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SAR EVALUATION REPORT

Applicant Name:
Samsung Electronics Co., Ltd.
129, Samsung-ro, Maetan dong,
Yeongtong-gu, Suwon-si
Gyeonggi-do, 16677, Korea

Date of Testing:
06/28/21 - 07/13/21
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
1M2106230070-01.A3L (Rev1)

FCC ID: **A3LSMF926JPN**

APPLICANT: **SAMSUNG ELECTRONICS CO., LTD.**

DUT Type: Portable Handset
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model: SC-55B, SCG11

Equipment Class	Band & Mode	Tx Frequency	SAR					
			1g Head (W/kg)	1g Body-Worn (W/kg)	1g Hotspot (W/kg)	10g Phablet (W/kg)	1g UMPC Body (W/kg)	10g UMPC Extremity (W/kg)
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.16	0.11	0.33	N/A	0.48	1.69
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	< 0.1	0.29	0.40	2.03	0.88	2.14
PCE	UMTS 850	826.40 - 846.60 MHz	0.16	0.19	0.42	N/A	0.53	1.44
PCE	LTE Band 12	699.7 - 715.3 MHz	0.19	0.22	0.51	N/A	0.50	1.42
PCE	LTE Band 13	779.5 - 784.5 MHz	0.17	0.23	0.39	N/A	0.62	1.31
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	0.19	0.18	0.38	N/A	0.59	1.21
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	0.10	0.58	0.51	1.36	0.85	2.02
PCE	LTE Band 41	2498.5 - 2687.5 MHz	< 0.1	0.15	0.45	1.65	0.57	1.74
DTS	2.4 GHz WLAN	2412 - 2472 MHz	< 0.1	< 0.1	0.20	N/A	0.29	0.98
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	N/A	N/A	N/A	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.22	< 0.1	N/A	1.01	0.31	1.39
NII	U-NII-2C	5500 - 5720 MHz	0.17	< 0.1	N/A	1.05	0.32	1.44
NII	U-NII-3	5745 - 5825 MHz	0.16	< 0.1	0.11	N/A	0.20	1.03
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.21	< 0.1	0.18	N/A	0.25	1.25
Simultaneous SAR per KDB 690783 D01v01r03:			1.13	0.64	1.10	3.62	1.59	3.99

Note: This revised Test Report supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.
This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE C95.1-1992 and has been tested in accordance with the measurement procedures specified in Section 1.9 of this report; for North American frequency bands only.

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

Randy Ortanez
President

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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
LTE Band 12	Voice/Data	699.7 - 715.3 MHz
LTE Band 13	Voice/Data	779.5 - 784.5 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2472 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
U-NII-5	Voice/Data	5935 - 6415 MHz
U-NII-6	Voice/Data	6435 - 6525 MHz
U-NII-7	Voice/Data	6535 - 6875 MHz
U-NII-8	Voice/Data	6895 - 7115 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
UWB	Data	6489.6 - 7987.2 MHz

1.2 Time-Averaging Algorithm for RF Exposure Compliance

This device is enabled with the Qualcomm® Smart Transmit feature. This feature performs time averaging algorithm in real time to control and manage transmitting power and ensure the time-averaged RF exposure is in compliance with FCC requirements all the time. **For this device, all US Operations are limited to peak exposure mode only.**

Note that WLAN operations are not enabled with Smart Transmit.

In Peak Exposure mode, the output power of the device is limited to the lower of the Pmax and the Plimit for each characterized technology and band (see RF Exposure Part 0 Test Report, report SN could be found in Section 1.11 - Bibliography).

Below table shows Plimit EFS settings and maximum tune up output power Pmax configured for this EUT for various transmit conditions (Device State Index DSI). Note that the device uncertainty for sub-6GHz WWAN is 1.0dB for this EUT.

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Exposure Scenario:		Body-Worn	Phablet	Body	Extremity	Grip Sensor Active		Head		Hotspot		Earjack		Maximum Tune-up Output Power*
Averaging Volume:		1g	10g	1g	10g	10g	1g, 10g	1g	1g	1g	1g	10g	10g	
Spacing:		15 mm	10, 12 mm	12, 10, 16 mm	12, 9, 16 mm	0 mm	10, 0 mm	0 mm	0 mm	10 mm	10 mm	0 mm	0 mm	
DSI:		11	11	0	0	2	1	4	3	6	5	8	7	
Configuration		Folder Closed		Folder Open		Folder Closed	Folder Open	Folder Closed	Folder Open	Folder Closed	Folder Open	Folder Closed	Folder Open	
Technology/Band	Antenna	Plimit corresponding to 1mW/g (SAR_design_target)												Pmax
GSM/GPRS/EDGE 850 MHz	A, A+B	30.5		29.9		29.6	27.8	32.3	32.3	30.9	27.8	29.6	27.8	25.3
GSM/GPRS/EDGE 1900 MHz	B	26.4		23.6		17.3	17.3	34.8	34.8	17.3	17.3	17.3	17.3	22.1
UMTS B5	A, A+B	28.4		29.3		28.4	28.2	32.7	32.7	29.6	28.2	28.4	28.2	24.8
LTE FDD B12	A, A+B	27.6		28.0		27.6	28.0	32.8	32.8	28.7	28.0	27.6	28.0	24.8
LTE FDD B13	A, A+B	28.1		28.8		28.1	27.9	33.5	33.5	29.7	27.9	28.1	27.9	24.8
LTE FDD B5	A, A+B	27.1		28.7		27.1	27.9	33.1	33.1	30.0	28.1	27.1	28.1	24.8
LTE FDD B4	B	27.8		25.9		18.0	18.0	35.3	35.3	18.0	18.0	18.0	18.0	24.5
LTE TDD B41	B	28.8		23.5		16.0	16.0	33.8	33.8	16.0	16.0	16.0	16.0	20.0

*Note all P_{limit} EFS and maximum tune up output power P_{max} levels entered in above Table correspond to average power levels after accounting for duty cycle in the case of TDD modulation schemes (for e.g., GSM & LTE TDD).
*Maximum tune up output power P_{max} is used to configure EUT during RF tune up procedure. The maximum allowed output power is equal to maximum Tune up output power + 1Db device design uncertainty.

The maximum time-averaged output power (dBm) for any 2G/3G/4G WWAN technology, band, and DSI = minimum of "P_{limit} EFS" and "Maximum tune up output power P_{max}" + 1Db device uncertainty. SAR values in this report were scaled to this maximum time-averaged output power to determine compliance per KDB Publication 447498 D01v06.

The purpose of this report (Part 1 test) is to demonstrate that the EUT meets FCC SAR limits when transmitting in static transmission scenario at maximum allowable time-averaged power levels.

Measurement Condition: All conducted power and SAR measurements in this report (Part 1 test) were performed by setting *Reserve_power_margin* (Smart Transmit EFS entry) to 0Db.

1.3 Power Reduction for SAR

This device uses an independent fixed level power reduction mechanism for WLAN/BT operations during voice or VoIP held to ear active scenarios. Per FCC Guidance, the held-to-ear exposure conditions were evaluated at reduced power according to the head SAR positions described in IEEE 1528-2013. Detailed descriptions of the power reduction mechanism are included in the operational description.

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1.4 Nominal and Maximum Output Power Specifications

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

1.4.1 2G/3G/4G Output Power

GSM/GPRS/EDGE 850										
Power Level		Voice (in dBm)	Data - Burst Average GMSK (in dBm)				Data - Burst Average 8-PSK (in dBm)			
		1 TX Slot	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
Pmax, DSI =0-8, 11	Max allowed power	33.5	33.5	32.5	30.5	28.5	28.0	26.0	24.0	23.0
	Nominal	32.5	32.5	31.5	29.5	27.5	27.0	25.0	23.0	22.0
GSM/GPRS/EDGE 1900										
Power Level		Voice (in dBm)	Data - Burst Average GMSK (in dBm)				Data - Burst Average 8-PSK (in dBm)			
		1 TX Slot	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
Pmax	Max allowed power	30.2	30.2	29.0	27.5	25.5	27.5	25.0	23.0	22.0
	Nominal	29.2	29.2	28.0	26.5	24.5	26.5	24.0	22.0	21.0
DSI = 0 (Folder Open - Max) DSI = 11 (Folder Closed - Max)	Max allowed power	30.2	30.2	29.0	27.5	25.5	27.5	25.0	23.0	22.0
	Nominal	29.2	29.2	28.0	26.5	24.5	26.5	24.0	22.0	21.0
DSI = 1 (Folder Open - Grip Sensor) DSI = 2 (Folder Closed - Grip Sensor)	Max allowed power	27.5	27.5	24.5	22.7	21.5	27.5	24.5	22.7	21.5
	Nominal	26.5	26.5	23.5	21.7	20.5	26.5	23.5	21.7	20.5
DSI = 3 (Folder Open - Head) DSI = 4 (Folder Closed- Head)	Max allowed power	30.2	30.2	29.0	27.5	25.5	27.5	25.0	23.0	22.0
	Nominal	29.2	29.2	28.0	26.5	24.5	26.5	24.0	22.0	21.0
DSI = 5 (Folder Open - Hotspot) DSI = 6 (Folder Closed - Hotspot)	Max allowed power	N/A	27.5	24.5	22.7	21.5	27.5	24.5	22.7	21.5
	Nominal	N/A	26.5	23.5	21.7	20.5	26.5	23.5	21.7	20.5
DSI = 7 (Folder Open - Earjack) DSI = 8 (Folder Closed - Earjack)	Max allowed power	27.5	27.5	24.5	22.7	21.5	27.5	24.5	22.7	21.5
	Nominal	26.5	26.5	23.5	21.7	20.5	26.5	23.5	21.7	20.5

For GSM, the above powers listed are GSM burst average values.

UMTS Band 5 (850 MHz)				
Power Level		Modulated Average Output Power (in dBm)		
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6
Pmax, DSI=0-8, 11	Max allowed power	25.8	24.8	24.8
	Nominal	24.8	23.8	23.8

Mode / Band		Modulated Average Output Power (in dBm)										
		Pmax	DSI = 0 (Folder Open - Max)	DSI = 11 (Folder Closed - Max)	DSI = 1 (Folder Open - Grip Sensor Active)	DSI = 2 (Folder Closed - Grip Sensor Active)	DSI = 3 (Folder Open - Head)	DSI = 4 (Folder Closed - Head)	DSI = 5 (Folder Open - Hotspot)	DSI = 6 (Folder Closed - Hotspot)	DSI = 7 (Folder Open - Earjack)	DSI = 8 (Folder Closed - Earjack)
LTE FDD Band 12	Max allowed	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8
	Nominal	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8
LTE FDD Band 13	Max allowed	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8
	Nominal	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8
LTE FDD Band 5	Max allowed	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8
	Nominal	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8
LTE FDD Band 4	Max allowed	25.5	25.5	25.5	19.0	19.0	25.5	25.5	19.0	19.0	19.0	19.0
	Nominal	24.5	24.5	24.5	18.0	18.0	24.5	24.5	18.0	18.0	18.0	18.0
LTE TDD Band 41	Max allowed	23.0	23.0	23.0	19.0	19.0	23.0	23.0	19.0	19.0	19.0	19.0
	Nominal	22.0	22.0	22.0	18.0	18.0	22.0	22.0	18.0	18.0	18.0	18.0

For LTE TDD, the above powers listed are TDD burst average values.

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1.4.2 2.4 GHz Maximum Bluetooth and SISO/MIMO WLAN Output Power

Note: Targets for 802.11ax RU operations can be found in Appendix I

Mode	Band	IEEE 802.11 (in dBm)															
		SISO Antenna 1 & Antenna 2								MIMO							
		b		g		n		ax (SU)		b (CDD + STBC)		g (CDD + STBC)		n (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
2.4 GHz WIFI	2.45 GHz	18.0 Ch. 12: 5.0 Ch. 13: -1.0	19.0 Ch. 12: 6.0 Ch. 13: 0.0	17.0 Ch. 12: 5.0 Ch. 13: -1.0	18.0 Ch. 12: 6.0 Ch. 13: 0.0	17.0 Ch. 11: 15.5 Ch. 12: 5.0 Ch. 13: -1.0	18.0 Ch. 11: 16.5 Ch. 12: 6.0 Ch. 13: 0.0	17.0 Ch. 11: 15.5 Ch. 12: 5.0 Ch. 13: -1.0	18.0 Ch. 11: 16.5 Ch. 12: 6.0 Ch. 13: 0.0	21.0 Ch. 12: 8.0 Ch. 13: 2.0	22.0 Ch. 12: 9.0 Ch. 13: 3.0	20.0 Ch. 12: 8.0 Ch. 13: 2.0	21.0 Ch. 12: 9.0 Ch. 13: 3.0	20.0 Ch. 11: 18.5 Ch. 12: 8.0 Ch. 13: 2.0	21.0 Ch. 11: 19.5 Ch. 12: 9.0 Ch. 13: 3.0	20.0 Ch. 11: 18.5 Ch. 12: 8.0 Ch. 13: 2.0	21.0 Ch. 11: 19.5 Ch. 12: 9.0 Ch. 13: 3.0

(Upper tolerance: target + 1.0 dB)

Mode	Single Antenna Antenna 1 & Antenna 2	
	Nominal	Maximum
Bluetooth (in dBm)	16.5	17.5
Bluetooth EDR (in dBm)	13.5	14.5
Bluetooth LE 2Mbps (in dBm)	6.0	7.0
Bluetooth LE 1Mbps, 125/500 kbps (in dBm)	6.0	7.0

(Upper tolerance: target + 1.0 dB)

1.4.3 2.4 GHz Reduced Bluetooth and SISO/MIMO WLAN Output Power

Note: Targets for 802.11ax RU operations can be found in Appendix I

The below table is applicable in the following conditions:

- Simultaneous conditions with 5/6 GHz WLAN

Mode	Band	IEEE 802.11 (in dBm)															
		SISO Antenna 1 & Antenna 2								MIMO							
		b		g		n		ax (SU)		b (CDD + STBC)		g (CDD + STBC)		n (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
2.4 GHz WIFI	2.45 GHz	14.0 Ch. 12: 5.0 Ch. 13: -1.0	15.0 Ch. 12: 6.0 Ch. 13: 0.0	14.0 Ch. 12: 5.0 Ch. 13: -1.0	15.0 Ch. 12: 6.0 Ch. 13: 0.0	14.0 Ch. 12: 5.0 Ch. 13: -1.0	15.0 Ch. 12: 6.0 Ch. 13: 0.0	14.0 Ch. 12: 5.0 Ch. 13: -1.0	15.0 Ch. 12: 6.0 Ch. 13: 0.0	17.0 Ch. 12: 8.0 Ch. 13: 2.0	18.0 Ch. 12: 9.0 Ch. 13: 3.0	17.0 Ch. 12: 8.0 Ch. 13: 2.0	18.0 Ch. 12: 9.0 Ch. 13: 3.0	17.0 Ch. 12: 8.0 Ch. 13: 2.0	18.0 Ch. 12: 9.0 Ch. 13: 3.0	17.0 Ch. 12: 8.0 Ch. 13: 2.0	18.0 Ch. 12: 9.0 Ch. 13: 3.0

(Upper tolerance: target + 1.0 dB)

The below table is applicable in the following conditions:

- RCV Active
- RCV Active during simultaneous conditions with 5/6 GHz WLAN

Mode	Band	IEEE 802.11 (in dBm)								IEEE 802.11 (in dBm)							
		SISO Antenna 1 & Antenna 2								MIMO							
		b		g		n		ax (SU)		b (CDD + STBC)		g (CDD + STBC)		n (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
2.4 GHz WIFI	2.45 GHz	12.0 Ch. 12: 5.0 Ch. 13: -1.0	13.0 Ch. 12: 6.0 Ch. 13: 0.0	12.0 Ch. 12: 5.0 Ch. 13: -1.0	13.0 Ch. 12: 6.0 Ch. 13: 0.0	12.0 Ch. 12: 5.0 Ch. 13: -1.0	13.0 Ch. 12: 6.0 Ch. 13: 0.0	12.0 Ch. 12: 5.0 Ch. 13: -1.0	13.0 Ch. 12: 6.0 Ch. 13: 0.0	15.0 Ch. 12: 8.0 Ch. 13: 2.0	16.0 Ch. 12: 9.0 Ch. 13: 3.0	15.0 Ch. 12: 8.0 Ch. 13: 2.0	16.0 Ch. 12: 9.0 Ch. 13: 3.0	15.0 Ch. 12: 8.0 Ch. 13: 2.0	16.0 Ch. 12: 9.0 Ch. 13: 3.0	15.0 Ch. 12: 8.0 Ch. 13: 2.0	16.0 Ch. 12: 9.0 Ch. 13: 3.0

(Upper tolerance: target + 1.0 dB)

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The below table is applicable in the following conditions:

- RCV active

Mode	Single Antenna	
	Antenna 1 & Antenna 2	
	Nominal	Maximum
Bluetooth (in dBm)	9.5	10.5
Bluetooth EDR (in dBm)	9.5	10.5
Bluetooth LE 2Mbps (in dBm)	6.0	7.0
Bluetooth LE 1Mbps, 125/500 kbps (in dBm)	6.0	7.0

(Upper tolerance: target + 1.0 dB)

The below table is applicable in the following conditions:

- Simultaneous conditions with 5/6 GHz WLAN

Mode	Single Antenna	
	Antenna 1 & Antenna 2	
	Nominal	Maximum
Bluetooth (in dBm)	11.0	12.0
Bluetooth EDR (in dBm)	11.0	12.0
Bluetooth LE 2Mbps (in dBm)	6.0	7.0
Bluetooth LE 1Mbps, 125/500 kbps (in dBm)	6.0	7.0

(Upper tolerance: target + 1.0 dB)

1.4.4 5 GHz Maximum SISO/MIMO WLAN Output Power

Note: Targets for 802.11ax RU operations can be found in Appendix I

Mode	Band	IEEE 802.11 (in dBm)															
		SISO Antenna 1 & Antenna 2								MIMO							
		a		n		ac		ax (SU)		a (CDD + STBC)		n (CDD + STBC, SDM)		ac (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
5 GHz WIFI (20MHz BW)	5200 MHz	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0	20.0	21.0	20.0	21.0	20.0	21.0	20.0	21.0
	5300 MHz	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0	20.0	21.0	20.0	21.0	20.0	21.0	20.0	21.0
	5500 MHz	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0	20.0	21.0	20.0	21.0	20.0	21.0	20.0	21.0
	5800 MHz	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0	20.0	21.0	20.0	21.0	20.0	21.0	20.0	21.0
5 GHz WIFI (40MHz BW)	5200 MHz			16.0	17.0	16.0	17.0	16.0	17.0			19.0	20.0	19.0	20.0	19.0	20.0
	5300 MHz			16.0	17.0	16.0	17.0	16.0	17.0			19.0	20.0	19.0	20.0	19.0	20.0
	5500 MHz			16.0	17.0	16.0	17.0	16.0	17.0			19.0	20.0	19.0	20.0	19.0	20.0
	5800 MHz			16.0	17.0	16.0	17.0	16.0	17.0			19.0	20.0	19.0	20.0	19.0	20.0
5 GHz WIFI (80MHz BW)	5200 MHz					15.0	16.0	15.0	16.0					18.0	19.0	18.0	19.0
	5300 MHz					15.0	16.0	15.0	16.0					18.0	19.0	18.0	19.0
	5500 MHz					15.0	16.0	15.0	16.0					18.0	19.0	18.0	19.0
	5800 MHz					15.0	16.0	15.0	16.0					18.0	19.0	18.0	19.0
5 GHz WIFI (160MHz BW)	5250 MHz					14.0	15.0	14.0	15.0					17.0	18.0	17.0	18.0
	5570 MHz					14.0	15.0	14.0	15.0					17.0	18.0	17.0	18.0

(Upper tolerance: target + 1.0 dB)

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1.4.5 5 GHz Reduced WLAN Output Power

Note: Targets for 802.11ax RU operations can be found in Appendix I

The below table is applicable in the following conditions:

- Simultaneous conditions with 2.4 GHz WLAN

Mode	Band	IEEE 802.11 (in dBm)															
		SISO Antenna 1 & Antenna 2								MIMO							
		a		n		ac		ax (SU)		a (CDD + STBC)		n (CDD + STBC, SDM)		ac (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
5 GHz WIFI (20MHz BW)	5200 MHz	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0
	5300 MHz	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0
	5500 MHz	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0
	5800 MHz	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0
5 GHz WIFI (40MHz BW)	5200 MHz			14.0	15.0	14.0	15.0	14.0	15.0			17.0	18.0	17.0	18.0	17.0	18.0
	5300 MHz			14.0	15.0	14.0	15.0	14.0	15.0			17.0	18.0	17.0	18.0	17.0	18.0
	5500 MHz			14.0	15.0	14.0	15.0	14.0	15.0			17.0	18.0	17.0	18.0	17.0	18.0
	5800 MHz			14.0	15.0	14.0	15.0	14.0	15.0			17.0	18.0	17.0	18.0	17.0	18.0
5 GHz WIFI (80MHz BW)	5200 MHz					14.0	15.0	14.0	15.0					17.0	18.0	17.0	18.0
	5300 MHz					14.0	15.0	14.0	15.0					17.0	18.0	17.0	18.0
	5500 MHz					14.0	15.0	14.0	15.0					17.0	18.0	17.0	18.0
	5800 MHz					14.0	15.0	14.0	15.0					17.0	18.0	17.0	18.0
5 GHz WIFI (160MHz BW)	5250 MHz					14.0	15.0	14.0	15.0					17.0	18.0	17.0	18.0
	5570 MHz					14.0	15.0	14.0	15.0					17.0	18.0	17.0	18.0

(Upper tolerance: target + 1.0 dB)

The below table is applicable in the following conditions:

- RCV Active
- RCV Active during simultaneous conditions with 2.4 GHz WLAN

Mode	Band	IEEE 802.11 (in dBm)															
		SISO Antenna 1 & Antenna 2								MIMO							
		a		n		ac		ax (SU)		a (CDD + STBC)		n (CDD + STBC, SDM)		ac (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
5 GHz WIFI (20MHz BW)	5200 MHz	11.0	12.0	11.0	12.0	11.0	12.0	11.0	12.0	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0
	5300 MHz	11.0	12.0	11.0	12.0	11.0	12.0	11.0	12.0	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0
	5500 MHz	11.0	12.0	11.0	12.0	11.0	12.0	11.0	12.0	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0
	5800 MHz	11.0	12.0	11.0	12.0	11.0	12.0	11.0	12.0	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0
5 GHz WIFI (40MHz BW)	5200 MHz			11.0	12.0	11.0	12.0	11.0	12.0			14.0	15.0	14.0	15.0	14.0	15.0
	5300 MHz			11.0	12.0	11.0	12.0	11.0	12.0			14.0	15.0	14.0	15.0	14.0	15.0
	5500 MHz			11.0	12.0	11.0	12.0	11.0	12.0			14.0	15.0	14.0	15.0	14.0	15.0
	5800 MHz			11.0	12.0	11.0	12.0	11.0	12.0			14.0	15.0	14.0	15.0	14.0	15.0
5 GHz WIFI (80MHz BW)	5200 MHz					11.0	12.0	11.0	12.0					14.0	15.0	14.0	15.0
	5300 MHz					11.0	12.0	11.0	12.0					14.0	15.0	14.0	15.0
	5500 MHz					11.0	12.0	11.0	12.0					14.0	15.0	14.0	15.0
	5800 MHz					11.0	12.0	11.0	12.0					14.0	15.0	14.0	15.0
5 GHz WIFI (160MHz BW)	5250 MHz					11.0	12.0	11.0	12.0					14.0	15.0	14.0	15.0
	5570 MHz					11.0	12.0	11.0	12.0					14.0	15.0	14.0	15.0

(Upper tolerance: target + 1.0 dB)

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1.5 DUT Antenna Locations

The overall dimensions of this device are > 9 x 5 cm. A diagram showing the location of the device antennas can be found in Appendix E. This device is considered a “phablet” when it is in closed configuration and a “UMPC mini-tablet” when it is in open configuration. Exact antenna dimensions and separation distances are shown in the Technical Descriptions in the FCC filing

Table 1-1
Device Edges/Sides for Closed Configuration SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
GPRS 850 Ant A	Yes	Yes	No	Yes	Yes	No
GPRS 850 Ant A + B	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	Yes	Yes
UMTS 850 Ant A	Yes	Yes	No	Yes	Yes	No
UMTS 850 Ant A + B	Yes	Yes	No	Yes	Yes	Yes
LTE Band 12 Ant A + B	Yes	Yes	No	Yes	Yes	Yes
LTE Band 12 Ant A	Yes	Yes	No	Yes	Yes	No
LTE Band 13 Ant A + B	Yes	Yes	No	Yes	Yes	Yes
LTE Band 13 Ant A	Yes	Yes	No	Yes	Yes	No
LTE Band 5 (Cell) Ant A	Yes	Yes	No	Yes	Yes	No
LTE Band 5 (Cell) Ant A + B	Yes	Yes	No	Yes	Yes	Yes
LTE Band 4 (AWS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 41	Yes	Yes	No	Yes	Yes	Yes
2.4 GHz WLAN Ant 2	Yes	Yes	No	Yes	No	Yes
2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	No	Yes
5 GHz WLAN Ant 1	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	No	Yes
2.4 GHz Bluetooth Ant 1	Yes	Yes	Yes	No	No	Yes
2.4 GHz Bluetooth Ant 2	Yes	Yes	No	Yes	No	Yes

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Table 1-2
Device Edges/Sides for Open Configuration SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
GPRS 850 Ant A + B	Yes	Yes	No	Yes	Yes	No
GPRS 1900	Yes	Yes	No	Yes	Yes	No
UMTS 850 Ant A + B	Yes	Yes	No	Yes	Yes	No
LTE Band 12 Ant A + B	Yes	Yes	No	Yes	Yes	No
LTE Band 13 Ant A + B	Yes	Yes	No	Yes	Yes	No
LTE Band 5 (Cell) Ant A + B	Yes	Yes	No	Yes	Yes	No
LTE Band 4 (AWS)	Yes	Yes	No	Yes	Yes	No
LTE Band 41	Yes	Yes	No	Yes	Yes	No
2.4 GHz WLAN Ant 2	Yes	Yes	No	Yes	No	No
2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	No	No
5 GHz WLAN Ant 1	Yes	Yes	Yes	No	No	No
5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	No	No
2.4 GHz Bluetooth Ant 1	Yes	Yes	Yes	No	No	No
2.4 GHz Bluetooth Ant 2	Yes	Yes	No	Yes	No	No

Note: Particular DUT edges were not required to be evaluated for wireless router SAR, phablet SAR or UMPC mini-tablet SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v02r01 Section III, FCC KDB Publication 941225 D07v01r02 and FCC KDB Publication 648474 D04v01r03. The distances between the transmit antennas and the edges of the device are included in the filing. When wireless router mode is enabled, U-NII-1, U-NII-2A, U-NII-2C operations are disabled.

1.6 Near Field Communications (NFC) Antenna

This DUT has NFC operations. The NFC antenna is integrated into the device for this model. Therefore, all SAR tests were performed with the device which already incorporates the NFC antenna. A diagram showing the location of the NFC antenna can be found in Appendix E.

1.7 Simultaneous Transmission Capabilities

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

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

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Table 1-3
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Phablet	UMPC Body	UMPC Extremity	Notes
1	GSM voice + 2.4 GHz WLAN MIMO	Yes	Yes	N/A	Yes	Yes	Yes	
2	GSM voice + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	Yes	Yes	
3	GSM voice + 2.4 GHz WLAN MIMO + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	Yes	Yes	
4	GSM voice + 2.4 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
5	GSM voice + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
6	GSM voice + 2.4 GHz WLAN Ant 2 + 6 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
7	GSM voice + 5 GHz WLAN Ant 1	Yes	Yes	N/A	Yes	Yes	Yes	
8	GSM voice + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	Yes	Yes	
9	GSM voice + 5 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
10	GSM voice + 5 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
11	GSM voice + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	Yes	Yes	
12	GSM voice + 6 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
13	GSM voice + 6 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
14	GSM voice + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
15	GSM voice + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
16	UMTS + 2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	Yes	Yes	
17	UMTS + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	Yes	Yes	
18	UMTS + 2.4 GHz WLAN MIMO + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	Yes	Yes	
19	UMTS + 2.4 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
20	UMTS + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
21	UMTS + 2.4 GHz WLAN Ant 2 + 6 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
22	UMTS + 5 GHz WLAN Ant 1	Yes	Yes	Yes	Yes	Yes	Yes	
23	UMTS + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	Yes	Yes	
24	UMTS + 5 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
25	UMTS + 5 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
26	UMTS + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	Yes	Yes	
27	UMTS + 6 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
28	UMTS + 6 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
29	UMTS + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
30	UMTS + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
31	LTE + 2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	Yes	Yes	
32	LTE + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	Yes	Yes	
33	LTE + 2.4 GHz WLAN MIMO + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	Yes	Yes	
34	LTE + 2.4 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
35	LTE + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
36	LTE + 2.4 GHz WLAN Ant 2 + 6 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
37	LTE + 5 GHz WLAN Ant 1	Yes	Yes	Yes	Yes	Yes	Yes	
38	LTE + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	Yes	Yes	
39	LTE + 5 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
40	LTE + 5 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
41	LTE + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	Yes	Yes	
42	LTE + 6 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
43	LTE + 6 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
44	LTE + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
45	LTE + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
46	GPRS/EDGE + 2.4 GHz WLAN MIMO	N/A	N/A	Yes	Yes	Yes	Yes	
47	GPRS/EDGE + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	N/A	N/A	Yes	Yes	Yes	Yes	
48	GPRS/EDGE + 2.4 GHz WLAN MIMO + 6 GHz WLAN MIMO	N/A	N/A	N/A	Yes	Yes	Yes	
49	GPRS/EDGE + 2.4 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	N/A	N/A	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
50	GPRS/EDGE + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 1	N/A	N/A	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
51	GPRS/EDGE + 2.4 GHz WLAN Ant 2 + 6 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 1	N/A	N/A	N/A	Yes	Yes	Yes	
52	GPRS/EDGE + 5 GHz WLAN Ant 1	N/A	N/A	Yes	Yes	Yes	Yes	
53	GPRS/EDGE + 5 GHz WLAN MIMO	N/A	N/A	Yes	Yes	Yes	Yes	
54	GPRS/EDGE + 5 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 1	N/A	N/A	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
55	GPRS/EDGE + 5 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 2	N/A	N/A	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
56	GPRS/EDGE + 6 GHz WLAN MIMO	N/A	N/A	N/A	Yes	Yes	Yes	
57	GPRS/EDGE + 6 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 1	N/A	N/A	N/A	Yes	Yes	Yes	
58	GPRS/EDGE + 6 GHz WLAN MIMO + 2.4 GHz Bluetooth Ant 2	N/A	N/A	N/A	Yes	Yes	Yes	
59	GPRS/EDGE + 2.4 GHz Bluetooth Ant 1	N/A	N/A	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
60	GPRS/EDGE + 2.4 GHz Bluetooth Ant 2	N/A	N/A	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered

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1. 2.4 GHz WLAN ant 1, and 2.4 GHz Bluetooth 1 share the same antenna path and cannot transmit simultaneously.
2. 5 GHz WLAN and 6 GHz WLAN share the same antenna path and cannot transmit simultaneously.
3. All licensed modes share the same antenna path and cannot transmit simultaneously.
4. 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.
5. Per the manufacturer, WIFI Direct is not expected to be used in conjunction with a held-to-ear or body-worn accessory voice call. Therefore, there are no simultaneous transmission scenarios involving WIFI direct beyond that listed in the above table.
6. 5 GHz Wireless Router is only supported for the U-NII-3 by S/W, therefore U-NII-1, U-NII-2A, and U-NII-2C were not evaluated for wireless router conditions.
7. 6 GHz Wireless Router is not supported, therefore it was not evaluated for wireless router conditions.
8. This device supports 2x2 MIMO Tx for WLAN 802.11a/g/n/ac/ax. 802.11a/g/n/ac/ax supports CDD and STBC and 802.11n/ac/ax additionally supports SDM.
9. This device supports VOLTE.
10. This device supports VOWIFI.
11. This device supports Bluetooth Tethering.

1.8 Miscellaneous SAR Test Considerations

(A) WIFI/BT

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

This device supports channel 1-13 for 2.4 GHZ WLAN. However, because channel 12/13 targets are not higher than that of channels 1-11, default channels for SAR testing are determined per FCC KDB 248227 D01v02r02.

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

This device supports 6 GHz WIFI Operations. RF Exposure assessment for these bands can be found in the WIFI6E RF Exposure Report (report SN can be found in Section 1.11 – Bibliography). Simultaneous transmission analysis is addressed in section 12 of this report.

This device supports IEEE 802.11ax with the following features:

a) Up to 160 MHz Bandwidth only for 5/6 GHz
b) Up to 20 MHz Bandwidth only for 2.4 GHz
c) No aggregate channel configurations
d) 2 Tx antenna output
e) Up to 1024 QAM is supported
f) TDWR and Band gap channels are supported for 5/6 GHz
g) MU-MIMO UL Operations are not supported

Per FCC KDB Publication 648474 D04v01r03, this device is considered a “phablet” when it is in a closed configuration since the diagonal dimension is greater than 160mm and less than 200mm. Phablet SAR tests

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are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Because wireless router operations are not supported for U-NII-1, U-NII-2A & U-NII-2C WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for 2.4 GHz WLAN, 2.4 GHz Bluetooth, and U-NII-3 WLAN operations since wireless router 1g SAR was < 1.2 W/kg.

Per April 2019 TCB Workshop Notes, SAR testing was not required for 802.11ax when applying the initial test configuration procedures of KDB 248227, with 802.11ax considered a higher order 802.11 mode.

(B) 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/EDGE Data.

This device is only capable of QPSK HSUPA in the uplink. Therefore, no additional SAR tests are required beyond that described for devices with HSUPA in KDB 941225 D01v03r01.

LTE SAR for the higher modulations and lower bandwidths were not tested since the maximum average output power of all required channels and configurations was not more than 0.5 Db higher than the highest bandwidth; and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05v02r04.

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

Per FCC KDB Publication 648474 D04v01r03, this device is considered a “phablet” when it is closed configuration since the diagonal dimension is greater than 160mm and less than 200mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg.

This device supports downlink 4x4 MIMO operations for some LTE Bands. Per May 2017 TCB Workshop Notes, SAR for 4x4 DL MIMO was not needed since the maximum average output power in 4x4 DL MIMO mode was not more than 0.25 Db higher than the maximum output power with 4x4 DL MIMO inactive. Additionally, SAR for 4x4 MIMO Downlink Carrier Aggregation was not needed since the maximum average output power in 4x4 MIMO Downlink Carrier Aggregation mode was not more than 0.25 Db higher than the maximum output power with 4x4 MIMO Downlink and downlink carrier aggregation inactive.

This device supports LTE Carrier Aggregation (CA) for LTE Band 41 with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per 2017 Fall TCB Workshop Notes.

For 2G/3G/4G bands operating < 1 GHz, this device can transmit with Ant A or with Ant A+ Ant B. The RF path for both conditions is identical, therefore separate conducted powers are not required for these conditions. For closed phablet test conditions, both Ant A and Ant A + Ant B conditions were fully evaluated for all exposure conditions. For open UMPC Body or UMPC Extremity conditions, only Ant A + Ant B conditions are supported as described in the operational description.

