	0.050	0.783
		Rear	0.894	0.445	**1.338**
	WCDMA 1700	Front	0.895	0.050	0.945
		Rear	0.701	0.445	**1.146**
	WCDMA 1900	Front	0.626	0.050	0.676
		Rear	0.619	0.445	**1.064**
	LTE Band 12	Front	0.531	0.050	0.582
		Rear	0.583	0.445	**1.027**
	LTE Band 13	Front	0.488	0.050	0.538
		Rear	0.540	0.445	**0.985**
	LTE Band 5	Front	0.737	0.050	0.788
		Rear	0.862	0.445	**1.307**
	LTE Band 4	Front	0.889	0.050	0.939
		Rear	0.638	0.445	**1.082**
	LTE Band 2	Front	0.550	0.050	0.600
		Rear	0.499	0.445	**0.944**
	LTE Band 7	Front	0.630	0.050	0.680
		Rear	0.771	0.445	**1.215**
	LTE Band 41	Front	0.373	0.050	0.424
		Rear	0.544	0.445	**0.989**

Table 13.5.13 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	0.402	0.068	0.471
		Rear	0.438	0.424	**0.862**
	GPRS 850	Front	0.531	0.068	0.600
		Rear	0.613	0.424	**1.037**
	GSM 1900	Front	0.264	0.068	0.333
		Rear	0.258	0.424	**0.681**
	GPRS 1900	Front	0.303	0.068	0.372
		Rear	0.303	0.424	0.727
	WCDMA 850	Front	0.732	0.068	0.801
		Rear	0.894	0.424	**1.318**
	WCDMA 1700	Front	0.895	0.068	0.963
		Rear	0.701	0.424	**1.125**
	WCDMA 1900	Front	0.626	0.068	0.695
		Rear	0.619	0.424	**1.043**
	LTE Band 12	Front	0.531	0.068	0.600
		Rear	0.583	0.424	**1.007**
	LTE Band 13	Front	0.488	0.068	0.556
		Rear	0.540	0.424	**0.964**
	LTE Band 5	Front	0.737	0.068	0.806
		Rear	0.862	0.424	**1.286**
	LTE Band 4	Front	0.889	0.068	0.957
		Rear	0.638	0.424	**1.062**
	LTE Band 2	Front	0.550	0.068	0.619
		Rear	0.499	0.424	**0.923**
	LTE Band 7	Front	0.630	0.068	0.698
		Rear	0.771	0.424	**1.195**
	LTE Band 41	Front	0.373	0.068	0.442
		Rear	0.544	0.424	**0.968**

Table 13.5.14 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	0.402	0.032	0.434
		Rear	0.438	0.214	**0.653**
	GPRS 850	Front	0.531	0.032	0.563
		Rear	0.613	0.214	**0.828**
	GSM 1900	Front	0.264	0.032	0.296
		Rear	0.258	0.214	**0.472**
	GPRS 1900	Front	0.303	0.032	0.336
		Rear	0.303	0.214	0.518
	WCDMA 850	Front	0.732	0.032	0.765
		Rear	0.894	0.214	**1.108**
	WCDMA 1700	Front	0.895	0.032	**0.927**
		Rear	0.701	0.214	0.915
	WCDMA 1900	Front	0.626	0.032	0.658
		Rear	0.619	0.214	**0.834**
	LTE Band 12	Front	0.531	0.032	0.564
		Rear	0.583	0.214	**0.797**
	LTE Band 13	Front	0.488	0.032	0.520
		Rear	0.540	0.214	**0.755**
	LTE Band 5	Front	0.737	0.032	0.770
		Rear	0.862	0.214	**1.077**
	LTE Band 4	Front	0.889	0.032	**0.921**
		Rear	0.638	0.214	0.852
	LTE Band 2	Front	0.550	0.032	0.582
		Rear	0.499	0.214	**0.713**
	LTE Band 7	Front	0.630	0.032	0.662
		Rear	0.771	0.214	**0.985**
	LTE Band 41	Front	0.373	0.032	0.406
		Rear	0.544	0.214	**0.759**

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Table 13.5.15 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	0.402	0.057	0.459
		Rear	0.438	0.374	**0.813**
	GPRS 850	Front	0.531	0.057	0.588
		Rear	0.613	0.374	**0.988**
	GSM 1900	Front	0.264	0.057	0.321
		Rear	0.258	0.374	**0.632**
	GPRS 1900	Front	0.303	0.057	0.360
		Rear	0.303	0.374	0.678
	WCDMA 850	Front	0.732	0.057	0.789
		Rear	0.894	0.374	**1.268**
	WCDMA 1700	Front	0.895	0.057	0.952
		Rear	0.701	0.374	**1.075**
	WCDMA 1900	Front	0.626	0.057	0.683
		Rear	0.619	0.374	**0.994**
	LTE Band 12	Front	0.531	0.057	0.588
		Rear	0.583	0.374	**0.957**
	LTE Band 13	Front	0.488	0.057	0.545
		Rear	0.540	0.374	**0.915**
	LTE Band 5	Front	0.737	0.057	0.794
		Rear	0.862	0.374	**1.237**
	LTE Band 4	Front	0.889	0.057	0.946
		Rear	0.638	0.374	**1.012**
	LTE Band 2	Front	0.550	0.057	0.607
		Rear	0.499	0.374	**0.873**
	LTE Band 7	Front	0.630	0.057	0.687
		Rear	0.771	0.374	**1.145**
	LTE Band 41	Front	0.373	0.057	0.430
		Rear	0.544	0.374	**0.919**

Table 13.5.16 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth (Body-Worn at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Body-Worn SAR	GSM 850	Front	0.402	0.087	0.489
		Rear	0.438	0.091	**0.529**
	GPRS 850	Front	0.531	0.087	0.618
		Rear	0.613	0.091	**0.704**
	GSM 1900	Front	0.264	0.087	**0.351**
		Rear	0.258	0.091	0.348
	GPRS 1900	Front	0.303	0.087	0.390
		Rear	0.303	0.091	0.394
	WCDMA 850	Front	0.732	0.087	0.819
		Rear	0.894	0.091	**0.985**
	WCDMA 1700	Front	0.895	0.087	**0.982**
		Rear	0.701	0.091	0.792
	WCDMA 1900	Front	0.626	0.087	**0.713**
		Rear	0.619	0.091	0.710
	LTE Band 12	Front	0.531	0.087	0.618
		Rear	0.583	0.091	**0.673**
	LTE Band 13	Front	0.488	0.087	0.575
		Rear	0.540	0.091	**0.631**
	LTE Band 5	Front	0.737	0.087	0.824
		Rear	0.862	0.091	**0.953**
	LTE Band 4	Front	0.889	0.087	**0.976**
		Rear	0.638	0.091	0.728
	LTE Band 2	Front	0.550	0.087	**0.637**
		Rear	0.499	0.091	0.590
	LTE Band 7	Front	0.630	0.087	0.717
		Rear	0.771	0.091	**0.861**
	LTE Band 41	Front	0.373	0.087	0.460
		Rear	0.544	0.091	**0.635**

Table 13.5.17 Simultaneous Transmission Scenario : 2.4 GHz 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	0.111	0.068	0.179
		Rear	0.141	0.314	**0.455**
	5.6G W-LAN Ant.2	Front	0.111	0.027	0.138
		Rear	0.141	0.238	**0.379**
	5.8G W-LAN Ant.2	Front	0.111	0.032	0.143
		Rear	0.141	0.214	**0.355**

