



SAR EVALUATION REPORT

Applicant Name:
LG Electronics U.S.A., Inc.
111 Sylvan Avenue, North Building
Englewood Cliffs, NJ 07632
United States

Date of Testing:
08/26/20 – 09/28/20
Test Site/Location:
PCTEST, Columbia, MD, USA
Document Serial No.:
1M2007230114-02.ZNF

FCC ID: **ZNFF100VM**

APPLICANT: **LG ELECTRONICS U.S.A., INC.**

DUT Type: Portable Handset
Application Type: Class II Permissive Change
FCC Rule Part(s): CFR §2.1093
Model: LM-F100VM
Additional Model(s): LMF100VM, F100VM, LM-F101V, LMF101V, F101V
Permissive Change(s): See FCC Change Document
Date of Original Certification: 09/21/20

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	Cell. CDMA/EVDO	824.70 - 848.31 MHz	0.14	0.51	0.54	N/A
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	< 0.1	0.76	0.96	2.26
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	< 0.1	0.51	0.51	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	< 0.1	0.57	0.82	N/A
PCE	UMTS 850	826.40 - 846.60 MHz	0.14	0.50	0.50	N/A
PCE	UMTS 1750	1712.4 - 1752.6 MHz	< 0.1	0.75	1.02	2.01
PCE	UMTS 1900	1852.4 - 1907.6 MHz	< 0.1	0.77	0.98	2.80
PCE	LTE Band 12	699.7 - 715.3 MHz	< 0.1	0.34	0.34	N/A
PCE	LTE Band 13	779.5 - 784.5 MHz	0.10	0.53	0.53	N/A
PCE	LTE Band 14	790.5 - 795.5 MHz	0.12	0.47	0.47	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	0.15	0.62	0.62	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.11	0.71	0.91	1.74
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	< 0.1	0.67	0.86	1.76
PCE	LTE Band 30	2307.5 - 2312.5 MHz	< 0.1	0.32	0.59	N/A
CBE	LTE Band 48	3552.5 - 3697.5 MHz	0.93	0.20	0.41	N/A
PCE	LTE Band 41	2498.5 - 2687.5 MHz	< 0.1	0.23	0.53	N/A
PCE	NR Band n5 (Cell)	826.5 - 846.5 MHz	0.12	0.58	0.58	N/A
PCE	NR Band n66 (AWS)	1712.5 - 1777.5 MHz	< 0.1	0.39	0.60	N/A
PCE	NR Band n2 (PCS)	1852.5 - 1907.5 MHz	0.10	0.32	0.32	N/A
DTS	2.4 GHz WLAN	2412 - 2462 MHz	1.13	0.20	0.30	N/A
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	0.22	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.29	0.23	N/A	0.50
NII	U-NII-2C	5500 - 5720 MHz	0.19	0.16	N/A	0.39
NII	U-NII-3	5745 - 5825 MHz	0.16	0.13	0.13	N/A
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.27	< 0.1	< 0.1	N/A
Simultaneous SAR per KDB 690783 D01v01r03:			1.55	1.21	1.48	3.65

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 1.10 of this report; for North American frequency bands only.

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


Randy Ortañez
President



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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
Cell. CDMA/EVDO	Voice/Data	824.70 - 848.31 MHz
PCS CDMA/EVDO	Voice/Data	1851.25 - 1908.75 MHz
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 12	Voice/Data	699.7 - 715.3 MHz
LTE Band 13	Voice/Data	779.5 - 784.5 MHz
LTE Band 14	Voice/Data	790.5 - 795.5 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 30	Voice/Data	2307.5 - 2312.5 MHz
LTE Band 48	Voice/Data	3552.5 - 3697.5 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
NR Band n5 (Cell)	Data	826.5 - 846.5 MHz
NR Band n66 (AWS)	Data	1712.5 - 1777.5 MHz
NR Band n2 (PCS)	Data	1852.5 - 1907.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2462 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
WMC	Data	500 Hz - 4 kHz
NR Band n260	Data	37000 - 40000 MHz
NR Band n261	Data	27500 - 28350 MHz

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1.2 Time-Averaging Algorithm for RF Exposure Compliance

The equipment under test (EUT) contains:

Qualcomm® SM7250 modem supporting 2G/3G/4G/5G NR WWAN technologies

Qualcomm® SM7250 modem is enabled with Qualcomm® Smart Transmit feature. This feature performs time averaging algorithm in real time to control and manage transmitting power and ensure the time-averaged RF exposure is in compliance with FCC requirements all the time. Refer to Compliance Summary document for detailed description of Qualcomm® Smart Transmit feature (report SN could be found in Section 1.12 – Bibliography).

Note that WLAN operations are not enabled with Smart Transmit.

The Smart Transmit algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of *SAR_design_target*, below the predefined time-averaged power limit (i.e., P_{limit} for sub-6 radio, and $input.power.limit$ for 5G mmW NR), for each characterized technology and band (see RF Exposure Part 0 Test Report, report SN could be found in Section 1.12 - Bibliography).

Smart Transmit allows the device to transmit at higher power instantaneously, as high as P_{max} , when needed, but enforces power limiting to maintain time-averaged transmit power to P_{limit} . Below table shows P_{limit} EFS settings and maximum tune up output power P_{max} configured for this EUT for various transmit conditions (Device State Index DSI). Note that the device uncertainty for sub-6GHz WWAN is +1.0/-1.0 dB for this EUT.

Exposure Scenario:		Head	Body-Worn	Phablet	Head Swivel	Phablet Swivel	Hotspot	Maximum Tune-Up Output Power*
Averaging Volume:		1g	1g	10g	1g	10g	1g	
Spacing:		0 mm	10 mm	0 mm	0 mm	0 mm	10 mm	
DSI:		1			7		5	
Technology/Band	Antenna	Plimit						Pmax
CDMA/EVDO BC0	1	27.9			27.9		27.9	24.5
CDMA/EVDO BC1	2	22.5			22.5		22.5	24.5
GSM/GPRS/EDGE 850 MHz	1	27.5			27.5		27.5	24.8
GSM/GPRS/EDGE 1900 MHz	2	24.3			24.3		24.3	21.8
UMTS B5	1	28.0			28.0		28.0	24.5
UMTS B4	2	22.5			22.5		22.5	24.5
UMTS B2	2	22.5			22.5		22.5	24.5
LTE FDD B12	1	29.9			29.9		28.9	24.5
LTE FDD B12 ULCA	1	28.9			28.9		28.9	22.5
LTE FDD B13	1	27.9			27.9		27.9	24.5
LTE FDD B14	1	28.5			28.5		28.5	24.5
LTE FDD B5	1	27.2			27.2		27.2	24.5
LTE FDD B5 ULCA	1	28.4			28.4		27.2	22.5
LTE FDD B66/B4	2	22.5			22.5		22.5	24.5
LTE FDD B66 ULCA	3	24.4			24.4		24.4	22.5
LTE FDD B66 EN-DC	3	22.5			22.5		22.5	24.5
LTE FDD B2	2	22.5			22.5		22.5	24.5
LTE FDD B2 ULCA	3	23.8			23.8		23.8	22.5
LTE FDD B2 EN-DC	3	22.5			22.5		22.5	24.5
LTE FDD B30	2	24.0			24.0		24.0	24.5
LTE FDD B30 EN-DC	1	24.0			24.0		24.0	24.5
LTE TDD B48	9	19.5			19.5		19.5	21.0
LTE TDD B41	2	22.0			22.0		22.0	22.5
NR FDD n5	1	26.9			26.9		26.9	24.5
NR FDD n66	3	22.5			22.5		22.5	24.5
NR FDD n2	3	22.5			22.5		22.5	24.5

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*Note all P_{limit} EFS and maximum tune up output power P_{max} levels entered in above Table correspond to average power levels after accounting for duty cycle in the case of TDD modulation schemes (for e.g., GSM & LTE TDD). LTE B12/B5/B2/B66 is defined by ULCA PCC and Standalone, and LTE B12/B5/B2/B66 ULCA is defined by ULCA SCC. When they are operated by ULCA, the max power is 22.5 dBm (2 dB lower than standalone power).

*Maximum tune up output power P_{max} is used to configure EUT during RF tune up procedure. The maximum allowed output power is equal to maximum Tune up output power + 1.0dB device design uncertainty. For interband-ULCA scenarios, LTE Band 66/2/5/12 as SCC will operate as maximum allowed output power limited at 17.7 dBm according to software implementation in this model.

The maximum time-averaged output power (dBm) for any 2G/3G/4G/5G WWAN technology, band, and DSI = minimum of " P_{limit} EFS" and "Maximum tune up output power P_{max} " +1.0/-1.0 dB device uncertainty. SAR values in this report were scaled to this maximum time-averaged output power to determine compliance per KDB Publication 447498 D01v06.

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

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

1.3 Power Reduction for SAR

This device uses an independent fixed level power reduction mechanism for WLAN operations when 5G NR FR2 is active. Detailed descriptions of the power reduction mechanism are included in the operational description.

1.4 Mechanical Modes

This device supports four different mechanical modes: normal mode, normal mode + pop up, swivel mode, swivel mode + pop up. Per FCC guidance, SAR with the mechanical mode 3 was measured for the configurations with the highest reported SAR from mechanical mode 1 for each wireless technology, frequency band, operating mode, and applicable exposure condition (head, phablet). Additionally, overall worst-case hotspot and phablet (between normal and swivel modes) was checked for mechanical mode 2 (normal mode + pop-up) or mechanical mode 4 (swivel mode + pop-up). Full SAR tests were additionally performed for any mechanical mode 3 test configurations with 1g SAR >1.2 W/kg or 10g SAR >3.0 W/kg. For WIFI/BT and LTE B48 phablet, if the worst case was right edge or left edge, the second-worst case was considered for SAR testing with mechanical mode 3 since swivel mode checks can only be performed for TX antennas in the grip portion of the DUT (Antennas 1, 2, 3, and 13). There are no TX antennas present in the swivel-display. Appendix E contains positioning information in mechanical modes 2 and 3.

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1.5 Nominal and Maximum Output Power Specifications

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

1.5.1 2G/3G/4G/5G Output Power

CDMA BC0 (835 MHz)						
Power Level		Modulated Average Output Power (in dBm)				
		1x-RTT	EVDO Rev 0	EVDO Rev A		
All DSI	Max allowed power	25.5	25.5	25.5		
	Nominal	24.5	24.5	24.5		
CDMA BC1 (1900 MHz)						
Power Level		Modulated Average Output Power (in dBm)				
		1x-RTT	EVDO Rev 0	EVDO Rev A		
DSI = 1 (Head, Bodyworn, or Phablet); DSI = 7 (Swivel)	Max allowed power	23.5	23.5	23.5		
	Nominal	22.5	22.5	22.5		
DSI = 5 (Hotspot)	Max allowed power	23.5	23.5	23.5		
	Nominal	22.5	22.5	22.5		
GSM/GPRS/EDGE 850						
Power Level		Voice (in dBm)	Data - Burst Average GMSK (in dBm)		Data - Burst Average 8-PSK (in dBm)	
		1 TX Slot	1 TX Slots	2 TX Slots	1 TX Slots	2 TX Slots
All DSI	Max allowed power	34.0	34.0	32.0	27.0	27.0
	Nominal	33.0	33.0	31.0	26.0	26.0
GSM/GPRS/EDGE 1900						
Power Level		Voice (in dBm)	Data - Burst Average GMSK (in dBm)		Data - Burst Average 8-PSK (in dBm)	
		1 TX Slot	1 TX Slots	2 TX Slots	1 TX Slots	2 TX Slots
All DSI	Max allowed power	31.0	31.0	29.0	26.0	26.0
	Nominal	30.0	30.0	28.0	25.0	25.0

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UMTS Band 5 (850 MHz)				
Power Level		Modulated Average Output Power (in dBm)		
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6
Max	Max allowed power	25.5	25.5	25.5
	Nominal	24.5	24.5	24.5
UMTS Band 4 (1750 MHz)				
Power Level		Modulated Average Output Power (in dBm)		
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6
DSI = 1 (Head, Bodyworn, or Phablet); DSI = 7 (Swivel)	Max allowed power	23.5	23.5	23.5
	Nominal	22.5	22.5	22.5
DSI = 5 (Hotspot)	Max allowed power	23.5	23.5	23.5
	Nominal	22.5	22.5	22.5
UMTS Band 2 (1900 MHz)				
Power Level		Modulated Average Output Power (in dBm)		
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6
DSI = 1 (Head, Bodyworn, or Phablet); DSI = 7 (Swivel)	Max allowed power	23.5	23.5	23.5
	Nominal	22.5	22.5	22.5
DSI = 5 (Hotspot)	Max allowed power	23.5	23.5	23.5
	Nominal	22.5	22.5	22.5

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Mode / Band		Modulated Average Output Power (in dBm)		
		DSI = 1 (Head, Bodyworn, or Phablet)	DSI = 5 (Hotspot)	DSI = 7 (Swivel)
LTE FDD Band 12	Max allowed power	25.5	25.5	25.5
	Nominal	24.5	24.5	24.5
LTE FDD Band 13	Max allowed power	25.5	25.5	25.5
	Nominal	24.5	24.5	24.5
LTE FDD Band 14	Max allowed power	25.5	25.5	25.5
	Nominal	24.5	24.5	24.5
LTE FDD Band 5	Max allowed power	25.5	25.5	25.5
	Nominal	24.5	24.5	24.5
LTE FDD Band 4	Max allowed power	23.5	23.5	23.5
	Nominal	22.5	22.5	22.5
LTE FDD Band 66	Max allowed power	23.5	23.5	23.5
	Nominal	22.5	22.5	22.5
LTE FDD Band 2	Max allowed power	23.5	23.5	23.5
	Nominal	22.5	22.5	22.5
LTE FDD Band 30	Max allowed power	25.0	25.0	25.0
	Nominal	24.0	24.0	24.0
LTE TDD Band 48	Max allowed power	22.5	22.5	22.5
	Nominal	21.5	21.5	21.5
LTE TDD Band 41	Max allowed power	25.0	25.0	25.0
	Nominal	24.0	24.0	24.0

Mode / Band		Modulated Average Output Power (in dBm)		
		DSI = 1 (Head, Bodyworn, or Phablet)	DSI = 5 (Hotspot)	DSI = 7 (Swivel)
NR FDD Band n5	Max allowed power	25.5	25.5	25.5
	Nominal	24.5	24.5	24.5
NR FDD Band n66	Max allowed power	23.5	23.5	23.5
	Nominal	22.5	22.5	22.5
NR FDD Band n2	Max allowed power	23.5	23.5	23.5
	Nominal	22.5	22.5	22.5

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The below tables are applicable in the following condition:

- Inter-band ULCA Active for combos CA 12A-66A, CA 2A-12A, CA 2A-5A, CA 5A-66A, CA 2A-66A

Mode / Band		Modulated Average Output Power (in dBm)		
		DSI = 1 (Head, Bodyworn, or Phablet)	DSI = 5 (Hotspot)	DSI = 7 (Swivel)
LTE FDD Band 12 as PCC	Max allowed power	23.5	23.5	23.5
	Nominal	22.5	22.5	22.5
LTE FDD Band 5 as PCC	Max allowed power	23.5	23.5	23.5
	Nominal	22.5	22.5	22.5
LTE FDD Band 66 as PCC	Max allowed power	23.5	23.5	23.5
	Nominal	22.5	22.5	22.5
LTE FDD Band 2 as PCC	Max allowed power	23.5	23.5	23.5
	Nominal	22.5	22.5	22.5
LTE FDD Band 12 as SCC	Max allowed power	17.7	17.7	17.7
	Nominal	17.0	17.0	17.0
LTE FDD Band 5 as SCC	Max allowed power	17.7	17.7	17.7
	Nominal	17.0	17.0	17.0
LTE FDD Band 66 as SCC	Max allowed power	17.7	17.7	17.7
	Nominal	17.0	17.0	17.0
LTE FDD Band 2 as SCC	Max allowed power	17.7	17.7	17.7
	Nominal	17.0	17.0	17.0

Note: For 2A-66A uplink conditions, LTE Band 2 PCC/SCC operate using Antenna 3 and LTE B66 PCC/SCC operate using Antenna 2. For other uplink conditions, LTE B66 and LTE B2 PCC/SCC operate using Antenna 3. A diagram showing the location of the device antennas can be found in Appendix E.

