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SAR EVALUATION REPORT

Applicant Name:
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Date of Testing:
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Test Site/Location:
Element, Columbia, MD, USA
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FCC ID: **A3LSMF936JPN**

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

DUT Type: Portable Handset
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model(s): SC-55C, SCG16

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	0.11	0.11	0.28	N/A	0.28	1.99
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	< 0.1	0.28	0.58	1.98	0.55	2.39
PCE	UMTS 850	826.40 - 846.60 MHz	0.11	0.12	0.26	N/A	0.32	1.05
PCE	LTE Band 12	699.7 - 715.3 MHz	0.10	0.16	0.27	N/A	0.30	1.32
PCE	LTE Band 13	779.5 - 784.5 MHz	0.15	0.15	0.28	N/A	0.34	1.13
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	< 0.1	0.15	0.32	N/A	0.34	1.19
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	0.10	0.58	0.59	1.94	0.47	2.40
PCE	LTE Band 41	2498.5 - 2687.5 MHz	0.33	0.35	0.37	1.46	0.48	2.20
DTS	2.4 GHz WLAN	2412 - 2472 MHz	< 0.1	< 0.1	0.16	N/A	0.21	0.63
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	0.37*	< 0.1*	N/A	1.36*	0.30*	1.44*
NII	U-NII-2C	5500 - 5720 MHz	0.38*	< 0.1*	N/A	1.46*	0.29*	1.74*
NII	U-NII-3	5745 - 5825 MHz	0.38*	< 0.1*	0.27*	N/A	0.34*	1.96*
NII	U-NII-4	5845 - 5885 MHz	0.60*	< 0.1*	N/A	1.84*	0.34*	1.77*
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.34	< 0.1	0.37	N/A	0.45	1.26
DXX	NFC	13.56 MHz	N/A	N/A	N/A	< 0.1	N/A	< 0.1
Simultaneous SAR per KDB 690783 D01v01r03:			1.45	0.71	0.97	3.28	1.04	3.92

Note: * SAR values represent RF exposure during MIMO operations.

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.

RJ Ortanez
Executive Vice 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	Data	2412 - 2472 MHz
U-NII-1	Data	5180 - 5240 MHz
U-NII-2A	Data	5260 - 5320 MHz
U-NII-2C	Data	5500 - 5720 MHz
U-NII-3	Data	5745 - 5825 MHz
U-NII-4	Data	5845 - 5885 MHz
U-NII-5	Data	5935 - 6415 MHz
U-NII-6	Data	6435 - 6515 MHz
U-NII-7	Data	6535 - 6875 MHz
U-NII-8	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 Gen2 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.

Exposure Senario			Folder Closed - Body-Worn	Folder Closed - Phablet Max	Folder Open - Body	Folder Open - Extremity	Folder Closed - Head	Folder Open - Head	Folder Closed - Grip Sensor Active	Folder Open - Grip Sensor Active	Folder Open - Grip Sensor Active	Folder Closed - Hotspot	Folder Open - Hotspot	Folder Closed - Earjack	Folder Open - Earjack	Maximum Tune-Up Output Power*
Averaging Volume			1g	10g	1g	10g	1g	1g	10g	1g	10g	1g	1g	10g	10g	
Spacing			15 mm	14, 12, 0 mm	18, 14, 12, 10 mm	18, 14, 12, 0 mm	0 mm	0 mm	0 mm	10 mm	0 mm	10 mm	10 mm	0 mm	0 mm	
Configuration			Folder Closed	Folder Closed	Folder Open	Folder Open	Folder Closed	Folder Open	Folder Closed	Folder Open	Folder Open	Folder Closed	Folder Open	Folder Closed	Folder Open	
DSI			0	0	0	0	4	3	2	1	1	6	5	8	7	
Technology/Band	Antenna	Antenna Group														Pmax
GSM 850	A, A+B	AG0	28.3				34.1		29.4	27.1		31.6	31.7	29.4	27.1	25.3
GSM 1900	B	AG0	26.4				34.8		17.8	17.8		17.8	17.8	17.8	17.8	22.1
UMTS 850	A, A+B	AG0	27.2				33.6		27.2	27.8		29.9	29.0	27.2	27.8	23.0
LTE Band 12	A, A+B	AG0	25.4				34.0		24.9	26.8		29.8	29.2	24.9	26.8	23.0
LTE Band 13	A, A+B	AG0	25.8				32.1		27.0	27.4		29.6	28.6	27.0	27.4	23.0
LTE Band 5 (Cell)	A, A+B	AG0	25.8				34.3		26.8	27.2		28.9	28.7	26.8	27.2	23.0
LTE Band 4 (AWS)	B	AG0	25.9				33.4		19.0	19.0		19.0	19.0	19.0	19.0	22.5
LTE Band 41 (PC3)	B	AG0	25.0				37.1		16.0	16.0		16.0	16.0	16.0	16.0	21.0
LTE Band 41 (PC3)	F	AG1	18.0		N/A		26.8	N/A	18.0	N/A		18.0	N/A	18.0	N/A	21.0

*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 (e.g. GSM and 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 used an independent fixed level power reduction mechanism for WLAN/BT during all voice or VoIP held to ear 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.

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.

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

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	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
DSI = 0 (Folder Closed - Body-Worn/Phablet Max or Folder Open - Body/Extremity)	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
DSI = 2 (Folder Closed - Grip Sensor Active)	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
DSI = 4 (Folder Closed - Head)	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
DSI = 6 (Folder Closed - Hotspot)	Max Allowed Power	N/A	33.5	32.5	30.5	28.5	28.0	26.0	24.0	23.0
	Nominal	N/A	32.5	31.5	29.5	27.5	27.0	25.0	23.0	22.0
DSI = 8 (Folder Closed - Earjack)	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
DSI = 1 (Folder Open - Grip Sensor Active)	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
DSI = 3 (Folder Open - Head)	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
DSI = 5 (Folder Open - Hotspot)	Max Allowed Power	N/A	33.5	32.5	30.5	28.5	28.0	26.0	24.0	23.0
	Nominal	N/A	32.5	31.5	29.5	27.5	27.0	25.0	23.0	22.0
DSI = 7 (Folder Open - Earjack)	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	30.0	30.0	29.0	27.5	25.5	27.0	25.0	23.0	22.0
	Nominal	29.0	29.0	28.0	26.5	24.5	26.0	24.0	22.0	21.0
DSI = 0 (Folder Closed - Body-Worn/Phablet Max or Folder Open - Body/Extremity)	Max Allowed Power	30.0	30.0	29.0	27.5	25.5	27.0	25.0	23.0	22.0
	Nominal	29.0	29.0	28.0	26.5	24.5	26.0	24.0	22.0	21.0
DSI = 2 (Folder Closed - Grip Sensor Active)	Max Allowed Power	28.0	28.0	25.0	23.2	22.0	27.0	25.0	23.0	22.0
	Nominal	27.0	27.0	24.0	22.2	21.0	26.0	24.0	22.0	21.0
DSI = 4 (Folder Closed - Head)	Max Allowed Power	30.0	30.0	29.0	27.5	25.5	27.0	25.0	23.0	22.0
	Nominal	29.0	29.0	28.0	26.5	24.5	26.0	24.0	22.0	21.0
DSI = 6 (Folder Closed - Hotspot)	Max Allowed Power	N/A	28.0	25.0	23.2	22.0	27.0	25.0	23.0	22.0
	Nominal	N/A	27.0	24.0	22.2	21.0	26.0	24.0	22.0	21.0
DSI = 8 (Folder Closed - Earjack)	Max Allowed Power	28.0	28.0	25.0	23.2	22.0	27.0	25.0	23.0	22.0
	Nominal	27.0	27.0	24.0	22.2	21.0	26.0	24.0	22.0	21.0
DSI = 1 (Folder Open - Grip Sensor Active)	Max Allowed Power	28.0	28.0	25.0	23.2	22.0	27.0	25.0	23.0	22.0
	Nominal	27.0	27.0	24.0	22.2	21.0	26.0	24.0	22.0	21.0
DSI = 3 (Folder Open - Head)	Max Allowed Power	30.0	30.0	29.0	27.5	25.5	27.0	25.0	23.0	22.0
	Nominal	29.0	29.0	28.0	26.5	24.5	26.0	24.0	22.0	21.0
DSI = 5 (Folder Open - Hotspot)	Max Allowed Power	N/A	28.0	25.0	23.2	22.0	27.0	25.0	23.0	22.0
	Nominal	N/A	27.0	24.0	22.2	21.0	26.0	24.0	22.0	21.0
DSI = 7 (Folder Open - Earjack)	Max Allowed Power	28.0	28.0	25.0	23.2	22.0	27.0	25.0	23.0	22.0
	Nominal	27.0	27.0	24.0	22.2	21.0	26.0	24.0	22.0	21.0

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

UMTS Band 5 (850 MHz)				
Power Level		Modulated Average Output Power		
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6
Pmax	Max Allowed Power	24.0	23.0	23.0
	Nominal	23.0	22.0	22.0
DSI = 0 (Folder Closed - Body-Worn/Phablet Max or Folder Open - Body/Extremity)	Max Allowed Power	24.0	23.0	23.0
	Nominal	23.0	22.0	22.0
DSI = 2 (Folder Closed - Grip Sensor Active)	Max Allowed Power	24.0	23.0	23.0
	Nominal	23.0	22.0	22.0
DSI = 4 (Folder Closed - Head)	Max Allowed Power	24.0	23.0	23.0
	Nominal	23.0	22.0	22.0
DSI = 6 (Folder Closed - Hotspot)	Max Allowed Power	24.0	23.0	23.0
	Nominal	23.0	22.0	22.0
DSI = 8 (Folder Closed - Earjack)	Max Allowed Power	24.0	23.0	23.0
	Nominal	23.0	22.0	22.0
DSI = 1 (Folder Open - Grip Sensor Active)	Max Allowed Power	24.0	23.0	23.0
	Nominal	23.0	22.0	22.0
DSI = 3 (Folder Open - Head)	Max Allowed Power	24.0	23.0	23.0
	Nominal	23.0	22.0	22.0
DSI = 5 (Folder Open - Hotspot)	Max Allowed Power	24.0	23.0	23.0
	Nominal	23.0	22.0	22.0
DSI = 7 (Folder Open - Earjack)	Max Allowed Power	24.0	23.0	23.0
	Nominal	23.0	22.0	22.0

Mode / Band	Antenna		Modulated Average Output Power (in dBm)										
			Pmax	DSI = 0 (Folder Closed - Body-Worn or Folder Closed - Phablet Max)	DSI = 2 (Folder Closed - Grip Sensor Active)	DSI = 4 (Folder Closed - Head)	DSI = 6 (Folder Closed - Hotspot)	DSI = 8 (Folder Closed - Earjack)	DSI = 0 (Folder Open - Body or Folder Open - Extremity)	DSI = 1 (Folder Open - Grip Sensor Active)	DSI = 3 (Folder Open - Head)	DSI = 5 (Folder Open - Hotspot)	DSI = 7 (Folder Open - Earjack)
LTE Band 12	A, A+B	Max Allowed	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
		Nominal	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
LTE Band 13	A, A+B	Max Allowed	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
		Nominal	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
LTE Band 5 (Cell)	A, A+B	Max Allowed	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
		Nominal	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
LTE Band 4 (AWS)	B	Max Allowed	23.5	23.5	20.0	23.5	20.0	20.0	23.5	20.0	23.5	20.0	20.0
		Nominal	22.5	22.5	19.0	22.5	19.0	19.0	22.5	19.0	22.5	19.0	19.0
LTE Band 41 (PC3)	B	Max Allowed	24.0	24.0	19.0	24.0	19.0	19.0	24.0	19.0	24.0	19.0	19.0
		Nominal	23.0	23.0	18.0	23.0	18.0	18.0	23.0	18.0	23.0	18.0	18.0
LTE Band 41 (PC3)	F	Max Allowed	24.0	21.0	21.0	24.0	21.0	21.0	N/A	N/A	N/A	N/A	N/A
		Nominal	23.0	20.0	20.0	23.0	20.0	20.0	N/A	N/A	N/A	N/A	N/A

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

1.4.2 2.4 GHz Maximum SISO/MIMO WLAN Output Power

Mode	Band	IEEE 802.11 (in dBm)															
		SISO Antenna 2								MIMO							
		b		g		n		ax		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	19.0	17.0	18.0	17.0	18.0	17.0	18.0	21.0	22.0	20.0	21.0	20.0	21.0	20.0	21.0
		Ch. 12: 5.0	Ch. 12: 6.0	Ch. 12: 5.0	Ch. 12: 6.0	Ch. 12: 5.0	Ch. 12: 6.0	Ch. 12: 5.0	Ch. 12: 6.0	Ch. 12: 8.0	Ch. 12: 9.0	Ch. 12: 8.0	Ch. 12: 9.0	Ch. 12: 8.0	Ch. 12: 9.0	Ch. 12: 8.0	Ch. 12: 9.0
		Ch. 13: -1.0	Ch. 13: 0.0	Ch. 13: -1.0	Ch. 13: 0.0	Ch. 13: -1.0	Ch. 13: 0.0	Ch. 13: -1.0	Ch. 13: 0.0	Ch. 13: 2.0	Ch. 13: 3.0	Ch. 13: 2.0	Ch. 13: 3.0	Ch. 13: 2.0	Ch. 13: 3.0	Ch. 13: 2.0	Ch. 13: 3.0

1.4.3 2.4 GHz Reduced WLAN Output Powers

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)															
		SISO Antenna 2								MIMO							
		b		g		n		ax		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	13.0	12.0	13.0	12.0	13.0	12.0	13.0	15.0	16.0	15.0	16.0	15.0	16.0	15.0	16.0
		Ch. 12: 5.0	Ch. 12: 6.0	Ch. 12: 5.0	Ch. 12: 6.0	Ch. 12: 5.0	Ch. 12: 6.0	Ch. 12: 5.0	Ch. 12: 6.0	Ch. 12: 8.0	Ch. 12: 9.0	Ch. 12: 8.0	Ch. 12: 9.0	Ch. 12: 8.0	Ch. 12: 9.0	Ch. 12: 8.0	Ch. 12: 9.0
		Ch. 13: -1.0	Ch. 13: 0.0	Ch. 13: -1.0	Ch. 13: 0.0	Ch. 13: -1.0	Ch. 13: 0.0	Ch. 13: -1.0	Ch. 13: 0.0	Ch. 13: 2.0	Ch. 13: 3.0	Ch. 13: 2.0	Ch. 13: 3.0	Ch. 13: 2.0	Ch. 13: 3.0	Ch. 13: 2.0	Ch. 13: 3.0

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 2								MIMO							
		b		g		n		ax		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	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
		Ch. 12: 5.0	Ch. 12: 6.0	Ch. 12: 5.0	Ch. 12: 6.0	Ch. 12: 5.0	Ch. 12: 6.0	Ch. 12: 5.0	Ch. 12: 6.0	Ch. 12: 8.0	Ch. 12: 9.0	Ch. 12: 8.0	Ch. 12: 9.0	Ch. 12: 8.0	Ch. 12: 9.0	Ch. 12: 8.0	Ch. 12: 9.0
		Ch. 13: -1.0	Ch. 13: 0.0	Ch. 13: -1.0	Ch. 13: 0.0	Ch. 13: -1.0	Ch. 13: 0.0	Ch. 13: -1.0	Ch. 13: 0.0	Ch. 13: 2.0	Ch. 13: 3.0	Ch. 13: 2.0	Ch. 13: 3.0	Ch. 13: 2.0	Ch. 13: 3.0	Ch. 13: 2.0	Ch. 13: 3.0

1.4.4 5 GHz Maximum SISO/MIMO WLAN Output Power

Mode	Band	IEEE 802.11 (in dBm)							
		MIMO							
		a (CDD + STBC)		n (CDD + STBC, SDM)		ac (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
5 GHz WIFI (20MHz BW)	UNII-1	20.0	21.0	20.0	21.0	20.0	21.0	20.0	21.0
	UNII-2A	20.0	21.0	20.0	21.0	20.0	21.0	20.0	21.0
	UNII-2C	20.0	21.0	20.0	21.0	20.0	21.0	20.0	21.0
	UNII-3	20.0	21.0	20.0	21.0	20.0	21.0	20.0	21.0
	UNII-4	20.0	21.0	20.0	21.0	20.0	21.0	20.0	21.0
5 GHz WIFI (40MHz BW)	UNII-1			19.0 Ch. 38: 17.5	20.0 Ch. 38: 18.5	19.0 Ch. 38: 17.5	20.0 Ch. 38: 18.5	19.0 Ch. 38: 17.5	20.0 Ch. 38: 18.5
	UNII-2A			19.0	20.0	19.0	20.0	19.0	20.0
	UNII-2C			19.0	20.0	19.0	20.0	19.0	20.0
	UNII-3			19.0	20.0	19.0	20.0	19.0	20.0
	UNII-4			19.0	20.0	19.0	20.0	19.0	20.0
5 GHz WIFI (80MHz BW)	UNII-1					17.0	18.0	17.0	18.0
	UNII-2A					18.0	19.0	18.0	19.0
	UNII-2C					18.0	19.0	18.0	19.0
	UNII-3					18.0	19.0	18.0	19.0
	UNII-4					18.0	19.0	18.0	19.0
5 GHz WIFI (160MHz BW)	UNII-1/2A					18.0	19.0	18.0	19.0
	UNII-2C					18.0	19.0	18.0	19.0
	UNII-3/4					18.0	19.0	18.0	19.0

1.4.5 5 GHz Reduced WLAN Output Powers

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)							
		MIMO							
		a (CDD + STBC)		n (CDD + STBC, SDM)		ac (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
5 GHz WIFI (20MHz BW)	UNII-1	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0
	UNII-2A	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0
	UNII-2C	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0
	UNII-3	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0
	UNII-4	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0
5 GHz WIFI (40MHz BW)	UNII-1			14.0	15.0	14.0	15.0	14.0	15.0
	UNII-2A			14.0	15.0	14.0	15.0	14.0	15.0
	UNII-2C			14.0	15.0	14.0	15.0	14.0	15.0
	UNII-3			14.0	15.0	14.0	15.0	14.0	15.0
	UNII-4			14.0	15.0	14.0	15.0	14.0	15.0
5 GHz WIFI (80MHz BW)	UNII-1					14.0	15.0	14.0	15.0
	UNII-2A					14.0	15.0	14.0	15.0
	UNII-2C					14.0	15.0	14.0	15.0
	UNII-3					14.0	15.0	14.0	15.0
	UNII-4					14.0	15.0	14.0	15.0
5 GHz WIFI (160MHz BW)	UNII-1/2A					14.0	15.0	14.0	15.0
	UNII-2C					14.0	15.0	14.0	15.0
	UNII-3/4					14.0	15.0	14.0	15.0

The below table is applicable in the following conditions:

- Simultaneous conditions with 2.4 GHz WLAN

Mode	Band	IEEE 802.11 (in dBm)							
		MIMO							
		a (CDD + STBC)		n (CDD + STBC, SDM)		ac (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
5 GHz WIFI (20MHz BW)	UNII-1	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0
	UNII-2A	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0
	UNII-2C	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0
	UNII-3	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0
	UNII-4	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0
5 GHz WIFI (40MHz BW)	UNII-1			17.0	18.0	17.0	18.0	17.0	18.0
	UNII-2A			17.0	18.0	17.0	18.0	17.0	18.0
	UNII-2C			17.0	18.0	17.0	18.0	17.0	18.0
	UNII-3			17.0	18.0	17.0	18.0	17.0	18.0
	UNII-4			17.0	18.0	17.0	18.0	17.0	18.0
5 GHz WIFI (80MHz BW)	UNII-1					17.0	18.0	17.0	18.0
	UNII-2A					17.0	18.0	17.0	18.0
	UNII-2C					17.0	18.0	17.0	18.0
	UNII-3					17.0	18.0	17.0	18.0
	UNII-4					17.0	18.0	17.0	18.0
5 GHz WIFI (160MHz BW)	UNII-1/2A					17.0	18.0	17.0	18.0
	UNII-2C					17.0	18.0	17.0	18.0
	UNII-3/4					17.0	18.0	17.0	18.0

1.4.6 2.4 GHz Maximum Bluetooth Output Power

Mode	Antenna 1		Antenna 2	
	Nominal	Maximum	Nominal	Maximum
Bluetooth (in dBm)	18.5	19.5	15.0	16.0
Bluetooth EDR (in dBm)	15.5	16.5	12.0	13.0
Bluetooth LE 1Mbps, 2Mbps (in dBm)	18.5	19.5	15.0	16.0
Bluetooth LE 125/500 kbps (in dBm)	10.0	11.0	N/A	N/A

1.4.7 2.4 GHz Reduced Bluetooth Output Power

The below table is applicable in the following conditions:

- RCV active

Mode	Antenna 1		Antenna 2	
	Nominal	Maximum	Nominal	Maximum
Bluetooth (in dBm)	10.5	11.5	8.5	9.5
Bluetooth EDR (in dBm)	10.5	11.5	8.5	9.5
Bluetooth LE 1Mbps, 2Mbps (in dBm)	10.5	11.5	8.5	9.5
Bluetooth LE 125/500 kbps (in dBm)	10.0	11.0	N/A	N/A

The below table is applicable in the following conditions:

- Simultaneous conditions with 5/6 GHz WLAN

Mode	Antenna 1		Antenna 2	
	Nominal	Maximum	Nominal	Maximum
Bluetooth (in dBm)	14.0	15.0	12.0	13.0
Bluetooth EDR (in dBm)	14.0	15.0	12.0	13.0
Bluetooth LE 1Mbps, 2Mbps (in dBm)	14.0	15.0	12.0	13.0
Bluetooth LE 125/500 kbps (in dBm)	10.0	11.0	N/A	N/A

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 DUT Antenna Diagram & SAR Test Setup Photographs Appendix. 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

Device Sides/Edges for SAR Testing						
Mode	Back	Front	Top	Bottom	Right	Left
GPRS 850 Antenna A+B	Yes	Yes	No	Yes	Yes	Yes
GPRS 850 Antenna A	Yes	Yes	No	Yes	Yes	No
GPRS 1900 Antenna B	Yes	Yes	No	Yes	Yes	Yes
UMTS 850 Antenna A+B	Yes	Yes	No	Yes	Yes	Yes
UMTS 850 Antenna A	Yes	Yes	No	Yes	Yes	No
LTE Band 12 Antenna A+B	Yes	Yes	No	Yes	Yes	Yes
LTE Band 12 Antenna A	Yes	Yes	No	Yes	Yes	No
LTE Band 13 Antenna A+B	Yes	Yes	No	Yes	Yes	Yes
LTE Band 13 Antenna A	Yes	Yes	No	Yes	Yes	No
LTE Band 5 (Cell) Antenna A+B	Yes	Yes	No	Yes	Yes	Yes
LTE Band 5 (Cell) Antenna A	Yes	Yes	No	Yes	Yes	No
LTE Band 4 (AWS) Antenna B	Yes	Yes	No	Yes	Yes	Yes
LTE Band 41 Antenna B	Yes	Yes	No	Yes	Yes	Yes
LTE Band 41 Antenna F	Yes	Yes	Yes	No	No	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 MIMO	Yes	Yes	Yes	Yes	No	Yes
Bluetooth Ant 1	Yes	Yes	Yes	No	No	Yes
Bluetooth Ant 2	Yes	Yes	No	Yes	No	Yes
NFC	Yes	Yes	No	No	Yes	Yes

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

Device Sides/Edges for SAR Testing						
Mode	Back	Front	Top	Bottom	Right	Left
GPRS 850 Antenna A+B	Yes	Yes	No	Yes	Yes	No
GPRS 1900 Antenna B	Yes	Yes	No	Yes	Yes	No
UMTS 850 Antenna A+B	Yes	Yes	No	Yes	Yes	No
LTE Band 12 Antenna A+B	Yes	Yes	No	Yes	Yes	No
LTE Band 13 Antenna A+B	Yes	Yes	No	Yes	Yes	No
LTE Band 5 (Cell) Antenna A+B	Yes	Yes	No	Yes	Yes	No
LTE Band 4 (AWS) Antenna B	Yes	Yes	No	Yes	Yes	No
LTE Band 41 Antenna B	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 MIMO	Yes	Yes	Yes	Yes	No	No
Bluetooth Ant 1	Yes	Yes	Yes	No	No	No
Bluetooth Ant 2	Yes	Yes	No	Yes	No	No
NFC	Yes	Yes	No	No	Yes	No

Note: Particular DUT edges were not required to be evaluated for wireless router SAR or phablet SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v02r01 Section III 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, U-NII-4, and WIFI6E 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 the DUT Antenna Diagram and SAR Test Setup Photographs Appendix.

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.

Table 1-3
Simultaneous Transmission Scenarios

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

1. 5 GHz WLAN and 6 GHz WLAN share the same antenna path and cannot transmit simultaneously.
2. 2.4 GHz WLAN ant 2 and 2.4 GHz Bluetooth ant 2 share the same antenna path and cannot transmit simultaneously.
3. 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.
4. 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.
5. 5 GHz Wireless Router is only supported for the U-NII-3 by S/W, therefore U-NII-1, U-NII2A, U-NII2C, and U-NII4 were not evaluated for wireless router conditions.
6. 6 GHz Wireless Router is not supported, therefore it was not evaluated for wireless router conditions.
7. 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. WLAN can transmit only when operating with MIMO.
8. This device supports Bluetooth Tethering in SISO Mode.
9. This device supports VoLTE.
10. UWB and NFC were evaluated for phablet and UMPC extremity based on expected usage conditions.

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, and U-NII-4 WIFI, only 2.4 GHz 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 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) 2 Tx antenna output
d) Up to 1024 QAM is supported
e) TDWR and Band gap channels are supported for 5/6 GHz
f) 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 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, and U-NII-4 WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for 2.4 GHz 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.

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 the Simultaneous Numerical Calculations Appendix of this report.

(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 the Downlink LTE CA RF Conducted Powers Appendix.

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" when it is in the 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 capabilities with overlapping transmission frequency ranges. When the supported frequency range of an LTE Band falls completely within an LTE band with a larger transmission frequency range, both LTE bands have the same target power (or the band with the larger transmission frequency range has a higher target power), and both LTE bands share the same transmission path and signal characteristics, SAR was only assessed for the band with the larger transmission frequency range.

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 closed phablet test conditions only, this device can transmit with antenna F for LTE B41. SAR tests for antenna F were additionally performed for this LTE band to ensure compliance.

For WWAN 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 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, D05v02r05, 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)
- May 2017 TCB Workshop Notes (LTE 4x4 Downlink MIMO)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)

- FCC KDB Publication 648474 D04v01r03 (Phablet Procedures)
- FCC KDB Publication 616217 D04v01r02 (Proximity Sensor)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)
- November 2017, April 2018, October 2018 TCB Workshop Notes (LTE Carrier Aggregation)
- 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
RF Exposure Part 0 Test Report	1M2206010070-19.A3L
6-8 GHz RF Exposure Evaluation Report	1M2206010070-22.A3L

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)				
	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)	2549.5 (40185)	2593 (40620)	2636.5 (41055)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2549.5 (40185)	2593 (40620)	2636.5 (41055)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2549.5 (40185)	2593 (40620)	2636.5 (41055)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2549.5 (40185)	2593 (40620)	2636.5 (41055)
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 aggregation and downlink MIMO features as shown in RF Conducted Powers Section and Downlink LTE CA RF Conducted Powers Appendix. 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, WIFI Offloading, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA				

3 INTRODUCTION

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

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

3.1 SAR Definition

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

Equation 3-1
SAR Mathematical Equation

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

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

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

where:

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

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

4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

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

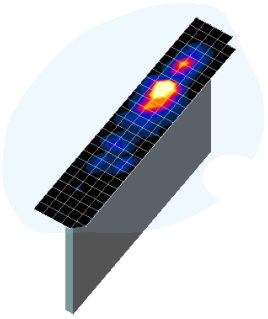

Figure 4-1
Sample SAR Area Scan

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

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

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

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

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

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

*Also compliant to IEEE 1528-2013 Table 6

5 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].