13.6 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 13.6.1 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	-	0.039	0.083	0.039	0.083	0.122
		Bottom	0.321	-	-	0.321	0.321	0.321
		Front	0.531	0.111	0.064	0.642	0.595	0.706
		Rear	0.613	0.141	0.233	0.754	0.846	**0.987**
		Right	0.093	-	-	0.093	0.093	0.093
		Left	0.286	0.144	0.028	0.430	0.313	0.457
	GPRS 1900	Top	-	0.039	0.083	0.039	0.083	0.122
		Bottom	0.279	-	-	0.279	0.279	0.279
		Front	0.303	0.111	0.064	0.414	0.368	0.479
		Rear	0.303	0.141	0.233	0.444	0.536	**0.677**
		Right	-	-	-	-	-	-
		Left	0.115	0.144	0.028	0.259	0.142	0.287
	WCDMA 850	Top	-	0.039	0.083	0.039	0.083	0.122
		Bottom	0.372	-	-	0.372	0.372	0.372
		Front	0.732	0.111	0.064	0.843	0.797	0.908
		Rear	0.894	0.141	0.233	1.034	1.127	**1.267**
		Right	0.129	-	-	0.129	0.129	0.129
		Left	0.361	0.144	0.028	0.505	0.389	0.533
	WCDMA 1700	Top	-	0.039	0.083	0.039	0.083	0.122
		Bottom	0.783	-	-	0.783	0.783	0.783
		Front	0.895	0.111	0.064	1.006	0.959	1.070
		Rear	0.701	0.141	0.233	0.842	0.934	**1.075**
		Right	-	-	-	-	-	-
		Left	0.432	0.144	0.028	0.576	0.459	0.603
	WCDMA 1900	Top	-	0.039	0.083	0.039	0.083	0.122
		Bottom	0.597	-	-	0.597	0.597	0.597
		Front	0.626	0.111	0.064	0.737	0.690	0.801
		Rear	0.619	0.141	0.233	0.760	0.852	**0.993**
		Right	0.000	-	-	0.000	0.000	0.000
		Left	0.234	0.144	0.028	0.378	0.262	0.406
	LTE Band 12	Top	-	0.039	0.083	0.039	0.083	0.122
		Bottom	0.345	-	-	0.345	0.345	0.345
		Front	0.531	0.111	0.064	0.642	0.596	0.707
		Rear	0.583	0.141	0.233	0.723	0.816	**0.956**
		Right	0.184	-	-	0.184	0.184	0.184
		Left	0.174	0.144	0.028	0.318	0.202	0.346
	LTE Band 13	Top	0.000	0.039	0.083	0.039	0.083	0.122
		Bottom	0.304	-	-	0.304	0.304	0.304
		Front	0.488	0.111	0.064	0.599	0.552	0.663
		Rear	0.540	0.141	0.233	0.681	0.773	**0.914**
		Right	0.109	-	-	0.109	0.109	0.109
		Left	0.275	0.144	0.028	0.419	0.302	0.447
	LTE Band 5	Top	-	0.039	0.083	0.039	0.083	0.122
		Bottom	0.385	-	-	0.385	0.385	0.385
		Front	0.737	0.111	0.064	0.848	0.802	0.913
		Rear	0.862	0.141	0.233	1.003	1.095	**1.236**
		Right	0.129	-	-	0.129	0.129	0.129
		Left	0.403	0.144	0.028	0.547	0.431	0.575
	LTE Band 4	Top	-	0.039	0.083	0.039	0.083	0.122
		Bottom	0.648	-	-	0.648	0.648	0.648
		Front	0.889	0.111	0.064	1.000	0.953	**1.064**
		Rear	0.638	0.141	0.233	0.778	0.871	1.011
		Right	-	-	-	-	-	-
		Left	0.401	0.144	0.028	0.545	0.429	0.573
	LTE Band 2	Top	-	0.039	0.083	0.039	0.083	0.122
		Bottom	0.467	-	-	0.467	0.467	0.467
		Front	0.550	0.111	0.064	0.661	0.614	0.725
		Rear	0.499	0.141	0.233	0.640	0.732	**0.873**
		Right	-	-	-	-	-	-
		Left	0.171	0.144	0.028	0.315	0.199	0.343
	LTE Band 7	Top	-	0.039	0.083	0.039	0.083	0.122
		Bottom	0.687	-	-	0.687	0.687	0.687
		Front	0.630	0.111	0.064	0.741	0.694	0.805
		Rear	0.771	0.141	0.233	0.911	1.004	**1.144**
		Right	-	-	-	-	-	-
		Left	0.120	0.144	0.028	0.264	0.148	0.292
	LTE Band 41	Top	-	0.039	0.083	0.039	0.083	0.122
		Bottom	0.481	-	-	0.481	0.481	0.481
		Front	0.373	0.111	0.064	0.484	0.438	0.549
		Rear	0.544	0.141	0.233	0.685	0.778	**0.918**
		Right	-	-	-	-	-	-
		Left	0.094	0.144	0.028	0.238	0.121	0.265

Table 13.6.2 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	-	0.039	0.115	0.039	0.115	0.154
		Bottom	0.321	-	-	0.321	0.321	0.321
		Front	0.531	0.111	0.032	0.642	0.563	0.674
		Rear	0.613	0.141	0.214	0.754	0.828	**0.968**
		Right	0.093	-	-	0.093	0.093	0.093
		Left	0.286	0.144	0.032	0.430	0.318	0.462
	GPRS 1900	Top	-	0.039	0.115	0.039	0.115	0.154
		Bottom	0.279	-	-	0.279	0.279	0.279
		Front	0.303	0.111	0.032	0.414	0.336	0.447
		Rear	0.303	0.141	0.214	0.444	0.518	**0.658**
		Right	-	-	-	-	-	-
		Left	0.115	0.144	0.032	0.259	0.147	0.291
	WCDMA 850	Top	-	0.039	0.115	0.039	0.115	0.154
		Bottom	0.372	-	-	0.372	0.372	0.372
		Front	0.732	0.111	0.032	0.843	0.765	0.876
		Rear	0.894	0.141	0.214	1.034	1.108	**1.249**
		Right	0.129	-	-	0.129	0.129	0.129
		Left	0.361	0.144	0.032	0.505	0.393	0.537
	WCDMA 1700	Top	-	0.039	0.115	0.039	0.115	0.154
		Bottom	0.783	-	-	0.783	0.783	0.783
		Front	0.895	0.111	0.032	1.006	0.927	1.038
		Rear	0.701	0.141	0.214	0.842	0.915	**1.056**
		Right	-	-	-	-	-	-
		Left	0.432	0.144	0.032	0.576	0.464	0.608
	WCDMA 1900	Top	-	0.039	0.115	0.039	0.115	0.154
		Bottom	0.597	-	-	0.597	0.597	0.597
		Front	0.626	0.111	0.032	0.737	0.658	0.769
		Rear	0.619	0.141	0.214	0.760	0.834	**0.974**
		Right	-	-	-	-	-	-
		Left	0.234	0.144	0.032	0.378	0.266	0.410
	LTE Band 12	Top	-	0.039	0.115	0.039	0.115	0.154
		Bottom	0.345	-	-	0.345	0.345	0.345
		Front	0.531	0.111	0.032	0.642	0.564	0.675
		Rear	0.583	0.141	0.214	0.723	0.797	**0.938**
		Right	0.184	-	-	0.184	0.184	0.184
		Left	0.174	0.144	0.032	0.318	0.206	0.350
	LTE Band 13	Top	-	0.039	0.115	0.039	0.115	0.154
		Bottom	0.304	-	-	0.304	0.304	0.304
		Front	0.488	0.111	0.032	0.599	0.520	0.631
		Rear	0.540	0.141	0.214	0.681	0.755	**0.895**
		Right	0.109	-	-	0.109	0.109	0.109
		Left	0.275	0.144	0.032	0.419	0.307	0.451
	LTE Band 5	Top	-	0.039	0.115	0.039	0.115	0.154
		Bottom	0.385	-	-	0.385	0.385	0.385
		Front	0.737	0.111	0.032	0.848	0.770	0.881
		Rear	0.862	0.141	0.214	1.003	1.077	**1.217**
		Right	0.129	-	-	0.129	0.129	0.129
		Left	0.403	0.144	0.032	0.547	0.435	0.579
	LTE Band 4	Top	-	0.039	0.115	0.039	0.115	0.154
		Bottom	0.648	-	-	0.648	0.648	0.648
		Front	0.889	0.111	0.032	1.000	0.921	**1.032**
		Rear	0.638	0.141	0.214	0.778	0.852	0.993
		Right	-	-	-	-	-	-
		Left	0.401	0.144	0.032	0.545	0.433	0.577
	LTE Band 2	Top	-	0.039	0.115	0.039	0.115	0.154
		Bottom	0.467	-	-	0.467	0.467	0.467
		Front	0.550	0.111	0.032	0.661	0.582	0.693
		Rear	0.499	0.141	0.214	0.640	0.713	**0.854**
		Right	-	-	-	-	-	-
		Left	0.171	0.144	0.032	0.315	0.203	0.347
	LTE Band 7	Top	-	0.039	0.115	0.039	0.115	0.154
		Bottom	0.687	-	-	0.687	0.687	0.687
		Front	0.630	0.111	0.032	0.741	0.662	0.773
		Rear	0.771	0.141	0.214	0.911	0.985	**1.126**
		Right	-	-	-	-	-	-
		Left	0.120	0.144	0.032	0.264	0.153	0.297
	LTE Band 41	Top	-	0.039	0.115	0.039	0.115	0.154
		Bottom	0.481	-	-	0.481	0.481	0.481
		Front	0.373	0.111	0.032	0.484	0.406	0.517
		Rear	0.544	0.141	0.214	0.685	0.759	**0.899**
		Right	-	-	-	-	-	-
		Left	0.094	0.144	0.032	0.238	0.126	0.270