1.9 Guidance Applied

- IEEE 1528-2013
- FCC KDB Publication 941225 D01v03r01, D05v02r04, D05Av01r02, D06v02r01 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v06 (General SAR Guidance)

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- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D04v01r03 (Phablet Procedures)
- FCC KDB Publication 616217 D04v01r02 (Tablet, Proximity Sensor)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)
- May 2017 TCB Workshop Notes (LTE 4x4 Downlink MIMO)
- April 2019 TCB Workshop Notes (IEEE 802.11ax, Dynamic Antenna Tuning)
- FCC KDB Publication 941225 D07v01r02 (UMPC Mini-Tablet Devices)

1.10 Device Serial Numbers

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

1.11 Bibliography

Report Type	Report Serial Number
WIFI 6GHz RF exposure	1M2106230070-21.A3L
RF Exposure Part 0 Test Report	1M2106230070-23.A3L

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2 LTE AND NR INFORMATION

LTE Information					
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 12 (699.7 - 715.3 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 41 (2498.5 - 2687.5 MHz)				
Channel Bandwidths	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 13: 5 MHz, 10 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 12: 1.4 MHz	699.7 (23017)		707.5 (23095)	715.3 (23173)	
LTE Band 12: 3 MHz	700.5 (23025)		707.5 (23095)	714.5 (23165)	
LTE Band 12: 5 MHz	701.5 (23035)		707.5 (23095)	713.5 (23155)	
LTE Band 12: 10 MHz	704 (23060)		707.5 (23095)	711 (23130)	
LTE Band 13: 5 MHz	779.5 (23205)		782 (23230)	784.5 (23255)	
LTE Band 13: 10 MHz	N/A		782 (23230)	N/A	
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)		836.5 (20525)	848.3 (20643)	
LTE Band 5 (Cell): 3 MHz	825.5 (20415)		836.5 (20525)	847.5 (20635)	
LTE Band 5 (Cell): 5 MHz	826.5 (20425)		836.5 (20525)	846.5 (20625)	
LTE Band 5 (Cell): 10 MHz	829 (20450)		836.5 (20525)	844 (20600)	
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)		1732.5 (20175)	1754.3 (20393)	
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)		1732.5 (20175)	1753.5 (20385)	
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)		1732.5 (20175)	1752.5 (20375)	
LTE Band 4 (AWS): 10 MHz	1715 (20000)		1732.5 (20175)	1750 (20350)	
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)		1732.5 (20175)	1747.5 (20325)	
LTE Band 4 (AWS): 20 MHz	1720 (20050)		1732.5 (20175)	1745 (20300)	
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	DL UE Cat 20, UL UE Cat 13				
Modulations Supported in UL	QPSK, 16QAM, 64QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	YES				
A-MPR (Additional MPR) disabled for SAR Testing?	YES				
LTE Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations				
LTE Additional Information	This device does not support full CA features on 3GPP Release 15. It supports carrier aggreagtion, dowlink MIMO as shown in section 9 and appendix F. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. The following LTE Release 15 Features are not supported: Relay, HetNet, Enhanced MIMO, eICIC, eMBMS, Cross-Carrier Scheduling, WIFI Offloading, Enhanced SC-FDMA.				

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3 INTRODUCTION

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

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

3.1 SAR Definition

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

Equation 3-1
SAR Mathematical Equation

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

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

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

where:

σ = conductivity of the tissue-simulating material (S/m)
ρ = mass density of the tissue-simulating material (kg/m^3)
E = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relation to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.[6]

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4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

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

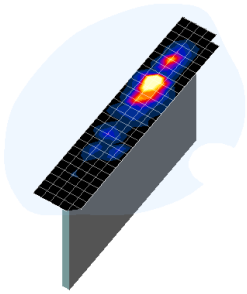

Figure 4-1
Sample SAR Area Scan

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

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

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

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

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

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

*Also compliant to IEEE 1528-2013 Table 6

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5 DEFINITION OF REFERENCE POINTS

5.1 EAR REFERENCE POINT

Figure 5-2 shows the front, back and side views of the SAM Twin Phantom. The point "M" is the reference point for the center of the mouth, "LE" is the left ear reference point (ERP), and "RE" is the right ERP. The ERP is 15mm posterior to the entrance to the ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 5-1. The plane passing through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck-Front), also called the Reference Pivoting Line, is not perpendicular to the reference plane (see Figure 5-1). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning [5].

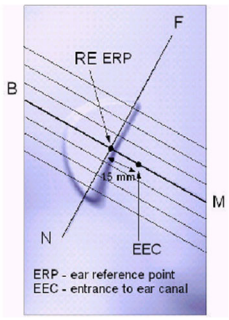

Figure 5-1
Close-Up Side view of ERP

5.2 HANDSET REFERENCE POINTS

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The test device was placed in a normal operating position with the acoustic output located along the "vertical centerline" on the front of the device aligned to the "ear reference point" (See Figure 5-3). The acoustic output was 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 its top and bottom edges, positioning the "ear reference point" on the outer surface of the both the left and right head phantoms on the ear reference point.

Figure 5-2
Front, back and side view of SAM Twin Phantom

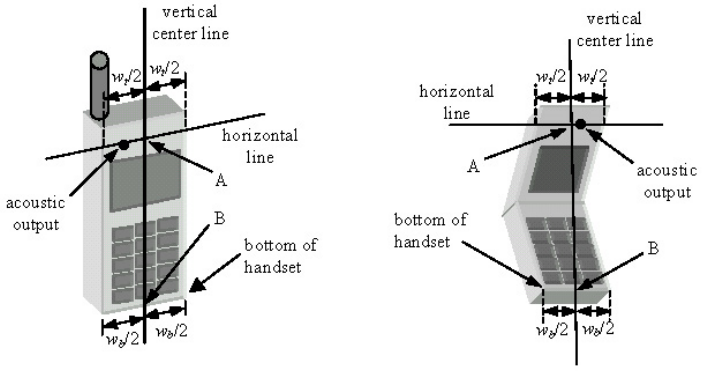

Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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6 TEST CONFIGURATION POSITIONS

6.1 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.

6.2 Positioning for Cheek

1. The test device was positioned with the device close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 6-1), such that the plane defined by the vertical center line and the horizontal line of the phone is approximately parallel to the sagittal plane of the phantom.

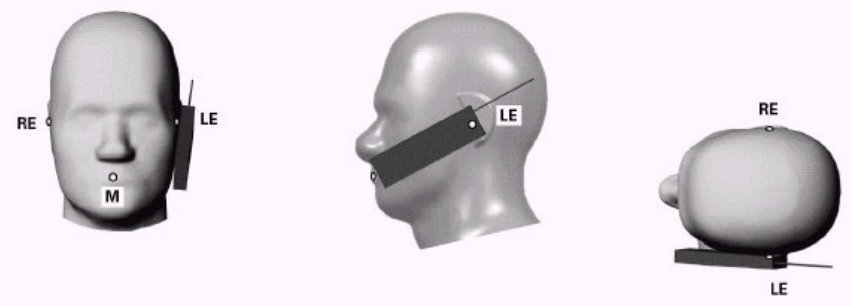

Figure 6-1 Front, Side and Top View of Cheek Position

2. The handset was translated towards the phantom along the line passing through RE & LE until the handset touches the pinna.
3. While maintaining the handset in this plane, the handset was rotated around the LE-RE line until the vertical centerline was in the reference plane.
4. The phone was then rotated around the vertical centerline until the phone (horizontal line) was symmetrical 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 device contact with the ear, the device was rotated about the NF line until any point on the handset made contact with a phantom point below the ear (cheek) (See Figure 6-2).

6.3 Positioning for Ear / 15º Tilt

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

1. While maintaining the orientation of the phone, the phone was retracted parallel to the reference plane far enough to enable a rotation of the phone by 15degrees.
2. The phone was then rotated around the horizontal line by 15 degrees.
3. While maintaining the orientation of the phone, the phone was moved parallel to the reference plane until any part of the handset touched the head. (In this position, point A was located on the line RE-LE). The tilted position is obtained when the contact is on the pinna. If the contact was at any location other than the pinna, the angle of the phone would then be reduced. In this situation, the tilted position was obtained when any part of the phone was in contact of the ear as well as a second part of the phone was in contact with the head (see Figure 6-2).

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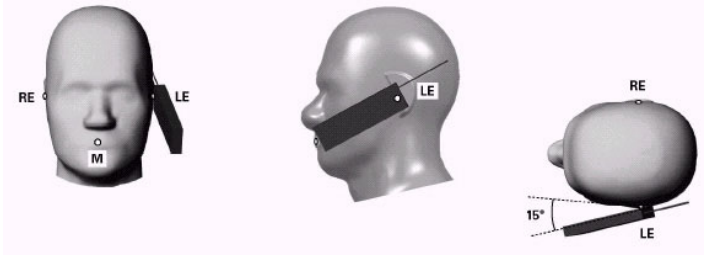

Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

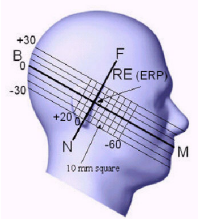

Figure 6-3
Side view w/ relevant markings

6.4 SAR Evaluations near the Mouth/Jaw Regions of the SAM Phantom

Antennas located near the bottom of a phone may require SAR measurements around the mouth and jaw regions of the SAM head phantom. This typically applies to clam-shell style phones that are generally longer in the unfolded normal use positions or to certain older style long rectangular phones. Per IEEE 1528-2013, a rotated SAM phantom is necessary to allow probe access to such regions. Both SAM heads of the TwinSAM-Chin20 are rotated 20 degrees around the NF line. Each head can be removed from the table for emptying and cleaning.

Under these circumstances, the following procedures apply, adopted from the FCC guidance on SAR handsets document FCC KDB Publication 648474 D04v01r03. The SAR required in these regions of SAM should be measured using a flat phantom. The phone should be positioned with a separation distance of 4 mm between the ear reference point (ERP) and the outer surface of the flat phantom shell. While maintaining this distance at the ERP location, the low (bottom) edge of the phone should be lowered from the phantom to establish the same separation distance between the peak SAR location identified by the truncated partial SAR distribution measured with the SAM phantom. The distance from the peak SAR location to the phone is determined by the straight line passing perpendicularly through the phantom surface. When it is not feasible to maintain 4 mm separation at the ERP while also establishing the required separation at the peak SAR location, the top edge of the phone will be allowed to touch the phantom with a separation < 4 mm at the ERP. The phone should not be tilted to the left or right while placed in this inclined position to the flat phantom.

6.5 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6-4). 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.

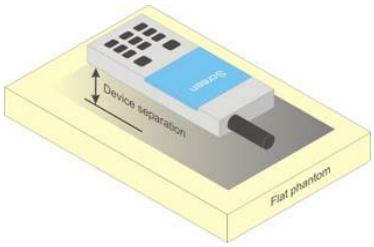

Figure 6-4
Sample Body-Worn Diagram

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not

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contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented.
Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

6.6 Extremity Exposure Configurations

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

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

6.7 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 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, back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

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

6.8 Phablet Configurations

For smart phones with a display diagonal dimension > 150 mm or an overall diagonal dimension > 160 mm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that

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support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04v01r03 should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. In addition to the normally required head and body-worn accessory SAR test procedures required for handsets, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna <=25 mm from that surface or edge, in direct contact with the phantom, for 10g SAR. The UMPC mini-tablet 1g SAR at 5 mm is not required. When hotspot mode applies, 10g SAR is required only for the surfaces and edges with hotspot mode 1g SAR > 1.2 W/kg.

6.9 Proximity Sensor Considerations

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

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

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

6.10 UMPC Mini-Tablet Configurations

Small hand-held tablets (and devices of similar form factors that are designed primarily for interactive hand-held use next to or near the body of users) require body SAR and extremity SAR evaluation. These types of mini-tablets are normally optimized for mobile web access and multimedia use. UMPC test procedures are applicable for devices with displays and overall diagonal dimension ≤ 20 cm. Devices are to be set up according to KDB publication 941225 D07v01r02 requirements and are configured with maximum output power during SAR assessment for a worst case SAR evaluation.

Per KDB Publication 941225 D07v01r02, UMPC mini-tablet devices must be tested for all surfaces and edges ≤ 25 mm from a transmitting antenna. A test separation distance of 10 mm may be considered for 1g SAR, with the addition of 10g SAR measurement at 0 mm test separation distance for all measured 1g SAR (at 10 mm) configurations to address hand exposure.

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7 RF EXPOSURE LIMITS

7.1 Uncontrolled Environment

UNCONTROLLED ENVIRONMENTS are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

7.2 Controlled Environment

CONTROLLED ENVIRONMENTS are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Table 7-1
SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

HUMAN EXPOSURE LIMITS		
	UNCONTROLLED ENVIRONMENT *General Population* (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT *Occupational* (W/kg) or (mW/g)
Peak Spatial Average SAR Head	1.6	8.0
Whole Body SAR	0.08	0.4
Peak Spatial Average SAR Hands, Feet, Ankle, Wrists, etc.	4.0	20

1. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
2. The Spatial Average value of the SAR averaged over the whole body.
3. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

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8 FCC MEASUREMENT PROCEDURES

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

8.1 Measured and Reported SAR

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

8.2 3G SAR Test Reduction Procedure

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

8.3 Procedures Used to Establish RF Signal for SAR

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

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

8.4 SAR Measurement Conditions for UMTS

8.4.1 Output Power Verification

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, 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.

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8.4.2 Head SAR Measurements

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's". The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure.

8.4.3 Body SAR Measurements

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all "1s". The 3G SAR test reduction procedure is applied to other spreading codes and multiple $DPDCH_n$ configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreading code or $DPDCH_n$, for the highest reported SAR configuration in 12.2 kbps RMC.

8.4.4 SAR Measurements with Rel 5 HSDPA

The 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, for the highest reported SAR configuration in 12.2 kbps RMC without HSDPA. Handsets with both HSDPA and HSUPA are tested according to Release 6 HSPA test procedures.

8.4.5 SAR Measurements with Rel 6 HSUPA

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

8.5 SAR Measurement Conditions for LTE

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

8.5.1 Spectrum Plots for RB Configurations

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

8.5.2 MPR

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

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8.5.3 A-MPR

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

8.5.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r04:

a. Per Section 5.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
    i. The required channel and offset combination with the highest maximum output power is required for SAR.
    ii. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
    iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
b. Per Section 5.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 5.2.1.
c. Per Section 5.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is ≤ 0.8 W/kg.
d. Per Section 5.2.4 and 5.3, SAR tests for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sections 5.2.1 through 5.2.3 is less than or equal to ½ dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is <1.45 W/kg.

8.5.5 TDD

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

8.5.6 Downlink Only Carrier Aggregation

Conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to specifications when downlink carrier aggregation is inactive on the PCC. Additional conducted output powers are measured with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band. Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for downlink only 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.

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8.6 SAR Testing with 802.11 Transmitters

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

8.6.1 General Device Setup

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

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

8.6.2 U-NII-1 and U-NII-2A

For devices that operate in both U-NII-1 and U-NII-2A bands, when the same maximum output power is specified for both bands, SAR measurement using OFDM SAR test procedures is not required for U-NII-1 unless the highest reported SAR for U-NII-2A is > 1.2 W/kg. When different maximum output powers are specified for the bands, SAR measurement for the U-NII band with the lower maximum output power is not required unless the highest reported SAR for the U-NII band with the higher maximum output power, adjusted by the ratio of lower to higher specified maximum output power for the two bands, is > 1.2 W/kg. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.3 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 Radar (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. Each band is tested independently according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

8.6.4 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 positions 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 positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

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8.6.5 2.4 GHz SAR Test Requirements

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

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

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

2.4 GHz 802.11 g/n/ax 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. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.6 OFDM Transmission Mode and SAR Test Channel Selection

When the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a, 802.11n and 802.11ac or 802.11g and 802.11n with the same channel bandwidth, modulation and data rate etc., the lower order 802.11 mode i.e., 802.11a, then 802.11n and 802.11ac or 802.11g then 802.11n, is used for SAR measurement. Per April 2019 TCB Workshop guidance, 802.11ax was considered the highest order 802.11 mode. When the maximum output power are the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

8.6.7 Initial Test Configuration Procedure

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

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is ≤ 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements (See Section 8.6.6). When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.8 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 the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the

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subsequent test configuration to initial test configuration, is ≤ 1.2 W/kg, no additional SAR tests for the subsequent test configurations are required. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.9 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. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

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9 RF CONDUCTED POWERS

9.1 GSM Conducted Powers

Table 9-1
Measured P_{max} for all DSI for GSM 850
Measured P_{max} for DSI = 0/11 (Body-worn, or Phablet/UMPC with grip sensor inactive), or DSI = 3/4 (Head) for GSM 1900

Maximum Burst-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 850	128	32.71	32.79	31.67	**29.40**	27.88	26.94	25.41	23.28	21.80
	190	32.91	33.17	31.88	**29.72**	27.82	26.86	25.33	23.27	22.19
	251	32.66	32.89	31.54	**29.49**	27.67	26.77	25.07	23.08	22.03
GSM 1900	512	29.27	29.23	28.03	**26.35**	24.64	26.65	24.00	22.11	20.96
	661	29.43	29.38	28.11	**26.42**	24.67	26.67	24.20	22.21	21.19
	810	29.16	29.16	27.91	**26.40**	24.49	26.44	23.96	22.08	20.79

Calculated Maximum Frame-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 850	128	23.51	23.59	25.48	**24.97**	24.70	17.74	19.22	18.85	18.62
	190	23.71	23.97	25.69	**25.29**	24.64	17.66	19.14	18.84	19.01
	251	23.46	23.69	25.35	**25.06**	24.49	17.57	18.88	18.65	18.85
GSM 1900	512	20.07	20.03	21.84	**21.92**	21.46	17.45	17.81	17.68	17.78
	661	20.23	20.18	21.92	**21.99**	21.49	17.47	18.01	17.78	18.01
	810	19.96	19.96	21.72	**21.97**	21.31	17.24	17.77	17.65	17.61

GSM 850	**Frame Avg.Targets:**	23.30	23.30	25.31	**25.07**	24.32	17.80	18.81	18.57	18.82
GSM 1900		20.00	20.00	21.81	**22.07**	21.32	17.30	17.81	17.57	17.82

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Table 9-2
Measured P_{limit} for DSI = 1/2 (Phablet or UMPC Extremity with grip sensor active), or DSI = 5/6 (Hotspot Mode), and/or DSI = 7/8 (Earjack active)

Maximum Burst-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 1900	512	26.64	26.67	23.37	21.31	**20.31**	26.65	23.12	21.21	20.24
	661	26.67	26.71	23.73	21.54	**20.57**	26.67	23.50	21.46	20.58
	810	26.48	26.54	23.57	21.60	**20.44**	26.44	23.38	21.47	20.40

Calculated Maximum Frame-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 1900	512	17.44	17.47	17.18	16.88	**17.13**	17.45	16.93	16.78	17.06
	661	17.47	17.51	17.54	17.11	**17.39**	17.47	17.31	17.03	17.40
	810	17.28	17.34	17.38	17.17	**17.26**	17.24	17.19	17.04	17.22
GSM 1900	**Frame Avg.Targets:**	17.30	17.30	17.31	17.27	**17.32**	17.30	17.31	17.27	17.32

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/EDGE (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 8-PSK modulation do not have an impact on output power.

GSM Class: B
GPRS Multislot class: 33 (Max 4 Tx uplink slots)
EDGE Multislot class: 33 (Max 4 Tx uplink slots)
DTM Multislot Class: N/A

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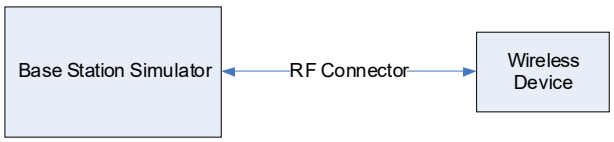

Figure 9-1
Power Measurement Setup

9.2 UMTS Conducted Powers

Table 9-3
Measured P_{max} for all DSI for UMTS 850

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	
99	WCDMA	12.2 kbps RMC	24.91	24.80	24.66	-
99		12.2 kbps AMR	24.95	24.78	24.68	-
6	HSDPA	Subtest 1	23.87	23.71	23.60	0
6		Subtest 2	23.86	23.69	23.61	0
6		Subtest 3	23.39	23.19	23.09	0.5
6		Subtest 4	23.38	23.19	23.07	0.5
6	HSUPA	Subtest 1	23.84	23.69	23.57	0
6		Subtest 2	21.84	21.71	21.60	2
6		Subtest 3	22.85	22.70	22.59	1
6		Subtest 4	21.85	21.69	21.61	2
6		Subtest 5	23.85	23.70	23.61	0

It is expected by the manufacturer that MPR for some HSPA subtests may be up to 2 dB more than specified by 3GPP, but also as low as 0 dB according to the chipset implementation in this model.

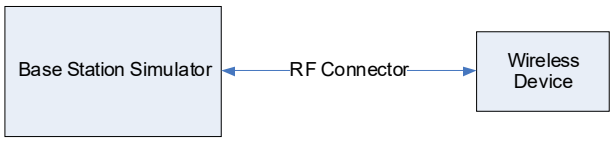

Figure 9-2
Power Measurement Setup

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9.3 LTE Conducted Powers

Note: Per FCC KDB Publication 941225 D05v02r05, LTE SAR for the lower bandwidths was not required for testing since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg. Lower bandwidth conducted powers for all LTE bands can be found in Appendix H.

9.3.1 LTE Band 12

Table 9-4
LTE Band 12 Measured P_{Max} for all DSI - 10 MHz Bandwidth

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23095 (707.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**24.80**	0	0
	1	25	24.79		0
	1	49	24.77		0
	25	0	23.67	0-1	1
	25	12	**23.83**		1
	25	25	23.76		1
	50	0	23.82		1
16QAM	1	0	24.25	0-1	1
	1	25	24.21		1
	1	49	24.27		1
	25	0	22.76	0-2	2
	25	12	22.93		2
	25	25	22.91		2
	50	0	22.86		2
64QAM	1	0	22.70	0-2	2
	1	25	22.98		2
	1	49	22.72		2
	25	0	21.76	0-3	3
	25	12	21.93		3
	25	25	21.81		3
	50	0	21.80		3

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

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9.3.2 LTE Band 13

Table 9-5
LTE Band 13 Measured P_{Max} for all DSI - 10 MHz Bandwidth

LTE Band 13 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	**24.81**	0	0
	1	25	24.68		0
	1	49	24.71		0
	25	0	**24.01**	0-1	1
	25	12	24.00		1
	25	25	23.98		1
	50	0	23.90		1
16QAM	1	0	24.32	0-1	1
	1	25	24.18		1
	1	49	24.15		1
	25	0	23.08	0-2	2
	25	12	23.07		2
	25	25	23.05		2
	50	0	22.90		2
64QAM	1	0	23.30	0-2	2
	1	25	23.17		2
	1	49	23.15		2
	25	0	22.05	0-3	3
	25	12	22.05		3
	25	25	22.00		3
	50	0	21.91		3

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9.3.3 LTE Band 5

Table 9-6
LTE Band 5 (Cell) Measured P_{Max} for all DSI - 10 MHz Bandwidth

LTE Band 5 (Cell) 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	**24.85**	0	0
	1	25	24.81		0
	1	49	24.80		0
	25	0	23.88	0-1	1
	25	12	23.90		1
	25	25	**23.93**		1
	50	0	23.81		1
16QAM	1	0	24.17	0-1	1
	1	25	24.08		1
	1	49	24.02		1
	25	0	22.95	0-2	2
	25	12	22.97		2
	25	25	22.97		2
	50	0	22.82		2
64QAM	1	0	22.84	0-2	2
	1	25	22.81		2
	1	49	22.78		2
	25	0	21.99	0-3	3
	25	12	21.96		3
	25	25	22.00		3
	50	0	21.81		3

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

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9.3.4 LTE Band 4

Table 9-7

LTE Band 4 (AWS) Measured P_{Max} for DSI = 0/11 (Body-worn, or Phablet/UMPC with grip sensor inactive), or DSI = 3/4 (Head) - 20 MHz Bandwidth

LTE Band 4 (AWS) 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	24.66	0	0
	1	50	**25.00**		0
	1	99	24.54		0
	50	0	23.83	0-1	1
	50	25	**23.90**		1
	50	50	23.79		1
	100	0	23.85		1
16QAM	1	0	24.11	0-1	1
	1	50	24.20		1
	1	99	24.03		1
	50	0	22.85	0-2	2
	50	25	22.90		2
	50	50	22.78		2
	100	0	22.87		2
64QAM	1	0	22.20	0-2	2
	1	50	22.53		2
	1	99	22.55		2
	50	0	21.56	0-3	3
	50	25	21.65		3
	50	50	21.65		3
	100	0	21.53		3

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

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Table 9-8
LTE Band 4 (AWS) Measured P_{limit} for DSI = 1/2 (Phablet or UMPC Extremity with grip sensor active), or DSI = 5/6 (Hotspot Mode), and/or DSI = 7/8 (Earjack active) - 20 MHz Bandwidth

LTE Band 4 (AWS) 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	18.08	0	0
	1	50	**18.29**		0
	1	99	18.02		0
	50	0	18.28	0-1	0
	50	25	**18.38**		0
	50	50	18.21		0
	100	0	18.28		0
16QAM	1	0	18.61	0-1	0
	1	50	18.69		0
	1	99	18.49		0
	50	0	18.28	0-2	0
	50	25	18.39		0
	50	50	18.24		0
	100	0	18.35		0
64QAM	1	0	18.24	0-2	0
	1	50	18.41		0
	1	99	18.14		0
	50	0	18.37	0-3	0
	50	25	18.49		0
	50	50	18.32		0
	100	0	18.38		0

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

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9.3.5 LTE Band 41

Table 9-9
LTE Band 41 Measured P_{Max} for DSI = 0/11 (Body-worn, or Phablet/UMPC with grip sensor inactive), or DSI = 3/4 (Head) - 20 MHz Bandwidth

LTE Band 41 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	22.19	22.00	21.79	22.04	21.82	0	0
	1	50	**22.23**	22.07	22.16	22.22	22.19		0
	1	99	22.02	22.00	21.91	21.89	22.09		0
	50	0	22.20	22.09	22.10	22.24	22.10	0-1	0
	50	25	**22.35**	22.19	22.34	22.31	22.34		0
	50	50	22.28	22.03	22.24	22.25	22.30		0
	100	0	22.21	22.09	22.19	22.20	22.22		0
16QAM	1	0	22.54	22.54	22.09	22.33	21.90	0-1	0
	1	50	22.53	22.49	22.52	22.57	22.27		0
	1	99	22.57	22.50	22.31	22.16	22.21		0
	50	0	22.18	22.09	22.09	22.18	22.09	0-2	0
	50	25	22.31	22.16	22.29	22.27	22.36		0
	50	50	22.26	22.06	22.22	22.21	22.31		0
	100	0	22.24	22.06	22.23	22.20	22.26		0
64QAM	1	0	22.44	22.34	22.03	22.23	21.79	0-2	0
	1	50	22.46	22.37	22.50	22.54	22.25		0
	1	99	22.46	22.38	22.26	22.13	22.15		0
	50	0	21.22	21.11	21.12	21.26	21.19	0-3	1
	50	25	21.34	21.17	21.33	21.28	21.39		1
	50	50	21.28	21.04	21.30	21.21	21.37		1
	100	0	21.24	21.12	21.25	21.19	21.29		1

Table 9-10
LTE Band 41 Measured P_{limit} for DSI = 1/2 (Phablet or UMPC Extremity with grip sensor active), or DSI = 5/6 (Hotspot Mode), and/or DSI = 7/8 (Earjack active) - 20 MHz Bandwidth

LTE Band 41 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	18.21	17.99	17.81	17.99	17.81	0	0
	1	50	18.19	18.00	18.11	18.21	18.09		0
	1	99	**18.22**	18.00	17.87	17.81	18.03		0
	50	0	18.23	18.08	18.12	18.22	18.09	0-1	0
	50	25	**18.34**	18.16	18.32	18.31	18.27		0
	50	50	18.28	18.04	18.25	18.22	18.28		0
	100	0	18.20	18.05	18.20	18.18	18.19		0
16QAM	1	0	18.32	18.55	18.04	18.08	18.23	0-1	0
	1	50	18.32	18.47	18.48	18.34	18.57		0
	1	99	18.34	18.49	18.28	17.92	18.52		0
	50	0	18.21	18.06	18.05	18.27	18.08	0-2	0
	50	25	18.36	18.14	18.25	18.28	18.30		0
	50	50	18.32	18.00	18.24	18.26	18.26		0
	100	0	18.26	18.03	18.23	18.20	18.20		0
64QAM	1	0	18.23	18.30	18.04	18.03	18.04	0-2	0
	1	50	18.31	18.27	18.51	18.34	18.47		0
	1	99	18.18	18.34	18.26	17.91	18.39		0
	50	0	18.32	18.08	18.14	18.28	18.10	0-3	0
	50	25	18.43	18.15	18.33	18.38	18.29		0
	50	50	18.34	18.02	18.29	18.31	18.30		0
	100	0	18.32	18.06	18.20	18.25	18.27		0

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9.3.6 LTE Uplink Carrier Aggregation Conducted Powers

Table 9-11
LTE Uplink Carrier Aggregation Measured P_{limit} for DSI = 0/11 (Body-worn, or Phablet/UMPC with grip sensor inactive), or DSI = 3/4 (Head) - 20 MHz Bandwidth

	PCC							SCC							Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41C	LTE B41	20	39750	2506.0	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	21.99	22.02

Table 9-12
LTE Uplink Carrier Aggregation P_{limit} for DSI = 1/2 (Phablet or UMPC Extremity with grip sensor active), or DSI = 5/6 (Hotspot Mode), and/or DSI = 7/8 (Earjack active)

	PCC							SCC							Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41C	LTE B41	20	40185	2549.5	QPSK	1	99	LTE B41	20	40383	2569.3	QPSK	1	0	17.80	18.00

Notes:

1. This device supports uplink carrier aggregation for LTE CA_41C with a maximum of two component carriers. For intraband contiguous carrier aggregation scenarios, 3GPP 36.101 Table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when non-contiguous RB allocation is implemented. The conducted powers and MPR settings in this device are permanently implemented per the above 3GPP requirements.
2. Per FCC Guidance, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.

Figure 9-3
Power Measurement Setup

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9.4 WLAN Conducted Powers

Table 9-13
2.4 GHz WLAN Maximum Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ax
		Average	Average	Average	Average
2412	1	18.71	17.91	17.69	17.56
2437	6	18.75	17.91	17.74	17.69
2457	10	N/A	N/A	17.70	17.92
2462	11	18.88	17.62	16.10	16.22

Table 9-14
2.4 GHz WLAN Maximum Average RF Power – MIMO

2.4GHz 802.11b Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
2412	1	18.55	18.47	21.52
2437	6	18.63	18.51	21.58
2462	11	18.67	18.70	21.70

Table 9-15
5 GHz WLAN Maximum Average RF Power – Ant 1

5GHz (20MHz) Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11a	802.11n	802.11ac	802.11ax
		Average	Average	Average	Average
5180	36	17.96	17.69	17.72	17.54
5200	40	17.90	17.67	17.74	17.68
5220	44	17.97	17.66	17.89	17.69
5240	48	17.95	17.77	17.82	17.88
5260	52	17.69	17.78	17.75	17.62
5280	56	17.64	17.75	17.77	17.67
5300	60	17.67	17.79	17.84	17.99
5320	64	17.57	17.70	17.88	17.84
5500	100	17.79	17.92	17.92	17.88
5600	120	17.76	17.55	17.54	17.92
5620	124	17.69	17.88	17.90	17.84
5720	144	17.68	17.82	17.92	17.35
5745	149	17.67	17.53	17.66	17.72
5785	157	17.98	17.85	17.77	17.84
5825	165	17.92	17.78	17.72	17.88

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Table 9-16
5 GHz WLAN Maximum Average RF Power – MIMO

5GHz (20MHz) 802.11n Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
5180	36	17.75	17.73	20.75
5200	40	17.68	17.65	20.68
5220	44	17.79	17.37	20.60
5240	48	17.72	17.30	20.53
5260	52	17.87	17.45	20.68
5280	56	17.81	17.39	20.62
5300	60	17.77	17.32	20.56
5320	64	17.74	17.34	20.55
5500	100	17.87	17.63	20.76
5600	120	17.97	17.34	20.68
5620	124	17.96	17.25	20.63
5720	144	17.91	17.36	20.65
5745	149	17.99	17.22	20.63
5785	157	17.83	17.44	20.65
5825	165	17.77	17.11	20.46

Table 9-17
2.4 GHz WLAN Reduced Average RF Power for conditions with RCV active or RCV active During Conditions with 5/6 GHz WLAN – Ant 2

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ax
		Average	Average	Average	Average
2412	1	12.83	12.43	12.65	12.65
2437	6	12.76	12.98	12.80	12.74
2462	11	12.55	12.76	12.44	12.77

Table 9-18
2.4 GHz WLAN Reduced Average RF Power for conditions with RCV active or RCV active During Conditions with 5/6 GHz WLAN – MIMO

2.4GHz 802.11n Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
2412	1	12.71	12.65	15.69
2437	6	12.85	12.80	15.84
2462	11	12.61	12.44	15.54

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Table 9-19
5 GHz WLAN Reduced Average RF Power during conditions with 2.4 GHz WLAN – MIMO

5GHz (80MHz) 802.11ac Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
5210	42	14.88	14.53	17.72
5290	58	14.87	14.41	17.66
5530	106	14.93	14.68	17.82
5610	122	14.96	14.42	17.71
5690	138	14.72	14.77	17.76
5775	155	14.98	14.66	17.83

Table 9-20
5 GHz WLAN Reduced Average RF Power for conditions with RCV active, RCV active during conditions with 2.4 GHz WLAN – Ant 1

5GHz (80MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11ac	802.11ax
		Average	Average
5210	42	11.94	11.85
5290	58	11.49	11.50
5530	106	11.50	11.48
5610	122	11.77	11.59
5690	138	11.57	11.50
5775	155	11.64	11.62

Table 9-21
5 GHz WLAN Reduced Average RF Power for conditions with RCV active, RCV active during conditions with 2.4 GHz WLAN – MIMO

5GHz (80MHz) 802.11ac Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
5210	42	11.94	11.54	14.75
5290	58	11.49	11.62	14.57
5530	106	11.50	11.47	14.50
5610	122	11.77	11.51	14.65
5690	138	11.57	11.74	14.67
5775	155	11.64	11.80	14.73

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

- Power measurements were performed for the transmission mode configuration with the highest maximum output power specified for production units.
- For transmission modes with the same maximum output power specification, powers were measured for the largest channel bandwidth, lowest order modulation and lowest data rate.
- For transmission modes with identical maximum specified output power, channel bandwidth, modulation and data rates, power measurements were required for all identical configurations.

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- For each transmission mode configuration, powers were measured for the highest and lowest channels; and at the mid-band channel(s) when there were at least 3 channels supported. For configurations with multiple mid-band channels, due to an even number of channels, both channels were measured.

