element

ELEMENT MATERIALS TECHNOLOGY
(formerly PCTEST)
7185 Oakland Mills Road, Columbia, MD 21046 USA
Tel. +1.410.290.6652 / Fax +1.410.290.6654
http://www.element.com

SAR EVALUATION REPORT

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

Date of Testing:
11/08/23 – 01/02/24
Test Site/Location:
Element, Columbia, MD, USA
Document Serial No.:
1M2310260110-07.A3L (Rev1)

FCC ID:	**A3LSMA356E**
APPLICANT:	**SAMSUNG ELECTRONICS CO., LTD.**

DUT Type:	Portable Handset
Application Type:	Certification
FCC Rule Part(s):	CFR §2.1093
Model(s):	SM-A356E
Additional Model(s):	SM-A356E/DS

Equipment Class	Band & Mode	Tx Frequency	SAR			
			1g Head (W/kg)	1g Body-Worn (W/kg)	1g Hotspot (W/kg)	10g Phablet (W/kg)
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.17	0.39	0.44	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	<0.1	0.32	0.34	N/A
PCE	UMTS 850	826.40 - 846.60 MHz	0.25	**0.58**	0.58	N/A
PCE	UMTS 1750	1712.4 - 1752.6 MHz	0.22	0.30	0.37	N/A
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.17	0.39	0.39	N/A
PCE	LTE Band 12	699.7 - 715.3 MHz	0.21	0.37	0.40	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	0.21	0.48	0.48	N/A
PCE	LTE Band 26	814.7 - 848.3 MHz	0.19	0.49	0.49	N/A
PCE	LTE Band 5	824.7 - 848.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 66	1710.7 - 1779.3 MHz	0.55	0.24	0.33	N/A
PCE	LTE Band 4	1710.7 - 1754.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 25	1850.7 - 1914.3 MHz	0.46	0.23	0.27	N/A
PCE	LTE Band 2	1850.7 - 1909.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 41	2498.5 - 2687.5 MHz	0.45	0.14	0.15	N/A
PCE	NR Band n5	826.5 - 846.5 MHz	0.24	0.45	0.45	N/A
PCE	NR Band n66	1712.5 - 1777.5 MHz	0.70	0.28	0.39	0.80
PCE	NR Band n41	2501.01 - 2685 MHz	0.17	0.12	0.12	N/A
PCE	NR Band n77	3455.01 - 3544.98 MHz; 3705 - 3975 MHz	**1.05**	0.53	**0.72**	**2.29**
DTS	2.4 GHz WIFI	2412 - 2472 MHz	**0.35**	**0.53**	**0.53**	N/A
NII	5 GHz WIFI	U-NII-1: 5180 - 5240 MHz U-NII-2A: 5260 - 5320 MHz U-NII-2C: 5500 - 5720 MHz U-NII-3: 5745 - 5825 MHz	**0.51**	**0.40**	**0.40**	**0.98**
DSS	2.4 GHz Bluetooth	2402 - 2480 MHz	**<0.1**	**<0.1**	**<0.1**	N/A
DXX	NFC	13.56 MHz	N/A	N/A	N/A	**<0.1**
Simultaneous SAR per KDB 690783 D01v01r03:			**1.59**	1.15	1.16	**3.50**

Note: This revised test report supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

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

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

RJ Ortanez
Executive Vice President

The SAR Tick is an initiative of the Mobile & Wireless Forum (MWF). While a product may be considered eligible, use of the SAR Tick logo requires an agreement with the MWF. Further details can be obtained by emailing: sartick@mwfai.info.

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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/EDGE1900	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	Voice/Data	814.7 - 848.3 MHz
LTE Band 5	Voice/Data	824.7 - 848.3 MHz
LTE Band 66	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 25	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2	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 WIFI	Voice/Data	2412 - 2472 MHz
5 GHz WIFI	Voice/Data	U-NII-1: 5180 - 5240 MHz U-NII-2A: 5260 - 5320 MHz U-NII-2C: 5500 - 5720 MHz U-NII-3: 5745 - 5825 MHz
2.4 GHz Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz

1.2 Time-Averaging Algorithm for RF Exposure Compliance

The purpose of this report is to show SAR Characterization of WWAN sub-6/WLAN (Part0) and to demonstrate that the EUT meets FCC SAR limits when transmitting in static transmission scenario at maximum allowable time-averaged power levels (Part1).

This Device is enabled with L.SI FastConnect TAS feature for 2G/3G/4G/5G modes. This feature performs time averaging algorithm in real time to control and manage transmitting power and ensure the time-averaged RF exposure is in compliance with FCC requirements all the time. Refer to Compliance Summary document for detailed description of L.SI FastConnect TAS feature (report SN could be found in Section 1.11 – Bibliography).

Note that WLAN, Bluetooth and NFC operations are not enabled with TAS.

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., Plimit for sub-6 radio), for each characterized technology and band. Characterization is achieved by determining Plimit for WWAN sub-6 that corresponds to the exposure design targets after accounting for all device design related uncertainties, i.e., SAR_design_target (<FCC SAR Limit) for sub-6 radio. The SAR characterization is denoted as SAR char in this report (see SAR Summary Section, Section 11 of this report, and Part 0 SAR Test Results for Plimit Calculations Appendix).

FastConnect TAS allows the device to transmit at higher power instantaneously, as high as Pmax, when needed, but enforces power limiting to maintain time-averaged transmit power to Plimit. Below table shows Final Plimit settings and maximum tune up output power Pmax configured for this EUT for various transmit conditions (Radio State Index RSI for S.LSI). Note that the device uncertainty for sub-6GHz is 1.0dB for this EUT.

Exposure Scenario			Maximum Tune-Up Output Power*	Free (Body-Worn, Hotspot, or Phablet)	Head
Averaging Volume				1g/10g	1g
Spacing				10mm, 0mm	0mm
Configuration					
RSI				0	4
Technology/Band	Antenna	Antenna Group	Pmax		
GSM 850	A	AG0	24.3	27.6	33.0
GSM 1900	B	AG0	22.6	19.0	32.6
UMTS 850	A	AG0	24.0	27.3	30.9
UMTS 1750	B	AG0	23.0	20.0	30.6
UMTS 1900	B	AG0	23.0	20.0	31.8
LTE Band 12/17	A	AG0	24.5	27.9	31.9
LTE Band 13	A	AG0	24.5	28.1	31.7
LTE Band 26/5	A	AG0	24.5	28.1	32.3
LTE Band 66/4	B	AG0	23.0	18.5	31.5
LTE Band 66/4	F	AG1	22.5	18.5	18.5
LTE Band 25/2	B	AG0	23.0	18.5	31.3
LTE Band 25/2	F	AG1	22.5	18.5	18.5
LTE Band 41	B	AG0	22.0	17.5	33.8
LTE Band 41	F	AG1	20.0	17.5	17.5
NR Band n5	A	AG0	24.5	27.5	31.7
NR Band n66	B	AG0	23.0	18.5	31.3
NR Band n66	F	AG1	22.5	18.5	18.5
NR Band n41 PC3	B	AG0	24.0	16.5	32.7
NR Band n41 PC3	F	AG1	20.5	16.5	16.5
NR Band n41 PC3	I	AG1	20.0	20.0	20.0
NR Band n41 PC3	E	AG1	19.5	19.0	19.0
NR Band n77 PC3	G	AG1	24.0	16.5	15.5
NR Band n77 PC2	G	AG1	25.0	16.5	15.5

*Note all Final Plimit and maximum tune up output power Pmax 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 Pmax 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 technology, band, and RSI = minimum of "final Plimit " and "Maximum tune up output power Pmax " + 1dB device uncertainty. SAR values in this report were scaled to this maximum time-averaged output power to determine compliance per KDB Publication 447498 D01v06.

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

Measurement Condition: All conducted power and SAR measurements in this report (Part 1 test) were performed by setting Reserve_power_margin (FastConnect BDF entry) when applicable to 0dB.

1.3 Power Reduction for SAR

This device uses an independent fixed level power reduction mechanism for WLAN operations during voice or VoIP held to ear scenarios and/or 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.

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

GSM/GPRS/EDGE 850										
Antenna A										
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	34.5	34.5	31.5	29.5	28.5	27.0	25.0	23.5	22.5
	Nominal	33.5	33.5	30.5	28.5	27.5	26.0	24.0	22.5	21.5
RSI = 0 (Free (Body-Worn, Hotspot, or Phablet))	Max Allowed Power	34.5	34.5	31.5	29.5	28.5	27.0	25.0	23.5	22.5
	Nominal	33.5	33.5	30.5	28.5	27.5	26.0	24.0	22.5	21.5
RSI = 4 (Head)	Max Allowed Power	34.5	34.5	31.5	29.5	28.5	27.0	25.0	23.5	22.5
	Nominal	33.5	33.5	30.5	28.5	27.5	26.0	24.0	22.5	21.5
GSM/GPRS/EDGE 1900										
Antenna B										
Power Level		Voice (in dBm)	Data - Burst Average GMSK (in dBm)				Data - Burst Average 8-PSK (in dBm)			
		1 TX Slot	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
Pmax	Max Allowed Power	30.0	30.0	29.0	28.0	26.5	27.0	25.0	23.5	22.5
	Nominal	29.0	29.0	28.0	27.0	25.5	26.0	24.0	22.5	21.5
RSI = 0 (Free (Body-Worn, Hotspot, or Phablet))	Max Allowed Power	29.2	29.2	26.2	24.4	23.2	27.0	25.0	23.5	22.5
	Nominal	28.2	28.2	25.2	23.4	22.2	26.0	24.0	22.5	21.5
RSI = 4 (Head)	Max Allowed Power	30.0	30.0	29.0	28.0	26.5	27.0	25.0	23.5	22.5
	Nominal	29.0	29.0	28.0	27.0	25.5	26.0	24.0	22.5	21.5

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

UMTS Band 5 (850 MHz)					
Antenna A					
Power Level		Modulated Average Output Power (in dBm)			
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6	3GPP DC-HSDPA Rel 8
Pmax	Max Allowed Power	25.0	24.0	24.0	24.0
	Nominal	24.0	23.0	23.0	23.0
RSI = 0 (Free (Body-Worn, Hotspot, or Phablet))	Max Allowed Power	25.0	24.0	24.0	24.0
	Nominal	24.0	23.0	23.0	23.0
RSI = 4 (Head)	Max Allowed Power	25.0	24.0	24.0	24.0
	Nominal	24.0	23.0	23.0	23.0
UMTS Band 4 (1750 MHz)					
Antenna B					
Power Level		Modulated Average Output Power (in dBm)			
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6	3GPP DC-HSDPA Rel 8
Pmax	Max Allowed Power	24.0	24.0	24.0	24.0
	Nominal	23.0	23.0	23.0	23.0
RSI = 0 (Free (Body-Worn, Hotspot, or Phablet))	Max Allowed Power	21.0	21.0	21.0	21.0
	Nominal	20.0	20.0	20.0	20.0
RSI = 4 (Head)	Max Allowed Power	24.0	24.0	24.0	24.0
	Nominal	23.0	23.0	23.0	23.0
UMTS Band 2 (1900 MHz)					
Antenna B					
Power Level		Modulated Average Output Power (in dBm)			
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6	3GPP DC-HSDPA Rel 8
Pmax	Max Allowed Power	24.0	24.0	24.0	24.0
	Nominal	23.0	23.0	23.0	23.0
RSI = 0 (Free (Body-Worn, Hotspot, or Phablet))	Max Allowed Power	21.0	21.0	21.0	21.0
	Nominal	20.0	20.0	20.0	20.0
RSI = 4 (Head)	Max Allowed Power	24.0	24.0	24.0	24.0
	Nominal	23.0	23.0	23.0	23.0

Mode / Band	Antenna		Modulated Average Output Power (in dBm)		
			Pmax	RSI = 0 (Free (Body-Worn, Hotspot, or Phablet))	RSI = 4 (Head)
LTE Band 12/17	A	Max Allowed Power	25.5	25.5	25.5
		Nominal	24.5	24.5	24.5
LTE Band 13	A	Max Allowed Power	25.5	25.5	25.5
		Nominal	24.5	24.5	24.5
LTE Band 26/5	A	Max Allowed Power	25.5	25.5	25.5
		Nominal	24.5	24.5	24.5
LTE Band 66/4	B	Max Allowed Power	24.0	19.5	24.0
		Nominal	23.0	18.5	23.0
LTE Band 66/4	F	Max Allowed Power	23.5	19.5	19.5
		Nominal	22.5	18.5	18.5
LTE Band 25/2	B	Max Allowed Power	24.0	19.5	24.0
		Nominal	23.0	18.5	23.0
LTE Band 25/2	F	Max Allowed Power	23.5	19.5	19.5
		Nominal	22.5	18.5	18.5
LTE Band 41	B	Max Allowed Power	25.0	20.5	25.0
		Nominal	24.0	19.5	24.0
LTE Band 41	F	Max Allowed Power	23.0	20.5	20.5
		Nominal	22.0	19.5	19.5

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

Mode / Band	Antenna		Modulated Average Output Power (in dBm)		
			Pmax	RSI = 0 (Free (Body-Worn, Hotspot, or Phablet))	RSI = 4 (Head)
NR Band n5	A	Max Allowed Power	25.5	25.5	25.5
		Nominal	24.5	24.5	24.5
NR Band n66	B	Max Allowed Power	24.0	19.5	24.0
		Nominal	23.0	18.5	23.0
NR Band n66	F	Max Allowed Power	23.5	19.5	19.5
		Nominal	22.5	18.5	18.5
NR Band n41 PC3	B	Max Allowed Power	25.0	17.5	25.0
		Nominal	24.0	16.5	24.0
NR Band n41 PC3	F	Max Allowed Power	21.5	17.5	17.5
		Nominal	20.5	16.5	16.5
NR Band n41 PC3	I	Max Allowed Power	21.0	21.0	21.0
		Nominal	20.0	20.0	20.0
NR Band n41 PC3	E	Max Allowed Power	20.5	20.0	20.0
		Nominal	19.5	19.0	19.0
NR Band n77 PC3	G	Max Allowed Power	25.0	17.5	16.5
		Nominal	24.0	16.5	15.5
NR Band n77 PC2	G	Max Allowed Power	26.0	17.5	16.5
		Nominal	25.0	16.5	15.5

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

1.4.2 2.4 GHz WLAN Output Power

The below table is applicable in the following conditions:

- Maximum Power

Band	Power Level	IEEE 802.11 Modulated Output Power (in dBm)																							
		SISO Antenna I								SISO Antenna M								MIMO							
		b		g		n		ax (SU)		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.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.
2.4 GHz WLAN	2.45 GHz	19.0	18.0	17.0	16.0	17.0	16.0	17.0	16.0	19.0	18.0	17.0	16.0	17.0	16.0	17.0	16.0	22.0	21.0	20.0	19.0	20.0	19.0	20.0	19.0
				ch. 1: 16.0	15.0	ch. 1: 16.0	15.0	ch. 1: 16.0	15.0			ch. 1: 16.0	15.0	ch. 1: 16.0	15.0	ch. 1: 16.0	15.0			ch. 1: 19.0	18.0	ch. 1: 19.0	18.0	ch. 1: 19.0	18.0
		ch. 12: 8.0	7.0	ch. 12: 8.0	7.0	ch. 12: 8.0	7.0	ch. 12: 8.0	7.0	ch. 12: 8.0	7.0	ch. 12: 8.0	7.0	ch. 12: 8.0	7.0	ch. 12: 8.0	7.0	ch. 12: 11.0	10.0	ch. 12: 11.0	10.0	ch. 12: 11.0	10.0	ch. 12: 11.0	10.0
		ch. 13: 1.0	0.0	ch. 13: 1.0	0.0	ch. 13: 1.0	0.0	ch. 13: 1.0	0.0	ch. 13: 1.0	0.0	ch. 13: 1.0	0.0	ch. 13: 1.0	0.0	ch. 13: 1.0	0.0	ch. 13: 4.0	3.0	ch. 13: 4.0	3.0	ch. 13: 4.0	3.0	ch. 13: 4.0	3.0

The below table is applicable in the following conditions:

- Reduced Power – RCV Active

Band	Power Level	IEEE 802.11 Modulated Output Power (in dBm)																							
		SISO Antenna I								SISO Antenna M								MIMO							
		b		g		n		ax (SU)		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.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.
2.4 GHz WLAN	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	17.0	16.0	17.0	16.0	17.0	16.0	17.0	16.0
		ch. 12: 8.0	7.0	ch. 12: 8.0	7.0	ch. 12: 8.0	7.0	ch. 12: 8.0	7.0	ch. 12: 8.0	7.0	ch. 12: 8.0	7.0	ch. 12: 8.0	7.0	ch. 12: 8.0	7.0	ch. 12: 11.0	10.0	ch. 12: 11.0	10.0	ch. 12: 11.0	10.0	ch. 12: 11.0	10.0
		ch. 13: 1.0	0.0	ch. 13: 1.0	0.0	ch. 13: 1.0	0.0	ch. 13: 1.0	0.0	ch. 13: 1.0	0.0	ch. 13: 1.0	0.0	ch. 13: 1.0	0.0	ch. 13: 1.0	0.0	ch. 13: 4.0	3.0	ch. 13: 4.0	3.0	ch. 13: 4.0	3.0	ch. 13: 4.0	3.0

1.4.3 5 GHz Maximum WLAN Output Power

The below table is applicable in the following conditions:

- Maximum Power

Mode	Band	IEEE 802.11 Modulated Output Power (in dBm)																							
		SISO Antenna G								SISO Antenna M								MIMO							
		a		n		ac		ax (SU)		a		n		ac		ax (SU)		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.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.
5 GHz WIFI (20MHz BW)	UNII-1/2A/2C/3	17.0	16.0	17.0	16.0	17.0	16.0	17.0	16.0	17.0	16.0	17.0	16.0	17.0	16.0	17.0	16.0	20.0	19.0	20.0	19.0	20.0	19.0	20.0	19.0
5 GHz WIFI (40MHz BW)	UNII-1			16.0	15.0	16.0	15.0	16.0	15.0			16.0	15.0	16.0	15.0	16.0	15.0			19.0	18.0	19.0	18.0	19.0	18.0
						ch. 38: 15.0	14.0	ch. 38: 15.0	14.0					ch. 38: 15.0	14.0	ch. 38: 15.0	14.0					ch. 38: 18.0	17.0	ch. 38: 18.0	17.0
	UNII-2A			16.0	15.0	16.0	15.0	16.0	15.0			16.0	15.0	16.0	15.0	16.0	15.0			19.0	18.0	19.0	18.0	19.0	18.0
						ch. 62: 15.0	14.0	ch. 62: 15.0	14.0					ch. 62: 15.0	14.0	ch. 62: 15.0	14.0					ch. 62: 18.0	17.0	ch. 62: 18.0	17.0
	UNII-2C			16.0	15.0	16.0	15.0	16.0	15.0			16.0	15.0	16.0	15.0	16.0	15.0			19.0	18.0	19.0	18.0	19.0	18.0
				ch. 102: 14.0	13.0	ch. 102: 14.0	13.0	ch. 102: 14.0	13.0			ch. 102: 14.0	13.0	ch. 102: 14.0	13.0	ch. 102: 14.0	13.0			ch. 102: 17.0	16.0	ch. 102: 17.0	16.0	ch. 102: 17.0	16.0
	UNII-3			16.0	15.0	16.0	15.0	16.0	15.0			16.0	15.0	16.0	15.0	16.0	15.0			19.0	18.0	19.0	18.0	19.0	18.0
5 GHz WIFI (80MHz BW)	UNII-1					14.0	13.0	14.0	13.0					14.0	13.0	14.0	13.0					17.0	16.0	17.0	16.0
	UNII-2A					13.0	12.0	13.0	12.0					13.0	12.0	13.0	12.0					16.0	15.0	16.0	15.0
	UNII-2C					14.0	13.0	14.0	13.0					14.0	13.0	14.0	13.0					17.0	16.0	17.0	16.0
	UNII-3					14.0	13.0	14.0	13.0					14.0	13.0	14.0	13.0					17.0	16.0	17.0	16.0

The below table is applicable in the following conditions:

- Reduced Power – RCV Active

Mode	Band	IEEE 802.11 Modulated Output Power (in dBm)																							
		SISO Antenna G								SISO Antenna M								MIMO							
		a		n		ac		ax (SU)		a		n		ac		ax (SU)		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.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.
5 GHz WIFI (20MHz BW)	UNII-1/2A/2C/3	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	17.0	16.0	17.0	16.0	17.0	16.0	17.0	16.0
5 GHz WIFI (40MHz BW)	UNII-1/2A/2C/3			14.0	13.0	14.0	13.0	14.0	13.0			14.0	13.0	14.0	13.0	14.0	13.0			17.0	16.0	17.0	16.0	17.0	16.0
5 GHz WIFI (80MHz BW)	UNII-1					14.0	13.0	14.0	13.0					14.0	13.0	14.0	13.0					17.0	16.0	17.0	16.0
	UNII-2A					13.0	12.0	13.0	12.0					13.0	12.0	13.0	12.0					16.0	15.0	16.0	15.0
	UNII-2C					14.0	13.0	14.0	13.0					14.0	13.0	14.0	13.0					17.0	16.0	17.0	16.0
	UNII-3					14.0	13.0	14.0	13.0					14.0	13.0	14.0	13.0					17.0	16.0	17.0	16.0
	UNII-4					14.0	13.0	14.0	13.0					14.0	13.0	14.0	13.0					17.0	16.0	17.0	16.0

1.4.4 2.4 GHz Bluetooth Maximum Output Power

Mode	Data Rate	Modulated Output Power (in dBm)	
		Single Antenna	
		Antenna I	
Maximum / Nominal Power		Max	Nom.
Bluetooth	1Mbps	17.0	16.0
Bluetooth EDR	2Mbps	12.5	11.5
Bluetooth EDR	3Mbps	12.5	11.5
Bluetooth LE	1Mbps	10.5	9.5
Bluetooth LE	2Mbps	10.5	9.5
Bluetooth LE	125kbps	10.5	9.5
Bluetooth LE	500kbps	10.5	9.5

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
F	Yes	Yes	Yes	No	No	Yes
G	Yes	Yes	Yes	No	No	Yes
I	Yes	Yes	Yes	No	No	Yes
E	Yes	Yes	Yes	No	Yes	No
M	Yes	Yes	Yes	No	No	Yes

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, and U-NII-2C operations are disabled.

1.6 Near Field Communications (NFC) Antenna

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

1.7 Simultaneous Transmission Capabilities

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

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB Publication 447498 D01v06 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 WLAN Ant I	Yes	Yes	N/A	Yes	
2	GSM voice + 2.4 GHz WLAN Ant F	Yes	Yes	N/A	Yes	
3	GSM voice + 2.4 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
4	GSM voice + 5 GHz WLAN Ant G	Yes	Yes	N/A	Yes	
5	GSM voice + 5 GHz WLAN Ant M	Yes	Yes	N/A	Yes	
6	GSM voice + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
7	GSM voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
8	GSM voice + 2.4 GHz Bluetooth + 5 GHz WLAN Ant G	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
9	GSM voice + 2.4 GHz Bluetooth + 5 GHz WLAN Ant M	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
10	GSM voice + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
11	UMTS/LTE/NR + 2.4 GHz WLAN Ant I	Yes	Yes	Yes	Yes	
12	UMTS/LTE/NR + 2.4 GHz WLAN Ant F	Yes	Yes	Yes	Yes	
13	UMTS/LTE/NR + 2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
14	UMTS/LTE/NR + 5 GHz WLAN Ant G	Yes	Yes	Yes	Yes	
15	UMTS/LTE/NR + 5 GHz WLAN Ant M	Yes	Yes	Yes	Yes	
16	UMTS/LTE/NR + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
17	UMTS/LTE/NR + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
18	UMTS/LTE/NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant G	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
19	UMTS/LTE/NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant M	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
20	UMTS/LTE/NR + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
21	LTE + NR	Yes	Yes	N/A	Yes	
22	LTE + NR + 2.4 GHz WLAN Ant I	Yes	Yes	Yes	Yes	
23	LTE + NR + 2.4 GHz WLAN Ant F	Yes	Yes	Yes	Yes	
24	LTE + NR + 2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
25	LTE + NR + 5 GHz WLAN Ant G	Yes	Yes	Yes	Yes	
26	LTE + NR + 5 GHz WLAN Ant M	Yes	Yes	Yes	Yes	
27	LTE + NR + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
28	LTE + NR + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
29	LTE + NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant G	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
30	LTE + NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant M	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
31	LTE + NR + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
32	GPRS/EDGE + 2.4 GHz WLAN Ant I	N/A	N/A	Yes	Yes	
33	GPRS/EDGE + 2.4 GHz WLAN Ant F	N/A	N/A	Yes	Yes	
34	GPRS/EDGE + 2.4 GHz WLAN MIMO	N/A	N/A	Yes	Yes	
35	GPRS/EDGE + 5 GHz WLAN Ant G	N/A	N/A	Yes	Yes	
36	GPRS/EDGE + 5 GHz WLAN Ant M	N/A	N/A	Yes	Yes	
37	GPRS/EDGE + 5 GHz WLAN MIMO	N/A	N/A	Yes	Yes	
38	GPRS/EDGE + 2.4 GHz Bluetooth	N/A	N/A	Yes^	Yes	^ Bluetooth Tethering is considered
39	GPRS/EDGE + 2.4 GHz Bluetooth + 5 GHz WLAN Ant G	N/A	N/A	Yes^	Yes	^ Bluetooth Tethering is considered
40	GPRS/EDGE + 2.4 GHz Bluetooth + 5 GHz WLAN Ant M	N/A	N/A	Yes^	Yes	^ Bluetooth Tethering is considered
41	GPRS/EDGE + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO	N/A	N/A	Yes^	Yes	^ Bluetooth Tethering is considered

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, and U-NII-2C were not evaluated for wireless router conditions.
5. 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.
6. This device supports VoWIFI.
7. This device supports Bluetooth Tethering.

8. This device supports VoLTE.
9. This device supports VoNR.
10. LTE + 5G NR FR1 Scenarios are limited to EN-DC combinations with anchor bands as shown in the NR FR1 checklist.
11. 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, and U-NII-2C 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 80 MHz Bandwidth only for 5 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 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, and U-NII-2C WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for 2.4 GHz WLAN, 2.4 GHz Bluetooth, and U-NII-3 WLAN operations since wireless router 1g SAR was < 1.2 W/kg.

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

(B) Licensed Transmitter(s)

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

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

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

This device supports LTE Carrier Aggregation (CA) in the downlink. All uplink communications are identical to Release 8 specifications. Per FCC KDB Publication 941225 D05A v01r02, SAR for LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive. The downlink carrier aggregation exclusion analysis can be found in 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 can transmit with antenna F for LTE B2/4/25/66/41 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 S.LSI guidance.