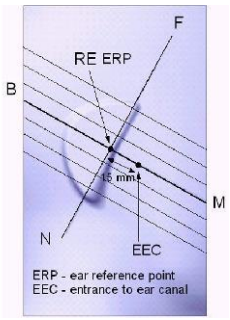

Figure 5-1
Close-Up Side view of ERP

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

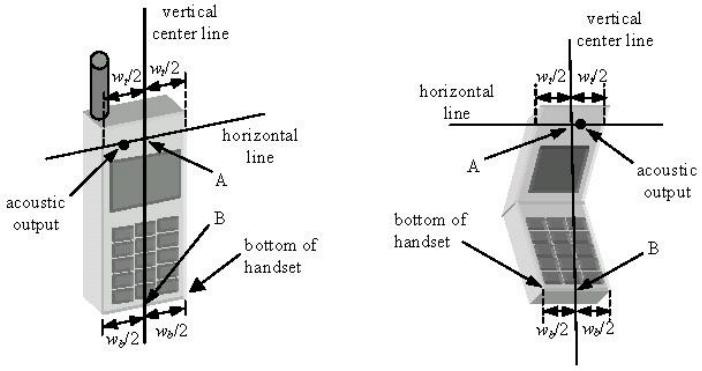

Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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.

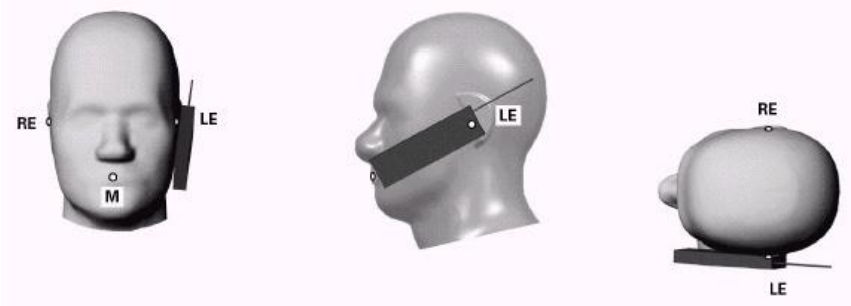

Figure 6-1 Front, Side and Top View of Cheek Position

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).

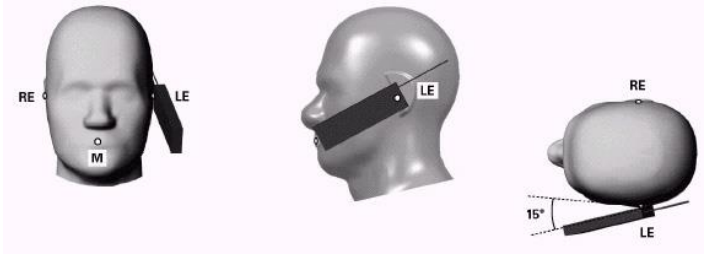

Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

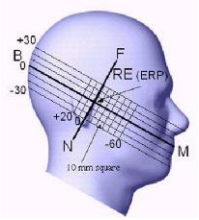

Figure 6-3
Side view w/ relevant markings

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.

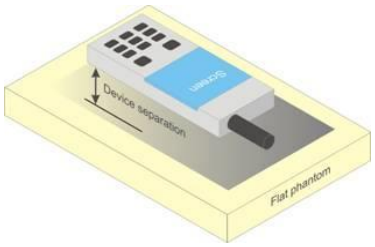

Figure 6-4
Sample Body-Worn Diagram

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 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 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 the Power Reduction Verification Appendix.

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 minitablets 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.

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.

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.

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.

8.4.6 SAR Measurement Conditions for DC-HSDPA

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

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.

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.

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.

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 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.

9 RF CONDUCTED POWERS

All conducted power measurements for 2G/3G/4G technologies and bands in this section were performed by setting *Reserve_power_margin* (Qualcomm® Smart Transmit EFS entry) to 0dB, so that the EUT transmits continuously at minimum (P_{limit}, maximum tune up output power P_{max}).

9.1 GSM Conducted Powers

Table 9-1
Measured P_{max} for all DSI for GSM 850
Measured P_{max} for DSI = 0 (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	32.19	32.32	31.78	**29.87**	27.82	27.05	25.31	23.32	22.54
	190	31.98	32.14	31.53	**29.50**	27.65	26.62	25.04	23.21	22.42
	251	31.78	31.94	31.37	**29.38**	27.34	26.35	24.89	23.03	22.11
GSM 1900	512	29.03	29.02	28.24	**26.42**	24.23	25.23	24.16	22.02	21.00
	661	28.94	28.92	28.22	**26.29**	24.13	25.16	24.05	21.92	21.13
	810	28.61	28.60	27.85	**26.02**	24.07	24.84	23.74	21.86	20.94
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	22.99	23.12	25.59	**25.44**	24.64	17.85	19.12	18.89	19.36
	190	22.78	22.94	25.34	**25.07**	24.47	17.42	18.85	18.78	19.24
	251	22.58	22.74	25.18	**24.95**	24.16	17.15	18.70	18.60	18.93
GSM 1900	512	19.83	19.82	22.05	**21.99**	21.05	16.03	17.97	17.59	17.82
	661	19.74	19.72	22.03	**21.86**	20.95	15.96	17.86	17.49	17.95
	810	19.41	19.40	21.66	**21.59**	20.89	15.64	17.55	17.43	17.76
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		19.80	19.80	21.81	**22.07**	21.32	16.80	17.81	17.57	17.82

Table 9-2
Measured P_{limit} for DSI = 1/2 (Phablet or UMPC with grip sensor active), 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	27.34	27.33	23.73	22.18	**20.80**	25.23	24.16	22.02	21.00
	661	26.65	26.65	23.68	22.13	**20.85**	25.16	24.05	21.92	21.13
	810	26.61	26.59	23.52	21.76	**20.84**	24.84	23.74	21.86	20.94
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	18.14	18.13	17.54	17.75	**17.62**	16.03	17.97	17.59	17.82
	661	17.45	17.45	17.49	17.70	**17.67**	15.96	17.86	17.49	17.95
	810	17.41	17.39	17.33	17.33	**17.66**	15.64	17.55	17.43	17.76
GSM 1900	**Frame Avg.Targets:**	17.80	17.80	17.81	17.77	**17.82**	16.80	17.81	17.57	17.82

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

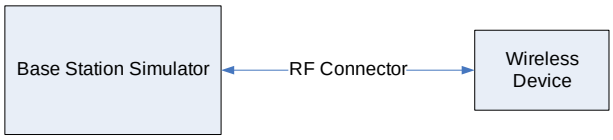

Figure 9-1
Power Measurement Setup

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	23.25	22.97	22.81	-
99		12.2 kbps AMR	23.23	22.97	22.80	-
6	HSDPA	Subtest 1	22.32	22.08	21.92	0
6		Subtest 2	22.33	22.12	21.94	0
6		Subtest 3	21.87	21.61	21.44	0.5
6		Subtest 4	21.84	21.62	21.45	0.5
6	HSUPA	Subtest 1	22.35	22.08	21.93	0
6		Subtest 2	20.34	20.07	19.96	2
6		Subtest 3	21.33	21.08	20.94	1
6		Subtest 4	20.34	20.10	19.94	2
6		Subtest 5	22.34	22.10	21.95	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.

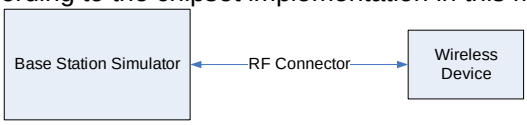

Figure 9-2
Power Measurement Setup

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 the LTE Lower Bandwidth Conducted Power Appendix.

Note: Some bands do 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.

LTE Carrier Aggregation 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. Note that only LTE B41 Antenna B support uplink carrier aggregation. LTE B41 Antenna F does not support uplink carrier aggregation.
3. 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.

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	**22.49**	0	0
	1	25	22.38		0
	1	49	22.20		0
	25	0	21.41	0-1	1
	25	12	**21.43**		1
	25	25	21.25		1
	50	0	21.36		1
16QAM	1	0	21.84	0-1	1
	1	25	21.70		1
	1	49	21.55		1
	25	0	20.45	0-2	2
	25	12	20.48		2
	25	25	20.30		2
	50	0	20.39		2
64QAM	1	0	20.71	0-2	2
	1	25	20.60		2
	1	49	20.44		2
	25	0	19.43	0-3	3
	25	12	19.47		3
	25	25	19.28		3
	50	0	19.36		3

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	22.77	0	0
	1	25	22.93		0
	1	49	**22.96**		0
	25	0	21.91	0-1	1
	25	12	21.94		1
	25	25	**21.97**		1
	50	0	21.93		1
16QAM	1	0	22.05	0-1	1
	1	25	22.18		1
	1	49	22.23		1
	25	0	20.94	0-2	2
	25	12	20.98		2
	25	25	21.04		2
	50	0	20.93		2
64QAM	1	0	20.96	0-2	2
	1	25	21.13		2
	1	49	21.08		2
	25	0	19.94	0-3	3
	25	12	20.00		3
	25	25	20.04		3
	50	0	19.92		3

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	22.91	0	0
	1	25	**22.92**		0
	1	49	22.78		0
	25	0	**21.78**	0-1	1
	25	12	21.77		1
	25	25	21.71		1
	50	0	21.68		1
16QAM	1	0	22.11	0-1	1
	1	25	22.13		1
	1	49	21.98		1
	25	0	20.81	0-2	2
	25	12	20.84		2
	25	25	20.75		2
	50	0	20.71		2
64QAM	1	0	21.07	0-2	2
	1	25	21.12		2
	1	49	20.98		2
	25	0	19.78	0-3	3
	25	12	19.79		3
	25	25	19.72		3
	50	0	19.68		3

9.3.4 LTE Band 4

Table 9-7
LTE Band 4 (AWS) Measured P_{Max} for DSI = 0 (Body-worn or Phablet/UMPC with grip sensor inactive) and 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	22.18	0	0
	1	50	**22.59**		0
	1	99	22.08		0
	50	0	21.33	0-1	1
	50	25	**21.43**		1
	50	50	21.36		1
	100	0	21.35		1
16QAM	1	0	21.40	0-1	1
	1	50	21.73		1
	1	99	21.38		1
	50	0	20.33	0-2	2
	50	25	20.48		2
	50	50	20.37		2
	100	0	20.34		2
64QAM	1	0	20.33	0-2	2
	1	50	20.73		2
	1	99	20.27		2
	50	0	19.32	0-3	3
	50	25	19.46		3
	50	50	19.35		3
	100	0	19.37		3

Table 9-8
LTE Band 4 (AWS) Measured P_{Limit} for DSI = 1/2 (Phablet/UMPC with grip sensor active), 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	19.10	0	0
	1	50	**19.47**		0
	1	99	19.19		0
	50	0	19.05	0-1	0
	50	25	**19.47**		0
	50	50	19.10		0
	100	0	19.38		0
16QAM	1	0	19.19	0-1	0
	1	50	19.62		0
	1	99	19.16		0
	50	0	19.04	0-2	0
	50	25	19.20		0
	50	50	19.11		0
	100	0	19.08		0
64QAM	1	0	19.05	0-2	0
	1	50	19.35		0
	1	99	19.01		0
	50	0	19.03	0-3	0
	50	25	19.07		0
	50	50	19.08		0
	100	0	19.09		0

9.3.5 LTE Band 41

Table 9-9
LTE Band 41 PC3 Ant B Measured P_{Max} for DSI = 0 (Body-worn, or Phablet/UMPC with grip sensor inactive) and DSI = 3/4 (Head) – 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	22.88	22.78	22.34	22.29	22.15	0	0
	1	50	23.00	22.75	22.74	22.63	22.60		0
	1	99	**23.01**	22.69	22.38	22.15	22.52		0
	50	0	22.01	21.82	21.56	21.49	21.38	0-1	1
	50	25	**22.03**	21.81	21.68	21.61	21.66		1
	50	50	21.99	21.66	21.55	21.45	21.67		1
	100	0	21.94	21.67	21.59	21.52	21.54		1
16QAM	1	0	21.97	21.90	21.34	21.40	21.22	0-1	1
	1	50	22.12	21.91	21.82	21.74	21.73		1
	1	99	22.02	21.76	21.38	21.34	21.58		1
	50	0	21.02	20.82	20.56	20.49	20.37	0-2	2
	50	25	21.04	20.77	20.71	20.61	20.63		2
	50	50	20.99	20.68	20.54	20.48	20.62		2
	100	0	20.94	20.67	20.61	20.51	20.57		2
64QAM	1	0	21.01	20.78	20.29	20.26	20.19	0-2	2
	1	50	21.10	20.73	20.71	20.57	20.65		2
	1	99	21.02	20.58	20.37	20.15	20.54		2
	50	0	20.03	19.80	19.56	19.48	19.41	0-3	3
	50	25	20.02	19.77	19.72	19.59	19.67		3
	50	50	19.99	19.67	19.54	19.44	19.63		3
	100	0	19.94	19.68	19.61	19.49	19.59		3

Table 9-10
LTE Band 41 PC3 Ant B Uplink Carrier Aggregation Measured P_{Max} for DSI = 0 (Body-worn, or Phablet/UMPC with grip sensor inactive) and 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	23.17	23.01

Table 9-11
LTE Band 41 PC3 Ant B Measured P_{Limit} for DSI = 1/2 (Phablet/UMPC 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	17.98	17.84	17.30	17.35	17.14	0	0
	1	50	18.04	17.81	17.64	17.64	17.62		0
	1	99	**18.05**	17.69	17.29	17.20	17.44		0
	50	0	18.01	17.82	17.56	17.52	17.36	0-1	0
	50	25	18.02	17.83	17.72	17.61	17.64		0
	50	50	**18.04**	17.75	17.54	17.48	17.63		0
	100	0	17.95	17.69	17.59	17.54	17.55		0
16QAM	1	0	17.90	17.97	17.33	17.24	17.24	0-1	0
	1	50	18.01	18.00	17.73	17.62	17.61		0
	1	99	17.95	17.81	17.34	17.10	17.45		0
	50	0	18.03	17.84	17.56	17.46	17.39	0-2	0
	50	25	18.02	17.79	17.67	17.61	17.61		0
	50	50	17.99	17.70	17.52	17.46	17.55		0
	100	0	17.93	17.67	17.56	17.50	17.51		0
64QAM	1	0	17.97	17.84	17.24	17.29	17.17	0-2	0
	1	50	17.98	17.82	17.67	17.57	17.57		0
	1	99	17.95	17.68	17.35	17.15	17.54		0
	50	0	18.03	17.78	17.57	17.47	17.39	0-3	0
	50	25	18.03	17.79	17.65	17.62	17.61		0
	50	50	18.00	17.71	17.54	17.45	17.57		0
	100	0	17.94	17.66	17.59	17.51	17.54		0

Table 9-12
LTE Band 41 PC3 Ant B Uplink Carrier Aggregation Measured P_{Limit} for DSI = 1/2 (Phablet/UMPC with grip sensor active), or DSI = 5/6 (Hotspot Mode), and/or DSI = 7/8 (Earjack Active) - 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	41490	2680.0	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	17.25	17.14
CA_41C	LTE B41	20	39750	2506.0	QPSK	50	50	LTE B41	20	39948	2525.8	QPSK	50	0	18.01	18.04

Table 9-13
LTE Band 41 PC3 Ant F Measured P_{Max} for 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	23.45	23.44	22.95	23.00	22.91	0	0
	1	50	23.59	**23.60**	23.39	23.23	23.04		0
	1	99	23.57	23.50	23.10	22.99	22.57		0
	50	0	22.54	22.43	22.38	22.18	22.19	0-1	1
	50	25	22.57	**22.59**	22.51	22.29	22.21		1
	50	50	22.49	22.56	22.37	22.24	21.94		1
	100	0	22.46	22.42	22.41	22.25	22.24		1
16QAM	1	0	22.38	22.45	22.16	21.98	21.90	0-1	1
	1	50	22.55	22.55	22.55	22.22	22.06		1
	1	99	22.51	22.50	22.20	21.93	21.70		1
	50	0	21.54	21.45	21.34	21.19	21.16	0-2	2
	50	25	21.57	21.54	21.49	21.34	21.35		2
	50	50	21.45	21.52	21.36	21.22	21.10		2
	100	0	21.45	21.39	21.37	21.21	21.27		2
64QAM	1	0	21.48	21.44	21.01	20.87	20.96	0-2	2
	1	50	21.61	21.54	21.41	21.29	21.32		2
	1	99	21.56	21.56	21.21	20.97	20.90		2
	50	0	20.49	20.41	20.31	20.18	20.16	0-3	3
	50	25	20.55	20.54	20.48	20.34	20.34		3
	50	50	20.46	20.51	20.32	20.20	20.19		3
	100	0	20.42	20.41	20.35	20.21	20.23		3

Table 9-14
LTE Band 41 PC3 Ant F Measured P_{Limit} for DSI = 0 (Body-worn, or Phablet with grip sensor inactive), DSI = 2 (Phablet with grip sensor active), DSI = 6 (Hotspot Mode), and/or DSI = 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	19.90	19.94	19.65	19.56	19.55	0	0
	1	50	19.86	19.99	19.99	19.88	19.87		0
	1	99	19.82	**20.06**	19.61	19.43	19.90		0
	50	0	19.93	19.99	19.92	19.87	19.77	0-1	0
	50	25	19.94	**20.04**	20.03	19.89	19.96		0
	50	50	19.84	20.01	19.86	19.71	20.02		0
	100	0	19.85	19.99	19.91	19.76	19.86		0
16QAM	1	0	19.92	19.94	19.62	19.59	19.53	0-1	0
	1	50	19.94	20.08	20.07	19.91	20.12		0
	1	99	19.81	19.97	19.61	19.38	19.97		0
	50	0	19.91	19.88	19.85	19.72	19.77	0-2	0
	50	25	19.90	19.99	19.99	19.84	19.93		0
	50	50	19.82	19.96	19.83	19.71	20.01		0
	100	0	19.84	19.89	19.90	19.75	19.86		0
64QAM	1	0	19.88	19.96	19.62	19.56	19.63	0-2	0
	1	50	19.90	19.97	19.98	19.87	19.98		0
	1	99	19.80	19.98	19.66	19.41	19.93		0
	50	0	19.82	19.80	19.79	19.61	19.68	0-3	0
	50	25	19.83	19.91	19.89	19.77	19.75		0
	50	50	19.69	19.90	19.75	19.61	19.50		0
	100	0	19.72	19.77	19.81	19.66	19.76		0

Figure 9-3
Power Measurement Setup

9.4 WLAN Conducted Powers

Table 9-15
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	18.43	17.66	17.23	17.37
2437	6	18.55	17.52	17.45	17.38
2462	11	18.94	17.34	17.66	17.62

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

2.4GHz 802.11b Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
2412	1	18.57	18.43	21.51
2437	6	18.48	18.55	21.53
2462	11	18.72	18.94	21.84

Table 9-17
2.4 GHz WLAN Reduced Average RF Power with RCV Active – 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	12.32	12.47	12.55	12.62
2437	6	12.57	12.70	12.63	12.57
2462	11	12.19	12.37	12.29	12.48

Table 9-18
2.4 GHz WLAN Reduced Average RF Powers During Conditions with 5/6 GHz WLAN – Ant 2

Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ax
		Average	Average	Average	Average
2412	1	14.43	14.49	14.33	14.27
2437	6	14.63	14.51	14.50	14.59
2462	11	14.46	14.53	14.47	14.70

Table 9-19
2.4 GHz WLAN Reduced Average RF Power with RCV Active - MIMO

2.4GHz 802.11n Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
2412	1	12.04	12.56	15.32
2437	6	12.18	12.66	15.44
2462	11	12.19	12.46	15.34

Table 9-20
2.4 GHz WLAN Reduced Average RF Powers During Conditions with 5/6 GHz WLAN MIMO - MIMO

2.4GHz 802.11n Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
2412	1	14.27	14.52	17.41
2437	6	14.28	14.56	17.43
2462	11	14.15	14.57	17.38

Table 9-21
5 GHz WLAN Maximum Average RF Power – MIMO

5GHz (20MHz) 802.11n Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
5180	36	17.43	17.90	20.68
5200	40	17.40	17.98	20.71
5220	44	17.55	17.41	20.49
5240	48	17.46	17.66	20.57
5260	52	17.38	17.69	20.55
5280	56	17.31	17.76	20.55
5300	60	17.39	17.85	20.64
5320	64	17.34	17.94	20.66
5500	100	17.13	17.95	20.57
5600	120	17.05	17.99	20.56
5620	124	17.07	17.92	20.53
5720	144	17.32	17.82	20.59
5745	149	17.31	17.84	20.59
5785	157	17.23	17.85	20.56
5825	165	17.45	17.83	20.65
5845	169	17.43	17.96	20.71
5865	173	17.12	17.12	20.13
5885	177	17.11	17.34	20.24

Table 9-22
5 GHz WLAN Reduced Average RF Power with RCV Active - MIMO

5GHz (80MHz) 802.11ac Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
5210	42	11.53	11.46	14.51
5290	58	11.04	11.88	14.49
5530	106	11.02	11.96	14.53
5610	122	11.23	11.88	14.58
5690	138	11.26	11.55	14.42
5775	155	11.46	11.35	14.42
5855	171	11.76	11.04	14.43

Table 9-23
5 GHz WLAN Reduced Average RF Power During Conditions with 2.45 GHz WLAN MIMO - MIMO

5GHz (80MHz) 802.11ac Conducted Power [dBm]				
Freq [MHz]	**Channel**	**ANT1**	**ANT2**	**MIMO**
5210	42	14.45	14.64	17.56
5290	58	14.21	14.83	17.54
5530	106	14.21	14.91	17.58
5610	122	14.29	14.63	17.47
5690	138	14.09	14.71	17.42
5775	155	14.14	14.51	17.34
5855	171	14.27	14.33	17.31

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

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

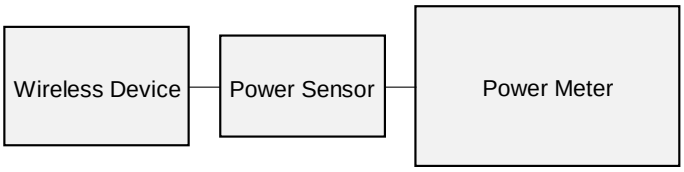

Figure 9-4
Power Measurement Setup

9.5 Bluetooth Conducted Powers

Table 9-24
Bluetooth Maximum Average RF Power– Antenna 1

Frequency [MHz]	Data Rate [Mbps]	Mod.	Power Scheme	Channel No.	Avg Conducted Power	
					[dBm]	[mW]
2402	1.0	GFSK	ePA	0	18.57	71.928
2441	1.0	GFSK	ePA	39	18.77	75.266
2480	1.0	GFSK	ePA	78	18.58	72.078
2402	2.0	π/4-DQPSK	ePA	0	15.55	35.892
2441	2.0	π/4-DQPSK	ePA	39	15.16	32.817
2480	2.0	π/4-DQPSK	ePA	78	14.85	30.514
2402	3.0	8DPSK	ePA	0	15.56	35.975
2441	3.0	8DPSK	ePA	39	15.18	32.984
2480	3.0	8DPSK	ePA	78	15.14	32.651

Table 9-25
Bluetooth Maximum Average RF Power– Antenna 2

Frequency [MHz]	Data Rate [Mbps]	Mod.	Power Scheme	Channel No.	Avg Conducted Power	
					[dBm]	[mW]
2402	1.0	GFSK	ePA	0	15.30	33.908
2441	1.0	GFSK	ePA	39	15.82	38.186
2480	1.0	GFSK	ePA	78	14.01	25.188
2402	2.0	π/4-DQPSK	ePA	0	12.25	16.784
2441	2.0	π/4-DQPSK	ePA	39	12.89	19.440
2480	2.0	π/4-DQPSK	ePA	78	11.07	12.800
2402	3.0	8DPSK	ePA	0	12.29	16.959
2441	3.0	8DPSK	ePA	39	12.97	19.792
2480	3.0	8DPSK	ePA	78	11.15	13.032

Table 9-26
Bluetooth Reduced Average RF Power (RCV Active) – Antenna 1

Frequency [MHz]	Data Rate [Mbps]	Mod.	Power Scheme	Channel No.	Avg Conducted Power	
					[dBm]	[mW]
2402	1.0	GFSK	ePA	0	11.00	12.589
2441	1.0	GFSK	ePA	39	11.14	13.002
2480	1.0	GFSK	ePA	78	11.11	12.912

Table 9-27
Bluetooth Reduced Average RF Power (RCV Active) – Antenna 2

Frequency [MHz]	Data Rate [Mbps]	Mod.	Power Scheme	Channel No.	Avg Conducted Power	
					[dBm]	[mW]
2402	1.0	GFSK	ePA	0	8.44	6.982
2441	1.0	GFSK	ePA	39	9.10	8.128
2480	1.0	GFSK	ePA	78	7.50	5.623

Table 9-28
Bluetooth Reduced Average RF Power During Conditions with 5/6 GHz WLAN – Antenna 1

Frequency [MHz]	Data Rate [Mbps]	Mod.	Power Scheme	Channel No.	Avg Conducted Power	
					[dBm]	[mW]
2402	1.0	GFSK	ePA	0	14.50	28.184
2441	1.0	GFSK	ePA	39	14.80	30.200
2480	1.0	GFSK	ePA	78	14.63	29.040

Table 9-29
Bluetooth Reduced Average RF Power During Conditions with 5/6 GHz WLAN – Antenna 2

Frequency [MHz]	Data Rate [Mbps]	Mod.	Power Scheme	Channel No.	Avg Conducted Power	
					[dBm]	[mW]
2402	1.0	GFSK	ePA	0	11.96	15.704
2441	1.0	GFSK	ePA	39	12.72	18.707
2480	1.0	GFSK	ePA	78	11.00	12.589

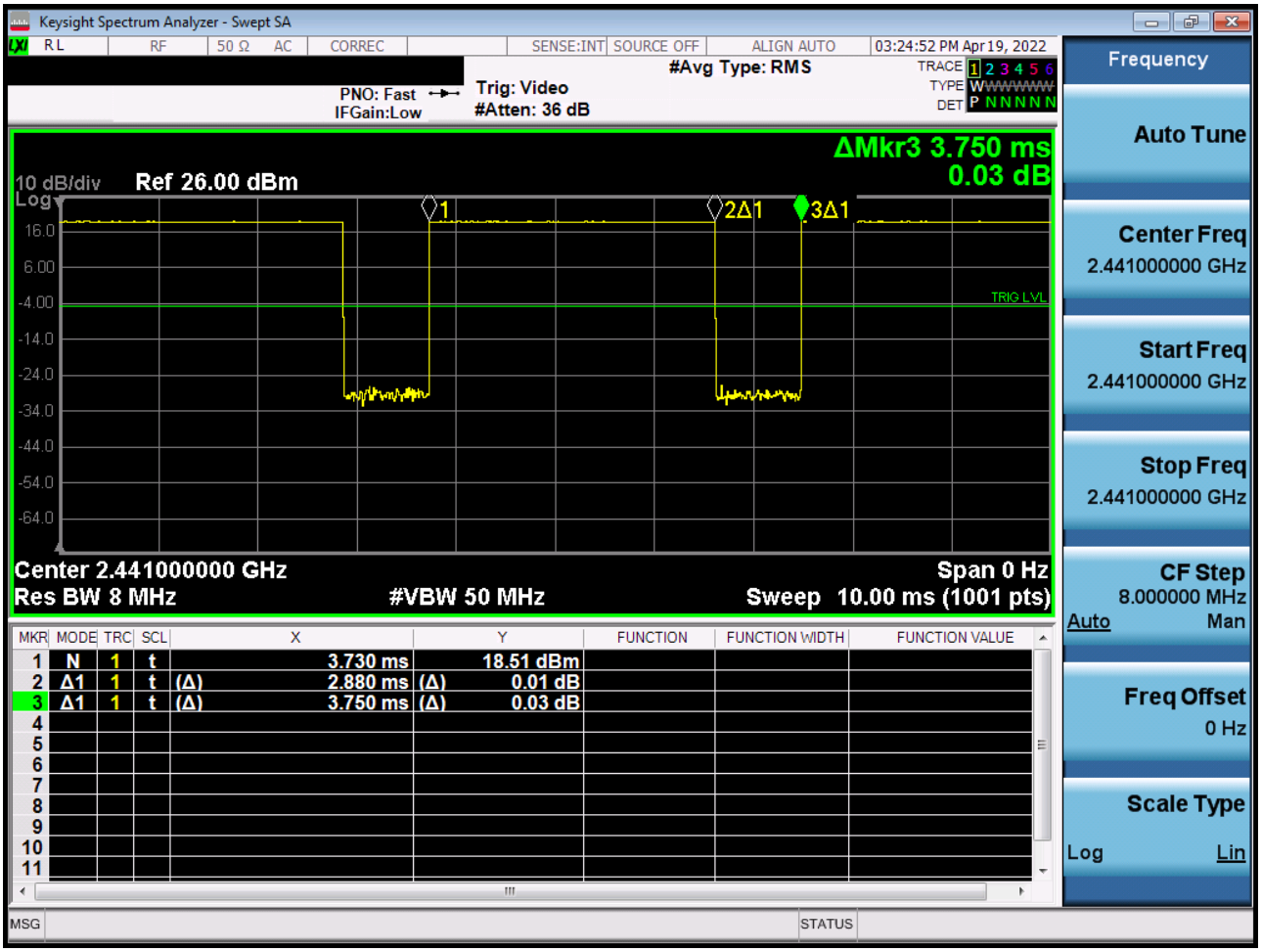

Figure 9-5
Bluetooth Antenna 1 Transmission Plot

Equation 9-1
Bluetooth Antenna 1 Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.880ms}{3.750ms} * 100\% = 76.80\%$$