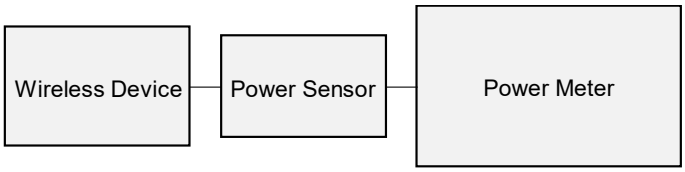

Figure 9-4
Power Measurement Setup

9.5 Bluetooth Conducted Powers

Table 9-22
Bluetooth Maximum Average RF Power - Ant 1

Frequency [MHz]	Data Rate [Mbps]	Mod.	Power Scheme	Channel No.	Avg Conducted Power	
					[dBm]	[mW]
2402	1.0	GFSK	ePA	0	16.90	48.938
2441	1.0	GFSK	ePA	39	17.29	53.540
2480	1.0	GFSK	ePA	78	16.85	48.462
2402	2.0	π/4-DQPSK	ePA	0	13.88	24.444
2441	2.0	π/4-DQPSK	ePA	39	14.25	26.592
2480	2.0	π/4-DQPSK	ePA	78	13.91	24.604
2402	3.0	8DPSK	ePA	0	13.93	24.717
2441	3.0	8DPSK	ePA	39	14.33	27.109
2480	3.0	8DPSK	ePA	78	13.99	25.051

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Table 9-23
Bluetooth Maximum Average RF Power - Ant 2

Frequency [MHz]	Data Rate [Mbps]	Mod.	Power Scheme	Channel No.	Avg Conducted Power	
					[dBm]	[mW]
2402	1.0	GFSK	ePA	0	16.71	54.723
2441	1.0	GFSK	ePA	39	16.93	60.102
2480	1.0	GFSK	ePA	78	15.52	39.554
2402	2.0	π/4-DQPSK	ePA	0	13.38	28.642
2441	2.0	π/4-DQPSK	ePA	39	13.93	31.584
2480	2.0	π/4-DQPSK	ePA	78	12.45	21.258
2402	3.0	8DPSK	ePA	0	13.30	28.961
2441	3.0	8DPSK	ePA	39	13.83	32.195
2480	3.0	8DPSK	ePA	78	12.59	21.564

Table 9-24
Bluetooth Reduced Average RF Power During Simultaneous conditions with 5/6GHz WLAN - Ant 1

Frequency [MHz]	Data Rate [Mbps]	Mod.	Power Scheme	Channel No.	Avg Conducted Power	
					[dBm]	[mW]
2402	1.0	GFSK	ePA	0	11.96	15.707
2441	1.0	GFSK	ePA	39	11.99	15.809
2480	1.0	GFSK	ePA	78	11.91	15.513

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Table 9-25
Bluetooth Reduced Average RF Power During Simultaneous conditions with 5/6GHz WLAN - Ant 2

Frequency [MHz]	Data Rate [Mbps]	Mod.	Power Scheme	Channel No.	Avg Conducted Power	
					[dBm]	[mW]
2402	1.0	GFSK	ePA	0	11.59	14.428
2441	1.0	GFSK	ePA	39	11.99	15.805
2480	1.0	GFSK	ePA	78	10.52	11.267

Table 9-26
Bluetooth Reduced Average RF Power with RCV Active - Ant 1

Frequency [MHz]	Data Rate [Mbps]	Mod.	Power Scheme	Channel No.	Avg Conducted Power	
					[dBm]	[mW]
2402	1.0	GFSK	ePA	0	9.88	9.732
2441	1.0	GFSK	ePA	39	10.20	10.476
2480	1.0	GFSK	ePA	78	9.68	9.283

Table 9-27
Bluetooth Reduced Average RF Power with RCV Active - Ant 2

Frequency [MHz]	Data Rate [Mbps]	Mod.	Power Scheme	Channel No.	Avg Conducted Power	
					[dBm]	[mW]
2402	1.0	GFSK	ePA	0	8.95	7.860
2441	1.0	GFSK	ePA	39	9.31	8.539
2480	1.0	GFSK	ePA	78	8.37	6.873

Figure 9-5
Bluetooth Transmission Plot Ant 1

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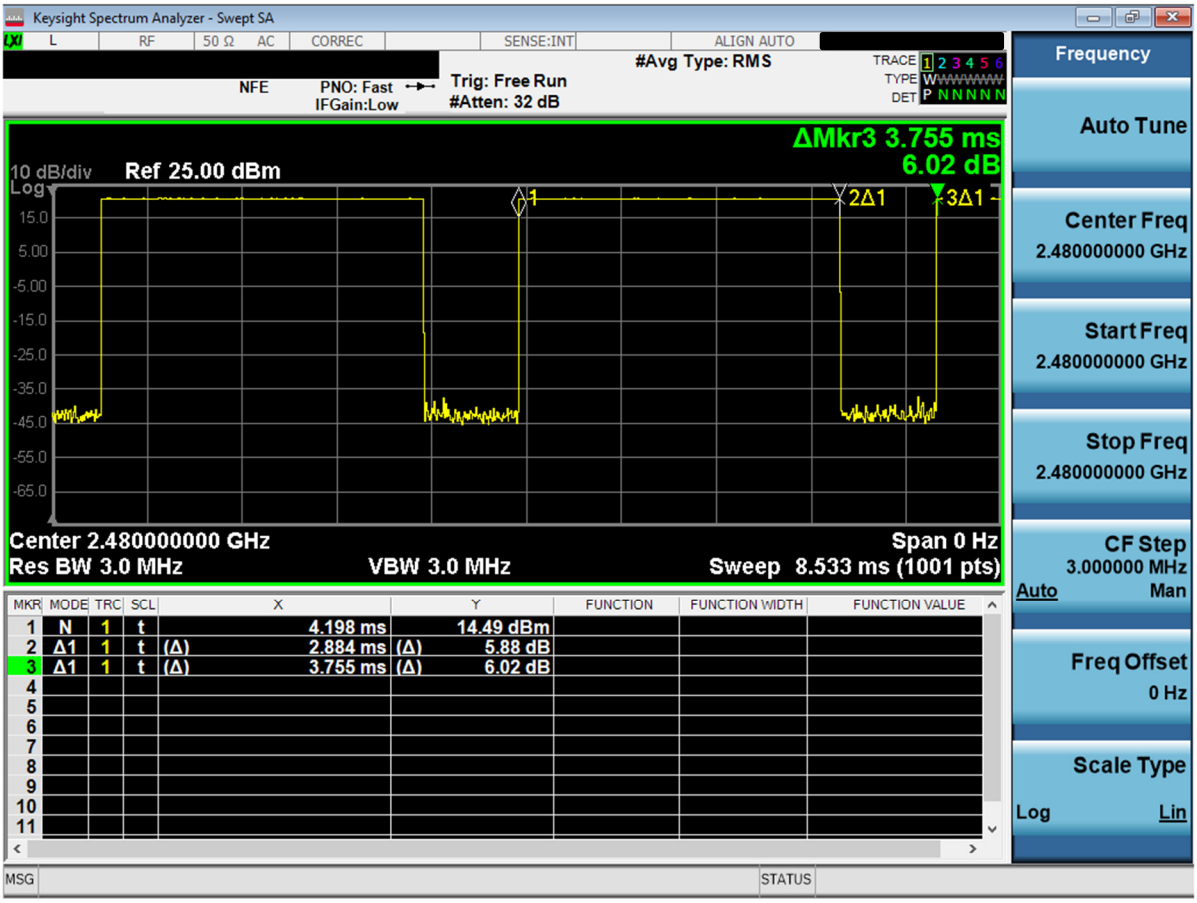

Equation 9-1
Bluetooth Duty Cycle Calculation Ant 1

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.88ms}{3.76ms} * 100\% = 76.8\%$$

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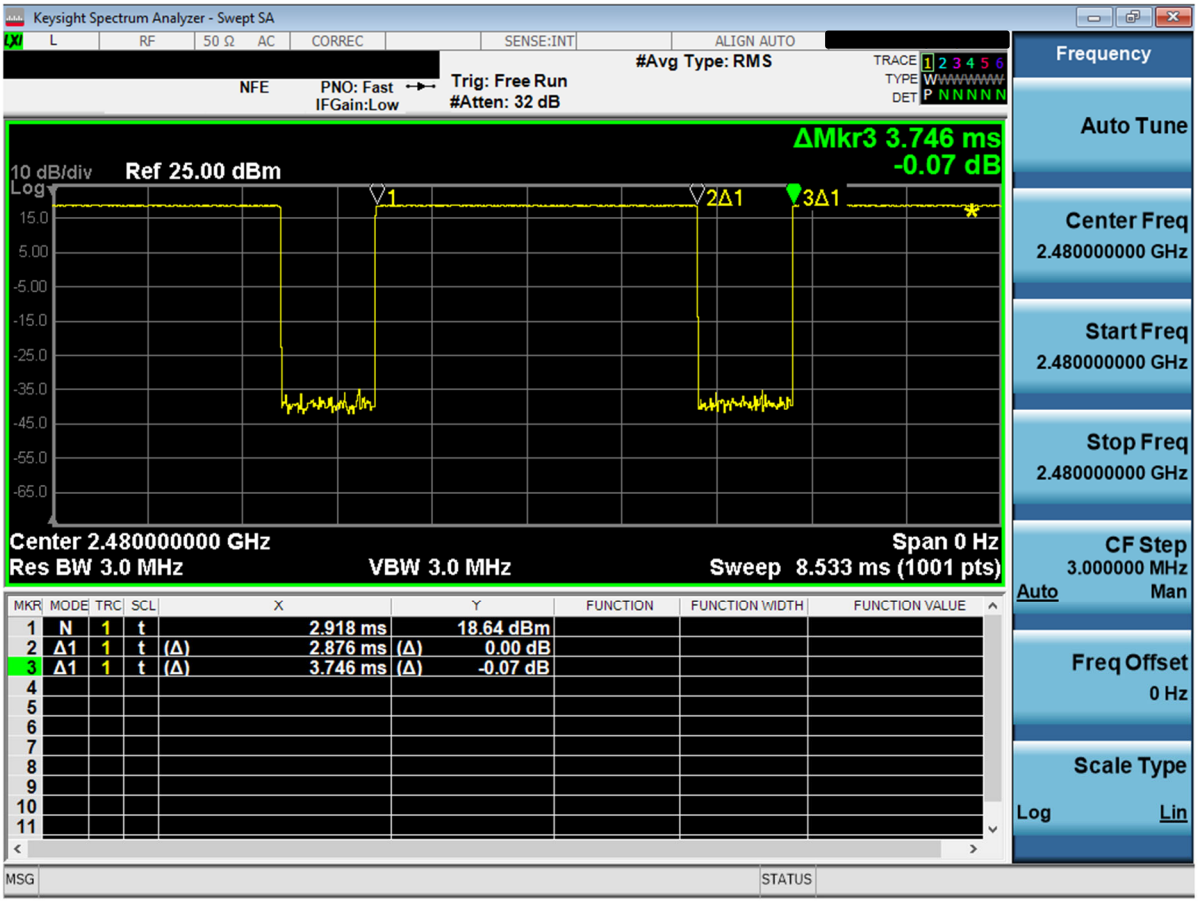
Figure 9-6
Bluetooth Transmission Plot Ant 2



Equation 9-2
Bluetooth Duty Cycle Calculation Ant 2

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.88ms}{3.75ms} * 100\% = 76.8\%$$

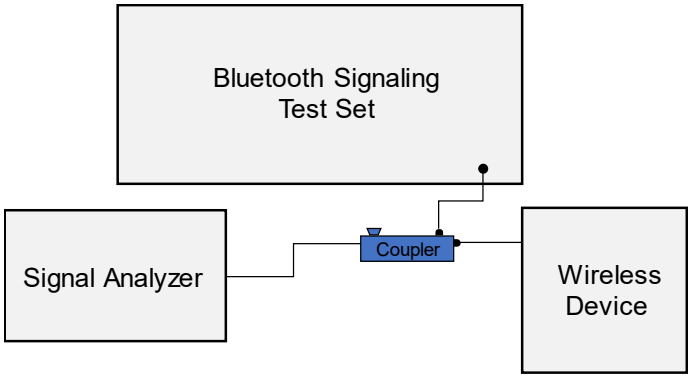


Figure 9-7
Power Measurement Setup

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10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Head Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
07/05/2021	750 Head	20.7	680	0.867	41.498	0.888	42.305	-2.36%	-1.91%
			695	0.873	41.440	0.889	42.227	-1.80%	-1.86%
			700	0.875	41.418	0.889	42.201	-1.57%	-1.86%
			710	0.878	41.368	0.890	42.149	-1.35%	-1.85%
			725	0.883	41.301	0.891	42.071	-0.90%	-1.83%
			750	0.892	41.239	0.894	41.942	-0.22%	-1.68%
			770	0.900	41.227	0.895	41.838	0.56%	-1.46%
			785	0.906	41.188	0.896	41.760	1.12%	-1.37%
			800	0.912	41.122	0.897	41.682	1.67%	-1.34%
06/28/2021	835 Head	22.5	820	0.872	40.329	0.899	41.578	-3.00%	-3.00%
			835	0.887	40.137	0.900	41.500	-1.44%	-3.28%
			850	0.902	39.946	0.916	41.500	-1.53%	-3.74%
06/30/2021	835 Head	23.0	820	0.874	40.828	0.899	41.578	-2.78%	-1.80%
			835	0.889	40.644	0.900	41.500	-1.22%	-2.06%
			850	0.904	40.458	0.916	41.500	-1.31%	-2.51%
07/07/2021	835 Head	20.8	820	0.907	42.528	0.899	41.578	-2.33%	-2.56%
			835	0.923	42.345	0.900	41.500	-2.57%	-2.56%
			850	0.938	42.155	0.916	41.500	-2.81%	-2.57%
07/06/2021	1750 Head	19.6	1710	1.370	39.245	1.348	40.142	1.63%	-2.23%
			1720	1.380	39.201	1.354	40.126	1.92%	-2.31%
			1745	1.405	39.078	1.368	40.087	2.70%	-2.52%
			1750	1.410	39.053	1.371	40.079	2.84%	-2.56%
			1770	1.431	38.956	1.383	40.047	3.47%	-2.72%
			1790	1.453	38.861	1.394	40.016	4.23%	-2.89%
07/13/2021	1900 Head	23.2	1850	1.334	39.800	1.400	40.000	-4.71%	-0.50%
			1860	1.344	39.754	1.400	40.000	-4.00%	-0.62%
			1880	1.365	39.662	1.400	40.000	-2.50%	-0.85%
			1900	1.386	39.575	1.400	40.000	-1.00%	-1.06%
			1905	1.391	39.554	1.400	40.000	-0.64%	-1.11%
			1910	1.396	39.532	1.400	40.000	-0.29%	-1.17%
07/07/2021	2450 Head	24.0	2400	1.784	37.366	1.756	39.289	1.59%	-4.89%
			2450	1.820	37.301	1.800	39.200	1.11%	-4.84%
			2480	1.841	37.270	1.833	39.162	0.44%	-4.83%
			2500	1.856	37.248	1.855	39.136	0.05%	-4.82%
			2510	1.864	37.235	1.866	39.123	-0.11%	-4.83%
			2535	1.884	37.199	1.893	39.092	-0.48%	-4.84%
			2550	1.895	37.179	1.909	39.073	-0.73%	-4.85%
			2560	1.903	37.167	1.920	39.060	-0.89%	-4.85%
			2600	1.934	37.112	1.964	39.009	-1.53%	-4.86%
			2650	1.972	37.039	2.018	38.945	-2.28%	-4.89%
			2680	1.995	36.992	2.051	38.907	-2.73%	-4.92%
			2700	2.009	36.958	2.073	38.882	-3.09%	-4.95%
07/11/2021	2450 Head	22.0	2300	1.730	37.901	1.670	39.500	3.59%	-4.05%
			2310	1.738	37.884	1.679	39.480	3.51%	-4.04%
			2320	1.745	37.870	1.687	39.460	3.44%	-4.03%
			2400	1.804	37.747	1.756	39.289	2.73%	-3.92%
			2450	1.842	37.663	1.800	39.200	2.33%	-3.92%
			2480	1.863	37.625	1.833	39.162	1.64%	-3.92%
			2500	1.878	37.594	1.855	39.136	1.24%	-3.94%
			2510	1.885	37.575	1.866	39.123	1.02%	-3.96%
			2535	1.905	37.529	1.893	39.092	0.63%	-4.00%
			2550	1.918	37.504	1.909	39.073	0.47%	-4.02%
			2560	1.926	37.491	1.920	39.060	0.31%	-4.02%
			2600	1.955	37.442	1.964	39.009	-0.46%	-4.02%
			2650	1.994	37.356	2.018	38.945	-1.19%	-4.08%
			2680	2.018	37.315	2.051	38.907	-1.61%	-4.09%
			2700	2.034	37.285	2.073	38.882	-1.88%	-4.11%
07/12/2021	5200-5800 Head	22.2	5180	4.474	34.834	4.635	36.009	-3.47%	-3.26%
			5190	4.484	34.825	4.645	35.998	-3.47%	-3.26%
			5200	4.494	34.804	4.655	35.986	-3.46%	-3.28%
			5210	4.505	34.781	4.666	35.975	-3.45%	-3.32%
			5220	4.518	34.758	4.676	35.963	-3.38%	-3.35%
			5240	4.540	34.730	4.696	35.940	-3.32%	-3.37%
			5250	4.552	34.708	4.706	35.929	-3.27%	-3.40%
			5260	4.564	34.688	4.717	35.917	-3.24%	-3.42%
			5270	4.574	34.671	4.727	35.906	-3.24%	-3.44%
			5280	4.585	34.656	4.737	35.894	-3.21%	-3.45%
			5290	4.593	34.645	4.748	35.883	-3.26%	-3.45%
			5300	4.605	34.635	4.758	35.871	-3.22%	-3.45%
			5310	4.617	34.618	4.768	35.860	-3.17%	-3.46%
			5320	4.627	34.594	4.778	35.849	-3.16%	-3.50%
			5500	4.822	34.279	4.963	35.643	-2.84%	-3.83%
			5510	4.834	34.266	4.973	35.632	-2.80%	-3.83%
			5520	4.847	34.252	4.983	35.620	-2.73%	-3.84%
			5530	4.860	34.237	4.994	35.609	-2.68%	-3.85%
			5540	4.873	34.217	5.004	35.597	-2.62%	-3.88%
			5550	4.886	34.197	5.014	35.586	-2.55%	-3.90%
			5560	4.898	34.184	5.024	35.574	-2.51%	-3.91%
			5580	4.920	34.164	5.045	35.551	-2.48%	-3.90%
			5600	4.939	34.118	5.065	35.529	-2.49%	-3.97%
			5610	4.950	34.100	5.076	35.518	-2.48%	-3.99%
			5620	4.962	34.083	5.086	35.506	-2.44%	-4.01%
			5640	4.984	34.046	5.106	35.483	-2.39%	-4.05%
			5660	5.010	34.016	5.127	35.460	-2.28%	-4.07%
			5670	5.021	34.009	5.137	35.449	-2.26%	-4.06%
			5680	5.031	34.000	5.147	35.437	-2.25%	-4.06%
			5690	5.040	33.994	5.158	35.426	-2.29%	-4.04%
			5700	5.051	33.973	5.168	35.414	-2.26%	-4.07%
			5710	5.064	33.954	5.178	35.403	-2.20%	-4.09%
			5720	5.075	33.937	5.188	35.391	-2.18%	-4.11%
			5745	5.099	33.889	5.214	35.363	-2.21%	-4.17%
			5750	5.106	33.877	5.219	35.357	-2.17%	-4.19%
			5755	5.112	33.868	5.224	35.351	-2.14%	-4.20%
			5765	5.124	33.854	5.234	35.340	-2.10%	-4.20%
			5775	5.134	33.839	5.245	35.329	-2.12%	-4.22%
			5785	5.143	33.829	5.255	35.317	-2.13%	-4.21%
			5795	5.153	33.818	5.265	35.305	-2.13%	-4.21%
			5805	5.165	33.806	5.275	35.294	-2.09%	-4.22%
			5825	5.186	33.770	5.296	35.271	-2.08%	-4.26%

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Table 10-2
Measured Body Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
06/28/2021	750 Body	21.2	680	0.932	55.715	0.958	55.804	-2.71%	-0.16%
			695	0.938	55.682	0.959	55.745	-2.19%	-0.11%
			700	0.940	55.671	0.959	55.726	-1.98%	-0.10%
			710	0.944	55.650	0.960	55.687	-1.67%	-0.07%
			725	0.950	55.622	0.961	55.629	-1.14%	-0.01%
			750	0.959	55.560	0.964	55.531	-0.52%	0.05%
			770	0.967	55.504	0.965	55.453	0.21%	0.09%
			785	0.973	55.458	0.966	55.395	0.72%	0.11%
			800	0.978	55.420	0.967	55.336	1.14%	0.15%
06/29/2021	835 Body	22.7	820	0.932	53.974	0.969	55.258	-3.82%	-2.32%
			835	0.948	53.843	0.970	55.200	-2.27%	-2.46%
			850	0.963	53.707	0.988	55.154	-2.53%	-2.62%
07/01/2021	835 Body	22.5	820	0.932	53.370	0.969	55.258	-3.82%	-3.42%
			835	0.949	53.230	0.970	55.200	-2.16%	-3.57%
			850	0.965	53.077	0.988	55.154	-2.33%	-3.77%
07/06/2021	835 Body	23.4	820	0.923	52.714	0.969	55.258	-4.75%	-4.60%
			835	0.938	52.574	0.970	55.200	-3.30%	-4.76%
			850	0.954	52.435	0.988	55.154	-3.44%	-4.93%
07/11/2021	835 Body	22.7	820	0.927	53.016	0.969	55.258	-4.33%	-4.06%
			835	0.943	52.866	0.970	55.200	-2.78%	-4.23%
			850	0.959	52.711	0.988	55.154	-2.94%	-4.43%
06/28/2021	1750 Body	22.6	1710	1.483	52.831	1.463	53.537	1.37%	-1.32%
			1720	1.493	52.784	1.469	53.511	1.63%	-1.36%
			1745	1.520	52.668	1.485	53.445	2.36%	-1.45%
			1750	1.525	52.648	1.488	53.432	2.49%	-1.47%
			1770	1.546	52.570	1.501	53.379	3.00%	-1.52%
			1790	1.567	52.502	1.514	53.326	3.50%	-1.55%
06/29/2021	1900 Body	23.3	1850	1.481	52.319	1.520	53.300	-2.57%	-1.84%
			1860	1.492	52.278	1.520	53.300	-1.84%	-1.92%
			1880	1.515	52.200	1.520	53.300	-0.33%	-2.06%
			1900	1.538	52.129	1.520	53.300	1.18%	-2.20%
			1905	1.543	52.114	1.520	53.300	1.51%	-2.23%
			1910	1.549	52.099	1.520	53.300	1.91%	-2.25%
07/05/2021	1900 Body	23.2	1850	1.523	52.199	1.520	53.300	0.20%	-2.07%
			1860	1.534	52.173	1.520	53.300	0.92%	-2.11%
			1880	1.553	52.100	1.520	53.300	2.17%	-2.25%
			1900	1.574	52.007	1.520	53.300	3.55%	-2.43%
			1905	1.580	51.985	1.520	53.300	3.95%	-2.47%
			1910	1.585	51.964	1.520	53.300	4.28%	-2.51%
07/07/2021	1900 Body	22.4	1850	1.506	51.850	1.520	53.300	-0.92%	-2.72%
			1860	1.517	51.817	1.520	53.300	-0.20%	-2.78%
			1880	1.539	51.752	1.520	53.300	1.25%	-2.90%
			1900	1.562	51.686	1.520	53.300	2.76%	-3.03%
			1905	1.568	51.668	1.520	53.300	3.16%	-3.06%
			1910	1.574	51.650	1.520	53.300	3.55%	-3.10%
06/29/2021	2450 Body	23.2	2300	1.868	52.822	1.809	52.900	3.26%	-0.15%
			2310	1.879	52.797	1.816	52.887	3.47%	-0.17%
			2320	1.891	52.774	1.826	52.873	3.56%	-0.19%
			2400	1.982	52.601	1.902	52.767	4.21%	-0.31%
			2450	2.039	52.488	1.950	52.700	4.56%	-0.40%
			2480	2.074	52.420	1.993	52.662	4.06%	-0.46%
			2500	2.099	52.375	2.021	52.636	3.86%	-0.50%
			2510	2.111	52.351	2.035	52.623	3.73%	-0.52%
			2535	2.143	52.289	2.071	52.592	3.48%	-0.58%
			2550	2.161	52.252	2.092	52.573	3.30%	-0.61%
			2560	2.173	52.224	2.106	52.560	3.18%	-0.64%
			2600	2.222	52.107	2.163	52.509	2.73%	-0.77%
			2650	2.282	51.950	2.234	52.445	2.15%	-0.94%
			2680	2.317	51.851	2.277	52.407	1.76%	-1.06%
			2700	2.341	51.782	2.305	52.382	1.56%	-1.15%
07/06/2021	2450 Body	24.0	2300	1.875	52.085	1.809	52.900	3.65%	-1.54%
			2310	1.887	52.053	1.816	52.887	3.91%	-1.58%
			2320	1.898	52.023	1.826	52.873	3.94%	-1.61%
			2400	1.989	51.788	1.902	52.767	4.57%	-1.86%
			2450	2.046	51.634	1.950	52.700	4.92%	-2.02%
			2480	2.079	51.544	1.993	52.662	4.32%	-2.12%
			2500	2.102	51.481	2.021	52.636	4.01%	-2.19%
			2510	2.113	51.450	2.035	52.623	3.83%	-2.23%
			2535	2.143	51.377	2.071	52.592	3.48%	-2.31%
			2550	2.160	51.335	2.092	52.573	3.25%	-2.35%
			2560	2.172	51.308	2.106	52.560	3.13%	-2.38%
			2600	2.218	51.188	2.163	52.509	2.54%	-2.52%
			2650	2.277	51.044	2.234	52.445	1.92%	-2.67%
			2680	2.312	50.961	2.277	52.407	1.54%	-2.76%
			2700	2.335	50.901	2.305	52.382	1.30%	-2.83%
07/12/2021	2450 Body	23.4	2300	1.767	54.105	1.809	52.900	-2.32%	2.28%
			2310	1.780	54.068	1.816	52.887	-1.98%	2.23%
			2320	1.794	54.031	1.826	52.873	-1.75%	2.19%
			2400	1.899	53.756	1.902	52.767	-0.16%	1.87%
			2450	1.965	53.577	1.950	52.700	0.77%	1.66%
			2480	2.005	53.480	1.993	52.662	0.60%	1.55%
			2500	2.032	53.409	2.021	52.636	0.54%	1.47%
			2510	2.046	53.371	2.035	52.623	0.54%	1.42%
			2535	2.080	53.276	2.071	52.592	0.43%	1.30%
			2550	2.101	53.226	2.092	52.573	0.43%	1.24%
			2560	2.116	53.192	2.106	52.560	0.47%	1.20%
			2600	2.171	53.060	2.163	52.509	0.37%	1.05%
			2650	2.239	52.862	2.234	52.445	0.22%	0.80%
			2680	2.284	52.757	2.277	52.407	0.31%	0.67%
			2700	2.311	52.692	2.305	52.382	0.26%	0.59%

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Table 10-3
Measured Body Tissue Properties Cont.

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
07/04/2021	5200-5800 Body	24.5	5180	5.215	48.069	5.276	49.041	-1.16%	-1.98%
			5190	5.228	48.047	5.288	49.028	-1.13%	-2.00%
			5200	5.241	48.023	5.299	49.014	-1.09%	-2.02%
			5210	5.254	48.000	5.311	49.001	-1.07%	-2.04%
			5220	5.270	47.989	5.323	48.987	-1.00%	-2.04%
			5240	5.300	47.947	5.346	48.960	-0.86%	-2.07%
			5250	5.311	47.917	5.358	48.947	-0.88%	-2.10%
			5260	5.321	47.907	5.369	48.933	-0.89%	-2.10%
			5270	5.337	47.901	5.381	48.919	-0.82%	-2.08%
			5280	5.353	47.890	5.393	48.906	-0.74%	-2.08%
			5290	5.367	47.878	5.404	48.892	-0.68%	-2.07%
			5300	5.383	47.868	5.416	48.879	-0.61%	-2.07%
			5310	5.399	47.860	5.428	48.865	-0.53%	-2.06%
			5320	5.417	47.837	5.439	48.851	-0.40%	-2.08%
			5500	5.668	47.542	5.650	48.607	0.32%	-2.19%
			5510	5.683	47.527	5.661	48.594	0.39%	-2.20%
			5520	5.701	47.517	5.673	48.580	0.49%	-2.19%
			5530	5.718	47.506	5.685	48.566	0.58%	-2.18%
			5540	5.732	47.500	5.696	48.553	0.63%	-2.17%
			5550	5.747	47.490	5.708	48.539	0.68%	-2.16%
			5560	5.762	47.475	5.720	48.526	0.73%	-2.17%
			5580	5.786	47.428	5.743	48.499	0.75%	-2.21%
			5600	5.814	47.383	5.766	48.471	0.83%	-2.24%
			5610	5.828	47.365	5.778	48.458	0.87%	-2.26%
			5620	5.845	47.346	5.790	48.444	0.95%	-2.27%
			5640	5.875	47.321	5.813	48.417	1.07%	-2.26%
			5660	5.901	47.310	5.837	48.390	1.10%	-2.23%
			5670	5.913	47.299	5.848	48.376	1.11%	-2.23%
			5680	5.925	47.280	5.860	48.363	1.11%	-2.24%
			5690	5.939	47.251	5.872	48.349	1.14%	-2.27%
			5700	5.952	47.226	5.883	48.336	1.17%	-2.30%
			5710	5.965	47.208	5.895	48.322	1.19%	-2.31%
			5720	5.980	47.190	5.907	48.309	1.24%	-2.32%
			5745	6.019	47.142	5.936	48.275	1.40%	-2.35%
			5750	6.026	47.137	5.942	48.268	1.41%	-2.34%
			5755	6.031	47.136	5.947	48.261	1.41%	-2.33%
			5765	6.041	47.131	5.959	48.248	1.38%	-2.32%
			5775	6.052	47.117	5.971	48.234	1.36%	-2.32%
			5785	6.065	47.104	5.982	48.220	1.39%	-2.31%
			5795	6.079	47.084	5.994	48.207	1.42%	-2.33%
			5800	6.088	47.078	6.000	48.200	1.47%	-2.33%
			5805	6.095	47.068	6.006	48.193	1.48%	-2.33%
			5825	6.119	47.004	6.029	48.166	1.49%	-2.41%
07/11/2021	5200-5800 Body	24.0	5180	5.160	47.582	5.276	49.041	-2.20%	-2.98%
			5190	5.173	47.570	5.288	49.028	-2.17%	-2.97%
			5200	5.188	47.547	5.299	49.014	-2.09%	-2.99%
			5210	5.199	47.525	5.311	49.001	-2.11%	-3.01%
			5220	5.211	47.514	5.323	48.987	-2.10%	-3.01%
			5240	5.244	47.465	5.346	48.960	-1.91%	-3.05%
			5250	5.256	47.432	5.358	48.947	-1.90%	-3.10%
			5260	5.266	47.403	5.369	48.933	-1.92%	-3.13%
			5270	5.277	47.394	5.381	48.919	-1.93%	-3.12%
			5280	5.293	47.390	5.393	48.906	-1.85%	-3.10%
			5290	5.308	47.384	5.404	48.892	-1.78%	-3.08%
			5300	5.321	47.377	5.416	48.879	-1.75%	-3.07%
			5310	5.336	47.358	5.428	48.865	-1.69%	-3.08%
			5320	5.350	47.339	5.439	48.851	-1.64%	-3.10%
			5500	5.596	47.023	5.650	48.607	-0.96%	-3.26%
			5510	5.611	47.005	5.661	48.594	-0.88%	-3.27%
			5520	5.627	46.996	5.673	48.580	-0.81%	-3.26%
			5530	5.643	46.980	5.685	48.566	-0.74%	-3.27%
			5540	5.657	46.956	5.696	48.553	-0.68%	-3.29%
			5550	5.671	46.936	5.708	48.539	-0.65%	-3.30%
			5560	5.685	46.922	5.720	48.526	-0.61%	-3.31%
			5580	5.715	46.892	5.743	48.499	-0.49%	-3.31%
			5600	5.740	46.849	5.766	48.471	-0.45%	-3.35%
			5610	5.754	46.835	5.778	48.458	-0.42%	-3.35%
			5620	5.768	46.823	5.790	48.444	-0.38%	-3.35%
			5640	5.794	46.786	5.813	48.417	-0.33%	-3.37%
			5660	5.824	46.751	5.837	48.390	-0.22%	-3.39%
			5670	5.838	46.736	5.848	48.376	-0.17%	-3.39%
			5680	5.851	46.724	5.860	48.363	-0.15%	-3.39%
			5690	5.864	46.706	5.872	48.349	-0.14%	-3.40%
			5700	5.878	46.687	5.883	48.336	-0.08%	-3.41%
			5710	5.891	46.672	5.895	48.322	-0.07%	-3.41%
			5720	5.905	46.650	5.907	48.309	-0.03%	-3.43%
			5745	5.941	46.600	5.936	48.275	0.08%	-3.47%
			5750	5.947	46.593	5.942	48.268	0.08%	-3.47%
			5755	5.953	46.588	5.947	48.261	0.10%	-3.47%
			5765	5.964	46.572	5.959	48.248	0.08%	-3.47%
			5775	5.977	46.548	5.971	48.234	0.10%	-3.50%
			5785	5.988	46.528	5.982	48.220	0.10%	-3.51%
			5795	6.000	46.516	5.994	48.207	0.10%	-3.51%
			5800	6.007	46.511	6.000	48.200	0.12%	-3.50%
			5805	6.016	46.505	6.006	48.193	0.17%	-3.50%
			5825	6.045	46.449	6.029	48.166	0.27%	-3.56%

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

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10.2 Test System Verification

Prior to SAR assessment, the system is verified to ±10% of the SAR measurement on the reference dipole at the time of calibration by the calibration facility. Full system validation status and result summary can be found in Appendix D.

