PCTEST
7185 Oakland Mills Road, Columbia, MD 21046 USA
Tel. +1.410.290.6652 / Fax +1.410.290.6654
http://www.pctest.com

SAR EVALUATION REPORT

Applicant Name:
Sony Mobile Communications Inc.
4-12-3 Higashi-Shinagawa
Shinagawa-ku
Tokyo, 140-0002, Japan

Date of Testing:
08/23/20 - 09/16/20
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
1M2007070106-04-R1.PY7

FCC ID: **PY7-57441Y**

APPLICANT: **SONY MOBILE COMMUNICATIONS INC.**

DUT Type: Portable Handset
Application Type: Certification
FCC Rule Part(s): CFR §2.1093

Equipment Class	Band & Mode	Tx Frequency	SAR			
			1g Head (W/kg)	1g Body-Worn (W/kg)	1g Hotspot (W/kg)	10g Phablet (W/kg)
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.16	0.24	0.21	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	0.10	0.24	0.36	N/A
PCE	UMTS 850	826.40 - 846.60 MHz	0.25	0.38	0.38	N/A
PCE	UMTS 1750	1712.4 - 1752.6 MHz	< 0.1	< 0.1	0.13	N/A
PCE	UMTS 1900	1852.4 - 1907.6 MHz	< 0.1	0.11	0.14	N/A
PCE	LTE Band 12	699.7 - 715.3 MHz	0.22	0.29	0.30	N/A
PCE	LTE Band 17	706.5 - 713.5 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 13	779.5 - 784.5 MHz	0.19	0.28	0.28	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.21	0.30	0.30	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	< 0.1	< 0.1	0.14	N/A
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	< 0.1	0.13	0.17	N/A
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 7	2502.5 - 2567.5 MHz	< 0.1	< 0.1	< 0.1	N/A
CBE	LTE Band 48	3552.5 - 3697.5 MHz	< 0.1	< 0.1	< 0.1	N/A
PCE	LTE Band 41	2498.5 - 2687.5 MHz	< 0.1	< 0.1	< 0.1	N/A
PCE	NR Band n5 (Cell)	826.5 - 846.5 MHz	< 0.1	0.13	0.13	N/A
PCE	NR Band n66 (AWS)	1712.5 - 1777.5 MHz	< 0.1	< 0.1	< 0.1	N/A
PCE	NR Band n2 (PCS)	1852.5 - 1907.5 MHz	< 0.1	< 0.1	< 0.1	N/A
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.27	< 0.1	< 0.1	N/A
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	N/A	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.23	< 0.1	N/A	0.23
NII	U-NII-2C	5500 - 5720 MHz	0.41	< 0.1	N/A	0.20
NII	U-NII-3	5745 - 5825 MHz	0.47	< 0.1	N/A	0.19
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.36	< 0.1	0.12	N/A
Simultaneous SAR per KDB 690783 D01v01r03:			1.10	0.58	0.50	0.44

Note: This revised Test Report (S/N: 1M2007070106-04-R1.PY7) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE C95.1-1992 and has been tested in accordance with the measurement procedures specified in Section 1.8 of this report; for North American frequency bands only.

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

Randy Ortanez
President

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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 12	Voice/Data	699.7 - 715.3 MHz
LTE Band 17	Voice/Data	706.5 - 713.5 MHz
LTE Band 13	Voice/Data	779.5 - 784.5 MHz
LTE Band 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 7	Voice/Data	2502.5 - 2567.5 MHz
LTE Band 48	Voice/Data	3552.5 - 3697.5 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Data	2412 - 2462 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
Bluetooth	Data	2402 - 2480 MHz
NR Band n5 (Cell)	Data	826.5 - 846.5 MHz
NR Band n66 (AWS)	Data	1712.5 - 1777.5 MHz
NR Band n2 (PCS)	Data	1852.5 - 1907.5 MHz
NFC	Data	13.56 MHz
NR Band n260	Data	37000 - 40000 MHz
NR Band n261	Data	27500 - 28350 MHz

1.2 Time-Averaging Algorithm for RF Exposure Compliance

The equipment under test (EUT) contains:

a. Qualcomm® SDX55M modem supporting 2G/3G/4G/5G NR WWAN technologies

Qualcomm® SDX55M modem is enabled with Qualcomm® Smart Transmit feature. This feature performs time averaging algorithm in real time to control and manage transmitting power and ensure the time-averaged RF exposure is in compliance with FCC requirements all the time. Refer to Compliance Summary document for detailed description of Qualcomm® Smart Transmit feature (report SN could be found in Section 1.11 – Bibliography).

Note that WLAN operations are not enabled with Smart Transmit.

The Smart Transmit algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of *SAR_design_target* or *PD_design_target*, below the predefined time-averaged power limit (i.e., P_{limit} for sub-6 radio, and *input.power.limit* for 5G mmW NR), for each characterized technology and band (see RF Exposure Part 0 Test Report, report SN could be found in Section 1.11 - Bibliography).

Smart Transmit allows the device to transmit at higher power instantaneously, as high as P_{max}, when needed, but enforces power limiting to maintain time-averaged transmit power to P_{limit}. Below table shows P_{limit} EFS settings and maximum tune up output power P_{max} 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 Scenario:		Head	Body-Worn	Phablet	Hotspot
Averaging Volume:		1g	1g	10g	1g
Spacing:		0 mm	10 mm	0 mm	10 mm
DSI:		5			6
Technology/Band	Antenna	**Plimit**			
GSM/GPRS/EDGE 850 MHz	1	23.3			23.3
GSM/GPRS/EDGE 1900 MHz	1	18.3			18.3
UMTS B5	1	24.0			24.0
UMTS B4	1	16.0			16.0
UMTS B2	1	16.0			16.0
LTE FDD B12	1	24.0			24.0
LTE FDD B13	1	24.0			24.0
LTE FDD B17	1	24.0			24.0
LTE FDD B5	1	24.0			24.0
LTE FDD B26	1	24.0			24.0
LTE FDD B66/B4	1	16.0			16.0
LTE FDD B25/2	1	16.0			16.0
LTE FDD B7	1	16.0			16.0
LTE TDD B48	2	12.0			12.0
LTE TDD B41	1	12.0			12.0
NR FDD n5	1	24.0			24.0
NR FDD n66	1	16.0			16.0
NR FDD n2	1	16.0			16.0

*Note all P_{limit} EFS and maximum tune up output power P_{max} levels entered in above Table correspond to average power levels after accounting for duty cycle in the case of TDD modulation schemes (for e.g., GSM & LTE TDD).

*Maximum tune up output power P_{max} is used to configure EUT during RF tune up procedure. The maximum allowed output power is equal to maximum Tune up output power + 1dB device design uncertainty.

The maximum time-averaged output power (dBm) for any 2G/3G/4G/5G Sub6 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 Nominal and Maximum Output Power Specifications

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

1.3.1 2G/3G/4G/5G Output Power

For this device, Only DSI = 5/6 conditions are applicable for SAR for this device. Therefore, only those targets are listed below per manufacturer request.

GSM/GPRS/EDGE 850										
Power Level	Mode / Band	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
Max (DSI = 5 or 6)	Max allowed power	33.2	33.2	30.2	28.4	27.2	28.0	26.5	24.5	23.5
	Nominal	32.5	32.5	29.5	27.7	26.5	27.0	25.5	23.5	22.5
GSM/GPRS/EDGE 1900										
Power Level	Mode / Band	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
Body-worn, Head, Phablet (DSI = 5)	Max allowed power	28.2	28.2	25.2	23.4	22.2	27.0	25.5	23.5	22.5
	Nominal	27.5	27.5	24.5	22.7	21.5	26.0	24.5	22.5	21.5
Hotspot (DSI = 6)	Max allowed power	28.2	28.2	25.2	23.4	22.2	27.0	25.5	23.5	22.5
	Nominal	27.5	27.5	24.5	22.7	21.5	26.0	24.5	22.5	21.5

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

UMTS Band 5 (850 MHz)					
Power Level	Mode / Band	Modulated Average Output Power (in dBm)			
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6	3GPP DC-HSDPA Rel 8
Max (DSI = 5 or 6)	Max allowed power	24.7	24.0	24.0	24.0
	Nominal	24.0	23.0	23.0	23.0
UMTS Band 4 (1750 MHz)					
Power Level	Mode / Band	Modulated Average Output Power (in dBm)			
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6	3GPP DC-HSDPA Rel 8
Body-worn, Head, Phablet (DSI = 5)	Max allowed power	16.7	16.0	16.0	16.0
	Nominal	16.0	15.0	15.0	15.0
Hotspot (DSI = 6)	Max allowed power	16.7	16.0	16.0	16.0
	Nominal	16.0	15.0	15.0	15.0
UMTS Band 2 (1900 MHz)					
Power Level	Mode / Band	Modulated Average Output Power (in dBm)			
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6	3GPP DC-HSDPA Rel 8
Body-worn, Head, Phablet (DSI = 5)	Max allowed power	16.7	16.0	16.0	16.0
	Nominal	16.0	15.0	15.0	15.0
Hotspot (DSI = 6)	Max allowed power	16.7	16.0	16.0	16.0
	Nominal	16.0	15.0	15.0	15.0

Mode / Band		Modulated Average Output Power (in dBm)	
		Body-worn, Head, Phablet (DSI = 5)	Hotspot (DSI = 6)
LTE FDD Band 12	Max allowed power	25.0	25.0
	Nominal	24.0	24.0
LTE FDD Band 17	Max allowed power	25.0	25.0
	Nominal	24.0	24.0
LTE FDD Band 13	Max allowed power	25.0	25.0
	Nominal	24.0	24.0
LTE FDD Band 26	Max allowed power	25.0	25.0
	Nominal	24.0	24.0
LTE FDD Band 5	Max allowed power	25.0	25.0
	Nominal	24.0	24.0
LTE FDD Band 66	Max allowed power	17.0	17.0
	Nominal	16.0	16.0
LTE FDD Band 4	Max allowed power	17.0	17.0
	Nominal	16.0	16.0
LTE FDD Band 2	Max allowed power	17.0	17.0
	Nominal	16.0	16.0
LTE FDD Band 25	Max allowed power	17.0	17.0
	Nominal	16.0	16.0
LTE FDD Band 7	Max allowed power	17.0	17.0
	Nominal	16.0	16.0
LTE TDD Band 48	Max allowed power	15.0	15.0
	Nominal	14.0	14.0
LTE TDD Band 41 (PC3)	Max allowed power	15.0	15.0
	Nominal	14.0	14.0

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

Mode / Band		Modulated Average Output Power (in dBm)	
		Body-worn, Head, Phablet (DSI = 5)	Hotspot (DSI = 6)
NR FDD Band n5	Max allowed power	25.0	25.0
	Nominal	24.0	24.0
NR FDD Band n66	Max allowed power	17.0	17.0
	Nominal	16.0	16.0
NR FDD Band n2	Max allowed power	17.0	17.0
	Nominal	16.0	16.0

1.3.2 2.4 GHz Maximum Bluetooth and SISO/MIMO WLAN Output Power

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

Mode	Band	IEEE 802.11 (in dBm) Modulated Average - Single Tx Chain Chain 0			
		b	g	n	ax (SU)
Maximum Power		Max	Max	Max	Max
2.4 GHz WIFI	2.45 GHz	9.7	9.1	9.1	9.1

Mode	Band	IEEE 802.11 (in dBm) Modulated Average - Single Tx Chain Chain 1			
		b	g	n	ax (SU)
Maximum Power		Max	Max	Max	Max
2.4 GHz WIFI	2.45 GHz	9.0	9.1	9.1	9.1

Mode	Band	IEEE 802.11 (in dBm) Modulated Average - MIMO Chain 0 & Chain 1		
		g (CDD + STBC)	n (CDD + STBC, SDM)	ax (SU) (CDD + STBC, SDM)
Maximum Power		Max	Max	Max
2.4 GHz WIFI	2.45 GHz	9.1	9.1	9.1

Note: In MIMO operations, each Chain 0 and Chain 1 transmits at maximum allowed powers as indicated above.

Bluetooth (in dBm)
14.0

Bluetooth LE (in dBm)
9.8

1.3.3 5 GHz Maximum SISO/MIMO WLAN Output Power

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

Mode	Band	IEEE 802.11 (in dBm)							
		Modulated Average - Single Tx Chain				Modulated Average - MIMO			
		Chain 0 & Chain 1				Chain 0 & Chain 1			
		a	n	ac	ax (SU)	a (CDD + STBC)	n (CDD + STBC, SDM)	ac (CDD + STBC, SDM)	ax (SU) (CDD + STBC, SDM)
Nominal / Maximum Power		Max	Max	Max	Max	Max	Max	Max	Max
5 GHz WIFI (20MHz BW)	5200 MHz	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	5300 MHz	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	5500 MHz	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	5800 MHz	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
5 GHz WIFI (40MHz BW)	5200 MHz	[redacted]	9.0	9.0	9.0	[redacted]	9.0	9.0	9.0
	5300 MHz		9.0	9.0	9.0		9.0	9.0	9.0
	5500 MHz		9.0	9.0	9.0		9.0	9.0	9.0
	5800 MHz		9.0	9.0	9.0		9.0	9.0	9.0
5 GHz WIFI (80MHz BW)	5200 MHz	[redacted]		9.0	9.0	[redacted]		9.0	9.0
	5300 MHz			9.0	9.0			9.0	9.0
	5500 MHz			9.0	9.0			9.0	9.0
	5800 MHz			9.0	9.0			9.0	9.0

Note: In MIMO operations, each Chain 0 and Chain 1 transmits at maximum allowed powers as indicated above.

1.4 DUT Antenna Locations

The overall dimensions of this device are > 9 x 5 cm. A diagram showing the location of the device antennas can be found in Appendix E. Since the diagonal dimension of this device is > 160 mm and <200 mm, it is considered a "phablet."

Table 1-1
Device Edges/Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
GPRS 850	Yes	Yes	No	Yes	No	Yes
GPRS 1900	Yes	Yes	No	Yes	No	Yes
UMTS 850	Yes	Yes	No	Yes	No	Yes
UMTS 1750	Yes	Yes	No	Yes	No	Yes
UMTS 1900	Yes	Yes	No	Yes	No	Yes
LTE Band 12	Yes	Yes	No	Yes	No	Yes
LTE Band 13	Yes	Yes	No	Yes	No	Yes
LTE Band 26 (Cell)	Yes	Yes	No	Yes	No	Yes
LTE Band 66 (AWS)	Yes	Yes	No	Yes	No	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	No	Yes
LTE Band 7	Yes	Yes	No	Yes	No	Yes
LTE Band 48	Yes	Yes	No	Yes	Yes	No
LTE Band 41	Yes	Yes	No	Yes	No	Yes
NR Band n5 (Cell)	Yes	Yes	No	Yes	No	Yes
NR Band n66 (AWS)	Yes	Yes	No	Yes	No	Yes
NR Band n2 (PCS)	Yes	Yes	No	Yes	No	Yes
2.4 GHz WLAN Ant 1	Yes	Yes	Yes	No	Yes	No
2.4 GHz WLAN Ant 2	Yes	Yes	No	No	No	Yes
5 GHz WLAN Ant 1	Yes	Yes	Yes	No	Yes	No
5 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes
Bluetooth	Yes	Yes	Yes	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, 5 GHz WLAN operations are disabled.

1.5 Near Field Communications (NFC) Antenna

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

1.6 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 1-2
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Phablet	Notes
1	GSM voice + 2.4 GHz WI-FI	Yes	Yes	N/A	Yes	
2	GSM voice + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
3	GSM voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
4	GSM voice + 2.4 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
5	GSM voice + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
6	GSM voice + 2.4 GHz Bluetooth + 5 GHz WI-FI	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
7	GSM voice + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
8	GSM voice + 2.4 GHz Bluetooth + 5 GHz WI-FI MIMO	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
9	UMTS + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
10	UMTS + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
11	UMTS + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
12	UMTS + 2.4 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
13	UMTS + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
14	UMTS + 2.4 GHz Bluetooth + 5 GHz WI-FI	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
15	UMTS + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
16	UMTS + 2.4 GHz Bluetooth + 5 GHz WI-FI MIMO	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
17	LTE + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
18	LTE + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
19	LTE + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
20	LTE + 2.4 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
21	LTE + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
22	LTE + 2.4 GHz Bluetooth + 5 GHz WI-FI MIMO	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
23	LTE + 2.4 GHz Bluetooth + 5 GHz WI-FI	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
24	LTE + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
25	LTE + 5G NR	Yes	Yes	N/A	Yes	
26	LTE + 5 GHz WI-FI + 5G NR	Yes	Yes	N/A	Yes	
27	LTE + 2.4 GHz WI-FI + 5G NR	Yes	Yes	Yes	Yes	
28	LTE + 2.4 GHz Bluetooth + 5G NR	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
29	LTE + 2.4 GHz WI-FI MIMO + 5G NR	Yes	Yes	Yes	Yes	
30	LTE + 5 GHz WI-FI MIMO + 5G NR	Yes	Yes	N/A	Yes	
31	LTE + 2.4 GHz Bluetooth + 5 GHz WI-FI + 5G NR	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
32	LTE + 2.4 GHz Bluetooth + 5 GHz WI-FI MIMO + 5G NR	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
33	LTE + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO + 5G NR	Yes	Yes	N/A	Yes	
34	GPRS/EDGE + 2.4 GHz WI-FI	Yes*	Yes*	Yes	Yes	* DTM applications are considered
35	GPRS/EDGE + 5 GHz WI-FI	Yes*	Yes*	N/A	Yes	* DTM applications are considered
36	GPRS/EDGE + 2.4 GHz Bluetooth	Yes*^	Yes*	Yes^	Yes	* DTM applications are considered ^ Bluetooth Tethering is considered
37	GPRS/EDGE + 2.4 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* DTM applications are considered
38	GPRS/EDGE + 5 GHz WI-FI MIMO	Yes*	Yes*	N/A	Yes	* DTM applications are considered
39	GPRS/EDGE + 2.4 GHz Bluetooth + 5 GHz WI-FI	Yes*^	Yes*	N/A	Yes	* DTM applications are considered ^ Bluetooth Tethering is considered
40	GPRS/EDGE + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	Yes*	Yes*	N/A	Yes	* DTM applications are considered
41	GPRS/EDGE + 2.4 GHz Bluetooth + 5 GHz WI-FI MIMO	Yes*^	Yes*	N/A	Yes	* DTM applications are considered ^ Bluetooth Tethering is considered

1. 2.4 GHz WLAN and 2.4 GHz Bluetooth share the same antenna path and cannot transmit simultaneously.
2. All licensed modes 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 not supported by S/W, therefore U-NII-1, U-NII2A, U-NII2C, and U-NII-3 were not evaluated for wireless router conditions.
6. 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. Each WLAN antenna can transmit independently or together when operating with MIMO.
7. This device supports Bluetooth Tethering.
8. This device supports VoLTE.
9. LTE + 5G NR FR1 Scenarios are limited to EN-DC combinations with anchor bands as shown in the NR FR1 checklist.
10. 5G NR FR2 n260 and n261 cannot transmit simultaneously.
11. LTE + 5G NR FR2 Scenarios are limited to EN-DC combinations with anchor bands as shown in the NR FR2 checklist.

1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

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

Since Wireless Router operations are not allowed by the chipset firmware using U-NII-1, U-NII-2A, U-NII-2C, & U-NII-3 WIFI, only 2.4 GHz WLAN, and 2.4 GHz Bluetooth 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 80 MHz Bandwidth only for 5 GHz
b) Up to 20 MHz Bandwidth only for 2.4 GHz
c) No aggregate channel configurations
d) 2 Tx antenna output
e) Up to 1024 QAM is supported
f) TDWR and Band gap channels are supported for 5 GHz
g) MU-MIMO UL Operations are not supported

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" 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 5 GHz WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for 2.4 GHz WLAN, and 2.4 GHz Bluetooth operations since wireless router 1g SAR was < 1.2 W/kg.

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

(B) Licensed Transmitter(s)

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

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

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

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" 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 5G NR for Bands n260, and n261. RF Exposure assessment and simultaneous transmission analysis for these bands can be found in the Near Field PD Report (report SN can be found in Section 1.11 – Bibliography).

NR implementation is limited to EN-DC operations only, with the LTE Bands shown in the NR FR1 checklist acting as anchor bands. Per FCC guidance, SAR tests for NR Bands and LTE anchors bands were performed separately due to limitations in SAR probe calibration factors. Please see Section 11 for more details.

1.8 Guidance Applied

- IEEE 1528-2013
- FCC KDB Publication 941225 D01v03r01, D05v02r04, D05Av01r02, D06v02r01 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v06 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D04v01r03 (Phablet Procedures)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)
- May 2017 TCB Workshop Notes (LTE 4x4 Downlink MIMO)
- April 2018 TCB Workshop Notes (LTE Carrier Aggregation)
- April 2019 TCB Workshop Notes (IEEE 802.11ax)

1.9 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.

1.10 Bibliography

Report Type	Report Serial Number
PD Exposure Part 0 Test Report	Revision B.
Near Field PD Report (Part 1)	1M2007070106-01-R1.PY7
RF Exposure Part 0 Test Report	Revision B
RF Exposure Part 2 Test Report	1M2007070106-02.PY7
RF Exposure Compliance Summary Report	1M2007070106-03.PY7

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 17 (706.5 - 713.5 MHz)				
	LTE Band 13 (779.5 - 784.5 MHz)				
	LTE Band 26 (Cell) (814.7 - 848.3 MHz)				
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)				
	LTE Band 66 (AWS) (1710.7 - 1779.3 MHz)				
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 7 (2502.5 - 2567.5 MHz)				
	LTE Band 48 (3552.5 - 3697.5 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
	LTE Band 38 (2572.5 - 2617.5 MHz)				
Channel Bandwidths	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 17: 5 MHz, 10 MHz				
	LTE Band 13: 5 MHz, 10 MHz				
	LTE Band 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 66 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 7: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 48: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 38: 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 17: 5 MHz	706.5 (23755)		710 (23790)	713.5 (23825)	
LTE Band 17: 10 MHz	709 (23780)		710 (23790)	711 (23800)	
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 26 (Cell): 1.4 MHz	814.7 (26697)		831.5 (26865)	848.3 (27033)	
LTE Band 26 (Cell): 3 MHz	815.5 (26705)		831.5 (26865)	847.5 (27025)	
LTE Band 26 (Cell): 5 MHz	816.5 (26715)		831.5 (26865)	846.5 (27015)	
LTE Band 26 (Cell): 10 MHz	819 (26740)		831.5 (26865)	844 (26990)	
LTE Band 26 (Cell): 15 MHz	821.5 (26765)		831.5 (26865)	841.5 (26965)	
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 66 (AWS): 1.4 MHz	1710.7 (131979)		1745 (132322)	1779.3 (132665)	
LTE Band 66 (AWS): 3 MHz	1711.5 (131987)		1745 (132322)	1778.5 (132657)	
LTE Band 66 (AWS): 5 MHz	1712.5 (131997)		1745 (132322)	1777.5 (132647)	
LTE Band 66 (AWS): 10 MHz	1715 (132022)		1745 (132322)	1775 (132622)	
LTE Band 66 (AWS): 15 MHz	1717.5 (132047)		1745 (132322)	1772.5 (132597)	
LTE Band 66 (AWS): 20 MHz	1720 (132072)		1745 (132322)	1770 (132572)	
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 25 (PCS): 1.4 MHz	1850.7 (26047)		1882.5 (26365)	1914.3 (26683)	
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)		1882.5 (26365)	1913.5 (26675)	
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)		1882.5 (26365)	1912.5 (26665)	
LTE Band 25 (PCS): 10 MHz	1855 (26090)		1882.5 (26365)	1910 (26640)	
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)		1882.5 (26365)	1907.5 (26615)	
LTE Band 25 (PCS): 20 MHz	1860 (26140)		1882.5 (26365)	1905 (26590)	
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)		1880 (18900)	1909.3 (19193)	
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)		1880 (18900)	1908.5 (19185)	
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)		1880 (18900)	1907.5 (19175)	
LTE Band 2 (PCS): 10 MHz	1855 (18650)		1880 (18900)	1905 (19150)	
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)		1880 (18900)	1902.5 (19125)	
LTE Band 2 (PCS): 20 MHz	1860 (18700)		1880 (18900)	1900 (19100)	
LTE Band 7: 5 MHz	2502.5 (20775)		2535 (21100)	2567.5 (21425)	
LTE Band 7: 10 MHz	2505 (20800)		2535 (21100)	2565 (21400)	
LTE Band 7: 15 MHz	2507.5 (20825)		2535 (21100)	2562.5 (21375)	
LTE Band 7: 20 MHz	2510 (20850)		2535 (21100)	2560 (21350)	
LTE Band 48: 5 MHz	3552.5 (55265)	3600.8 (55748)	N/A	3649.2 (56232)	3697.5 (56715)
LTE Band 48: 10 MHz	3555 (55290)	3601.7 (55757)	N/A	3648.3 (56223)	3695 (56690)
LTE Band 48: 15 MHz	3557.5 (55315)	3602.5 (55765)	N/A	3647.5 (56215)	3692.5 (56665)
LTE Band 48: 20 MHz	3560 (55340)	3603.3 (55773)	N/A	3646.7 (56207)	3690 (56640)
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 38: 5 MHz	2572.5 (37775)		2595 (38000)	2617.5 (38225)	
LTE Band 38: 10 MHz	2575 (37800)		2595 (38000)	2615 (38200)	
LTE Band 38: 15 MHz	2577.5 (37825)		2595 (38000)	2612.5 (38175)	
LTE Band 38: 20 MHz	2580 (37850)		2595 (38000)	2610 (38150)	
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, downlink MIMO, LAA features as shown in Section 9 and Appendix F. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. The following LTE Release 15 Features are not supported: Relay, HetNet, Enhanced MIMO, eICIC, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

