



## SAR EVALUATION REPORT

**Applicant Name:**

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Gyeonggi-do, 16677, Korea

**Date of Testing:**

06/21/23 – 08/06/23

**Test Site/Location:**

Element, Columbia, MD, USA

**Document Serial No.:**

1M2304260063-01.A3L

**FCC ID:**

**A3LSMS711B**

**APPLICANT:**

**SAMSUNG ELECTRONICS CO., LTD.**

**DUT Type:**

Portable Handset

**Application Type:**

Certification

**FCC Rule Part(s):**

CFR §2.1093

**Model(s):**

SM-S711B/DS

**Additional Model(s):**

SM-S711B

Equipment Class	Band & Mode	Tx Frequency	SAR			
			1g Head (W/kg)	1g Body-Worn (W/kg)	1g Hotspot (W/kg)	10g Phablot (W/kg)
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.20	0.40	0.50	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	0.10	0.57	0.58	2.15
PCE	UMTS 850	826.40 - 846.60 MHz	0.25	0.87	0.87	N/A
PCE	UMTS 1750	1712.4 - 1752.6 MHz	0.18	0.17	0.33	N/A
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.18	0.26	0.67	0.77
PCE	LTE Band 12	699.7 - 715.3 MHz	0.18	0.42	0.42	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	0.25	0.65	0.65	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.22	0.62	0.62	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	0.26	0.63	0.63	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	1.01	0.38	0.56	1.35
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	0.94	0.23	0.43	0.99
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	0.89	0.39	0.77	1.15
PCE	LTE Band 41	2498.5 - 2687.5 MHz	< 0.1	0.46	0.46	N/A
PCE	NR Band n5	826.5 - 846.5 MHz	0.20	0.53	0.53	N/A
PCE	NR Band n66	1712.5 - 1777.5 MHz	0.93	0.47	0.71	1.20
PCE	NR Band n41	2501.01 - 2685 MHz	0.86	0.22	0.24	N/A
PCE	NR Band n77	3455.01 - 3544.98 MHz 3705 - 3975 MHz	0.82	0.19	0.19	0.89
DTS	2.4 GHz WLAN	2412 - 2472 MHz	0.50	0.13	0.19	N/A
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	N/A	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.30*	0.37*	N/A	1.16*
NII	U-NII-2C	5500 - 5720 MHz	0.47*	0.30*	N/A	0.96*
NII	U-NII-3	5745 - 5825 MHz	0.42*	0.21*	0.27*	N/A
NII	U-NII-4	5845 - 5885 MHz	0.44*	0.17*	N/A	0.88*
DSS/DTS	Bluetooth	2402 - 2480 MHz	< 0.1	< 0.1	0.12	0.46
DXX	NFC	13.56 MHz	N/A	N/A	N/A	< 0.1
Simultaneous SAR per KDB 690783 D01v01r03:			1.53	1.43	1.43	2.68

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

This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE C95.1-1992 and has been tested in accordance with the measurement procedures specified in Section 1.9 of this report; for North American frequency bands only.

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

RJ Ortanez  
Executive Vice President



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# 1 DEVICE UNDER TEST

## 1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
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 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
NR Band n5	Voice/Data	826.5 - 846.5 MHz
NR Band n66	Voice/Data	1712.5 - 1777.5 MHz
NR Band n41	Voice/Data	2501.01 - 2685 MHz
NR Band n77	Voice/Data	3455.01 - 3544.98 MHz 3705 - 3975 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2472 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
U-NII-4	Voice/Data	5845 - 5885 MHz
U-NII-5	Voice/Data	5935 - 6415 MHz
U-NII-6	Voice/Data	6435 - 6515 MHz
U-NII-7	Voice/Data	6535 - 6875 MHz
U-NII-8	Voice/Data	6895 - 7115 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz

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## 1.2 Time-Averaging Algorithm for RF Exposure Compliance

This Device is enabled with L.SI FastConnect TAS feature for 2G/3G/4G/5G modes and with the Qualcomm® FastConnect TAS feature for WLAN technologies. These features perform 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 both L.SI FastConnect TAS feature and Qualcomm® FastConnect TAS feature (report SN could be found in Section 1.11 – Bibliography).

Note that Bluetooth and NFC operations are not enabled with Smart Transmit.

The FastConnect TAS algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of  $SAR_{design\_target}$ , below the predefined time-averaged power limit (i.e.,  $P_{limit}$  for sub-6 radio), for each characterized technology and band (see RF Exposure Part 0 Test Report, report SN could be found in Section 1.11 - Bibliography).

The FastConnect TAS algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of  $SAR_{design\_target}$ , below the predefined time-averaged power limit (i.e.,  $P_{limit}$  for sub-6 radio), for each characterized technology and band (see RF Exposure Part 0 Test Report, report SN can be found in Section 1.11 - Bibliography).

FastConnect TAS 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 Final  $P_{limit}$  settings and maximum tune up output power  $P_{max}$  configured for this EUT for various transmit conditions (Device State Index DSI for FastConnect, Radio State Index RSI for S.LSI). Note that the device uncertainty for sub-6GHz WWAN is 1.0dB for this EUT.

Exposure Scenario		Maximum Tune-Up Output Power*	Body-Worn	Phablet	Head	Hotspot	Earjack
Averaging Volume			1g	10g	1g	1g	1g/10g
Spacing		Pmax	10 mm	0 mm	0 mm	10 mm	10 mm, 0 mm
RSI			Free	Free	RCV	Hotspot	Earjack
Technology/Band	Antenna						
GSM 850	A	24.3	27.3		30.3	27.3	27.3
GSM 1900	A	21.3	17.8		17.8	17.8	17.8
UMTS 850	A	24.5	25.1		30.6	25.1	25.1
UMTS 1750	A	23.0	17.5		17.5	17.5	17.5
UMTS 1900	A	23.5	18.0		18.0	18.0	18.0
LTE Band 12	A	24.0	27.8		31.5	27.8	27.8
LTE Band 17	A	23.5	27.8		31.5	27.8	27.8
LTE Band 13	A	24.0	25.0		29.2	25.0	25.0
LTE Band 26 (Cell)	A	24.0	25.2		29.9	25.2	25.2
LTE Band 5 (Cell)	A	24.5	25.8		30.4	25.8	25.8
LTE Band 66/4 (AWS)	A	23.5	19.0		31.7	19.0	19.0
LTE Band 66/4 (AWS)	F	23.0	16.0		16.0	16.0	16.0
LTE Band 2 (PCS)	A	23.5	19.0		30.7	19.0	19.0
LTE Band 2 (PCS)	F	23.0	17.5		17.5	17.5	17.5
LTE Band 41 (PC3)	B	22.0	20.0		32.3	20.0	20.0
LTE Band 41 (PC2)	B	21.4	20.0		32.3	20.0	20.0
NR Band n5	A	24.0	26.3		31.1	26.3	26.3
NR Band n66	A	23.5	18.5		30.9	18.5	18.5
NR Band n66	F	23.0	16.0		16.0	16.0	16.0
NR Band n41	B	24.0	17.0		17.0	17.0	17.0
NR Band n41	F	23.5	16.5		16.5	16.5	16.5
NR Band n41	E	24.0	17.0		17.0	17.0	17.0
NR Band n41	D	22.0	16.0		16.0	16.0	16.0
NR Band n77	F	24.5	14.0		14.0	14.0	14.0
NR Band n77	C	24.5	12.0		12.0	12.0	12.0
NR Band n77	I	24.5	12.0		12.0	12.0	12.0
NR Band n77	D	23.0	9.5		9.5	9.5	9.5

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

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

The maximum time-averaged output power (dBm) for any Sub6 WWAN/WLAN technology, band, and RSI/DSI = minimum of "final  $P_{limit}$  " 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.

Exposure Scenario		Maximum Tune-Up Output Power*	Free	RCV	NR Active	RCV + NR Active
Averaging Volume				1g/10g	1g	1g/10g
Spacing			10 mm, 0 mm	0 mm	10, 0 mm	0 mm
DSI			0	1	8	9
Technology/Band	Antenna	Pmax				
2.4 GHz WLAN	2	17.0	15.5	13.0	13.0	13.0
2.4 GHz WLAN	MIMO	17.0	15.5	13.0	13.0	13.0
5 GHz WLAN	MIMO	15.0	12.0	12.0	12.0	12.0

All MIMO  $P_{max}$  and  $P_{limit}$  are defined per antenna chain.

SAR/CHAR for WIFI 6 GHz can be found in the WIFI 6 GHz RF Exposure Report (report SN can be found in Section 1.11 – Bibliography)

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* (FastConnect BDF entry) when applicable to 0dB.**

### 1.3 Power Reduction for SAR

This device uses an independent fixed level power reduction mechanism for BT operations during voice or VoIP held to ear scenarios and when 5G NR is active. Per FCC Guidance, the held-to-ear exposure conditions were evaluated at reduced power according to the head SAR positions described in IEEE 1528-2013. Detailed descriptions of the power reduction mechanism are included in the operational description.

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## 1.4 Nominal and Maximum Output Power Specifications

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

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

### 1.4.1 WWAN Output Power

Antenna A										
GSM/GPRS/EDGE 850										
Power Level		Voice (in dBm)	Data - Burst Average GMSK (in dBm)				Data - Burst Average 8-PSK (in dBm)			
		1 TX Slot	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
Pmax	Max Allowed Power	33.5	33.5	31.5	29.0	28.5	27.5	25.5	24.0	22.5
	Nominal	32.5	32.5	30.5	28.0	27.5	26.5	24.5	23.0	21.5
Free (Body-Worn or Phablet)	Max Allowed Power	33.5	33.5	31.5	29.0	28.5	27.5	25.5	24.0	22.5
	Nominal	32.5	32.5	30.5	28.0	27.5	26.5	24.5	23.0	21.5
RCV (Head)	Max Allowed Power	33.5	33.5	31.5	29.0	28.5	27.5	25.5	24.0	22.5
	Nominal	32.5	32.5	30.5	28.0	27.5	26.5	24.5	23.0	21.5
Hotspot	Max Allowed Power	N/A	33.5	31.5	29.0	28.5	27.5	25.5	24.0	22.5
	Nominal	N/A	32.5	30.5	28.0	27.5	26.5	24.5	23.0	21.5
Earjack	Max Allowed Power	33.5	33.5	31.5	29.0	28.5	27.5	25.5	24.0	22.5
	Nominal	32.5	32.5	30.5	28.0	27.5	26.5	24.5	23.0	21.5
GSM/GPRS/EDGE 1900										
Power Level		Voice (in dBm)	Data - Burst Average GMSK (in dBm)				Data - Burst Average 8-PSK (in dBm)			
		1 TX Slot	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
Pmax	Max Allowed Power	30.5	30.5	28.5	26.5	25.5	26.5	24.5	23.0	21.0
	Nominal	29.5	29.5	27.5	25.5	24.5	25.5	23.5	22.0	20.0
Free (Body-Worn or Phablet)	Max Allowed Power	27.0	28.0	25.0	23.0	21.0	26.5	24.5	23.0	21.0
	Nominal	26.0	27.0	24.0	22.0	20.0	25.5	23.5	22.0	20.0
RCV (Head)	Max Allowed Power	27.0	28.0	25.0	23.0	21.0	26.5	24.5	23.0	21.0
	Nominal	26.0	27.0	24.0	22.0	20.0	25.5	23.5	22.0	20.0
Hotspot	Max Allowed Power	N/A	28.0	25.0	23.0	21.0	26.5	24.5	23.0	21.0
	Nominal	N/A	27.0	24.0	22.0	20.0	25.5	23.5	22.0	20.0
Earjack	Max Allowed Power	27.0	28.0	25.0	23.0	21.0	26.5	24.5	23.0	21.0
	Nominal	26.0	27.0	24.0	22.0	20.0	25.5	23.5	22.0	20.0

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

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<b>Antenna A</b>					
<b>UMTS Band 5 (850 MHz)</b>					
Power Level		Modulated Average Output Power			
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6	3GPP DC-HSDPA Rel 8
Pmax	Max Allowed Power	25.5	23.5	22.5	23.5
	Nominal	24.5	22.5	21.5	22.5
Free (Body-Worn or Phablet)	Max Allowed Power	25.5	23.5	22.5	23.5
	Nominal	24.5	22.5	21.5	22.5
RCV (Head)	Max Allowed Power	25.5	23.5	22.5	23.5
	Nominal	24.5	22.5	21.5	22.5
Hotspot	Max Allowed Power	25.5	23.5	22.5	23.5
	Nominal	24.5	22.5	21.5	22.5
Earjack	Max Allowed Power	25.5	23.5	22.5	23.5
	Nominal	24.5	22.5	21.5	22.5
<b>UMTS Band 4 (1750 MHz)</b>					
Power Level		Modulated Average Output Power			
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6	3GPP DC-HSDPA Rel 8
Pmax	Max Allowed Power	24.0	22.5	22.5	22.5
	Nominal	23.0	21.5	21.5	21.5
Free (Body-Worn or Phablet)	Max Allowed Power	18.5	17.0	17.0	17.0
	Nominal	17.5	16.0	16.0	16.0
RCV (Head)	Max Allowed Power	18.5	17.0	17.0	17.0
	Nominal	17.5	16.0	16.0	16.0
Hotspot	Max Allowed Power	18.5	17.0	17.0	17.0
	Nominal	17.5	16.0	16.0	16.0
Earjack	Max Allowed Power	18.5	17.0	17.0	17.0
	Nominal	17.5	16.0	16.0	16.0
<b>UMTS Band 2 (1900 MHz)</b>					
Power Level		Modulated Average Output Power			
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6	3GPP DC-HSDPA Rel 8
Pmax	Max Allowed Power	24.5	23.0	23.0	23.0
	Nominal	23.5	22.0	22.0	22.0
Free (Body-Worn or Phablet)	Max Allowed Power	19.0	17.5	17.5	17.5
	Nominal	18.0	16.5	16.5	16.5
RCV (Head)	Max Allowed Power	19.0	17.5	17.5	17.5
	Nominal	18.0	16.5	16.5	16.5
Hotspot	Max Allowed Power	19.0	17.5	17.5	17.5
	Nominal	18.0	16.5	16.5	16.5
Earjack	Max Allowed Power	19.0	17.5	17.5	17.5
	Nominal	18.0	16.5	16.5	16.5

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Mode / Band	Antenna		Modulated Average Output Power (in dBm)				
			Pmax	Free (Body-Worn or Phablet)	RCV (Head)	Hotspot	Earjack
LTE Band 12	A	Max Allowed Power	25.0	25.0	25.0	25.0	25.0
		Nominal	24.0	24.0	24.0	24.0	24.0
LTE Band 17	A	Max Allowed Power	24.5	24.5	24.5	24.5	24.5
		Nominal	23.5	23.5	23.5	23.5	23.5
LTE Band 13	A	Max Allowed Power	25.0	25.0	25.0	25.0	25.0
		Nominal	24.0	24.0	24.0	24.0	24.0
LTE Band 26 (Cell)	A	Max Allowed Power	25.0	25.0	25.0	25.0	25.0
		Nominal	24.0	24.0	24.0	24.0	24.0
LTE Band 5 (Cell)	A	Max Allowed Power	25.5	25.5	25.5	25.5	25.5
		Nominal	24.5	24.5	24.5	24.5	24.5
LTE Band 66/4 (AWS)	A	Max Allowed Power	24.5	20.0	24.5	20.0	20.0
		Nominal	23.5	19.0	23.5	19.0	19.0
LTE Band 66/4 (AWS)	F	Max Allowed Power	24.0	17.0	17.0	17.0	17.0
		Nominal	23.0	16.0	16.0	16.0	16.0
LTE Band 2 (PCS)	A	Max Allowed Power	24.5	20.0	24.5	20.0	20.0
		Nominal	23.5	19.0	23.5	19.0	19.0
LTE Band 2 (PCS)	F	Max Allowed Power	24.0	18.5	18.5	18.5	18.5
		Nominal	23.0	17.5	17.5	17.5	17.5
LTE Band 41 (PC3)	B	Max Allowed Power	25.0	23.0	25.0	23.0	23.0
		Nominal	24.0	22.0	24.0	22.0	22.0
LTE Band 41 (PC2)	B	Max Allowed Power	26.0	24.6	26.0	24.6	24.6
		Nominal	25.0	23.6	25.0	23.6	23.6

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Mode / Band	Antenna		Modulated Average Output Power (in dBm)				
			Pmax	Free (Body-Worn or Phablet)	RCV (Head)	Hotspot	Earjack
NR Band n5	A	Max Allowed Power	25.0	25.0	25.0	25.0	25.0
		Nominal	24.0	24.0	24.0	24.0	24.0
NR Band n66	A	Max Allowed Power	24.5	19.5	24.5	19.5	19.5
		Nominal	23.5	18.5	23.5	18.5	18.5
NR Band n66	F	Max Allowed Power	24.0	17.0	17.0	17.0	17.0
		Nominal	23.0	16.0	16.0	16.0	16.0
NR Band n41	B	Max Allowed Power	25.0	18.0	18.0	18.0	18.0
		Nominal	24.0	17.0	17.0	17.0	17.0
NR Band n41	F	Max Allowed Power	24.5	17.5	17.5	17.5	17.5
		Nominal	23.5	16.5	16.5	16.5	16.5
NR Band n41	E	Max Allowed Power	25.0	18.0	18.0	18.0	18.0
		Nominal	24.0	17.0	17.0	17.0	17.0
NR Band n41	D	Max Allowed Power	23.0	17.0	17.0	17.0	17.0
		Nominal	22.0	16.0	16.0	16.0	16.0
NR Band n77	F	Max Allowed Power	25.5	15.0	15.0	15.0	15.0
		Nominal	24.5	14.0	14.0	14.0	14.0
NR Band n77	C	Max Allowed Power	25.5	13.0	13.0	13.0	13.0
		Nominal	24.5	12.0	12.0	12.0	12.0
NR Band n77	I	Max Allowed Power	25.5	13.0	13.0	13.0	13.0
		Nominal	24.5	12.0	12.0	12.0	12.0
NR Band n77	D	Max Allowed Power	24.0	10.5	10.5	10.5	10.5
		Nominal	23.0	9.5	9.5	9.5	9.5

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

## 1.4.2 2.4 GHz WLAN Output Power

The below table is applicable in the following conditions:

- Pmax

Mode	Band	IEEE 802.11 Modulated Output Power (in dBm)															
		SISO Antenna 2								Antenna 1 & Antenna 2 in MIMO							
		b		g		n		ax (SU)		b CDD + STBC		g (CDD + STBC)		n (CDD+STBC, SDM)		ax (SU) (CDD+STBC, SDM)	
Maximum / Nominal Power	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	
2.4 GHz WiFi	2.45 GHz	18.0	17.0	17.0	16.0	17.0	16.0	17.0	16.0	18.0	17.0	17.0	16.0	17.0	16.0	17.0	16.0
		ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0

The below table is applicable in the following conditions:

- DSI = 0 (Free)

Mode	Band	IEEE 802.11 Modulated Output Power (in dBm)															
		SISO Antenna 2								Antenna 1 & Antenna 2 in MIMO							
		b		g		n		ax (SU)		b CDD + STBC		g (CDD + STBC)		n (CDD+STBC, SDM)		ax (SU) (CDD+STBC, SDM)	
Maximum / Nominal Power	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	
2.4 GHz WiFi	2.45 GHz	16.5	15.5	16.5	15.5	16.5	15.5	16.5	15.5	16.5	15.5	16.5	15.5	16.5	15.5	16.5	15.5
		ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0

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The below table is applicable in the following conditions:

- DSI = 1 (RCV), DSI = 8 (NR Active), DSI = 9 (RCV + NR Active)

		IEEE 802.11 Modulated Output Power (in dBm)															
Mode	Band	SISO								Antenna 1 & Antenna 2 in MIMO							
		Antenna 2				Antenna 1				Antenna 1 & Antenna 2 in MIMO				Antenna 2			
		b		g		n		ax (SU)		b		g		n		ax (SU)	
		CDD + STBC		CDD + STBC		CDD + STBC, SDM		CDD + STBC, SDM		CDD + STBC		CDD + STBC		CDD + STBC, SDM		CDD + STBC, SDM	
Maximum / Nominal Power		Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.
2.4 GHz WiFi	2.45 GHz	14.0	13.0	14.0	13.0	14.0	13.0	14.0	13.0	14.0	13.0	14.0	13.0	14.0	13.0	14.0	13.0
		ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0	ch. 12: 6.0 ch. 13: 0.0	5.0 -1.0

### 1.4.3 5 GHz Maximum WLAN Output Power

The below table is applicable in the following conditions:

- Pmax, DSI = 0 (Free)

		IEEE 802.11 Modulated Output Power (in dBm)							
Mode		Antenna 1 & Antenna 2 in MIMO							
		a (CDD + STBC)		n (CDD+STBC, SDM)		ac (CDD+STBC, SDM)		ax (SU) (CDD+STBC, SDM)	
Maximum / Nominal Power		Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.
5 GHz WiFi (20MHz BW)		16.0	15.0	16.0	15.0	16.0	15.0	16.0	15.0
5 GHz WiFi (40MHz BW)				16.0	15.0	16.0	15.0	16.0	15.0
5 GHz WiFi (80MHz BW)						15.0	14.0	15.0	14.0
5 GHz WiFi (160MHz BW)						14.0	13.0	14.0	13.0

The below table is applicable in the following conditions:

- DSI = 1 (RCV), DSI = 8 (NR Active), DSI = 9 (RCV + NR Active)

		IEEE 802.11 Modulated Output Power (in dBm)							
Mode		Antenna 1 & Antenna 2 in MIMO							
		a (CDD + STBC)		n (CDD+STBC, SDM)		ac (CDD+STBC, SDM)		ax (SU) (CDD+STBC, SDM)	
Maximum / Nominal Power		Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.
5 GHz WiFi (20MHz BW)		13.0	12.0	13.0	12.0	13.0	12.0	13.0	12.0
5 GHz WiFi (40MHz BW)				13.0	12.0	13.0	12.0	13.0	12.0
5 GHz WiFi (80MHz BW)						13.0	12.0	13.0	12.0
5 GHz WiFi (160MHz BW)						13.0	12.0	13.0	12.0

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### 1.4.4 2.4 GHz Maximum Bluetooth Output Power

Mode	Data Rate	Modulated Output Power (in dBm)			
		Single Antenna			
		Antenna 1		Antenna 2	
Maximum / Nominal Power		Max	Nom.	Max	Nom.
Bluetooth	1Mbps	15.0	14.0	15.0	14.0
Bluetooth EDR	2Mbps	12.0	11.0	12.0	11.0
Bluetooth EDR	3Mbps	12.0	11.0	12.0	11.0
Bluetooth LE	1Mbps	7.0	6.0		
Bluetooth LE	2Mbps	7.0	6.0		
Bluetooth LE	125kbps	7.0	6.0		
Bluetooth LE	500kbps	7.0	6.0		

### 1.4.5 2.4 GHz Reduced Bluetooth Output Power

The below table is applicable in the following conditions:

- RCV active

Mode	Data Rate	Modulated Output Power (in dBm)			
		Single Antenna			
		Antenna 1		Antenna 2	
Maximum / Nominal Power		Max	Nom.	Max	Nom.
Bluetooth	1Mbps	11.0	10.0	9.0	8.0
Bluetooth EDR	2Mbps	10.5	9.5	8.5	7.5
Bluetooth EDR	3Mbps	10.5	9.5	8.5	7.5
Bluetooth LE	1Mbps	7.0	6.0		
Bluetooth LE	2Mbps	7.0	6.0		
Bluetooth LE	125kbps	7.0	6.0		
Bluetooth LE	500kbps	7.0	6.0		

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## 1.5 DUT Antenna Locations

The overall dimensions of this device are > 9 x 5 cm. A diagram showing the location of the device antennas can be found in DUT Antenna Diagram & SAR Test Setup Photographs Appendix. Since the display diagonal dimension of this device is > 150 mm and <200 mm, it is considered a “phablet.” Exact antenna dimensions and separation distances are shown in the Technical Descriptions in the FCC filing.

**Table 1-1  
Device Edges/Sides for SAR Testing**

Antenna	Back	Front	Top	Bottom	Right	Left
A	Yes	Yes	No	Yes	Yes	Yes
B	Yes	Yes	No	Yes	No	Yes
C	Yes	Yes	No	Yes	No	Yes
D	Yes	Yes	No	Yes	Yes	No
E	Yes	Yes	Yes	No	Yes	No
F	Yes	Yes	Yes	No	No	Yes
I	Yes	Yes	Yes	No	No	Yes
H	Yes	Yes	Yes	No	No	Yes
J	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, U-NII-1, U-NII-2A, U-NII-2C, U-NII-4, and WIFI6E operations are disabled.

## 1.6 Near Field Communications (NFC) Antenna

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

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## 1.7 Simultaneous Transmission Capabilities

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

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB Publication 447498 D01v06 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 Bluetooth Ant 1	Yes	Yes	N/A	Yes	
2	GSM voice + 2.4 GHz Bluetooth Ant 2	Yes	Yes	N/A	Yes	
3	GSM voice + 2.4 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
4	GSM voice + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
5	GSM voice + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
6	GSM voice + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
7	GSM voice + 2.4 GHz WLAN MIMO + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
8	GSM voice + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2	Yes	Yes	N/A	Yes	
9	GSM voice + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
10	GSM voice + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
11	GSM voice + 2.4 GHz Bluetooth Ant 1 + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
12	GSM voice + 2.4 GHz Bluetooth Ant 2 + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
13	GSM voice + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
14	GSM voice + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
15	UMTS + 2.4 GHz Bluetooth Ant 1	Yes	Yes	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
16	UMTS + 2.4 GHz Bluetooth Ant 2	Yes	Yes	N/A	Yes	
17	UMTS + 2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
18	UMTS + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
19	UMTS + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
20	UMTS + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
21	UMTS + 2.4 GHz WLAN MIMO + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
22	UMTS + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2	Yes	Yes	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
23	UMTS + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN MIMO	Yes	Yes	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
24	UMTS + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
25	UMTS + 2.4 GHz Bluetooth Ant 1 + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
26	UMTS + 2.4 GHz Bluetooth Ant 2 + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
27	UMTS + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	Yes	Yes	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
28	UMTS + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
29	LTE + 2.4 GHz Bluetooth Ant 1	Yes	Yes	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
30	LTE + 2.4 GHz Bluetooth Ant 2	Yes	Yes	N/A	Yes	
31	LTE + 2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
32	LTE + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
33	LTE + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
34	LTE + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
35	LTE + 2.4 GHz WLAN MIMO + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
36	LTE + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2	Yes	Yes	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
37	LTE + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN MIMO	Yes	Yes	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
38	LTE + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
39	LTE + 2.4 GHz Bluetooth Ant 1 + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
40	LTE + 2.4 GHz Bluetooth Ant 2 + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
41	LTE + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	Yes	Yes	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
42	LTE + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
43	LTE + NR	Yes	Yes	N/A	Yes	
44	LTE + NR + 2.4 GHz Bluetooth Ant 1	Yes	Yes	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
45	LTE + NR + 2.4 GHz Bluetooth Ant 2	Yes	Yes	N/A	Yes	
46	LTE + NR + 2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
47	LTE + NR + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
48	LTE + NR + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
49	LTE + NR + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
50	LTE + NR + 2.4 GHz WLAN MIMO + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
51	LTE + NR + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2	Yes	Yes	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
52	LTE + NR + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN MIMO	Yes	Yes	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
53	LTE + NR + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
54	LTE + NR + 2.4 GHz Bluetooth Ant 1 + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
55	LTE + NR + 2.4 GHz Bluetooth Ant 2 + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
56	LTE + NR + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	Yes	Yes	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
57	LTE + NR + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
58	NR + 2.4 GHz Bluetooth Ant 1	Yes	Yes	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
59	NR + 2.4 GHz Bluetooth Ant 2	Yes	Yes	N/A	Yes	
60	NR + 2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
61	NR + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
62	NR + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
63	NR + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
64	NR + 2.4 GHz WLAN MIMO + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
65	NR + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2	Yes	Yes	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
66	NR + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN MIMO	Yes	Yes	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
67	NR + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
68	NR + 2.4 GHz Bluetooth Ant 1 + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
69	NR + 2.4 GHz Bluetooth Ant 2 + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
70	NR + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	Yes	Yes	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
71	NR + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 6 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
72	GPRS/EDGE + 2.4 GHz Bluetooth Ant 1	N/A	N/A	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
73	GPRS/EDGE + 2.4 GHz Bluetooth Ant 2	N/A	N/A	N/A	Yes	
74	GPRS/EDGE + 2.4 GHz WLAN MIMO	N/A	N/A	Yes	Yes	
75	GPRS/EDGE + 5 GHz WLAN MIMO	N/A	N/A	Yes	Yes	
76	GPRS/EDGE + 6 GHz WLAN MIMO	N/A	N/A	N/A	Yes	
77	GPRS/EDGE + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	N/A	N/A	Yes	Yes	
78	GPRS/EDGE + 2.4 GHz WLAN MIMO + 6 GHz WLAN MIMO	N/A	N/A	N/A	Yes	
79	GPRS/EDGE + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2	N/A	N/A	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
80	GPRS/EDGE + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN MIMO	N/A	N/A	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
81	GPRS/EDGE + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN MIMO	N/A	N/A	N/A	Yes	
82	GPRS/EDGE + 2.4 GHz Bluetooth Ant 1 + 6 GHz WLAN MIMO	N/A	N/A	N/A	Yes	
83	GPRS/EDGE + 2.4 GHz Bluetooth Ant 2 + 6 GHz WLAN MIMO	N/A	N/A	N/A	Yes	
84	GPRS/EDGE + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	N/A	N/A	Yes <sup>a</sup>	Yes	<sup>a</sup> Bluetooth Tethering is considered
85	GPRS/EDGE + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 6 GHz WLAN MIMO	N/A	N/A	N/A	Yes	

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1. No other simultaneous scenarios besides described above is supported for this model.
2. 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.
3. 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.
4. 5 GHz Wireless Router is only supported for the U-NII-3 by S/W, therefore U-NII-1, U-NII-2A, U-NII-2C, and U-NII-4 were not evaluated for wireless router conditions.
5. 6 GHz Wireless Router is not supported, therefore it was not evaluated for wireless router conditions.
6. This device supports 2x2 MIMO Tx for WLAN 802.11a/b/g/n/ac/ax. 802.11a/b/g/n/ac/ax supports CDD and STBC and 802.11n/ac/ax additionally supports SDM.
7. This device supports VoWIFI.
8. This device supports Bluetooth Tethering for Ant 1.
9. This device supports VoLTE.
10. This device supports VoNR.
11. LTE + 5G NR FR1 Scenarios are limited to EN-DC combinations with anchor bands as shown in the NR FR1 checklist.
12. NFC were evaluated for phablet based on expected usage conditions.

## 1.8 Miscellaneous SAR Test Considerations

### (A) WIFI/BT

This device supports channel 1-13 for 2.4 GHz WLAN. However, because channel 12/13 targets are not higher than that of channels 1-11, channels 1, 6, and 11 were considered for SAR testing per FCC KDB 248227 D01V02r02.

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, and U-NII-4 WIFI, only 2.4 GHz WIFI, 2.4 GHz Bluetooth, and U-NII-3 WIFI Hotspot SAR tests and combinations are considered for SAR with respect to Wireless Router configurations according to FCC KDB 941225 D06v02r01.

This device supports IEEE 802.11ax with the following features:

- a) Up to 160 MHz Bandwidth only for 5/6 GHz
- b) Up to 20 MHz Bandwidth only for 2.4 GHz
- c) 2 Tx antenna output
- d) Up to 1024 QAM is supported
- e) TDWR and Band gap channels are supported for 5/6 GHz
- f) MU-MIMO UL Operations are not supported

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the display diagonal dimension is greater than 150mm and less than 200mm. Phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Because wireless router operations are not supported for U-NII-1, U-NII-2A, U-NII-2C, and U-NII-4 WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for 2.4 GHz WLAN, 2.4 GHz Bluetooth Ant 1, and U-NII-3 WLAN operations since wireless router 1g SAR was < 1.2 W/kg.

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

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This device supports 6 GHz WIFI Operations. RF Exposure assessment for these bands can be found in the WIFI 6E RF Exposure Report (report SN can be found in Section 1.11 – Bibliography). Simultaneous transmission analysis is addressed in Multi-Tx and Antenna SAR Considerations Appendix of this report.

**(B) Licensed Transmitter(s)**

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

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

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

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

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the display diagonal dimension is greater than 150mm 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/NR capabilities with overlapping transmission frequency ranges. When the supported frequency range of an LTE/NR Band falls completely within an LTE/NR band with a larger transmission frequency range, both LTE/NR bands have the same target power (or the band with the larger transmission frequency range has a higher target power), and both LTE/NR 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 both Power Class 2 (PC2) and Power Class 3 (PC3) for LTE Band 41. Per May 2017 TCB Workshop Notes, SAR tests were performed with Power Class 3 (given the specific UL/DL limitations for Power Class 2). Additionally, SAR testing for the power class 2 condition was evaluated for the highest configuration in Power Class 3 for each test configuration to confirm the results were scalable linearly (See Section 13).

This device can transmit with antenna F for LTE B2/4/66 and NR n66. SAR tests for antenna F were additionally performed for these LTE and NR bands to ensure compliance.

NR implementation supports SA and NSA mode. In EN-DC mode, NR operates 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.

SRS was tested with CW signal per Qualcomm guidance in 80-w2112-4.