Table 10-4
System Verification Results –1g

System Verification TARGET & MEASURED												
SAR System	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp. (C)	Liquid Temp. (C)	Input Power (W)	Source SN	Probe SN	Measured SAR1g (W/kg)	1W Target SAR1g (W/kg)	1W Normalized SAR 1g (W/kg)	Deviation1g (%)
E	750	HEAD	07/05/2021	22.2	20.7	0.2	1161	7571	1.68	8.03	8.400	4.61%
E	835	HEAD	06/28/2021	22.7	22.5	0.2	4d132	7571	1.92	9.66	9.600	-0.62%
E	835	HEAD	06/30/2021	23.5	23.5	0.2	4d132	7571	1.83	9.66	9.150	-5.28%
I	835	HEAD	07/07/2021	21.3	20.8	0.2	4d133	7551	1.95	9.43	9.750	3.39%
P	1750	HEAD	07/06/2021	21.5	20.2	0.1	1148	7308	3.31	35.90	33.100	-7.80%
I	1900	HEAD	07/13/2021	22.2	22.1	0.1	5d149	7551	4.23	39.30	42.300	7.63%
E	2450	HEAD	07/07/2021	25.0	24.0	0.1	719	7571	5.28	51.40	52.800	2.72%
E	2450	HEAD	07/11/2021	24.0	22.0	0.1	719	7571	5.39	51.40	53.900	4.86%
K	5250	HEAD	07/12/2021	23.4	22.2	0.1	1191	7538	3.83	79.80	76.600	-4.01%
K	5600	HEAD	07/12/2021	23.4	22.2	0.1	1191	7538	4.34	81.80	86.800	6.11%
K	5750	HEAD	07/12/2021	23.4	22.2	0.1	1191	7538	3.93	81.80	78.600	-3.91%
G	750	BODY	06/28/2021	22.0	21.2	0.2	1003	7357	1.71	8.61	8.550	-0.70%
H	835	BODY	06/29/2021	25.0	23.0	0.2	4d047	7410	1.97	9.47	9.850	4.01%
H	835	BODY	07/01/2021	22.0	22.4	0.2	4d133	7410	2.05	9.75	10.250	5.13%
H	835	BODY	07/06/2021	24.4	22.7	0.2	4d133	7409	2.00	9.75	10.000	2.56%
H	835	BODY	07/11/2021	23.3	24.4	0.2	4d133	7409	1.99	9.75	9.950	2.05%
P	1750	BODY	06/28/2021	21.2	21.4	0.1	1148	7308	3.73	36.30	37.300	2.75%
D	1900	BODY	06/29/2021	24.0	23.3	0.1	5d080	3589	3.95	39.20	39.500	0.77%
D	1900	BODY	07/07/2021	23.7	22.4	0.1	5d080	3589	4.06	39.20	40.600	3.57%
K	2450	BODY	06/29/2021	22.8	22.0	0.1	719	7538	5.26	50.70	52.600	3.75%
K	2450	BODY	07/06/2021	23.8	22.2	0.1	719	7538	5.22	50.70	52.200	2.96%
L	2450	BODY	07/12/2021	21.7	23.4	0.1	981	7539	5.03	50.10	50.300	0.40%
K	2600	BODY	06/29/2021	22.8	22.0	0.1	1064	7538	5.67	55.60	56.700	1.98%
J	5250	BODY	07/04/2021	21.3	22.5	0.1	1191	7526	3.52	74.60	70.400	-5.63%
J	5250	BODY	07/11/2021	22.1	22.0	0.1	1191	7526	3.65	74.60	73.000	-2.14%
J	5600	BODY	07/04/2021	21.3	22.5	0.1	1191	7526	3.62	78.10	72.400	-7.30%
J	5600	BODY	07/11/2021	22.1	22.0	0.1	1191	7526	3.72	78.10	74.400	-4.74%
J	5750	BODY	07/04/2021	21.3	22.5	0.1	1191	7526	3.59	74.90	71.800	-4.14%
J	5750	BODY	07/11/2021	22.1	22.0	0.1	1191	7526	3.50	74.90	70.000	-6.54%

Table 10-5
System Verification Results – 10g

System Verification TARGET & MEASURED												
SAR System	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp. (C)	Liquid Temp. (C)	Input Power (W)	Source SN	Probe SN	Measured SAR10g (W/kg)	1W Target SAR10g (W/kg)	1W Normalized SAR10g (W/kg)	Deviation10g (%)
G	750	BODY	06/28/2021	22.0	21.2	0.2	1003	7357	1.130	5.67	5.650	-0.35%
H	835	BODY	07/01/2021	22.0	22.4	0.2	4d133	7410	1.350	6.40	6.750	5.47%
H	835	BODY	07/06/2021	24.4	22.7	0.2	4d133	7409	1.320	6.40	6.600	3.13%
P	1750	BODY	06/28/2021	21.2	21.4	0.1	1148	7308	1.940	19.30	19.400	0.52%
D	1900	BODY	07/05/2021	23.0	23.2	0.1	5d149	3589	2.090	20.70	20.900	0.97%
D	1900	BODY	07/07/2021	23.7	22.4	0.1	5d080	3589	2.080	20.60	20.800	0.97%
K	2450	BODY	06/29/2021	22.8	22.0	0.1	719	7538	2.420	23.90	24.200	1.26%
L	2450	BODY	07/12/2021	21.7	23.4	0.1	981	7539	2.330	23.70	23.300	-1.69%
K	2600	BODY	06/29/2021	22.8	22.0	0.1	1064	7538	2.500	25.00	25.000	0.00%
J	5250	BODY	07/04/2021	21.3	22.5	0.1	1191	7526	0.990	21.00	19.800	-5.71%
J	5250	BODY	07/11/2021	22.1	22.0	0.1	1191	7526	1.030	21.00	20.600	-1.90%
J	5600	BODY	07/04/2021	21.3	22.5	0.1	1191	7526	1.000	21.70	20.000	-7.83%
J	5600	BODY	07/11/2021	22.1	22.0	0.1	1191	7526	1.030	21.70	20.600	-5.07%
J	5750	BODY	07/04/2021	21.3	22.5	0.1	1191	7526	1.010	20.80	20.200	-2.88%
J	5750	BODY	07/11/2021	22.1	22.0	0.1	1191	7526	0.983	20.80	19.660	-5.48%

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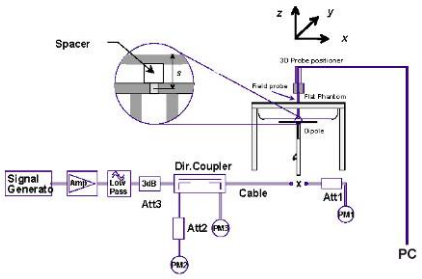

Figure 10-1
System Verification Setup Diagram

Figure 10-2
System Verification Setup Photo

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11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
GSM 850 Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	33.5	32.91	-0.05	Right	Cheek	A	1371M	1	1:8.3	0.139	1.146	0.159	A1
836.60	190	GSM 850	GSM	33.5	32.91	0.13	Right	Tilt	A	1371M	1	1:8.3	0.049	1.146	0.056	
836.60	190	GSM 850	GSM	33.5	32.91	-0.05	Left	Cheek	A	1371M	1	1:8.3	0.075	1.146	0.086	
836.60	190	GSM 850	GSM	33.5	32.91	0.13	Left	Tilt	A	1371M	1	1:8.3	0.032	1.146	0.037	
836.60	190	GSM 850	GSM	33.5	32.91	0.05	Right	Cheek	A + B	1374M	1	1:8.3	0.101	1.146	0.116	
836.60	190	GSM 850	GSM	33.5	32.91	0.16	Right	Tilt	A + B	1374M	1	1:8.3	0.036	1.146	0.041	
836.60	190	GSM 850	GSM	33.5	32.91	0.03	Left	Cheek	A + B	1374M	1	1:8.3	0.063	1.146	0.072	
836.60	190	GSM 850	GSM	33.5	32.91	-0.01	Left	Tilt	A + B	1374M	1	1:8.3	0.026	1.146	0.030	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-2
GSM 1900 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	30.2	29.43	0.16	Right	Cheek	1377M	1	1:8.3	0.021	1.194	0.025	
1880.00	661	GSM 1900	GSM	30.2	29.43	0.05	Right	Tilt	1377M	1	1:8.3	0.035	1.194	0.042	A2
1880.00	661	GSM 1900	GSM	30.2	29.43	0.10	Left	Cheek	1377M	1	1:8.3	0.028	1.194	0.033	
1880.00	661	GSM 1900	GSM	30.2	29.43	0.16	Left	Tilt	1377M	1	1:8.3	0.025	1.194	0.030	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-3
UMTS 850 Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
826.40	4132	UMTS 850	RMC	25.8	24.91	0	0.00	Right	Cheek	A	1380M	1:1	0.128	1.227	0.157	
826.40	4132	UMTS 850	RMC	25.8	24.91	0	0.04	Right	Tilt	A	1380M	1:1	0.043	1.227	0.053	
826.40	4132	UMTS 850	RMC	25.8	24.91	0	0.13	Left	Cheek	A	1380M	1:1	0.072	1.227	0.088	
826.40	4132	UMTS 850	RMC	25.8	24.91	0	0.03	Left	Tilt	A	1380M	1:1	0.045	1.227	0.055	
826.40	4132	UMTS 850	RMC	25.8	24.91	108	-0.01	Right	Cheek	A + B	1374M	1:1	0.129	1.227	0.158	A3
826.40	4132	UMTS 850	RMC	25.8	24.91	108	0.09	Right	Tilt	A + B	1374M	1:1	0.063	1.227	0.077	
826.40	4132	UMTS 850	RMC	25.8	24.91	108	0.07	Left	Cheek	A + B	1374M	1:1	0.098	1.227	0.120	
826.40	4132	UMTS 850	RMC	25.8	24.91	108	0.09	Left	Tilt	A + B	1374M	1:1	0.042	1.227	0.052	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram									

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Table 11-4
LTE Band 12 Head SAR

MEASUREMENT RESULTS																							
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna Config.	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																				
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	56	0.00	0	Right	Cheek	A	QPSK	1	0	1371M	1:1	0.081	1.259	0.102	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	56	0.08	1	Right	Cheek	A	QPSK	25	12	1371M	1:1	0.068	1.250	0.085	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	56	0.20	0	Right	Tilt	A	QPSK	1	0	1371M	1:1	0.041	1.259	0.052	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	56	0.13	1	Right	Tilt	A	QPSK	25	12	1371M	1:1	0.031	1.250	0.039	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	56	0.05	0	Left	Cheek	A	QPSK	1	0	1371M	1:1	0.064	1.259	0.081	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	56	0.07	1	Left	Cheek	A	QPSK	25	12	1371M	1:1	0.046	1.250	0.058	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	56	0.07	0	Left	Tilt	A	QPSK	1	0	1371M	1:1	0.030	1.259	0.038	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	56	0.16	1	Left	Tilt	A	QPSK	25	12	1371M	1:1	0.022	1.250	0.028	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	108	-0.11	0	Right	Cheek	A + B	QPSK	1	0	1374M	1:1	0.154	1.259	**0.194**	A4
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	108	0.01	1	Right	Cheek	A + B	QPSK	25	12	1374M	1:1	0.128	1.250	0.160	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	108	-0.05	0	Right	Tilt	A + B	QPSK	1	0	1374M	1:1	0.068	1.259	0.086	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	108	-0.07	1	Right	Tilt	A + B	QPSK	25	12	1374M	1:1	0.058	1.250	0.073	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	108	0.13	0	Left	Cheek	A + B	QPSK	1	0	1374M	1:1	0.109	1.259	0.137	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	108	0.06	1	Left	Cheek	A + B	QPSK	25	12	1374M	1:1	0.078	1.250	0.098	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	108	0.08	0	Left	Tilt	A + B	QPSK	1	0	1374M	1:1	0.053	1.259	0.067	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	108	0.05	1	Left	Tilt	A + B	QPSK	25	12	1374M	1:1	0.040	1.250	0.050	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**													**Head** **1.6 W/kg (mW/g)** averaged over 1 gram								

Table 11-5
LTE Band 13 Head SAR

MEASUREMENT RESULTS																							
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna Config.	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																				
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	0	0.19	0	Right	Cheek	A	QPSK	1	0	1369M	1:1	0.101	1.256	0.127	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	0	0.10	1	Right	Cheek	A	QPSK	25	0	1369M	1:1	0.083	1.199	0.100	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	0	0.07	0	Right	Tilt	A	QPSK	1	0	1369M	1:1	0.040	1.256	0.050	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	0	-0.02	1	Right	Tilt	A	QPSK	25	0	1369M	1:1	0.035	1.199	0.042	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	0	0.19	0	Left	Cheek	A	QPSK	1	0	1369M	1:1	0.065	1.256	0.082	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	0	0.19	1	Left	Cheek	A	QPSK	25	0	1369M	1:1	0.058	1.199	0.070	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	0	-0.20	0	Left	Tilt	A	QPSK	1	0	1369M	1:1	0.029	1.256	0.036	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	0	0.07	1	Left	Tilt	A	QPSK	25	0	1369M	1:1	0.024	1.199	0.029	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	108	0.11	0	Right	Cheek	A + B	QPSK	1	0	1374M	1:1	0.133	1.256	0.167	A5
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	108	0.03	1	Right	Cheek	A + B	QPSK	25	0	1374M	1:1	0.113	1.199	0.135	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	108	-0.08	0	Right	Tilt	A + B	QPSK	1	0	1374M	1:1	0.065	1.256	0.082	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	108	0.05	1	Right	Tilt	A + B	QPSK	25	0	1374M	1:1	0.055	1.199	0.066	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	108	0.01	0	Left	Cheek	A + B	QPSK	1	0	1374M	1:1	0.110	1.256	0.138	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	108	0.08	1	Left	Cheek	A + B	QPSK	25	0	1374M	1:1	0.088	1.199	0.106	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	108	0.12	0	Left	Tilt	A + B	QPSK	1	0	1374M	1:1	0.054	1.256	0.068	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	108	0.11	1	Left	Tilt	A + B	QPSK	25	0	1374M	1:1	0.048	1.199	0.058	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**													**Head** **1.6 W/kg (mW/g)** averaged over 1 gram								

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Table 11-6
LTE Band 5 (Cell) Head SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna Config.	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																				
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	109	-0.03	0	Right	Cheek	A	QPSK	1	0	1374M	1:1	0.147	1.245	0.183	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	109	0.06	1	Right	Cheek	A	QPSK	25	25	1374M	1:1	0.116	1.222	0.142	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	109	0.03	0	Right	Tilt	A	QPSK	1	0	1374M	1:1	0.053	1.245	0.066	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	109	-0.01	1	Right	Tilt	A	QPSK	25	25	1374M	1:1	0.045	1.222	0.055	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	109	0.02	0	Left	Cheek	A	QPSK	1	0	1374M	1:1	0.108	1.245	0.134	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	109	0.04	1	Left	Cheek	A	QPSK	25	25	1374M	1:1	0.089	1.222	0.109	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	109	0.04	0	Left	Tilt	A	QPSK	1	0	1374M	1:1	0.044	1.245	0.055	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	109	0.06	1	Left	Tilt	A	QPSK	25	25	1374M	1:1	0.039	1.222	0.048	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	108	0.01	0	Right	Cheek	A + B	QPSK	1	0	1374M	1:1	0.151	1.245	**0.188**	A6
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	108	0.02	1	Right	Cheek	A + B	QPSK	25	25	1374M	1:1	0.115	1.222	0.141	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	108	0.05	0	Right	Tilt	A + B	QPSK	1	0	1374M	1:1	0.054	1.245	0.067	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	108	0.09	1	Right	Tilt	A + B	QPSK	25	25	1374M	1:1	0.043	1.222	0.053	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	108	0.02	0	Left	Cheek	A + B	QPSK	1	0	1374M	1:1	0.092	1.245	0.115	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	108	0.03	1	Left	Cheek	A + B	QPSK	25	25	1374M	1:1	0.074	1.222	0.090	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	108	0.09	0	Left	Tilt	A + B	QPSK	1	0	1374M	1:1	0.043	1.245	0.054	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	108	0.02	1	Left	Tilt	A + B	QPSK	25	25	1374M	1:1	0.037	1.222	0.045	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-7
LTE Band 4 (AWS) Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																				
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	-0.16	0	Right	Cheek	QPSK	1	50	1369M	1:1	0.060	1.122	0.067	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	-0.02	1	Right	Cheek	QPSK	50	25	1369M	1:1	0.051	1.148	0.059	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	-0.15	0	Right	Tilt	QPSK	1	50	1369M	1:1	0.086	1.122	0.096	A7
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	0.16	1	Right	Tilt	QPSK	50	25	1369M	1:1	0.073	1.148	0.084	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	0.11	0	Left	Cheek	QPSK	1	50	1369M	1:1	0.076	1.122	0.085	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	0.17	1	Left	Cheek	QPSK	50	25	1369M	1:1	0.063	1.148	0.072	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	0.03	0	Left	Tilt	QPSK	1	50	1369M	1:1	0.079	1.122	0.089	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	0.08	1	Left	Tilt	QPSK	50	25	1369M	1:1	0.061	1.148	0.070	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram								

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Table 11-8
LTE Band 41 Head SAR

MEASUREMENT RESULTS																						
1 CC Uplink | 2 CC Uplink	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
		MHz	Ch.															(W/kg)		(W/kg)	
1 CC Uplink	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.23	0.02	0	Right	Cheek	QPSK	1	50	1371M	1:1.58	0.038	1.194	0.045	
1 CC Uplink	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.35	0.10	0	Right	Cheek	QPSK	50	25	1371M	1:1.58	0.030	1.161	0.035	
1 CC Uplink	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.23	0.04	0	Right	Tilt	QPSK	1	50	1371M	1:1.58	0.029	1.194	0.035	
1 CC Uplink	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.35	0.03	0	Right	Tilt	QPSK	50	25	1371M	1:1.58	0.024	1.161	0.028	
1 CC Uplink	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.23	-0.10	0	Left	Cheek	QPSK	1	50	1371M	1:1.58	0.044	1.194	0.053	A8
1 CC Uplink	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.02	0.03	0	Left	Cheek	QPSK	1	99	1371M	1:1.58	0.039	1.253	0.049	
1 CC Uplink	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.35	0.03	0	Left	Cheek	QPSK	50	25	1371M	1:1.58	0.033	1.161	0.038	
2 CC Uplink	PCC	2506.00	39750	Low	LTE Band 41	20	23.0	21.99	0.01	0	Left	Cheek	QPSK	1	99	1371M	1:1.58	0.039	1.262	0.049	
	SCC	2525.80	39948												0						
1 CC Uplink	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.23	-0.10	0	Left	Tilt	QPSK	1	50	1371M	1:1.58	0.031	1.194	0.037	
1 CC Uplink	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.35	0.08	0	Left	Tilt	QPSK	50	25	1371M	1:1.58	0.030	1.161	0.035	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-9
DTS SISO Head SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	13.0	12.83	0.04	Right	Cheek	2	1376M	1	98.9	0.006	-	1.040	1.011	-	
2412	1	802.11b	DSSS	22	13.0	12.83	0.00	Right	Tilt	2	1376M	1	98.9	0.004	-	1.040	1.011	-	
2412	1	802.11b	DSSS	22	13.0	12.83	0.03	Left	Cheek	2	1376M	1	98.9	0.013	0.009	1.040	1.011	**0.009**	
2412	1	802.11b	DSSS	22	13.0	12.83	0.00	Left	Tilt	2	1376M	1	98.9	0.004	-	1.040	1.011	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-10
DTS MIMO Head SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
2437	6	802.11n	OFDM	20	13.0	12.85	13.0	12.80	0.10	Right	Cheek	MIMO	1376M	13	92.2	0.845	0.521	1.047	1.085	0.592	A9
2437	6	802.11n	OFDM	20	13.0	12.85	13.0	12.80	0.02	Right	Tilt	MIMO	1376M	13	92.2	0.764	0.466	1.047	1.085	0.529	
2437	6	802.11n	OFDM	20	13.0	12.85	13.0	12.80	-0.03	Left	Cheek	MIMO	1376M	13	92.2	0.462	-	1.047	1.085	-	
2437	6	802.11n	OFDM	20	13.0	12.85	13.0	12.80	0.01	Left	Tilt	MIMO	1376M	13	92.2	0.471	-	1.047	1.085	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram										

Note: To achieve the 16.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 13.0 dBm.

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Table 11-11
NII SISO Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5290	58	802.11ac	OFDM	80	12.0	11.49	0.01	Right	Cheek	1	1376M	29.3	86.1	0.224	-	1.125	1.161	-	
5290	58	802.11ac	OFDM	80	12.0	11.49	0.00	Right	Tilt	1	1376M	29.3	86.1	0.267	0.170	1.125	1.161	0.222	
5290	58	802.11ac	OFDM	80	12.0	11.49	0.01	Left	Cheek	1	1376M	29.3	86.1	0.137	-	1.125	1.161	-	
5290	58	802.11ac	OFDM	80	12.0	11.49	0.01	Left	Tilt	1	1376M	29.3	86.1	0.142	-	1.125	1.161	-	
5610	122	802.11ac	OFDM	80	12.0	11.77	0.12	Right	Cheek	1	1376M	29.3	86.1	0.314	0.140	1.054	1.161	0.171	
5610	122	802.11ac	OFDM	80	12.0	11.77	0.01	Right	Tilt	1	1376M	29.3	86.1	0.288	-	1.054	1.161	-	
5610	122	802.11ac	OFDM	80	12.0	11.77	0.01	Left	Cheek	1	1376M	29.3	86.1	0.188	-	1.054	1.161	-	
5610	122	802.11ac	OFDM	80	12.0	11.77	0.01	Left	Tilt	1	1376M	29.3	86.1	0.157	-	1.054	1.161	-	
5775	155	802.11ac	OFDM	80	12.0	11.64	-0.05	Right	Cheek	1	1376M	29.3	86.1	0.190	0.125	1.086	1.161	0.158	
5775	155	802.11ac	OFDM	80	12.0	11.64	0.01	Right	Tilt	1	1376M	29.3	86.1	0.187	-	1.086	1.161	-	
5775	155	802.11ac	OFDM	80	12.0	11.64	0.01	Left	Cheek	1	1376M	29.3	86.1	0.178	-	1.086	1.161	-	
5775	155	802.11ac	OFDM	80	12.0	11.64	0.01	Left	Tilt	1	1376M	29.3	86.1	0.185	-	1.086	1.161	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Head 1.6 W/kg (mW/g) averaged over 1 gram					

Table 11-12
NII MIMO Head SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
5290	58	802.11ac	OFDM	80	12.0	11.49	12.0	11.62	0.01	Right	Cheek	MIMO	1376M	58.5	86.3	0.361	-	1.125	1.159	-	
5290	58	802.11ac	OFDM	80	12.0	11.49	12.0	11.62	0.01	Right	Tilt	MIMO	1376M	58.5	86.3	0.429	0.267	1.125	1.159	0.348	A10
5290	58	802.11ac	OFDM	80	12.0	11.49	12.0	11.62	0.02	Left	Cheek	MIMO	1376M	58.5	86.3	0.260	-	1.125	1.159	-	
5290	58	802.11ac	OFDM	80	12.0	11.49	12.0	11.62	0.01	Left	Tilt	MIMO	1376M	58.5	86.3	0.250	-	1.125	1.159	-	
5690	138	802.11ac	OFDM	80	12.0	11.57	12.0	11.74	-0.04	Right	Cheek	MIMO	1376M	58.5	86.3	0.169	0.110	1.104	1.159	0.141	
5690	138	802.11ac	OFDM	80	12.0	11.57	12.0	11.74	0.01	Right	Tilt	MIMO	1376M	58.5	86.3	0.162	-	1.104	1.159	-	
5690	138	802.11ac	OFDM	80	12.0	11.57	12.0	11.74	0.01	Left	Cheek	MIMO	1376M	58.5	86.3	0.122	-	1.104	1.159	-	
5690	138	802.11ac	OFDM	80	12.0	11.57	12.0	11.74	0.01	Left	Tilt	MIMO	1376M	58.5	86.3	0.132	-	1.104	1.159	-	
5775	155	802.11ac	OFDM	80	12.0	11.64	12.0	11.80	0.00	Right	Cheek	MIMO	1376M	58.5	86.3	0.091	-	1.086	1.159	-	
5775	155	802.11ac	OFDM	80	12.0	11.64	12.0	11.80	0.05	Right	Tilt	MIMO	1376M	58.5	86.3	0.114	0.082	1.086	1.159	0.103	
5775	155	802.11ac	OFDM	80	12.0	11.64	12.0	11.80	0.01	Left	Cheek	MIMO	1376M	58.5	86.3	0.104	-	1.086	1.159	-	
5775	155	802.11ac	OFDM	80	12.0	11.64	12.0	11.80	0.01	Left	Tilt	MIMO	1376M	58.5	86.3	0.109	-	1.086	1.159	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Head 1.6 W/kg (mW/g) averaged over 1 gram					

Note: To achieve the 15.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 12.0 dBm.

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Table 11-13
DSS Head SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)			(W/kg)	
2441.00	39	Bluetooth	FHSS	10.5	10.20	0.07	Right	Cheek	1	1376M	1	76.80	0.153	1.072	1.302	**0.214**	A11
2441.00	39	Bluetooth	FHSS	10.5	10.20	0.08	Right	Tilt	1	1376M	1	76.80	0.135	1.072	1.302	0.188	
2441.00	39	Bluetooth	FHSS	10.5	10.20	0.10	Left	Cheek	1	1376M	1	76.80	0.088	1.072	1.302	0.123	
2441.00	39	Bluetooth	FHSS	10.5	10.20	0.04	Left	Tilt	1	1376M	1	76.80	0.126	1.072	1.302	0.176	
2441.00	39	Bluetooth	FHSS	10.5	9.31	0.10	Right	Cheek	2	1376M	1	76.80	0.008	1.315	1.302	0.014	
2441.00	39	Bluetooth	FHSS	10.5	9.31	0.10	Right	Tilt	2	1376M	1	76.80	0.004	1.315	1.302	0.007	
2441.00	39	Bluetooth	FHSS	10.5	9.31	0.04	Left	Cheek	2	1376M	1	76.80	0.007	1.315	1.302	0.012	
2441.00	39	Bluetooth	FHSS	10.5	9.31	0.10	Left	Tilt	2	1376M	1	76.80	0.003	1.315	1.302	0.005	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**							**Head** **1.6 W/kg (mW/g)** averaged over 1 gram										

11.2 Standalone Body-Worn SAR Data

Table 11-14
GSM/UMTS Body-Worn SAR Data

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.													(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	33.5	32.91	N/A	0.03	15 mm	A	1380M	1	1:8.3	back	0.096	1.146	0.110	A12
836.60	190	GSM 850	GSM	33.5	32.91	N/A	0.07	15 mm	A + B	1374M	1	1:8.3	back	0.087	1.146	0.100	
1880.00	661	GSM 1900	GSM	30.2	29.43	N/A	-0.02	15 mm	B	1377M	1	1:8.3	back	0.244	1.194	0.291	A14
826.40	4132	UMTS 850	RMC	25.8	24.91	4	0.05	15 mm	A	1369M	N/A	1:1	back	0.158	1.227	0.194	A16
826.40	4132	UMTS 850	RMC	25.8	24.91	72	-0.01	15 mm	A + B	1374M	N/A	1:1	back	0.114	1.227	0.140	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**							**Body** **1.6 W/kg (mW/g)** averaged over 1 gram										

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Table 11-15
LTE Body-Worn SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																				
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	10	0.02	0	A	1371M	QPSK	1	0	15 mm	back	1:1	0.122	1.259	0.154	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	10	0.14	1	A	1371M	QPSK	25	12	15 mm	back	1:1	0.092	1.250	0.115	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	0	0.01	0	A + B	1380M	QPSK	1	0	15 mm	back	1:1	0.175	1.259	0.220	A18
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	0	0.03	1	A + B	1380M	QPSK	25	12	15 mm	back	1:1	0.134	1.250	0.168	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	4	-0.06	0	A	1380M	QPSK	1	0	15 mm	back	1:1	0.126	1.256	0.158	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	4	0.13	1	A	1380M	QPSK	25	0	15 mm	back	1:1	0.102	1.199	0.122	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	36	0.02	0	A + B	1380M	QPSK	1	0	15 mm	back	1:1	0.183	1.256	0.230	A20
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	36	-0.14	1	A + B	1380M	QPSK	25	0	15 mm	back	1:1	0.148	1.199	0.177	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	0	0.04	0	A	1374M	QPSK	1	0	15 mm	back	1:1	0.142	1.245	0.177	A22
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	0	-0.02	1	A	1374M	QPSK	25	25	15 mm	back	1:1	0.116	1.222	0.142	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	72	-0.04	0	A + B	1374M	QPSK	1	0	15 mm	back	1:1	0.101	1.245	0.126	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	72	0.00	1	A + B	1374M	QPSK	25	25	15 mm	back	1:1	0.081	1.222	0.099	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	135	-0.10	0	B	1369M	QPSK	1	50	15 mm	back	1:1	0.513	1.122	**0.576**	A24
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	135	-0.05	1	B	1369M	QPSK	50	25	15 mm	back	1:1	0.411	1.148	0.472	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**																**Body** **1.6 W/kg (mW/g)** averaged over 1 gram					

Table 11-16
LTE 41 Body-Worn SAR

MEASUREMENT RESULTS																		
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																		
2506.00	39750	Low	LTE Band 41	20	23.0	22.23	0.00	0	1371M	QPSK	1	50	15 mm	back	1:1.58	0.128	1.194	0.153	A26
2506.00	39750	Low	LTE Band 41	20	23.0	22.35	0.00	0	1371M	QPSK	50	25	15 mm	back	1:1.58	0.128	1.161	0.149	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**															**Body** **1.6 W/kg (mW/g)** averaged over 1 gram				

Table 11-17
DTS Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan W/kg	SAR (1g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																		
2462	11	802.11b	DSSS	22	19.0	18.88	0.21	15 mm	2	1376M	1	back	98.9	0.028	0.023	1.028	1.011	**0.024**	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**														**Body** **1.6 W/kg (mW/g)** averaged over 1 gram					

Table 11-18
DTS MIMO Body-Worn SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan W/kg	SAR (1g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																				
2462	11	802.11b	DSSS	22	19.0	18.67	19.0	18.70	-0.07	15 mm	MIMO	1376M	1	back	98.9	0.037	0.031	1.079	1.011	0.034	A28
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**																**Body** **1.6 W/kg (mW/g)** averaged over 1 gram					

Note: To achieve the 22.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 19.0 dBm.

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Table 11-19
NII SISO Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5260	52	802.11a	OFDM	20	18.0	17.69	0.01	15 mm	1	1385M	6	back	93.8	0.009	0.000	1.074	1.066	**0.000**	
5500	100	802.11a	OFDM	20	18.0	17.79	0.00	15 mm	1	1385M	6	back	93.8	0.000	0.000	1.050	1.066	**0.000**	
5785	157	802.11a	OFDM	20	18.0	17.98	0.00	15 mm	1	1385M	6	back	93.8	0.000	0.000	1.005	1.066	**0.000**	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**								**Body** **1.6 W/kg (mW/g)** averaged over 1 gram											

Table 11-20
NII MIMO Body-Worn SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
5260	52	802.11n	OFDM	20	18.0	17.87	18.0	17.45	-0.20	15 mm	MIMO	1385M	13	back	86.9	0.012	0.004	1.135	1.151	0.005	
5500	100	802.11n	OFDM	20	18.0	17.87	18.0	17.63	0.05	15 mm	MIMO	1385M	13	back	86.9	0.031	0.010	1.089	1.151	0.013	A30
5785	157	802.11n	OFDM	20	18.0	17.83	18.0	17.44	-0.04	15 mm	MIMO	1385M	13	back	86.9	0.015	0.004	1.138	1.151	0.005	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**										**Body** **1.6 W/kg (mW/g)** averaged over 1 gram											

Note: To achieve the 21.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 18.0 dBm.

Table 11-21
DSS Body-Worn SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	17.5	17.29	0.02	15 mm	1	1376M	1	back	76.80	0.017	1.050	1.302	**0.023**	A32
2441	39	Bluetooth	FHSS	17.5	16.93	0.16	15 mm	2	1376M	1	back	76.80	0.008	1.140	1.302	0.012	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**				**Body** **1.6 W/kg (mW/g)** averaged over 1 gram													

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11.3 Standalone Hotspot SAR Data

Table 11-22
GSM/UMTS Hotspot SAR Data

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.													(W/kg)		(W/kg)	
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	-0.01	10 mm	A	1380M	3	1:2.76	back	0.272	1.197	0.326	A13
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	0.02	10 mm	A	1380M	3	1:2.76	front	0.084	1.197	0.101	
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	-0.03	10 mm	A	1380M	3	1:2.76	bottom	0.095	1.197	0.114	
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	-0.03	10 mm	A	1380M	3	1:2.76	right	0.261	1.197	0.312	
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	-0.01	10 mm	A + B	1374M	3	1:2.76	back	0.166	1.197	0.199	
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	0.07	10 mm	A + B	1374M	3	1:2.76	front	0.047	1.197	0.056	
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	-0.01	10 mm	A + B	1374M	3	1:2.76	bottom	0.039	1.197	0.047	
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	-0.03	10 mm	A + B	1374M	3	1:2.76	right	0.156	1.197	0.187	
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	0.08	10 mm	A + B	1374M	3	1:2.76	left	0.062	1.197	0.074	
1880.00	661	GSM 1900	GPRS	21.5	20.57	N/A	-0.12	10 mm	B	1377M	4	1:2.076	back	0.209	1.239	0.259	
1880.00	661	GSM 1900	GPRS	21.5	20.57	N/A	0.12	10 mm	B	1377M	4	1:2.076	front	0.071	1.239	0.088	
1880.00	661	GSM 1900	GPRS	21.5	20.57	N/A	0.04	10 mm	B	1377M	4	1:2.076	bottom	0.322	1.239	0.399	A15
1880.00	661	GSM 1900	GPRS	21.5	20.57	N/A	0.09	10 mm	B	1377M	4	1:2.076	right	0.040	1.239	0.050	
1880.00	661	GSM 1900	GPRS	21.5	20.57	N/A	0.07	10 mm	B	1377M	4	1:2.076	left	0.032	1.239	0.040	
826.40	4132	UMTS 850	RMC	25.8	24.91	4	0.03	10 mm	A	1369M	N/A	1:1	back	0.226	1.227	0.277	
826.40	4132	UMTS 850	RMC	25.8	24.91	4	0.04	10 mm	A	1369M	N/A	1:1	front	0.140	1.227	0.172	
826.40	4132	UMTS 850	RMC	25.8	24.91	4	-0.02	10 mm	A	1369M	N/A	1:1	bottom	0.138	1.227	0.169	
826.40	4132	UMTS 850	RMC	25.8	24.91	4	-0.02	10 mm	A	1369M	N/A	1:1	right	0.343	1.227	0.421	A17
826.40	4132	UMTS 850	RMC	25.8	24.91	72	-0.04	10 mm	A + B	1374M	N/A	1:1	back	0.239	1.227	0.293	
826.40	4132	UMTS 850	RMC	25.8	24.91	72	0.00	10 mm	A + B	1374M	N/A	1:1	front	0.096	1.227	0.118	
826.40	4132	UMTS 850	RMC	25.8	24.91	72	0.12	10 mm	A + B	1374M	N/A	1:1	bottom	0.071	1.227	0.087	
826.40	4132	UMTS 850	RMC	25.8	24.91	72	0.04	10 mm	A + B	1374M	N/A	1:1	right	0.252	1.227	0.309	
826.40	4132	UMTS 850	RMC	25.8	24.91	72	0.00	10 mm	A + B	1374M	N/A	1:1	left	0.095	1.227	0.117	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram				

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Table 11-23
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	10	-0.01	0	A	1371M	QPSK	1	0	10 mm	back	1:1	0.190	1.259	0.239	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	10	-0.09	1	A	1371M	QPSK	25	12	10 mm	back	1:1	0.163	1.250	0.204	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	10	-0.03	0	A	1371M	QPSK	1	0	10 mm	front	1:1	0.088	1.259	0.111	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	10	0.02	1	A	1371M	QPSK	25	12	10 mm	front	1:1	0.070	1.250	0.088	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	10	0.17	0	A	1371M	QPSK	1	0	10 mm	bottom	1:1	0.080	1.259	0.101	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	10	0.02	1	A	1371M	QPSK	25	12	10 mm	bottom	1:1	0.065	1.250	0.081	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	10	-0.08	0	A	1371M	QPSK	1	0	10 mm	right	1:1	0.271	1.259	0.341	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	10	0.03	1	A	1371M	QPSK	25	12	10 mm	right	1:1	0.204	1.250	0.255	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	0	0.12	0	A + B	1380M	QPSK	1	0	10 mm	back	1:1	0.249	1.259	0.313	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	0	0.08	1	A + B	1380M	QPSK	25	12	10 mm	back	1:1	0.205	1.250	0.256	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	0	-0.06	0	A + B	1380M	QPSK	1	0	10 mm	front	1:1	0.148	1.259	0.186	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	0	0.02	1	A + B	1380M	QPSK	25	12	10 mm	front	1:1	0.116	1.250	0.145	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	0	0.12	0	A + B	1380M	QPSK	1	0	10 mm	bottom	1:1	0.092	1.259	0.116	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	0	0.02	1	A + B	1380M	QPSK	25	12	10 mm	bottom	1:1	0.074	1.250	0.093	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	0	-0.11	0	A + B	1380M	QPSK	1	0	10 mm	right	1:1	0.406	1.259	**0.511**	A19
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	0	-0.01	1	A + B	1380M	QPSK	25	12	10 mm	right	1:1	0.295	1.250	0.369	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	0	-0.04	0	A + B	1380M	QPSK	1	0	10 mm	left	1:1	0.166	1.259	0.209	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	0	-0.02	1	A + B	1380M	QPSK	25	12	10 mm	left	1:1	0.113	1.250	0.141	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-24
LTE Band 13 Hotspot SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	4	0.06	0	A	1380M	QPSK	1	0	10 mm	back	1:1	0.252	1.256	0.317	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	4	0.01	1	A	1380M	QPSK	25	0	10 mm	back	1:1	0.204	1.199	0.245	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	4	-0.06	0	A	1380M	QPSK	1	0	10 mm	front	1:1	0.111	1.256	0.139	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	4	-0.01	1	A	1380M	QPSK	25	0	10 mm	front	1:1	0.089	1.199	0.107	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	4	0.10	0	A	1380M	QPSK	1	0	10 mm	bottom	1:1	0.085	1.256	0.107	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	4	0.20	1	A	1380M	QPSK	25	0	10 mm	bottom	1:1	0.072	1.199	0.086	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	4	-0.13	0	A	1380M	QPSK	1	0	10 mm	right	1:1	0.266	1.256	0.334	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	4	-0.19	1	A	1380M	QPSK	25	0	10 mm	right	1:1	0.230	1.199	0.276	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	36	0.20	0	A + B	1380M	QPSK	1	0	10 mm	back	1:1	0.275	1.256	0.345	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	36	0.07	1	A + B	1380M	QPSK	25	0	10 mm	back	1:1	0.217	1.199	0.260	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	36	-0.08	0	A + B	1380M	QPSK	1	0	10 mm	front	1:1	0.163	1.256	0.205	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	36	0.01	1	A + B	1380M	QPSK	25	0	10 mm	front	1:1	0.136	1.199	0.163	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	36	0.06	0	A + B	1380M	QPSK	1	0	10 mm	bottom	1:1	0.084	1.256	0.106	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	36	0.06	1	A + B	1380M	QPSK	25	0	10 mm	bottom	1:1	0.070	1.199	0.084	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	36	-0.04	0	A + B	1380M	QPSK	1	0	10 mm	right	1:1	0.311	1.256	0.391	A21
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	36	0.00	1	A + B	1380M	QPSK	25	0	10 mm	right	1:1	0.269	1.199	0.323	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	36	0.05	0	A + B	1380M	QPSK	1	0	10 mm	left	1:1	0.144	1.256	0.181	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	36	-0.03	1	A + B	1380M	QPSK	25	0	10 mm	left	1:1	0.131	1.199	0.157	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Body 1.6 W/kg (mW/g) averaged over 1 gram						