The below tables are applicable in the following condition:

- EN-DC active with LTE Band 2/66/30 as an anchor band for NR Band n5.

Mode / Band		Modulated Average Output Power (in dBm)		
		DSI = 1 (Head, Bodyworn, or Phablet)	DSI = 5 (Hotspot)	DSI = 7 (Swivel)
LTE FDD Band 66 as Anchor Band in EN-DC	Max allowed power	23.5	23.5	23.5
	Nominal	22.5	22.5	22.5
LTE FDD Band 2 as Anchor Band in EN-DC	Max allowed power	23.5	23.5	23.5
	Nominal	22.5	22.5	22.5
LTE FDD Band 30 as Anchor Band in EN-DC	Max allowed power	25.0	25.0	25.0
	Nominal	24.0	24.0	24.0

Note: For LTE Band 66/2/30 as LTE Anchor for NR Band n5, LTE Band 66/2 will transmit from Antenna 3 and LTE Band 30 will transmit from Antenna 1. A diagram showing the location of the device antennas can be found in Appendix E.

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1.5.2 Maximum Bluetooth and SISO/MIMO WLAN Output Power

Mode	Band	IEEE 802.11 (in dBm)																							
		SISO								SISO								MIMO							
		Antenna 1								Antenna 2															
		b		g		n		ac		b		g		n		ac		^b (CDD + STBC)		^g (CDD + STBC)		ⁿ (CDD+STBC, SDM)		^{ac} (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 WIFI	2.45 GHz	19.0	18.0	16.0	15.0	14.0	15.0	14.0	19.0	18.0	16.0	15.0	14.0	15.0	14.0	22.0	21.0	19.0	18.0	18.0	17.0	18.0	17.0		

Mode	Band	IEEE 802.11 (in dBm)																	
		SISO						SISO						MIMO					
		Antenna 1						Antenna 2											
		a		n		ac		a		n		ac		a (CDD + STBC)		n (CDD+STBC, SDM)		ac (CDD+STBC, SDM)	
Maximum / Nominal Power		Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.
5 GHz WIFI (20MHz BW)	5200 MHz	17.0	16.0	16.0	15.0	16.0	15.0	17.0	16.0	16.0	15.0	16.0	15.0	20.0	19.0	19.0	18.0	19.0	18.0
	5300 MHz	17.0	16.0	16.0	15.0	16.0	15.0	17.0	16.0	16.0	15.0	16.0	15.0	20.0	19.0	19.0	18.0	19.0	18.0
	5500 MHz	17.0	16.0	16.0	15.0	16.0	15.0	17.0	16.0	16.0	15.0	16.0	15.0	20.0	19.0	19.0	18.0	19.0	18.0
	5800 MHz	17.0	16.0	16.0	15.0	16.0	15.0	17.0	16.0	16.0	15.0	16.0	15.0	20.0	19.0	19.0	18.0	19.0	18.0
5 GHz WIFI (40MHz BW)	5200 MHz			16.0 ch. 38: 14.0	15.0 13.0	16.0 ch. 38: 14.0	15.0 13.0			16.0 ch. 38: 14.0	15.0 13.0	16.0 ch. 38: 14.0	15.0 13.0			19.0 ch. 38: 17.0	18.0 16.0	19.0 ch. 38: 17.0	18.0 16.0
	5300 MHz			16.0 ch. 62: 14.0	15.0 13.0	16.0 ch. 62: 14.0	15.0 13.0			16.0 ch. 62: 14.0	15.0 13.0	16.0 ch. 62: 14.0	15.0 13.0			19.0 ch. 62: 17.0	18.0 16.0	19.0 ch. 62: 17.0	18.0 16.0
	5500 MHz			16.0 ch. 102: 14.0	15.0 13.0	16.0 ch. 102: 14.0	15.0 13.0			16.0 ch. 102: 14.0	15.0 13.0	16.0 ch. 102: 14.0	15.0 13.0			19.0 ch. 102: 17.0	18.0 16.0	19.0 ch. 102: 17.0	18.0 16.0
	5800 MHz			16.0	15.0	16.0	15.0			16.0	15.0	16.0	15.0			19.0	18.0	19.0	18.0
5 GHz WIFI (80MHz BW)	5200 MHz					13.0	12.0					13.0	12.0					16.0	15.0
	5300 MHz					13.0	12.0					13.0	12.0					16.0	15.0
	5500 MHz					15.0	14.0					15.0	14.0					18.0	17.0
	5800 MHz					ch. 106: 13.0	12.0					ch. 106: 13.0	12.0					ch. 106: 16.0	15.0

Mode / Band		Modulated Average - Single Tx Chain (dBm)
Bluetooth 1 Mbps (GFSK)	Maximum	12.0
	Nominal	11.0
Bluetooth 2 Mbps (DPSK)	Maximum	11.5
	Nominal	10.5
Bluetooth 3 Mbps (8DPSK)	Maximum	11.5
	Nominal	10.5
Bluetooth LE	Maximum	9.5
	Nominal	8.5

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1.5.3 Reduced SISO/MIMO WLAN Output Power

The below tables are applicable in the following conditions:

- During simultaneous conditions with 2.4 GHz WLAN and 5 GHz WLAN and/or NR FR2 active

Mode	Band	IEEE 802.11 (in dBm)																							
		SISO												MIMO											
		Antenna 1								Antenna 2															
		b		g		n		ac		b		g		n		ac		b (CDD + STBC)		g (CDD + STBC)		n (CDD+STBC, SDM)		ac (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 WIFI	2.45 GHz	15.0	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0	14.0	15.0	14.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0	17.0

1.6 DUT Antenna Locations

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

Table 1-1
Device Edges/Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
Cell. EVDO	Yes	Yes	No	Yes	Yes	No
PCS EVDO	Yes	Yes	No	Yes	No	Yes
GPRS 850	Yes	Yes	No	Yes	Yes	No
GPRS 1900	Yes	Yes	No	Yes	No	Yes
UMTS 850	Yes	Yes	No	Yes	Yes	No
UMTS 1750	Yes	Yes	No	Yes	No	Yes
UMTS 1900	Yes	Yes	No	Yes	No	Yes
LTE Band 12	Yes	Yes	No	Yes	Yes	No
LTE Band 13	Yes	Yes	No	Yes	Yes	No
LTE Band 14	Yes	Yes	No	Yes	Yes	No
LTE Band 5 (Cell)	Yes	Yes	No	Yes	Yes	No
LTE Band 66 (AWS)	Yes	Yes	No	Yes	No	Yes
LTE Band 66 (AWS) Ant 3	Yes	Yes	No	No	Yes	No
LTE Band 2 (PCS)	Yes	Yes	No	Yes	No	Yes
LTE Band 2 (PCS) Ant 3	Yes	Yes	No	No	Yes	No
LTE Band 30	Yes	Yes	No	Yes	No	Yes
LTE Band 30 Ant 1	Yes	Yes	No	Yes	Yes	No
LTE Band 48	Yes	Yes	Yes	No	Yes	No
LTE Band 41	Yes	Yes	No	Yes	No	Yes
NR Band n5 (Cell)	Yes	Yes	No	No	Yes	No
NR Band n66 (AWS)	Yes	Yes	No	No	Yes	No
NR Band n2 (PCS)	Yes	Yes	No	No	Yes	No
2.4 GHz WLAN Ant 1	Yes	Yes	Yes	No	No	Yes
2.4 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN Ant 1	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes
Bluetooth	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-2A, U-NII-2C operations are disabled. Additional edges were also evaluated.

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1.7 Near Field Communications (NFC) Antenna

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

1.8 Simultaneous Transmission Capabilities

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

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

Table 1-2
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Phablet	Notes
1	1x CDMA voice + 2.4 GHz Wi-Fi	Yes	Yes	N/A	Yes	
2	1x CDMA voice + 5 GHz Wi-Fi	Yes	Yes	N/A	Yes	
3	1x CDMA voice + 2.4 GHz Bluetooth	Yes ^a	Yes	N/A	Yes	^a Bluetooth Tethering is considered
4	1x CDMA voice + 2.4 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	
5	1x CDMA voice + 5 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	
6	1x CDMA voice + 2.4 GHz Bluetooth + 2.4 GHz Wi-Fi Ant 2	Yes ^a	Yes	N/A	Yes	^a Bluetooth Tethering is considered
7	1x CDMA voice + 2.4 GHz Bluetooth + 5 GHz Wi-Fi	Yes ^a	Yes	N/A	Yes	^a Bluetooth Tethering is considered
8	1x CDMA voice + 2.4 GHz Bluetooth + 5 GHz Wi-Fi MIMO	Yes ^a	Yes	N/A	Yes	^a Bluetooth Tethering is considered
9	1x CDMA voice + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	N/A	Yes	
10	GSM voice + 2.4 GHz Wi-Fi	Yes	Yes	N/A	Yes	
11	GSM voice + 5 GHz Wi-Fi	Yes	Yes	N/A	Yes	
12	GSM voice + 2.4 GHz Bluetooth	Yes ^a	Yes	N/A	Yes	^a Bluetooth Tethering is considered
13	GSM voice + 2.4 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	
14	GSM voice + 5 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	
15	GSM voice + 2.4 GHz Bluetooth + 2.4 GHz Wi-Fi Ant 2	Yes ^a	Yes	N/A	Yes	^a Bluetooth Tethering is considered
16	GSM voice + 2.4 GHz Bluetooth + 5 GHz Wi-Fi	Yes ^a	Yes	N/A	Yes	^a Bluetooth Tethering is considered
17	GSM voice + 2.4 GHz Bluetooth + 5 GHz Wi-Fi MIMO	Yes ^a	Yes	N/A	Yes	^a Bluetooth Tethering is considered
18	GSM voice + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	N/A	Yes	
19	UMTS + 2.4 GHz Wi-Fi	Yes	Yes	Yes	Yes	
20	UMTS + 5 GHz Wi-Fi	Yes	Yes	Yes	Yes	
21	UMTS + 2.4 GHz Bluetooth	Yes ^a	Yes	Yes ^a	Yes	^a Bluetooth Tethering is considered
22	UMTS + 2.4 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
23	UMTS + 5 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
24	UMTS + 2.4 GHz Bluetooth + 2.4 GHz Wi-Fi Ant 2	Yes ^a	Yes	Yes ^a	Yes	^a Bluetooth Tethering is considered
25	UMTS + 2.4 GHz Bluetooth + 5 GHz Wi-Fi	Yes ^a	Yes	Yes ^a	Yes	^a Bluetooth Tethering is considered
26	UMTS + 2.4 GHz Bluetooth + 5 GHz Wi-Fi MIMO	Yes ^a	Yes	Yes ^a	Yes	^a Bluetooth Tethering is considered
27	UMTS + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	Yes	Yes	
28	LTE + 2.4 GHz Wi-Fi	Yes	Yes	Yes	Yes	
29	LTE + 5 GHz Wi-Fi	Yes	Yes	Yes	Yes	
30	LTE + 2.4 GHz Bluetooth	Yes ^a	Yes	Yes ^a	Yes	^a Bluetooth Tethering is considered
31	LTE + 2.4 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
32	LTE + 5 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
33	LTE + 2.4 GHz Bluetooth + 2.4 GHz Wi-Fi Ant 2	Yes ^a	Yes	Yes ^a	Yes	^a Bluetooth Tethering is considered
34	LTE + 2.4 GHz Bluetooth + 5 GHz Wi-Fi	Yes ^a	Yes	Yes ^a	Yes	^a Bluetooth Tethering is considered
35	LTE + 2.4 GHz Bluetooth + 5 GHz Wi-Fi MIMO	Yes ^a	Yes	Yes ^a	Yes	^a Bluetooth Tethering is considered
36	LTE + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	Yes	Yes	
37	CDMA/EVDO data + 2.4 GHz Wi-Fi	Yes ^a	Yes ^a	Yes	Yes	^a Pre-installed VOIP applications are considered
38	CDMA/EVDO data + 5 GHz Wi-Fi	Yes ^a	Yes ^a	Yes	Yes	^a Pre-installed VOIP applications are considered
39	CDMA/EVDO data + 2.4 GHz Bluetooth	Yes ^a	Yes ^a	Yes ^a	Yes	^a Pre-installed VOIP applications are considered ^a Bluetooth Tethering is considered
40	CDMA/EVDO data + 2.4 GHz Wi-Fi MIMO	Yes ^a	Yes ^a	Yes	Yes	^a Pre-installed VOIP applications are considered
41	CDMA/EVDO data + 5 GHz Wi-Fi MIMO	Yes ^a	Yes ^a	Yes	Yes	^a Pre-installed VOIP applications are considered
42	CDMA/EVDO data + 2.4 GHz Bluetooth + 2.4 GHz Wi-Fi Ant 2	Yes ^a	Yes ^a	Yes ^a	Yes	^a Pre-installed VOIP applications are considered ^a Bluetooth Tethering is considered
43	CDMA/EVDO data + 2.4 GHz Bluetooth + 5 GHz Wi-Fi	Yes ^a	Yes ^a	Yes ^a	Yes	^a Pre-installed VOIP applications are considered ^a Bluetooth Tethering is considered
44	CDMA/EVDO data + 2.4 GHz Bluetooth + 5 GHz Wi-Fi MIMO	Yes ^a	Yes ^a	Yes ^a	Yes	^a Pre-installed VOIP applications are considered ^a Bluetooth Tethering is considered
45	CDMA/EVDO data + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes ^a	Yes ^a	Yes	Yes	^a Pre-installed VOIP applications are considered
46	GPRS/EDGE + 2.4 GHz Wi-Fi	Yes ^a	Yes ^a	Yes	Yes	^a Pre-installed VOIP applications are considered
47	GPRS/EDGE + 5 GHz Wi-Fi	Yes ^a	Yes ^a	Yes	Yes	^a Pre-installed VOIP applications are considered
48	GPRS/EDGE + 2.4 GHz Bluetooth	Yes ^a	Yes ^a	Yes ^a	Yes	^a Pre-installed VOIP applications are considered ^a Bluetooth Tethering is considered
49	GPRS/EDGE + 2.4 GHz Wi-Fi MIMO	Yes ^a	Yes ^a	Yes	Yes	^a Pre-installed VOIP applications are considered
50	GPRS/EDGE + 5 GHz Wi-Fi MIMO	Yes ^a	Yes ^a	Yes	Yes	^a Pre-installed VOIP applications are considered
51	GPRS/EDGE + 2.4 GHz Bluetooth + 2.4 GHz Wi-Fi Ant 2	Yes ^a	Yes ^a	Yes ^a	Yes	^a Pre-installed VOIP applications are considered ^a Bluetooth Tethering is considered
52	GPRS/EDGE + 2.4 GHz Bluetooth + 5 GHz Wi-Fi	Yes ^a	Yes ^a	Yes ^a	Yes	^a Pre-installed VOIP applications are considered ^a Bluetooth Tethering is considered
53	GPRS/EDGE + 2.4 GHz Bluetooth + 5 GHz Wi-Fi MIMO	Yes ^a	Yes ^a	Yes ^a	Yes	^a Pre-installed VOIP applications are considered ^a Bluetooth Tethering is considered
54	GPRS/EDGE + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes ^a	Yes ^a	Yes	Yes	^a Pre-installed VOIP applications are considered
55	LTE + 5G NR	Yes	Yes	N/A	Yes	
56	LTE + 5G NR + 2.4 GHz Wi-Fi	Yes	Yes	Yes	Yes	
57	LTE + 5G NR + 5 GHz Wi-Fi	Yes	Yes	Yes	Yes	
58	LTE + 5G NR + 2.4 GHz Bluetooth	Yes ^a	Yes	Yes ^a	Yes	^a Bluetooth Tethering is considered
59	LTE + 5G NR + 2.4 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
60	LTE + 5G NR + 5 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
61	LTE + 5G NR + 2.4 GHz Bluetooth + 2.4 GHz Wi-Fi Ant 2	Yes ^a	Yes	Yes ^a	Yes	^a Bluetooth Tethering is considered
62	LTE + 5G NR + 2.4 GHz Bluetooth + 5 GHz Wi-Fi	Yes ^a	Yes	Yes ^a	Yes	^a Bluetooth Tethering is considered
63	LTE + 5G NR + 2.4 GHz Bluetooth + 5 GHz Wi-Fi MIMO	Yes ^a	Yes	Yes ^a	Yes	^a Bluetooth Tethering is considered
64	LTE + 5G NR + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	Yes	Yes	
65	5G NR + 2.4 GHz Wi-Fi	Yes ^a	Yes ^a	Yes	Yes	^a Pre-installed VOIP applications are considered
66	5G NR + 5 GHz Wi-Fi	Yes ^a	Yes ^a	Yes	Yes	^a Pre-installed VOIP applications are considered
67	5G NR + 2.4 GHz Bluetooth	Yes ^a	Yes ^a	Yes ^a	Yes	^a Pre-installed VOIP applications are considered ^a Bluetooth Tethering is considered
68	5G NR + 2.4 GHz Wi-Fi MIMO	Yes ^a	Yes ^a	Yes	Yes	^a Pre-installed VOIP applications are considered
69	5G NR + 5 GHz Wi-Fi MIMO	Yes ^a	Yes ^a	Yes	Yes	^a Pre-installed VOIP applications are considered
70	5G NR + 2.4 GHz Bluetooth + 2.4 GHz Wi-Fi Ant 2	Yes ^a	Yes ^a	Yes ^a	Yes	^a Bluetooth Tethering is considered
71	5G NR + 2.4 GHz Bluetooth + 5 GHz Wi-Fi	Yes ^a	Yes ^a	Yes ^a	Yes	^a Pre-installed VOIP applications are considered ^a Bluetooth Tethering is considered
72	5G NR + 2.4 GHz Bluetooth + 5 GHz Wi-Fi MIMO	Yes ^a	Yes ^a	Yes ^a	Yes	^a Pre-installed VOIP applications are considered ^a Bluetooth Tethering is considered
73	5G NR + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes ^a	Yes ^a	Yes	Yes	^a Pre-installed VOIP applications are considered