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## 1.9 Guidance Applied

- IEEE 1528-2013
- FCC KDB Publication 941225 D01v03r01, D05v02r05, D05Av01r02, D06v02r01 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v06 (General SAR Guidance)
- 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, LTE Band 41 Power Class 2/3)
- November 2017, April 2018, October 2018 TCB Workshop Notes (LTE Carrier Aggregation)
- April 2019 TCB Workshop Notes (IEEE 802.11ax, Dynamic Antenna Tuning)

## 1.10 Device Serial Numbers

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

## 1.11 Bibliography

Report Type	Report Serial Number
RF Exposure Part 2 Test Report	1M2304260063-23.A3L
RF Exposure Compliance Summary Report	1M2304260063-22.A3L
RF Exposure Part 0 Test Report	1M2304260063-02.A3L
WIFI 6GHz RF exposure	1M2304260063-03.A3L

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## 2 LTE AND NR INFORMATION

LTE Information					
Form Factor	Portable Handset				
	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 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
Channel Bandwidths	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 17: 5 MHz, 10 MHz				
	LTE Band 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 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 12: 1.4 MHz	699.7 (23017)		707.5 (23095)		715.3 (23173)
LTE Band 12: 3 MHz	700.5 (23025)		707.5 (23095)		714.5 (23165)
LTE Band 12: 5 MHz	701.5 (23035)		707.5 (23095)		713.5 (23155)
LTE Band 12: 10 MHz	704 (23060)		707.5 (23095)		711 (23130)
LTE Band 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 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 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 41: 5 MHz	2506 (39750)	2549.5 (40185)	2549.5 (40185)	2593 (40620)	2636.5 (41055)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2549.5 (40185)	2593 (40620)	2636.5 (41055)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2549.5 (40185)	2593 (40620)	2636.5 (41055)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2549.5 (40185)	2593 (40620)	2636.5 (41055)
UE Category	DL UE Cat 20, UL UE Cat 18				
Modulations Supported in UL	QPSK, 16QAM, 64QAM, 256QAM				
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 16. It supports carrier aggregation, downlink MIMO features as shown in the RF Conducted Powers section of this report and the Downlink LTE CA RF Conducted Powers Appendix. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. The following LTE Release 16 Features are not supported: Relay, HetNet, Enhanced MIMO, eCIC, eMBMS, WIFI Offloading, Cross-Carrier Scheduling, Enhanced SC-FDMA				

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NR Information						
Form Factor	Portable Handset					
Frequency Range of each NR transmission band	NR Band n5 (826.5 - 846.5 MHz)					
	NR Band n66 (1712.5 - 1777.5 MHz)					
	NR Band n41 (2501.01 - 2685 MHz)					
	NR Band n77 (3455.01 - 3544.98 MHz, 3705 - 3975 MHz)					
Channel Bandwidths	NR Band n5: 5 MHz, 10 MHz, 15 MHz, 20 MHz					
	NR Band n66: 5 MHz, 10 MHz, 15 MHz, 20 MHz, 30 MHz, 40 MHz					
	NR Band n41: 10 MHz, 15 MHz, 20 MHz, 30 MHz, 40 MHz, 50 MHz, 60 MHz, 70 MHz, 80 MHz, 90 MHz, 100 MHz					
	NR Band n77: 10 MHz, 15 MHz, 20 MHz, 30 MHz, 40 MHz, 50 MHz, 60 MHz, 70 MHz, 80 MHz, 90 MHz, 100 MHz					
Channel Numbers and Frequencies (MHz)						
NR Band n5: 5 MHz	826.5 (165300)		836.5 (167300)		846.5 (169300)	
NR Band n5: 10 MHz	829 (165800)		836.5 (167300)		844 (168800)	
NR Band n5: 15 MHz	831.5 (166300)		836.5 (167300)		841.5 (168300)	
NR Band n5: 20 MHz	834 (166800)		836.5 (167300)		839 (167800)	
NR Band n66: 5 MHz	1712.5 (342500)		1745 (349000)		1777.5 (355500)	
NR Band n66: 10 MHz	1715 (343000)		1745 (349000)		1775 (355000)	
NR Band n66: 15 MHz	1717.5 (343500)		1745 (349000)		1772.5 (354500)	
NR Band n66: 20 MHz	1720 (344000)		1745 (349000)		1770 (354000)	
NR Band n66: 30 MHz	1725 (345000)		1745 (349000)		1765 (353000)	
NR Band n66: 40 MHz	1730 (346000)		1745 (349000)		1760 (352000)	
NR Band n41: 10 MHz	2501.01 (500202)	2547 (509400)	2592.99 (518598)	2639.01 (527802)	2685 (537000)	
NR Band n41: 15 MHz	2503.5 (500700)	2548.26 (509652)	2592.99 (518598)	2637.75 (527550)	2682.51 (536502)	
NR Band n41: 20 MHz	2506.02 (501204)	2549.49 (509898)	2592.99 (518598)	2636.49 (527298)	2679.99 (535998)	
NR Band n41: 30 MHz	2511 (502200)	2552.01 (510402)	2592.99 (518598)	2634 (526800)	2674.98 (534996)	
NR Band n41: 40 MHz	2516.01 (503202)	2567.34 (513468)	N/A	2618.67 (523734)	2670 (534000)	
NR Band n41: 50 MHz	2521.02 (504204)		2592.99 (518598)		2664.99 (532998)	
NR Band n41: 60 MHz	2526 (505200)		2592.99 (518598)		2659.98 (531996)	
NR Band n41: 70 MHz	2531.01 (506202)		N/A		2655 (531000)	
NR Band n41: 80 MHz	2536.02 (507204)		N/A		2649.99 (529998)	
NR Band n41: 90 MHz	2541 (508200)		N/A		2644.99 (528996)	
NR Band n41: 100 MHz	2546.01 (509202)		2592.99 (518598)		2640 (528000)	
NR Band n77 DoD: 10 MHz	3455.01 (630334)		3500.01 (633334)		3544.98 (636332)	
NR Band n77 DoD: 15 MHz	3457.5 (630500)		3500.01 (633334)		3542.49 (636166)	
NR Band n77 DoD: 20 MHz	3460.02 (630668)		3500.01 (633334)		3540 (636000)	
NR Band n77 DoD: 30 MHz	3465 (631000)		3500.01 (633334)		3534.99 (635666)	
NR Band n77 DoD: 40 MHz	3470.01 (631334)		N/A		3470.01 (631334)	
NR Band n77 DoD: 50 MHz	3475.02 (631668)		N/A		3475.02 (631668)	
NR Band n77 DoD: 60 MHz	N/A		3500.01 (633334)		N/A	
NR Band n77 DoD: 70 MHz	N/A		3500.01 (633334)		N/A	
NR Band n77 DoD: 80 MHz	N/A		3500.01 (633334)		N/A	
NR Band n77 DoD: 90 MHz	N/A		3500.01 (633334)		N/A	
NR Band n77 DoD: 100 MHz	N/A		3500.01 (633334)		N/A	
NR Band n77: 10 MHz	3705 (647000)	3759 (650600)	3813 (654200)	3867 (657800)	3921 (661400)	3975 (665000)
NR Band n77: 15 MHz	3707.52 (647168)	3760.5 (650700)	3813.51 (654234)	3866.49 (657766)	3919.5 (661300)	3972.48 (664832)
NR Band n77: 20 MHz	3710.01 (647334)	3762 (650800)	3813.99 (654266)	3866.01 (657734)	3918 (661200)	3969.99 (664666)
NR Band n77: 30 MHz	3715.02 (647668)	3765 (651000)	3815.01 (654334)	3864.99 (657666)	3915 (661000)	3964.98 (664332)
NR Band n77: 40 MHz	3720 (648000)	3768 (651200)	3816 (654400)	3864 (657600)	3912 (660800)	3960 (664000)
NR Band n77: 50 MHz	3725.01 (648334)	3782.49 (652166)	3840 (656000)		3897.51 (659834)	3954.99 (663666)
NR Band n77: 60 MHz	3730.02 (648668)	3803.34 (653556)	N/A	N/A	3876.66 (658444)	3949.98 (663332)
NR Band n77: 70 MHz	3735 (649000)	3804.99 (653666)	N/A		3875.01 (658334)	3945 (663000)
NR Band n77: 80 MHz	3740.01 (649334)	N/A	3840 (656000)		N/A	3939.99 (662666)
NR Band n77: 90 MHz	3745.02 (649668)	N/A	3840 (656000)		N/A	3934.98 (662332)
NR Band n77: 100 MHz	3750 (650000)	N/A	N/A	N/A	N/A	3930 (662000)
SCS for NR Band: n5/n66	15 kHz					
SCS for NR Band: n41/n77	30 kHz					
Modulations Supported in UL	DFT-s-OFDM: $\pi/2$ BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM					
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	LTE Band 2/5/12/13					
LTE Anchor Bands for NR Band n41	LTE Band 4/12/66					
LTE Anchor Bands for NR Band n77	LTE Band 2/5/12/13/66					

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### 3 INTRODUCTION

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

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

#### 3.1 SAR Definition

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

**Equation 3-1  
SAR Mathematical Equation**

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

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

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

where:

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

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

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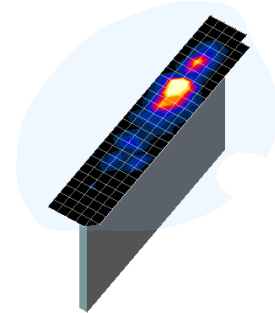
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## 4 DOSIMETRIC ASSESSMENT

### 4.1 Measurement Procedure

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

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.



**Figure 4-1**  
Sample SAR Area Scan

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

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

\*Also compliant to IEEE 1528-2013 Table 6

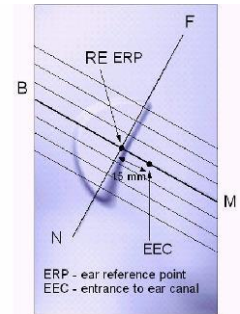
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## 5 DEFINITION OF REFERENCE POINTS

### 5.1 EAR REFERENCE POINT

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



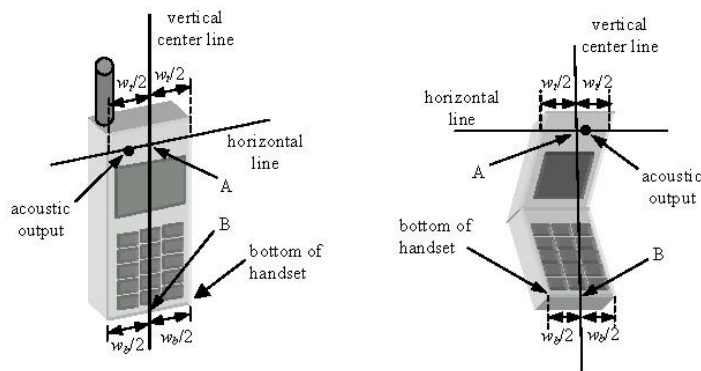
**Figure 5-1**  
Close-Up Side view of ERP

### 5.2 HANDSET REFERENCE POINTS

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



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



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

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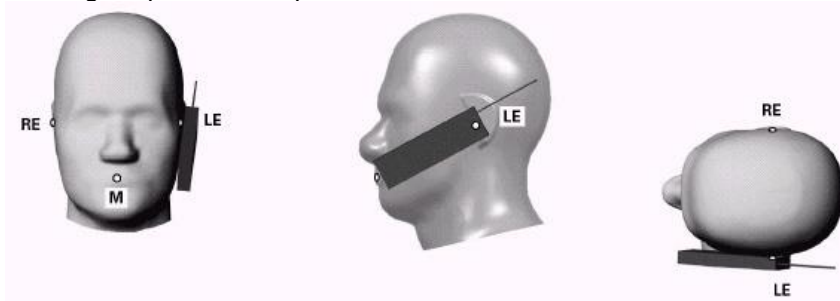
## 6 TEST CONFIGURATION POSITIONS

### 6.1 Device Holder

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

### 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 with respect to the line NF.
5. While maintaining the vertical centerline in the reference plane, keeping point A on the line passing through RE and LE, and maintaining the 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).

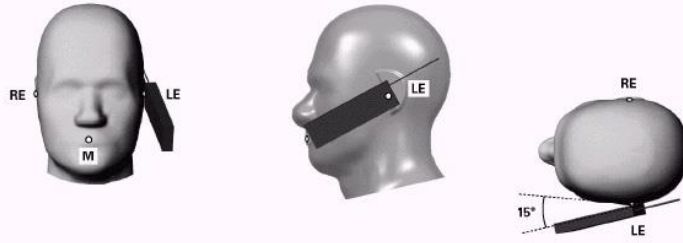
### 6.3 Positioning for Ear / 15° Tilt

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

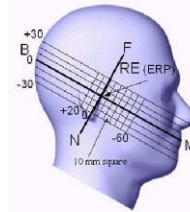
1. While maintaining the orientation of the phone, the phone was retracted parallel to the reference plane far enough to enable a rotation of the phone by 15 degrees.
2. The phone was then rotated around the horizontal line by 15 degrees.
3. While maintaining the orientation of the phone, the phone was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

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



**Figure 6-3 Side view w/ relevant markings**

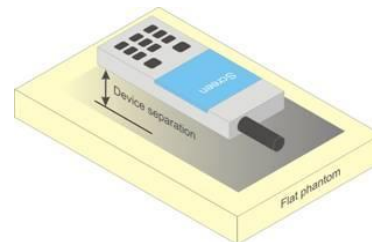
## 6.4 SAR Evaluations near the Mouth/Jaw Regions of the SAM Phantom

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

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

## 6.5 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6-4). Per FCC KDB Publication 648474 D04v01r03, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.



**Figure 6-4 Sample Body-Worn Diagram**

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

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

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

### 6.6 Extremity Exposure Configurations

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

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

### 6.7 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10 mm from the front, back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

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

### 6.8 Phablet Configurations

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

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support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04v01r03 should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. In addition to the normally required head and body-worn accessory SAR test procedures required for handsets, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna  $\leq 25$  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.

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## 7 RF EXPOSURE LIMITS

### 7.1 Uncontrolled Environment

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

### 7.2 Controlled Environment

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

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

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

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

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## 8 FCC MEASUREMENT PROCEDURES

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

### 8.1 Measured and Reported SAR

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

### 8.2 3G SAR Test Reduction Procedure

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

### 8.3 Procedures Used to Establish RF Signal for SAR

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

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

### 8.4 SAR Measurement Conditions for UMTS

#### 8.4.1 Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the general descriptions in section 5.2 of 3GPP TS 34.121, using the appropriate RMC with TPC (transmit power control) set to all “1s” or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

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### 8.4.2 Head SAR Measurements

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

### 8.4.3 Body SAR Measurements

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all “1s”. The 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCH<sub>n</sub> 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<sub>n</sub>, 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).

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### 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  $\leq 0.8$  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  $\frac{1}{2}$  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

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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.

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### 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  $\leq 0.4$  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  $\leq 0.8$  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  $\leq 0.8$  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.

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When the reported SAR is  $\leq 0.8$  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  $\leq 1.2$  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  $\leq 1.2$  W/kg, no additional SAR tests for the subsequent test configurations are required. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

### 8.6.9 MIMO SAR considerations

Per KDB Publication 248227 D01v02r02, the simultaneous SAR provisions in KDB Publication 447498 D01v06 should be applied to determine simultaneous transmission SAR test exclusion for WIFI MIMO. If the sum of 1g single transmission chain SAR measurements is  $< 1.6$  W/kg, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

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## 9 RF CONDUCTED POWERS

### 9.1 GSM Conducted Powers

**Table 9-1**  
**Measured  $P_{max}$  for Free, RCV Active, Hotspot Mode, or Earjack Active for GSM 850**

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
<b>GSM 850</b>	128	33.10	33.20	30.19	28.34	<b>27.54</b>	25.40	23.53	22.43	21.21
	190	33.25	33.19	30.90	28.87	<b>27.52</b>	25.32	23.33	22.54	21.00
	251	33.21	33.21	30.23	28.70	<b>27.53</b>	25.42	23.40	22.50	21.43
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
<b>GSM 850</b>	128	23.90	24.00	24.00	23.91	<b>24.36</b>	16.20	17.34	18.00	18.03
	190	24.05	23.99	24.71	24.44	<b>24.34</b>	16.12	17.14	18.11	17.82
	251	24.01	24.01	24.04	24.27	<b>24.35</b>	16.22	17.21	18.07	18.25
<b>GSM 850</b>	<b>Frame Avg.Targets:</b>	23.30	23.30	24.31	23.57	<b>24.32</b>	17.30	18.31	18.57	18.32

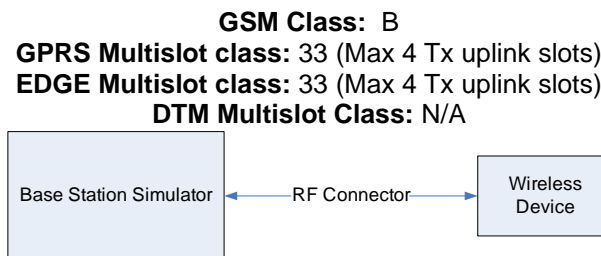
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**Table 9-2**  
**Measured  $P_{limit}$  for Free, RCV Active, Hotspot Mode, or Earjack Active for GSM 1900**

Maximum Burst-Averaged Output Power										
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 1900	512	25.86	26.31	23.44	21.32	19.89	24.78	23.80	21.60	19.79
	661	26.02	26.44	23.70	21.14	20.00	24.98	23.73	21.26	19.75
	810	25.96	26.54	23.65	21.27	19.98	24.90	23.76	21.18	19.87
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	16.66	17.11	17.25	16.89	16.71	15.58	17.61	17.17	16.61
	661	16.82	17.24	17.51	16.71	16.82	15.78	17.54	16.83	16.57
	810	16.76	17.34	17.46	16.84	16.80	15.70	17.57	16.75	16.69
GSM 1900	Frame Avg.Targets:	16.80	17.80	17.81	17.57	16.82	16.30	17.31	17.57	16.82

Note:

- Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
- GPRS/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.
- 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.



**Figure 9-1**  
**Power Measurement Setup**

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## 9.2 UMTS Conducted Powers

**Table 9-3**  
Measured  $P_{max}$  for Free, RCV Active, Hotspot Mode, or Earjack Active for UMTS 850

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	
99	WCDMA	12.2 kbps RMC	24.37	24.40	24.31	-
99		12.2 kbps AMR	24.20	24.35	24.30	-
6	HSDPA	Subtest 1	22.82	22.90	22.81	0
6		Subtest 2	21.89	21.97	21.87	0
6		Subtest 3	21.84	21.85	21.98	0.5
6		Subtest 4	20.87	20.87	20.79	0.5
6	HSUPA	Subtest 1	21.73	21.59	21.64	0
6		Subtest 2	19.46	19.46	19.40	2
6		Subtest 3	21.22	21.20	21.10	1
6		Subtest 4	19.72	19.70	19.76	2
6		Subtest 5	22.43	22.37	22.43	0
8	DC-HSDPA	Subtest 1	22.97	22.84	22.69	0
8		Subtest 2	22.01	21.83	21.84	0
8		Subtest 3	21.32	21.09	20.98	0.5
8		Subtest 4	21.19	21.21	21.00	0.5

**Table 9-4**  
Measured  $P_{limit}$  for Free, RCV Active, Hotspot Mode or Earjack Active for UMTS 1750 & UMTS 1900

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	17.20	17.27	17.16	17.43	17.47	17.32	-
99		12.2 kbps AMR	16.80	16.89	16.87	17.20	17.02	17.00	-
5	HSDPA	Subtest 1	14.92	14.57	14.88	15.32	15.30	15.31	0
5		Subtest 2	14.94	14.90	14.99	15.43	15.21	15.31	0
5		Subtest 3	15.93	15.68	15.88	16.28	16.20	16.10	0.5
5		Subtest 4	14.79	14.80	14.83	15.37	15.40	15.20	0.5
6	HSUPA	Subtest 1	14.51	14.59	14.65	15.28	15.20	15.21	0
6		Subtest 2	14.32	14.42	14.40	14.98	14.90	14.91	2
6		Subtest 3	14.83	14.89	14.91	15.26	15.32	15.21	1
6		Subtest 4	14.00	14.10	14.21	14.87	14.89	14.89	2
6		Subtest 5	14.61	14.53	14.56	15.32	15.12	15.32	0
8	DC-HSDPA	Subtest 1	15.28	15.20	15.08	15.76	15.36	15.57	0
8		Subtest 2	15.35	15.18	15.03	15.83	15.43	15.56	0
8		Subtest 3	15.29	15.11	14.99	15.79	15.32	15.53	0.5
8		Subtest 4	15.27	15.12	15.06	15.78	15.36	15.47	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

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



**Figure 9-2**  
Power Measurement Setup

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### 9.3 LTE Conducted Powers

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

Note: Some bands do not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

#### 9.3.1 LTE Band 12

**Table 9-5**  
**LTE Band 12 Measured  $P_{Max}$  for Free, RCV Active, Hotspot Mode, or Earjack Active - 10 MHz Bandwidth**

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	Designed MPR [dB]
			23095 (707.5 MHz) Conducted Power [dBm]		
QPSK	1	0	23.71	0	0
	1	25	23.59		0
	1	49	23.55		0
	25	0	21.71	0-1	2
	25	12	21.64		2
	25	25	21.60		2
16QAM	50	0	21.63	0-1	2
	1	0	22.00		2
	1	25	21.88		2
	1	49	21.98	0-2	2
	25	0	20.68		3
	25	12	20.65		3
64QAM	25	25	20.60	0-2	3
	50	0	20.61		3
	1	0	20.78		0-2
	1	25	20.52	3	
	1	49	20.56	0-3	
	25	0	19.69		4
25	12	19.65	4		
256QAM	25	25	19.62	0-3	4
	50	0	19.60		4
	1	0	20.02		0-5
	1	25	19.91	4	
	1	49	19.95	4	
	25	0	18.71	0-5	5
25	12	18.68	5		
25	25	18.64	5		
	50	0	18.65		5

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### 9.3.2 LTE Band 13

Table 9-6

LTE Band 13 Measured  $P_{Max}$  for Free, RCV Active, Hotspot Mode, or Earjack Active - 10 MHz Bandwidth

LTE Band 13 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	Designed MPR [dB]
			23230 (782.0 MHz) Conducted Power [dBm]		
QPSK	1	0	23.79	0	0
	1	25	23.98		0
	1	49	23.94		0
	25	0	22.08	0-1	2
	25	12	22.13		2
	25	25	22.09		2
	50	0	22.09		2
16QAM	1	0	22.50	0-1	2
	1	25	22.56		2
	1	49	22.29		2
	25	0	21.11	0-2	3
	25	12	21.13		3
	25	25	21.01		3
	50	0	21.10		3
64QAM	1	0	21.32	0-2	3
	1	25	21.67		3
	1	49	21.35		3
	25	0	20.12	0-3	4
	25	12	20.17		4
	25	25	20.21		4
	50	0	20.10		4
256QAM	1	0	20.00	0-5	4
	1	25	19.99		4
	1	49	19.89		4
	25	0	19.15		5
	25	12	19.16		5
	25	25	19.06		5
	50	0	19.06		5

### 9.3.3 LTE Band 26

Table 9-7

LTE Band 26 (Cell) Measured  $P_{Max}$  for Free, RCV Active, Hotspot Mode, or Earjack Active – 15 MHz Bandwidth

LTE Band 26 (Cell) 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	Designed MPR [dB]
			26865 (831.5 MHz) Conducted Power [dBm]		
QPSK	1	0	24.14	0	0
	1	36	24.04		0
	1	74	24.00		0
	36	0	22.26	0-1	2
	36	18	22.16		2
	36	37	22.11		2
	75	0	22.15		2
16QAM	1	0	22.36	0-1	2
	1	36	22.33		2
	1	74	22.26		2
	36	0	21.15	0-2	3
	36	18	21.18		3
	36	37	21.08		3
	75	0	21.10		3
64QAM	1	0	21.16	0-2	3
	1	36	21.21		3
	1	74	21.30		3
	36	0	20.23	0-3	4
	36	18	20.31		4
	36	37	20.15		4
	75	0	20.11		4
256QAM	1	0	20.00	0-5	4
	1	36	19.99		4
	1	74	19.94		4
	36	0	19.22		5
	36	18	19.17		5
	36	37	19.20		5
	75	0	19.11		5

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### 9.3.4 LTE Band 5

**Table 9-8**  
**LTE Band 5 (Cell) Measured  $P_{Max}$  or Free, RCV Active, Hotspot Mode, or Earjack Active – 10 MHz Bandwidth**

LTE Band 5 (Cell) 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	Designed MPR [dB]
			20525 (836.5 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	<b>23.79</b>	0	0
	1	25	23.73		0
	1	49	23.75		0
	25	0	<b>21.91</b>	0-1	2
	25	12	21.88		2
	25	25	21.85		2
	50	0	21.89		2
16QAM	1	0	22.16	0-1	2
	1	25	22.06		2
	1	49	22.09		2
	25	0	20.95	0-2	3
	25	12	20.98		3
	25	25	20.88		3
	50	0	20.89		3
64QAM	1	0	21.01	0-2	3
	1	25	20.89		3
	1	49	20.95		3
	25	0	19.97	0-3	4
	25	12	19.98		4
	25	25	19.94		4
	50	0	19.91		4
256QAM	1	0	20.09	0-5	4
	1	25	19.97		4
	1	49	19.97		4
	25	0	18.93		5
	25	12	18.91		5
	25	25	18.89		5
	50	0	18.88		5

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### 9.3.5 LTE Band 66 Antenna A

Table 9-9

LTE Band 66 Antenna A (AWS) Measured  $P_{Max}$  for RCV Active – 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]		
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)				
			Conducted Power [dBm]						
QPSK	1	0	23.57	23.48	23.52	0	0		
	1	50	23.43	23.77	23.33		0		
	1	99	23.48	23.41	23.35		0		
	QPSK	50	0	22.75	22.65	22.70	0-1	1	
		50	25	22.71	22.56	22.60		1	
		50	50	22.73	22.76	22.66		1	
		100	0	22.73	22.55	22.67		1	
1		0	22.86	22.69	22.73	1			
16QAM	1	50	22.79	22.79	22.78	0-1	1		
	1	99	22.72	22.66	22.61		1		
	50	0	21.74	21.65	21.72		2		
	16QAM	50	25	21.83	21.72	21.67	0-2	2	
		50	50	21.81	21.71	21.75		2	
		100	0	21.83	21.66	21.79		2	
		1	0	21.75	21.77	21.74		2	
1		50	21.81	21.54	21.67	2			
64QAM	1	99	21.51	21.44	21.51	0-2	2		
	50	0	20.78	20.71	20.72		3		
	50	25	20.64	20.71	20.56		3		
	64QAM	50	50	20.73	20.70	20.78	0-3	3	
		100	0	20.80	20.74	20.77		3	
		1	0	18.77	18.87	18.91		0-5	5
		1	50	18.55	18.81	18.88			5
1	99	18.66	18.81	18.81	5				
50	0	18.59	18.62	18.73	5				
50	25	18.69	18.72	18.81	5				
50	50	18.73	18.64	18.71	5				
100	0	18.77	18.71	18.69	5				

Table 9-10

LTE Band 66 Antenna A (AWS) Measured  $P_{Limit}$  for Free, Hotspot Mode, or Earjack Active – 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]	
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)			
			Conducted Power [dBm]					
QPSK	1	0	18.33	18.40	18.56	0	0	
	1	50	18.45	18.22	18.55		0	
	1	99	18.32	18.22	18.51		0	
	QPSK	50	0	18.70	18.30	18.71	0-1	0
		50	25	18.65	18.54	18.68		0
		50	50	18.61	18.48	18.64		0
		100	0	18.40	18.45	18.54		0
1		0	18.63	18.47	18.70	0		
16QAM	1	50	18.51	18.45	18.65	0-1	0	
	1	99	18.54	18.42	18.51		0	
	50	0	18.45	18.44	18.55		0	
	16QAM	50	25	18.59	18.46	18.68	0-2	0
		50	50	18.60	18.41	18.57		0
		100	0	18.55	18.40	18.53		0
		1	0	18.47	18.47	18.52		0
64QAM	1	50	18.37	18.55	18.75	0-2	0	
	1	99	18.43	18.39	18.74		0	
	50	0	18.45	18.57	18.71		0	
	64QAM	50	25	18.33	18.52	18.70	0-3	0
		50	50	18.50	18.59	18.65		0
		100	0	18.38	18.41	18.48		0
		1	0	18.45	18.46	18.65		0-5
1	50	18.49	18.48	18.55	0.5			
1	99	18.53	18.41	18.48	0.5			
50	0	18.57	18.52	18.55	0.5			
50	25	18.44	18.54	18.51	0.5			
50	50	18.41	18.50	18.58	0.5			
100	0	18.50	18.50	18.60	0.5			

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### 9.3.6 LTE Band 66 Antenna F

**Table 9-11**  
**LTE Band 66 Antenna F (AWS) Measured  $P_{Limit}$  for Free, RCV Active, Hotspot Mode or Earjack Active – 20 MHz Bandwidth**

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	15.70	15.53	15.73	0	0
	1	50	15.55	15.35	<b>15.88</b>		0
	1	99	15.61	15.64	15.78		0
	50	0	15.76	15.51	15.81	0-1	0
	50	25	15.75	15.80	15.85		0
	50	50	15.72	15.60	<b>15.90</b>		0
100	0	15.75	15.58	15.87	0		
16QAM	1	0	15.94	15.71	15.93	0-1	0
	1	50	15.87	15.69	15.98		0
	1	99	15.87	15.82	15.99		0
	50	0	15.73	15.56	15.85	0-2	0
	50	25	15.75	15.61	15.88		0
	50	50	15.71	15.64	15.87		0
100	0	15.72	15.56	15.85	0		
64QAM	1	0	15.86	15.70	15.98	0-2	0
	1	50	15.84	15.64	15.90		0
	1	99	15.82	15.74	16.03		0
	50	0	15.76	15.57	15.86	0-3	0
	50	25	15.74	15.59	15.87		0
	50	50	15.75	15.60	15.89		0
100	0	15.71	15.59	15.84	0		
256QAM	1	0	15.85	15.61	15.83	0-5	0
	1	50	15.76	15.72	15.86		0
	1	99	15.74	15.76	15.94		0
	50	0	15.74	15.56	15.85		0
	50	25	15.71	15.55	15.82		0
	50	50	15.70	15.57	15.88		0
100	0	15.75	15.61	15.86	0		

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### 9.3.7 LTE Band 4 Antenna F

**Table 9-12**  
**LTE Band 4 (AWS) Antenna F Measured  $P_{Limit}$  Free, RCV Active, Hotspot Mode, or Earjack Active – 20 MHz Bandwidth**

LTE Band 4 (AWS) 20 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20175 (1732.5 MHz) Conducted Power [dBm]		
QPSK	1	0	16.28	0	0
	1	50	16.24		0
	1	99	16.24		0
	50	0	16.32	0-1	0
	50	25	16.31		0
	50	50	16.31		0
	100	0	16.27		0
16QAM	1	0	16.65	0-1	0
	1	50	16.60		0
	1	99	16.66		0
	50	0	16.33	0-2	0
	50	25	15.81		0
	50	50	16.33		0
	100	0	16.35		0
64QAM	1	0	16.51	0-2	0
	1	50	16.38		0
	1	99	16.55		0
	50	0	16.37	0-3	0
	50	25	16.38		0
	50	50	16.37		0
	100	0	16.36		0
256QAM	1	0	16.43	0-5	0
	1	50	16.33		0
	1	99	16.39		0
	50	0	16.34		0
	50	25	16.35		0
	50	50	16.34		0
	100	0	16.32		0

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### 9.3.8 LTE Band 2 Antenna A

**Table 9-13**  
**LTE Band 2 (PCS) Antenna A Measured  $P_{Max}$  for RCV Active – 20 MHz Bandwidth**

LTE Band 2 (PCS) 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]		
			18700 (1860.0 MHz)	18900 (1880.0 MHz)	19100 (1900.0 MHz)				
			Conducted Power [dBm]						
QPSK	1	0	23.60	23.59	23.67	0	0		
	1	50	23.31	23.50	23.33		0		
	1	99	23.55	23.44	23.35		0		
	QPSK	50	0	22.77	22.77	22.87	0-1	1	
		50	25	22.63	22.71	22.70		1	
		50	50	22.63	22.68	22.54		1	
		100	0	22.73	22.60	22.59		1	
16QAM		1	0	22.78	22.73	22.69		0-1	1
		1	50	22.54	22.64	22.65			1
	1	99	22.73	22.80	22.44	1			
	16QAM	50	0	21.81	21.85	22.02	0-2	2	
		50	25	21.74	21.75	21.90		2	
		50	50	21.63	21.72	21.81		2	
		100	0	21.75	21.70	21.79		2	
64QAM		1	0	21.73	21.84	22.06		0-2	2
		1	50	21.43	21.71	21.80			2
	1	99	21.65	21.80	21.57	2			
	64QAM	50	0	20.81	20.73	20.81	0-3	3	
		50	25	20.86	20.70	20.93		3	
		50	50	20.79	20.69	20.78		3	
		100	0	20.69	20.69	20.85		3	
256QAM	1	0	18.63	18.98	19.13	0-5	5		
	1	50	18.59	18.91	18.88		5		
	1	99	18.60	19.00	18.73		5		
	50	0	18.69	18.92	18.88		5		
	50	25	18.78	18.65	18.82		5		
	50	50	18.70	18.71	18.78		5		
	100	0	18.81	18.88	18.83		5		

**Table 9-14**  
**LTE Band 2 (PCS) Antenna A Measured  $P_{Limit}$  for Free, Hotspot Mode, or Earjack Active – 20 MHz Bandwidth**