NR Information					
Form Factor	Portable Handset				
	NR Band n5 (Cell) (826.5 - 846.5 MHz)				
	NR Band n66 (AWS) (1712.5 - 1777.5 MHz)				
	NR Band n2 (PCS) (1852.5 - 1907.5 MHz)				
	NR Band n5 (Cell): 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	NR Band n66 (AWS): 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	NR Band n2 (PCS): 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
NR Band n5 (Cell): 5 MHz	826.5 (165300)		836.5 (167300)	846.5 (169300)	
NR Band n5 (Cell): 10 MHz	829 (165800)		836.5 (167300)	844 (168800)	
NR Band n5 (Cell): 15 MHz	831.5 (166300)		836.5 (167300)	841.5 (168300)	
NR Band n5 (Cell): 20 MHz	834 (166800)		836.5 (167300)	839 (167800)	
NR Band n66 (AWS): 5 MHz	1712.5 (342500)		1745 (349000)	1777.5 (355500)	
NR Band n66 (AWS): 10 MHz	1715 (343000)		1745 (349000)	1775 (355000)	
NR Band n66 (AWS): 15 MHz	1717.5 (343500)		1745 (349000)	1772.5 (354500)	
NR Band n66 (AWS): 20 MHz	1720 (344000)		1745 (349000)	1770 (354000)	
NR Band n2 (PCS): 5 MHz	1852.5 (370500)		1880 (376000)	1907.5 (381500)	
NR Band n2 (PCS): 10 MHz	1855 (371000)		1880 (376000)	1905 (381000)	
NR Band n2 (PCS): 15 MHz	1857.5 (371500)		1880 (376000)	1902.5 (380500)	
NR Band n2 (PCS): 20 MHz	1860 (372000)		1880 (376000)	1900 (380000)	
SCS for NR Band n5/n66/n2	15 kHz				
Modulations Supported in UL	DFT-s-OFDM: π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM				
NR MPR Permanently implemented per 3GPP TS	YES				
A-MPR (Additional MPR) disabled for SAR Testing?	YES				
EN-DC Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations				
LTE Anchor Bands for NR Band n5	LTE Band 2/66				
LTE Anchor Bands for NR Band n66 (AWS)	LTE Band 5/13				
LTE Anchor Bands for NR Band n2 (PCS)	LTE Band 5/13				

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:

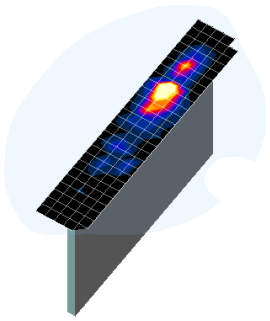

Figure 4-1
Sample SAR Area Scan

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*Δz_{zoom}(n-1)	≥ 30
2-3 GHz	≤ 12	≤ 5	≤ 5	≤ 4	≤ 1.5*Δz_{zoom}(n-1)	≥ 30
3-4 GHz	≤ 12	≤ 5	≤ 4	≤ 3	≤ 1.5*Δz_{zoom}(n-1)	≥ 28
4-5 GHz	≤ 10	≤ 4	≤ 3	≤ 2.5	≤ 1.5*Δz_{zoom}(n-1)	≥ 25
5-6 GHz	≤ 10	≤ 4	≤ 2	≤ 2	≤ 1.5*Δz_{zoom}(n-1)	≥ 22

*Also compliant to IEEE 1528-2013 Table 6

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].

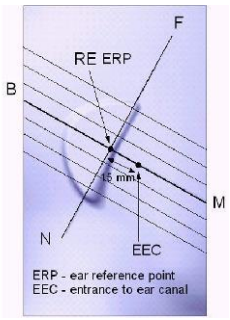

Figure 5-1
Close-Up Side view of ERP

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

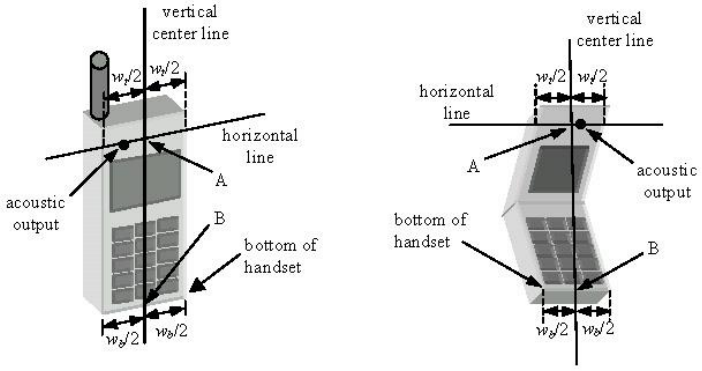

Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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.

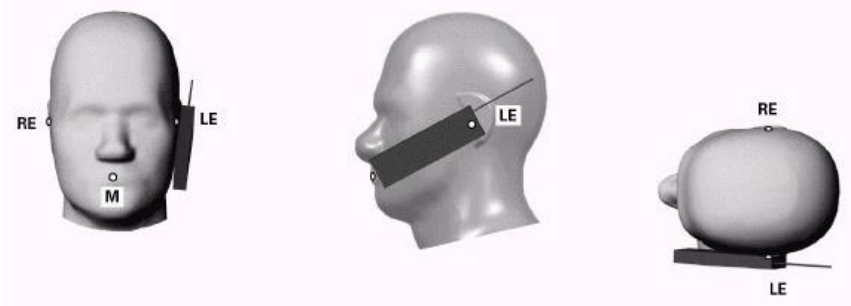

Figure 6-1 Front, Side and Top View of Cheek Position

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).

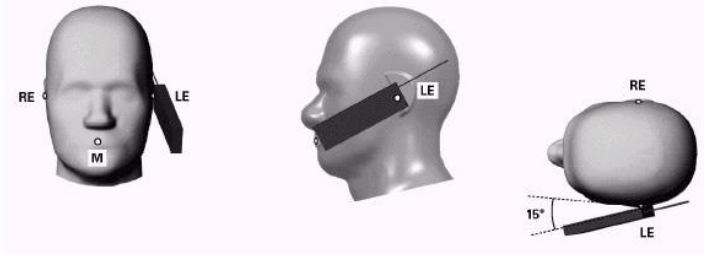

Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

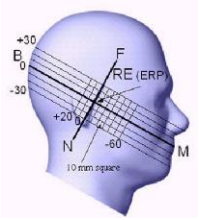

Figure 6-3
Side view w/ relevant markings

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.

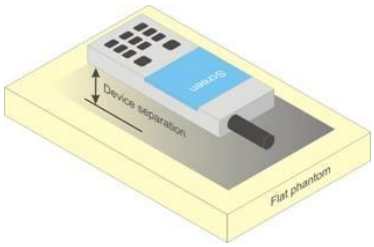

Figure 6-4
Sample Body-Worn Diagram

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.

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.

9 RF CONDUCTED POWERS

All conducted power measurements for 2G/3G/4G/5G Sub6 WWAN 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}

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	32.50	32.48	30.20	28.26	**26.94**	26.60	25.04	23.32	22.69
	190	32.43	32.41	30.20	28.34	**27.17**	26.85	25.00	23.48	22.38
	251	32.27	32.25	30.11	28.27	**27.07**	26.71	25.12	23.15	22.24

Calculated Maximum Frame-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 850	128	23.30	23.28	24.01	23.83	**23.76**	17.40	18.85	18.89	19.51
	190	23.23	23.21	24.01	23.91	**23.99**	17.65	18.81	19.05	19.20
	251	23.07	23.05	23.92	23.84	**23.89**	17.51	18.93	18.72	19.06
GSM 850	**Frame Avg.Targets:**	23.30	23.30	23.31	23.27	**23.32**	17.80	19.31	19.07	19.32

Table 9-2
Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot)

Maximum Burst-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 1900	512	26.74	26.84	23.51	21.85	**20.71**	25.89	24.22	22.11	21.04
	661	26.73	26.85	23.56	21.88	**20.73**	26.15	24.52	22.33	21.41
	810	26.84	26.77	23.52	21.73	**20.54**	25.83	24.24	21.97	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	17.54	17.64	17.32	17.42	**17.53**	16.69	18.03	17.68	17.86
	661	17.53	17.65	17.37	17.45	**17.55**	16.95	18.33	17.90	18.23
	810	17.64	17.57	17.33	17.30	**17.36**	16.63	18.05	17.54	17.76
GSM 1900	**Frame Avg.Targets:**	18.30	18.30	18.31	18.27	**18.32**	16.80	18.31	18.07	18.32

Note:

1. Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
2. GPRS/EDGE (GMSK) output powers were measured with coding scheme setting of 1 (CS1) on the base station simulator. CS1 was configured to measure GPRS output power measurements and SAR to ensure GMSK modulation in the signal. Our Investigation has shown that CS1 - CS4 settings do not have any impact on the output levels or modulation in the GPRS modes.
3. EDGE (8-PSK) output powers were measured with MCS7 on the base station simulator. MCS7 coding scheme was used to measure the output powers for EDGE since investigation has shown that choosing MCS7 coding scheme will ensure 8-PSK modulation. It has been shown that MCS levels that produce 8-PSK modulation do not have an impact on output power.

GSM Class: A
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}

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	
99	WCDMA	12.2 kbps RMC	23.94	23.90	23.85	-
99		12.2 kbps AMR	23.88	23.86	23.84	-
6	HSDPA	Subtest 1	23.02	22.92	22.73	0
6		Subtest 2	23.01	22.89	22.91	0
6		Subtest 3	22.50	22.47	22.38	0.5
6		Subtest 4	22.49	22.46	22.38	0.5
6	HSUPA	Subtest 1	23.07	22.98	22.96	0
6		Subtest 2	21.07	21.01	20.97	2
6		Subtest 3	22.00	22.05	22.00	1
6		Subtest 4	21.08	21.02	20.99	2
6		Subtest 5	23.07	23.00	22.99	0
8	DC-HSDPA	Subtest 1	22.99	23.01	22.97	0
8		Subtest 2	23.04	22.98	22.95	0
8		Subtest 3	22.56	22.49	22.46	0.5
8		Subtest 4	22.57	22.46	22.44	0.5

Table 9-4
Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot)

3GPP Release Version	Mode	3GPP 34.121 Subtest	AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	15.60	15.63	15.66	15.75	15.79	15.79	-
99		12.2 kbps AMR	15.74	15.69	15.73	15.77	15.78	15.81	-
6	HSDPA	Subtest 1	14.90	14.93	14.91	15.07	15.10	15.00	0
6		Subtest 2	14.96	14.93	15.02	15.05	15.13	15.08	0
6		Subtest 3	14.48	14.46	14.48	14.57	14.64	14.60	0.5
6		Subtest 4	14.39	14.51	14.55	14.59	14.69	14.62	0.5
6	HSUPA	Subtest 1	14.90	14.92	14.95	15.00	15.02	15.03	0
6		Subtest 2	12.89	12.90	12.96	13.01	13.04	13.03	2
6		Subtest 3	13.86	13.89	13.90	14.00	14.03	14.00	1
6		Subtest 4	12.89	12.91	12.96	13.01	13.04	13.03	2
6		Subtest 5	14.88	14.90	14.93	14.98	15.01	15.01	0
8	DC-HSDPA	Subtest 1	14.93	14.86	14.91	15.02	14.89	15.06	0
8		Subtest 2	14.95	14.94	14.87	15.05	14.91	15.02	0
8		Subtest 3	14.48	14.43	14.42	14.54	14.57	14.54	0.5
8		Subtest 4	14.44	14.36	14.41	14.53	14.57	14.54	0.5

DC-HSDPA considerations

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

Figure 9-2
Power Measurement Setup

9.3 LTE Conducted Powers

9.3.1 LTE Band 12

Table 9-5
LTE Band 12 Measured P_{max} for all DSI - 10 MHz Bandwidth

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23095 (707.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	24.15	0	0
	1	25	**24.18**		0
	1	49	24.07		0
	25	0	**23.45**	0-1	1
	25	12	23.44		1
	25	25	23.42		1
	50	0	23.40		1
16QAM	1	0	23.72	0-1	1
	1	25	23.77		1
	1	49	23.66		1
	25	0	22.11	0-2	2
	25	12	22.10		2
	25	25	22.09		2
	50	0	22.11		2
64QAM	1	0	22.39	0-2	2
	1	25	22.51		2
	1	49	22.45		2
	25	0	21.17	0-3	3
	25	12	21.10		3
	25	25	21.09		3
	50	0	21.11		3

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

Table 9-6
LTE Band 12 Measured P_{max} for all DSI - 5 MHz Bandwidth

LTE Band 12 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23035 (701.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23155 (713.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.19	24.20	24.06	0	0
	1	12	24.17	24.03	23.93		0
	1	24	24.13	24.05	23.93		0
	12	0	23.66	23.50	23.48	0-1	1
	12	6	23.60	23.45	23.48		1
	12	13	23.56	23.48	23.39		1
	25	0	23.59	23.49	23.42		1
16QAM	1	0	23.75	23.40	23.25	0-1	1
	1	12	23.68	23.35	23.20		1
	1	24	23.58	23.34	23.14		1
	12	0	22.58	22.21	22.23	0-2	2
	12	6	22.51	22.18	22.22		2
	12	13	22.45	22.20	22.12		2
	25	0	22.31	22.20	22.16		2
64QAM	1	0	22.12	22.40	22.53	0-2	2
	1	12	22.75	22.35	22.51		2
	1	24	22.82	22.31	22.36		2
	12	0	20.87	21.16	21.30	0-3	3
	12	6	21.18	21.10	21.24		3
	12	13	21.31	21.07	21.19		3
	25	0	21.18	21.17	21.21		3

Table 9-7
LTE Band 12 Measured P_{max} for all DSI - 3 MHz Bandwidth

LTE Band 12 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23025 (700.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23165 (714.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.12	24.01	23.93	0	0
	1	7	24.10	23.95	23.82		0
	1	14	23.98	23.98	23.78		0
	8	0	23.54	23.48	23.40	0-1	1
	8	4	23.60	23.54	23.42		1
	8	7	23.51	23.44	23.35		1
	15	0	23.60	23.43	23.41		1
16QAM	1	0	23.55	23.32	23.73	0-1	1
	1	7	23.48	23.25	23.57		1
	1	14	23.46	23.23	23.51		1
	8	0	22.41	22.21	22.27	0-2	2
	8	4	22.39	22.26	22.27		2
	8	7	22.34	22.25	22.21		2
	15	0	22.37	22.10	22.16		2
64QAM	1	0	21.81	22.17	22.29	0-2	2
	1	7	22.02	22.16	22.20		2
	1	14	22.29	22.14	22.14		2
	8	0	20.74	21.19	21.27	0-3	3
	8	4	20.89	21.25	21.26		3
	8	7	21.03	21.19	21.19		3
	15	0	20.89	21.29	21.13		3

Table 9-8
LTE Band 12 Measured P_{max} for all DSI - 1.4 MHz Bandwidth

LTE Band 12 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23017 (699.7 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23173 (715.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.03	24.00	23.76	0	0
	1	2	24.07	24.14	23.74		0
	1	5	23.96	24.01	23.72		0
	3	0	24.05	23.92	23.82		0
	3	2	24.07	24.00	23.84		0
	3	3	24.02	23.96	23.76		0
	6	0	23.47	23.32	23.28	0-1	1
16QAM	1	0	23.27	23.26	23.20	0-1	1
	1	2	23.31	23.37	23.27		1
	1	5	23.25	23.34	23.18		1
	3	0	23.37	23.29	23.01		1
	3	2	23.36	23.38	23.02		1
	3	3	23.31	23.33	22.96		1
	6	0	22.17	22.16	21.96	0-2	2
64QAM	1	0	21.54	22.46	22.25	0-2	2
	1	2	21.68	22.59	22.27		2
	1	5	21.61	22.43	22.25		2
	3	0	21.73	22.40	22.16		2
	3	2	21.86	22.46	22.19		2
	3	3	21.82	22.39	22.16		2
	6	0	20.63	21.03	21.10	0-3	3

9.3.2 LTE Band 13

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

LTE Band 13 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**24.46**	0	0
	1	25	24.34		0
	1	49	24.32		0
	25	0	23.48	0-1	1
	25	12	23.45		1
	25	25	**23.51**		1
	50	0	23.49		1
16QAM	1	0	23.61	0-1	1
	1	25	23.66		1
	1	49	23.52		1
	25	0	22.20	0-2	2
	25	12	22.21		2
	25	25	22.20		2
	50	0	22.20		2
64QAM	1	0	22.36	0-2	2
	1	25	22.28		2
	1	49	22.27		2
	25	0	20.83	0-3	3
	25	12	21.28		3
	25	25	21.29		3
	50	0	21.25		3

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

LTE Band 13 5 MHz Bandwidth					
Modulation	**RB Size**	**RB Offset**	**Mid Channel** **23230 (782.0 MHz)** **Conducted Power [dBm]**	**MPR Allowed per 3GPP [dB]**	**MPR [dB]**
QPSK	1	0	24.30	0	0
	1	12	24.27		0
	1	24	24.30		0
	12	0	23.49	0-1	1
	12	6	23.48		1
	12	13	23.54		1
	25	0	23.47		1
16QAM	1	0	23.25	0-1	1
	1	12	23.28		1
	1	24	23.26		1
	12	0	22.22	0-2	2
	12	6	22.17		2
	12	13	22.21		2
	25	0	22.23		2
64QAM	1	0	22.44	0-2	2
	1	12	22.53		2
	1	24	22.45		2
	12	0	21.30	0-3	3
	12	6	21.26		3
	12	13	21.28		3
	25	0	21.23		3

Note: LTE Band 13 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

9.3.3 LTE Band 26 (Cell)

Table 9-11
LTE Band 26 (Cell) Measured P_{max} for all DSI - 15 MHz Bandwidth

LTE Band 26 (Cell) 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 26865 (831.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	23.75	0	0
	1	36	**23.76**		0
	1	74	23.65		0
	36	0	**23.32**	0-1	1
	36	18	23.30		1
	36	37	23.29		1
	75	0	23.31		1
16QAM	1	0	23.44	0-1	1
	1	36	23.45		1
	1	74	23.35		1
	36	0	22.07	0-2	2
	36	18	22.05		2
	36	37	22.05		2
	75	0	22.06		2
64QAM	1	0	22.13	0-2	2
	1	36	22.16		2
	1	74	22.07		2
	36	0	21.06	0-3	3
	36	18	21.06		3
	36	37	21.05		3
	75	0	21.05		3

Note: LTE Band 26 (Cell) at 15 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 9-12
LTE Band 26 (Cell) Measured P_{max} for all DSI - 10 MHz Bandwidth

LTE Band 26 (Cell) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26740 (819.0 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 26990 (844.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.07	23.93	23.86	0	0
	1	25	23.90	23.90	23.72		0
	1	49	23.93	23.90	23.68		0
	25	0	23.16	22.97	22.99	0-1	1
	25	12	23.15	23.09	22.97		1
	25	25	23.04	23.00	22.93		1
	50	0	23.14	23.05	22.93		1
16QAM	1	0	22.96	23.27	23.05	0-1	1
	1	25	22.82	23.21	22.97		1
	1	49	22.77	23.16	22.91		1
	25	0	21.93	21.79	21.81	0-2	2
	25	12	21.90	21.88	21.76		2
	25	25	21.81	21.79	21.78		2
	50	0	21.85	21.75	21.65		2
64QAM	1	0	21.80	21.79	21.94	0-2	2
	1	25	21.64	21.77	21.99		2
	1	49	21.60	21.82	21.78		2
	25	0	21.00	20.80	20.79	0-3	3
	25	12	20.98	20.86	20.78		3
	25	25	20.86	20.80	20.73		3
	50	0	20.87	20.83	20.71		3

Table 9-13
LTE Band 26 (Cell) Measured P_{max} for all DSI - 5 MHz Bandwidth

LTE Band 26 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26715 (816.5 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27015 (846.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.18	24.02	23.84	0	0
	1	12	24.10	24.04	23.81		0
	1	24	24.01	24.03	23.75		0
	12	0	23.22	23.06	23.00	0-1	1
	12	6	23.24	23.07	22.96		1
	12	13	23.11	23.01	22.86		1
	25	0	23.16	23.05	22.97		1
16QAM	1	0	23.04	23.11	22.84	0-1	1
	1	12	22.95	23.14	22.78		1
	1	24	22.81	23.10	22.83		1
	12	0	21.94	21.93	21.73	0-2	2
	12	6	21.93	21.96	21.72		2
	12	13	21.84	21.89	21.62		2
	25	0	21.91	21.73	21.75		2
64QAM	1	0	22.34	22.35	21.88	0-2	2
	1	12	22.21	22.39	21.81		2
	1	24	22.08	22.40	21.75		2
	12	0	21.03	20.78	20.64	0-3	3
	12	6	21.00	20.83	20.64		3
	12	13	20.87	20.79	20.54		3
	25	0	20.91	20.89	20.71		3

Table 9-14
LTE Band 26 (Cell) Measured P_{max} for all DSI - 3 MHz Bandwidth

LTE Band 26 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26705 (815.5 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27025 (847.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.08	23.88	23.87	0	0
	1	7	24.05	23.90	23.79		0
	1	14	23.91	23.93	23.74		0
	8	0	23.17	22.97	22.96	0-1	1
	8	4	23.20	23.06	22.96		1
	8	7	23.11	22.96	22.88		1
	15	0	23.19	23.03	22.91		1
16QAM	1	0	23.21	22.81	23.20	0-1	1
	1	7	23.10	22.80	23.14		1
	1	14	23.03	22.77	23.09		1
	8	0	21.98	21.73	21.80	0-2	2
	8	4	21.98	21.79	21.80		2
	8	7	21.90	21.76	21.71		2
	15	0	21.99	21.71	21.73		2
64QAM	1	0	22.24	21.66	21.80	0-2	2
	1	7	22.11	21.67	21.75		2
	1	14	22.04	21.76	21.71		2
	8	0	21.01	20.69	20.78	0-3	3
	8	4	20.98	20.78	20.80		3
	8	7	20.91	20.74	20.70		3
	15	0	20.90	20.87	20.65		3

Table 9-15
LTE Band 26 (Cell) Measured P_{max} for all DSI - 1.4 MHz Bandwidth

LTE Band 26 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26697 (814.7 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27033 (848.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.97	23.81	23.67	0	0
	1	2	24.03	23.91	23.73		0
	1	5	23.90	23.82	23.65		0
	3	0	24.06	23.86	23.78		0
	3	2	24.06	23.95	23.85		0
	3	3	23.99	23.87	23.76		0
	6	0	23.10	22.92	22.80	0-1	1
16QAM	1	0	23.07	22.71	22.80	0-1	1
	1	2	23.13	22.82	22.88		1
	1	5	23.04	22.74	22.77		1
	3	0	22.84	22.75	22.55		1
	3	2	22.85	22.87	22.58		1
	3	3	22.75	22.79	22.51		1
	6	0	21.80	21.67	21.52	0-2	2
64QAM	1	0	22.09	21.59	21.77	0-2	2
	1	2	22.11	21.69	21.81		2
	1	5	22.03	21.58	21.76		2
	3	0	22.00	21.78	21.74		2
	3	2	22.03	21.93	21.77		2
	3	3	22.02	21.85	21.72		2
	6	0	20.88	20.72	20.66	0-3	3

9.3.4 LTE Band 66 (AWS)

Table 9-16
LTE Band 66 (AWS) Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	15.71	**15.94**	15.85	0	0
	1	50	15.70	15.90	15.87		0
	1	99	15.67	15.89	15.75		0
	50	0	15.81	15.92	15.96	0-1	0
	50	25	15.92	15.93	16.02		0
	50	50	15.86	**16.04**	16.03		0
	100	0	15.85	15.87	15.92		0
16QAM	1	0	15.80	15.95	15.87	0-1	0
	1	50	15.79	15.82	15.93		0
	1	99	15.85	15.86	15.84		0
	50	0	15.85	15.93	16.01	0-2	0
	50	25	15.99	15.97	16.00		0
	50	50	15.90	16.00	16.02		0
	100	0	15.88	15.96	15.99		0
64QAM	1	0	16.07	16.15	16.42	0-2	0
	1	50	16.07	16.14	16.36		0
	1	99	16.06	16.12	16.32		0
	50	0	15.97	15.98	15.97	0-3	0
	50	25	15.90	15.98	16.00		0
	50	50	15.85	16.04	16.00		0
	100	0	15.90	15.92	16.03		0