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)
- November 2017, April 2018, October 2018 TCB Workshop Notes (LTE Carrier Aggregation)
- April 2019 TCB Workshop Notes (IEEE 802.11ax)

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	1M2310260110-21.A3L
RF Exposure Compliance Summary Report	1M2310260110-08.A3L

2 LTE AND NR INFORMATION

LTE Information					
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 12: 699.7 - 715.3 MHz				
	LTE Band 17: 706.5 - 713.5 MHz				
	LTE Band 13: 779.5 - 784.5 MHz				
	LTE Band 26: 814.7 - 848.3 MHz				
	LTE Band 5: 824.7 - 848.3 MHz				
	LTE Band 66: 1710.7 - 1779.3 MHz				
	LTE Band 4: 1710.7 - 1754.3 MHz				
	LTE Band 25: 1850.7 - 1914.3 MHz				
	LTE Band 2: 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: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz				
	LTE Band 5: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 66: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 4: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 25: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 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: 1.4 MHz	814.7 (26697)		831.5 (26865)	848.3 (27033)	
LTE Band 26: 3 MHz	815.5 (26705)		831.5 (26865)	847.5 (27025)	
LTE Band 26: 5 MHz	816.5 (26715)		831.5 (26865)	846.5 (27015)	
LTE Band 26: 10 MHz	819 (26740)		831.5 (26865)	844 (26990)	
LTE Band 26: 15 MHz	821.5 (26765)		831.5 (26865)	841.5 (26965)	
LTE Band 5: 1.4 MHz	824.7 (20407)		836.5 (20525)	848.3 (20643)	
LTE Band 5: 3 MHz	825.5 (20415)		836.5 (20525)	847.5 (20635)	
LTE Band 5: 5 MHz	826.5 (20425)		836.5 (20525)	846.5 (20625)	
LTE Band 5: 10 MHz	829 (20450)		836.5 (20525)	844 (20600)	
LTE Band 66: 1.4 MHz	1710.7 (131979)		1745 (132322)	1779.3 (132665)	
LTE Band 66: 3 MHz	1711.5 (131987)		1745 (132322)	1778.5 (132657)	
LTE Band 66: 5 MHz	1712.5 (131997)		1745 (132322)	1777.5 (132647)	
LTE Band 66: 10 MHz	1715 (132022)		1745 (132322)	1775 (132622)	
LTE Band 66: 15 MHz	1717.5 (132047)		1745 (132322)	1772.5 (132597)	
LTE Band 66: 20 MHz	1720 (132072)		1745 (132322)	1770 (132572)	
LTE Band 4: 1.4 MHz	1710.7 (19957)		1732.5 (20175)	1754.3 (20393)	
LTE Band 4: 3 MHz	1711.5 (19965)		1732.5 (20175)	1753.5 (20385)	
LTE Band 4: 5 MHz	1712.5 (19975)		1732.5 (20175)	1752.5 (20375)	
LTE Band 4: 10 MHz	1715 (20000)		1732.5 (20175)	1750 (20350)	
LTE Band 4: 15 MHz	1717.5 (20025)		1732.5 (20175)	1747.5 (20325)	
LTE Band 4: 20 MHz	1720 (20050)		1732.5 (20175)	1745 (20300)	
LTE Band 25: 1.4 MHz	1850.7 (26047)		1882.5 (26365)	1914.3 (26683)	
LTE Band 25: 3 MHz	1851.5 (26055)		1882.5 (26365)	1913.5 (26675)	
LTE Band 25: 5 MHz	1852.5 (26065)		1882.5 (26365)	1912.5 (26665)	
LTE Band 25: 10 MHz	1855 (26090)		1882.5 (26365)	1910 (26640)	
LTE Band 25: 15 MHz	1857.5 (26115)		1882.5 (26365)	1907.5 (26615)	
LTE Band 25: 20 MHz	1860 (26140)		1882.5 (26365)	1905 (26590)	
LTE Band 2: 1.4 MHz	1850.7 (18607)		1880 (18900)	1909.3 (19193)	
LTE Band 2: 3 MHz	1851.5 (18615)		1880 (18900)	1908.5 (19185)	
LTE Band 2: 5 MHz	1852.5 (18625)		1880 (18900)	1907.5 (19175)	
LTE Band 2: 10 MHz	1855 (18650)		1880 (18900)	1905 (19150)	
LTE Band 2: 15 MHz	1857.5 (18675)		1880 (18900)	1902.5 (19125)	
LTE Band 2: 20 MHz	1860 (18700)		1880 (18900)	1900 (19100)	
LTE Band 41: 5 MHz	2502.5 (39715)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2505 (39740)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2507.5 (39765)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2510 (39790)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	UL Cat: 18, DL 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 14. 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 14 Features are not supported: Relay, HetNet, Enhanced MIMO, eICIC, eMBMS, Wifi Offloading, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

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, 25 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, 25 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: 25 MHz	1722.5 (344500)		1745 (349000)		1767.5 (353500)	
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	2616.01 (523202)	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)		2644.98 (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: 25 MHz	3462.51 (630834)		3500.01 (633334)		3537.48 (635832)	
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)		3529.98 (635332)	
NR Band n77 DoD: 50 MHz	3475.02 (631668)		(N/A)		3525 (635000)	
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: 25 MHz	3712.5 (647500)	3763.5 (650900)	3814.5 (654300)	3865.5 (657700)	3916.5 (661100)	3967.5 (664500)
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)		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: π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM					
A-MPR (Additional MPR) disabled for SAR Testing?	YES					
EN-DC and NR 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 4/5/12/66					
LTE Anchor Bands for NR Band n77	LTE Band 2/5/12/13/25/66					

3 INTRODUCTION

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

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

3.1 SAR Definition

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

Equation 3-1
SAR Mathematical Equation

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

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

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

where:

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

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

4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

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

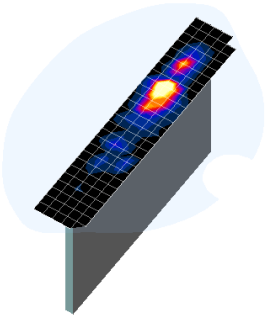


Figure 4-1
Sample SAR Area Scan

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

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

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

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

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

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

*Also compliant to IEEE 1528-2013 Table 6

5 DEFINITION OF REFERENCE POINTS

5.1 EAR REFERENCE POINT

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

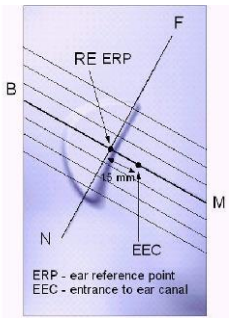


Figure 5-1
Close-Up Side view of ERP

5.2 HANDSET REFERENCE POINTS

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

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

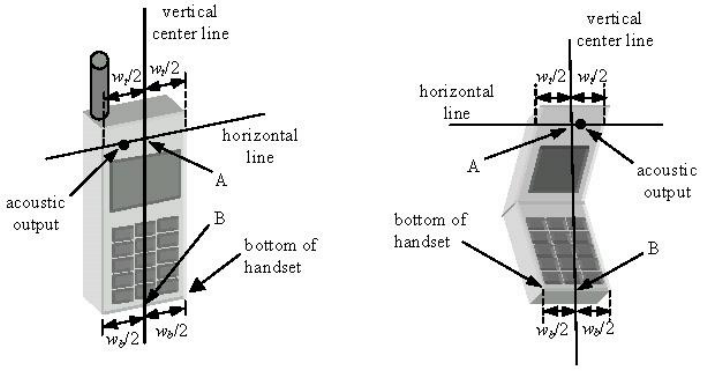


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

6 TEST CONFIGURATION POSITIONS

6.1 Device Holder

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

6.2 Positioning for Cheek

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

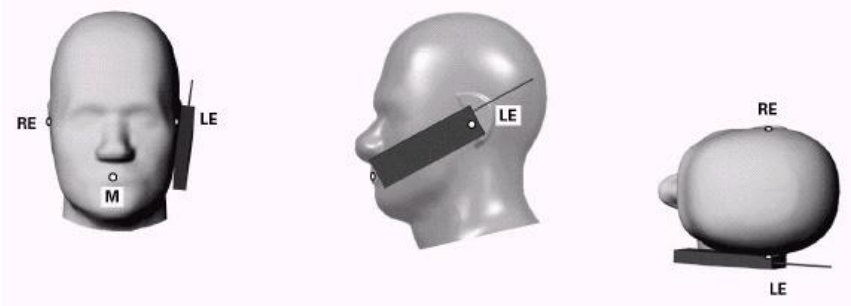


Figure 6-1 Front, Side and Top View of Cheek Position

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

6.3 Positioning for Ear / 15º Tilt

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

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

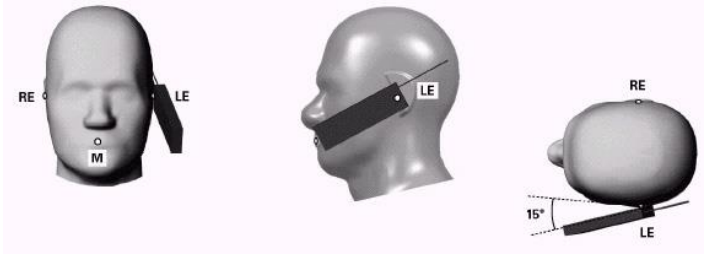


Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

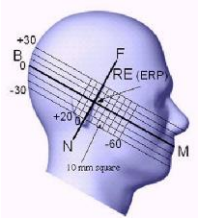


Figure 6-3
Side view w/ relevant markings

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

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

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

6.5 Body-Worn Accessory Configurations

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

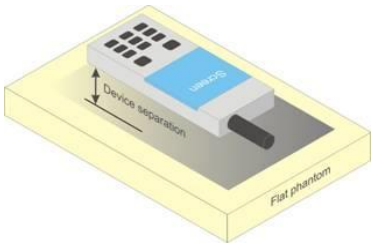


Figure 6-4
Sample Body-Worn Diagram

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

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

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

6.6 Extremity Exposure Configurations

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

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

6.7 Wireless Router Configurations

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

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

6.8 Phablet Configurations

For smart phones with a display diagonal dimension > 150 mm or an overall diagonal dimension > 160 mm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04v01r03 should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. In addition to the normally required head and body-worn accessory SAR test procedures required for handsets, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna <=25 mm from that surface or edge, in direct contact with the phantom, for 10g SAR. The UMPC mini-tablet 1g SAR at 5 mm is not required. When hotspot mode applies, 10g SAR is required only for the surfaces and edges with hotspot mode 1g SAR > 1.2 W/kg.

7 RF EXPOSURE LIMITS

7.1 Uncontrolled Environment

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

7.2 Controlled Environment

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

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

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

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

8 FCC MEASUREMENT PROCEDURES

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

8.1 Measured and Reported SAR

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

8.2 3G SAR Test Reduction Procedure

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

8.3 Procedures Used to Establish RF Signal for SAR

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

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

8.4 SAR Measurement Conditions for UMTS

8.4.1 Output Power Verification

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

8.4.2 Head SAR Measurements

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

8.4.3 Body SAR Measurements

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

8.4.4 SAR Measurements with Rel 5 HSDPA

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

8.4.5 SAR Measurements with Rel 6 HSUPA

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

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

8.4.6 SAR Measurement Conditions for DC-HSDPA

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

8.5 SAR Measurement Conditions for LTE

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

8.5.1 Spectrum Plots for RB Configurations

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

8.5.2 MPR

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

8.5.3 A-MPR

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

8.5.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r04:

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

8.5.5 TDD

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

8.5.6 Downlink Only Carrier Aggregation

Conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only.

All uplink communications and acknowledgements remain identical to specifications when downlink carrier aggregation is inactive on the PCC. Additional conducted output powers are measured with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band. Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for downlink only carrier aggregation configurations when the average output power with downlink only carrier aggregation active is not more than 0.25 dB higher than the average output power with downlink only carrier aggregation inactive.

8.6 SAR Testing with 802.11 Transmitters

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

8.6.1 General Device Setup

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

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

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

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

8.6.3 U-NII-2C and U-NII-3

The frequency range covered by U-NII-2C and U-NII-3 is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, the channels at 5.60 – 5.65 GHz in U-NII-2C band must be disabled with acceptable mechanisms and documented in the equipment certification. Unless band gap channels are permanently disabled, SAR must be considered for these channels. Each band is tested independently according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

8.6.4 Initial Test Position Procedure

For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode or UMPC mini-tablet, procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all positions in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.5 2.4 GHz SAR Test Requirements

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

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

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

2.4 GHz 802.11 g/n/ax OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is > 1.2 W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Procedures should be followed. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.6 OFDM Transmission Mode and SAR Test Channel Selection

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

8.6.7 Initial Test Configuration Procedure

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

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

8.6.8 Subsequent Test Configuration Procedures

For OFDM configurations in each frequency band and aggregated band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position procedure. When the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is ≤ 1.2 W/kg, no additional SAR tests for the subsequent test configurations are required. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.9 MIMO SAR considerations

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

9 RF CONDUCTED POWERS

9.1 GSM Conducted Powers

Table 9-1
Measured P_{max} for Free or RCV 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**
GSM 850	128	33.03	33.10	29.89	28.64	**26.89**	25.95	23.80	22.56	21.01
	190	33.32	33.21	29.95	28.69	**26.90**	25.88	23.90	22.44	20.89
	251	33.61	33.61	30.29	28.66	**26.96**	25.83	24.08	22.52	21.02

Calculated Maximum Frame-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 850	128	23.83	23.90	23.70	24.21	**23.71**	16.75	17.61	18.13	17.83
	190	24.12	24.01	23.76	24.26	**23.72**	16.68	17.71	18.01	17.71
	251	24.41	24.41	24.10	24.23	**23.78**	16.63	17.89	18.09	17.84
GSM 850	**Frame Avg.Targets:**	24.30	24.30	24.31	24.07	**24.32**	16.80	17.81	18.07	18.32

Table 9-2
Measured P_{max} for RCV 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	29.40	29.27	28.48	**26.89**	25.64	25.87	24.11	22.73	21.52
	661	29.22	29.10	28.30	**26.71**	25.50	25.55	23.94	22.72	21.56
	810	29.30	29.14	28.28	**27.13**	25.56	25.50	23.95	22.77	21.62
GSM 1900	**Targets:**	29.0	29.0	28.0	**27.0**	25.5	26.0	24.0	22.5	21.5

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	20.20	20.07	22.29	**22.46**	22.46	16.67	17.92	18.30	18.34
	661	20.02	19.90	22.11	**22.28**	22.32	16.35	17.75	18.29	18.38
	810	20.10	19.94	22.09	**22.70**	22.38	16.30	17.76	18.34	18.44
GSM 1900	**Frame Avg.Targets:**	19.80	19.80	21.81	**22.57**	22.32	16.80	17.81	18.07	18.32

Table 9-3
Measured P_{limit} for Free 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	28.22	28.21	25.06	22.89	**22.05**	25.87	24.11	22.73	21.52
	661	27.89	28.13	25.04	22.86	**22.02**	25.55	23.94	22.72	21.56
	810	28.03	28.26	25.00	22.81	**22.21**	25.50	23.95	22.77	21.62

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	19.02	19.01	18.87	18.46	**18.87**	16.67	17.92	18.30	18.34
	661	18.69	18.93	18.85	18.43	**18.84**	16.35	17.75	18.29	18.38
	810	18.83	19.06	18.81	18.38	**19.03**	16.30	17.76	18.34	18.44
GSM 1900	**Frame Avg.Targets:**	19.00	19.00	19.01	18.97	**19.02**	16.80	17.81	18.07	18.32

Note:

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

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

Figure 9-1
Power Measurement Setup

9.2 UMTS Conducted Powers

Table 9-4
Measured P_{max} for Free or RCV 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	23.97	**23.98**	23.86	-
99		12.2 kbps AMR	24.01	24.00	23.86	-
6	HSDPA	Subtest 1	23.18	23.25	23.24	0
6		Subtest 2	22.62	22.79	22.76	0
6		Subtest 3	22.08	22.16	22.19	0.5
6		Subtest 4	21.58	21.70	21.67	0.5
6	HSUPA	Subtest 1	22.23	23.19	22.12	0
6		Subtest 2	20.25	20.20	20.20	2
6		Subtest 3	21.12	21.11	21.12	1
6		Subtest 4	20.17	20.12	20.16	2
6		Subtest 5	23.21	23.14	23.14	0
8	DC-HSDPA	Subtest 1	23.03	23.34	23.09	0
8		Subtest 2	23.22	23.26	23.19	0
8		Subtest 3	21.92	21.71	21.80	0.5
8		Subtest 4	21.80	21.78	21.68	0.5

Table 9-5
Measured P_{limit} for RCV Active for UMTS 1750 & UMTS 1900

Mode	3GPP 34.121 Subtest	AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
		1312	1412	1513	9262	9400	9538	
WCDMA	12.2 kbps RMC	**23.19**	23.02	23.09	**23.57**	23.27	23.42	-
	12.2 kbps AMR	23.18	22.98	23.02	23.59	23.40	23.60	-
HSDPA	Subtest 1	23.47	23.30	23.29	23.90	23.53	23.72	0
	Subtest 2	22.84	22.66	22.75	23.14	22.91	23.12	0
	Subtest 3	22.21	22.05	22.21	22.51	22.38	22.54	0.5
	Subtest 4	22.25	22.05	22.15	22.15	21.89	22.08	0.5
HSUPA	Subtest 1	22.04	21.86	21.52	22.41	22.15	22.25	0
	Subtest 2	19.49	19.29	19.44	19.85	19.55	19.78	2
	Subtest 3	22.11	21.92	22.05	22.38	22.21	22.36	1
	Subtest 4	19.73	19.56	19.01	20.32	20.05	20.25	2
	Subtest 5	23.33	23.10	23.23	23.64	23.43	23.62	0
DC-HSDPA	Subtest 1	23.71	23.55	23.45	23.54	23.53	23.43	0
	Subtest 2	23.36	23.21	23.11	23.75	23.62	22.89	0
	Subtest 3	22.50	22.23	22.17	22.87	22.85	22.40	0.5
	Subtest 4	22.49	22.31	22.23	22.37	22.24	22.29	0.5

Table 9-6
Measured P_{limit} for Free 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	**19.38**	19.20	19.36	**19.80**	19.54	19.77	-
99		12.2 kbps AMR	19.35	19.18	19.38	19.81	19.63	19.84	-
6	HSDPA	Subtest 1	18.55	18.26	18.36	18.83	18.55	18.72	0
6		Subtest 2	19.05	18.79	18.88	19.37	19.09	19.25	0
6		Subtest 3	19.55	19.27	19.35	19.86	19.62	19.79	0.5
6		Subtest 4	19.57	19.26	19.36	19.38	19.12	19.23	0.5
6	HSUPA	Subtest 1	17.35	17.08	16.75	17.78	17.54	17.61	0
6		Subtest 2	16.89	16.58	16.70	17.23	17.00	17.12	2
6		Subtest 3	18.48	18.21	18.34	18.76	18.45	18.66	1
6		Subtest 4	17.21	16.94	16.93	17.71	17.52	17.75	2
6		Subtest 5	18.47	18.20	18.35	18.75	18.46	18.63	0
8	DC-HSDPA	Subtest 1	18.56	18.38	18.25	18.92	18.88	18.85	0
8		Subtest 2	19.17	19.06	18.91	19.51	19.40	19.41	0
8		Subtest 3	19.10	18.82	18.81	19.60	19.57	19.31	0.5
8		Subtest 4	19.40	19.24	19.19	19.36	19.31	19.25	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

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 9-7
LTE Band 12 Measured P_{Max} for Free or RCV Active - 10 MHz Bandwidth

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23095 (707.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**24.42**	0	0
	1	25	24.21		0
	1	49	24.26		0
	25	0	**23.46**	0-1	1
	25	12	23.45		1
	25	25	23.36		1
	50	0	23.43		1
16QAM	1	0	23.57	0-1	1
	1	25	23.37		1
	1	49	23.48		1
	25	0	22.45	0-2	2
	25	12	22.37		2
	25	25	22.32		2
	50	0	22.41		2
64QAM	1	0	22.46	0-2	2
	1	25	22.30		2
	1	49	22.35		2
	25	0	21.36	0-3	3
	25	12	21.30		3
	25	25	21.30		3
	50	0	21.41		3
256QAM	1	0	19.54	0-5	5
	1	25	19.40		5
	1	49	19.33		5
	25	0	19.41		5
	25	12	19.38		5
	25	25	19.31		5
	50	0	19.33		5

9.3.2 LTE Band 13

Table 9-8
LTE Band 13 Measured P_{Max} for Free or RCV Active - 10 MHz Bandwidth

LTE Band 13 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**25.10**	0	0
	1	25	24.88		0
	1	49	24.91		0
	25	0	**24.17**	0-1	1
	25	12	24.06		1
	25	25	24.06		1
	50	0	24.15		1
16QAM	1	0	24.38	0-1	1
	1	25	24.17		1
	1	49	24.23		1
	25	0	23.19	0-2	2
	25	12	23.12		2
	25	25	23.06		2
	50	0	23.13		2
64QAM	1	0	23.44	0-2	2
	1	25	23.07		2
	1	49	23.13		2
	25	0	22.10	0-3	3
	25	12	22.09		3
	25	25	22.03		3
	50	0	22.15		3
256QAM	1	0	20.21	0-5	5
	1	25	20.05		5
	1	49	20.05		5
	25	0	20.12		5
	25	12	20.05		5
	25	25	20.01		5
	50	0	20.03		5

9.3.3 LTE Band 26

Table 9-9
LTE Band 26 (Cell) Measured P_{Max} for Free or RCV Active – 15 MHz Bandwidth

LTE Band 26 (Cell) 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 26865 (831.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**24.70**	0	0
	1	36	24.55		0
	1	74	24.65		0
	36	0	**23.82**	0-1	1
	36	18	23.81		1
	36	37	23.72		1
	75	0	23.81		1
16QAM	1	0	23.96	0-1	1
	1	36	23.73		1
	1	74	23.78		1
	36	0	22.78	0-2	2
	36	18	22.71		2
	36	37	22.67		2
	75	0	22.72		2
64QAM	1	0	22.81	0-2	2
	1	36	22.54		2
	1	74	22.67		2
	36	0	21.75	0-3	3
	36	18	21.72		3
	36	37	21.65		3
	75	0	21.73		3
256QAM	1	0	19.86	0-5	5
	1	36	19.55		5
	1	74	19.69		5
	36	0	19.74		5
	36	18	19.68		5
	36	37	19.65		5
	75	0	19.69		5

9.3.4 LTE Band 66 Antenna B

Table 9-10
LTE Band 66 Antenna B (AWS) Measured P_{Max} for RCV Active – 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.77	22.55	22.84	0	0
	1	50	22.72	22.46	22.76		0
	1	99	22.78	22.57	**22.86**		0
	50	0	21.87	21.65	**21.98**	0-1	1
	50	25	21.86	21.67	21.95		1
	50	50	21.84	21.63	21.93		1
	100	0	21.88	21.69	21.93		1
16QAM	1	0	22.12	21.92	22.26	0-1	1
	1	50	21.91	21.84	22.17		1
	1	99	22.12	21.90	22.19		1
	50	0	20.93	20.69	20.99	0-2	2
	50	25	20.91	20.65	20.99		2
	50	50	20.86	20.65	20.94		2
	100	0	20.87	20.65	20.94		2
64QAM	1	0	21.04	20.80	21.21	0-2	2
	1	50	20.91	20.66	21.00		2
	1	99	21.02	20.74	20.99		2
	50	0	19.90	19.63	19.96	0-3	3
	50	25	19.87	19.63	19.91		3
	50	50	19.84	19.61	19.89		3
	100	0	19.79	19.58	19.86		3
256QAM	1	0	17.78	17.71	17.93	0-5	5
	1	50	17.75	17.54	17.76		5
	1	99	17.86	17.62	17.76		5
	50	0	17.69	17.45	17.77		5
	50	25	17.67	17.45	17.71		5
	50	50	17.64	17.45	17.68		5
	100	0	17.66	17.45	17.72		5

Table 9-11
LTE Band 66 Antenna B (AWS) Measured P_{Limit} for Free Mode– 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	**18.21**	18.11	18.13	0	0
	1	50	18.15	18.04	18.10		0
	1	99	18.15	18.06	18.09		0
	50	0	**18.28**	18.08	18.25	0-1	0
	50	25	18.22	18.09	18.24		0
	50	50	18.16	18.02	18.24		0
	100	0	18.20	18.04	18.19		0
16QAM	1	0	18.44	18.23	18.34	0-1	0
	1	50	18.36	18.15	18.25		0
	1	99	18.32	18.18	18.19		0
	50	0	18.21	18.00	18.27	0-2	0
	50	25	18.20	18.02	18.29		0
	50	50	18.16	17.97	18.24		0
	100	0	18.22	17.97	18.24		0
64QAM	1	0	18.42	18.17	18.68	0-2	0
	1	50	18.33	18.10	18.59		0
	1	99	18.28	18.12	18.56		0
	50	0	18.26	18.01	18.31	0-3	0
	50	25	18.24	18.01	18.28		0
	50	50	18.21	17.97	18.24		0
	100	0	18.23	17.99	18.22		0
256QAM	1	0	17.75	17.77	17.90	0-5	0.5
	1	50	17.66	17.71	17.88		0.5
	1	99	17.66	17.66	17.92		0.5
	50	0	17.82	17.60	17.88		0.5
	50	25	17.81	17.57	17.90		0.5
	50	50	17.77	17.57	17.81		0.5
	100	0	17.83	17.54	17.85		0.5

9.3.5 LTE Band 66 Antenna F

Table 9-12
LTE Band 66 Antenna F (AWS) Measured P_{Limit} for Free or RCV Active – 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.25	**18.35**	18.12	0	0
	1	50	18.20	18.32	18.01		0
	1	99	18.12	18.20	18.06		0
	50	0	18.21	18.25	18.10	0-1	0
	50	25	18.24	**18.33**	18.13		0
	50	50	18.21	18.25	18.14		0
	100	0	18.20	18.26	18.13		0
16QAM	1	0	18.31	18.32	18.28	0-1	0
	1	50	18.26	18.33	18.29		0
	1	99	18.23	18.33	18.33		0
	50	0	18.26	18.27	18.14	0-2	0
	50	25	18.29	18.28	18.16		0
	50	50	18.28	18.27	18.19		0
	100	0	18.21	18.28	18.19		0
64QAM	1	0	18.28	18.29	18.34	0-2	0
	1	50	18.23	18.30	18.33		0
	1	99	18.18	18.33	18.29		0
	50	0	18.27	18.29	18.16	0-3	0
	50	25	18.32	18.31	18.17		0
	50	50	18.30	18.30	18.16		0
	100	0	18.30	18.21	18.10		0
256QAM	1	0	17.29	17.46	17.31	0-5	1
	1	50	17.23	17.45	17.26		1
	1	99	17.20	17.36	17.30		1
	50	0	17.30	17.38	17.23		1
	50	25	17.35	17.42	17.26		1
	50	50	17.35	17.37	17.23		1
	100	0	17.36	17.35	17.22		1

9.3.6 LTE Band 25 Antenna B

Table 9-13
LTE Band 25 (PCS) Antenna B Measured P_{Max} for RCV Active – 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.04	22.92	**23.08**	0	0
	1	50	22.93	22.81	22.96		0
	1	99	23.06	22.91	22.98		0
	50	0	22.15	22.01	**22.20**	0-1	1
	50	25	22.10	22.02	22.17		1
	50	50	22.13	22.00	22.18		1
	100	0	22.14	21.98	22.19		1
16QAM	1	0	22.36	22.19	22.42	0-1	1
	1	50	22.11	21.97	22.24		1
	1	99	22.22	22.17	22.28		1
	50	0	21.18	21.04	21.26	0-2	2
	50	25	21.11	21.01	21.17		2
	50	50	21.13	20.98	21.18		2
	100	0	21.16	20.99	21.17		2
64QAM	1	0	21.32	21.10	21.32	0-2	2
	1	50	21.23	20.99	21.20		2
	1	99	21.26	21.05	21.24		2
	50	0	20.14	19.98	20.18	0-3	3
	50	25	20.10	19.97	20.15		3
	50	50	20.09	19.94	20.08		3
	100	0	20.08	19.94	20.13		3
256QAM	1	0	18.22	18.03	18.16	0-5	5
	1	50	18.02	17.87	18.08		5
	1	99	17.99	17.93	17.99		5
	50	0	17.99	17.85	18.01		5
	50	25	17.97	17.80	18.01		5
	50	50	17.92	17.74	17.92		5
	100	0	17.93	17.83	17.99		5