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1. 2.4 GHz WLAN antenna 1 and 2.4 GHz Bluetooth share the same antenna path and cannot transmit simultaneously.
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 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-1 and U-NII-3 by S/W, therefore 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/g/n/ac. 802.11a/g/n/ac supports CDD and STBC and 802.11n/ac additionally supports SDM. Each WLAN antenna can transmit independently or together when operating with MIMO.
6. This device supports VOLTE.
7. This device supports VOWIFI.
8. This device supports Bluetooth Tethering.
9. LTE + 5G NR FR1 Scenarios are limited to anchor bands shown in the NR FR1 Checklist.
10. LTE operations in the table above include intra-band and inter-band ULCA operations with 2 carriers transmitting in the uplink.
11. 5G NR FR2 n260 and n261 cannot transmit simultaneously
12. LTE + 5G NR FR2 n260 and n261 operations are possible only with LTE B2/4/5/12/13/48/66 under EN-DC mode.

1.9 Miscellaneous SAR Test Considerations

(A) WIFI/BT

Since U-NII-1 and U-NII-2A bands have the same maximum output power and the highest reported SAR for U-NII-2A is less than 1.2 W/kg, head and body-worn 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-2A and U-NII-2C WIFI, only 2.4 GHz, U-NII-1, 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.

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is greater than 160mm and less than 200mm. Phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Because wireless router operations are not supported for U-NII-2A & U-NII-2C WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for 2.4 GHz WLAN, Bluetooth, U-NII-1, and U-NII-3 WLAN operations since wireless router 1g SAR was < 1.2 W/kg.

This device supports IEEE 802.11ac with the following features:

- a) Up to 80 MHz Bandwidth only for 5GHz
- b) Up to 20 MHz Bandwidth only for 2.4 GHz
- c) No aggregate channel configurations
- d) 2 Tx antenna output
- e) Up to 1024 QAM is supported
- f) TDWR and Band gap channels are supported
- g) MU-MIMO UL Operations are not supported

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(B) Licensed Transmitter(s)

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

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

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

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

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

This device supports LTE capabilities with overlapping transmission frequency ranges. When the supported frequency range of an LTE Band falls completely within an LTE band with a larger transmission frequency range, both LTE bands have the same target power (or the band with the larger transmission frequency range has a higher target power), and both LTE bands share the same transmission path and signal characteristics, SAR was only assessed for the band with the larger transmission frequency range.

This device supports intra-band LTE Carrier Aggregation (CA) for LTE Band 5 with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per 2017 Fall TCB Workshop Notes.

This device supports uplink inter-band LTE Carrier Aggregation (CA) for LTE Bands 12, 5, 2, 66 with two component carriers in the uplink. For 2A-66A uplink conditions, LTE Band 2 PCC/SCC operate using Antenna 3 and LTE Band 66 PCC/SCC operate using Antenna 2. For other uplink conditions, LTE B66 and LTE B2 PCC/SCC operate using Antenna 3. SAR tests were performed separately for antenna 3 for LTE Band 2 and LTE Band 66.

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.

NR implementation in EN-DC mode operates with LTE Bands shown in the NR FR1 Checklist acting as anchor bands. Per FCC Guidance, SAR tests for NR Bands and LTE Anchor Bands were performed separately due to equipment limitations in SAR probe calibration factors. Please see Section 11 for more details.

This device supports 64QAM on the uplink and 256QAM on the downlink for LTE Operations. Conducted powers for 64QAM uplink configurations were measured per Section 5.1 of FCC KDB Publication 941225D05v02r05. SAR was not required for 64QAM since the highest maximum output power for 64QAM is

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≤ ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45W/kg, per Section 5.2.4 of FCC KDB Publication 941225 D05v02r05.

This device supports 5G NR for Bands n260, and n261. RF Exposure assessment and simultaneous transmission analysis for these bands can be found in the Near Field PD Report (report SN can be found in Section 1.12 – Bibliography).

1.10 Guidance Applied

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

1.11 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.

1.12 Bibliography

Report Type	Report Serial Number
SAR Part 0 Test Report	Rev1.0
Power Density Part 0 Test Report	Rev.B (Ver.1.2)
Power Density Part 1 Test Report	1M2007230114-01.ZNF
RF Exposure Part 2 Test Report	1M2007230114-03.ZNF
RF Exposure Compliance Summary Report	1M2007230114-04.ZNF

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LTE Information					
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 12 (699.7 - 715.3 MHz)				
	LTE Band 13 (779.5 - 784.5 MHz)				
	LTE Band 14 (790.5 - 795.5 MHz)				
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)				
	LTE Band 66 (AWS) (1710.7 - 1779.3 MHz)				
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 30 (2307.5 - 2312.5 MHz)				
	LTE Band 48 (3552.5 - 3697.5 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
Channel Bandwidths	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 13: 5 MHz, 10 MHz				
	LTE Band 14: 5 MHz, 10 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 66 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 30: 5 MHz, 10 MHz				
	LTE Band 48: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 12: 1.4 MHz	699.7 (23017)		707.5 (23095)		715.3 (23173)
LTE Band 12: 3 MHz	700.5 (23025)		707.5 (23095)		714.5 (23165)
LTE Band 12: 5 MHz	701.5 (23035)		707.5 (23095)		713.5 (23155)
LTE Band 12: 10 MHz	704 (23060)		707.5 (23095)		711 (23130)
LTE Band 13: 5 MHz	779.5 (23205)		782 (23230)		784.5 (23255)
LTE Band 13: 10 MHz	N/A		782 (23230)		N/A
LTE Band 14: 5 MHz	790.5 (23305)		793 (23330)		795.5 (23355)
LTE Band 14: 10 MHz	N/A		793 (23330)		N/A
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)		836.5 (20525)		848.3 (20643)
LTE Band 5 (Cell): 3 MHz	825.5 (20415)		836.5 (20525)		847.5 (20635)
LTE Band 5 (Cell): 5 MHz	826.5 (20425)		836.5 (20525)		846.5 (20625)
LTE Band 5 (Cell): 10 MHz	829 (20450)		836.5 (20525)		844 (20600)
LTE Band 66 (AWS): 1.4 MHz	1710.7 (131979)		1745 (132322)		1779.3 (132665)
LTE Band 66 (AWS): 3 MHz	1711.5 (131987)		1745 (132322)		1778.5 (132657)
LTE Band 66 (AWS): 5 MHz	1712.5 (131997)		1745 (132322)		1777.5 (132647)
LTE Band 66 (AWS): 10 MHz	1715 (132022)		1745 (132322)		1775 (132622)
LTE Band 66 (AWS): 15 MHz	1717.5 (132047)		1745 (132322)		1772.5 (132597)
LTE Band 66 (AWS): 20 MHz	1720 (132072)		1745 (132322)		1770 (132572)
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)		1732.5 (20175)		1754.3 (20393)
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)		1732.5 (20175)		1753.5 (20385)
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)		1732.5 (20175)		1752.5 (20375)
LTE Band 4 (AWS): 10 MHz	1715 (20000)		1732.5 (20175)		1750 (20350)
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)		1732.5 (20175)		1747.5 (20325)
LTE Band 4 (AWS): 20 MHz	1720 (20050)		1732.5 (20175)		1745 (20300)
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)		1880 (18900)		1909.3 (19193)
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)		1880 (18900)		1908.5 (19185)
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)		1880 (18900)		1907.5 (19175)
LTE Band 2 (PCS): 10 MHz	1855 (18650)		1880 (18900)		1905 (19150)
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)		1880 (18900)		1902.5 (19125)
LTE Band 2 (PCS): 20 MHz	1860 (18700)		1880 (18900)		1900 (19100)
LTE Band 30: 5 MHz	2307.5 (27685)		2310 (27710)		2312.5 (27735)
LTE Band 30: 10 MHz	N/A		2310 (27710)		N/A
LTE Band 48: 5 MHz	3552.5 (55265)	3600.8 (55748)	N/A	3649.2 (56232)	3697.5 (56715)
LTE Band 48: 10 MHz	3555 (55290)	3601.7 (55757)	N/A	3648.3 (56223)	3695 (56690)
LTE Band 48: 15 MHz	3557.5 (55315)	3602.5 (55765)	N/A	3647.5 (56215)	3692.5 (56665)
LTE Band 48: 20 MHz	3560 (55340)	3603.3 (55773)	N/A	3646.7 (56207)	3690 (56640)
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	DL UE Cat 18, UL UE Cat 13				
Modulations Supported in UL	QPSK, 16QAM, 64QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3-6.2.5? (manufacturer attestation to be provided)	YES				
A-MPR (Additional MPR) disabled for SAR Testing?	YES				
LTE Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations				
LTE Additional Information	This device does not support full CA features on 3GPP Release 15. It supports carrier aggregation, downlink MIMO, LAA features as shown in section 9 and Appendix F. All other uplink communications are identical to the Release 8 specification. Uplink communications are done on the PCC. The following LTE Release 15 Features are not supported: Relay, HetNet, Enhanced MIMO, eICIC, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

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NR Information			
Form Factor	Portable Handset		
Frequency Range of each NR transmission band	NR Band n5 (Cell) (826.5 - 846.5 MHz)		
	NR Band n66 (AWS) (1712.5 - 1777.5 MHz)		
	NR Band n2 (PCS) (1852.5 - 1907.5 MHz)		
Channel Bandwidths	NR Band n5 (Cell): 5 MHz, 10 MHz, 15 MHz, 20 MHz		
	NR Band n66 (AWS): 5 MHz, 10 MHz, 15 MHz, 20 MHz		
	NR Band n2 (PCS): 5 MHz, 10 MHz, 15 MHz, 20 MHz		
Channel Numbers and Frequencies (MHz)	Low	Mid	High
NR Band n5 (Cell): 5 MHz	826.5 (165300)	836.5 (167300)	846.5 (169300)
NR Band n5 (Cell): 10 MHz	829 (165800)	836.5 (167300)	844 (168800)
NR Band n5 (Cell): 15 MHz	831.5 (166300)	836.5 (167300)	841.5 (168300)
NR Band n5 (Cell): 20 MHz	834 (166800)	836.5 (167300)	839 (167800)
NR Band n66 (AWS): 5 MHz	1712.5 (342500)	1745 (349000)	1777.5 (355500)
NR Band n66 (AWS): 10 MHz	1715 (343000)	1745 (349000)	1775 (355000)
NR Band n66 (AWS): 15 MHz	1717.5 (343500)	1745 (349000)	1772.5 (354500)
NR Band n66 (AWS): 20 MHz	1720 (344000)	1745 (349000)	1770 (354000)
NR Band n2 (PCS): 5 MHz	1852.5 (370500)	1880 (376000)	1907.5 (381500)
NR Band n2 (PCS): 10 MHz	1855 (371000)	1880 (376000)	1905 (381000)
NR Band n2 (PCS): 15 MHz	1857.5 (371500)	1880 (376000)	1902.5 (380500)
NR Band n2 (PCS): 20 MHz	1860 (372000)	1880 (376000)	1900 (380000)
SCS for NR Band n5/n66/n2	15 kHz		
Modulations Supported in UL	DFT-s-OFDM: $\pi/2$ BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM		
A-MPR (Additional MPR) disabled for SAR Testing?	YES		
EN-DC Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations		
LTE Anchor Bands for NR Band n5 (Cell)	LTE Band 66/2/30/48		
LTE Anchor Bands for NR Band n66 (AWS)	LTE Band 12/13/14/5/2/30		
LTE Anchor Bands for NR Band n2 (PCS)	LTE Band 12/13/14/5/66/30		

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3 INTRODUCTION

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

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

3.1 SAR Definition

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

Equation 3-1
SAR Mathematical Equation

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

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

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

where:

- σ = conductivity of the tissue-simulating material (S/m)
- ρ = mass density of the tissue-simulating material (kg/m³)
- E = Total RMS electric field strength (V/m)

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

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4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

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

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):
 - a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 4-1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).
 - b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the “Not a knot” condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.
 - c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

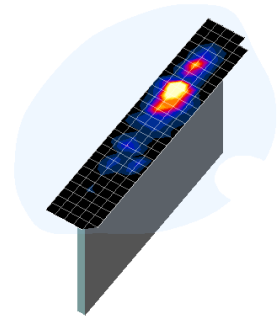


Figure 4-1
Sample SAR Area Scan

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

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

*Also compliant to IEEE 1528-2013 Table 6

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5 DEFINITION OF REFERENCE POINTS

5.1 EAR REFERENCE POINT

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

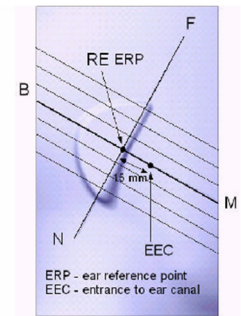


Figure 5-1
Close-Up Side view
of ERP

5.2 HANDSET REFERENCE POINTS

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



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

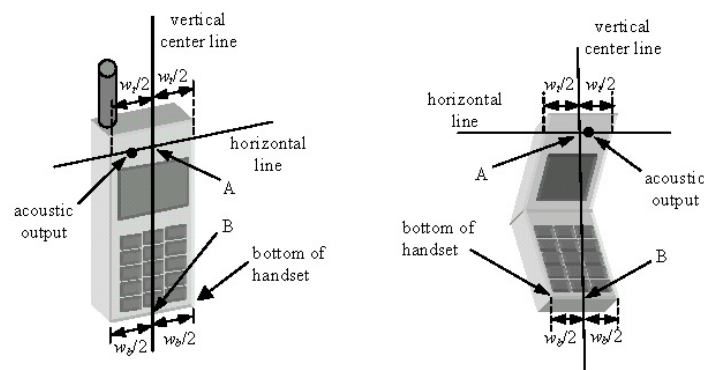


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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6 TEST CONFIGURATION POSITIONS

6.1 Device Holder

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

6.2 Positioning for Cheek

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

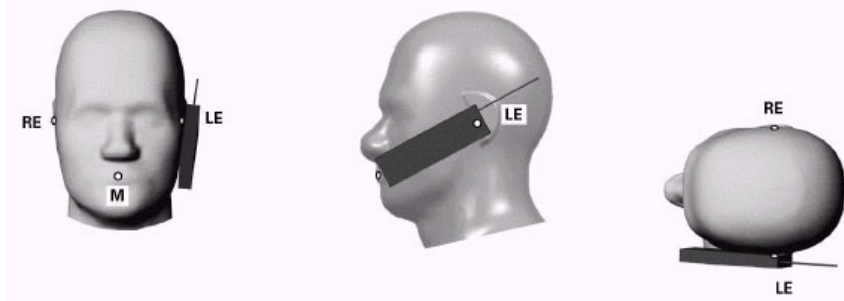


Figure 6-1 Front, Side and Top View of Cheek Position

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

6.3 Positioning for Ear / 15° Tilt

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

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

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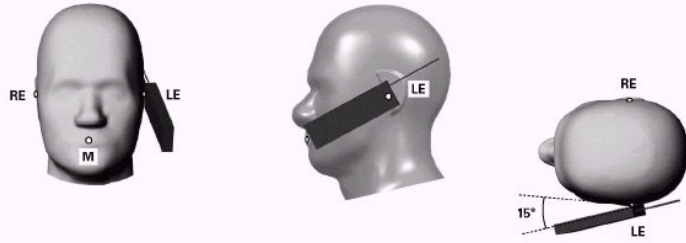


Figure 6-2 Front, Side and Top View of Ear/15° Tilt Position

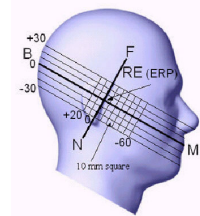


Figure 6-3 Side view w/ relevant markings

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

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

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

6.5 Body-Worn Accessory Configurations

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

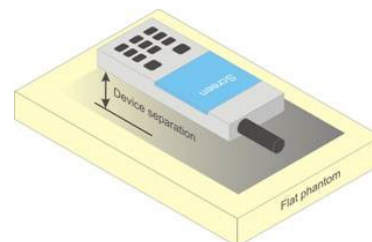


Figure 6-4 Sample Body-Worn Diagram

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that

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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 ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) 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.