Table 9-17
LTE Band 66 (AWS) Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132047 (1717.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132597 (1772.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	15.52	15.82	15.78	0	0
	1	36	15.69	15.91	15.87		0
	1	74	15.61	15.86	15.74		0
	36	0	15.74	15.84	15.97	0-1	0
	36	18	15.89	15.83	16.09		0
	36	37	15.83	15.93	16.01		0
	75	0	15.79	15.81	15.93		0
16QAM	1	0	15.93	16.04	16.11	0-1	0
	1	36	16.11	16.16	16.13		0
	1	74	16.05	16.06	16.07		0
	36	0	15.70	15.90	15.98	0-2	0
	36	18	15.82	15.97	16.10		0
	36	37	15.78	16.00	16.04		0
	75	0	15.81	15.84	15.95		0
64QAM	1	0	16.36	16.00	15.83	0-2	0
	1	36	16.32	16.22	15.92		0
	1	74	16.33	16.11	15.79		0
	36	0	15.76	15.91	16.09	0-3	0
	36	18	15.89	15.98	16.16		0
	36	37	15.83	15.98	16.12		0
	75	0	15.84	15.91	15.98		0

Table 9-18
LTE Band 66 (AWS) Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132022 (1715.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132622 (1775.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	15.58	15.89	15.78	0	0
	1	25	15.52	15.79	15.80		0
	1	49	15.56	15.83	15.78		0
	25	0	15.77	15.86	15.97	0-1	0
	25	12	15.79	15.88	15.96		0
	25	25	15.75	15.91	16.00		0
	50	0	15.78	15.86	15.97		0
16QAM	1	0	16.04	15.95	16.09	0-1	0
	1	25	15.91	15.98	16.07		0
	1	49	15.97	15.93	16.07		0
	25	0	15.82	15.88	15.97	0-2	0
	25	12	15.81	15.90	15.96		0
	25	25	15.83	15.94	16.03		0
	50	0	15.82	15.87	15.93		0
64QAM	1	0	16.35	15.96	15.77	0-2	0
	1	25	16.38	16.09	15.82		0
	1	49	16.40	16.03	15.77		0
	25	0	15.77	15.81	16.03	0-3	0
	25	12	15.69	15.88	16.01		0
	25	25	15.74	15.87	16.07		0
	50	0	15.80	15.86	15.98		0

Table 9-19
LTE Band 66 (AWS) Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131997 (1712.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132647 (1777.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	15.59	15.66	15.95	0	0
	1	12	15.62	15.69	15.94		0
	1	24	15.59	15.68	15.85		0
	12	0	15.75	15.80	15.99	0-1	0
	12	6	15.79	15.81	16.01		0
	12	13	15.75	15.84	15.97		0
	25	0	15.73	15.90	16.04		0
16QAM	1	0	15.63	15.97	16.30	0-1	0
	1	12	15.69	16.07	16.28		0
	1	24	15.66	15.96	16.24		0
	12	0	15.79	15.90	16.06	0-2	0
	12	6	15.82	15.92	16.06		0
	12	13	15.75	15.94	16.02		0
	25	0	15.86	15.88	16.05		0
64QAM	1	0	16.35	16.20	16.14	0-2	0
	1	12	16.42	16.23	16.10		0
	1	24	16.33	16.23	16.11		0
	12	0	15.79	15.98	16.09	0-3	0
	12	6	15.88	16.01	16.11		0
	12	13	15.80	16.02	16.05		0
	25	0	15.76	15.85	16.15		0

Table 9-20
LTE Band 66 (AWS) Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131987 (1711.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132657 (1778.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	15.55	15.71	15.75	0	0
	1	7	15.49	15.92	15.78		0
	1	14	15.56	15.76	15.75		0
	8	0	15.81	15.82	15.96	0-1	0
	8	4	15.81	15.93	15.99		0
	8	7	15.77	15.85	15.95		0
	15	0	15.78	15.85	15.96		0
16QAM	1	0	15.95	15.84	16.09	0-1	0
	1	7	15.93	15.97	16.14		0
	1	14	15.90	15.92	15.91		0
	8	0	15.68	15.83	16.01	0-2	0
	8	4	15.71	15.92	16.06		0
	8	7	15.60	15.85	15.96		0
	15	0	15.79	15.83	16.03		0
64QAM	1	0	16.42	15.97	15.86	0-2	0
	1	7	16.43	16.04	15.83		0
	1	14	16.42	16.06	15.91		0
	8	0	15.84	15.83	15.94	0-3	0
	8	4	15.93	15.90	15.94		0
	8	7	15.82	15.87	15.90		0
	15	0	15.72	15.99	16.05		0

Table 9-21
LTE Band 66 (AWS) Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 1.4 MHz Bandwidth

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131979 (1710.7 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132665 (1779.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	15.51	15.68	15.91	0	0
	1	2	15.53	15.79	15.93		0
	1	5	15.46	15.67	15.90		0
	3	0	15.61	15.70	15.76		0
	3	2	15.64	15.73	15.77		0
	3	3	15.59	15.67	15.73		0
	6	0	15.69	15.79	15.94	0-1	0
16QAM	1	0	15.84	15.84	15.94	0-1	0
	1	2	16.00	15.90	16.03		0
	1	5	15.87	15.82	15.96		0
	3	0	15.78	15.65	15.99		0
	3	2	15.86	15.71	16.03		0
	3	3	15.80	15.68	15.93		0
	6	0	15.74	15.76	15.88	0-2	0
64QAM	1	0	16.40	15.99	16.28	0-2	0
	1	2	16.37	16.08	16.35		0
	1	5	16.34	15.97	16.22		0
	3	0	15.76	15.63	15.99		0
	3	2	15.73	15.71	15.98		0
	3	3	15.69	15.66	15.94		0
	6	0	15.54	15.84	15.93	0-3	0

9.3.5 LTE Band 25 (PCS)

Table 9-22
LTE Band 25 (PCS) Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	15.90	15.94	15.77	0	0
	1	50	15.94	**16.09**	15.80		0
	1	99	15.86	15.97	15.76		0
	50	0	16.07	16.01	15.98	0-1	0
	50	25	16.13	**16.14**	15.97		0
	50	50	16.10	16.05	16.06		0
	100	0	16.08	16.05	15.93		0
16QAM	1	0	15.96	15.90	15.85	0-1	0
	1	50	16.00	15.94	15.93		0
	1	99	15.93	15.91	15.84		0
	50	0	16.11	16.04	16.00	0-2	0
	50	25	16.19	16.13	15.99		0
	50	50	16.13	16.11	16.04		0
	100	0	16.07	16.09	15.96		0
64QAM	1	0	16.23	16.16	16.37	0-2	0
	1	50	16.28	16.30	16.35		0
	1	99	16.22	16.20	16.34		0
	50	0	16.03	16.11	15.99	0-3	0
	50	25	16.11	16.16	15.98		0
	50	50	16.07	16.13	16.03		0
	100	0	16.13	16.11	15.99		0

Table 9-23
LTE Band 25 (PCS) Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26115 (1857.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26615 (1907.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	15.79	15.94	15.69	0	0
	1	36	15.85	16.01	15.76		0
	1	74	15.77	15.94	15.67		0
	36	0	16.09	15.95	15.91	0-1	0
	36	18	16.13	15.99	15.98		0
	36	37	16.05	16.00	15.99		0
	75	0	16.04	16.00	15.90		0
16QAM	1	0	16.26	16.14	16.00	0-1	0
	1	36	16.30	16.21	16.09		0
	1	74	16.21	16.14	15.97		0
	36	0	16.08	16.04	15.92	0-2	0
	36	18	16.11	16.03	15.95		0
	36	37	16.02	16.09	15.99		0
	75	0	16.07	16.02	15.90		0
64QAM	1	0	16.28	16.16	15.68	0-2	0
	1	36	16.31	16.31	15.78		0
	1	74	16.30	16.19	15.69		0
	36	0	16.13	16.03	16.04	0-3	0
	36	18	16.11	16.04	16.01		0
	36	37	16.06	16.03	16.09		0
	75	0	16.09	16.05	15.94		0

Table 9-24
LTE Band 25 (PCS) Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26090 (1855.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26640 (1910.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	15.84	15.97	15.68	0	0
	1	25	15.76	15.85	15.70		0
	1	49	15.83	15.97	15.70		0
	25	0	16.06	15.93	15.87	0-1	0
	25	12	16.09	15.97	15.88		0
	25	25	16.08	15.99	15.92		0
	50	0	16.08	16.02	15.89		0
16QAM	1	0	16.26	15.99	15.99	0-1	0
	1	25	16.17	16.10	15.99		0
	1	49	16.21	16.08	16.04		0
	25	0	16.08	15.97	15.85	0-2	0
	25	12	16.10	16.02	15.90		0
	25	25	16.13	16.02	15.97		0
	50	0	16.15	16.05	15.84		0
64QAM	1	0	16.37	16.02	15.61	0-2	0
	1	25	16.41	16.20	15.70		0
	1	49	16.30	16.11	15.76		0
	25	0	16.02	15.89	15.90	0-3	0
	25	12	16.07	15.92	15.95		0
	25	25	16.08	15.98	16.04		0
	50	0	16.12	16.04	15.91		0

Table 9-25
LTE Band 25 (PCS) Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 5 MHz Bandwidth

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26065 (1852.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26665 (1912.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	15.90	15.71	15.91	0	0
	1	12	15.87	15.80	15.91		0
	1	24	15.90	15.85	15.89		0
	12	0	15.99	15.87	15.88	0-1	0
	12	6	16.07	15.97	15.95		0
	12	13	16.11	16.02	15.99		0
	25	0	16.04	15.97	15.92		0
16QAM	1	0	15.92	16.04	16.26	0-1	0
	1	12	15.91	16.11	16.24		0
	1	24	15.97	16.11	16.26		0
	12	0	16.06	15.95	15.94	0-2	0
	12	6	16.10	16.08	16.01		0
	12	13	16.11	16.08	16.01		0
	25	0	16.16	15.96	16.01		0
64QAM	1	0	16.48	16.28	16.09	0-2	0
	1	12	16.50	16.35	16.07		0
	1	24	16.51	16.36	16.10		0
	12	0	16.03	16.01	15.97	0-3	0
	12	6	16.10	16.16	16.05		0
	12	13	16.13	16.16	16.05		0
	25	0	16.09	15.93	16.06		0

Table 9-26
LTE Band 25 (PCS) Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 3 MHz Bandwidth

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26055 (1851.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26675 (1913.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	15.78	15.76	15.60	0	0
	1	7	15.82	16.03	15.68		0
	1	14	15.90	15.94	15.72		0
	8	0	16.02	15.83	15.84	0-1	0
	8	4	16.09	15.97	15.96		0
	8	7	16.04	15.97	15.92		0
	15	0	16.05	15.94	15.92		0
16QAM	1	0	16.17	15.84	15.93	0-1	0
	1	7	16.18	16.04	15.94		0
	1	14	16.25	16.10	16.06		0
	8	0	15.86	15.89	15.88	0-2	0
	8	4	15.99	15.96	16.01		0
	8	7	15.94	16.01	15.97		0
	15	0	16.09	15.90	15.97		0
64QAM	1	0	15.83	16.00	15.68	0-2	0
	1	7	15.90	16.15	15.75		0
	1	14	16.00	16.18	15.80		0
	8	0	16.07	15.87	15.81	0-3	0
	8	4	16.17	16.01	15.92		0
	8	7	16.17	16.00	15.90		0
	15	0	15.96	16.03	15.97		0

Table 9-27
LTE Band 25 (PCS) Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) – 1.4 MHz Bandwidth

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26047 (1850.7 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26683 (1914.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	15.91	15.64	15.74	0	0
	1	2	16.03	15.72	15.80		0
	1	5	15.97	15.69	15.79		0
	3	0	15.80	15.72	15.72		0
	3	2	15.91	15.85	15.80		0
	3	3	15.89	15.80	15.73		0
	6	0	15.97	15.86	15.82	0-1	0
16QAM	1	0	15.94	15.96	15.86	0-1	0
	1	2	16.08	16.11	15.99		0
	1	5	16.05	16.09	15.91		0
	3	0	16.01	15.95	15.61		0
	3	2	16.08	16.03	15.71		0
	3	3	16.07	15.98	15.64		0
	6	0	15.98	15.90	15.80	0-2	0
64QAM	1	0	16.31	16.25	15.98	0-2	0
	1	2	16.47	16.33	16.08		0
	1	5	16.36	16.25	16.06		0
	3	0	16.01	15.92	15.63		0
	3	2	16.10	15.96	15.74		0
	3	3	16.04	15.91	15.69		0
	6	0	16.03	15.74	15.88	0-3	0

9.3.6 LTE Band 7

Table 9-28
LTE Band 7 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 20 MHz Bandwidth

LTE Band 7 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20850 (2510.0 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21350 (2560.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	15.74	15.86	15.79	0	0
	1	50	15.77	**15.93**	15.80		0
	1	99	15.76	15.84	15.67		0
	50	0	15.87	15.92	15.97	0-1	0
	50	25	15.96	15.93	15.97		0
	50	50	15.95	**15.98**	15.96		0
	100	0	15.92	15.92	15.88		0
16QAM	1	0	15.80	15.85	15.82	0-1	0
	1	50	15.78	15.89	15.88		0
	1	99	15.89	15.87	15.72		0
	50	0	15.92	16.00	15.95	0-2	0
	50	25	15.99	16.01	16.05		0
	50	50	16.05	16.07	15.97		0
	100	0	15.91	15.95	15.93		0
64QAM	1	0	16.07	16.07	16.24	0-2	0
	1	50	16.06	16.21	16.22		0
	1	99	16.19	16.10	16.12		0
	50	0	15.84	16.02	15.95	0-3	0
	50	25	15.93	16.04	16.04		0
	50	50	15.93	16.11	15.98		0
	100	0	15.93	15.97	15.98		0

Table 9-29
LTE Band 7 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 15 MHz Bandwidth

LTE Band 7 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20825 (2507.5 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21375 (2562.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	15.61	15.87	15.71	0	0
	1	36	15.71	15.96	15.75		0
	1	74	15.59	15.87	15.63		0
	36	0	15.82	15.95	15.96	0-1	0
	36	18	15.92	15.97	15.95		0
	36	37	15.94	15.96	15.95		0
	75	0	15.87	15.88	15.90		0
16QAM	1	0	16.07	16.01	16.06	0-1	0
	1	36	16.08	16.15	16.02		0
	1	74	16.10	16.08	16.04		0
	36	0	15.82	16.00	16.00	0-2	0
	36	18	15.89	16.05	16.02		0
	36	37	15.87	16.06	16.01		0
	75	0	15.85	15.88	15.89		0
64QAM	1	0	15.73	16.12	15.75	0-2	0
	1	36	15.67	16.24	15.74		0
	1	74	15.76	16.12	15.71		0
	36	0	15.85	15.96	16.09	0-3	0
	36	18	15.92	16.02	16.06		0
	36	37	15.94	16.04	16.06		0
	75	0	15.89	15.94	15.93		0

Table 9-30
LTE Band 7 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 10 MHz Bandwidth

LTE Band 7 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20800 (2505.0 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21400 (2565.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	15.60	15.79	15.71	0	0
	1	25	15.38	15.79	15.67		0
	1	49	15.51	15.80	15.67		0
	25	0	15.80	15.89	15.92	0-1	0
	25	12	15.84	15.92	15.94		0
	25	25	15.84	15.96	15.92		0
	50	0	15.86	15.85	15.91		0
16QAM	1	0	16.01	16.00	16.04	0-1	0
	1	25	15.97	16.00	15.94		0
	1	49	15.96	15.99	15.96		0
	25	0	15.89	15.94	15.90	0-2	0
	25	12	15.92	16.00	15.96		0
	25	25	15.91	16.01	15.96		0
	50	0	15.86	15.94	15.87		0
64QAM	1	0	16.33	16.03	15.75	0-2	0
	1	25	16.30	16.04	15.68		0
	1	49	16.29	16.10	15.68		0
	25	0	15.82	15.90	15.96	0-3	0
	25	12	15.89	15.94	16.00		0
	25	25	15.86	15.95	15.99		0
	50	0	15.85	15.91	15.92		0

Table 9-31
LTE Band 7 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 5 MHz Bandwidth

LTE Band 7 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20775 (2502.5 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21425 (2567.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	15.64	15.67	15.84	0	0
	1	12	15.57	15.73	15.79		0
	1	24	15.58	15.76	15.78		0
	12	0	15.79	15.87	15.89	0-1	0
	12	6	15.80	15.84	15.95		0
	12	13	15.79	15.91	15.89		0
	25	0	15.80	15.88	15.95		0
16QAM	1	0	15.61	15.96	16.18	0-1	0
	1	12	15.68	15.96	16.16		0
	1	24	15.67	16.00	16.14		0
	12	0	15.85	15.96	15.97	0-2	0
	12	6	15.84	15.93	15.98		0
	12	13	15.85	16.02	15.98		0
	25	0	15.94	15.90	15.96		0
64QAM	1	0	16.37	16.23	16.06	0-2	0
	1	12	16.39	16.24	16.04		0
	1	24	16.37	16.26	16.04		0
	12	0	15.83	16.06	16.02	0-3	0
	12	6	15.83	16.04	15.95		0
	12	13	15.81	16.08	15.96		0
	25	0	15.81	15.85	16.03		0

9.3.7 LTE Band 48

Table 9-32
LTE Band 48 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 20 MHz Bandwidth

LTE Band 48 20 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel 55340 (3560.0 MHz)	Low-Mid Channel 55773 (3603.3 MHz)	Mid-High Channel 56207 (3646.7 MHz)	High Channel 56640 (3690.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]					
QPSK	1	0	13.88	13.78	13.91	**13.99**	0	0
	1	50	13.80	13.76	13.78	13.76		0
	1	99	13.93	13.83	13.91	13.81		0
	50	0	13.89	13.94	13.96	**14.00**	0-1	0
	50	25	13.91	13.98	13.98	13.89		0
	50	50	13.85	13.92	13.94	13.83		0
	100	0	13.93	13.98	13.98	13.89		0
16QAM	1	0	14.04	14.00	13.44	13.97	0-1	0
	1	50	13.89	13.89	13.33	13.76		0
	1	99	14.02	14.04	13.40	13.84		0
	50	0	13.87	13.91	13.85	13.79	0-2	0
	50	25	13.86	13.91	13.85	13.76		0
	50	50	13.91	13.94	13.86	13.73		0
	100	0	13.85	13.87	13.88	13.75		0
64QAM	1	0	14.00	13.94	14.11	14.07	0-2	0
	1	50	13.88	13.91	13.95	13.92		0
	1	99	13.99	13.93	14.06	13.98		0
	50	0	13.88	13.93	13.92	13.83	0-3	0
	50	25	13.90	13.96	13.91	13.79		0
	50	50	13.93	13.95	13.91	13.78		0
	100	0	13.88	13.93	13.92	13.75		0

Table 9-33
LTE Band 48 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 15 MHz Bandwidth

LTE Band 48 15 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel 55315 (3557.5 MHz)	Low-Mid Channel 55765 (3602.5 MHz)	Mid-High Channel 56215 (3647.5 MHz)	High Channel 56665 (3692.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]					
QPSK	1	0	13.88	13.86	13.89	13.95	0	0
	1	36	13.92	13.93	13.90	13.92		0
	1	74	13.92	13.94	13.89	13.89		0
	36	0	13.99	13.98	14.07	14.10	0-1	0
	36	18	14.00	14.01	14.07	14.08		0
	36	37	14.00	13.98	14.05	14.05		0
	75	0	13.96	13.95	14.04	14.06		0
16QAM	1	0	13.98	13.89	13.58	14.05	0-1	0
	1	36	13.99	13.87	13.63	14.05		0
	1	74	14.10	14.18	13.66	14.05		0
	36	0	14.05	14.07	13.99	14.02	0-2	0
	36	18	14.08	14.11	14.00	14.09		0
	36	37	14.07	14.13	14.09	14.07		0
	75	0	13.99	14.07	13.95	13.97		0
64QAM	1	0	13.72	13.98	13.83	13.65	0-2	0
	1	36	13.76	14.00	13.91	13.71		0
	1	74	13.90	14.12	13.96	13.82		0
	36	0	14.06	14.03	14.07	14.03	0-3	0
	36	18	14.04	14.04	14.10	14.11		0
	36	37	14.06	14.12	14.15	14.04		0
	75	0	14.08	14.15	14.03	13.99		0

Table 9-34
LTE Band 48 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 10 MHz Bandwidth

LTE Band 48 10 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel 55290 (3555.0 MHz)	Low-Mid Channel 55757 (3601.7 MHz)	Mid-High Channel 56223 (3648.3 MHz)	High Channel 56690 (3695.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]					
QPSK	1	0	13.98	13.99	13.95	14.19	0	0
	1	25	14.01	14.01	13.90	13.97		0
	1	49	14.36	14.00	13.94	13.92		0
	25	0	14.05	14.07	14.08	14.12	0-1	0
	25	12	14.04	14.10	14.13	14.20		0
	25	25	14.00	13.99	14.08	14.17		0
	50	0	13.96	13.99	14.11	14.09		0
16QAM	1	0	13.99	14.19	14.13	14.29	0-1	0
	1	25	13.81	14.15	14.12	14.26		0
	1	49	13.96	14.24	14.16	13.96		0
	25	0	14.19	14.14	14.06	14.19	0-2	0
	25	12	14.23	14.18	14.11	14.22		0
	25	25	14.17	14.12	14.09	14.17		0
	50	0	14.11	14.11	14.03	14.17		0
64QAM	1	0	13.84	13.87	14.00	13.80	0-2	0
	1	25	13.73	13.88	14.02	13.74		0
	1	49	13.85	13.95	14.09	13.87		0
	25	0	14.04	14.14	14.00	14.21	0-3	0
	25	12	14.15	14.16	14.10	14.21		0
	25	25	14.25	14.11	14.09	14.17		0
	50	0	14.09	14.14	14.05	14.16		0

Table 9-35
LTE Band 48 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 5 MHz Bandwidth

LTE Band 48 5 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel 55265 (3552.5 MHz)	Low-Mid Channel 55748 (3600.8 MHz)	Mid-High Channel 56232 (3649.2 MHz)	High Channel 56715 (3697.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]					
QPSK	1	0	14.07	14.07	14.03	14.20	0	0
	1	12	13.97	13.97	13.96	14.03		0
	1	24	14.11	14.08	13.96	14.20		0
	12	0	14.02	14.06	14.08	14.15	0-1	0
	12	6	14.04	14.07	14.14	14.16		0
	12	13	14.01	14.07	14.13	14.13		0
	25	0	14.06	14.09	14.13	14.15		0
16QAM	1	0	14.06	14.31	14.37	14.20	0-1	0
	1	12	13.96	14.24	14.34	14.04		0
	1	24	14.09	14.28	14.35	14.15		0
	12	0	14.08	14.12	14.14	14.15	0-2	0
	12	6	14.13	14.09	14.16	14.21		0
	12	13	14.11	14.08	14.17	14.14		0
	25	0	14.08	14.05	14.11	14.15		0
64QAM	1	0	14.09	13.95	14.24	14.14	0-2	0
	1	12	13.99	13.86	14.16	14.05		0
	1	24	14.07	13.95	14.23	14.13		0
	12	0	14.14	14.23	14.17	14.19	0-3	0
	12	6	14.13	14.21	14.13	14.15		0
	12	13	14.13	14.25	14.17	14.16		0
	25	0	14.09	14.17	14.09	14.13		0

9.3.8 LTE Band 41

Table 9-36
LTE Band 41 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 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	14.31	14.10	14.31	14.37	14.55	0	0
	1	50	14.14	14.11	14.17	14.15	14.47		0
	1	99	14.09	14.10	14.18	14.41	**14.59**		0
	50	0	14.01	14.29	14.31	14.47	14.58	0-1	0
	50	25	14.08	14.35	14.26	14.41	**14.66**		0
	50	50	14.08	14.38	14.26	14.43	14.65		0
	100	0	14.08	14.29	14.28	14.41	14.54		0
16QAM	1	0	14.23	14.65	14.26	14.61	14.47	0-1	0
	1	50	14.20	14.55	14.13	14.39	14.50		0
	1	99	14.30	14.55	14.11	14.59	14.58		0
	50	0	13.94	14.22	14.22	14.33	14.52	0-2	0
	50	25	14.05	14.32	14.16	14.29	14.55		0
	50	50	14.05	14.33	14.26	14.26	14.61		0
	100	0	14.08	14.22	14.18	14.31	14.49		0
64QAM	1	0	14.07	13.98	14.26	14.36	14.41	0-2	0
	1	50	14.02	14.01	14.22	14.22	14.53		0
	1	99	14.10	14.02	14.15	14.35	14.65		0
	50	0	13.96	14.22	14.23	14.26	14.61	0-3	0
	50	25	14.06	14.35	14.23	14.30	14.62		0
	50	50	14.08	14.34	14.21	14.34	14.60		0
	100	0	14.07	14.26	14.24	14.33	14.58		0