Table 9-14
LTE Band 25 (PCS) Antenna B Measured P_{Limit} for Free Mode– 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	**18.55**	18.36	18.52	0	0
	1	50	18.46	18.27	18.48		0
	1	99	18.45	18.26	18.50		0
	50	0	**18.58**	18.40	18.56	0-1	0
	50	25	18.55	18.42	18.57		0
	50	50	18.50	18.37	18.54		0
	100	0	18.53	18.40	18.52		0
16QAM	1	0	18.51	18.57	18.52	0-1	0
	1	50	18.42	18.46	18.49		0
	1	99	18.47	18.46	18.49		0
	50	0	18.34	18.45	18.41	0-2	0
	50	25	18.34	18.43	18.42		0
	50	50	18.32	18.40	18.38		0
	100	0	18.36	18.39	18.41		0
64QAM	1	0	18.48	18.68	18.45	0-2	0
	1	50	18.44	18.59	18.46		0
	1	99	18.49	18.56	18.45		0
	50	0	18.45	18.39	18.44	0-3	0
	50	25	18.43	18.40	18.42		0
	50	50	18.53	18.38	18.36		0
	100	0	18.48	18.34	18.41		0
256QAM	1	0	18.15	18.13	18.22	0-5	0.5
	1	50	18.14	18.10	18.14		0.5
	1	99	18.10	18.08	18.17		0.5
	50	0	18.13	18.02	18.10		0.5
	50	25	18.17	18.01	18.17		0.5
	50	50	18.14	18.00	18.12		0.5
	100	0	18.12	18.00	18.13		0.5

9.3.7 LTE Band 25 Antenna F

Table 9-15
LTE Band 25 (PCS) Antenna F Measured P_{Limit} for Free or RCV Active – 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	**18.66**	18.32	18.33	0	0
	1	50	18.52	18.18	18.15		0
	1	99	18.45	18.14	18.23		0
	50	0	**18.62**	18.32	18.39	0-1	0
	50	25	18.59	18.32	18.42		0
	50	50	18.58	18.25	18.32		0
	100	0	18.61	18.29	18.34		0
16QAM	1	0	18.59	18.29	18.53	0-1	0
	1	50	18.54	18.24	18.40		0
	1	99	18.51	18.28	18.38		0
	50	0	18.51	18.40	18.41	0-2	0
	50	25	18.52	18.37	18.44		0
	50	50	18.49	18.30	18.36		0
	100	0	18.51	18.29	18.42		0
64QAM	1	0	18.56	18.51	18.48	0-2	0
	1	50	18.56	18.46	18.32		0
	1	99	18.52	18.50	18.31		0
	50	0	18.55	18.40	18.45	0-3	0
	50	25	18.58	18.35	18.50		0
	50	50	18.43	18.30	18.40		0
	100	0	18.45	18.28	18.42		0
256QAM	1	0	17.79	17.90	17.73	0-5	1
	1	50	17.76	17.71	17.61		1
	1	99	17.73	17.57	17.60		1
	50	0	17.74	17.48	17.50		1
	50	25	17.75	17.44	17.53		1
	50	50	17.71	17.35	17.44		1
	100	0	17.66	17.42	17.48		1

9.3.8 LTE Band 41 PC3 Antenna B

Table 9-16
LTE Band 41 PC3 Antenna B 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	23.19	23.35	23.96	**24.17**	24.16	0	0
	1	50	23.19	23.23	23.83	23.97	24.03		0
	1	99	23.34	23.27	23.78	23.53	23.54		0
	50	0	22.32	22.39	22.99	**23.26**	23.24	0-1	1
	50	25	22.35	22.36	22.99	23.15	23.21		1
	50	50	22.35	22.34	22.95	22.96	22.84		1
	100	0	22.36	22.38	22.99	23.08	23.22		1
16QAM	1	0	22.22	22.52	22.97	23.26	23.26	0-1	1
	1	50	22.23	22.29	22.86	23.04	23.05		1
	1	99	22.34	22.32	22.84	22.71	22.42		1
	50	0	21.36	21.39	22.02	22.27	22.22	0-2	2
	50	25	21.37	21.37	21.99	22.17	22.19		2
	50	50	21.37	21.33	21.97	22.02	21.92		2
	100	0	21.40	21.41	22.04	22.21	22.25		2
64QAM	1	0	21.23	21.42	22.12	22.23	22.19	0-2	2
	1	50	21.34	21.23	22.02	22.12	22.05		2
	1	99	21.43	21.24	22.01	21.77	21.35		2
	50	0	20.36	20.38	21.02	21.27	21.23	0-3	3
	50	25	20.36	20.36	20.98	21.26	21.20		3
	50	50	20.37	20.32	20.96	21.22	21.16		3
	100	0	20.33	20.33	20.97	21.22	21.16		3
256QAM	1	0	18.15	18.24	18.85	19.16	19.08	0-5	5
	1	50	18.03	18.06	18.70	18.98	18.86		5
	1	99	18.16	18.09	18.75	18.98	18.93		5
	50	0	18.29	18.32	18.96	19.21	19.17		5
	50	25	18.31	18.31	18.94	19.19	19.14		5
	50	50	18.31	18.27	18.90	19.16	19.10		5
	100	0	18.24	18.24	18.88	19.13	19.08		5

Table 9-17
LTE Band 41 PC3 Antenna B Measured P_{Limit} for Free Mode - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	18.61	18.71	19.34	**19.52**	19.47	0	0
	1	50	18.51	18.50	19.17	19.34	19.26		0
	1	99	18.61	18.51	19.29	19.36	19.26		0
	50	0	18.59	18.70	19.36	**19.51**	19.43	0-1	0
	50	25	18.58	18.65	19.35	19.47	19.39		0
	50	50	18.58	18.62	19.33	19.44	19.34		0
	100	0	18.59	18.67	19.38	19.49	19.40		0
16QAM	1	0	18.56	18.74	19.38	19.55	19.38	0-1	0
	1	50	18.42	18.55	19.24	19.33	19.21		0
	1	99	18.52	18.57	19.37	19.43	19.27		0
	50	0	18.58	18.70	19.41	19.49	19.41	0-2	0
	50	25	18.58	18.65	19.38	19.46	19.37		0
	50	50	18.58	18.61	19.35	19.43	19.33		0
	100	0	18.64	18.71	19.45	19.54	19.44		0
64QAM	1	0	18.54	18.70	19.49	19.54	19.52	0-2	0
	1	50	18.39	18.49	19.35	19.39	19.32		0
	1	99	18.50	18.54	19.40	19.44	19.33		0
	50	0	18.62	18.72	19.46	19.53	19.46	0-3	0
	50	25	18.62	18.68	19.43	19.51	19.42		0
	50	50	18.62	18.64	19.40	19.49	19.37		0
	100	0	18.59	18.66	19.40	19.49	19.40		0
256QAM	1	0	18.00	18.22	18.89	18.87	18.75	0-5	0.5
	1	50	17.92	18.08	18.70	18.72	18.58		0.5
	1	99	18.05	18.07	18.78	18.78	18.63		0.5
	50	0	18.06	18.16	18.90	18.98	18.90		0.5
	50	25	18.06	18.11	18.87	18.95	18.85		0.5
	50	50	18.05	18.07	18.83	18.91	18.82		0.5
	100	0	18.00	18.07	18.81	18.91	18.82		0.5

9.3.1 LTE Band 41 PC3 Antenna F

Table 9-18
LTE Band 41 PC3 Antenna F Measured P_{Limit} for Free or RCV Active - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	19.76	19.41	19.04	19.48	**20.18**	0	0
	1	50	19.67	19.27	18.89	19.28	19.87		0
	1	99	19.78	19.30	18.91	19.29	19.84		0
	50	0	20.11	19.62	19.23	19.64	**20.21**	0-1	0
	50	25	20.10	19.58	19.19	19.61	20.17		0
	50	50	20.09	19.54	19.14	19.57	20.13		0
	100	0	20.10	19.56	19.17	19.60	20.16		0
16QAM	1	0	19.54	19.34	18.98	19.44	20.07	0-1	0
	1	50	19.51	19.15	18.85	19.25	19.84		0
	1	99	19.61	19.15	18.93	19.25	19.84		0
	50	0	19.90	19.55	19.16	19.57	20.16	0-2	0
	50	25	19.91	19.51	19.13	19.52	20.12		0
	50	50	19.90	19.46	19.07	19.49	20.08		0
	100	0	19.93	19.53	19.13	19.56	20.15		0
64QAM	1	0	19.51	19.31	18.93	19.50	20.01	0-2	0
	1	50	19.46	19.14	18.79	19.30	19.88		0
	1	99	19.62	19.20	18.80	19.31	19.89		0
	50	0	19.30	18.98	18.58	18.98	19.60	0-3	0.5
	50	25	19.31	18.93	18.54	18.96	19.54		0.5
	50	50	19.30	18.88	18.49	18.91	19.50		0.5
	100	0	19.26	18.88	18.47	18.90	19.50		0.5
256QAM	1	0	16.86	16.67	16.33	16.71	17.44	0-5	2.5
	1	50	16.77	16.53	16.20	16.57	17.25		2.5
	1	99	16.92	16.50	16.23	16.49	17.24		2.5
	50	0	17.25	16.97	16.57	16.99	17.60		2.5
	50	25	17.25	16.92	16.53	16.94	17.54		2.5
	50	50	17.26	16.87	16.48	16.90	17.49		2.5
	100	0	17.20	16.83	16.44	16.86	17.47		2.5

Figure 9-3
Power Measurement Setup

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 9-19
NR Band n5 Measured P_{Max} for Free or RCV Active - 20 MHz Bandwidth

NR Band n5 20 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	167300 (836.5 MHz) Conducted Power [dBm]		
DFT-s-OFDM QPSK	1	1	24.36	0	0.0
	1	53	**24.50**		0.0
	1	104	24.32		0.0
	50	0	23.93	0-1	1.0
	50	28	**24.44**	0	0.0
	50	56	23.87	0-1	1.0
	100	0	23.93		1.0
DFT-s-OFDM 16QAM	1	1	23.43	0-1	1.0
CP-OFDM QPSK	1	1	22.90	0-1.5	1.5

9.4.2 NR Band n66 Antenna B

Table 9-20
NR Band n66 Antenna B Measured P_{Max} for RCV Active - 40 MHz Bandwidth

NR Band n66 40 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	349000 (1745 MHz) Conducted Power [dBm]		
DFT-s-OFDM QPSK	1	1	23.30	0	0.0
	1	108	23.21		0.0
	1	214	**23.40**		0.0
	108	0	22.32	0-1	1.0
	108	54	**23.25**	0	0.0
	108	108	22.48	0-1	1.0
	216	0	22.24		1.0
DFT-s-OFDM 16QAM	1	1	22.49	0-1	1.0
CP-OFDM QPSK	1	1	21.77	0-1.5	1.5

Table 9-21
NR Band n66 Antenna B Measured P_{Limit} for Free Mode - 40 MHz Bandwidth

NR Band n66 40 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	349000 (1745 MHz) Conducted Power [dBm]		
DFT-s-OFDM QPSK	1	1	18.14	0	0.0
	1	108	18.12		0.0
	1	214	**18.26**		0.0
	108	0	18.16	0-1	0.0
	108	54	18.01	0	0.0
	108	108	**18.20**	0-1	0.0
	216	0	18.00		0.0
DFT-s-OFDM 16QAM	1	1	18.07	0-1	0.0
CP-OFDM QPSK	1	1	18.03	0-1.5	0.0

9.4.3 NR Band n66 Antenna F

Table 9-22
NR Band n66 Antenna F Measured P_{Limit} for Free or RCV Active– 40 MHz Bandwidth

NR Band n66 40 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	349000 (1745 MHz) Conducted Power [dBm]		
DFT-s-OFDM QPSK	1	1	18.25	0	0.0
	1	108	**18.54**		0.0
	1	214	18.30		0.0
	108	0	18.38	0-1	0.0
	108	54	18.43	0	0.0
	108	108	**18.46**	0-1	0.0
	216	0	18.38		0.0
DFT-s-OFDM 16QAM	1	1	18.19	0-1	0.0
CP-OFDM QPSK	1	1	18.29	0-1.5	0.0

9.4.4 NR Band n41 Antenna B

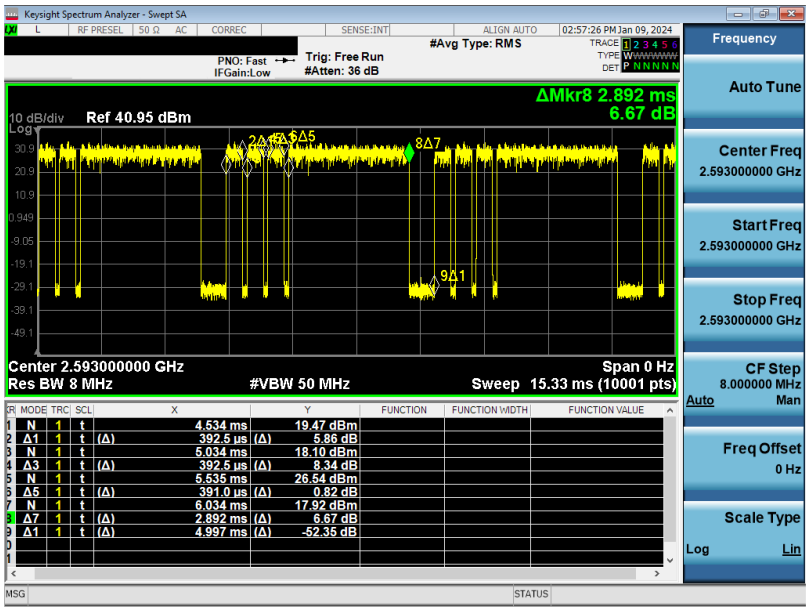
Table 9-23
NR Band n41 Antenna B Measured P_{Max} for RCV Active – 100 MHz Bandwidth

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	24.11	0	0.0
	1	137	**24.24**		0.0
	1	271	24.20		0.0
	135	0	23.09	0-1	1.0
	135	69	**24.28**	0	0.0
	135	138	23.21	0-1	1.0
	270	0	23.29		1.0
DFT-s-OFDM 16QAM	1	1	23.11	0-1	1.0
CP-OFDM QPSK	1	1	22.67	0-1.5	1.5

Table 9-24
NR Band n41 Antenna B Measured P_{Limit} for Free Mode – 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	17.05	0	0.0
	1	137	17.30		0.0
	1	271	**17.45**		0.0
	135	0	17.17	0-1	0.0
	135	69	**17.40**	0	0.0
	135	138	17.39	0-1	0.0
	270	0	17.38		0.0
DFT-s-OFDM 16QAM	1	1	17.12	0-1	0.0
CP-OFDM QPSK	1	1	17.00	0-1.5	0.0

Figure 9-4
NR n41 Antenna B Online Transmission Plot



	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	t	4.534 ms	19.47 dBm			
2	Δ1	1	t (Δ)	392.5 µs (Δ)	5.86 dB			
3	N	1	t	5.034 ms	18.10 dBm			
4	Δ3	1	t (Δ)	392.5 µs (Δ)	8.34 dB			
5	N	1	t	5.535 ms	26.54 dBm			
6	Δ5	1	t (Δ)	391.0 µs (Δ)	0.82 dB			
7	N	1	t	6.034 ms	17.92 dBm			
8	Δ7	1	t (Δ)	2.892 ms (Δ)	6.67 dB			
9	Δ1	1	t (Δ)	4.997 ms (Δ)	-52.35 dB			

Equation 9-1
NR n41 Antenna B Online Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{4.068ms}{4.997ms} * 100\% = 81.41\%$$

Note: Pulse widths were summed to calculate Duty Cycle

9.4.5 NR Band n41 Antenna F, I, E

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

NR Band n41 100 MHz Bandwidth		
	Channel	
Antenna	518598 (2592.99 MHz)	
	Conducted Power [dBm]	
SRS #2 Ant F	16.75	
SRS #3 Ant I	20.43	
SRS #4 Ant E	18.95	

9.4.6 NR Band n77 C-Band Antenna G

Table 9-26
NR Band n77 C-Band Antenna G Measured P_{Limit} for RCV Active – 100 MHz Bandwidth

NR Band n77 100 MHz Bandwidth						
			Channel		MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	650000 (3750 MHz)	662000 (3930 MHz)		
			Conducted Power [dBm]			
DFT-s-OFDM QPSK	1	1	15.25	15.16	0	0.0
	1	137	**15.59**	15.32		0.0
	1	271	15.33	15.33		0.0
	135	0	15.58	15.19	0-1	0.0
	135	69	**15.62**	15.29	0	0.0
	135	138	15.46	15.34	0-1	0.0
	270	0	15.53	15.39		0.0
DFT-s-OFDM 16QAM	1	1	15.42	15.32	0-1	0.0
CP-OFDM QPSK	1	1	15.37	15.15	0-1.5	0.0

Table 9-27
NR Band n77 C-Band Antenna G Measured P_{Limit} for Free Mode– 100 MHz Bandwidth

NR Band n77 100 MHz Bandwidth						
			Channel		MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	650000 (3750 MHz)	662000 (3930 MHz)		
			Conducted Power [dBm]			
DFT-s-OFDM QPSK	1	1	16.27	16.17	0	0.0
	1	137	16.62	**16.63**		0.0
	1	271	16.21	16.35		0.0
	135	0	16.50	16.46	0-1	0.0
	135	69	16.52	**16.54**	0	0.0
	135	138	16.34	16.53	0-1	0.0
	270	0	16.41	16.49		0.0
DFT-s-OFDM 16QAM	1	1	16.24	16.47	0-1	0.0
CP-OFDM QPSK	1	1	16.24	16.45	0-1.5	0.0

9.4.1 NR Band n77 DoD Antenna G

Table 9-28
NR Band n77 DoD Antenna G Measured P_{Limit} for RCV 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	15.67	0	0.0
	1	137	15.77		0.0
	1	271	**15.90**		0.0
	135	0	15.75	0-1	0.0
	135	69	**15.81**	0	0.0
	135	138	15.80	0-1	0.0
	270	0	15.79		0.0
DFT-s-OFDM 16QAM	1	1	15.80	0-1	0.0
CP-OFDM QPSK	1	1	15.75	0-1.5	0.0

Table 9-29
NR Band n77 DoD Antenna G Measured P_{Limit} for Free Mode– 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	17.10	0	0.0
	1	137	**17.13**		0.0
	1	271	17.07		0.0
	135	0	16.94	0-1	0.0
	135	69	**17.05**	0	0.0
	135	138	16.80	0-1	0.0
	270	0	17.00		0.0
DFT-s-OFDM 16QAM	1	1	16.84	0-1	0.0
CP-OFDM QPSK	1	1	16.70	0-1.5	0.0

Figure 9-5
Power Measurement Setup – NR Online

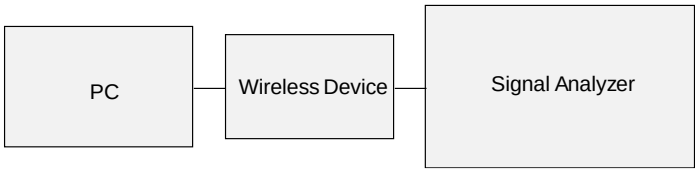


Figure 9-6
Power Measurement Setup – NR FTM

9.5 WLAN Conducted Powers

Table 9-30
2.4 GHz WLAN P_{Max} RF Power – Ant I

2.4GHz WIFI (20MHz 802.11b SISO ANTI)			
Freq. [MHz]	Channel	Detector	Conducted Power [dBm]
2412	1	Average	18.60
2437	6		18.51
2462	11		18.56
2.4GHz WIFI (20MHz 802.11g SISO ANTI)			
Freq. [MHz]	Channel	Detector	Conducted Power [dBm]
2412	1	Average	15.62
2437	6		16.47
2462	11		16.92
2.4GHz WIFI (20MHz 802.11n SISO ANTI)			
Freq. [MHz]	Channel	Detector	Conducted Power [dBm]
2412	1	Average	15.63
2437	6		16.51
2462	11		16.95
2.4GHz WIFI (20MHz 802.11ax SISO ANTI)			
Freq. [MHz]	Channel	Detector	Conducted Power [dBm]
2412	1	Average	15.66
2437	6		16.27
2462	11		16.97

Table 9-31
2.4 GHz WLAN P_{Max} RF Power – Ant M

2.4GHz WIFI (20MHz 802.11b SISO ANTM)			
Freq. [MHz]	Channel	Detector	Conducted Power [dBm]
2412	1	Average	18.61
2437	6		18.93
2462	11		18.93
2.4GHz WIFI (20MHz 802.11g SISO ANTM)			
Freq. [MHz]	Channel	Detector	Conducted Power [dBm]
2412	1	Average	15.38
2437	6		16.94
2462	11		16.51
2.4GHz WIFI (20MHz 802.11n SISO ANTM)			
Freq. [MHz]	Channel	Detector	Conducted Power [dBm]
2412	1	Average	15.52
2437	6		16.99
2462	11		16.65
2.4GHz WIFI (20MHz 802.11ax SISO ANTM)			
Freq. [MHz]	Channel	Detector	Conducted Power [dBm]
2412	1	Average	15.53
2437	6		16.75
2462	11		16.65

Table 9-32
2.4 GHz WLAN P_{Max} Average RF Power – MIMO

2.4GHz WIFI (20MHz 802.11b MIMO)					
Freq [MHz]	Channel	Detector	Conducted Power [dBm]		
			ANT1	ANT2	MIMO
2412	1	Average	18.92	18.99	21.97
2437	6		18.92	18.45	21.70
2462	11		18.51	18.99	21.77

Table 9-33
2.4 GHz WLAN P_{Limit} Reduced Average RF Power for RSI = 4 (RCV) – Ant I

2.4GHz WIFI (20MHz 802.11b SISO ANT1)			
Freq. [MHz]	Channel	Detector	Conducted Power [dBm]
2412	1	Average	13.53
2437	6		13.91
2462	11		13.76
2.4GHz WIFI (20MHz 802.11g SISO ANT1)			
Freq. [MHz]	**Channel**	**Detector**	**Conducted Power [dBm]**
2412	1	Average	13.49
2437	6		13.36
2462	11		13.71
2.4GHz WIFI (20MHz 802.11n SISO ANT1)			
Freq. [MHz]	**Channel**	**Detector**	**Conducted Power [dBm]**
2412	1	Average	13.43
2437	6		13.38
2462	11		13.70
2.4GHz WIFI (20MHz 802.11ax SISO ANT1)			
Freq. [MHz]	**Channel**	**Detector**	**Conducted Power [dBm]**
2412	1	Average	13.45
2437	6		13.43
2462	11		13.67

Table 9-34

2.4 GHz WLAN P_{Limit} Reduced Average RF Power for RSI = 4 (RCV) – Ant M

2.4GHz WIFI (20MHz 802.11b SISO ANT M)			
Freq. [MHz]	**Channel**	**Detector**	**Conducted Power [dBm]**
2412	1	Average	13.29
2437	6		13.57
2462	11		13.28
2.4GHz WIFI (20MHz 802.11g SISO ANT M)			
Freq. [MHz]	**Channel**	**Detector**	**Conducted Power [dBm]**
2412	1	Average	12.86
2437	6		13.67
2462	11		13.21
2.4GHz WIFI (20MHz 802.11n SISO ANT M)			
Freq. [MHz]	**Channel**	**Detector**	**Conducted Power [dBm]**
2412	1	Average	12.73
2437	6		13.71
2462	11		13.08
2.4GHz WIFI (20MHz 802.11ax SISO ANT M)			
Freq. [MHz]	**Channel**	**Detector**	**Conducted Power [dBm]**
2412	1	Average	13.03
2437	6		13.77
2462	11		13.05

Table 9-35

2.4 GHz WLAN P_{Limit} Reduced Average RF Power for RSI = 4 (RCV) – MIMO

2.4GHz WIFI (20MHz 802.11b MIMO)					
Freq [MHz]	**Channel**	**Detector**	**Conducted Power [dBm]**		
			ANT1	**ANT2**	**MIMO**
2412	1	Average	13.65	13.88	16.78
2437	6		13.95	13.77	16.87
2462	11		13.61	13.99	16.81

Table 9-36
5 GHz WLAN P_{Max} Average RF Power – Ant G

5GHz WIFI (20MHz 802.11a SISO ANT G)			
Band	**Freq. [MHz]**	**Channel**	**Avg. Conducted Power [dBm]**
UNII-1	5180	36	16.86
	5200	40	16.87
	5220	44	16.92
	5240	48	16.68
UNII-2A	5260	52	16.97
	5280	56	16.73
	5300	60	16.65
	5320	64	16.97
UNII-2C	5500	100	16.34
	5600	120	16.88
	5620	124	16.93
	5720	144	16.65
UNII-3	5745	149	16.83
	5785	157	16.64
	5825	165	16.69

Table 9-37
5 GHz WLAN P_{Max} Average RF Power – Ant M

5GHz WIFI (20MHz 802.11a SISO ANT M)			
Band	**Freq. [MHz]**	**Channel**	**Avg. Conducted Power [dBm]**
UNII-1	5180	36	16.89
	5200	40	16.69
	5220	44	16.87
	5240	48	16.76
UNII-2A	5260	52	16.81
	5280	56	16.85
	5300	60	16.93
	5320	64	16.53
UNII-2C	5500	100	16.72
	5600	120	16.83
	5620	124	16.57
	5720	144	16.63
UNII-3	5745	149	16.96
	5785	157	16.81
	5825	165	16.67

Table 9-38
5 GHz WLAN P_{Max} Average RF Power – MIMO

5GHz WIFI (20MHz 802.11a MIMO)					
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]		
			ANT1	ANT2	MIMO
UNII-1	5180	36	16.92	16.75	19.85
	5200	40	16.80	16.58	19.70
	5220	44	16.83	16.38	19.62
	5240	48	16.26	16.51	19.40
UNII-2A	5260	52	16.85	15.65	19.30
	5280	56	16.90	16.01	19.49
	5300	60	16.81	16.31	19.58
	5320	64	16.99	15.72	19.41
UNII-2C	5500	100	16.99	15.24	19.21
	5600	120	16.42	16.32	19.38
	5620	124	16.89	15.80	19.39
	5720	144	16.65	15.99	19.34
UNII-3	5745	149	16.84	15.93	19.42
	5785	157	16.89	16.21	19.57
	5825	165	16.30	16.68	19.50

Table 9-39
5 GHz WLAN P_{Limit} Average RF Power for RSI = 4 (RCV) – Ant G

5GHz WIFI (40MHz 802.11n SISO ANTG)			
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]
UNII-2A	5270	54	13.75
	5310	62	13.80

5GHz WIFI (40MHz 802.11ac SISO ANTG)			
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]
UNII-2A	5270	54	13.80
	5310	62	13.72

5GHz WIFI (40MHz 802.11ax SISO ANTG)			
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]
UNII-2A	5270	54	13.77
	5310	62	13.69

5GHz WIFI (80MHz 802.11ac SISO ANTG)			
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]
UNII-1	5210	42	13.91
UNII-2A	5290	58	12.85
UNII-2C	5530	106	13.96
	5610	122	13.94
	5690	138	13.51
UNII-3	5775	155	13.78

5GHz WIFI (80MHz 802.11ax SISO ANTG)			
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]
UNII-1	5210	42	13.99
UNII-2A	5290	58	12.82
UNII-2C	5530	106	13.58
	5610	122	13.94
	5690	138	13.61
UNII-3	5775	155	13.79

Table 9-40

5 GHz WLAN P_{Limit} Average RF Power for RSI = 4 (RCV) -Ant M

5GHz WIFI (40MHz 802.11n SISO ANTM)			
Band	**Freq. [MHz]**	**Channel**	**Avg. Conducted Power [dBm]**
UNII-2A	5270	54	13.61
	5310	62	13.57

5GHz WIFI (40MHz 802.11ac SISO ANTM)			
Band	**Freq. [MHz]**	**Channel**	**Avg. Conducted Power [dBm]**
UNII-2A	5270	54	13.65
	5310	62	13.70

5GHz WIFI (40MHz 802.11ax SISO ANTM)			
Band	**Freq. [MHz]**	**Channel**	**Avg. Conducted Power [dBm]**
UNII-2A	5270	54	13.55
	5310	62	13.62