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7 RF EXPOSURE LIMITS

7.1 Uncontrolled Environment

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

7.2 Controlled Environment

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

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

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

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

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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 CDMA2000

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

8.4.1 Output Power Verification

See 3GPP2 C.S0011/TIA-98-E as recommended by FCC KDB Publication 941225 D01v03r01 “3G SAR Measurement Procedures.” Maximum output power is verified on the High, Middle and Low channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. SO55 tests were measured with power control bits in the “All Up” condition.

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1. If the mobile station (MS) supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only.
2. Under RC1, C.S0011 Table 4.4.5.2-1, Table 8-1 parameters were applied.
3. If the MS supports the RC 3 Reverse FCH, RC3 Reverse SCH₀ and demodulation of RC 3,4, or 5, set up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9600 bps Fundamental Channel and 9600 bps SCH₀ data rate.
4. Under RC3, C.S0011 Table 4.4.5.2-2, Table 8-2 was applied.

Table 8-1
Parameters for Max. Power for RC1

Parameter	Units	Value
I_{or}	dBm/1.23 MHz	-104
$\frac{Pilot E_c}{I_{or}}$	dB	-7
$\frac{Traffic E_c}{I_{or}}$	dB	-7.4

Table 8-2
Parameters for Max. Power for RC3

Parameter	Units	Value
I_{or}	dBm/1.23 MHz	-86
$\frac{Pilot E_c}{I_{or}}$	dB	-7
$\frac{Traffic E_c}{I_{or}}$	dB	-7.4

5. FCHs were configured at full rate for maximum SAR with “All Up” power control bits.

8.4.2 Head SAR Measurements

SAR for next to the ear head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55. The 3G SAR test reduction procedure is applied to RC1 with RC3 as the primary mode; otherwise, SAR is required for the channel with maximum measured output in RC1 using the head exposure configuration that results in the highest reported SAR in RC3.

Head SAR is additionally evaluated using EVDO Rev. A to support compliance for VoIP operations. See Section 8.4.5 for EVDO Rev. A configuration parameters.

8.4.3 Body-worn SAR Measurements

SAR for body-worn exposure configurations is measured in RC3 with the DUT configured to transmit at full rate on FCH with all other code channels disabled using TDSO / SO32. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH_n), with FCH only as the primary mode. Otherwise, SAR is required for multiple code channel configuration (FCH + SCH_n), with FCH at full rate and SCH₀ enabled at 9600 bps, using the highest reported SAR configuration for FCH only. When multiple code channels are enabled, the transmitter output can shift by more than 0.5 dB and may lead to higher SAR drifts and SCH dropouts.

The 3G SAR test reduction procedure is applied to body-worn accessory SAR in RC1 with RC3 as the primary mode. Otherwise, SAR is required for RC1, with SO55 and full rate, using the highest reported SAR configuration for body-worn accessory exposure in RC3.

8.4.4 Body-worn SAR Measurements for EVDO Devices

For handsets with EVDO capabilities, the 3G SAR test reduction procedure is applied to EVDO Rev. 0 with 1x RTT RC3 as the primary mode to determine body-worn accessory test requirements. Otherwise, body-worn accessory SAR is required for Rev. 0, at 153.6 kbps, using the highest reported SAR configuration for body-worn accessory exposure in RC3.

The 3G SAR test reduction procedure is applied to Rev. A, with Rev. 0 as the primary mode to determine body-worn accessory SAR test requirements. When SAR is not required for Rev. 0, the 3G SAR test reduction is applied with 1x RTT RC3 as the primary mode.

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When SAR is required for EVDO Rev. A, SAR is measured with a Reverse Data Channel payload size of 4096 bits and a Termination Target of 16 slots defined for Subtype 2 Physical Layer configurations, using the highest reported SAR configuration for body-worn accessory exposure in Rev. 0 or 1x RTT RC3, as appropriate.

8.4.5 Body SAR Measurements for EVDO Hotspot

Hotspot Body SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0. The 3G SAR test reduction procedure is applied to Rev. A, Subtype 2 Physical layer configuration, with Rev. 0 as the primary mode; otherwise, SAR is measured for Rev. A using the highest reported SAR configuration for body-worn accessory exposure in Rev. 0. The AT is tested with a Reverse Data Channel rate of 153.6 kbps in Subtype 0/1 Physical Layer configurations; and a Reverse Data Channel payload size of 4096 bits and Termination Target of 16 slots in Subtype 2 Physical Layer configurations.

For EVDO data devices that also support 1x RTT voice and/or data operations, the 3G SAR test reduction procedure is applied to 1x RTT RC3 and RC1 with EVDO Rev. 0 and Rev. A as the respective primary modes. Otherwise, the 'Body-Worn Accessory SAR' procedures in the '3GPP2 CDMA 2000 1x Handsets' section are applied.

8.5 SAR Measurement Conditions for UMTS

8.5.1 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, DPDCH_n 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.

8.5.2 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 "1s". 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.

8.5.3 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.

8.5.4 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.

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8.5.5 SAR Measurements with Rel 6 HSPA

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.

8.6 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).

8.6.1 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.

8.6.2 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.

8.6.3 A-MPR

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

8.6.4 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

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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.

8.6.5 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.

8.6.6 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.

8.7 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.

8.7.1 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.

8.7.2 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

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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.

8.7.3 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.

8.7.4 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.

8.7.5 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 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.

8.7.6 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. 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.

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8.7.7 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 8.7.6). When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.8 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.

8.7.9 MIMO SAR Considerations

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

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9 RF CONDUCTED POWERS

9.1 GSM Conducted Powers

Table 9-1
Measured P_{max}

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	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot
GSM 850	128	32.81	32.56	31.48	26.87	26.56
	190	32.82	32.50	31.29	26.46	26.40
	251	32.68	32.47	31.04	26.67	26.24
GSM 1900	512	30.33	30.36	28.24	25.72	25.55
	661	30.27	30.39	28.30	25.56	25.40
	810	30.10	30.35	28.11	25.34	25.15

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	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot
GSM 850	128	23.61	23.36	25.29	17.67	20.37
	190	23.62	23.30	25.10	17.26	20.21
	251	23.48	23.27	24.85	17.47	20.05
GSM 1900	512	21.13	21.16	22.05	16.52	19.36
	661	21.07	21.19	22.11	16.36	19.21
	810	20.90	21.15	21.92	16.14	18.96

GSM 850	Frame Avg. Targets:	23.80	23.80	24.81	16.80	19.81
GSM 1900		20.80	20.80	21.81	15.80	18.81

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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.

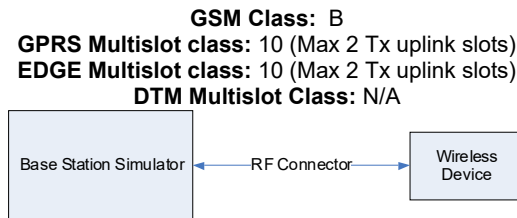


Figure 9-1
Power Measurement Setup

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9.2 CDMA Conducted Powers

Table 9-2
Measured P_{max}

				Loopback		Data			
Band	Channel	Rule Part	Frequency	SO55 [dBm]	SO55 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	RC1	RC3	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	1013	22H	824.7	24.87	24.96	24.86	24.89	24.86	24.89
	384	22H	836.52	24.93	24.91	24.95	24.92	24.95	24.92
	777	22H	848.31	24.90	24.88	24.86	24.84	24.85	24.88

Table 9-3
Measured P_{limit} for all DSI

Band	Channel	Rule Part	Frequency	SO55 [dBm]	SO55 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	RC1	RC3	FCH+SCH	FCH	(RTAP)	(RETAP)
PCS	25	24E	1851.25	22.86	22.85	22.89	22.88	22.90	22.89
	600	24E	1880	22.80	22.78	22.81	22.84	22.85	22.85
	1175	24E	1908.75	22.70	22.72	22.75	22.75	22.76	22.78

Note: RC1 is only applicable for IS-95 compatibility.



Figure 9-2
Power Measurement Setup

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9.3 UMTS Conducted Powers

Table 9-4
Measured P_{max}

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	
99	WCDMA	12.2 kbps RMC	25.24	25.27	25.22	-
99		12.2 kbps AMR	25.26	25.24	25.20	-
6	HSDPA	Subtest 1	25.41	25.44	25.37	0
6		Subtest 2	25.40	25.45	25.38	0
6		Subtest 3	24.91	24.96	24.85	0.5
6		Subtest 4	24.92	24.93	24.89	0.5
6	HSUPA	Subtest 1	24.45	24.87	24.44	0
6		Subtest 2	23.30	23.48	23.33	2
6		Subtest 3	24.42	24.45	24.54	1
6		Subtest 4	23.36	23.50	23.41	2
6		Subtest 5	25.31	25.41	25.32	0

Table 9-5
Measured P_{limit} for all DSI

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	22.92	22.99	22.96	23.02	22.94	22.80	-
	12.2 kbps AMR	22.90	22.94	22.95	23.01	22.90	22.75	-
HSDPA	Subtest 1	23.05	23.05	23.08	23.38	23.30	23.11	0
	Subtest 2	23.09	23.10	23.01	23.39	23.24	23.07	0
	Subtest 3	22.38	22.53	22.55	22.90	22.77	22.44	0.5
	Subtest 4	22.56	22.54	22.41	22.88	22.70	22.49	0.5
HSUPA	Subtest 1	23.08	23.04	23.05	22.88	22.77	22.60	0
	Subtest 2	21.05	21.08	21.03	21.36	21.25	21.08	2
	Subtest 3	22.02	22.06	22.00	22.35	22.24	22.28	1
	Subtest 4	21.05	21.05	21.03	21.39	21.26	21.11	2
	Subtest 5	23.06	23.05	23.02	23.38	23.28	23.07	0

This device does not support DC-HSDPA

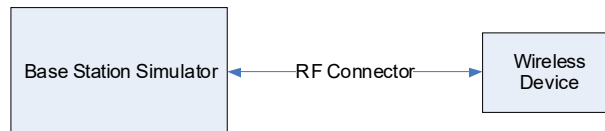


Figure 9-3
Power Measurement Setup

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9.4 LTE Conducted Powers

9.4.1 LTE Band 12

Table 9-6
LTE Band 12 Measured P_{max} - 10 MHz Bandwidth

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23095 (707.5 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	24.74	0	0
	1	25	24.73		0
	1	49	24.72		0
	25	0	23.81	0-1	1
	25	12	23.88		1
	25	25	23.85		1
	50	0	23.84		1
16QAM	1	0	23.64	0-1	1
	1	25	23.66		1
	1	49	23.64		1
	25	0	22.75	0-2	2
	25	12	22.78		2
	25	25	22.74		2
	50	0	22.66		2
64QAM	1	0	23.24	0-2	2
	1	25	23.24		2
	1	49	23.24		2
	25	0	21.82	0-3	3
	25	12	21.91		3
	25	25	21.90		3
	50	0	21.80		3

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

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Table 9-7
LTE Band 12 Measured P_{max} - 5 MHz Bandwidth

LTE Band 12 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23035 (701.5 MHz)	23095 (707.5 MHz)	23155 (713.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.85	24.72	24.81	0	0
	1	12	24.82	24.76	24.81		0
	1	24	24.78	24.74	24.82		0
	12	0	23.90	23.89	23.92	0-1	1
	12	6	23.94	23.95	23.91		1
	12	13	23.92	23.94	23.90		1
	25	0	23.95	23.90	23.92		1
16QAM	1	0	24.02	23.76	24.07	0-1	1
	1	12	24.02	23.78	24.10		1
	1	24	24.02	23.77	24.06		1
	12	0	22.63	22.78	22.67	0-2	2
	12	6	22.69	22.80	22.64		2
	12	13	22.65	22.78	22.65		2
	25	0	22.72	22.73	22.68		2
64QAM	1	0	23.31	23.38	22.95	0-2	2
	1	12	23.17	23.33	23.31		2
	1	24	23.19	23.36	23.28		2
	12	0	21.88	22.02	21.88	0-3	3
	12	6	21.90	22.03	21.86		3
	12	13	21.88	22.01	21.91		3
	25	0	21.88	21.97	21.85		3

Table 9-8
LTE Band 12 Measured P_{max} - 3 MHz Bandwidth

LTE Band 12 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23025 (700.5 MHz)	23095 (707.5 MHz)	23165 (714.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.96	24.81	24.88	0	0
	1	7	24.93	24.81	24.82		0
	1	14	24.88	24.83	24.84		0
	8	0	23.92	23.93	23.87	0-1	1
	8	4	23.92	23.99	23.92		1
	8	7	23.88	23.95	23.89		1
	15	0	23.91	23.91	23.82		1
16QAM	1	0	24.19	24.18	24.17	0-1	1
	1	7	24.14	24.25	24.19		1
	1	14	24.13	24.20	24.16		1
	8	0	22.78	22.76	22.71	0-2	2
	8	4	22.77	22.83	22.75		2
	8	7	22.73	22.81	22.74		2
	15	0	22.84	22.84	22.72		2
64QAM	1	0	23.40	23.34	23.33	0-2	2
	1	7	23.31	23.28	23.32		2
	1	14	23.36	23.35	23.36		2
	8	0	21.95	21.91	21.90	0-3	3
	8	4	21.98	21.99	21.97		3
	8	7	21.92	21.96	21.91		3
	15	0	21.95	21.97	21.88		3

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Table 9-9
LTE Band 12 Measured P_{max} -1.4 MHz Bandwidth