LTE Band 2 (PCS) 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]		
			18700 (1860.0 MHz)	18900 (1880.0 MHz)	19100 (1900.0 MHz)				
			Conducted Power [dBm]						
QPSK	1	0	18.43	18.55	18.45	0	0		
	1	50	18.56	18.41	18.49		0		
	1	99	18.66	18.38	18.67		0		
	QPSK	50	0	18.78	18.65	18.72	0-1	0	
		50	25	18.63	18.68	18.80		0	
		50	50	18.76	18.59	18.73		0	
		100	0	18.59	18.52	18.62		0	
16QAM		1	0	18.88	18.54	18.94		0-1	0
		1	50	18.70	18.53	18.88			0
	1	99	18.69	18.55	18.81	0			
	16QAM	50	0	18.75	18.59	18.77	0-2	0	
		50	25	18.69	18.65	18.71		0	
		50	50	18.60	18.61	18.69		0	
		100	0	18.65	18.38	18.69		0	
64QAM	1	0	18.70	18.73	18.89	0-2	0		
	1	50	18.78	18.65	18.91		0		
	1	99	18.63	18.41	18.74		0		
	64QAM	50	0	18.58	18.61	18.80	0-3	0	
		50	25	18.66	18.71	18.79		0	
		50	50	18.69	18.66	18.80		0	
		100	0	18.53	18.49	18.67		0	
256QAM	1	0	18.73	18.45	18.94	0-5	0.5		
	1	50	18.70	18.51	18.92		0.5		
	1	99	18.62	18.38	18.86		0.5		
	50	0	18.54	18.58	18.87		0.5		
	50	25	18.52	18.61	18.85		0.5		
	50	50	18.63	18.66	18.80		0.5		
	100	0	18.53	18.60	18.80		0.5		

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### 9.3.9 LTE Band 2 Antenna F

**Table 9-15**  
**LTE Band 2 (PCS) Antenna F Measured P<sub>Limit</sub> for Free, RCV Active, Hotspot Mode, or Earjack Active – 20 MHz Bandwidth**

LTE Band 2 (PCS) 20 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]	
			18700 (1860.0 MHz)	18900 (1880.0 MHz)	19100 (1900.0 MHz)			
Conducted Power [dBm]								
QPSK	1	0	17.25	17.43	17.30	0	0	
	1	50	17.34	17.21	17.29		0	
	1	99	17.04	17.15	17.45		0	
	QPSK	50	0	17.32	17.38	17.70	0-1	0
		50	25	17.38	17.33	17.41		0
		50	50	17.32	17.33	17.58		0
		100	0	17.39	17.31	17.40		0
16QAM	1	0	17.32	17.60	17.80	0-1	0	
	1	50	17.41	17.56	17.45		0	
	1	99	17.46	17.54	17.54		0	
	16QAM	50	0	17.29	17.42	17.64	0-2	0
		50	25	17.32	17.39	17.56		0
		50	50	17.11	17.45	17.70		0
		100	0	17.21	17.33	17.62		0
64QAM	1	0	17.33	17.51	17.81	0-2	0	
	1	50	17.41	17.57	17.68		0	
	1	99	17.46	17.61	17.75		0	
	64QAM	50	0	17.21	17.35	17.57	0-3	0
		50	25	17.34	17.38	17.62		0
		50	50	17.37	17.31	17.51		0
		100	0	17.29	17.23	17.61		0
256QAM	1	0	17.18	17.65	17.71	0-5	0	
	1	50	17.31	17.51	17.80		0	
	1	99	17.29	17.50	17.70		0	
	50	0	17.41	17.38	17.74		0	
	50	25	17.35	17.39	17.58		0	
	50	50	17.36	17.34	17.70		0	
	100	0	17.41	17.28	17.62		0	

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### 9.3.10 LTE Band 41

**Table 9-16**  
**LTE Band 41 PC3 Measured  $P_{Max}$  for RCV Active– 20 MHz Bandwidth**

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	Designed MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
Conducted Power [dBm]									
QPSK	1	0	24.45	24.71	24.36	24.27	24.52	0	0
	1	50	24.47	24.62	24.30	24.16	23.89		0
	1	99	24.68	24.69	24.54	24.38	23.72		0
	50	0	22.55	22.52	22.34	22.25	22.29	0-1	2
	50	25	22.54	22.57	22.31	22.24	22.30		2
	50	50	22.57	22.58	22.35	22.27	22.29		2
16QAM	100	0	22.56	22.52	22.30	22.25	22.31	0-1	2
	1	0	22.38	22.71	22.08	22.27	22.04		2
	1	50	22.29	22.57	21.95	22.26	21.92		2
	1	99	22.49	22.65	22.16	22.43	22.08	0-2	2
	50	0	21.53	21.44	21.21	21.19	21.23		3
	50	25	21.55	21.37	21.17	21.21	21.21		3
64QAM	50	50	21.55	21.41	21.15	21.24	21.18	0-2	3
	100	0	21.59	21.38	21.17	21.20	21.26		3
	1	0	21.68	21.45	20.99	21.52	21.11		0-2
	1	50	21.61	21.28	20.82	21.39	21.00	3	
	1	99	21.78	21.35	21.05	21.55	21.14	3	
	256QAM	50	0	20.57	20.31	20.14	20.14	20.19	0-3
50		25	20.60	20.31	20.17	20.13	20.16	4	
50		50	20.60	20.28	20.17	20.15	20.18	4	
100		0	20.54	20.28	20.19	20.16	20.20	0-5	4
1		0	20.86	20.51	20.27	20.19	20.48		4
1		50	20.79	20.42	20.18	20.14	20.33		4
256QAM	1	99	20.98	20.58	20.32	20.32	20.38	0-5	4
	50	0	19.54	19.32	19.20	19.15	19.15		5
	50	25	19.54	19.26	19.23	19.18	19.18		5
	50	50	19.57	19.30	19.24	19.19	19.11	5	
	100	0	19.56	19.31	19.23	19.16	19.15	5	

**Table 9-17**  
**LTE Band 41 PC2 Measured  $P_{Max}$  for RCV Active - 20 MHz Bandwidth**

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
Conducted Power [dBm]									
QPSK	1	0	25.60	25.50	25.48	25.27	25.30	0	0
	1	50	25.58	25.42	25.40	25.17	25.13		0
	1	99	25.73	25.62	25.54	25.32	25.25		0
	50	0	24.61	24.61	24.37	24.21	24.25	0-1	1
	50	25	24.60	24.61	24.40	24.24	24.30		1
	50	50	24.63	24.58	24.37	24.25	24.26		1
100	0	24.63	24.61	24.42	24.24	24.31	1		

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**Table 9-18**  
**LTE Band 41 PC3 Measured  $P_{Limit}$  for Free, Hotspot Mode, or Earjack Active - 20 MHz Bandwidth**

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	21.83	21.82	21.54	21.46	21.49	0	0
	1	50	21.74	21.69	21.47	21.41	21.40		0
	1	99	<b>21.92</b>	21.79	21.64	21.57	21.48		0
	50	0	21.86	21.84	21.65	21.48	21.54	0-1	0
	50	25	21.85	21.85	21.65	21.51	21.55		0
	50	50	<b>21.93</b>	21.84	21.68	21.53	21.53		0
16QAM	100	0	21.86	21.86	21.66	21.50	21.55	0-1	0
	1	0	21.51	21.90	21.59	21.42	21.41		0
	1	50	21.57	21.79	21.46	21.36	21.28		0
	50	0	21.30	21.25	21.02	20.88	20.92	0-2	1
	50	25	21.34	21.27	21.05	20.88	20.92		1
	50	50	21.34	21.26	21.02	20.91	20.92		1
64QAM	100	0	21.28	21.24	21.09	20.95	20.94	0-2	1
	1	0	21.36	21.47	20.83	20.76	20.89		1
	1	50	21.31	21.31	20.71	20.66	20.76		1
	1	99	21.40	21.39	20.88	20.84	20.83	0-3	1
	50	0	20.29	20.26	20.02	19.87	19.89		2
	50	25	20.30	20.26	20.06	19.89	19.87		2
256QAM	50	50	20.31	20.23	20.03	19.90	19.85	0-3	2
	100	0	20.30	20.24	20.04	19.87	19.88		2
	1	0	20.21	20.07	20.25	20.26	19.66		0-5
	1	50	20.14	19.96	20.11	20.19	19.57	2	
	1	99	20.25	20.08	20.28	20.34	19.68	2	
	50	0	19.24	19.27	19.01	18.82	18.85	3	
50	25	19.27	19.20	19.03	18.86	18.84	3		
50	50	19.26	19.19	19.04	18.84	18.82	3		
100	0	19.26	19.18	19.03	18.83	18.86	3		

**Table 9-19**  
**LTE Band 41 PC2 Measured  $P_{Limit}$  for Free Hotspot Mode, or Earjack Active - 20 MHz Bandwidth**

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	23.79	23.69	23.57	23.33	23.32	0	0
	1	50	23.71	23.62	23.52	23.29	23.28		0
	1	99	23.78	23.73	23.70	23.40	23.39		0
	50	0	23.76	23.74	23.54	23.31	23.39	0-1	0
	50	25	23.78	23.73	23.55	23.31	23.38		0
	50	50	23.77	23.73	23.52	23.36	23.39		0
100	0	23.76	23.76	23.51	23.34	23.42	0		



**Figure 9-3**  
**Power Measurement Setup**

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## 9.4 NR Conducted Powers

Per October 2020 TCB Workshop Guidance, NR FR1 SAR evaluations are being generally based on adapting the existing LTE SAR procedures (FCC KDB Publication 941225 D05v02r05). Therefore, NR SAR for the lower bandwidths was not required for testing based on the measured output power and the reported NR SAR for the highest bandwidth. Lower bandwidth conducted powers for all NR bands can be found in LTE and NR Lower Bandwidth RF Conducted Powers Appendix.

Note: Some bands do 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.

### 9.4.1 NR Band n5

**Table 9-20**  
NR Band n5 Measured  $P_{Max}$  for Free, RCV Active, Hotspot Mode, or Earjack Active - 20 MHz Bandwidth

NR Band n5 20 MHz Bandwidth					
Modulation	RB Size	RB Offset	Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			167300 (836.5 MHz) Conducted Power [dBm]		
DFT-s-OFDM QPSK	1	1	23.87	0	0.0
	1	53	<b>23.88</b>		0.0
	1	104	23.84		0.0
	50	0	22.89	0-1	1.0
	50	28	<b>23.87</b>	0	0.0
	50	56	22.93	0-1	1.0
	100	0	22.88		1.0
DFT-s-OFDM 16QAM	1	1	22.75	0-1	1.0
CP-OFDM QPSK	1	1	22.43	0-1.5	1.5

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## 9.4.2 NR Band n66 Antenna A

Table 9-21  
NR Band n66 Antenna A Measured  $P_{Max}$  for RCV Active - 40 MHz Bandwidth

NR Band n66 40 MHz Bandwidth					
Modulation	RB Size	RB Offset	Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			349000 (1745 MHz)		
			Conducted Power [dBm]		
DFT-s-OFDM QPSK	1	1	23.22	0	0.0
	1	108	<b>23.32</b>		0.0
	1	214	22.99		0.0
	108	0	22.27	0-1	1.0
	108	54	<b>23.21</b>	0	0.0
	108	108	22.14	0-1	1.0
	216	0	22.19		1.0
DFT-s-OFDM 16QAM	1	1	22.13	0-1	1.0
CP-OFDM QPSK	1	1	21.72	0-1.5	1.5

Table 9-22  
NR Band n66 Antenna A Measured  $P_{Limit}$  for Free, Hotspot Mode, or Earjack Active - 40 MHz Bandwidth

NR Band n66 40 MHz Bandwidth					
Modulation	RB Size	RB Offset	Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			349000 (1745 MHz)		
			Conducted Power [dBm]		
DFT-s-OFDM QPSK	1	1	18.03	0	0.0
	1	108	<b>18.13</b>		0.0
	1	214	17.64		0.0
	108	0	18.02	0-1	0.0
	108	54	<b>18.10</b>	0	0.0
	108	108	17.85	0-1	0.0
	216	0	17.92		0.0
DFT-s-OFDM 16QAM	1	1	17.87	0-1	0.0
CP-OFDM QPSK	1	1	17.96	0-1.5	0.0

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### 9.4.3 NR Band n66 Antenna F

Table 9-23  
NR Band n66 Antenna F Measured  $P_{Limit}$  for Free, RCV Active, Hotspot Mode, or Earjack Active – 40 MHz Bandwidth

NR Band n66 40 MHz Bandwidth					
Modulation	RB Size	RB Offset	Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			349000 (1745 MHz) Conducted Power [dBm]		
DFT-s-OFDM QPSK	1	1	15.93	0	0.0
	1	108	<b>15.95</b>		0.0
	1	214	15.65		0.0
	108	0	<b>15.96</b>	0-1	0.0
	108	54	15.91	0	0.0
	108	108	15.80	0-1	0.0
	216	0	15.89		0.0
DFT-s-OFDM 16QAM	1	1	15.96	0-1	0.0
CP-OFDM QPSK	1	1	15.92	0-1.5	0.0

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### 9.4.4 NR Band n41 Antenna B

Table 9-24  
NR Band n41 Antenna B Measured  $P_{Limit}$  for Free, RCV Active, Hotspot Mode, or Earjack Active – 100 MHz Bandwidth

NR Band n41 100 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	518598 (2592.99 MHz)		
			Conducted Power [dBm]		
DFT-s-OFDM QPSK	1	1	16.71	0	0.0
	1	137	16.34		0.0
	1	271	<b>16.92</b>		0.0
	135	0	<b>16.65</b>	0-1	0.0
	135	69	16.37	0	0.0
	135	138	16.49	0-1	0.0
	270	0	16.52		0.0
DFT-s-OFDM 16QAM	1	1	16.61	0-1	0.0
CP-OFDM QPSK	1	1	16.60	0-1.5	0.0

### 9.4.5 NR Band n41 Antenna F, D, E

Table 9-25  
NR Band n41 Antenna F, D, E Measured  $P_{Limit}$  for Free, RCV Active, Hotspot Mode, or Earjack Active – 100 MHz Bandwidth

NR Band n41 100 MHz Bandwidth	
Channel	
Antenna	518598 (2592.99 MHz)
	Conducted Power [dBm]
SRS #1 Ant F	<b>17.07</b>
SRS #2 Ant D	<b>15.68</b>
SRS #3 Ant E	<b>17.36</b>

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### 9.4.6 NR Band n77 DoD Antenna F

Table 9-26  
NR Band n77 DoD Antenna F Measured  $P_{Limit}$  for Free, RCV Active, Hotspot Mode, or Earjack Active – 100 MHz Bandwidth

NR Band n77 DoD 100 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	633334 (3500.01 MHz)		
			Conducted Power [dBm]		
DFT-s-OFDM QPSK	1	1	14.31	0	0.0
	1	137	14.36		0.0
	1	271	<b>14.73</b>		0.0
	135	0	14.63	0-1	0.0
	135	69	14.46	0	0.0
	135	138	14.52	0-1	0.0
	270	0	14.60		0.0
DFT-s-OFDM 16QAM	1	1	14.40	0-1	0.0
CP-OFDM QPSK	1	1	14.38	0-1.5	0.0

### 9.4.7 NR Band n77 DoD Antenna C, I, D

Table 9-27  
NR Band n77 DoD Antenna C, I, D Measured  $P_{Limit}$  for Free, RCV Active, Hotspot Mode, or Earjack Active – 100 MHz Bandwidth

NR Band n77 DoD 100 MHz Bandwidth	
Channel	
Antenna	633334 (3500.01 MHz)
	Conducted Power [dBm]
SRS #1 Ant C	<b>11.77</b>
SRS #2 Ant I	<b>12.23</b>
SRS #3 Ant D	<b>9.16</b>

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### 9.4.8 NR Band n77 C-Band Antenna F

Table 9-28

NR Band n77 C-Band Antenna F Measured  $P_{Limit}$  for Free, RCV Active, Hotspot Mode, or Earjack Active – 100 MHz Bandwidth

NR Band n77 100 MHz Bandwidth						
Channel						
Modulation	RB Size	RB Offset	650000 (3750 MHz)	662000 (3930 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]			
DFT-s-OFDM QPSK	1	1	14.75	14.07	0	0.0
	1	137	14.62	14.04		0.0
	1	271	14.18	13.70		0.0
	135	0	14.82	14.44	0-1	0.0
	135	69	14.69	14.14	0	0.0
	135	138	14.59	14.12	0-1	0.0
	270	0	14.73	14.32		0.0
DFT-s-OFDM 16QAM	1	1	14.90	14.14	0-1	0.0
CP-OFDM QPSK	1	1	14.84	14.13	0-1.5	0.0

### 9.4.9 NR Band n77 C-Band Antenna C, I, D

Table 9-29

NR Band n77 C-Band Antenna C, I, D Measured  $P_{Limit}$  for Free, RCV Active, Hotspot Mode, or Earjack Active – 100 MHz Bandwidth

NR Band n77 100 MHz Bandwidth		
Channel		
Antenna	650000 (3750 MHz)	662000 (3930 MHz)
	Conducted Power [dBm]	
SRS #1 Ant C	12.22	11.81
SRS #2 Ant I	11.68	12.28
SRS #3 Ant D	10.02	9.27

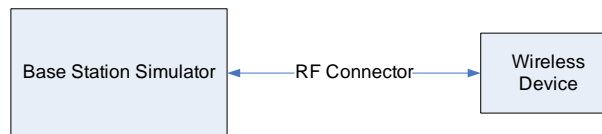


Figure 9-4

Power Measurement Setup – NR FDD

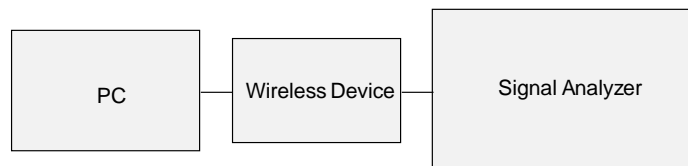


Figure 9-5

Power Measurement Setup – NR TDD

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## 9.5 WLAN Conducted Powers

Table 9-30

**2.4 GHz WLAN  $P_{Max}$  RF Power – Ant 2**

2.4GHz WIFI 20MHz 802.11b SISO			802.11g SISO	802.11n SISO	802.11ax SISO
Freq. [MHz]	Channel	Conducted Power [dBm]	Conducted Power [dBm]	Conducted Power [dBm]	Conducted Power [dBm]
2412	1	17.98	16.28	16.21	16.24
2437	6	17.85	16.54	16.48	16.63
2462	11	17.84	16.95	16.84	16.99

Table 9-31

**2.4 GHz WLAN  $P_{Max}$  Average RF Power – MIMO**

2.4GHz WIFI (20MHz 802.11b MIMO)				
Freq [MHz]	Channel	Conducted Power [dBm]		
		ANT1	ANT2	MIMO
2412	1	17.81	17.82	20.83
2437	6	17.83	17.77	20.81
2462	11	17.74	17.69	20.73

Table 9-32

**2.4 GHz WLAN  $P_{Limit}$  Reduced Average RF Power for DSI = 0 (Free) – Ant 2**

2.4GHz WIFI (20MHz 802.11b SISO ANT2)				802.11g SISO	802.11n SISO	802.11ax
Freq. [MHz]	Channel	Detector	Conducted Power [dBm]	Conducted Power [dBm]	Conducted Power [dBm]	Conducted Power [dBm]
2412	1	Average	16.45	16.45	16.31	16.41
2437	6		16.35	16.31	16.21	16.25
2462	11		16.07	16.44	16.41	16.47

Table 9-33

**2.4 GHz WLAN  $P_{Limit}$  Average RF Power for DSI = 0 (Free) – MIMO**

2.4GHz WIFI (20MHz 802.11n MIMO)					
Freq [MHz]	Channel	Detector	Conducted Power [dBm]		
			ANT1	ANT2	MIMO
2412	1	Average	15.51	15.49	18.51
2437	6		15.25	15.39	18.33
2462	11		15.55	15.71	18.64

Table 9-34

**2.4 GHz WLAN  $P_{Limit}$  Average RF Power for DSI = 1 (RCV), DSI = 8 (NR Active), or DSI = 9 (RCV + NR Active) – Ant 2**

2.4GHz WIFI (20MHz 802.11b SISO ANT2)				802.11g SISO	802.11n SISO	802.11ax SISO
Freq. [MHz]	Channel	Detector	Conducted Power [dBm]	Conducted Power [dBm]	Conducted Power [dBm]	Conducted Power [dBm]
2412	1	Average	13.91	13.72	13.51	13.55
2437	6		13.59	13.91	13.78	13.33
2462	11		13.84	13.76	13.59	13.59

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**Table 9-35**

**2.4 GHz WLAN  $P_{Limit}$  Average RF Power for DSI = 1 (RCV), DSI = 8 (NR Active), or DSI = 9 (RCV + NR Active) – MIMO**

2.4GHz WIFI (20MHz 802.11n MIMO)					
Freq [MHz]	Channel	Detector	Conducted Power [dBm]		
			ANT1	ANT2	MIMO
2412	1	Average	13.68	13.92	16.81
2437	6		13.57	13.75	16.67
2462	11		13.55	13.99	16.79

**Table 9-36**

**5 GHz WLAN  $P_{Max}$  Average RF Power – MIMO**

5GHz WIFI (20MHz 802.11n MIMO)					
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]		
			ANT1	ANT2	MIMO
UNII-1	5180	36	15.85	15.72	18.80
	5200	40	15.81	15.73	18.78
	5220	44	15.02	15.76	18.41
	5240	48	15.35	15.70	18.54
UNII-2A	5260	52	15.67	15.42	18.56
	5280	56	15.99	15.69	18.85
	5300	60	15.87	15.55	18.72
	5320	64	15.84	15.49	18.68
UNII-2C	5500	100	15.98	13.93	18.08
	5600	120	15.86	14.37	18.19
	5620	124	15.78	14.39	18.15
	5720	144	15.93	14.82	18.42
UNII-3	5745	149	15.76	15.55	18.67
	5785	157	15.73	15.76	18.75
	5825	165	15.51	15.62	18.58
UNII-4	5845	169	15.82	15.78	18.81
	5865	173	15.50	15.52	18.52
	5885	177	15.62	15.49	18.57

**Table 9-37**

**5 GHz WLAN  $P_{Limit}$  Average RF Power for DSI = 1 (RCV), DSI = 8 (NR Active), or DSI = 9 (RCV + NR Active) - MIMO**

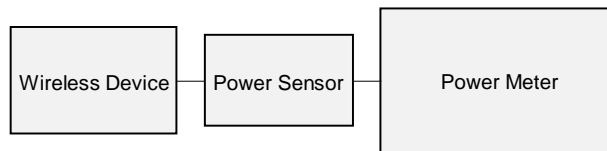
5GHz WIFI (80MHz 802.11ac MIMO)					
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]		
			ANT1	ANT2	MIMO
UNII-1	5210	42	12.61	12.98	15.81
UNII-2A	5290	58	12.64	12.76	15.71
UNII-2C	5530	106	12.62	12.72	15.68
	5610	122	12.52	12.81	15.68
	5690	138	12.60	12.82	15.72
UNII-3	5775	155	12.55	12.80	15.69
UNII-4	5885	171	12.72	12.94	15.84

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

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

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



**Figure 9-6**  
**Power Measurement Setup**

## 9.6 Bluetooth Conducted Powers

**Table 9-38**  
**Bluetooth Maximum Average RF Power– Antenna 1**

Frequency [MHz]	Data Rate [Mbps]	Mod.	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	1.0	GFSK	0	14.23	26.476
2441	1.0	GFSK	39	14.66	29.274
2480	1.0	GFSK	78	14.41	27.619

**Table 9-39**  
**Bluetooth Maximum Average RF Power– Antenna 2**

Frequency [MHz]	Data Rate [Mbps]	Mod.	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	1.0	GFSK	0	13.30	21.393
2441	1.0	GFSK	39	14.14	25.946
2480	1.0	GFSK	78	12.90	19.482

**Table 9-40**  
**Bluetooth Reduced Average RF Power (RCV Active) – Antenna 1**

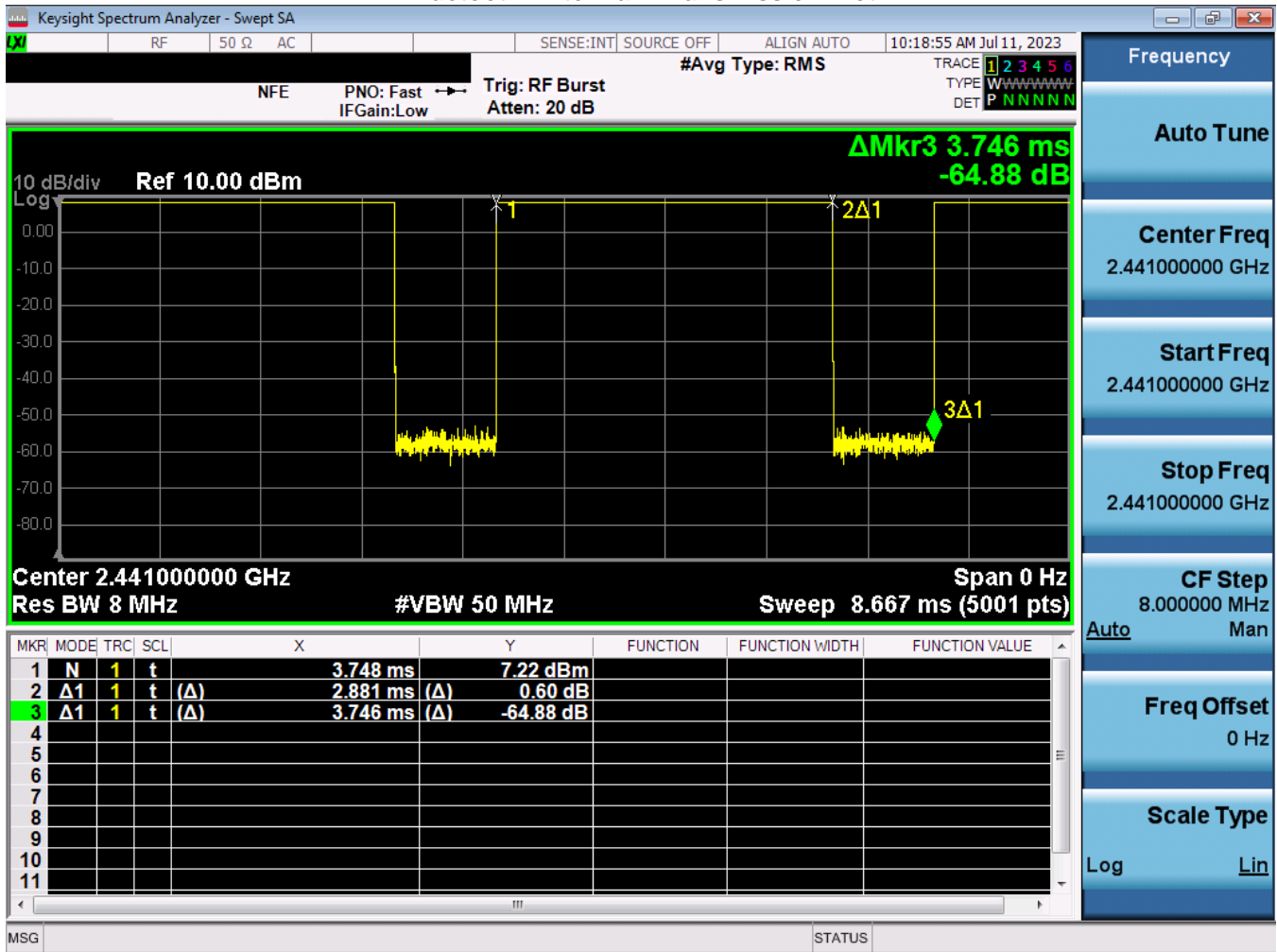
Frequency [MHz]	Data Rate [Mbps]	Mod.	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	1.0	GFSK	0	10.19	10.438
2441	1.0	GFSK	39	10.57	11.413
2480	1.0	GFSK	78	9.39	8.690

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**Table 9-41**  
**Bluetooth Reduced Average RF Power (RCV Active) – Antenna 2**

Frequency [MHz]	Data Rate [Mbps]	Mod.	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	1.0	GFSK	0	8.20	6.602
2441	1.0	GFSK	39	8.61	7.266
2480	1.0	GFSK	78	6.97	4.978

**Figure 9-7**  
**Bluetooth Antenna 1 Transmission Plot**

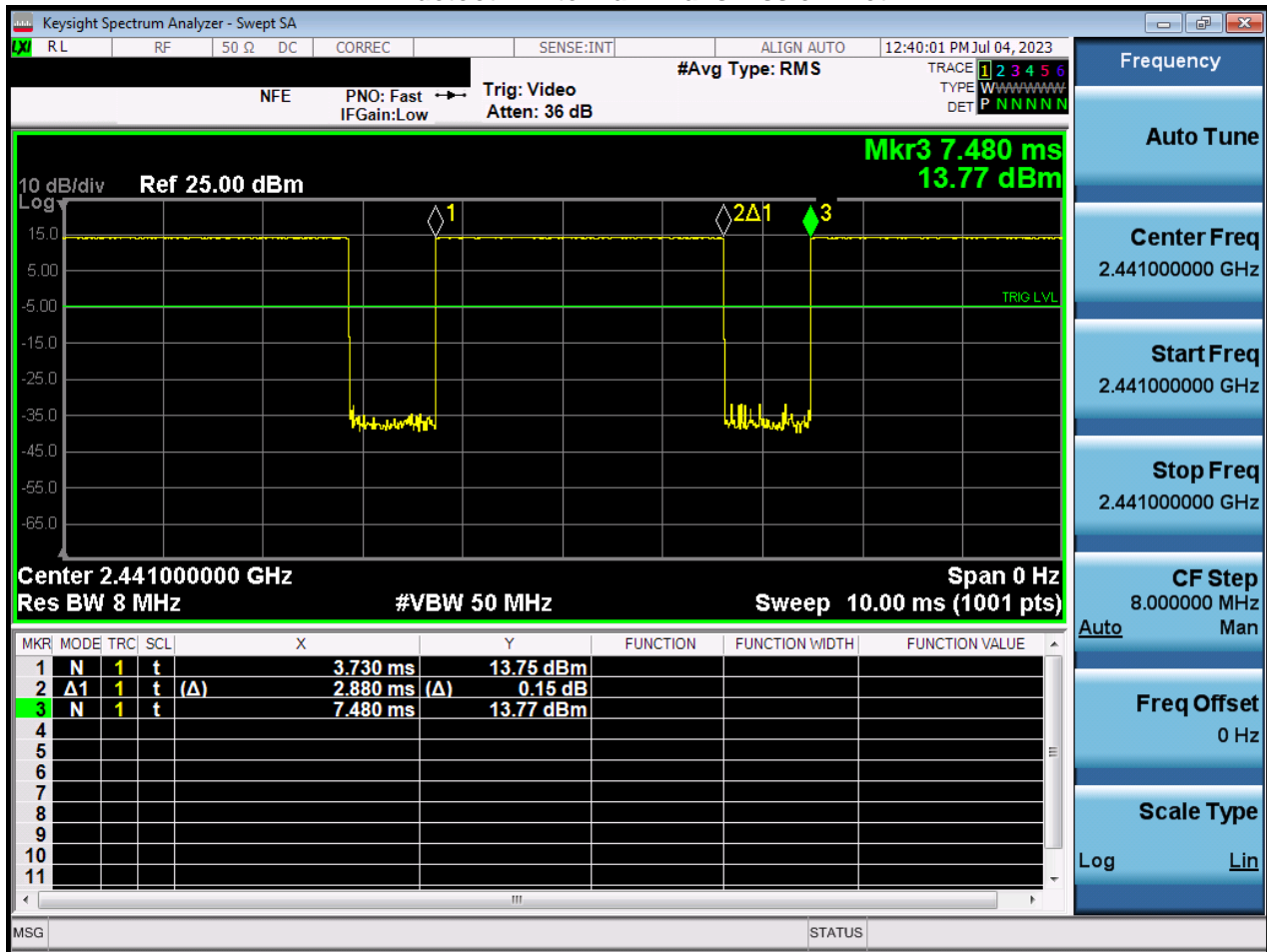


**Equation 9-1**  
**Bluetooth Antenna 1 Duty Cycle Calculation**

$$\text{Duty Cycle} = \frac{\text{Pulse Width}}{\text{Period}} * 100\% = \frac{2.881\text{ms}}{3.746\text{ms}} * 100\% = 76.9\%$$

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Figure 9-8  
Bluetooth Antenna 2 Transmission Plot



Equation 9-2  
Bluetooth Antenna 2 Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.880ms}{3.750ms} * 100\% = 76.8\%$$