5GHz WIFI (80MHz 802.11ac SISO ANT M)			
Band	**Freq. [MHz]**	**Channel**	**Avg. Conducted Power [dBm]**
UNII-1	5210	42	13.53
UNII-2A	5290	58	12.67
UNII-2C	5530	106	13.82
	5610	122	13.89
	5690	138	13.74
UNII-3	5775	155	13.45

5GHz WIFI (80MHz 802.11ax SISO ANTM)			
Band	**Freq. [MHz]**	**Channel**	**Avg. Conducted Power [dBm]**
UNII-1	5210	42	13.64
UNII-2A	5290	58	12.75
UNII-2C	5530	106	13.92
	5610	122	13.86
	5690	138	13.64
UNII-3	5775	155	13.87

Table 9-41

5 GHz WLAN P_{Limit} Average RF Power for RSI = 4 (RCV) - MIMO

5GHz WIFI (40MHz 802.11n MIMO)					
Band	**Freq [MHz]**	**Channel**	**Avg. Conducted Powers [dBm]**		
			ANT1	**ANT2**	**MIMO**
UNII-2A	5270	54	13.70	13.62	16.67
	5310	62	13.65	13.59	16.63

5GHz WIFI (80MHz 802.11ac MIMO)					
Band	**Freq [MHz]**	**Channel**	**Avg. Conducted Powers [dBm]**		
			ANT1	**ANT2**	**MIMO**
UNII-1	5210	42	13.67	13.50	16.60
UNII-2A	5290	58	12.65	12.61	15.64
UNII-2C	5530	106	13.51	12.62	16.10
	5610	122	13.99	13.79	16.90
	5690	138	13.91	13.85	16.89
UNII-3	5775	155	13.73	13.62	16.69

5GHz WIFI (80MHz 802.11ax MIMO)					
Band	**Freq [MHz]**	**Channel**	**Avg. Conducted Powers [dBm]**		
			ANT1	**ANT2**	**MIMO**
UNII-1	5210	42	13.99	13.91	16.96
UNII-2A	5290	58	12.60	12.67	15.65
UNII-2C	5530	106	13.99	13.20	16.62
	5610	122	13.94	13.68	16.82
	5690	138	13.96	13.62	16.80
UNII-3	5775	155	13.88	13.64	16.77

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

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

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

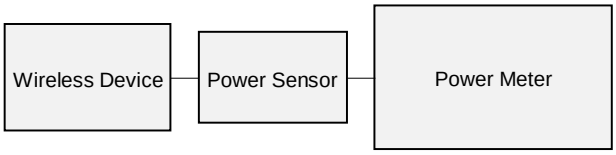


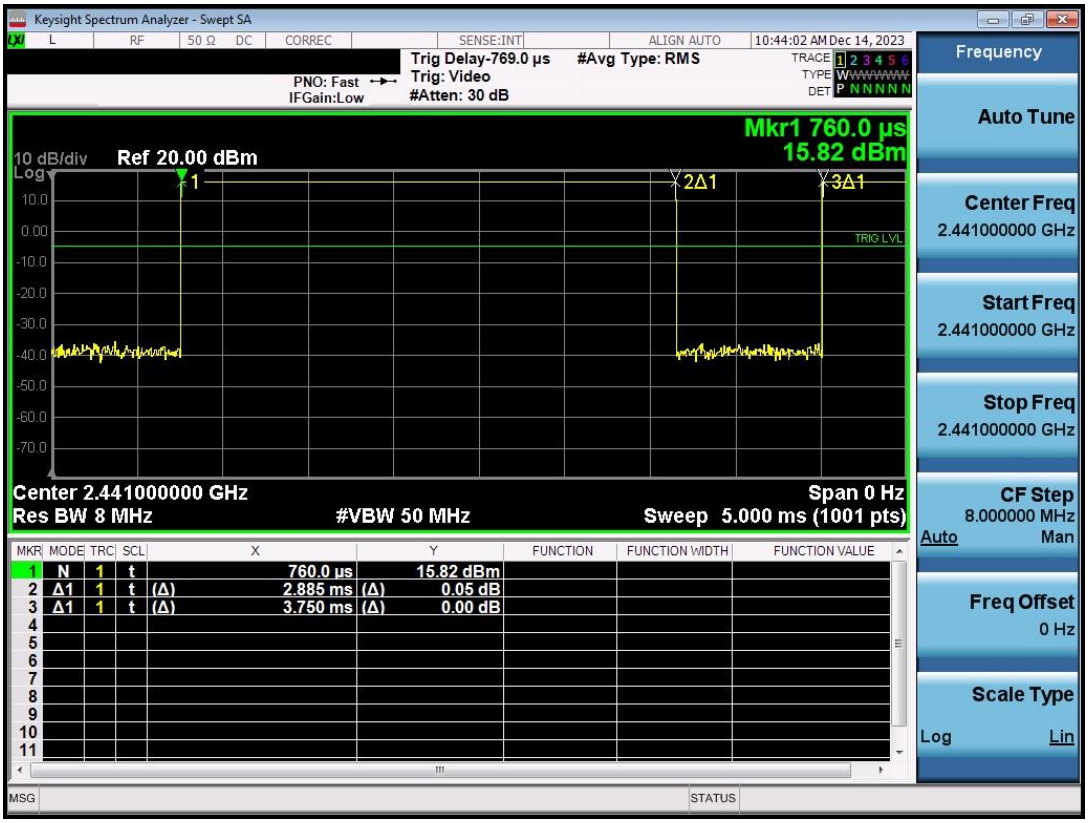
Figure 9-7
Power Measurement Setup

9.6 Bluetooth Conducted Powers

Table 9-42
Bluetooth Maximum Average RF Power– Antenna I

Frequency [MHz]	Data Rate [Mbps]	Mod.	Power Scheme	Channel No.	Avg Conducted Power	
					[dBm]	[mW]
2402	1.0	GFSK	ePA	0	16.01	39.897
2441	1.0	GFSK	ePA	39	16.80	47.817
2480	1.0	GFSK	ePA	78	16.00	39.813

Figure 9-8
Bluetooth Antenna 1 Transmission Plot



Equation 9-2
Bluetooth Antenna 1 Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.885ms}{3.750ms} * 100\% = 76.93\%$$

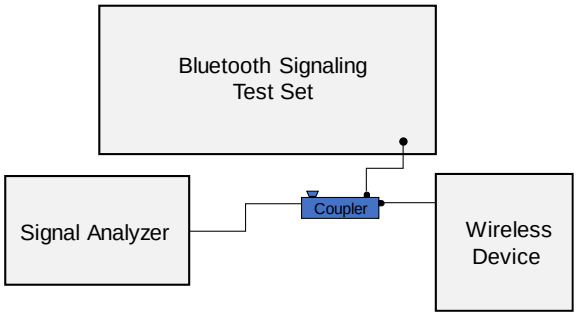


Figure 9-9
Power Measurement Setup

10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Head Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
12/22/2023	30 Head	20.5	12	0.748	52.459	0.750	55.000	-0.27%	-4.62%
			13	0.748	52.891	0.750	55.000	-0.27%	-3.83%
			14	0.748	53.277	0.750	55.000	-0.27%	-3.13%
11/08/2023	750 Head	22.1	680	0.874	40.681	0.888	42.305	-1.58%	-3.84%
			695	0.878	40.631	0.889	42.227	-1.24%	-3.78%
			700	0.880	40.614	0.889	42.201	-1.01%	-3.76%
			710	0.883	40.580	0.890	42.149	-0.79%	-3.72%
			725	0.887	40.539	0.891	42.071	-0.45%	-3.64%
			750	0.896	40.469	0.894	41.942	0.22%	-3.51%
			770	0.903	40.405	0.895	41.838	0.89%	-3.43%
			785	0.908	40.350	0.896	41.760	1.34%	-3.38%
			800	0.913	40.291	0.897	41.682	1.78%	-3.34%
11/10/2023	750 Head	22.5	680	0.876	40.303	0.888	42.305	-1.35%	-4.73%
			695	0.881	40.270	0.889	42.227	-0.90%	-4.63%
			700	0.883	40.256	0.889	42.201	-0.67%	-4.61%
			710	0.886	40.228	0.890	42.149	-0.45%	-4.56%
			725	0.891	40.181	0.891	42.071	0.00%	-4.49%
			750	0.900	40.087	0.894	41.942	0.67%	-4.42%
			770	0.906	40.030	0.895	41.838	1.23%	-4.32%
			785	0.912	39.993	0.896	41.760	1.79%	-4.23%
			800	0.917	39.951	0.897	41.682	2.23%	-4.15%
11/08/2023	835 Head	21.4	815	0.925	41.068	0.898	41.594	3.01%	-1.26%
			820	0.927	41.052	0.899	41.578	3.11%	-1.27%
			835	0.932	40.988	0.900	41.500	3.56%	-1.23%
			850	0.937	40.925	0.916	41.500	2.29%	-1.39%
11/10/2023	835 Head	21.1	815	0.934	40.832	0.898	41.594	4.01%	-1.83%
			820	0.936	40.811	0.899	41.578	4.12%	-1.84%
			835	0.942	40.752	0.900	41.500	4.67%	-1.80%
			850	0.948	40.705	0.916	41.500	3.49%	-1.92%
11/13/2023	835 Head	20.8	815	0.929	41.333	0.898	41.594	3.45%	-0.63%
			820	0.931	41.316	0.899	41.578	3.56%	-0.63%
			835	0.937	41.281	0.900	41.500	4.11%	-0.53%
			850	0.944	41.250	0.916	41.500	3.06%	-0.60%
11/15/2023	835 Head	21.5	815	0.918	40.794	0.898	41.594	2.23%	-1.92%
			820	0.920	40.776	0.899	41.578	2.34%	-1.93%
			835	0.925	40.727	0.900	41.500	2.78%	-1.86%
			850	0.931	40.684	0.916	41.500	1.64%	-1.97%
11/22/2023	835 Head	21.1	815	0.907	39.978	0.898	41.594	1.00%	-3.89%
			820	0.909	39.962	0.899	41.578	1.11%	-3.89%
			835	0.915	39.912	0.900	41.500	1.67%	-3.83%
			850	0.920	39.866	0.916	41.500	0.44%	-3.94%
11/20/2023	1750 Head	19.9	1700	1.295	38.249	1.343	40.145	-3.57%	-4.72%
			1705	1.298	38.243	1.345	40.141	-3.49%	-4.73%
			1710	1.301	38.235	1.348	40.136	-3.49%	-4.74%
			1720	1.308	38.215	1.354	40.126	-3.40%	-4.76%
			1745	1.324	38.177	1.368	40.087	-3.22%	-4.76%
			1750	1.327	38.171	1.371	40.079	-3.21%	-4.76%
			1770	1.340	38.142	1.383	40.047	-3.11%	-4.76%
			1790	1.354	38.112	1.394	40.016	-2.87%	-4.76%
11/23/2023	1750 Head	22.2	1700	1.319	38.993	1.343	40.145	-1.79%	-2.87%
			1705	1.322	38.983	1.345	40.141	-1.71%	-2.88%
			1710	1.325	38.974	1.348	40.136	-1.71%	-2.90%
			1720	1.331	38.956	1.354	40.126	-1.70%	-2.92%
			1745	1.345	38.917	1.368	40.087	-1.68%	-2.92%
			1750	1.348	38.910	1.371	40.079	-1.68%	-2.92%
			1770	1.358	38.878	1.383	40.047	-1.81%	-2.92%
			1790	1.369	38.836	1.394	40.016	-1.79%	-2.95%
11/23/2023	1750 Head	21.0	1700	1.316	38.680	1.343	40.145	-2.01%	-3.65%
			1705	1.319	38.671	1.345	40.141	-1.93%	-3.66%
			1710	1.322	38.661	1.348	40.136	-1.93%	-3.68%
			1720	1.329	38.641	1.354	40.126	-1.85%	-3.70%
			1745	1.344	38.598	1.368	40.087	-1.75%	-3.71%
			1750	1.347	38.589	1.371	40.079	-1.75%	-3.72%
			1770	1.357	38.554	1.383	40.047	-1.88%	-3.73%
			1790	1.368	38.513	1.394	40.016	-1.87%	-3.76%
12/04/2023	1750 Head	20.5	1700	1.286	40.010	1.343	40.145	-4.24%	-0.34%
			1705	1.289	40.005	1.345	40.141	-4.16%	-0.34%
			1710	1.291	39.999	1.348	40.136	-4.23%	-0.34%
			1720	1.296	39.982	1.354	40.126	-4.28%	-0.36%
			1745	1.311	39.939	1.368	40.087	-4.17%	-0.37%
			1750	1.314	39.931	1.371	40.079	-4.16%	-0.37%
			1770	1.326	39.911	1.383	40.047	-4.12%	-0.34%
			1790	1.338	39.897	1.394	40.016	-4.02%	-0.30%
12/04/2023	1750 Head	21.1	1700	1.345	38.986	1.343	40.145	0.15%	-2.89%
			1705	1.349	38.965	1.345	40.141	0.30%	-2.93%
			1710	1.354	38.945	1.348	40.136	0.45%	-2.97%
			1720	1.364	38.903	1.354	40.126	0.74%	-3.05%
			1745	1.387	38.788	1.368	40.087	1.39%	-3.24%
			1750	1.392	38.764	1.371	40.079	1.53%	-3.28%
			1770	1.411	38.674	1.383	40.047	2.02%	-3.43%
			1790	1.432	38.593	1.394	40.016	2.73%	-3.56%
12/11/2023	1750 Head	20.0	1700	1.378	38.627	1.343	40.145	2.61%	-3.78%
			1705	1.383	38.603	1.345	40.141	2.83%	-3.83%
			1710	1.388	38.577	1.348	40.136	2.97%	-3.88%
			1720	1.398	38.525	1.354	40.126	3.25%	-3.99%
			1745	1.423	38.386	1.368	40.087	4.02%	-4.24%
			1750	1.428	38.357	1.371	40.079	4.16%	-4.30%
			1770	1.448	38.250	1.383	40.047	4.70%	-4.49%
12/28/2023	1750 Head	22.6	1700	1.357	38.894	1.343	40.145	1.04%	-3.12%
			1705	1.363	38.870	1.345	40.141	1.34%	-3.17%
			1710	1.368	38.845	1.348	40.136	1.48%	-3.22%
			1720	1.378	38.794	1.354	40.126	1.77%	-3.32%
			1745	1.404	38.662	1.368	40.087	2.63%	-3.55%
			1750	1.409	38.636	1.371	40.079	2.77%	-3.60%
			1770	1.429	38.538	1.383	40.047	3.33%	-3.77%
			1790	1.448	38.444	1.394	40.016	3.87%	-3.93%

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

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
11/20/2023	1900 Head	22.7	1850	1.403	38.780	1.400	40.000	0.21%	-3.05%
			1860	1.407	38.773	1.400	40.000	0.50%	-3.07%
			1880	1.417	38.748	1.400	40.000	1.21%	-3.13%
			1900	1.429	38.697	1.400	40.000	2.07%	-3.26%
			1905	1.433	38.683	1.400	40.000	2.36%	-3.29%
			1910	1.436	38.672	1.400	40.000	2.57%	-3.32%
			1920	1.442	38.653	1.400	40.000	3.00%	-3.37%
11/23/2023	1900 Head	22.2	1850	1.403	38.724	1.400	40.000	0.21%	-3.19%
			1860	1.408	38.712	1.400	40.000	0.57%	-3.22%
			1880	1.419	38.683	1.400	40.000	1.36%	-3.29%
			1900	1.432	38.642	1.400	40.000	2.29%	-3.39%
			1905	1.435	38.632	1.400	40.000	2.50%	-3.42%
			1910	1.438	38.623	1.400	40.000	2.71%	-3.44%
			1920	1.444	38.607	1.400	40.000	3.14%	-3.48%
11/30/2023	1900 Head	19.7	1850	1.391	39.641	1.400	40.000	-0.64%	-0.90%
			1860	1.397	39.625	1.400	40.000	-0.21%	-0.94%
			1880	1.410	39.592	1.400	40.000	0.71%	-1.02%
			1900	1.423	39.566	1.400	40.000	1.64%	-1.08%
			1905	1.427	39.559	1.400	40.000	1.93%	-1.10%
			1910	1.430	39.553	1.400	40.000	2.14%	-1.12%
			1920	1.436	39.537	1.400	40.000	2.57%	-1.16%
12/18/2023	1900 Head	24.1	1850	1.365	41.456	1.400	40.000	-2.50%	3.64%
			1860	1.375	41.383	1.400	40.000	-1.79%	3.46%
			1880	1.397	41.254	1.400	40.000	-0.21%	3.13%
			1900	1.422	41.191	1.400	40.000	1.57%	2.98%
			1905	1.428	41.183	1.400	40.000	2.00%	2.96%
			1910	1.435	41.179	1.400	40.000	2.50%	2.95%
			1920	1.446	41.169	1.400	40.000	3.29%	2.92%
01/02/2024	1900 Head	19.0	1850	1.341	40.289	1.400	40.000	-4.21%	0.72%
			1860	1.346	40.280	1.400	40.000	-3.86%	0.70%
			1880	1.354	40.255	1.400	40.000	-3.29%	0.64%
			1900	1.364	40.224	1.400	40.000	-2.57%	0.56%
			1905	1.366	40.215	1.400	40.000	-2.43%	0.54%
			1910	1.369	40.207	1.400	40.000	-2.21%	0.52%
			1920	1.375	40.191	1.400	40.000	-1.79%	0.48%
12/13/2023	2450 Head	19.0	2400	1.731	38.894	1.756	39.289	-1.42%	-1.01%
			2450	1.766	38.817	1.800	39.200	-1.89%	-0.98%
			2480	1.796	38.748	1.833	39.162	-2.02%	-1.06%
			2500	1.814	38.724	1.855	39.136	-2.21%	-1.05%
			2510	1.822	38.717	1.866	39.123	-2.36%	-1.04%
			2535	1.838	38.691	1.893	39.092	-2.91%	-1.03%
			2550	1.848	38.665	1.909	39.073	-3.20%	-1.04%
			2560	1.856	38.640	1.920	39.060	-3.33%	-1.08%
			2600	1.896	38.549	1.964	39.009	-3.46%	-1.18%
			2650	1.934	38.488	2.018	38.945	-4.16%	-1.17%
			2680	1.956	38.430	2.051	38.907	-4.63%	-1.23%
			2700	1.975	38.386	2.073	38.882	-4.73%	-1.28%
12/18/2023	2450 Head	20.3	2400	1.760	38.224	1.756	39.289	0.23%	-2.71%
			2450	1.799	38.144	1.800	39.200	-0.06%	-2.69%
			2480	1.822	38.099	1.833	39.162	-0.60%	-2.71%
			2500	1.837	38.071	1.855	39.136	-0.97%	-2.72%
			2510	1.845	38.055	1.866	39.123	-1.13%	-2.73%
			2535	1.865	38.006	1.893	39.092	-1.48%	-2.78%
			2550	1.878	37.979	1.909	39.073	-1.62%	-2.80%
			2560	1.887	37.961	1.920	39.060	-1.72%	-2.81%
			2600	1.919	37.912	1.964	39.009	-2.29%	-2.81%
			2650	1.958	37.804	2.018	38.945	-2.97%	-2.93%
			2680	1.984	37.760	2.051	38.907	-3.27%	-2.95%
			2700	1.999	37.743	2.073	38.882	-3.57%	-2.93%
12/20/2023	2450 Head	19.2	2400	1.755	39.595	1.756	39.289	-0.06%	0.78%
			2450	1.797	39.508	1.800	39.200	-0.17%	0.79%
			2480	1.822	39.448	1.833	39.162	-0.60%	0.73%
			2500	1.839	39.411	1.855	39.136	-0.86%	0.70%
			2510	1.847	39.396	1.866	39.123	-1.02%	0.70%
			2535	1.868	39.355	1.893	39.092	-1.32%	0.67%
			2550	1.882	39.326	1.909	39.073	-1.41%	0.65%
			2560	1.891	39.304	1.920	39.060	-1.51%	0.62%
			2600	1.925	39.229	1.964	39.009	-1.99%	0.56%
			2650	1.966	39.123	2.018	38.945	-2.58%	0.46%
			2680	1.993	39.075	2.051	38.907	-2.83%	0.43%
			2700	2.010	39.054	2.073	38.882	-3.04%	0.44%
12/20/2023	2450 Head	20.4	2400	1.740	38.144	1.756	39.289	-0.91%	-2.91%
			2450	1.780	38.062	1.800	39.200	-1.11%	-2.90%
			2480	1.804	38.006	1.833	39.162	-1.58%	-2.95%
			2500	1.819	37.974	1.855	39.136	-1.94%	-2.97%
			2510	1.827	37.959	1.866	39.123	-2.09%	-2.98%
			2535	1.847	37.921	1.893	39.092	-2.43%	-3.00%
			2550	1.861	37.893	1.909	39.073	-2.51%	-3.02%
			2560	1.869	37.873	1.920	39.060	-2.66%	-3.04%
			2600	1.899	37.802	1.964	39.009	-3.31%	-3.09%
			2650	1.940	37.704	2.018	38.945	-3.87%	-3.19%
			2680	1.964	37.661	2.051	38.907	-4.24%	-3.20%
			2700	1.980	37.644	2.073	38.882	-4.49%	-3.18%
12/26/2023	2450 Head	24.8	2400	1.790	39.642	1.756	39.289	1.94%	0.90%
			2450	1.849	39.460	1.800	39.200	2.72%	0.66%
			2480	1.881	39.337	1.833	39.162	2.62%	0.45%
			2500	1.904	39.253	1.855	39.136	2.64%	0.30%

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, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
12/11/2023	3600 Head	20.4	3300	2.625	38.876	2.708	38.157	-3.08%	1.88%
			3350	2.675	38.829	2.759	38.100	-3.06%	1.91%
			3450	2.767	38.620	2.861	37.986	-3.30%	1.67%
			3500	2.813	38.482	2.913	37.929	-3.44%	1.46%
			3550	2.857	38.437	2.964	37.871	-3.60%	1.50%
			3560	2.867	38.444	2.974	37.860	-3.61%	1.54%
			3600	2.905	38.341	3.015	37.814	-3.66%	1.39%
			3650	2.952	38.292	3.066	37.757	-3.73%	1.42%
			3690	2.993	38.217	3.107	37.711	-3.68%	1.34%
			3700	3.005	38.203	3.117	37.700	-3.60%	1.33%
			3750	3.051	38.107	3.169	37.643	-3.73%	1.23%
			3900	3.206	37.922	3.323	37.471	-3.52%	0.94%
			3930	3.233	37.776	3.353	37.437	-3.58%	0.91%
			4100	3.418	37.531	3.528	37.243	-3.13%	0.77%
			4150	3.466	37.410	3.579	37.186	-3.15%	0.60%
12/18/2023	3600 Head	19.2	3300	2.617	39.881	2.708	38.157	-3.36%	4.52%
			3350	2.659	39.832	2.759	38.100	-3.62%	4.55%
			3450	2.761	39.646	2.861	37.986	-3.50%	4.37%
			3500	2.810	39.538	2.913	37.929	-3.54%	4.24%
			3550	2.862	39.478	2.964	37.871	-3.44%	4.24%
			3560	2.870	39.481	2.974	37.860	-3.50%	4.28%
			3600	2.906	39.399	3.015	37.814	-3.62%	4.19%
			3650	2.961	39.316	3.066	37.757	-3.42%	4.13%
			3690	2.992	39.291	3.107	37.711	-3.70%	4.19%
			3700	3.001	39.263	3.117	37.700	-3.72%	4.15%
			3750	3.061	39.122	3.169	37.643	-3.41%	3.93%
			3900	3.218	38.923	3.323	37.471	-3.16%	3.87%
			3930	3.248	38.818	3.353	37.437	-3.13%	3.69%
			4100	3.443	38.562	3.528	37.243	-2.41%	3.54%
			4150	3.492	38.436	3.579	37.186	-2.43%	3.36%
12/26/2023	3600 Head	19.0	3300	2.616	38.677	2.708	38.157	-3.40%	1.36%
			3350	2.662	38.577	2.759	38.100	-3.52%	1.25%
			3450	2.757	38.392	2.861	37.986	-3.64%	1.07%
			3500	2.803	38.291	2.913	37.929	-3.78%	0.95%
			3550	2.848	38.218	2.964	37.871	-3.91%	0.92%
			3560	2.857	38.194	2.974	37.860	-3.93%	0.88%
			3600	2.900	38.120	3.015	37.814	-3.81%	0.81%
			3650	2.946	38.035	3.066	37.757	-3.91%	0.74%
			3690	2.985	37.958	3.107	37.711	-3.93%	0.65%
			3700	2.995	37.942	3.117	37.700	-3.91%	0.64%
			3750	3.044	37.856	3.169	37.643	-3.94%	0.57%
			3900	3.195	37.612	3.323	37.471	-3.85%	0.38%
			3930	3.226	37.556	3.353	37.437	-3.79%	0.32%
			4100	3.404	37.280	3.528	37.243	-3.51%	0.10%
			4150	3.460	37.197	3.579	37.186	-3.32%	0.03%
12/17/2023	5200-5800 Head	22.9	5180	4.551	34.950	4.635	36.009	-1.81%	-2.94%
			5190	4.556	34.944	4.645	35.998	-1.92%	-2.93%
			5200	4.559	34.927	4.655	35.986	-2.06%	-2.94%
			5210	4.562	34.889	4.666	35.975	-2.23%	-3.02%
			5220	4.570	34.844	4.676	35.963	-2.27%	-3.11%
			5240	4.598	34.772	4.696	35.940	-2.09%	-3.25%
			5250	4.616	34.757	4.706	35.929	-1.91%	-3.26%
			5260	4.631	34.750	4.717	35.917	-1.82%	-3.25%
			5270	4.648	34.749	4.727	35.906	-1.67%	-3.22%
			5280	4.660	34.756	4.737	35.894	-1.63%	-3.17%
			5290	4.670	34.751	4.748	35.883	-1.64%	-3.15%
			5300	4.676	34.737	4.758	35.871	-1.72%	-3.16%
			5310	4.679	34.710	4.768	35.860	-1.87%	-3.21%
			5320	4.683	34.677	4.778	35.849	-1.99%	-3.27%
			5500	4.895	34.337	4.963	35.643	-1.37%	-3.66%
			5510	4.905	34.343	4.973	35.632	-1.37%	-3.62%
			5520	4.910	34.343	4.983	35.620	-1.46%	-3.59%
			5530	4.912	34.332	4.994	35.609	-1.64%	-3.59%
			5540	4.918	34.294	5.004	35.597	-1.72%	-3.66%
			5550	4.929	34.252	5.014	35.586	-1.70%	-3.75%
			5560	4.944	34.200	5.024	35.574	-1.59%	-3.86%
			5580	4.971	34.139	5.045	35.551	-1.47%	-3.97%
			5600	5.002	34.127	5.065	35.529	-1.24%	-3.95%
			5610	5.016	34.127	5.076	35.518	-1.18%	-3.92%
			5620	5.029	34.134	5.086	35.506	-1.12%	-3.86%
			5640	5.037	34.106	5.106	35.483	-1.35%	-3.88%
			5660	5.054	34.022	5.127	35.460	-1.42%	-4.06%
			5670	5.070	33.986	5.137	35.449	-1.30%	-4.13%
			5680	5.085	33.963	5.147	35.437	-1.20%	-4.19%
			5690	5.100	33.927	5.158	35.426	-1.12%	-4.23%
			5700	5.115	33.919	5.168	35.414	-1.03%	-4.22%
			5710	5.129	33.928	5.178	35.403	-0.95%	-4.17%
			5720	5.139	33.934	5.188	35.391	-0.94%	-4.12%
			5745	5.151	33.879	5.214	35.363	-1.21%	-4.20%
			5750	5.153	33.865	5.219	35.357	-1.26%	-4.22%
			5755	5.157	33.849	5.224	35.351	-1.28%	-4.25%
			5765	5.169	33.821	5.234	35.340	-1.24%	-4.30%
			5775	5.184	33.785	5.245	35.329	-1.16%	-4.37%
			5785	5.198	33.748	5.255	35.317	-1.08%	-4.44%
			5795	5.217	33.731	5.265	35.305	-0.91%	-4.46%
			5800	5.227	33.727	5.270	35.300	-0.82%	-4.46%
			5800	5.227	33.727	5.270	35.300	-0.82%	-4.46%
			5805	5.234	33.726	5.275	35.294	-0.78%	-4.44%
			5825	5.256	33.730	5.296	35.271	-0.76%	-4.37%
			5835	5.259	33.730	5.305	35.230	-0.87%	-4.26%
			5845	5.260	33.727	5.315	35.210	-1.03%	-4.21%
			5855	5.265	33.710	5.325	35.197	-1.13%	-4.22%
			5865	5.272	33.667	5.336	35.190	-1.20%	-4.33%
			5865	5.272	33.667	5.336	35.190	-1.20%	-4.33%
			5865	5.272	33.667	5.336	35.190	-1.20%	-4.33%
			5865	5.272	33.667	5.336	35.190	-1.20%	-4.33%
			5875	5.284	33.621	5.347	35.183	-1.18%	-4.44%
			5885	5.295	33.583	5.357	35.177	-1.16%	-4.53%
			5905	5.330	33.529	5.379	35.163	-0.91%	-4.65%