Table 9-37
LTE Band 41 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 15 MHz Bandwidth

LTE Band 41 15 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	14.05	14.26	14.29	14.40	14.54	0	0
	1	36	14.01	14.32	14.35	14.35	14.55		0
	1	74	14.02	14.29	14.31	14.44	14.58		0
	36	0	14.10	14.32	14.42	14.47	14.63	0-1	0
	36	18	14.18	14.41	14.43	14.47	14.64		0
	36	37	14.14	14.36	14.35	14.47	14.67		0
	75	0	14.15	14.31	14.40	14.47	14.59		0
16QAM	1	0	13.88	14.10	13.77	14.29	14.06	0-1	0
	1	36	13.92	14.18	13.84	14.29	14.14		0
	1	74	13.84	14.19	13.81	14.38	14.16		0
	36	0	13.99	14.14	14.21	14.39	14.48	0-2	0
	36	18	14.08	14.23	14.21	14.43	14.53		0
	36	37	14.05	14.20	14.25	14.33	14.56		0
	75	0	14.00	14.10	14.18	14.39	14.50		0
64QAM	1	0	13.74	13.76	14.07	14.30	14.33	0-2	0
	1	36	13.83	13.79	14.08	14.31	14.38		0
	1	74	13.83	13.86	14.11	14.47	14.43		0
	36	0	14.02	14.15	14.30	14.31	14.61	0-3	0
	36	18	14.07	14.18	14.28	14.31	14.61		0
	36	37	14.05	14.17	14.30	14.28	14.65		0
	75	0	14.04	14.11	14.26	14.37	14.55		0

Table 9-38
LTE Band 41 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 10 MHz Bandwidth

LTE Band 41 10 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	14.14	14.30	14.30	14.15	14.52	0	0
	1	25	14.07	14.33	14.15	14.17	14.54		0
	1	49	14.13	14.27	14.01	14.16	14.31		0
	25	0	13.99	14.27	14.05	14.27	14.39	0-1	0
	25	12	14.04	14.36	14.06	14.29	14.36		0
	25	25	14.10	14.31	14.26	14.32	14.39		0
	50	0	14.10	14.34	14.07	14.33	14.37		0
16QAM	1	0	14.16	14.28	14.18	14.24	14.60	0-1	0
	1	25	13.94	14.23	14.33	14.27	14.13		0
	1	49	14.00	14.28	14.24	14.26	14.71		0
	25	0	14.00	14.14	14.25	14.23	14.31	0-2	0
	25	12	14.08	14.22	14.29	14.29	14.28		0
	25	25	14.08	14.18	14.19	14.21	14.42		0
	50	0	13.95	14.19	14.12	14.20	14.33		0
64QAM	1	0	13.96	13.91	13.93	14.10	14.39	0-2	0
	1	25	13.92	13.98	13.74	14.12	14.27		0
	1	49	13.87	13.95	13.71	14.07	14.25		0
	25	0	13.89	14.17	14.08	14.17	14.28	0-3	0
	25	12	13.96	14.25	14.02	14.15	14.38		0
	25	25	14.02	14.20	14.05	14.15	14.50		0
	50	0	13.91	14.22	14.00	14.25	14.34		0

Table 9-39
LTE Band 41 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 5 MHz Bandwidth

LTE Band 41 5 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	14.10	14.37	14.49	14.40	14.75	0	0
	1	12	14.11	14.42	14.53	14.44	14.78		0
	1	24	14.21	14.40	14.53	14.42	14.80		0
	12	0	14.11	14.37	14.49	14.48	14.69	0-1	0
	12	6	14.18	14.48	14.52	14.54	14.75		0
	12	13	14.13	14.42	14.52	14.53	14.76		0
	25	0	14.14	14.42	14.48	14.52	14.70		0
16QAM	1	0	13.97	14.45	14.22	14.52	14.57	0-1	0
	1	12	13.94	14.48	14.23	14.56	14.58		0
	1	24	14.07	14.47	14.25	14.54	14.67		0
	12	0	14.01	14.28	14.24	14.35	14.63	0-2	0
	12	6	14.09	14.37	14.27	14.39	14.60		0
	12	13	14.04	14.33	14.29	14.36	14.69		0
	25	0	13.99	14.22	14.23	14.35	14.57		0
64QAM	1	0	13.92	13.97	14.17	14.38	14.51	0-2	0
	1	12	13.96	14.08	14.21	14.42	14.60		0
	1	24	13.99	14.01	14.20	14.42	14.62		0
	12	0	14.00	14.38	14.25	14.36	14.66	0-3	0
	12	6	14.07	14.42	14.27	14.42	14.67		0
	12	13	14.08	14.42	14.30	14.36	14.69		0
	25	0	14.01	14.30	14.20	14.32	14.58		0

9.4 NR Conducted Powers

9.4.1 NR Band n5

Table 9-40
NR Band n5 Measured P_{max} for all DSI - 20 MHz Bandwidth

NR Band n5 20 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	167300 (836.5 MHz) Conducted Power [dBm]		
DFT-s-OFDM π/2 BPSK	1	1	24.12	0	0.0
	1	53	24.22		0.0
	1	104	23.53		0.0
	50	0	23.64	0-0.5	0.5
	50	28	24.01	0	0.0
	50	56	23.53	0-0.5	0.5
	100	0	23.56		0.5
DFT-s-OFDM QPSK	1	1	**24.10**	0	0.0
	1	53	24.06		0.0
	1	104	23.34		0.0
	50	0	23.09	0-1	1.0
	50	28	**24.06**	0	0.0
	50	56	22.97	0-1	1.0
	100	0	23.07		1.0
DFT-s-OFDM 16QAM	1	1	22.99	0-1	1.0
CP-OFDM QPSK	1	1	22.62	0-1.5	1.5

Note: NR Band n5 (Cell) at 20 MHz bandwidth does not support non-overlapping channels. Per FCC Guidance, 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.

Table 9-41
NR Band n5 Measured P_{max} for all DSI - 15 MHz Bandwidth

NR Band n5 15 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	167300 (836.5 MHz) Conducted Power [dBm]		
DFT-s-OFDM π/2 BPSK	1	1	24.04	0	0.0
	1	40	23.97		0.0
	1	77	23.91		0.0
	36	0	23.46	0-0.5	0.5
	36	22	23.91	0	0.0
	36	43	23.39	0-0.5	0.5
	75	0	23.42		0.5
DFT-s-OFDM QPSK	1	1	24.04	0	0.0
	1	40	23.88		0.0
	1	77	23.57		0.0
	36	0	22.95	0-1	1.0
	36	22	23.86	0	0.0
	36	43	22.83	0-1	1.0
	75	0	22.88		1.0
DFT-s-OFDM 16QAM	1	1	22.96	0-1	1.0
CP-OFDM QPSK	1	1	22.33	0-1.5	1.5

Note: NR Band n5 (Cell) at 15 MHz bandwidth does not support non-overlapping channels. Per FCC Guidance, 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.

Table 9-42
NR Band n5 Measured P_{max} for all DSI - 10 MHz Bandwidth

NR Band n5 10 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	167300 (836.5 MHz) Conducted Power [dBm]		
DFT-s-OFDM π/2 BPSK	1	1	23.87	0	0.0
	1	26	23.94		0.0
	1	50	23.81		0.0
	25	0	23.42	0-0.5	0.5
	25	14	23.92	0	0.0
	25	27	23.29	0-0.5	0.5
	50	0	23.39		0.5
DFT-s-OFDM QPSK	1	1	23.84	0	0.0
	1	26	23.87		0.0
	1	50	23.85		0.0
	25	0	22.81	0-1	1.0
	25	14	23.85	0	0.0
	25	27	22.79	0-1	1.0
	50	0	22.84		1.0
DFT-s-OFDM 16QAM	1	1	22.76	0-1	1.0
CP-OFDM QPSK	1	1	22.12	0-1.5	1.5

Note: NR Band n5 (Cell) at 10 MHz bandwidth does not support non-overlapping channels. Per FCC Guidance, 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.

Table 9-43
NR Band n5 Measured P_{max} for all DSI - 5 MHz Bandwidth

NR Band n5 5 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	165300 (826.5 MHz)	167300 (836.5 MHz)	169300 (846.5 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM π/2 BPSK	1	1	23.96	23.90	23.81	0	0.0
	1	13	23.81	23.84	23.68		0.0
	1	23	23.84	23.77	23.59		0.0
	12	0	23.44	23.34	23.04	0-0.5	0.5
	12	7	23.96	23.89	23.42	0	0.0
	12	13	23.36	23.29	23.09	0-0.5	0.5
	25	0	23.40	23.35	23.17		0.5
DFT-s-OFDM QPSK	1	1	23.98	23.88	23.78	0	0.0
	1	13	23.95	23.82	23.54		0.0
	1	23	23.80	23.83	23.66		0.0
	12	0	22.93	22.90	22.57	0-1	1.0
	12	7	23.84	23.79	23.38	0	0.0
	12	13	22.87	22.82	22.63	0-1	1.0
	25	0	22.88	22.85	22.66		1.0
DFT-s-OFDM 16QAM	1	1	22.96	22.84	22.80	0-1	1.0
CP-OFDM QPSK	1	1	22.47	22.08	22.01	0-1.5	1.5

9.4.2 NR Band n66

Table 9-44
NR Band n66 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 20 MHz Bandwidth

NR Band n66 20 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	344000 (1720 MHz)	349000 (1745 MHz)	354000 (1770 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM π/2 BPSK	1	1	16.12	16.18	16.18	0	0.0
	1	53	16.39	16.49	16.52		0.0
	1	104	16.15	16.07	16.14		0.0
	50	0	16.09	16.12	16.15	0-0.5	0.0
	50	28	16.17	16.04	16.09	0	0.0
	50	56	16.13	16.04	16.08	0-0.5	0.0
	100	0	16.12	16.03	16.06		0.0
DFT-s-OFDM QPSK	1	1	16.16	16.18	16.23	0	0.0
	1	53	**16.34**	16.14	16.21		0.0
	1	104	16.21	16.16	16.10		0.0
	50	0	16.09	16.09	16.12	0-1	0.0
	50	28	16.07	16.04	16.11	0	0.0
	50	56	**16.14**	16.06	16.08	0-1	0.0
	100	0	16.12	16.02	16.12		0.0
DFT-s-OFDM 16QAM	1	1	16.44	16.31	16.43	0-1	0.0
CP-OFDM QPSK	1	1	16.11	16.29	16.24	0-1.5	0.0

Table 9-45
NR Band n66 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 15 MHz Bandwidth

NR Band n66 15 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	343500 (1717.5 MHz)	349000 (1745 MHz)	354500 (1772.5 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM π/2 BPSK	1	1	15.97	16.07	15.93	0	0.0
	1	40	16.05	15.98	15.83		0.0
	1	77	16.16	16.06	15.87		0.0
	36	0	16.02	16.00	15.92	0-0.5	0.0
	36	22	15.95	15.91	15.81	0	0.0
	36	43	15.99	15.95	15.83	0-0.5	0.0
	75	0	16.00	15.96	15.85		0.0
DFT-s-OFDM QPSK	1	1	16.03	16.10	15.90	0	0.0
	1	40	15.92	15.93	15.86		0.0
	1	77	16.01	15.97	15.90		0.0
	36	0	16.00	16.00	15.89	0-1	0.0
	36	22	15.94	15.87	15.76	0	0.0
	36	43	15.96	15.91	15.82	0-1	0.0
	75	0	15.95	15.97	15.87		0.0
DFT-s-OFDM 16QAM	1	1	16.00	15.99	15.91	0-1	0.0
CP-OFDM QPSK	1	1	15.87	15.86	15.77	0-1.5	0.0

Table 9-46
NR Band n66 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 10 MHz Bandwidth

NR Band n66 10 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	343000 (1715 MHz)	349000 (1745 MHz)	355000 (1775 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM π/2 BPSK	1	1	15.88	16.05	15.84	0	0.0
	1	26	15.92	15.89	15.88		0.0
	1	50	15.88	15.97	15.81		0.0
	25	0	15.85	15.95	15.87	0-0.5	0.0
	25	14	15.87	15.93	15.88	0	0.0
	25	27	15.86	15.90	15.82	0-0.5	0.0
	50	0	15.90	15.91	15.85		0.0
DFT-s-OFDM QPSK	1	1	15.87	16.03	15.91	0	0.0
	1	26	15.84	15.99	15.86		0.0
	1	50	15.81	15.97	15.88		0.0
	25	0	15.85	15.96	15.84	0-1	0.0
	25	14	15.83	15.95	15.82	0	0.0
	25	27	15.88	15.93	15.79	0-1	0.0
	50	0	15.84	15.92	15.81		0.0
DFT-s-OFDM 16QAM CP-OFDM QPSK	1	1	15.80	15.88	15.79	0-1	0.0
	1	1	15.68	15.81	15.76	0-1.5	0.0

Table 9-47
NR Band n66 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 5 MHz Bandwidth

NR Band n66 5 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	342500 (1712.5 MHz)	349000 (1745 MHz)	355500 (1777.5 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM π/2 BPSK	1	1	15.69	15.97	15.78	0	0.0
	1	13	15.85	16.02	15.73		0.0
	1	23	15.82	16.00	15.81		0.0
	12	0	15.84	15.94	15.83	0-0.5	0.0
	12	7	15.93	15.97	15.92	0	0.0
	12	13	15.84	15.89	15.76	0-0.5	0.0
	25	0	15.88	15.91	15.82		0.0
DFT-s-OFDM QPSK	1	1	15.77	15.99	15.74	0	0.0
	1	13	15.92	15.93	15.93		0.0
	1	23	15.83	15.91	15.76		0.0
	12	0	15.86	15.88	15.82	0-1	0.0
	12	7	15.90	15.87	15.88	0	0.0
	12	13	15.89	15.94	15.90	0-1	0.0
	25	0	15.87	15.89	15.72		0.0
DFT-s-OFDM 16QAM	1	1	15.79	15.93	15.76	0-1	0.0
CP-OFDM QPSK	1	1	15.75	15.89	15.67	0-1.5	0.0

9.4.3 NR Band n2

Table 9-48
NR Band n2 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 20 MHz Bandwidth

NR Band n2 20 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	372000 (1860 MHz)	376000 (1880 MHz)	380000 (1900 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM π/2 BPSK	1	1	16.18	16.07	16.01	0	0.0
	1	53	16.64	16.52	16.43		0.0
	1	104	16.16	16.06	15.86		0.0
	50	0	16.19	16.09	15.92	0-0.5	0.0
	50	28	16.16	16.08	15.93	0	0.0
	50	56	16.09	16.05	15.95	0-0.5	0.0
	100	0	16.16	16.07	15.94		0.0
DFT-s-OFDM QPSK	1	1	16.43	16.19	16.11	0	0.0
	1	53	**16.51**	16.31	16.15		0.0
	1	104	16.38	16.12	16.10		0.0
	50	0	**16.16**	16.04	15.96	0-1	0.0
	50	28	16.14	16.06	15.95	0	0.0
	50	56	16.11	16.04	15.93	0-1	0.0
	100	0	16.12	16.05	15.98		0.0
DFT-s-OFDM 16QAM	1	1	16.58	15.97	16.21	0-1	0.0
CP-OFDM QPSK	1	1	15.88	16.17	15.97	0-1.5	0.0

Table 9-49
NR Band n2 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 15 MHz Bandwidth

NR Band n2 15 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	371500 (1857.5 MHz)	376000 (1880 MHz)	380500 (1902.5 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM π/2 BPSK	1	1	16.18	16.08	15.81	0	0.0
	1	40	16.15	16.00	15.90		0.0
	1	77	16.17	16.02	15.92		0.0
	36	0	16.19	15.99	15.86	0-0.5	0.0
	36	22	16.16	16.00	15.87	0	0.0
	36	43	16.18	15.97	15.86	0-0.5	0.0
	75	0	16.22	15.99	15.93		0.0
DFT-s-OFDM QPSK	1	1	16.13	16.04	15.91	0	0.0
	1	40	16.19	16.05	15.86		0.0
	1	77	16.21	16.07	15.93		0.0
	36	0	16.20	16.03	15.89	0-1	0.0
	36	22	16.21	15.97	15.87	0	0.0
	36	43	16.18	15.98	15.90	0-1	0.0
	75	0	16.15	16.03	15.88		0.0
DFT-s-OFDM 16QAM CP-OFDM QPSK	1	1	16.38	16.06	15.90	0-1	0.0
	1	1	15.93	15.98	15.78	0-1.5	0.0

Table 9-50
NR Band n2 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 10 MHz Bandwidth

NR Band n2 10 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	371000 (1855 MHz)	376000 (1880 MHz)	381000 (1905 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM π/2 BPSK	1	1	16.25	16.12	15.89	0	0.0
	1	26	16.16	16.13	16.02		0.0
	1	50	16.13	16.05	16.03		0.0
	25	0	16.12	16.00	15.95	0-0.5	0.0
	25	14	16.07	16.01	15.94	0	0.0
	25	27	16.09	15.98	15.98	0-0.5	0.0
	50	0	16.15	16.02	15.97		0.0
DFT-s-OFDM QPSK	1	1	16.07	16.03	15.90	0	0.0
	1	26	16.16	16.12	16.04		0.0
	1	50	16.02	15.99	16.01		0.0
	25	0	16.08	16.02	15.96	0-1	0.0
	25	14	16.10	15.97	15.94	0	0.0
	25	27	16.09	15.94	16.01	0-1	0.0
	50	0	16.10	15.97	15.95		0.0
DFT-s-OFDM 16QAM	1	1	16.43	16.22	16.10	0-1	0.0
CP-OFDM QPSK	1	1	15.96	15.87	15.77	0-1.5	0.0

Table 9-51
NR Band n2 Measured P_{limit} for DSI = 5 (Body-worn, Phablet, Held-to-Ear), and/or DSI = 6 (Hotspot) - 5 MHz Bandwidth

NR Band n2 5 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	370500 (1852.5 MHz)	376000 (1880 MHz)	381500 (1907.5 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM π/2 BPSK	1	1	16.02	15.96	15.83	0	0.0
	1	13	16.01	15.98	15.87		0.0
	1	23	16.07	15.88	15.91		0.0
	12	0	16.01	16.02	15.89	0-0.5	0.0
	12	7	16.13	16.03	15.98	0	0.0
	12	13	16.09	15.96	15.95	0-0.5	0.0
	25	0	16.11	15.92	15.92		0.0
DFT-s-OFDM QPSK	1	1	16.06	15.90	15.88	0	0.0
	1	13	16.04	15.99	16.00		0.0
	1	23	16.05	15.89	15.94		0.0
	12	0	16.03	15.93	15.88	0-1	0.0
	12	7	16.06	15.96	15.88	0	0.0
	12	13	16.10	15.98	15.97	0-1	0.0
	25	0	16.11	15.96	15.99		0.0
DFT-s-OFDM 16QAM	1	1	16.35	16.23	16.04	0-1	0.0
CP-OFDM QPSK	1	1	15.88	15.74	15.71	0-1.5	0.0

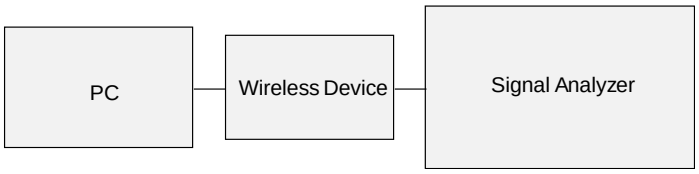

Figure 9-3
Power Measurement Setup

9.5 WLAN Conducted Powers

Table 9-52
2.4 GHz WLAN Average RF Power – Chain 0

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	9.69	8.68	9.09	8.78
2437	6	9.40	8.72	9.09	9.08
2462	11	9.47	8.79	9.09	9.04

Table 9-53
2.4 GHz WLAN Average RF Power – Chain 1

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	8.91	9.02	8.93	8.92
2437	6	8.65	9.09	9.04	9.00
2462	11	8.51	8.85	8.84	8.77

Table 9-54
5 GHz WLAN Average RF Power – Chain 0

5GHz (80MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11ac	802.11ax
		Average	Average
5210	42	8.61	8.50
5290	58	8.66	8.56
5530	106	8.65	8.49
5610	122	8.68	8.44
5690	138	8.71	8.56
5775	155	8.60	8.35

Table 9-55
5 GHz WLAN Average RF Power – Chain 1

5GHz (80MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11ac	802.11ax
		Average	Average
5210	42	8.43	8.47
5290	58	8.67	8.59
5530	106	8.50	8.52
5610	122	8.68	8.59
5690	138	8.34	8.66
5775	155	8.44	8.36

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.

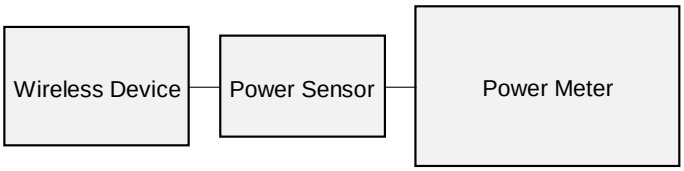

Figure 9-4
Power Measurement Setup

9.6 Bluetooth Conducted Powers

Table 9-56
Bluetooth Average RF Power

Frequency [MHz]	Data Rate [Mbps]	Mod.	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	1.0	GFSK	0	12.04	16.003
2441	1.0	GFSK	39	13.75	23.714
2480	1.0	GFSK	78	12.61	18.239
2402	2.0	π/4-DQPSK	0	11.15	13.032
2441	2.0	π/4-DQPSK	39	11.63	14.558
2480	2.0	π/4-DQPSK	78	11.57	14.355
2402	3.0	8DPSK	0	11.19	13.152
2441	3.0	8DPSK	39	11.67	14.689
2480	3.0	8DPSK	78	11.61	14.484

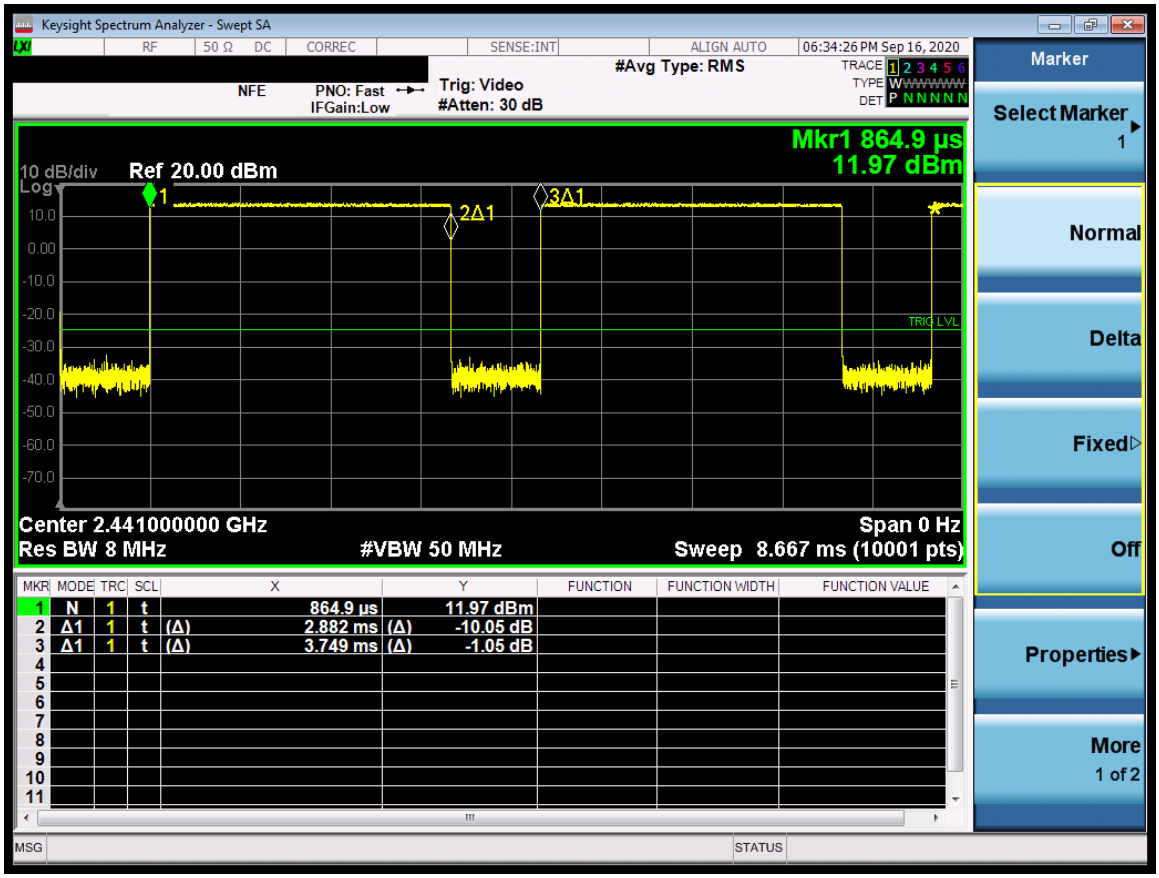

Figure 9-5
Bluetooth Transmission Plot

Equation 9-1
Bluetooth Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.882ms}{3.749ms} * 100\% = 76.9\%$$