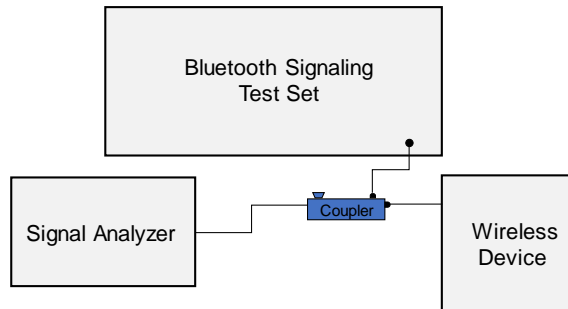


Figure 9-9  
Power Measurement Setup

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# 10 SYSTEM VERIFICATION

## 10.1 Tissue Verification

**Table 10-1  
Measured Head Tissue Properties**

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, $\sigma$ (S/m)	Measured Dielectric Constant, $\epsilon$	TARGET Conductivity, $\sigma$ (S/m)	TARGET Dielectric Constant, $\epsilon$	% dev $\sigma$	% dev $\epsilon$
07/06/2023	30 Head	20.6	12	0.717	52.460	0.750	55.000	-4.40%	-4.62%
			13	0.717	52.685	0.750	55.000	-4.40%	-4.21%
			14	0.717	52.780	0.750	55.000	-4.40%	-4.04%
06/26/2023	750 Head	22.2	680	0.859	41.520	0.888	42.305	-3.27%	-1.86%
			695	0.864	41.495	0.889	42.227	-2.81%	-1.73%
			700	0.866	41.487	0.889	42.201	-2.59%	-1.69%
			710	0.870	41.469	0.890	42.149	-2.25%	-1.61%
			725	0.874	41.435	0.891	42.071	-1.91%	-1.51%
			750	0.882	41.363	0.894	41.942	-1.34%	-1.38%
			770	0.889	41.295	0.895	41.838	-0.67%	-1.30%
			785	0.895	41.253	0.896	41.760	-0.11%	-1.21%
			800	0.900	41.215	0.897	41.682	0.33%	-1.12%
06/26/2023	750 Head	24.5	680	0.846	43.693	0.888	42.305	-4.73%	3.28%
			695	0.851	43.675	0.889	42.227	-4.27%	3.43%
			700	0.853	43.668	0.889	42.201	-4.05%	3.48%
			710	0.856	43.651	0.890	42.149	-3.82%	3.56%
			725	0.860	43.615	0.891	42.071	-3.48%	3.67%
			750	0.866	43.535	0.894	41.942	-3.13%	3.80%
			770	0.873	43.470	0.895	41.838	-2.46%	3.90%
			785	0.879	43.431	0.896	41.760	-1.90%	4.00%
			800	0.884	43.396	0.897	41.682	-1.45%	4.11%
07/10/2023	750 Head	23.3	680	0.844	42.886	0.888	42.305	-4.95%	1.37%
			695	0.849	42.846	0.889	42.227	-4.50%	1.47%
			700	0.850	42.831	0.889	42.201	-4.39%	1.49%
			710	0.853	42.804	0.890	42.149	-4.16%	1.55%
			725	0.858	42.764	0.891	42.071	-3.70%	1.65%
			750	0.866	42.694	0.894	41.942	-3.13%	1.79%
			770	0.872	42.643	0.895	41.838	-2.57%	1.92%
			785	0.877	42.607	0.896	41.760	-2.12%	2.03%
			800	0.883	42.574	0.897	41.682	-1.56%	2.14%
07/12/2023	750 Head	23.3	680	0.847	41.991	0.888	42.305	-4.62%	-0.74%
			695	0.852	41.952	0.889	42.227	-4.16%	-0.65%
			700	0.853	41.941	0.889	42.201	-4.05%	-0.62%
			710	0.856	41.920	0.890	42.149	-3.82%	-0.54%
			725	0.861	41.889	0.891	42.071	-3.37%	-0.43%
			750	0.869	41.816	0.894	41.942	-2.80%	-0.30%
			770	0.875	41.757	0.895	41.838	-2.23%	-0.19%
			785	0.880	41.718	0.896	41.760	-1.79%	-0.10%
			800	0.885	41.681	0.897	41.682	-1.34%	0.00%
07/30/2023	750 Head	20.6	680	0.858	42.058	0.888	42.305	-3.38%	-0.58%
			695	0.863	42.013	0.889	42.227	-2.92%	-0.51%
			700	0.865	41.995	0.889	42.201	-2.70%	-0.49%
			710	0.868	41.955	0.890	42.149	-2.47%	-0.46%
			725	0.874	41.896	0.891	42.071	-1.91%	-0.42%
			750	0.882	41.829	0.894	41.942	-1.34%	-0.27%
			770	0.889	41.791	0.895	41.838	-0.67%	-0.11%
			785	0.894	41.745	0.896	41.760	-0.22%	-0.04%
			800	0.899	41.686	0.897	41.682	0.22%	0.01%

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**Table 10-2  
Measured Head Tissue Properties (Cont.)**

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, $\sigma$ (S/m)	Measured Dielectric Constant, $\epsilon$	TARGET Conductivity, $\sigma$ (S/m)	TARGET Dielectric Constant, $\epsilon$	% dev $\sigma$	% dev $\epsilon$
06/27/2023	835 Head	24.0	815	0.862	43.038	0.898	41.594	-4.01%	3.47%
			820	0.864	43.027	0.899	41.578	-3.89%	3.49%
			835	0.868	42.997	0.900	41.500	-3.56%	3.61%
			850	0.872	42.967	0.916	41.500	-4.80%	3.53%
06/28/2023	835 Head	22.2	815	0.897	40.586	0.898	41.594	-0.11%	-2.42%
			820	0.899	40.570	0.899	41.578	0.00%	-2.42%
			835	0.904	40.529	0.900	41.500	0.44%	-2.34%
06/29/2023	835 Head	21.5	850	0.909	40.498	0.916	41.500	-0.76%	-2.41%
			815	0.869	41.079	0.898	41.594	-3.23%	-1.24%
			820	0.871	41.066	0.899	41.578	-3.11%	-1.23%
07/05/2023	835 Head	21.5	835	0.876	41.023	0.900	41.500	-2.67%	-1.15%
			850	0.880	40.985	0.916	41.500	-3.93%	-1.24%
			815	0.858	39.871	0.898	41.594	-4.45%	-4.14%
07/10/2023	835 Head	24.5	820	0.860	39.859	0.899	41.578	-4.34%	-4.13%
			835	0.865	39.817	0.900	41.500	-3.89%	-4.06%
			850	0.871	39.768	0.916	41.500	-4.91%	-4.17%
07/12/2023	835 Head	24.3	815	0.891	43.411	0.898	41.594	-0.78%	4.37%
			820	0.892	43.401	0.899	41.578	-0.78%	4.38%
			835	0.897	43.369	0.900	41.500	-0.33%	4.50%
			850	0.901	43.341	0.916	41.500	-1.64%	4.44%
06/21/2023	1750 Head	20.9	815	0.888	41.200	0.898	41.594	-1.11%	-0.95%
			820	0.890	41.189	0.899	41.578	-1.00%	-0.94%
			835	0.894	41.143	0.900	41.500	-0.67%	-0.86%
			850	0.898	41.095	0.916	41.500	-1.97%	-0.98%
			1710	1.371	38.441	1.348	40.142	1.71%	-4.24%
06/23/2023	1750 Head	20.3	1720	1.382	38.387	1.354	40.126	2.07%	-4.33%
			1745	1.409	38.246	1.368	40.087	3.00%	-4.59%
			1750	1.415	38.222	1.371	40.079	3.21%	-4.63%
			1770	1.436	38.133	1.383	40.047	3.83%	-4.78%
			1790	1.456	38.047	1.394	40.016	4.45%	-4.92%
06/28/2023	1750 Head	20.4	1710	1.281	39.715	1.348	40.142	-4.97%	-1.06%
			1720	1.292	39.665	1.354	40.126	-4.58%	-1.15%
			1745	1.318	39.518	1.368	40.087	-3.65%	-1.42%
			1750	1.324	39.487	1.371	40.079	-3.43%	-1.48%
			1770	1.346	39.382	1.383	40.047	-2.68%	-1.66%
07/03/2023	1750 Head	22.5	1790	1.367	39.292	1.394	40.016	-1.94%	-1.81%
			1710	1.281	38.632	1.348	40.142	-4.97%	-3.76%
			1720	1.292	38.577	1.354	40.126	-4.58%	-3.86%
			1745	1.318	38.436	1.368	40.087	-3.65%	-4.12%
			1750	1.324	38.408	1.371	40.079	-3.43%	-4.17%
07/06/2023	1750 Head	20.1	1770	1.345	38.303	1.383	40.047	-2.75%	-4.35%
			1790	1.365	38.206	1.394	40.016	-2.08%	-4.52%
			1710	1.311	38.335	1.348	40.142	-2.74%	-4.50%
			1720	1.317	38.328	1.354	40.126	-2.73%	-4.48%
			1745	1.331	38.300	1.368	40.087	-2.70%	-4.46%
07/06/2023	1750 Head	20.1	1750	1.334	38.293	1.371	40.079	-2.70%	-4.46%
			1770	1.346	38.275	1.383	40.047	-2.68%	-4.42%
			1790	1.359	38.258	1.394	40.016	-2.51%	-4.39%
			1710	1.311	40.880	1.348	40.142	-2.74%	1.84%
			1720	1.317	40.858	1.354	40.126	-2.73%	1.82%
07/06/2023	1750 Head	20.1	1745	1.332	40.795	1.368	40.087	-2.63%	1.77%
			1750	1.335	40.785	1.371	40.079	-2.63%	1.76%
			1770	1.348	40.750	1.383	40.047	-2.53%	1.76%
			1790	1.359	40.726	1.394	40.016	-2.51%	1.77%

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**Table 10-3  
Measured Head Tissue Properties (Cont.)**

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, $\sigma$ (S/m)	Measured Dielectric Constant, $\epsilon$	TARGET Conductivity, $\sigma$ (S/m)	TARGET Dielectric Constant, $\epsilon$	% dev $\sigma$	% dev $\epsilon$
07/17/2023	1750 Head	20.0	1710	1.348	39.962	1.348	40.142	0.00%	-0.45%
			1720	1.353	39.943	1.354	40.126	-0.07%	-0.46%
			1745	1.369	39.888	1.368	40.087	0.07%	-0.50%
			1750	1.372	39.876	1.371	40.079	0.07%	-0.51%
			1770	1.386	39.841	1.383	40.047	0.22%	-0.51%
			1790	1.400	39.817	1.394	40.016	0.43%	-0.50%
07/27/2023	1750 Head	20.8	1710	1.313	39.629	1.348	40.142	-2.60%	-1.28%
			1720	1.318	39.610	1.354	40.126	-2.66%	-1.29%
			1745	1.333	39.559	1.368	40.087	-2.56%	-1.32%
			1750	1.336	39.549	1.371	40.079	-2.55%	-1.32%
			1770	1.348	39.519	1.383	40.047	-2.53%	-1.32%
			1790	1.359	39.497	1.394	40.016	-2.51%	-1.30%
07/31/2023	1750 Head	21.4	1710	1.329	39.429	1.348	40.142	-1.41%	-1.78%
			1720	1.334	39.406	1.354	40.126	-1.48%	-1.79%
			1745	1.349	39.350	1.368	40.087	-1.39%	-1.84%
			1750	1.352	39.338	1.371	40.079	-1.39%	-1.85%
			1770	1.364	39.302	1.383	40.047	-1.37%	-1.86%
			1790	1.375	39.277	1.394	40.016	-1.36%	-1.85%
08/06/2023	1750 Head	20.3	1710	1.303	39.914	1.348	40.142	-3.34%	-0.57%
			1720	1.309	39.898	1.354	40.126	-3.32%	-0.57%
			1745	1.327	39.861	1.368	40.087	-3.00%	-0.56%
			1750	1.330	39.854	1.371	40.079	-2.99%	-0.56%
			1770	1.343	39.822	1.383	40.047	-2.89%	-0.56%
			1790	1.354	39.789	1.394	40.016	-2.87%	-0.57%
06/21/2023	1900 Head	21.2	1850	1.351	38.837	1.400	40.000	-3.50%	-2.91%
			1860	1.357	38.825	1.400	40.000	-3.07%	-2.94%
			1880	1.369	38.800	1.400	40.000	-2.21%	-3.00%
			1900	1.381	38.782	1.400	40.000	-1.36%	-3.05%
			1905	1.384	38.776	1.400	40.000	-1.14%	-3.06%
			1910	1.387	38.771	1.400	40.000	-0.93%	-3.07%
			1920	1.392	38.758	1.400	40.000	-0.57%	-3.10%
06/23/2023	1900 Head	21.0	1850	1.363	40.128	1.400	40.000	-2.64%	0.32%
			1860	1.369	40.113	1.400	40.000	-2.21%	0.28%
			1880	1.382	40.084	1.400	40.000	-1.29%	0.21%
			1900	1.394	40.066	1.400	40.000	-0.43%	0.17%
			1905	1.398	40.061	1.400	40.000	-0.14%	0.15%
			1910	1.401	40.057	1.400	40.000	0.07%	0.14%
			1920	1.406	40.043	1.400	40.000	0.43%	0.11%
06/25/2023	1900 Head	20.4	1850	1.363	39.166	1.400	40.000	-2.64%	-2.09%
			1860	1.369	39.149	1.400	40.000	-2.21%	-2.13%
			1880	1.383	39.114	1.400	40.000	-1.21%	-2.22%
			1900	1.395	39.084	1.400	40.000	-0.36%	-2.29%
			1905	1.399	39.077	1.400	40.000	-0.07%	-2.31%
			1910	1.401	39.070	1.400	40.000	0.07%	-2.33%
			1920	1.407	39.056	1.400	40.000	0.50%	-2.36%
07/31/2023	1900 Head	21.4	1850	1.408	39.168	1.400	40.000	0.57%	-2.08%
			1860	1.413	39.153	1.400	40.000	0.93%	-2.12%
			1880	1.426	39.132	1.400	40.000	1.86%	-2.17%
			1900	1.438	39.123	1.400	40.000	2.71%	-2.19%
			1905	1.441	39.120	1.400	40.000	2.93%	-2.20%
			1910	1.444	39.117	1.400	40.000	3.14%	-2.21%
			1920	1.450	39.108	1.400	40.000	3.57%	-2.23%

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**Table 10-4  
Measured Head Tissue Properties (Cont.)**

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, $\sigma$ (S/m)	Measured Dielectric Constant, $\epsilon$	TARGET Conductivity, $\sigma$ (S/m)	TARGET Dielectric Constant, $\epsilon$	% dev $\sigma$	% dev $\epsilon$
06/22/2023	2450 Head	22.3	2300	1.685	39.603	1.670	39.500	0.90%	0.26%
			2310	1.692	39.589	1.679	39.480	0.77%	0.28%
			2320	1.699	39.575	1.687	39.460	0.71%	0.29%
			2400	1.755	39.469	1.756	39.289	-0.06%	0.46%
			2450	1.793	39.387	1.800	39.200	-0.39%	0.48%
			2480	1.816	39.352	1.833	39.162	-0.93%	0.49%
			2500	1.830	39.332	1.855	39.136	-1.35%	0.50%
			2510	1.837	39.315	1.866	39.123	-1.55%	0.49%
			2535	1.856	39.267	1.893	39.092	-1.95%	0.45%
			2550	1.869	39.239	1.909	39.073	-2.10%	0.42%
			2560	1.877	39.224	1.920	39.060	-2.24%	0.42%
			2600	1.909	39.184	1.964	39.009	-2.80%	0.45%
			2650	1.945	39.076	2.018	38.945	-3.62%	0.34%
			2680	1.972	39.038	2.051	38.907	-3.85%	0.34%
2700	1.987	39.032	2.073	38.882	-4.15%	0.39%			
06/28/2023	2450 Head	21.3	2300	1.668	38.584	1.670	39.500	-0.12%	-2.32%
			2310	1.675	38.576	1.679	39.480	-0.24%	-2.29%
			2320	1.682	38.570	1.687	39.460	-0.30%	-2.26%
			2400	1.740	38.471	1.756	39.289	-0.91%	-2.08%
			2450	1.775	38.415	1.800	39.200	-1.39%	-2.00%
			2480	1.798	38.384	1.833	39.162	-1.91%	-1.99%
			2500	1.813	38.377	1.855	39.136	-2.26%	-1.94%
			2510	1.820	38.372	1.866	39.123	-2.47%	-1.92%
			2535	1.839	38.342	1.893	39.092	-2.85%	-1.92%
			2550	1.851	38.321	1.909	39.073	-3.04%	-1.92%
			2560	1.859	38.311	1.920	39.060	-3.18%	-1.92%
			2600	1.891	38.276	1.964	39.009	-3.72%	-1.88%
			2650	1.931	38.209	2.018	38.945	-4.31%	-1.89%
			2680	1.956	38.163	2.051	38.907	-4.63%	-1.91%
2700	1.973	38.137	2.073	38.882	-4.82%	-1.92%			
07/02/2023	2450 Head	22.5	2400	1.813	37.371	1.756	39.289	3.25%	-4.88%
			2450	1.848	37.348	1.800	39.200	2.67%	-4.72%
			2480	1.865	37.293	1.833	39.162	1.75%	-4.77%
			2500	1.879	37.260	1.855	39.136	1.29%	-4.79%
			2510	1.887	37.248	1.866	39.123	1.13%	-4.79%
			2535	1.907	37.229	1.893	39.092	0.74%	-4.77%
			2550	1.919	37.218	1.909	39.073	0.52%	-4.75%
			2560	1.925	37.203	1.920	39.060	0.26%	-4.75%
			2600	1.949	37.135	1.964	39.009	-0.76%	-4.80%
			2650	1.988	37.062	2.018	38.945	-1.49%	-4.84%
07/12/2023	2450 Head	23.0	2300	1.737	38.859	1.670	39.500	4.01%	-1.62%
			2310	1.744	38.851	1.679	39.480	3.87%	-1.59%
			2320	1.751	38.843	1.687	39.460	3.79%	-1.56%
			2400	1.808	38.706	1.756	39.289	2.96%	-1.48%
			2450	1.847	38.645	1.800	39.200	2.61%	-1.42%
			2480	1.868	38.595	1.833	39.162	1.91%	-1.45%
			2500	1.883	38.558	1.855	39.136	1.51%	-1.48%
			2510	1.891	38.540	1.866	39.123	1.34%	-1.49%
			2535	1.912	38.501	1.893	39.092	1.00%	-1.51%
			2550	1.925	38.478	1.909	39.073	0.84%	-1.52%
			2560	1.933	38.463	1.920	39.060	0.68%	-1.53%
			2600	1.962	38.397	1.964	39.009	-0.10%	-1.57%
			2650	2.001	38.293	2.018	38.945	-0.84%	-1.67%
			2680	2.027	38.258	2.051	38.907	-1.17%	-1.67%
2700	2.040	38.241	2.073	38.882	-1.59%	-1.65%			
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**Table 10-5  
Measured Head Tissue Properties (Cont.)**

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, $\sigma$ (S/m)	Measured Dielectric Constant, $\epsilon$	TARGET Conductivity, $\sigma$ (S/m)	TARGET Dielectric Constant, $\epsilon$	% dev $\sigma$	% dev $\epsilon$
07/12/2023	2450 Head	19.5	2300	1.661	41.353	1.670	39.500	-0.54%	4.69%
			2310	1.667	41.339	1.679	39.480	-0.71%	4.71%
			2320	1.674	41.319	1.687	39.460	-0.77%	4.71%
			2400	1.743	41.212	1.756	39.289	-0.74%	4.89%
			2450	1.777	41.118	1.800	39.200	-1.28%	4.89%
			2480	1.805	41.065	1.833	39.162	-1.53%	4.86%
			2500	1.822	41.035	1.855	39.136	-1.78%	4.85%
			2510	1.829	41.014	1.866	39.123	-1.98%	4.83%
			2535	1.846	40.978	1.893	39.092	-2.48%	4.82%
			2550	1.858	40.942	1.909	39.073	-2.67%	4.78%
			2560	1.867	40.924	1.920	39.060	-2.76%	4.77%
			2600	1.905	40.848	1.964	39.009	-3.00%	4.71%
			2650	1.940	40.788	2.018	38.945	-3.87%	4.73%
2680	1.969	40.708	2.051	38.907	-4.00%	4.63%			
2700	1.988	40.666	2.073	38.882	-4.10%	4.59%			
07/24/2023	2450 Head	20.4	2300	1.674	38.744	1.670	39.500	0.24%	-1.91%
			2310	1.682	38.734	1.679	39.480	0.18%	-1.89%
			2320	1.689	38.723	1.687	39.460	0.12%	-1.87%
			2400	1.751	38.598	1.756	39.289	-0.28%	-1.76%
			2450	1.790	38.512	1.800	39.200	-0.56%	-1.76%
			2480	1.813	38.458	1.833	39.162	-1.09%	-1.80%
			2500	1.829	38.428	1.855	39.136	-1.40%	-1.81%
			2510	1.836	38.412	1.866	39.123	-1.61%	-1.82%
			2535	1.857	38.363	1.893	39.092	-1.90%	-1.86%
			2550	1.870	38.333	1.909	39.073	-2.04%	-1.89%
			2560	1.878	38.312	1.920	39.060	-2.19%	-1.92%
			2600	1.909	38.247	1.964	39.009	-2.80%	-1.95%
			2650	1.948	38.143	2.018	38.945	-3.47%	-2.06%
2680	1.973	38.093	2.051	38.907	-3.80%	-2.09%			
2700	1.988	38.072	2.073	38.882	-4.10%	-2.08%			
07/20/2023	3600 Head	19.4	3300	2.605	38.018	2.708	38.157	-3.80%	-0.36%
			3350	2.655	37.971	2.759	38.100	-3.77%	-0.34%
			3450	2.745	37.825	2.861	37.986	-4.05%	-0.42%
			3500	2.784	37.695	2.913	37.929	-4.43%	-0.62%
			3550	2.832	37.652	2.964	37.871	-4.45%	-0.58%
			3560	2.837	37.621	2.974	37.860	-4.61%	-0.63%
			3600	2.877	37.506	3.015	37.814	-4.58%	-0.81%
			3650	2.921	37.452	3.066	37.757	-4.73%	-0.81%
			3690	2.958	37.336	3.107	37.711	-4.80%	-0.99%
			3700	2.969	37.323	3.117	37.700	-4.75%	-1.00%
			3750	3.021	37.282	3.169	37.643	-4.67%	-0.96%
			3900	3.173	37.039	3.323	37.471	-4.51%	-1.15%
			3930	3.204	37.004	3.353	37.437	-4.44%	-1.16%
4100	3.379	36.718	3.528	37.243	-4.22%	-1.41%			
4150	3.426	36.653	3.579	37.186	-4.27%	-1.43%			
07/27/2023	3600 Head	19.2	3300	2.598	38.605	2.708	38.157	-4.06%	1.17%
			3350	2.644	38.519	2.759	38.100	-4.17%	1.10%
			3450	2.731	38.325	2.861	37.986	-4.54%	0.89%
			3500	2.777	38.259	2.913	37.929	-4.67%	0.87%
			3550	2.828	38.154	2.964	37.871	-4.59%	0.75%
			3560	2.839	38.139	2.974	37.860	-4.54%	0.74%
			3600	2.876	38.068	3.015	37.814	-4.61%	0.67%
			3650	2.922	37.986	3.066	37.757	-4.70%	0.61%
			3690	2.962	37.910	3.107	37.711	-4.67%	0.53%
			3700	2.973	37.903	3.117	37.700	-4.62%	0.54%
			3750	3.017	37.821	3.169	37.643	-4.80%	0.47%
			3900	3.167	37.571	3.323	37.471	-4.69%	0.27%
			3930	3.200	37.520	3.353	37.437	-4.56%	0.22%
4100	3.375	37.250	3.528	37.243	-4.34%	0.02%			
4150	3.431	37.165	3.579	37.186	-4.14%	-0.06%			

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**Table 10-6  
Measured Head Tissue Properties (Cont.)**

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, $\sigma$ (S/m)	Measured Dielectric Constant, $\epsilon$	TARGET Conductivity, $\sigma$ (S/m)	TARGET Dielectric Constant, $\epsilon$	% dev $\sigma$	% dev $\epsilon$
06/27/2023	5200-5800 Head	22.5	5180	4.425	35.181	4.635	36.009	-4.53%	-2.30%
			5190	4.434	35.165	4.645	35.998	-4.54%	-2.31%
			5200	4.443	35.154	4.655	35.986	-4.55%	-2.31%
			5210	4.452	35.130	4.666	35.975	-4.59%	-2.35%
			5220	4.461	35.094	4.676	35.963	-4.60%	-2.42%
			5240	4.488	35.044	4.696	35.940	-4.43%	-2.49%
			5250	4.502	35.036	4.706	35.929	-4.33%	-2.49%
			5260	4.516	35.020	4.717	35.917	-4.26%	-2.50%
			5270	4.528	35.007	4.727	35.906	-4.21%	-2.50%
			5280	4.539	34.999	4.737	35.894	-4.18%	-2.49%
			5290	4.550	34.988	4.748	35.883	-4.17%	-2.49%
			5300	4.559	34.968	4.758	35.871	-4.18%	-2.52%
			5310	4.567	34.948	4.768	35.860	-4.22%	-2.54%
			5320	4.573	34.920	4.778	35.849	-4.29%	-2.59%
			5500	4.771	34.641	4.963	35.643	-3.87%	-2.81%
			5510	4.784	34.627	4.973	35.632	-3.80%	-2.82%
			5520	4.796	34.608	4.983	35.620	-3.75%	-2.84%
			5530	4.805	34.585	4.994	35.609	-3.78%	-2.88%
			5540	4.811	34.559	5.004	35.597	-3.86%	-2.92%
			5550	4.822	34.528	5.014	35.586	-3.83%	-2.97%
			5560	4.834	34.504	5.024	35.574	-3.78%	-3.01%
			5580	4.865	34.479	5.045	35.551	-3.57%	-3.02%
			5600	4.894	34.459	5.065	35.529	-3.38%	-3.01%
			5610	4.903	34.450	5.076	35.518	-3.41%	-3.01%
			5620	4.912	34.433	5.086	35.506	-3.42%	-3.02%
			5640	4.928	34.395	5.106	35.483	-3.49%	-3.07%
			5660	4.951	34.356	5.127	35.460	-3.43%	-3.11%
			5670	4.965	34.324	5.137	35.449	-3.35%	-3.17%
			5680	4.979	34.287	5.147	35.437	-3.26%	-3.25%
			5690	4.993	34.273	5.158	35.426	-3.20%	-3.25%
			5700	5.005	34.261	5.168	35.414	-3.15%	-3.26%
			5710	5.017	34.258	5.178	35.403	-3.11%	-3.23%
			5720	5.027	34.249	5.188	35.391	-3.10%	-3.23%
			5745	5.047	34.206	5.214	35.363	-3.20%	-3.27%
			5750	5.052	34.193	5.219	35.357	-3.20%	-3.29%
			5755	5.058	34.178	5.224	35.351	-3.18%	-3.32%
			5765	5.071	34.155	5.234	35.340	-3.11%	-3.35%
			5775	5.081	34.132	5.245	35.329	-3.13%	-3.39%
			5785	5.093	34.111	5.255	35.317	-3.08%	-3.41%
			5795	5.108	34.096	5.265	35.305	-2.98%	-3.42%
5800	5.115	34.087	5.270	35.300	-2.94%	-3.44%			
5800	5.115	34.087	5.270	35.300	-2.94%	-3.44%			
5805	5.123	34.084	5.275	35.294	-2.88%	-3.43%			
5825	5.148	34.079	5.296	35.271	-2.79%	-3.38%			
5835	5.158	34.071	5.305	35.230	-2.77%	-3.29%			
5845	5.164	34.057	5.315	35.210	-2.84%	-3.27%			
5855	5.170	34.048	5.325	35.197	-2.91%	-3.26%			
5865	5.179	34.029	5.336	35.190	-2.94%	-3.30%			
5865	5.179	34.029	5.336	35.190	-2.94%	-3.30%			
5865	5.179	34.029	5.336	35.190	-2.94%	-3.30%			
5875	5.188	34.002	5.347	35.183	-2.97%	-3.36%			
5885	5.202	33.971	5.357	35.177	-2.89%	-3.43%			
5905	5.234	33.920	5.379	35.163	-2.70%	-3.53%			

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**Table 10-7  
Measured Head Tissue Properties (Cont.)**

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, $\sigma$ (S/m)	Measured Dielectric Constant, $\epsilon$	TARGET Conductivity, $\sigma$ (S/m)	TARGET Dielectric Constant, $\epsilon$	% dev $\sigma$	% dev $\epsilon$
07/04/2023	5200-5800 Head	21.5	5180	4.545	37.258	4.635	36.009	-1.94%	3.47%
			5190	4.558	37.251	4.645	35.998	-1.87%	3.48%
			5200	4.569	37.239	4.655	35.986	-1.85%	3.48%
			5210	4.577	37.217	4.666	35.975	-1.91%	3.45%
			5220	4.584	37.192	4.676	35.963	-1.97%	3.42%
			5240	4.600	37.124	4.696	35.940	-2.04%	3.29%
			5250	4.610	37.094	4.706	35.929	-2.04%	3.24%
			5260	4.621	37.078	4.717	35.917	-2.04%	3.23%
			5270	4.633	37.071	4.727	35.906	-1.99%	3.24%
			5280	4.645	37.059	4.737	35.894	-1.94%	3.25%
			5290	4.658	37.041	4.748	35.883	-1.90%	3.23%
			5300	4.671	37.031	4.758	35.871	-1.83%	3.23%
			5310	4.682	37.024	4.768	35.860	-1.80%	3.25%
			5320	4.693	37.011	4.778	35.849	-1.78%	3.24%
			5500	4.869	36.681	4.963	35.643	-1.89%	2.91%
			5510	4.878	36.673	4.973	35.632	-1.91%	2.92%
			5520	4.890	36.662	4.983	35.620	-1.87%	2.93%
			5530	4.904	36.641	4.994	35.609	-1.80%	2.90%
			5540	4.919	36.607	5.004	35.597	-1.70%	2.84%
			5550	4.930	36.579	5.014	35.586	-1.68%	2.79%
			5560	4.946	36.564	5.024	35.574	-1.55%	2.78%
			5580	4.974	36.528	5.045	35.551	-1.41%	2.75%
			5600	4.991	36.496	5.065	35.529	-1.46%	2.72%
			5610	4.998	36.493	5.076	35.518	-1.54%	2.75%
			5620	5.005	36.490	5.086	35.506	-1.59%	2.77%
			5640	5.022	36.447	5.106	35.483	-1.65%	2.72%
			5660	5.049	36.395	5.127	35.460	-1.52%	2.64%
			5670	5.067	36.368	5.137	35.449	-1.36%	2.59%
			5680	5.084	36.344	5.147	35.437	-1.22%	2.56%
			5690	5.100	36.324	5.158	35.426	-1.12%	2.53%
			5700	5.111	36.314	5.168	35.414	-1.10%	2.54%
			5710	5.121	36.305	5.178	35.403	-1.10%	2.55%
			5720	5.127	36.298	5.188	35.391	-1.18%	2.56%
			5745	5.139	36.277	5.214	35.363	-1.44%	2.58%
			5750	5.143	36.266	5.219	35.357	-1.46%	2.57%
			5755	5.148	36.250	5.224	35.351	-1.45%	2.54%
			5765	5.163	36.214	5.234	35.340	-1.36%	2.47%
			5775	5.178	36.184	5.245	35.329	-1.28%	2.42%
			5785	5.194	36.150	5.255	35.317	-1.16%	2.36%
			5795	5.211	36.128	5.265	35.305	-1.03%	2.33%
5800	5.219	36.120	5.270	35.300	-0.97%	2.32%			
5800	5.219	36.120	5.270	35.300	-0.97%	2.32%			
5805	5.227	36.113	5.275	35.294	-0.91%	2.32%			
5825	5.248	36.114	5.296	35.271	-0.91%	2.39%			
5835	5.253	36.115	5.305	35.230	-0.98%	2.51%			
5845	5.256	36.109	5.315	35.210	-1.11%	2.55%			
5855	5.261	36.097	5.325	35.197	-1.20%	2.56%			
5865	5.269	36.073	5.336	35.190	-1.26%	2.51%			
5865	5.269	36.073	5.336	35.190	-1.26%	2.51%			
5865	5.269	36.073	5.336	35.190	-1.26%	2.51%			
5875	5.278	36.046	5.347	35.183	-1.29%	2.45%			
5885	5.291	36.008	5.357	35.177	-1.23%	2.36%			
5905	5.324	35.944	5.379	35.163	-1.02%	2.22%			

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

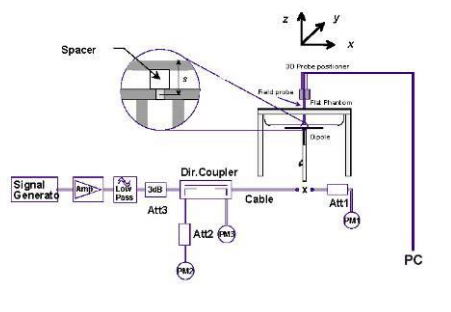
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## 10.2 Test System Verification

Prior to SAR assessment, the system is verified to  $\pm 10\%$  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 SAR System Validation Appendix.