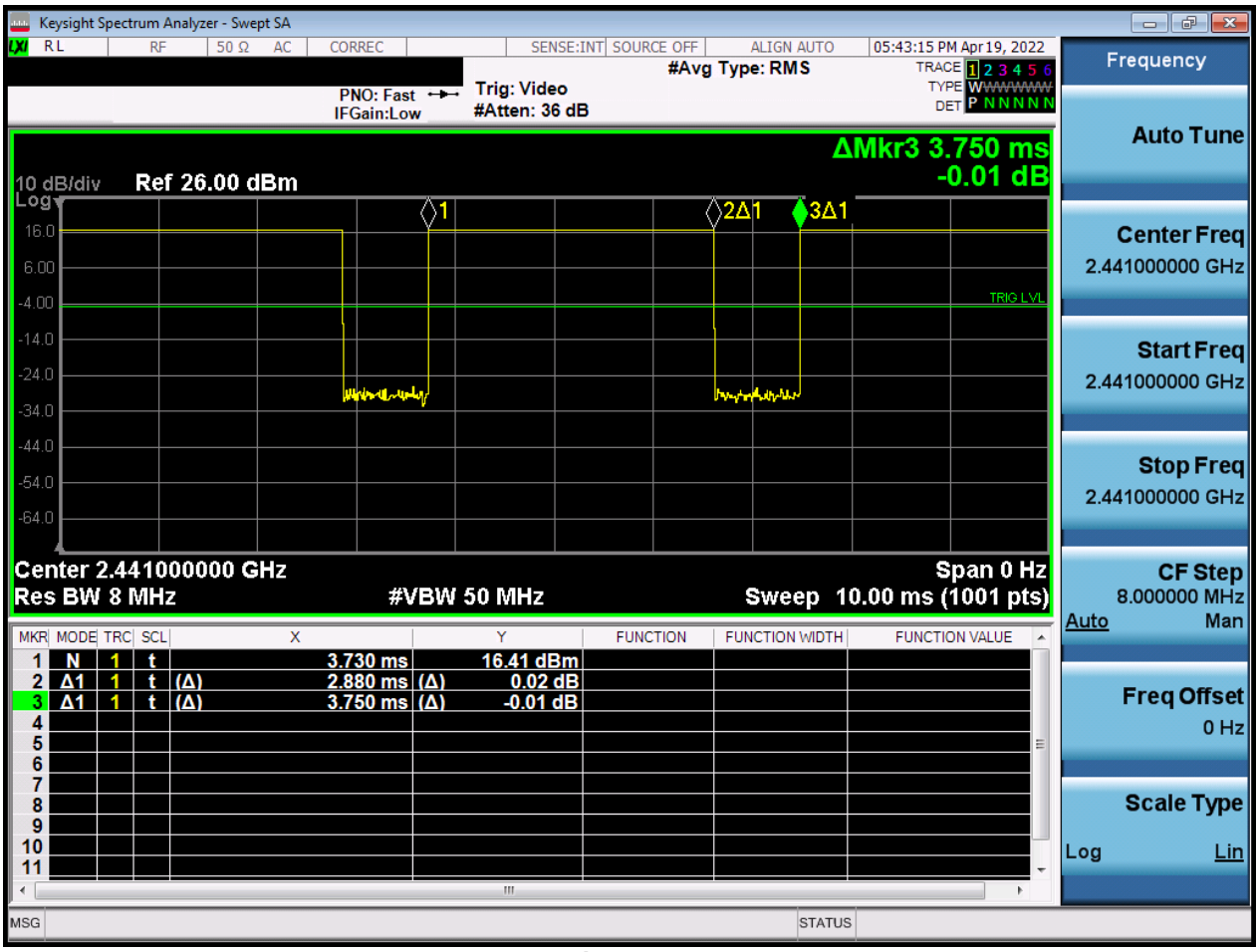

Figure 9-6
Bluetooth Antenna 2 Transmission Plot

Equation 9-2
Bluetooth Antenna 2 Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.880ms}{3.750ms} * 100\% = 76.80\%$$

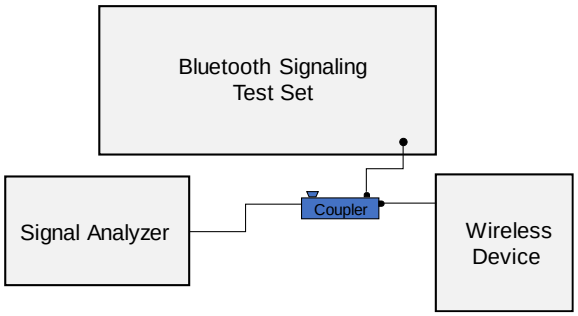

Figure 9-7
Power Measurement Setup

10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Head 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
06/09/2022	30 Head	21.5	12	0.762	52.265	0.750	55.000	1.60%	-4.97%
			13	0.762	52.537	0.750	55.000	1.60%	-4.48%
			14	0.762	52.681	0.750	55.000	1.60%	-4.22%
			30	0.764	53.410	0.750	55.000	1.87%	-2.89%
			60	0.769	53.180	0.753	54.325	2.12%	-2.11%
			65	0.771	53.098	0.753	54.213	2.39%	-2.06%
07/18/2022	750 Head	21.8	680	0.885	41.324	0.888	42.305	-0.34%	-2.32%
			695	0.890	41.280	0.889	42.227	0.11%	-2.24%
			700	0.892	41.267	0.889	42.201	0.34%	-2.21%
			710	0.895	41.240	0.890	42.149	0.56%	-2.16%
			725	0.901	41.200	0.891	42.071	1.12%	-2.07%
			750	0.909	41.135	0.894	41.942	1.68%	-1.92%
			770	0.916	41.084	0.895	41.838	2.35%	-1.80%
			785	0.921	41.037	0.896	41.760	2.79%	-1.73%
			800	0.926	40.995	0.897	41.682	3.23%	-1.65%
06/07/2022	835 Head	21.0	815	0.926	40.621	0.898	41.594	3.12%	-2.34%
			820	0.927	40.608	0.899	41.578	3.11%	-2.33%
			835	0.933	40.567	0.900	41.500	3.67%	-2.25%
			850	0.939	40.528	0.916	41.500	2.51%	-2.34%
06/10/2022	835 Head	19.8	815	0.908	40.227	0.898	41.594	1.11%	-3.29%
			820	0.910	40.212	0.899	41.578	1.22%	-3.29%
			835	0.916	40.165	0.900	41.500	1.78%	-3.22%
			850	0.922	40.124	0.916	41.500	0.66%	-3.32%
06/19/2022	1750 Head	19.9	1710	1.336	39.919	1.348	40.142	-0.89%	-0.56%
			1720	1.342	39.902	1.354	40.126	-0.89%	-0.56%
			1745	1.357	39.862	1.368	40.087	-0.80%	-0.56%
			1750	1.360	39.854	1.371	40.079	-0.80%	-0.56%
			1770	1.371	39.823	1.383	40.047	-0.87%	-0.56%
			1790	1.381	39.791	1.394	40.016	-0.93%	-0.56%
06/19/2022	1900 Head	19.9	1850	1.413	39.708	1.400	40.000	0.93%	-0.73%
			1860	1.419	39.701	1.400	40.000	1.36%	-0.75%
			1880	1.432	39.690	1.400	40.000	2.29%	-0.78%
			1900	1.444	39.672	1.400	40.000	3.14%	-0.82%
			1905	1.447	39.666	1.400	40.000	3.36%	-0.84%
			1910	1.450	39.660	1.400	40.000	3.57%	-0.85%
06/24/2022	2450 Head	20.6	2300	1.750	38.028	1.670	39.500	4.79%	-3.73%
			2310	1.757	38.013	1.679	39.480	4.65%	-3.72%
			2320	1.765	37.999	1.687	39.460	4.62%	-3.70%
			2400	1.825	37.877	1.756	39.289	3.93%	-3.59%
			2450	1.863	37.777	1.800	39.200	3.50%	-3.63%
			2480	1.887	37.735	1.833	39.162	2.95%	-3.64%
			2500	1.902	37.711	1.855	39.136	2.53%	-3.64%
			2510	1.909	37.698	1.866	39.123	2.30%	-3.64%
			2535	1.928	37.647	1.893	39.092	1.85%	-3.70%
			2550	1.940	37.613	1.909	39.073	1.62%	-3.74%
			2560	1.949	37.596	1.920	39.060	1.51%	-3.75%
			2600	1.982	37.545	1.964	39.009	0.92%	-3.75%
			2650	2.020	37.419	2.018	38.945	0.10%	-3.92%
			2680	2.046	37.381	2.051	38.907	-0.24%	-3.92%
			2700	2.060	37.357	2.073	38.882	-0.63%	-3.92%

Table 10-2
Measured Head 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
07/24/2022	2450 Head	22.2	2300	1.590	40.057	1.670	39.500	-4.79%	1.41%
			2310	1.601	40.024	1.679	39.480	-4.65%	1.38%
			2320	1.612	39.989	1.687	39.460	-4.45%	1.34%
			2400	1.701	39.687	1.756	39.289	-3.13%	1.01%
			2450	1.754	39.496	1.800	39.200	-2.56%	0.76%
			2480	1.788	39.389	1.833	39.162	-2.45%	0.58%
			2500	1.810	39.321	1.855	39.136	-2.43%	0.47%
			2510	1.821	39.285	1.866	39.123	-2.41%	0.41%
			2535	1.847	39.190	1.893	39.092	-2.43%	0.25%
			2550	1.864	39.134	1.909	39.073	-2.36%	0.16%
			2560	1.876	39.099	1.920	39.060	-2.29%	0.10%
			2600	1.922	38.967	1.964	39.009	-2.14%	-0.11%
			2650	1.978	38.763	2.018	38.945	-1.98%	-0.47%
			2680	2.014	38.671	2.051	38.907	-1.80%	-0.61%
			2700	2.035	38.612	2.073	38.882	-1.83%	-0.69%
07/28/2022	2450 Head	21.0	2300	1.749	40.584	1.670	39.500	4.73%	2.74%
			2310	1.756	40.567	1.679	39.480	4.59%	2.75%
			2320	1.764	40.551	1.687	39.460	4.56%	2.76%
			2400	1.827	40.433	1.756	39.289	4.04%	2.91%
			2450	1.866	40.348	1.800	39.200	3.67%	2.93%
			2480	1.890	40.300	1.833	39.162	3.11%	2.91%
			2500	1.906	40.270	1.855	39.136	2.75%	2.90%
			2510	1.914	40.254	1.866	39.123	2.57%	2.89%
			2535	1.934	40.203	1.893	39.092	2.17%	2.84%
			2550	1.947	40.171	1.909	39.073	1.99%	2.81%
			2560	1.956	40.154	1.920	39.060	1.88%	2.80%
			2600	1.988	40.104	1.964	39.009	1.22%	2.81%
			2650	2.030	39.992	2.018	38.945	0.59%	2.69%
			2680	2.056	39.960	2.051	38.907	0.24%	2.71%
			2700	2.070	39.935	2.073	38.882	-0.14%	2.71%
07/11/2022	5200-5800 Head	20.7	5180	4.475	35.206	4.635	36.009	-3.45%	-2.23%
			5190	4.487	35.181	4.645	35.998	-3.40%	-2.27%
			5200	4.500	35.150	4.655	35.986	-3.33%	-2.32%
			5210	4.511	35.126	4.666	35.975	-3.32%	-2.36%
			5220	4.525	35.099	4.676	35.963	-3.23%	-2.40%
			5240	4.546	35.072	4.696	35.940	-3.19%	-2.42%
			5250	4.558	35.064	4.706	35.929	-3.14%	-2.41%
			5260	4.566	35.042	4.717	35.917	-3.20%	-2.44%
			5270	4.577	35.023	4.727	35.906	-3.17%	-2.46%
			5280	4.587	35.008	4.737	35.894	-3.17%	-2.47%
			5290	4.597	34.993	4.748	35.883	-3.18%	-2.48%
			5300	4.608	34.975	4.758	35.871	-3.15%	-2.50%
			5310	4.616	34.947	4.768	35.860	-3.19%	-2.55%
			5320	4.628	34.930	4.778	35.849	-3.14%	-2.56%
			5500	4.829	34.631	4.963	35.643	-2.70%	-2.84%
			5510	4.841	34.617	4.973	35.632	-2.65%	-2.85%
			5520	4.851	34.602	4.983	35.620	-2.65%	-2.86%
			5530	4.863	34.593	4.994	35.609	-2.62%	-2.85%
			5540	4.875	34.582	5.004	35.597	-2.58%	-2.85%
			5550	4.885	34.566	5.014	35.586	-2.57%	-2.87%
			5560	4.896	34.545	5.024	35.574	-2.55%	-2.89%
			5580	4.922	34.493	5.045	35.551	-2.44%	-2.98%
			5600	4.944	34.466	5.065	35.529	-2.39%	-2.99%
			5610	4.953	34.453	5.076	35.518	-2.42%	-3.00%
			5620	4.966	34.431	5.086	35.506	-2.36%	-3.03%
			5640	4.984	34.403	5.106	35.483	-2.39%	-3.04%
			5660	5.007	34.358	5.127	35.460	-2.34%	-3.11%
			5670	5.021	34.343	5.137	35.449	-2.26%	-3.12%
			5680	5.036	34.324	5.147	35.437	-2.16%	-3.14%
			5690	5.048	34.311	5.158	35.426	-2.13%	-3.15%
			5700	5.061	34.290	5.168	35.414	-2.07%	-3.17%
			5710	5.071	34.275	5.178	35.403	-2.07%	-3.19%
			5720	5.085	34.261	5.188	35.391	-1.99%	-3.19%
			5745	5.110	34.207	5.214	35.363	-1.99%	-3.27%
			5750	5.114	34.195	5.219	35.357	-2.01%	-3.29%
			5755	5.118	34.188	5.224	35.351	-2.03%	-3.29%
			5765	5.128	34.175	5.234	35.340	-2.03%	-3.30%
			5775	5.142	34.164	5.245	35.329	-1.96%	-3.30%
			5785	5.153	34.145	5.255	35.317	-1.94%	-3.32%
			5795	5.167	34.131	5.265	35.305	-1.86%	-3.33%
			5805	5.178	34.113	5.275	35.294	-1.84%	-3.35%
			5825	5.200	34.066	5.296	35.271	-1.81%	-3.42%
			5835	5.212	34.046	5.305	35.230	-1.75%	-3.36%
			5845	5.224	34.033	5.315	35.210	-1.71%	-3.34%
			5855	5.235	34.026	5.325	35.197	-1.69%	-3.33%
			5875	5.255	34.012	5.347	35.183	-1.72%	-3.33%
			5885	5.269	33.986	5.357	35.177	-1.64%	-3.39%
			5905	5.290	33.946	5.379	35.163	-1.65%	-3.46%

Table 10-3
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
06/07/2022	750 Body	20.9	680	0.957	53.403	0.958	55.804	-0.10%	-4.30%
			695	0.962	53.376	0.959	55.745	0.31%	-4.25%
			700	0.963	53.369	0.959	55.726	0.42%	-4.23%
			710	0.967	53.352	0.960	55.687	0.73%	-4.19%
			725	0.972	53.314	0.961	55.629	1.14%	-4.16%
			750	0.982	53.244	0.964	55.531	1.87%	-4.12%
			770	0.989	53.188	0.965	55.453	2.49%	-4.08%
			785	0.995	53.155	0.966	55.395	3.00%	-4.04%
			800	1.000	53.127	0.967	55.336	3.41%	-3.99%
06/09/2022	750 Body	20.9	680	0.962	53.809	0.958	55.804	0.42%	-3.58%
			695	0.967	53.772	0.959	55.745	0.83%	-3.54%
			700	0.969	53.761	0.959	55.726	1.04%	-3.53%
			710	0.972	53.736	0.960	55.687	1.25%	-3.50%
			725	0.977	53.704	0.961	55.629	1.66%	-3.46%
			750	0.986	53.652	0.964	55.531	2.28%	-3.38%
			770	0.994	53.609	0.965	55.453	3.01%	-3.33%
			785	1.000	53.577	0.966	55.395	3.52%	-3.28%
			800	1.005	53.535	0.967	55.336	3.93%	-3.25%
06/14/2022	750 Body	21.5	680	0.942	53.489	0.958	55.804	-1.67%	-4.15%
			695	0.947	53.471	0.959	55.745	-1.25%	-4.08%
			700	0.949	53.466	0.959	55.726	-1.04%	-4.06%
			710	0.953	53.451	0.960	55.687	-0.73%	-4.02%
			725	0.958	53.419	0.961	55.629	-0.31%	-3.97%
			750	0.967	53.354	0.964	55.531	0.31%	-3.92%
			770	0.974	53.305	0.965	55.453	0.93%	-3.87%
			785	0.980	53.279	0.966	55.395	1.45%	-3.82%
			800	0.986	53.250	0.967	55.336	1.96%	-3.77%
06/14/2022	750 Body	20.6	680	0.946	53.725	0.958	55.804	-1.25%	-3.73%
			695	0.951	53.701	0.959	55.745	-0.83%	-3.67%
			700	0.953	53.693	0.959	55.726	-0.63%	-3.65%
			710	0.956	53.682	0.960	55.687	-0.42%	-3.60%
			725	0.962	53.656	0.961	55.629	0.10%	-3.55%
			750	0.971	53.593	0.964	55.531	0.73%	-3.49%
			770	0.979	53.548	0.965	55.453	1.45%	-3.44%
			785	0.984	53.521	0.966	55.395	1.86%	-3.38%
			800	0.990	53.488	0.967	55.336	2.38%	-3.34%
07/20/2022	750 Body	21.4	680	0.914	53.141	0.958	55.804	-4.59%	-4.77%
			695	0.919	53.114	0.959	55.745	-4.17%	-4.72%
			700	0.921	53.103	0.959	55.726	-3.96%	-4.71%
			710	0.924	53.080	0.960	55.687	-3.75%	-4.68%
			725	0.929	53.042	0.961	55.629	-3.33%	-4.65%
			750	0.938	52.991	0.964	55.531	-2.70%	-4.57%
			770	0.945	52.954	0.965	55.453	-2.07%	-4.51%
			785	0.951	52.916	0.966	55.395	-1.55%	-4.48%
			800	0.956	52.874	0.967	55.336	-1.14%	-4.45%
06/06/2022	835 Body	20.6	815	1.010	53.459	0.968	55.271	4.34%	-3.28%
			820	1.011	53.446	0.969	55.258	4.33%	-3.28%
			835	1.018	53.410	0.970	55.200	4.95%	-3.24%
			850	1.024	53.374	0.988	55.154	3.64%	-3.23%
06/08/2022	835 Body	20.3	815	1.010	53.194	0.968	55.271	4.34%	-3.76%
			820	1.011	53.180	0.969	55.258	4.33%	-3.76%
			835	1.017	53.146	0.970	55.200	4.85%	-3.72%
			850	1.024	53.124	0.988	55.154	3.64%	-3.68%
06/14/2022	835 Body	20.6	815	0.996	53.452	0.968	55.271	2.89%	-3.29%
			820	0.998	53.439	0.969	55.258	2.99%	-3.29%
			835	1.003	53.408	0.970	55.200	3.40%	-3.25%
			850	1.009	53.383	0.988	55.154	2.13%	-3.21%
06/15/2022	835 Body	23.0	815	0.931	53.319	0.968	55.271	-3.82%	-3.53%
			820	0.936	53.265	0.969	55.258	-3.41%	-3.61%
			835	0.952	53.109	0.970	55.200	-1.86%	-3.79%
			850	0.967	52.968	0.988	55.154	-2.13%	-3.96%
06/16/2022	835 Body	22.4	815	0.938	53.283	0.968	55.271	-3.10%	-3.60%
			820	0.943	53.231	0.969	55.258	-2.68%	-3.67%
			835	0.959	53.073	0.970	55.200	-1.13%	-3.85%
			850	0.975	52.914	0.988	55.154	-1.32%	-4.06%
06/21/2022	835 Body	22.3	815	1.004	52.732	0.968	55.271	3.72%	-4.59%
			820	1.006	52.721	0.969	55.258	3.82%	-4.59%
			835	1.012	52.687	0.970	55.200	4.33%	-4.55%
			850	1.018	52.651	0.988	55.154	3.04%	-4.54%

Table 10-4
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
07/11/2022	1750 Body	21.4	1710	1.469	51.925	1.463	53.537	0.41%	-3.01%
			1720	1.476	51.905	1.469	53.511	0.48%	-3.00%
			1745	1.494	51.868	1.485	53.445	0.61%	-2.95%
			1750	1.498	51.864	1.488	53.432	0.67%	-2.93%
			1770	1.511	51.844	1.501	53.379	0.67%	-2.88%
			1790	1.523	51.818	1.514	53.326	0.59%	-2.83%
06/21/2022	1900 Body	22.3	1850	1.551	51.151	1.520	53.300	2.04%	-4.03%
			1860	1.558	51.142	1.520	53.300	2.50%	-4.05%
			1880	1.573	51.124	1.520	53.300	3.49%	-4.08%
			1900	1.586	51.103	1.520	53.300	4.34%	-4.12%
			1905	1.589	51.096	1.520	53.300	4.54%	-4.14%
			1910	1.593	51.088	1.520	53.300	4.80%	-4.15%
07/15/2022	1900 Body	20.4	1850	1.516	51.847	1.520	53.300	-0.26%	-2.73%
			1860	1.523	51.834	1.520	53.300	0.20%	-2.75%
			1880	1.537	51.814	1.520	53.300	1.12%	-2.79%
			1900	1.552	51.790	1.520	53.300	2.11%	-2.83%
			1905	1.555	51.782	1.520	53.300	2.30%	-2.85%
			1910	1.559	51.775	1.520	53.300	2.57%	-2.86%
07/18/2022	1900 Body	21.1	1850	1.502	51.039	1.520	53.300	-1.18%	-4.24%
			1860	1.509	51.026	1.520	53.300	-0.72%	-4.27%
			1880	1.523	51.013	1.520	53.300	0.20%	-4.29%
			1900	1.536	50.997	1.520	53.300	1.05%	-4.32%
			1905	1.540	50.993	1.520	53.300	1.32%	-4.33%
			1910	1.543	50.988	1.520	53.300	1.51%	-4.34%
06/28/2022	2450 Body	24.3	2300	1.722	51.414	1.809	52.900	-4.81%	-2.81%
			2310	1.735	51.382	1.816	52.887	-4.46%	-2.85%
			2320	1.746	51.351	1.826	52.873	-4.38%	-2.88%
			2400	1.849	51.106	1.902	52.767	-2.79%	-3.15%
			2450	1.912	50.902	1.950	52.700	-1.95%	-3.41%
			2480	1.954	50.810	1.993	52.662	-1.96%	-3.52%
			2500	1.979	50.756	2.021	52.636	-2.08%	-3.57%
			2510	1.991	50.724	2.035	52.623	-2.16%	-3.61%
			2535	2.023	50.604	2.071	52.592	-2.32%	-3.78%
			2550	2.046	50.534	2.092	52.573	-2.20%	-3.88%
			2560	2.061	50.499	2.106	52.560	-2.14%	-3.92%
			2600	2.114	50.395	2.163	52.509	-2.27%	-4.03%
			2650	2.183	50.145	2.234	52.445	-2.28%	-4.39%
			2680	2.226	50.072	2.277	52.407	-2.24%	-4.46%
			2700	2.246	50.004	2.305	52.382	-2.56%	-4.54%
06/28/2022	2450 Body	21.9	2300	1.898	50.502	1.809	52.900	4.92%	-4.53%
			2310	1.906	50.488	1.816	52.887	4.96%	-4.54%
			2320	1.915	50.475	1.826	52.873	4.87%	-4.54%
			2400	1.980	50.364	1.902	52.767	4.10%	-4.55%
			2450	2.025	50.291	1.950	52.700	3.85%	-4.57%
			2480	2.052	50.242	1.993	52.662	2.96%	-4.60%
			2500	2.070	50.216	2.021	52.636	2.42%	-4.60%
			2510	2.079	50.206	2.035	52.623	2.16%	-4.59%
			2535	2.101	50.176	2.071	52.592	1.45%	-4.59%
			2550	2.115	50.154	2.092	52.573	1.10%	-4.60%
			2560	2.124	50.137	2.106	52.560	0.85%	-4.61%
			2600	2.163	50.066	2.163	52.509	0.00%	-4.65%
			2650	2.209	49.989	2.234	52.445	-1.12%	-4.68%
			2680	2.237	49.931	2.277	52.407	-1.76%	-4.72%
			2700	2.258	49.890	2.305	52.382	-2.04%	-4.76%
06/30/2022	2450 Body	23.4	2300	1.899	51.727	1.809	52.900	4.98%	-2.22%
			2310	1.906	51.721	1.816	52.887	4.96%	-2.20%
			2320	1.915	51.708	1.826	52.873	4.87%	-2.20%
			2400	1.981	51.554	1.902	52.767	4.15%	-2.30%
			2450	2.027	51.487	1.950	52.700	3.95%	-2.30%
			2480	2.051	51.414	1.993	52.662	2.91%	-2.37%
			2500	2.068	51.384	2.021	52.636	2.33%	-2.38%
			2510	2.078	51.377	2.035	52.623	2.11%	-2.37%
			2535	2.104	51.362	2.071	52.592	1.59%	-2.34%
			2550	2.119	51.345	2.092	52.573	1.29%	-2.34%
			2560	2.127	51.326	2.106	52.560	1.00%	-2.35%
			2600	2.159	51.233	2.163	52.509	-0.18%	-2.43%
			2650	2.211	51.186	2.234	52.445	-1.03%	-2.40%
			2680	2.236	51.156	2.277	52.407	-1.80%	-2.39%
			2700	2.253	51.115	2.305	52.382	-2.26%	-2.42%