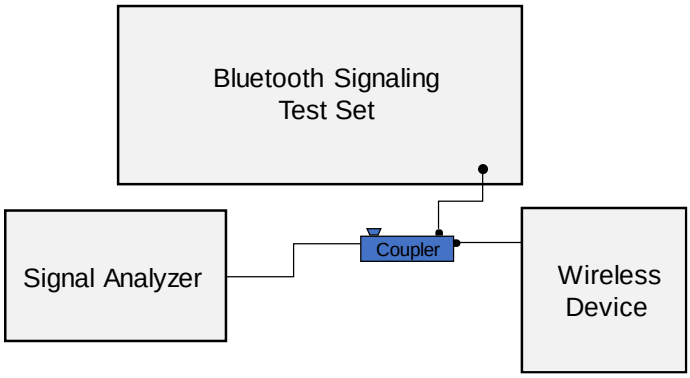

Figure 9-6
Power Measurement Setup

10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Head Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
09/08/2020	750 Head	22.0	700	0.886	43.961	0.889	42.201	-0.34%	4.17%
			710	0.890	43.927	0.890	42.149	0.00%	4.22%
			750	0.904	43.819	0.894	41.942	1.12%	4.48%
			770	0.911	43.759	0.895	41.838	1.79%	4.59%
			785	0.916	43.706	0.896	41.760	2.23%	4.66%
09/02/2020	835 Head	24.0	820	0.872	41.466	0.899	41.578	-3.00%	-0.27%
			835	0.879	41.381	0.900	41.500	-2.33%	-0.29%
			850	0.883	41.346	0.916	41.500	-3.60%	-0.37%
09/14/2020	835 Head	21.0	820	0.913	43.139	0.899	41.578	1.56%	3.75%
			835	0.919	43.105	0.900	41.500	2.11%	3.87%
			850	0.925	43.070	0.916	41.500	0.98%	3.78%
9/2/2020	1750 Head	22.1	1710	1.360	39.041	1.348	40.142	0.89%	-2.74%
			1720	1.370	38.975	1.354	40.126	1.18%	-2.87%
			1745	1.399	38.844	1.368	40.087	2.27%	-3.10%
			1750	1.403	38.831	1.371	40.079	2.33%	-3.11%
			1770	1.423	38.739	1.383	40.047	2.89%	-3.27%
			1790	1.444	38.621	1.394	40.016	3.59%	-3.49%
08/27/2020	1900 Head	21.3	1850	1.384	39.589	1.400	40.000	-1.14%	-1.03%
			1860	1.395	39.545	1.400	40.000	-0.36%	-1.14%
			1880	1.417	39.460	1.400	40.000	1.21%	-1.35%
			1900	1.438	39.371	1.400	40.000	2.71%	-1.57%
			1905	1.444	39.348	1.400	40.000	3.14%	-1.63%
			1910	1.449	39.326	1.400	40.000	3.50%	-1.69%
8/31/2020	1900 Head	21.8	1850	1.402	38.964	1.400	40.000	0.14%	-2.59%
			1860	1.412	38.920	1.400	40.000	0.86%	-2.70%
			1880	1.432	38.838	1.400	40.000	2.29%	-2.91%
			1900	1.452	38.755	1.400	40.000	3.71%	-3.11%
			1905	1.457	38.734	1.400	40.000	4.07%	-3.17%
			1910	1.463	38.714	1.400	40.000	4.50%	-3.22%
9/1/2020	2450 Head	24.0	2510	1.930	38.355	1.866	39.123	3.43%	-1.96%
			2535	1.967	38.212	1.893	39.092	3.91%	-2.25%
			2550	1.984	38.175	1.909	39.073	3.93%	-2.30%
			2560	1.998	38.174	1.920	39.060	4.06%	-2.27%
			2600	2.043	37.980	1.964	39.009	4.02%	-2.64%
			2650	2.098	37.766	2.018	38.945	3.96%	-3.03%
			2680	2.135	37.656	2.051	38.907	4.10%	-3.22%
			2700	2.152	37.586	2.073	38.882	3.81%	-3.33%
09/03/2020	2450 Head	24.0	2400	1.813	38.755	1.756	39.289	3.25%	-1.36%
			2450	1.875	38.563	1.800	39.200	4.17%	-1.63%
			2480	1.910	38.446	1.833	39.162	4.20%	-1.83%
			2500	1.931	38.361	1.855	39.136	4.10%	-1.98%
09/16/2020	2450 Head	24.9	2400	1.784	40.024	1.756	39.289	1.59%	1.87%
			2450	1.840	39.823	1.800	39.200	2.22%	1.59%
			2480	1.875	39.703	1.833	39.162	2.29%	1.38%
			2500	1.898	39.636	1.855	39.136	2.32%	1.28%
08/23/2020	3600 Head	22.5	3650	2.986	39.158	3.066	37.757	-2.61%	3.71%
			3690	3.022	39.103	3.107	37.711	-2.74%	3.69%
			3700	3.029	39.093	3.117	37.700	-2.82%	3.69%
08/26/2020	5200-5800 Head	22.4	5250	4.481	34.876	4.706	35.929	-4.78%	-2.93%
			5290	4.532	34.800	4.748	35.883	-4.55%	-3.02%
			5600	4.867	34.275	5.065	35.529	-3.91%	-3.53%
			5610	4.879	34.258	5.076	35.518	-3.88%	-3.55%
			5690	4.963	34.117	5.158	35.426	-3.78%	-3.70%
			5750	5.035	34.043	5.219	35.357	-3.53%	-3.72%
			5775	5.055	34.006	5.245	35.329	-3.62%	-3.74%

Table 10-2
Measured Body Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
08/27/2020	750 Body	22.4	700	0.955	53.336	0.959	55.726	-0.42%	-4.29%
			710	0.958	53.321	0.960	55.687	-0.21%	-4.25%
			750	0.975	53.217	0.964	55.531	1.14%	-4.17%
			770	0.982	53.148	0.965	55.453	1.76%	-4.16%
			785	0.988	53.106	0.966	55.395	2.28%	-4.13%
08/24/2020	835 Body	21.3	820	0.938	54.559	0.969	55.258	-3.20%	-1.26%
			835	0.954	54.414	0.970	55.200	-1.65%	-1.42%
			850	0.969	54.267	0.988	55.154	-1.92%	-1.61%
09/15/2020	835 Body	22.5	820	0.934	53.429	0.969	55.258	-3.61%	-3.31%
			835	0.949	53.311	0.970	55.200	-2.16%	-3.42%
			850	0.964	53.141	0.988	55.154	-2.43%	-3.65%
08/24/2020	1750 Body	22.2	1710	1.450	52.440	1.463	53.537	-0.89%	-2.05%
			1720	1.461	52.395	1.469	53.511	-0.54%	-2.09%
			1745	1.488	52.298	1.485	53.445	0.20%	-2.15%
			1750	1.494	52.279	1.488	53.432	0.40%	-2.16%
			1770	1.515	52.200	1.501	53.379	0.93%	-2.21%
			1790	1.536	52.115	1.514	53.326	1.45%	-2.27%
09/03/2020	1750 Body	21.5	1710	1.442	53.585	1.463	53.537	-1.44%	0.09%
			1720	1.453	53.549	1.469	53.511	-1.09%	0.07%
			1745	1.481	53.444	1.485	53.445	-0.27%	0.00%
			1750	1.487	53.424	1.488	53.432	-0.07%	-0.01%
			1770	1.508	53.340	1.501	53.379	0.47%	-0.07%
			1790	1.529	53.260	1.514	53.326	0.99%	-0.12%
09/14/2020	1750 Body	20.9	1710	1.467	53.109	1.463	53.537	0.27%	-0.80%
			1720	1.479	53.069	1.469	53.511	0.68%	-0.83%
			1745	1.508	53.003	1.485	53.445	1.55%	-0.83%
			1750	1.513	52.973	1.488	53.432	1.68%	-0.86%
			1770	1.533	52.913	1.501	53.379	2.13%	-0.87%
			1790	1.555	52.793	1.514	53.326	2.71%	-1.00%
8/24/2020	1900 Body	24.2	1850	1.514	51.232	1.520	53.300	-0.39%	-3.88%
			1860	1.525	51.204	1.520	53.300	0.33%	-3.93%
			1880	1.546	51.136	1.520	53.300	1.71%	-4.06%
			1900	1.567	51.061	1.520	53.300	3.09%	-4.20%
			1905	1.573	51.044	1.520	53.300	3.49%	-4.23%
			1910	1.578	51.025	1.520	53.300	3.82%	-4.27%
08/24/2020	1900 Body	24.6	1850	1.499	51.023	1.520	53.300	-1.38%	-4.27%
			1860	1.509	50.990	1.520	53.300	-0.72%	-4.33%
			1880	1.530	50.922	1.520	53.300	0.66%	-4.46%
			1900	1.551	50.858	1.520	53.300	2.04%	-4.58%
			1905	1.557	50.842	1.520	53.300	2.43%	-4.61%
			1910	1.562	50.826	1.520	53.300	2.76%	-4.64%
8/31/2020	1900 Body	24.4	1850	1.497	52.726	1.520	53.300	-1.51%	-1.08%
			1860	1.508	52.688	1.520	53.300	-0.79%	-1.15%
			1880	1.530	52.607	1.520	53.300	0.66%	-1.30%
			1900	1.554	52.545	1.520	53.300	2.24%	-1.42%
			1905	1.560	52.532	1.520	53.300	2.63%	-1.44%
			1910	1.566	52.517	1.520	53.300	3.03%	-1.47%
09/03/2020	2450 Body	23.0	2400	1.982	52.342	1.902	52.767	4.21%	-0.81%
			2450	2.046	52.213	1.950	52.700	4.92%	-0.92%
			2480	2.079	52.124	1.993	52.662	4.32%	-1.02%
			2500	2.102	52.062	2.021	52.636	4.01%	-1.09%
08/24/2020	2450 Body	23.8	2510	2.109	52.061	2.035	52.623	3.64%	-1.07%
			2535	2.140	51.986	2.071	52.592	3.33%	-1.15%
			2550	2.159	51.946	2.092	52.573	3.20%	-1.19%
			2560	2.171	51.920	2.106	52.560	3.09%	-1.22%
			2600	2.217	51.810	2.163	52.509	2.50%	-1.33%
			2650	2.279	51.654	2.234	52.445	2.01%	-1.51%
			2680	2.316	51.566	2.277	52.407	1.71%	-1.60%
			2700	2.340	51.504	2.305	52.382	1.52%	-1.68%
09/13/2020	2450 Body	23.0	2400	1.979	51.569	1.902	52.767	4.05%	-2.27%
			2450	2.042	51.435	1.950	52.700	4.72%	-2.40%
			2480	2.075	51.361	1.993	52.662	4.11%	-2.47%
			2500	2.098	51.302	2.021	52.636	3.81%	-2.53%
09/14/2020	3600 Body	21.6	3650	3.552	49.894	3.489	51.118	1.81%	-2.39%
			3690	3.602	49.839	3.536	51.063	1.87%	-2.40%
			3700	3.613	49.839	3.548	51.050	1.83%	-2.37%
08/23/2020	5200-5800 Body	22.6	5250	5.468	47.485	5.358	48.947	2.05%	-2.99%
			5290	5.517	47.419	5.404	48.892	2.09%	-3.01%
			5600	5.934	46.887	5.766	48.471	2.91%	-3.27%
			5610	5.948	46.873	5.778	48.458	2.94%	-3.27%
			5690	6.057	46.755	5.872	48.349	3.15%	-3.30%
			5750	6.147	46.655	5.942	48.268	3.45%	-3.34%
			5775	6.176	46.636	5.971	48.234	3.43%	-3.31%

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 Appendix D.

Table 10-3
System Verification Results – 1g Head

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 SAR_{1g} (W/kg)	1 W Target SAR_{1g} (W/kg)	1 W Normalized SAR_{1g} (W/kg)	$Deviation_{1g}$ (%)
E	750	HEAD	09/08/2020	22.3	22.0	0.200	1054	3589	1.680	8.630	8.400	-2.67%
D	835	HEAD	09/02/2020	23.1	22.7	0.200	4d047	7488	1.990	9.420	9.950	5.63%
E	835	HEAD	09/14/2020	21.9	21.0	0.200	4d133	3589	2.020	9.430	10.100	7.10%
L	1750	HEAD	09/02/2020	24.3	22.2	0.100	1008	7406	3.920	36.200	39.200	8.29%
L	1900	HEAD	08/27/2020	22.3	21.5	0.100	5d148	7406	3.910	39.100	39.100	0.00%
L	1900	HEAD	08/31/2020	22.7	21.9	0.100	5d148	7406	4.280	39.100	42.800	9.46%
E	2450	HEAD	09/03/2020	22.9	22.7	0.100	797	3589	5.180	52.700	51.800	-1.71%
P	2450	HEAD	09/16/2020	23.7	23.3	0.100	981	7308	5.150	52.300	51.500	-1.53%
E	2600	HEAD	09/01/2020	22.6	23.0	0.100	1064	3589	5.900	58.100	59.000	1.55%
D	3700	HEAD	08/23/2020	23.0	22.5	0.100	1018	7488	6.410	65.800	64.100	-2.58%
H	5250	HEAD	08/26/2020	24.5	22.4	0.050	1237	7357	3.690	81.300	73.800	-9.23%
H	5600	HEAD	08/26/2020	24.5	22.4	0.050	1237	7357	4.000	85.700	80.000	-6.65%
H	5750	HEAD	08/26/2020	24.5	22.4	0.050	1237	7357	3.710	80.600	74.200	-7.94%

Table 10-4
System Verification Results – 1g Body

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 SAR_{1g} (W/kg)	1 W Target SAR_{1g} (W/kg)	1 W Normalized SAR_{1g} (W/kg)	$Deviation_{1g}$ (%)
P	750	BODY	08/27/2020	22.2	22.4	0.200	1054	7551	1.830	8.530	9.150	7.27%
P	835	BODY	08/24/2020	21.9	21.2	0.200	4d047	7551	2.000	9.470	10.000	5.60%
D	835	BODY	09/15/2020	23.1	22.5	0.200	4d133	7488	1.910	9.750	9.550	-2.05%
I	1750	BODY	08/24/2020	21.9	22.2	0.100	1148	7570	3.770	36.300	37.700	3.86%
I	1750	BODY	09/03/2020	21.9	21.5	0.100	1148	7570	3.430	36.300	34.300	-5.51%
G	1750	BODY	09/14/2020	22.1	20.9	0.100	1008	7538	3.940	37.400	39.400	5.35%
H	1900	BODY	08/24/2020	24.0	22.8	0.100	5d080	7357	4.170	39.200	41.700	6.38%
J	1900	BODY	08/24/2020	22.7	22.6	0.100	5d080	7571	4.140	39.200	41.400	5.61%
J	1900	BODY	08/31/2020	20.9	22.4	0.100	5d080	7571	4.220	39.200	42.200	7.65%
K	2450	BODY	09/03/2020	22.0	21.7	0.100	981	7409	5.210	50.900	52.100	2.36%
K	2450	BODY	09/13/2020	23.0	22.7	0.100	981	7409	5.210	50.900	52.100	2.36%
K	2600	BODY	08/24/2020	22.6	23.0	0.100	1064	7409	5.620	55.600	56.200	1.08%
D	3700	BODY	09/14/2020	22.4	21.6	0.100	1018	7488	6.680	64.300	66.800	3.89%
G	5250	BODY	08/23/2020	22.1	22.6	0.050	1237	7538	3.680	75.600	73.600	-2.65%
G	5600	BODY	08/23/2020	22.1	22.6	0.050	1237	7538	3.760	78.500	75.200	-4.20%
G	5750	BODY	08/23/2020	22.1	22.6	0.050	1237	7538	3.540	75.900	70.800	-6.72%

Table 10-5
System Verification Results – 10g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR_{10g} (W/kg)	1 W Target SAR_{10g} (W/kg)	1 W Normalized SAR_{10g} (W/kg)	$Deviation_{10g}$ (%)
G	5250	BODY	08/23/2020	22.1	22.6	0.050	1237	7538	1.030	21.200	20.600	-2.83%
G	5600	BODY	08/23/2020	22.1	22.6	0.050	1237	7538	1.050	22.000	21.000	-4.55%
G	5750	BODY	08/23/2020	22.1	22.6	0.050	1237	7538	0.981	21.200	19.620	-7.45%

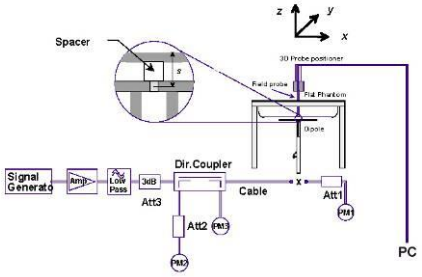

Figure 10-1
System Verification Setup Diagram

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		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	33.2	32.43	0.03	Right	Cheek	80813	1	1:8.3	0.130	1.194	0.155	A1
836.60	190	GSM 850	GSM	33.2	32.43	0.06	Right	Tilt	80813	1	1:8.3	0.066	1.194	0.079	
836.60	190	GSM 850	GSM	33.2	32.43	0.05	Left	Cheek	80813	1	1:8.3	0.124	1.194	0.148	
836.60	190	GSM 850	GSM	33.2	32.43	-0.13	Left	Tilt	80813	1	1:8.3	0.067	1.194	0.080	
836.60	190	GSM 850	GPRS	27.2	27.17	0.14	Right	Cheek	80813	4	1:2.076	0.123	1.007	0.124	
836.60	190	GSM 850	GPRS	27.2	27.17	0.14	Right	Tilt	80813	4	1:2.076	0.050	1.007	0.050	
836.60	190	GSM 850	GPRS	27.2	27.17	0.07	Left	Cheek	80813	4	1:2.076	0.121	1.007	0.122	
836.60	190	GSM 850	GPRS	27.2	27.17	0.01	Left	Tilt	80813	4	1:2.076	0.100	1.007	0.101	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-2
GSM 1900 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	28.2	26.73	0.17	Right	Cheek	81779	1	1:8.3	0.036	1.403	0.051	
1880.00	661	GSM 1900	GSM	28.2	26.73	0.08	Right	Tilt	81779	1	1:8.3	0.026	1.403	0.036	
1880.00	661	GSM 1900	GSM	28.2	26.73	0.03	Left	Cheek	81779	1	1:8.3	0.073	1.403	0.102	A2
1880.00	661	GSM 1900	GSM	28.2	26.73	0.10	Left	Tilt	81779	1	1:8.3	0.027	1.403	0.038	
1880.00	661	GSM 1900	GPRS	22.2	20.73	-0.09	Right	Cheek	81779	4	1:2.076	0.032	1.403	0.045	
1880.00	661	GSM 1900	GPRS	22.2	20.73	-0.18	Right	Tilt	81779	4	1:2.076	0.029	1.403	0.041	
1880.00	661	GSM 1900	GPRS	22.2	20.73	-0.17	Left	Cheek	81779	4	1:2.076	0.062	1.403	0.087	
1880.00	661	GSM 1900	GPRS	22.2	20.73	-0.08	Left	Tilt	81779	4	1:2.076	0.024	1.403	0.034	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-3
UMTS 850 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
836.60	4183	UMTS 850	RMC	24.7	23.90	0.00	Right	Cheek	81779	1:1	0.207	1.202	**0.249**	A3
836.60	4183	UMTS 850	RMC	24.7	23.90	0.02	Right	Tilt	81779	1:1	0.103	1.202	0.124	
836.60	4183	UMTS 850	RMC	24.7	23.90	0.00	Left	Cheek	81779	1:1	0.192	1.202	0.231	
836.60	4183	UMTS 850	RMC	24.7	23.90	0.03	Left	Tilt	81779	1:1	0.109	1.202	0.131	
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
UMTS 1750 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	16.7	15.63	0.12	Right	Cheek	80813	1:1	0.021	1.279	0.027	
1732.40	1412	UMTS 1750	RMC	16.7	15.63	0.11	Right	Tilt	80813	1:1	0.020	1.279	0.026	
1732.40	1412	UMTS 1750	RMC	16.7	15.63	0.10	Left	Cheek	80813	1:1	0.044	1.279	0.056	A4
1732.40	1412	UMTS 1750	RMC	16.7	15.63	-0.11	Left	Tilt	80813	1:1	0.028	1.279	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
UMTS 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	16.7	15.79	0.11	Right	Cheek	81779	1:1	0.040	1.233	0.049	
1880.00	9400	UMTS 1900	RMC	16.7	15.79	0.17	Right	Tilt	81779	1:1	0.029	1.233	0.036	
1880.00	9400	UMTS 1900	RMC	16.7	15.79	0.04	Left	Cheek	81779	1:1	0.074	1.233	0.091	A5
1880.00	9400	UMTS 1900	RMC	16.7	15.79	0.17	Left	Tilt	81779	1:1	0.037	1.233	0.046	
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 12 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.0	24.18	-0.05	0	Right	Cheek	QPSK	1	25	80813	1:1	0.151	1.208	0.182	
707.50	23095	Mid	LTE Band 12	10	24.0	23.45	0.01	1	Right	Cheek	QPSK	25	0	80813	1:1	0.113	1.135	0.128	
707.50	23095	Mid	LTE Band 12	10	25.0	24.18	0.11	0	Right	Tilt	QPSK	1	25	80813	1:1	0.066	1.208	0.080	
707.50	23095	Mid	LTE Band 12	10	24.0	23.45	0.17	1	Right	Tilt	QPSK	25	0	80813	1:1	0.048	1.135	0.054	
707.50	23095	Mid	LTE Band 12	10	25.0	24.18	-0.09	0	Left	Cheek	QPSK	1	25	80813	1:1	0.179	1.208	0.216	A6
707.50	23095	Mid	LTE Band 12	10	24.0	23.45	0.06	1	Left	Cheek	QPSK	25	0	80813	1:1	0.130	1.135	0.148	
707.50	23095	Mid	LTE Band 12	10	25.0	24.18	-0.03	0	Left	Tilt	QPSK	1	25	80813	1:1	0.080	1.208	0.097	
707.50	23095	Mid	LTE Band 12	10	24.0	23.45	0.13	1	Left	Tilt	QPSK	25	0	80813	1:1	0.059	1.135	0.067	

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

Table 11-7
LTE Band 13 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	25.0	24.46	0.03	0	Right	Cheek	QPSK	1	0	80813	1:1	0.139	1.132	0.157	
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	0.03	1	Right	Cheek	QPSK	25	25	80813	1:1	0.119	1.119	0.133	
782.00	23230	Mid	LTE Band 13	10	25.0	24.46	0.01	0	Right	Tilt	QPSK	1	0	80813	1:1	0.078	1.132	0.088	
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	0.05	1	Right	Tilt	QPSK	25	25	80813	1:1	0.069	1.119	0.077	
782.00	23230	Mid	LTE Band 13	10	25.0	24.46	-0.12	0	Left	Cheek	QPSK	1	0	80813	1:1	0.165	1.132	0.187	A7
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	0.04	1	Left	Cheek	QPSK	25	25	80813	1:1	0.144	1.119	0.161	
782.00	23230	Mid	LTE Band 13	10	25.0	24.46	0.03	0	Left	Tilt	QPSK	1	0	80813	1:1	0.096	1.132	0.109	
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	-0.04	1	Left	Tilt	QPSK	25	25	80813	1:1	0.078	1.119	0.087	

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

Table 11-8
LTE Band 26 (Cell) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	23.76	0.10	0	Right	Cheek	QPSK	1	36	81779	1:1	0.157	1.330	0.209	A8
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.32	0.03	1	Right	Cheek	QPSK	36	0	81779	1:1	0.143	1.169	0.167	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	23.76	-0.01	0	Right	Tilt	QPSK	1	36	81779	1:1	0.078	1.330	0.104	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.32	0.07	1	Right	Tilt	QPSK	36	0	81779	1:1	0.067	1.169	0.078	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	23.76	-0.01	0	Left	Cheek	QPSK	1	36	81779	1:1	0.145	1.330	0.193	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.32	-0.05	1	Left	Cheek	QPSK	36	0	81779	1:1	0.136	1.169	0.159	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	23.76	0.06	0	Left	Tilt	QPSK	1	36	81779	1:1	0.077	1.330	0.102	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.32	0.10	1	Left	Tilt	QPSK	36	0	81779	1:1	0.074	1.169	0.087	