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

10.2 Test System Verification

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

Table 10-4
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	12/22/2023	20.2	20.2	0.10	1002	7417	665	0.521	0.523	0.521	-0.38%	0.323	0.327	0.323	-1.22%
K2	750	HEAD	11/08/2023	23.1	22.1	0.20	1003	7565	1466	1.740	8.480	8.700	2.59%	1.140	5.560	5.700	2.52%
K2	750	HEAD	11/10/2023	22.9	22.5	0.20	1003	7565	1466	1.750	8.480	8.750	3.18%	1.140	5.560	5.700	2.52%
K3	835	HEAD	11/08/2023	22.6	21.4	0.20	4d180	7558	1364	2.050	9.630	10.250	6.44%	1.330	6.270	6.650	6.06%
K3	835	HEAD	11/10/2023	22.1	21.1	0.20	4d119	7558	1364	2.060	9.720	10.300	5.97%	1.330	6.380	6.650	4.23%
K4	835	HEAD	11/13/2023	21.5	20.8	0.20	4d119	7640	1645	1.970	9.720	9.850	1.34%	1.280	6.380	6.400	0.31%
K4	835	HEAD	11/15/2023	21.5	21.5	0.20	4d119	7640	1645	2.020	9.720	10.100	3.91%	1.310	6.380	6.550	2.66%
K6	835	HEAD	11/22/2023	21.0	21.1	0.20	4d119	7491	1532	2.000	9.720	10.000	2.88%	1.300	6.380	6.500	1.88%
K6	1750	HEAD	11/20/2023	20.1	19.9	0.10	1051	7491	1532	3.610	36.100	36.100	0.00%	1.910	19.000	19.100	0.53%
K2	1750	HEAD	11/23/2023	22.2	22.2	0.10	1092	7565	1466	3.390	36.200	33.900	-6.35%	1.820	19.100	18.200	-4.71%
K4	1750	HEAD	11/23/2023	22.1	21.0	0.10	1051	7640	1645	3.800	36.100	38.000	5.26%	2.000	19.000	20.000	5.26%
S	1750	HEAD	12/04/2023	22.6	21.1	0.10	1008	7713	1530	3.680	37.400	36.800	-1.60%	1.930	19.600	19.300	-1.53%
L	1750	HEAD	12/04/2023	22.0	21.0	0.10	1008	7409	1334	3.530	37.400	35.300	-5.61%	1.880	19.600	18.800	-4.08%
G	1750	HEAD	12/11/2023	19.1	20.0	0.10	1150	7417	665	3.870	37.200	38.700	4.88%	1.990	19.400	19.900	2.58%
H	1750	HEAD	12/28/2023	23.7	20.6	0.10	1008	7718	1368	3.730	37.400	37.300	-0.27%	1.950	19.600	19.500	-0.51%
K2	1900	HEAD	11/20/2023	22.5	22.7	0.10	5d026	7565	1466	4.150	38.900	41.500	6.68%	2.150	20.500	21.500	4.88%
K2	1900	HEAD	11/23/2023	22.2	22.2	0.10	5d026	7565	1466	4.010	38.900	40.100	3.08%	2.080	20.500	20.800	1.46%
K6	1900	HEAD	11/30/2023	19.8	19.7	0.10	5d141	7491	1532	4.080	39.900	40.800	2.26%	2.090	20.800	20.900	0.48%
P	1900	HEAD	01/02/2024	19.0	19.0	0.10	5d148	7659	1407	3.960	40.100	39.600	-1.25%	2.090	21.000	20.900	-0.48%
L	2450	HEAD	12/13/2023	20.0	20.0	0.10	719	7409	1334	5.450	55.000	54.500	-0.91%	2.540	25.700	25.400	-1.17%
S	2450	HEAD	12/18/2023	21.1	20.3	0.10	719	7713	1530	5.160	55.000	51.600	-6.18%	2.410	25.700	24.100	-6.23%
S	2450	HEAD	12/20/2023	20.1	19.2	0.10	719	7713	1530	5.230	55.000	52.300	-4.91%	2.450	25.700	24.500	-4.67%
G	2450	HEAD	12/26/2023	19.8	22.8	0.10	981	7417	665	5.180	53.900	51.800	-3.90%	2.300	25.400	23.000	-9.45%
L	2600	HEAD	12/13/2023	20.0	20.0	0.10	1064	7409	1334	5.970	56.400	59.700	5.85%	2.690	25.200	26.900	6.75%
L	2600	HEAD	12/20/2023	20.6	19.3	0.10	1004	7409	1334	5.680	57.800	56.800	-1.73%	2.560	25.700	25.600	-0.39%
K4	3500	HEAD	12/11/2023	20.8	20.4	0.10	1127	7640	1645	6.620	64.900	66.200	2.00%	2.520	24.400	25.200	3.28%
K4	3500	HEAD	12/18/2023	19.8	19.2	0.10	1127	7640	1645	6.500	64.900	65.000	0.15%	2.440	24.400	24.400	0.00%
K3	3500	HEAD	12/26/2023	20.4	19.0	0.10	1127	7558	1364	6.060	64.900	60.600	-6.63%	2.290	24.400	22.900	-6.15%
K4	3700	HEAD	12/11/2023	20.8	20.4	0.10	1096	7640	1645	6.740	66.900	67.400	0.75%	2.520	24.400	25.200	3.28%
K4	3700	HEAD	12/18/2023	19.8	19.2	0.10	1096	7640	1645	6.300	66.900	63.000	-5.83%	2.320	24.400	23.200	-4.92%
K3	3700	HEAD	12/26/2023	20.4	19.0	0.10	1096	7558	1364	6.260	66.900	62.600	-6.43%	2.300	24.400	23.000	-5.74%
K4	3900	HEAD	12/11/2023	20.8	20.4	0.10	1074	7640	1645	6.820	69.400	68.200	-1.73%	2.420	24.100	24.200	0.41%
K3	3900	HEAD	12/26/2023	20.4	19.0	0.10	1074	7558	1364	6.580	69.400	65.800	-5.19%	2.310	24.100	23.100	-4.15%
O	5250	HEAD	12/17/2023	23.0	22.9	0.05	1191	7570	1558	3.700	80.400	74.000	-7.96%	1.080	23.100	21.600	-6.49%
O	5600	HEAD	12/17/2023	23.0	22.9	0.05	1191	7570	1558	3.930	81.900	78.600	-4.03%	1.130	23.300	22.600	-3.00%
O	5750	HEAD	12/17/2023	23.0	22.9	0.05	1191	7570	1558	3.670	78.400	73.400	-6.38%	1.060	22.300	21.200	-4.93%

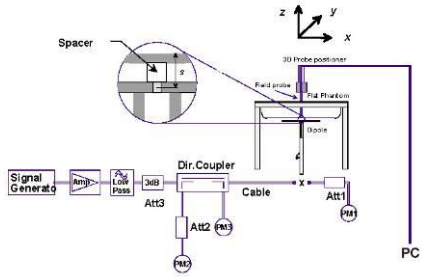


Figure 10-1
System Verification Setup Diagram

Figure 10-2
System Verification Setup Photo

11 SAR DATA SUMMARY

11.1 GSM 850 Standalone SAR

Table 11-1

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	GSM 850	GSM	A	1029M	1:8.3	-0.17	848.80	251	34.5	33.61	Right Cheek	0	0.136	1.227	0.167	A1	33.0	33.0
Head	GSM 850	GSM	A	1029M	1:8.3	0.04	848.80	251	34.5	33.61	Right Tilt	0	0.080	1.227	0.098		35.3	
Head	GSM 850	GSM	A	1029M	1:8.3	0.08	848.80	251	34.5	33.61	Left Cheek	0	0.105	1.227	0.129		34.1	
Head	GSM 850	GSM	A	1029M	1:8.3	-0.02	848.80	251	34.5	33.61	Left Tilt	0	0.064	1.227	0.079		36.3	
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

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn	GSM 850	GSM	A	1029M	1:8.3	0.01	848.80	251	34.5	33.61	Back	10	0.320	1.227	0.393	A2	29.3	28.9
Hotspot	GPRS 850	GPRS 4 Tx Slots	A	1029M	1:2.076	0.02	848.80	251	28.5	26.96	Back	10	0.307	1.426	0.438	A3	28.9	
Hotspot	GPRS 850	GPRS 4 Tx Slots	A	1029M	1:2.076	-0.01	848.80	251	28.5	26.96	Front	10	0.170	1.426	0.242		31.4	
Hotspot	GPRS 850	GPRS 4 Tx Slots	A	1029M	1:2.076	0.04	848.80	251	28.5	26.96	Bottom	10	0.244	1.426	0.348		29.9	
Hotspot	GPRS 850	GPRS 4 Tx Slots	A	1029M	1:2.076	-0.02	848.80	251	28.5	26.96	Right	10	0.129	1.426	0.184		32.6	
Hotspot	GPRS 850	GPRS 4 Tx Slots	A	1029M	1:2.076	0.13	848.80	251	28.5	26.96	Left	10	0.060	1.426	0.086		35.9	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Body 1.6 W/kg (mW/g) averaged over 1 gram							

11.2 GSM 1900 Standalone SAR

Table 11-3

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	GSM 1900	GSM	B	1164M	1:8.3	0.09	1850.20	512	30.0	29.94	Right Cheek	0	0.064	1.014	0.065	A4	32.6	32.6
Head	GSM 1900	GSM	B	1164M	1:8.3	-0.11	1850.20	512	30.0	29.94	Right Tilt	0	0.054	1.014	0.055		33.4	
Head	GSM 1900	GSM	B	1164M	1:8.3	0.10	1850.20	512	30.0	29.94	Left Cheek	0	0.060	1.014	0.061		32.9	
Head	GSM 1900	GSM	B	1164M	1:8.3	0.10	1850.20	512	30.0	29.94	Left Tilt	0	0.049	1.014	0.050		33.8	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-4

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn	GPRS 1900	GSM	B	1131M	1:8.3	0.06	1850.20	512	29.2	28.22	Back	10	0.252	1.253	0.316	A5	25.0	24.6
Hotspot	GPRS 1900	GPRS 4 Tx Slots	B	1131M	1:2.076	-0.04	1909.80	810	23.2	22.21	Back	10	0.272	1.256	0.342	A6	24.6	
Hotspot	GPRS 1900	GPRS 4 Tx Slots	B	1131M	1:2.076	-0.05	1909.80	810	23.2	22.21	Front	10	0.218	1.256	0.274		25.6	
Hotspot	GPRS 1900	GPRS 4 Tx Slots	B	1131M	1:2.076	-0.02	1909.80	810	23.2	22.21	Bottom	10	0.234	1.256	0.294		25.3	
Hotspot	GPRS 1900	GPRS 4 Tx Slots	B	1131M	1:2.076	-0.05	1909.80	810	23.2	22.21	Left	10	0.131	1.256	0.165		27.8	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak											Body 1.6 W/kg (mW/g)							

11.3 UMTS 850 Standalone SAR

Table 11-5

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	UMTS 850	RMC	A	1029M	1:1	-0.07	836.60	4183	25.0	23.98	Right Cheek	0	0.199	1.265	0.252	A7	30.9	30.9
Head	UMTS 850	RMC	A	1029M	1:1	-0.01	836.60	4183	25.0	23.98	Right Tilt	0	0.090	1.265	0.114		34.4	
Head	UMTS 850	RMC	A	1029M	1:1	0.03	836.60	4183	25.0	23.98	Left Cheek	0	0.153	1.265	0.194		32.1	
Head	UMTS 850	RMC	A	1029M	1:1	-0.03	836.60	4183	25.0	23.98	Left Tilt	0	0.074	1.265	0.094		35.2	
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

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	UMTS 850	RMC	A	1029M	1:1	0.00	836.60	4183	25.0	23.98	Back	10	0.458	1.265	0.579	A8	27.3	27.3
Hotspot	UMTS 850	RMC	A	1029M	1:1	-0.08	836.60	4183	25.0	23.98	Front	10	0.206	1.265	0.261		30.8	
Hotspot	UMTS 850	RMC	A	1029M	1:1	0.04	836.60	4183	25.0	23.98	Bottom	10	0.284	1.265	0.359		29.4	
Hotspot	UMTS 850	RMC	A	1029M	1:1	0.02	836.60	4183	25.0	23.98	Right	10	0.175	1.265	0.221		31.5	
Hotspot	UMTS 850	RMC	A	1029M	1:1	-0.06	836.60	4183	25.0	23.98	Left	10	0.087	1.265	0.110		34.5	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Body 1.6 W/kg (mW/g) averaged over 1 gram							

11.4 UMTS 1750 Standalone SAR

Table 11-7

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	UMTS 1750	RMC	B	1164M	1:1	-0.07	1712.40	1312	24.0	23.19	Right Cheek	0	0.179	1.205	0.216	A9	30.6	30.6
Head	UMTS 1750	RMC	B	1164M	1:1	-0.04	1712.40	1312	24.0	23.19	Right Tilt	0	0.062	1.205	0.075		35.2	
Head	UMTS 1750	RMC	B	1164M	1:1	-0.04	1712.40	1312	24.0	23.19	Left Cheek	0	0.095	1.205	0.114		33.4	
Head	UMTS 1750	RMC	B	1164M	1:1	-0.01	1712.40	1312	24.0	23.19	Left Tilt	0	0.078	1.205	0.094		34.2	
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

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	UMTS 1750	RMC	B	1242M	1:1	0.04	1712.40	1312	21.0	19.38	Back	10	0.208	1.452	0.302	A10	26.1	25.3
Hotspot	UMTS 1750	RMC	B	1242M	1:1	-0.02	1712.40	1312	21.0	19.38	Front	10	0.171	1.452	0.248		27.0	
Hotspot	UMTS 1750	RMC	B	1242M	1:1	0.02	1712.40	1312	21.0	19.38	Bottom	10	0.252	1.452	0.366	A11	25.3	
Hotspot	UMTS 1750	RMC	B	1242M	1:1	0.08	1712.40	1312	21.0	19.38	Left	10	0.110	1.452	0.160		28.9	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Body 1.6 W/kg (mW/g) averaged over 1 gram							

11.5 UMTS 1900 Standalone SAR

Table 11-9

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	UMTS 1900	RMC	B	1164M	1:1	-0.05	1880.00	9400	24.0	23.27	Right Cheek	0	0.140	1.183	0.166	A12	31.8	31.8
Head	UMTS 1900	RMC	B	1164M	1:1	-0.05	1880.00	9400	24.0	23.27	Right Tilt	0	0.132	1.183	0.156		32.0	
Head	UMTS 1900	RMC	B	1164M	1:1	0.02	1880.00	9400	24.0	23.27	Left Cheek	0	0.137	1.183	0.162		31.9	
Head	UMTS 1900	RMC	B	1164M	1:1	-0.19	1880.00	9400	24.0	23.27	Left Tilt	0	0.122	1.183	0.144		32.4	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-10

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	UMTS 1900	RMC	B	1131M	1:1	0.03	1852.40	9262	21.0	19.80	Back	10	0.295	1.318	0.389	A13	25.1	25.1
Hotspot	UMTS 1900	RMC	B	1131M	1:1	0.00	1852.40	9262	21.0	19.80	Front	10	0.146	1.318	0.192		28.1	
Hotspot	UMTS 1900	RMC	B	1131M	1:1	0.05	1852.40	9262	21.0	19.80	Bottom	10	0.293	1.318	0.386		25.1	
Hotspot	UMTS 1900	RMC	B	1131M	1:1	0.00	1852.40	9262	21.0	19.80	Left	10	0.130	1.318	0.171		28.6	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Body 1.6 W/kg (mW/g) averaged over 1 gram							

11.6 LTE Band 12 Standalone SAR

Table 11-11

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	LTE Band 12	10	QPSK	A	1257M	1:1	0.03	707.50	23095	0.0	25.5	24.42	1	0	Right Cheek	0	0.161	1.282	0.206	A14	32.3	31.9
Head	LTE Band 12	10	QPSK	A	1257M	1:1	-0.03	707.50	23095	1.0	24.5	23.46	25	0	Right Cheek	0	0.143	1.271	0.182		31.9	
Head	LTE Band 12	10	QPSK	A	1257M	1:1	0.10	707.50	23095	0.0	25.5	24.42	1	0	Right Tilt	0	0.083	1.282	0.106		35.2	
Head	LTE Band 12	10	QPSK	A	1257M	1:1	-0.08	707.50	23095	1.0	24.5	23.46	25	0	Right Tilt	0	0.075	1.271	0.095		34.7	
Head	LTE Band 12	10	QPSK	A	1257M	1:1	-0.02	707.50	23095	0.0	25.5	24.42	1	0	Left Cheek	0	0.143	1.282	0.183		32.8	
Head	LTE Band 12	10	QPSK	A	1257M	1:1	0.04	707.50	23095	1.0	24.5	23.46	25	0	Left Cheek	0	0.125	1.271	0.159		32.4	
Head	LTE Band 12	10	QPSK	A	1257M	1:1	0.01	707.50	23095	0.0	25.5	24.42	1	0	Left Tilt	0	0.063	1.282	0.081		36.4	
Head	LTE Band 12	10	QPSK	A	1257M	1:1	0.05	707.50	23095	1.0	24.5	23.46	25	0	Left Tilt	0	0.055	1.271	0.070		36.0	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-12

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	LTE Band 12	10	QPSK	A	1257M	1:1	-0.03	707.50	23095	0.0	25.5	24.42	1	0	Back	10	0.290	1.282	0.372	A15	29.7	29.0
Body-worn/Hotspot	LTE Band 12	10	QPSK	A	1257M	1:1	0.04	707.50	23095	1.0	24.5	23.46	25	0	Back	10	0.251	1.271	0.319		29.4	
Hotspot	LTE Band 12	10	QPSK	A	1257M	1:1	0.02	707.50	23095	0.0	25.5	24.42	1	0	Front	10	0.193	1.282	0.247		31.5	
Hotspot	LTE Band 12	10	QPSK	A	1257M	1:1	-0.02	707.50	23095	1.0	24.5	23.46	25	0	Front	10	0.169	1.271	0.215		31.1	
Hotspot	LTE Band 12	10	QPSK	A	1257M	1:1	0.01	707.50	23095	0.0	25.5	24.42	1	0	Bottom	10	0.217	1.282	0.278		31.0	
Hotspot	LTE Band 12	10	QPSK	A	1257M	1:1	-0.02	707.50	23095	1.0	24.5	23.46	25	0	Bottom	10	0.193	1.271	0.245		30.6	
Hotspot	LTE Band 12	10	QPSK	A	1257M	1:1	0.00	707.50	23095	0.0	25.5	24.42	1	0	Right	10	0.309	1.282	0.396	A16	29.5	
Hotspot	LTE Band 12	10	QPSK	A	1257M	1:1	0.00	707.50	23095	1.0	24.5	23.46	25	0	Right	10	0.274	1.271	0.348		29.0	
Hotspot	LTE Band 12	10	QPSK	A	1257M	1:1	0.00	707.50	23095	0.0	25.5	24.42	1	0	Left	10	0.153	1.282	0.196		32.5	
Hotspot	LTE Band 12	10	QPSK	A	1257M	1:1	-0.02	707.50	23095	1.0	24.5	23.46	25	0	Left	10	0.132	1.271	0.168		32.2	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram							

11.7 LTE Band 13 Standalone SAR

Table 11-13

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	LTE Band 13	10	QPSK	A	1257M	1:1	0.05	782.00	23230	0.0	25.5	25.10	1	0	Right Cheek	0	0.192	1.096	0.210	A17	32.2	31.7
Head	LTE Band 13	10	QPSK	A	1257M	1:1	0.08	782.00	23230	1.0	24.5	24.17	25	0	Right Cheek	0	0.175	1.079	0.189		31.7	
Head	LTE Band 13	10	QPSK	A	1257M	1:1	-0.10	782.00	23230	0.0	25.5	25.10	1	0	Right Tilt	0	0.105	1.096	0.115		34.8	
Head	LTE Band 13	10	QPSK	A	1257M	1:1	0.00	782.00	23230	1.0	24.5	24.17	25	0	Right Tilt	0	0.096	1.079	0.104		34.3	
Head	LTE Band 13	10	QPSK	A	1257M	1:1	-0.03	782.00	23230	0.0	25.5	25.10	1	0	Left Cheek	0	0.171	1.096	0.187		32.7	
Head	LTE Band 13	10	QPSK	A	1257M	1:1	0.04	782.00	23230	1.0	24.5	24.17	25	0	Left Cheek	0	0.148	1.079	0.160		32.4	
Head	LTE Band 13	10	QPSK	A	1257M	1:1	0.00	782.00	23230	0.0	25.5	25.10	1	0	Left Tilt	0	0.096	1.096	0.105		35.2	
Head	LTE Band 13	10	QPSK	A	1257M	1:1	0.05	782.00	23230	1.0	24.5	24.17	25	0	Left Tilt	0	0.074	1.079	0.080		35.4	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-14

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	LTE Band 13	10	QPSK	A	1257M	1:1	0.09	782.00	23230	0.0	25.5	25.10	1	0	Back	10	0.438	1.096	0.480	A18	28.6	28.6
Body-worn/Hotspot	LTE Band 13	10	QPSK	A	1257M	1:1	0.03	782.00	23230	1.0	24.5	24.17	25	0	Back	10	0.352	1.079	0.380		28.7	
Hotspot	LTE Band 13	10	QPSK	A	1257M	1:1	0.02	782.00	23230	0.0	25.5	25.10	1	0	Front	10	0.252	1.096	0.276		31.0	
Hotspot	LTE Band 13	10	QPSK	A	1257M	1:1	0.03	782.00	23230	1.0	24.5	24.17	25	0	Front	10	0.198	1.079	0.214		31.2	
Hotspot	LTE Band 13	10	QPSK	A	1257M	1:1	0.00	782.00	23230	0.0	25.5	25.10	1	0	Bottom	10	0.311	1.096	0.341		30.1	
Hotspot	LTE Band 13	10	QPSK	A	1257M	1:1	0.01	782.00	23230	1.0	24.5	24.17	25	0	Bottom	10	0.250	1.079	0.270		30.1	
Hotspot	LTE Band 13	10	QPSK	A	1257M	1:1	0.00	782.00	23230	0.0	25.5	25.10	1	0	Right	10	0.330	1.096	0.362		29.9	
Hotspot	LTE Band 13	10	QPSK	A	1257M	1:1	0.01	782.00	23230	1.0	24.5	24.17	25	0	Right	10	0.267	1.079	0.288		29.9	
Hotspot	LTE Band 13	10	QPSK	A	1257M	1:1	0.09	782.00	23230	0.0	25.5	25.10	1	0	Left	10	0.174	1.096	0.191		32.6	
Hotspot	LTE Band 13	10	QPSK	A	1257M	1:1	-0.05	782.00	23230	1.0	24.5	24.17	25	0	Left	10	0.142	1.079	0.153		32.6	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram							

11.8 LTE Band 26 (Cell) Standalone SAR

Table 11-15

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	LTE Band 26	15	QPSK	A	1190M	1:1	-0.08	831.50	26865	0.0	25.5	24.70	1	0	Right Cheek	0	0.157	1.202	0.189	A19	32.7	32.3
Head	LTE Band 26	15	QPSK	A	1190M	1:1	0.05	831.50	26865	1.0	24.5	23.82	36	0	Right Cheek	0	0.140	1.169	0.164		32.3	
Head	LTE Band 26	15	QPSK	A	1190M	1:1	0.09	831.50	26865	0.0	25.5	24.70	1	0	Right Tilt	0	0.084	1.202	0.101		35.4	
Head	LTE Band 26	15	QPSK	A	1190M	1:1	0.11	831.50	26865	1.0	24.5	23.82	36	0	Right Tilt	0	0.074	1.169	0.087		35.1	
Head	LTE Band 26	15	QPSK	A	1190M	1:1	-0.06	831.50	26865	0.0	25.5	24.70	1	0	Left Cheek	0	0.149	1.202	0.179		32.9	
Head	LTE Band 26	15	QPSK	A	1190M	1:1	0.01	831.50	26865	1.0	24.5	23.82	36	0	Left Cheek	0	0.138	1.169	0.161		32.4	
Head	LTE Band 26	15	QPSK	A	1190M	1:1	0.15	831.50	26865	0.0	25.5	24.70	1	0	Left Tilt	0	0.080	1.202	0.096		35.6	
Head	LTE Band 26	15	QPSK	A	1190M	1:1	0.04	831.50	26865	1.0	24.5	23.82	36	0	Left Tilt	0	0.074	1.169	0.087		35.1	
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 11-16

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	LTE Band 26	15	QPSK	A	1190M	1:1	0.00	831.50	26865	0.0	25.5	24.70	1	0	Back	10	0.409	1.202	0.492	A20	28.5	28.1
Body-worn/Hotspot	LTE Band 26	15	QPSK	A	1190M	1:1	0.00	831.50	26865	1.0	24.5	23.82	36	0	Back	10	0.369	1.169	0.431		28.1	
Hotspot	LTE Band 26	15	QPSK	A	1190M	1:1	0.03	831.50	26865	0.0	25.5	24.70	1	0	Front	10	0.174	1.202	0.209		32.2	
Hotspot	LTE Band 26	15	QPSK	A	1190M	1:1	0.00	831.50	26865	1.0	24.5	23.82	36	0	Front	10	0.159	1.169	0.186		31.8	
Hotspot	LTE Band 26	15	QPSK	A	1190M	1:1	0.01	831.50	26865	0.0	25.5	24.70	1	0	Bottom	10	0.264	1.202	0.317		30.4	
Hotspot	LTE Band 26	15	QPSK	A	1190M	1:1	0.00	831.50	26865	1.0	24.5	23.82	36	0	Bottom	10	0.237	1.169	0.277		30.0	
Hotspot	LTE Band 26	15	QPSK	A	1190M	1:1	0.00	831.50	26865	0.0	25.5	24.70	1	0	Right	10	0.202	1.202	0.243		31.6	
Hotspot	LTE Band 26	15	QPSK	A	1190M	1:1	-0.01	831.50	26865	1.0	24.5	23.82	36	0	Right	10	0.170	1.169	0.199		31.5	
Hotspot	LTE Band 26	15	QPSK	A	1190M	1:1	-0.02	831.50	26865	0.0	25.5	24.70	1	0	Left	10	0.108	1.202	0.130		34.3	
Hotspot	LTE Band 26	15	QPSK	A	1190M	1:1	0.00	831.50	26865	1.0	24.5	23.82	36	0	Left	10	0.090	1.169	0.105		34.2	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram							