Table 13.6.3 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	-	0.039	0.039
		Bottom	0.321	-	0.321
		Front	0.531	0.111	0.642
		Rear	0.613	0.141	**0.754**
		Right	0.093	-	0.093
		Left	0.286	0.144	0.430
	GPRS 1900	Top	-	0.039	0.039
		Bottom	0.279	-	0.279
		Front	0.303	0.111	0.414
		Rear	0.303	0.141	**0.444**
		Right	-	-	-
		Left	0.115	0.144	0.259
	WCDMA 850	Top	-	0.039	0.039
		Bottom	0.372	-	0.372
		Front	0.732	0.111	0.843
		Rear	0.894	0.141	**1.034**
		Right	0.129	-	0.129
		Left	0.361	0.144	0.505
	WCDMA 1700	Top	-	0.039	0.039
		Bottom	0.783	-	0.783
		Front	0.895	0.111	**1.006**
		Rear	0.701	0.141	0.842
		Right	-	-	-
		Left	0.432	0.144	0.576
	WCDMA 1900	Top	-	0.039	0.039
		Bottom	0.597	-	0.597
		Front	0.626	0.111	0.737
		Rear	0.619	0.141	**0.760**
		Right	-	-	-
		Left	0.234	0.144	0.378
	LTE Band 12	Top	-	0.039	0.039
		Bottom	0.345	-	0.345
		Front	0.531	0.111	0.642
		Rear	0.583	0.141	**0.723**
		Right	0.184	-	0.184
		Left	0.174	0.144	0.318
	LTE Band 13	Top	-	0.039	0.039
		Bottom	0.304	-	0.304
		Front	0.488	0.111	0.599
		Rear	0.540	0.141	**0.681**
		Right	0.109	-	0.109
		Left	0.275	0.144	0.419
	LTE Band 5	Top	-	0.039	0.039
		Bottom	0.385	-	0.385
		Front	0.737	0.111	0.848
		Rear	0.862	0.141	**1.003**
		Right	0.129	-	0.129
		Left	0.403	0.144	0.547
	LTE Band 4	Top	-	0.039	0.039
		Bottom	0.648	-	0.648
		Front	0.889	0.111	**1.000**
		Rear	0.638	0.141	0.778
		Right	-	-	-
		Left	0.401	0.144	0.545
	LTE Band 2	Top	-	0.039	0.039
		Bottom	0.467	-	0.467
		Front	0.550	0.111	**0.661**
		Rear	0.499	0.141	0.640
		Right	-	-	-
		Left	0.171	0.144	0.315
	LTE Band 7	Top	-	0.039	0.039
		Bottom	0.687	-	0.687
		Front	0.630	0.111	0.741
		Rear	0.771	0.141	**0.911**
		Right	-	-	-
		Left	0.120	0.144	0.264
	LTE Band 41	Top	-	0.039	0.039
		Bottom	0.481	-	0.481
		Front	0.373	0.111	0.484
		Rear	0.544	0.141	**0.685**
		Right	-	-	-
		Left	0.094	0.144	0.238

Table 13.6.4 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN Ant.2 (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN Ant.2 SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	0.090	0.090
		Bottom	0.321	-	0.321
		Front	0.531	0.071	0.602
		Rear	0.613	0.057	**0.670**
		Right	0.093	-	0.093
		Left	0.286	0.006	0.292
	GPRS 1900	Top	-	0.090	0.090
		Bottom	0.279	-	0.279
		Front	0.303	0.071	**0.374**
		Rear	0.303	0.057	0.360
		Right	-	-	-
		Left	0.115	0.006	0.121
	WCDMA 850	Top	-	0.090	0.090
		Bottom	0.372	-	0.372
		Front	0.732	0.071	0.803
		Rear	0.894	0.057	**0.951**
		Right	0.129	-	0.129
		Left	0.361	0.006	0.367
	WCDMA 1700	Top	-	0.090	0.090
		Bottom	0.783	-	0.783
		Front	0.895	0.071	**0.966**
		Rear	0.701	0.057	0.758
		Right	-	-	-
		Left	0.432	0.006	0.438
	WCDMA 1900	Top	-	0.090	0.090
		Bottom	0.597	0.000	0.597
		Front	0.626	0.071	**0.697**
		Rear	0.619	0.057	0.676
		Right	-	-	-
		Left	0.234	0.006	0.240
	LTE Band 12	Top	-	0.090	0.090
		Bottom	0.345	-	0.345
		Front	0.531	0.071	0.602
		Rear	0.583	0.057	**0.639**
		Right	0.184	-	0.184
		Left	0.174	0.006	0.180
	LTE Band 13	Top	-	0.090	0.090
		Bottom	0.304	-	0.304
		Front	0.488	0.071	0.559
		Rear	0.540	0.057	**0.597**
		Right	0.109	-	0.109
		Left	0.275	0.006	0.281
	LTE Band 5	Top	-	0.090	0.090
		Bottom	0.385	-	0.385
		Front	0.737	0.071	0.808
		Rear	0.862	0.057	**0.919**
		Right	0.129	-	0.129
		Left	0.403	0.006	0.409
	LTE Band 4	Top	-	0.090	0.090
		Bottom	0.648	-	0.648
		Front	0.889	0.071	**0.960**
		Rear	0.638	0.057	0.694
		Right	-	-	-
		Left	0.401	0.006	0.407
	LTE Band 2	Top	-	0.090	0.090
		Bottom	0.467	-	0.467
		Front	0.550	0.071	**0.621**
		Rear	0.499	0.057	0.556
		Right	-	-	-
		Left	0.171	0.006	0.177
	LTE Band 7	Top	-	0.090	0.090
		Bottom	0.687	-	0.687
		Front	0.630	0.071	0.701
		Rear	0.771	0.057	**0.827**
		Right	-	-	-
		Left	0.120	0.006	0.127
	LTE Band 41	Top	-	0.090	0.090
		Bottom	0.481	-	0.481
		Front	0.373	0.071	0.444
		Rear	0.544	0.057	**0.601**
		Right	-	-	-
		Left	0.094	0.006	0.100