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

Table 11-9
LTE Band 66 (AWS) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	15.94	0.10	0	Right	Cheek	QPSK	1	0	80813	1:1	0.016	1.276	0.020	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	16.04	-0.13	0	Right	Cheek	QPSK	50	50	80813	1:1	0.015	1.247	0.019	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	15.94	0.13	0	Right	Tilt	QPSK	1	0	80813	1:1	0.016	1.276	0.020	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	16.04	0.15	0	Right	Tilt	QPSK	50	50	80813	1:1	0.015	1.247	0.019	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	15.94	0.21	0	Left	Cheek	QPSK	1	0	80813	1:1	0.041	1.276	0.052	A9
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	16.04	0.09	0	Left	Cheek	QPSK	50	50	80813	1:1	0.039	1.247	0.049	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	15.94	0.11	0	Left	Tilt	QPSK	1	0	80813	1:1	0.024	1.276	0.031	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	16.04	-0.04	0	Left	Tilt	QPSK	50	50	80813	1:1	0.021	1.247	0.026	
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
LTE Band 25 (PCS) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.09	-0.11	0	Right	Cheek	QPSK	1	50	81779	1:1	0.017	1.233	0.021	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.14	0.13	0	Right	Cheek	QPSK	50	25	81779	1:1	0.019	1.219	0.023	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.09	0.18	0	Right	Tilt	QPSK	1	50	81779	1:1	0.013	1.233	0.016	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.14	0.17	0	Right	Tilt	QPSK	50	25	81779	1:1	0.013	1.219	0.016	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.09	0.01	0	Left	Cheek	QPSK	1	50	81779	1:1	0.038	1.233	0.047	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.14	0.04	0	Left	Cheek	QPSK	50	25	81779	1:1	0.039	1.219	0.048	A10
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.09	0.17	0	Left	Tilt	QPSK	1	50	81779	1:1	0.016	1.233	0.020	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.14	0.10	0	Left	Tilt	QPSK	50	25	81779	1:1	0.016	1.219	0.020	
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 11-11
LTE Band 7 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2535.00	21100	Mid	LTE Band 7	20	17.0	15.93	0.11	0	Right	Cheek	QPSK	1	50	80797	1:1	0.034	1.279	0.043	
2535.00	21100	Mid	LTE Band 7	20	17.0	15.98	0.17	0	Right	Cheek	QPSK	50	50	80797	1:1	0.028	1.265	0.035	
2535.00	21100	Mid	LTE Band 7	20	17.0	15.93	0.19	0	Right	Tilt	QPSK	1	50	80797	1:1	0.020	1.279	0.026	
2535.00	21100	Mid	LTE Band 7	20	17.0	15.98	0.12	0	Right	Tilt	QPSK	50	50	80797	1:1	0.015	1.265	0.019	
2535.00	21100	Mid	LTE Band 7	20	17.0	15.93	0.09	0	Left	Cheek	QPSK	1	50	80797	1:1	0.055	1.279	0.070	A11
2535.00	21100	Mid	LTE Band 7	20	17.0	15.98	0.10	0	Left	Cheek	QPSK	50	50	80797	1:1	0.041	1.265	0.052	
2535.00	21100	Mid	LTE Band 7	20	17.0	15.93	0.12	0	Left	Tilt	QPSK	1	50	80797	1:1	0.023	1.279	0.029	
2535.00	21100	Mid	LTE Band 7	20	17.0	15.98	0.14	0	Left	Tilt	QPSK	50	50	80797	1:1	0.019	1.265	0.024	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-12
LTE Band 48 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
3690.00	56640	High	LTE Band 48	20	15.0	13.99	0.14	0	Right	Cheek	QPSK	1	0	80797	1:1.58	0.012	1.262	0.015	
3690.00	56640	High	LTE Band 48	20	15.0	14.00	0.19	0	Right	Cheek	QPSK	50	0	80797	1:1.58	0.009	1.259	0.011	
3690.00	56640	High	LTE Band 48	20	15.0	13.99	0.17	0	Right	Tilt	QPSK	1	0	80797	1:1.58	0.016	1.262	0.020	A12
3690.00	56640	High	LTE Band 48	20	15.0	14.00	-0.21	0	Right	Tilt	QPSK	50	0	80797	1:1.58	0.012	1.259	0.015	
3690.00	56640	High	LTE Band 48	20	15.0	13.99	0.00	0	Left	Cheek	QPSK	1	0	80797	1:1.58	0.008	1.262	0.010	
3690.00	56640	High	LTE Band 48	20	15.0	14.00	0.11	0	Left	Cheek	QPSK	50	0	80797	1:1.58	0.003	1.259	0.004	
3690.00	56640	High	LTE Band 48	20	15.0	13.99	0.11	0	Left	Tilt	QPSK	1	0	80797	1:1.58	0.005	1.262	0.006	
3690.00	56640	High	LTE Band 48	20	15.0	14.00	0.12	0	Left	Tilt	QPSK	50	0	80797	1:1.58	0.004	1.259	0.005	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Head 1.6 W/kg (mW/g) averaged over 1 gram	

Table 11-13
LTE Band 41 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2680.00	41490	High	LTE Band 41	20	15.0	14.59	-0.19	0	Right	Cheek	QPSK	1	99	80797	1:1.58	0.026	1.099	0.029	
2680.00	41490	High	LTE Band 41	20	15.0	14.66	0.01	0	Right	Cheek	QPSK	50	25	80797	1:1.58	0.018	1.081	0.019	
2680.00	41490	High	LTE Band 41	20	15.0	14.59	0.12	0	Right	Tilt	QPSK	1	99	80797	1:1.58	0.018	1.099	0.020	
2680.00	41490	High	LTE Band 41	20	15.0	14.66	0.17	0	Right	Tilt	QPSK	50	25	80797	1:1.58	0.012	1.081	0.013	
2680.00	41490	High	LTE Band 41	20	15.0	14.59	-0.21	0	Left	Cheek	QPSK	1	99	80797	1:1.58	0.034	1.099	0.037	A13
2680.00	41490	High	LTE Band 41	20	15.0	14.66	-0.02	0	Left	Cheek	QPSK	50	25	80797	1:1.58	0.022	1.081	0.024	
2680.00	41490	High	LTE Band 41	20	15.0	14.59	0.21	0	Left	Tilt	QPSK	1	99	80797	1:1.58	0.010	1.099	0.011	
2680.00	41490	High	LTE Band 41	20	15.0	14.66	0.14	0	Left	Tilt	QPSK	50	25	80797	1:1.58	0.005	1.081	0.005	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Head 1.6 W/kg (mW/g) averaged over 1 gram	

Table 11-14
NR Band n5 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.10	0.12	0	Right	Cheek	DFT-S-OFDM QPSK	1	1	80797	1:1	0.056	1.230	0.069	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.06	0.21	0	Right	Cheek	DFT-S-OFDM QPSK	50	28	80797	1:1	0.051	1.242	0.063	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.10	0.16	0	Right	Tilt	DFT-S-OFDM QPSK	1	1	80797	1:1	0.028	1.230	0.034	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.06	0.16	0	Right	Tilt	DFT-S-OFDM QPSK	50	28	80797	1:1	0.026	1.242	0.032	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.10	0.20	0	Left	Cheek	DFT-S-OFDM QPSK	1	1	80797	1:1	0.049	1.230	0.060	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.06	0.15	0	Left	Cheek	DFT-S-OFDM QPSK	50	28	80797	1:1	0.058	1.242	0.072	A14
836.50	167300	Mid	NR Band n5 (Cell)	20	23.5	22.62	0.17	1.5	Left	Cheek	CP-OFDM QPSK	1	1	80797	1:1	0.033	1.225	0.040	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.10	0.17	0	Left	Tilt	DFT-S-OFDM QPSK	1	1	80797	1:1	0.024	1.230	0.030	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.06	0.18	0	Left	Tilt	DFT-S-OFDM QPSK	50	28	80797	1:1	0.028	1.242	0.035	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Head 1.6 W/kg (mW/g) averaged over 1 gram	

Table 11-15
NR Band n66 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.34	0.14	0	Right	Cheek	DFT-S-OFDM QPSK	1	53	81779	1:1	0.000	1.164	0.000	
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.14	-0.13	0	Right	Cheek	DFT-S-OFDM QPSK	50	56	81779	1:1	0.000	1.219	0.000	
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.34	0.12	0	Right	Tilt	DFT-S-OFDM QPSK	1	53	81779	1:1	0.000	1.164	0.000	
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.14	0.10	0	Right	Tilt	DFT-S-OFDM QPSK	50	56	81779	1:1	0.000	1.219	0.000	
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.34	0.04	0	Left	Cheek	DFT-S-OFDM QPSK	1	53	81779	1:1	0.007	1.164	0.008	A15
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.14	0.18	0	Left	Cheek	DFT-S-OFDM QPSK	50	56	81779	1:1	0.005	1.219	0.006	
1745.00	349000	Mid	NR Band n66 (AWS)	20	17.0	16.29	0.07	0	Left	Cheek	CP-OFDM QPSK	1	1	81779	1:1	0.005	1.178	0.006	
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.34	0.13	0	Left	Tilt	DFT-S-OFDM QPSK	1	53	81779	1:1	0.000	1.164	0.000	
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.14	0.10	0	Left	Tilt	DFT-S-OFDM QPSK	50	56	81779	1:1	0.000	1.219	0.000	

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

Table 11-16
NR Band n2 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.51	0.13	0	Right	Cheek	DFT-S-OFDM QPSK	1	53	81779	1:1	0.005	1.119	0.006	
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.16	0.14	0	Right	Cheek	DFT-S-OFDM QPSK	50	0	81779	1:1	0.005	1.213	0.006	
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.51	0.15	0	Right	Tilt	DFT-S-OFDM QPSK	1	53	81779	1:1	0.003	1.119	0.003	
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.16	0.06	0	Right	Tilt	DFT-S-OFDM QPSK	50	0	81779	1:1	0.003	1.213	0.004	
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.51	0.12	0	Left	Cheek	DFT-S-OFDM QPSK	1	53	81779	1:1	0.014	1.119	0.016	
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.16	0.14	0	Left	Cheek	DFT-S-OFDM QPSK	50	0	81779	1:1	0.013	1.213	0.016	
1880.00	376000	Mid	NR Band n2 (PCS)	20	17.0	16.17	0.15	0	Left	Cheek	CP-OFDM QPSK	1	1	81779	1:1	0.021	1.211	0.025	A16
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.51	0.11	0	Left	Tilt	DFT-S-OFDM QPSK	1	53	81779	1:1	0.006	1.119	0.007	
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.16	0.12	0	Left	Tilt	DFT-S-OFDM QPSK	50	0	81779	1:1	0.005	1.213	0.006	

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

Table 11-17
DTS Head SISO SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	9.7	9.69	0.17	Right	Cheek	Chain 0	80979	1	99.9	0.107	-	1.002	1.001	-	
2412	1	802.11b	DSSS	22	9.7	9.69	0.07	Right	Tilt	Chain 0	80979	1	99.9	0.163	-	1.002	1.001	-	
2412	1	802.11b	DSSS	22	9.7	9.69	0.11	Left	Cheek	Chain 0	80979	1	99.9	0.448	0.266	1.002	1.001	**0.267**	A17
2412	1	802.11b	DSSS	22	9.7	9.69	0.16	Left	Tilt	Chain 0	80979	1	99.9	0.281	-	1.002	1.001	-	
2412	1	802.11b	DSSS	22	9.0	8.91	0.14	Right	Cheek	Chain 1	80979	1	99.9	0.070	0.038	1.021	1.001	0.039	
2412	1	802.11b	DSSS	22	9.0	8.91	0.15	Right	Tilt	Chain 1	80979	1	99.9	0.025	-	1.021	1.001	-	
2412	1	802.11b	DSSS	22	9.0	8.91	0.00	Left	Cheek	Chain 1	80979	1	99.9	0.068	-	1.021	1.001	-	
2412	1	802.11b	DSSS	22	9.0	8.91	0.18	Left	Tilt	Chain 1	80979	1	99.9	0.014	-	1.021	1.001	-	
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 11-18
NII Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5290	58	802.11ac	OFDM	80	9.0	8.66	-0.13	Right	Cheek	Chain 0	80953	29.3	99.7	0.298	-	1.081	1.003	-	
5290	58	802.11ac	OFDM	80	9.0	8.66	0.15	Right	Tilt	Chain 0	80953	29.3	99.7	0.347	-	1.081	1.003	-	
5290	58	802.11ac	OFDM	80	9.0	8.66	0.13	Left	Cheek	Chain 0	80953	29.3	99.7	0.489	0.208	1.081	1.003	0.226	
5290	58	802.11ac	OFDM	80	9.0	8.66	0.19	Left	Tilt	Chain 0	80953	29.3	99.7	0.441	-	1.081	1.003	-	
5290	58	802.11ac	OFDM	80	9.0	8.67	0.12	Right	Cheek	Chain 1	80953	29.3	99.7	0.070	-	1.079	1.003	-	
5290	58	802.11ac	OFDM	80	9.0	8.67	0.00	Right	Tilt	Chain 1	80953	29.3	99.7	0.079	0.021	1.079	1.003	0.023	
5290	58	802.11ac	OFDM	80	9.0	8.67	0.00	Left	Cheek	Chain 1	80953	29.3	99.7	0.013	-	1.079	1.003	-	
5290	58	802.11ac	OFDM	80	9.0	8.67	0.00	Left	Tilt	Chain 1	80953	29.3	99.7	0.014	-	1.079	1.003	-	
5690	138	802.11ac	OFDM	80	9.0	8.71	-0.10	Right	Cheek	Chain 0	80953	29.3	99.7	0.623	-	1.069	1.003	-	
5690	138	802.11ac	OFDM	80	9.0	8.71	0.12	Right	Tilt	Chain 0	80953	29.3	99.7	0.634	-	1.069	1.003	-	
5690	138	802.11ac	OFDM	80	9.0	8.71	0.14	Left	Cheek	Chain 0	80953	29.3	99.7	1.194	0.382	1.069	1.003	0.410	
5690	138	802.11ac	OFDM	80	9.0	8.71	0.18	Left	Tilt	Chain 0	80953	29.3	99.7	1.077	0.386	1.069	1.003	0.414	
5610	122	802.11ac	OFDM	80	9.0	8.68	0.11	Right	Cheek	Chain 1	80953	29.3	99.7	0.073	-	1.076	1.003	-	
5610	122	802.11ac	OFDM	80	9.0	8.68	0.00	Right	Tilt	Chain 1	80953	29.3	99.7	0.077	0.022	1.076	1.003	0.024	
5610	122	802.11ac	OFDM	80	9.0	8.68	0.14	Left	Cheek	Chain 1	80953	29.3	99.7	0.013	-	1.076	1.003	-	
5610	122	802.11ac	OFDM	80	9.0	8.68	0.00	Left	Tilt	Chain 1	80953	29.3	99.7	0.017	-	1.076	1.003	-	
5775	155	802.11ac	OFDM	80	9.0	8.60	0.14	Right	Cheek	Chain 0	80953	29.3	99.7	0.520	-	1.096	1.003	-	
5775	155	802.11ac	OFDM	80	9.0	8.60	0.17	Right	Tilt	Chain 0	80953	29.3	99.7	0.536	-	1.096	1.003	-	
5775	155	802.11ac	OFDM	80	9.0	8.60	0.13	Left	Cheek	Chain 0	80953	29.3	99.7	0.841	0.382	1.096	1.003	0.420	
5775	155	802.11ac	OFDM	80	9.0	8.60	0.17	Left	Tilt	Chain 0	80953	29.3	99.7	1.149	0.424	1.096	1.003	**0.466**	A18
5775	155	802.11ac	OFDM	80	9.0	8.44	0.18	Right	Cheek	Chain 1	80953	29.3	99.7	0.047	0.017	1.138	1.003	0.019	
5775	155	802.11ac	OFDM	80	9.0	8.44	0.00	Right	Tilt	Chain 1	80953	29.3	99.7	0.027	-	1.138	1.003	-	
5775	155	802.11ac	OFDM	80	9.0	8.44	0.00	Left	Cheek	Chain 1	80953	29.3	99.7	0.013	-	1.138	1.003	-	
5775	155	802.11ac	OFDM	80	9.0	8.44	0.00	Left	Tilt	Chain 1	80953	29.3	99.7	0.014	-	1.138	1.003	-	
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 11-19
DSS Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441.00	39	Bluetooth	FHSS	14.0	13.75	-0.06	Right	Cheek	80979	1	76.9	0.075	1.059	1.300	0.103	
2441.00	39	Bluetooth	FHSS	14.0	13.75	-0.02	Right	Tilt	80979	1	76.9	0.124	1.059	1.300	0.171	
2441.00	39	Bluetooth	FHSS	14.0	13.75	-0.01	Left	Cheek	80979	1	76.9	0.259	1.059	1.300	**0.357**	A19
2441.00	39	Bluetooth	FHSS	14.0	13.75	0.03	Left	Tilt	80979	1	76.9	0.198	1.059	1.300	0.273	
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 11-20
GSM/UMTS Body-Worn SAR Data