**Table 10-8  
System Verification Results**

SAR System	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp. (C)	Liquid Temp. (C)	Input Power (W)	Source SN	Probe SN	DAE	Measured SAR 1g (W/kg)	1W Target SAR 1g (W/kg)	1W Normalized SAR 1g (W/kg)	Deviation 1g (%)	Measured SAR 10g (W/kg)	1W Target SAR 10g (W/kg)	1W Normalized SAR 10g (W/kg)	Deviation 10g (%)
G	13	HEAD	07/06/2023	21.6	21.6	1.00	1002	7417	665	0.508	0.557	0.508	-8.80%	0.314	0.346	0.314	-9.25%
K4	750	HEAD	06/26/2023	22.2	22.2	0.20	1046	7640	1645	1.660	8.690	8.300	-4.49%	1.090	5.700	5.450	-4.39%
K5	750	HEAD	06/26/2023	22.7	22.9	0.20	1046	7637	1652	1.680	8.690	8.400	-3.34%	1.130	5.700	5.650	-0.88%
K5	750	HEAD	07/10/2023	22.5	21.5	0.20	1003	7637	1652	1.630	8.480	8.150	-3.89%	1.090	5.560	5.450	-1.98%
K5	750	HEAD	07/12/2023	22.4	22.0	0.20	1046	7637	1652	1.710	8.690	8.550	-1.61%	1.140	5.700	5.700	0.00%
O	750	HEAD	07/30/2023	20.5	20.6	0.20	1054	7570	1558	1.730	8.520	8.650	1.53%	1.140	5.600	5.700	1.79%
K5	835	HEAD	06/27/2023	22.6	23.0	0.20	4d119	7637	1652	1.970	9.720	9.850	1.34%	1.320	6.380	6.600	3.45%
K4	835	HEAD	06/28/2023	22.5	22.2	0.20	4d119	7640	1645	2.060	9.720	10.300	5.97%	1.340	6.380	6.700	5.02%
K5	835	HEAD	06/29/2023	22.2	21.5	0.20	4d119	7637	1652	1.890	9.720	9.450	-2.78%	1.250	6.380	6.250	-2.04%
K5	835	HEAD	07/05/2023	22.3	21.5	0.20	4d119	7637	1652	1.900	9.720	9.500	-2.26%	1.260	6.380	6.300	-1.25%
K1	835	HEAD	07/10/2023	20.9	23.5	0.20	4d180	7402	1502	1.960	9.630	9.800	1.77%	1.310	6.270	6.550	4.47%
K1	835	HEAD	07/12/2023	20.4	22.5	0.20	4d180	7402	1502	1.950	9.630	9.750	1.25%	1.320	6.270	6.600	5.26%
G	1750	HEAD	06/21/2023	22.8	20.9	0.10	1148	7417	665	3.720	37.200	37.200	0.00%	1.940	19.400	19.400	0.00%
S	1750	HEAD	06/23/2023	24.0	20.3	0.10	1150	7713	1530	3.530	36.900	35.300	-4.34%	1.900	19.400	19.000	-2.06%
S	1750	HEAD	06/28/2023	23.8	20.4	0.10	1150	7713	1530	3.490	36.900	34.900	-5.42%	1.870	19.400	18.700	-3.61%
C	1750	HEAD	07/03/2023	22.0	22.5	0.10	1148	7661	728	3.670	37.200	36.700	-1.34%	1.930	19.400	19.300	-0.52%
L	1750	HEAD	07/06/2023	20.9	20.6	0.10	1150	7409	1334	3.580	36.900	35.800	-2.98%	1.920	19.400	19.200	-1.03%
L	1750	HEAD	07/17/2023	21.8	21.5	0.10	1150	7409	1334	3.780	36.900	37.800	2.44%	2.010	19.400	20.100	3.61%
L	1750	HEAD	07/27/2023	21.0	20.8	0.10	1150	7409	1334	3.650	36.900	36.500	-1.08%	1.950	19.400	19.500	0.52%
L	1750	HEAD	07/31/2023	21.3	21.4	0.10	1150	7409	1334	3.760	36.900	37.600	1.90%	2.010	19.400	20.100	3.61%
O	1750	HEAD	08/06/2023	20.6	20.3	0.10	1150	7570	1558	3.680	36.900	36.800	-0.27%	1.960	19.400	19.600	1.03%
L	1900	HEAD	06/21/2023	22.9	21.2	0.10	5d149	7410	1583	4.220	40.500	42.200	4.20%	2.200	21.200	22.000	3.77%
L	1900	HEAD	06/23/2023	23.0	21.0	0.10	5d149	7410	1583	4.210	40.500	42.100	3.95%	2.200	21.200	22.000	3.77%
L	1900	HEAD	06/25/2023	21.3	21.3	0.10	5d149	7410	1583	4.350	40.500	43.500	7.41%	2.280	21.200	22.800	7.55%
L	1900	HEAD	07/31/2023	21.3	21.4	0.10	5d149	7409	1334	4.010	40.500	40.100	-0.99%	2.070	21.200	20.700	-2.36%
O	2450	HEAD	06/22/2023	23.9	22.3	0.10	981	7570	1558	5.170	53.900	51.700	-4.08%	2.420	25.400	24.200	-4.72%
O	2450	HEAD	07/02/2023	23.5	22.5	0.10	981	7570	1558	5.110	53.900	51.100	-5.19%	2.380	25.400	23.800	-6.30%
O	2450	HEAD	07/12/2023	24.6	23.0	0.10	981	7570	1558	4.920	53.900	49.200	-8.72%	2.290	25.400	22.900	-9.84%
O	2450	HEAD	07/24/2023	21.1	20.4	0.10	981	7570	1558	5.110	53.900	51.100	-5.19%	2.400	25.400	24.000	-5.51%
AM3	2600	HEAD	06/28/2023	23.2	21.3	0.10	1069	3837	793	5.380	55.600	53.800	-3.24%	2.410	24.900	24.100	-3.21%
O	2600	HEAD	07/12/2023	24.6	23.0	0.10	1071	7570	1558	5.790	56.500	57.900	2.48%	2.610	25.400	26.100	2.76%
AM2	2600	HEAD	07/12/2023	22.7	20.9	0.10	1069	7308	467	5.430	55.600	54.300	-2.34%	2.480	24.900	24.800	-0.40%
AM6	3500	HEAD	07/20/2023	20.3	20.0	0.10	1055	7638	1408	7.010	66.000	70.100	6.21%	2.650	24.900	26.500	6.43%
AM3	3500	HEAD	07/27/2023	22.5	20.8	0.10	1055	3837	793	6.740	66.000	67.400	2.12%	2.580	24.900	25.800	3.61%
AM6	3700	HEAD	07/20/2023	20.3	20.0	0.10	1002	7638	1408	6.890	67.900	68.900	1.47%	2.520	24.700	25.200	2.02%
AM3	3700	HEAD	07/27/2023	22.5	20.8	0.10	1002	3837	793	6.950	67.900	69.500	2.36%	2.570	24.700	25.700	4.05%
AM6	3900	HEAD	07/20/2023	20.3	20.0	0.10	1062	7638	1408	7.300	68.600	73.000	6.41%	2.550	23.800	25.500	7.14%
AM3	3900	HEAD	07/27/2023	22.5	20.8	0.10	1062	3837	793	6.410	68.600	64.100	-6.56%	2.260	23.800	22.600	-5.04%
O	5250	HEAD	06/27/2023	23.9	22.5	0.05	1191	7570	1558	3.830	80.400	76.600	-4.73%	1.120	23.100	22.400	-3.03%
O	5250	HEAD	07/04/2023	22.9	21.6	0.05	1191	7570	1558	4.070	80.400	81.400	1.24%	1.180	23.100	23.600	2.16%
O	5600	HEAD	06/27/2023	23.9	22.5	0.05	1191	7570	1558	4.240	81.900	84.800	3.54%	1.240	23.300	24.800	6.44%
O	5600	HEAD	07/04/2023	22.9	21.6	0.05	1191	7570	1558	4.270	81.900	85.400	4.27%	1.250	23.300	25.000	7.30%
O	5750	HEAD	06/27/2023	23.9	22.5	0.05	1191	7570	1558	4.050	78.400	81.000	3.32%	1.170	22.300	23.400	4.93%
O	5750	HEAD	07/04/2023	22.9	21.6	0.05	1191	7570	1558	4.200	78.400	84.000	7.14%	1.210	22.300	24.200	8.52%
O	5800	HEAD	06/27/2023	23.9	22.5	0.05	1191	7570	1558	4.000	79.000	80.000	1.27%	1.160	22.300	23.200	4.04%
O	5800	HEAD	07/04/2023	22.9	21.6	0.05	1191	7570	1558	4.040	79.000	80.800	2.28%	1.190	22.300	23.800	6.73%



**Figure 10-1  
System Verification Setup Diagram**



**Figure 10-2  
System Verification Setup Photo**

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# 11 SAR DATA SUMMARY

## 11.1 Standalone Head SAR Data

**Table 11-1  
GSM 850 Head SAR**

MEASUREMENT RESULTS															
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	Right	Cheek	GSM 850	GSM	A	26639	33.5	33.25	0.09	1:8.3	0.190	1.059	0.201	A1
836.60	190	Right	Tilt	GSM 850	GSM	A	26639	33.5	33.25	-0.02	1:8.3	0.096	1.059	0.102	
836.60	190	Left	Cheek	GSM 850	GSM	A	26639	33.5	33.25	0.00	1:8.3	0.111	1.059	0.118	
836.60	190	Left	Tilt	GSM 850	GSM	A	26639	33.5	33.25	-0.03	1:8.3	0.079	1.059	0.084	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

**Table 11-2  
GSM 1900 Head SAR**

MEASUREMENT RESULTS															
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	661	Right	Cheek	GSM 1900	GSM	A	30920	27.0	26.02	-0.20	1:8.3	0.051	1.253	0.064	
1880.00	661	Right	Tilt	GSM 1900	GSM	A	30920	27.0	26.02	-0.07	1:8.3	0.038	1.253	0.048	
1880.00	661	Left	Cheek	GSM 1900	GSM	A	30920	27.0	26.02	-0.06	1:8.3	0.082	1.253	0.103	A2
1880.00	661	Left	Tilt	GSM 1900	GSM	A	30920	27.0	26.02	0.05	1:8.3	0.024	1.253	0.030	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

**Table 11-3  
UMTS 850 Head SAR**

MEASUREMENT RESULTS															
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	4183	Right	Cheek	UMTS 850	RMC	A	26977	25.5	24.40	0.00	1:1	0.190	1.288	0.245	A3
836.60	4183	Right	Tilt	UMTS 850	RMC	A	26977	25.5	24.40	0.12	1:1	0.094	1.288	0.121	
836.60	4183	Left	Cheek	UMTS 850	RMC	A	26977	25.5	24.40	-0.03	1:1	0.144	1.288	0.185	
836.60	4183	Left	Tilt	UMTS 850	RMC	A	26977	25.5	24.40	-0.04	1:1	0.119	1.288	0.153	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

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**Table 11-4  
UMTS 1750 Head SAR**

MEASUREMENT RESULTS															
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1732.40	1412	Right	Cheek	UMTS 1750	RMC	A	30920	18.5	17.27	0.01	1:1	0.066	1.327	0.088	
1732.40	1412	Right	Tilt	UMTS 1750	RMC	A	30920	18.5	17.27	-0.03	1:1	0.058	1.327	0.077	
1732.40	1412	Left	Cheek	UMTS 1750	RMC	A	30920	18.5	17.27	0.01	1:1	0.134	1.327	0.178	A4
1732.40	1412	Left	Tilt	UMTS 1750	RMC	A	30920	18.5	17.27	-0.02	1:1	0.040	1.327	0.053	
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		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	9400	Right	Cheek	UMTS 1900	RMC	A	30920	19.0	17.47	-0.20	1:1	0.093	1.422	0.132	
1880.00	9400	Right	Tilt	UMTS 1900	RMC	A	30920	19.0	17.47	-0.06	1:1	0.068	1.422	0.097	
1880.00	9400	Left	Cheek	UMTS 1900	RMC	A	30920	19.0	17.47	-0.01	1:1	0.126	1.422	0.179	A5
1880.00	9400	Left	Tilt	UMTS 1900	RMC	A	30920	19.0	17.47	-0.01	1:1	0.045	1.422	0.064	
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		Side	Test Position	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	Right	Cheek	A	26639	10	QPSK	1	0	25.0	23.71	0	0.04	1:1	0.132	1.346	0.178	A6
707.50	23095	Mid	Right	Cheek	A	26639	10	QPSK	25	0	23.0	21.71	2	0.09	1:1	0.077	1.346	0.104	
707.50	23095	Mid	Right	Tilt	A	26639	10	QPSK	1	0	25.0	23.71	0	0.15	1:1	0.068	1.346	0.092	
707.50	23095	Mid	Right	Tilt	A	26639	10	QPSK	25	0	23.0	21.71	2	-0.11	1:1	0.038	1.346	0.051	
707.50	23095	Mid	Left	Cheek	A	26639	10	QPSK	1	0	25.0	23.71	0	0.06	1:1	0.096	1.346	0.129	
707.50	23095	Mid	Left	Cheek	A	26639	10	QPSK	25	0	23.0	21.71	2	0.04	1:1	0.055	1.346	0.074	
707.50	23095	Mid	Left	Tilt	A	26639	10	QPSK	1	0	25.0	23.71	0	0.14	1:1	0.065	1.346	0.087	
707.50	23095	Mid	Left	Tilt	A	26639	10	QPSK	25	0	23.0	21.71	2	0.01	1:1	0.036	1.346	0.048	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram								

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**Table 11-7  
LTE Band 13 Head SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Test Position	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
782.00	23230	Mid	Right	Cheek	LTE Band 13	A	26639	10	QPSK	1	25	25.0	23.98	0	0.08	1:1	0.199	1.265	0.252	A7
782.00	23230	Mid	Right	Cheek	LTE Band 13	A	26639	10	QPSK	25	12	23.0	22.13	2	0.05	1:1	0.158	1.222	0.193	
782.00	23230	Mid	Right	Tilt	LTE Band 13	A	26639	10	QPSK	1	25	25.0	23.98	0	0.08	1:1	0.093	1.265	0.118	
782.00	23230	Mid	Right	Tilt	LTE Band 13	A	26639	10	QPSK	25	12	23.0	22.13	2	0.12	1:1	0.073	1.222	0.089	
782.00	23230	Mid	Left	Cheek	LTE Band 13	A	26639	10	QPSK	1	25	25.0	23.98	0	0.06	1:1	0.110	1.265	0.139	
782.00	23230	Mid	Left	Cheek	LTE Band 13	A	26639	10	QPSK	25	12	23.0	22.13	2	0.12	1:1	0.085	1.222	0.104	
782.00	23230	Mid	Left	Tilt	LTE Band 13	A	26639	10	QPSK	1	25	25.0	23.98	0	0.09	1:1	0.080	1.265	0.101	
782.00	23230	Mid	Left	Tilt	LTE Band 13	A	26639	10	QPSK	25	12	23.0	22.13	2	0.08	1:1	0.063	1.222	0.077	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram									

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

MEASUREMENT RESULTS																				
FREQUENCY		Side	Test Position	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
831.50	26865	Mid	Right	Cheek	LTE Band 26 (Cell)	A	26977	15	QPSK	1	0	25.0	24.14	0	0.05	1:1	0.177	1.219	0.216	A8
831.50	26865	Mid	Right	Cheek	LTE Band 26 (Cell)	A	26977	15	QPSK	36	0	23.0	22.26	2	-0.01	1:1	0.138	1.186	0.164	
831.50	26865	Mid	Right	Tilt	LTE Band 26 (Cell)	A	26977	15	QPSK	1	0	25.0	24.14	0	0.19	1:1	0.095	1.219	0.116	
831.50	26865	Mid	Right	Tilt	LTE Band 26 (Cell)	A	26977	15	QPSK	36	0	23.0	22.26	2	0.12	1:1	0.076	1.186	0.090	
831.50	26865	Mid	Left	Cheek	LTE Band 26 (Cell)	A	26977	15	QPSK	1	0	25.0	24.14	0	0.12	1:1	0.115	1.219	0.140	
831.50	26865	Mid	Left	Cheek	LTE Band 26 (Cell)	A	26977	15	QPSK	36	0	23.0	22.26	2	0.07	1:1	0.094	1.186	0.111	
831.50	26865	Mid	Left	Tilt	LTE Band 26 (Cell)	A	26977	15	QPSK	1	0	25.0	24.14	0	0.02	1:1	0.105	1.219	0.128	
831.50	26865	Mid	Left	Tilt	LTE Band 26 (Cell)	A	26977	15	QPSK	36	0	23.0	22.26	2	0.03	1:1	0.088	1.186	0.104	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram									

**Table 11-9  
LTE Band 5 (Cell) Head SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Test Position	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
836.50	20525	Mid	Right	Cheek	LTE Band 5 (Cell)	A	26639	10	QPSK	1	0	25.5	23.79	0	0.01	1:1	0.176	1.483	0.261	A9
836.50	20525	Mid	Right	Cheek	LTE Band 5 (Cell)	A	26639	10	QPSK	25	0	23.5	21.91	2	0.12	1:1	0.107	1.442	0.154	
836.50	20525	Mid	Right	Tilt	LTE Band 5 (Cell)	A	26639	10	QPSK	1	0	25.5	23.79	0	0.09	1:1	0.084	1.483	0.125	
836.50	20525	Mid	Right	Tilt	LTE Band 5 (Cell)	A	26639	10	QPSK	25	0	23.5	21.91	2	0.13	1:1	0.051	1.442	0.074	
836.50	20525	Mid	Left	Cheek	LTE Band 5 (Cell)	A	26639	10	QPSK	1	0	25.5	23.79	0	0.03	1:1	0.116	1.483	0.172	
836.50	20525	Mid	Left	Cheek	LTE Band 5 (Cell)	A	26639	10	QPSK	25	0	23.5	21.91	2	0.19	1:1	0.071	1.442	0.102	
836.50	20525	Mid	Left	Tilt	LTE Band 5 (Cell)	A	26639	10	QPSK	1	0	25.5	23.79	0	0.19	1:1	0.103	1.483	0.153	
836.50	20525	Mid	Left	Tilt	LTE Band 5 (Cell)	A	26639	10	QPSK	25	0	23.5	21.91	2	0.18	1:1	0.061	1.442	0.088	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram									

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**Table 11-10**  
**LTE Band 66 (AWS) Head SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Test Position	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #	
MHz	Ch.																			
1745.00	132322	Mid	Right	Cheek	LTE Band 66 (AWS)	A	30920	20	QPSK	1	50	24.5	23.77	0	0.11	1:1	0.075	1.183	0.089	
1745.00	132322	Mid	Right	Cheek	LTE Band 66 (AWS)	A	30920	20	QPSK	50	50	23.5	22.76	1	0.01	1:1	0.055	1.186	0.065	
1745.00	132322	Mid	Right	Tilt	LTE Band 66 (AWS)	A	30920	20	QPSK	1	50	24.5	23.77	0	-0.01	1:1	0.071	1.183	0.084	
1745.00	132322	Mid	Right	Tilt	LTE Band 66 (AWS)	A	30920	20	QPSK	50	50	23.5	22.76	1	0.15	1:1	0.053	1.186	0.063	
1745.00	132322	Mid	Left	Cheek	LTE Band 66 (AWS)	A	30920	20	QPSK	1	50	24.5	23.77	0	-0.02	1:1	0.125	1.183	0.148	
1745.00	132322	Mid	Left	Cheek	LTE Band 66 (AWS)	A	30920	20	QPSK	50	50	23.5	22.76	1	-0.10	1:1	0.103	1.186	0.122	
1745.00	132322	Mid	Left	Tilt	LTE Band 66 (AWS)	A	30920	20	QPSK	1	50	24.5	23.77	0	-0.12	1:1	0.058	1.183	0.069	
1745.00	132322	Mid	Left	Tilt	LTE Band 66 (AWS)	A	30920	20	QPSK	50	50	23.5	22.76	1	-0.06	1:1	0.052	1.186	0.062	
1770.00	132572	High	Right	Cheek	LTE Band 66 (AWS)	F	31449	20	QPSK	1	50	17.0	15.88	0	-0.04	1:1	0.538	1.294	0.696	
1770.00	132572	High	Right	Cheek	LTE Band 66 (AWS)	F	31449	20	QPSK	50	50	17.0	15.90	0	-0.03	1:1	0.540	1.288	0.696	
1720.00	132072	Low	Right	Tilt	LTE Band 66 (AWS)	F	31449	20	QPSK	1	0	17.0	15.70	0	0.00	1:1	0.746	1.349	1.006	
1745.00	132322	Mid	Right	Tilt	LTE Band 66 (AWS)	F	31449	20	QPSK	1	99	17.0	15.64	0	0.03	1:1	0.719	1.368	0.984	
1770.00	132572	High	Right	Tilt	LTE Band 66 (AWS)	F	31449	20	QPSK	1	50	17.0	15.88	0	0.01	1:1	0.627	1.294	0.811	
1720.00	132072	Low	Right	Tilt	LTE Band 66 (AWS)	F	31449	20	QPSK	50	0	17.0	15.76	0	0.02	1:1	0.757	1.330	1.007	
1745.00	132322	Mid	Right	Tilt	LTE Band 66 (AWS)	F	31449	20	QPSK	50	25	17.0	15.80	0	0.03	1:1	0.763	1.318	1.006	
1770.00	132572	High	Right	Tilt	LTE Band 66 (AWS)	F	31449	20	QPSK	50	50	17.0	15.90	0	0.00	1:1	0.614	1.288	0.791	
1770.00	132572	High	Right	Tilt	LTE Band 66 (AWS)	F	31449	20	QPSK	100	0	17.0	15.87	0	0.01	1:1	0.776	1.297	1.006	A10
1770.00	132572	High	Left	Cheek	LTE Band 66 (AWS)	F	31449	20	QPSK	1	50	17.0	15.88	0	-0.01	1:1	0.379	1.294	0.490	
1770.00	132572	High	Left	Cheek	LTE Band 66 (AWS)	F	31449	20	QPSK	50	50	17.0	15.90	0	0.02	1:1	0.399	1.288	0.514	
1770.00	132572	High	Left	Tilt	LTE Band 66 (AWS)	F	31449	20	QPSK	1	50	17.0	15.88	0	-0.06	1:1	0.523	1.294	0.677	
1770.00	132572	High	Left	Tilt	LTE Band 66 (AWS)	F	31449	20	QPSK	50	50	17.0	15.90	0	0.01	1:1	0.540	1.288	0.696	
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 4 (AWS) Head SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Test Position	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #	
MHz	Ch.																			
1732.50	20175	Mid	Right	Cheek	LTE Band 4 (AWS)	F	30995	20	QPSK	1	0	17.0	16.28	0	0.02	1:1	0.753	1.180	0.889	
1732.50	20175	Mid	Right	Cheek	LTE Band 4 (AWS)	F	30995	20	QPSK	50	0	17.0	16.32	0	0.07	1:1	0.740	1.169	0.865	
1732.50	20175	Mid	Right	Cheek	LTE Band 4 (AWS)	F	30995	20	QPSK	100	0	17.0	16.27	0	0.02	1:1	0.725	1.183	0.858	
1732.50	20175	Mid	Right	Tilt	LTE Band 4 (AWS)	F	30995	20	QPSK	1	0	17.0	16.28	0	0.20	1:1	0.792	1.180	0.935	A11
1732.50	20175	Mid	Right	Tilt	LTE Band 4 (AWS)	F	30995	20	QPSK	50	0	17.0	16.32	0	0.01	1:1	0.785	1.169	0.918	
1732.50	20175	Mid	Right	Tilt	LTE Band 4 (AWS)	F	30995	20	QPSK	100	0	17.0	16.27	0	0.02	1:1	0.768	1.183	0.909	
1732.50	20175	Mid	Left	Cheek	LTE Band 4 (AWS)	F	30995	20	QPSK	1	0	17.0	16.28	0	0.03	1:1	0.437	1.180	0.516	
1732.50	20175	Mid	Left	Cheek	LTE Band 4 (AWS)	F	30995	20	QPSK	50	0	17.0	16.32	0	-0.01	1:1	0.430	1.169	0.503	
1732.50	20175	Mid	Left	Tilt	LTE Band 4 (AWS)	F	30995	20	QPSK	1	0	17.0	16.28	0	0.01	1:1	0.608	1.180	0.717	
1732.50	20175	Mid	Left	Tilt	LTE Band 4 (AWS)	F	30995	20	QPSK	50	0	17.0	16.32	0	0.01	1:1	0.590	1.169	0.690	
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**Table 11-12  
LTE Band 2 (PCS) Head SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Test Position	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
1900.00	19100	High	Right	Cheek	LTE Band 2 (PCS)	A	30920	20	QPSK	1	0	24.5	23.67	0	-0.01	1:1	0.079	1.211	0.096	
1900.00	19100	High	Right	Cheek	LTE Band 2 (PCS)	A	30920	20	QPSK	50	0	23.5	22.87	1	-0.01	1:1	0.070	1.156	0.081	
1900.00	19100	High	Right	Tilt	LTE Band 2 (PCS)	A	30920	20	QPSK	1	0	24.5	23.67	0	-0.02	1:1	0.069	1.211	0.084	
1900.00	19100	High	Right	Tilt	LTE Band 2 (PCS)	A	30920	20	QPSK	50	0	23.5	22.87	1	0.09	1:1	0.058	1.156	0.067	
1900.00	19100	High	Left	Cheek	LTE Band 2 (PCS)	A	30920	20	QPSK	1	0	24.5	23.67	0	-0.04	1:1	0.157	1.211	0.190	
1900.00	19100	High	Left	Cheek	LTE Band 2 (PCS)	A	30920	20	QPSK	50	0	23.5	22.87	1	-0.02	1:1	0.123	1.156	0.142	
1900.00	19100	High	Left	Tilt	LTE Band 2 (PCS)	A	30920	20	QPSK	1	0	24.5	23.67	0	-0.01	1:1	0.053	1.211	0.064	
1900.00	19100	High	Left	Tilt	LTE Band 2 (PCS)	A	30920	20	QPSK	50	0	23.5	22.87	1	0.16	1:1	0.038	1.156	0.044	
1860.00	18700	Low	Right	Cheek	LTE Band 2 (PCS)	F	30995	20	QPSK	1	50	18.5	17.34	0	-0.03	1:1	0.631	1.306	0.824	
1880.00	18900	Mid	Right	Cheek	LTE Band 2 (PCS)	F	30995	20	QPSK	1	0	18.5	17.43	0	-0.05	1:1	0.677	1.279	0.866	
1900.00	19100	High	Right	Cheek	LTE Band 2 (PCS)	F	30995	20	QPSK	1	99	18.5	17.45	0	0.02	1:1	0.653	1.274	0.832	
1860.00	18700	Low	Right	Cheek	LTE Band 2 (PCS)	F	30995	20	QPSK	50	25	18.5	17.38	0	-0.01	1:1	0.661	1.294	0.855	
1880.00	18900	Mid	Right	Cheek	LTE Band 2 (PCS)	F	30995	20	QPSK	50	0	18.5	17.38	0	-0.01	1:1	0.668	1.294	0.864	
1900.00	19100	High	Right	Cheek	LTE Band 2 (PCS)	F	30995	20	QPSK	50	0	18.5	17.70	0	0.01	1:1	0.677	1.202	0.814	
1900.00	19100	High	Right	Cheek	LTE Band 2 (PCS)	F	30995	20	QPSK	100	0	18.5	17.40	0	-0.03	1:1	0.654	1.288	0.842	
1860.00	18700	Low	Right	Tilt	LTE Band 2 (PCS)	F	30995	20	QPSK	1	50	18.5	17.34	0	-0.02	1:1	0.611	1.306	0.798	
1880.00	18900	Mid	Right	Tilt	LTE Band 2 (PCS)	F	30995	20	QPSK	1	0	18.5	17.43	0	-0.02	1:1	0.593	1.279	0.758	
1900.00	19100	High	Right	Tilt	LTE Band 2 (PCS)	F	30995	20	QPSK	1	99	18.5	17.45	0	-0.07	1:1	0.695	1.274	0.885	
1860.00	18700	Low	Right	Tilt	LTE Band 2 (PCS)	F	30995	20	QPSK	50	25	18.5	17.38	0	-0.02	1:1	0.657	1.294	0.850	
1880.00	18900	Mid	Right	Tilt	LTE Band 2 (PCS)	F	30995	20	QPSK	50	0	18.5	17.38	0	0.02	1:1	0.641	1.294	0.829	
1900.00	19100	High	Right	Tilt	LTE Band 2 (PCS)	F	30995	20	QPSK	50	0	18.5	17.70	0	-0.07	1:1	0.720	1.202	0.865	A12
1900.00	19100	High	Right	Tilt	LTE Band 2 (PCS)	F	30995	20	QPSK	100	0	18.5	17.40	0	0.02	1:1	0.622	1.288	0.801	
1900.00	19100	High	Left	Cheek	LTE Band 2 (PCS)	F	30995	20	QPSK	1	99	18.5	17.45	0	0.01	1:1	0.410	1.274	0.522	
1900.00	19100	High	Left	Cheek	LTE Band 2 (PCS)	F	30995	20	QPSK	50	0	18.5	17.70	0	0.02	1:1	0.418	1.202	0.502	
1900.00	19100	High	Left	Tilt	LTE Band 2 (PCS)	F	30995	20	QPSK	1	99	18.5	17.45	0	-0.03	1:1	0.447	1.274	0.569	
1900.00	19100	High	Left	Tilt	LTE Band 2 (PCS)	F	30995	20	QPSK	50	0	18.5	17.70	0	0.02	1:1	0.472	1.202	0.567	
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**Table 11-13  
LTE Band 41 Head SAR**

MEASUREMENT RESULTS																					
# CC Uplink - Power Class	FREQUENCY		Side	Test Position	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
	MHz	Ch.															(W/kg)		(W/kg)		
1 CC Uplink - Power Class 3	2549.50	40185	Low-Md	Right	Cheek	LTE Band 41	B	30920	20	QPSK	1	0	25.0	24.71	0	0.06	1:1.58	0.035	1.069	0.037	
1 CC Uplink - Power Class 3	2549.50	40185	Low-Md	Right	Cheek	LTE Band 41	B	30920	20	QPSK	50	50	23.0	22.58	2	0.01	1:1.58	0.022	1.102	0.024	
1 CC Uplink - Power Class 3	2549.50	40185	Low-Md	Right	Tilt	LTE Band 41	B	30920	20	QPSK	1	0	25.0	24.71	0	-0.12	1:1.58	0.023	1.069	0.025	
1 CC Uplink - Power Class 3	2549.50	40185	Low-Md	Right	Tilt	LTE Band 41	B	30920	20	QPSK	50	50	23.0	22.58	2	0.05	1:1.58	0.013	1.102	0.014	
1 CC Uplink - Power Class 3	2549.50	40185	Low-Md	Left	Cheek	LTE Band 41	B	30920	20	QPSK	1	0	25.0	24.71	0	0.05	1:1.58	0.081	1.069	0.087	A13
1 CC Uplink - Power Class 3	2549.50	40185	Low-Md	Left	Cheek	LTE Band 41	B	30920	20	QPSK	50	50	23.0	22.58	2	-0.06	1:1.58	0.054	1.102	0.060	
1 CC Uplink - Power Class 2	2549.50	40185	Low-Md	Left	Cheek	LTE Band 41	B	30920	20	QPSK	1	0	26.0	25.50	0	0.15	1:2.31	0.061	1.122	0.068	
1 CC Uplink - Power Class 3	2549.50	40185	Low-Md	Left	Tilt	LTE Band 41	B	30920	20	QPSK	1	0	25.0	24.71	0	0.07	1:1.58	0.032	1.069	0.034	
1 CC Uplink - Power Class 3	2549.50	40185	Low-Md	Left	Tilt	LTE Band 41	B	30920	20	QPSK	50	50	23.0	22.58	2	0.02	1:1.58	0.021	1.102	0.023	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Head 1.6 W/kg (mW/g) averaged over 1 gram									

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**Table 11-14  
NR Band n5 Head SAR**