LTE Band 12 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23017 (699.7 MHz)	23095 (707.5 MHz)	23173 (715.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.80	24.77	24.79	0	0
	1	2	24.82	24.89	24.84		0
	1	5	24.77	24.84	24.78		0
	3	0	24.74	24.72	24.73		0
	3	2	24.77	24.81	24.80		0
	3	3	24.73	24.78	24.72		0
	6	0	23.90	23.84	23.82	0-1	1
16QAM	1	0	23.69	23.77	23.76	0-1	1
	1	2	23.72	23.86	23.83		1
	1	5	23.63	23.81	23.77		1
	3	0	23.49	23.48	23.48		1
	3	2	23.50	23.58	23.51		1
	3	3	23.48	23.51	23.47		1
	6	0	22.77	22.70	22.70	0-2	2
64QAM	1	0	23.28	23.37	23.39	0-2	2
	1	2	23.31	23.48	23.43		2
	1	5	23.25	23.42	23.37		2
	3	0	22.86	22.90	22.88		2
	3	2	22.89	23.02	22.95		2
	3	3	22.87	22.96	22.91		2
	6	0	21.84	21.74	21.75	0-3	3

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9.4.2

LTE Band 13

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

LTE Band 13 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23230 (782.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	25.19	0	0
	1	25	25.03		0
	1	49	24.99		0
	25	0	24.15	0-1	1
	25	12	24.14		1
	25	25	24.12		1
	50	0	24.14		1
16QAM	1	0	24.14	0-1	1
	1	25	23.92		1
	1	49	23.85		1
	25	0	22.95	0-2	2
	25	12	22.95		2
	25	25	22.92		2
	50	0	23.00		2
64QAM	1	0	23.50	0-2	2
	1	25	23.44		2
	1	49	23.36		2
	25	0	22.19	0-3	3
	25	12	22.26		3
	25	25	22.16		3
	50	0	22.07		3

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Table 9-11
LTE Band 13 Measured P_{max} - 5 MHz Bandwidth

LTE Band 13 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23230 (782.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	25.10	0	0
	1	12	25.12		0
	1	24	25.09		0
	12	0	24.18	0-1	1
	12	6	24.31		1
	12	13	24.20		1
	25	0	24.24		1
16QAM	1	0	24.15	0-1	1
	1	12	24.08		1
	1	24	24.10		1
	12	0	23.02	0-2	2
	12	6	23.12		2
	12	13	23.05		2
	25	0	23.03		2
64QAM	1	0	23.29	0-2	2
	1	12	23.32		2
	1	24	23.39		2
	12	0	22.24	0-3	3
	12	6	22.28		3
	12	13	22.24		3
	25	0	22.23		3

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

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9.4.3

LTE Band 14

Table 9-12
LTE Band 14 Measured P_{max} - 10 MHz Bandwidth

LTE Band 14 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23330 (793.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	25.05	0	0
	1	25	24.88		0
	1	49	24.81		0
	25	0	23.97	0-1	1
	25	12	24.00		1
	25	25	23.99		1
	50	0	23.93		1
16QAM	1	0	24.13	0-1	1
	1	25	24.04		1
	1	49	23.97		1
	25	0	22.79	0-2	2
	25	12	22.85		2
	25	25	22.86		2
	50	0	22.80		2
64QAM	1	0	23.34	0-2	2
	1	25	23.32		2
	1	49	23.25		2
	25	0	21.92	0-3	3
	25	12	21.98		3
	25	25	21.95		3
	50	0	21.95		3

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Table 9-13
LTE Band 14 Measured P_{max} - 5 MHz Bandwidth

LTE Band 14 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23330 (793.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	24.81	0	0
	1	12	24.93		0
	1	24	24.76		0
	12	0	24.11	0-1	1
	12	6	24.10		1
	12	13	24.04		1
	25	0	24.01		1
16QAM	1	0	23.92	0-1	1
	1	12	23.96		1
	1	24	23.88		1
	12	0	22.98	0-2	2
	12	6	22.96		2
	12	13	22.93		2
	25	0	22.87		2
64QAM	1	0	23.17	0-2	2
	1	12	23.23		2
	1	24	23.18		2
	12	0	22.15	0-3	3
	12	6	22.09		3
	12	13	22.09		3
	25	0	22.05		3

Note: LTE Band 14 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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9.4.4

LTE Band 5 (Cell)

Table 9-14
LTE Band 5 (Cell) Measured P_{max} - 10 MHz Bandwidth

LTE Band 5 (Cell) 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20525 (836.5 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	25.17	0	0
	1	25	25.04		0
	1	49	25.05		0
	25	0	24.19	0-1	1
	25	12	24.16		1
	25	25	24.16		1
	50	0	24.07		1
16QAM	1	0	23.56	0-1	1
	1	25	23.55		1
	1	49	23.53		1
	25	0	23.02	0-2	2
	25	12	23.05		2
	25	25	23.06		2
	50	0	22.89		2
64QAM	1	0	23.40	0-2	2
	1	25	23.40		2
	1	49	23.39		2
	25	0	22.19	0-3	3
	25	12	22.16		3
	25	25	22.21		3
	50	0	22.06		3

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

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Table 9-15
LTE Band 5 (Cell) Measured P_{max} - 5 MHz Bandwidth

LTE Band 5 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20425 (826.5 MHz)	20525 (836.5 MHz)	20625 (846.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.07	25.02	24.96	0	0
	1	12	25.14	25.16	25.06		0
	1	24	25.02	25.02	24.99		0
	12	0	24.18	24.11	24.10	0-1	1
	12	6	24.22	24.15	24.18		1
	12	13	24.21	24.18	24.16		1
	25	0	24.20	24.12	24.12		1
16QAM	1	0	23.98	24.06	23.90	0-1	1
	1	12	24.03	24.03	23.97		1
	1	24	23.98	24.02	23.97		1
	12	0	22.99	22.94	22.97	0-2	2
	12	6	23.09	23.02	23.02		2
	12	13	23.04	23.05	23.01		2
	25	0	23.01	22.90	22.94		2
64QAM	1	0	23.31	23.23	23.20	0-2	2
	1	12	23.31	23.30	23.24		2
	1	24	23.26	23.23	23.33		2
	12	0	22.20	22.17	22.15	0-3	3
	12	6	22.21	22.21	22.19		3
	12	13	22.17	22.21	22.20		3
	25	0	22.22	22.12	22.14		3

Table 9-16
LTE Band 5 (Cell) Measured P_{max} - 3 MHz Bandwidth

LTE Band 5 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20415 (825.5 MHz)	20525 (836.5 MHz)	20635 (847.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.09	25.03	25.01	0	0
	1	7	25.10	25.04	24.93		0
	1	14	25.06	25.08	24.90		0
	8	0	24.16	24.13	24.13	0-1	1
	8	4	24.20	24.20	24.13		1
	8	7	24.17	24.19	24.11		1
	15	0	24.18	24.08	24.10		1
16QAM	1	0	24.00	24.01	24.06	0-1	1
	1	7	23.95	24.01	23.94		1
	1	14	23.99	24.05	23.97		1
	8	0	23.09	23.02	22.94	0-2	2
	8	4	23.05	23.11	22.98		2
	8	7	23.01	23.06	23.01		2
	15	0	22.99	22.90	22.91		2
64QAM	1	0	23.32	23.25	23.28	0-2	2
	1	7	23.31	23.30	23.21		2
	1	14	23.25	23.31	23.28		2
	8	0	22.19	22.11	22.09	0-3	3
	8	4	22.20	22.19	22.20		3
	8	7	22.17	22.15	22.10		3
	15	0	22.25	22.15	22.16		3

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Table 9-17
LTE Band 5 (Cell) Measured P_{max} -1.4 MHz Bandwidth

LTE Band 5 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20407 (824.7 MHz)	20525 (836.5 MHz)	20643 (848.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.98	24.94	24.89	0	0
	1	2	25.04	25.06	24.98		0
	1	5	24.98	24.96	24.88		0
	3	0	24.97	24.91	24.90		0
	3	2	25.04	25.05	24.93		0
	3	3	25.01	24.98	24.84		0
	6	0	24.11	24.00	24.01	0-1	1
16QAM	1	0	24.03	23.95	23.88	0-1	1
	1	2	24.06	24.12	23.99		1
	1	5	23.97	23.97	23.86		1
	3	0	23.82	23.74	23.78		1
	3	2	23.86	23.87	23.82		1
	3	3	23.80	23.87	23.71		1
	6	0	22.94	22.90	22.89	0-2	2
64QAM	1	0	23.27	23.17	23.16	0-2	2
	1	2	23.32	23.31	23.27		2
	1	5	23.25	23.23	23.19		2
	3	0	23.18	23.11	23.08		2
	3	2	23.28	23.25	23.14		2
	3	3	23.19	23.22	23.09		2
	6	0	22.12	22.04	22.03	0-3	3

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LTE Band 66 (AWS)

Table 9-18
LTE Band 66 (AWS) Antenna 2 Measured P_{limit} for all DSI -20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.51	22.75	23.05	0	0
	1	50	22.70	23.00	23.02		0
	1	99	22.71	22.95	23.12		0
	50	0	22.93	23.03	23.06	0-1	0
	50	25	23.12	23.10	23.10		0
	50	50	23.07	23.09	23.13		0
	100	0	23.03	23.08	23.11		0
16QAM	1	0	23.26	23.15	23.46	0-1	0
	1	50	23.50	23.49	23.50		0
	1	99	23.33	23.30	23.49		0
	50	0	23.02	23.00	23.06	0-2	0
	50	25	23.10	23.10	23.06		0
	50	50	23.09	23.02	23.10		0
	100	0	23.07	23.03	23.04		0
64QAM	1	0	22.95	22.76	22.96	0-2	0
	1	50	23.29	23.15	23.08		0
	1	99	23.12	23.02	23.13		0
	50	0	22.23	22.28	22.41	0-3	1
	50	25	22.32	22.34	22.37		1
	50	50	22.26	22.28	22.36		1
	100	0	22.22	22.29	22.30		1

Table 9-19
LTE Band 66 (AWS) Antenna 2 Measured P_{limit} for all DSI -15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132047 (1717.5 MHz)	132322 (1745.0 MHz)	132597 (1772.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.74	22.68	22.87	0	0
	1	36	22.87	22.79	22.85		0
	1	74	22.69	22.66	22.82		0
	36	0	22.95	22.84	22.86	0-1	0
	36	18	22.94	22.91	22.89		0
	36	37	22.91	22.84	22.93		0
	75	0	22.92	22.86	22.85		0
16QAM	1	0	22.94	22.92	23.10	0-1	0
	1	36	23.07	22.99	23.06		0
	1	74	22.92	22.80	23.03		0
	36	0	23.05	22.82	22.89	0-2	0
	36	18	22.92	22.91	22.87		0
	36	37	22.90	22.85	22.93		0
	75	0	22.86	22.84	22.86		0
64QAM	1	0	22.93	22.89	23.12	0-2	0
	1	36	23.06	23.07	23.01		0
	1	74	22.89	22.92	23.06		0
	36	0	22.19	22.00	22.12	0-3	1
	36	18	22.15	22.13	22.12		1
	36	37	22.11	22.06	22.14		1
	75	0	22.15	22.11	22.09		1

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Table 9-20
LTE Band 66 (AWS) Antenna 2 Measured P_{limit} for all DSI -10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132022 (1715.0 MHz)	132322 (1745.0 MHz)	132622 (1775.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.65	22.59	22.66	0	0
	1	25	22.85	22.80	22.82		0
	1	49	22.75	22.64	22.68		0
	25	0	22.93	22.84	22.85	0-1	0
	25	12	22.96	22.96	22.93		0
	25	25	22.87	22.86	22.86		0
	50	0	22.88	22.87	22.89		0
16QAM	1	0	22.97	22.93	23.04	0-1	0
	1	25	23.17	23.13	23.23		0
	1	49	23.03	23.00	23.00		0
	25	0	22.92	22.81	22.87	0-2	0
	25	12	23.01	22.95	22.92		0
	25	25	22.84	22.82	22.87		0
	50	0	22.91	22.86	22.84		0
64QAM	1	0	22.87	22.77	22.76	0-2	0
	1	25	23.04	23.01	23.04		0
	1	49	22.80	22.81	22.90		0
	25	0	22.12	22.05	22.06	0-3	1
	25	12	22.23	22.16	22.14		1
	25	25	22.12	22.08	22.15		1
	50	0	22.16	22.11	22.06		1

Table 9-21
LTE Band 66 (AWS) Antenna 2 Measured P_{limit} for all DSI- 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131997 (1712.5 MHz)	132322 (1745.0 MHz)	132647 (1777.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.93	22.83	22.86	0	0
	1	12	23.01	22.94	22.93		0
	1	24	22.86	22.81	22.74		0
	12	0	23.00	22.90	23.01	0-1	0
	12	6	22.98	22.95	23.00		0
	12	13	22.90	22.91	22.97		0
	25	0	22.99	22.96	22.96		0
16QAM	1	0	23.22	23.15	23.19	0-1	0
	1	12	23.33	23.19	23.22		0
	1	24	23.15	23.04	23.14		0
	12	0	23.09	22.94	23.07	0-2	0
	12	6	23.08	23.01	23.03		0
	12	13	22.97	22.95	22.98		0
	25	0	23.00	22.94	22.96		0
64QAM	1	0	23.17	23.00	23.14	0-2	0
	1	12	23.12	23.04	23.10		0
	1	24	23.04	23.02	23.05		0
	12	0	22.26	22.15	22.25	0-3	1
	12	6	22.24	22.18	22.26		1
	12	13	22.17	22.12	22.12		1
	25	0	22.18	22.13	22.17		1

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Table 9-22
LTE Band 66 (AWS) Antenna 2 Measured P_{limit} for all DSI -3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131987 (1711.5 MHz)	132322 (1745.0 MHz)	132657 (1778.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.90	22.82	22.93	0	0
	1	7	22.97	22.92	22.91		0
	1	14	22.82	22.83	22.80		0
	8	0	22.99	22.91	23.01	0-1	0
	8	4	23.01	22.96	22.98		0
	8	7	22.97	22.90	22.94		0
	15	0	23.05	22.96	22.97		0
16QAM	1	0	23.30	23.11	23.27	0-1	0
	1	7	23.35	23.13	23.15		0
	1	14	23.10	23.21	23.22		0
	8	0	23.13	23.00	23.11	0-2	0
	8	4	23.12	23.09	23.09		0
	8	7	23.04	22.98	23.02		0
	15	0	23.04	22.98	22.97		0
64QAM	1	0	23.17	23.04	23.13	0-2	0
	1	7	23.12	23.07	23.10		0
	1	14	23.06	22.97	23.06		0
	8	0	22.24	22.10	22.19	0-3	1
	8	4	22.26	22.18	22.24		1
	8	7	22.17	22.09	22.17		1
	15	0	22.25	22.17	22.22		1

Table 9-23
LTE Band 66 (AWS) Antenna 2 Measured P_{limit} for all DSI -1.4 MHz Bandwidth

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131979 (1710.7 MHz)	132322 (1745.0 MHz)	132665 (1779.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.88	22.75	22.82	0	0
	1	2	22.92	22.86	22.88		0
	1	5	22.81	22.74	22.77		0
	3	0	22.85	22.83	22.78		0
	3	2	22.90	22.80	22.84		0
	3	3	22.81	22.77	22.79		0
	6	0	22.91	22.87	22.84	0-1	0
16QAM	1	0	23.20	23.30	23.29	0-1	0
	1	2	23.34	23.28	23.29		0
	1	5	23.12	23.20	23.21		0
	3	0	23.04	23.01	23.00		0
	3	2	23.06	23.01	23.04		0
	3	3	23.00	22.93	22.96		0
	6	0	23.05	22.95	22.95	0-2	0
64QAM	1	0	23.08	23.04	23.10	0-2	0
	1	2	23.14	23.09	23.14		0
	1	5	23.06	23.00	23.01		0
	3	0	23.00	23.00	23.01		0
	3	2	23.08	23.04	23.05		0
	3	3	23.01	22.95	22.97		0
	6	0	22.14	22.13	22.12	0-3	1