Table 10-5
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
07/03/2022	2450 Body	24.2	2300	1.787	51.312	1.809	52.900	-1.22%	-3.00%
			2310	1.799	51.283	1.816	52.887	-0.94%	-3.03%
			2320	1.811	51.250	1.826	52.873	-0.82%	-3.07%
			2400	1.920	50.980	1.902	52.767	0.95%	-3.39%
			2450	1.985	50.765	1.950	52.700	1.79%	-3.67%
			2480	2.032	50.676	1.993	52.662	1.96%	-3.77%
			2500	2.057	50.620	2.021	52.636	1.78%	-3.83%
			2510	2.069	50.578	2.035	52.623	1.67%	-3.89%
			2535	2.101	50.435	2.071	52.592	1.45%	-4.10%
			2550	2.125	50.359	2.092	52.573	1.58%	-4.21%
			2560	2.141	50.324	2.106	52.560	1.66%	-4.25%
			2600	2.196	50.227	2.163	52.509	1.53%	-4.35%
			2650	2.267	49.947	2.234	52.445	1.48%	-4.76%
			2680	2.315	49.897	2.277	52.407	1.67%	-4.79%
			2700	2.337	49.831	2.305	52.382	1.39%	-4.87%
07/26/2022	2450 Body	21.2	2300	1.861	50.815	1.809	52.900	2.87%	-3.94%
			2310	1.869	50.806	1.816	52.887	2.92%	-3.93%
			2320	1.877	50.794	1.826	52.873	2.79%	-3.93%
			2400	1.949	50.697	1.902	52.767	2.47%	-3.92%
			2450	1.992	50.599	1.950	52.700	2.15%	-3.99%
			2480	2.023	50.569	1.993	52.662	1.51%	-3.97%
			2500	2.040	50.554	2.021	52.636	0.94%	-3.96%
			2510	2.049	50.535	2.035	52.623	0.69%	-3.97%
			2535	2.071	50.458	2.071	52.592	0.00%	-4.06%
			2550	2.087	50.417	2.092	52.573	-0.24%	-4.10%
			2560	2.098	50.404	2.106	52.560	-0.38%	-4.10%
			2600	2.136	50.377	2.163	52.509	-1.25%	-4.06%
			2650	2.183	50.233	2.234	52.445	-2.28%	-4.22%
			2680	2.213	50.218	2.277	52.407	-2.81%	-4.18%
			2700	2.228	50.186	2.305	52.382	-3.34%	-4.19%
07/27/2022	2450 Body	24.6	2400	1.849	51.016	1.902	52.767	-2.79%	-3.32%
			2450	1.906	50.799	1.950	52.700	-2.26%	-3.61%
			2480	1.952	50.698	1.993	52.662	-2.06%	-3.73%
			2500	1.979	50.645	2.021	52.636	-2.08%	-3.78%
			2510	1.990	50.615	2.035	52.623	-2.21%	-3.82%
			2535	2.018	50.508	2.071	52.592	-2.56%	-3.96%
			2550	2.037	50.438	2.092	52.573	-2.63%	-4.06%
			2560	2.052	50.400	2.106	52.560	-2.56%	-4.11%
			2600	2.110	50.294	2.163	52.509	-2.45%	-4.22%
			2650	2.172	50.105	2.234	52.445	-2.78%	-4.46%
			2680	2.217	50.003	2.277	52.407	-2.64%	-4.59%
			2700	2.244	49.943	2.305	52.382	-2.65%	-4.66%
07/05/2022	5200-5800 Body	20.8	5180	5.306	48.577	5.276	49.041	0.57%	-0.95%
			5190	5.323	48.566	5.288	49.028	0.66%	-0.94%
			5200	5.341	48.557	5.299	49.014	0.79%	-0.93%
			5210	5.356	48.540	5.311	49.001	0.85%	-0.94%
			5220	5.370	48.520	5.323	48.987	0.88%	-0.95%
			5240	5.400	48.477	5.346	48.960	1.01%	-0.99%
			5250	5.414	48.457	5.358	48.947	1.05%	-1.00%
			5260	5.431	48.450	5.369	48.933	1.15%	-0.99%
			5270	5.449	48.435	5.381	48.919	1.26%	-0.99%
			5280	5.463	48.413	5.393	48.906	1.30%	-1.01%
			5290	5.473	48.371	5.404	48.892	1.28%	-1.07%
			5300	5.485	48.340	5.416	48.879	1.27%	-1.10%
			5310	5.498	48.316	5.428	48.865	1.29%	-1.12%
			5320	5.520	48.301	5.439	48.851	1.49%	-1.13%
			5500	5.780	47.953	5.650	48.607	2.30%	-1.35%
			5510	5.796	47.920	5.661	48.594	2.38%	-1.39%
			5520	5.809	47.911	5.673	48.580	2.40%	-1.38%
			5530	5.822	47.892	5.685	48.566	2.41%	-1.39%
			5540	5.836	47.873	5.696	48.553	2.46%	-1.40%
			5550	5.852	47.862	5.708	48.539	2.52%	-1.39%
			5560	5.870	47.852	5.720	48.526	2.62%	-1.39%
			5580	5.898	47.813	5.743	48.499	2.70%	-1.41%
			5600	5.927	47.759	5.766	48.471	2.79%	-1.47%
			5610	5.944	47.748	5.778	48.458	2.87%	-1.47%
			5620	5.956	47.725	5.790	48.444	2.87%	-1.48%
			5640	5.992	47.678	5.813	48.417	3.08%	-1.53%
			5660	6.029	47.626	5.837	48.390	3.29%	-1.58%
			5670	6.038	47.608	5.848	48.376	3.25%	-1.59%
			5680	6.055	47.592	5.860	48.363	3.33%	-1.59%
			5690	6.073	47.575	5.872	48.349	3.42%	-1.60%
			5700	6.091	47.550	5.883	48.336	3.54%	-1.63%
			5710	6.109	47.542	5.895	48.322	3.63%	-1.61%
			5720	6.120	47.519	5.907	48.309	3.61%	-1.64%
			5745	6.151	47.465	5.936	48.275	3.62%	-1.68%
			5750	6.161	47.458	5.942	48.268	3.69%	-1.68%
			5755	6.170	47.454	5.947	48.261	3.75%	-1.67%
			5765	6.186	47.445	5.959	48.248	3.81%	-1.66%
			5775	6.201	47.413	5.971	48.234	3.85%	-1.70%
			5785	6.214	47.395	5.982	48.220	3.88%	-1.71%
			5795	6.233	47.377	5.994	48.207	3.99%	-1.72%
			5800	6.242	47.356	6.000	48.200	4.03%	-1.75%
			5805	6.249	47.351	6.006	48.193	4.05%	-1.75%
			5825	6.278	47.322	6.029	48.166	4.13%	-1.75%
			5835	6.290	47.304	6.042	48.130	4.10%	-1.72%
			5845	6.306	47.280	6.054	48.110	4.16%	-1.73%
			5855	6.325	47.249	6.066	48.093	4.27%	-1.75%
			5865	6.345	47.237	6.077	48.080	4.41%	-1.75%
			5875	6.365	47.217	6.088	48.067	4.55%	-1.77%
			5885	6.378	47.199	6.100	48.053	4.56%	-1.78%
			5905	6.396	47.172	6.122	48.027	4.48%	-1.78%

Table 10-6
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
07/18/2022	5200-5800 Body	21.6	5180	5.140	47.399	5.276	49.041	-2.58%	-3.35%
			5190	5.152	47.388	5.288	49.028	-2.57%	-3.35%
			5200	5.165	47.358	5.299	49.014	-2.53%	-3.38%
			5210	5.175	47.329	5.311	49.001	-2.56%	-3.41%
			5220	5.191	47.314	5.323	48.987	-2.48%	-3.42%
			5240	5.222	47.304	5.346	48.960	-2.32%	-3.38%
			5250	5.238	47.291	5.358	48.947	-2.24%	-3.38%
			5260	5.252	47.255	5.369	48.933	-2.18%	-3.43%
			5270	5.263	47.219	5.381	48.919	-2.19%	-3.48%
			5280	5.272	47.199	5.393	48.906	-2.24%	-3.49%
			5290	5.287	47.189	5.404	48.892	-2.17%	-3.48%
			5300	5.300	47.165	5.416	48.879	-2.14%	-3.51%
			5310	5.314	47.143	5.428	48.865	-2.10%	-3.52%
			5320	5.331	47.121	5.439	48.851	-1.99%	-3.54%
			5500	5.578	46.777	5.650	48.607	-1.27%	-3.76%
			5510	5.592	46.762	5.661	48.594	-1.22%	-3.77%
			5520	5.604	46.742	5.673	48.580	-1.22%	-3.78%
			5530	5.614	46.718	5.685	48.566	-1.25%	-3.81%
			5540	5.628	46.712	5.696	48.553	-1.19%	-3.79%
			5550	5.649	46.700	5.708	48.539	-1.03%	-3.79%
			5560	5.665	46.673	5.720	48.526	-0.96%	-3.82%
			5580	5.688	46.611	5.743	48.499	-0.96%	-3.89%
			5600	5.722	46.603	5.766	48.471	-0.76%	-3.85%
			5610	5.735	46.590	5.778	48.458	-0.74%	-3.85%
			5620	5.750	46.569	5.790	48.444	-0.69%	-3.87%
			5640	5.777	46.532	5.813	48.417	-0.62%	-3.89%
			5660	5.804	46.468	5.837	48.390	-0.57%	-3.97%
			5670	5.819	46.444	5.848	48.376	-0.50%	-3.99%
			5680	5.837	46.428	5.860	48.363	-0.39%	-4.00%
			5690	5.851	46.411	5.872	48.349	-0.36%	-4.01%
			5700	5.864	46.404	5.883	48.336	-0.32%	-4.00%
			5710	5.877	46.392	5.895	48.322	-0.31%	-3.99%
			5720	5.893	46.383	5.907	48.309	-0.24%	-3.99%
			5745	5.926	46.331	5.936	48.275	-0.17%	-4.03%
			5750	5.932	46.314	5.942	48.268	-0.17%	-4.05%
			5755	5.939	46.300	5.947	48.261	-0.13%	-4.06%
			5765	5.956	46.278	5.959	48.248	-0.05%	-4.08%
			5775	5.973	46.269	5.971	48.234	0.03%	-4.07%
			5785	5.987	46.258	5.982	48.220	0.08%	-4.07%
			5795	5.998	46.228	5.994	48.207	0.07%	-4.11%
			5800	6.003	46.212	6.000	48.200	0.05%	-4.12%
			5805	6.010	46.197	6.006	48.193	0.07%	-4.14%
			5825	6.039	46.185	6.029	48.166	0.17%	-4.11%
			5835	6.057	46.165	6.042	48.130	0.25%	-4.08%
			5845	6.075	46.129	6.054	48.110	0.35%	-4.12%
			5855	6.088	46.106	6.066	48.093	0.36%	-4.13%
			5865	6.101	46.097	6.077	48.080	0.39%	-4.12%
			5875	6.111	46.076	6.088	48.067	0.38%	-4.14%
			5885	6.126	46.052	6.100	48.053	0.43%	-4.16%
			5905	6.158	46.013	6.122	48.027	0.59%	-4.19%

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.

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 the SAR System Validation Appendix.

Table 10-7
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 (%)
K2	750	HEAD	07/18/2022	21.3	21.8	0.20	1003	7640	1.750	8.59	8.750	1.86%
K2	835	HEAD	06/07/2022	21.0	21.0	0.20	4d119	7640	2.030	9.66	10.150	5.07%
K2	835	HEAD	06/10/2022	19.5	19.8	0.20	4d119	7640	2.020	9.66	10.100	4.55%
K2	1750	HEAD	06/19/2022	19.8	19.9	0.10	1051	7640	3.750	37.30	37.500	0.54%
K2	1900	HEAD	06/19/2022	19.8	19.9	0.10	5d141	7640	4.150	40.30	41.500	2.98%
P	2450	HEAD	06/24/2022	21.9	20.6	0.10	797	7410	5.570	52.40	55.700	6.30%
P	2450	HEAD	07/24/2022	23.3	22.2	0.10	981	7409	5.210	53.90	52.100	-3.34%
E	2450	HEAD	07/28/2022	21.9	21.7	0.10	797	7538	5.510	52.40	55.100	5.15%
P	2600	HEAD	07/24/2022	23.3	22.2	0.10	1071	7409	5.520	56.10	55.200	-1.60%
O	5250	HEAD	07/11/2022	23.3	21.7	0.05	1057	7417	3.710	81.20	74.200	-8.62%
O	5600	HEAD	07/11/2022	23.3	21.7	0.05	1057	7417	4.130	84.20	82.600	-1.90%
O	5750	HEAD	07/11/2022	23.3	21.7	0.05	1057	7417	3.980	80.80	79.600	-1.49%
O	5800	HEAD	07/11/2022	23.3	21.7	0.05	1057	7417	3.770	82.10	75.400	-8.16%
K3	750	BODY	06/07/2022	21.1	20.9	0.20	1046	7565	1.710	8.68	8.550	-1.50%
K3	750	BODY	06/09/2022	21.9	20.9	0.20	1046	7565	1.740	8.68	8.700	0.23%
K3	750	BODY	06/14/2022	22.6	21.5	0.20	1046	7565	1.710	8.68	8.550	-1.50%
K3	750	BODY	07/20/2022	22.8	20.3	0.20	1046	7565	1.680	8.68	8.400	-3.23%
K1	835	BODY	06/06/2022	20.7	20.6	0.20	4d119	7558	2.070	9.91	10.350	4.44%
K2	835	BODY	06/15/2022	22.8	23.0	0.20	4d119	7640	1.970	9.91	9.850	-0.61%
K2	835	BODY	06/16/2022	22.6	22.4	0.20	4d119	7640	1.980	9.91	9.900	-0.10%
K3	835	BODY	06/21/2022	22.4	21.0	0.20	4d119	7565	1.960	9.91	9.800	-1.11%
K2	1750	BODY	07/11/2022	20.3	21.4	0.10	1092	7640	3.710	37.60	37.100	-1.33%
K3	1900	BODY	06/21/2022	22.4	21.0	0.10	5d141	7565	4.100	39.80	41.000	3.02%
K3	1900	BODY	07/15/2022	21.8	20.4	0.10	5d141	7565	4.200	39.80	42.000	5.53%
K3	1900	BODY	07/18/2022	21.9	21.1	0.10	5d141	7565	4.170	39.80	41.700	4.77%
S	2450	BODY	06/28/2022	21.3	24.0	0.10	981	7552	4.860	50.30	48.600	-3.38%
K2	2450	BODY	06/28/2022	20.2	20.4	0.10	882	7640	4.880	51.00	48.800	-4.31%
K2	2450	BODY	06/30/2022	21.9	21.7	0.10	882	7640	4.960	51.00	49.600	-2.75%
S	2450	BODY	07/03/2022	21.8	22.2	0.10	719	7552	5.230	52.00	52.300	0.58%
E	2450	BODY	07/26/2022	21.5	21.5	0.10	797	7538	5.250	49.40	52.500	6.28%
O	2450	BODY	07/27/2022	22.9	24.5	0.10	719	7417	4.930	52.00	49.300	-5.19%
K2	2600	BODY	06/28/2022	20.2	20.4	0.10	1126	7640	5.170	55.20	51.700	-6.34%
K2	2600	BODY	06/30/2022	21.9	21.7	0.10	1126	7640	5.260	55.20	52.600	-4.71%
O	5250	BODY	07/05/2022	22.1	20.8	0.05	1057	7417	3.380	74.20	67.600	-8.89%
O	5250	BODY	07/18/2022	23.6	21.6	0.05	1057	7417	3.410	74.20	68.200	-8.09%
O	5600	BODY	07/05/2022	22.1	20.8	0.05	1057	7417	3.640	77.00	72.800	-5.45%
O	5600	BODY	07/18/2022	23.6	21.6	0.05	1057	7417	3.530	77.00	70.600	-8.31%
O	5750	BODY	07/05/2022	22.1	20.8	0.05	1057	7417	3.390	74.90	67.800	-9.48%
O	5750	BODY	07/18/2022	23.6	21.6	0.05	1057	7417	3.520	74.90	70.400	-6.01%
O	5800	BODY	07/05/2022	22.1	20.8	0.05	1057	7417	3.520	74.80	70.400	-5.88%
O	5800	BODY	07/18/2022	23.6	21.6	0.05	1057	7417	3.620	74.80	72.400	-3.21%

Table 10-8
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	13	HEAD	06/09/2022	24.0	21.9	1.00	1002	7527	0.317	0.34	0.317	-7.85%
K3	750	BODY	06/07/2022	21.1	20.9	0.20	1046	7565	1.130	5.72	5.650	-1.22%
K1	750	BODY	06/14/2022	20.6	20.6	0.20	1046	7558	1.160	5.72	5.800	1.40%
K1	835	BODY	06/08/2022	20.6	20.8	0.20	4d119	7558	1.310	6.59	6.550	-0.61%
K1	835	BODY	06/14/2022	20.6	20.6	0.20	4d119	7558	1.320	6.59	6.600	0.15%
K2	1750	BODY	07/11/2022	20.3	21.4	0.10	1092	7640	1.970	20.10	19.700	-1.99%
K3	1900	BODY	07/18/2022	21.9	21.1	0.10	5d141	7565	2.170	20.60	21.700	5.34%
K2	2450	BODY	06/28/2022	20.2	20.4	0.10	882	7640	2.240	24.00	22.400	-6.67%
K2	2450	BODY	06/30/2022	21.9	21.7	0.10	882	7640	2.280	24.00	22.800	-5.00%
S	2450	BODY	07/03/2022	21.8	22.2	0.10	719	7552	2.400	24.70	24.000	-2.83%
O	2450	BODY	07/27/2022	22.9	24.5	0.10	719	7417	2.320	24.70	23.200	-6.07%
K2	2600	BODY	06/28/2022	20.2	20.4	0.10	1126	7640	2.290	24.70	22.900	-7.29%
K2	2600	BODY	06/30/2022	21.9	21.7	0.10	1126	7640	2.340	24.70	23.400	-5.26%
O	5250	BODY	07/05/2022	22.1	20.8	0.05	1057	7417	0.958	20.60	19.160	-6.99%
O	5250	BODY	07/18/2022	23.6	21.6	0.05	1057	7417	0.988	20.60	19.760	-4.08%
O	5600	BODY	07/05/2022	22.1	20.8	0.05	1057	7417	1.020	21.20	20.400	-3.77%
O	5600	BODY	07/18/2022	23.6	21.6	0.05	1057	7417	1.010	21.20	20.200	-4.72%
O	5750	BODY	07/05/2022	22.1	20.8	0.05	1057	7417	0.958	20.70	19.160	-7.44%
O	5750	BODY	07/18/2022	23.6	21.6	0.05	1057	7417	0.987	20.70	19.740	-4.64%
O	5800	BODY	07/05/2022	22.1	20.8	0.05	1057	7417	0.992	20.50	19.840	-3.22%
O	5800	BODY	07/18/2022	23.6	21.6	0.05	1057	7417	1.010	20.50	20.200	-1.46%

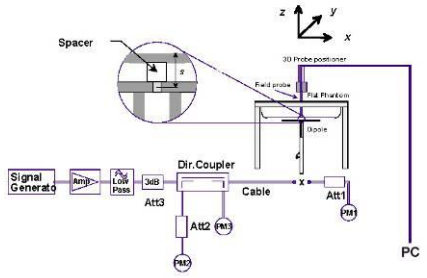

Figure 10-1
System Verification Setup Diagram

Figure 10-2
System Verification Setup Photo

11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
GSM 850 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
824.20	128	Right	Cheek	GSM 850	GSM	A+B	0429M	33.5	32.19	-0.04	1:8.3	0.065	1.352	0.088	
824.20	128	Right	Tilt	GSM 850	GSM	A+B	0429M	33.5	32.19	0.06	1:8.3	0.031	1.352	0.042	
824.20	128	Left	Cheek	GSM 850	GSM	A+B	0429M	33.5	32.19	0.01	1:8.3	0.043	1.352	0.058	
824.20	128	Left	Tilt	GSM 850	GSM	A+B	0429M	33.5	32.19	-0.04	1:8.3	0.021	1.352	0.028	
824.20	128	Right	Cheek	GSM 850	GSM	A	0429M	33.5	32.19	0.01	1:8.3	0.078	1.352	0.105	A1
824.20	128	Right	Tilt	GSM 850	GSM	A	0429M	33.5	32.19	-0.02	1:8.3	0.025	1.352	0.034	
824.20	128	Left	Cheek	GSM 850	GSM	A	0429M	33.5	32.19	-0.04	1:8.3	0.044	1.352	0.059	
824.20	128	Left	Tilt	GSM 850	GSM	A	0429M	33.5	32.19	0.02	1:8.3	0.023	1.352	0.031	
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		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1850.20	512	Right	Cheek	GSM 1900	GSM	B	1202M	30.0	29.03	-0.03	1:8.3	0.021	1.250	0.026	
1850.20	512	Right	Tilt	GSM 1900	GSM	B	1202M	30.0	29.03	-0.06	1:8.3	0.019	1.250	0.024	
1850.20	512	Left	Cheek	GSM 1900	GSM	B	1202M	30.0	29.03	-0.05	1:8.3	0.032	1.250	0.040	A2
1850.20	512	Left	Tilt	GSM 1900	GSM	B	1202M	30.0	29.03	0.09	1:8.3	0.014	1.250	0.018	
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		Side	Test Position	Mode	Service	Antenna Config.	Tune State	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
826.40	4132	Right	Cheek	UMTS 850	RMC	A+B	108	0429M	24.0	23.25	-0.02	1:1	0.061	1.189	0.073	
826.40	4132	Right	Tilt	UMTS 850	RMC	A+B	108	0429M	24.0	23.25	0.00	1:1	0.021	1.189	0.025	
826.40	4132	Left	Cheek	UMTS 850	RMC	A+B	108	0429M	24.0	23.25	-0.01	1:1	0.046	1.189	0.055	
826.40	4132	Left	Tilt	UMTS 850	RMC	A+B	108	0429M	24.0	23.25	-0.01	1:1	0.022	1.189	0.026	
826.40	4132	Right	Cheek	UMTS 850	RMC	A	126	0429M	24.0	23.25	0.02	1:1	0.093	1.189	0.111	A3
826.40	4132	Right	Tilt	UMTS 850	RMC	A	126	0429M	24.0	23.25	0.02	1:1	0.031	1.189	0.037	
826.40	4132	Left	Cheek	UMTS 850	RMC	A	126	0429M	24.0	23.25	0.00	1:1	0.064	1.189	0.076	
826.40	4132	Left	Tilt	UMTS 850	RMC	A	126	0429M	24.0	23.25	-0.06	1:1	0.028	1.189	0.033	
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 11-4
LTE Band 12 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Side	Test Position	Mode	Antenna Config.	Tune State	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
707.50	23095	Mid	Right	Cheek	LTE Band 12	A+B	90	0420M	90	QPSK	1	0	24.0	22.49	0	-0.08	1:1	0.069	1.416	0.098	A4
707.50	23095	Mid	Right	Cheek	LTE Band 12	A+B	90	0420M	90	QPSK	25	12	23.0	21.43	1	-0.02	1:1	0.055	1.435	0.079	
707.50	23095	Mid	Right	Tilt	LTE Band 12	A+B	90	0420M	90	QPSK	1	0	24.0	22.49	0	-0.12	1:1	0.032	1.416	0.045	
707.50	23095	Mid	Right	Tilt	LTE Band 12	A+B	90	0420M	90	QPSK	25	12	23.0	21.43	1	0.03	1:1	0.026	1.435	0.037	
707.50	23095	Mid	Left	Cheek	LTE Band 12	A+B	90	0420M	90	QPSK	1	0	24.0	22.49	0	0.05	1:1	0.062	1.416	0.088	
707.50	23095	Mid	Left	Cheek	LTE Band 12	A+B	90	0420M	90	QPSK	25	12	23.0	21.43	1	0.01	1:1	0.044	1.435	0.063	
707.50	23095	Mid	Left	Tilt	LTE Band 12	A+B	90	0420M	90	QPSK	1	0	24.0	22.49	0	-0.14	1:1	0.036	1.416	0.051	
707.50	23095	Mid	Left	Tilt	LTE Band 12	A+B	90	0420M	90	QPSK	25	12	23.0	21.43	1	-0.10	1:1	0.026	1.435	0.037	
707.50	23095	Mid	Right	Cheek	LTE Band 12	A	90	0429M	10	QPSK	1	0	24.0	22.49	0	0.09	1:1	0.056	1.416	0.079	
707.50	23095	Mid	Right	Cheek	LTE Band 12	A	90	0429M	10	QPSK	25	12	23.0	21.43	1	0.03	1:1	0.047	1.435	0.067	
707.50	23095	Mid	Right	Tilt	LTE Band 12	A	90	0429M	10	QPSK	1	0	24.0	22.49	0	-0.08	1:1	0.031	1.416	0.044	
707.50	23095	Mid	Right	Tilt	LTE Band 12	A	90	0429M	10	QPSK	25	12	23.0	21.43	1	0.01	1:1	0.026	1.435	0.037	
707.50	23095	Mid	Left	Cheek	LTE Band 12	A	90	0429M	10	QPSK	1	0	24.0	22.49	0	-0.04	1:1	0.053	1.416	0.075	
707.50	23095	Mid	Left	Cheek	LTE Band 12	A	90	0429M	10	QPSK	25	12	23.0	21.43	1	-0.11	1:1	0.042	1.435	0.060	
707.50	23095	Mid	Left	Tilt	LTE Band 12	A	90	0429M	10	QPSK	1	0	24.0	22.49	0	-0.17	1:1	0.032	1.416	0.045	
707.50	23095	Mid	Left	Tilt	LTE Band 12	A	90	0429M	10	QPSK	25	12	23.0	21.43	1	-0.09	1:1	0.025	1.435	0.036	
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			Side	Test Position	Mode	Antenna Config.	Tune State	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
782.00	23230	Mid	Right	Cheek	LTE Band 13	A+B	0	0420M	10	QPSK	1	49	24.0	22.96	0	-0.06	1:1	0.121	1.271	0.154	A5
782.00	23230	Mid	Right	Cheek	LTE Band 13	A+B	0	0420M	10	QPSK	25	25	23.0	21.97	1	-0.02	1:1	0.096	1.268	0.122	
782.00	23230	Mid	Right	Tilt	LTE Band 13	A+B	0	0420M	10	QPSK	1	49	24.0	22.96	0	0.00	1:1	0.060	1.271	0.076	
782.00	23230	Mid	Right	Tilt	LTE Band 13	A+B	0	0420M	10	QPSK	25	25	23.0	21.97	1	0.00	1:1	0.043	1.268	0.055	
782.00	23230	Mid	Left	Cheek	LTE Band 13	A+B	108	0420M	10	QPSK	1	49	24.0	22.96	0	-0.10	1:1	0.076	1.271	0.097	
782.00	23230	Mid	Left	Cheek	LTE Band 13	A+B	108	0420M	10	QPSK	25	25	23.0	21.97	1	-0.16	1:1	0.060	1.268	0.076	
782.00	23230	Mid	Left	Tilt	LTE Band 13	A+B	0	0420M	10	QPSK	1	49	24.0	22.96	0	-0.17	1:1	0.039	1.271	0.050	
782.00	23230	Mid	Left	Tilt	LTE Band 13	A+B	0	0420M	10	QPSK	25	25	23.0	21.97	1	0.00	1:1	0.030	1.268	0.038	
782.00	23230	Mid	Right	Cheek	LTE Band 13	A	18	0429M	10	QPSK	1	49	24.0	22.96	0	-0.01	1:1	0.093	1.271	0.118	
782.00	23230	Mid	Right	Cheek	LTE Band 13	A	18	0429M	10	QPSK	25	25	23.0	21.97	1	-0.01	1:1	0.074	1.268	0.094	
782.00	23230	Mid	Right	Tilt	LTE Band 13	A	18	0429M	10	QPSK	1	49	24.0	22.96	0	-0.08	1:1	0.050	1.271	0.064	
782.00	23230	Mid	Right	Tilt	LTE Band 13	A	18	0429M	10	QPSK	25	25	23.0	21.97	1	-0.03	1:1	0.038	1.268	0.048	
782.00	23230	Mid	Left	Cheek	LTE Band 13	A	18	0429M	10	QPSK	1	49	24.0	22.96	0	-0.09	1:1	0.072	1.271	0.092	
782.00	23230	Mid	Left	Cheek	LTE Band 13	A	18	0429M	10	QPSK	25	25	23.0	21.97	1	-0.04	1:1	0.057	1.268	0.072	
782.00	23230	Mid	Left	Tilt	LTE Band 13	A	18	0429M	10	QPSK	1	49	24.0	22.96	0	-0.03	1:1	0.037	1.271	0.047	
782.00	23230	Mid	Left	Tilt	LTE Band 13	A	18	0429M	10	QPSK	25	25	23.0	21.97	1	-0.05	1:1	0.029	1.268	0.037	
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 11-6
LTE Band 5 (Cell) Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Test Position	Mode	Antenna Config.	Tune State	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
836.50	20525	Mid	Right	Cheek	LTE Band 5 (Cell)	A+B	108	0429M	10	QPSK	1	25	24.0	22.92	0	-0.12	1:1	0.048	1.282	0.062	
836.50	20525	Mid	Right	Cheek	LTE Band 5 (Cell)	A+B	108	0429M	10	QPSK	25	0	23.0	21.78	1	-0.01	1:1	0.037	1.324	0.049	
836.50	20525	Mid	Right	Tilt	LTE Band 5 (Cell)	A+B	108	0429M	10	QPSK	1	25	24.0	22.92	0	-0.15	1:1	0.025	1.282	0.032	
836.50	20525	Mid	Right	Tilt	LTE Band 5 (Cell)	A+B	108	0429M	10	QPSK	25	0	23.0	21.78	1	-0.05	1:1	0.020	1.324	0.026	
836.50	20525	Mid	Left	Cheek	LTE Band 5 (Cell)	A+B	108	0429M	10	QPSK	1	25	24.0	22.92	0	-0.15	1:1	0.034	1.282	0.044	
836.50	20525	Mid	Left	Cheek	LTE Band 5 (Cell)	A+B	108	0429M	10	QPSK	25	0	23.0	21.78	1	-0.03	1:1	0.028	1.324	0.037	
836.50	20525	Mid	Left	Tilt	LTE Band 5 (Cell)	A+B	108	0429M	10	QPSK	1	25	24.0	22.92	0	-0.09	1:1	0.027	1.282	0.035	
836.50	20525	Mid	Left	Tilt	LTE Band 5 (Cell)	A+B	108	0429M	10	QPSK	25	0	23.0	21.78	1	-0.19	1:1	0.021	1.324	0.028	
836.50	20525	Mid	Right	Cheek	LTE Band 5 (Cell)	A	126	0429M	10	QPSK	1	25	24.0	22.92	0	0.08	1:1	0.072	1.282	0.092	A6
836.50	20525	Mid	Right	Cheek	LTE Band 5 (Cell)	A	126	0429M	10	QPSK	25	0	23.0	21.78	1	0.00	1:1	0.056	1.324	0.074	
836.50	20525	Mid	Right	Tilt	LTE Band 5 (Cell)	A	126	0429M	10	QPSK	1	25	24.0	22.92	0	-0.10	1:1	0.033	1.282	0.042	
836.50	20525	Mid	Right	Tilt	LTE Band 5 (Cell)	A	126	0429M	10	QPSK	25	0	23.0	21.78	1	-0.12	1:1	0.026	1.324	0.034	
836.50	20525	Mid	Left	Cheek	LTE Band 5 (Cell)	A	126	0429M	10	QPSK	1	25	24.0	22.92	0	0.00	1:1	0.053	1.282	0.068	
836.50	20525	Mid	Left	Cheek	LTE Band 5 (Cell)	A	126	0429M	10	QPSK	25	0	23.0	21.78	1	-0.02	1:1	0.043	1.324	0.057	
836.50	20525	Mid	Left	Tilt	LTE Band 5 (Cell)	A	126	0429M	10	QPSK	1	25	24.0	22.92	0	0.10	1:1	0.037	1.282	0.047	
836.50	20525	Mid	Left	Tilt	LTE Band 5 (Cell)	A	126	0429M	10	QPSK	25	0	23.0	21.78	1	0.02	1:1	0.030	1.324	0.040	
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			Side	Test Position	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1732.50	20175	Mid	Right	Cheek	LTE Band 4 (AWS)	B	0420M	20	QPSK	1	50	23.5	22.59	0	0.01	1:1	0.084	1.233	0.104	A7
1732.50	20175	Mid	Right	Cheek	LTE Band 4 (AWS)	B	0420M	20	QPSK	50	25	22.5	21.43	1	0.01	1:1	0.064	1.279	0.082	
1732.50	20175	Mid	Right	Tilt	LTE Band 4 (AWS)	B	0420M	20	QPSK	1	50	23.5	22.59	0	0.04	1:1	0.047	1.233	0.058	
1732.50	20175	Mid	Right	Tilt	LTE Band 4 (AWS)	B	0420M	20	QPSK	50	25	22.5	21.43	1	0.05	1:1	0.037	1.279	0.047	
1732.50	20175	Mid	Left	Cheek	LTE Band 4 (AWS)	B	0420M	20	QPSK	1	50	23.5	22.59	0	-0.06	1:1	0.077	1.233	0.095	
1732.50	20175	Mid	Left	Cheek	LTE Band 4 (AWS)	B	0420M	20	QPSK	50	25	22.5	21.43	1	-0.06	1:1	0.057	1.279	0.073	
1732.50	20175	Mid	Left	Tilt	LTE Band 4 (AWS)	B	0420M	20	QPSK	1	50	23.5	22.59	0	-0.11	1:1	0.043	1.233	0.053	
1732.50	20175	Mid	Left	Tilt	LTE Band 4 (AWS)	B	0420M	20	QPSK	50	25	22.5	21.43	1	-0.13	1:1	0.032	1.279	0.041	
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 11-8
LTE Band 41 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Side	Test Position	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
2506.00	39750	Low	Right	Cheek	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	0.17	1:1.58	0.021	1.256	0.026	
2506.00	39750	Low	Right	Cheek	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	-0.10	1:1.58	0.018	1.250	0.023	
2506.00	39750	Low	Right	Tilt	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	0.00	1:1.58	0.015	1.256	0.019	
2506.00	39750	Low	Right	Tilt	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	-0.14	1:1.58	0.011	1.250	0.014	
2506.00	39750	Low	Left	Cheek	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	0.12	1:1.58	0.025	1.256	0.031	
2506.00	39750	Low	Left	Cheek	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	-0.14	1:1.58	0.018	1.250	0.023	
2506.00	39750	Low	Left	Cheek	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.17	0	0.13	1:1.58	0.028	1.211	0.034	
2525.80	39948										0									
2506.00	39750	Low	Left	Tilt	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	0.15	1:1.58	0.016	1.256	0.020	
2506.00	39750	Low	Left	Tilt	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	-0.10	1:1.58	0.016	1.250	0.020	
2549.50	40185	Low-Mid	Right	Cheek	LTE Band 41	F	0068M	20	QPSK	1	50	24.0	23.60	0	-0.01	1:1.58	0.215	1.096	0.236	
2549.50	40185	Low-Mid	Right	Cheek	LTE Band 41	F	0068M	20	QPSK	50	25	23.0	22.59	1	0.03	1:1.58	0.165	1.099	0.181	
2549.50	40185	Low-Mid	Right	Tilt	LTE Band 41	F	0068M	20	QPSK	1	50	24.0	23.60	0	-0.10	1:1.58	0.243	1.096	0.266	
2549.50	40185	Low-Mid	Right	Tilt	LTE Band 41	F	0068M	20	QPSK	50	25	23.0	22.59	1	-0.02	1:1.58	0.224	1.099	0.246	
2549.50	40185	Low-Mid	Left	Cheek	LTE Band 41	F	0068M	20	QPSK	1	50	24.0	23.60	0	0.02	1:1.58	0.215	1.096	0.236	
2549.50	40185	Low-Mid	Left	Cheek	LTE Band 41	F	0068M	20	QPSK	50	25	23.0	22.59	1	0.10	1:1.58	0.165	1.099	0.181	
2549.50	40185	Low-Mid	Left	Tilt	LTE Band 41	F	0068M	20	QPSK	1	50	24.0	23.60	0	-0.09	1:1.58	0.301	1.096	**0.330**	A8
2549.50	40185	Low-Mid	Left	Tilt	LTE Band 41	F	0068M	20	QPSK	50	25	23.0	22.59	1	-0.01	1:1.58	0.224	1.099	0.246	
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 Head SISO SAR