11.9 LTE Band 66 (AWS) Standalone SAR

Table 11-17

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	LTE Band 66	20	QPSK	B	1164M	1:1	0.03	1770.00	132572	0.0	24.0	22.86	1	99	Right Cheek	0	0.135	1.300	0.176		31.5	31.5
Head	LTE Band 66	20	QPSK	B	1164M	1:1	-0.10	1770.00	132572	1.0	23.0	21.98	50	0	Right Cheek	0	0.093	1.265	0.118		32.2	
Head	LTE Band 66	20	QPSK	B	1164M	1:1	-0.21	1770.00	132572	0.0	24.0	22.86	1	99	Right Tilt	0	0.078	1.300	0.101		33.9	
Head	LTE Band 66	20	QPSK	B	1164M	1:1	-0.09	1770.00	132572	1.0	23.0	21.98	50	0	Right Tilt	0	0.058	1.265	0.073		34.3	
Head	LTE Band 66	20	QPSK	B	1164M	1:1	0.10	1770.00	132572	0.0	24.0	22.86	1	99	Left Cheek	0	0.125	1.300	0.163		31.8	
Head	LTE Band 66	20	QPSK	B	1164M	1:1	0.05	1770.00	132572	1.0	23.0	21.98	50	0	Left Cheek	0	0.107	1.265	0.135		31.6	
Head	LTE Band 66	20	QPSK	B	1164M	1:1	-0.05	1770.00	132572	0.0	24.0	22.86	1	99	Left Tilt	0	0.080	1.300	0.104		33.8	
Head	LTE Band 66	20	QPSK	B	1164M	1:1	0.02	1770.00	132572	1.0	23.0	21.98	50	0	Left Tilt	0	0.065	1.265	0.082		33.8	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-18

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	LTE Band 66	20	QPSK	B	1190M	1:1	-0.06	1720.00	132072	0.0	19.5	18.21	1	0	Back	10	0.178	1.346	0.240	A22	25.7	25.2
Body-worn/Hotspot	LTE Band 66	20	QPSK	B	1190M	1:1	-0.01	1720.00	132072	0.0	19.5	18.28	50	0	Back	10	0.171	1.324	0.226		25.9	
Hotspot	LTE Band 66	20	QPSK	B	1190M	1:1	-0.04	1720.00	132072	0.0	19.5	18.21	1	0	Front	10	0.121	1.346	0.163		27.3	
Hotspot	LTE Band 66	20	QPSK	B	1190M	1:1	0.06	1720.00	132072	0.0	19.5	18.28	50	0	Front	10	0.121	1.324	0.160		27.4	
Hotspot	LTE Band 66	20	QPSK	B	1190M	1:1	0.01	1720.00	132072	0.0	19.5	18.21	1	0	Bottom	10	0.198	1.346	0.267		25.2	
Hotspot	LTE Band 66	20	QPSK	B	1190M	1:1	0.00	1720.00	132072	0.0	19.5	18.28	50	0	Bottom	10	0.189	1.324	0.250		25.5	
Hotspot	LTE Band 66	20	QPSK	B	1190M	1:1	-0.03	1720.00	132072	0.0	19.5	18.21	1	0	Left	10	0.088	1.346	0.118		28.7	
Hotspot	LTE Band 66	20	QPSK	B	1190M	1:1	-0.02	1720.00	132072	0.0	19.5	18.28	50	0	Left	10	0.084	1.324	0.111		29.0	
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 11-19

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	LTE Band 66	20	QPSK	F	1131M	1:1	0.06	1745.00	132322	0.0	19.5	18.35	1	0	Right Cheek	0	0.396	1.303	0.516		22.3	22.1
Head	LTE Band 66	20	QPSK	F	1131M	1:1	0.02	1745.00	132322	0.0	19.5	18.33	50	25	Right Cheek	0	0.405	1.309	0.530		22.2	
Head	LTE Band 66	20	QPSK	F	1131M	1:1	0.00	1745.00	132322	0.0	19.5	18.35	1	0	Right Tilt	0	0.418	1.303	0.545	A21	22.1	
Head	LTE Band 66	20	QPSK	F	1131M	1:1	0.01	1745.00	132322	0.0	19.5	18.33	50	25	Right Tilt	0	0.411	1.309	0.538		22.1	
Head	LTE Band 66	20	QPSK	F	1131M	1:1	-0.05	1745.00	132322	0.0	19.5	18.35	1	0	Left Cheek	0	0.244	1.303	0.318		24.4	
Head	LTE Band 66	20	QPSK	F	1131M	1:1	0.07	1745.00	132322	0.0	19.5	18.33	50	25	Left Cheek	0	0.249	1.309	0.326		24.3	
Head	LTE Band 66	20	QPSK	F	1131M	1:1	0.01	1745.00	132322	0.0	19.5	18.35	1	0	Left Tilt	0	0.322	1.303	0.420		23.2	
Head	LTE Band 66	20	QPSK	F	1131M	1:1	0.01	1745.00	132322	0.0	19.5	18.33	50	25	Left Tilt	0	0.288	1.309	0.377		23.7	
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 11-20

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	LTE Band 66	20	QPSK	F	1131M	1:1	0.02	1745.00	132322	0.0	19.5	18.35	1	0	Back	10	0.165	1.303	0.215		26.1	24.3
Body-worn/Hotspot	LTE Band 66	20	QPSK	F	1131M	1:1	-0.01	1745.00	132322	0.0	19.5	18.33	50	25	Back	10	0.170	1.309	0.223		26.0	
Hotspot	LTE Band 66	20	QPSK	F	1131M	1:1	-0.01	1745.00	132322	0.0	19.5	18.35	1	0	Front	10	0.083	1.303	0.108		29.1	
Hotspot	LTE Band 66	20	QPSK	F	1131M	1:1	0.02	1745.00	132322	0.0	19.5	18.33	50	25	Front	10	0.084	1.309	0.110		29.0	
Hotspot	LTE Band 66	20	QPSK	F	1131M	1:1	0.02	1745.00	132322	0.0	19.5	18.35	1	0	Top	10	0.249	1.303	0.324		24.3	
Hotspot	LTE Band 66	20	QPSK	F	1131M	1:1	-0.01	1745.00	132322	0.0	19.5	18.33	50	25	Top	10	0.249	1.309	0.326	A23	24.3	
Hotspot	LTE Band 66	20	QPSK	F	1131M	1:1	0.01	1745.00	132322	0.0	19.5	18.35	1	0	Left	10	0.033	1.303	0.043		33.1	
Hotspot	LTE Band 66	20	QPSK	F	1131M	1:1	0.04	1745.00	132322	0.0	19.5	18.33	50	25	Left	10	0.033	1.309	0.043		33.1	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram							

11.10 LTE Band 25 (PCS) Standalone SAR

Table 11-21

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	LTE Band 25	20	QPSK	B	1164M	1:1	0.01	1905.00	26590	0.0	24.0	23.08	1	0	Right Cheek	0	0.143	1.236	0.177		31.5	31.3
Head	LTE Band 25	20	QPSK	B	1164M	1:1	0.05	1905.00	26590	1.0	23.0	22.20	50	0	Right Cheek	0	0.114	1.202	0.137		31.6	
Head	LTE Band 25	20	QPSK	B	1164M	1:1	0.01	1905.00	26590	0.0	24.0	23.08	1	0	Right Tilt	0	0.113	1.236	0.140		32.5	
Head	LTE Band 25	20	QPSK	B	1164M	1:1	0.02	1905.00	26590	1.0	23.0	22.20	50	0	Right Tilt	0	0.085	1.202	0.102		32.9	
Head	LTE Band 25	20	QPSK	B	1164M	1:1	-0.11	1905.00	26590	0.0	24.0	23.08	1	0	Left Cheek	0	0.147	1.236	0.182		31.4	
Head	LTE Band 25	20	QPSK	B	1164M	1:1	-0.01	1905.00	26590	1.0	23.0	22.20	50	0	Left Cheek	0	0.122	1.202	0.147		31.3	
Head	LTE Band 25	20	QPSK	B	1164M	1:1	0.04	1905.00	26590	0.0	24.0	23.08	1	0	Left Tilt	0	0.109	1.236	0.135		32.7	
Head	LTE Band 25	20	QPSK	B	1164M	1:1	0.01	1905.00	26590	1.0	23.0	22.20	50	0	Left Tilt	0	0.082	1.202	0.099		33.0	
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 11-22

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	LTE Band 25	20	QPSK	B	1131M	1:1	0.00	1860.00	26140	0.0	19.5	18.55	1	0	Back	10	0.181	1.245	0.225		25.9	25.1
Body-worn/Hotspot	LTE Band 25	20	QPSK	B	1131M	1:1	0.02	1860.00	26140	0.0	19.5	18.58	50	0	Back	10	0.182	1.236	0.225	A25	25.9	
Hotspot	LTE Band 25	20	QPSK	B	1131M	1:1	0.03	1860.00	26140	0.0	19.5	18.55	1	0	Front	10	0.125	1.245	0.156		27.5	
Hotspot	LTE Band 25	20	QPSK	B	1131M	1:1	0.02	1860.00	26140	0.0	19.5	18.58	50	0	Front	10	0.124	1.236	0.153		27.6	
Hotspot	LTE Band 25	20	QPSK	B	1131M	1:1	0.03	1860.00	26140	0.0	19.5	18.55	1	0	Bottom	10	0.219	1.245	0.273		25.1	
Hotspot	LTE Band 25	20	QPSK	B	1131M	1:1	0.00	1860.00	26140	0.0	19.5	18.58	50	0	Bottom	10	0.219	1.236	0.271		25.1	
Hotspot	LTE Band 25	20	QPSK	B	1131M	1:1	-0.02	1860.00	26140	0.0	19.5	18.55	1	0	Left	10	0.090	1.245	0.112		29.0	
Hotspot	LTE Band 25	20	QPSK	B	1131M	1:1	0.02	1860.00	26140	0.0	19.5	18.58	50	0	Left	10	0.089	1.236	0.110		29.0	
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

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	LTE Band 25	20	QPSK	F	1131M	1:1	0.04	1860.00	26140	0.0	19.5	18.66	1	0	Right Cheek	0	0.376	1.213	0.456	A24	22.9	22.9
Head	LTE Band 25	20	QPSK	F	1131M	1:1	-0.01	1860.00	26140	0.0	19.5	18.62	50	0	Right Cheek	0	0.361	1.225	0.442		23.0	
Head	LTE Band 25	20	QPSK	F	1131M	1:1	0.02	1860.00	26140	0.0	19.5	18.66	1	0	Right Tilt	0	0.359	1.213	0.435		23.1	
Head	LTE Band 25	20	QPSK	F	1131M	1:1	0.01	1860.00	26140	0.0	19.5	18.62	50	0	Right Tilt	0	0.347	1.225	0.425		23.2	
Head	LTE Band 25	20	QPSK	F	1131M	1:1	0.00	1860.00	26140	0.0	19.5	18.66	1	0	Left Cheek	0	0.180	1.213	0.218		26.1	
Head	LTE Band 25	20	QPSK	F	1131M	1:1	0.04	1860.00	26140	0.0	19.5	18.62	50	0	Left Cheek	0	0.179	1.225	0.219		26.0	
Head	LTE Band 25	20	QPSK	F	1131M	1:1	0.01	1860.00	26140	0.0	19.5	18.66	1	0	Left Tilt	0	0.243	1.213	0.295		24.8	
Head	LTE Band 25	20	QPSK	F	1131M	1:1	0.03	1860.00	26140	0.0	19.5	18.62	50	0	Left Tilt	0	0.240	1.225	0.294		24.8	
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 11-24

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	LTE Band 25	20	QPSK	F	1131M	1:1	0.01	1860.00	26140	0.0	19.5	18.66	1	0	Back	10	0.152	1.213	0.184		26.8	25.2
Body-worn/Hotspot	LTE Band 25	20	QPSK	F	1131M	1:1	0.01	1860.00	26140	0.0	19.5	18.62	50	0	Back	10	0.144	1.225	0.176		27.0	
Hotspot	LTE Band 25	20	QPSK	F	1131M	1:1	0.01	1860.00	26140	0.0	19.5	18.66	1	0	Front	10	0.070	1.213	0.085		30.2	
Hotspot	LTE Band 25	20	QPSK	F	1131M	1:1	-0.06	1860.00	26140	0.0	19.5	18.62	50	0	Front	10	0.070	1.225	0.086		30.1	
Hotspot	LTE Band 25	20	QPSK	F	1131M	1:1	0.01	1860.00	26140	0.0	19.5	18.66	1	0	Top	10	0.220	1.213	0.267	A26	25.2	
Hotspot	LTE Band 25	20	QPSK	F	1131M	1:1	-0.01	1860.00	26140	0.0	19.5	18.62	50	0	Top	10	0.216	1.225	0.265		25.2	
Hotspot	LTE Band 25	20	QPSK	F	1131M	1:1	-0.02	1860.00	26140	0.0	19.5	18.66	1	0	Left	10	0.057	1.213	0.069		31.1	
Hotspot	LTE Band 25	20	QPSK	F	1131M	1:1	0.04	1860.00	26140	0.0	19.5	18.62	50	0	Left	10	0.057	1.225	0.070		31.0	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram							

11.11 LTE Band 41 Standalone SAR

Table 11-25

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	LTE Band 41	20	QPSK	B	1173M	1:1.58	0.05	2636.50	41055	0.0	25.0	24.17	1	0	Right Cheek	0	0.062	1.211	0.075		34.2	33.8
Head	LTE Band 41	20	QPSK	B	1173M	1:1.58	0.05	2636.50	41055	1.0	24.0	23.26	50	0	Right Cheek	0	0.050	1.186	0.059		34.2	
Head	LTE Band 41	20	QPSK	B	1173M	1:1.58	0.06	2636.50	41055	0.0	25.0	24.17	1	0	Right Tilt	0	0.054	1.211	0.065		34.8	
Head	LTE Band 41	20	QPSK	B	1173M	1:1.58	0.06	2636.50	41055	1.0	24.0	23.26	50	0	Right Tilt	0	0.044	1.186	0.052		34.8	
Head	LTE Band 41	20	QPSK	B	1173M	1:1.58	0.03	2636.50	41055	0.0	25.0	24.17	1	0	Left Cheek	0	0.064	1.211	0.078		34.1	
Head	LTE Band 41	20	QPSK	B	1173M	1:1.58	0.07	2636.50	41055	1.0	24.0	23.26	50	0	Left Cheek	0	0.055	1.186	0.065		33.8	
Head	LTE Band 41	20	QPSK	B	1173M	1:1.58	0.01	2636.50	41055	0.0	25.0	24.17	1	0	Left Tilt	0	0.021	1.211	0.025		38.9	
Head	LTE Band 41	20	QPSK	B	1173M	1:1.58	0.09	2636.50	41055	1.0	24.0	23.26	50	0	Left Tilt	0	0.019	1.186	0.023		38.4	
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 11-26

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	LTE Band 41	20	QPSK	B	1164M	1:1.58	-0.03	2636.50	41055	0.0	20.5	19.52	1	0	Back	10	0.106	1.253	0.133		27.2	26.7
Body-worn/Hotspot	LTE Band 41	20	QPSK	B	1164M	1:1.58	-0.01	2636.50	41055	0.0	20.5	19.51	50	0	Back	10	0.114	1.256	0.143		26.9	
Hotspot	LTE Band 41	20	QPSK	B	1164M	1:1.58	-0.05	2636.50	41055	0.0	20.5	19.52	1	0	Front	10	0.068	1.253	0.085		29.2	
Hotspot	LTE Band 41	20	QPSK	B	1164M	1:1.58	-0.04	2636.50	41055	0.0	20.5	19.51	50	0	Front	10	0.076	1.256	0.095		28.7	
Hotspot	LTE Band 41	20	QPSK	B	1164M	1:1.58	0.00	2636.50	41055	0.0	20.5	19.52	1	0	Bottom	10	0.114	1.253	0.143		26.9	
Hotspot	LTE Band 41	20	QPSK	B	1164M	1:1.58	-0.02	2636.50	41055	0.0	20.5	19.51	50	0	Bottom	10	0.119	1.256	0.149		26.7	
Hotspot	LTE Band 41	20	QPSK	B	1164M	1:1.58	0.05	2636.50	41055	0.0	20.5	19.52	1	0	Left	10	0.026	1.253	0.033		33.3	
Hotspot	LTE Band 41	20	QPSK	B	1164M	1:1.58	-0.13	2636.50	41055	0.0	20.5	19.51	50	0	Left	10	0.031	1.256	0.039		32.6	
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

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	LTE Band 41	20	QPSK	F	1179M	1:1.58	0.02	2680.00	41490	0.0	20.5	20.18	1	0	Right Cheek	0	0.285	1.076	0.307		23.6	22.0
Head	LTE Band 41	20	QPSK	F	1179M	1:1.58	0.02	2680.00	41490	0.0	20.5	20.21	50	0	Right Cheek	0	0.307	1.069	0.328		23.3	
Head	LTE Band 41	20	QPSK	F	1179M	1:1.58	0.01	2680.00	41490	0.0	20.5	20.18	1	0	Right Tilt	0	0.387	1.076	0.416		22.3	
Head	LTE Band 41	20	QPSK	F	1179M	1:1.58	0.01	2680.00	41490	0.0	20.5	20.21	50	0	Right Tilt	0	0.418	1.069	0.447	A27	22.0	
Head	LTE Band 41	20	QPSK	F	1179M	1:1.58	-0.08	2680.00	41490	0.0	20.5	20.18	1	0	Left Cheek	0	0.171	1.076	0.184		25.8	
Head	LTE Band 41	20	QPSK	F	1179M	1:1.58	0.17	2680.00	41490	0.0	20.5	20.21	50	0	Left Cheek	0	0.184	1.069	0.197		25.5	
Head	LTE Band 41	20	QPSK	F	1179M	1:1.58	0.08	2680.00	41490	0.0	20.5	20.18	1	0	Left Tilt	0	0.187	1.076	0.201		25.4	
Head	LTE Band 41	20	QPSK	F	1179M	1:1.58	-0.03	2680.00	41490	0.0	20.5	20.21	50	0	Left Tilt	0	0.200	1.069	0.214		25.2	
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 11-28

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	LTE Band 41	20	QPSK	F	1179M	1:1.58	-0.03	2680.00	41490	0.0	20.5	20.18	1	0	Back	10	0.114	1.076	0.123		27.6	26.8
Body-worn/Hotspot	LTE Band 41	20	QPSK	F	1179M	1:1.58	-0.05	2680.00	41490	0.0	20.5	20.21	50	0	Back	10	0.122	1.069	0.130	A28	27.3	
Hotspot	LTE Band 41	20	QPSK	F	1179M	1:1.58	0.02	2680.00	41490	0.0	20.5	20.18	1	0	Front	10	0.045	1.076	0.048		31.6	
Hotspot	LTE Band 41	20	QPSK	F	1179M	1:1.58	-0.15	2680.00	41490	0.0	20.5	20.21	50	0	Front	10	0.047	1.069	0.050		31.5	
Hotspot	LTE Band 41	20	QPSK	F	1179M	1:1.58	0.00	2680.00	41490	0.0	20.5	20.18	1	0	Top	10	0.129	1.076	0.139		27.0	
Hotspot	LTE Band 41	20	QPSK	F	1179M	1:1.58	-0.08	2680.00	41490	0.0	20.5	20.21	50	0	Top	10	0.137	1.069	0.146	A29	26.8	
Hotspot	LTE Band 41	20	QPSK	F	1179M	1:1.58	0.15	2680.00	41490	0.0	20.5	20.18	1	0	Left	10	0.034	1.076	0.037		32.8	
Hotspot	LTE Band 41	20	QPSK	F	1179M	1:1.58	-0.08	2680.00	41490	0.0	20.5	20.21	50	0	Left	10	0.036	1.069	0.038		32.6	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram							

11.12 NR Band n5 Antenna A Standalone SAR

Table 11-29

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	NR Band n5	20	QPSK	A	1242M	1:1	-0.02	836.50	167300	DFT-s-OFDM	0.0	25.5	24.50	1	53	Right Cheek	0	0.184	1.259	0.232		31.8	
Head	NR Band n5	20	QPSK	A	1242M	1:1	0.02	836.50	167300	DFT-s-OFDM	0.0	25.5	24.44	50	28	Right Cheek	0	0.186	1.276	0.237	A30	31.7	
Head	NR Band n5	20	QPSK	A	1242M	1:1	0.19	836.50	167300	CP-OFDM	1.5	24.0	22.90	1	1	Right Cheek	0	0.116	1.288	0.149		32.2	
Head	NR Band n5	20	QPSK	A	1242M	1:1	-0.05	836.50	167300	DFT-s-OFDM	0.0	25.5	24.50	1	53	Right Tilt	0	0.090	1.259	0.113		34.9	
Head	NR Band n5	20	QPSK	A	1242M	1:1	-0.09	836.50	167300	DFT-s-OFDM	0.0	25.5	24.44	50	28	Right Tilt	0	0.089	1.276	0.114		34.9	31.7
Head	NR Band n5	20	QPSK	A	1242M	1:1	-0.11	836.50	167300	DFT-s-OFDM	0.0	25.5	24.50	1	53	Left Cheek	0	0.161	1.259	0.203		32.4	
Head	NR Band n5	20	QPSK	A	1242M	1:1	-0.01	836.50	167300	DFT-s-OFDM	0.0	25.5	24.44	50	28	Left Cheek	0	0.159	1.276	0.203		32.4	
Head	NR Band n5	20	QPSK	A	1242M	1:1	-0.06	836.50	167300	DFT-s-OFDM	0.0	25.5	24.50	1	53	Left Tilt	0	0.079	1.259	0.099		35.5	
Head	NR Band n5	20	QPSK	A	1242M	1:1	0.01	836.50	167300	DFT-s-OFDM	0.0	25.5	24.44	50	28	Left Tilt	0	0.079	1.276	0.101		35.4	
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 11-30

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	NR Band n5	20	QPSK	A	1242M	1:1	0.01	836.50	167300	DFT-s-OFDM	0.0	25.5	24.50	1	53	Back	10	0.355	1.259	0.447	A31	28.9	
Body-worn/Hotspot	NR Band n5	20	QPSK	A	1242M	1:1	0.01	836.50	167300	DFT-s-OFDM	0.0	25.5	24.44	50	28	Back	10	0.334	1.276	0.426		29.2	
Body-worn/Hotspot	NR Band n5	20	QPSK	A	1242M	1:1	-0.03	836.50	167300	CP-OFDM	1.5	24.0	22.90	1	1	Back	10	0.256	1.288	0.330		28.8	
Hotspot	NR Band n5	20	QPSK	A	1242M	1:1	0.04	836.50	167300	DFT-s-OFDM	0.0	25.5	24.50	1	53	Front	10	0.191	1.259	0.240		31.6	
Hotspot	NR Band n5	20	QPSK	A	1242M	1:1	-0.03	836.50	167300	DFT-s-OFDM	0.0	25.5	24.44	50	28	Front	10	0.191	1.276	0.244		31.6	
Hotspot	NR Band n5	20	QPSK	A	1242M	1:1	-0.02	836.50	167300	DFT-s-OFDM	0.0	25.5	24.50	1	53	Bottom	10	0.321	1.259	0.404		29.4	28.8
Hotspot	NR Band n5	20	QPSK	A	1242M	1:1	-0.01	836.50	167300	DFT-s-OFDM	0.0	25.5	24.44	50	28	Bottom	10	0.319	1.276	0.407		29.4	
Hotspot	NR Band n5	20	QPSK	A	1242M	1:1	-0.03	836.50	167300	DFT-s-OFDM	0.0	25.5	24.50	1	53	Right	10	0.192	1.259	0.242		31.6	
Hotspot	NR Band n5	20	QPSK	A	1242M	1:1	-0.01	836.50	167300	DFT-s-OFDM	0.0	25.5	24.44	50	28	Right	10	0.191	1.276	0.244		31.6	
Hotspot	NR Band n5	20	QPSK	A	1242M	1:1	-0.01	836.50	167300	DFT-s-OFDM	0.0	25.5	24.50	1	53	Left	10	0.094	1.259	0.118		34.7	
Hotspot	NR Band n5	20	QPSK	A	1242M	1:1	-0.04	836.50	167300	DFT-s-OFDM	0.0	25.5	24.44	50	28	Left	10	0.095	1.276	0.121		34.6	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Body 1.6 W/kg (mW/g) averaged over 1 gram							

11.13 NR Band n66 Standalone SAR

Table 11-31

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	NR Band n66	40	QPSK	B	1164M	1:1	0.03	1745.00	349000	DFT-s-OFDM	0.0	24.0	23.40	1	214	Right Cheek	0	0.120	1.148	0.138		32.6	
Head	NR Band n66	40	QPSK	B	1164M	1:1	-0.10	1745.00	349000	DFT-s-OFDM	0.0	24.0	23.25	108	54	Right Cheek	0	0.122	1.189	0.145		32.3	
Head	NR Band n66	40	QPSK	B	1164M	1:1	-0.01	1745.00	349000	CP-OFDM	1.5	22.5	21.77	1	1	Right Cheek	0	0.109	1.183	0.129		31.3	
Head	NR Band n66	40	QPSK	B	1164M	1:1	-0.07	1745.00	349000	DFT-s-OFDM	0.0	24.0	23.40	1	214	Right Tilt	0	0.076	1.148	0.087		34.5	
Head	NR Band n66	40	QPSK	B	1164M	1:1	-0.10	1745.00	349000	DFT-s-OFDM	0.0	24.0	23.25	108	54	Right Tilt	0	0.085	1.189	0.101		33.9	31.3
Head	NR Band n66	40	QPSK	B	1164M	1:1	0.04	1745.00	349000	DFT-s-OFDM	0.0	24.0	23.40	1	214	Left Cheek	0	0.112	1.148	0.129		32.9	
Head	NR Band n66	40	QPSK	B	1164M	1:1	0.06	1745.00	349000	DFT-s-OFDM	0.0	24.0	23.25	108	54	Left Cheek	0	0.114	1.189	0.136		32.6	
Head	NR Band n66	40	QPSK	B	1164M	1:1	-0.07	1745.00	349000	DFT-s-OFDM	0.0	24.0	23.40	1	214	Left Tilt	0	0.087	1.148	0.100		34.0	
Head	NR Band n66	40	QPSK	B	1164M	1:1	-0.05	1745.00	349000	DFT-s-OFDM	0.0	24.0	23.25	108	54	Left Tilt	0	0.084	1.189	0.100		34.0	
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 11-32

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	NR Band n66	40	QPSK	B	01421	1:1	-0.03	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.26	1	214	Back	10	0.146	1.330	0.194		26.6	
Body-worn/Hotspot	NR Band n66	40	QPSK	B	01421	1:1	-0.01	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.20	108	108	Back	10	0.159	1.349	0.214		26.1	
Hotspot	NR Band n66	40	QPSK	B	01421	1:1	-0.01	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.26	1	214	Front	10	0.167	1.330	0.222		26.0	
Hotspot	NR Band n66	40	QPSK	B	01421	1:1	0.10	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.20	108	108	Front	10	0.171	1.349	0.231		25.8	
Hotspot	NR Band n66	40	QPSK	B	01421	1:1	0.01	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.26	1	214	Bottom	10	0.242	1.330	0.322		24.4	23.7
Hotspot	NR Band n66	40	QPSK	B	01421	1:1	0.02	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.20	108	108	Bottom	10	0.261	1.349	0.352		24.0	
Hotspot	NR Band n66	40	QPSK	B	01421	1:1	-0.05	1745.00	349000	CP-OFDM	0.0	19.5	18.03	1	1	Bottom	10	0.267	1.403	0.375		23.7	
Hotspot	NR Band n66	40	QPSK	B	01421	1:1	-0.07	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.26	1	214	Left	10	0.099	1.330	0.132		28.3	
Hotspot	NR Band n66	40	QPSK	B	01421	1:1	-0.06	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.20	108	108	Left	10	0.103	1.349	0.139		28.0	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Body 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-33