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Table 9-24

LTE Band 66 (AWS) Antenna 3 for conditions with NR EN-DC (Measured P_{limit} for all DSI) or Inter-band ULCA with LTE Band 66 as PCC (Measured P_{max})- 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.48	22.33	22.56	0	0
	1	50	22.58	22.47	22.41		0
	1	99	22.35	22.31	22.44		0
	50	0	22.63	22.59	22.51	0-1	0
	50	25	22.69	22.57	22.54		0
	50	50	22.70	22.55	22.46		0
	100	0	22.57	22.46	22.39		0
16QAM	1	0	22.72	22.66	22.89	0-1	0
	1	50	22.91	22.86	22.78		0
	1	99	22.70	22.58	22.69		0
	50	0	22.59	22.52	22.37	0-2	0
	50	25	22.70	22.49	22.41		0
	50	50	22.59	22.48	22.41		0
	100	0	22.65	22.54	22.38		0
64QAM	1	0	22.57	22.45	22.73	0-2	0
	1	50	22.76	22.69	22.59		0
	1	99	22.43	22.36	22.50		0
	50	0	22.28	22.11	22.08	0-3	1
	50	25	22.26	22.16	22.10		1
	50	50	22.24	22.13	22.10		1
	100	0	22.34	22.16	22.07		1

Table 9-25

LTE Band 66 (AWS) Antenna 3 for conditions with NR EN-DC (Measured P_{limit} for all DSI) or Inter-band ULCA with LTE Band 66 as PCC (Measured P_{max}) - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132047 (1717.5 MHz)	132322 (1745.0 MHz)	132597 (1772.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.53	22.56	22.55	0	0
	1	36	22.68	22.64	22.46		0
	1	74	22.51	22.45	22.38		0
	36	0	22.76	22.62	22.50	0-1	0
	36	18	22.74	22.61	22.61		0
	36	37	22.69	22.70	22.49		0
	75	0	22.68	22.55	22.52		0
16QAM	1	0	22.72	22.66	22.63	0-1	0
	1	36	22.70	22.83	22.52		0
	1	74	22.57	22.56	22.51		0
	36	0	22.75	22.59	22.46	0-2	0
	36	18	22.83	22.68	22.63		0
	36	37	22.68	22.64	22.55		0
	75	0	22.65	22.61	22.55		0
64QAM	1	0	22.44	22.57	22.66	0-2	0
	1	36	22.78	22.66	22.57		0
	1	74	22.50	22.54	22.43		0
	36	0	22.39	22.22	22.08	0-3	1
	36	18	22.34	22.23	22.13		1
	36	37	22.18	22.24	22.04		1
	75	0	22.25	22.16	22.03		1

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Table 9-26
LTE Band 66 (AWS) Antenna 3 for conditions with NR EN-DC (Measured P_{limit} for all DSI) or Inter-band ULCA with LTE Band 66 as PCC (Measured P_{max}) - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132022 (1715.0 MHz)	132322 (1745.0 MHz)	132622 (1775.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.55	22.46	22.33	0	0
	1	25	22.69	22.68	22.51		0
	1	49	22.53	22.49	22.29		0
	25	0	22.70	22.55	22.40	0-1	0
	25	12	22.76	22.66	22.42		0
	25	25	22.66	22.63	22.39		0
	50	0	22.65	22.51	22.34		0
16QAM	1	0	22.61	22.60	22.42	0-1	0
	1	25	22.84	22.79	22.61		0
	1	49	22.59	22.51	22.37		0
	25	0	22.66	22.47	22.28	0-2	0
	25	12	22.68	22.56	22.41		0
	25	25	22.59	22.45	22.30		0
	50	0	22.72	22.60	22.44		0
64QAM	1	0	22.63	22.47	22.28	0-2	0
	1	25	22.77	22.75	22.71		0
	1	49	22.54	22.58	22.37		0
	25	0	22.46	22.31	22.16	0-3	1
	25	12	22.39	22.26	22.18		1
	25	25	22.35	22.29	22.17		1
	50	0	22.34	22.18	22.07		1

Table 9-27
LTE Band 66 (AWS) Antenna 3 for conditions with NR EN-DC (Measured P_{limit} for all DSI) or Inter-band ULCA with LTE Band 66 as PCC (Measured P_{max}) - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]	
			131997 (1712.5 MHz)	132322 (1745.0 MHz)	132647 (1777.5 MHz)			
			Conducted Power [dBm]					
QPSK	1	0	22.74	22.61	22.54	0	0	
	1	12	22.86	22.87	22.66		0	
	1	24	22.63	22.63	22.36		0	
	12	0	22.80	22.70	22.62	0-1	0	
	12	6	22.77	22.73	22.51		0	
	12	13	22.82	22.69	22.46		0	
16QAM	25	0	22.81	22.65	22.53	0-1	0	
	1	0	22.86	22.72	22.66		0	
	1	12	22.76	22.68	22.61		0	
	1	24	22.81	22.71	22.55	0-2	0	
	12	0	22.88	22.74	22.69		0	
	12	6	22.86	22.82	22.63		0	
	12	13	22.84	22.71	22.57		0	
64QAM	25	0	22.75	22.60	22.51	0-2	0	
	1	0	22.84	22.70	22.72		0-2	0
	1	12	22.92	22.83	22.61			0
	1	24	22.86	22.77	22.57	0-3		0
	12	0	22.49	22.41	22.36		1	
	12	6	22.50	22.43	22.22		1	
	12	13	22.42	22.32	22.16		1	
		25	0	22.43	22.35	22.24		1

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Table 9-28
LTE Band 66 (AWS) Antenna 3 for conditions with NR EN-DC (Measured P_{limit} for all DSI) or Inter-band ULCA with LTE Band 66 as PCC (Measured P_{max}) - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131987 (1711.5 MHz)	132322 (1745.0 MHz)	132657 (1778.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.91	22.69	22.58	0	0
	1	7	22.88	22.86	22.62		0
	1	14	22.74	22.63	22.51		0
	8	0	22.78	22.64	22.56	0-1	0
	8	4	22.82	22.75	22.50		0
	8	7	22.72	22.71	22.49		0
	15	0	22.74	22.66	22.48		0
16QAM	1	0	22.94	22.81	22.63	0-1	0
	1	7	22.86	22.72	22.42		0
	1	14	22.76	22.79	22.56		0
	8	0	22.91	22.80	22.61	0-2	0
	8	4	22.90	22.89	22.62		0
	8	7	22.85	22.75	22.50		0
	15	0	22.77	22.62	22.49		0
64QAM	1	0	22.96	22.87	22.71	0-2	0
	1	7	22.98	22.89	22.59		0
	1	14	22.73	22.74	22.48		0
	8	0	22.46	22.33	22.17	0-3	1
	8	4	22.48	22.45	22.22		1
	8	7	22.38	22.36	22.15		1
	15	0	22.48	22.38	22.21		1

Table 9-29
LTE Band 66 (AWS) Antenna 3 for conditions with NR EN-DC (Measured P_{limit} for all DSI) or Inter-band ULCA with LTE Band 66 as PCC (Measured P_{max}) - 1.4 MHz Bandwidth

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131979 (1710.7 MHz)	132322 (1745.0 MHz)	132665 (1779.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.65	22.63	22.46	0	0
	1	2	22.78	22.69	22.46		0
	1	5	22.63	22.60	22.41		0
	3	0	22.61	22.57	22.31		0
	3	2	22.54	22.56	22.40		0
	3	3	22.57	22.52	22.35		0
	6	0	22.69	22.59	22.45	0-1	0
16QAM	1	0	22.88	22.69	22.57	0-1	0
	1	2	22.84	22.75	22.65		0
	1	5	22.86	22.67	22.51		0
	3	0	22.81	22.66	22.58		0
	3	2	22.79	22.67	22.47		0
	3	3	22.76	22.68	22.46		0
	6	0	22.69	22.52	22.39	0-2	0
64QAM	1	0	22.90	22.73	22.68	0-2	0
	1	2	22.95	22.91	22.62		0
	1	5	22.83	22.71	22.55		0
	3	0	22.82	22.69	22.57		0
	3	2	22.85	22.80	22.52		0
	3	3	22.82	22.74	22.47		0
	6	0	22.24	22.23	21.98	0-3	1

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LTE Band 2 (PCS)

Table 9-30
LTE Band 2 (PCS) Antenna 2 Measured P_{limit} for all DSI- 20 MHz Bandwidth

LTE Band 2 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18700 (1860.0 MHz)	18900 (1880.0 MHz)	19100 (1900.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.88	23.06	23.00	0	0
	1	50	22.89	23.07	22.95		0
	1	99	22.91	23.04	22.97		0
	50	0	23.07	22.99	22.92	0-1	0
	50	25	23.20	23.23	23.00		0
	50	50	23.22	23.08	23.03		0
	100	0	23.02	23.04	22.99		0
16QAM	1	0	23.34	23.45	23.50	0-1	0
	1	50	23.40	23.49	23.48		0
	1	99	23.42	23.50	23.49		0
	50	0	23.12	22.88	22.82	0-2	0
	50	25	23.11	22.98	22.91		0
	50	50	23.13	22.95	22.92		0
	100	0	23.11	22.96	22.90		0
64QAM	1	0	23.28	23.12	22.96	0-2	0
	1	50	23.41	23.24	23.05		0
	1	99	23.42	23.17	23.04		0
	50	0	22.27	22.20	22.13	0-3	1
	50	25	22.34	22.22	22.19		1
	50	50	22.33	22.23	22.19		1
	100	0	22.27	22.24	22.16		1

Table 9-31
LTE Band 2 (PCS) Antenna 2 Measured P_{limit} for all DSI - 15 MHz Bandwidth

LTE Band 2 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18675 (1857.5 MHz)	18900 (1880.0 MHz)	19125 (1902.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.92	22.98	22.87	0	0
	1	36	22.96	23.06	22.78		0
	1	74	22.97	22.94	22.78		0
	36	0	23.11	22.92	22.86	0-1	0
	36	18	23.11	22.98	22.87		0
	36	37	23.14	23.03	22.89		0
	75	0	23.10	23.14	22.89		0
16QAM	1	0	23.18	23.15	23.01	0-1	0
	1	36	23.21	23.11	22.91		0
	1	74	23.14	23.09	22.96		0
	36	0	23.04	22.85	22.77	0-2	0
	36	18	23.07	22.86	22.79		0
	36	37	23.11	22.98	22.81		0
	75	0	23.01	22.86	22.75		0
64QAM	1	0	23.10	23.16	23.07	0-2	0
	1	36	23.18	23.21	22.92		0
	1	74	23.18	23.15	23.00		0
	36	0	22.20	22.06	21.94	0-3	1
	36	18	22.24	22.14	22.03		1
	36	37	22.27	22.18	22.02		1
	75	0	22.23	22.06	21.98		1

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Table 9-32
LTE Band 2 (PCS) Antenna 2 Measured P_{limit} for all DSI- 10 MHz Bandwidth

LTE Band 2 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18650 (1855.0 MHz)	18900 (1880.0 MHz)	19150 (1905.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.89	22.43	22.71	0	0
	1	25	22.76	22.72	22.67		0
	1	49	22.51	22.46	22.68		0
	25	0	22.91	22.68	22.63	0-1	0
	25	12	22.94	22.78	22.71		0
	25	25	22.85	22.76	22.62		0
16QAM	50	0	23.00	22.73	22.60	0-1	0
	1	0	22.33	22.86	22.72		0
	1	25	22.60	23.23	22.71		0
	1	49	22.39	22.97	22.70	0-2	0
	25	0	22.85	22.67	22.63		0
	25	12	22.93	22.79	22.70		0
64QAM	25	25	22.90	22.74	22.61	0-2	0
	50	0	22.77	22.59	22.53		0
	1	0	23.10	22.70	23.22		0-2
	1	25	23.32	23.02	23.15	0	
	1	49	23.14	22.72	23.15	0	
	64QAM	25	0	22.16	22.07	22.03	0-3
25		12	22.28	22.23	22.17	1	
25		25	22.17	22.19	22.07	1	
50		0	22.12	22.05	22.02	1	

Table 9-33
LTE Band 2 (PCS) Antenna 2 Measured P_{limit} for all DSI- 5 MHz Bandwidth

LTE Band 2 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18625 (1852.5 MHz)	18900 (1880.0 MHz)	19175 (1907.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.85	22.60	22.73	0	0
	1	12	22.89	22.71	22.75		0
	1	24	22.76	22.60	22.66		0
	12	0	22.91	22.74	22.69	0-1	0
	12	6	22.93	22.80	22.72		0
	12	13	22.89	22.75	22.63		0
	25	0	22.89	22.73	22.69		0
16QAM	1	0	23.44	22.76	22.66	0-1	0
	1	12	23.46	22.85	22.72		0
	1	24	23.50	22.75	22.64		0
	12	0	22.92	22.73	22.63	0-2	0
	12	6	22.94	22.80	22.71		0
	12	13	22.83	22.79	22.63		0
	25	0	22.90	22.64	22.61		0
64QAM	1	0	23.48	23.39	22.88	0-2	0
	1	12	23.50	23.47	22.94		0
	1	24	23.49	23.35	22.85		0
	12	0	22.34	22.12	22.20	0-3	1
	12	6	22.38	22.21	22.17		1
	12	13	22.30	22.11	22.11		1
	25	0	22.26	22.14	22.10		1

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Table 9-34
LTE Band 2 (PCS) Antenna 2 Measured P_{limit} for all DSI- 3 MHz Bandwidth

LTE Band 2 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18615 (1851.5 MHz)	18900 (1880.0 MHz)	19185 (1908.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.20	22.94	22.73	0	0
	1	7	23.13	22.87	22.75		0
	1	14	22.85	22.84	22.71		0
	8	0	22.93	22.80	22.69	0-1	0
	8	4	22.94	22.84	22.69		0
	8	7	22.87	22.75	22.64		0
	15	0	22.94	22.79	22.69		0
16QAM	1	0	22.97	23.22	22.49	0-1	0
	1	7	22.94	23.20	22.53		0
	1	14	22.87	23.13	22.38		0
	8	0	22.87	22.85	22.57	0-2	0
	8	4	22.89	22.83	22.58		0
	8	7	22.82	22.79	22.51		0
	15	0	22.87	22.74	22.54		0
64QAM	1	0	23.45	23.17	23.18	0-2	0
	1	7	23.44	23.13	23.23		0
	1	14	23.29	23.07	23.15		0
	8	0	22.23	22.19	22.13	0-3	1
	8	4	22.27	22.21	22.14		1
	8	7	22.21	22.18	22.08		1
	15	0	22.30	22.20	22.05		1

Table 9-35
LTE Band 2 (PCS) Antenna 2 Measured P_{limit} for all DSI- 1.4 MHz Bandwidth

LTE Band 2 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18607 (1850.7 MHz)	18900 (1880.0 MHz)	19193 (1909.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.74	22.75	22.57	0	0
	1	2	22.83	22.75	22.63		0
	1	5	22.76	22.71	22.68		0
	3	0	22.77	22.65	22.44		0
	3	2	22.81	22.71	22.52		0
	3	3	22.74	22.62	22.48		0
	6	0	22.83	22.68	22.56	0-1	0
16QAM	1	0	22.62	23.15	22.34	0-1	0
	1	2	22.71	23.18	22.42		0
	1	5	22.61	23.09	22.33		0
	3	0	22.95	22.98	22.67		0
	3	2	22.99	22.98	22.75		0
	3	3	22.94	22.91	22.68		0
	6	0	22.95	22.57	22.67	0-2	0
64QAM	1	0	23.35	23.11	23.27	0-2	0
	1	2	23.38	23.17	23.32		0
	1	5	23.33	23.01	23.20		0
	3	0	23.02	23.11	23.19		0
	3	2	23.09	23.15	23.23		0
	3	3	23.04	23.07	23.17		0
	6	0	22.25	22.43	21.93	0-3	1

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Table 9-36
LTE Band 2 (PCS) Antenna 3 for conditions with NR EN-DC (Measured P_{limit} for all DSI) or Inter-band ULCA
with LTE Band 2 as PCC (Measured P_{max}) PCC - 20 MHz Bandwidth