Table 13.6.5 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN MIMO (Hotspot at 10 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN MIMO SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	0.093	0.093
		Bottom	0.321	-	0.321
		Front	0.531	0.089	0.620
		Rear	0.613	0.115	**0.729**
		Right	0.093	-	0.093
		Left	0.286	0.117	0.402
	GPRS 1900	Top	-	0.093	0.093
		Bottom	0.279	-	0.279
		Front	0.303	0.089	0.393
		Rear	0.303	0.115	**0.419**
		Right	-	-	-
		Left	0.115	0.117	0.231
	WCDMA 850	Top	-	0.093	0.093
		Bottom	0.372	-	0.372
		Front	0.732	0.089	0.822
		Rear	0.894	0.115	**1.009**
		Right	0.129	-	0.129
		Left	0.361	0.117	0.478
	WCDMA 1700	Top	-	0.093	0.093
		Bottom	0.783	-	0.783
		Front	0.895	0.089	**0.984**
		Rear	0.701	0.115	0.816
		Right	-	-	-
		Left	0.432	0.117	0.548
	WCDMA 1900	Top	-	0.093	0.093
		Bottom	0.597	-	0.597
		Front	0.626	0.089	0.715
		Rear	0.619	0.115	**0.735**
		Right	-	-	-
		Left	0.234	0.117	0.351
	LTE Band 12	Top	-	0.093	0.093
		Bottom	0.345	-	0.345
		Front	0.531	0.089	0.621
		Rear	0.583	0.115	**0.698**
		Right	0.184	-	0.184
		Left	0.174	0.117	0.291
	LTE Band 13	Top	-	0.093	0.093
		Bottom	0.304	-	0.304
		Front	0.488	0.089	0.577
		Rear	0.540	0.115	**0.656**
		Right	0.109	-	0.109
		Left	0.275	0.117	0.392
	LTE Band 5	Top	-	0.093	0.093
		Bottom	0.385	-	0.385
		Front	0.737	0.089	0.827
		Rear	0.862	0.115	**0.978**
		Right	0.129	-	0.129
		Left	0.403	0.117	0.520
	LTE Band 4	Top	-	0.093	0.093
		Bottom	0.648	-	0.648
		Front	0.889	0.089	**0.978**
		Rear	0.638	0.115	0.753
		Right	-	-	-
		Left	0.401	0.117	0.518
	LTE Band 2	Top	-	0.093	0.093
		Bottom	0.467	-	0.467
		Front	0.550	0.089	**0.639**
		Rear	0.499	0.115	0.614
		Right	-	-	-
		Left	0.171	0.117	0.288
	LTE Band 7	Top	-	0.093	0.093
		Bottom	0.687	-	0.687
		Front	0.630	0.089	0.719
		Rear	0.771	0.115	**0.886**
		Right	-	-	-
		Left	0.120	0.117	0.237
	LTE Band 41	Top	-	0.093	0.093
		Bottom	0.481	-	0.481
		Front	0.373	0.089	0.463
		Rear	0.544	0.115	**0.660**
		Right	-	-	-
		Left	0.094	0.117	0.210

Table 13.6.6 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)	ΣSAR (W/kg)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	0.045	0.045
		Bottom	0.321	-	0.321
		Front	0.531	0.020	0.551
		Rear	0.613	0.291	**0.905**
		Right	0.093	-	0.093
		Left	0.286	0.159	0.444
	GPRS 1900	Top	-	0.045	0.045
		Bottom	0.279	-	0.279
		Front	0.303	0.020	0.323
		Rear	0.303	0.291	**0.595**
		Right	-	-	-
		Left	0.115	0.159	0.274
	WCDMA 850	Top	-	0.045	0.045
		Bottom	0.372	-	0.372
		Front	0.732	0.020	0.752
		Rear	0.894	0.291	**1.185**
		Right	0.129	-	0.129
		Left	0.361	0.159	0.520
	WCDMA 1700	Top	-	0.045	0.045
		Bottom	0.783	-	0.783
		Front	0.895	0.020	0.915
		Rear	0.701	0.291	**0.992**
		Right	-	-	-
		Left	0.432	0.159	0.590
	WCDMA 1900	Top	-	0.045	0.045
		Bottom	0.597	-	0.597
		Front	0.626	0.020	0.646
		Rear	0.619	0.291	**0.911**
		Right	-	-	-
		Left	0.234	0.159	0.393
	LTE Band 12	Top	-	0.045	0.045
		Bottom	0.345	-	0.345
		Front	0.531	0.020	0.551
		Rear	0.583	0.291	**0.874**
		Right	0.184	-	0.184
		Left	0.174	0.159	0.333
	LTE Band 13	Top	-	0.045	0.045
		Bottom	0.304	-	0.304
		Front	0.488	0.020	0.508
		Rear	0.540	0.291	**0.832**
		Right	0.109	-	0.109
		Left	0.275	0.159	0.434
	LTE Band 5	Top	-	0.045	0.045
		Bottom	0.385	-	0.385
		Front	0.737	0.020	0.757
		Rear	0.862	0.291	**1.154**
		Right	0.129	-	0.129
		Left	0.403	0.159	0.562
	LTE Band 4	Top	-	0.045	0.045
		Bottom	0.648	-	0.648
		Front	0.889	0.020	0.909
		Rear	0.638	0.291	**0.929**
		Right	-	-	-
		Left	0.401	0.159	0.560
	LTE Band 2	Top	-	0.045	0.045
		Bottom	0.467	-	0.467
		Front	0.550	0.020	0.570
		Rear	0.499	0.291	**0.790**
		Right	-	-	-
		Left	0.171	0.159	0.330
	LTE Band 7	Top	-	0.045	0.045
		Bottom	0.687	-	0.687
		Front	0.630	0.020	0.650
		Rear	0.771	0.291	**1.062**
		Right	-	-	-
		Left	0.120	0.159	0.279
	LTE Band 41	Top	-	0.045	0.045
		Bottom	0.481	-	0.481
		Front	0.373	0.020	0.393
		Rear	0.544	0.291	**0.836**
		Right	-	-	-
		Left	0.094	0.159	0.252

Table 13.6.7 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)	ΣSAR (W/kg)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	0.083	0.083
		Bottom	0.321	-	0.321
		Front	0.531	0.064	0.595
		Rear	0.613	0.233	**0.846**
		Right	0.093	-	0.093
		Left	0.286	0.028	0.313
	GPRS 1900	Top	-	0.083	0.083
		Bottom	0.279	-	0.279
		Front	0.303	0.064	0.368
		Rear	0.303	0.233	**0.536**
		Right	-	-	-
		Left	0.115	0.028	0.142
	WCDMA 850	Top	-	0.083	0.083
		Bottom	0.372	-	0.372
		Front	0.732	0.064	0.797
		Rear	0.894	0.233	**1.127**
		Right	0.129	-	0.129
		Left	0.361	0.028	0.389
	WCDMA 1700	Top	-	0.083	0.083
		Bottom	0.783	-	0.783
		Front	0.895	0.064	**0.959**
		Rear	0.701	0.233	0.934
		Right	-	-	-
		Left	0.432	0.028	0.459
	WCDMA 1900	Top	-	0.083	0.083
		Bottom	0.597	-	0.597
		Front	0.626	0.064	0.690
		Rear	0.619	0.233	**0.852**
		Right	0.000	-	0.000
		Left	0.234	0.028	0.262
	LTE Band 12	Top	-	0.083	0.083
		Bottom	0.345	-	0.345
		Front	0.531	0.064	0.596
		Rear	0.583	0.233	**0.816**
		Right	0.184	-	0.184
		Left	0.174	0.028	0.202
	LTE Band 13	Top	-	0.083	0.083
		Bottom	0.304	-	0.304
		Front	0.488	0.064	0.552
		Rear	0.540	0.233	**0.773**
		Right	0.109	-	0.109
		Left	0.275	0.028	0.302
	LTE Band 5	Top	-	0.083	0.083
		Bottom	0.385	-	0.385
		Front	0.737	0.064	0.802
		Rear	0.862	0.233	**1.095**
		Right	0.129	-	0.129
		Left	0.403	0.028	0.431
	LTE Band 4	Top	-	0.083	0.083
		Bottom	0.648	-	0.648
		Front	0.889	0.064	**0.953**
		Rear	0.638	0.233	0.871
		Right	-	-	-
		Left	0.401	0.028	0.429
	LTE Band 2	Top	-	0.083	0.083
		Bottom	0.467	-	0.467
		Front	0.550	0.064	0.614
		Rear	0.499	0.233	**0.732**
		Right	-	-	-
		Left	0.171	0.028	0.199
	LTE Band 7	Top	-	0.083	0.083
		Bottom	0.687	-	0.687
		Front	0.630	0.064	0.694
		Rear	0.771	0.233	**1.004**
		Right	-	-	-
		Left	0.120	0.028	0.148
	LTE Band 41	Top	-	0.083	0.083
		Bottom	0.481	-	0.481
		Front	0.373	0.064	0.438
		Rear	0.544	0.233	**0.778**
		Right	-	-	-
		Left	0.094	0.028	0.121