MEASUREMENT RESULTS																			
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	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	Right	Cheek	802.11b	DSSS	2	0521M	22	1	13.0	12.57	0.12	98.85	0.022	0.015	1.104	1.012	**0.017**	
2437	6	Right	Tilt	802.11b	DSSS	2	0521M	22	1	13.0	12.57	-0.11	98.85	0.009	0.000	1.104	1.012	0.000	
2437	6	Left	Cheek	802.11b	DSSS	2	0521M	22	1	13.0	12.57	-0.12	98.85	0.003	0.000	1.104	1.012	0.000	
2437	6	Left	Tilt	802.11b	DSSS	2	0521M	22	1	13.0	12.57	0.14	98.85	0.001	0.000	1.104	1.012	0.000	

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 Head MIMO SAR

MEASUREMENT RESULTS																				
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	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]	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	Right	Cheek	802.11n	OFDM	MIMO	0521M	20	13	13.0	12.18	13.0	12.66	-0.10	97.70	0.359	0.277	1.208	1.024	0.343	
2437	6	Right	Tilt	802.11n	OFDM	MIMO	0521M	20	13	13.0	12.18	13.0	12.66	0.14	97.70	0.412	0.407	1.208	1.024	0.503	A9
2437	6	Left	Cheek	802.11n	OFDM	MIMO	0521M	20	13	13.0	12.18	13.0	12.66	0.02	97.70	0.155	-	1.208	1.024	-	
2437	6	Left	Tilt	802.11n	OFDM	MIMO	0521M	20	13	13.0	12.18	13.0	12.66	-0.07	97.70	0.242	-	1.208	1.024	-	

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.

Table 11-11
NII MIMO Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	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]	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	Right	Cheek	802.11ac	OFDM	MIMO	0521M	80	58.5	12.0	11.04	12.0	11.88	-0.12	92.82	0.446	0.274	1.247	1.077	0.368	
5290	58	Right	Tilt	802.11ac	OFDM	MIMO	0521M	80	58.5	12.0	11.04	12.0	11.88	0.03	92.82	0.387	0.276	1.247	1.077	0.371	
5290	58	Left	Cheek	802.11ac	OFDM	MIMO	0521M	80	58.5	12.0	11.04	12.0	11.88	0.10	92.82	0.219	0.160	1.247	1.077	0.215	
5290	58	Left	Tilt	802.11ac	OFDM	MIMO	0521M	80	58.5	12.0	11.04	12.0	11.88	-0.06	92.82	0.208	0.181	1.247	1.077	0.243	
5610	122	Right	Cheek	802.11ac	OFDM	MIMO	0521M	80	58.5	12.0	11.23	12.0	11.88	0.06	92.82	0.464	0.284	1.194	1.077	0.365	
5610	122	Right	Tilt	802.11ac	OFDM	MIMO	0521M	80	58.5	12.0	11.23	12.0	11.88	0.00	92.82	0.393	0.292	1.194	1.077	0.375	
5610	122	Left	Cheek	802.11ac	OFDM	MIMO	0521M	80	58.5	12.0	11.23	12.0	11.88	0.04	92.82	0.275	0.224	1.194	1.077	0.288	
5610	122	Left	Tilt	802.11ac	OFDM	MIMO	0521M	80	58.5	12.0	11.23	12.0	11.88	0.01	92.82	0.293	0.229	1.194	1.077	0.294	
5775	155	Right	Cheek	802.11ac	OFDM	MIMO	0521M	80	58.5	12.0	11.46	12.0	11.35	0.04	92.82	0.380	0.250	1.161	1.077	0.313	
5775	155	Right	Tilt	802.11ac	OFDM	MIMO	0521M	80	58.5	12.0	11.46	12.0	11.35	0.08	92.82	0.568	0.302	1.161	1.077	0.378	
5775	155	Left	Cheek	802.11ac	OFDM	MIMO	0521M	80	58.5	12.0	11.46	12.0	11.35	0.00	92.82	0.255	0.180	1.161	1.077	0.225	
5775	155	Left	Tilt	802.11ac	OFDM	MIMO	0521M	80	58.5	12.0	11.46	12.0	11.35	0.01	92.82	0.306	0.204	1.161	1.077	0.255	
5855	171	Right	Cheek	802.11ac	OFDM	MIMO	0521M	80	58.5	12.0	11.76	12.0	11.04	-0.13	92.82	0.555	0.347	1.247	1.077	0.466	
5855	171	Right	Tilt	802.11ac	OFDM	MIMO	0521M	80	58.5	12.0	11.76	12.0	11.04	0.01	92.82	0.667	0.448	1.247	1.077	**0.602**	A10
5855	171	Left	Cheek	802.11ac	OFDM	MIMO	0521M	80	58.5	12.0	11.76	12.0	11.04	0.08	92.82	0.327	0.214	1.247	1.077	0.287	
5855	171	Left	Tilt	802.11ac	OFDM	MIMO	0521M	80	58.5	12.0	11.76	12.0	11.04	0.17	92.82	0.356	0.238	1.247	1.077	0.320	

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.

Table 11-12
DSS Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)			(W/kg)	
2441	39	Right	Cheek	Bluetooth	FHSS	1	0513M	1	11.5	11.14	0.04	76.80	0.240	1.086	1.302	**0.339**	A11
2441	39	Right	Tilt	Bluetooth	FHSS	1	0513M	1	11.5	11.14	0.03	76.80	0.204	1.086	1.302	0.288	
2441	39	Left	Cheek	Bluetooth	FHSS	1	0513M	1	11.5	11.14	0.20	76.80	0.131	1.086	1.302	0.185	
2441	39	Left	Tilt	Bluetooth	FHSS	1	0513M	1	11.5	11.14	-0.01	76.80	0.159	1.086	1.302	0.225	
2441	39	Right	Cheek	Bluetooth	FHSS	2	0513M	1	9.5	9.10	0.03	76.80	0.000	1.096	1.302	0.000	
2441	39	Right	Tilt	Bluetooth	FHSS	2	0513M	1	9.5	9.10	0.09	76.80	0.000	1.096	1.302	0.000	
2441	39	Left	Cheek	Bluetooth	FHSS	2	0513M	1	9.5	9.10	0.07	76.80	0.003	1.096	1.302	0.004	
2441	39	Left	Tilt	Bluetooth	FHSS	2	0513M	1	9.5	9.10	0.09	76.80	0.000	1.096	1.302	0.000	

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 11-13
GSM Body-Worn SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
824.20	128	back	15 mm	GSM 850	GSM	A+B	0427M	33.5	32.19	0.04	1:8.3	0.079	1.352	0.107	A12
824.20	128	back	15 mm	GSM 850	GSM	A	0429M	33.5	32.19	0.00	1:8.3	0.056	1.352	0.076	
1850.20	512	back	15 mm	GSM 1900	GSM	B	1188M	30.0	29.03	0.01	1:8.3	0.221	1.250	0.276	A13
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 11-14
UMTS Body-Worn SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Tune State	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
826.40	4132	back	15 mm	UMTS 850	RMC	A+B	108	0427M	24.0	23.25	0.02	1:1	0.102	1.189	0.121	A14
826.40	4132	back	15 mm	UMTS 850	RMC	A	126	0429M	24.0	23.25	0.03	1:1	0.093	1.189	0.111	
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 11-15
LTE Body-Worn SAR

MEASUREMENT RESULTS																								
# CC Uplink, Power Class	Component Carrier	FREQUENCY			Side	Spacing	Mode	Antenna Config.	Tune State	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
		MHz	Ch.																	(W/kg)		(W/kg)	
1 CC Uplink	N/A	707.50	23095	Mid	back	15 mm	LTE Band 12	A+B	90	0420M	10	QPSK	1	0	24.0	22.49	0	-0.15	1:1	0.114	1.416	0.161	A15
1 CC Uplink	N/A	707.50	23095	Mid	back	15 mm	LTE Band 12	A+B	90	0420M	10	QPSK	25	12	23.0	21.43	1	0.03	1:1	0.086	1.435	0.123	
1 CC Uplink	N/A	707.50	23095	Mid	back	15 mm	LTE Band 12	A	10	0420M	10	QPSK	1	0	24.0	22.49	0	0.09	1:1	0.097	1.416	0.137	
1 CC Uplink	N/A	707.50	23095	Mid	back	15 mm	LTE Band 12	A	10	0420M	10	QPSK	25	12	23.0	21.43	1	0.02	1:1	0.072	1.435	0.103	
1 CC Uplink	N/A	782.00	23230	Mid	back	15 mm	LTE Band 13	A+B	108	0420M	10	QPSK	1	49	24.0	22.96	0	0.07	1:1	0.116	1.271	0.147	A16
1 CC Uplink	N/A	782.00	23230	Mid	back	15 mm	LTE Band 13	A+B	108	0420M	10	QPSK	25	25	23.0	21.97	1	-0.04	1:1	0.097	1.268	0.123	
1 CC Uplink	N/A	782.00	23230	Mid	back	15 mm	LTE Band 13	A	63	0420M	10	QPSK	1	49	24.0	22.96	0	0.07	1:1	0.109	1.271	0.139	
1 CC Uplink	N/A	782.00	23230	Mid	back	15 mm	LTE Band 13	A	63	0420M	10	QPSK	25	25	23.0	21.97	1	-0.01	1:1	0.086	1.268	0.109	
1 CC Uplink	N/A	836.50	20525	Mid	back	15 mm	LTE Band 5 (Cell)	A+B	0	0427M	10	QPSK	1	25	24.0	22.92	0	0.14	1:1	0.108	1.282	0.138	
1 CC Uplink	N/A	836.50	20525	Mid	back	15 mm	LTE Band 5 (Cell)	A+B	0	0427M	10	QPSK	25	0	23.0	21.78	1	0.02	1:1	0.083	1.324	0.110	
1 CC Uplink	N/A	836.50	20525	Mid	back	15 mm	LTE Band 5 (Cell)	A	63	0427M	10	QPSK	1	25	24.0	22.92	0	-0.04	1:1	0.115	1.282	0.147	A17
1 CC Uplink	N/A	836.50	20525	Mid	back	15 mm	LTE Band 5 (Cell)	A	63	0427M	10	QPSK	25	0	23.0	21.78	1	0.01	1:1	0.088	1.324	0.117	
1 CC Uplink	N/A	1732.50	20175	Mid	back	15 mm	LTE Band 4 (AWS)	B	N/A	0427M	20	QPSK	1	50	23.5	22.59	0	0.00	1:1	0.466	1.233	0.575	A18
1 CC Uplink	N/A	1732.50	20175	Mid	back	15 mm	LTE Band 4 (AWS)	B	N/A	0427M	20	QPSK	50	25	22.5	21.43	1	0.01	1:1	0.359	1.279	0.459	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	back	15 mm	LTE Band 41	B	N/A	0420M	20	QPSK	1	99	24.0	23.01	0	0.01	1:1.58	0.278	1.256	0.349	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	back	15 mm	LTE Band 41	B	N/A	0420M	20	QPSK	50	25	23.0	22.03	1	-0.01	1:1.58	0.238	1.250	0.298	
2 CC Uplink - Power Class 3	PCC	2506.00	39750	Low	back	15 mm	LTE Band 41	B	N/A	0420M	20	QPSK	1	99	24.0	23.17	0	-0.02	1:1.58	0.285	1.211	0.345	A19
	SCC	2525.80	39948											0									
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	back	15 mm	LTE Band 41	F	N/A	0068M	20	QPSK	1	99	21.0	20.06	0	-0.04	1:1.58	0.047	1.242	0.058	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	back	15 mm	LTE Band 41	F	N/A	0068M	20	QPSK	50	25	21.0	20.04	0	-0.03	1:1.58	0.047	1.247	0.059	
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
DTS SISO Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	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	back	15 mm	802.11b	DSSS	2	0521M	22	1	19.0	18.94	0.12	98.85	0.005	0.004	1.014	1.012	**0.004**	
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 MIMO SAR

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	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]	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	back	15 mm	802.11b	DSSS	MIMO	0521M	22	1	19.0	18.72	19.0	18.94	-0.03	98.85	0.042	0.035	1.067	1.012	0.038	A20
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

Table 11-18
NII MIMO Body-Worn SAR

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	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]	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)	
5320	64	back	15 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.34	18.0	17.94	-0.15	97.92	0.024	0.011	1.164	1.021	0.013	
5720	144	back	15 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.32	18.0	17.82	0.15	97.92	0.042	0.021	1.169	1.021	0.025	
5825	165	back	15 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.45	18.0	17.83	0.12	97.92	0.033	0.026	1.135	1.021	0.030	
5845	169	back	15 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.43	18.0	17.96	-0.07	97.92	0.052	0.028	1.140	1.021	**0.033**	A21
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 11-19
DSS Body-Worn SAR

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)			(W/kg)	
2441	39	back	15 mm	Bluetooth	FHSS	1	0513M	1	19.5	18.77	-0.16	76.80	0.019	1.184	1.302	**0.029**	A22
2441	39	back	15 mm	Bluetooth	FHSS	2	0513M	1	16.0	15.82	0.19	76.80	0.002	1.043	1.302	0.003	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**										**Body** **1.6 W/kg (mW/g)** averaged over 1 gram							

11.3 Standalone Hotspot SAR Data

Table 11-20
GPRS Hotspot SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	# of Time Slots	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
824.20	128	back	10 mm	GSM 850	GPRS	A+B	0427M	3	30.5	29.87	-0.02	1:2.76	0.240	1.156	0.277	A23
824.20	128	front	10 mm	GSM 850	GPRS	A+B	0427M	3	30.5	29.87	-0.06	1:2.76	0.098	1.156	0.113	
824.20	128	bottom	10 mm	GSM 850	GPRS	A+B	0427M	3	30.5	29.87	0.00	1:2.76	0.088	1.156	0.102	
824.20	128	right	10 mm	GSM 850	GPRS	A+B	0427M	3	30.5	29.87	-0.08	1:2.76	0.223	1.156	0.258	
824.20	128	left	10 mm	GSM 850	GPRS	A+B	0427M	3	30.5	29.87	-0.05	1:2.76	0.080	1.156	0.092	
824.20	128	back	10 mm	GSM 850	GPRS	A	0429M	3	30.5	29.87	0.00	1:2.76	0.163	1.156	0.188	
824.20	128	front	10 mm	GSM 850	GPRS	A	0429M	3	30.5	29.87	-0.01	1:2.76	0.052	1.156	0.060	
824.20	128	bottom	10 mm	GSM 850	GPRS	A	0429M	3	30.5	29.87	0.01	1:2.76	0.051	1.156	0.059	
824.20	128	right	10 mm	GSM 850	GPRS	A	0429M	3	30.5	29.87	-0.01	1:2.76	0.139	1.156	0.161	
1880.00	661	back	10 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.85	-0.09	1:2.076	0.279	1.303	0.364	
1880.00	661	front	10 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.85	-0.03	1:2.076	0.106	1.303	0.138	
1850.20	512	bottom	10 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.80	0.01	1:2.076	0.379	1.318	0.500	
1880.00	661	bottom	10 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.85	-0.02	1:2.076	0.446	1.303	0.581	A24
1909.80	810	bottom	10 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.84	0.00	1:2.076	0.418	1.306	0.546	
1880.00	661	right	10 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.85	-0.09	1:2.076	0.053	1.303	0.069	
1880.00	661	left	10 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.85	0.03	1:2.076	0.038	1.303	0.050	
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 11-21
UMTS Hotspot SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Tune State	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
826.40	4132	back	10 mm	UMTS 850	RMC	A+B	108	0427M	24.0	23.25	0.02	1:1	0.216	1.189	0.257	A25
826.40	4132	front	10 mm	UMTS 850	RMC	A+B	108	0427M	24.0	23.25	0.02	1:1	0.052	1.189	0.062	
826.40	4132	bottom	10 mm	UMTS 850	RMC	A+B	108	0427M	24.0	23.25	0.10	1:1	0.041	1.189	0.049	
826.40	4132	right	10 mm	UMTS 850	RMC	A+B	108	0427M	24.0	23.25	-0.01	1:1	0.181	1.189	0.215	
826.40	4132	left	10 mm	UMTS 850	RMC	A+B	108	0427M	24.0	23.25	0.08	1:1	0.069	1.189	0.082	
826.40	4132	back	10 mm	UMTS 850	RMC	A	126	0429M	24.0	23.25	0.03	1:1	0.179	1.189	0.213	
826.40	4132	front	10 mm	UMTS 850	RMC	A	54	0429M	24.0	23.25	0.05	1:1	0.059	1.189	0.070	
826.40	4132	bottom	10 mm	UMTS 850	RMC	A	126	0429M	24.0	23.25	-0.01	1:1	0.056	1.189	0.067	
826.40	4132	right	10 mm	UMTS 850	RMC	A	126	0429M	24.0	23.25	-0.03	1:1	0.133	1.189	0.158	
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 11-22
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Antenna Config.	Tune State	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
707.50	23095	Mid	back	10 mm	LTE Band 12	A+B	90	0420M	10	QPSK	1	0	24.0	22.49	0	-0.09	1:1	0.159	1.416	0.225	
707.50	23095	Mid	back	10 mm	LTE Band 12	A+B	90	0420M	10	QPSK	25	12	23.0	21.43	1	0.01	1:1	0.125	1.435	0.179	
707.50	23095	Mid	front	10 mm	LTE Band 12	A+B	90	0420M	10	QPSK	1	0	24.0	22.49	0	0.03	1:1	0.065	1.416	0.092	
707.50	23095	Mid	front	10 mm	LTE Band 12	A+B	90	0420M	10	QPSK	25	12	23.0	21.43	1	0.05	1:1	0.051	1.435	0.073	
707.50	23095	Mid	bottom	10 mm	LTE Band 12	A+B	90	0420M	10	QPSK	1	0	24.0	22.49	0	-0.05	1:1	0.043	1.416	0.061	
707.50	23095	Mid	bottom	10 mm	LTE Band 12	A+B	90	0420M	10	QPSK	25	12	23.0	21.43	1	-0.05	1:1	0.032	1.435	0.046	
707.50	23095	Mid	right	10 mm	LTE Band 12	A+B	90	0420M	10	QPSK	1	0	24.0	22.49	0	-0.09	1:1	0.161	1.416	0.228	
707.50	23095	Mid	right	10 mm	LTE Band 12	A+B	90	0420M	10	QPSK	25	12	23.0	21.43	1	0.00	1:1	0.117	1.435	0.168	
707.50	23095	Mid	left	10 mm	LTE Band 12	A+B	117	0420M	10	QPSK	1	0	24.0	22.49	0	-0.02	1:1	0.086	1.416	0.122	
707.50	23095	Mid	left	10 mm	LTE Band 12	A+B	117	0420M	10	QPSK	25	12	23.0	21.43	1	0.02	1:1	0.065	1.435	0.093	
707.50	23095	Mid	back	10 mm	LTE Band 12	A	10	0420M	10	QPSK	1	0	24.0	22.49	0	-0.08	1:1	0.151	1.416	0.214	
707.50	23095	Mid	back	10 mm	LTE Band 12	A	10	0420M	10	QPSK	25	12	23.0	21.43	1	0.02	1:1	0.122	1.435	0.175	
707.50	23095	Mid	front	10 mm	LTE Band 12	A	10	0420M	10	QPSK	1	0	24.0	22.49	0	-0.06	1:1	0.063	1.416	0.089	
707.50	23095	Mid	front	10 mm	LTE Band 12	A	10	0420M	10	QPSK	25	12	23.0	21.43	1	0.02	1:1	0.049	1.435	0.070	
707.50	23095	Mid	bottom	10 mm	LTE Band 12	A	10	0420M	10	QPSK	1	0	24.0	22.49	0	0.09	1:1	0.055	1.416	0.078	
707.50	23095	Mid	bottom	10 mm	LTE Band 12	A	10	0420M	10	QPSK	25	12	23.0	21.43	1	0.05	1:1	0.046	1.435	0.066	
707.50	23095	Mid	right	10 mm	LTE Band 12	A	10	0420M	10	QPSK	1	0	24.0	22.49	0	0.00	1:1	0.188	1.416	0.266	A26
707.50	23095	Mid	right	10 mm	LTE Band 12	A	10	0420M	10	QPSK	25	12	23.0	21.43	1	-0.03	1:1	0.137	1.435	0.197	
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 11-23
LTE Band 13 Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Antenna Config.	Tune State	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
782.00	23230	Mid	back	10 mm	LTE Band 13	A+B	0	0420M	10	QPSK	1	49	24.0	22.96	0	0.02	1:1	0.190	1.271	0.241	
782.00	23230	Mid	back	10 mm	LTE Band 13	A+B	0	0420M	10	QPSK	25	25	23.0	21.97	1	0.01	1:1	0.152	1.268	0.193	
782.00	23230	Mid	front	10 mm	LTE Band 13	A+B	108	0420M	10	QPSK	1	49	24.0	22.96	0	0.04	1:1	0.101	1.271	0.128	
782.00	23230	Mid	front	10 mm	LTE Band 13	A+B	108	0420M	10	QPSK	25	25	23.0	21.97	1	-0.03	1:1	0.082	1.268	0.104	
782.00	23230	Mid	bottom	10 mm	LTE Band 13	A+B	0	0420M	10	QPSK	1	49	24.0	22.96	0	-0.07	1:1	0.053	1.271	0.067	
782.00	23230	Mid	bottom	10 mm	LTE Band 13	A+B	0	0420M	10	QPSK	25	25	23.0	21.97	1	0.09	1:1	0.040	1.268	0.051	
782.00	23230	Mid	right	10 mm	LTE Band 13	A+B	1	0420M	10	QPSK	1	49	24.0	22.96	0	0.09	1:1	0.202	1.271	0.257	
782.00	23230	Mid	right	10 mm	LTE Band 13	A+B	1	0420M	10	QPSK	25	25	23.0	21.97	1	0.00	1:1	0.163	1.268	0.207	
782.00	23230	Mid	left	10 mm	LTE Band 13	A+B	1	0420M	10	QPSK	1	49	24.0	22.96	0	-0.07	1:1	0.084	1.271	0.107	
782.00	23230	Mid	left	10 mm	LTE Band 13	A+B	1	0420M	10	QPSK	25	25	23.0	21.97	1	-0.01	1:1	0.069	1.268	0.087	
782.00	23230	Mid	back	10 mm	LTE Band 13	A	63	0420M	10	QPSK	1	49	24.0	22.96	0	0.07	1:1	0.219	1.271	0.278	A27
782.00	23230	Mid	back	10 mm	LTE Band 13	A	63	0420M	10	QPSK	25	25	23.0	21.97	1	0.00	1:1	0.170	1.268	0.216	
782.00	23230	Mid	front	10 mm	LTE Band 13	A	27	0420M	10	QPSK	1	49	24.0	22.96	0	-0.09	1:1	0.087	1.271	0.111	
782.00	23230	Mid	front	10 mm	LTE Band 13	A	27	0420M	10	QPSK	25	25	23.0	21.97	1	-0.01	1:1	0.067	1.268	0.085	
782.00	23230	Mid	bottom	10 mm	LTE Band 13	A	18	0420M	10	QPSK	1	49	24.0	22.96	0	0.05	1:1	0.092	1.271	0.117	
782.00	23230	Mid	bottom	10 mm	LTE Band 13	A	18	0420M	10	QPSK	25	25	23.0	21.97	1	0.00	1:1	0.074	1.268	0.094	
782.00	23230	Mid	right	10 mm	LTE Band 13	A	9	0420M	10	QPSK	1	49	24.0	22.96	0	0.03	1:1	0.207	1.271	0.263	
782.00	23230	Mid	right	10 mm	LTE Band 13	A	9	0420M	10	QPSK	25	25	23.0	21.97	1	0.01	1:1	0.167	1.268	0.212	
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 5 (Cell) Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Antenna Config.	Tune State	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
836.50	20525	Mid	back	10 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	1	25	24.0	22.92	0	-0.03	1:1	0.194	1.282	0.249	
836.50	20525	Mid	back	10 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	25	0	23.0	21.78	1	-0.04	1:1	0.158	1.324	0.209	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	1	25	24.0	22.92	0	-0.06	1:1	0.137	1.282	0.176	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	25	0	23.0	21.78	1	0.02	1:1	0.097	1.324	0.128	
836.50	20525	Mid	bottom	10 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	1	25	24.0	22.92	0	0.01	1:1	0.045	1.282	0.058	
836.50	20525	Mid	bottom	10 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	25	0	23.0	21.78	1	0.07	1:1	0.035	1.324	0.046	
836.50	20525	Mid	right	10 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	1	25	24.0	22.92	0	-0.03	1:1	0.250	1.282	0.321	A28
836.50	20525	Mid	right	10 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	25	0	23.0	21.78	1	-0.03	1:1	0.192	1.324	0.254	
836.50	20525	Mid	left	10 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	1	25	24.0	22.92	0	0.01	1:1	0.144	1.282	0.185	
836.50	20525	Mid	left	10 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	25	0	23.0	21.78	1	0.05	1:1	0.095	1.324	0.126	
836.50	20525	Mid	back	10 mm	LTE Band 5 (Cell)	A	63	0427M	10	QPSK	1	25	24.0	22.92	0	0.00	1:1	0.237	1.282	0.304	
836.50	20525	Mid	back	10 mm	LTE Band 5 (Cell)	A	63	0427M	10	QPSK	25	0	23.0	21.78	1	0.00	1:1	0.181	1.324	0.240	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	A	63	0427M	10	QPSK	1	25	24.0	22.92	0	-0.06	1:1	0.057	1.282	0.073	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	A	63	0427M	10	QPSK	25	0	23.0	21.78	1	-0.03	1:1	0.042	1.324	0.056	
836.50	20525	Mid	bottom	10 mm	LTE Band 5 (Cell)	A	54	0427M	10	QPSK	1	25	24.0	22.92	0	-0.05	1:1	0.066	1.282	0.085	
836.50	20525	Mid	bottom	10 mm	LTE Band 5 (Cell)	A	54	0427M	10	QPSK	25	0	23.0	21.78	1	-0.02	1:1	0.052	1.324	0.069	
836.50	20525	Mid	right	10 mm	LTE Band 5 (Cell)	A	63	0427M	10	QPSK	1	25	24.0	22.92	0	-0.04	1:1	0.133	1.282	0.171	
836.50	20525	Mid	right	10 mm	LTE Band 5 (Cell)	A	63	0427M	10	QPSK	25	0	23.0	21.78	1	-0.02	1:1	0.106	1.324	0.140	