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Table 11-25
LTE Band 5 (Cell) Hotspot SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	0	0.05	0	A	1374M	QPSK	1	0	10 mm	back	1:1	0.303	1.245	0.377	A23
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	0	0.01	1	A	1374M	QPSK	25	25	10 mm	back	1:1	0.239	1.222	0.292	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	0	-0.03	0	A	1374M	QPSK	1	0	10 mm	front	1:1	0.135	1.245	0.168	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	0	-0.01	1	A	1374M	QPSK	25	25	10 mm	front	1:1	0.101	1.222	0.123	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	0	0.06	0	A	1374M	QPSK	1	0	10 mm	bottom	1:1	0.091	1.245	0.113	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	0	-0.01	1	A	1374M	QPSK	25	25	10 mm	bottom	1:1	0.076	1.222	0.093	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	0	0.00	0	A	1374M	QPSK	1	0	10 mm	right	1:1	0.261	1.245	0.325	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	0	-0.02	1	A	1374M	QPSK	25	25	10 mm	right	1:1	0.220	1.222	0.269	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	72	-0.14	0	A + B	1374M	QPSK	1	0	10 mm	back	1:1	0.216	1.245	0.269	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	72	0.00	1	A + B	1374M	QPSK	25	25	10 mm	back	1:1	0.185	1.222	0.226	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	72	0.08	0	A + B	1374M	QPSK	1	0	10 mm	front	1:1	0.114	1.245	0.142	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	72	0.06	1	A + B	1374M	QPSK	25	25	10 mm	front	1:1	0.096	1.222	0.117	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	72	0.03	0	A + B	1374M	QPSK	1	0	10 mm	bottom	1:1	0.052	1.245	0.065	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	72	-0.08	1	A + B	1374M	QPSK	25	25	10 mm	bottom	1:1	0.044	1.222	0.054	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	72	-0.04	0	A + B	1374M	QPSK	1	0	10 mm	right	1:1	0.226	1.245	0.281	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	72	-0.01	1	A + B	1374M	QPSK	25	25	10 mm	right	1:1	0.194	1.222	0.237	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-26
LTE Band 4 (AWS) Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.29	135	-0.06	0	1369M	QPSK	1	50	10 mm	back	1:1	0.320	1.178	0.377	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.38	135	-0.08	0	1369M	QPSK	50	25	10 mm	back	1:1	0.325	1.153	0.375	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.29	135	-0.11	0	1369M	QPSK	1	50	10 mm	front	1:1	0.048	1.178	0.057	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.38	135	0.08	0	1369M	QPSK	50	25	10 mm	front	1:1	0.049	1.153	0.056	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.29	135	-0.04	0	1369M	QPSK	1	50	10 mm	bottom	1:1	0.430	1.178	0.507	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.38	135	-0.06	0	1369M	QPSK	50	25	10 mm	bottom	1:1	0.437	1.153	0.504	A25
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.29	135	0.15	0	1369M	QPSK	1	50	10 mm	right	1:1	0.049	1.178	0.058	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.38	135	-0.02	0	1369M	QPSK	50	25	10 mm	right	1:1	0.051	1.153	0.059	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.29	135	0.20	0	1369M	QPSK	1	50	10 mm	left	1:1	0.018	1.178	0.021	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.38	135	0.19	0	1369M	QPSK	50	25	10 mm	left	1:1	0.021	1.153	0.024	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram						

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Table 11-27
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2506.00	39750	Low	LTE Band 41	20	19.0	18.22	0.00	0	1383M	QPSK	1	99	10 mm	back	1:1.58	0.167	1.197	0.200	
2506.00	39750	Low	LTE Band 41	20	19.0	18.34	-0.02	0	1383M	QPSK	50	25	10 mm	back	1:1.58	0.163	1.164	0.190	
2506.00	39750	Low	LTE Band 41	20	19.0	18.22	0.01	0	1383M	QPSK	1	99	10 mm	front	1:1.58	0.063	1.197	0.075	
2506.00	39750	Low	LTE Band 41	20	19.0	18.34	0.01	0	1383M	QPSK	50	25	10 mm	front	1:1.58	0.065	1.164	0.076	
2506.00	39750	Low	LTE Band 41	20	19.0	18.22	-0.04	0	1383M	QPSK	1	99	10 mm	bottom	1:1.58	0.368	1.197	0.440	
2506.00	39750	Low	LTE Band 41	20	19.0	18.34	-0.03	0	1383M	QPSK	50	25	10 mm	bottom	1:1.58	0.386	1.164	0.449	A27
2506.00	39750	Low	LTE Band 41	20	19.0	18.22	0.09	0	1383M	QPSK	1	99	10 mm	right	1:1.58	0.031	1.197	0.037	
2506.00	39750	Low	LTE Band 41	20	19.0	18.34	0.01	0	1383M	QPSK	50	25	10 mm	right	1:1.58	0.032	1.164	0.037	
2506.00	39750	Low	LTE Band 41	20	19.0	18.22	-0.10	0	1383M	QPSK	1	99	10 mm	left	1:1.58	0.020	1.197	0.024	
2506.00	39750	Low	LTE Band 41	20	19.0	18.34	-0.19	0	1383M	QPSK	50	25	10 mm	left	1:1.58	0.023	1.164	0.027	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-28
WLAN Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	19.0	18.88	0.02	10 mm	2	1376M	1	back	98.9	0.047	-	1.028	1.011	-	
2462	11	802.11b	DSSS	22	19.0	18.88	-0.06	10 mm	2	1376M	1	front	98.9	0.131	-	1.028	1.011	-	
2462	11	802.11b	DSSS	22	19.0	18.88	-0.07	10 mm	2	1376M	1	bottom	98.9	0.261	0.190	1.028	1.011	0.197	
2462	11	802.11b	DSSS	22	19.0	18.88	0.02	10 mm	2	1376M	1	left	98.9	0.029	-	1.028	1.011	-	
5785	157	802.11a	OFDM	20	18.0	17.98	0.00	10 mm	1	1385M	6	back	93.8	0.000	-	1.005	1.066	-	
5785	157	802.11a	OFDM	20	18.0	17.98	0.00	10 mm	1	1385M	6	front	93.8	0.152	-	1.005	1.066	-	
5785	157	802.11a	OFDM	20	18.0	17.98	0.06	10 mm	1	1385M	6	top	93.8	0.163	0.098	1.005	1.066	0.105	
5785	157	802.11a	OFDM	20	18.0	17.98	0.06	10 mm	1	1385M	6	left	93.8	0.028	-	1.005	1.066	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Body 1.6 W/kg (mW/g) averaged over 1 gram					

Table 11-29
WLAN MIMO Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	19.0	18.67	19.0	18.70	-0.13	10 mm	MIMO	1376M	1	back	98.9	0.056	-	1.079	1.011	-	
2462	11	802.11b	DSSS	22	19.0	18.67	19.0	18.70	-0.01	10 mm	MIMO	1376M	1	front	98.9	0.267	0.193	1.079	1.011	0.211	
2462	11	802.11b	DSSS	22	19.0	18.67	19.0	18.70	-0.04	10 mm	MIMO	1376M	1	top	98.9	0.351	0.285	1.079	1.011	0.311	A29
2462	11	802.11b	DSSS	22	19.0	18.67	19.0	18.70	-0.13	10 mm	MIMO	1376M	1	bottom	98.9	0.122	-	1.079	1.011	-	
2462	11	802.11b	DSSS	22	19.0	18.67	19.0	18.70	0.13	10 mm	MIMO	1376M	1	left	98.9	0.133	-	1.079	1.011	-	
5785	157	802.11n	OFDM	20	18.0	17.83	18.0	17.44	0.01	10 mm	MIMO	1385M	13	back	86.9	0.028	-	1.138	1.151	-	
5785	157	802.11n	OFDM	20	18.0	17.83	18.0	17.44	0.01	10 mm	MIMO	1385M	13	front	86.9	0.184	-	1.138	1.151	-	
5785	157	802.11n	OFDM	20	18.0	17.83	18.0	17.44	0.01	10 mm	MIMO	1385M	13	top	86.9	0.134	-	1.138	1.151	-	
5785	157	802.11n	OFDM	20	18.0	17.83	18.0	17.44	-0.15	10 mm	MIMO	1385M	13	bottom	86.9	0.237	0.162	1.138	1.151	0.212	A31
5785	157	802.11n	OFDM	20	18.0	17.83	18.0	17.44	0.01	10 mm	MIMO	1385M	13	left	86.9	0.029	-	1.138	1.151	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram						

Note: For 2450 MHz WLAN, to achieve the 22.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 19.0 dBm. For 5GHz WLAN, to achieve the 21.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 18.0 dBm.

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Table 11-30
DSS Hotspot SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	17.5	17.29	-0.10	10 mm	1	1376M	1	back	76.80	0.026	1.050	1.302	0.036	
2441	39	Bluetooth	FHSS	17.5	17.29	0.09	10 mm	1	1376M	1	front	76.80	0.102	1.050	1.302	0.139	
2441	39	Bluetooth	FHSS	17.5	17.29	0.01	10 mm	1	1376M	1	top	76.80	0.134	1.050	1.302	**0.183**	A33
2441	39	Bluetooth	FHSS	17.5	17.29	-0.04	10 mm	1	1376M	1	left	76.80	0.043	1.050	1.302	0.059	
2441	39	Bluetooth	FHSS	17.5	16.93	0.03	10 mm	2	1376M	1	back	76.80	0.012	1.140	1.302	0.018	
2441	39	Bluetooth	FHSS	17.5	16.93	0.02	10 mm	2	1376M	1	front	76.80	0.039	1.140	1.302	0.058	
2441	39	Bluetooth	FHSS	17.5	16.93	-0.02	10 mm	2	1376M	1	bottom	76.80	0.074	1.140	1.302	0.110	
2441	39	Bluetooth	FHSS	17.5	16.93	-0.10	10 mm	2	1376M	1	left	76.80	0.013	1.140	1.302	0.019	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**							**Body** **1.6 W/kg (mW/g)** averaged over 1 gram										

11.4 Standalone Phablet SAR Data

Table 11-31
GPRS 1900 Phablet SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GPRS	27.5	26.42	-0.12	10 mm	1380M	3	1:2.76	back	0.442	1.282	0.567	
1880.00	661	GSM 1900	GPRS	27.5	26.42	-0.11	0 mm	1380M	3	1:2.76	front	0.753	1.282	0.965	
1880.00	661	GSM 1900	GPRS	27.5	26.42	-0.13	12 mm	1380M	3	1:2.76	bottom	0.456	1.282	0.585	
1880.00	661	GSM 1900	GPRS	27.5	26.42	0.14	0 mm	1380M	3	1:2.76	right	0.342	1.282	0.438	
1880.00	661	GSM 1900	GPRS	27.5	26.42	0.15	0 mm	1380M	3	1:2.76	left	0.183	1.282	0.235	
1880.00	661	GSM 1900	GPRS	21.5	20.57	0.10	0 mm	1380M	4	1:2.076	back	1.030	1.239	1.276	
1850.20	512	GSM 1900	GPRS	21.5	20.31	-0.07	0 mm	1380M	4	1:2.076	bottom	1.540	1.315	**2.025**	
1880.00	661	GSM 1900	GPRS	21.5	20.57	-0.18	0 mm	1380M	4	1:2.076	bottom	1.430	1.239	1.772	
1909.80	810	GSM 1900	GPRS	21.5	20.44	-0.01	0 mm	1380M	4	1:2.076	bottom	1.560	1.276	1.991	A34
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**							**Phablet** **4.0 W/kg (mW/g)** averaged over 10 grams								

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Table 11-32
LTE Band 4 Phablet SAR Data

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	135	0.00	0	1369M	QPSK	1	50	10 mm	back	1:1	0.582	1.122	0.653	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	135	0.01	1	1369M	QPSK	50	25	10 mm	back	1:1	0.467	1.148	0.536	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	135	0.09	0	1369M	QPSK	1	50	0 mm	front	1:1	0.720	1.122	0.808	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	135	0.09	1	1369M	QPSK	50	25	0 mm	front	1:1	0.580	1.148	0.666	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	135	-0.04	0	1369M	QPSK	1	50	12 mm	bottom	1:1	0.666	1.122	0.747	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	135	0.01	1	1369M	QPSK	50	25	12 mm	bottom	1:1	0.539	1.148	0.619	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	135	0.07	0	1369M	QPSK	1	50	0 mm	right	1:1	0.634	1.122	0.711	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	135	0.10	1	1369M	QPSK	50	25	0 mm	right	1:1	0.510	1.148	0.585	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	135	0.01	0	1369M	QPSK	1	50	0 mm	left	1:1	0.251	1.122	0.282	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	135	0.13	1	1369M	QPSK	50	25	0 mm	left	1:1	0.202	1.148	0.232	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.29	135	-0.12	0	1369M	QPSK	1	50	0 mm	back	1:1	0.871	1.178	1.026	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.38	135	-0.14	0	1369M	QPSK	50	25	0 mm	back	1:1	0.901	1.153	1.039	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.29	135	-0.06	0	1369M	QPSK	1	50	0 mm	bottom	1:1	1.140	1.178	1.343	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.38	135	-0.02	0	1369M	QPSK	50	25	0 mm	bottom	1:1	1.180	1.153	1.361	A35
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																	Phablet 4.0 W/kg (mW/g) averaged over 10 grams			

Table 11-33
LTE Band 41 Phablet SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2506.00	39750	Low	LTE Band 41	20	23.0	22.23	0.00	0	1383M	QPSK	1	50	10 mm	back	1:1.58	0.230	1.194	0.275	
2506.00	39750	Low	LTE Band 41	20	23.0	22.35	-0.01	0	1383M	QPSK	50	25	10 mm	back	1:1.58	0.222	1.161	0.258	
2506.00	39750	Low	LTE Band 41	20	23.0	22.23	0.00	0	1383M	QPSK	1	50	0 mm	front	1:1.58	0.334	1.194	0.399	
2506.00	39750	Low	LTE Band 41	20	23.0	22.35	0.00	0	1383M	QPSK	50	25	0 mm	front	1:1.58	0.345	1.161	0.401	
2506.00	39750	Low	LTE Band 41	20	23.0	22.23	0.00	0	1383M	QPSK	1	50	12 mm	bottom	1:1.58	0.350	1.194	0.418	
2506.00	39750	Low	LTE Band 41	20	23.0	22.35	-0.03	0	1383M	QPSK	50	25	12 mm	bottom	1:1.58	0.355	1.161	0.412	
2506.00	39750	Low	LTE Band 41	20	23.0	22.23	0.00	0	1383M	QPSK	1	50	0 mm	right	1:1.58	0.210	1.194	0.251	
2506.00	39750	Low	LTE Band 41	20	23.0	22.35	-0.03	0	1383M	QPSK	50	25	0 mm	right	1:1.58	0.212	1.161	0.246	
2506.00	39750	Low	LTE Band 41	20	23.0	22.23	0.08	0	1383M	QPSK	1	50	0 mm	left	1:1.58	0.131	1.194	0.156	
2506.00	39750	Low	LTE Band 41	20	23.0	22.35	-0.01	0	1383M	QPSK	50	25	0 mm	left	1:1.58	0.134	1.161	0.156	
2506.00	39750	Low	LTE Band 41	20	19.0	18.22	0.04	0	1383M	QPSK	1	99	0 mm	back	1:1.58	0.548	1.197	0.656	
2506.00	39750	Low	LTE Band 41	20	19.0	18.34	0.01	0	1383M	QPSK	50	25	0 mm	back	1:1.58	0.561	1.164	0.653	
2506.00	39750	Low	LTE Band 41	20	19.0	18.22	-0.03	0	1383M	QPSK	1	99	0 mm	bottom	1:1.58	1.250	1.197	1.496	
2506.00	39750	Low	LTE Band 41	20	19.0	18.34	-0.04	0	1383M	QPSK	50	25	0 mm	bottom	1:1.58	1.320	1.164	1.536	
2549.50	40185	Low-Mid	LTE Band 41	20	19.0	18.16	-0.01	0	1383M	QPSK	50	25	0 mm	bottom	1:1.58	1.360	1.213	1.650	
2593.00	40620	Mid	LTE Band 41	20	19.0	18.32	-0.01	0	1383M	QPSK	50	25	0 mm	bottom	1:1.58	1.390	1.169	1.625	A36
2636.50	41055	Mid-High	LTE Band 41	20	19.0	18.31	0.01	0	1383M	QPSK	50	25	0 mm	bottom	1:1.58	1.320	1.172	1.547	
2680.00	41490	High	LTE Band 41	20	19.0	18.28	0.00	0	1383M	QPSK	50	50	0 mm	bottom	1:1.58	1.300	1.180	1.534	
2506.00	39750	Low	LTE Band 41	20	19.0	18.20	-0.01	0	1383M	QPSK	100	0	0 mm	bottom	1:1.58	1.300	1.202	1.563	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																	Phablet 4.0 W/kg (mW/g) averaged over 10 grams			

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Table 11-34
WLAN Phablet SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5260	52	802.11a	OFDM	20	18.0	17.69	0.00	0 mm	1	1385M	6	back	93.8	0.058	-	1.074	1.066	-	
5260	52	802.11a	OFDM	20	18.0	17.69	-0.02	0 mm	1	1385M	6	front	93.8	3.910	0.707	1.074	1.066	0.809	
5260	52	802.11a	OFDM	20	18.0	17.69	0.03	0 mm	1	1385M	6	top	93.8	4.820	0.885	1.074	1.066	1.013	
5260	52	802.11a	OFDM	20	18.0	17.69	0.01	0 mm	1	1385M	6	left	93.8	0.323	-	1.074	1.066	-	
5500	100	802.11a	OFDM	20	18.0	17.79	0.01	0 mm	1	1385M	6	back	93.8	0.033	-	1.050	1.066	-	
5500	100	802.11a	OFDM	20	18.0	17.79	-0.03	0 mm	1	1385M	6	front	93.8	5.070	0.832	1.050	1.066	0.931	
5500	100	802.11a	OFDM	20	18.0	17.79	0.04	0 mm	1	1385M	6	top	93.8	5.920	0.942	1.050	1.066	**1.054**	
5500	100	802.11a	OFDM	20	18.0	17.79	0.01	0 mm	1	1385M	6	left	93.8	0.348	-	1.050	1.066	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**														**Phablet** **4.0 W/kg (mW/g)** averaged over 10 grams					

Table 11-35
WLAN MIMO Phablet SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
5260	52	802.11n	OFDM	20	18.0	17.87	18.0	17.45	0.01	0 mm	MIMO	1385M	13	back	86.9	0.213	-	1.135	1.151	-	
5260	52	802.11n	OFDM	20	18.0	17.87	18.0	17.45	0.01	0 mm	MIMO	1385M	13	front	86.9	5.240	-	1.135	1.151	-	
5260	52	802.11n	OFDM	20	18.0	17.87	18.0	17.45	-0.01	0 mm	MIMO	1385M	13	top	86.9	7.540	1.060	1.135	1.151	1.385	
5260	52	802.11n	OFDM	20	18.0	17.87	18.0	17.45	-0.09	0 mm	MIMO	1385M	13	bottom	86.9	6.440	0.831	1.135	1.151	1.086	
5260	52	802.11n	OFDM	20	18.0	17.87	18.0	17.45	0.01	0 mm	MIMO	1385M	13	left	86.9	0.327	-	1.135	1.151	-	
5500	100	802.11n	OFDM	20	18.0	17.87	18.0	17.63	0.04	0 mm	MIMO	1385M	13	back	86.9	0.503	-	1.089	1.151	-	
5500	100	802.11n	OFDM	20	18.0	17.87	18.0	17.63	0.07	0 mm	MIMO	1385M	13	front	86.9	5.560	-	1.089	1.151	-	
5500	100	802.11n	OFDM	20	18.0	17.87	18.0	17.63	-0.06	0 mm	MIMO	1385M	13	top	86.9	5.920	1.270	1.089	1.151	1.592	A37
5600	120	802.11n	OFDM	20	18.0	17.97	18.0	17.34	0.08	0 mm	MIMO	1385M	13	top	86.9	6.430	1.030	1.164	1.151	1.380	
5720	144	802.11n	OFDM	20	18.0	17.91	18.0	17.36	0.01	0 mm	MIMO	1385M	13	top	86.9	4.800	0.809	1.159	1.151	1.079	
5500	100	802.11n	OFDM	20	18.0	17.87	18.0	17.63	-0.05	0 mm	MIMO	1385M	13	bottom	86.9	8.880	1.180	1.089	1.151	1.479	
5500	100	802.11n	OFDM	20	18.0	17.87	18.0	17.63	0.01	0 mm	MIMO	1385M	13	left	86.9	0.347	-	1.089	1.151	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**																**Phablet** **4.0 W/kg (mW/g)** averaged over 10 grams					

Note: To achieve the 21.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 18.0 dBm.

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11.5 Standalone UMPC Body SAR

Table 11-36
GSM/UMTS UMPC Body SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.													(W/kg)		(W/kg)	
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	-0.09	10 mm	A + B	1380M	3	1:2.76	back	0.397	1.197	0.475	A38
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	0.01	10 mm	A + B	1380M	3	1:2.76	front	0.335	1.197	0.401	
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	-0.04	10 mm	A + B	1380M	3	1:2.76	bottom	0.260	1.197	0.311	
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	-0.08	10 mm	A + B	1380M	3	1:2.76	right	0.253	1.197	0.303	
1880.00	661	GSM 1900	GPRS	27.5	26.42	N/A	0.01	12 mm	B	1377M	3	1:2.76	back	0.482	1.282	0.618	
1850.20	512	GSM 1900	GPRS	27.5	26.35	N/A	-0.05	10 mm	B	1377M	3	1:2.76	front	0.630	1.303	0.821	
1880.00	661	GSM 1900	GPRS	27.5	26.42	N/A	0.01	10 mm	B	1377M	3	1:2.76	front	0.569	1.282	0.729	
1909.80	810	GSM 1900	GPRS	27.5	26.40	N/A	0.00	10 mm	B	1377M	3	1:2.76	front	0.682	1.288	**0.878**	A39
1880.00	661	GSM 1900	GPRS	27.5	26.42	N/A	0.07	16 mm	B	1377M	3	1:2.76	bottom	0.422	1.282	0.541	
1880.00	661	GSM 1900	GPRS	27.5	26.42	N/A	0.04	10 mm	B	1377M	3	1:2.76	right	0.095	1.282	0.122	
1880.00	661	GSM 1900	GPRS	21.5	20.57	N/A	-0.15	10 mm	B	1377M	4	1:2.076	back	0.231	1.239	0.286	
1880.00	661	GSM 1900	GPRS	21.5	20.57	N/A	0.01	10 mm	B	1377M	4	1:2.076	bottom	0.339	1.239	0.420	
826.40	4132	UMTS 850	RMC	25.8	24.91	72	0.01	10 mm	A + B	1369M	N/A	1:1	back	0.435	1.227	0.534	A40
826.40	4132	UMTS 850	RMC	25.8	24.91	72	0.04	10 mm	A + B	1369M	N/A	1:1	front	0.365	1.227	0.448	
826.40	4132	UMTS 850	RMC	25.8	24.91	72	0.01	10 mm	A + B	1369M	N/A	1:1	bottom	0.329	1.227	0.404	
826.40	4132	UMTS 850	RMC	25.8	24.91	72	0.01	10 mm	A + B	1369M	N/A	1:1	right	0.299	1.227	0.367	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**								**UMPC Body** **1.6 W/kg (mW/g)** averaged over 1 gram									

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Table 11-37
LTE Band 12 UMPC Body SAR

MEASUREMENT RESULTS																							
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	0	-0.01	0	A + B	1380M	QPSK	1	0	10 mm	back	1:1	0.400	1.259	0.504	A41
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	0	-0.12	1	A + B	1380M	QPSK	25	12	10 mm	back	1:1	0.327	1.250	0.409	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	0	-0.12	0	A + B	1380M	QPSK	1	0	10 mm	front	1:1	0.332	1.259	0.418	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	0	0.04	1	A + B	1380M	QPSK	25	12	10 mm	front	1:1	0.273	1.250	0.341	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	0	0.06	0	A + B	1380M	QPSK	1	0	10 mm	bottom	1:1	0.190	1.259	0.239	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	0	0.02	1	A + B	1380M	QPSK	25	12	10 mm	bottom	1:1	0.148	1.250	0.185	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	0	0.09	0	A + B	1380M	QPSK	1	0	10 mm	right	1:1	0.226	1.259	0.285	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	0	-0.03	1	A + B	1380M	QPSK	25	12	10 mm	right	1:1	0.167	1.250	0.209	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		UMPC Body 1.6 W/kg (mW/g) averaged over 1 gram			

Table 11-38
LTE Band 13 UMPC Body SAR

MEASUREMENT RESULTS																							
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	36	-0.09	0	A + B	1380M	QPSK	1	0	10 mm	back	1:1	0.495	1.256	0.622	A42
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	36	-0.06	1	A + B	1380M	QPSK	25	0	10 mm	back	1:1	0.403	1.199	0.483	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	36	0.02	0	A + B	1380M	QPSK	1	0	10 mm	front	1:1	0.350	1.256	0.440	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	36	-0.04	1	A + B	1380M	QPSK	25	0	10 mm	front	1:1	0.289	1.199	0.347	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	36	0.04	0	A + B	1380M	QPSK	1	0	10 mm	bottom	1:1	0.232	1.256	0.291	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	36	0.05	1	A + B	1380M	QPSK	25	0	10 mm	bottom	1:1	0.205	1.199	0.246	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	36	0.10	0	A + B	1380M	QPSK	1	0	10 mm	right	1:1	0.171	1.256	0.215	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	36	-0.02	1	A + B	1380M	QPSK	25	0	10 mm	right	1:1	0.158	1.199	0.189	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		UMPC Body 1.6 W/kg (mW/g) averaged over 1 gram			

Table 11-39
LTE Band 5 (Cell) UMPC Body SAR

MEASUREMENT RESULTS																							
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	72	0.03	0	A + B	1369M	QPSK	1	0	10 mm	back	1:1	0.472	1.245	0.588	A43
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	72	0.00	1	A + B	1369M	QPSK	25	25	10 mm	back	1:1	0.339	1.222	0.414	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	72	-0.04	0	A + B	1369M	QPSK	1	0	10 mm	front	1:1	0.343	1.245	0.427	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	72	0.01	1	A + B	1369M	QPSK	25	25	10 mm	front	1:1	0.279	1.222	0.341	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	72	0.00	0	A + B	1369M	QPSK	1	0	10 mm	bottom	1:1	0.368	1.245	0.458	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	72	-0.03	1	A + B	1369M	QPSK	25	25	10 mm	bottom	1:1	0.281	1.222	0.343	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	72	0.04	0	A + B	1369M	QPSK	1	0	10 mm	right	1:1	0.263	1.245	0.327	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	72	0.01	1	A + B	1369M	QPSK	25	25	10 mm	right	1:1	0.189	1.222	0.231	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		UMPC Body 1.6 W/kg (mW/g) averaged over 1 gram			

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Table 11-40
LTE Band 4 UMPC Body SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	135	0.05	0	1369M	QPSK	1	50	12 mm	back	1:1	0.682	1.122	0.765	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	135	-0.04	1	1369M	QPSK	50	25	12 mm	back	1:1	0.553	1.148	0.635	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.85	135	0.00	1	1369M	QPSK	100	0	12 mm	back	1:1	0.549	1.161	0.637	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	135	-0.16	0	1369M	QPSK	1	50	10 mm	front	1:1	0.755	1.122	0.847	A44
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	135	-0.07	1	1369M	QPSK	50	25	10 mm	front	1:1	0.611	1.148	0.701	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.85	135	-0.15	1	1369M	QPSK	100	0	10 mm	front	1:1	0.624	1.161	0.724	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	135	0.16	0	1369M	QPSK	1	50	16 mm	bottom	1:1	0.577	1.122	0.647	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	135	-0.03	1	1369M	QPSK	50	25	16 mm	bottom	1:1	0.453	1.148	0.520	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	135	-0.08	0	1369M	QPSK	1	50	10 mm	right	1:1	0.332	1.122	0.373	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	135	0.06	1	1369M	QPSK	50	25	10 mm	right	1:1	0.261	1.148	0.300	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.29	135	-0.08	0	1369M	QPSK	1	50	10 mm	back	1:1	0.191	1.178	0.225	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.38	135	-0.01	0	1369M	QPSK	50	25	10 mm	back	1:1	0.196	1.153	0.226	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.29	135	-0.02	0	1369M	QPSK	1	50	10 mm	bottom	1:1	0.314	1.178	0.370	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.38	135	-0.07	0	1369M	QPSK	50	25	10 mm	bottom	1:1	0.328	1.153	0.378	

ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population	UMPC Body 1.6 W/kg (mW/g) averaged over 1 gram

Table 11-41
LTE Band 41 UMPC Body SAR

MEASUREMENT RESULTS																						
1 CC Uplink | 2 CC Uplink, Power Class	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
		MHz	Ch.															(W/kg)		(W/kg)	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.23	-0.05	0	1383M	QPSK	1	50	12 mm	back	1:1.58	0.343	1.194	0.410	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.35	0.03	0	1383M	QPSK	50	25	12 mm	back	1:1.58	0.339	1.161	0.394	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.23	-0.01	0	1383M	QPSK	1	50	10 mm	front	1:1.58	0.474	1.194	0.566	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.02	0.01	0	1383M	QPSK	1	99	10 mm	front	1:1.58	0.389	1.253	0.487	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.35	0.02	0	1383M	QPSK	50	25	10 mm	front	1:1.58	0.476	1.161	0.553	A45
2 CC Uplink - Power Class 3	PCC	2506.00	39750	Low	LTE Band 41	20	23.0	21.99	0.01	0	1383M	QPSK	1	99	10 mm	front	1:1.58	0.370	1.262	0.467	
	SCC	2525.80	39948											0							
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.23	0.04	0	1383M	QPSK	1	50	16 mm	bottom	1:1.58	0.347	1.194	0.414	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.35	-0.02	0	1383M	QPSK	50	25	16 mm	bottom	1:1.58	0.356	1.161	0.413	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.23	-0.02	0	1383M	QPSK	1	50	10 mm	right	1:1.58	0.094	1.194	0.112	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.35	-0.04	0	1383M	QPSK	50	25	10 mm	right	1:1.58	0.098	1.161	0.114	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	19.0	18.22	0.04	0	1383M	QPSK	1	99	10 mm	back	1:1.58	0.197	1.197	0.236	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	19.0	18.34	0.00	0	1383M	QPSK	50	25	10 mm	back	1:1.58	0.203	1.164	0.236	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	19.0	18.22	-0.02	0	1383M	QPSK	1	99	10 mm	bottom	1:1.58	0.418	1.197	0.500	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	19.0	18.34	-0.02	0	1383M	QPSK	50	25	10 mm	bottom	1:1.58	0.432	1.164	0.503	

ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population	UMPC Body 1.6 W/kg (mW/g) averaged over 1 gram

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Table 11-42
WLAN UMPC Body SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	19.0	18.88	0.21	10 mm	2	1376M	1	back	98.9	0.234	0.203	1.028	1.011	0.211	
2462	11	802.11b	DSSS	22	19.0	18.88	0.05	10 mm	2	1376M	1	front	98.9	0.343	0.268	1.028	1.011	0.279	
2462	11	802.11b	DSSS	22	19.0	18.88	-0.21	10 mm	2	1376M	1	bottom	98.9	0.356	0.277	1.028	1.011	**0.288**	
5260	52	802.11a	OFDM	20	18.0	17.69	0.07	10 mm	1	1385M	6	back	93.8	0.198	0.129	1.074	1.066	0.148	
5260	52	802.11a	OFDM	20	18.0	17.69	-0.06	10 mm	1	1385M	6	front	93.8	0.151	0.110	1.074	1.066	0.126	
5260	52	802.11a	OFDM	20	18.0	17.69	0.04	10 mm	1	1385M	6	top	93.8	0.387	0.268	1.074	1.066	0.307	
5500	100	802.11a	OFDM	20	18.0	17.79	-0.20	10 mm	1	1385M	6	back	93.8	0.162	0.124	1.050	1.066	0.139	
5500	100	802.11a	OFDM	20	18.0	17.79	0.02	10 mm	1	1385M	6	front	93.8	0.150	0.108	1.050	1.066	0.121	
5500	100	802.11a	OFDM	20	18.0	17.79	-0.06	10 mm	1	1385M	6	top	93.8	0.404	0.285	1.050	1.066	**0.319**	
5785	157	802.11a	OFDM	20	18.0	17.98	-0.02	10 mm	1	1385M	6	back	93.8	0.134	0.078	1.005	1.066	0.084	
5785	157	802.11a	OFDM	20	18.0	17.98	0.03	10 mm	1	1385M	6	front	93.8	0.107	0.053	1.005	1.066	0.057	
5785	157	802.11a	OFDM	20	18.0	17.98	-0.07	10 mm	1	1385M	6	top	93.8	0.263	0.186	1.005	1.066	0.199	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														UMPC Body 1.6 W/kg (mW/g) averaged over 1 gram					

Table 11-43
WLAN MIMO UMPC Body SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	19.0	18.67	19.0	18.70	-0.20	10 mm	MIMO	1385M	1	back	98.9	0.352	0.283	1.079	1.011	0.309	
2462	11	802.11b	DSSS	22	19.0	18.67	19.0	18.70	0.00	10 mm	MIMO	1385M	1	front	98.9	0.288	0.241	1.079	1.011	0.263	
2462	11	802.11b	DSSS	22	19.0	18.67	19.0	18.70	-0.05	10 mm	MIMO	1385M	1	top	98.9	0.546	0.414	1.079	1.011	0.452	A46
2462	11	802.11b	DSSS	22	19.0	18.67	19.0	18.70	-0.10	10 mm	MIMO	1385M	1	bottom	98.9	0.348	0.289	1.079	1.011	0.315	
5260	52	802.11n	OFDM	20	18.0	17.87	18.0	17.45	-0.07	10 mm	MIMO	1385M	13	back	86.9	0.215	0.140	1.135	1.151	0.183	
5260	52	802.11n	OFDM	20	18.0	17.87	18.0	17.45	-0.02	10 mm	MIMO	1385M	13	front	86.9	0.241	0.167	1.135	1.151	0.218	
5260	52	802.11n	OFDM	20	18.0	17.87	18.0	17.45	-0.04	10 mm	MIMO	1385M	13	top	86.9	0.424	0.294	1.135	1.151	0.384	
5260	52	802.11n	OFDM	20	18.0	17.87	18.0	17.45	0.01	10 mm	MIMO	1385M	13	bottom	86.9	0.454	0.330	1.135	1.151	0.431	
5500	100	802.11n	OFDM	20	18.0	17.87	18.0	17.63	-0.10	10 mm	MIMO	1385M	13	back	86.9	0.269	0.198	1.089	1.151	0.248	
5500	100	802.11n	OFDM	20	18.0	17.87	18.0	17.63	-0.01	10 mm	MIMO	1385M	13	front	86.9	0.330	0.244	1.089	1.151	0.306	
5500	100	802.11n	OFDM	20	18.0	17.87	18.0	17.63	-0.06	10 mm	MIMO	1385M	13	top	86.9	0.414	0.294	1.089	1.151	0.369	
5500	100	802.11n	OFDM	20	18.0	17.87	18.0	17.63	0.03	10 mm	MIMO	1385M	13	bottom	86.9	0.707	0.492	1.089	1.151	0.617	A47
5600	120	802.11n	OFDM	20	18.0	17.97	18.0	17.34	0.05	10 mm	MIMO	1385M	13	bottom	86.9	0.618	0.435	1.164	1.151	0.583	
5720	144	802.11n	OFDM	20	18.0	17.91	18.0	17.36	0.01	10 mm	MIMO	1385M	13	bottom	86.9	0.473	0.334	1.159	1.151	0.446	
5785	157	802.11n	OFDM	20	18.0	17.83	18.0	17.44	0.14	10 mm	MIMO	1385M	13	back	86.9	0.236	0.154	1.138	1.151	0.202	
5785	157	802.11n	OFDM	20	18.0	17.83	18.0	17.44	-0.05	10 mm	MIMO	1385M	13	front	86.9	0.228	0.180	1.138	1.151	0.236	
5785	157	802.11n	OFDM	20	18.0	17.83	18.0	17.44	-0.02	10 mm	MIMO	1385M	13	top	86.9	0.276	0.198	1.138	1.151	0.259	
5785	157	802.11n	OFDM	20	18.0	17.83	18.0	17.44	-0.04	10 mm	MIMO	1385M	13	bottom	86.9	0.415	0.287	1.138	1.151	0.376	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															UMPC Body 1.6 W/kg (mW/g) averaged over 1 gram					

Note: For 2450 MHz WLAN, to achieve the 22.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 19.0 dBm. For 5GHz WLAN, to achieve the 21.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 18.0 dBm.