Table 13.6.8 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)	ΣSAR (W/kg)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	0.120	0.120
		Bottom	0.321	-	0.321
		Front	0.531	0.077	0.608
		Rear	0.613	0.397	**1.010**
		Right	0.093	-	0.093
		Left	0.286	0.175	0.461
	GPRS 1900	Top	-	0.120	0.120
		Bottom	0.279	-	0.279
		Front	0.303	0.077	0.380
		Rear	0.303	0.397	**0.700**
		Right	-	-	-
		Left	0.115	0.175	0.290
	WCDMA 850	Top	-	0.120	0.120
		Bottom	0.372	-	0.372
		Front	0.732	0.077	0.809
		Rear	0.894	0.397	**1.291**
		Right	0.129	-	0.129
		Left	0.361	0.175	0.536
	WCDMA 1700	Top	-	0.120	0.120
		Bottom	0.783	-	0.783
		Front	0.895	0.077	0.972
		Rear	0.701	0.397	**1.098**
		Right	-	-	-
		Left	0.432	0.175	0.607
	WCDMA 1900	Top	-	0.120	0.120
		Bottom	0.597	-	0.597
		Front	0.626	0.077	0.703
		Rear	0.619	0.397	**1.016**
		Right	-	-	-
		Left	0.234	0.175	0.409
	LTE Band 12	Top	-	0.120	0.120
		Bottom	0.345	-	0.345
		Front	0.531	0.077	0.608
		Rear	0.583	0.397	**0.980**
		Right	0.184	-	0.184
		Left	0.174	0.175	0.349
	LTE Band 13	Top	-	0.120	0.120
		Bottom	0.304	-	0.304
		Front	0.488	0.077	0.565
		Rear	0.540	0.397	**0.937**
		Right	0.109	-	0.109
		Left	0.275	0.175	0.450
	LTE Band 5	Top	-	0.120	0.120
		Bottom	0.385	-	0.385
		Front	0.737	0.077	0.814
		Rear	0.862	0.397	**1.259**
		Right	0.129	-	0.129
		Left	0.403	0.175	0.578
	LTE Band 4	Top	-	0.120	0.120
		Bottom	0.648	-	0.648
		Front	0.889	0.077	0.966
		Rear	0.638	0.397	**1.035**
		Right	-	-	-
		Left	0.401	0.175	0.576
	LTE Band 2	Top	-	0.120	0.120
		Bottom	0.467	-	0.467
		Front	0.550	0.077	0.627
		Rear	0.499	0.397	**0.896**
		Right	-	-	-
		Left	0.171	0.175	0.346
	LTE Band 7	Top	-	0.120	0.120
		Bottom	0.687	-	0.687
		Front	0.630	0.077	0.707
		Rear	0.771	0.397	**1.168**
		Right	-	-	-
		Left	0.120	0.175	0.296
	LTE Band 41	Top	-	0.120	0.120
		Bottom	0.481	-	0.481
		Front	0.373	0.077	0.450
		Rear	0.544	0.397	**0.941**
		Right	-	-	-
		Left	0.094	0.175	0.269

Table 13.6.9 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)	ΣSAR (W/kg)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	0.055	0.055
		Bottom	0.321	-	0.321
		Front	0.531	0.068	0.600
		Rear	0.613	0.424	**1.037**
		Right	0.093	-	0.093
		Left	0.286	0.249	0.534
	GPRS 1900	Top	-	0.055	0.055
		Bottom	0.279	-	0.279
		Front	0.303	0.068	0.372
		Rear	0.303	0.424	**0.727**
		Right	-	-	-
		Left	0.115	0.249	0.363
	WCDMA 850	Top	-	0.055	0.055
		Bottom	0.372	-	0.372
		Front	0.732	0.068	0.801
		Rear	0.894	0.424	**1.318**
		Right	0.129	-	0.129
		Left	0.361	0.249	0.610
	WCDMA 1700	Top	-	0.055	0.055
		Bottom	0.783	-	0.783
		Front	0.895	0.068	0.963
		Rear	0.701	0.424	**1.125**
		Right	-	-	-
		Left	0.432	0.249	0.680
	WCDMA 1900	Top	-	0.055	0.055
		Bottom	0.597	-	0.597
		Front	0.626	0.068	0.695
		Rear	0.619	0.424	**1.043**
		Right	-	-	-
		Left	0.234	0.249	0.483
	LTE Band 12	Top	-	0.055	0.055
		Bottom	0.345	-	0.345
		Front	0.531	0.068	0.600
		Rear	0.583	0.424	**1.007**
		Right	0.184	-	0.184
		Left	0.174	0.249	0.422
	LTE Band 13	Top	-	0.055	0.055
		Bottom	0.304	-	0.304
		Front	0.488	0.068	0.556
		Rear	0.540	0.424	**0.964**
		Right	0.109	-	0.109
		Left	0.275	0.249	0.523
	LTE Band 5	Top	-	0.055	0.055
		Bottom	0.385	-	0.385
		Front	0.737	0.068	0.806
		Rear	0.862	0.424	**1.286**
		Right	0.129	-	0.129
		Left	0.403	0.249	0.652
	LTE Band 4	Top	-	0.055	0.055
		Bottom	0.648	-	0.648
		Front	0.889	0.068	0.957
		Rear	0.638	0.424	**1.062**
		Right	-	-	-
		Left	0.401	0.249	0.650
	LTE Band 2	Top	-	0.055	0.055
		Bottom	0.467	-	0.467
		Front	0.550	0.068	0.619
		Rear	0.499	0.424	**0.923**
		Right	-	-	-
		Left	0.171	0.249	0.419
	LTE Band 7	Top	-	0.055	0.055
		Bottom	0.687	-	0.687
		Front	0.630	0.068	0.698
		Rear	0.771	0.424	**1.195**
		Right	-	-	-
		Left	0.120	0.249	0.369
	LTE Band 41	Top	-	0.055	0.055
		Bottom	0.481	-	0.481
		Front	0.373	0.068	0.442
		Rear	0.544	0.424	**0.968**
		Right	-	-	-
		Left	0.094	0.249	0.342