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

Table 11-25
LTE Band 4 (AWS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Side	Spacing	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1732.50	20175	Mid	back	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	20.0	19.47	0	0.08	1:1	0.465	1.130	0.525	
1732.50	20175	Mid	back	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	20.0	19.47	0	0.04	1:1	0.468	1.130	0.529	
1732.50	20175	Mid	front	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	20.0	19.47	0	0.03	1:1	0.132	1.130	0.149	
1732.50	20175	Mid	front	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	20.0	19.47	0	0.05	1:1	0.130	1.130	0.147	
1732.50	20175	Mid	bottom	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	20.0	19.47	0	0.01	1:1	0.525	1.130	**0.593**	
1732.50	20175	Mid	bottom	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	20.0	19.47	0	-0.03	1:1	0.525	1.130	**0.593**	A29
1732.50	20175	Mid	right	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	20.0	19.47	0	-0.03	1:1	0.083	1.130	0.094	
1732.50	20175	Mid	right	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	20.0	19.47	0	-0.06	1:1	0.082	1.130	0.093	
1732.50	20175	Mid	left	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	20.0	19.47	0	0.00	1:1	0.066	1.130	0.075	
1732.50	20175	Mid	left	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	20.0	19.47	0	0.03	1:1	0.066	1.130	0.075	

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

Table 11-26
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																								
# CC Uplink, Power Class	Component Carrier	FREQUENCY		Side	Spacing	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	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	back	10 mm	LTE Band 41	B	0420M	20	QPSK	1	99	19.0	18.05	0	0.02	1:1.58	0.182	1.245	0.227	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	back	10 mm	LTE Band 41	B	0420M	20	QPSK	50	50	19.0	18.04	0	0.04	1:1.58	0.194	1.247	0.242	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	front	10 mm	LTE Band 41	B	0420M	20	QPSK	1	99	19.0	18.05	0	0.05	1:1.58	0.039	1.245	0.049	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	front	10 mm	LTE Band 41	B	0420M	20	QPSK	50	50	19.0	18.04	0	0.01	1:1.58	0.042	1.247	0.052	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	10 mm	LTE Band 41	B	0420M	20	QPSK	1	99	19.0	18.05	0	0.02	1:1.58	0.271	1.245	0.337	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	10 mm	LTE Band 41	B	0420M	20	QPSK	50	50	19.0	18.04	0	0.00	1:1.58	0.287	1.247	0.358	
2 CC Uplink - Power Class 3	PCC	2506.00	39750	Low	bottom	10 mm	LTE Band 41	B	0420M	20	QPSK	50	50	19.0	18.01	0	-0.03	1:1.58	0.294	1.256	0.369	A30
	SCC	2525.80	39948										0									
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	right	10 mm	LTE Band 41	B	0420M	20	QPSK	1	99	19.0	18.05	0	-0.09	1:1.58	0.049	1.245	0.061	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	right	10 mm	LTE Band 41	B	0420M	20	QPSK	50	50	19.0	18.04	0	-0.02	1:1.58	0.051	1.247	0.064	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	left	10 mm	LTE Band 41	B	0420M	20	QPSK	1	99	19.0	18.05	0	0.12	1:1.58	0.012	1.245	0.015	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	left	10 mm	LTE Band 41	B	0420M	20	QPSK	50	50	19.0	18.04	0	-0.01	1:1.58	0.014	1.247	0.017	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	back	10 mm	LTE Band 41	F	0068M	20	QPSK	1	99	21.0	20.06	0	-0.01	1:1.58	0.089	1.242	0.111	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	back	10 mm	LTE Band 41	F	0068M	20	QPSK	50	25	21.0	20.04	0	-0.04	1:1.58	0.088	1.247	0.110	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	front	10 mm	LTE Band 41	F	0068M	20	QPSK	1	99	21.0	20.06	0	0.12	1:1.58	0.035	1.242	0.043	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	front	10 mm	LTE Band 41	F	0068M	20	QPSK	50	25	21.0	20.04	0	0.11	1:1.58	0.034	1.247	0.042	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	top	10 mm	LTE Band 41	F	0068M	20	QPSK	1	99	21.0	20.06	0	-0.01	1:1.58	0.189	1.242	0.235	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	top	10 mm	LTE Band 41	F	0068M	20	QPSK	50	25	21.0	20.04	0	0.02	1:1.58	0.185	1.247	0.231	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	left	10 mm	LTE Band 41	F	0068M	20	QPSK	1	99	21.0	20.06	0	0.07	1:1.58	0.051	1.242	0.063	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	left	10 mm	LTE Band 41	F	0068M	20	QPSK	50	25	21.0	20.04	0	-0.03	1:1.58	0.053	1.247	0.066	

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

Table 11-27
DTS SISO WLAN Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	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	back	10 mm	802.11b	DSSS	2	0521M	22	1	19.0	18.94	-0.16	98.85	0.009	0.005	1.014	1.012	0.005	
2462	11	front	10 mm	802.11b	DSSS	2	0521M	22	1	19.0	18.94	-0.07	98.85	0.044	0.033	1.014	1.012	0.034	
2462	11	bottom	10 mm	802.11b	DSSS	2	0521M	22	1	19.0	18.94	-0.01	98.85	0.054	0.039	1.014	1.012	0.040	
2462	11	left	10 mm	802.11b	DSSS	2	0521M	22	1	19.0	18.94	-0.19	98.85	0.229	0.156	1.014	1.012	**0.160**	

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

Table 11-28
DTS MIMO WLAN Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	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]	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	back	10 mm	802.11b	DSSS	MIMO	0513M	22	1	19.0	18.72	19.0	18.94	0.04	98.85	0.082	0.069	1.067	1.012	0.075	
2462	11	front	10 mm	802.11b	DSSS	MIMO	0513M	22	1	19.0	18.72	19.0	18.94	0.11	98.85	0.609	0.496	1.067	1.012	0.536	A31
2462	11	top	10 mm	802.11b	DSSS	MIMO	0513M	22	1	19.0	18.72	19.0	18.94	-0.10	98.85	0.458	0.364	1.067	1.012	0.393	
2462	11	bottom	10 mm	802.11b	DSSS	MIMO	0513M	22	1	19.0	18.72	19.0	18.94	0.12	98.85	0.043	0.032	1.067	1.012	0.035	
2462	11	left	10 mm	802.11b	DSSS	MIMO	0513M	22	1	19.0	18.72	19.0	18.94	0.01	98.85	0.060	0.046	1.067	1.012	0.050	

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

Table 11-29
NII MIMO WLAN Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	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]	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)	
5825	165	back	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.45	18.0	17.83	0.15	97.92	0.049	0.034	1.135	1.021	0.039	
5825	165	front	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.45	18.0	17.83	0.16	97.92	0.265	0.189	1.135	1.021	0.219	
5825	165	top	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.45	18.0	17.83	0.04	97.92	0.320	0.230	1.135	1.021	**0.267**	A32
5825	165	bottom	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.45	18.0	17.83	-0.10	97.92	0.234	0.167	1.135	1.021	0.194	
5825	165	left	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.45	18.0	17.83	-0.13	97.92	0.089	0.061	1.135	1.021	0.071	
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 11-30
DSS Hotspot SAR

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)			(W/kg)	
2441	39	back	10 mm	Bluetooth	FHSS	1	0513M	1	19.5	18.77	-0.06	76.80	0.037	1.184	1.302	0.057	
2441	39	front	10 mm	Bluetooth	FHSS	1	0513M	1	19.5	18.77	-0.14	76.80	0.195	1.184	1.302	0.301	
2441	39	top	10 mm	Bluetooth	FHSS	1	0513M	1	19.5	18.77	-0.03	76.80	0.242	1.184	1.302	**0.373**	A33
2441	39	left	10 mm	Bluetooth	FHSS	1	0513M	1	19.5	18.77	0.10	76.80	0.058	1.184	1.302	0.089	
2441	39	back	10 mm	Bluetooth	FHSS	2	0513M	1	16.0	15.82	0.16	76.80	0.004	1.043	1.302	0.005	
2441	39	front	10 mm	Bluetooth	FHSS	2	0513M	1	16.0	15.82	0.08	76.80	0.021	1.043	1.302	0.029	
2441	39	bottom	10 mm	Bluetooth	FHSS	2	0513M	1	16.0	15.82	0.12	76.80	0.022	1.043	1.302	0.030	
2441	39	left	10 mm	Bluetooth	FHSS	2	0513M	1	16.0	15.82	-0.16	76.80	0.006	1.043	1.302	0.008	
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 Phablet SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	# of Time Slots	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1850.20	512	back	12 mm	GSM 1900	GPRS	B	1188M	3	27.5	26.42	-0.06	1:2.76	0.253	1.282	0.324	
1850.20	512	front	0 mm	GSM 1900	GPRS	B	1188M	3	27.5	26.42	-0.10	1:2.76	0.696	1.282	0.892	
1850.20	512	bottom	14 mm	GSM 1900	GPRS	B	1188M	3	27.5	26.42	-0.06	1:2.76	0.261	1.282	0.335	
1850.20	512	right	0 mm	GSM 1900	GPRS	B	1188M	3	27.5	26.42	-0.03	1:2.76	0.431	1.282	0.553	
1850.20	512	left	0 mm	GSM 1900	GPRS	B	1188M	3	27.5	26.42	0.16	1:2.76	0.138	1.282	0.177	
1880.00	661	back	0 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.85	0.12	1:2.076	0.980	1.303	1.277	
1850.20	512	bottom	0 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.80	-0.04	1:2.076	1.260	1.318	1.661	
1880.00	661	bottom	0 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.85	-0.02	1:2.076	1.520	1.303	**1.981**	A34
1909.80	810	bottom	0 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.84	-0.03	1:2.076	1.340	1.306	1.750	
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 11-32
LTE Band 4 (AWS) Phablet SAR

MEASUREMENT RESULTS																				
FREQUENCY			Side	Spacing	Mode	Antenna Config.	Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1732.50	20175	Mid	back	12 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	23.5	22.59	0	-0.05	1:1	0.427	1.233	0.526	
1732.50	20175	Mid	back	12 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	22.5	21.43	1	-0.01	1:1	0.329	1.279	0.421	
1732.50	20175	Mid	front	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	23.5	22.59	0	-0.01	1:1	0.810	1.233	0.999	
1732.50	20175	Mid	front	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	22.5	21.43	1	-0.01	1:1	0.636	1.279	0.813	
1732.50	20175	Mid	bottom	14 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	23.5	22.59	0	-0.01	1:1	0.376	1.233	0.464	
1732.50	20175	Mid	bottom	14 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	22.5	21.43	1	0.00	1:1	0.291	1.279	0.372	
1732.50	20175	Mid	right	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	23.5	22.59	0	-0.01	1:1	0.606	1.233	0.747	
1732.50	20175	Mid	right	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	22.5	21.43	1	0.02	1:1	0.478	1.279	0.611	
1732.50	20175	Mid	left	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	23.5	22.59	0	0.00	1:1	0.168	1.233	0.207	
1732.50	20175	Mid	left	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	22.5	21.43	1	0.00	1:1	0.130	1.279	0.166	
1732.50	20175	Mid	back	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	20.0	19.47	0	0.02	1:1	1.670	1.130	1.887	
1732.50	20175	Mid	back	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	20.0	19.47	0	-0.03	1:1	1.660	1.130	1.876	
1732.50	20175	Mid	back	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	100	0	20.0	19.38	0	0.00	1:1	1.620	1.153	1.868	
1732.50	20175	Mid	bottom	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	20.0	19.47	0	0.01	1:1	1.720	1.130	1.944	A35
1732.50	20175	Mid	bottom	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	20.0	19.47	0	0.02	1:1	1.700	1.130	1.921	
1732.50	20175	Mid	bottom	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	100	0	20.0	19.38	0	0.00	1:1	1.670	1.153	1.926	
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																							
# CC Uplink, Power Class	Component Carrier	FREQUENCY			Side	Spacing	Mode	Antenna Config.	Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	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	back	12 mm	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	-0.04	1:1.58	0.198	1.256	0.249	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	back	12 mm	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	-0.01	1:1.58	0.174	1.250	0.218	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	front	0 mm	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	0.05	1:1.58	0.266	1.256	0.334	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	front	0 mm	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	0.01	1:1.58	0.232	1.250	0.290	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	14 mm	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	0.07	1:1.58	0.255	1.256	0.320	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	14 mm	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	0.01	1:1.58	0.220	1.250	0.275	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	right	0 mm	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	0.00	1:1.58	0.399	1.256	0.501	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	right	0 mm	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	0.00	1:1.58	0.343	1.250	0.429	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	left	0 mm	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	-0.20	1:1.58	0.143	1.256	0.180	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	left	0 mm	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	0.01	1:1.58	0.131	1.250	0.164	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	back	0 mm	LTE Band 41	B	0420M	20	QPSK	1	99	19.0	18.05	0	0.07	1:1.58	1.100	1.245	1.370	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	back	0 mm	LTE Band 41	B	0420M	20	QPSK	50	50	19.0	18.04	0	-0.02	1:1.58	1.130	1.247	1.409	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	0 mm	LTE Band 41	B	0420M	20	QPSK	1	99	19.0	18.05	0	0.01	1:1.58	1.130	1.245	1.407	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	0 mm	LTE Band 41	B	0420M	20	QPSK	50	50	19.0	18.04	0	0.03	1:1.58	1.170	1.247	1.459	A36
2 CC Uplink - Power Class 3	PCC	2506.00	39750	Low	bottom	0 mm	LTE Band 41	B	0420M	20	QPSK	50	50	19.0	18.01	0	0.10	1:1.58	1.150	1.256	1.444	
	SCC	2525.80	39948					B					0									

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

Table 11-34
WLAN MIMO Phablet SAR

MEASUREMENT RESULTS																						
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	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]	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)	
5320	64	back	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.34	18.0	17.94	-0.12	97.92	0.122	0.024	1.164	1.021	0.029	
5320	64	front	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.34	18.0	17.94	0.02	97.92	7.070	1.010	1.164	1.021	1.200	
5320	64	top	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.34	18.0	17.94	-0.01	97.92	6.700	1.140	1.164	1.021	1.355	
5320	64	bottom	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.34	18.0	17.94	0.05	97.92	6.400	0.673	1.164	1.021	0.800	
5320	64	left	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.34	18.0	17.94	-0.07	97.92	0.493	0.106	1.164	1.021	0.126	
5720	144	back	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.32	18.0	17.82	-0.02	97.92	0.415	0.064	1.169	1.021	0.076	
5720	144	front	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.32	18.0	17.82	0.00	97.92	4.500	1.160	1.169	1.021	1.385	
5720	144	top	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.32	18.0	17.82	-0.02	97.92	5.970	1.220	1.169	1.021	1.456	
5720	144	bottom	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.32	18.0	17.82	-0.02	97.92	9.470	1.090	1.169	1.021	1.301	
5720	144	left	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.32	18.0	17.82	0.10	97.92	0.680	0.098	1.169	1.021	0.117	
5845	169	back	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.43	18.0	17.96	-0.12	97.92	0.197	0.039	1.140	1.021	0.045	
5845	169	front	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.43	18.0	17.96	0.12	97.92	7.200	1.150	1.140	1.021	1.339	
5845	169	top	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.43	18.0	17.96	0.10	97.92	7.610	1.380	1.140	1.021	1.606	
5865	173	top	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.12	18.0	17.12	0.04	97.92	9.220	1.470	1.225	1.021	**1.839**	A37
5885	177	top	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.11	18.0	17.34	-0.06	97.92	9.740	1.430	1.227	1.021	1.791	
5845	169	bottom	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.43	18.0	17.96	-0.01	97.92	8.530	1.100	1.140	1.021	1.280	
5845	169	left	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.43	18.0	17.96	0.03	97.92	0.656	0.119	1.140	1.021	0.139	

ANSI / IEEE C95.1 1992 - SAFETY LIMIT	Phablet
Spatial Peak	4.0 W/kg (mW/g)
Uncontrolled Exposure/General Population	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.

Table 11-35
NFC Phablet SAR

MEASUREMENT RESULTS									
FREQUENCY MHz	Side	Spacing	Mode	Type	Antenna Config.	Device Serial Number	Power Drift	SAR (10g) (W/kg)	Plot #
13.56	back	0 mm	NFC	B	NFC	0497M	0.04	**0.009**	A38
13.56	front	0 mm	NFC	B	NFC	0497M	0.17	0.000	
13.56	right	0 mm	NFC	B	NFC	0497M	0.10	0.000	
13.56	left	0 mm	NFC	B	NFC	0497M	-0.12	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**						**Phablet** **4.0 W/kg (mW/g)** averaged over 10 grams			

11.1 Standalone UMPC Body SAR Data

Table 11-36
GPRS UMPC Body SAR

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	# of Time Slots	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
824.20	128	back	10 mm	GSM 850	GPRS	A+B	0429M	3	30.5	29.87	-0.03	1:2.76	0.228	1.156	0.264	
824.20	128	front	10 mm	GSM 850	GPRS	A+B	0429M	3	30.5	29.87	0.00	1:2.76	0.238	1.156	0.275	A39
824.20	128	bottom	10 mm	GSM 850	GPRS	A+B	0429M	3	30.5	29.87	0.01	1:2.76	0.237	1.156	0.274	
824.20	128	right	10 mm	GSM 850	GPRS	A+B	0429M	3	30.5	29.87	0.04	1:2.76	0.120	1.156	0.139	
1850.20	512	back	14 mm	GSM 1900	GPRS	B	1188M	3	27.5	26.42	0.20	1:2.76	0.250	1.282	0.321	
1850.20	512	front	12 mm	GSM 1900	GPRS	B	1188M	3	27.5	26.42	0.05	1:2.76	0.272	1.282	0.349	
1850.20	512	bottom	18 mm	GSM 1900	GPRS	B	1188M	3	27.5	26.42	0.02	1:2.76	0.335	1.282	0.429	
1850.20	512	right	10 mm	GSM 1900	GPRS	B	1188M	3	27.5	26.42	0.09	1:2.76	0.158	1.282	0.203	
1880.00	661	back	10 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.85	0.01	1:2.076	0.192	1.303	0.250	
1880.00	661	front	10 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.85	-0.11	1:2.076	0.194	1.303	0.253	
1880.00	661	bottom	10 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.85	0.01	1:2.076	0.421	1.303	**0.549**	A40

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

Table 11-37
UMTS UMPC Body SAR

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Tune State	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
826.40	4132	back	10 mm	UMTS 850	RMC	A+B	0	0427M	24.0	23.25	-0.01	1:1	0.253	1.189	0.301	
826.40	4132	front	10 mm	UMTS 850	RMC	A+B	0	0427M	24.0	23.25	0.01	1:1	0.266	1.189	0.316	A41
826.40	4132	bottom	10 mm	UMTS 850	RMC	A+B	108	0427M	24.0	23.25	-0.03	1:1	0.217	1.189	0.258	
826.40	4132	right	10 mm	UMTS 850	RMC	A+B	108	0427M	24.0	23.25	0.02	1:1	0.191	1.189	0.227	

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

Table 11-38
LTE Band 12 UMPC Body SAR

MEASUREMENT RESULTS																						
FREQUENCY			Side	Spacing	Mode	Antenna Config.	Tune State	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
707.50	23095	Mid	back	10 mm	LTE Band 12	A+B	0	0420M	10	QPSK	1	0	24.0	22.49	0	0.02	1:1	0.212	1.416	0.300	A42
707.50	23095	Mid	back	10 mm	LTE Band 12	A+B	0	0420M	10	QPSK	25	12	23.0	21.43	1	-0.01	1:1	0.167	1.435	0.240	
707.50	23095	Mid	front	10 mm	LTE Band 12	A+B	0	0420M	10	QPSK	1	0	24.0	22.49	0	0.10	1:1	0.208	1.416	0.295	
707.50	23095	Mid	front	10 mm	LTE Band 12	A+B	0	0420M	10	QPSK	25	12	23.0	21.43	1	0.00	1:1	0.160	1.435	0.230	
707.50	23095	Mid	bottom	10 mm	LTE Band 12	A+B	0	0420M	10	QPSK	1	0	24.0	22.49	0	-0.08	1:1	0.154	1.416	0.218	
707.50	23095	Mid	bottom	10 mm	LTE Band 12	A+B	0	0420M	10	QPSK	25	12	23.0	21.43	1	0.06	1:1	0.125	1.435	0.179	
707.50	23095	Mid	right	10 mm	LTE Band 12	A+B	0	0420M	10	QPSK	1	0	24.0	22.49	0	0.11	1:1	0.150	1.416	0.212	
707.50	23095	Mid	right	10 mm	LTE Band 12	A+B	0	0420M	10	QPSK	25	12	23.0	21.43	1	0.03	1:1	0.110	1.435	0.158	

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

Table 11-39
LTE Band 13 UMPC Body SAR

MEASUREMENT RESULTS																						
FREQUENCY			Side	Spacing	Mode	Antenna Config.	Tune State	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
782.00	23230	Mid	back	10 mm	LTE Band 13	A+B	1	0420M	10	QPSK	1	49	24.0	22.96	0	-0.04	1:1	0.252	1.271	0.320	
782.00	23230	Mid	back	10 mm	LTE Band 13	A+B	1	0420M	10	QPSK	25	25	23.0	21.97	1	-0.02	1:1	0.197	1.268	0.250	
782.00	23230	Mid	front	10 mm	LTE Band 13	A+B	1	0420M	10	QPSK	1	49	24.0	22.96	0	-0.01	1:1	0.271	1.271	0.344	A43
782.00	23230	Mid	front	10 mm	LTE Band 13	A+B	1	0420M	10	QPSK	25	25	23.0	21.97	1	-0.01	1:1	0.208	1.268	0.264	
782.00	23230	Mid	bottom	10 mm	LTE Band 13	A+B	0	0420M	10	QPSK	1	49	24.0	22.96	0	-0.09	1:1	0.146	1.271	0.186	
782.00	23230	Mid	bottom	10 mm	LTE Band 13	A+B	0	0420M	10	QPSK	25	25	23.0	21.97	1	0.04	1:1	0.114	1.268	0.145	
782.00	23230	Mid	right	10 mm	LTE Band 13	A+B	0	0420M	10	QPSK	1	49	24.0	22.96	0	-0.01	1:1	0.163	1.271	0.207	
782.00	23230	Mid	right	10 mm	LTE Band 13	A+B	0	0420M	10	QPSK	25	25	23.0	21.97	1	0.01	1:1	0.128	1.268	0.162	