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Table 11-44
DSS UMPC Body SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	17.5	17.29	0.01	10 mm	1	1376M	1	back	76.80	0.125	1.050	1.302	0.171	
2441	39	Bluetooth	FHSS	17.5	17.29	-0.01	10 mm	1	1376M	1	front	76.80	0.091	1.050	1.302	0.124	
2441	39	Bluetooth	FHSS	17.5	17.29	0.03	10 mm	1	1376M	1	top	76.80	0.182	1.050	1.302	**0.249**	A48
2441	39	Bluetooth	FHSS	17.5	16.93	-0.01	10 mm	2	1376M	1	back	76.80	0.057	1.140	1.302	0.085	
2441	39	Bluetooth	FHSS	17.5	16.93	-0.15	10 mm	2	1376M	1	front	76.80	0.100	1.140	1.302	0.148	
2441	39	Bluetooth	FHSS	17.5	16.93	-0.01	10 mm	2	1376M	1	bottom	76.80	0.144	1.140	1.302	0.214	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**							**UMPC Body** **1.6 W/kg (mW/g)** averaged over 1 gram										

11.6 Standalone UMPC Extremity SAR

Table 11-45
GSM/UMTS UMPC Extremity SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.													(W/kg)		(W/kg)	
824.20	128	GSM 850	GPRS	30.5	29.40	N/A	0.02	0 mm	A + B	1380M	3	1:2.76	back	1.230	1.288	1.584	
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	0.09	0 mm	A + B	1380M	3	1:2.76	back	1.290	1.197	1.544	
848.80	251	GSM 850	GPRS	30.5	29.49	N/A	0.10	0 mm	A + B	1380M	3	1:2.76	back	1.340	1.262	1.691	A49
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	-0.03	0 mm	A + B	1380M	3	1:2.76	front	0.868	1.197	1.039	
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	-0.21	0 mm	A + B	1380M	3	1:2.76	bottom	0.731	1.197	0.875	
836.60	190	GSM 850	GPRS	30.5	29.72	N/A	-0.11	0 mm	A + B	1380M	3	1:2.76	right	0.857	1.197	1.026	
1880.00	661	GSM 1900	GPRS	27.5	26.42	N/A	0.01	12 mm	B	1377M	3	1:2.76	back	0.260	1.282	0.333	
1880.00	661	GSM 1900	GPRS	27.5	26.42	N/A	-0.04	9 mm	B	1377M	3	1:2.76	front	0.273	1.282	0.350	
1880.00	661	GSM 1900	GPRS	27.5	26.42	N/A	0.07	16 mm	B	1377M	3	1:2.76	bottom	0.237	1.282	0.304	
1880.00	661	GSM 1900	GPRS	27.5	26.42	N/A	0.02	0 mm	B	1377M	3	1:2.76	right	0.408	1.282	0.523	
1880.00	661	GSM 1900	GPRS	21.5	20.57	N/A	-0.03	0 mm	B	1377M	4	1:2.076	back	0.973	1.239	1.206	
1880.00	661	GSM 1900	GPRS	21.5	20.57	N/A	0.00	0 mm	B	1377M	4	1:2.076	front	0.639	1.239	0.792	
1850.20	512	GSM 1900	GPRS	21.5	20.31	N/A	-0.03	0 mm	B	1377M	4	1:2.076	bottom	1.630	1.315	2.143	
1880.00	661	GSM 1900	GPRS	21.5	20.57	N/A	-0.08	0 mm	B	1377M	4	1:2.076	bottom	1.540	1.239	1.908	
1909.80	810	GSM 1900	GPRS	21.5	20.44	N/A	-0.11	0 mm	B	1377M	4	1:2.076	bottom	1.680	1.276	**2.144**	A50
826.40	4132	UMTS 850	RMC	25.8	24.91	72	-0.17	0 mm	A + B	1369M	N/A	1:1	back	1.170	1.227	1.436	A51
826.40	4132	UMTS 850	RMC	25.8	24.91	72	0.03	0 mm	A + B	1369M	N/A	1:1	front	0.734	1.227	0.901	
826.40	4132	UMTS 850	RMC	25.8	24.91	72	-0.17	0 mm	A + B	1369M	N/A	1:1	bottom	0.771	1.227	0.946	
826.40	4132	UMTS 850	RMC	25.8	24.91	72	-0.20	0 mm	A + B	1369M	N/A	1:1	right	0.801	1.227	0.983	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**								**UMPC Extremity** **4.0 W/kg (mW/g)** averaged over 10 grams									

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Table 11-46
LTE Band UMPC Extremity SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Tune State	Power Drift [dB]	MPR [dB]	Antenna Config.	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	0	-0.02	0	A + B	1380M	QPSK	1	0	0 mm	back	1:1	0.998	1.259	1.256	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	0	-0.17	1	A + B	1380M	QPSK	25	12	0 mm	back	1:1	0.797	1.250	0.996	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	0	0.01	0	A + B	1380M	QPSK	1	0	0 mm	front	1:1	0.753	1.259	0.948	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	0	0.02	1	A + B	1380M	QPSK	25	12	0 mm	front	1:1	0.613	1.250	0.766	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	0	-0.04	0	A + B	1380M	QPSK	1	0	0 mm	bottom	1:1	1.020	1.259	1.284	
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	0	-0.04	1	A + B	1380M	QPSK	25	12	0 mm	bottom	1:1	0.804	1.250	1.005	
707.50	23095	Mid	LTE Band 12	10	25.8	24.80	0	-0.15	0	A + B	1380M	QPSK	1	0	0 mm	right	1:1	1.130	1.259	1.423	A52
707.50	23095	Mid	LTE Band 12	10	24.8	23.83	0	-0.12	1	A + B	1380M	QPSK	25	12	0 mm	right	1:1	0.953	1.250	1.191	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	36	-0.12	0	A + B	1380M	QPSK	1	0	0 mm	back	1:1	1.040	1.256	1.306	A53
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	36	-0.15	1	A + B	1380M	QPSK	25	0	0 mm	back	1:1	0.868	1.199	1.041	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	36	0.02	0	A + B	1380M	QPSK	1	0	0 mm	front	1:1	0.870	1.256	1.093	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	36	-0.01	1	A + B	1380M	QPSK	25	0	0 mm	front	1:1	0.719	1.199	0.862	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	36	-0.05	0	A + B	1380M	QPSK	1	0	0 mm	bottom	1:1	0.811	1.256	1.019	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	36	-0.06	1	A + B	1380M	QPSK	25	0	0 mm	bottom	1:1	0.673	1.199	0.807	
782.00	23230	Mid	LTE Band 13	10	25.8	24.81	36	-0.02	0	A + B	1380M	QPSK	1	0	0 mm	right	1:1	0.719	1.256	0.903	
782.00	23230	Mid	LTE Band 13	10	24.8	24.01	36	-0.15	1	A + B	1380M	QPSK	25	0	0 mm	right	1:1	0.580	1.199	0.695	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	72	0.09	0	A + B	1369M	QPSK	1	0	0 mm	back	1:1	0.975	1.245	1.214	A54
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	72	0.10	1	A + B	1369M	QPSK	25	25	0 mm	back	1:1	0.786	1.222	0.960	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	72	-0.03	0	A + B	1369M	QPSK	1	0	0 mm	front	1:1	0.837	1.245	1.042	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	72	0.00	1	A + B	1369M	QPSK	25	25	0 mm	front	1:1	0.662	1.222	0.809	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	72	-0.16	0	A + B	1369M	QPSK	1	0	0 mm	bottom	1:1	0.767	1.245	0.955	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	72	-0.16	1	A + B	1369M	QPSK	25	25	0 mm	bottom	1:1	0.630	1.222	0.770	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.8	24.85	72	-0.18	0	A + B	1369M	QPSK	1	0	0 mm	right	1:1	0.771	1.245	0.960	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.8	23.93	72	-0.20	1	A + B	1369M	QPSK	25	25	0 mm	right	1:1	0.629	1.222	0.769	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	135	0.05	0	B	1369M	QPSK	1	50	12 mm	back	1:1	0.369	1.122	0.414	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	135	-0.04	1	B	1369M	QPSK	50	25	12 mm	back	1:1	0.299	1.148	0.343	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	135	-0.11	0	B	1369M	QPSK	1	50	9 mm	front	1:1	0.531	1.122	0.596	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	135	-0.16	1	B	1369M	QPSK	50	25	9 mm	front	1:1	0.427	1.148	0.490	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	135	0.16	0	B	1369M	QPSK	1	50	16 mm	bottom	1:1	0.320	1.122	0.359	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	135	-0.03	1	B	1369M	QPSK	50	25	16 mm	bottom	1:1	0.252	1.148	0.289	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	25.5	25.00	135	0.01	0	B	1369M	QPSK	1	50	0 mm	right	1:1	0.747	1.122	0.838	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	24.5	23.90	135	-0.08	1	B	1369M	QPSK	50	25	0 mm	right	1:1	0.597	1.148	0.685	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.29	135	-0.11	0	B	1369M	QPSK	1	50	0 mm	back	1:1	0.798	1.178	0.940	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.38	135	-0.11	0	B	1369M	QPSK	50	25	0 mm	back	1:1	0.822	1.153	0.948	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.29	135	-0.16	0	B	1369M	QPSK	1	50	0 mm	front	1:1	0.690	1.178	0.813	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.38	135	-0.17	0	B	1369M	QPSK	50	25	0 mm	front	1:1	0.708	1.153	0.816	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.29	135	-0.04	0	B	1369M	QPSK	1	50	0 mm	bottom	1:1	1.660	1.178	1.955	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.38	135	-0.04	0	B	1369M	QPSK	50	25	0 mm	bottom	1:1	1.750	1.153	2.018	A55
1732.50	20175	Mid	LTE Band 4 (AWS)	20	19.0	18.28	135	-0.06	0	B	1369M	QPSK	100	0	0 mm	bottom	1:1	1.710	1.180	2.018	

ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**	**UMPC Extremity** **4.0 W/kg (mW/g)** averaged over 10 grams

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Table 11-47
LTE Band 41 UMPC Extremity SAR

MEASUREMENT RESULTS																						
1 CC Uplink | 2 CC Uplink, Power Class	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
		MHz	Ch.															(W/kg)		(W/kg)	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.23	0.04	0	1383M	QPSK	1	50	12 mm	back	1:1.58	0.171	1.194	0.204	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.35	0.03	0	1383M	QPSK	50	25	12 mm	back	1:1.58	0.169	1.161	0.196	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.23	0.00	0	1383M	QPSK	1	50	9 mm	front	1:1.58	0.224	1.194	0.267	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.35	0.01	0	1383M	QPSK	50	25	9 mm	front	1:1.58	0.220	1.161	0.255	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.23	0.04	0	1383M	QPSK	1	50	16 mm	bottom	1:1.58	0.182	1.194	0.217	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.35	-0.02	0	1383M	QPSK	50	25	16 mm	bottom	1:1.58	0.186	1.161	0.216	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.23	-0.02	0	1383M	QPSK	1	50	0 mm	right	1:1.58	0.158	1.194	0.189	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.35	0.04	0	1383M	QPSK	50	25	0 mm	right	1:1.58	0.165	1.161	0.192	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	19.0	18.22	0.00	0	1383M	QPSK	1	99	0 mm	back	1:1.58	0.729	1.197	0.873	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	19.0	18.34	0.01	0	1383M	QPSK	50	25	0 mm	back	1:1.58	0.755	1.164	0.879	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	19.0	18.22	0.03	0	1383M	QPSK	1	99	0 mm	front	1:1.58	0.656	1.197	0.785	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	19.0	18.34	0.03	0	1383M	QPSK	50	25	0 mm	front	1:1.58	0.675	1.164	0.786	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	19.0	18.22	-0.02	0	1383M	QPSK	1	99	0 mm	bottom	1:1.58	1.330	1.197	1.592	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	19.0	18.00	0.04	0	1383M	QPSK	1	50	0 mm	bottom	1:1.58	1.380	1.259	1.737	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	19.0	18.00	0.01	0	1383M	QPSK	1	99	0 mm	bottom	1:1.58	1.320	1.259	1.662	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	19.0	18.11	0.00	0	1383M	QPSK	1	50	0 mm	bottom	1:1.58	1.390	1.227	1.706	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	19.0	18.21	0.00	0	1383M	QPSK	1	50	0 mm	bottom	1:1.58	1.300	1.199	1.559	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	19.0	18.09	-0.01	0	1383M	QPSK	1	50	0 mm	bottom	1:1.58	1.320	1.233	1.628	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	19.0	18.34	-0.01	0	1383M	QPSK	50	25	0 mm	bottom	1:1.58	1.370	1.164	1.595	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	19.0	18.16	0.01	0	1383M	QPSK	50	25	0 mm	bottom	1:1.58	1.400	1.213	1.698	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	19.0	18.32	-0.02	0	1383M	QPSK	50	25	0 mm	bottom	1:1.58	1.430	1.169	1.672	A56
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	19.0	18.31	0.00	0	1383M	QPSK	50	25	0 mm	bottom	1:1.58	1.340	1.172	1.570	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	19.0	18.28	0.01	0	1383M	QPSK	50	50	0 mm	bottom	1:1.58	1.320	1.180	1.558	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	19.0	18.20	-0.01	0	1383M	QPSK	100	0	0 mm	bottom	1:1.58	1.350	1.202	1.623	
2 CC Uplink - Power Class 3	PCC	2549.50	40185	Low-Mid	LTE Band 41	20	19.0	17.80	0.00	0	1383M	QPSK	1	99	0 mm	bottom	1:1.58	1.320	1.318	1.740	
	SCC	2569.30	40383											0							

ANSI / IEEE C95.1 1992 - SAFETY LIMIT	UMPC Extremity
Spatial Peak	4.0 W/kg (mW/g)
Uncontrolled Exposure/General Population	averaged over 10 grams

Table 11-48
WLAN UMPC Extremity SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	19.0	18.88	-0.05	0 mm	2	1376M	1	back	98.9	2.860	0.675	1.028	1.011	0.702	
2462	11	802.11b	DSSS	22	19.0	18.88	-0.05	0 mm	2	1376M	1	front	98.9	2.610	0.639	1.028	1.011	0.664	
2462	11	802.11b	DSSS	22	19.0	18.88	-0.02	0 mm	2	1376M	1	bottom	98.9	3.550	0.944	1.028	1.011	**0.981**	
5260	52	802.11a	OFDM	20	18.0	17.69	-0.03	0 mm	1	1385M	6	back	93.8	1.850	0.384	1.074	1.066	0.440	
5260	52	802.11a	OFDM	20	18.0	17.69	0.00	0 mm	1	1385M	6	front	93.8	3.250	0.538	1.074	1.066	0.616	
5260	52	802.11a	OFDM	20	18.0	17.69	-0.01	0 mm	1	1385M	6	top	93.8	6.280	1.210	1.074	1.066	1.385	
5500	100	802.11a	OFDM	20	18.0	17.79	0.00	0 mm	1	1385M	6	back	93.8	2.010	0.390	1.050	1.066	0.437	
5500	100	802.11a	OFDM	20	18.0	17.79	0.00	0 mm	1	1385M	6	front	93.8	3.360	0.568	1.050	1.066	0.636	
5500	100	802.11a	OFDM	20	18.0	17.79	0.03	0 mm	1	1385M	6	top	93.8	6.860	1.290	1.050	1.066	**1.444**	
5785	157	802.11a	OFDM	20	18.0	17.98	-0.01	0 mm	1	1385M	6	back	93.8	1.420	0.330	1.005	1.066	0.354	
5785	157	802.11a	OFDM	20	18.0	17.98	-0.03	0 mm	1	1385M	6	front	93.8	2.380	0.412	1.005	1.066	0.441	
5785	157	802.11a	OFDM	20	18.0	17.98	0.00	0 mm	1	1385M	6	top	93.8	4.590	0.957	1.005	1.066	1.025	

ANSI / IEEE C95.1 1992 - SAFETY LIMIT	UMPC Extremity
Spatial Peak	4.0 W/kg (mW/g)
Uncontrolled Exposure/General Population	averaged over 10 grams

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Table 11-49
WLAN MIMO UMPC Extremity SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	19.0	18.67	19.0	18.70	-0.05	0 mm	MIMO	1385M	1	back	98.9	3.630	0.947	1.079	1.011	1.033	
2462	11	802.11b	DSSS	22	19.0	18.67	19.0	18.70	-0.02	0 mm	MIMO	1385M	1	front	98.9	3.720	0.883	1.079	1.011	0.963	
2462	11	802.11b	DSSS	22	19.0	18.67	19.0	18.70	0.00	0 mm	MIMO	1385M	1	top	98.9	4.730	1.350	1.079	1.011	1.473	A57
2462	11	802.11b	DSSS	22	19.0	18.67	19.0	18.70	0.01	0 mm	MIMO	1385M	1	bottom	98.9	4.470	1.010	1.079	1.011	1.102	
5260	52	802.11n	OFDM	20	18.0	17.87	18.0	17.45	0.00	0 mm	MIMO	1385M	13	back	86.9	3.240	0.884	1.135	1.151	1.155	
5260	52	802.11n	OFDM	20	18.0	17.87	18.0	17.45	-0.03	0 mm	MIMO	1385M	13	front	86.9	4.980	0.900	1.135	1.151	1.176	
5260	52	802.11n	OFDM	20	18.0	17.87	18.0	17.45	0.00	0 mm	MIMO	1385M	13	top	86.9	5.820	1.290	1.135	1.151	1.685	
5260	52	802.11n	OFDM	20	18.0	17.87	18.0	17.45	0.00	0 mm	MIMO	1385M	13	bottom	86.9	5.450	0.847	1.135	1.151	1.107	
5500	100	802.11n	OFDM	20	18.0	17.87	18.0	17.63	0.01	0 mm	MIMO	1385M	13	back	86.9	3.940	1.020	1.089	1.151	1.279	
5500	100	802.11n	OFDM	20	18.0	17.87	18.0	17.63	0.02	0 mm	MIMO	1385M	13	front	86.9	4.220	1.070	1.089	1.151	1.341	
5500	100	802.11n	OFDM	20	18.0	17.87	18.0	17.63	0.07	0 mm	MIMO	1385M	13	top	86.9	6.290	1.370	1.089	1.151	1.717	A58
5600	120	802.11n	OFDM	20	18.0	17.97	18.0	17.34	-0.02	0 mm	MIMO	1385M	13	top	86.9	7.510	1.130	1.164	1.151	1.514	
5720	144	802.11n	OFDM	20	18.0	17.91	18.0	17.36	0.05	0 mm	MIMO	1385M	13	top	86.9	6.010	0.963	1.159	1.151	1.285	
5500	100	802.11n	OFDM	20	18.0	17.87	18.0	17.63	0.00	0 mm	MIMO	1385M	13	bottom	86.9	5.900	1.050	1.089	1.151	1.316	
5785	157	802.11n	OFDM	20	18.0	17.83	18.0	17.44	-0.04	0 mm	MIMO	1385M	13	back	86.9	3.650	0.802	1.138	1.151	1.050	
5785	157	802.11n	OFDM	20	18.0	17.83	18.0	17.44	0.00	0 mm	MIMO	1385M	13	front	86.9	4.680	0.926	1.138	1.151	1.213	
5785	157	802.11n	OFDM	20	18.0	17.83	18.0	17.44	0.02	0 mm	MIMO	1385M	13	top	86.9	4.170	0.925	1.138	1.151	1.212	
5785	157	802.11n	OFDM	20	18.0	17.83	18.0	17.44	0.02	0 mm	MIMO	1385M	13	bottom	86.9	4.320	0.755	1.138	1.151	0.989	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																UMPC Extremity 4.0 W/kg (mW/g) averaged over 10 grams					

Note: For 2450 MHz WLAN, to achieve the 22.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 19.0 dBm. For 5GHz WLAN, to achieve the 21.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 18.0 dBm.

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Table 11-50
5 GHz WLAN MIMO UMPC Extremity SAR for conditions with 2.4 GHz WLAN

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
5290	58	802.11ac	OFDM	80	15.0	14.87	15.0	14.41	-0.06	0 mm	MIMO	1385M	58.5	back	86.3	1.560	0.427	1.146	1.159	0.567	
5290	58	802.11ac	OFDM	80	15.0	14.87	15.0	14.41	-0.02	0 mm	MIMO	1385M	58.5	front	86.3	1.800	0.468	1.146	1.159	0.622	
5290	58	802.11ac	OFDM	80	15.0	14.87	15.0	14.41	0.09	0 mm	MIMO	1385M	58.5	top	86.3	2.880	0.600	1.146	1.159	0.797	
5290	58	802.11ac	OFDM	80	15.0	14.87	15.0	14.41	-0.09	0 mm	MIMO	1385M	58.5	bottom	86.3	2.860	0.442	1.146	1.159	0.587	
5530	106	802.11ac	OFDM	80	15.0	14.93	15.0	14.68	0.04	0 mm	MIMO	1385M	58.5	back	86.3	1.720	0.381	1.076	1.159	0.475	
5530	106	802.11ac	OFDM	80	15.0	14.93	15.0	14.68	-0.02	0 mm	MIMO	1385M	58.5	front	86.3	2.850	0.591	1.076	1.159	0.737	
5530	106	802.11ac	OFDM	80	15.0	14.93	15.0	14.68	-0.02	0 mm	MIMO	1385M	58.5	top	86.3	3.120	0.592	1.076	1.159	0.738	
5530	106	802.11ac	OFDM	80	15.0	14.93	15.0	14.68	-0.01	0 mm	MIMO	1385M	58.5	bottom	86.3	2.690	0.464	1.076	1.159	0.579	
5775	155	802.11ac	OFDM	80	15.0	14.98	15.0	14.66	0.06	0 mm	MIMO	1385M	58.5	back	86.3	1.750	0.392	1.081	1.159	0.491	
5775	155	802.11ac	OFDM	80	15.0	14.98	15.0	14.66	-0.05	0 mm	MIMO	1385M	58.5	front	86.3	1.980	0.485	1.081	1.159	0.608	
5775	155	802.11ac	OFDM	80	15.0	14.98	15.0	14.66	-0.02	0 mm	MIMO	1385M	58.5	top	86.3	2.080	0.437	1.081	1.159	0.548	
5775	155	802.11ac	OFDM	80	15.0	14.98	15.0	14.66	0.01	0 mm	MIMO	1385M	58.5	bottom	86.3	2.860	0.341	1.081	1.159	0.427	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																UMPC Extremity 4.0 W/kg (mW/g) averaged over 10 grams					

Note: 5 GHz WLAN MIMO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz WLAN and 5 GHz WLAN. 2.4 GHz WIFI was not transmitting during the above evaluations.

Table 11-51
DSS UMPC Extremity SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (10g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.												(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	17.5	17.29	0.00	0 mm	1	1376M	1	back	76.80	0.459	1.050	1.302	0.627	
2441	39	Bluetooth	FHSS	17.5	17.29	-0.03	0 mm	1	1376M	1	front	76.80	0.500	1.050	1.302	0.684	
2441	39	Bluetooth	FHSS	17.5	17.29	0.04	0 mm	1	1376M	1	top	76.80	0.917	1.050	1.302	1.254	A59
2441	39	Bluetooth	FHSS	17.5	16.93	-0.04	0 mm	2	1376M	1	back	76.80	0.311	1.140	1.302	0.462	
2441	39	Bluetooth	FHSS	17.5	16.93	0.04	0 mm	2	1376M	1	front	76.80	0.279	1.140	1.302	0.414	
2441	39	Bluetooth	FHSS	17.5	16.93	-0.07	0 mm	2	1376M	1	bottom	76.80	0.455	1.140	1.302	0.675	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													UMPC Extremity 4.0 W/kg (mW/g) averaged over 10 grams				

Table 11-52
DSS UMPC Extremity SAR for conditions with 5/6 GHz WLAN

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (10g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.												(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	12.0	11.99	-0.03	0 mm	1	1385M	1	back	76.80	0.222	1.002	1.302	0.290	
2441	39	Bluetooth	FHSS	12.0	11.99	-0.02	0 mm	1	1385M	1	front	76.80	0.196	1.002	1.302	0.256	
2441	39	Bluetooth	FHSS	12.0	11.99	0.01	0 mm	1	1385M	1	top	76.80	0.407	1.002	1.302	0.531	
2441	39	Bluetooth	FHSS	12.0	11.99	-0.03	0 mm	2	1385M	1	back	76.80	0.124	1.002	1.302	0.162	
2441	39	Bluetooth	FHSS	12.0	11.99	0.02	0 mm	2	1385M	1	front	76.80	0.096	1.002	1.302	0.125	
2441	39	Bluetooth	FHSS	12.0	11.99	0.04	0 mm	2	1385M	1	bottom	76.80	0.188	1.002	1.302	0.245	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													UMPC Extremity 4.0 W/kg (mW/g) averaged over 10 grams				

Note: 5/6 GHz WLAN were not transmitting during the above evaluations.

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11.7 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.
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 15 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 body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. Per FCC KDB 865664 D01v01r04, no variability SAR test was performed since the measured SAR results for a frequency band were less than 0.8 W/kg.
9. 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 (See Section 6.7 for more details).
10. Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" when it is in closed configuration since the diagonal dimension is > 160 mm and < 200 mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Additional SAR tests for phablet SAR were evaluated per KDB 616217 Section 6 (See Section 6.9 for more information)
11. This device supports dynamic antenna tuning for some bands. Per FCC Guidance, SAR was measured according to the normally required SAR measurement configurations with tuner active. The auto-tune state determined by the device was verified before and after each SAR measurement and is listed in tables above. Please see Section 14 for supplemental data.
12. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds below.
13. Per FCC KDB Publication 941225 D07v01r02, this device is considered a "UMPC mini-tablet" when it is in open configuration. UMPC body 1g SAR tests are required on all surfaces and edges ≤ 25 mm from a transmitting antenna. Therefore, to address hand exposure, UMPC extremity 10g SAR tests are required at a test separation distance of 0 mm for all measured 1g SAR (at 10 mm) configurations.

GSM Test Notes:

1. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
2. Justification for reduced test configurations per KDB Publication 941225 D01v03r01 and October 2013 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. When the maximum frame-averaged powers are equivalent across two or more slots (within 0.25 dB), the configuration with the most number of time slots was tested.
3. 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 for 1g evaluations then testing at the other channels is not required for such test configuration(s). The highest output power channel was used for SAR testing.

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UMTS Notes:

1. UMTS mode was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. AMR and HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03r01.
2. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s). The highest output power channel was used for SAR testing.

LTE Notes:

1. LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 8.5.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 and MCC=001 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D01v06, when the reported LTE Band 41 measured at the highest output power channel in a given a test configuration was > 0.6 W/kg for 1g evaluations, testing at the other channels was required for such test configurations.
5. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r04. Testing was performed using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.
6. Per KDB Publication 941225 D05Av01r02, SAR for downlink only 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.
7. For LTE Band 41, per FCC guidance, SAR was first measured with only a single carrier active in the uplink (carrier aggregation not active). For each exposure condition, the uplink CA scenario with two component carriers was additionally tested for the configuration with the highest SAR when carrier aggregation was not active. The SCC was configured with the closest available contiguous channel. The two component carriers were configured so the resource blocks are physically allocated side by side to achieve the maximum output power.

WLAN Notes:

1. For held-to-ear, hotspot, phablet, and UMPC mini-tablet operations, the initial test position procedures were applied. When reported SAR for the initial test position is ≤ 0.4 W/kg for 1g evaluations, 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/ax) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.6.5 for more information.
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 for 1g evaluations. See Section 8.6.6 for more information.

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4. Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D01v06 by either evaluating the sum of the 1g SAR values of each antenna transmitting independently or making a SAR measurement with both antennas transmitting simultaneously. Please see Section 12 for complete analysis.
5. When the maximum reported 1g averaged SAR is ≤0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg for 1g evaluations or all test channels were measured.
6. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated EMC test reports.
7. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

Bluetooth Notes

1. Bluetooth SAR was measured with the device connected to a call box with hopping disabled with DH5 operation and Tx Tests test mode type. Per October 2016 TCB Workshop Notes, the reported SAR was scaled to the 100% transmission duty factor to determine compliance. See Section 9.7 for the time domain plot and calculation for the duty factor of the device.
   Head and Hotspot Bluetooth SAR were evaluated for BT BR tethering applications.

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12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

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

12.2 Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore, simultaneous transmission analysis is required. Per FCC KDB Publication 447498 D01v06 4.3.2 and IEEE 1528-2013 Section 6.3.4.1.2, simultaneous transmission SAR test exclusion may be applied when the sum of the 1g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤1.6 W/kg. The different test positions in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1g or 10g SAR.

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

(*) For test positions that were not required to be evaluated for WLAN SAR per FCC KDB publication 248227, the worst case WLAN SAR result for the applicable exposure conditions was used for simultaneous transmission analysis.

For SAR summation, the highest reported SAR across all test distances was used as the most conservative evaluation for simultaneous transmission analysis for each device edge.

Please refer to WIFI6E RF Exposure Report for 6 GHz WLAN standalone reported SAR results (report SN could be found in Section 1.11 - Bibliography).

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12.3 Head SAR Simultaneous Transmission Analysis

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	GSM 850 Ant A	0.159	0.592	0.751
	GSM 850 Ant A + B	0.116	0.592	0.708
	GSM 1900	0.042	0.592	0.634
	UMTS 850 Ant A	0.157	0.592	0.749
	UMTS 850 Ant A + B	0.158	0.592	0.750
	LTE Band 12 Ant A	0.102	0.592	0.694
	LTE Band 12 Ant A + B	0.194	0.592	**0.786**
	LTE Band 13 Ant A	0.127	0.592	0.719
	LTE Band 13 Ant A + B	0.167	0.592	0.759
	LTE Band 5 (Cell)	0.183	0.592	0.775
	LTE Band 5 (Cell) Ant A + B	0.188	0.592	0.780
	LTE Band 4 (AWS)	0.096	0.592	0.688
	LTE Band 41	0.053	0.592	0.645

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

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Head SAR	GSM 850 Ant A	0.159	0.222	0.348	0.381	0.507
	GSM 850 Ant A + B	0.116	0.222	0.348	0.338	0.464
	GSM 1900	0.042	0.222	0.348	0.264	0.390
	UMTS 850 Ant A	0.157	0.222	0.348	0.379	0.505
	UMTS 850 Ant A + B	0.158	0.222	0.348	0.380	0.506
	LTE Band 12 Ant A	0.102	0.222	0.348	0.324	0.450
	LTE Band 12 Ant A + B	0.194	0.222	0.348	0.416	**0.542**
	LTE Band 13 Ant A	0.127	0.222	0.348	0.349	0.475
	LTE Band 13 Ant A + B	0.167	0.222	0.348	0.389	0.515
	LTE Band 5 (Cell)	0.183	0.222	0.348	0.405	0.531
	LTE Band 5 (Cell) Ant A + B	0.188	0.222	0.348	0.410	0.536
	LTE Band 4 (AWS)	0.096	0.222	0.348	0.318	0.444
	LTE Band 41	0.053	0.222	0.348	0.275	0.401

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Table 12-3
Simultaneous Transmission Scenario with 6 GHz WLAN (Held to Ear)

Configuration	Mode	2G/3G/4G SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	GSM 850 Ant A	0.159	0.326	0.485
	GSM 850 Ant A + B	0.116	0.326	0.442
	GSM 1900	0.042	0.326	0.368
	UMTS 850 Ant A	0.157	0.326	0.483
	UMTS 850 Ant A + B	0.158	0.326	0.484
	LTE Band 12 Ant A	0.102	0.326	0.428
	LTE Band 12 Ant A + B	0.194	0.326	**0.520**
	LTE Band 13 Ant A	0.127	0.326	0.453
	LTE Band 13 Ant A + B	0.167	0.326	0.493
	LTE Band 5 (Cell)	0.183	0.326	0.509
	LTE Band 5 (Cell) Ant A + B	0.188	0.326	0.514
	LTE Band 4 (AWS)	0.096	0.326	0.422
	LTE Band 41	0.053	0.326	0.379

Table 12-4
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (Held to Ear)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	GSM 850 Ant A	0.159	0.592	0.348	1.099
	GSM 850 Ant A + B	0.116	0.592	0.348	1.056
	GSM 1900	0.042	0.592	0.348	0.982
	UMTS 850 Ant A	0.157	0.592	0.348	1.097
	UMTS 850 Ant A + B	0.158	0.592	0.348	1.098
	LTE Band 12 Ant A	0.102	0.592	0.348	1.042
	LTE Band 12 Ant A + B	0.194	0.592	0.348	**1.134**
	LTE Band 13 Ant A	0.127	0.592	0.348	1.067
	LTE Band 13 Ant A + B	0.167	0.592	0.348	1.107
	LTE Band 5 (Cell)	0.183	0.592	0.348	1.123
	LTE Band 5 (Cell) Ant A + B	0.188	0.592	0.348	1.128
	LTE Band 4 (AWS)	0.096	0.592	0.348	1.036
	LTE Band 41	0.053	0.592	0.348	0.993

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Table 12-5
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 6 GHz WLAN MIMO (Held to Ear)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	GSM 850 Ant A	0.159	0.592	0.326	1.077
	GSM 850 Ant A + B	0.116	0.592	0.326	1.034
	GSM 1900	0.042	0.592	0.326	0.960
	UMTS 850 Ant A	0.157	0.592	0.326	1.075
	UMTS 850 Ant A + B	0.158	0.592	0.326	1.076
	LTE Band 12 Ant A	0.102	0.592	0.326	1.020
	LTE Band 12 Ant A + B	0.194	0.592	0.326	**1.112**
	LTE Band 13 Ant A	0.127	0.592	0.326	1.045
	LTE Band 13 Ant A + B	0.167	0.592	0.326	1.085
	LTE Band 5 (Cell)	0.183	0.592	0.326	1.101
	LTE Band 5 (Cell) Ant A + B	0.188	0.592	0.326	1.106
	LTE Band 4 (AWS)	0.096	0.592	0.326	1.014
	LTE Band 41	0.053	0.592	0.326	0.971

Table 12-6
Simultaneous Transmission Scenario with Bluetooth (Held to Ear)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Head SAR	GSM 850 Ant A	0.159	0.214	0.014	0.373	0.173
	GSM 850 Ant A + B	0.116	0.214	0.014	0.330	0.130
	GSM 1900	0.042	0.214	0.014	0.256	0.056
	UMTS 850 Ant A	0.157	0.214	0.014	0.371	0.171
	UMTS 850 Ant A + B	0.158	0.214	0.014	0.372	0.172
	LTE Band 12 Ant A	0.102	0.214	0.014	0.316	0.116
	LTE Band 12 Ant A + B	0.194	0.214	0.014	**0.408**	0.208
	LTE Band 13 Ant A	0.127	0.214	0.014	0.341	0.141
	LTE Band 13 Ant A + B	0.167	0.214	0.014	0.381	0.181
	LTE Band 5 (Cell)	0.183	0.214	0.014	0.397	0.197
	LTE Band 5 (Cell) Ant A + B	0.188	0.214	0.014	0.402	0.202
	LTE Band 4 (AWS)	0.096	0.214	0.014	0.310	0.110
	LTE Band 41	0.053	0.214	0.014	0.267	0.067