Table 13.6.10 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)	ΣSAR (W/kg)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	0.115	0.115
		Bottom	0.321	-	0.321
		Front	0.531	0.032	0.563
		Rear	0.613	0.214	**0.828**
		Right	0.093	-	0.093
		Left	0.286	0.032	0.318
	GPRS 1900	Top	-	0.115	0.115
		Bottom	0.279	-	0.279
		Front	0.303	0.032	0.336
		Rear	0.303	0.214	**0.518**
		Right	-	-	-
		Left	0.115	0.032	0.147
	WCDMA 850	Top	-	0.115	0.115
		Bottom	0.372	-	0.372
		Front	0.732	0.032	0.765
		Rear	0.894	0.214	**1.108**
		Right	0.129	-	0.129
		Left	0.361	0.032	0.393
	WCDMA 1700	Top	-	0.115	0.115
		Bottom	0.783	-	0.783
		Front	0.895	0.032	**0.927**
		Rear	0.701	0.214	0.915
		Right	-	-	-
		Left	0.432	0.032	0.464
	WCDMA 1900	Top	-	0.115	0.115
		Bottom	0.597	-	0.597
		Front	0.626	0.032	0.658
		Rear	0.619	0.214	**0.834**
		Right	-	-	-
		Left	0.234	0.032	0.266
	LTE Band 12	Top	-	0.115	0.115
		Bottom	0.345	-	0.345
		Front	0.531	0.032	0.564
		Rear	0.583	0.214	**0.797**
		Right	0.184	-	0.184
		Left	0.174	0.032	0.206
	LTE Band 13	Top	-	0.115	0.115
		Bottom	0.304	-	0.304
		Front	0.488	0.032	0.520
		Rear	0.540	0.214	**0.755**
		Right	0.109	-	0.109
		Left	0.275	0.032	0.307
	LTE Band 5	Top	-	0.115	0.115
		Bottom	0.385	-	0.385
		Front	0.737	0.032	0.770
		Rear	0.862	0.214	**1.077**
		Right	0.129	-	0.129
		Left	0.403	0.032	0.435
	LTE Band 4	Top	-	0.115	0.115
		Bottom	0.648	-	0.648
		Front	0.889	0.032	**0.921**
		Rear	0.638	0.214	0.852
		Right	-	-	-
		Left	0.401	0.032	0.433
	LTE Band 2	Top	-	0.115	0.115
		Bottom	0.467	-	0.467
		Front	0.550	0.032	0.582
		Rear	0.499	0.214	**0.713**
		Right	-	-	-
		Left	0.171	0.032	0.203
	LTE Band 7	Top	-	0.115	0.115
		Bottom	0.687	-	0.687
		Front	0.630	0.032	0.662
		Rear	0.771	0.214	**0.985**
		Right	-	-	-
		Left	0.120	0.032	0.153
	LTE Band 41	Top	-	0.115	0.115
		Bottom	0.481	-	0.481
		Front	0.373	0.032	0.406
		Rear	0.544	0.214	**0.759**
		Right	-	-	-
		Left	0.094	0.032	0.126

Table 13.6.11 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)	ΣSAR (W/kg)
			1	2	1+2
Hotspot SAR	GPRS 850	Top	-	0.152	0.152
		Bottom	0.321	-	0.321
		Front	0.531	0.057	0.588
		Rear	0.613	0.374	**0.988**
		Right	0.093	-	0.093
		Left	0.286	0.223	0.509
	GPRS 1900	Top	-	0.152	0.152
		Bottom	0.279	-	0.279
		Front	0.303	0.057	0.360
		Rear	0.303	0.374	**0.678**
		Right	-	-	-
		Left	0.115	0.223	0.338
	WCDMA 850	Top	-	0.152	0.152
		Bottom	0.372	-	0.372
		Front	0.732	0.057	0.789
		Rear	0.894	0.374	**1.268**
		Right	0.129	-	0.129
		Left	0.361	0.223	0.584
	WCDMA 1700	Top	-	0.152	0.152
		Bottom	0.783	-	0.783
		Front	0.895	0.057	0.952
		Rear	0.701	0.374	**1.075**
		Right	-	-	-
		Left	0.432	0.223	0.655
	WCDMA 1900	Top	0.000	0.152	0.152
		Bottom	0.597	0.000	0.597
		Front	0.626	0.057	0.683
		Rear	0.619	0.374	**0.994**
		Right	-	-	-
		Left	0.234	0.223	0.457
	LTE Band 12	Top	-	0.152	0.152
		Bottom	0.345	-	0.345
		Front	0.531	0.057	0.588
		Rear	0.583	0.374	**0.957**
		Right	0.184	-	0.184
		Left	0.174	0.223	0.397
	LTE Band 13	Top	-	0.152	0.152
		Bottom	0.304	-	0.304
		Front	0.488	0.057	0.545
		Rear	0.540	0.374	**0.915**
		Right	0.109	-	0.109
		Left	0.275	0.223	0.498
	LTE Band 5	Top	-	0.152	0.152
		Bottom	0.385	-	0.385
		Front	0.737	0.057	0.794
		Rear	0.862	0.374	**1.237**
		Right	0.129	-	0.129
		Left	0.403	0.223	0.626
	LTE Band 4	Top	-	0.152	0.152
		Bottom	0.648	-	0.648
		Front	0.889	0.057	0.946
		Rear	0.638	0.374	**1.012**
		Right	-	-	-
		Left	0.401	0.223	0.624
	LTE Band 2	Top	-	0.152	0.152
		Bottom	0.467	-	0.467
		Front	0.550	0.057	0.607
		Rear	0.499	0.374	**0.873**
		Right	-	-	-
		Left	0.171	0.223	0.394
	LTE Band 7	Top	-	0.152	0.152
		Bottom	0.687	-	0.687
		Front	0.630	0.057	0.687
		Rear	0.771	0.374	**1.145**
		Right	-	-	-
		Left	0.120	0.223	0.343
	LTE Band 41	Top	-	0.152	0.152
		Bottom	0.481	-	0.481
		Front	0.373	0.057	0.430
		Rear	0.544	0.374	**0.919**
		Right	-	-	-
		Left	0.094	0.223	0.317

Table 13.6.12 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	-	0.028	0.028
		Bottom	0.321	-	0.321
		Front	0.531	0.087	0.618
		Rear	0.613	0.091	**0.704**
		Right	0.093	-	0.093
		Left	0.286	0.111	0.396
	GPRS 1900	Top	-	0.028	0.028
		Bottom	0.279	-	0.279
		Front	0.303	0.087	0.390
		Rear	0.303	0.091	**0.394**
		Right	-	-	-
		Left	0.115	0.111	0.226
	WCDMA 850	Top	-	0.028	0.028
		Bottom	0.372	-	0.372
		Front	0.732	0.087	0.819
		Rear	0.894	0.091	**0.985**
		Right	0.129	-	0.129
		Left	0.361	0.111	0.472
	WCDMA 1700	Top	-	0.028	0.028
		Bottom	0.783	-	0.783
		Front	0.895	0.087	**0.982**
		Rear	0.701	0.091	0.792
		Right	-	-	-
		Left	0.432	0.111	0.543
	WCDMA 1900	Top	-	0.028	0.028
		Bottom	0.597	-	0.597
		Front	0.626	0.087	**0.713**
		Rear	0.619	0.091	0.710
		Right	-	-	-
		Left	0.234	0.111	0.345
	LTE Band 12	Top	-	0.028	0.028
		Bottom	0.345	-	0.345
		Front	0.531	0.087	0.618
		Rear	0.583	0.091	**0.673**
		Right	0.184	-	0.184
		Left	0.174	0.111	0.285
	LTE Band 13	Top	-	0.028	0.028
		Bottom	0.304	-	0.304
		Front	0.488	0.087	0.575
		Rear	0.540	0.091	**0.631**
		Right	0.109	-	0.109
		Left	0.275	0.111	0.386
	LTE Band 5	Top	-	0.028	0.028
		Bottom	0.385	-	0.385
		Front	0.737	0.087	0.824
		Rear	0.862	0.091	**0.953**
		Right	0.129	-	0.129
		Left	0.403	0.111	0.514
	LTE Band 4	Top	-	0.028	0.028
		Bottom	0.648	-	0.648
		Front	0.889	0.087	**0.976**
		Rear	0.638	0.091	0.728
		Right	-	-	-
		Left	0.401	0.111	0.512
	LTE Band 2	Top	-	0.028	0.028
		Bottom	0.467	-	0.467
		Front	0.550	0.087	**0.637**
		Rear	0.499	0.091	0.590
		Right	-	-	-
		Left	0.171	0.111	0.282
	LTE Band 7	Top	-	0.028	0.028
		Bottom	0.687	-	0.687
		Front	0.630	0.087	0.717
		Rear	0.771	0.091	**0.861**
		Right	-	-	-
		Left	0.120	0.111	0.231
	LTE Band 41	Top	-	0.028	0.028
		Bottom	0.481	-	0.481
		Front	0.373	0.087	0.460
		Rear	0.544	0.091	**0.635**
		Right	-	-	-
		Left	0.094	0.111	0.205

Table 13.6.13 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	0.039	0.083	0.122
		Bottom	-	-	-
		Front	0.111	0.064	0.175
		Rear	0.141	0.233	**0.374**
		Right	-	-	-
		Left	0.144	0.028	0.172
	5.8G W-LAN Ant.2	Top	0.039	0.115	0.154
		Bottom	-	-	-
		Front	0.111	0.032	0.143
		Rear	0.141	0.214	**0.355**
		Right	-	-	-
		Left	0.144	0.032	0.176

13.7 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.