MEASUREMENT RESULTS																					
FREQUENCY			Side	Test Position	Mode	Antenna Config	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
Mhz	Ch.	Md																			
836.50	167300	Md	Right	Cheek	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	1	53	25.0	23.88	0	0.06	1:1	0.146	1.294	0.189	
836.50	167300	Md	Right	Cheek	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	50	28	25.0	23.87	0	-0.02	1:1	0.152	1.297	0.197	A14
836.50	167300	Md	Right	Cheek	NR Band n5	A	62162	20	CP-OFDM	QPSK	1	1	23.5	22.43	1.5	-0.09	1:1	0.096	1.279	0.123	
836.50	167300	Md	Right	Tilt	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	1	53	25.0	23.88	0	-0.08	1:1	0.088	1.294	0.114	
836.50	167300	Md	Right	Tilt	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	50	28	25.0	23.87	0	0.06	1:1	0.092	1.297	0.119	
836.50	167300	Md	Left	Cheek	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	1	53	25.0	23.88	0	-0.03	1:1	0.104	1.294	0.135	
836.50	167300	Md	Left	Cheek	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	50	28	25.0	23.87	0	0.01	1:1	0.106	1.297	0.137	
836.50	167300	Md	Left	Tilt	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	1	53	25.0	23.88	0	0.04	1:1	0.079	1.294	0.102	
836.50	167300	Md	Left	Tilt	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	50	28	25.0	23.87	0	0.01	1:1	0.080	1.297	0.104	
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			Side	Test Position	Mode	Antenna Config	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
Mhz	Ch.	Md																			
1745.00	349000	Md	Right	Cheek	NR Band n66	A	30904	40	DFT-S-OFDM	QPSK	1	108	24.5	23.32	0	0.05	1:1	0.088	1.312	0.115	
1745.00	349000	Md	Right	Cheek	NR Band n66	A	30904	40	DFT-S-OFDM	QPSK	108	54	24.5	23.21	0	0.00	1:1	0.083	1.346	0.112	
1745.00	349000	Md	Right	Tilt	NR Band n66	A	30904	40	DFT-S-OFDM	QPSK	1	108	24.5	23.32	0	-0.06	1:1	0.069	1.312	0.091	
1745.00	349000	Md	Right	Tilt	NR Band n66	A	30904	40	DFT-S-OFDM	QPSK	108	54	24.5	23.21	0	-0.02	1:1	0.064	1.346	0.086	
1745.00	349000	Md	Left	Cheek	NR Band n66	A	30904	40	DFT-S-OFDM	QPSK	1	108	24.5	23.32	0	-0.10	1:1	0.132	1.312	0.173	
1745.00	349000	Md	Left	Cheek	NR Band n66	A	30904	40	DFT-S-OFDM	QPSK	108	54	24.5	23.21	0	-0.02	1:1	0.135	1.346	0.182	
1745.00	349000	Md	Left	Cheek	NR Band n66	A	30904	40	CP-OFDM	QPSK	1	1	23.0	21.72	1.5	0.02	1:1	0.092	1.343	0.124	
1745.00	349000	Md	Left	Tilt	NR Band n66	A	30904	40	DFT-S-OFDM	QPSK	1	108	24.5	23.32	0	-0.11	1:1	0.068	1.312	0.089	
1745.00	349000	Md	Left	Tilt	NR Band n66	A	30904	40	DFT-S-OFDM	QPSK	108	54	24.5	23.21	0	-0.21	1:1	0.055	1.346	0.074	
1745.00	349000	Md	Right	Cheek	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	1	108	17.0	15.95	0	0.01	1:1	0.600	1.274	0.764	
1745.00	349000	Md	Right	Cheek	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	108	0	17.0	15.96	0	-0.03	1:1	0.629	1.271	0.799	
1745.00	349000	Md	Right	Tilt	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	1	108	17.0	15.95	0	0.02	1:1	0.687	1.274	0.875	
1745.00	349000	Md	Right	Tilt	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	108	0	17.0	15.96	0	0.01	1:1	0.691	1.271	0.878	
1745.00	349000	Md	Right	Tilt	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	216	0	17.0	15.89	0	0.01	1:1	0.662	1.291	0.855	
1745.00	349000	Md	Right	Tilt	NR Band n66	F	31498	40	CP-OFDM	QPSK	1	1	17.0	15.92	0	-0.01	1:1	0.724	1.282	0.928	A15
1745.00	349000	Md	Left	Cheek	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	1	108	17.0	15.95	0	0.02	1:1	0.377	1.274	0.480	
1745.00	349000	Md	Left	Cheek	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	108	0	17.0	15.96	0	0.20	1:1	0.391	1.271	0.497	
1745.00	349000	Md	Left	Tilt	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	1	108	17.0	15.95	0	-0.02	1:1	0.499	1.274	0.636	
1745.00	349000	Md	Left	Tilt	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	108	0	17.0	15.96	0	0.02	1:1	0.528	1.271	0.671	
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**Table 11-16  
NR Band n41 Head SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Test Position	Mode	Antenna Config	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #	
Mhz	Ch.																				
2592.99	518598	Md	Right	Cheek	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	1	271	18.0	16.92	0	0.11	1:1	0.005	1.282	0.006	
2592.99	518598	Md	Right	Cheek	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	135	0	18.0	16.65	0	0.01	1:1	0.005	1.365	0.007	
2592.99	518598	Md	Right	Tilt	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	1	271	18.0	16.92	0	0.08	1:1	0.000	1.282	0.000	
2592.99	518598	Md	Right	Tilt	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	135	0	18.0	16.65	0	0.09	1:1	0.000	1.365	0.000	
2592.99	518598	Md	Left	Cheek	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	1	271	18.0	16.92	0	0.20	1:1	0.005	1.282	0.006	
2592.99	518598	Md	Left	Cheek	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	135	0	18.0	16.65	0	0.09	1:1	0.011	1.365	0.015	
2592.99	518598	Md	Left	Cheek	NR Band n41	B	26910	100	CP-OFDM	QPSK	1	1	18.0	16.60	0	0.01	1:1	0.019	1.380	0.026	
2592.99	518598	Md	Left	Tilt	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	1	271	18.0	16.92	0	0.04	1:1	0.000	1.282	0.000	
2592.99	518598	Md	Left	Tilt	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	135	0	18.0	16.65	0	0.09	1:1	0.000	1.365	0.000	
2592.99	518598	Md	Right	Cheek	NR Band n41	F	26910	100	CW/SRS	N/A	N/A	N/A	17.5	17.07	N/A	0.02	1:1	0.775	1.104	0.856	A16
2592.99	518598	Md	Right	Tilt	NR Band n41	F	26910	100	CW/SRS	N/A	N/A	N/A	17.5	17.07	N/A	0.01	1:1	0.699	1.104	0.772	
2592.99	518598	Md	Left	Cheek	NR Band n41	F	26910	100	CW/SRS	N/A	N/A	N/A	17.5	17.07	N/A	-0.01	1:1	0.320	1.104	0.353	
2592.99	518598	Md	Left	Tilt	NR Band n41	F	26910	100	CW/SRS	N/A	N/A	N/A	17.5	17.07	N/A	0.00	1:1	0.461	1.104	0.509	
2592.99	518598	Md	Right	Cheek	NR Band n41	E	26910	100	CW/SRS	N/A	N/A	N/A	18.0	17.36	N/A	-0.02	1:1	0.304	1.159	0.352	
2592.99	518598	Md	Right	Tilt	NR Band n41	E	26910	100	CW/SRS	N/A	N/A	N/A	18.0	17.36	N/A	-0.18	1:1	0.220	1.159	0.255	
2592.99	518598	Md	Left	Cheek	NR Band n41	E	26910	100	CW/SRS	N/A	N/A	N/A	18.0	17.36	N/A	-0.02	1:1	0.624	1.159	0.723	
2592.99	518598	Md	Left	Tilt	NR Band n41	E	26910	100	CW/SRS	N/A	N/A	N/A	18.0	17.36	N/A	-0.01	1:1	0.534	1.159	0.619	
2592.99	518598	Md	Right	Cheek	NR Band n41	D	26910	100	CW/SRS	N/A	N/A	N/A	17.0	15.68	N/A	0.05	1:1	0.000	1.355	0.000	
2592.99	518598	Md	Right	Tilt	NR Band n41	D	26910	100	CW/SRS	N/A	N/A	N/A	17.0	15.68	N/A	0.08	1:1	0.000	1.355	0.000	
2592.99	518598	Md	Left	Cheek	NR Band n41	D	26910	100	CW/SRS	N/A	N/A	N/A	17.0	15.68	N/A	0.06	1:1	0.000	1.355	0.000	
2592.99	518598	Md	Left	Tilt	NR Band n41	D	26910	100	CW/SRS	N/A	N/A	N/A	17.0	15.68	N/A	0.06	1:1	0.000	1.355	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Head 1.6 W/kg (mW/g) averaged over 1 gram									

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**Table 11-17  
NR Band n77 Head SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Test Position	Mode	Antenna Config	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #	
MHz	Ch.																				
3750.00	650000	Low	Right	Cheek	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	1	1	15.0	14.75	0	0.03	1:1	0.468	1.059	0.496	
3830.00	662000	High	Right	Cheek	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	1	1	15.0	14.07	0	-0.01	1:1	0.661	1.239	0.819	
3750.00	650000	Low	Right	Cheek	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	135	0	15.0	14.82	0	0.01	1:1	0.518	1.042	0.540	
3930.00	662000	High	Right	Cheek	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	135	0	15.0	14.44	0	-0.01	1:1	0.720	1.138	0.819	A17
3750.00	650000	Low	Right	Cheek	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	270	0	15.0	14.73	0	0.00	1:1	0.560	1.064	0.596	
3750.00	650000	Low	Right	Cheek	NR Band n77	F	26613	100	CP-OFDM	QPSK	1	1	15.0	14.84	0	0.03	1:1	0.492	1.038	0.511	
3500.01	633334	Mid	Right	Cheek	NR Band n77 DoD	F	26613	100	DFT-S-OFDM	QPSK	1	271	15.0	14.73	0	0.01	1:1	0.515	1.064	0.548	
3750.00	650000	Low	Right	Tilt	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	1	1	15.0	14.75	0	-0.03	1:1	0.499	1.059	0.528	
3930.00	662000	High	Right	Tilt	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	1	1	15.0	14.07	0	-0.01	1:1	0.617	1.239	0.764	
3750.00	650000	Low	Right	Tilt	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	135	0	15.0	14.82	0	-0.03	1:1	0.511	1.042	0.532	
3930.00	662000	High	Right	Tilt	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	135	0	15.0	14.44	0	0.00	1:1	0.692	1.138	0.787	
3750.00	650000	Low	Right	Tilt	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	270	0	15.0	14.73	0	-0.01	1:1	0.525	1.064	0.559	
3750.00	650000	Low	Left	Cheek	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	1	1	15.0	14.75	0	0.01	1:1	0.222	1.059	0.235	
3750.00	650000	Low	Left	Cheek	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	135	0	15.0	14.82	0	0.02	1:1	0.228	1.042	0.238	
3750.00	650000	Low	Left	Tilt	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	1	1	15.0	14.75	0	-0.02	1:1	0.251	1.059	0.266	
3750.00	650000	Low	Left	Tilt	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	135	0	15.0	14.82	0	-0.05	1:1	0.251	1.042	0.262	
3750.00	650000	Low	Right	Cheek	NR Band n77	C	26613	100	CW/SRS	N/A	N/A	N/A	13.0	12.22	N/A	0.02	1:1	0.003	1.197	0.004	
3750.00	650000	Low	Right	Tilt	NR Band n77	C	26613	100	CW/SRS	N/A	N/A	N/A	13.0	12.22	N/A	0.04	1:1	0.010	1.197	0.012	
3500.01	633334	Mid	Right	Tilt	NR Band n77 DoD	C	26613	100	CW/SRS	N/A	N/A	N/A	13.0	11.77	N/A	0.20	1:1	0.005	1.327	0.007	
3750.00	650000	Low	Left	Cheek	NR Band n77	C	26613	100	CW/SRS	N/A	N/A	N/A	13.0	12.22	N/A	0.04	1:1	0.004	1.197	0.005	
3750.00	650000	Low	Left	Tilt	NR Band n77	C	26613	100	CW/SRS	N/A	N/A	N/A	13.0	12.22	N/A	0.02	1:1	0.000	1.197	0.000	
3930.00	662000	High	Right	Cheek	NR Band n77	I	26613	100	CW/SRS	N/A	N/A	N/A	13.0	12.28	N/A	-0.18	1:1	0.124	1.180	0.146	
3500.01	633334	Mid	Right	Cheek	NR Band n77 DoD	I	26613	100	CW/SRS	N/A	N/A	N/A	13.0	12.23	N/A	0.01	1:1	0.273	1.194	0.326	
3930.00	662000	High	Right	Tilt	NR Band n77	I	26613	100	CW/SRS	N/A	N/A	N/A	13.0	12.28	N/A	0.04	1:1	0.006	1.180	0.007	
3930.00	662000	High	Left	Cheek	NR Band n77	I	26613	100	CW/SRS	N/A	N/A	N/A	13.0	12.28	N/A	-0.06	1:1	0.110	1.180	0.130	
3930.00	662000	High	Left	Tilt	NR Band n77	I	26613	100	CW/SRS	N/A	N/A	N/A	13.0	12.28	N/A	0.04	1:1	0.000	1.180	0.000	
3750.00	650000	Low	Right	Cheek	NR Band n77	D	26613	100	CW/SRS	N/A	N/A	N/A	10.5	10.02	N/A	0.04	1:1	0.037	1.117	0.041	
3500.01	633334	Mid	Right	Cheek	NR Band n77 DoD	D	26613	100	CW/SRS	N/A	N/A	N/A	10.5	9.16	N/A	0.05	1:1	0.000	1.361	0.000	
3750.00	650000	Low	Right	Tilt	NR Band n77	D	26613	100	CW/SRS	N/A	N/A	N/A	10.5	10.02	N/A	0.06	1:1	0.000	1.117	0.000	
3750.00	650000	Low	Left	Cheek	NR Band n77	D	26613	100	CW/SRS	N/A	N/A	N/A	10.5	10.02	N/A	0.06	1:1	0.000	1.117	0.000	
3750.00	650000	Low	Left	Tilt	NR Band n77	D	26613	100	CW/SRS	N/A	N/A	N/A	10.5	10.02	N/A	0.03	1:1	0.000	1.117	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									

Note: Light purple entries indicate the additional DoD check on the worst-case exposure scenario from C-band antennas.

**Table 11-18  
DTS SISO Head AR**

MEASUREMENT RESULTS																			
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Maximum Duty Cycle (%)	Duty Cycle (%)	SAR (1g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																		
2412	1	Right	Cheek	802.11b	DSSS	2	26423	22	1	14.0	13.91	-0.07	100.00	98.86	0.317	1.021	1.012	0.328	
2412	1	Right	Tilt	802.11b	DSSS	2	26423	22	1	14.0	13.91	0.03	100.00	98.86	0.027	1.021	1.012	0.028	
2412	1	Left	Cheek	802.11b	DSSS	2	26423	22	1	14.0	13.91	0.03	100.00	98.86	0.487	1.021	1.012	0.503	A18
2412	1	Left	Tilt	802.11b	DSSS	2	26423	22	1	14.0	13.91	0.00	100.00	98.86	0.035	1.021	1.012	0.036	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT												Head							
Spatial Peak												1.6 W/kg (mW/g)							
Uncontrolled Exposure/General Population												averaged over 1 gram							

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**Table 11-19  
DTS MIMO Head SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Maximum Duty Cycle (%)	Duty Cycle (%)	SAR (1g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																				
2412	1	Right	Cheek	802.11n	OFDM	MIMO	26423	20	13	14.0	13.68	14.0	13.92	0.03	100.00	97.98	0.416	1.076	1.021	0.457	
2412	1	Right	Tilt	802.11n	OFDM	MIMO	26423	20	13	14.0	13.68	14.0	13.92	0.06	100.00	97.98	0.328	1.076	1.021	0.360	
2412	1	Left	Cheek	802.11n	OFDM	MIMO	26423	20	13	14.0	13.68	14.0	13.92	0.00	100.00	97.98	0.337	1.076	1.021	0.370	
2412	1	Left	Tilt	802.11n	OFDM	MIMO	26423	20	13	14.0	13.68	14.0	13.92	0.15	100.00	97.98	0.149	1.076	1.021	0.164	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram										

Note: To achieve the 17.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 14.0 dBm.

**Table 11-20  
NII MIMO Head SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Maximum Duty Cycle (%)	Duty Cycle (%)	SAR (1g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																				
5290	58	Right	Cheek	802.11ac	OFDM	MIMO	26571	80	58.5	13.0	12.64	13.0	12.76	-0.07	100.00	97.77	0.266	1.086	1.023	0.296	
5290	58	Right	Tilt	802.11ac	OFDM	MIMO	26571	80	58.5	13.0	12.64	13.0	12.76	0.04	100.00	97.77	0.122	1.086	1.023	0.136	
5290	58	Left	Cheek	802.11ac	OFDM	MIMO	26571	80	58.5	13.0	12.64	13.0	12.76	-0.05	100.00	97.77	0.075	1.086	1.023	0.083	
5290	58	Left	Tilt	802.11ac	OFDM	MIMO	26571	80	58.5	13.0	12.64	13.0	12.76	0.03	100.00	97.77	0.072	1.086	1.023	0.080	
5690	138	Right	Cheek	802.11ac	OFDM	MIMO	26571	80	58.5	13.0	12.60	13.0	12.82	0.11	100.00	97.77	0.419	1.096	1.023	0.470	A19
5690	138	Right	Tilt	802.11ac	OFDM	MIMO	26571	80	58.5	13.0	12.60	13.0	12.82	-0.07	100.00	97.77	0.271	1.096	1.023	0.304	
5690	138	Left	Cheek	802.11ac	OFDM	MIMO	26571	80	58.5	13.0	12.60	13.0	12.82	-0.11	100.00	97.77	0.265	1.096	1.023	0.297	
5690	138	Left	Tilt	802.11ac	OFDM	MIMO	26571	80	58.5	13.0	12.60	13.0	12.82	0.12	100.00	97.77	0.202	1.096	1.023	0.226	
5775	155	Right	Cheek	802.11ac	OFDM	MIMO	26571	80	58.5	13.0	12.55	13.0	12.80	0.02	100.00	97.77	0.368	1.109	1.023	0.417	
5775	155	Right	Tilt	802.11ac	OFDM	MIMO	26571	80	58.5	13.0	12.55	13.0	12.80	-0.05	100.00	97.77	0.181	1.109	1.023	0.205	
5775	155	Left	Cheek	802.11ac	OFDM	MIMO	26571	80	58.5	13.0	12.55	13.0	12.80	0.05	100.00	97.77	0.230	1.109	1.023	0.261	
5775	155	Left	Tilt	802.11ac	OFDM	MIMO	26571	80	58.5	13.0	12.55	13.0	12.80	0.11	100.00	97.77	0.174	1.109	1.023	0.197	
5855	171	Right	Cheek	802.11ac	OFDM	MIMO	26571	80	58.5	13.0	12.72	13.0	12.94	0.20	100.00	97.77	0.404	1.067	1.023	0.441	
5855	171	Right	Tilt	802.11ac	OFDM	MIMO	26571	80	58.5	13.0	12.72	13.0	12.94	-0.05	100.00	97.77	0.159	1.067	1.023	0.174	
5855	171	Left	Cheek	802.11ac	OFDM	MIMO	26571	80	58.5	13.0	12.72	13.0	12.94	0.01	100.00	97.77	0.282	1.067	1.023	0.308	
5855	171	Left	Tilt	802.11ac	OFDM	MIMO	26571	80	58.5	13.0	12.72	13.0	12.94	0.02	100.00	97.77	0.246	1.067	1.023	0.269	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram										

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

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**Table 11-21  
DSS Head SISO SAR**

MEASUREMENT RESULTS																		
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Maximum Duty Cycle (%)	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													(W/kg)			(W/kg)	
2441	39	Right	Cheek	Bluetooth	FHSS	1	24623	1	11.0	10.57	0.12	78.00	76.91	0.071	1.104	1.014	0.079	A20
2441	39	Right	Tilt	Bluetooth	FHSS	1	24623	1	11.0	10.57	-0.19	78.00	76.91	0.062	1.104	1.014	0.069	
2441	39	Left	Cheek	Bluetooth	FHSS	1	24623	1	11.0	10.57	0.02	78.00	76.91	0.018	1.104	1.014	0.020	
2441	39	Left	Tilt	Bluetooth	FHSS	1	24623	1	11.0	10.57	-0.14	78.00	76.91	0.022	1.104	1.014	0.025	
2441	39	Right	Cheek	Bluetooth	FHSS	2	24623	1	9.0	8.61	0.05	78.00	76.80	0.028	1.094	1.016	0.031	
2441	39	Right	Tilt	Bluetooth	FHSS	2	24623	1	9.0	8.61	0.02	78.00	76.80	0.000	1.094	1.016	0.000	
2441	39	Left	Cheek	Bluetooth	FHSS	2	24623	1	9.0	8.61	0.12	78.00	76.80	0.051	1.094	1.016	0.057	
2441	39	Left	Tilt	Bluetooth	FHSS	2	24623	1	9.0	8.61	0.02	78.00	76.80	0.000	1.094	1.016	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram									

## 11.2 Standalone Body-Worn SAR Data

**Table 11-22  
GSM Body-Worn SAR Data**

MEASUREMENT RESULTS																	
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #		
MHz	Ch.											(W/kg)		(W/kg)			
836.60	190	back	10 mm	GSM 850	GSM	A	26977	33.5	33.25	-0.03	1:8.3	0.381	1.059	0.403	A21		
1880.00	661	back	10 mm	GSM 1900	GSM	A	30920	27.0	26.02	-0.02	1:8.3	0.454	1.253	0.569	A22		
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  
UMTS Body-Worn SAR Data**

MEASUREMENT RESULTS																	
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #		
MHz	Ch.											(W/kg)		(W/kg)			
826.40	4132	back	10 mm	UMTS 850	RMC	A	26985	25.5	24.37	0.01	1:1	0.504	1.297	0.654			
836.60	4183	back	10 mm	UMTS 850	RMC	A	26985	25.5	24.40	-0.04	1:1	0.604	1.288	0.778			
846.60	4233	back	10 mm	UMTS 850	RMC	A	26985	25.5	24.31	0.01	1:1	0.660	1.315	0.868	A23		
1732.40	1412	back	10 mm	UMTS 1750	RMC	A	30920	18.5	17.27	-0.03	1:1	0.125	1.327	0.166	A24		
1880.00	9400	back	10 mm	UMTS 1900	RMC	A	30920	19.0	17.47	-0.05	1:1	0.184	1.422	0.262	A25		
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram								

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**Table 11-24  
LTE Body-Worn SAR**

MEASUREMENT RESULTS																					
# CC Uplink, Power Class	FREQUENCY		Side	Spacing	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #	
	MHz	Ch.																			
1 CC Uplink	707.50	23095	Mid	back	10 mm	LTE Band 12	A	26639	10	QPSK	1	0	25.0	23.71	0	0.10	1:1	0.313	1.346	0.421	A26
1 CC Uplink	707.50	23095	Mid	back	10 mm	LTE Band 12	A	26639	10	QPSK	25	0	23.0	21.71	2	0.05	1:1	0.193	1.346	0.260	
1 CC Uplink	782.00	23230	Mid	back	10 mm	LTE Band 13	A	26977	10	QPSK	1	25	25.0	23.98	0	0.00	1:1	0.516	1.265	0.653	A27
1 CC Uplink	782.00	23230	Mid	back	10 mm	LTE Band 13	A	26977	10	QPSK	25	12	23.0	22.13	2	-0.01	1:1	0.414	1.222	0.506	
1 CC Uplink	831.50	26865	Mid	back	10 mm	LTE Band 26 (Cell)	A	26977	15	QPSK	1	0	25.0	24.14	0	-0.03	1:1	0.511	1.219	0.623	A28
1 CC Uplink	831.50	26865	Mid	back	10 mm	LTE Band 26 (Cell)	A	26977	15	QPSK	36	0	23.0	22.26	2	-0.02	1:1	0.410	1.186	0.486	
1 CC Uplink	836.50	20525	Mid	back	10 mm	LTE Band 5 (Cell)	A	62162	10	QPSK	1	0	25.5	23.79	0	-0.05	1:1	0.427	1.483	0.633	A29
1 CC Uplink	836.50	20525	Mid	back	10 mm	LTE Band 5 (Cell)	A	62162	10	QPSK	25	0	23.5	21.91	2	0.00	1:1	0.275	1.442	0.397	
1 CC Uplink	1770.00	132572	High	back	10 mm	LTE Band 66 (AWS)	A	30920	20	QPSK	1	0	20.0	18.56	0	-0.03	1:1	0.270	1.393	0.376	
1 CC Uplink	1770.00	132572	High	back	10 mm	LTE Band 66 (AWS)	A	30920	20	QPSK	50	0	20.0	18.71	0	-0.02	1:1	0.279	1.346	0.376	A30
1 CC Uplink	1770.00	132572	High	back	10 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	1	50	17.0	15.88	0	-0.05	1:1	0.087	1.294	0.113	
1 CC Uplink	1770.00	132572	High	back	10 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	50	50	17.0	15.90	0	-0.02	1:1	0.086	1.288	0.111	
1 CC Uplink	1732.50	20175	Mid	back	10 mm	LTE Band 4 (AWS)	F	31449	20	QPSK	1	0	17.0	16.28	0	0.00	1:1	0.183	1.180	0.216	
1 CC Uplink	1732.50	20175	Mid	back	10 mm	LTE Band 4 (AWS)	F	31449	20	QPSK	50	0	17.0	16.32	0	-0.04	1:1	0.195	1.169	0.228	A31
1 CC Uplink	1900.00	19100	High	back	10 mm	LTE Band 2 (PCS)	A	30920	20	QPSK	1	99	20.0	18.67	0	-0.01	1:1	0.268	1.358	0.364	
1 CC Uplink	1900.00	19100	High	back	10 mm	LTE Band 2 (PCS)	A	30920	20	QPSK	50	25	20.0	18.80	0	0.00	1:1	0.299	1.318	0.394	A32
1 CC Uplink	1900.00	19100	High	back	10 mm	LTE Band 2 (PCS)	F	30995	20	QPSK	1	99	18.5	17.45	0	0.05	1:1	0.132	1.274	0.168	
1 CC Uplink	1900.00	19100	High	back	10 mm	LTE Band 2 (PCS)	F	30995	20	QPSK	50	0	18.5	17.70	0	0.01	1:1	0.137	1.202	0.165	
1 CC Uplink - Power Class 3	2506.00	39750	Low	back	10 mm	LTE Band 41	B	30920	20	QPSK	1	99	23.0	21.92	0	-0.02	1:1.58	0.343	1.282	0.440	
1 CC Uplink - Power Class 3	2506.00	39750	Low	back	10 mm	LTE Band 41	B	30920	20	QPSK	50	50	23.0	21.93	0	-0.04	1:1.58	0.361	1.279	0.462	
1 CC Uplink - Power Class 2	2506.00	39750	Low	back	10 mm	LTE Band 41	B	30920	20	QPSK	50	50	24.6	23.77	0	0.00	1:2.31	0.364	1.211	0.441	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 11-25  
NR Body-Worn SAR**

MEASUREMENT RESULTS																					
# CC Uplink, Power Class	FREQUENCY		Side	Spacing	Mode	Antenna Config.	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
	MHz	Ch.																			
836.50	167300	Mid	back	10 mm	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	1	53	25.0	23.88	0	-0.10	1:1	0.408	1.294	0.528	A34
836.50	167300	Mid	back	10 mm	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	50	28	25.0	23.87	0	-0.13	1:1	0.355	1.297	0.460	
836.50	167300	Mid	back	10 mm	NR Band n5	A	62162	20	CP-OFDM	QPSK	1	1	23.5	22.43	1.5	0.00	1:1	0.220	1.279	0.281	
1745.00	349000	Mid	back	10 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	1	108	19.5	18.13	0	-0.03	1:1	0.311	1.371	0.426	
1745.00	349000	Mid	back	10 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	108	54	19.5	18.10	0	0.01	1:1	0.309	1.380	0.426	
1745.00	349000	Mid	back	10 mm	NR Band n66	A	30664	40	CP-OFDM	QPSK	1	1	19.5	17.96	0	0.01	1:1	0.327	1.426	0.466	A35
1745.00	349000	Mid	back	10 mm	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	1	108	17.0	15.95	0	-0.07	1:1	0.175	1.274	0.223	
1745.00	349000	Mid	back	10 mm	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	108	0	17.0	15.96	0	-0.16	1:1	0.184	1.271	0.234	
1745.00	349000	Mid	back	10 mm	NR Band n66	F	31498	40	CP-OFDM	QPSK	1	1	17.0	15.92	0	-0.08	1:1	0.195	1.282	0.250	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram									

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**Table 11-26  
NR Band 41 Body-Worn SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Antenna Config	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #	
MHz	Ch.																				
2592.99	518598	Md	back	10 mm	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	1	271	18.0	16.92	0	-0.10	1:1	0.144	1.282	0.185	
2592.99	518598	Md	back	10 mm	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	135	0	18.0	16.65	0	0.02	1:1	0.143	1.365	0.195	
2592.99	518598	Md	back	10 mm	NR Band n41	B	26910	100	CP-OFDM	QPSK	1	1	18.0	16.60	0	-0.03	1:1	0.158	1.380	0.218	A36
2592.99	518598	Md	back	10 mm	NR Band n41	F	26910	100	CW/SRS	N/A	N/A	N/A	17.5	17.07	N/A	0.01	1:1	0.077	1.104	0.085	
2592.99	518598	Md	back	10 mm	NR Band n41	E	26910	100	CW/SRS	N/A	N/A	N/A	18.0	17.36	N/A	-0.02	1:1	0.056	1.159	0.065	
2592.99	518598	Md	back	10 mm	NR Band n41	D	26910	100	CW/SRS	N/A	N/A	N/A	17.0	15.68	N/A	-0.02	1:1	0.082	1.355	0.111	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram									

**Table 11-27  
NR Band 77 Body-Worn SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Antenna Config	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #	
MHz	Ch.																				
3750.00	650000	Low	back	10 mm	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	1	1	15.0	14.75	0	-0.20	1:1	0.092	1.059	0.097	
3750.00	650000	Low	back	10 mm	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	135	0	15.0	14.82	0	-0.16	1:1	0.092	1.042	0.096	
3750.00	650000	Low	back	10 mm	NR Band n77	F	26613	100	CP-OFDM	QPSK	1	1	15.0	14.84	0	-0.11	1:1	0.101	1.038	0.105	
3500.01	633334	Md	back	10 mm	NR Band n77 DoD	F	26613	100	DFT-S-OFDM	QPSK	1	271	15.0	14.73	0	-0.14	1:1	0.087	1.064	0.093	
3750.00	650000	Low	back	10 mm	NR Band n77	C	26613	100	CW/SRS	N/A	NA	NA	13.0	12.22	N/A	0.08	1:1	0.031	1.197	0.037	
3500.01	633334	Md	back	10 mm	NR Band n77 DoD	C	26613	100	CW/SRS	N/A	NA	NA	13.0	11.77	N/A	-0.05	1:1	0.061	1.327	0.081	
3930.00	662000	High	back	10 mm	NR Band n77	I	26910	100	CW/SRS	N/A	NA	NA	13.0	12.28	N/A	0.03	1:1	0.022	1.180	0.026	
3500.01	633334	Md	back	10 mm	NR Band n77 DoD	I	26910	100	CW/SRS	N/A	NA	NA	13.0	12.23	N/A	0.00	1:1	0.047	1.194	0.056	
3750.00	650000	Low	back	10 mm	NR Band n77	D	26910	100	CW/SRS	N/A	NA	NA	10.5	10.02	N/A	-0.02	1:1	0.113	1.117	0.126	
3500.01	633334	Md	back	10 mm	NR Band n77 DoD	D	26910	100	CW/SRS	N/A	NA	NA	10.5	9.16	N/A	0.03	1:1	0.142	1.361	0.193	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									

Note: Light purple entries indicate the additional DoD check on the worst-case exposure scenario from C-band antennas.

**Table 11-28  
DTS Body-Worn SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Maximum Duty Cycle (%)	Duty Cycle (%)	SAR (1g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																				
2412	1	back	10 mm	802.11b	DSSS	2	26423	22	1	16.5	16.45	-	-	0.00	100.00	98.86	0.129	1.012	1.012	0.132	
2412	1	back	10 mm	802.11b	DSSS	MIMO	26423	22	1	16.5	16.49	16.5	16.36	-0.11	100.00	98.87	0.174	1.033	1.011	0.182	A38
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram									

Note: To achieve the 19.5 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 16.5 dBm.

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**Table 11-29  
NII MIMO Body-Worn SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Maximum Duty Cycle (%)	Duty Cycle (%)	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)			(W/kg)	
5280	56	back	10 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.99	16.0	15.69	-0.04	100.00	97.88	0.333	1.074	1.022	0.366	A39
5720	144	back	10 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.93	16.0	14.82	0.01	100.00	97.88	0.220	1.312	1.022	0.295	
5785	157	back	10 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.73	16.0	15.76	-0.05	100.00	97.88	0.189	1.064	1.022	0.206	
5845	169	back	10 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.82	16.0	15.78	0.13	100.00	97.88	0.159	1.051	1.022	0.171	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Body 1.6 W/kg (mW/g) averaged over 1 gram										

Note: To achieve the 19.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 16.0 dBm.