LTE Band 2 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18700 (1860.0 MHz)	18900 (1880.0 MHz)	19100 (1900.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.47	22.49	22.54	0	0
	1	50	22.28	22.38	22.39		0
	1	99	22.43	22.43	22.43		0
	50	0	22.34	22.39	22.39	0-1	0
	50	25	22.50	22.46	22.59		0
	50	50	22.49	22.53	22.49		0
	100	0	22.44	22.42	22.51		0
16QAM	1	0	22.74	22.98	22.87	0-1	0
	1	50	22.72	22.86	22.83		0
	1	99	22.76	22.76	22.81		0
	50	0	22.21	22.34	22.36	0-2	0
	50	25	22.43	22.46	22.54		0
	50	50	22.42	22.49	22.51		0
	100	0	22.44	22.46	22.57		0
64QAM	1	0	22.47	22.62	22.47	0-2	0
	1	50	22.52	22.65	22.62		0
	1	99	22.60	22.52	22.68		0
	50	0	21.96	21.99	22.00	0-3	1
	50	25	22.06	22.05	22.21		1
	50	50	22.12	22.12	22.08		1
	100	0	22.12	22.09	22.12		1

Table 9-37
LTE Band 2 (PCS) Antenna 3 for conditions with NR EN-DC (Measured P_{limit} for all DSI) or Inter-band ULCA
with LTE Band 2 as PCC (Measured P_{max}) - 15 MHz Bandwidth

LTE Band 2 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18675 (1857.5 MHz)	18900 (1880.0 MHz)	19125 (1902.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.27	22.39	22.49	0	0
	1	36	22.40	22.40	22.42		0
	1	74	22.34	22.44	22.49		0
	36	0	22.40	22.43	22.48	0-1	0
	36	18	22.54	22.49	22.54		0
	36	37	22.55	22.56	22.65		0
	75	0	22.56	22.44	22.46		0
16QAM	1	0	22.53	22.77	22.72	0-1	0
	1	36	22.61	22.72	22.75		0
	1	74	22.51	22.73	22.76		0
	36	0	22.40	22.39	22.40	0-2	0
	36	18	22.56	22.50	22.50		0
	36	37	22.54	22.61	22.62		0
	75	0	22.52	22.49	22.51		0
64QAM	1	0	22.26	22.48	22.47	0-2	0
	1	36	22.57	22.54	22.57		0
	1	74	22.42	22.48	22.58		0
	36	0	22.03	22.00	22.03	0-3	1
	36	18	22.20	22.09	22.18		1
	36	37	22.18	22.22	21.85		1
	75	0	22.12	22.06	22.00		1

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Table 9-38
LTE Band 2 (PCS) Antenna 3 for conditions with NR EN-DC (Measured P_{limit} for all DSI) or Inter-band ULCA
with LTE Band 2 as PCC (Measured P_{max}) - 10 MHz Bandwidth

LTE Band 2 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18650 (1855.0 MHz)	18900 (1880.0 MHz)	19150 (1905.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.28	22.35	22.65	0	0
	1	25	22.58	22.62	22.60		0
	1	49	22.41	22.40	22.63		0
	25	0	22.57	22.49	22.51	0-1	0
	25	12	22.64	22.62	22.61		0
	25	25	22.54	22.58	22.58		0
	50	0	22.51	22.46	22.40		0
16QAM	1	0	22.56	22.50	22.91	0-1	0
	1	25	22.77	22.81	22.82		0
	1	49	22.66	22.59	22.88		0
	25	0	22.47	22.40	22.43	0-2	0
	25	12	22.60	22.56	22.56		0
	25	25	22.42	22.46	22.45		0
	50	0	22.62	22.52	22.59		0
64QAM	1	0	22.34	22.34	22.66	0-2	0
	1	25	22.61	22.81	22.74		0
	1	49	22.43	22.48	22.77		0
	25	0	22.12	22.10	22.12	0-3	1
	25	12	22.18	22.16	21.91		1
	25	25	22.13	22.11	21.69		1
	50	0	22.17	22.06	22.05		1

Table 9-39
LTE Band 2 (PCS) Antenna 3 for conditions with NR EN-DC (Measured P_{limit} for all DSI) or Inter-band ULCA
with LTE Band 2 as PCC (Measured P_{max}) - 5 MHz Bandwidth

LTE Band 2 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18625 (1852.5 MHz)	18900 (1880.0 MHz)	19175 (1907.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.46	22.42	22.48	0	0
	1	12	22.65	22.46	22.59		0
	1	24	22.42	22.45	22.37		0
	12	0	22.72	22.58	22.67	0-1	0
	12	6	22.69	22.65	22.72		0
	12	13	22.61	22.69	22.60		0
	25	0	22.59	22.53	22.61		0
16QAM	1	0	22.78	22.70	22.76	0-1	0
	1	12	22.77	22.75	22.69		0
	1	24	22.73	22.73	22.73		0
	12	0	22.65	22.68	22.70	0-2	0
	12	6	22.64	22.67	22.71		0
	12	13	22.61	22.63	22.59		0
	25	0	22.62	22.55	22.66		0
64QAM	1	0	22.72	22.66	22.73	0-2	0
	1	12	22.68	22.75	22.77		0
	1	24	22.56	22.68	22.65		0
	12	0	22.35	22.19	21.72	0-3	1
	12	6	22.33	22.33	21.86		1
	12	13	22.25	22.25	21.80		1
	25	0	22.27	22.21	21.68		1

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Table 9-40

LTE Band 2 (PCS) Antenna 3 for conditions with NR EN-DC (Measured P_{limit} for all DSI) or Inter-band ULCA with LTE Band 2 as PCC (Measured P_{max}) - 3 MHz Bandwidth

LTE Band 2 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18615 (1851.5 MHz)	18900 (1880.0 MHz)	19185 (1908.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.61	22.39	22.75	0	0
	1	7	22.75	22.44	22.76		0
	1	14	22.48	22.46	22.57		0
	8	0	22.66	22.61	22.62	0-1	0
	8	4	22.65	22.60	22.68		0
	8	7	22.59	22.58	22.59		0
	15	0	22.61	22.54	22.62		0
16QAM	1	0	22.72	22.69	22.70	0-1	0
	1	7	22.60	22.49	22.67		0
	1	14	22.69	22.56	22.59		0
	8	0	22.77	22.61	22.74	0-2	0
	8	4	22.74	22.62	22.80		0
	8	7	22.73	22.57	22.73		0
	15	0	22.62	22.55	22.63		0
64QAM	1	0	22.75	22.67	22.84	0-2	0
	1	7	22.79	22.63	22.85		0
	1	14	22.71	22.57	22.76		0
	8	0	22.31	22.07	21.73	0-3	1
	8	4	22.29	22.20	21.83		1
	8	7	22.22	22.18	21.78		1
	15	0	22.26	22.17	21.81		1

Table 9-41

LTE Band 2 (PCS) Antenna 3 for conditions with NR EN-DC (Measured P_{limit} for all DSI) or Inter-band ULCA with LTE Band 2 as PCC (Measured P_{max}) - 1.4 MHz Bandwidth

LTE Band 2 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18607 (1850.7 MHz)	18900 (1880.0 MHz)	19193 (1909.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.57	22.55	22.57	0	0
	1	2	22.64	22.53	22.66		0
	1	5	22.57	22.51	22.55		0
	3	0	22.40	22.52	22.45		0
	3	2	22.51	22.49	22.53		0
	3	3	22.47	22.42	22.41		0
	6	0	22.59	22.58	22.52	0-1	0
16QAM	1	0	22.55	22.59	22.59	0-1	0
	1	2	22.84	22.76	22.78		0
	1	5	22.66	22.59	22.64		0
	3	0	22.63	22.56	22.63		0
	3	2	22.62	22.62	22.66		0
	3	3	22.59	22.56	22.62		0
	6	0	22.54	22.51	22.55	0-2	0
64QAM	1	0	22.72	22.73	22.71	0-2	0
	1	2	22.81	22.78	22.75		0
	1	5	22.67	22.63	22.66		0
	3	0	22.68	22.62	22.68		0
	3	2	22.70	22.70	22.69		0
	3	3	22.71	22.61	22.61		0
	6	0	22.12	22.06	21.73	0-3	1

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LTE Band 30

Table 9-42
LTE Band 30 Antenna 2 Measured P_{limit} for all DSI- 10 MHz Bandwidth

LTE Band 30 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			27710 (2310.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	24.80	0	0
	1	25	24.75		0
	1	49	24.79		0
	25	0	24.41	0-1	0.5
	25	12	24.50		0.5
	25	25	24.36		0.5
	50	0	24.35		0.5
16QAM	1	0	24.50	0-1	0.5
	1	25	24.49		0.5
	1	49	24.48		0.5
	25	0	23.22	0-2	1.5
	25	12	23.33		1.5
	25	25	23.19		1.5
	50	0	23.16		1.5
64QAM	1	0	23.50	0-2	1.5
	1	25	23.49		1.5
	1	49	23.50		1.5
	25	0	22.44	0-3	2.5
	25	12	22.50		2.5
	25	25	22.42		2.5
	50	0	22.33		2.5

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Table 9-43
LTE Band 30 Antenna 2 Measured P_{limit} for all DSI- 5 MHz Bandwidth

LTE Band 30 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			27710 (2310.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	24.45	0	0
	1	12	24.56		0
	1	24	24.46		0
	12	0	24.14	0-1	0.5
	12	6	24.24		0.5
	12	13	24.15		0.5
	25	0	24.11		0.5
16QAM	1	0	23.84	0-1	0.5
	1	12	23.91		0.5
	1	24	23.87		0.5
	12	0	23.02	0-2	1.5
	12	6	23.09		1.5
	12	13	23.00		1.5
	25	0	22.87		1.5
64QAM	1	0	23.02	0-2	1.5
	1	12	23.15		1.5
	1	24	23.00		1.5
	12	0	22.20	0-3	2.5
	12	6	22.27		2.5
	12	13	22.26		2.5
	25	0	22.20		2.5

Note: LTE Band 30 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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Table 9-44
LTE Band 30 Antenna 1 Measured P_{limit} for all DSI- 10 MHz Bandwidth

LTE Band 30 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			27710 (2310.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	24.22	0	0
	1	25	24.21		0
	1	49	24.19		0
	25	0	23.93	0-1	0.5
	25	12	24.07		0.5
	25	25	24.00		0.5
	50	0	23.98		0.5
16QAM	1	0	23.71	0-1	0.5
	1	25	23.60		0.5
	1	49	23.76		0.5
	25	0	22.83	0-2	1.5
	25	12	22.96		1.5
	25	25	22.82		1.5
	50	0	22.84		1.5
64QAM	1	0	23.38	0-2	1.5
	1	25	23.44		1.5
	1	49	23.29		1.5
	25	0	22.20	0-3	2.5
	25	12	22.26		2.5
	25	25	22.13		2.5
	50	0	22.14		2.5

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Table 9-45
LTE Band 30 Antenna 1 Measured P_{limit} for all DSI- 5 MHz Bandwidth

LTE Band 30 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			27710 (2310.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	24.09	0	0
	1	12	24.29		0
	1	24	24.12		0
	12	0	24.23	0-1	0.5
	12	6	24.20		0.5
	12	13	24.11		0.5
	25	0	24.16		0.5
16QAM	1	0	23.58	0-1	0.5
	1	12	23.79		0.5
	1	24	23.85		0.5
	12	0	23.10	0-2	1.5
	12	6	23.09		1.5
	12	13	23.07		1.5
	25	0	23.09		1.5
64QAM	1	0	23.40	0-2	1.5
	1	12	23.20		1.5
	1	24	23.45		1.5
	12	0	22.28	0-3	2.5
	12	6	22.31		2.5
	12	13	22.28		2.5
	25	0	22.37		2.5

Note: LTE Band 30 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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LTE Band 48

Table 9-46
LTE Band 48 Measured P_{limit} for all DSI- 20 MHz Bandwidth

LTE Band 48 20 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			55340 (3560.0 MHz)	55773 (3603.3 MHz)	56207 (3646.7 MHz)	56640 (3690.0 MHz)		
			Conducted Power [dBm]					
QPSK	1	0	21.78	21.77	21.86	21.84	0	0
	1	50	21.69	21.76	21.82	21.80		0
	1	99	21.77	21.91	21.91	21.92		0
	50	0	21.72	21.74	21.82	21.80	0-1	0
	50	25	21.86	21.93	21.87	22.00		0
	50	50	21.84	21.83	21.89	21.86		0
	100	0	21.80	21.90	21.82	21.91		0
16QAM	1	0	22.09	21.63	21.95	21.94	0-1	0
	1	50	21.98	21.64	21.99	21.92		0
	1	99	22.07	21.76	22.03	21.88		0
	50	0	21.35	21.43	21.50	21.56	0-2	0.5
	50	25	21.61	21.53	21.62	21.59		0.5
	50	50	21.55	21.51	21.61	21.43		0.5
	100	0	21.35	21.60	21.47	21.48		0.5
64QAM	1	0	21.37	21.67	21.17	21.20	0-2	0.5
	1	50	21.39	21.79	21.21	21.22		0.5
	1	99	21.58	21.72	21.28	21.25		0.5
	50	0	20.48	20.63	20.63	20.77	0-3	1.5
	50	25	20.73	20.82	20.78	20.80		1.5
	50	50	20.56	20.75	20.72	20.72		1.5
	100	0	20.65	20.72	20.77	20.74		1.5

Table 9-47
LTE Band 48 Measured P_{limit} for all DSI - 15 MHz Bandwidth

LTE Band 48 15 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			55315 (3557.5 MHz)	55765 (3602.5 MHz)	56215 (3647.5 MHz)	56665 (3692.5 MHz)		
			Conducted Power [dBm]					
QPSK	1	0	22.09	21.89	22.03	22.11	0	0
	1	36	22.06	21.91	22.05	22.12		0
	1	74	22.05	21.88	22.06	22.07		0
	36	0	22.08	22.03	22.05	22.05	0-1	0
	36	18	22.11	22.08	22.10	22.09		0
	36	37	22.07	22.03	22.13	22.10		0
	75	0	22.00	22.00	22.03	22.00		0
16QAM	1	0	22.00	21.75	21.86	22.09	0-1	0
	1	36	21.98	21.80	21.85	22.05		0
	1	74	22.01	21.87	21.88	22.06		0
	36	0	21.68	21.50	21.65	21.65	0-2	0.5
	36	18	21.67	21.48	21.61	21.66		0.5
	36	37	21.64	21.48	21.69	21.65		0.5
	75	0	21.58	21.52	21.55	21.60		0.5
64QAM	1	0	21.59	21.58	21.30	21.64	0-2	0.5
	1	36	21.62	21.64	21.40	21.70		0.5
	1	74	21.63	21.66	21.45	21.68		0.5
	36	0	20.85	20.80	20.83	20.83	0-3	1.5
	36	18	20.90	20.84	20.92	20.87		1.5
	36	37	20.84	20.79	20.88	20.86		1.5
	75	0	20.85	20.77	20.78	20.80		1.5

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Table 9-48
LTE Band 48 Measured P_{limit} for all DSI - 10 MHz Bandwidth

LTE Band 48 10 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			55290 (3555.0 MHz)	55757 (3601.7 MHz)	56223 (3648.3 MHz)	56690 (3695.0 MHz)		
			Conducted Power [dBm]					
QPSK	1	0	21.95	21.76	22.00	22.00	0	0
	1	25	22.02	21.77	22.00	22.01		0
	1	49	22.03	21.82	22.04	22.02		0
	25	0	21.89	21.81	21.82	21.87	0-1	0
	25	12	21.99	21.88	22.02	22.05		0
	25	25	21.97	21.88	21.98	22.01		0
	50	0	21.93	21.85	21.84	21.93		0
16QAM	1	0	21.88	21.62	22.22	22.03	0-1	0
	1	25	21.89	21.68	22.23	22.00		0
	1	49	21.95	21.77	22.30	22.01		0
	25	0	21.32	21.20	21.31	21.31	0-2	0.5
	25	12	21.31	21.29	21.55	21.48		0.5
	25	25	21.44	21.29	21.54	21.45		0.5
	50	0	21.37	21.33	21.34	21.38		0.5
64QAM	1	0	21.52	21.12	21.15	21.64	0-2	0.5
	1	25	21.57	21.20	21.21	21.65		0.5
	1	49	21.59	21.24	21.26	21.66		0.5
	25	0	20.49	20.50	20.56	20.55	0-3	1.5
	25	12	20.61	20.62	20.71	20.71		1.5
	25	25	20.63	20.60	20.71	20.65		1.5
	50	0	20.57	20.54	20.53	20.55		1.5