13.8 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.

14. SAR MEASUREMENT VARIABILITY

14.1 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 14.1 Body-worn 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)	
1732.5	20175	LTE B4	-	-	10 mm [Front]	0.849	0.815	1.04	-	-	-	-
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure							Body 1.6 W/kg (mW/g) averaged over 1 gram					

Table 14.2 Hotspot SAR Measurement Variability Results

Frequency		Mode	Service	# of Time Slots	Spacing [Side]	Measured SAR (1g)	1st Repeated SAR(1g)	Ratio	2nd Repeated SAR(1g)	Ratio	3rd Repeated SAR(1g)	Ratio
MHz	Ch.					(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1732.5	20175	LTE B4	-	-	10 mm [Front]	0.849	0.815	1.04	-	-	-	-
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					

15. MEASUREMENT UNCERTAINTIES

750 MHz Head (SN: 3933)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.0	Normal	1	1	± 6.0 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 4.2	Normal	1	0.64	± 4.2 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 4.1	Normal	1	0.6	± 4.1 %	10
Temp. unc. - Conductivity	± 2.0	Rectangular	√3	0.78	± 1.2 %	∞
Temp. unc. - Permittivity	± 2.0	Rectangular	√3	0.23	± 1.2 %	∞
Combined Standard Uncertainty					**± 12 %**	330
Expanded Uncertainty (k=2)					**± 24 %**	

The above measurement uncertainties are according to IEEE Std 1528

750 MHz Body (SN: 3933)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.0	Normal	1	1	± 6.0 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 4.0	Normal	1	0.64	± 4.0 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 3.8	Normal	1	0.6	± 3.8 %	10
Temp. unc. - Conductivity	± 1.8	Rectangular	√3	0.78	± 1.0 %	∞
Temp. unc. - Permittivity	± 2.0	Rectangular	√3	0.23	± 1.2 %	∞
Combined Standard Uncertainty					**± 12 %**	330
Expanded Uncertainty (k=2)					**± 24 %**	

The above measurement uncertainties are according to IEEE Std 1528

835 MHz Head (SN: 3933)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.0	Normal	1	1	± 6.0 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 4.1	Normal	1	0.64	± 4.1 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 4.2	Normal	1	0.6	± 4.2 %	10
Temp. unc. - Conductivity	± 1.9	Rectangular	√3	0.78	± 1.1 %	∞
Temp. unc. - Permittivity	± 2.0	Rectangular	√3	0.23	± 1.2 %	∞
Combined Standard Uncertainty					**± 12 %**	330
Expanded Uncertainty (k=2)					**± 24 %**	

The above measurement uncertainties are according to IEEE Std 1528

835 MHz Body (SN: 3933)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.0	Normal	1	1	± 6.0 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 3.7	Normal	1	0.64	± 3.7 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 4.0	Normal	1	0.6	± 4.0 %	10
Temp. unc. - Conductivity	± 1.8	Rectangular	√3	0.78	± 1.0 %	∞
Temp. unc. - Permittivity	± 1.9	Rectangular	√3	0.23	± 1.1 %	∞
Combined Standard Uncertainty					**± 12 %**	330
Expanded Uncertainty (k=2)					**± 24 %**	

The above measurement uncertainties are according to IEEE Std 1528

1800 MHz Head (SN: 3933)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.0	Normal	1	1	± 6.0 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 4.0	Normal	1	0.64	± 4.0 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 3.9	Normal	1	0.6	± 3.9 %	10
Temp. unc. - Conductivity	± 2.0	Rectangular	√3	0.78	± 1.2 %	∞
Temp. unc. - Permittivity	± 2.0	Rectangular	√3	0.23	± 1.2 %	∞
Combined Standard Uncertainty					**± 12 %**	330
Expanded Uncertainty (k=2)					**± 24 %**	

The above measurement uncertainties are according to IEEE Std 1528

1800 MHz Body (SN: 3933)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.0	Normal	1	1	± 6.0 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 4.1	Normal	1	0.64	± 4.1 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 4.3	Normal	1	0.6	± 4.3 %	10
Temp. unc. - Conductivity	± 1.8	Rectangular	√3	0.78	± 1.0 %	∞
Temp. unc. - Permittivity	± 1.9	Rectangular	√3	0.23	± 1.1 %	∞
Combined Standard Uncertainty					**± 12 %**	330
Expanded Uncertainty (k=2)					**± 24 %**	

The above measurement uncertainties are according to IEEE Std 1528

1900 MHz Head (SN: 3933)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.0	Normal	1	1	± 6.0 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 4.0	Normal	1	0.64	± 4.0 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 4.2	Normal	1	0.6	± 4.2 %	10
Temp. unc. - Conductivity	± 1.7	Rectangular	√3	0.78	± 1.0 %	∞
Temp. unc. - Permittivity	± 1.8	Rectangular	√3	0.23	± 1.0 %	∞
Combined Standard Uncertainty					**± 12 %**	330
Expanded Uncertainty (k=2)					**± 24 %**	

The above measurement uncertainties are according to IEEE Std 1528

1900 MHz Body (SN: 3933)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.0	Normal	1	1	± 6.0 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 3.8	Normal	1	0.64	± 3.8 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 4.2	Normal	1	0.6	± 4.2 %	10
Temp. unc. - Conductivity	± 1.9	Rectangular	√3	0.78	± 1.1 %	∞
Temp. unc. - Permittivity	± 1.9	Rectangular	√3	0.23	± 1.1 %	∞
Combined Standard Uncertainty					**± 12 %**	330
Expanded Uncertainty (k=2)					**± 24 %**	

The above measurement uncertainties are according to IEEE Std 1528

2450 MHz Head (SN: 3930)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.0	Normal	1	1	± 6.0 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 4.0	Normal	1	0.64	± 4.0 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 3.9	Normal	1	0.6	± 3.9 %	10
Temp. unc. - Conductivity	± 1.9	Rectangular	√3	0.78	± 1.1 %	∞
Temp. unc. - Permittivity	± 1.9	Rectangular	√3	0.23	± 1.1 %	∞
Combined Standard Uncertainty					**± 12 %**	330
Expanded Uncertainty (k=2)					**± 24 %**	

The above measurement uncertainties are according to IEEE Std 1528

2450 MHz Body (SN: 3930)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.0	Normal	1	1	± 6.0 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 4.0	Normal	1	0.64	± 4.0 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 3.8	Normal	1	0.6	± 3.8 %	10
Temp. unc. - Conductivity	± 1.9	Rectangular	√3	0.78	± 1.1 %	∞
Temp. unc. - Permittivity	± 2.0	Rectangular	√3	0.23	± 1.2 %	∞
Combined Standard Uncertainty					**± 12 %**	330
Expanded Uncertainty (k=2)					**± 24 %**	

The above measurement uncertainties are according to IEEE Std 1528

2600 MHz Head (SN: 3933)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.0	Normal	1	1	± 6.0 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 3.9	Normal	1	0.64	± 3.9 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 4.3	Normal	1	0.6	± 4.3 %	10
Temp. unc. - Conductivity	± 1.8	Rectangular	√3	0.78	± 1.0 %	∞
Temp. unc. - Permittivity	± 1.8	Rectangular	√3	0.23	± 1.0 %	∞
Combined Standard Uncertainty					**± 12 %**	330
Expanded Uncertainty (k=2)					**± 24 %**	