MEASUREMENT RESULTS													
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	33.2	32.43	-0.02	10 mm	81779	1:8.3	back	0.203	1.194	0.242	
836.60	190	GSM 850	GPRS	27.2	27.17	-0.10	10 mm	81779	1:2.076	back	0.210	1.007	0.211	A20
1880.00	661	GSM 1900	GSM	28.2	26.73	0.00	10 mm	80797	1:8.3	back	0.168	1.403	0.236	
1880.00	661	GSM 1900	GPRS	22.2	20.73	-0.08	10 mm	80797	1:2.076	back	0.171	1.403	0.240	A21
836.60	4183	UMTS 850	RMC	24.7	23.90	0.01	10 mm	81779	1:1	back	0.319	1.202	**0.383**	A23
1732.40	1412	UMTS 1750	RMC	16.7	15.63	0.01	10 mm	83197	1:1	back	0.059	1.279	0.075	A24
1880.00	9400	UMTS 1900	RMC	16.7	15.79	0.04	10 mm	81738	1:1	back	0.085	1.233	0.105	A26
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
LTE Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.0	24.18	0.02	0	80797	QPSK	1	25	10 mm	back	1:1	0.242	1.208	0.292	A28
707.50	23095	Mid	LTE Band 12	10	24.0	23.45	-0.02	1	80797	QPSK	25	0	10 mm	back	1:1	0.194	1.135	0.220	
782.00	23230	Mid	LTE Band 13	10	25.0	24.46	-0.01	0	80797	QPSK	1	0	10 mm	back	1:1	0.248	1.132	0.281	A30
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	-0.01	1	80797	QPSK	25	25	10 mm	back	1:1	0.205	1.119	0.229	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	23.76	0.02	0	81779	QPSK	1	36	10 mm	back	1:1	0.226	1.330	0.301	A31
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.32	-0.01	1	81779	QPSK	36	0	10 mm	back	1:1	0.200	1.169	0.234	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	15.94	0.02	0	83197	QPSK	1	0	10 mm	back	1:1	0.056	1.276	0.071	A32
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	16.04	0.04	0	83197	QPSK	50	50	10 mm	back	1:1	0.055	1.247	0.069	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.09	0.06	0	81738	QPSK	1	50	10 mm	back	1:1	0.100	1.233	0.123	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.14	0.08	0	81738	QPSK	50	25	10 mm	back	1:1	0.104	1.219	0.127	A34
2535.00	21100	Mid	LTE Band 7	20	17.0	15.93	0.18	0	80797	QPSK	1	50	10 mm	back	1:1	0.034	1.279	0.043	
2535.00	21100	Mid	LTE Band 7	20	17.0	15.98	0.12	0	80797	QPSK	50	50	10 mm	back	1:1	0.039	1.265	0.049	A36
3690.00	56640	High	LTE Band 48	20	15.0	13.99	-0.07	0	81779	QPSK	1	0	10 mm	back	1:1.58	0.067	1.262	**0.085**	A38
3690.00	56640	High	LTE Band 48	20	15.0	14.00	-0.13	0	81779	QPSK	50	0	10 mm	back	1:1.58	0.063	1.259	0.079	
2680.00	41490	High	LTE Band 41	20	15.0	14.59	0.20	0	80797	QPSK	1	99	10 mm	back	1:1.58	0.045	1.099	0.049	
2680.00	41490	High	LTE Band 41	20	15.0	14.66	0.10	0	80797	QPSK	50	25	10 mm	back	1:1.58	0.050	1.081	0.054	A40
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
NR Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.10	-0.02	0	80797	DFT-S-OFDM QPSK	1	1	10 mm	back	1:1	0.096	1.230	0.118	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.06	0.03	0	80797	DFT-S-OFDM QPSK	50	28	10 mm	back	1:1	0.105	1.242	0.130	A41
836.50	167300	Mid	NR Band n5 (Cell)	20	23.5	22.62	0.01	1.5	80797	CP-OFDM QPSK	1	1	10 mm	back	1:1	0.067	1.225	0.082	
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.34	0.19	0	80797	DFT-S-OFDM QPSK	1	53	10 mm	back	1:1	0.012	1.164	0.014	A42
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.14	0.10	0	80797	DFT-S-OFDM QPSK	50	56	10 mm	back	1:1	0.012	1.219	0.015	
1745.00	349000	Mid	NR Band n66 (AWS)	20	17.0	16.29	-0.13	0	80797	CP-OFDM QPSK	1	1	10 mm	back	1:1	0.012	1.178	0.014	
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.51	0.10	0	81738	DFT-S-OFDM QPSK	1	53	10 mm	back	1:1	0.030	1.119	0.034	A44
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.16	0.21	0	81738	DFT-S-OFDM QPSK	50	0	10 mm	back	1:1	0.026	1.213	0.032	
1880.00	376000	Mid	NR Band n2 (PCS)	20	17.0	16.17	0.17	0	81738	CP-OFDM QPSK	1	1	10 mm	back	1:1	0.023	1.211	0.028	
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
DTS Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	9.7	9.69	-0.19	10 mm	Chain 0	80953	1	back	99.9	0.077	0.057	1.002	1.001	0.057	A46
2412	1	802.11b	DSSS	22	9.0	8.91	0.17	10 mm	Chain 1	80953	1	back	99.9	0.037	0.024	1.021	1.001	0.025	
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
NII Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5290	58	802.11ac	OFDM	80	9.0	8.66	0.19	10 mm	Chain 0	81134	29.3	back	99.7	0.081	0.030	1.081	1.003	0.033	
5290	58	802.11ac	OFDM	80	9.0	8.67	0.00	10 mm	Chain 1	81134	29.3	back	99.7	0.155	0.069	1.079	1.003	0.075	A48
5690	138	802.11ac	OFDM	80	9.0	8.71	0.10	10 mm	Chain 0	81134	29.3	back	99.7	0.083	0.033	1.069	1.003	0.035	
5610	122	802.11ac	OFDM	80	9.0	8.68	0.09	10 mm	Chain 1	81134	29.3	back	99.7	0.084	0.035	1.076	1.003	0.038	
5775	155	802.11ac	OFDM	80	9.0	8.60	0.00	10 mm	Chain 0	81134	29.3	back	99.7	0.076	0.026	1.096	1.003	0.029	
5775	155	802.11ac	OFDM	80	9.0	8.44	0.01	10 mm	Chain 1	81134	29.3	back	99.7	0.083	0.035	1.138	1.003	0.040	
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 11-25
DSS Body-Worn SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	14.0	13.75	0.20	10 mm	80979	1	back	76.9	0.061	1.059	1.300	0.084	A49
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 11-26
GPRS/UMTS Hotspot SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GPRS	27.2	27.17	-0.10	10 mm	81779	4	1:2.076	back	0.210	1.007	0.211	A20
836.60	190	GSM 850	GPRS	27.2	27.17	-0.17	10 mm	81779	4	1:2.076	front	0.131	1.007	0.132	
836.60	190	GSM 850	GPRS	27.2	27.17	0.11	10 mm	81779	4	1:2.076	bottom	0.139	1.007	0.140	
836.60	190	GSM 850	GPRS	27.2	27.17	0.01	10 mm	81779	4	1:2.076	left	0.136	1.007	0.137	
1880.00	661	GSM 1900	GPRS	22.2	20.73	-0.08	10 mm	80797	4	1:2.076	back	0.171	1.403	0.240	
1880.00	661	GSM 1900	GPRS	22.2	20.73	-0.04	10 mm	80797	4	1:2.076	front	0.146	1.403	0.205	
1880.00	661	GSM 1900	GPRS	22.2	20.73	0.21	10 mm	80797	4	1:2.076	bottom	0.048	1.403	0.067	
1880.00	661	GSM 1900	GPRS	22.2	20.73	-0.02	10 mm	80797	4	1:2.076	left	0.254	1.403	0.356	A22
836.60	4183	UMTS 850	RMC	24.7	23.90	0.01	10 mm	81779	N/A	1:1	back	0.319	1.202	**0.383**	A23
836.60	4183	UMTS 850	RMC	24.7	23.90	0.00	10 mm	81779	N/A	1:1	front	0.194	1.202	0.233	
836.60	4183	UMTS 850	RMC	24.7	23.90	-0.05	10 mm	81779	N/A	1:1	bottom	0.234	1.202	0.281	
836.60	4183	UMTS 850	RMC	24.7	23.90	-0.01	10 mm	81779	N/A	1:1	left	0.205	1.202	0.246	
1732.40	1412	UMTS 1750	RMC	16.7	15.63	0.01	10 mm	83197	N/A	1:1	back	0.059	1.279	0.075	
1732.40	1412	UMTS 1750	RMC	16.7	15.63	0.00	10 mm	83197	N/A	1:1	front	0.060	1.279	0.077	
1732.40	1412	UMTS 1750	RMC	16.7	15.63	0.04	10 mm	83197	N/A	1:1	bottom	0.025	1.279	0.032	
1732.40	1412	UMTS 1750	RMC	16.7	15.63	-0.03	10 mm	83197	N/A	1:1	left	0.105	1.279	0.134	A25
1880.00	9400	UMTS 1900	RMC	16.7	15.79	0.04	10 mm	81738	N/A	1:1	back	0.085	1.233	0.105	
1880.00	9400	UMTS 1900	RMC	16.7	15.79	0.07	10 mm	81738	N/A	1:1	front	0.060	1.233	0.074	
1880.00	9400	UMTS 1900	RMC	16.7	15.79	0.15	10 mm	81738	N/A	1:1	bottom	0.023	1.233	0.028	
1880.00	9400	UMTS 1900	RMC	16.7	15.79	-0.01	10 mm	81738	N/A	1:1	left	0.115	1.233	0.142	A27
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 11-27
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.0	24.18	0.02	0	80797	QPSK	1	25	10 mm	back	1:1	0.242	1.208	0.292	
707.50	23095	Mid	LTE Band 12	10	24.0	23.45	-0.02	1	80797	QPSK	25	0	10 mm	back	1:1	0.194	1.135	0.220	
707.50	23095	Mid	LTE Band 12	10	25.0	24.18	0.03	0	80797	QPSK	1	25	10 mm	front	1:1	0.194	1.208	0.234	
707.50	23095	Mid	LTE Band 12	10	24.0	23.45	0.01	1	80797	QPSK	25	0	10 mm	front	1:1	0.161	1.135	0.183	
707.50	23095	Mid	LTE Band 12	10	25.0	24.18	-0.03	0	80797	QPSK	1	25	10 mm	bottom	1:1	0.097	1.208	0.117	
707.50	23095	Mid	LTE Band 12	10	24.0	23.45	0.01	1	80797	QPSK	25	0	10 mm	bottom	1:1	0.072	1.135	0.082	
707.50	23095	Mid	LTE Band 12	10	25.0	24.18	0.01	0	80797	QPSK	1	25	10 mm	left	1:1	0.248	1.208	0.300	A29
707.50	23095	Mid	LTE Band 12	10	24.0	23.45	0.07	1	80797	QPSK	25	0	10 mm	left	1:1	0.204	1.135	0.232	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-28
LTE Band 13 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	25.0	24.46	-0.01	0	80797	QPSK	1	0	10 mm	back	1:1	0.248	1.132	0.281	A30
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	-0.01	1	80797	QPSK	25	25	10 mm	back	1:1	0.205	1.119	0.229	
782.00	23230	Mid	LTE Band 13	10	25.0	24.46	0.02	0	80797	QPSK	1	0	10 mm	front	1:1	0.205	1.132	0.232	
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	0.05	1	80797	QPSK	25	25	10 mm	front	1:1	0.166	1.119	0.186	
782.00	23230	Mid	LTE Band 13	10	25.0	24.46	0.02	0	80797	QPSK	1	0	10 mm	bottom	1:1	0.143	1.132	0.162	
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	0.01	1	80797	QPSK	25	25	10 mm	bottom	1:1	0.125	1.119	0.140	
782.00	23230	Mid	LTE Band 13	10	25.0	24.46	-0.03	0	80797	QPSK	1	0	10 mm	left	1:1	0.235	1.132	0.266	
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	0.02	1	80797	QPSK	25	25	10 mm	left	1:1	0.171	1.119	0.191	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-29
LTE Band 26 (Cell) Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	23.76	0.02	0	81779	QPSK	1	36	10 mm	back	1:1	0.226	1.330	0.301	A31
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.32	-0.01	1	81779	QPSK	36	0	10 mm	back	1:1	0.200	1.169	0.234	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	23.76	-0.01	0	81779	QPSK	1	36	10 mm	front	1:1	0.173	1.330	0.230	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.32	0.01	1	81779	QPSK	36	0	10 mm	front	1:1	0.151	1.169	0.177	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	23.76	0.02	0	81779	QPSK	1	36	10 mm	bottom	1:1	0.150	1.330	0.200	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.32	-0.04	1	81779	QPSK	36	0	10 mm	bottom	1:1	0.132	1.169	0.154	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	23.76	-0.08	0	81779	QPSK	1	36	10 mm	left	1:1	0.129	1.330	0.172	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.32	0.02	1	81779	QPSK	36	0	10 mm	left	1:1	0.122	1.169	0.143	
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 11-30
LTE Band 66 (AWS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	15.94	0.02	0	83197	QPSK	1	0	10 mm	back	1:1	0.056	1.276	0.071	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	16.04	0.04	0	83197	QPSK	50	50	10 mm	back	1:1	0.055	1.247	0.069	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	15.94	0.05	0	83197	QPSK	1	0	10 mm	front	1:1	0.060	1.276	0.077	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	16.04	0.16	0	83197	QPSK	50	50	10 mm	front	1:1	0.061	1.247	0.076	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	15.94	0.01	0	83197	QPSK	1	0	10 mm	bottom	1:1	0.025	1.276	0.032	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	16.04	0.07	0	83197	QPSK	50	50	10 mm	bottom	1:1	0.024	1.247	0.030	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	15.94	0.02	0	83197	QPSK	1	0	10 mm	left	1:1	0.096	1.276	0.122	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	17.0	16.04	0.06	0	83197	QPSK	50	50	10 mm	left	1:1	0.109	1.247	0.136	A33
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 11-31
LTE Band 25 (PCS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.09	0.06	0	81738	QPSK	1	50	10 mm	back	1:1	0.100	1.233	0.123	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.14	0.08	0	81738	QPSK	50	25	10 mm	back	1:1	0.104	1.219	0.127	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.09	0.03	0	81738	QPSK	1	50	10 mm	front	1:1	0.084	1.233	0.104	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.14	-0.02	0	81738	QPSK	50	25	10 mm	front	1:1	0.085	1.219	0.104	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.09	0.02	0	81738	QPSK	1	50	10 mm	bottom	1:1	0.037	1.233	0.046	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.14	0.03	0	81738	QPSK	50	25	10 mm	bottom	1:1	0.037	1.219	0.045	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.09	-0.04	0	81738	QPSK	1	50	10 mm	left	1:1	0.136	1.233	0.168	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	17.0	16.14	0.02	0	81738	QPSK	50	25	10 mm	left	1:1	0.142	1.219	0.173	A35
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 11-32
LTE Band 7 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2535.00	21100	Mid	LTE Band 7	20	17.0	15.93	0.18	0	80797	QPSK	1	50	10 mm	back	1:1	0.034	1.279	0.043	
2535.00	21100	Mid	LTE Band 7	20	17.0	15.98	0.12	0	80797	QPSK	50	50	10 mm	back	1:1	0.039	1.265	0.049	
2535.00	21100	Mid	LTE Band 7	20	17.0	15.93	0.14	0	80797	QPSK	1	50	10 mm	front	1:1	0.008	1.279	0.010	
2535.00	21100	Mid	LTE Band 7	20	17.0	15.98	0.19	0	80797	QPSK	50	50	10 mm	front	1:1	0.007	1.265	0.009	
2535.00	21100	Mid	LTE Band 7	20	17.0	15.93	-0.13	0	80797	QPSK	1	50	10 mm	bottom	1:1	0.025	1.279	0.032	
2535.00	21100	Mid	LTE Band 7	20	17.0	15.98	0.08	0	80797	QPSK	50	50	10 mm	bottom	1:1	0.029	1.265	0.037	
2535.00	21100	Mid	LTE Band 7	20	17.0	15.93	0.12	0	80797	QPSK	1	50	10 mm	left	1:1	0.052	1.279	0.067	
2535.00	21100	Mid	LTE Band 7	20	17.0	15.98	0.20	0	80797	QPSK	50	50	10 mm	left	1:1	0.055	1.265	0.070	A37
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 11-33
LTE Band 48 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
3690.00	56640	High	LTE Band 48	20	15.0	13.99	-0.07	0	81779	QPSK	1	0	10 mm	back	1:1.58	0.067	1.262	**0.085**	
3690.00	56640	High	LTE Band 48	20	15.0	14.00	-0.13	0	81779	QPSK	50	0	10 mm	back	1:1.58	0.063	1.259	0.079	
3690.00	56640	High	LTE Band 48	20	15.0	13.99	0.10	0	81779	QPSK	1	0	10 mm	front	1:1.58	0.048	1.262	0.061	
3690.00	56640	High	LTE Band 48	20	15.0	14.00	-0.13	0	81779	QPSK	50	0	10 mm	front	1:1.58	0.047	1.259	0.059	
3690.00	56640	High	LTE Band 48	20	15.0	13.99	0.03	0	81779	QPSK	1	0	10 mm	bottom	1:1.58	0.069	1.262	**0.087**	A39
3690.00	56640	High	LTE Band 48	20	15.0	14.00	-0.11	0	81779	QPSK	50	0	10 mm	bottom	1:1.58	0.067	1.259	0.084	
3690.00	56640	High	LTE Band 48	20	15.0	13.99	0.05	0	81779	QPSK	1	0	10 mm	right	1:1.58	0.048	1.262	0.061	
3690.00	56640	High	LTE Band 48	20	15.0	14.00	-0.04	0	81779	QPSK	50	0	10 mm	right	1:1.58	0.045	1.259	0.057	
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 11-34
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2680.00	41490	High	LTE Band 41	20	15.0	14.59	0.20	0	80797	QPSK	1	99	10 mm	back	1:1.58	0.045	1.099	0.049	
2680.00	41490	High	LTE Band 41	20	15.0	14.66	0.10	0	80797	QPSK	50	25	10 mm	back	1:1.58	0.050	1.081	0.054	A40
2680.00	41490	High	LTE Band 41	20	15.0	14.59	0.15	0	80797	QPSK	1	99	10 mm	front	1:1.58	0.005	1.099	0.005	
2680.00	41490	High	LTE Band 41	20	15.0	14.66	0.10	0	80797	QPSK	50	25	10 mm	front	1:1.58	0.006	1.081	0.006	
2680.00	41490	High	LTE Band 41	20	15.0	14.59	-0.07	0	80797	QPSK	1	99	10 mm	bottom	1:1.58	0.009	1.099	0.010	
2680.00	41490	High	LTE Band 41	20	15.0	14.66	-0.01	0	80797	QPSK	50	25	10 mm	bottom	1:1.58	0.011	1.081	0.012	
2680.00	41490	High	LTE Band 41	20	15.0	14.59	0.13	0	80797	QPSK	1	99	10 mm	left	1:1.58	0.022	1.099	0.024	
2680.00	41490	High	LTE Band 41	20	15.0	14.66	0.10	0	80797	QPSK	50	25	10 mm	left	1:1.58	0.026	1.081	0.028	
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 11-35
NR Band n5 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.10	-0.02	0	80797	DFT-S-OFDM QPSK	1	1	10 mm	back	1:1	0.096	1.230	0.118	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.06	0.03	0	80797	DFT-S-OFDM QPSK	50	28	10 mm	back	1:1	0.105	1.242	0.130	A41
836.50	167300	Mid	NR Band n5 (Cell)	20	23.5	22.62	0.01	1.5	80797	CP-OFDM QPSK	1	1	10 mm	back	1:1	0.067	1.225	0.082	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.10	0.05	0	80797	DFT-S-OFDM QPSK	1	1	10 mm	front	1:1	0.061	1.230	0.075	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.06	-0.01	0	80797	DFT-S-OFDM QPSK	50	28	10 mm	front	1:1	0.067	1.242	0.083	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.10	-0.02	0	80797	DFT-S-OFDM QPSK	1	1	10 mm	bottom	1:1	0.071	1.230	0.087	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.06	-0.01	0	80797	DFT-S-OFDM QPSK	50	28	10 mm	bottom	1:1	0.075	1.242	0.093	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.10	-0.07	0	80797	DFT-S-OFDM QPSK	1	1	10 mm	left	1:1	0.068	1.230	0.084	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.0	24.06	0.05	0	80797	DFT-S-OFDM QPSK	50	28	10 mm	left	1:1	0.073	1.242	0.091	
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 11-36
NR Band n66 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.34	0.19	0	80797	DFT-S-OFDM QPSK	1	53	10 mm	back	1:1	0.012	1.164	0.014	
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.14	0.10	0	80797	DFT-S-OFDM QPSK	50	56	10 mm	back	1:1	0.012	1.219	0.015	
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.34	0.11	0	80797	DFT-S-OFDM QPSK	1	53	10 mm	front	1:1	0.015	1.164	0.017	
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.14	-0.10	0	80797	DFT-S-OFDM QPSK	50	56	10 mm	front	1:1	0.013	1.219	0.016	
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.34	-0.17	0	80797	DFT-S-OFDM QPSK	1	53	10 mm	bottom	1:1	0.006	1.164	0.007	
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.14	0.06	0	80797	DFT-S-OFDM QPSK	50	56	10 mm	bottom	1:1	0.006	1.219	0.007	
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.34	0.06	0	80797	DFT-S-OFDM QPSK	1	53	10 mm	left	1:1	0.028	1.164	0.033	
1720.00	344000	Low	NR Band n66 (AWS)	20	17.0	16.14	0.21	0	80797	DFT-S-OFDM QPSK	50	56	10 mm	left	1:1	0.027	1.219	0.033	
1745.00	349000	Mid	NR Band n66 (AWS)	20	17.0	16.29	0.12	0	80797	CP-OFDM QPSK	1	1	10 mm	left	1:1	0.029	1.178	0.034	A43
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 11-37
NR Band n2 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.51	0.10	0	81738	DFT-S-OFDM QPSK	1	53	10 mm	back	1:1	0.030	1.119	0.034	
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.16	0.21	0	81738	DFT-S-OFDM QPSK	50	0	10 mm	back	1:1	0.026	1.213	0.032	
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.51	0.12	0	81738	DFT-S-OFDM QPSK	1	53	10 mm	front	1:1	0.026	1.119	0.029	
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.16	0.19	0	81738	DFT-S-OFDM QPSK	50	0	10 mm	front	1:1	0.023	1.213	0.028	
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.51	-0.15	0	81738	DFT-S-OFDM QPSK	1	53	10 mm	bottom	1:1	0.013	1.119	0.015	
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.16	0.17	0	81738	DFT-S-OFDM QPSK	50	0	10 mm	bottom	1:1	0.013	1.213	0.016	
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.51	0.00	0	81738	DFT-S-OFDM QPSK	1	53	10 mm	left	1:1	0.034	1.119	0.038	
1860.00	372000	Low	NR Band n2 (PCS)	20	17.0	16.16	0.14	0	81738	DFT-S-OFDM QPSK	50	0	10 mm	left	1:1	0.036	1.213	0.044	A45
1880.00	376000	Mid	NR Band n2 (PCS)	20	17.0	16.17	0.15	0	81738	CP-OFDM QPSK	1	1	10 mm	left	1:1	0.028	1.211	0.034	
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 11-38
WLAN Hotspot SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	9.7	9.69	-0.19	10 mm	Chain 0	80953	1	back	99.9	0.077	0.057	1.002	1.001	0.057	
2412	1	802.11b	DSSS	22	9.7	9.69	0.00	10 mm	Chain 0	80953	1	front	99.9	0.069	-	1.002	1.001	-	
2412	1	802.11b	DSSS	22	9.7	9.69	0.16	10 mm	Chain 0	80953	1	top	99.9	0.065	-	1.002	1.001	-	
2412	1	802.11b	DSSS	22	9.7	9.69	0.00	10 mm	Chain 0	80953	1	right	99.9	0.129	0.078	1.002	1.001	**0.078**	A47
2412	1	802.11b	DSSS	22	9.0	8.91	0.17	10 mm	Chain 1	80953	1	back	99.9	0.037	0.024	1.021	1.001	0.025	
2412	1	802.11b	DSSS	22	9.0	8.91	0.00	10 mm	Chain 1	80953	1	front	99.9	0.010	-	1.021	1.001	-	
2412	1	802.11b	DSSS	22	9.0	8.91	0.08	10 mm	Chain 1	80953	1	left	99.9	0.032	-	1.021	1.001	-	

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 11-39
DSS Hotspot SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	14.0	13.75	0.20	10 mm	80979	1	back	76.9	0.061	1.059	1.300	0.084	
2441	39	Bluetooth	FHSS	14.0	13.75	0.20	10 mm	80979	1	front	76.9	0.052	1.059	1.300	0.072	
2441	39	Bluetooth	FHSS	14.0	13.75	0.11	10 mm	80979	1	top	76.9	0.044	1.059	1.300	0.061	
2441	39	Bluetooth	FHSS	14.0	13.75	0.01	10 mm	80979	1	right	76.9	0.088	1.059	1.300	**0.121**	A50

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

11.4 Standalone Phablet SAR Data

Table 11-40
WLAN Phablet SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan W/kg	SAR (10g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g) (W/kg)	Plot #
MHz	Ch.																		
5290	58	802.11ac	OFDM	80	9.0	8.66	-0.16	0 mm	Chain 0	81134	29.3	back	99.7	0.787	-	1.081	1.003	-	
5290	58	802.11ac	OFDM	80	9.0	8.66	0.17	0 mm	Chain 0	81134	29.3	front	99.7	0.598	-	1.081	1.003	-	
5290	58	802.11ac	OFDM	80	9.0	8.66	-0.16	0 mm	Chain 0	81134	29.3	top	99.7	2.402	0.189	1.081	1.003	0.205	
5290	58	802.11ac	OFDM	80	9.0	8.66	0.12	0 mm	Chain 0	81134	29.3	right	99.7	0.148	-	1.081	1.003	-	
5290	58	802.11ac	OFDM	80	9.0	8.67	0.00	0 mm	Chain 1	81134	29.3	back	99.7	1.750	0.215	1.079	1.003	**0.233**	A51
5290	58	802.11ac	OFDM	80	9.0	8.67	0.00	0 mm	Chain 1	81134	29.3	front	99.7	0.065	-	1.079	1.003	-	
5290	58	802.11ac	OFDM	80	9.0	8.67	0.18	0 mm	Chain 1	81134	29.3	top	99.7	0.053	-	1.079	1.003	-	
5290	58	802.11ac	OFDM	80	9.0	8.67	0.00	0 mm	Chain 1	81134	29.3	left	99.7	0.296	-	1.079	1.003	-	
5690	138	802.11ac	OFDM	80	9.0	8.71	-0.11	0 mm	Chain 0	81134	29.3	back	99.7	0.856	-	1.069	1.003	-	
5690	138	802.11ac	OFDM	80	9.0	8.71	0.18	0 mm	Chain 0	81134	29.3	front	99.7	1.037	-	1.069	1.003	-	
5690	138	802.11ac	OFDM	80	9.0	8.71	0.19	0 mm	Chain 0	81134	29.3	top	99.7	2.539	0.184	1.069	1.003	0.197	
5690	138	802.11ac	OFDM	80	9.0	8.71	0.17	0 mm	Chain 0	81134	29.3	right	99.7	0.623	-	1.069	1.003	-	
5610	122	802.11ac	OFDM	80	9.0	8.68	0.00	0 mm	Chain 1	81134	29.3	back	99.7	0.920	0.133	1.076	1.003	0.144	
5610	122	802.11ac	OFDM	80	9.0	8.68	0.00	0 mm	Chain 1	81134	29.3	front	99.7	0.097	-	1.076	1.003	-	
5610	122	802.11ac	OFDM	80	9.0	8.68	0.00	0 mm	Chain 1	81134	29.3	top	99.7	0.114	-	1.076	1.003	-	
5610	122	802.11ac	OFDM	80	9.0	8.68	0.00	0 mm	Chain 1	81134	29.3	left	99.7	0.234	-	1.076	1.003	-	
5775	155	802.11ac	OFDM	80	9.0	8.60	-0.10	0 mm	Chain 0	81134	29.3	back	99.7	0.833	-	1.096	1.003	-	
5775	155	802.11ac	OFDM	80	9.0	8.60	-0.12	0 mm	Chain 0	81134	29.3	front	99.7	1.038	-	1.096	1.003	-	
5775	155	802.11ac	OFDM	80	9.0	8.60	0.00	0 mm	Chain 0	81134	29.3	top	99.7	2.320	0.176	1.096	1.003	0.193	
5775	155	802.11ac	OFDM	80	9.0	8.60	-0.04	0 mm	Chain 0	81134	29.3	right	99.7	0.579	-	1.096	1.003	-	
5775	155	802.11ac	OFDM	80	9.0	8.44	0.00	0 mm	Chain 1	81134	29.3	back	99.7	0.947	0.118	1.138	1.003	0.135	
5775	155	802.11ac	OFDM	80	9.0	8.44	0.00	0 mm	Chain 1	81134	29.3	front	99.7	0.125	-	1.138	1.003	-	
5775	155	802.11ac	OFDM	80	9.0	8.44	0.00	0 mm	Chain 1	81134	29.3	top	99.7	0.261	-	1.138	1.003	-	
5775	155	802.11ac	OFDM	80	9.0	8.44	0.00	0 mm	Chain 1	81134	29.3	left	99.7	0.267	-	1.138	1.003	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**														**Phablet** **4.0 W/kg (mW/g)** averaged over 10 grams					

11.5 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.

7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported 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 not required since measured SAR results for all frequency bands were less than 0.8 W/kg. Please see Section 13 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" 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. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds below.
12. This device uses Qualcomm Smart Transmit for 2G/3G/4G/5G 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 middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel was used.

UMTS Notes:

1. UMTS mode was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. AMR and HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03r01.
2. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel was used.

LTE Notes:

1. LTE 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 or LTE Band 48 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.

NR Notes:

1. NR implementation is limited to EN-DC operations only, with the LTE Bands shown in the NR FR1 checklist acting as anchor bands. Per FCC guidance, SAR tests for NR Bands and LTE anchors bands were performed separately due to limitations in SAR probe calibration factors.
2. Due to test setup limitations, SAR testing for NR was performed using test mode software to establish the connection.
3. Simultaneous transmission analysis for EN-DC operations is addressed in the Part 2 Test Report (Serial Number can be found in the bibliography).
4. This device additionally supports some EN-DC conditions where additional LTE carriers are added on the downlink only.
5. Per FCC Guidance, NR modulations and RB Sizes/Offsets were selected for testing such that configurations with the highest output power were evaluated for SAR tests.

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 single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg for 1g evaluations. See Section 8.6.6 for more information.
4. Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D01v06 by either evaluating the sum of the 1g SAR values of each antenna transmitting independently or making a SAR measurement with both antennas transmitting simultaneously. Please see Section 12 for complete analysis.
5. When the maximum reported 1g averaged SAR is ≤0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg for 1g evaluations or all test channels were measured.
6. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated EMC test reports.

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

Bluetooth Notes

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

12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

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

12.2 Simultaneous Transmission Procedures

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

Qualcomm Smart Transmit algorithm in WWAN adds directly the time-averaged RF exposure from 4G and time-averaged RF exposure from 5G NR. Smart Transmit algorithm controls the total RF exposure from both 4G and 5G NR to not exceed FCC limit. Therefore, simultaneous transmission compliance between 4G+5G operations is demonstrated in the Qualcomm Part 2 Report during algorithm validation.