**Table 11-30  
DSS SISO Body-Worn SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Maximum Duty Cycle (%)	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #		
MHz	Ch.													(W/kg)			(W/kg)			
2441	39	back	10 mm	Bluetooth	FHSS	1	26571	1	15.0	14.66	0.00	78.00	76.91	0.053	1.081	1.014	0.058	A40		
2441	39	back	10 mm	Bluetooth	FHSS	2	26571	1	15.0	14.14	0.01	78.00	76.80	0.025	1.219	1.016	0.031			
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 11-31  
GPRS Hotspot SAR Data**

MEASUREMENT RESULTS																	
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	# of Time Slots	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.												(W/kg)		(W/kg)		
824.20	128	back	10 mm	GSM 850	GPRS	A	26977	4	28.5	27.54	0.02	1:2.076	0.403	1.247	0.503	A41	
824.20	128	front	10 mm	GSM 850	GPRS	A	26977	4	28.5	27.54	-0.03	1:2.076	0.347	1.247	0.433		
824.20	128	bottom	10 mm	GSM 850	GPRS	A	26977	4	28.5	27.54	0.06	1:2.076	0.235	1.247	0.293		
824.20	128	right	10 mm	GSM 850	GPRS	A	26977	4	28.5	27.54	-0.02	1:2.076	0.318	1.247	0.397		
824.20	128	left	10 mm	GSM 850	GPRS	A	26977	4	28.5	27.54	-0.07	1:2.076	0.064	1.247	0.080		
1850.20	512	back	10 mm	GSM 1900	GPRS	A	30920	3	23.0	21.32	0.17	1:2.76	0.167	1.472	0.246		
1850.20	512	front	10 mm	GSM 1900	GPRS	A	30920	3	23.0	21.32	-0.06	1:2.76	0.206	1.472	0.303		
1850.20	512	bottom	10 mm	GSM 1900	GPRS	A	30920	3	23.0	21.32	0.11	1:2.76	0.397	1.472	0.584	A42	
1850.20	512	right	10 mm	GSM 1900	GPRS	A	30920	3	23.0	21.32	0.20	1:2.76	0.023	1.472	0.034		
1850.20	512	left	10 mm	GSM 1900	GPRS	A	30920	3	23.0	21.32	-0.04	1:2.76	0.046	1.472	0.068		
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Body 1.6 W/kg (mW/g) averaged over 1 gram						

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**Table 11-32  
UMTS Hotspot SAR Data**

MEASUREMENT RESULTS															
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
826.40	4132	back	10 mm	UMTS 850	RMC	A	26985	25.5	24.37	0.01	1:1	0.504	1.297	0.654	
836.60	4183	back	10 mm	UMTS 850	RMC	A	26985	25.5	24.40	-0.04	1:1	0.604	1.288	0.778	
846.60	4233	back	10 mm	UMTS 850	RMC	A	26985	25.5	24.31	0.01	1:1	0.660	1.315	0.868	A23
836.60	4183	front	10 mm	UMTS 850	RMC	A	26985	25.5	24.40	0.00	1:1	0.443	1.288	0.571	
836.60	4183	bottom	10 mm	UMTS 850	RMC	A	26985	25.5	24.40	-0.01	1:1	0.283	1.288	0.365	
836.60	4183	right	10 mm	UMTS 850	RMC	A	26985	25.5	24.40	0.00	1:1	0.166	1.288	0.214	
836.60	4183	left	10 mm	UMTS 850	RMC	A	26985	25.5	24.40	-0.08	1:1	0.082	1.288	0.106	
1732.40	1412	back	10 mm	UMTS 1750	RMC	A	30920	18.5	17.27	-0.03	1:1	0.125	1.327	0.166	
1732.40	1412	front	10 mm	UMTS 1750	RMC	A	30920	18.5	17.27	-0.03	1:1	0.123	1.327	0.163	
1732.40	1412	bottom	10 mm	UMTS 1750	RMC	A	30920	18.5	17.27	-0.01	1:1	0.247	1.327	0.328	A43
1732.40	1412	right	10 mm	UMTS 1750	RMC	A	30920	18.5	17.27	0.13	1:1	0.010	1.327	0.013	
1732.40	1412	left	10 mm	UMTS 1750	RMC	A	30920	18.5	17.27	-0.04	1:1	0.057	1.327	0.076	
1880.00	9400	back	10 mm	UMTS 1900	RMC	A	30920	19.0	17.47	-0.05	1:1	0.184	1.422	0.262	
1880.00	9400	front	10 mm	UMTS 1900	RMC	A	30920	19.0	17.47	-0.04	1:1	0.189	1.422	0.269	
1852.40	9262	bottom	10 mm	UMTS 1900	RMC	A	30920	19.0	17.43	0.05	1:1	0.425	1.435	0.610	
1880.00	9400	bottom	10 mm	UMTS 1900	RMC	A	30920	19.0	17.47	-0.04	1:1	0.439	1.422	0.624	
1907.60	9538	bottom	10 mm	UMTS 1900	RMC	A	30920	19.0	17.32	0.00	1:1	0.456	1.472	0.671	A44
1880.00	9400	right	10 mm	UMTS 1900	RMC	A	30920	19.0	17.47	-0.11	1:1	0.022	1.422	0.031	
1880.00	9400	left	10 mm	UMTS 1900	RMC	A	30920	19.0	17.47	-0.12	1:1	0.048	1.422	0.068	
<b>ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population</b>							<b>Body 1.6 W/kg (mW/g) averaged over 1 gram</b>								

**Table 11-33  
LTE Band 12 Hotspot SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
707.50	23095	Mid	back	10 mm	LTE Band 12	A	26639	10	QPSK	1	0	25.0	23.71	0	0.10	1:1	0.313	1.346	0.421	A26
707.50	23095	Mid	back	10 mm	LTE Band 12	A	26639	10	QPSK	25	0	23.0	21.71	2	0.05	1:1	0.193	1.346	0.260	
707.50	23095	Mid	front	10 mm	LTE Band 12	A	26639	10	QPSK	1	0	25.0	23.71	0	0.11	1:1	0.262	1.346	0.353	
707.50	23095	Mid	front	10 mm	LTE Band 12	A	26639	10	QPSK	25	0	23.0	21.71	2	-0.03	1:1	0.159	1.346	0.214	
707.50	23095	Mid	bottom	10 mm	LTE Band 12	A	26639	10	QPSK	1	0	25.0	23.71	0	-0.03	1:1	0.141	1.346	0.190	
707.50	23095	Mid	bottom	10 mm	LTE Band 12	A	26639	10	QPSK	25	0	23.0	21.71	2	0.01	1:1	0.089	1.346	0.120	
707.50	23095	Mid	right	10 mm	LTE Band 12	A	26639	10	QPSK	1	0	25.0	23.71	0	0.01	1:1	0.232	1.346	0.312	
707.50	23095	Mid	right	10 mm	LTE Band 12	A	26639	10	QPSK	25	0	23.0	21.71	2	-0.08	1:1	0.143	1.346	0.192	
707.50	23095	Mid	left	10 mm	LTE Band 12	A	26639	10	QPSK	1	0	25.0	23.71	0	0.02	1:1	0.172	1.346	0.232	
707.50	23095	Mid	left	10 mm	LTE Band 12	A	26639	10	QPSK	25	0	23.0	21.71	2	0.09	1:1	0.099	1.346	0.133	
<b>ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population</b>							<b>Body 1.6 W/kg (mW/g) averaged over 1 gram</b>													

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**Table 11-34  
LTE Band 13 Hotspot SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
782.00	23230	Mid	back	10 mm	LTE Band 13	A	26977	10	QPSK	1	25	25.0	23.98	0	0.00	1:1	0.516	1.265	0.653	A27
782.00	23230	Mid	back	10 mm	LTE Band 13	A	26977	10	QPSK	25	12	23.0	22.13	2	0.00	1:1	0.414	1.222	0.506	
782.00	23230	Mid	front	10 mm	LTE Band 13	A	26977	10	QPSK	1	25	25.0	23.98	0	-0.01	1:1	0.359	1.265	0.454	
782.00	23230	Mid	front	10 mm	LTE Band 13	A	26977	10	QPSK	25	12	23.0	22.13	2	-0.02	1:1	0.283	1.222	0.346	
782.00	23230	Mid	bottom	10 mm	LTE Band 13	A	26977	10	QPSK	1	25	25.0	23.98	0	-0.02	1:1	0.252	1.265	0.319	
782.00	23230	Mid	bottom	10 mm	LTE Band 13	A	26977	10	QPSK	25	12	23.0	22.13	2	-0.03	1:1	0.202	1.222	0.247	
782.00	23230	Mid	right	10 mm	LTE Band 13	A	26977	10	QPSK	1	25	25.0	23.98	0	-0.06	1:1	0.162	1.265	0.205	
782.00	23230	Mid	right	10 mm	LTE Band 13	A	26977	10	QPSK	25	12	23.0	22.13	2	0.00	1:1	0.129	1.222	0.158	
782.00	23230	Mid	left	10 mm	LTE Band 13	A	26977	10	QPSK	1	25	25.0	23.98	0	0.04	1:1	0.074	1.265	0.094	
782.00	23230	Mid	left	10 mm	LTE Band 13	A	26977	10	QPSK	25	12	23.0	22.13	2	0.04	1:1	0.059	1.222	0.072	
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  
LTE Band 26 (Cell) Hotspot SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
831.50	26865	Mid	back	10 mm	LTE Band 26 (Cell)	A	26977	15	QPSK	1	0	25.0	24.14	0	-0.03	1:1	0.511	1.219	0.623	A28
831.50	26865	Mid	back	10 mm	LTE Band 26 (Cell)	A	26977	15	QPSK	36	0	23.0	22.26	2	-0.02	1:1	0.410	1.186	0.486	
831.50	26865	Mid	front	10 mm	LTE Band 26 (Cell)	A	26977	15	QPSK	1	0	25.0	24.14	0	-0.02	1:1	0.363	1.219	0.442	
831.50	26865	Mid	front	10 mm	LTE Band 26 (Cell)	A	26977	15	QPSK	36	0	23.0	22.26	2	0.03	1:1	0.287	1.186	0.340	
831.50	26865	Mid	bottom	10 mm	LTE Band 26 (Cell)	A	26977	15	QPSK	1	0	25.0	24.14	0	-0.04	1:1	0.267	1.219	0.325	
831.50	26865	Mid	bottom	10 mm	LTE Band 26 (Cell)	A	26977	15	QPSK	36	0	23.0	22.26	2	-0.03	1:1	0.163	1.186	0.193	
831.50	26865	Mid	right	10 mm	LTE Band 26 (Cell)	A	26977	15	QPSK	1	0	25.0	24.14	0	0.09	1:1	0.176	1.219	0.215	
831.50	26865	Mid	right	10 mm	LTE Band 26 (Cell)	A	26977	15	QPSK	36	0	23.0	22.26	2	0.01	1:1	0.101	1.186	0.120	
831.50	26865	Mid	left	10 mm	LTE Band 26 (Cell)	A	26977	15	QPSK	1	0	25.0	24.14	0	0.02	1:1	0.073	1.219	0.089	
831.50	26865	Mid	left	10 mm	LTE Band 26 (Cell)	A	26977	15	QPSK	36	0	23.0	22.26	2	-0.01	1:1	0.044	1.186	0.052	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Body 1.6 W/kg (mW/g) averaged over 1 gram									

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**Table 11-36  
LTE Band 5 (Cell) Hotspot SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
836.50	20525	Mid	back	10 mm	LTE Band 5 (Cell)	A	62162	10	QPSK	1	0	25.5	23.79	0	-0.05	1:1	0.427	1.483	0.633	A29
836.50	20525	Mid	back	10 mm	LTE Band 5 (Cell)	A	62162	10	QPSK	25	0	23.5	21.91	2	0.00	1:1	0.275	1.442	0.397	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	A	62162	10	QPSK	1	0	25.5	23.79	0	-0.05	1:1	0.331	1.483	0.491	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	A	62162	10	QPSK	25	0	23.5	21.91	2	-0.06	1:1	0.213	1.442	0.307	
836.50	20525	Mid	bottom	10 mm	LTE Band 5 (Cell)	A	62162	10	QPSK	1	0	25.5	23.79	0	-0.01	1:1	0.230	1.483	0.341	
836.50	20525	Mid	bottom	10 mm	LTE Band 5 (Cell)	A	62162	10	QPSK	25	0	23.5	21.91	2	-0.10	1:1	0.148	1.442	0.213	
836.50	20525	Mid	right	10 mm	LTE Band 5 (Cell)	A	62162	10	QPSK	1	0	25.5	23.79	0	-0.05	1:1	0.155	1.483	0.230	
836.50	20525	Mid	right	10 mm	LTE Band 5 (Cell)	A	62162	10	QPSK	25	0	23.5	21.91	2	-0.09	1:1	0.092	1.442	0.133	
836.50	20525	Mid	left	10 mm	LTE Band 5 (Cell)	A	62162	10	QPSK	1	0	25.5	23.79	0	-0.06	1:1	0.068	1.483	0.101	
836.50	20525	Mid	left	10 mm	LTE Band 5 (Cell)	A	62162	10	QPSK	25	0	23.5	21.91	2	-0.06	1:1	0.045	1.442	0.065	
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  
LTE Band 66 (AWS) Hotspot SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
1770.00	132572	High	back	10 mm	LTE Band 66 (AWS)	A	30920	20	QPSK	1	0	20.0	18.56	0	-0.03	1:1	0.270	1.393	0.376	
1770.00	132572	High	back	10 mm	LTE Band 66 (AWS)	A	30920	20	QPSK	50	0	20.0	18.71	0	-0.02	1:1	0.279	1.346	0.376	
1770.00	132572	High	front	10 mm	LTE Band 66 (AWS)	A	30920	20	QPSK	1	0	20.0	18.56	0	-0.09	1:1	0.235	1.393	0.327	
1770.00	132572	High	front	10 mm	LTE Band 66 (AWS)	A	30920	20	QPSK	50	0	20.0	18.71	0	-0.02	1:1	0.244	1.346	0.328	
1770.00	132572	High	bottom	10 mm	LTE Band 66 (AWS)	A	30920	20	QPSK	1	0	20.0	18.56	0	0.02	1:1	0.392	1.393	0.546	
1770.00	132572	High	bottom	10 mm	LTE Band 66 (AWS)	A	30920	20	QPSK	50	0	20.0	18.71	0	0.00	1:1	0.417	1.346	0.561	A45
1770.00	132572	High	right	10 mm	LTE Band 66 (AWS)	A	30920	20	QPSK	1	0	20.0	18.56	0	-0.09	1:1	0.022	1.393	0.031	
1770.00	132572	High	right	10 mm	LTE Band 66 (AWS)	A	30920	20	QPSK	50	0	20.0	18.71	0	0.07	1:1	0.022	1.346	0.030	
1770.00	132572	High	left	10 mm	LTE Band 66 (AWS)	A	30920	20	QPSK	1	0	20.0	18.56	0	0.01	1:1	0.082	1.393	0.114	
1770.00	132572	High	left	10 mm	LTE Band 66 (AWS)	A	30920	20	QPSK	50	0	20.0	18.71	0	0.06	1:1	0.084	1.346	0.113	
1770.00	132572	High	back	10 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	1	50	17.0	15.88	0	-0.05	1:1	0.087	1.294	0.113	
1770.00	132572	High	back	10 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	50	50	17.0	15.90	0	-0.02	1:1	0.086	1.288	0.111	
1770.00	132572	High	front	10 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	1	50	17.0	15.88	0	-0.03	1:1	0.100	1.294	0.129	
1770.00	132572	High	front	10 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	50	50	17.0	15.90	0	-0.06	1:1	0.101	1.288	0.130	
1770.00	132572	High	top	10 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	1	50	17.0	15.88	0	-0.06	1:1	0.199	1.294	0.258	
1770.00	132572	High	top	10 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	50	50	17.0	15.90	0	0.01	1:1	0.194	1.288	0.250	
1770.00	132572	High	left	10 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	1	50	17.0	15.88	0	0.03	1:1	0.038	1.294	0.049	
1770.00	132572	High	left	10 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	50	50	17.0	15.90	0	0.03	1:1	0.039	1.288	0.050	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Body 1.6 W/kg (mW/g) averaged over 1 gram									

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**Table 11-38  
LTE Band 4 (AWS) Hotspot SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
1732.50	20175	Mid	back	10 mm	LTE Band 4 (AWS)	F	31449	20	QPSK	1	0	17.0	16.28	0	0.00	1:1	0.183	1.180	0.216	
1732.50	20175	Mid	back	10 mm	LTE Band 4 (AWS)	F	31449	20	QPSK	50	0	17.0	16.32	0	-0.04	1:1	0.195	1.169	0.228	
1732.50	20175	Mid	front	10 mm	LTE Band 4 (AWS)	F	31449	20	QPSK	1	0	17.0	16.28	0	0.05	1:1	0.172	1.180	0.203	
1732.50	20175	Mid	front	10 mm	LTE Band 4 (AWS)	F	31449	20	QPSK	50	0	17.0	16.32	0	-0.03	1:1	0.183	1.169	0.214	
1732.50	20175	Mid	top	10 mm	LTE Band 4 (AWS)	F	31449	20	QPSK	1	0	17.0	16.28	0	-0.02	1:1	0.344	1.180	0.406	
1732.50	20175	Mid	top	10 mm	LTE Band 4 (AWS)	F	31449	20	QPSK	50	0	17.0	16.32	0	0.00	1:1	0.371	1.169	0.434	A46
1732.50	20175	Mid	left	10 mm	LTE Band 4 (AWS)	F	31449	20	QPSK	1	0	17.0	16.28	0	-0.12	1:1	0.064	1.180	0.076	
1732.50	20175	Mid	left	10 mm	LTE Band 4 (AWS)	F	31449	20	QPSK	50	0	17.0	16.32	0	0.02	1:1	0.060	1.169	0.070	
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 11-39  
LTE Band 2 (PCS) Hotspot SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
1900.00	19100	High	back	10 mm	LTE Band 2 (PCS)	A	30920	20	QPSK	1	99	20.0	18.67	0	-0.01	1:1	0.268	1.358	0.364	
1900.00	19100	High	back	10 mm	LTE Band 2 (PCS)	A	30920	20	QPSK	50	25	20.0	18.80	0	0.00	1:1	0.299	1.318	0.394	
1900.00	19100	High	front	10 mm	LTE Band 2 (PCS)	A	30920	20	QPSK	1	99	20.0	18.67	0	0.00	1:1	0.257	1.358	0.349	
1900.00	19100	High	front	10 mm	LTE Band 2 (PCS)	A	30920	20	QPSK	50	25	20.0	18.80	0	-0.02	1:1	0.282	1.318	0.372	
1900.00	19100	High	bottom	10 mm	LTE Band 2 (PCS)	A	30920	20	QPSK	1	99	20.0	18.67	0	-0.01	1:1	0.550	1.358	0.747	
1860.00	18700	Low	bottom	10 mm	LTE Band 2 (PCS)	A	30920	20	QPSK	50	0	20.0	18.78	0	0.00	1:1	0.560	1.324	0.741	
1880.00	18900	Mid	bottom	10 mm	LTE Band 2 (PCS)	A	30920	20	QPSK	50	25	20.0	18.68	0	0.03	1:1	0.568	1.355	0.770	
1900.00	19100	High	bottom	10 mm	LTE Band 2 (PCS)	A	30920	20	QPSK	50	25	20.0	18.80	0	0.00	1:1	0.586	1.318	0.772	A47
1900.00	19100	High	right	10 mm	LTE Band 2 (PCS)	A	30920	20	QPSK	1	99	20.0	18.67	0	0.12	1:1	0.031	1.358	0.042	
1900.00	19100	High	right	10 mm	LTE Band 2 (PCS)	A	30920	20	QPSK	50	25	20.0	18.80	0	-0.02	1:1	0.033	1.318	0.043	
1900.00	19100	High	left	10 mm	LTE Band 2 (PCS)	A	30920	20	QPSK	1	99	20.0	18.67	0	0.08	1:1	0.054	1.358	0.073	
1900.00	19100	High	left	10 mm	LTE Band 2 (PCS)	A	30920	20	QPSK	50	25	20.0	18.80	0	0.01	1:1	0.066	1.318	0.087	
1900.00	19100	High	back	10 mm	LTE Band 2 (PCS)	F	30995	20	QPSK	1	99	18.5	17.45	0	0.05	1:1	0.132	1.274	0.168	
1900.00	19100	High	back	10 mm	LTE Band 2 (PCS)	F	30995	20	QPSK	50	0	18.5	17.70	0	0.01	1:1	0.137	1.202	0.165	
1900.00	19100	High	front	10 mm	LTE Band 2 (PCS)	F	30995	20	QPSK	1	99	18.5	17.45	0	-0.08	1:1	0.112	1.274	0.143	
1900.00	19100	High	front	10 mm	LTE Band 2 (PCS)	F	30995	20	QPSK	50	0	18.5	17.70	0	-0.07	1:1	0.120	1.202	0.144	
1900.00	19100	High	top	10 mm	LTE Band 2 (PCS)	F	30995	20	QPSK	1	99	18.5	17.45	0	-0.03	1:1	0.286	1.274	0.364	
1900.00	19100	High	top	10 mm	LTE Band 2 (PCS)	F	30995	20	QPSK	50	0	18.5	17.70	0	0.04	1:1	0.309	1.202	0.371	
1900.00	19100	High	left	10 mm	LTE Band 2 (PCS)	F	30995	20	QPSK	1	99	18.5	17.45	0	-0.12	1:1	0.021	1.274	0.027	
1900.00	19100	High	left	10 mm	LTE Band 2 (PCS)	F	30995	20	QPSK	50	0	18.5	17.70	0	-0.13	1:1	0.018	1.202	0.022	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram								

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**Table 11-40  
LTE Band 41 Hotspot SAR**

MEASUREMENT RESULTS																					
# CC Uplink, Power Class	FREQUENCY		Side	Spacing	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #	
	MHz	Ch.																			
1 CC Uplink - Power Class 3	2506.00	39750	Low	back	10 mm	LTE Band 41	B	30920	20	QPSK	1	99	23.0	21.92	0	-0.02	1:1.58	0.343	1.282	0.440	
1 CC Uplink - Power Class 3	2506.00	39750	Low	back	10 mm	LTE Band 41	B	30920	20	QPSK	50	50	23.0	21.93	0	-0.04	1:1.58	0.361	1.279	0.462	
1 CC Uplink - Power Class 2	2506.00	39750	Low	back	10 mm	LTE Band 41	B	30920	20	QPSK	50	50	24.6	23.77	0	0.00	1:2.31	0.364	1.211	0.441	A33
1 CC Uplink - Power Class 3	2506.00	39750	Low	front	10 mm	LTE Band 41	B	30920	20	QPSK	1	99	23.0	21.92	0	0.01	1:1.58	0.155	1.282	0.199	
1 CC Uplink - Power Class 3	2506.00	39750	Low	front	10 mm	LTE Band 41	B	30920	20	QPSK	50	50	23.0	21.93	0	-0.01	1:1.58	0.174	1.279	0.223	
1 CC Uplink - Power Class 3	2506.00	39750	Low	bottom	10 mm	LTE Band 41	B	30920	20	QPSK	1	99	23.0	21.92	0	-0.01	1:1.58	0.319	1.282	0.409	
1 CC Uplink - Power Class 3	2506.00	39750	Low	bottom	10 mm	LTE Band 41	B	30920	20	QPSK	50	50	23.0	21.93	0	-0.01	1:1.58	0.337	1.279	0.431	
1 CC Uplink - Power Class 3	2506.00	39750	Low	left	10 mm	LTE Band 41	B	30920	20	QPSK	1	99	23.0	21.92	0	0.03	1:1.58	0.173	1.282	0.222	
1 CC Uplink - Power Class 3	2506.00	39750	Low	left	10 mm	LTE Band 41	B	30920	20	QPSK	50	50	23.0	21.93	0	-0.03	1:1.58	0.186	1.279	0.238	
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 11-41  
NR Band n5 Hotspot SAR**

MEASUREMENT RESULTS																					
# CC Uplink, Power Class	FREQUENCY		Side	Spacing	Mode	Antenna Config.	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
	MHz	Ch.																			
836.50	167300	Md	back	10 mm	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	1	53	25.0	23.88	0	-0.10	1:1	0.408	1.294	0.528	A34
836.50	167300	Md	back	10 mm	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	50	28	25.0	23.87	0	-0.13	1:1	0.365	1.297	0.460	
836.50	167300	Md	back	10 mm	NR Band n5	A	62162	20	CP-OFDM	QPSK	1	1	23.5	22.43	1.5	0.00	1:1	0.220	1.279	0.281	
836.50	167300	Md	front	10 mm	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	1	53	25.0	23.88	0	0.03	1:1	0.302	1.294	0.391	
836.50	167300	Md	front	10 mm	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	50	28	25.0	23.87	0	0.13	1:1	0.265	1.297	0.344	
836.50	167300	Md	bottom	10 mm	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	1	53	25.0	23.88	0	-0.03	1:1	0.201	1.294	0.260	
836.50	167300	Md	bottom	10 mm	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	50	28	25.0	23.87	0	-0.18	1:1	0.195	1.297	0.253	
836.50	167300	Md	right	10 mm	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	1	53	25.0	23.88	0	0.05	1:1	0.121	1.294	0.157	
836.50	167300	Md	right	10 mm	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	50	28	25.0	23.87	0	0.18	1:1	0.128	1.297	0.166	
836.50	167300	Md	left	10 mm	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	1	53	25.0	23.88	0	-0.11	1:1	0.054	1.294	0.070	
836.50	167300	Md	left	10 mm	NR Band n5	A	62162	20	DFT-S-OFDM	QPSK	50	28	25.0	23.87	0	0.16	1:1	0.051	1.297	0.066	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram									

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**Table 11-42  
NR Band n66 Hotspot SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Antenna Config	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #	
MHz	Ch.																				
1745.00	349000	Md	back	10 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	1	108	19.5	18.13	0	-0.03	1:1	0.311	1.371	0.426	
1745.00	349000	Md	back	10 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	108	54	19.5	18.10	0	0.01	1:1	0.309	1.380	0.426	
1745.00	349000	Md	front	10 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	1	108	19.5	18.13	0	0.01	1:1	0.298	1.371	0.409	
1745.00	349000	Md	front	10 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	108	54	19.5	18.10	0	0.01	1:1	0.294	1.380	0.406	
1745.00	349000	Md	bottom	10 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	1	108	19.5	18.13	0	-0.01	1:1	0.510	1.371	0.699	A48
1745.00	349000	Md	bottom	10 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	108	54	19.5	18.10	0	0.01	1:1	0.509	1.380	0.702	
1745.00	349000	Md	bottom	10 mm	NR Band n66	A	30664	40	CP-OFDM	QPSK	1	1	19.5	17.96	0	0.00	1:1	0.500	1.426	0.713	
1745.00	349000	Md	right	10 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	1	108	19.5	18.13	0	0.08	1:1	0.028	1.371	0.038	
1745.00	349000	Md	right	10 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	108	54	19.5	18.10	0	0.05	1:1	0.026	1.380	0.036	
1745.00	349000	Md	left	10 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	1	108	19.5	18.13	0	-0.05	1:1	0.087	1.371	0.119	
1745.00	349000	Md	left	10 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	108	54	19.5	18.10	0	-0.01	1:1	0.087	1.380	0.120	
1745.00	349000	Md	back	10 mm	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	1	108	17.0	15.95	0	-0.07	1:1	0.175	1.274	0.223	
1745.00	349000	Md	back	10 mm	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	108	0	17.0	15.96	0	-0.16	1:1	0.184	1.271	0.234	
1745.00	349000	Md	front	10 mm	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	1	108	17.0	15.95	0	-0.03	1:1	0.146	1.274	0.186	
1745.00	349000	Md	front	10 mm	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	108	0	17.0	15.96	0	-0.01	1:1	0.149	1.271	0.189	
1745.00	349000	Md	top	10 mm	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	1	108	17.0	15.95	0	-0.04	1:1	0.289	1.274	0.368	
1745.00	349000	Md	top	10 mm	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	108	0	17.0	15.96	0	0.00	1:1	0.300	1.271	0.381	
1745.00	349000	Md	top	10 mm	NR Band n66	F	31498	40	CP-OFDM	QPSK	1	1	17.0	15.92	0	-0.02	1:1	0.302	1.282	0.387	
1745.00	349000	Md	left	10 mm	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	1	108	17.0	15.95	0	0.06	1:1	0.045	1.274	0.057	
1745.00	349000	Md	left	10 mm	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	108	0	17.0	15.96	0	-0.03	1:1	0.045	1.271	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 11-43  
NR Band n41 Hotspot SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Antenna Config	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #	
MHz	Ch.																				
2592.99	518598	Md	back	10 mm	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	1	271	18.0	16.92	0	-0.10	1:1	0.144	1.282	0.185	
2592.99	518598	Md	back	10 mm	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	135	0	18.0	16.65	0	0.02	1:1	0.143	1.365	0.195	
2592.99	518598	Md	front	10 mm	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	1	271	18.0	16.92	0	-0.08	1:1	0.125	1.282	0.160	
2592.99	518598	Md	front	10 mm	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	135	0	18.0	16.65	0	-0.04	1:1	0.112	1.365	0.153	
2592.99	518598	Md	bottom	10 mm	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	1	271	18.0	16.92	0	0.00	1:1	0.178	1.282	0.228	A49
2592.99	518598	Md	bottom	10 mm	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	135	0	18.0	16.65	0	0.02	1:1	0.175	1.365	0.239	
2592.99	518598	Md	bottom	10 mm	NR Band n41	B	26910	100	CP-OFDM	QPSK	1	1	18.0	16.60	0	0.00	1:1	0.173	1.380	0.239	
2592.99	518598	Md	left	10 mm	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	1	271	18.0	16.92	0	0.02	1:1	0.069	1.282	0.088	
2592.99	518598	Md	left	10 mm	NR Band n41	B	26910	100	DFT-S-OFDM	QPSK	135	0	18.0	16.65	0	-0.05	1:1	0.072	1.365	0.098	
2592.99	518598	Md	back	10 mm	NR Band n41	F	26910	100	CW/SRS	N/A	N/A	N/A	17.5	17.07	N/A	0.01	1:1	0.077	1.104	0.085	
2592.99	518598	Md	front	10 mm	NR Band n41	F	26910	100	CW/SRS	N/A	N/A	N/A	17.5	17.07	N/A	-0.10	1:1	0.080	1.104	0.088	
2592.99	518598	Md	top	10 mm	NR Band n41	F	26910	100	CW/SRS	N/A	N/A	N/A	17.5	17.07	N/A	-0.08	1:1	0.174	1.104	0.192	
2592.99	518598	Md	left	10 mm	NR Band n41	F	26910	100	CW/SRS	N/A	N/A	N/A	17.5	17.07	N/A	0.03	1:1	0.015	1.104	0.017	
2592.99	518598	Md	back	10 mm	NR Band n41	E	26910	100	CW/SRS	N/A	N/A	N/A	18.0	17.36	N/A	-0.02	1:1	0.056	1.159	0.065	
2592.99	518598	Md	front	10 mm	NR Band n41	E	26910	100	CW/SRS	N/A	N/A	N/A	18.0	17.36	N/A	-0.04	1:1	0.070	1.159	0.081	
2592.99	518598	Md	top	10 mm	NR Band n41	E	26910	100	CW/SRS	N/A	N/A	N/A	18.0	17.36	N/A	-0.02	1:1	0.075	1.159	0.087	
2592.99	518598	Md	right	10 mm	NR Band n41	E	26910	100	CW/SRS	N/A	N/A	N/A	18.0	17.36	N/A	0.05	1:1	0.055	1.159	0.064	
2592.99	518598	Md	back	10 mm	NR Band n41	D	26910	100	CW/SRS	N/A	N/A	N/A	17.0	15.68	N/A	-0.02	1:1	0.082	1.355	0.111	
2592.99	518598	Md	front	10 mm	NR Band n41	D	26910	100	CW/SRS	N/A	N/A	N/A	17.0	15.68	N/A	0.09	1:1	0.007	1.355	0.009	
2592.99	518598	Md	bottom	10 mm	NR Band n41	D	26910	100	CW/SRS	N/A	N/A	N/A	17.0	15.68	N/A	-0.03	1:1	0.025	1.355	0.034	
2592.99	518598	Md	right	10 mm	NR Band n41	D	26910	100	CW/SRS	N/A	N/A	N/A	17.0	15.68	N/A	0.06	1:1	0.002	1.355	0.003	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram									

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**Table 11-44  
NR Band n77 Hotspot SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Antenna Config	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #	
MHz	Ch.																(W/kg)				
3750.00	650000	Low	back	10 mm	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	1	1	15.0	14.75	0	-0.20	1:1	0.092	1.059	0.097	
3750.00	650000	Low	back	10 mm	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	135	0	15.0	14.82	0	-0.16	1:1	0.092	1.042	0.096	
3750.00	650000	Low	front	10 mm	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	1	1	15.0	14.75	0	-0.18	1:1	0.054	1.059	0.057	
3750.00	650000	Low	front	10 mm	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	135	0	15.0	14.82	0	-0.19	1:1	0.050	1.042	0.052	
3750.00	650000	Low	top	10 mm	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	1	1	15.0	14.75	0	-0.13	1:1	0.099	1.059	0.105	
3750.00	650000	Low	top	10 mm	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	135	0	15.0	14.82	0	-0.05	1:1	0.093	1.042	0.097	
3750.00	650000	Low	top	10 mm	NR Band n77	F	26613	100	CP-OFDM	QPSK	1	1	15.0	14.84	0	-0.05	1:1	0.108	1.038	0.112	
3500.01	633334	Mid	top	10 mm	NR Band n77 DoD	F	26613	100	DFT-S-OFDM	QPSK	1	271	15.0	14.73	0	-0.03	1:1	0.117	1.064	0.124	
3750.00	650000	Low	left	10 mm	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	1	1	15.0	14.75	0	0.07	1:1	0.012	1.059	0.013	
3750.00	650000	Low	left	10 mm	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	135	0	15.0	14.82	0	0.08	1:1	0.012	1.042	0.013	
3750.00	650000	Low	back	10 mm	NR Band n77	C	26613	100	CW/SRS	N/A	N/A	N/A	13.0	12.22	N/A	0.08	1:1	0.031	1.197	0.037	
3750.00	650000	Low	front	10 mm	NR Band n77	C	26613	100	CW/SRS	N/A	N/A	N/A	13.0	12.22	N/A	0.04	1:1	0.023	1.197	0.028	
3750.00	650000	Low	bottom	10 mm	NR Band n77	C	26613	100	CW/SRS	N/A	N/A	N/A	13.0	12.22	N/A	-0.07	1:1	0.061	1.197	0.073	
3500.01	633334	Mid	bottom	10 mm	NR Band n77 DoD	C	26613	100	CW/SRS	N/A	N/A	N/A	13.0	11.77	N/A	0.14	1:1	0.062	1.327	0.082	
3750.00	650000	Low	left	10 mm	NR Band n77	C	26613	100	CW/SRS	N/A	N/A	N/A	13.0	12.22	N/A	-0.17	1:1	0.057	1.197	0.068	
3930.00	662000	High	back	10 mm	NR Band n77	I	26910	100	CW/SRS	N/A	N/A	N/A	13.0	12.28	N/A	0.03	1:1	0.022	1.180	0.026	
3500.01	633334	Mid	back	10 mm	NR Band n77 DoD	I	26910	100	CW/SRS	N/A	N/A	N/A	13.0	12.23	N/A	0.00	1:1	0.047	1.194	0.056	
3930.00	662000	High	front	10 mm	NR Band n77	I	26910	100	CW/SRS	N/A	N/A	N/A	13.0	12.28	N/A	0.04	1:1	0.022	1.180	0.026	
3930.00	662000	High	left	10 mm	NR Band n77	I	26910	100	CW/SRS	N/A	N/A	N/A	13.0	12.28	N/A	0.01	1:1	0.003	1.180	0.004	
3750.00	650000	Low	back	10 mm	NR Band n77	D	26910	100	CW/SRS	N/A	N/A	N/A	10.5	10.02	N/A	-0.02	1:1	0.113	1.117	0.126	
3500.01	633334	Mid	back	10 mm	NR Band n77 DoD	D	26910	100	CW/SRS	N/A	N/A	N/A	10.5	9.16	N/A	0.03	1:1	0.142	1.361	0.193	A37
3750.00	650000	Low	front	10 mm	NR Band n77	D	26910	100	CW/SRS	N/A	N/A	N/A	10.5	10.02	N/A	0.08	1:1	0.000	1.117	0.000	
3750.00	650000	Low	bottom	10 mm	NR Band n77	D	26910	100	CW/SRS	N/A	N/A	N/A	10.5	10.02	N/A	0.08	1:1	0.007	1.117	0.008	
3750.00	650000	Low	right	10 mm	NR Band n77	D	26910	100	CW/SRS	N/A	N/A	N/A	10.5	10.02	N/A	0.09	1:1	0.002	1.117	0.002	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram									

Note: Light purple entries indicate the additional DoD check on the worst-case exposure scenario from C-band antennas.