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Reported 10g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Phablet	NR Band n66	40	QPSK	B	1114M	1:1	0.01	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.26	1	214	Bottom	0	0.555	1.330	0.738		24.7	
Phablet	NR Band n66	40	QPSK	B	1114M	1:1	0.01	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.20	108	108	Bottom	0	0.548	1.349	0.739		24.7	24.4
Phablet	NR Band n66	40	QPSK	B	1114M	1:1	-0.04	1745.00	349000	CP-OFDM	0.0	19.5	18.03	1	1	Bottom	0	0.572	1.403	0.803	A35	24.4	
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 11-34

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	NR Band n66	40	QPSK	F	1173M	1:1	0.03	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.54	1	108	Right Cheek	0	0.397	1.247	0.495		22.5	
Head	NR Band n66	40	QPSK	F	1173M	1:1	0.01	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.46	108	108	Right Cheek	0	0.401	1.271	0.510		22.4	
Head	NR Band n66	40	QPSK	F	1173M	1:1	0.09	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.54	1	108	Right Tilt	0	0.475	1.247	0.592		21.7	
Head	NR Band n66	40	QPSK	F	1173M	1:1	0.00	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.46	108	108	Right Tilt	0	0.479	1.271	0.609		21.6	
Head	NR Band n66	40	QPSK	F	1173M	1:1	0.02	1745.00	349000	CP-OFDM	0.0	19.5	18.29	1	1	Right Tilt	0	0.527	1.321	0.696	A32	21.0	21.0
Head	NR Band n66	40	QPSK	F	1173M	1:1	0.00	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.54	1	108	Left Cheek	0	0.291	1.247	0.363		23.9	
Head	NR Band n66	40	QPSK	F	1173M	1:1	0.00	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.46	108	108	Left Cheek	0	0.259	1.271	0.329		24.3	
Head	NR Band n66	40	QPSK	F	1173M	1:1	0.07	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.54	1	108	Left Tilt	0	0.345	1.247	0.430		23.1	
Head	NR Band n66	40	QPSK	F	1173M	1:1	0.01	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.46	108	108	Left Tilt	0	0.322	1.271	0.409		23.3	
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 11-35

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	NR Band n66	40	QPSK	F	1179M	1:1	-0.01	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.54	1	108	Back	10	0.221	1.247	0.276	A33	25.0	
Body-worn/Hotspot	NR Band n66	40	QPSK	F	1179M	1:1	-0.08	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.46	108	108	Back	10	0.220	1.271	0.280		25.0	
Hotspot	NR Band n66	40	QPSK	F	1179M	1:1	0.03	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.54	1	108	Front	10	0.091	1.247	0.113		28.9	
Hotspot	NR Band n66	40	QPSK	F	1179M	1:1	0.01	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.46	108	108	Front	10	0.089	1.271	0.113		28.9	
Hotspot	NR Band n66	40	QPSK	F	1179M	1:1	0.02	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.54	1	108	Top	10	0.226	1.247	0.282		24.9	23.6
Hotspot	NR Band n66	40	QPSK	F	1179M	1:1	-0.03	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.46	108	108	Top	10	0.203	1.271	0.258		25.3	
Hotspot	NR Band n66	40	QPSK	F	1179M	1:1	-0.02	1745.00	349000	CP-OFDM	0.0	19.5	18.29	1	1	Top	10	0.293	1.321	0.387	A34	23.6	
Hotspot	NR Band n66	40	QPSK	F	1179M	1:1	0.15	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.54	1	108	Left	10	0.044	1.247	0.055		32.1	
Hotspot	NR Band n66	40	QPSK	F	1179M	1:1	-0.09	1745.00	349000	DFT-s-OFDM	0.0	19.5	18.46	108	108	Left	10	0.016	1.271	0.020		36.4	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Body 1.6 W/kg (mW/g) averaged over 1 gram							

11.14 NR Band n41 Standalone SAR

Table 11-36

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	NR Band n41	100	QPSK	B	1173M	81.41	0.01	2592.99	518598	DFT-s-OFDM	0.0	25.0	24.24	1	137	Right Cheek	0	0.096	1.191	1.228	0.140		33.5	
Head	NR Band n41	100	QPSK	B	1173M	81.41	-0.02	2592.99	518598	DFT-s-OFDM	0.0	25.0	24.28	135	69	Right Cheek	0	0.115	1.180	1.228	0.167	A36	32.7	
Head	NR Band n41	100	QPSK	B	1173M	81.41	-0.09	2592.99	518598	CP-OFDM	1.5	23.5	22.67	1	1	Right Cheek	0	0.060	1.211	1.228	0.089		33.9	
Head	NR Band n41	100	QPSK	B	1173M	81.41	0.09	2592.99	518598	DFT-s-OFDM	0.0	25.0	24.24	1	137	Right Tilt	0	0.108	1.191	1.228	0.158		33.0	
Head	NR Band n41	100	QPSK	B	1173M	81.41	-0.02	2592.99	518598	DFT-s-OFDM	0.0	25.0	24.28	135	69	Right Tilt	0	0.107	1.180	1.228	0.155		33.0	32.7
Head	NR Band n41	100	QPSK	B	1173M	81.41	0.00	2592.99	518598	DFT-s-OFDM	0.0	25.0	24.24	1	137	Left Cheek	0	0.098	1.191	1.228	0.143		33.4	
Head	NR Band n41	100	QPSK	B	1173M	81.41	-0.16	2592.99	518598	DFT-s-OFDM	0.0	25.0	24.28	135	69	Left Cheek	0	0.111	1.180	1.228	0.161		32.9	
Head	NR Band n41	100	QPSK	B	1173M	81.41	0.04	2592.99	518598	DFT-s-OFDM	0.0	25.0	24.24	1	137	Left Tilt	0	0.037	1.191	1.228	0.054		37.6	
Head	NR Band n41	100	QPSK	B	1173M	81.41	-0.08	2592.99	518598	DFT-s-OFDM	0.0	25.0	24.28	135	69	Left Tilt	0	0.037	1.180	1.228	0.054		37.7	
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 11-37

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	NR Band n41	100	QPSK	B	1173M	81.41	0.06	2592.99	518598	DFT-s-OFDM	0.0	17.5	17.45	1	271	Back	10	0.084	1.012	1.228	0.104		27.3	
Body-worn/Hotspot	NR Band n41	100	QPSK	B	1173M	81.41	-0.08	2592.99	518598	DFT-s-OFDM	0.0	17.5	17.40	135	69	Back	10	0.086	1.023	1.228	0.108		27.1	
Body-worn/Hotspot	NR Band n41	100	QPSK	B	1173M	81.41	-0.03	2592.99	518598	CP-OFDM	0.0	17.5	17.00	1	1	Back	10	0.089	1.122	1.228	0.123	A37	26.6	
Hotspot	NR Band n41	100	QPSK	B	1173M	81.41	-0.03	2592.99	518598	DFT-s-OFDM	0.0	17.5	17.45	1	271	Front	10	0.049	1.012	1.228	0.061		29.6	
Hotspot	NR Band n41	100	QPSK	B	1173M	81.41	-0.18	2592.99	518598	DFT-s-OFDM	0.0	17.5	17.40	135	69	Front	10	0.055	1.023	1.228	0.069		29.1	26.6
Hotspot	NR Band n41	100	QPSK	B	1173M	81.41	-0.13	2592.99	518598	DFT-s-OFDM	0.0	17.5	17.45	1	271	Bottom	10	0.081	1.012	1.228	0.101		27.4	
Hotspot	NR Band n41	100	QPSK	B	1173M	81.41	-0.07	2592.99	518598	DFT-s-OFDM	0.0	17.5	17.40	135	69	Bottom	10	0.082	1.023	1.228	0.103		27.3	
Hotspot	NR Band n41	100	QPSK	B	1173M	81.41	0.02	2592.99	518598	DFT-s-OFDM	0.0	17.5	17.45	1	271	Left	10	0.021	1.012	1.228	0.026		33.3	
Hotspot	NR Band n41	100	QPSK	B	1173M	81.41	0.04	2592.99	518598	DFT-s-OFDM	0.0	17.5	17.40	135	69	Left	10	0.026	1.023	1.228	0.033		32.3	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Body 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-38

Exposure	Band / Mode	Bandwidth [MHz]	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	NR Band n41	100	F	1195M	1:1	-0.05	2592.99	518598	CW/SRS	17.5	16.75	Right Cheek	0	0.050	1.189	0.059		29.7	
Head	NR Band n41	100	F	1195M	1:1	0.05	2592.99	518598	CW/SRS	17.5	16.75	Right Tilt	0	0.055	1.189	0.065		29.3	29.3
Head	NR Band n41	100	F	1195M	1:1	-0.02	2592.99	518598	CW/SRS	17.5	16.75	Left Cheek	0	0.031	1.189	0.037		31.8	
Head	NR Band n41	100	F	1195M	1:1	-0.04	2592.99	518598	CW/SRS	17.5	16.75	Left Tilt	0	0.034	1.189	0.040		31.4	
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 11-39

Exposure	Band / Mode	Bandwidth [MHz]	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	NR Band n41	100	F	1195M	1:1	0.11	2592.99	518598	CW/SRS	17.5	16.75	Back	10	0.019	1.189	0.023		33.9	
Hotspot	NR Band n41	100	F	1195M	1:1	-0.14	2592.99	518598	CW/SRS	17.5	16.75	Front	10	0.006	1.189	0.007		38.9	32.4
Hotspot	NR Band n41	100	F	1195M	1:1	-0.09	2592.99	518598	CW/SRS	17.5	16.75	Top	10	0.027	1.189	0.032		32.4	
Hotspot	NR Band n41	100	F	1195M	1:1	0.08	2592.99	518598	CW/SRS	17.5	16.75	Left	10	0.002	1.189	0.002		43.7	
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 11-40

Exposure	Band / Mode	Bandwidth [MHz]	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	NR Band n41	100	I	1195M	1:1	-0.12	2592.99	518598	CW/SRS	21.0	20.43	Right Cheek	0	0.101	1.140	0.115		30.3	
Head	NR Band n41	100	I	1195M	1:1	0.20	2592.99	518598	CW/SRS	21.0	20.43	Right Tilt	0	0.024	1.140	0.027		36.6	30.3
Head	NR Band n41	100	I	1195M	1:1	0.20	2592.99	518598	CW/SRS	21.0	20.43	Left Cheek	0	0.020	1.140	0.023		37.4	
Head	NR Band n41	100	I	1195M	1:1	0.07	2592.99	518598	CW/SRS	21.0	20.43	Left Tilt	0	0.010	1.140	0.011		40.4	
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 11-41

Exposure	Band / Mode	Bandwidth [MHz]	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	NR Band n41	100	I	1195M	1:1	0.11	2592.99	518598	CW/SRS	21.0	20.43	Back	10	0.025	1.140	0.029		36.4	33.9
Hotspot	NR Band n41	100	I	1195M	1:1	-0.08	2592.99	518598	CW/SRS	21.0	20.43	Front	10	0.017	1.140	0.019		38.1	
Hotspot	NR Band n41	100	I	1195M	1:1	0.04	2592.99	518598	CW/SRS	21.0	20.43	Top	10	0.005	1.140	0.006		43.4	
Hotspot	NR Band n41	100	I	1195M	1:1	-0.09	2592.99	518598	CW/SRS	21.0	20.43	Left	10	0.044	1.140	0.050		33.9	
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 11-42

Exposure	Band / Mode	Bandwidth [MHz]	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	NR Band n41	100	E	1195M	1:1	0.05	2592.99	518598	CW/SRS	20.0	18.95	Right Cheek	0	0.004	1.274	0.005		42.9	33.7
Head	NR Band n41	100	E	1195M	1:1	-0.14	2592.99	518598	CW/SRS	20.0	18.95	Right Tilt	0	0.006	1.274	0.008		41.1	
Head	NR Band n41	100	E	1195M	1:1	0.16	2592.99	518598	CW/SRS	20.0	18.95	Left Cheek	0	0.033	1.274	0.042		33.7	
Head	NR Band n41	100	E	1195M	1:1	-0.07	2592.99	518598	CW/SRS	20.0	18.95	Left Tilt	0	0.029	1.274	0.037		34.3	
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 11-43

Exposure	Band / Mode	Bandwidth [MHz]	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	NR Band n41	100	E	1195M	1:1	-0.02	2592.99	518598	CW/SRS	20.0	18.95	Back	10	0.007	1.274	0.009		40.4	38.9
Hotspot	NR Band n41	100	E	1195M	1:1	-0.15	2592.99	518598	CW/SRS	20.0	18.95	Front	10	0.003	1.274	0.004		44.1	
Hotspot	NR Band n41	100	E	1195M	1:1	0.03	2592.99	518598	CW/SRS	20.0	18.95	Top	10	0.010	1.274	0.013		38.9	
Hotspot	NR Band n41	100	E	1195M	1:1	0.06	2592.99	518598	CW/SRS	20.0	18.95	Right	10	0.001	1.274	0.001		48.9	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram							

11.15 NR Band n77 Standalone SAR

Table 11-44

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Head	NR Band n77 DoD	100	QPSK	G	1195M	1:1	-0.06	3500.01	633334	DFT-s-OFDM	0.0	16.5	15.90	1	271	Right Cheek	0	0.776	1.148	0.891		17.0	16.2
Head	NR Band n77	100	QPSK	G	1195M	1:1	0.06	3750.00	650000	DFT-s-OFDM	0.0	16.5	15.59	1	137	Right Cheek	0	0.739	1.233	0.911		16.9	
Head	NR Band n77	100	QPSK	G	1195M	1:1	0.09	3930.00	662000	DFT-s-OFDM	0.0	16.5	15.33	1	271	Right Cheek	0	0.641	1.309	0.839		17.2	
Head	NR Band n77	100	QPSK	G	1195M	1:1	0.14	3750.00	650000	DFT-s-OFDM	0.0	16.5	15.62	135	69	Right Cheek	0	0.754	1.225	0.924		16.8	
Head	NR Band n77	100	QPSK	G	1195M	1:1	0.15	3930.00	662000	DFT-s-OFDM	0.0	16.5	15.34	135	138	Right Cheek	0	0.622	1.306	0.812		17.4	
Head	NR Band n77	100	QPSK	G	1195M	1:1	0.11	3750.00	650000	DFT-s-OFDM	0.0	16.5	15.53	270	0	Right Cheek	0	0.821	1.250	1.026	A38	16.3	
Head	NR Band n77	100	QPSK	G	1195M	1:1	0.07	3750.00	650000	DFT-s-OFDM	0.0	16.5	15.53	270	0	Right Cheek	0	0.820	1.250	1.025		16.3	
Head	NR Band n77	100	QPSK	G	1195M	1:1	-0.04	3750.00	650000	CP-OFDM	0.0	16.5	15.37	1	1	Right Cheek	0	0.811	1.297	1.052		16.2	
Head	NR Band n77	100	QPSK	G	1195M	1:1	0.14	3750.00	650000	DFT-s-OFDM	0.0	16.5	15.59	1	137	Right Tilt	0	0.396	1.233	0.488		19.6	
Head	NR Band n77	100	QPSK	G	1195M	1:1	0.06	3930.00	662000	DFT-s-OFDM	0.0	16.5	15.33	1	271	Right Tilt	0	0.269	1.309	0.352		21.0	
Head	NR Band n77	100	QPSK	G	1195M	1:1	0.01	3750.00	650000	DFT-s-OFDM	0.0	16.5	15.62	135	69	Right Tilt	0	0.388	1.225	0.475		19.7	
Head	NR Band n77	100	QPSK	G	1195M	1:1	0.06	3930.00	662000	DFT-s-OFDM	0.0	16.5	15.34	135	138	Right Tilt	0	0.280	1.306	0.366		20.8	
Head	NR Band n77	100	QPSK	G	1195M	1:1	0.11	3750.00	650000	DFT-s-OFDM	0.0	16.5	15.53	270	0	Right Tilt	0	0.397	1.250	0.496		19.5	
Head	NR Band n77	100	QPSK	G	1195M	1:1	0.10	3750.00	650000	DFT-s-OFDM	0.0	16.5	15.59	1	137	Left Cheek	0	0.220	1.233	0.271		22.1	
Head	NR Band n77	100	QPSK	G	1195M	1:1	0.11	3750.00	650000	DFT-s-OFDM	0.0	16.5	15.62	135	69	Left Cheek	0	0.220	1.225	0.270		22.1	
Head	NR Band n77	100	QPSK	G	1195M	1:1	0.08	3750.00	650000	DFT-s-OFDM	0.0	16.5	15.59	1	137	Left Tilt	0	0.148	1.233	0.182		23.8	
Head	NR Band n77	100	QPSK	G	1195M	1:1	0.06	3750.00	650000	DFT-s-OFDM	0.0	16.5	15.62	135	69	Left Tilt	0	0.140	1.225	0.172		24.1	
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: Blue entry represents variability measurement

Table 11-45

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Body-worn/Hotspot	NR Band n77	100	QPSK	G	1045M	1:1	-0.03	3750.00	650000	DFT-s-OFDM	0.0	17.5	16.62	1	137	Back	10	0.365	1.225	0.447		20.9	18.9
Body-worn/Hotspot	NR Band n77	100	QPSK	G	1045M	1:1	-0.02	3930.00	662000	DFT-s-OFDM	0.0	17.5	16.63	1	137	Back	10	0.361	1.222	0.441		21.0	
Body-worn/Hotspot	NR Band n77	100	QPSK	G	1045M	1:1	-0.01	3750.00	650000	DFT-s-OFDM	0.0	17.5	16.52	135	69	Back	10	0.422	1.253	0.529	A39	20.2	
Body-worn/Hotspot	NR Band n77	100	QPSK	G	1045M	1:1	-0.02	3930.00	662000	DFT-s-OFDM	0.0	17.5	16.54	135	69	Back	10	0.362	1.247	0.451		20.9	
Body-worn/Hotspot	NR Band n77	100	QPSK	G	1045M	1:1	-0.04	3930.00	662000	DFT-s-OFDM	0.0	17.5	16.49	270	0	Back	10	0.328	1.262	0.414		21.3	
Hotspot	NR Band n77	100	QPSK	G	1045M	1:1	-0.04	3930.00	662000	DFT-s-OFDM	0.0	17.5	16.63	1	137	Front	10	0.209	1.222	0.255		23.4	
Hotspot	NR Band n77	100	QPSK	G	1045M	1:1	-0.09	3930.00	662000	DFT-s-OFDM	0.0	17.5	16.54	135	69	Front	10	0.173	1.247	0.216		24.1	
Hotspot	NR Band n77	100	QPSK	G	1045M	1:1	0.16	3930.00	662000	DFT-s-OFDM	0.0	17.5	16.63	1	137	Top	10	0.100	1.222	0.122		26.6	
Hotspot	NR Band n77	100	QPSK	G	1045M	1:1	0.08	3930.00	662000	DFT-s-OFDM	0.0	17.5	16.54	135	69	Top	10	0.094	1.247	0.117		26.8	
Hotspot	NR Band n77 DoD	100	QPSK	G	1045M	1:1	-0.01	3500.01	633334	DFT-s-OFDM	0.0	17.5	17.13	1	137	Left	10	0.614	1.089	0.669	A40	19.2	
Hotspot	NR Band n77	100	QPSK	G	1045M	1:1	-0.10	3750.00	650000	DFT-s-OFDM	0.0	17.5	16.62	1	137	Left	10	0.504	1.225	0.617		19.5	
Hotspot	NR Band n77	100	QPSK	G	1045M	1:1	-0.01	3930.00	662000	DFT-s-OFDM	0.0	17.5	16.63	1	137	Left	10	0.550	1.222	0.672		19.2	
Hotspot	NR Band n77	100	QPSK	G	1045M	1:1	-0.03	3750.00	650000	DFT-s-OFDM	0.0	17.5	16.52	135	69	Left	10	0.577	1.253	0.723		18.9	
Hotspot	NR Band n77	100	QPSK	G	1045M	1:1	-0.02	3930.00	662000	DFT-s-OFDM	0.0	17.5	16.54	135	69	Left	10	0.514	1.247	0.641		19.4	
Hotspot	NR Band n77	100	QPSK	G	1045M	1:1	0.00	3930.00	662000	DFT-s-OFDM	0.0	17.5	16.49	270	0	Left	10	0.559	1.262	0.705		19.0	
Hotspot	NR Band n77	100	QPSK	G	1045M	1:1	-0.02	3930.00	662000	CP-OFDM	0.0	17.5	16.45	1	1	Left	10	0.534	1.274	0.680		19.1	
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 11-46

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Waveform	MPR [dB]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Reported 10g SAR [W/kg]	Plot #	Plimit [dBm]	Overall Plimit [dBm]
Phablet	NR Band n77	100	QPSK	G	1045M	1:1	-0.02	3750.00	650000	DFT-s-OFDM	0.0	16.62	1	137	Back	0	0.847	1.225	1.038		21.3	17.8
Phablet	NR Band n77	100	QPSK	G	1045M	1:1	0.00	3930.00	662000	DFT-s-OFDM	0.0	16.63	1	137	Back	0	0.958	1.222	1.171		20.7	
Phablet	NR Band n77	100	QPSK	G	1045M	1:1	-0.04	3930.00	662000	DFT-s-OFDM	0.0	16.54	135	69	Back	0	1.000	1.247	1.247		20.5	
Phablet	NR Band n77	100	QPSK	G	1045M	1:1	0.10	3930.00	662000	DFT-s-OFDM	0.0	16.49	270	0	Back	0	0.982	1.262	1.239		20.5	
Phablet	NR Band n77	100	QPSK	G	1045M	1:1	-0.04	3930.00	662000	DFT-s-OFDM	0.0	16.63	1	137	Front	0	0.569	1.222	0.695		23.0	
Phablet	NR Band n77	100	QPSK	G	1045M	1:1	-0.04	3930.00	662000	DFT-s-OFDM	0.0	16.54	135	69	Front	0	0.567	1.247	0.707		22.9	
Phablet	NR Band n77 DoD	100	QPSK	G	1045M	1:1	0.04	3500.01	633334	DFT-s-OFDM	0.0	17.13	1	137	Left	0	2.100	1.089	2.287	A41	17.8	
Phablet	NR Band n77	100	QPSK	G	1045M	1:1	-0.01	3750.00	650000	DFT-s-OFDM	0.0	16.62	1	137	Left	0	1.650	1.225	2.021		18.4	
Phablet	NR Band n77	100	QPSK	G	1045M	1:1	0.01	3930.00	662000	DFT-s-OFDM	0.0	16.63	1	137	Left	0	1.680	1.222	2.053		18.3	
Phablet	NR Band n77	100	QPSK	G	1045M	1:1	0.01	3750.00	650000	DFT-s-OFDM	0.0	16.52	135	69	Left	0	1.660	1.253	2.080		18.2	
Phablet	NR Band n77	100	QPSK	G	1045M	1:1	-0.01	3930.00	662000	DFT-s-OFDM	0.0	16.54	135	69	Left	0	1.730	1.247	2.157		18.1	
Phablet	NR Band n77	100	QPSK	G	1045M	1:1	-0.02	3930.00	662000	DFT-s-OFDM	0.0	16.49	270	0	Left	0	1.780	1.262	2.246		17.9	
Phablet	NR Band n77	100	QPSK	G	1045M	1:1	-0.02	3930.00	662000	CP-OFDM	0.0	16.45	1	1	Left	0	1.730	1.274	2.204		18.0	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Phablet 4.0 W/kg (mW/g) averaged over 10 grams							

11.16 DTS SISO Standalone SAR

Table 11-47

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	I	0592M	98.53	0.06	2437.00	6	1	14.0	13.91	Right Cheek	0	0.010	1.021	1.015	0.010	
Head	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	I	0592M	98.53	0.04	2437.00	6	1	14.0	13.91	Right Tilt	0	0.014	1.021	1.015	0.015	
Head	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	I	0592M	98.53	0.19	2437.00	6	1	14.0	13.91	Left Cheek	0	0.071	1.021	1.015	0.074	
Head	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	I	0592M	98.53	0.07	2437.00	6	1	14.0	13.91	Left Tilt	0	0.058	1.021	1.015	0.060	
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 11-48

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Body-worn/Hotspot	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	I	0592M	98.53	-0.01	2412.00	1	1	19.0	18.60	Back	10	0.479	1.096	1.015	0.533	
Hotspot	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	I	0592M	98.53	0.00	2412.00	1	1	19.0	18.60	Front	10	0.276	1.096	1.015	0.307	
Hotspot	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	I	0592M	98.53	0.00	2412.00	1	1	19.0	18.60	Top	10	0.082	1.096	1.015	0.091	
Hotspot	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	I	0592M	98.53	-0.03	2412.00	1	1	19.0	18.60	Left	10	0.391	1.096	1.015	0.435	
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 11-49

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	M	0592M	98.78	0.01	2437.00	6	1	14.0	13.57	Right Cheek	0	0.315	1.104	1.012	0.352	A42
Head	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	M	0592M	98.78	0.08	2437.00	6	1	14.0	13.57	Right Tilt	0	0.087	1.104	1.012	0.097	
Head	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	M	0592M	98.78	0.07	2437.00	6	1	14.0	13.57	Left Cheek	0	0.008	1.104	1.012	0.009	
Head	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	M	0592M	98.78	0.06	2437.00	6	1	14.0	13.57	Left Tilt	0	0.007	1.104	1.012	0.008	
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 11-50

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Body-worn/Hotspot	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	M	0592M	98.78	-0.02	2437.00	6	1	19.0	18.93	Back	10	0.353	1.016	1.012	0.363	
Hotspot	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	M	0592M	98.78	0.02	2437.00	6	1	19.0	18.93	Front	10	0.014	1.016	1.012	0.014	
Hotspot	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	M	0592M	98.78	-0.01	2437.00	6	1	19.0	18.93	Top	10	0.093	1.016	1.012	0.096	
Hotspot	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	M	0592M	98.78	0.08	2437.00	6	1	19.0	18.93	Left	10	0.013	1.016	1.012	0.013	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram						

11.1 DTS MIMO Standalone SAR

Table 11-51

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Max Allowed Power (2nd ant) [dBm]	Conducted Power (2nd ant) [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	MIMO	0592M	98.75	0.08	2437.00	6	1	14.0	13.95	14.0	13.77	Right Cheek	0	0.283	1.054	1.013	0.302	
Head	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	MIMO	0592M	98.75	-0.01	2437.00	6	1	14.0	13.95	14.0	13.77	Right Tilt	0	0.088	1.054	1.013	0.094	
Head	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	MIMO	0592M	98.75	-0.02	2437.00	6	1	14.0	13.95	14.0	13.77	Left Cheek	0	0.048	1.054	1.013	0.051	
Head	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	MIMO	0592M	98.75	0.02	2437.00	6	1	14.0	13.95	14.0	13.77	Left Tilt	0	0.043	1.054	1.013	0.046	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Head 1.6 W/kg (mW/g) averaged over 1 gram						

Note: To achieve the 17 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 14 dBm.

Table 11-52

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Max Allowed Power (2nd ant) [dBm]	Conducted Power (2nd ant) [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Body-worn/Hotspot	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	MIMO	0592M	98.75	-0.13	2412.00	1	1	19.0	18.92	19.0	18.99	Back	10	0.552	1.019	1.013	0.570	A43
Hotspot	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	MIMO	0592M	98.75	0.02	2412.00	1	1	19.0	18.92	19.0	18.99	Front	10	0.187	1.019	1.013	0.193	
Hotspot	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	MIMO	0592M	98.75	0.04	2412.00	1	1	19.0	18.92	19.0	18.99	Top	10	0.082	1.019	1.013	0.085	
Hotspot	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	MIMO	0592M	98.75	-0.13	2412.00	1	1	19.0	18.92	19.0	18.99	Left	10	0.332	1.019	1.013	0.343	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram						

Note: To achieve the 22 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 19 dBm.