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

Table 11-40
LTE Band 5 (Cell) UMPC Body SAR

MEASUREMENT RESULTS																						
FREQUENCY			Side	Spacing	Mode	Antenna Config.	Tune State	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
836.50	20525	Mid	back	10 mm	LTE Band 5 (Cell)	A+B	0	0427M	10	QPSK	1	25	24.0	22.92	0	0.01	1:1	0.265	1.282	0.340	
836.50	20525	Mid	back	10 mm	LTE Band 5 (Cell)	A+B	0	0427M	10	QPSK	25	0	23.0	21.78	1	0.00	1:1	0.197	1.324	0.261	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	A+B	0	0427M	10	QPSK	1	25	24.0	22.92	0	-0.02	1:1	0.267	1.282	0.342	A44
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	A+B	0	0427M	10	QPSK	25	0	23.0	21.78	1	-0.01	1:1	0.200	1.324	0.265	
836.50	20525	Mid	bottom	10 mm	LTE Band 5 (Cell)	A+B	0	0427M	10	QPSK	1	25	24.0	22.92	0	0.09	1:1	0.177	1.282	0.227	
836.50	20525	Mid	bottom	10 mm	LTE Band 5 (Cell)	A+B	0	0427M	10	QPSK	25	0	23.0	21.78	1	-0.01	1:1	0.142	1.324	0.188	
836.50	20525	Mid	right	10 mm	LTE Band 5 (Cell)	A+B	0	0427M	10	QPSK	1	25	24.0	22.92	0	0.02	1:1	0.157	1.282	0.201	
836.50	20525	Mid	right	10 mm	LTE Band 5 (Cell)	A+B	0	0427M	10	QPSK	25	0	23.0	21.78	1	0.06	1:1	0.121	1.324	0.160	

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

Table 11-41
LTE Band 4 (AWS) UMPC Body SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1732.50	20175	Mid	back	14 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	23.5	22.59	0	0.01	1:1	0.289	1.233	0.356	
1732.50	20175	Mid	back	14 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	22.5	21.43	1	0.01	1:1	0.221	1.279	0.283	
1732.50	20175	Mid	front	12 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	23.5	22.59	0	0.04	1:1	0.333	1.233	0.411	
1732.50	20175	Mid	front	12 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	22.5	21.43	1	0.02	1:1	0.256	1.279	0.327	
1732.50	20175	Mid	bottom	18 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	23.5	22.59	0	-0.02	1:1	0.329	1.233	0.406	
1732.50	20175	Mid	bottom	18 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	22.5	21.43	1	0.02	1:1	0.257	1.279	0.329	
1732.50	20175	Mid	right	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	23.5	22.59	0	-0.03	1:1	0.265	1.233	0.327	
1732.50	20175	Mid	right	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	22.5	21.43	1	-0.03	1:1	0.212	1.279	0.271	
1732.50	20175	Mid	back	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	20.0	19.47	0	-0.01	1:1	0.194	1.130	0.219	
1732.50	20175	Mid	back	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	20.0	19.47	0	0.00	1:1	0.191	1.130	0.216	
1732.50	20175	Mid	front	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	20.0	19.47	0	-0.01	1:1	0.201	1.130	0.227	
1732.50	20175	Mid	front	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	20.0	19.47	0	-0.01	1:1	0.198	1.130	0.224	
1732.50	20175	Mid	bottom	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	20.0	19.47	0	-0.01	1:1	0.414	1.130	0.468	A45
1732.50	20175	Mid	bottom	10 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	20.0	19.47	0	0.01	1:1	0.411	1.130	0.464	

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

Table 11-42
LTE Band 41 UMPC Body SAR

MEASUREMENT RESULTS																						
# CC Uplink, Power Class	Component Carrier	FREQUENCY			Side	Spacing	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	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	back	14 mm	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	0.00	1:1.58	0.311	1.256	0.391	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	back	14 mm	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	-0.03	1:1.58	0.256	1.250	0.320	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	front	12 mm	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	0.02	1:1.58	0.312	1.256	0.392	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	front	12 mm	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	0.03	1:1.58	0.260	1.250	0.325	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	18 mm	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	-0.01	1:1.58	0.368	1.256	0.462	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	18 mm	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	0.01	1:1.58	0.320	1.250	0.400	
2 CC Uplink - Power Class 3	PCC	2506.00	39750	Low	bottom	18 mm	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.17	0	0.00	1:1.58	0.397	1.211	0.481	A46
	SCC	2525.80	39948										0									
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	right	10 mm	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	-0.01	1:1.58	0.132	1.256	0.166	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	right	10 mm	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	0.01	1:1.58	0.108	1.250	0.135	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	back	10 mm	LTE Band 41	B	0420M	20	QPSK	1	99	19.0	18.05	0	-0.02	1:1.58	0.153	1.245	0.190	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	back	10 mm	LTE Band 41	B	0420M	20	QPSK	50	50	19.0	18.04	0	0.00	1:1.58	0.156	1.247	0.195	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	front	10 mm	LTE Band 41	B	0420M	20	QPSK	1	99	19.0	18.05	0	-0.01	1:1.58	0.150	1.245	0.187	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	front	10 mm	LTE Band 41	B	0420M	20	QPSK	50	50	19.0	18.04	0	0.04	1:1.58	0.156	1.247	0.195	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	10 mm	LTE Band 41	B	0420M	20	QPSK	1	99	19.0	18.05	0	0.01	1:1.58	0.323	1.245	0.402	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	10 mm	LTE Band 41	B	0420M	20	QPSK	50	50	19.0	18.04	0	-0.02	1:1.58	0.339	1.247	0.423	

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

Table 11-43
DTS SISO WLAN UMPC Body SAR

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	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	back	10 mm	802.11b	DSSS	2	0521M	22	1	19.0	18.94	-0.08	98.85	0.150	0.114	1.014	1.012	0.117	
2462	11	front	10 mm	802.11b	DSSS	2	0521M	22	1	19.0	18.94	-0.02	98.85	0.120	0.100	1.014	1.012	0.103	
2462	11	bottom	10 mm	802.11b	DSSS	2	0521M	22	1	19.0	18.94	-0.10	98.85	0.260	0.200	1.014	1.012	**0.205**	
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 11-44
DTS MIMO WLAN UMPC Body SAR

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	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]	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	back	10 mm	802.11b	DSSS	MIMO	0521M	22	1	19.0	18.72	19.0	18.94	0.11	98.85	0.509	0.384	1.067	1.012	0.415	
2462	11	front	10 mm	802.11b	DSSS	MIMO	0521M	22	1	19.0	18.72	19.0	18.94	0.06	98.85	0.379	0.309	1.067	1.012	0.334	
2462	11	top	10 mm	802.11b	DSSS	MIMO	0521M	22	1	19.0	18.72	19.0	18.94	-0.01	98.85	0.538	0.409	1.067	1.012	0.442	A47
2462	11	bottom	10 mm	802.11b	DSSS	MIMO	0521M	22	1	19.0	18.72	19.0	18.94	-0.13	98.85	0.354	0.273	1.067	1.012	0.295	
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: 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.

Table 11-45
NII MIMO WLAN UMPC Body SAR

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	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]	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)	
5320	64	back	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.34	18.0	17.94	-0.08	97.92	0.196	0.129	1.164	1.021	0.153	
5320	64	front	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.34	18.0	17.94	0.07	97.92	0.220	0.152	1.164	1.021	0.181	
5320	64	top	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.34	18.0	17.94	-0.07	97.92	0.362	0.256	1.164	1.021	0.304	
5320	64	bottom	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.34	18.0	17.94	0.14	97.92	0.127	0.086	1.164	1.021	0.102	
5720	144	back	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.32	18.0	17.82	-0.16	97.92	0.259	0.196	1.169	1.021	0.234	
5720	144	front	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.32	18.0	17.82	0.06	97.92	0.279	0.214	1.169	1.021	0.255	
5720	144	top	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.32	18.0	17.82	0.04	97.92	0.338	0.244	1.169	1.021	0.291	
5720	144	bottom	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.32	18.0	17.82	0.20	97.92	0.223	0.154	1.169	1.021	0.184	
5825	165	back	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.45	18.0	17.83	-0.07	97.92	0.242	0.150	1.135	1.021	0.174	
5825	165	front	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.45	18.0	17.83	-0.11	97.92	0.248	0.202	1.135	1.021	0.234	
5825	165	top	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.45	18.0	17.83	-0.03	97.92	0.387	0.293	1.135	1.021	0.340	
5825	165	bottom	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.45	18.0	17.83	0.12	97.92	0.221	0.165	1.135	1.021	0.191	
5845	169	back	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.43	18.0	17.96	0.14	97.92	0.186	0.130	1.140	1.021	0.151	
5845	169	front	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.43	18.0	17.96	-0.04	97.92	0.243	0.181	1.140	1.021	0.211	
5845	169	top	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.43	18.0	17.96	0.00	97.92	0.390	0.295	1.140	1.021	**0.343**	A48
5845	169	bottom	10 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.43	18.0	17.96	0.13	97.92	0.209	0.150	1.140	1.021	0.175	
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: 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 11-46
DSS UMPC Body SAR

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)			(W/kg)	
2441	39	back	10 mm	Bluetooth	FHSS	1	0513M	1	19.5	18.77	-0.02	76.80	0.240	1.184	1.302	0.370	
2441	39	front	10 mm	Bluetooth	FHSS	1	0513M	1	19.5	18.77	0.00	76.80	0.189	1.184	1.302	0.291	
2441	39	top	10 mm	Bluetooth	FHSS	1	0513M	1	19.5	18.77	-0.01	76.80	0.289	1.184	1.302	**0.446**	A49
2441	39	back	10 mm	Bluetooth	FHSS	2	0513M	1	16.0	15.82	-0.11	76.80	0.044	1.043	1.302	0.060	
2441	39	front	10 mm	Bluetooth	FHSS	2	0513M	1	16.0	15.82	-0.14	76.80	0.038	1.043	1.302	0.052	
2441	39	bottom	10 mm	Bluetooth	FHSS	2	0513M	1	16.0	15.82	0.00	76.80	0.091	1.043	1.302	0.124	
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 11-47
DSS UMPC Body SAR during Conditions with 5/6 GHz WLAN

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)			(W/kg)	
2441	39	back	10 mm	Bluetooth	FHSS	1	0521M	1	15.0	14.80	0.05	76.80	0.146	1.047	1.302	0.199	
2441	39	front	10 mm	Bluetooth	FHSS	1	0521M	1	15.0	14.80	0.01	76.80	0.101	1.047	1.302	0.138	
2441	39	top	10 mm	Bluetooth	FHSS	1	0521M	1	15.0	14.80	0.01	76.80	0.194	1.047	1.302	0.264	
2441	39	back	10 mm	Bluetooth	FHSS	2	0521M	1	13.0	12.72	0.08	76.80	0.036	1.067	1.302	0.050	
2441	39	front	10 mm	Bluetooth	FHSS	2	0521M	1	13.0	12.72	-0.10	76.80	0.025	1.067	1.302	0.035	
2441	39	bottom	10 mm	Bluetooth	FHSS	2	0521M	1	13.0	12.72	0.05	76.80	0.058	1.067	1.302	0.081	
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								

11.1 Standalone UMPC Extremity SAR Data

Table 11-48
GPRS UMPC Extremity SAR

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	# of Time Slots	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
824.20	128	back	0 mm	GSM 850	GPRS	A+B	0427M	3	30.5	29.87	0.00	1:2.76	1.350	1.156	1.561	
836.60	190	back	0 mm	GSM 850	GPRS	A+B	0427M	3	30.5	29.50	-0.07	1:2.76	1.580	1.259	1.989	A50
848.80	251	back	0 mm	GSM 850	GPRS	A+B	0427M	3	30.5	29.38	-0.01	1:2.76	1.310	1.294	1.695	
824.20	128	front	0 mm	GSM 850	GPRS	A+B	0427M	3	30.5	29.87	-0.07	1:2.76	1.220	1.156	1.410	
824.20	128	bottom	0 mm	GSM 850	GPRS	A+B	0427M	3	30.5	29.87	-0.03	1:2.76	1.210	1.156	1.399	
824.20	128	right	0 mm	GSM 850	GPRS	A+B	0427M	3	30.5	29.87	0.00	1:2.76	0.877	1.156	1.014	
1850.20	512	back	14 mm	GSM 1900	GPRS	B	1188M	3	27.5	26.42	0.20	1:2.76	0.147	1.282	0.188	
1850.20	512	front	12 mm	GSM 1900	GPRS	B	1188M	3	27.5	26.42	0.05	1:2.76	0.155	1.282	0.199	
1850.20	512	bottom	18 mm	GSM 1900	GPRS	B	1188M	3	27.5	26.42	0.02	1:2.76	0.195	1.282	0.250	
1850.20	512	right	0 mm	GSM 1900	GPRS	B	1188M	3	27.5	26.42	-0.10	1:2.76	0.515	1.282	0.660	
1880.00	661	back	0 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.85	0.18	1:2.076	0.676	1.303	0.881	
1880.00	661	front	0 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.85	0.10	1:2.076	0.697	1.303	0.908	
1850.20	512	bottom	0 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.80	0.00	1:2.076	1.690	1.318	2.227	
1880.00	661	bottom	0 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.85	0.02	1:2.076	1.720	1.303	2.241	
1909.80	810	bottom	0 mm	GSM 1900	GPRS	B	1188M	4	22.0	20.84	-0.03	1:2.076	1.830	1.306	2.390	A51
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 11-49
UMTS UMPC Extremity SAR

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Tune State	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
826.40	4132	back	0 mm	UMTS 850	RMC	A+B	0	0427M	24.0	23.25	0.01	1:1	0.886	1.189	1.053	A52
826.40	4132	front	0 mm	UMTS 850	RMC	A+B	0	0427M	24.0	23.25	0.03	1:1	0.721	1.189	0.857	
826.40	4132	bottom	0 mm	UMTS 850	RMC	A+B	108	0427M	24.0	23.25	-0.02	1:1	0.839	1.189	0.998	
826.40	4132	right	0 mm	UMTS 850	RMC	A+B	108	0427M	24.0	23.25	-0.03	1:1	0.876	1.189	1.042	
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 11-50
LTE Band 12 UMPC Extremity SAR

MEASUREMENT RESULTS																				
FREQUENCY			Side	Spacing	Mode	Antenna Config.	Tune State	Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
707.50	23095	Mid	back	0 mm	LTE Band 12	A+B	0	0420M	10	QPSK	1	0	24.0	22.49	0	0.11	1:1	0.458	1.416	0.649	
707.50	23095	Mid	back	0 mm	LTE Band 12	A+B	0	0420M	10	QPSK	25	12	23.0	21.43	1	0.00	1:1	0.362	1.435	0.519	
707.50	23095	Mid	front	0 mm	LTE Band 12	A+B	10	0420M	10	QPSK	1	0	24.0	22.49	0	0.01	1:1	0.561	1.416	0.794	
707.50	23095	Mid	front	0 mm	LTE Band 12	A+B	10	0420M	10	QPSK	25	12	23.0	21.43	1	0.01	1:1	0.443	1.435	0.636	
707.50	23095	Mid	bottom	0 mm	LTE Band 12	A+B	0	0420M	10	QPSK	1	0	24.0	22.49	0	0.09	1:1	0.522	1.416	0.739	
707.50	23095	Mid	bottom	0 mm	LTE Band 12	A+B	0	0420M	10	QPSK	25	12	23.0	21.43	1	0.00	1:1	0.430	1.435	0.617	
707.50	23095	Mid	right	0 mm	LTE Band 12	A+B	72	0420M	10	QPSK	1	0	24.0	22.49	0	-0.07	1:1	0.935	1.416	1.324	A53
707.50	23095	Mid	right	0 mm	LTE Band 12	A+B	72	0420M	10	QPSK	25	12	23.0	21.43	1	-0.03	1:1	0.650	1.435	0.933	
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 11-51
LTE Band 13 UMPC Extremity SAR

MEASUREMENT RESULTS																				
FREQUENCY			Side	Spacing	Mode	Antenna Config.	Tune State	Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
782.00	23230	Mid	back	0 mm	LTE Band 13	A+B	108	0427M	10	QPSK	1	49	24.0	22.96	0	0.11	1:1	0.886	1.271	1.126	A54
782.00	23230	Mid	back	0 mm	LTE Band 13	A+B	108	0427M	10	QPSK	25	25	23.0	21.97	1	-0.01	1:1	0.710	1.268	0.900	
782.00	23230	Mid	front	0 mm	LTE Band 13	A+B	108	0427M	10	QPSK	1	49	24.0	22.96	0	0.09	1:1	0.710	1.271	0.902	
782.00	23230	Mid	front	0 mm	LTE Band 13	A+B	108	0427M	10	QPSK	25	25	23.0	21.97	1	-0.03	1:1	0.566	1.268	0.718	
782.00	23230	Mid	bottom	0 mm	LTE Band 13	A+B	108	0427M	10	QPSK	1	49	24.0	22.96	0	0.08	1:1	0.808	1.271	1.027	
782.00	23230	Mid	bottom	0 mm	LTE Band 13	A+B	108	0427M	10	QPSK	25	25	23.0	21.97	1	0.01	1:1	0.619	1.268	0.785	
782.00	23230	Mid	right	0 mm	LTE Band 13	A+B	108	0427M	10	QPSK	1	49	24.0	22.96	0	-0.18	1:1	0.772	1.271	0.981	
782.00	23230	Mid	right	0 mm	LTE Band 13	A+B	108	0427M	10	QPSK	25	25	23.0	21.97	1	0.03	1:1	0.596	1.268	0.756	
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
LTE Band 5 (Cell) UMPC Extremity SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Antenna Config.	Tune State	Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
836.50	20525	Mid	back	0 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	1	25	24.0	22.92	0	-0.04	1:1	0.927	1.282	1.188	A55
836.50	20525	Mid	back	0 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	25	0	23.0	21.78	1	-0.09	1:1	0.725	1.324	0.960	
836.50	20525	Mid	front	0 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	1	25	24.0	22.92	0	-0.01	1:1	0.711	1.282	0.912	
836.50	20525	Mid	front	0 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	25	0	23.0	21.78	1	-0.03	1:1	0.550	1.324	0.728	
836.50	20525	Mid	bottom	0 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	1	25	24.0	22.92	0	-0.05	1:1	0.900	1.282	1.154	
836.50	20525	Mid	bottom	0 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	25	0	23.0	21.78	1	-0.02	1:1	0.703	1.324	0.931	
836.50	20525	Mid	right	0 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	1	25	24.0	22.92	0	-0.03	1:1	0.922	1.282	1.182	
836.50	20525	Mid	right	0 mm	LTE Band 5 (Cell)	A+B	108	0427M	10	QPSK	25	0	23.0	21.78	1	-0.01	1:1	0.714	1.324	0.945	

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 11-53
LTE Band 4 (AWS) UMPC Extremity SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Antenna Config.	Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1732.50	20175	Mid	back	14 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	23.5	22.59	0	0.01	1:1	0.170	1.233	0.210	
1732.50	20175	Mid	back	14 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	22.5	21.43	1	0.01	1:1	0.130	1.279	0.166	
1732.50	20175	Mid	front	12 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	23.5	22.59	0	0.04	1:1	0.184	1.233	0.227	
1732.50	20175	Mid	front	12 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	22.5	21.43	1	0.02	1:1	0.142	1.279	0.182	
1732.50	20175	Mid	bottom	18 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	23.5	22.59	0	-0.02	1:1	0.189	1.233	0.233	
1732.50	20175	Mid	bottom	18 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	22.5	21.43	1	0.02	1:1	0.147	1.279	0.188	
1732.50	20175	Mid	right	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	23.5	22.59	0	-0.02	1:1	0.823	1.233	1.015	
1732.50	20175	Mid	right	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	22.5	21.43	1	-0.01	1:1	0.655	1.279	0.838	
1732.50	20175	Mid	back	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	20.0	19.47	0	0.00	1:1	0.862	1.130	0.974	
1732.50	20175	Mid	back	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	20.0	19.47	0	0.01	1:1	0.852	1.130	0.963	
1732.50	20175	Mid	front	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	20.0	19.47	0	0.00	1:1	1.070	1.130	1.209	
1732.50	20175	Mid	front	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	20.0	19.47	0	0.00	1:1	1.080	1.130	1.220	
1732.50	20175	Mid	bottom	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	1	50	20.0	19.47	0	0.01	1:1	2.120	1.130	**2.396**	
1732.50	20175	Mid	bottom	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	20.0	19.47	0	0.01	1:1	2.120	1.130	**2.396**	A56
1732.50	20175	Mid	bottom	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	100	0	20.0	19.38	0	0.00	1:1	2.070	1.153	2.387	
1732.50	20175	Mid	bottom	0 mm	LTE Band 4 (AWS)	B	0427M	20	QPSK	50	25	20.0	19.47	0	0.01	1:1	2.120	1.130	**2.396**	

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

Note: Blue entry represents variability measurement.

Table 11-54
LTE Band 41 UMPC Extremity SAR

MEASUREMENT RESULTS																							
# CC Uplink, Power Class	Component Carrier	FREQUENCY			Side	Spacing	Mode	Antenna Config.	Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	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	back	14 mm	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	0.00	1:1.58	0.159	1.256	0.200	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	back	14 mm	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	-0.03	1:1.58	0.133	1.250	0.166	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	front	12 mm	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	0.02	1:1.58	0.155	1.256	0.195	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	front	12 mm	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	0.03	1:1.58	0.129	1.250	0.161	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	18 mm	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	-0.01	1:1.58	0.194	1.256	0.244	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	18 mm	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	0.01	1:1.58	0.168	1.250	0.210	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	right	0 mm	LTE Band 41	B	0420M	20	QPSK	1	99	24.0	23.01	0	-0.03	1:1.58	0.370	1.256	0.465	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	right	0 mm	LTE Band 41	B	0420M	20	QPSK	50	25	23.0	22.03	1	-0.01	1:1.58	0.303	1.250	0.379	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	back	0 mm	LTE Band 41	B	0420M	20	QPSK	1	99	19.0	18.05	0	0.02	1:1.58	0.756	1.245	0.941	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	back	0 mm	LTE Band 41	B	0420M	20	QPSK	50	50	19.0	18.04	0	0.00	1:1.58	0.757	1.247	0.944	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	front	0 mm	LTE Band 41	B	0420M	20	QPSK	1	99	19.0	18.05	0	0.02	1:1.58	0.589	1.245	0.733	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	front	0 mm	LTE Band 41	B	0420M	20	QPSK	50	50	19.0	18.04	0	0.02	1:1.58	0.618	1.247	0.771	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	0 mm	LTE Band 41	B	0420M	20	QPSK	1	99	19.0	18.05	0	0.01	1:1.58	1.490	1.245	1.855	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	bottom	0 mm	LTE Band 41	B	0420M	20	QPSK	1	0	19.0	17.84	0	-0.01	1:1.58	1.480	1.306	1.933	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	bottom	0 mm	LTE Band 41	B	0420M	20	QPSK	1	50	19.0	17.64	0	-0.06	1:1.58	1.450	1.368	1.984	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	bottom	0 mm	LTE Band 41	B	0420M	20	QPSK	1	50	19.0	17.64	0	-0.02	1:1.58	1.430	1.368	1.956	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	bottom	0 mm	LTE Band 41	B	0420M	20	QPSK	1	0	19.0	17.14	0	-0.01	1:1.58	1.430	1.535	2.195	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	bottom	0 mm	LTE Band 41	B	0420M	20	QPSK	1	50	19.0	17.62	0	0.01	1:1.58	1.530	1.374	2.102	A57
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	0 mm	LTE Band 41	B	0420M	20	QPSK	50	50	19.0	18.04	0	0.01	1:1.58	1.500	1.247	1.871	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	bottom	0 mm	LTE Band 41	B	0420M	20	QPSK	50	25	19.0	17.83	0	0.02	1:1.58	1.410	1.309	1.846	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	bottom	0 mm	LTE Band 41	B	0420M	20	QPSK	50	25	19.0	17.72	0	-0.03	1:1.58	1.410	1.343	1.894	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	bottom	0 mm	LTE Band 41	B	0420M	20	QPSK	50	25	19.0	17.61	0	0.01	1:1.58	1.370	1.377	1.886	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	bottom	0 mm	LTE Band 41	B	0420M	20	QPSK	50	25	19.0	17.64	0	-0.01	1:1.58	1.530	1.368	2.093	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	0 mm	LTE Band 41	B	0420M	20	QPSK	100	0	19.0	17.95	0	0.01	1:1.58	1.440	1.274	1.835	
2 CC Uplink - Power Class 3	PCC	2680.00	41490	High	bottom	0 mm	LTE Band 41	B	0420M	20	QPSK	1	0	19.0	17.25	0	0.00	1:1.58	1.440	1.496	2.154	
	SCC	2660.20	41292					B					99									

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 11-55
DTS SISO WLAN UMPC Extremity SAR

MEASUREMENT RESULTS																			
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	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	back	0 mm	802.11b	DSSS	2	0521M	22	1	19.0	18.94	-0.02	98.85	2.390	0.616	1.014	1.012	**0.632**	
2462	11	front	0 mm	802.11b	DSSS	2	0521M	22	1	19.0	18.94	-0.02	98.85	1.720	0.543	1.014	1.012	0.557	
2462	11	bottom	0 mm	802.11b	DSSS	2	0521M	22	1	19.0	18.94	0.07	98.85	2.480	0.527	1.014	1.012	0.541	

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 11-56
DTS MIMO WLAN UMPC Extremity SAR

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	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]	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	back	0 mm	802.11b	DSSS	MIMO	0521M	22	1	19.0	18.72	19.0	18.94	0.02	98.85	2.100	0.757	1.067	1.012	0.817	
2462	11	front	0 mm	802.11b	DSSS	MIMO	0521M	22	1	19.0	18.72	19.0	18.94	-0.02	98.85	3.300	0.837	1.067	1.012	0.904	
2462	11	top	0 mm	802.11b	DSSS	MIMO	0521M	22	1	19.0	18.72	19.0	18.94	0.10	98.85	4.950	1.220	1.067	1.012	1.317	A58
2462	11	bottom	0 mm	802.11b	DSSS	MIMO	0521M	22	1	19.0	18.72	19.0	18.94	-0.01	98.85	2.010	0.403	1.067	1.012	0.435	
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: 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**.**

Table 11-57
NII MIMO WLAN UMPC Extremity SAR

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	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]	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)	
5320	64	back	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.34	18.0	17.94	0.10	97.92	3.020	0.419	1.164	1.021	0.498	
5320	64	front	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.34	18.0	17.94	-0.01	97.92	3.040	0.486	1.164	1.021	0.578	
5320	64	top	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.34	18.0	17.94	0.02	97.92	7.920	1.210	1.164	1.021	1.438	
5320	64	bottom	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.34	18.0	17.94	0.17	97.92	5.240	0.557	1.164	1.021	0.662	
5720	144	back	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.32	18.0	17.82	0.00	97.92	3.930	0.966	1.169	1.021	1.153	
5720	144	front	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.32	18.0	17.82	-0.07	97.92	4.390	1.040	1.169	1.021	1.241	
5720	144	top	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.32	18.0	17.82	0.03	97.92	9.750	1.460	1.169	1.021	1.743	
5720	144	bottom	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.32	18.0	17.82	-0.01	97.92	9.420	1.130	1.169	1.021	1.349	
5825	165	back	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.45	18.0	17.83	0.00	97.92	3.960	0.855	1.135	1.021	0.991	
5825	165	front	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.45	18.0	17.83	-0.05	97.92	3.950	0.963	1.135	1.021	1.116	
5745	149	top	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.31	18.0	17.84	-0.09	97.92	9.090	1.360	1.172	1.021	1.627	
5785	157	top	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.23	18.0	17.85	0.01	97.92	9.620	1.480	1.194	1.021	1.804	
5825	165	top	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.45	18.0	17.83	0.14	97.92	10.100	1.690	1.135	1.021	1.958	A59
5825	165	bottom	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.45	18.0	17.83	0.00	97.92	9.820	1.140	1.135	1.021	1.321	
5845	169	back	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.43	18.0	17.96	-0.02	97.92	3.140	0.837	1.140	1.021	0.974	
5845	169	front	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.43	18.0	17.96	0.05	97.92	5.280	0.970	1.140	1.021	1.129	
5845	169	top	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.43	18.0	17.96	0.03	97.92	11.100	1.520	1.140	1.021	1.769	
5845	169	bottom	0 mm	802.11n	OFDM	MIMO	0521M	20	13	18.0	17.43	18.0	17.96	-0.04	97.92	10.600	1.120	1.140	1.021	1.304	
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: 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 11-58
DTS UMPC Extremity SISO SAR during Conditions with 5/6 GHz WLAN

MEASUREMENT RESULTS																			
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	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)	
2437	6	back	0 mm	802.11b	DSSS	2	0521M	22	1	15.0	14.63	0.05	98.85	0.756	0.232	1.089	1.012	0.256	
2437	6	front	0 mm	802.11b	DSSS	2	0521M	22	1	15.0	14.63	0.03	98.85	0.809	0.195	1.089	1.012	0.215	
2437	6	bottom	0 mm	802.11b	DSSS	2	0521M	22	1	15.0	14.63	-0.01	98.85	1.160	0.214	1.089	1.012	0.236	
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: 2.4 GHz Antenna 2 was additionally evaluated at the maximum allowed output power during simultaneous operations with 5/6 GHz WLAN. 5/6 GHz WIFI was not transmitting during the above evaluations.