**Table 11-45  
DTS SISO WLAN Hotspot SAR**

MEASUREMENT RESULTS																			
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Maximum Duty Cycle (%)	Duty Cycle (%)	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.														(W/kg)				
2412	1	back	10 mm	802.11b	DSSS	2	26423	22	1	16.5	16.45	0.00	100.00	98.86	0.129	1.012	1.012	0.132	
2412	1	front	10 mm	802.11b	DSSS	2	26423	22	1	16.5	16.45	-0.11	100.00	98.86	0.183	1.012	1.012	0.187	
2412	1	top	10 mm	802.11b	DSSS	2	26423	22	1	16.5	16.45	0.16	100.00	98.86	0.003	1.012	1.012	0.003	
2412	1	right	10 mm	802.11b	DSSS	2	26423	22	1	16.5	16.45	-0.06	100.00	98.86	0.039	1.012	1.012	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							

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**Table 11-46  
DTS MIMO WLAN Hotspot SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Maximum Duty Cycle (%)	Duty Cycle (%)	SAR (1g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																				
2412	1	back	10 mm	802.11b	DSSS	MIMO	26423	22	1	16.5	16.49	16.5	16.36	-0.11	100.00	98.87	0.174	1.033	1.011	0.182	
2412	1	front	10 mm	802.11b	DSSS	MIMO	26423	22	1	16.5	16.49	16.5	16.36	-0.10	100.00	98.87	0.208	1.033	1.011	0.217	
2412	1	top	10 mm	802.11b	DSSS	MIMO	26423	22	1	16.5	16.49	16.5	16.36	-0.01	100.00	98.87	0.216	1.033	1.011	0.226	
2412	1	right	10 mm	802.11b	DSSS	MIMO	26423	22	1	16.5	16.49	16.5	16.36	-0.20	100.00	98.87	0.067	1.033	1.011	0.070	
2412	1	left	10 mm	802.11b	DSSS	MIMO	26423	22	1	16.5	16.49	16.5	16.36	0.01	100.00	98.87	0.318	1.033	1.011	0.332	A50
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Body 1.6 W/kg (mW/g) averaged over 1 gram										

Note: To achieve the 19.5 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 16.5 dBm

**Table 11-47  
NII MIMO WLAN Hotspot SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Maximum Duty Cycle (%)	Duty Cycle (%)	SAR (1g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																				
5785	157	back	10 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.73	16.0	15.76	-0.05	100.00	97.88	0.189	1.064	1.022	0.206	
5785	157	front	10 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.73	16.0	15.76	0.08	100.00	97.88	0.133	1.064	1.022	0.145	
5785	157	top	10 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.73	16.0	15.76	0.03	100.00	97.88	0.079	1.064	1.022	0.086	
5785	157	right	10 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.73	16.0	15.76	0.04	100.00	97.88	0.049	1.064	1.022	0.053	
5785	157	left	10 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.73	16.0	15.76	-0.04	100.00	97.88	0.248	1.064	1.022	0.270	A51
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Body 1.6 W/kg (mW/g) averaged over 1 gram										

Note: To achieve the 19.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 16.0 dBm

**Table 11-48  
DSS Hotspot SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Maximum Duty Cycle (%)	Duty Cycle (%)	SAR (1g) (W/kg)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	Plot #		
MHz	Ch.																			
2441	39	back	10 mm	Bluetooth	FHSS	1	26571	1	15.0	14.66	0.00	78.00	76.91	0.053	1.081	1.014	0.058			
2441	39	front	10 mm	Bluetooth	FHSS	1	26571	1	15.0	14.66	-0.01	78.00	76.91	0.056	1.081	1.014	0.061			
2441	39	top	10 mm	Bluetooth	FHSS	1	26571	1	15.0	14.66	0.04	78.00	76.91	0.076	1.081	1.014	0.083			
2441	39	left	10 mm	Bluetooth	FHSS	1	26571	1	15.0	14.66	0.01	78.00	76.91	0.113	1.081	1.014	0.124	A52		
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Body 1.6 W/kg (mW/g) averaged over 1 gram									

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## 11.4 Standalone Phablet SAR Data

**Table 11-49  
GSM 1900 Phablet SAR Data**

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	# of Time Slots	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1850.20	512	bottom	0 mm	GSM 1900	GPRS	A	30920	3	23.0	21.32	0.00	1:2.76	1.360	1.472	2.002	
1880.00	661	bottom	0 mm	GSM 1900	GPRS	A	30920	3	23.0	21.14	-0.02	1:2.76	1.400	1.535	2.149	A53
1909.80	810	bottom	0 mm	GSM 1900	GPRS	A	30920	3	23.0	21.27	-0.01	1:2.76	1.310	1.489	1.951	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Phablet 4.0 W/kg (mW/g) averaged over 10 grams									

**Table 11-50  
UMTS 1900 Phablet SAR Data**

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #	
MHz	Ch.											(W/kg)		(W/kg)		
1880.00	9400	bottom	0 mm	UMTS 1900	RMC	A	30920	19.0	17.47	0.08	1:1	0.542	1.422	0.771	A54	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Phablet 4.0 W/kg (mW/g) averaged over 10 grams									

**Table 11-51  
LTE Band 66 (AWS) Phablet SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Antenna Config.	Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
1770.00	132572	High	bottom	0 mm	LTE Band 66 (AWS)	A	30920	20	QPSK	1	0	20.0	18.56	0	0.03	1:1	0.966	1.393	1.346	
1770.00	132572	High	bottom	0 mm	LTE Band 66 (AWS)	A	30920	20	QPSK	50	0	20.0	18.71	0	-0.02	1:1	0.996	1.346	1.341	A55
1770.00	132572	High	back	0 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	1	50	17.0	15.88	0	-0.02	1:1	0.374	1.294	0.484	
1770.00	132572	High	back	0 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	50	50	17.0	15.90	0	-0.01	1:1	0.380	1.288	0.489	
1770.00	132572	High	front	0 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	1	50	17.0	15.88	0	0.05	1:1	0.370	1.294	0.479	
1770.00	132572	High	front	0 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	50	50	17.0	15.90	0	-0.03	1:1	0.364	1.288	0.469	
1770.00	132572	High	top	0 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	1	50	17.0	15.88	0	-0.02	1:1	0.685	1.294	0.886	
1770.00	132572	High	top	0 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	50	50	17.0	15.90	0	0.07	1:1	0.696	1.288	0.896	
1770.00	132572	High	left	0 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	1	50	17.0	15.88	0	0.00	1:1	0.097	1.294	0.126	
1770.00	132572	High	left	0 mm	LTE Band 66 (AWS)	F	31449	20	QPSK	50	50	17.0	15.90	0	-0.02	1:1	0.100	1.288	0.129	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Phablet 4.0 W/kg (mW/g) averaged over 10 grams													

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**Table 11-52  
LTE Band 4 (AWS) Phablet SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Antenna Config.	Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
1732.50	20175	Mid	top	0 mm	LTE Band 4 (AWS)	F	30995	20	QPSK	1	0	17.0	16.28	0	-0.05	1:1	0.836	1.180	0.986	A56
1732.50	20175	Mid	top	0 mm	LTE Band 4 (AWS)	F	30995	20	QPSK	50	0	17.0	16.32	0	0.03	1:1	0.828	1.169	0.968	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Phablet 4.0 W/kg (mW/g) averaged over 10 grams									

**Table 11-53  
LTE Band 2 (PCS) Phablet SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Antenna Config.	Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
1900.00	19100	High	bottom	0 mm	LTE Band 2 (PCS)	A	30920	20	QPSK	1	99	20.0	18.67	0	0.00	1:1	0.622	1.358	0.845	
1900.00	19100	High	bottom	0 mm	LTE Band 2 (PCS)	A	30920	20	QPSK	50	25	20.0	18.80	0	0.06	1:1	0.712	1.318	0.938	
1900.00	19100	High	top	0 mm	LTE Band 2 (PCS)	F	30995	20	QPSK	1	99	18.5	17.45	0	-0.06	1:1	0.897	1.274	1.143	
1900.00	19100	High	top	0 mm	LTE Band 2 (PCS)	F	30995	20	QPSK	50	0	18.5	17.70	0	-0.12	1:1	0.955	1.202	1.148	A57
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Phablet 4.0 W/kg (mW/g) averaged over 10 grams									

**Table 11-54  
NR Band n66 Phablet SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Antenna Config.	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #	
MHz	Ch.																(W/kg)		(W/kg)		
1745.00	349000	Mid	back	0 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	1	108	19.5	18.13	0	-0.01	1:1	0.654	1.371	0.897	
1745.00	349000	Mid	back	0 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	108	54	19.5	18.10	0	0.00	1:1	0.634	1.380	0.875	
1745.00	349000	Mid	front	0 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	1	108	19.5	18.13	0	-0.02	1:1	0.698	1.371	0.957	
1745.00	349000	Mid	front	0 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	108	54	19.5	18.10	0	-0.02	1:1	0.683	1.380	0.943	
1745.00	349000	Mid	bottom	0 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	1	108	19.5	18.13	0	-0.01	1:1	0.809	1.371	1.109	
1745.00	349000	Mid	bottom	0 mm	NR Band n66	A	30664	40	DFT-S-OFDM	QPSK	108	54	19.5	18.10	0	-0.01	1:1	0.824	1.380	1.137	
1745.00	349000	Mid	bottom	0 mm	NR Band n66	A	30664	40	CP-OFDM	QPSK	1	1	19.5	17.96	0	-0.03	1:1	0.843	1.426	1.202	A58
1745.00	349000	Mid	back	0 mm	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	1	108	17.0	15.95	0	0.00	1:1	0.430	1.274	0.548	
1745.00	349000	Mid	back	0 mm	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	108	0	17.0	15.96	0	0.01	1:1	0.441	1.271	0.561	
1745.00	349000	Mid	top	0 mm	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	1	108	17.0	15.95	0	0.00	1:1	0.813	1.274	1.036	
1745.00	349000	Mid	top	0 mm	NR Band n66	F	31498	40	DFT-S-OFDM	QPSK	108	0	17.0	15.96	0	0.00	1:1	0.825	1.271	1.049	
1745.00	349000	Mid	top	0 mm	NR Band n66	F	31498	40	CP-OFDM	QPSK	1	1	17.0	15.92	0	0.01	1:1	0.834	1.282	1.069	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Phablet 4.0 W/kg (mW/g) averaged over 10 grams										

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**Table 11-55  
NR Band n77 Phablet SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Antenna Config	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g) (W/kg)	Scaling Factor	Reported SAR (10g) (W/kg)	Plot #	
MHz	Ch.																				
3750.00	650000	Low	top	0 mm	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	1	1	15.0	14.75	0	-0.02	1:1	0.488	1.059	0.517	
3750.00	650000	Low	top	0 mm	NR Band n77	F	26613	100	DFT-S-OFDM	QPSK	135	0	15.0	14.82	0	-0.06	1:1	0.470	1.042	0.490	
3750.00	650000	Low	top	0 mm	NR Band n77	F	26613	100	CP-OFDM	QPSK	1	1	15.0	14.84	0	0.02	1:1	0.506	1.038	0.525	
3500.01	633334	Md	top	0 mm	NR Band n77 DoD	F	26613	100	DFT-S-OFDM	QPSK	1	271	15.0	14.73	0	-0.05	1:1	0.553	1.064	0.588	
3750.00	650000	Low	back	0 mm	NR Band n77	D	26910	100	CW/SRS	N/A	N/A	N/A	10.5	10.02	N/A	-0.05	1:1	0.442	1.117	0.494	
3500.01	633334	Md	back	0 mm	NR Band n77 DoD	D	26910	100	CW/SRS	N/A	N/A	N/A	10.5	9.16	N/A	-0.01	1:1	0.652	1.361	0.887	A59
3750.00	650000	Low	front	0 mm	NR Band n77	D	26910	100	CW/SRS	N/A	N/A	N/A	10.5	10.02	N/A	-0.21	1:1	0.001	1.117	0.001	
3750.00	650000	Low	bottom	0 mm	NR Band n77	D	26910	100	CW/SRS	N/A	N/A	N/A	10.5	10.02	N/A	0.02	1:1	0.014	1.117	0.016	
3750.00	650000	Low	right	0 mm	NR Band n77	D	26910	100	CW/SRS	N/A	N/A	N/A	10.5	10.02	N/A	0.03	1:1	0.009	1.117	0.010	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Phablet 4 W/kg (mW/g) averaged over 10 grams									

Note: Light purple entries indicate the additional DoD check on the worst-case exposure scenario from C-band antennas.

**Table 11-56  
WLAN MIMO Phablet SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Maximum Duty Cycle (%)	Duty Cycle (%)	SAR (10g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g) (W/kg)	Plot #
MHz	Ch.																				
5280	56	back	0 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.99	16.0	15.69	0.05	100.00	97.88	0.485	1.074	1.022	0.532	
5280	56	front	0 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.99	16.0	15.69	0.14	100.00	97.88	1.060	1.074	1.022	1.163	A60
5280	56	top	0 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.99	16.0	15.69	-0.02	100.00	97.88	0.177	1.074	1.022	0.194	
5280	56	right	0 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.99	16.0	15.69	-0.03	100.00	97.88	0.052	1.074	1.022	0.057	
5280	56	left	0 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.99	16.0	15.69	0.10	100.00	97.88	0.680	1.074	1.022	0.746	
5720	144	back	0 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.93	16.0	14.82	0.01	100.00	97.88	0.443	1.312	1.022	0.594	
5720	144	front	0 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.93	16.0	14.82	0.02	100.00	97.88	0.717	1.312	1.022	0.961	
5720	144	top	0 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.93	16.0	14.82	-0.18	100.00	97.88	0.172	1.312	1.022	0.231	
5720	144	right	0 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.93	16.0	14.82	0.02	100.00	97.88	0.164	1.312	1.022	0.220	
5720	144	left	0 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.93	16.0	14.82	-0.01	100.00	97.88	0.708	1.312	1.022	0.949	
5845	169	back	0 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.82	16.0	15.78	-0.05	100.00	97.88	0.340	1.051	1.022	0.365	
5845	169	front	0 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.82	16.0	15.78	-0.03	100.00	97.88	0.633	1.051	1.022	0.680	
5845	169	top	0 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.82	16.0	15.78	0.06	100.00	97.88	0.186	1.051	1.022	0.200	
5845	169	right	0 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.82	16.0	15.78	-0.10	100.00	97.88	0.182	1.051	1.022	0.195	
5845	169	left	0 mm	802.11n	OFDM	MIMO	26423	20	13	16.0	15.82	16.0	15.78	0.04	100.00	97.88	0.823	1.051	1.022	0.884	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Phablet 4.0 W/kg (mW/g) averaged over 10 grams									

Note: To achieve the 19.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 16.0 dBm.

**Table 11-57  
DSS SISO Phablet SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config	Device Serial Number	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift	Maximum Duty Cycle (%)	Duty Cycle (%)	SAR (10g) (W/kg)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g) (W/kg)	Plot #			
MHz	Ch.																				
2441	39	back	0 mm	Bluetooth	FHSS	2	26571	1	15.0	14.14	-0.01	78.00	76.80	0.124	1.219	1.016	0.154				
2441	39	front	0 mm	Bluetooth	FHSS	2	26571	1	15.0	14.14	0.02	78.00	76.80	0.373	1.219	1.016	0.462	A61			
2441	39	top	0 mm	Bluetooth	FHSS	2	26571	1	15.0	14.14	0.01	78.00	76.80	0.001	1.219	1.016	0.001				
2441	39	right	0 mm	Bluetooth	FHSS	2	26571	1	15.0	14.14	0.03	78.00	76.80	0.056	1.219	1.016	0.069				
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Phablet 4.0 W/kg (mW/g) averaged over 10 grams									

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**Table 11-58  
NFC Phablet SAR**

MEASUREMENT RESULTS											
FREQUENCY		Side	Test Position	Mode	Type	Antenna Config.	Device Serial Number	Power Drift	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.								(W/kg)	(W/kg)	
13.56	N/A	back	0 mm	NFC	B	1	30771	-0.08	0.028	0.028	A62
13.56	N/A	front	0 mm	NFC	B	1	30771	-0.09	0.000	0.000	
13.56	N/A	right	0 mm	NFC	B	1	30771	0.04	0.000	0.000	
13.56	N/A	left	0 mm	NFC	B	1	30771	0.01	0.000	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Phablet 4.0 W/kg (mW/g) averaged over 10 grams			

## 11.5 SAR Test Notes

### General Notes:

- 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.
- Batteries are fully charged at the beginning of the SAR measurements.
- Liquid tissue depth was at least 15.0 cm for all frequencies.
- 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.
- SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
- 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.
- 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  $\leq 1.2$  W/kg, no additional body-worn SAR evaluations using a headset cable were required.
- Per FCC KDB 865664 D01v01r04, variability SAR tests were not performed when the measured SAR results for a frequency band were less than 0.8 W/kg. Please see Section 12 for variability analysis.
- 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).
- Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the display diagonal dimension is  $> 150$  mm and  $< 200$  mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR  $> 1.2$  W/kg.
- Additional SAR tests for phablet SAR were evaluated per KDB 616217 Section 6 (See Section 6.9 for more information).
- Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the 1g thresholds for the equivalent test cases.
- This device uses S.LSI TAS for WWAN and Qualcomm FastConnect TAS for WIFI 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 (RSI/DSI).

### GSM Test Notes:

- Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.

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2. Justification for reduced test configurations per KDB Publication 941225 D01v03r01 and October 2013 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all GPRS/EDGE slot configurations. The configuration with the highest target frame averaged output power was evaluated for hotspot SAR. When the maximum frame-averaged powers are equivalent across two or more slots (within 0.25 dB), the configuration with the most number of time slots was tested.
3. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the highest output power channel for each test configuration is  $\leq 0.8$  W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s).

**UMTS Notes:**

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

**LTE Notes:**

1. LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 8.5.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 and MCC=001 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D01v06, when the reported 1g SAR measured at the highest output power channel in a given a test configuration was  $> 0.6$  W/kg for LTE B41, testing at the other channels was required for such test configurations.
5. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r04. Testing was performed using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.
6. Per KDB Publication 941225 D05Av01r02, SAR for downlink only LTE CA operations was not needed since the maximum average output power in LTE CA mode was not  $>0.25$  dB higher than the maximum output power when downlink carrier aggregation was inactive.
7. This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per FCC Guidance, all SAR tests were performed using Power Class 3. SAR with power class 2 at the available duty factor was additionally performed for the power class 3 configuration with the highest SAR configuration for each exposure conditions. Please see Section 13 for linearity results.

**NR Notes:**

1. NR implementation supports SA and NSA mode. In EN-DC mode, NR operates 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 TDD 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).

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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.
6. Per FCC KDB Publication 447498 D01v06, when the reported NR Band n77 C-Band SAR measured at the highest output power channel in a given a test configuration was > 0.4 W/kg for 1g evaluations and > 1 W/kg for 10g evaluation, testing at the other channels was required for such test configurations.
7. Per FCC KDB Publication 447498 D01v06, when the reported NR Band n41 SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg for 1g evaluations and > 1.5 W/kg for 10g evaluation, testing at the other channels was required for such test configurations.
8. SRS was tested with CW signal per Qualcomm guidance in 80-w2112-4.
9. For final implementation, NR Band n41 and n77 slot configuration is synchronized using maximum duty cycle of 100%. SAR testing was performed using FTM mode with a 100% duty cycle applied to match final duty cycle.
10. Per FCC Guidance, C-Band for NR n77 (3705 – 3975 MHz) was fully tested according to FCC procedures. For each exposure condition and antenna, the worst-case position was additionally evaluated for the NR n77 DoD (3455.01 – 3544.98 MHz).

**WLAN Notes:**

1. For held-to-ear, 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  $\leq 0.4$  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  $\leq 0.8$  W/kg or all test positions are measured.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n/ax) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.6.5 for more information.
3. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg for 1g evaluations. See Section 8.6.6 for more information.
4. Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D01v06 by either evaluating the sum of the 1g SAR values of each antenna transmitting independently or making a SAR measurement with both antennas transmitting simultaneously. Please see Multi-TX and Antenna SAR Considerations Appendix for complete analysis.
5. When the maximum reported 1g averaged SAR is  $\leq 0.8$  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  $\leq 1.20$  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.

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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 78% transmission duty factor to determine compliance. See RF Conducted Power Section for the time domain plot and calculation for the duty factor of the device.
2. Head and Hotspot Bluetooth SAR were evaluated for BT BDR tethering applications.

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## 12 SAR MEASUREMENT VARIABILITY

### 12.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01, SAR measurement variability is assessed when the highest measured SAR is  $\geq 0.80$  W/kg. Since all measured SAR values are  $< 0.80$  W/kg for this device, SAR measurement variability was not assessed.

### 12.2 Measurement Uncertainty

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

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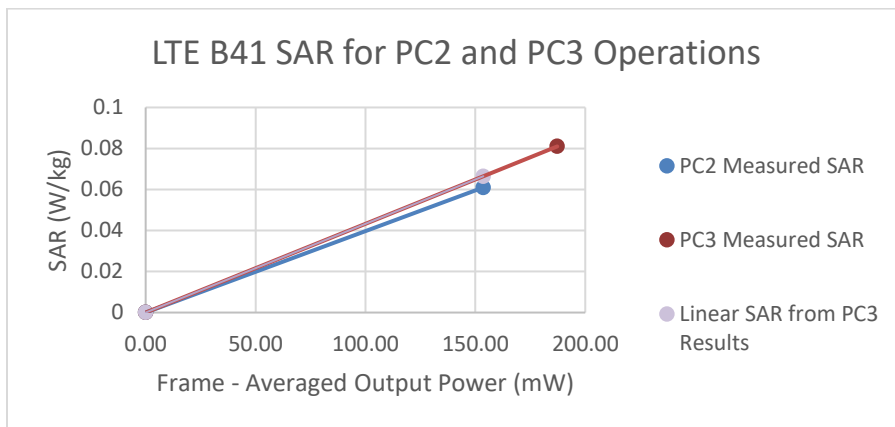
## 13 ADDITIONAL TESTING PER FCC GUIDANCE

### 13.1 LTE Band 41 Power Class 2 and Power Class 3 Linearity

This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per May 2017 TCB Workshop Notes based on the device behavior, all SAR tests were performed using Power Class 3. SAR with Power Class 2 at the highest power and available duty factor was additionally performed for the Power Class 3 configuration with the highest SAR for each exposure condition. The linearity between the Power Class 2 and Power Class 3 SAR results and the respective frame averaged powers was calculated to determine that the results were linear. Per May 2017 TCB Workshop, no additional SAR measurements were required since the linearity between power classes was < 10% and all reported SAR values were < 1.4 W/kg for 1g and < 3.5 W/kg for 10g.

**Table 13-1  
LTE Band 41 Head Linearity Data**

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.0	26.0
Measured Output Power (dBm)	24.71	25.50
Measured SAR (W/kg)	0.081	0.061
Measured Power (mW)	295.80	354.81
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	187.24	153.63
% deviation from expected linearity		-8.22%

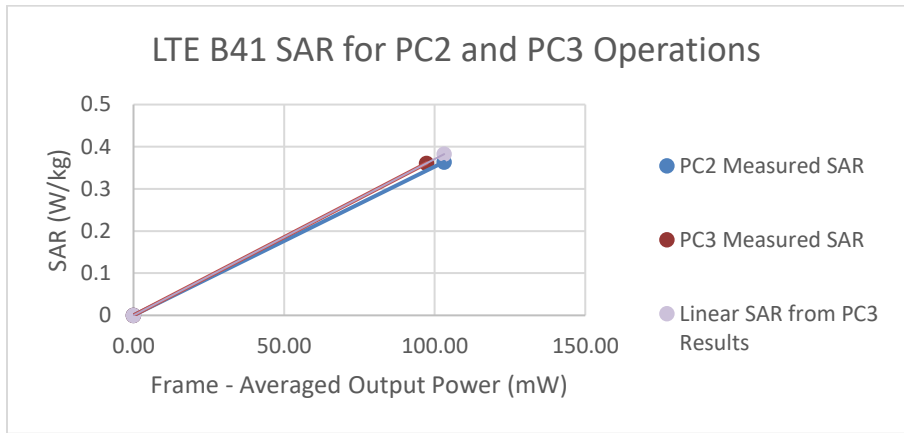


**Figure 13-1  
LTE Band 41 Head Linearity**

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**Table 13-2  
LTE Band 41 Body-Worn & Hotspot Linearity Data**

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	23.0	24.6
Measured Output Power (dBm)	21.87	23.77
Measured SAR (W/kg)	0.361	0.364
Measured Power (mW)	153.82	238.23
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	97.37	103.15
% deviation from expected linearity		-4.83%



**Figure 13-2  
LTE Band 41 Body-Worn & Hotspot Linearity**

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# 14 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E4404B	Spectrum Analyzer	N/A	N/A	N/A	MY45113242
Agilent	E4438C	ESG Vector Signal Generator	1/18/2023	Annual	1/18/2024	MY47270002
Agilent	E4438C	ESG Vector Signal Generator	4/25/2023	Annual	4/25/2024	US41460739
Agilent	N5182A	MXG Vector Signal Generator	11/30/2022	Annual	11/30/2023	MY47420603
Agilent	N5182A	MXG Vector Signal Generator	4/1/2023	Annual	4/1/2024	MY47420837
Agilent	N5182A	MXG Vector Signal Generator	7/4/2022	Annual	7/4/2023	MY48180366
Agilent	8753E5	S-Parameter Vector Network Analyzer	6/2/2023	Annual	6/2/2024	MY40003841
Agilent	8753E5	S-Parameter Vector Network Analyzer	1/12/2023	Annual	1/12/2024	MY40001472
Agilent	E5515C	Wireless Communications Test Set	1/12/2023	Annual	1/12/2024	MY50262130
Agilent	E5515C	Wireless Communications Test Set	CBT	N/A	CBT	GB46310798
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433972
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	343972
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Amplifier Research	150A100C	Amplifier	CBT	N/A	CBT	350132
Anritsu	ML2496A	Power Meter	8/16/2022	Annual	8/16/2023	1351001
Anritsu	ML2496A	Power Meter	6/15/2023	Annual	6/15/2024	1138001
Anritsu	MA2411B	Pulse Power Sensor	1/10/2023	Annual	1/10/2024	1315051
Anritsu	MA2411B	Pulse Power Sensor	6/15/2023	Annual	6/15/2024	1126066
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	1/10/2023	Annual	1/10/2024	6201524637
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	3/31/2023	Annual	3/31/2024	6201381794
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	11/28/2022	Annual	11/28/2023	6262150047
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	6/27/2022	Annual	6/27/2023	6261895213
Anritsu	MT8000A	Radio Communication Test Station	6/23/2023	Annual	6/23/2024	6261914237
Anritsu	MT8000A	Radio Communication Test Station	3/1/2023	Annual	3/1/2024	6272337419
Anritsu	MT8000A	Radio Communication Test Station	2/9/2023	Annual	2/9/2024	6272337408
Anritsu	MA24106A	USB Power Sensor	2/9/2023	Annual	2/9/2024	1520505
Anritsu	MA24106A	USB Power Sensor	6/15/2023	Annual	6/15/2024	1827530
Anritsu	MA24106A	USB Power Sensor	1/13/2023	Annual	1/13/2024	1344557
Mini-Circuits	PWR-4GHS	USB Power Sensor	11/11/2022	Annual	11/11/2023	11710030062
Control Company	4352	Long Stem Thermometer	9/10/2021	Biennial	9/10/2023	210774678
Control Company	4352	Long Stem Thermometer	9/10/2021	Biennial	9/10/2023	210774685
Control Company	4352	Long Stem Thermometer	9/10/2021	Biennial	9/10/2023	210774675
Control Company	4040	Therm./ Clock/ Humidity Monitor	1/17/2023	Annual	1/17/2024	160574418
Mitutoyo	500-196-30	CD-6" ASX 6inch Digital Caliper	2/16/2022	Triennial	2/16/2025	A20238413
Keysight Technologies	N6705B	DC Power Analyzer	5/5/2021	Triennial	5/5/2024	MY53004059
Keysight Technologies	N9020A	MXA Signal Analyzer	3/15/2023	Annual	3/15/2024	US46470561
Keysight Technologies	N9020A	MXA Signal Analyzer	4/6/2023	Annual	4/6/2024	MY48010233
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
Mini-Circuits	VLF-6000+	Low Pass Filter DC to 6000 MHz	CBT	N/A	CBT	31634
Mini-Circuits	VLF-6000+	Low Pass Filter DC to 6000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mini-Circuits	ZUDC10-83-S+	Directional Coupler	CBT	N/A	CBT	2050
Mini-Circuits	ZUDC10-83-S+	Directional Coupler	CBT	N/A	CBT	2111
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120

Note: 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.

Note: All equipment was used solely within its respective calibration period.

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Seekonk	TSF-100	Torque Wrench	7/11/2022	Annual	7/11/2023	47639-29
Pasternack	NC-100	Torque Wrench	11/28/2022	Biennial	11/28/2024	N/A
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	3/8/2023	Annual	3/8/2024	128635
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	6/1/2023	Annual	6/1/2024	108843
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	1/12/2023	Annual	1/12/2024	150117
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	2/17/2023	Annual	2/17/2024	164948
SPEAG	DAK-3.5	Dielectric Assessment Kit	12/15/2022	Annual	12/15/2023	1278
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/9/2023	Annual	5/9/2024	1070
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	8/15/2022	Annual	8/15/2023	1041
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	9/19/2022	Annual	9/19/2023	1045
SPEAG	MAIA	Modulation and Audio Interference Analyzer	N/A	N/A	N/A	1379
SPEAG	MAIA	Modulation and Audio Interference Analyzer	N/A	N/A	N/A	1243
SPEAG	MAIA	Modulation and Audio Interference Analyzer	N/A	N/A	N/A	1237
SPEAG	CLA-13	Confined Loop Antenna	9/13/2022	Annual	9/13/2023	1002
SPEAG	D750V3	750 MHz SAR Dipole	5/11/2023	Annual	5/11/2024	1003
SPEAG	D750V3	750 MHz SAR Dipole	2/13/2023	Annual	2/13/2024	1046
SPEAG	D750V3	750 MHz SAR Dipole	3/14/2022	Biennial	3/14/2024	1054
SPEAG	D835V2	835 MHz SAR Dipole	4/13/2023	Annual	4/13/2024	4d119
SPEAG	D835V2	835 MHz SAR Dipole	5/11/2023	Annual	5/11/2024	4d180
SPEAG	D1750V2	1750 MHz SAR Dipole	1/18/2022	Biennial	1/18/2024	1148
SPEAG	D1750V2	1750 MHz SAR Dipole	10/22/2021	Biennial	10/22/2023	1150
SPEAG	D1900V2	1900 MHz SAR Dipole	9/21/2021	Biennial	9/21/2023	5d149
SPEAG	D2450V2	2450 MHz SAR Dipole	11/25/2021	Biennial	11/25/2023	981
SPEAG	D2600V2	2600 MHz SAR Dipole	11/15/2022	Annual	11/15/2023	1071
SPEAG	D2600V2	2600 MHz SAR Dipole	9/9/2020	Triennial	9/9/2023	1069
SPEAG	D3500V2	3500 MHz SAR Dipole	8/17/2022	Annual	8/17/2023	1055
SPEAG	D3700V2	3700 MHz SAR Dipole	10/21/2022	Annual	10/21/2023	1002
SPEAG	D3900V2	3900 MHz SAR Dipole	11/13/2020	Triennial	11/13/2023	1062
SPEAG	D5GHzV2	5 GHz SAR Dipole	1/18/2023	Annual	1/18/2024	1191
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/18/2022	Annual	7/18/2023	1583
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/15/2023	Annual	2/15/2024	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/18/2023	Annual	1/18/2024	1530
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/15/2023	Annual	6/15/2024	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/17/2023	Annual	1/17/2024	1558
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/11/2023	Annual	5/11/2024	728
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/17/2023	Annual	1/17/2024	793
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/13/2023	Annual	3/13/2024	1408
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/16/2023	Annual	2/16/2024	1645
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/16/2023	Annual	3/16/2024	1652
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/15/2023	Annual	2/15/2024	467
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/27/2023	Annual	6/27/2024	1502
SPEAG	EX3DV4	SAR Probe	7/19/2022	Annual	7/19/2023	7410
SPEAG	EX3DV4	SAR Probe	2/8/2023	Annual	2/8/2024	7417
SPEAG	EX3DV4	SAR Probe	1/11/2023	Annual	1/11/2024	7713
SPEAG	EX3DV4	SAR Probe	6/15/2023	Annual	6/15/2024	7409
SPEAG	EX3DV4	SAR Probe	1/11/2023	Annual	1/11/2024	7570
SPEAG	EX3DV4	SAR Probe	6/14/2023	Annual	6/14/2024	7661
SPEAG	EX3DV4	SAR Probe	1/17/2023	Annual	1/17/2024	3837
SPEAG	EX3DV4	SAR Probe	3/16/2023	Annual	3/16/2024	7638
SPEAG	EX3DV4	SAR Probe	3/16/2023	Annual	3/16/2024	7637
SPEAG	EX3DV4	SAR Probe	5/10/2023	Annual	5/10/2024	7402
SPEAG	EX3DV4	SAR Probe	2/10/2023	Annual	2/10/2024	7640
SPEAG	EX3DV4	SAR Probe	2/13/2023	Annual	2/13/2024	7308

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# 15 MEASUREMENT UNCERTAINTIES

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

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

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## 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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