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Table 12-7
Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2 and Bluetooth Antenna 1 (Held to Ear)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	GSM 850 Ant A	0.159	0.009	0.214	0.382
	GSM 850 Ant A + B	0.116	0.009	0.214	0.339
	GSM 1900	0.042	0.009	0.214	0.265
	UMTS 850 Ant A	0.157	0.009	0.214	0.380
	UMTS 850 Ant A + B	0.158	0.009	0.214	0.381
	LTE Band 12 Ant A	0.102	0.009	0.214	0.325
	LTE Band 12 Ant A + B	0.194	0.009	0.214	**0.417**
	LTE Band 13 Ant A	0.127	0.009	0.214	0.350
	LTE Band 13 Ant A + B	0.167	0.009	0.214	0.390
	LTE Band 5 (Cell)	0.183	0.009	0.214	0.406
	LTE Band 5 (Cell) Ant A + B	0.188	0.009	0.214	0.411
	LTE Band 4 (AWS)	0.096	0.009	0.214	0.319
	LTE Band 41	0.053	0.009	0.214	0.276

Table 12-8
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO and Bluetooth (Held to Ear)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	4	1+2+3	1+2+4
Head SAR	GSM 850 Ant A	0.159	0.348	0.214	0.014	0.721	0.521
	GSM 850 Ant A + B	0.116	0.348	0.214	0.014	0.678	0.478
	GSM 1900	0.042	0.348	0.214	0.014	0.604	0.404
	UMTS 850 Ant A	0.157	0.348	0.214	0.014	0.719	0.519
	UMTS 850 Ant A + B	0.158	0.348	0.214	0.014	0.720	0.520
	LTE Band 12 Ant A	0.102	0.348	0.214	0.014	0.664	0.464
	LTE Band 12 Ant A + B	0.194	0.348	0.214	0.014	**0.756**	0.556
	LTE Band 13 Ant A	0.127	0.348	0.214	0.014	0.689	0.489
	LTE Band 13 Ant A + B	0.167	0.348	0.214	0.014	0.729	0.529
	LTE Band 5 (Cell)	0.183	0.348	0.214	0.014	0.745	0.545
	LTE Band 5 (Cell) Ant A + B	0.188	0.348	0.214	0.014	0.750	0.550
	LTE Band 4 (AWS)	0.096	0.348	0.214	0.014	0.658	0.458
	LTE Band 41	0.053	0.348	0.214	0.014	0.615	0.415

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Table 12-9
Simultaneous Transmission Scenario with 6 GHz WLAN MIMO and Bluetooth (Held to Ear)

Configuration	Mode	2G/3G/4G SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	4	1+2+3	1+2+4
Head SAR	GSM 850 Ant A	0.159	0.326	0.214	0.014	0.699	0.499
	GSM 850 Ant A + B	0.116	0.326	0.214	0.014	0.656	0.456
	GSM 1900	0.042	0.326	0.214	0.014	0.582	0.382
	UMTS 850 Ant A	0.157	0.326	0.214	0.014	0.697	0.497
	UMTS 850 Ant A + B	0.158	0.326	0.214	0.014	0.698	0.498
	LTE Band 12 Ant A	0.102	0.326	0.214	0.014	0.642	0.442
	LTE Band 12 Ant A + B	0.194	0.326	0.214	0.014	**0.734**	0.534
	LTE Band 13 Ant A	0.127	0.326	0.214	0.014	0.667	0.467
	LTE Band 13 Ant A + B	0.167	0.326	0.214	0.014	0.707	0.507
	LTE Band 5 (Cell)	0.183	0.326	0.214	0.014	0.723	0.523
	LTE Band 5 (Cell) Ant A + B	0.188	0.326	0.214	0.014	0.728	0.528
	LTE Band 4 (AWS)	0.096	0.326	0.214	0.014	0.636	0.436
	LTE Band 41	0.053	0.326	0.214	0.014	0.593	0.393

Table 12-10
Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN MIMO, and Bluetooth Antenna 1, (Held to Ear)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Head SAR	GSM 850 Ant A	0.159	0.009	0.348	0.214	0.730
	GSM 850 Ant A + B	0.116	0.009	0.348	0.214	0.687
	GSM 1900	0.042	0.009	0.348	0.214	0.613
	UMTS 850 Ant A	0.157	0.009	0.348	0.214	0.728
	UMTS 850 Ant A + B	0.158	0.009	0.348	0.214	0.729
	LTE Band 12 Ant A	0.102	0.009	0.348	0.214	0.673
	LTE Band 12 Ant A + B	0.194	0.009	0.348	0.214	**0.765**
	LTE Band 13 Ant A	0.127	0.009	0.348	0.214	0.698
	LTE Band 13 Ant A + B	0.167	0.009	0.348	0.214	0.738
	LTE Band 5 (Cell)	0.183	0.009	0.348	0.214	0.754
	LTE Band 5 (Cell) Ant A + B	0.188	0.009	0.348	0.214	0.759
	LTE Band 4 (AWS)	0.096	0.009	0.348	0.214	0.667
	LTE Band 41	0.053	0.009	0.348	0.214	0.624

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Table 12-11
Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2, 6 GHz WLAN MIMO, and Bluetooth Antenna 1, (Held to Ear)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Head SAR	GSM 850 Ant A	0.159	0.009	0.326	0.214	0.708
	GSM 850 Ant A + B	0.116	0.009	0.326	0.214	0.665
	GSM 1900	0.042	0.009	0.326	0.214	0.591
	UMTS 850 Ant A	0.157	0.009	0.326	0.214	0.706
	UMTS 850 Ant A + B	0.158	0.009	0.326	0.214	0.707
	LTE Band 12 Ant A	0.102	0.009	0.326	0.214	0.651
	LTE Band 12 Ant A + B	0.194	0.009	0.326	0.214	**0.743**
	LTE Band 13 Ant A	0.127	0.009	0.326	0.214	0.676
	LTE Band 13 Ant A + B	0.167	0.009	0.326	0.214	0.716
	LTE Band 5 (Cell)	0.183	0.009	0.326	0.214	0.732
	LTE Band 5 (Cell) Ant A + B	0.188	0.009	0.326	0.214	0.737
	LTE Band 4 (AWS)	0.096	0.009	0.326	0.214	0.645
	LTE Band 41	0.053	0.009	0.326	0.214	0.602

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12.4 Body-Worn Simultaneous Transmission Analysis

Table 12-12
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body - Worn SAR	GSM 850 Ant A	0.110	0.034	0.144
	GSM 850 Ant A + B	0.100	0.034	0.134
	GSM 1900	0.291	0.034	0.325
	UMTS 850 Ant A	0.194	0.034	0.228
	UMTS 850 Ant A + B	0.140	0.034	0.174
	LTE Band 12 Ant A	0.154	0.034	0.188
	LTE Band 12 Ant A + B	0.220	0.034	0.254
	LTE Band 13 Ant A	0.158	0.034	0.192
	LTE Band 13 Ant A + B	0.230	0.034	0.264
	LTE Band 5 (Cell)	0.177	0.034	0.211
	LTE Band 5 (Cell) Ant A + B	0.126	0.034	0.160
	LTE Band 4 (AWS)	0.576	0.034	**0.610**
	LTE Band 41	0.153	0.034	0.187

Table 12-13
Simultaneous Transmission Scenario with 5 GHz WLAN (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Body - Worn SAR	GSM 850 Ant A	0.110	0.000	0.013	0.110	0.123
	GSM 850 Ant A + B	0.100	0.000	0.013	0.100	0.113
	GSM 1900	0.291	0.000	0.013	0.291	0.304
	UMTS 850 Ant A	0.194	0.000	0.013	0.194	0.207
	UMTS 850 Ant A + B	0.140	0.000	0.013	0.140	0.153
	LTE Band 12 Ant A	0.154	0.000	0.013	0.154	0.167
	LTE Band 12 Ant A + B	0.220	0.000	0.013	0.220	0.233
	LTE Band 13 Ant A	0.158	0.000	0.013	0.158	0.171
	LTE Band 13 Ant A + B	0.230	0.000	0.013	0.230	0.243
	LTE Band 5 (Cell)	0.177	0.000	0.013	0.177	0.190
	LTE Band 5 (Cell) Ant A + B	0.126	0.000	0.013	0.126	0.139
	LTE Band 4 (AWS)	0.576	0.000	0.013	0.576	**0.589**
	LTE Band 41	0.153	0.000	0.013	0.153	0.166

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Table 12-14
Simultaneous Transmission Scenario with 6 GHz WLAN (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body - Worn SAR	GSM 850 Ant A	0.110	0.004	0.114
	GSM 850 Ant A + B	0.100	0.004	0.104
	GSM 1900	0.291	0.004	0.295
	UMTS 850 Ant A	0.194	0.004	0.198
	UMTS 850 Ant A + B	0.140	0.004	0.144
	LTE Band 12 Ant A	0.154	0.004	0.158
	LTE Band 12 Ant A + B	0.220	0.004	0.224
	LTE Band 13 Ant A	0.158	0.004	0.162
	LTE Band 13 Ant A + B	0.230	0.004	0.234
	LTE Band 5 (Cell)	0.177	0.004	0.181
	LTE Band 5 (Cell) Ant A + B	0.126	0.004	0.130
	LTE Band 4 (AWS)	0.576	0.004	**0.580**
	LTE Band 41	0.153	0.004	0.157

Table 12-15
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Body - Worn SAR	GSM 850 Ant A	0.110	0.034	0.013	0.157
	GSM 850 Ant A + B	0.100	0.034	0.013	0.147
	GSM 1900	0.291	0.034	0.013	0.338
	UMTS 850 Ant A	0.194	0.034	0.013	0.241
	UMTS 850 Ant A + B	0.140	0.034	0.013	0.187
	LTE Band 12 Ant A	0.154	0.034	0.013	0.201
	LTE Band 12 Ant A + B	0.220	0.034	0.013	0.267
	LTE Band 13 Ant A	0.158	0.034	0.013	0.205
	LTE Band 13 Ant A + B	0.230	0.034	0.013	0.277
	LTE Band 5 (Cell)	0.177	0.034	0.013	0.224
	LTE Band 5 (Cell) Ant A + B	0.126	0.034	0.013	0.173
	LTE Band 4 (AWS)	0.576	0.034	0.013	**0.623**
	LTE Band 41	0.153	0.034	0.013	0.200

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Table 12-16
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 6 GHz WLAN MIMO (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Body - Worn SAR	GSM 850 Ant A	0.110	0.034	0.004	0.148
	GSM 850 Ant A + B	0.100	0.034	0.004	0.138
	GSM 1900	0.291	0.034	0.004	0.329
	UMTS 850 Ant A	0.194	0.034	0.004	0.232
	UMTS 850 Ant A + B	0.140	0.034	0.004	0.178
	LTE Band 12 Ant A	0.154	0.034	0.004	0.192
	LTE Band 12 Ant A + B	0.220	0.034	0.004	0.258
	LTE Band 13 Ant A	0.158	0.034	0.004	0.196
	LTE Band 13 Ant A + B	0.230	0.034	0.004	0.268
	LTE Band 5 (Cell)	0.177	0.034	0.004	0.215
	LTE Band 5 (Cell) Ant A + B	0.126	0.034	0.004	0.164
	LTE Band 4 (AWS)	0.576	0.034	0.004	**0.614**
	LTE Band 41	0.153	0.034	0.004	0.191

Table 12-17
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Body - Worn SAR	GSM 850 Ant A	0.110	0.023	0.012	0.133	0.122
	GSM 850 Ant A + B	0.100	0.023	0.012	0.123	0.112
	GSM 1900	0.291	0.023	0.012	0.314	0.303
	UMTS 850 Ant A	0.194	0.023	0.012	0.217	0.206
	UMTS 850 Ant A + B	0.140	0.023	0.012	0.163	0.152
	LTE Band 12 Ant A	0.154	0.023	0.012	0.177	0.166
	LTE Band 12 Ant A + B	0.220	0.023	0.012	0.243	0.232
	LTE Band 13 Ant A	0.158	0.023	0.012	0.181	0.170
	LTE Band 13 Ant A + B	0.230	0.023	0.012	0.253	0.242
	LTE Band 5 (Cell)	0.177	0.023	0.012	0.200	0.189
	LTE Band 5 (Cell) Ant A + B	0.126	0.023	0.012	0.149	0.138
	LTE Band 4 (AWS)	0.576	0.023	0.012	**0.599**	0.588
	LTE Band 41	0.153	0.023	0.012	0.176	0.165

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Table 12-18
Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2 and Bluetooth Antenna 1 (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Body - Worn SAR	GSM 850 Ant A	0.110	0.024	0.023	0.157
	GSM 850 Ant A + B	0.100	0.024	0.023	0.147
	GSM 1900	0.291	0.024	0.023	0.338
	UMTS 850 Ant A	0.194	0.024	0.023	0.241
	UMTS 850 Ant A + B	0.140	0.024	0.023	0.187
	LTE Band 12 Ant A	0.154	0.024	0.023	0.201
	LTE Band 12 Ant A + B	0.220	0.024	0.023	0.267
	LTE Band 13 Ant A	0.158	0.024	0.023	0.205
	LTE Band 13 Ant A + B	0.230	0.024	0.023	0.277
	LTE Band 5 (Cell)	0.177	0.024	0.023	0.224
	LTE Band 5 (Cell) Ant A + B	0.126	0.024	0.023	0.173
	LTE Band 4 (AWS)	0.576	0.024	0.023	**0.623**
	LTE Band 41	0.153	0.024	0.023	0.200

Table 12-19
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO and Bluetooth (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	4	1+2+3	1+2+4
Body - Worn SAR	GSM 850 Ant A	0.110	0.013	0.023	0.012	0.146	0.135
	GSM 850 Ant A + B	0.100	0.013	0.023	0.012	0.136	0.125
	GSM 1900	0.291	0.013	0.023	0.012	0.327	0.316
	UMTS 850 Ant A	0.194	0.013	0.023	0.012	0.230	0.219
	UMTS 850 Ant A + B	0.140	0.013	0.023	0.012	0.176	0.165
	LTE Band 12 Ant A	0.154	0.013	0.023	0.012	0.190	0.179
	LTE Band 12 Ant A + B	0.220	0.013	0.023	0.012	0.256	0.245
	LTE Band 13 Ant A	0.158	0.013	0.023	0.012	0.194	0.183
	LTE Band 13 Ant A + B	0.230	0.013	0.023	0.012	0.266	0.255
	LTE Band 5 (Cell)	0.177	0.013	0.023	0.012	0.213	0.202
	LTE Band 5 (Cell) Ant A + B	0.126	0.013	0.023	0.012	0.162	0.151
	LTE Band 4 (AWS)	0.576	0.013	0.023	0.012	**0.612**	0.601
	LTE Band 41	0.153	0.013	0.023	0.012	0.189	0.178

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Table 12-20
Simultaneous Transmission Scenario with 6 GHz WLAN MIMO and Bluetooth (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	4	1+2+3	1+2+4
Body - Worn SAR	GSM 850 Ant A	0.110	0.004	0.023	0.012	0.137	0.126
	GSM 850 Ant A + B	0.100	0.004	0.023	0.012	0.127	0.116
	GSM 1900	0.291	0.004	0.023	0.012	0.318	0.307
	UMTS 850 Ant A	0.194	0.004	0.023	0.012	0.221	0.210
	UMTS 850 Ant A + B	0.140	0.004	0.023	0.012	0.167	0.156
	LTE Band 12 Ant A	0.154	0.004	0.023	0.012	0.181	0.170
	LTE Band 12 Ant A + B	0.220	0.004	0.023	0.012	0.247	0.236
	LTE Band 13 Ant A	0.158	0.004	0.023	0.012	0.185	0.174
	LTE Band 13 Ant A + B	0.230	0.004	0.023	0.012	0.257	0.246
	LTE Band 5 (Cell)	0.177	0.004	0.023	0.012	0.204	0.193
	LTE Band 5 (Cell) Ant A + B	0.126	0.004	0.023	0.012	0.153	0.142
	LTE Band 4 (AWS)	0.576	0.004	0.023	0.012	**0.603**	0.592
	LTE Band 41	0.153	0.004	0.023	0.012	0.180	0.169

Table 12-21
Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN MIMO, and Bluetooth Antenna 1, (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body - Worn SAR	GSM 850 Ant A	0.110	0.024	0.013	0.023	0.170
	GSM 850 Ant A + B	0.100	0.024	0.013	0.023	0.160
	GSM 1900	0.291	0.024	0.013	0.023	0.351
	UMTS 850 Ant A	0.194	0.024	0.013	0.023	0.254
	UMTS 850 Ant A + B	0.140	0.024	0.013	0.023	0.200
	LTE Band 12 Ant A	0.154	0.024	0.013	0.023	0.214
	LTE Band 12 Ant A + B	0.220	0.024	0.013	0.023	0.280
	LTE Band 13 Ant A	0.158	0.024	0.013	0.023	0.218
	LTE Band 13 Ant A + B	0.230	0.024	0.013	0.023	0.290
	LTE Band 5 (Cell)	0.177	0.024	0.013	0.023	0.237
	LTE Band 5 (Cell)	0.126	0.024	0.013	0.023	0.186
	LTE Band 4 (AWS)	0.576	0.024	0.013	0.023	**0.636**
	LTE Band 41	0.153	0.024	0.013	0.023	0.213

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Table 12-22
Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2, 6 GHz WLAN MIMO, and Bluetooth Antenna 1, (Body-Worn at 1.5 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body - Worn SAR	GSM 850 Ant A	0.110	0.024	0.004	0.023	0.161
	GSM 850 Ant A + B	0.100	0.024	0.004	0.023	0.151
	GSM 1900	0.291	0.024	0.004	0.023	0.342
	UMTS 850 Ant A	0.194	0.024	0.004	0.023	0.245
	UMTS 850 Ant A + B	0.140	0.024	0.004	0.023	0.191
	LTE Band 12 Ant A	0.154	0.024	0.004	0.023	0.205
	LTE Band 12 Ant A + B	0.220	0.024	0.004	0.023	0.271
	LTE Band 13 Ant A	0.158	0.024	0.004	0.023	0.209
	LTE Band 13 Ant A + B	0.230	0.024	0.004	0.023	0.281
	LTE Band 5 (Cell)	0.177	0.024	0.004	0.023	0.228
	LTE Band 5 (Cell)	0.126	0.024	0.004	0.023	0.177
	LTE Band 4 (AWS)	0.576	0.024	0.004	0.023	**0.627**
	LTE Band 41	0.153	0.024	0.004	0.023	0.204

12.5 Hotspot SAR Simultaneous Transmission Analysis

Table 12-23
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	GSM 850 Ant A	0.326	0.311	0.637
	GSM 850 Ant A + B	0.199	0.311	0.510
	GSM 1900	0.399	0.311	0.710
	UMTS 850 Ant A	0.421	0.311	0.732
	UMTS 850 Ant A + B	0.309	0.311	0.620
	LTE Band 12 Ant A	0.341	0.311	0.652
	LTE Band 12 Ant A + B	0.511	0.311	**0.822**
	LTE Band 13 Ant A	0.334	0.311	0.645
	LTE Band 13 Ant A + B	0.391	0.311	0.702
	LTE Band 5 (Cell)	0.377	0.311	0.688
	LTE Band 5 (Cell) Ant A + B	0.281	0.311	0.592
	LTE Band 4 (AWS)	0.507	0.311	0.818
	LTE Band 41	0.449	0.311	0.760

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Table 12-24
Simultaneous Transmission Scenario with 5 GHz WLAN (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Hotspot SAR	GSM 850 Ant A	0.326	0.105	0.212	0.431	0.538
	GSM 850 Ant A + B	0.199	0.105	0.212	0.304	0.411
	GSM 1900	0.399	0.105	0.212	0.504	0.611
	UMTS 850 Ant A	0.421	0.105	0.212	0.526	0.633
	UMTS 850 Ant A + B	0.309	0.105	0.212	0.414	0.521
	LTE Band 12 Ant A	0.341	0.105	0.212	0.446	0.553
	LTE Band 12 Ant A + B	0.511	0.105	0.212	0.616	**0.723**
	LTE Band 13 Ant A	0.334	0.105	0.212	0.439	0.546
	LTE Band 13 Ant A + B	0.391	0.105	0.212	0.496	0.603
	LTE Band 5 (Cell)	0.377	0.105	0.212	0.482	0.589
	LTE Band 5 (Cell) Ant A + B	0.281	0.105	0.212	0.386	0.493
	LTE Band 4 (AWS)	0.507	0.105	0.212	0.612	0.719
	LTE Band 41	0.449	0.105	0.212	0.554	0.661

Table 12-25
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	GSM 850 Ant A	0.326	0.311	0.212	0.849
	GSM 850 Ant A + B	0.199	0.311	0.212	0.722
	GSM 1900	0.399	0.311	0.212	0.922
	UMTS 850 Ant A	0.421	0.311	0.212	0.944
	UMTS 850 Ant A + B	0.309	0.311	0.212	0.832
	LTE Band 12 Ant A	0.341	0.311	0.212	0.864
	LTE Band 12 Ant A + B	0.511	0.311	0.212	**1.034**
	LTE Band 13 Ant A	0.334	0.311	0.212	0.857
	LTE Band 13 Ant A + B	0.391	0.311	0.212	0.914
	LTE Band 5 (Cell)	0.377	0.311	0.212	0.900
	LTE Band 5 (Cell) Ant A + B	0.281	0.311	0.212	0.804
	LTE Band 4 (AWS)	0.507	0.311	0.212	1.030
	LTE Band 41	0.449	0.311	0.212	0.972

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Table 12-26
Simultaneous Transmission Scenario with Bluetooth (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Hotspot SAR	GSM 850 Ant A	0.326	0.183	0.110	0.509	0.436
	GSM 850 Ant A + B	0.199	0.183	0.110	0.382	0.309
	GSM 1900	0.399	0.183	0.110	0.582	0.509
	UMTS 850 Ant A	0.421	0.183	0.110	0.604	0.531
	UMTS 850 Ant A + B	0.309	0.183	0.110	0.492	0.419
	LTE Band 12 Ant A	0.341	0.183	0.110	0.524	0.451
	LTE Band 12 Ant A + B	0.511	0.183	0.110	**0.694**	0.621
	LTE Band 13 Ant A	0.334	0.183	0.110	0.517	0.444
	LTE Band 13 Ant A + B	0.391	0.183	0.110	0.574	0.501
	LTE Band 5 (Cell)	0.377	0.183	0.110	0.560	0.487
	LTE Band 5 (Cell) Ant A + B	0.281	0.183	0.110	0.464	0.391
	LTE Band 4 (AWS)	0.507	0.183	0.110	0.690	0.617
	LTE Band 41	0.449	0.183	0.110	0.632	0.559

Table 12-27
Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2 and Bluetooth Antenna 1 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	GSM 850 Ant A	0.326	0.197	0.183	0.706
	GSM 850 Ant A + B	0.199	0.197	0.183	0.579
	GSM 1900	0.399	0.197	0.183	0.779
	UMTS 850 Ant A	0.421	0.197	0.183	0.801
	UMTS 850 Ant A + B	0.309	0.197	0.183	0.689
	LTE Band 12 Ant A	0.341	0.197	0.183	0.721
	LTE Band 12 Ant A + B	0.511	0.197	0.183	**0.891**
	LTE Band 13 Ant A	0.334	0.197	0.183	0.714
	LTE Band 13 Ant A + B	0.391	0.197	0.183	0.771
	LTE Band 5 (Cell)	0.377	0.197	0.183	0.757
	LTE Band 5 (Cell) Ant A + B	0.281	0.197	0.183	0.661
	LTE Band 4 (AWS)	0.507	0.197	0.183	0.887
	LTE Band 41	0.449	0.197	0.183	0.829

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Table 12-28
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO and Bluetooth (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	4	1+2+3	1+2+4
Hotspot SAR	GSM 850 Ant A	0.326	0.212	0.183	0.110	0.721	0.648
	GSM 850 Ant A + B	0.199	0.212	0.183	0.110	0.594	0.521
	GSM 1900	0.399	0.212	0.183	0.110	0.794	0.721
	UMTS 850 Ant A	0.421	0.212	0.183	0.110	0.816	0.743
	UMTS 850 Ant A + B	0.309	0.212	0.183	0.110	0.704	0.631
	LTE Band 12 Ant A	0.341	0.212	0.183	0.110	0.736	0.663
	LTE Band 12 Ant A + B	0.511	0.212	0.183	0.110	**0.906**	0.833
	LTE Band 13 Ant A	0.334	0.212	0.183	0.110	0.729	0.656
	LTE Band 13 Ant A + B	0.391	0.212	0.183	0.110	0.786	0.713
	LTE Band 5 (Cell)	0.377	0.212	0.183	0.110	0.772	0.699
	LTE Band 5 (Cell) Ant A + B	0.281	0.212	0.183	0.110	0.676	0.603
	LTE Band 4 (AWS)	0.507	0.212	0.183	0.110	0.902	0.829
	LTE Band 41	0.449	0.212	0.183	0.110	0.844	0.771

Table 12-29
Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN MIMO, and Bluetooth Antenna 1, (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	GSM 850 Ant A	0.326	0.197	0.212	0.183	0.918
	GSM 850 Ant A + B	0.199	0.197	0.212	0.183	0.791
	GSM 1900	0.399	0.197	0.212	0.183	0.991
	UMTS 850 Ant A	0.421	0.197	0.212	0.183	1.013
	UMTS 850 Ant A + B	0.309	0.197	0.212	0.183	0.901
	LTE Band 12 Ant A	0.341	0.197	0.212	0.183	0.933
	LTE Band 12 Ant A + B	0.511	0.197	0.212	0.183	**1.103**
	LTE Band 13 Ant A	0.334	0.197	0.212	0.183	0.926
	LTE Band 13 Ant A + B	0.391	0.197	0.212	0.183	0.983
	LTE Band 5 (Cell)	0.377	0.197	0.212	0.183	0.969
	LTE Band 5 (Cell) Ant A + B	0.281	0.197	0.212	0.183	0.873
	LTE Band 4 (AWS)	0.507	0.197	0.212	0.183	1.099
	LTE Band 41	0.449	0.197	0.212	0.183	1.041

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12.6 Phablet Simultaneous Transmission Analysis

For SAR summation, the highest reported SAR across all test distances was used as the most conservative evaluation for simultaneous transmission analysis for each device edge.

Per FCC KDB Publication 648474 D04 Handset SAR, Phablet SAR tests were not required if wireless router 1g SAR (scaled to the maximum output power, including tolerance) < 1.2 W/kg. Therefore no further analysis beyond the tables included in this section was required to determine that possible simultaneous transmission scenarios would not exceed the SAR limit.

Table 12-30
Simultaneous Transmission Scenario with 5 GHz WLAN (Phablet)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
		1	2	2	1+2	1+3
Phablet SAR	GPRS 1900	2.025	1.054	1.592	3.079	**3.617**
	LTE Band 4 (AWS)	1.361	1.054	1.592	2.415	2.953
	LTE Band 41	1.650	1.054	1.592	2.704	3.242

Table 12-31
Simultaneous Transmission Scenario with 6 GHz WLAN (Phablet)

Configuration	Mode	2G/3G/4G SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Phablet SAR	GPRS 1900	2.025	0.162	**2.187**
	LTE Band 4 (AWS)	1.361	0.162	1.523
	LTE Band 41	1.650	0.162	1.812

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12.7 UMPC Body Simultaneous Transmission Analysis

For SAR summation, the highest reported SAR across all test distances was used as the most conservative evaluation for simultaneous transmission analysis for each device edge.

Table 12-32
Simultaneous Transmission Scenario with 2.4 GHz WLAN (UMPC Body)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
UMPC Body SAR	GPRS 850 Ant A + B	0.475	0.452	0.927
	GPRS 1900	0.878	0.452	**1.330**
	UMTS 850 Ant A + B	0.534	0.452	0.986
	LTE Band 12 Ant A + B	0.504	0.452	0.956
	LTE Band 13 Ant A + B	0.622	0.452	1.074
	LTE Band 5 (Cell) Ant A + B	0.588	0.452	1.040
	LTE Band 4 (AWS)	0.847	0.452	1.299
	LTE Band 41	0.566	0.452	1.018

Table 12-33
Simultaneous Transmission Scenario with 5 GHz WLAN (UMPC Body)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
UMPC Body SAR	GPRS 850 Ant A + B	0.475	0.319	0.617	0.794	1.092
	GPRS 1900	0.878	0.319	0.617	1.197	**1.495**
	UMTS 850 Ant A + B	0.534	0.319	0.617	0.853	1.151
	LTE Band 12 Ant A + B	0.504	0.319	0.617	0.823	1.121
	LTE Band 13 Ant A + B	0.622	0.319	0.617	0.941	1.239
	LTE Band 5 (Cell) Ant A + B	0.588	0.319	0.617	0.907	1.205
	LTE Band 4 (AWS)	0.847	0.319	0.617	1.166	1.464
	LTE Band 41	0.566	0.319	0.617	0.885	1.183

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Table 12-34
Simultaneous Transmission Scenario with 6 GHz WLAN (UMPC Body)

Configuration	Mode	2G/3G/4G SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
UMPC Body SAR	GPRS 850 Ant A + B	0.475	0.021	0.496
	GPRS 1900	0.878	0.021	**0.899**
	UMTS 850 Ant A + B	0.534	0.021	0.555
	LTE Band 12 Ant A + B	0.504	0.021	0.525
	LTE Band 13 Ant A + B	0.622	0.021	0.643
	LTE Band 5 (Cell) Ant A + B	0.588	0.021	0.609
	LTE Band 4 (AWS)	0.847	0.021	0.868
	LTE Band 41	0.566	0.021	0.587

Table 12-35
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (UMPC Body)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	GPRS 850 Ant A + B	0.475	0.452	0.617	1.544
	GPRS 1900	0.878	0.452	0.617	See Table Below
	UMTS 850 Ant A + B	0.534	0.452	0.617	See Table Below
	LTE Band 12 Ant A + B	0.504	0.452	0.617	**1.573**
	LTE Band 13 Ant A + B	0.622	0.452	0.617	See Table Below
	LTE Band 5 (Cell) Ant A + B	0.588	0.452	0.617	See Table Below
	LTE Band 4 (AWS)	0.847	0.452	0.617	See Table Below
	LTE Band 41	0.566	0.452	0.617	See Table Below

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR SAR	Back	0.618	0.309	0.248	1.175
	Front	0.878	0.263	0.306	1.447
	Top	-	0.452	0.384	0.836
	Bottom	0.541	0.315	0.617	**1.473**
	Right	0.122	-	-	0.122

Simult Tx	Configuration	LTE Band 13 Ant A + B SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR SAR	Back	0.622	0.309	0.248	1.179
	Front	0.440	0.263	0.306	1.009
	Top	-	0.452	0.384	0.836
	Bottom	0.291	0.315	0.617	**1.223**
	Right	0.215	-	-	0.215

Simult Tx	Configuration	UMTS 850 Ant A + B SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR SAR	Back	0.534	0.309	0.248	1.091
	Front	0.448	0.263	0.306	1.017
	Top	-	0.452	0.384	0.836
	Bottom	0.404	0.315	0.617	**1.336**
	Right	0.367	-	-	0.367

Simult Tx	Configuration	LTE Band 5 (Cell) A + B SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR SAR	Back	0.588	0.309	0.248	1.145
	Front	0.427	0.263	0.306	0.996
	Top	-	0.452	0.384	0.836
	Bottom	0.458	0.315	0.617	**1.390**
	Right	0.327	-	-	0.327

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Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR SAR	Back	0.765	0.309	0.248	1.322
	Front	0.847	0.263	0.306	1.416
	Top	-	0.452	0.384	0.836
	Bottom	0.647	0.315	0.617	**1.579**
	Right	0.373	-	-	0.373
Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR SAR	Back	0.410	0.309	0.248	0.967
	Front	0.566	0.263	0.306	1.135
	Top	-	0.452	0.384	0.836
	Bottom	0.503	0.315	0.617	**1.435**
	Right	0.114	-	-	0.114

Table 12-36
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 6 GHz WLAN MIMO (UMPC Body)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	GPRS 850 Ant A + B	0.475	0.452	0.021	0.948
	GPRS 1900	0.878	0.452	0.021	**1.351**
	UMTS 850 Ant A + B	0.534	0.452	0.021	1.007
	LTE Band 12 Ant A + B	0.504	0.452	0.021	0.977
	LTE Band 13 Ant A + B	0.622	0.452	0.021	1.095
	LTE Band 5 (Cell) Ant A + B	0.588	0.452	0.021	1.061
	LTE Band 4 (AWS)	0.847	0.452	0.021	1.320
	LTE Band 41	0.566	0.452	0.021	1.039

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Table 12-37
Simultaneous Transmission Scenario with Bluetooth (UMPC Body)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
UMPC Body SAR	GPRS 850 Ant A + B	0.475	0.249	0.214	0.724	0.689
	GPRS 1900	0.878	0.249	0.214	**1.127**	1.092
	UMTS 850 Ant A + B	0.534	0.249	0.214	0.783	0.748
	LTE Band 12 Ant A + B	0.504	0.249	0.214	0.753	0.718
	LTE Band 13 Ant A + B	0.622	0.249	0.214	0.871	0.836
	LTE Band 5 (Cell) Ant A + B	0.588	0.249	0.214	0.837	0.802
	LTE Band 4 (AWS)	0.847	0.249	0.214	1.096	1.061
	LTE Band 41	0.566	0.249	0.214	0.815	0.780

Table 12-38
Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2 and Bluetooth Antenna 1 (UMPC Body)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	GPRS 850 Ant A + B	0.475	0.288	0.249	1.012
	GPRS 1900	0.878	0.288	0.249	**1.415**
	UMTS 850 Ant A + B	0.534	0.288	0.249	1.071
	LTE Band 12 Ant A + B	0.504	0.288	0.249	1.041
	LTE Band 13 Ant A + B	0.622	0.288	0.249	1.159
	LTE Band 5 (Cell) Ant A + B	0.588	0.288	0.249	1.125
	LTE Band 4 (AWS)	0.847	0.288	0.249	1.384
	LTE Band 41	0.566	0.288	0.249	1.103

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Table 12-39
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO and Bluetooth (UMPC Body)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	4	1+2+3	1+2+4
UMPC Body SAR	GPRS 850 Ant A + B	0.475	0.617	0.249	0.214	1.341	1.306
	GPRS 1900	0.878	0.617	0.249	0.214	See Table Below	See Table Below
	UMTS 850 Ant A + B	0.534	0.617	0.249	0.214	1.400	1.365
	LTE Band 12 Ant A + B	0.504	0.617	0.249	0.214	1.370	1.335
	LTE Band 13 Ant A + B	0.622	0.617	0.249	0.214	**1.488**	1.453
	LTE Band 5 (Cell) Ant A + B	0.588	0.617	0.249	0.214	1.454	1.419
	LTE Band 4 (AWS)	0.847	0.617	0.249	0.214	See Table Below	See Table Below
	LTE Band 41	0.566	0.617	0.249	0.214	1.432	1.397

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+4
UMPC Body SAR SAR	Back	0.618	0.248	0.171	0.085	0.946
	Front	0.878	0.306	0.124	0.148	1.332
	Top	-	0.384	0.249	-	0.384
	Bottom	0.541	0.617	-	0.214	**1.372**
	Right	0.122	-	-	-	0.122

Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+4
UMPC Body SAR SAR	Back	0.765	0.248	0.171	0.085	1.098
	Front	0.847	0.306	0.124	0.148	1.301
	Top	-	0.384	0.249	-	0.384
	Bottom	0.647	0.617	-	0.214	**1.478**
	Right	0.373	-	-	-	0.373

Table 12-40
Simultaneous Transmission Scenario with 6 GHz WLAN MIMO and Bluetooth (UMPC Body)

Configuration	Mode	2G/3G/4G SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	4	1+2+3	1+2+4
UMPC Body SAR	GPRS 850 Ant A + B	0.475	0.021	0.249	0.214	0.745	0.710
	GPRS 1900	0.878	0.021	0.249	0.214	**1.148**	1.113
	UMTS 850 Ant A + B	0.534	0.021	0.249	0.214	0.804	0.769
	LTE Band 12 Ant A + B	0.504	0.021	0.249	0.214	0.774	0.739
	LTE Band 13 Ant A + B	0.622	0.021	0.249	0.214	0.892	0.857
	LTE Band 5 (Cell) Ant A + B	0.588	0.021	0.249	0.214	0.858	0.823
	LTE Band 4 (AWS)	0.847	0.021	0.249	0.214	1.117	1.082
	LTE Band 41	0.566	0.021	0.249	0.214	0.836	0.801

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Table 12-41
Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN MIMO, and Bluetooth Antenna 1, (UMPC Body)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Body SAR	GPRS 850 Ant A + B	0.475	0.288	0.617	0.249	See Table Below
	GPRS 1900	0.878	0.288	0.617	0.249	See Table Below
	UMTS 850 Ant A + B	0.534	0.288	0.617	0.249	See Table Below
	LTE Band 12 Ant A + B	0.504	0.288	0.617	0.249	See Table Below
	LTE Band 13 Ant A + B	0.622	0.288	0.617	0.249	See Table Below
	LTE Band 5 (Cell) Ant A + B	0.588	0.288	0.617	0.249	See Table Below
	LTE Band 4 (AWS)	0.847	0.288	0.617	0.249	See Table Below
	LTE Band 41	0.566	0.288	0.617	0.249	See Table Below

Simult Tx	Configuration	GPRS 850 Ant A + B SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Body SAR SAR	Back	0.475	0.211	0.248	0.171	1.105
	Front	0.401	0.279	0.306	0.124	1.110
	Top	-	-	0.384	0.249	0.633
	Bottom	0.311	0.288	0.617	-	**1.216**
	Right	0.303	-	-	-	0.303

Simult Tx	Configuration	LTE Band 13 Ant A + B SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Body SAR SAR	Back	0.622	0.211	0.248	0.171	**1.252**
	Front	0.440	0.279	0.306	0.124	1.149
	Top	-	-	0.384	0.249	0.633
	Bottom	0.291	0.288	0.617	-	1.196
	Right	0.215	-	-	-	0.215

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Body SAR SAR	Back	0.618	0.211	0.248	0.171	1.248
	Front	0.878	0.279	0.306	0.124	**1.587**
	Top	-	-	0.384	0.249	0.633
	Bottom	0.541	0.288	0.617	-	1.446
	Right	0.122	-	-	-	0.122

Simult Tx	Configuration	LTE Band 5 (Cell) A + B SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Body SAR SAR	Back	0.588	0.211	0.248	0.171	1.218
	Front	0.427	0.279	0.306	0.124	1.136
	Top	-	-	0.384	0.249	0.633
	Bottom	0.458	0.288	0.617	-	**1.363**
	Right	0.327	-	-	-	0.327

Simult Tx	Configuration	UMTS 850 Ant A + B SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Body SAR SAR	Back	0.534	0.211	0.248	0.171	1.164
	Front	0.448	0.279	0.306	0.124	1.157
	Top	-	-	0.384	0.249	0.633
	Bottom	0.404	0.288	0.617	-	**1.309**
	Right	0.367	-	-	-	0.367

Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Body SAR SAR	Back	0.765	0.211	0.248	0.171	1.395
	Front	0.847	0.279	0.306	0.124	**1.556**
	Top	-	-	0.384	0.249	0.633
	Bottom	0.647	0.288	0.617	-	1.552
	Right	0.373	-	-	-	0.373

Simult Tx	Configuration	LTE Band 12 Ant A + B SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Body SAR SAR	Back	0.504	0.211	0.248	0.171	1.134
	Front	0.418	0.279	0.306	0.124	1.127
	Top	-	-	0.384	0.249	0.633
	Bottom	0.239	0.288	0.617	-	**1.144**
	Right	0.285	-	-	-	0.285

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Body SAR SAR	Back	0.410	0.211	0.248	0.171	1.040
	Front	0.566	0.279	0.306	0.124	1.275
	Top	-	-	0.384	0.249	0.633
	Bottom	0.503	0.288	0.617	-	**1.408**
	Right	0.114	-	-	-	0.114

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Table 12-42
Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2, 6 GHz WLAN MIMO, and Bluetooth Antenna 1, (UMPC Body)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	2	3	1+2+3+4
UMPC Body SAR	GPRS 850 Ant A + B	0.475	0.288	0.021	0.249	1.033
	GPRS 1900	0.878	0.288	0.021	0.249	**1.436**
	UMTS 850 Ant A + B	0.534	0.288	0.021	0.249	1.092
	LTE Band 12 Ant A + B	0.504	0.288	0.021	0.249	1.062
	LTE Band 13 Ant A + B	0.622	0.288	0.021	0.249	1.180
	LTE Band 5 (Cell) Ant A + B	0.588	0.288	0.021	0.249	1.146
	LTE Band 4 (AWS)	0.847	0.288	0.021	0.249	1.405
	LTE Band 41	0.566	0.288	0.021	0.249	1.124

12.8 UMPC Extremity Simultaneous Transmission Analysis

For SAR summation, the highest reported SAR across all test distances was used as the most conservative evaluation for simultaneous transmission analysis for each device edge.