11.2 NII SISO Standalone SAR

Table 11-53

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	U-NII band	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	5 GHz WIFI/ IEEE 802.11ac	40	OFDM	G	0554M	98.18	0.07	5270.00	62	U-NII-2A	29.3	14.0	13.80	Right Cheek	0	0.450	1.047	1.019	0.480	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	G	0554M	94.62	0.03	5530.00	106	U-NII-2C	29.3	14.0	13.96	Right Cheek	0	0.474	1.009	1.057	0.506	A44
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	G	0554M	94.62	-0.04	5775.00	155	U-NII-3	29.3	14.0	13.78	Right Cheek	0	0.436	1.052	1.057	0.485	
Head	5 GHz WIFI/ IEEE 802.11ac	40	OFDM	G	0554M	98.18	-0.03	5270.00	62	U-NII-2A	29.3	14.0	13.80	Right Tilt	0	0.269	1.047	1.019	0.287	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	G	0554M	94.62	-0.08	5530.00	106	U-NII-2C	29.3	14.0	13.96	Right Tilt	0	0.293	1.009	1.057	0.312	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	G	0554M	94.62	-0.01	5775.00	155	U-NII-3	29.3	14.0	13.78	Right Tilt	0	0.290	1.052	1.057	0.322	
Head	5 GHz WIFI/ IEEE 802.11ac	40	OFDM	G	0554M	98.18	0.06	5270.00	62	U-NII-2A	29.3	14.0	13.80	Left Cheek	0	0.135	1.047	1.019	0.144	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	G	0554M	94.62	-0.20	5530.00	106	U-NII-2C	29.3	14.0	13.96	Left Cheek	0	0.157	1.009	1.057	0.167	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	G	0554M	94.62	0.04	5775.00	155	U-NII-3	29.3	14.0	13.78	Left Cheek	0	0.128	1.052	1.057	0.142	
Head	5 GHz WIFI/ IEEE 802.11ac	40	OFDM	G	0554M	98.18	0.01	5270.00	62	U-NII-2A	29.3	14.0	13.80	Left Tilt	0	0.148	1.047	1.019	0.158	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	G	0554M	94.62	0.01	5530.00	106	U-NII-2A	29.3	14.0	13.96	Left Tilt	0	0.158	1.009	1.057	0.169	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	G	0554M	94.62	0.17	5775.00	155	U-NII-3	29.3	14.0	13.78	Left Tilt	0	0.135	1.052	1.057	0.150	
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 11-54

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	U-NII band	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Body-worn	5 GHz WIFI/ IEEE 802.11a	20	OFDM	G	0554M	93.75	-0.04	5320.00	64	U-NII-2A	6	17.0	16.97	Back	10	0.220	1.007	1.067	0.236	
Body-worn	5 GHz WIFI/ IEEE 802.11a	20	OFDM	G	0554M	93.75	-0.02	5620.00	124	U-NII-2C	6	17.0	16.93	Back	10	0.367	1.016	1.067	0.398	A45
Body-worn/Hotspot	5 GHz WIFI/ IEEE 802.11a	20	OFDM	G	0554M	93.75	-0.07	5745.00	149	U-NII-3	6	17.0	16.83	Back	10	0.361	1.040	1.067	0.401	A46
Hotspot	5 GHz WIFI/ IEEE 802.11a	20	OFDM	G	0554M	93.75	0.17	5745.00	149	U-NII-3	6	17.0	16.83	Front	10	0.160	1.040	1.067	0.178	
Hotspot	5 GHz WIFI/ IEEE 802.11a	20	OFDM	G	0554M	93.75	0.19	5745.00	149	U-NII-3	6	17.0	16.83	Top	10	0.196	1.040	1.067	0.217	
Hotspot	5 GHz WIFI/ IEEE 802.11a	20	OFDM	G	0554M	93.75	-0.02	5745.00	149	U-NII-3	6	17.0	16.83	Left	10	0.356	1.040	1.067	0.395	
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 11-55

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	U-NII band	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	G	0554M	93.75	0.02	5320.00	64	U-NII-2A	6	17.0	16.97	Back	0	0.439	1.007	1.067	0.472	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	G	0554M	93.75	0.01	5620.00	124	U-NII-2C	6	17.0	16.93	Back	0	0.555	1.016	1.067	0.602	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	G	0554M	93.75	-0.03	5320.00	64	U-NII-2A	6	17.0	16.97	Front	0	0.487	1.007	1.067	0.523	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	G	0554M	93.75	0.01	5620.00	124	U-NII-2C	6	17.0	16.93	Front	0	0.345	1.016	1.067	0.374	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	G	0554M	93.75	-0.05	5320.00	64	U-NII-2A	6	17.0	16.97	Top	0	0.314	1.007	1.067	0.337	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	G	0554M	93.75	-0.02	5620.00	124	U-NII-2C	6	17.0	16.93	Top	0	0.388	1.016	1.067	0.421	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	G	0554M	93.75	0.01	5320.00	64	U-NII-2A	6	17.0	16.97	Left	0	0.819	1.007	1.067	0.880	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	G	0554M	93.75	0.00	5620.00	124	U-NII-2C	6	17.0	16.93	Left	0	0.902	1.016	1.067	0.978	
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 11-56

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	U-NII band	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	5 GHz WIFI/ IEEE 802.11ac	40	OFDM	M	0554M	98.64	0.11	5270.00	54	U-NII-2A	29.3	14.0	13.61	Right Cheek	0	0.074	1.094	1.014	0.082	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	M	0554M	93.31	0.06	5610.00	122	U-NII-2C	29.3	14.0	13.89	Right Cheek	0	0.154	1.026	1.072	0.169	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	M	0554M	93.31	0.15	5775.00	155	U-NII-3	29.3	14.0	13.45	Right Cheek	0	0.128	1.135	1.072	0.156	
Head	5 GHz WIFI/ IEEE 802.11ac	40	OFDM	M	0554M	98.64	0.07	5270.00	54	U-NII-2A	29.3	14.0	13.61	Right Tilt	0	0.060	1.094	1.014	0.067	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	M	0554M	93.31	0.09	5610.00	122	U-NII-2C	29.3	14.0	13.89	Right Tilt	0	0.164	1.026	1.072	0.180	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	M	0554M	93.31	0.08	5775.00	155	U-NII-3	29.3	14.0	13.45	Right Tilt	0	0.149	1.135	1.072	0.181	
Head	5 GHz WIFI/ IEEE 802.11ac	40	OFDM	M	0554M	98.64	0.03	5270.00	54	U-NII-2A	29.3	14.0	13.61	Left Cheek	0	0.142	1.094	1.014	0.158	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	M	0554M	93.31	0.07	5610.00	122	U-NII-2C	29.3	14.0	13.89	Left Cheek	0	0.176	1.026	1.072	0.194	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	M	0554M	93.31	0.02	5775.00	155	U-NII-3	29.3	14.0	13.45	Left Cheek	0	0.128	1.135	1.072	0.156	
Head	5 GHz WIFI/ IEEE 802.11ac	40	OFDM	M	0554M	98.64	0.07	5270.00	54	U-NII-2A	29.3	14.0	13.61	Left Tilt	0	0.115	1.094	1.014	0.128	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	M	0554M	93.31	0.08	5610.00	122	U-NII-2C	29.3	14.0	13.89	Left Tilt	0	0.164	1.026	1.072	0.180	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	M	0554M	93.31	-0.19	5775.00	155	U-NII-3	29.3	14.0	13.45	Left Tilt	0	0.151	1.135	1.072	0.184	
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 11-57

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	U-NII band	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Body-worn	5 GHz WIFI/ IEEE 802.11a	20	OFDM	M	0554M	95.22	0.01	5300.00	60	U-NII-2A	6	17.0	16.93	Back	10	0.197	1.016	1.050	0.210	
Body-worn	5 GHz WIFI/ IEEE 802.11a	20	OFDM	M	0554M	95.22	0.09	5600.00	120	U-NII-2C	6	17.0	16.83	Back	10	0.139	1.040	1.050	0.152	
Body-worn/Hotspot	5 GHz WIFI/ IEEE 802.11a	20	OFDM	M	0554M	95.22	-0.15	5745.00	149	U-NII-3	6	17.0	16.96	Back	10	0.196	1.009	1.050	0.208	
Hotspot	5 GHz WIFI/ IEEE 802.11a	20	OFDM	M	0554M	95.22	-0.12	5745.00	149	U-NII-3	6	17.0	16.96	Front	10	0.128	1.009	1.050	0.136	
Hotspot	5 GHz WIFI/ IEEE 802.11a	20	OFDM	M	0554M	95.22	0.07	5745.00	149	U-NII-3	6	17.0	16.96	Top	10	0.200	1.009	1.050	0.212	
Hotspot	5 GHz WIFI/ IEEE 802.11a	20	OFDM	M	0554M	95.22	0.06	5745.00	149	U-NII-3	6	17.0	16.96	Left	10	0.023	1.009	1.050	0.024	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-58

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	U-NII band	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	M	0554M	95.22	-0.04	5300.00	60	U-NII-2A	6	17.0	16.93	Back	0	0.713	1.016	1.050	0.761	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	M	0554M	95.22	-0.07	5600.00	120	U-NII-2C	6	17.0	16.83	Back	0	0.579	1.040	1.050	0.632	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	M	0554M	95.22	0.08	5300.00	60	U-NII-2A	6	17.0	16.93	Front	0	0.162	1.016	1.050	0.173	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	M	0554M	95.22	0.04	5600.00	120	U-NII-2C	6	17.0	16.83	Front	0	0.207	1.040	1.050	0.226	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	M	0554M	95.22	0.05	5300.00	60	U-NII-2A	6	17.0	16.93	Top	0	0.244	1.016	1.050	0.260	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	M	0554M	95.22	0.04	5600.00	120	U-NII-2C	6	17.0	16.83	Top	0	0.306	1.040	1.050	0.334	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	M	0554M	95.22	-0.04	5300.00	60	U-NII-2A	6	17.0	16.93	Left	0	0.085	1.016	1.050	0.091	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	M	0554M	95.22	-0.18	5600.00	120	U-NII-2C	6	17.0	16.83	Left	0	0.022	1.040	1.050	0.024	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Phablet 4.0 W/kg (mW/g) averaged over 10 grams						

11.1 NII MIMO Standalone SAR

Table 11-59

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	U-NII band	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Max Allowed Power (2nd ant) [dBm]	Conducted Power (2nd ant) [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	5 GHz WIFI/ IEEE 802.11ac	40	OFDM	MIMO	0554M	96.16	-0.13	5270.00	54	U-NII-2A	58.5	14.0	13.70	14.0	13.62	Right Cheek	0	0.355	1.091	1.040	0.403	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	MIMO	0554M	96.16	-0.02	5610.00	122	U-NII-2C	58.5	14.0	13.70	14.0	13.62	Right Cheek	0	0.372	1.091	1.040	0.422	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	MIMO	0554M	96.16	-0.09	5775.00	155	U-NII-3	58.5	14.0	13.70	14.0	13.62	Right Cheek	0	0.316	1.091	1.040	0.359	
Head	5 GHz WIFI/ IEEE 802.11ac	40	OFDM	MIMO	0554M	96.16	0.06	5270.00	54	U-NII-2A	58.5	14.0	13.70	14.0	13.62	Right Tilt	0	0.218	1.091	1.040	0.247	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	MIMO	0554M	89.35	0.01	5610.00	122	U-NII-2C	58.5	14.0	13.99	14.0	13.79	Right Tilt	0	0.326	1.050	1.119	0.383	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	MIMO	0554M	89.35	-0.18	5775.00	155	U-NII-3	58.5	14.0	13.73	14.0	13.62	Right Tilt	0	0.273	1.091	1.119	0.333	
Head	5 GHz WIFI/ IEEE 802.11ac	40	OFDM	MIMO	0554M	96.16	0.05	5270.00	54	U-NII-2A	58.5	14.0	13.70	14.0	13.62	Left Cheek	0	0.157	1.091	1.040	0.178	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	MIMO	0554M	89.35	-0.01	5610.00	122	U-NII-2C	58.5	14.0	13.99	14.0	13.79	Left Cheek	0	0.265	1.050	1.119	0.311	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	MIMO	0554M	89.35	-0.12	5775.00	155	U-NII-3	58.5	14.0	13.73	14.0	13.62	Left Cheek	0	0.204	1.091	1.119	0.249	
Head	5 GHz WIFI/ IEEE 802.11ac	40	OFDM	MIMO	0554M	96.16	-0.14	5270.00	54	U-NII-2A	58.5	14.0	13.70	14.0	13.62	Left Tilt	0	0.146	1.091	1.040	0.166	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	MIMO	0554M	89.35	-0.01	5610.00	122	U-NII-2C	58.5	14.0	13.99	14.0	13.79	Left Tilt	0	0.264	1.050	1.119	0.310	
Head	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	MIMO	0554M	89.35	-0.10	5775.00	155	U-NII-3	58.5	14.0	13.73	14.0	13.62	Left Tilt	0	0.224	1.091	1.119	0.273	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Head 1.6 W/kg (mW/g) averaged over 1 gram						

Note: To achieve the 17 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 14 dBm.

Table 11-60

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	U-NII band	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Max Allowed Power (2nd ant) [dBm]	Conducted Power (2nd ant) [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Body-worn	5 GHz WIFI/ IEEE 802.11a	20	OFDM	MIMO	0554M	96.27	-0.15	5300.00	60	U-NII-2A	13	17.0	16.81	17.0	16.31	Back	10	0.245	1.172	1.039	0.298	
Body-worn	5 GHz WIFI/ IEEE 802.11a	20	OFDM	MIMO	0554M	96.27	-0.02	5620.00	124	U-NII-2C	13	17.0	16.89	17.0	15.80	Back	10	0.320	1.318	1.039	0.438	
Body-worn/Hotspot	5 GHz WIFI/ IEEE 802.11a	20	OFDM	MIMO	0554M	96.27	-0.11	5785.00	157	U-NII-3	13	17.0	16.89	17.0	16.21	Back	10	0.314	1.199	1.039	0.391	
Hotspot	5 GHz WIFI/ IEEE 802.11a	20	OFDM	MIMO	0554M	96.27	-0.04	5785.00	157	U-NII-3	13	17.0	16.89	17.0	16.21	Front	10	0.135	1.199	1.039	0.168	
Hotspot	5 GHz WIFI/ IEEE 802.11a	20	OFDM	MIMO	0554M	96.27	0.05	5785.00	157	U-NII-3	13	17.0	16.89	17.0	16.21	Top	10	0.281	1.199	1.039	0.350	
Hotspot	5 GHz WIFI/ IEEE 802.11a	20	OFDM	MIMO	0554M	96.27	-0.01	5785.00	157	U-NII-3	13	17.0	16.89	17.0	16.21	Left	10	0.339	1.199	1.039	0.422	
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 20 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 17 dBm.

Table 11-61

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	U-NII band	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Max Allowed Power (2nd ant) [dBm]	Conducted Power (2nd ant) [dBm]	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	MIMO	0554M	96.27	-0.05	5300.00	60	U-NII-2A	13	17.0	16.81	17.0	16.31	Back	0	0.755	1.172	1.039	0.919	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	MIMO	0554M	96.27	0.06	5620.00	124	U-NII-2C	13	17.0	16.89	17.0	15.80	Back	0	0.939	1.318	1.039	1.286	A47
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	MIMO	0554M	96.27	0.01	5300.00	60	U-NII-2A	13	17.0	16.81	17.0	16.31	Front	0	0.580	1.172	1.039	0.706	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	MIMO	0554M	96.27	0.06	5620.00	124	U-NII-2C	13	17.0	16.89	17.0	15.80	Front	0	0.635	1.318	1.039	0.870	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	MIMO	0554M	96.27	0.01	5300.00	60	U-NII-2A	13	17.0	16.81	17.0	16.31	Top	0	0.492	1.172	1.039	0.599	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	MIMO	0554M	96.27	-0.01	5620.00	124	U-NII-2C	13	17.0	16.89	17.0	15.80	Top	0	0.563	1.318	1.039	0.771	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	MIMO	0554M	96.27	0.01	5300.00	60	U-NII-2A	13	17.0	16.81	17.0	16.31	Left	0	0.787	1.172	1.039	0.958	
Phablet	5 GHz WIFI/ IEEE 802.11a	20	OFDM	MIMO	00554M	96.27	0.02	5620.00	124	U-NII-2C	13	17.0	16.89	17.0	15.80	Left	0	0.889	1.318	1.039	1.217	
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 20 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 17 dBm.

11.2 DSS SISO Standalone SAR

Table 11-62

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	2.4 GHz Bluetooth	FHSS	I	0542M	76.93	0.06	2441.00	39	1	17.0	16.80	Right Cheek	0	0.033	1.048	1.014	0.035	A48
Head	2.4 GHz Bluetooth	FHSS	I	0542M	76.93	0.05	2441.00	39	1	17.0	16.80	Right Tilt	0	0.007	1.048	1.014	0.007	
Head	2.4 GHz Bluetooth	FHSS	I	0554M	76.93	0.03	2441.00	39	1	17.0	16.80	Left Cheek	0	0.007	1.048	1.014	0.007	
Head	2.4 GHz Bluetooth	FHSS	I	0554M	76.93	0.07	2441.00	39	1	17.0	16.80	Left Tilt	0	0.004	1.048	1.014	0.004	
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 11-63

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Body-worn/Hotspot	2.4 GHz Bluetooth	FHSS	I	0592M	76.93	0.09	2441.00	39	1	17.0	16.80	Back	10	0.006	1.048	1.014	0.006	A49
Hotspot	2.4 GHz Bluetooth	FHSS	I	0592M	76.93	0.02	2441.00	39	1	17.0	16.80	Front	10	0.005	1.048	1.014	0.005	
Hotspot	2.4 GHz Bluetooth	FHSS	I	0592M	76.93	0.03	2441.00	39	1	17.0	16.80	Top	10	0.000	1.048	1.014	0.000	
Hotspot	2.4 GHz Bluetooth	FHSS	I	0592M	76.93	0.09	2441.00	39	1	17.0	16.80	Left	10	0.009	1.048	1.014	0.010	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						

11.3 NFC Standalone SAR

Table 11-64

Exposure	Band / Mode	Signal Type	Ant.	Serial Number	Power Drift [dB]	Frequency [MHz]	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Plot #
Phablet	NFC	B	NFC	0805M	0.04	13.60	Back	0	0.039	A51
Phablet	NFC	B	NFC	0805M	0.01	13.60	Front	0	0.000	
Phablet	NFC	B	NFC	0805M	-0.12	13.60	Right	0	0.000	
Phablet	NFC	B	NFC	0805M	0.07	13.60	Left	0	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			

11.4 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. Per FCC KDB 865664 D01v01r04, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 12 for variability analysis.
9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v02r01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.7 for more details).
10. Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" 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.
11. Additional SAR tests for phablet SAR were evaluated per KDB 616217 Section 6 (See Section 6.9 for more information).
12. 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.

13. This device uses S.LSI TAS for WWAN 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).

GSM Test Notes:

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

UMTS Notes:

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

LTE Notes:

1. LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 8.5.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 and MCC=001 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D01v06, when the reported 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.

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 Band n41 Ants F/I/E and NR Band n77 were performed using test mode software to establish the connection.

3. Per manufacture request, NR Band n41 Ant B was tested in online mode. SAR was scaled up from the measured duty cycle (see section 9.4.4) to 100% duty cycle.
4. Simultaneous transmission analysis for EN-DC operations is addressed in the Part 2 Test Report (Serial Number can be found in the bibliography).
5. This device additionally supports some EN-DC conditions where additional LTE carriers are added on the downlink only.
6. 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.
7. Per FCC KDB Publication 447498 D01v06, when the reported NR Band n77 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.
8. 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.
9. SRS was tested with CW signal per S.LSI guidance.
10. 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.
11. 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 ≤ 0.4 W/kg for 1g evaluations, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n/ax) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.6.5 for more information.
3. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg for 1g evaluations. See Section 8.6.6 for more information.
4. Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D01v06 by either evaluating the sum of the 1g SAR values of each antenna transmitting independently or making a SAR measurement with both antennas transmitting simultaneously. Please see Multi-TX and Antenna SAR Considerations Appendix for complete analysis.
5. When the maximum reported 1g averaged SAR is ≤0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg for 1g evaluations or all test channels were measured.
6. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated EMC test reports.
7. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

Bluetooth Notes

1. Bluetooth SAR was measured with the device connected to a call box with hopping disabled with DH5 operation and Tx Tests test mode type. Per October 2016 TCB Workshop Notes, the reported SAR was scaled to the 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.

12 SAR MEASUREMENT VARIABILITY

12.1 Measurement Variability

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

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

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

Table 12-1
Head SAR Measurement Variability Results

HEAD VARIABILITY RESULTS														
Band	FREQUENCY		Mode	Service	Side	Test Position	Antenna Config	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.						(W/kg)	(W/kg)		(W/kg)		(W/kg)	
3700	3750.00	650000	NR Band 77, 100 MHz Bandwidth	DFT-S-OFDM, QPSK, 1 RB, 271 RB Offset	Right	Cheek	G	0.821	0.820	1.00	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					Head 1.6 W/kg (mW/g) averaged over 1 gram									

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. equipment list

13 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	11/14/2023	Annual	11/14/2024	MY45093852
Agilent	E4438C	ESG Vector Signal Generator	11/15/2023	Annual	11/15/2024	MY45092078
Agilent	N5182A	MXG Vector Signal Generator	10/12/2023	Annual	10/12/2024	MY47400015
Agilent	N5182A	MXG Vector Signal Generator	7/4/2023	Annual	7/4/2024	MY48180366
Agilent	8753ES	S-Parameter Vector Network Analyzer	1/12/2023	Annual	1/12/2024	MY40001472
Agilent	8753ES	S-Parameter Vector Network Analyzer	6/2/2023	Annual	6/2/2024	MY40003841
Agilent	E5515C	Wireless Communications Test Set	CBT	N/A	CBT	US41140256
Agilent	E5515C	Wireless Communications Test Set	1/12/2023	Annual	1/12/2024	MY50262130
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433973
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433974
Amplifier Research	150A100C	Amplifier	CBT	N/A	CBT	350132
Anritsu	MN8110B	I/O Adaptor	CBT	N/A	CBT	6261747881
Anritsu	ML2496A	Power Meter	6/15/2023	Annual	6/15/2024	1138001
Anritsu	ML2495A	Power Meter	6/13/2023	Annual	6/13/2024	1039008
Anritsu	MA2411B	Pulse Power Sensor	8/22/2023	Annual	8/22/2024	1726262
Anritsu	MA2411B	Pulse Power Sensor	1/10/2023	Annual	1/10/2024	1339026
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	1/10/2023	Annual	1/10/2024	6201524637
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	7/7/2023	Annual	7/7/2024	6262044715
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	1/20/2023	Annual	1/20/2024	6201144419
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	7/5/2023	Annual	7/5/2024	6262150000
Anritsu	MT8000A	Radio Communication Test Station	3/21/2023	Annual	3/21/2024	6261987983
Anritsu	MT8000A	Radio Communication Test Station	1/5/2023	Annual	1/5/2024	6272337436
Anritsu	MT8000A	Radio Communication Test Station	4/6/2023	Annual	4/6/2024	6272337439
Anritsu	MA24106A	USB Power Sensor	6/15/2023	Annual	6/15/2024	1827530
Anritsu	MA24106A	USB Power Sensor	4/21/2023	Annual	4/21/2024	1344554
Control Company	4052	Long Stem Thermometer	2/17/2023	Biennial	2/17/2025	230111049
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	4/6/2023	Annual	4/6/2024	MY48010233
Agilent	N9020A	MXA Signal Analyzer	4/26/2022	Biennial	4/26/2024	MY56470202
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	N/A
Mini-Circuits	VLF-6000+	Low Pass Filter DC to 6000 MHz	7/5/2023	Annual	7/5/2024	31634
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
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Seekonk	NC-100	Torque Wrench	CBT	N/A	CBT	22217
Seekonk	NC-100	Torque Wrench	CBT	N/A	CBT	1262
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	1/12/2023	Annual	1/12/2024	131453
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	7/4/2023	Annual	7/4/2024	166818
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	2/9/2023	Annual	2/9/2024	161617
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	1/17/2023	Annual	1/17/2024	151849
SPEAG	DAK-3.5	Dielectric Assessment Kit	11/13/2023	Annual	11/13/2024	1277
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	8/14/2023	Annual	8/14/2024	1041
SPEAG	MAIA	Modulation and Audio Interference Analyzer	N/A	N/A	N/A	1237
SPEAG	MAIA	Modulation and Audio Interference Analyzer	N/A	N/A	N/A	1331
SPEAG	MAIA	Modulation and Audio Interference Analyzer	N/A	N/A	N/A	1390
SPEAG	DAK-12	Dielectric Assessment Kit (4MHz - 3GHz)	3/13/2023	Annual	3/13/2024	1102
SPEAG	CLA-13	Confined Loop Antenna	9/12/2023	Annual	9/12/2024	1002
SPEAG	D1750V2	1750 MHz SAR Dipole	4/19/2023	Annual	4/19/2024	1051
SPEAG	D1750V2	1750 MHz SAR Dipole	5/17/2023	Annual	5/17/2024	1092
SPEAG	D1765V2	1750 MHz SAR Dipole	5/14/2021	Triennial	5/14/2024	1008
SPEAG	D1750V2	1750 MHz SAR Dipole	10/22/2021	Triennial	10/22/2024	1150
SPEAG	D1900V2	1900 MHz SAR Dipole	9/21/2021	Triennial	9/21/2024	5d149
SPEAG	D1900V2	1900 MHz SAR Dipole	4/18/2023	Annual	4/18/2024	5d141
SPEAG	D1900V2	1900 MHz SAR Dipole	5/12/2023	Annual	5/12/2024	5d026
SPEAG	D2450V2	2450 MHz SAR Dipole	8/18/2021	Triennial	8/18/2024	719
SPEAG	D2600V2	2600 MHz SAR Dipole	6/13/2022	Biennial	6/13/2024	1064
SPEAG	D2600V2	2600 MHz SAR Dipole	4/14/2021	Triennial	4/14/2024	1004
SPEAG	D3500V2	3500 MHz SAR Dipole	6/15/2023	Annual	6/15/2024	1127
SPEAG	D3700V2	3700 MHz SAR Dipole	6/15/2023	Annual	6/15/2024	1096
SPEAG	D3900V2	3900 MHz SAR Dipole	6/15/2023	Annual	6/15/2024	1074
SPEAG	D5GHzV2	5 GHz SAR Dipole	1/18/2023	Annual	1/18/2024	1191
SPEAG	D750V3	750 MHz SAR Dipole	5/11/2023	Annual	5/11/2024	1003
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	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	6/15/2023	Annual	6/15/2024	1532
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/6/2023	Annual	9/6/2024	1364
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/20/2023	Annual	1/20/2024	1466
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/15/2023	Annual	2/15/2024	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/16/2023	Annual	2/16/2024	1645
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/14/2023	Annual	4/14/2024	1368
SPEAG	EX3DV4	SAR Probe	9/12/2023	Annual	9/12/2024	7558
SPEAG	EX3DV4	SAR Probe	6/15/2023	Annual	6/15/2024	7409
SPEAG	EX3DV4	SAR Probe	4/18/2023	Annual	4/18/2024	7718
SPEAG	EX3DV4	SAR Probe	1/12/2023	Annual	1/12/2024	7565
SPEAG	EX3DV4	SAR Probe	2/8/2023	Annual	2/8/2024	7417
SPEAG	EX3DV4	SAR Probe	6/8/2023	Annual	6/8/2024	7491
SPEAG	EX3DV4	SAR Probe	2/10/2023	Annual	2/10/2024	7640
SPEAG	EX3DV4	SAR Probe	1/11/2023	Annual	1/11/2024	7570
SPEAG	EX3DV4	SAR Probe	1/11/2023	Annual	1/11/2024	7713

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.

14 MEASUREMENT UNCERTAINTIES

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

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

15 CONCLUSION

15.1 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]

16 REFERENCES

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

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

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

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

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