12.3 Head SAR Simultaneous Transmission Analysis

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

Exposure Condition	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 850	0.155	0.267	0.039	0.422	0.194	0.461
	GSM 1900	0.102	0.267	0.039	0.369	0.141	0.408
	UMTS 850	0.249	0.267	0.039	0.516	0.288	**0.555**
	UMTS 1750	0.056	0.267	0.039	0.323	0.095	0.362
	UMTS 1900	0.091	0.267	0.039	0.358	0.130	0.397
	LTE Band 12	0.216	0.267	0.039	0.483	0.255	0.522
	LTE Band 13	0.187	0.267	0.039	0.454	0.226	0.493
	LTE Band 26 (Cell)	0.209	0.267	0.039	0.476	0.248	0.515
	LTE Band 66 (AWS)	0.052	0.267	0.039	0.319	0.091	0.358
	LTE Band 25 (PCS)	0.048	0.267	0.039	0.315	0.087	0.354
	LTE Band 7	0.070	0.267	0.039	0.337	0.109	0.376
	LTE Band 48	0.020	0.267	0.039	0.287	0.059	0.326
	LTE Band 41	0.037	0.267	0.039	0.304	0.076	0.343
	NR Band n5 (Cell)	0.072	0.267	0.039	0.339	0.111	0.378
	NR Band n66 (AWS)	0.008	0.267	0.039	0.275	0.047	0.314
	NR Band n2 (PCS)	0.025	0.267	0.039	0.292	0.064	0.331

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

Exposure Condition	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 850	0.155	0.466	0.024	0.621	0.179	0.645
	GSM 1900	0.102	0.466	0.024	0.568	0.126	0.592
	UMTS 850	0.249	0.466	0.024	0.715	0.273	**0.739**
	UMTS 1750	0.056	0.466	0.024	0.522	0.080	0.546
	UMTS 1900	0.091	0.466	0.024	0.557	0.115	0.581
	LTE Band 12	0.216	0.466	0.024	0.682	0.240	0.706
	LTE Band 13	0.187	0.466	0.024	0.653	0.211	0.677
	LTE Band 26 (Cell)	0.209	0.466	0.024	0.675	0.233	0.699
	LTE Band 66 (AWS)	0.052	0.466	0.024	0.518	0.076	0.542
	LTE Band 25 (PCS)	0.048	0.466	0.024	0.514	0.072	0.538
	LTE Band 7	0.070	0.466	0.024	0.536	0.094	0.560
	LTE Band 48	0.020	0.466	0.024	0.486	0.044	0.510
	LTE Band 41	0.037	0.466	0.024	0.503	0.061	0.527
	NR Band n5 (Cell)	0.072	0.466	0.024	0.538	0.096	0.562
	NR Band n66 (AWS)	0.008	0.466	0.024	0.474	0.032	0.498
	NR Band n2 (PCS)	0.025	0.466	0.024	0.491	0.049	0.515

Table 12-3
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (Held to Ear)

Exposure Condition	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Head SAR	GSM 850	0.155	0.267	0.039	0.466	0.024	0.951
	GSM 1900	0.102	0.267	0.039	0.466	0.024	0.898
	UMTS 850	0.249	0.267	0.039	0.466	0.024	**1.045**
	UMTS 1750	0.056	0.267	0.039	0.466	0.024	0.852
	UMTS 1900	0.091	0.267	0.039	0.466	0.024	0.887
	LTE Band 12	0.216	0.267	0.039	0.466	0.024	1.012
	LTE Band 13	0.187	0.267	0.039	0.466	0.024	0.983
	LTE Band 26 (Cell)	0.209	0.267	0.039	0.466	0.024	1.005
	LTE Band 66 (AWS)	0.052	0.267	0.039	0.466	0.024	0.848
	LTE Band 25 (PCS)	0.048	0.267	0.039	0.466	0.024	0.844
	LTE Band 7	0.070	0.267	0.039	0.466	0.024	0.866
	LTE Band 48	0.020	0.267	0.039	0.466	0.024	0.816
	LTE Band 41	0.037	0.267	0.039	0.466	0.024	0.833
	NR Band n5 (Cell)	0.072	0.267	0.039	0.466	0.024	0.868
	NR Band n66 (AWS)	0.008	0.267	0.039	0.466	0.024	0.804
	NR Band n2 (PCS)	0.025	0.267	0.039	0.466	0.024	0.821

Table 12-4
Simultaneous Transmission Scenario with Bluetooth (Held to Ear)

Exposure Condition	Mode	2G/3G/4G/5G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	GSM 850	0.155	0.357	0.512
	GSM 1900	0.102	0.357	0.459
	UMTS 850	0.249	0.357	**0.606**
	UMTS 1750	0.056	0.357	0.413
	UMTS 1900	0.091	0.357	0.448
	LTE Band 12	0.216	0.357	0.573
	LTE Band 13	0.187	0.357	0.544
	LTE Band 26 (Cell)	0.209	0.357	0.566
	LTE Band 66 (AWS)	0.052	0.357	0.409
	LTE Band 25 (PCS)	0.048	0.357	0.405
	LTE Band 7	0.070	0.357	0.427
	LTE Band 48	0.020	0.357	0.377
	LTE Band 41	0.037	0.357	0.394
	NR Band n5 (Cell)	0.072	0.357	0.429
	NR Band n66 (AWS)	0.008	0.357	0.365
	NR Band n2 (PCS)	0.025	0.357	0.382

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

Exposure Condition	Mode	2G/3G/4G/5G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	4	1+2+3	1+2+4	1+2+3+4
Head SAR	GSM 850	0.155	0.357	0.466	0.024	0.978	0.536	1.002
	GSM 1900	0.102	0.357	0.466	0.024	0.925	0.483	0.949
	UMTS 850	0.249	0.357	0.466	0.024	1.072	0.630	**1.096**
	UMTS 1750	0.056	0.357	0.466	0.024	0.879	0.437	0.903
	UMTS 1900	0.091	0.357	0.466	0.024	0.914	0.472	0.938
	LTE Band 12	0.216	0.357	0.466	0.024	1.039	0.597	1.063
	LTE Band 13	0.187	0.357	0.466	0.024	1.010	0.568	1.034
	LTE Band 26 (Cell)	0.209	0.357	0.466	0.024	1.032	0.590	1.056
	LTE Band 66 (AWS)	0.052	0.357	0.466	0.024	0.875	0.433	0.899
	LTE Band 25 (PCS)	0.048	0.357	0.466	0.024	0.871	0.429	0.895
	LTE Band 7	0.070	0.357	0.466	0.024	0.893	0.451	0.917
	LTE Band 48	0.020	0.357	0.466	0.024	0.843	0.401	0.867
	LTE Band 41	0.037	0.357	0.466	0.024	0.860	0.418	0.884
	NR Band n5 (Cell)	0.072	0.357	0.466	0.024	0.895	0.453	0.919
	NR Band n66 (AWS)	0.008	0.357	0.466	0.024	0.831	0.389	0.855
	NR Band n2 (PCS)	0.025	0.357	0.466	0.024	0.848	0.406	0.872

12.4 Body-Worn Simultaneous Transmission Analysis

Table 12-6
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-worn	GSM/GPRS 850	0.242	0.057	0.025	0.299	0.267	0.324
	GSM/GPRS 1900	0.240	0.057	0.025	0.297	0.265	0.322
	UMTS 850	0.383	0.057	0.025	0.440	0.408	**0.465**
	UMTS 1750	0.075	0.057	0.025	0.132	0.100	0.157
	UMTS 1900	0.105	0.057	0.025	0.162	0.130	0.187
	LTE Band 12	0.292	0.057	0.025	0.349	0.317	0.374
	LTE Band 13	0.281	0.057	0.025	0.338	0.306	0.363
	LTE Band 26 (Cell)	0.301	0.057	0.025	0.358	0.326	0.383
	LTE Band 66 (AWS)	0.071	0.057	0.025	0.128	0.096	0.153
	LTE Band 25 (PCS)	0.127	0.057	0.025	0.184	0.152	0.209
	LTE Band 7	0.049	0.057	0.025	0.106	0.074	0.131
	LTE Band 48	0.085	0.057	0.025	0.142	0.110	0.167
	LTE Band 41	0.054	0.057	0.025	0.111	0.079	0.136
	NR Band n5 (Cell)	0.130	0.057	0.025	0.187	0.155	0.212
	NR Band n66 (AWS)	0.015	0.057	0.025	0.072	0.040	0.097
	NR Band n2 (PCS)	0.034	0.057	0.025	0.091	0.059	0.116

Table 12-7
Simultaneous Transmission Scenario with 5 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-worn	GSM/GPRS 850	0.242	0.035	0.075	0.277	0.317	0.352
	GSM/GPRS 1900	0.240	0.035	0.075	0.275	0.315	0.350
	UMTS 850	0.383	0.035	0.075	0.418	0.458	**0.493**
	UMTS 1750	0.075	0.035	0.075	0.110	0.150	0.185
	UMTS 1900	0.105	0.035	0.075	0.140	0.180	0.215
	LTE Band 12	0.292	0.035	0.075	0.327	0.367	0.402
	LTE Band 13	0.281	0.035	0.075	0.316	0.356	0.391
	LTE Band 26 (Cell)	0.301	0.035	0.075	0.336	0.376	0.411
	LTE Band 66 (AWS)	0.071	0.035	0.075	0.106	0.146	0.181
	LTE Band 25 (PCS)	0.127	0.035	0.075	0.162	0.202	0.237
	LTE Band 7	0.049	0.035	0.075	0.084	0.124	0.159
	LTE Band 48	0.085	0.035	0.075	0.120	0.160	0.195
	LTE Band 41	0.054	0.035	0.075	0.089	0.129	0.164
	NR Band n5 (Cell)	0.130	0.035	0.075	0.165	0.205	0.240
	NR Band n66 (AWS)	0.015	0.035	0.075	0.050	0.090	0.125
	NR Band n2 (PCS)	0.034	0.035	0.075	0.069	0.109	0.144

Table 12-8
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Body-worn	GSM/GPRS 850	0.242	0.057	0.025	0.035	0.075	0.434
	GSM/GPRS 1900	0.240	0.057	0.025	0.035	0.075	0.432
	UMTS 850	0.383	0.057	0.025	0.035	0.075	**0.575**
	UMTS 1750	0.075	0.057	0.025	0.035	0.075	0.267
	UMTS 1900	0.105	0.057	0.025	0.035	0.075	0.297
	LTE Band 12	0.292	0.057	0.025	0.035	0.075	0.484
	LTE Band 13	0.281	0.057	0.025	0.035	0.075	0.473
	LTE Band 26 (Cell)	0.301	0.057	0.025	0.035	0.075	0.493
	LTE Band 66 (AWS)	0.071	0.057	0.025	0.035	0.075	0.263
	LTE Band 25 (PCS)	0.127	0.057	0.025	0.035	0.075	0.319
	LTE Band 7	0.049	0.057	0.025	0.035	0.075	0.241
	LTE Band 48	0.085	0.057	0.025	0.035	0.075	0.277
	LTE Band 41	0.054	0.057	0.025	0.035	0.075	0.246
	NR Band n5 (Cell)	0.130	0.057	0.025	0.035	0.075	0.322
	NR Band n66 (AWS)	0.015	0.057	0.025	0.035	0.075	0.207
	NR Band n2 (PCS)	0.034	0.057	0.025	0.035	0.075	0.226

Table 12-9
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-worn	GSM/GPRS 850	0.242	0.084	0.326
	GSM/GPRS 1900	0.240	0.084	0.324
	UMTS 850	0.383	0.084	**0.467**
	UMTS 1750	0.075	0.084	0.159
	UMTS 1900	0.105	0.084	0.189
	LTE Band 12	0.292	0.084	0.376
	LTE Band 13	0.281	0.084	0.365
	LTE Band 26 (Cell)	0.301	0.084	0.385
	LTE Band 66 (AWS)	0.071	0.084	0.155
	LTE Band 25 (PCS)	0.127	0.084	0.211
	LTE Band 7	0.049	0.084	0.133
	LTE Band 48	0.085	0.084	0.169
	LTE Band 41	0.054	0.084	0.138
	NR Band n5 (Cell)	0.130	0.084	0.214
	NR Band n66 (AWS)	0.015	0.084	0.099
	NR Band n2 (PCS)	0.034	0.084	0.118

Table 12-10
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	4	1+2+3	1+2+4	1+2+3+4
Body-worn	GSM/GPRS 850	0.242	0.084	0.035	0.075	0.361	0.401	0.436
	GSM/GPRS 1900	0.240	0.084	0.035	0.075	0.359	0.399	0.434
	UMTS 850	0.383	0.084	0.035	0.075	0.502	0.542	**0.577**
	UMTS 1750	0.075	0.084	0.035	0.075	0.194	0.234	0.269
	UMTS 1900	0.105	0.084	0.035	0.075	0.224	0.264	0.299
	LTE Band 12	0.292	0.084	0.035	0.075	0.411	0.451	0.486
	LTE Band 13	0.281	0.084	0.035	0.075	0.400	0.440	0.475
	LTE Band 26 (Cell)	0.301	0.084	0.035	0.075	0.420	0.460	0.495
	LTE Band 66 (AWS)	0.071	0.084	0.035	0.075	0.190	0.230	0.265
	LTE Band 25 (PCS)	0.127	0.084	0.035	0.075	0.246	0.286	0.321
	LTE Band 7	0.049	0.084	0.035	0.075	0.168	0.208	0.243
	LTE Band 48	0.085	0.084	0.035	0.075	0.204	0.244	0.279
	LTE Band 41	0.054	0.084	0.035	0.075	0.173	0.213	0.248
	NR Band n5 (Cell)	0.130	0.084	0.035	0.075	0.249	0.289	0.324
	NR Band n66 (AWS)	0.015	0.084	0.035	0.075	0.134	0.174	0.209
	NR Band n2 (PCS)	0.034	0.084	0.035	0.075	0.153	0.193	0.228

12.5 Hotspot SAR Simultaneous Transmission Analysis

Table 12-11
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.211	0.078	0.025	0.289	0.236	0.314
	GPRS 1900	0.356	0.078	0.025	0.434	0.381	0.459
	UMTS 850	0.383	0.078	0.025	0.461	0.408	**0.486**
	UMTS 1750	0.134	0.078	0.025	0.212	0.159	0.237
	UMTS 1900	0.142	0.078	0.025	0.220	0.167	0.245
	LTE Band 12	0.300	0.078	0.025	0.378	0.325	0.403
	LTE Band 13	0.281	0.078	0.025	0.359	0.306	0.384
	LTE Band 26 (Cell)	0.301	0.078	0.025	0.379	0.326	0.404
	LTE Band 66 (AWS)	0.136	0.078	0.025	0.214	0.161	0.239
	LTE Band 25 (PCS)	0.173	0.078	0.025	0.251	0.198	0.276
	LTE Band 7	0.070	0.078	0.025	0.148	0.095	0.173
	LTE Band 48	0.087	0.078	0.025	0.165	0.112	0.190
	LTE Band 41	0.054	0.078	0.025	0.132	0.079	0.157
	NR Band n5 (Cell)	0.130	0.078	0.025	0.208	0.155	0.233
	NR Band n66 (AWS)	0.034	0.078	0.025	0.112	0.059	0.137
	NR Band n2 (PCS)	0.044	0.078	0.025	0.122	0.069	0.147

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

Exposure Condition	Mode	2G/3G/4G/5G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	GPRS 850	0.211	0.121	0.332
	GPRS 1900	0.356	0.121	0.477
	UMTS 850	0.383	0.121	**0.504**
	UMTS 1750	0.134	0.121	0.255
	UMTS 1900	0.142	0.121	0.263
	LTE Band 12	0.300	0.121	0.421
	LTE Band 13	0.281	0.121	0.402
	LTE Band 26 (Cell)	0.301	0.121	0.422
	LTE Band 66 (AWS)	0.136	0.121	0.257
	LTE Band 25 (PCS)	0.173	0.121	0.294
	LTE Band 7	0.070	0.121	0.191
	LTE Band 48	0.087	0.121	0.208
	LTE Band 41	0.054	0.121	0.175
	NR Band n5 (Cell)	0.130	0.121	0.251
	NR Band n66 (AWS)	0.034	0.121	0.155
	NR Band n2 (PCS)	0.044	0.121	0.165

12.6 Phablet Simultaneous Transmission Analysis

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

Table 12-13
Simultaneous Transmission Scenario with 5 GHz WLAN (Phablet)

Exposure Condition	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
	1	2	1+2
Phablet SAR	0.205	0.233	**0.438**

13 SAR MEASUREMENT VARIABILITY

13.1 Measurement Variability

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

13.2 Measurement Uncertainty

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

14 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	85033E	3.5mm Standard Calibration Kit	6/6/2020	Annual	6/6/2021	MY53402352
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	8753ES	Network Analyzer	3/5/2020	Annual	3/5/2021	MY40001472
Agilent	8753ES	S-Parameter Network Analyzer	12/31/2019	Annual	12/31/2020	US39170122
Agilent	8753ES	S-Parameter Vector Network Analyzer	9/19/2019	Annual	9/19/2020	MY40003841
Agilent	E4438C	ESG Vector Signal Generator	12/13/2019	Annual	12/13/2020	MY42082659
Agilent	E4438C	ESG Vector Signal Generator	3/8/2019	Biennial	3/8/2021	MY42082385
Agilent	E5515C	8960 Series 10 Wireless Communications Test Set	2/10/2020	Annual	2/10/2021	GB42230325
Agilent	E5515C	Wireless Communications Test Set	2/26/2020	Annual	2/26/2021	GB44400860
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Agilent	N5182A	MXG Vector Signal Generator	2/19/2020	Annual	2/19/2021	MY47420651
Agilent	N9030A	PXA Signal Analyzer (44GHz)	8/17/2020	Annual	8/17/2021	MY52350166
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433972
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433974
Anritsu	MA24106A	USB Power Sensor	10/10/2019	Annual	10/10/2020	1344545
Anritsu	MA24106A	USB Power Sensor	10/10/2019	Annual	10/10/2020	1344559
Anritsu	MA2411B	Pulse Power Sensor	12/4/2019	Annual	12/4/2020	1126066
Anritsu	MA2411B	Pulse Power Sensor	1/21/2020	Annual	1/21/2021	1207470
Anritsu	ML2495A	Power Meter	11/15/2019	Annual	11/15/2020	1039008
Anritsu	ML2495A	Power Meter	12/17/2019	Annual	12/17/2020	941001
Anritsu	MT8821C	Radio Communication Analyzer	3/10/2020	Annual	3/10/2021	6200901190
Anritsu	MT8821C	Radio Communication Analyzer	6/15/2020	Annual	6/15/2021	6201381794
Anritsu	MT8821C	Radio Communication Analyzer	2/22/2020	Annual	2/22/2021	6261895213
Anritsu	MT8821C	Radio Communication Analyzer	11/22/2019	Annual	11/22/2020	6262044715
Control Company	4040	Therm./ Clock/ Humidity Monitor	2/17/2020	Biennial	2/17/2022	200113269
Control Company	4040	Therm./ Clock/ Humidity Monitor	2/17/2020	Biennial	2/17/2022	200113274
Control Company	4040	Therm./ Clock/ Humidity Monitor	3/6/2020	Biennial	3/6/2022	200170313
Control Company	4352	Long Stem Thermometer	6/26/2019	Biennial	6/26/2021	192282744
Control Company	4352	Long Stem Thermometer	6/26/2019	Biennial	6/26/2021	192282739
Control Company	4352	Ultra Long Stem Thermometer	11/29/2018	Biennial	11/29/2020	181766816
Control Company	4352	Ultra Long Stem Thermometer	11/29/2018	Biennial	11/29/2020	181766817
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
KEYSIGHT	E4438C	VECTOR SIGNAL GENERATOR	6/22/2020	Annual	6/22/2021	MY45092078
Keysight Technologies	AT/N6705B	DC Power Supply	N/A	N/A	N/A	MY53001315
Keysight Technologies	N6705B	DC Power Analyzer	4/27/2019	Biennial	4/27/2021	MY53004059
Keysigntt Technologies	U3401A	Digital Multimeter	5/14/2020	Biennial	5/14/2022	MY57201470
Insize	1108-150	Digital Caliper	1/17/2020	Biennial	1/17/2022	409193536
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
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
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Pasternack	NC-100	Torque Wrench	8/4/2020	Biennial	8/4/2022	N/A
Pasternack	NC-100	Torque Wrench	8/4/2020	Biennial	8/4/2022	1445
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMW500	Radio Communication Tester	10/4/2019	Annual	10/4/2020	166462
Rohde & Schwarz	CMW500	Radio Communication Tester	10/15/2019	Annual	10/15/2020	109366
Rohde & Schwarz	CMW500	Radio Communication Tester	3/27/2020	Annual	3/27/2021	128633
Rohde & Schwarz	CMW500	Radio Communication Tester	5/21/2020	Annual	5/21/2021	128635
Rohde & Schwarz	ZNLE6	Vector Network Analyzer	10/11/2019	Annual	10/11/2020	101307
SPEAG	DAK-3.5	Dielectric Assessment Kit	10/22/2019	Annual	10/22/2020	1091
SPEAG	D1750V2	1750 MHz SAR Dipole	5/12/2020	Annual	5/12/2021	1148
SPEAG	D1765V2	1765 MHz SAR Dipole	5/23/2018	Triennial	5/23/2021	1008
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Biennial	10/23/2020	5d080
SPEAG	D1900V2	1900 MHz SAR Dipole	2/21/2019	Biennial	2/21/2021	5d148
SPEAG	D2450V2	2450 MHz SAR Dipole	8/16/2018	Triennial	8/16/2021	981
SPEAG	D2450V2	2450 MHz SAR Dipole	9/11/2017	Triennial	9/11/2020	797
SPEAG	D2600V2	2600 MHz SAR Dipole	6/14/2019	Biennial	6/14/2021	1064
SPEAG	D3700V2	3700 MHz SAR Dipole	1/11/2018	Triennial	1/11/2021	1018
SPEAG	D5GHzV2	5 GHz SAR Dipole	8/10/2018	Biennial	8/10/2021	1237
SPEAG	D750V3	750 MHz Dipole	3/11/2020	Annual	3/11/2021	1054
SPEAG	D835V2	835 MHz SAR Dipole	10/19/2018	Biennial	10/19/2020	4d133
SPEAG	D835V2	835 MHz SAR Dipole	3/13/2019	Biennial	3/13/2021	4d047
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/17/2019	Annual	9/17/2020	1333
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/13/2020	Annual	1/13/2021	1530
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/13/2020	Annual	1/13/2021	1558
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/15/2020	Annual	4/15/2021	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/12/2020	Annual	3/12/2021	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/20/2020	Annual	5/20/2021	728
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/18/2020	Annual	6/18/2021	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/11/2020	Annual	8/11/2021	1450
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/14/2020	Annual	5/14/2021	1583
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/15/2020	Annual	7/15/2021	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	12/5/2019	Annual	12/5/2020	1533
SPEAG	EX3DV4	SAR Probe	9/19/2019	Annual	9/19/2020	7551
SPEAG	EX3DV4	SAR Probe	1/21/2020	Annual	1/21/2021	3589
SPEAG	EX3DV4	SAR Probe	1/21/2020	Annual	1/21/2021	7488
SPEAG	EX3DV4	SAR Probe	4/21/2020	Annual	4/21/2021	7357
SPEAG	EX3DV4	SAR Probe	6/23/2020	Annual	6/23/2021	7406
SPEAG	EX3DV4	SAR Probe	6/23/2020	Annual	6/23/2021	7409
SPEAG	EX3DV4	SAR Probe	5/18/2020	Annual	5/18/2021	7538
SPEAG	EX3DV4	SAR Probe	12/11/2019	Annual	12/11/2020	7570
SPEAG	EX3DV4	SAR Probe	12/11/2019	Annual	12/11/2020	7571
SPEAG	EX3DV4	SAR Probe	7/31/2020	Annual	7/31/2021	7308

Note:

1. 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.
2. Each equipment item was used solely within its respective calibration period.

15 MEASUREMENT UNCERTAINTIES

a	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i 1gm**	**c_i 10 gms**	**1gm u_i (± %)**	**10gms u_i (± %)**	**v_i**
Measurement System								
Probe Calibration	6.55	N	1	1.0	1.0	6.6	6.6	∞
Axial Isotropy	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	2.0	R	1.73	1.0	1.0	1.2	1.2	∞
Linearity	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	0.25	R	1.73	1.0	1.0	0.1	0.1	∞
Readout Electronics	0.3	N	1	1.0	1.0	0.3	0.3	∞
Response Time	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions - Noise	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
RF Ambient Conditions - Reflections	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	6.7	R	1.73	1.0	1.0	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Test Sample Related								
Test Sample Positioning	2.7	N	1	1.0	1.0	2.7	2.7	35
Device Holder Uncertainty	1.67	N	1	1.0	1.0	1.7	1.7	5
Output Power Variation - SAR drift measurement	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
SAR Scaling	0.0	R	1.73	1.0	1.0	0.0	0.0	∞
Phantom & Tissue Parameters								
Phantom Uncertainty (Shape & Thickness tolerances)	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	4.2	N	1	0.78	0.71	3.3	3.0	10
Liquid Permittivity - measurement uncertainty	4.1	N	1	0.23	0.26	1.0	1.1	10
Liquid Conductivity - Temperature Uncertainty	3.4	R	1.73	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Unceritainty	0.6	R	1.73	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)		RSS				11.5	11.3	60
Expanded Uncertainty (95% CONFIDENCE LEVEL)		k=2				23.0	22.6	

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]

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