Table 12-43
Simultaneous Transmission Scenario with 2.4 GHz WLAN (UMPC Extremity)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
UMPC Extremitly SAR	GPRS 850 Ant A + B	1.691	1.473	3.164
	GPRS 1900	2.144	1.473	**3.617**
	UMTS 850 Ant A + B	1.436	1.473	2.909
	LTE Band 12 Ant A + B	1.423	1.473	2.896
	LTE Band 13 Ant A + B	1.306	1.473	2.779
	LTE Band 5 (Cell) A + B	1.214	1.473	2.687
	LTE Band 4 (AWS)	2.018	1.473	3.491
	LTE Band 41	1.740	1.473	3.213

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Table 12-44
Simultaneous Transmission Scenario with 5 GHz WLAN (UMPC Extremity)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
UMPC Extremitly SAR	GPRS 850 Ant A + B	1.691	1.444	1.717	3.135	3.408
	GPRS 1900	2.144	1.444	1.717	3.588	**3.861**
	UMTS 850 Ant A + B	1.436	1.444	1.717	2.880	3.153
	LTE Band 12 Ant A + B	1.423	1.444	1.717	2.867	3.140
	LTE Band 13 Ant A + B	1.306	1.444	1.717	2.750	3.023
	LTE Band 5 (Cell) A + B	1.214	1.444	1.717	2.658	2.931
	LTE Band 4 (AWS)	2.018	1.444	1.717	3.462	3.735
	LTE Band 41	1.740	1.444	1.717	3.184	3.457

Table 12-45
Simultaneous Transmission Scenario with 6 GHz WLAN (UMPC Extremity)

Configuration	Mode	2G/3G/4G SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
UMPC Extremitly SAR	GPRS 850 Ant A + B	1.691	0.132	1.823
	GPRS 1900	2.144	0.132	**2.276**
	UMTS 850 Ant A + B	1.436	0.132	1.568
	LTE Band 12 Ant A + B	1.423	0.132	1.555
	LTE Band 13 Ant A + B	1.306	0.132	1.438
	LTE Band 5 (Cell) A + B	1.214	0.132	1.346
	LTE Band 4 (AWS)	2.018	0.132	2.150
	LTE Band 41	1.740	0.132	1.872

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Table 12-46
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (UMPC Extremity)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	5 GHz WLAN MIMO at 18 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremitly SAR	GPRS 850 Ant A + B	1.691	1.473	0.797	**3.961**
	GPRS 1900	2.144	1.473	0.797	See Table Below
	UMTS 850 Ant A + B	1.436	1.473	0.797	3.706
	LTE Band 12 Ant A + B	1.423	1.473	0.797	3.693
	LTE Band 13 Ant A + B	1.306	1.473	0.797	3.576
	LTE Band 5 (Cell) A + B	1.214	1.473	0.797	3.484
	LTE Band 4 (AWS)	2.018	1.473	0.797	See Table Below
	LTE Band 41	1.740	1.473	0.797	See Table Below

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	5 GHz WLAN MIMO at 18 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremitly SAR	Back	1.206	1.033	0.567	2.806
	Front	0.792	0.963	0.737	2.492
	Top	-	1.473	0.797	2.270
	Bottom	2.144	1.102	0.587	**3.833**
	Right	0.523	-	-	0.523

Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	5 GHz WLAN MIMO at 18 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremitly SAR	Back	0.948	1.033	0.567	2.548
	Front	0.816	0.963	0.737	2.516
	Top	-	1.473	0.797	2.270
	Bottom	2.018	1.102	0.587	**3.707**
	Right	0.838	-	-	0.838

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	5 GHz WLAN MIMO at 18 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremitly SAR	Back	0.879	1.033	0.567	2.479
	Front	0.786	0.963	0.737	2.486
	Top	-	1.473	0.797	2.270
	Bottom	1.740	1.102	0.587	**3.429**
	Right	0.192	-	-	0.192

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Table 12-47
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 6 GHz WLAN MIMO (UMPC Extremity)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremitly SAR	GPRS 850 Ant A + B	1.691	1.473	0.132	3.296
	GPRS 1900	2.144	1.473	0.132	**3.749**
	UMTS 850 Ant A + B	1.436	1.473	0.132	3.041
	LTE Band 12 Ant A + B	1.423	1.473	0.132	3.028
	LTE Band 13 Ant A + B	1.306	1.473	0.132	2.911
	LTE Band 5 (Cell) A + B	1.214	1.473	0.132	2.819
	LTE Band 4 (AWS)	2.018	1.473	0.132	3.623
	LTE Band 41	1.740	1.473	0.132	3.345

Table 12-48
Simultaneous Transmission Scenario with Bluetooth (UMPC Extremity)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
UMPC Extremitly SAR	GPRS 850 Ant A + B	1.691	1.254	0.675	2.945	2.366
	GPRS 1900	2.144	1.254	0.675	**3.398**	2.819
	UMTS 850 Ant A + B	1.436	1.254	0.675	2.690	2.111
	LTE Band 12 Ant A + B	1.423	1.254	0.675	2.677	2.098
	LTE Band 13 Ant A + B	1.306	1.254	0.675	2.560	1.981
	LTE Band 5 (Cell) A + B	1.214	1.254	0.675	2.468	1.889
	LTE Band 4 (AWS)	2.018	1.254	0.675	3.272	2.693
	LTE Band 41	1.740	1.254	0.675	2.994	2.415

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Table 12-49
Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2 and Bluetooth Antenna 1 (UMPC Extremity)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremitly SAR	GPRS 850 Ant A + B	1.691	0.981	1.254	3.926
	GPRS 1900	2.144	0.981	1.254	See Table Below
	UMTS 850 Ant A + B	1.436	0.981	1.254	3.671
	LTE Band 12 Ant A + B	1.423	0.981	1.254	3.658
	LTE Band 13 Ant A + B	1.306	0.981	1.254	3.541
	LTE Band 5 (Cell) A + B	1.214	0.981	1.254	3.449
	LTE Band 4 (AWS)	2.018	0.981	1.254	See Table Below
	LTE Band 41	1.740	0.981	1.254	**3.975**

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremitly SAR	Back	1.206	0.702	0.627	2.535
	Front	0.792	0.664	0.684	2.140
	Top	-	-	1.254	1.254
	Bottom	2.144	0.981	-	**3.125**
	Right	0.523	-	-	0.523
Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremitly SAR	Back	0.948	0.702	0.627	2.277
	Front	0.816	0.664	0.684	2.164
	Top	-	-	1.254	1.254
	Bottom	2.018	0.981	-	**2.999**
	Right	0.838	-	-	0.838

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Table 12-50
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO and Bluetooth (UMPC Extremity)

Configuration	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 at 12.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	4	1+2+3	1+2+4
UMPC Extremitly SAR	GPRS 850 Ant A + B	1.691	1.717	0.531	0.245	3.939	3.653
	GPRS 1900	2.144	1.717	0.531	0.245	See Table Below	See Table Below
	UMTS 850 Ant A + B	1.436	1.717	0.531	0.245	3.684	3.398
	LTE Band 12 Ant A + B	1.423	1.717	0.531	0.245	3.671	3.385
	LTE Band 13 Ant A + B	1.306	1.717	0.531	0.245	3.554	3.268
	LTE Band 5 (Cell) A + B	1.214	1.717	0.531	0.245	3.462	3.176
	LTE Band 4 (AWS)	2.018	1.717	0.531	0.245	See Table Below	3.980
	LTE Band 41	1.740	1.717	0.531	0.245	**3.988**	3.702

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 at 12.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	4	1+2+3	1+2+4
UMPC Extremitly SAR	Back	1.206	1.279	0.290	0.162	2.775	2.647
	Front	0.792	1.341	0.256	0.125	2.389	2.258
	Top	-	1.717	0.531	-	2.248	1.717
	Bottom	2.144	1.316	-	0.245	3.460	**3.705**
	Right	0.523	-	-	-	0.523	0.523

Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 at 12.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3
UMPC Extremitly SAR	Back	0.948	1.279	0.290	0.162	2.517
	Front	0.816	1.341	0.256	0.125	2.413
	Top	-	1.717	0.531	-	2.248
	Bottom	2.018	1.316	-	0.245	**3.334**
	Right	0.838	-	-	-	0.838

Table 12-51
Simultaneous Transmission Scenario with 6 GHz WLAN MIMO and Bluetooth (UMPC Extremity)

Configuration	Mode	2G/3G/4G SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 at 12.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	4	1+2+3	1+2+4
UMPC Extremitly SAR	GPRS 850 Ant A + B	1.691	0.132	0.531	0.245	2.354	2.068
	GPRS 1900	2.144	0.132	0.531	0.245	**2.807**	2.521
	UMTS 850 Ant A + B	1.436	0.132	0.531	0.245	2.099	1.813
	LTE Band 12 Ant A + B	1.423	0.132	0.531	0.245	2.086	1.800
	LTE Band 13 Ant A + B	1.306	0.132	0.531	0.245	1.969	1.683
	LTE Band 5 (Cell) A + B	1.214	0.132	0.531	0.245	1.877	1.591
	LTE Band 4 (AWS)	2.018	0.132	0.531	0.245	2.681	2.395
	LTE Band 41	1.740	0.132	0.531	0.245	2.403	2.117

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Table 12-52
Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN MIMO, and Bluetooth Antenna 1, (UMPC Extremity)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO at 18 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Extremitly SAR	GPRS 850 Ant A + B	1.691	0.981	0.797	0.531	See Table Below
	GPRS 1900	2.144	0.981	0.797	0.531	See Table Below
	UMTS 850 Ant A + B	1.436	0.981	0.797	0.531	**3.745**
	LTE Band 12 Ant A + B	1.423	0.981	0.797	0.531	3.732
	LTE Band 13 Ant A + B	1.306	0.981	0.797	0.531	3.615
	LTE Band 5 (Cell) A + B	1.214	0.981	0.797	0.531	3.523
	LTE Band 4 (AWS)	2.018	0.981	0.797	0.531	See Table Below
	LTE Band 41	1.740	0.981	0.797	0.531	See Table Below

Simult Tx	Configuration	GPRS 850 Ant A + B SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO at 18 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Extremitly SAR	Back	1.691	0.702	0.567	0.290	**3.250**
	Front	1.039	0.664	0.737	0.256	2.696
	Top	-	-	0.797	0.531	1.328
	Bottom	0.875	0.981	0.587	-	2.443
	Right	1.026	-	-	-	1.026

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO at 18 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Extremitly SAR	Back	1.206	0.702	0.567	0.290	2.765
	Front	0.792	0.664	0.737	0.256	2.449
	Top	-	-	0.797	0.531	1.328
	Bottom	2.144	0.981	0.587	-	**3.712**
	Right	0.523	-	-	-	0.523

Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO at 18 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Extremitly SAR	Back	0.948	0.702	0.567	0.290	2.507
	Front	0.816	0.664	0.737	0.256	2.473
	Top	-	-	0.797	0.531	1.328
	Bottom	2.018	0.981	0.587	-	**3.586**
	Right	0.838	-	-	-	0.838

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN MIMO at 18 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Extremitly SAR	Back	0.879	0.702	0.567	0.290	2.438
	Front	0.786	0.664	0.737	0.256	2.443
	Top	-	-	0.797	0.531	1.328
	Bottom	1.740	0.981	0.587	-	**3.308**
	Right	0.192	-	-	-	0.192

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Table 12-53
Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2, 6 GHz WLAN MIMO, and Bluetooth Antenna 1, (UMPC Extremity)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	6 GHz WLAN MIMO SAR (W/kg)	2.4 GHz Bluetooth Ant 1 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Extremitly SAR	GPRS 850 Ant A + B	1.691	0.981	0.132	0.531	3.335
	GPRS 1900	2.144	0.981	0.132	0.531	**3.788**
	UMTS 850 Ant A + B	1.436	0.981	0.132	0.531	3.080
	LTE Band 12 Ant A + B	1.423	0.981	0.132	0.531	3.067
	LTE Band 13 Ant A + B	1.306	0.981	0.132	0.531	2.950
	LTE Band 5 (Cell) A + B	1.214	0.981	0.132	0.531	2.858
	LTE Band 4 (AWS)	2.018	0.981	0.132	0.531	3.662
	LTE Band 41	1.740	0.981	0.132	0.531	3.384

12.9 Simultaneous Transmission Conclusion

The above numerical summed SAR results are 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.

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13 SAR MEASUREMENT VARIABILITY

13.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01r04, variability SAR tests were not required since measured SAR results for all frequency bands were less than 0.8 W/kg.

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14 ADDITIONAL TESTING PER FCC GUIDANCE

14.1 Tuner Testing

Per April 2019 TCB Workshop Notes, the following test procedures were followed to demonstrate that the SAR results in Section 11 represented the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR was measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Additional single point SAR time-sweep measurements were evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values. The additional tuner hardware has no influence on the antenna characteristics, other than impedance matching.

To evaluate all the tuner states, the 152 tuner states were divided among the aggregate band, mode and exposure combinations. Single point time-sweep measurements were performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state was able to be established remotely so that the device was not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe remained stationary at the same position throughout the entire series of single point measurements for each combination. When the single point SAR or 1g SAR was > 1.2 W/kg for a particular band/mode/exposure condition, point SAR measurements were made for all 152 states.

The operational description contains more information about the design and implementation of the dynamic antenna tuning.

Table 14-1
UMTS Supplemental Head SAR Data

Supplemental Head SAR Data			
UMTS B5 A		UMTS B5 A + B	
RMC		RMC	
Test Position	Right Cheek	Test Position	Right Cheek
Frequency (MHz)	826.40	Frequency (MHz)	826.40
Channel	4132	Channel	4132
Measured 1g SAR (W/kg)	0.128	Measured 1g SAR (W/kg)	0.129
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 0)	0.164	Auto-tune (State 108)	0.174
Default (State 0)	0.150	Default (State 0)	0.154
State 0	0.150	State 2	0.157
State 11	0.088	State 10	0.121
State 31	0.067	State 30	0.076
State 51	0.038	State 50	0.073
State 59	0.063	State 70	0.008
State 71	0.008	State 90	0.123
State 72	0.164	State 108	0.172
State 91	0.082	State 110	0.142
State 111	0.054	State 124	0.011
State 131	0.053	State 130	0.075
State 151	0.087	State 150	0.172

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Table 14-2
LTE Supplemental Head SAR Data

Supplemental Head SAR Data												
LTE B12 A		LTE B12 A + B		LTE B13 A		LTE B13 A + B		LTE B5 A		LTE B5 A + B	
QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		QPSK, 10 MHz Bandwidth, 1RB, 0 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset	
Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek
Frequency (MHz)	707.50	Frequency (MHz)	707.50	Frequency (MHz)	782.00	Frequency (MHz)	782.00	Frequency (MHz)	836.50	Frequency (MHz)	836.50
Channel	23095	Channel	23095	Channel	23230	Channel	23230	Channel	20525	Channel	20525
Measured 1g SAR (W/kg)	0.081	Measured 1g SAR (W/kg)	0.154	Measured 1g SAR (W/kg)	0.101	Measured 1g SAR (W/kg)	0.133	Measured 1g SAR (W/kg)	0.147	Measured 1g SAR (W/kg)	0.151
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 56)	0.108	Auto-tune (State 108)	0.194	Auto-tune (State 0)	0.111	Auto-tune (State 108)	0.185	Auto-tune (State 109)	0.198	Auto-tune (State 108)	0.214
Default (State 0)	0.098	Default (State 45)	0.169	Default (State 0)	0.116	Default (State 0)	0.194	Default (State 0)	0.203	Default (State 0)	0.191
State 5	0.039	State 4	0.155	State 0	0.116	State 14	0.127	State 7	0.060	State 3	0.186
State 25	0.031	State 9	0.163	State 8	0.016	State 43	0.030	State 13	0.010	State 15	0.051
State 26	0.016	State 29	0.102	State 28	0.061	State 55	0.163	State 27	0.088	State 24	0.046
State 38	0.062	State 49	0.146	State 33	0.016	State 68	0.078	State 47	0.161	State 46	0.151
State 56	0.108	State 63	0.102	State 53	0.013	State 73	0.167	State 67	0.080	State 66	0.089
State 62	0.015	State 69	0.017	State 65	0.064	State 78	0.050	State 87	0.051	State 71	0.006
State 81	0.096	State 89	0.008	State 88	0.028	State 83	0.161	State 107	0.005	State 86	0.079
State 85	0.105	State 108	0.200	State 108	0.103	State 99	0.126	State 109	0.197	State 106	0.010
State 92	0.106	State 109	0.171	State 128	0.108	State 108	0.185	State 127	0.153	State 108	0.215
State 114	0.016	State 129	0.134	State 132	0.043	State 122	0.093	State 134	0.010	State 126	0.162
State 135	0.016	State 149	0.168	State 148	0.109	State 130	0.117	State 147	0.143	State 146	0.195

Table 14-3
UMTS Supplemental Body SAR Data

Supplemental Body SAR Data			
UMTS B5 A		UMTS B5 A + B	
RMC		RMC	
Test Position	Right	Test Position	Back - UMPC
Spacing	10 mm	Spacing	10mm
Frequency (MHz)	826.40	Frequency (MHz)	826.40
Channel	4132	Channel	4132
Measured 1g SAR (W/kg)	0.343	Measured 1g SAR (W/kg)	0.435
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 4)	0.494	Auto-tune (State 72)	0.799
Default (State 0)	0.452	Default (State 0)	0.701
State 1	0.488	State 0	0.701
State 4	0.493	State 20	0.473
State 21	0.292	State 32	0.211
State 41	0.426	State 40	0.706
State 61	0.047	State 60	0.155
State 81	0.340	State 72	0.755
State 87	0.102	State 80	0.088
State 101	0.175	State 100	0.301
State 121	0.278	State 112	0.635
State 141	0.037	State 140	0.145
State 143	0.010	State 145	0.429

Table 14-4
LTE Supplemental Body SAR Data

Supplemental Body SAR Data											
LTE B12 A		LTE B12 A + B		LTE B13 A		LTE B13 A + B		LTE B5 A		LTE B5 A + B	
QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset	
Test Position	Right	Test Position	Right	Test Position	Right	Test Position	Back - UMPC	Test Position	Back	Test Position	Back
Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm
Frequency (MHz)	707.50	Frequency (MHz)	707.50	Frequency (MHz)	782.00	Frequency (MHz)	782.00	Frequency (MHz)	836.50	Frequency (MHz)	836.50
Channel	23095	Channel	23095	Channel	23230	Channel	23230	Channel	20525	Channel	20525
Measured 1g SAR (W/kg)	0.271	Measured 1g SAR (W/kg)	0.406	Measured 1g SAR (W/kg)	0.266	Measured 1g SAR (W/kg)	0.495	Measured 1g SAR (W/kg)	0.303	Measured 1g SAR (W/kg)	0.472
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 10)	0.420	Auto-tune (State 0)	0.624	Auto-tune (State 0)	0.353	Auto-tune (State 36)	0.759	Auto-tune (State 0)	0.492	Auto-tune (State 72)	0.751
Default (State 0)	0.380	Default (State 45)	0.466	Default (State 0)	0.353	Default (State 0)	0.696	Default (State 0)	0.483	Default (State 0)	0.739
State 10	0.418	State 0	0.597	State 0	0.353	State 23	0.418	State 0	0.483	State 16	0.115
State 39	0.229	State 6	0.167	State 12	0.322	State 35	0.025	State 17	0.077	State 36	0.766
State 48	0.416	State 19	0.455	State 18	0.242	State 36	0.762	State 37	0.432	State 45	0.557
State 54	0.379	State 22	0.364	State 42	0.151	State 52	0.094	State 44	0.066	State 56	0.527
State 74	0.237	State 34	0.028	State 58	0.303	State 64	0.344	State 57	0.422	State 72	0.784
State 82	0.411	State 59	0.239	State 75	0.268	State 72	0.781	State 77	0.267	State 76	0.657
State 97	0.103	State 79	0.062	State 93	0.304	State 103	0.256	State 95	0.316	State 88	0.087
State 102	0.255	State 84	0.388	State 98	0.045	State 113	0.532	State 97	0.103	State 94	0.435
State 116	0.028	State 119	0.439	State 118	0.333	State 115	0.151	State 105	0.118	State 96	0.154
State 120	0.390	State 133	0.036	State 123	0.163	State 142	0.035	State 117	0.468	State 104	0.191
State 125	0.073	State 139	0.012	State 138	0.172	State 144	0.747	State 137	0.342	State 136	0.353

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15 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	CBT	N/A	CBT	3051A00187
Agilent	85033E	3.5mm Standard Calibration Kit	7/7/2021	Annual	7/7/2022	MY53402352
Agilent	E4438C	ESG Vector Signal Generator	12/14/2020	Biennial	12/14/2022	MY42082385
Agilent	E4438C	ESG Vector Signal Generator	9/8/2020	Biennial	9/8/2022	MY45090700
Agilent	E4432B	ESG-D Series Signal Generator	2/24/2021	Annual	2/24/2022	US40053896
Agilent	8753ES	S-Parameter Network Analyzer	9/16/2020	Annual	9/16/2021	MY40000670
Agilent	8753ES	S-Parameter Network Analyzer	2/2/2021	Annual	2/2/2022	US39170122
Agilent	8753ES	S-Parameter Vector Network Analyzer	12/15/2020	Annual	12/15/2021	MY40003841
Agilent	E5515C	Wireless Communications Test Set	2/4/2021	Annual	2/4/2022	GB43193563
Agilent	E5515C	Wireless Communications Test Set	2/6/2021	Annual	2/6/2022	GB43304278
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB44450273
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
SPEAG	DAK-3.5	Dielectric Assessment Kit	10/14/2020	Annual	10/14/2021	1091
Insize	1108-150	Digital Caliper	1/17/2020	Biennial	1/17/2022	409193536
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	353317
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	353468
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	353469
Anritsu	MN8110B	I/O Adaptor	CBT	N/A	CBT	6261747881
Anritsu	ML2495A	Power Meter	1/18/2021	Annual	1/18/2022	941001
Anritsu	ML2496A	Power Meter	3/3/2021	Annual	3/3/2022	1306009
Anritsu	ML2496A	Power Meter	4/21/2021	Annual	4/21/2022	1351001
Anritsu	MA2411B	Pulse Power Sensor	12/18/2020	Annual	12/18/2021	1126066
Anritsu	MA2411B	Pulse Power Sensor	3/9/2021	Annual	3/9/2022	1207470
Anritsu	MA2411B	Pulse Power Sensor	9/22/2020	Annual	9/22/2021	1339008
Anritsu	MT8821C	Radio Communication Analyzer	4/16/2021	Annual	4/16/2022	6200901190
Anritsu	MT8821C	Radio Communication Analyzer	3/23/2021	Annual	3/23/2022	6201144418
Anritsu	MT8821C	Radio Communication Analyzer	4/14/2021	Annual	4/14/2022	6261895213
Anritsu	MT8821C	Radio Communication Analyzer	3/2/2021	Annual	3/2/2022	6262044715
Anritsu	MA24106A	USB Power Sensor	1/15/2021	Annual	1/15/2022	1344554
Anritsu	MA24106A	USB Power Sensor	3/3/2021	Annual	3/3/2022	1344556
Anritsu	MA24106A	USB Power Sensor	5/17/2021	Annual	5/17/2022	1349501
Anritsu	MT8862A	Wireless Connectivity Test Set	10/29/2020	Annual	10/29/2021	6261782395
COMTech	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M15SA00-009
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
Control Company	4352	Long Stem Thermometer	5/16/2020	Biennial	5/16/2022	200294436
Control Company	4352	Long Stem Thermometer	5/16/2020	Biennial	5/16/2022	200294567
Control Company	4352	Long Stem Thermometer	5/16/2020	Biennial	5/16/2022	200294604
Control Company	4040	Therm./ Clock/ Humidity Monitor	2/17/2020	Biennial	2/17/2022	200113269
Control Company	4040	Therm./ Clock/ Humidity Monitor	2/17/2020	Biennial	2/17/2022	200113274
Control Company	4040	Therm./ Clock/ Humidity Monitor	3/6/2020	Biennial	3/6/2022	200170289
Intelligent Weigh	PD-3000	Electronic Balance	CBT	N/A	CBT	11081534
Intelligent Weighing	PD-3000	Electronic Balance	CBT	N/A	CBT	120405017
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	9/1/2020	Annual	9/1/2021	MY53401181
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	NC-100	Torque Wrench	8/4/2020	Biennial	8/4/2022	N/A
Pasternack	NC-100	Torque Wrench	8/4/2020	Biennial	8/4/2022	N/A
Pasternack	NC-100	Torque Wrench	8/4/2020	Biennial	8/4/2022	N/A
Pasternack	NC-100	Torque Wrench (8in-lbs)	8/5/2020	Biennial	8/5/2022	47639-47
Rohde & Schwarz	NRP50S	3-Path Dipole Power Sensor	5/7/2021	Annual	5/7/2022	101339
Rohde & Schwarz	NRP8S	3-Path Dipole Power Sensor	5/13/2021	Annual	5/13/2022	109052
Rohde & Schwarz	CMW500	Radio Communication Tester	2/18/2021	Annual	2/18/2022	101767
Rohde & Schwarz	CMW500	Radio Communication Tester	1/19/2021	Annual	1/19/2022	111427
Rohde & Schwarz	CMW500	Radio Communication Tester	3/19/2021	Annual	3/19/2022	128633
Rohde & Schwarz	CMW500	Radio Communication Tester	5/11/2021	Annual	5/11/2022	128636
Rohde & Schwarz	CMW500	Radio Communication Tester	2/23/2021	Annual	2/23/2022	164948
Rohde & Schwarz	ZNLE6	Vector Network Analyzer	9/29/2020	Annual	9/29/2021	101307
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	2/10/2021	Annual	2/10/2022	161662
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	3/22/2021	Annual	3/22/2022	162125
Seekonk	NC-100	Torque Wrench	8/5/2020	Biennial	8/5/2022	N/A
Seekonk	NC-100	Torque Wrench (8" lb)	8/4/2020	Biennial	8/4/2022	21053
Seekonk Inc	NC-100	Torque Wrench	8/4/2020	Biennial	8/4/2022	N/A
SPEAG	D750V3	750 MHz SAR Dipole	10/19/2018	Triennial	10/19/2021	1161
SPEAG	D750V3	750 MHz SAR Dipole	3/16/2020	Biennial	3/16/2022	1003
SPEAG	D835V2	835 MHz SAR Dipole	3/13/2019	Triennial	3/13/2022	4d047
SPEAG	D835V2	835 MHz SAR Dipole	1/21/2021	Annual	1/21/2022	4d132
SPEAG	D835V2	835 MHz SAR Dipole	10/19/2018	Triennial	10/19/2021	4d133
SPEAG	D1750V2	1750 MHz SAR Dipole	5/12/2020	Biennial	5/12/2022	1148
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Triennial	10/23/2021	5d080
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Triennial	10/23/2021	5d149
SPEAG	D2450V2	2450 MHz SAR Dipole	8/14/2020	Annual	8/14/2021	719
SPEAG	D2450V2	2450 MHz SAR Dipole	1/19/2021	Annual	1/19/2022	981
SPEAG	D2600V2	2600 MHz SAR Dipole	6/14/2019	Triennial	6/14/2022	1064
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/10/2020	Annual	9/10/2021	1191
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/18/2021	Annual	3/18/2022	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/15/2020	Annual	7/15/2021	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	10/16/2020	Annual	10/16/2021	1333
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/15/2021	Annual	6/15/2022	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/7/2021	Annual	4/7/2022	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/10/2021	Annual	3/10/2022	1415
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/10/2020	Annual	9/10/2021	1449
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/11/2020	Annual	8/11/2021	1450
SPEAG	DAE4	Dasy Data Acquisition Electronics	12/7/2020	Annual	12/7/2021	1533
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/13/2021	Annual	1/13/2022	1558
SPEAG	EX3DV4	SAR Probe	1/20/2021	Annual	1/20/2022	3589
SPEAG	EX3DV4	SAR Probe	7/31/2020	Annual	7/31/2021	7308
SPEAG	EX3DV4	SAR Probe	4/19/2021	Annual	4/19/2022	7357
SPEAG	EX3DV4	SAR Probe	6/21/2021	Annual	6/21/2022	7409
SPEAG	EX3DV4	SAR Probe	7/20/2020	Annual	7/20/2021	7410
SPEAG	EX3DV4	SAR Probe	3/16/2021	Annual	3/16/2022	7526
SPEAG	EX3DV4	SAR Probe	11/23/2020	Annual	11/23/2021	7538
SPEAG	EX3DV4	SAR Probe	10/20/2020	Annual	10/20/2021	7539
SPEAG	EX3DV4	SAR Probe	10/20/2020	Annual	10/20/2021	7551
SPEAG	EX3DV4	SAR Probe	12/11/2020	Annual	12/11/2021	7571

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

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16 MEASUREMENT UNCERTAINTIES

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	IEEE 1528 Sec.	Tol. (± %)	Prob. Dist.	Div.	c_i 1gm	c_i 10 gms	1gm u_i (± %)	10gms u_i (± %)	v_i
Measurement System									
Probe Calibration	E.2.1	7	N	1	1	1	7.0	7.0	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	E.2.3	2	R	1.732	1	1	1.2	1.2	∞
Linearity	E.2.4	0.3	N	1	1	1	0.3	0.3	∞
System Detection Limits	E.2.4	0.25	R	1.732	1	1	0.1	0.1	∞
Modulation Response	E.2.5	4.8	R	1.732	1	1	2.8	2.8	∞
Readout Electronics	E.2.6	0.3	N	1	1	1	0.3	0.3	∞
Response Time	E.2.7	0.8	R	1.732	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.732	1	1	1.5	1.5	∞
RF Ambient Conditions - Noise	E.6.1	3	R	1.732	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	3	R	1.732	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.8	R	1.732	1	1	0.5	0.5	∞
Probe Positioning w/ respect to Phantom	E.6.3	6.7	R	1.732	1	1	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	4	R	1.732	1	1	2.3	2.3	∞
Test Sample Related									
Test Sample Positioning	E.4.2	3.12	N	1	1	1	3.1	3.1	35
Device Holder Uncertainty	E.4.1	1.67	N	1	1	1	1.7	1.7	5
Output Power Variation - SAR drift measurement	E.2.9	5	R	1.732	1	1	2.9	2.9	∞
SAR Scaling	E.6.5	0	R	1.732	1	1	0.0	0.0	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	E.3.3	4.3	N	1	0.78	0.71	3.3	3.0	76
Liquid Permittivity - measurement uncertainty	E.3.3	4.2	N	1	0.23	0.26	1.0	1.1	75
Liquid Conductivity - Temperature Uncertainty	E.3.4	3.4	R	1.732	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Unceritainty	E.3.4	0.6	R	1.732	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)			RSS				12.2	12.0	191
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				24.4	24.0	

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17 CONCLUSION

17.1 Measurement Conclusion

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

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

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