Table 11-59
DTS UMPC Extremity MIMO SAR during Conditions with 5/6 GHz WLAN

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	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]	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)	
2437	6	back	0 mm	802.11n	OFDM	MIMO	0513M	20	13	15.0	14.28	15.0	14.56	-0.03	97.70	0.708	0.255	1.180	1.024	0.308	
2437	6	front	0 mm	802.11n	OFDM	MIMO	0513M	20	13	15.0	14.28	15.0	14.56	-0.02	97.70	0.861	0.318	1.180	1.024	0.384	
2437	6	top	0 mm	802.11n	OFDM	MIMO	0513M	20	13	15.0	14.28	15.0	14.56	-0.05	97.70	1.900	0.475	1.180	1.024	0.574	
2437	6	bottom	0 mm	802.11n	OFDM	MIMO	0513M	20	13	15.0	14.28	15.0	14.56	0.01	97.70	0.688	0.157	1.180	1.024	0.190	
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: 2.4 GHz MIMO was additionally evaluated at the maximum allowed output power during simultaneous operations with 5/6 GHz WLAN. 5/6 GHz WIFI was not transmitting during the above evaluations. To achieve the 18.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 15.0 dBm.

Table 11-60
NII UMPC Extremity MIMO SAR during Conditions with 5/6 GHz WLAN

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	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]	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	back	0 mm	802.11ac	OFDM	MIMO	0521M	80	58.5	15.0	14.21	15.0	14.83	-0.13	92.82	1.160	0.299	1.199	1.077	0.386	
5290	58	front	0 mm	802.11ac	OFDM	MIMO	0521M	80	58.5	15.0	14.21	15.0	14.83	-0.14	92.82	0.826	0.210	1.199	1.077	0.271	
5290	58	top	0 mm	802.11ac	OFDM	MIMO	0521M	80	58.5	15.0	14.21	15.0	14.83	0.00	92.82	3.300	0.550	1.199	1.077	0.710	
5290	58	bottom	0 mm	802.11ac	OFDM	MIMO	0521M	80	58.5	15.0	14.21	15.0	14.83	-0.04	92.82	2.500	0.238	1.199	1.077	0.307	
5530	106	back	0 mm	802.11ac	OFDM	MIMO	0521M	80	58.5	15.0	14.21	15.0	14.91	-0.12	92.82	1.880	0.363	1.199	1.077	0.469	
5530	106	front	0 mm	802.11ac	OFDM	MIMO	0521M	80	58.5	15.0	14.21	15.0	14.91	0.10	92.82	1.420	0.366	1.199	1.077	0.473	
5530	106	top	0 mm	802.11ac	OFDM	MIMO	0521M	80	58.5	15.0	14.21	15.0	14.91	0.04	92.82	3.080	0.616	1.199	1.077	0.795	
5530	106	bottom	0 mm	802.11ac	OFDM	MIMO	0521M	80	58.5	15.0	14.21	15.0	14.91	0.01	92.82	3.220	0.339	1.199	1.077	0.438	
5775	155	back	0 mm	802.11ac	OFDM	MIMO	0521M	80	58.5	15.0	14.14	15.0	14.51	-0.19	92.82	1.870	0.446	1.219	1.077	0.586	
5775	155	front	0 mm	802.11ac	OFDM	MIMO	0521M	80	58.5	15.0	14.14	15.0	14.51	-0.10	92.82	0.804	0.222	1.219	1.077	0.291	
5775	155	top	0 mm	802.11ac	OFDM	MIMO	0521M	80	58.5	15.0	14.14	15.0	14.51	0.13	92.82	1.490	0.344	1.219	1.077	0.452	
5775	155	bottom	0 mm	802.11ac	OFDM	MIMO	0521M	80	58.5	15.0	14.14	15.0	14.51	0.12	92.82	2.200	0.217	1.219	1.077	0.285	
5855	171	back	0 mm	802.11ac	OFDM	MIMO	0521M	80	58.5	15.0	14.27	15.0	14.33	0.16	92.82	0.852	0.186	1.183	1.077	0.237	
5855	171	front	0 mm	802.11ac	OFDM	MIMO	0521M	80	58.5	15.0	14.27	15.0	14.33	0.12	92.82	0.770	0.215	1.183	1.077	0.274	
5855	171	top	0 mm	802.11ac	OFDM	MIMO	0521M	80	58.5	15.0	14.27	15.0	14.33	-0.09	92.82	3.800	0.683	1.183	1.077	0.870	
5855	171	bottom	0 mm	802.11ac	OFDM	MIMO	0521M	80	58.5	15.0	14.27	15.0	14.33	0.03	92.82	3.950	0.412	1.183	1.077	0.525	
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 MIMO was additionally evaluated at the maximum allowed output power during simultaneous operations with 2.4 GHz WLAN. 2.4 GHz was not transmitting during the above evaluations. To achieve the 18.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 15.0 dBm.

Table 11-61
DSS UMPC Extremity SAR

MEASUREMENT RESULTS																
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift	Duty Cycle	SAR (10g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.												(W/kg)			(W/kg)	
2441	39	back	0 mm	Bluetooth	FHSS	1	0513M	1	19.5	18.77	0.18	76.80	0.493	1.184	1.302	0.760	
2441	39	front	0 mm	Bluetooth	FHSS	1	0513M	1	19.5	18.77	-0.04	76.80	0.619	1.184	1.302	0.954	
2441	39	top	0 mm	Bluetooth	FHSS	1	0513M	1	19.5	18.77	0.01	76.80	0.818	1.184	1.302	**1.261**	A60
2441	39	back	0 mm	Bluetooth	FHSS	2	0513M	1	16.0	15.82	0.01	76.80	0.216	1.043	1.302	0.293	
2441	39	front	0 mm	Bluetooth	FHSS	2	0513M	1	16.0	15.82	-0.16	76.80	0.114	1.043	1.302	0.155	
2441	39	bottom	0 mm	Bluetooth	FHSS	2	0513M	1	16.0	15.82	0.00	76.80	0.185	1.043	1.302	0.251	
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 11-62
DSS UMPC Extremity SAR during Conditions with 5/6 GHz WLAN

MEASUREMENT RESULTS																
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift	Duty Cycle	SAR (10g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.												(W/kg)			(W/kg)	
2441	39	back	0 mm	Bluetooth	FHSS	1	0521M	1	15.0	14.80	-0.01	76.80	0.353	1.047	1.302	0.481	
2441	39	front	0 mm	Bluetooth	FHSS	1	0521M	1	15.0	14.80	-0.08	76.80	0.408	1.047	1.302	0.556	
2441	39	top	0 mm	Bluetooth	FHSS	1	0521M	1	15.0	14.80	-0.01	76.80	0.651	1.047	1.302	0.887	
2441	39	back	0 mm	Bluetooth	FHSS	2	0521M	1	13.0	12.72	0.00	76.80	0.132	1.067	1.302	0.183	
2441	39	front	0 mm	Bluetooth	FHSS	2	0521M	1	13.0	12.72	-0.07	76.80	0.067	1.067	1.302	0.093	
2441	39	bottom	0 mm	Bluetooth	FHSS	2	0521M	1	13.0	12.72	0.03	76.80	0.125	1.067	1.302	0.174	
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 11-63
NFC UMPC Extremity SAR

MEASUREMENT RESULTS									
FREQUENCY	Side	Test Position	Mode	Type	Antenna Config.	Device Serial Number	Power Drift	SAR (10g)	Plot #
MHz								(W/kg)	
13.56	back	0 mm	NFC	B	NFC	0497M	0.00	**0.009**	A61
13.56	front	0 mm	NFC	B	NFC	0497M	-0.10	0.000	
13.56	right	0 mm	NFC	B	NFC	0497M	0.13	0.000	
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			

11.2 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, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 12 for variability analysis.
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.
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 13 for supplemental data.
12. Additional SAR tests for phablet SAR were evaluated per KDB 616217 Section 6 (See Section 6.9 for more information).
13. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the 1g thresholds for the equivalent test cases.
14. This device uses Qualcomm Smart Transmit for 2G/3G/4G operations to control and manage transmitting power in real time to ensure RF Exposure compliance. Per FCC Guidance, compliance for was assessed at the minimum of the time averaged power and the maximum output power for each band/mode/exposure condition (DSI).

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 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).

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 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).

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 SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg for 1g evaluations, testing at the other channels was required for such test configurations.
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, and hotspot, and phablet operations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg 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 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.
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 the Multi-Tx and Antenna SAR Considerations Appendix 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 for the time domain plot and calculation for the duty factor of the device.
2. Head and Hotspot Bluetooth SAR were evaluated for BT BR tethering applications.

12 SAR MEASUREMENT VARIABILITY

12.1 Measurement Variability

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

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

1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1g SAR limit).
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg
5) When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

Table 12-1
UMPC Extremity SAR Measurement Variability Results

UMPC EXTREMITY VARIABILITY RESULTS														
Band	FREQUENCY		Mode	Service	Side	Spacing	Antenna Config	Measured SAR (10g)	1st Repeated SAR (10g)	Ratio	2nd Repeated SAR (10g)	Ratio	3rd Repeated SAR (10g)	Ratio
	MHz	Ch.						(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1750	1732.50	20175	LTE Band 4 (AWS), 20 MHz Bandwidth	QPSK, 50 RB, 25 RB Offset	bottom	0 mm	B	2.120	2.120	1.00	N/A	N/A	N/A	N/A
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						

12.2 Measurement Uncertainty

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

13 ADDITIONAL TESTING PER FCC GUIDANCE

13.1 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 144 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 measured 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 144 states.

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

Table 13-1
UMTS Supplemental Head SAR Data

Supplemental Head SAR Data			
UMTS B5 Ant A		UMTS B5 Ant A + Ant 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)	0.093	Measured 1g SAR (W/kg)	0.061
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 126)	0.097	Auto-tune (State 108)	0.062
Default (State 0)	0.084	Default (State 0)	0.055
State 0	0.084	State 1	0.050
State 9	0.089	State 18	0.046
State 20	0.076	State 41	0.025
State 40	0.050	State 61	0.004
State 60	0.022	State 78	0.008
State 100	0.070	State 81	0.052
State 120	0.053	State 101	0.030
State 126	0.087	State 108	0.060
State 139	0.047	State 121	0.024
State 140	0.034	State 141	0.005

Table 13-2
LTE Supplemental Head SAR Data

Supplemental Head SAR Data											
LTE B12 Ant A		LTE B12 Ant A + Ant B		LTE B13 Ant A		LTE B13 Ant A + Ant B		LTE B5 Ant A		LTE B5 Ant A + Ant 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, 49 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 49 RB Offset		QPSK, 15 MHz Bandwidth, 1 RB, 25 RB Offset		QPSK, 15 MHz Bandwidth, 1 RB, 25 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)	831.50	Frequency (MHz)	831.50
Channel	23095	Channel	23095	Channel	23230	Channel	23230	Channel	26865	Channel	26865
Measured 1g SAR (W/kg)	0.056	Measured 1g SAR (W/kg)	0.069	Measured 1g SAR (W/kg)	0.093	Measured 1g SAR (W/kg)	0.121	Measured 1g SAR (W/kg)	0.072	Measured 1g SAR (W/kg)	0.048
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)	0.056	Auto-tune (State 90)	0.071	Auto-tune (State 18)	0.097	Auto-tune (State 0)	0.128	Auto-tune (State 126)	0.072	Auto-tune (State 108)	0.048
Default (State 0)	0.052	Default (State 0)	0.068	Default (State 0)	0.078	Default (State 0)	0.128	Default (State 0)	0.070	Default (State 0)	0.039
State 2	0.035	State 3	0.044	State 4	0.050	State 0	0.128	State 6	0.017	State 7	0.002
State 10	0.057	State 23	0.043	State 18	0.101	State 5	0.080	State 26	0.005	State 27	0.028
State 19	0.056	State 43	0.003	State 24	0.027	State 8	0.009	State 46	0.063	State 29	0.024
State 22	0.056	State 59	0.038	State 44	0.001	State 25	0.013	State 66	0.052	State 47	0.027
State 42	0.006	State 63	0.067	State 64	0.091	State 45	0.117	State 86	0.029	State 67	0.015
State 62	0.010	State 83	0.062	State 84	0.059	State 65	0.079	State 94	0.040	State 80	0.000
State 82	0.055	State 90	0.076	State 88	0.010	State 69	0.017	State 97	0.007	State 87	0.003
State 102	0.044	State 103	0.048	State 104	0.057	State 85	0.076	State 106	0.007	State 107	0.000
State 122	0.043	State 123	0.013	State 124	0.009	State 105	0.014	State 108	0.066	State 108	0.045
State 142	0.003	State 143	0.001	State 133	0.009	State 125	0.003	State 126	0.075	State 127	0.025

Table 13-3
UMTS Supplemental Body SAR Data

Supplemental Body SAR Data			
UMTS B5 Ant A		UMTS B5 Ant A + Ant B	
RMC		RMC	
Test Position	Back	Test Position	Front
Spacing	10 mm	Spacing	10 mm
Frequency (MHz)	826.40	Frequency (MHz)	826.40
Channel	4132	Channel	4132
Measured 1g SAR (W/kg)	0.179	Measured 1g SAR (W/kg)	0.266
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 126)	0.208	Auto-tune (State 0)	0.300
Default (State 0)	0.213	Default (State 0)	0.314
State 10	0.202	State 0	0.314
State 30	0.168	State 11	0.234
State 50	0.113	State 31	0.113
State 70	0.033	State 51	0.086
State 90	0.217	State 55	0.219
State 109	0.15	State 71	0.011
State 110	0.139	State 91	0.221
State 118	0.17	State 111	0.219
State 126	0.218	State 119	0.236
State 130	0.118	State 131	0.117

Table 13-4
LTE Supplemental Body SAR Data

Supplemental Body SAR Data											
LTE B12 Ant A		LTE B12 Ant A + Ant B		LTE B13 Ant A		LTE B13 Ant A + Ant B		LTE B5 Ant A		LTE B5 Ant A + Ant 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, 49 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 49 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 25 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 25 RB Offset	
Test Position	Right	Test Position	Back	Test Position	Back	Test Position	Front	Test Position	Back	Test Position	Front
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)	831.50	Frequency (MHz)	831.50
Channel	23095	Channel	23095	Channel	23230	Channel	23230	Channel	20525	Channel	26865
Measured 1g SAR (W/kg)	0.188	Measured 1g SAR (W/kg)	0.212	Measured 1g SAR (W/kg)	0.219	Measured 1g SAR (W/kg)	0.271	Measured 1g SAR (W/kg)	0.237	Measured 1g SAR (W/kg)	0.267
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)	0.185	Auto-tune (State 0)	0.244	Auto-tune (State 63)	0.236	Auto-tune (State 1)	0.301	Auto-tune (State 63)	0.255	Auto-tune (State 0)	0.306
Default (State 0)	0.162	Default (State 0)	0.238	Default (State 0)	0.194	Default (State 0)	0.293	Default (State 0)	0.220	Default (State 0)	0.316
State 10	0.175	State 0	0.238	State 14	0.152	State 1	0.295	State 16	0.045	State 0	0.316
State 12	0.172	State 13	0.227	State 34	0.068	State 15	0.102	State 36	0.213	State 17	0.036
State 32	0.102	State 33	0.038	State 38	0.138	State 28	0.119	State 56	0.197	State 21	0.232
State 48	0.17	State 53	0.03	State 54	0.249	State 35	0.009	State 63	0.247	State 37	0.287
State 52	0.064	State 58	0.212	State 63	0.254	State 75	0.253	State 68	0.132	State 39	0.256
State 72	0.139	State 73	0.179	State 74	0.121	State 79	0.062	State 76	0.107	State 49	0.23
State 92	0.175	State 93	0.215	State 94	0.159	State 89	0.018	State 96	0.057	State 57	0.225
State 112	0.069	State 99	0.145	State 98	0.028	State 95	0.132	State 116	0.012	State 77	0.172
State 132	0.091	State 113	0.093	State 114	0.03	State 115	0.055	State 129	0.144	State 117	0.293
State 138	0.123	State 128	0.224	State 134	0.025	State 135	0.142	State 136	0.197	State 137	0.159

14 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E4404B	Spectrum Analyzer	N/A	N/A	N/A	MY45113242
Agilent	E4438C	ESG Vector Signal Generator	5/10/2022	Annual	5/10/2023	MY42082659
Agilent	E4438C	ESG Vector Signal Generator	2/14/2022	Annual	2/14/2023	MY42082385
Agilent	N5182A	MXG Vector Signal Generator	6/21/2022	Annual	6/21/2023	MY47420651
Agilent	N5182A	MXG Vector Signal Generator	7/6/2021	Annual	7/6/2022	MY48180366
Agilent	8753ES	S-Parameter Vector Network Analyzer	2/11/2022	Annual	2/11/2023	MY40003841
Agilent	8753ES	S-Parameter Vector Network Analyzer	12/17/2021	Annual	12/17/2022	MY40000670
Agilent	MS2028C	Vector Network Analyzer	3/23/2022	Annual	3/23/2023	1128008
Agilent	E5515C	Wireless Communications Test Set	5/12/2022	Annual	5/12/2023	GB43304278
Agilent	E5515C	Wireless Communications Test Set	1/14/2020	Triennial	1/14/2023	GB43304447
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433974
Amplifier Research	15S1G6	Amplifier	9/15/2021	Annual	9/15/2022	433971
Anritsu	ML2496A	Power Meter	3/31/2022	Annual	3/31/2023	1138001
Anritsu	ML2496A	Power Meter	3/29/2022	Annual	3/29/2023	1306009
Anritsu	MA2411B	Pulse Power Sensor	4/29/2022	Annual	4/29/2023	1207470
Mini-Circuits	PWR-4GHS	Power Sensor	5/3/2022	Annual	5/3/2023	12108190029
Anritsu	MA2411B	Pulse Power Sensor	9/21/2021	Annual	9/21/2022	1339008
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	6/27/2022	Annual	6/27/2023	6261895213
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	5/24/2022	Annual	5/24/2023	6201144418
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	3/31/2022	Annual	3/31/2023	6201664756
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	9/26/2021	Annual	9/26/2022	6201524637
Anritsu	MA24106A	USB Power Sensor	6/1/2022	Annual	6/1/2023	1349514
Anritsu	MA24106A	USB Power Sensor	7/7/2021	Annual	7/7/2022	1244512
Control Company	4353	Long Stem Thermometer	10/28/2020	Biennial	10/28/2022	200670623
Control Company	4353	Long Stem Thermometer	10/28/2020	Biennial	10/28/2022	200670633
Control Company	4353	Long Stem Thermometer	10/28/2020	Biennial	10/28/2022	200670635
Control Company	4040	Therm./ Clock/ Humidity Monitor	1/21/2021	Biennial	1/21/2023	160574418
Control Company	4040	Therm./ Clock/ Humidity Monitor	3/12/2021	Biennial	3/12/2023	210202100
Mitutoyo	500-196-30	CD-6"ASX 6Inch Digital Caliper	2/16/2022	Triennial	2/16/2025	A20238413
Keysight Technologies	N6705B	DC Power Analyzer	5/5/2021	Triennial	5/5/2024	MY53004059
Keysight Technologies	N9020A	MXA Signal Analyzer	4/14/2022	Annual	4/14/2023	MY48010233
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
Mini-Circuits	VLF-6000+	Low Pass Filter DC to 6000 MHz	7/6/2021	Annual	7/6/2022	31634
Mini-Circuits	VLF-6000+	Low Pass Filter DC to 6000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	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
Mini-Circuits	ZUDC10-83-S+	Directional Coupler	CBT	N/A	CBT	2050
Mini-Circuits	ZUDC10-83-S+	Directional Coupler	9/15/2021	Annual	9/15/2022	2111
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Seekonk	NC-100	Torque Wrench (8" lb)	8/5/2020	Biennial	8/5/2022	N/A
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/18/2022	Annual	4/18/2023	128633
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	3/29/2022	Annual	3/29/2023	171075
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/8/2022	Annual	4/8/2023	162125
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/7/2022	Annual	4/7/2023	167283
SPEAG	DAK-3.5	Dielectric Assessment Kit	1/6/2022	Annual	1/6/2023	1278
SPEAG	DAK-3.5	Dielectric Assessment Kit	10/20/2021	Annual	10/20/2022	1091
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	8/18/2021	Annual	8/18/2022	1041
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	7/5/2022	Annual	7/5/2023	1039
SPEAG	DAKS-12	Dielectric Assessment Kit (10MHz - 3GHz)	3/21/2022	Annual	3/21/2023	1102
SPEAG	MAIA	Modulation and Audio Interference Analyzer	N/A	N/A	N/A	1379
SPEAG	D750V3	750 MHz SAR Dipole	5/9/2022	Annual	5/9/2023	1003
SPEAG	D750V3	750 MHz SAR Dipole	2/14/2022	Annual	2/14/2023	1046
SPEAG	D835V2	835 MHz SAR Dipole	4/14/2022	Annual	4/14/2023	4d119
SPEAG	D1750V2	1750 MHz SAR Dipole	4/20/2022	Annual	4/20/2023	1051
SPEAG	D1750V2	1750 MHz SAR Dipole	5/10/2022	Annual	5/10/2023	1092
SPEAG	D1900V2	1900 MHz SAR Dipole	4/14/2022	Annual	4/14/2023	5d141
SPEAG	D2450V2	2450 MHz SAR Dipole	9/20/2020	Biennial	9/20/2022	797
SPEAG	D2450V2	2450 MHz SAR Dipole	11/25/2021	Annual	11/25/2022	981
SPEAG	D2450V2	2450 MHz SAR Dipole	2/22/2022	Annual	2/22/2023	882
SPEAG	D2450V2	2450 MHz SAR Dipole	8/18/2021	Annual	8/18/2022	719
SPEAG	D2600V2	2600 MHz SAR Dipole	11/12/2019	Triennial	11/12/2022	1071
SPEAG	D2600V2	2600 MHz SAR Dipole	8/18/2021	Annual	8/18/2022	1126
SPEAG	D5GHzV2	5 GHz SAR Dipole	1/10/2022	Annual	1/10/2023	1057
SPEAG	CLA13	13 MHz SAR Dipole	9/16/2021	Annual	9/16/2022	1002
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/21/2022	Annual	2/21/2023	1645
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/13/2021	Annual	7/13/2022	1583
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/14/2022	Annual	6/14/2023	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/22/2022	Annual	2/22/2023	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/11/2021	Annual	11/11/2022	1466
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/13/2021	Annual	9/13/2022	1364
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/4/2021	Annual	8/4/2022	1680
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/10/2021	Annual	11/10/2022	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/16/2022	Annual	3/16/2023	1272
SPEAG	EX3DV4	SAR Probe	7/20/2021	Annual	7/20/2022	7410
SPEAG	EX3DV4	SAR Probe	6/16/2022	Annual	6/16/2023	7409
SPEAG	EX3DV4	SAR Probe	11/16/2021	Annual	11/16/2022	7538
SPEAG	EX3DV4	SAR Probe	2/22/2022	Annual	2/22/2023	7417
SPEAG	EX3DV4	SAR Probe	11/15/2021	Annual	11/15/2022	7565
SPEAG	EX3DV4	SAR Probe	9/17/2021	Annual	9/17/2022	7558
SPEAG	EX3DV4	SAR Probe	9/20/2021	Annual	9/20/2022	7552
SPEAG	EX3DV4	SAR Probe	3/21/2022	Annual	3/21/2023	7527
SPEAG	EX3DV4	SAR Probe	2/24/2022	Annual	2/24/2023	7640

Note: 1) All equipment 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.

15 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	

The above measurement uncertainties are according to IEEE Std. 1528-2013

16 CONCLUSION

16.1 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]

17 REFERENCES

[1] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, Aug. 1996.

[2] ANSI/IEEE C95.1-2005, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, 2006.

[3] ANSI/IEEE C95.1-1992, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, Sept. 1992.

[4] ANSI/IEEE C95.3-2002, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave, New York: IEEE, December 2002.

[5] IEEE Standards Coordinating Committee 39 –Standards Coordinating Committee 34 – IEEE Std. 1528-2013, IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.

[6] NCRP, National Council on Radiation Protection and Measurements, Biological Effects and Exposure Criteria for RadioFrequency Electromagnetic Fields, NCRP Report No. 86, 1986. Reprinted Feb. 1995.

[7] T. Schmid, O. Egger, N. Kuster, Automated E-field scanning system for dosimetric assessments, IEEE Transaction on Microwave Theory and Techniques, vol. 44, Jan. 1996, pp. 105-113.

[8] K. Pokovic, T. Schmid, N. Kuster, Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequencies, ICECOM97, Oct. 1997, pp. 1 -124.

[9] K. Pokovic, T. Schmid, and N. Kuster, E-field Probe with improved isotropy in brain simulating liquids, Proceedings of the ELMAR, Zadar, Croatia, June 23-25, 1996, pp. 172-175.

[10] Schmid & Partner Engineering AG, Application Note: Data Storage and Evaluation, June 1998, p2.

[11] V. Hombach, K. Meier, M. Burkhardt, E. Kuhn, N. Kuster, The Dependence of EM Energy Absorption upon Human Modeling at 900 MHz, IEEE Transaction on Microwave Theory and Techniques, vol. 44 no. 10, Oct. 1996, pp. 1865-1873.

[12] N. Kuster and Q. Balzano, Energy absorption mechanism by biological bodies in the near field of dipole antennas above 300MHz, IEEE Transaction on Vehicular Technology, vol. 41, no. 1, Feb. 1992, pp. 17-23.

[13] G. Hartsgrove, A. Kraszewski, A. Surowiec, Simulated Biological Materials for Electromagnetic Radiation Absorption Studies, University of Ottawa, Bioelectromagnetics, Canada: 1987, pp. 29-36.

[14] Q. Balzano, O. Garay, T. Manning Jr., Electromagnetic Energy Exposure of Simulated Users of Portable Cellular Telephones, IEEE Transactions on Vehicular Technology, vol. 44, no.3, Aug. 1995.

[15] W. Gander, Computermathematick, Birkhaeuser, Basel, 1992.

[16] W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, Numerical Recipes in C, The Art of Scientific Computing, Second edition, Cambridge University Press, 1992.

[17] N. Kuster, R. Kastle, T. Schmid, Dosimetric evaluation of mobile communications equipment with known precision, IEEE Transaction on Communications, vol. E80-B, no. 5, May 1997, pp. 645-652.

[18] CENELEC CLC/SC111B, European Prestandard (prENV 50166-2), Human Exposure to Electromagnetic Fields High-frequency: 10kHz-300GHz, Jan. 1995.

[19] Prof. Dr. Niels Kuster, ETH, Eidgenössische Technische Hoschschule Zürich, Dosimetric Evaluation of the Cellular Phone.

[20] IEC 62209-1, Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1: Devices used next to the ear (Frequency range of 300 MHz to 6 GHz), July 2016.

[21] Innovation, Science, Economic Development Canada RSS-102 Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) Issue 5, March 2015.

[22] Health Canada Safety Code 6 Limits of Human Exposure to Radio Frequency Electromagnetic Fields in the Frequency Range from 3 kHz – 300 GHz, 2015

[23] FCC SAR Test Procedures for 2G-3G Devices, Mobile Hotspot and UMPC Devices KDB Publications 941225, D01-D07

[24] SAR Measurement Guidance for IEEE 802.11 Transmitters, KDB Publication 248227 D01

[25] FCC SAR Considerations for Handsets with Multiple Transmitters and Antennas, KDB Publications 648474 D03-D04

[26] FCC SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers, FCC KDB Publication 616217 D04

[27] FCC SAR Measurement and Reporting Requirements for 100MHz – 6 GHz, KDB Publications 865664 D01-D02

[28] FCC General RF Exposure Guidance and SAR Procedures for Dongles, KDB Publication 447498, D01-D02

[29] Anexo à Resolução No. 533, de 10 de Septembro de 2009.

[30] IEC 62209-2, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz), Mar. 2010.