The above measurement uncertainties are according to IEEE Std 1528

2600 MHz Body (SN: 3933)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.0	Normal	1	1	± 6.0 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 4.0	Normal	1	0.64	± 4.0 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 3.7	Normal	1	0.6	± 3.7 %	10
Temp. unc. - Conductivity	± 2.0	Rectangular	√3	0.78	± 1.2 %	∞
Temp. unc. - Permittivity	± 2.0	Rectangular	√3	0.23	± 1.2 %	∞
Combined Standard Uncertainty					**± 12 %**	330
Expanded Uncertainty (k=2)					**± 24 %**	

The above measurement uncertainties are according to IEEE Std 1528

5200 MHz Head (SN: 3930)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.55	Normal	1	1	± 6.6 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 4.1	Normal	1	0.64	± 4.1 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 3.9	Normal	1	0.6	± 3.9 %	10
Temp. unc. - Conductivity	± 1.9	Rectangular	√3	0.78	± 1.1 %	∞
Temp. unc. - Permittivity	± 1.9	Rectangular	√3	0.23	± 1.1 %	∞
Combined Standard Uncertainty					**± 13 %**	330
Expanded Uncertainty (k=2)					**± 26 %**	

The above measurement uncertainties are according to IEEE Std 1528

5200 MHz Body (SN: 3930)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.55	Normal	1	1	± 6.6 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 4.0	Normal	1	0.64	± 4.0 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 3.8	Normal	1	0.6	± 3.8 %	10
Temp. unc. - Conductivity	± 1.8	Rectangular	√3	0.78	± 1.0 %	∞
Temp. unc. - Permittivity	± 1.7	Rectangular	√3	0.23	± 1.0 %	∞
Combined Standard Uncertainty					**± 13 %**	330
Expanded Uncertainty (k=2)					**± 26 %**	

The above measurement uncertainties are according to IEEE Std 1528

5300 MHz Head (SN: 3930)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.55	Normal	1	1	± 6.6 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 3.7	Normal	1	0.64	± 3.7 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 4.0	Normal	1	0.6	± 4.0 %	10
Temp. unc. - Conductivity	± 1.7	Rectangular	√3	0.78	± 1.0 %	∞
Temp. unc. - Permittivity	± 1.8	Rectangular	√3	0.23	± 1.0 %	∞
Combined Standard Uncertainty					**± 13 %**	330
Expanded Uncertainty (k=2)					**± 26 %**	

The above measurement uncertainties are according to IEEE Std 1528

5300 MHz Body (SN: 3930)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.55	Normal	1	1	± 6.6 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 3.9	Normal	1	0.64	± 3.9 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 4.1	Normal	1	0.6	± 4.1 %	10
Temp. unc. - Conductivity	± 1.9	Rectangular	√3	0.78	± 1.1 %	∞
Temp. unc. - Permittivity	± 1.9	Rectangular	√3	0.23	± 1.1 %	∞
Combined Standard Uncertainty					**± 13 %**	330
Expanded Uncertainty (k=2)					**± 26 %**	

The above measurement uncertainties are according to IEEE Std 1528

5500 MHz Head (SN: 3930)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.55	Normal	1	1	± 6.6 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 4.1	Normal	1	0.64	± 4.1 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 3.9	Normal	1	0.6	± 3.9 %	10
Temp. unc. - Conductivity	± 1.8	Rectangular	√3	0.78	± 1.0 %	∞
Temp. unc. - Permittivity	± 1.9	Rectangular	√3	0.23	± 1.1 %	∞
Combined Standard Uncertainty					**± 13 %**	330
Expanded Uncertainty (k=2)					**± 26 %**	

The above measurement uncertainties are according to IEEE Std 1528

5500 MHz Body (SN: 3930)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.55	Normal	1	1	± 6.6 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 3.8	Normal	1	0.64	± 3.8 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 3.9	Normal	1	0.6	± 3.9 %	10
Temp. unc. - Conductivity	± 1.7	Rectangular	√3	0.78	± 1.0 %	∞
Temp. unc. - Permittivity	± 1.8	Rectangular	√3	0.23	± 1.0 %	∞
Combined Standard Uncertainty					**± 13 %**	330
Expanded Uncertainty (k=2)					**± 26 %**	

The above measurement uncertainties are according to IEEE Std 1528

5600 MHz Head (SN: 3930)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.55	Normal	1	1	± 6.6 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 3.9	Normal	1	0.64	± 3.9 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 4.2	Normal	1	0.6	± 4.2 %	10
Temp. unc. - Conductivity	± 2.0	Rectangular	√3	0.78	± 1.2 %	∞
Temp. unc. - Permittivity	± 1.9	Rectangular	√3	0.23	± 1.1 %	∞
Combined Standard Uncertainty					**± 13 %**	330
Expanded Uncertainty (k=2)					**± 26 %**	

The above measurement uncertainties are according to IEEE Std 1528

5600 MHz Body (SN: 3930)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.55	Normal	1	1	± 6.6 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 3.9	Normal	1	0.64	± 3.9 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 4.1	Normal	1	0.6	± 4.1 %	10
Temp. unc. - Conductivity	± 1.9	Rectangular	√3	0.78	± 1.1 %	∞
Temp. unc. - Permittivity	± 1.9	Rectangular	√3	0.23	± 1.1 %	∞
Combined Standard Uncertainty					**± 13 %**	330
Expanded Uncertainty (k=2)					**± 26 %**	

The above measurement uncertainties are according to IEEE Std 1528

5800 MHz Head (SN: 3930)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.55	Normal	1	1	± 6.6 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 4.1	Normal	1	0.64	± 4.1 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 3.8	Normal	1	0.6	± 3.8 %	10
Temp. unc. - Conductivity	± 1.8	Rectangular	√3	0.78	± 1.0 %	∞
Temp. unc. - Permittivity	± 1.8	Rectangular	√3	0.23	± 1.0 %	∞
Combined Standard Uncertainty					**± 13 %**	330
Expanded Uncertainty (k=2)					**± 26 %**	

The above measurement uncertainties are according to IEEE Std 1528

5800 MHz Body (SN: 3930)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1g	Standard (1g)	vi 2 or Veff
Measurement System						
Probe calibration	± 6.55	Normal	1	1	± 6.6 %	∞
Axial isotropy	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Hemispherical isotropy	± 9.6	Rectangular	√3	1	± 5.5 %	∞
Boundary Effects	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Probe Linearity	± 4.7	Rectangular	√3	1	± 2.7 %	∞
Probe modulation response	± 2.4	Rectangular	√3	1	± 1.4 %	∞
Detection limits	± 0.25	Rectangular	√3	1	± 0.14 %	∞
Readout Electronics	± 1.0	Normal	1	1	± 1.0 %	∞
Response time	± 0.8	Rectangular	√3	1	± 0.46 %	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5 %	∞
RF Ambient Conditions – Noise	± 3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Conditions – Reflections	± 3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.23 %	∞
Probe Positioning	± 2.9	Rectangular	√3	1	± 1.7 %	∞
Algorithms for Max. SAR Eval.	± 1.0	Rectangular	√3	1	± 0.58 %	∞
Test Sample Related						
Device Positioning	± 2.9	Normal	1	1	± 2.9 %	145
Device Holder	± 3.6	Normal	1	1	± 3.6 %	5
Power Drift	± 5.0	Rectangular	√3	1	± 2.9 %	∞
SAR Scaling	± 2.0	Rectangular	√3	1	± 1.2 %	∞
Physical Parameters						
Phantom Shell	± 4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid conductivity (Target)	± 5.0	Rectangular	√3	0.64	± 2.9 %	∞
Liquid conductivity (Meas.)	± 4.0	Normal	1	0.64	± 4.0 %	10
Liquid permittivity (Target)	± 5.0	Rectangular	√3	0.6	± 2.9 %	∞
Liquid permittivity (Meas.)	± 4.1	Normal	1	0.6	± 4.1 %	10
Temp. unc. - Conductivity	± 1.9	Rectangular	√3	0.78	± 1.1 %	∞
Temp. unc. - Permittivity	± 1.8	Rectangular	√3	0.23	± 1.0 %	∞
Combined Standard Uncertainty					**± 13 %**	330
Expanded Uncertainty (k=2)					**± 26 %**	

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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