Table 9-49
LTE Band 48 Measured P_{limit} for all DSI - 5 MHz Bandwidth

LTE Band 48 5 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			55265 (3552.5 MHz)	55748 (3600.8 MHz)	56232 (3649.2 MHz)	56715 (3697.5 MHz)		
			Conducted Power [dBm]					
QPSK	1	0	21.85	21.62	21.78	21.88	0	0
	1	12	21.96	21.82	21.96	21.96		0
	1	24	21.94	21.73	21.88	22.00		0
	12	0	22.03	21.89	21.98	22.03	0-1	0
	12	6	22.00	21.91	22.02	22.06		0
	12	13	22.03	21.96	22.02	22.09		0
	25	0	22.03	21.89	22.01	22.08		0
16QAM	1	0	21.86	21.89	21.83	21.92	0-1	0
	1	12	21.95	22.07	21.97	22.00		0
	1	24	21.95	22.11	21.90	21.99		0
	12	0	21.52	21.41	21.44	21.60	0-2	0.5
	12	6	21.49	21.44	21.45	21.60		0.5
	12	13	21.53	21.43	21.50	21.59		0.5
	25	0	21.52	21.41	21.48	21.56		0.5
64QAM	1	0	21.12	21.55	21.49	21.23	0-2	0.5
	1	12	21.26	21.85	21.76	21.30		0.5
	1	24	21.27	21.87	21.66	21.36		0.5
	12	0	20.82	20.73	20.47	20.88	0-3	1.5
	12	6	20.83	20.65	20.53	20.89		1.5
	12	13	20.87	20.70	20.56	20.91		1.5
	25	0	20.71	20.66	20.63	20.76		1.5

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LTE Band 41

Table 9-50
LTE Band 41 Measured P_{limit} for all DSI - 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	23.92	24.09	23.90	23.82	23.62	0	0
	1	50	23.93	24.12	24.15	23.95	23.88		0
	1	99	23.97	24.14	23.92	23.71	23.91		0
	50	0	23.89	23.96	23.97	23.80	23.72	0-1	0.5
	50	25	24.09	24.12	24.13	23.87	23.83		0.5
	50	50	24.10	24.04	24.11	23.76	23.90		0.5
	100	0	24.05	24.03	24.07	23.76	23.82		0.5
16QAM	1	0	24.23	24.09	23.79	23.64	23.39	0-1	0.5
	1	50	24.23	24.15	24.11	23.77	23.66		0.5
	1	99	24.25	24.22	23.96	23.57	23.78		0.5
	50	0	23.01	22.93	23.01	22.81	22.79	0-2	1.5
	50	25	23.09	23.13	23.09	22.82	22.75		1.5
	50	50	23.08	23.00	23.05	22.75	22.89		1.5
	100	0	23.03	23.03	23.06	22.79	22.81		1.5
64QAM	1	0	22.70	23.40	23.11	22.96	22.74	0-2	1.5
	1	50	22.75	23.48	23.40	23.20	23.08		1.5
	1	99	22.79	23.50	23.24	22.85	23.07	0-3	1.5
	50	0	22.34	22.18	22.21	22.21	21.94		2.5
	50	25	22.29	22.36	22.36	22.07	22.00		2.5
	50	50	22.30	22.30	22.34	21.97	22.10		2.5
	100	0	22.25	22.26	22.29	21.99	21.99		2.5

Table 9-51
LTE Band 41 Measured P_{limit} for all DSI - 15 MHz Bandwidth

LTE Band 41									
15 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	23.93	23.78	23.83	23.75	23.80	0	0
	1	36	23.93	23.98	24.01	23.86	23.66		0
	1	74	23.90	23.80	23.89	23.89	23.71		0
	36	0	23.83	23.88	23.96	23.64	23.55	0-1	0.5
	36	18	23.92	23.98	23.98	23.69	23.65		0.5
	36	37	23.97	23.93	24.00	23.64	23.70		0.5
	75	0	23.91	23.91	23.95	23.63	23.65		0.5
16QAM	1	0	23.34	23.23	23.57	23.34	23.05	0-1	0.5
	1	36	23.33	23.36	23.73	23.25	23.30		0.5
	1	74	23.34	23.24	23.61	23.16	23.22		0.5
	36	0	22.86	22.94	22.88	22.70	22.55	0-2	1.5
	36	18	23.02	23.01	22.95	22.75	22.62		1.5
	36	37	22.98	22.97	22.99	22.68	22.71		1.5
	75	0	22.91	22.89	23.01	22.63	22.61		1.5
64QAM	1	0	22.65	22.71	22.63	22.51	22.57	0-2	1.5
	1	36	22.84	22.66	22.57	22.43	22.70		1.5
	1	74	22.73	22.70	22.71	22.69	22.65		1.5
	36	0	22.31	22.20	22.31	22.11	21.95	0-3	2.5
	36	18	22.29	22.15	22.19	22.05	22.04		2.5
	36	37	22.25	22.05	22.04	22.09	22.03		2.5
	75	0	22.24	21.99	22.14	22.13	21.92		2.5

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Table 9-52
LTE Band 41 Measured P_{limit} for all DSI - 10 MHz Bandwidth

LTE Band 41 10 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	24.05	24.12	24.01	23.85	23.80	0	0
	1	25	24.02	24.08	23.92	23.80	23.75		0
	1	49	24.05	23.85	23.98	23.79	23.79		0
	25	0	23.94	23.99	23.98	23.61	23.63	0-1	0.5
	25	12	24.01	24.13	24.12	23.72	23.68		0.5
	25	25	24.02	24.05	24.02	23.65	23.65		0.5
	50	0	23.96	24.05	24.05	23.62	23.62		0.5
16QAM	1	0	24.07	23.58	23.35	23.17	23.20	0-1	0.5
	1	25	24.14	23.85	23.69	23.41	23.46		0.5
	1	49	24.15	23.58	23.28	23.27	23.21		0.5
	25	0	23.03	22.94	22.83	22.51	22.56	0-2	1.5
	25	12	23.14	23.07	23.00	22.64	22.62		1.5
	25	25	23.09	23.00	22.91	22.54	22.62		1.5
	50	0	22.98	23.02	23.00	22.60	22.59		1.5
64QAM	1	0	22.65	22.71	22.59	22.51	22.59	0-2	1.5
	1	25	22.81	22.66	22.56	22.46	22.64		1.5
	1	49	22.76	22.60	22.70	22.64	22.66		1.5
	25	0	22.34	22.19	22.03	22.11	21.97	0-3	2.5
	25	12	22.27	22.16	22.05	22.03	22.01		2.5
	25	25	22.26	22.01	21.94	22.10	22.05		2.5
	50	0	22.24	22.03	21.99	22.15	22.01		2.5

Table 9-53
LTE Band 41 Measured P_{limit} for all DSI - 5 MHz Bandwidth

LTE Band 41 5 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	23.99	24.01	23.90	23.69	23.85	0	0
	1	12	24.00	24.04	24.00	23.72	23.89		0
	1	24	24.06	24.03	23.94	23.71	23.88		0
	12	0	24.05	24.11	24.07	23.70	23.73	0-1	0.5
	12	6	24.04	24.16	24.14	23.76	23.76		0.5
	12	13	24.07	24.13	24.10	23.70	23.74		0.5
	25	0	24.05	24.15	24.09	23.71	23.71		0.5
16QAM	1	0	23.72	24.09	24.02	23.65	23.70	0-1	0.5
	1	12	23.76	24.10	24.09	23.75	23.78		0.5
	1	24	23.81	24.11	24.05	23.72	23.73		0.5
	12	0	23.05	23.13	23.05	22.63	22.70	0-2	1.5
	12	6	23.07	23.16	23.11	22.74	22.72		1.5
	12	13	23.04	23.13	23.10	22.69	22.73		1.5
	25	0	23.06	23.12	23.12	22.70	22.70		1.5
64QAM	1	0	23.48	22.81	23.21	22.34	23.31	0-2	1.5
	1	12	23.45	22.86	23.33	22.44	23.33		1.5
	1	24	23.47	22.89	23.26	22.35	23.35		1.5
	12	0	22.37	22.46	22.13	22.06	22.02	0-3	2.5
	12	6	22.30	22.41	22.13	22.13	22.07		2.5
	12	13	22.33	22.40	22.13	22.11	22.07		2.5
	25	0	22.18	22.35	22.18	22.01	21.94		2.5

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9.4.10 LTE Uplink Carrier Aggregation Conducted Powers

Table 9-54
LTE Band 5 Uplink Carrier Aggregation Measured P_{max}

PCC									SCC									Power	
PCC Band	PCC Bandwidth [MHz]	PCC UL Channel	PCC UL Frequency [MHz]	PCC DL Channel	PCC DL Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC UL Channel	SCC UL Frequency [MHz]	SCC DL Channel	SCC DL Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
LTE B5	10	20525	836.5	2525	881.5	QPSK	1	0	LTE B5	5	20453	829.3	2453	874.3	QPSK	1	24	25.40	25.17

Notes:

1. This device supports uplink carrier aggregation for LTE CA_5B with a maximum of two component carriers. For intraband contiguous carrier aggregation scenarios, 3GPP 36.101 Table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when non-contiguous RB allocation is implemented. The conducted powers and MPR settings in this device are permanently implemented per the above 3GPP requirements.
2. Per FCC Guidance, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.



Figure 9-4
Power Measurement Setup

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9.5 NR Conducted Powers

9.5.1 NR Band n5

Table 9-55
NR Band n5 Measured P_{max} for all DSI - 20 MHz Bandwidth

NR Band n5 20 MHz Bandwidth					
Modulation	RB Size	RB Offset	Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			167300 (836.5 MHz) Conducted Power [dBm]		
DFT-s-OFDM $\pi/2$ BPSK	1	1	24.79	0	0.0
	1	53	24.87		0.0
	1	104	24.81		0.0
	50	0	24.88	0-0.5	0.0
	50	28	24.88	0	0.0
	50	56	24.89	0-0.5	0.0
	100	0	24.87		0.0
DFT-s-OFDM QPSK	1	1	25.06	0	0.0
	1	53	24.90		0.0
	1	104	24.85		0.0
	50	0	24.01	0-1	1.0
	50	28	24.83	0	0.0
	50	56	24.03	0-1	1.0
	100	0	24.00		1.0
DFT-s-OFDM 16QAM	1	1	23.30	0-1	1.0
CP-OFDM QPSK	1	1	23.22	0-1.5	1.5

Note: NR Band n5 (Cell) at 20 MHz bandwidth does not support non-overlapping channels. Per FCC Guidance, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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Table 9-56
NR Band n5 Measured P_{max} for all DSI - 15 MHz Bandwidth

NR Band n5 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			167300 (836.5 MHz) Conducted Power [dBm]		
DFT-s-OFDM $\pi/2$ BPSK	1	1	24.93	0	0.0
	1	40	25.00		0.0
	1	77	24.86		0.0
	36	0	24.90	0-0.5	0.0
	36	22	24.81	0	0.0
	36	43	24.88	0-0.5	0.0
	75	0	24.86		0.0
DFT-s-OFDM QPSK	1	1	25.14	0	0.0
	1	40	25.04		0.0
	1	77	25.07		0.0
	36	0	24.01	0-1	1.0
	36	22	24.86	0	0.0
	36	43	23.97	0-1	1.0
	75	0	24.00		1.0
DFT-s-OFDM 16QAM	1	1	23.77	0-1	1.0
CP-OFDM QPSK	1	1	23.16	0-1.5	1.5

Note: NR Band n5 (Cell) at 15 MHz bandwidth does not support non-overlapping channels. Per FCC Guidance, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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Table 9-57
NR Band n5 Measured P_{max} for all DSI - 10 MHz Bandwidth

NR Band n5 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			167300 (836.5 MHz) Conducted Power [dBm]		
DFT-s-OFDM $\pi/2$ BPSK	1	1	24.75	0	0.0
	1	26	24.86		0.0
	1	50	24.71		0.0
	25	0	24.77	0-0.5	0.0
	25	14	24.83	0	0.0
	25	27	24.77		0.0
	50	0	24.84		0.0
DFT-s-OFDM QPSK	1	1	24.94	0	0.0
	1	26	24.93		0.0
	1	50	24.99		0.0
	25	0	23.90	0-1	1.0
	25	14	24.76	0	0.0
	25	27	23.79		1.0
	50	0	23.89		1.0
DFT-s-OFDM 16QAM	1	1	23.53	0-1	1.0
CP-OFDM QPSK	1	1	23.01	0-1.5	1.5

Note: NR Band n5 (Cell) at 10 MHz bandwidth does not support non-overlapping channels. Per FCC Guidance, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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Table 9-58
NR Band n5 Measured P_{max} for all DSI - 5 MHz Bandwidth

NR Band n5 5 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	165300 (826.5 MHz)	167300 (836.5 MHz)	169300 (846.5 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM $\pi/2$ BPSK	1	1	24.98	24.81	24.76	0	0.0
	1	13	24.92	24.80	24.65		0.0
	1	23	24.86	24.78	24.61		0.0
	12	0	24.94	24.74	24.75	0-0.5	0.0
	12	7	24.87	24.83	24.66	0	0.0
	12	13	24.86	24.78	24.59	0-0.5	0.0
	25	0	24.89	24.69	24.68		0.0
DFT-s-OFDM QPSK	1	1	25.18	25.03	24.94	0	0.0
	1	13	25.13	25.00	24.86		0.0
	1	23	24.96	24.94	24.92		0.0
	12	0	24.07	23.91	23.88	0-1	1.0
	12	7	24.92	24.73	24.61	0	0.0
	12	13	23.95	23.91	23.71	0-1	1.0
	25	0	24.01	23.81	23.74		1.0
DFT-s-OFDM 16QAM	1	1	23.81	23.57	23.55	0-1	1.0
CP-OFDM QPSK	1	1	23.25	23.06	22.96	0-1.5	1.5

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9.5.2

NR Band n66 (AWS)

Table 9-59
NR Band n66 (AWS) Measured P_{limit} for all DSI - 20 MHz Bandwidth

NR Band n66 20 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	344000 (1720 MHz)	349000 (1745 MHz)	354000 (1770 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM $\pi/2$ BPSK	1	1	23.08	23.09	23.05	0	0.0
	1	53	23.01	23.10	22.89		0.0
	1	104	23.12	23.08	22.91		0.0
	50	0	23.08	23.10	23.00	0-0.5	0.0
	50	28	23.02	23.07	22.95	0	0.0
	50	56	23.11	23.01	22.93	0-0.5	0.0
	100	0	23.02	23.09	22.98		0.0
DFT-s-OFDM QPSK	1	1	23.00	23.05	23.11	0	0.0
	1	53	22.99	23.06	22.97		0.0
	1	104	23.14	23.03	22.94		0.0
	50	0	23.04	23.11	23.05	0-1	0.0
	50	28	23.05	23.07	22.98	0	0.0
	50	56	23.12	23.08	22.96	0-1	0.0
	100	0	23.02	23.09	23.00		0.0
DFT-s-OFDM 16QAM	1	1	22.63	22.77	22.87	0-1	0.0
CP-OFDM QPSK	1	1	23.10	23.18	23.21	0-1.5	0.0

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Table 9-60
NR Band n66 (AWS) Measured P_{limit} for all DSI - 15 MHz Bandwidth

NR Band n66 15 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	343500 (1717.5 MHz)	349000 (1745 MHz)	354500 (1772.5 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM $\pi/2$ BPSK	1	1	23.07	23.05	23.00	0	0.0
	1	40	22.96	22.99	22.87		0.0
	1	77	23.12	23.04	22.98		0.0
	36	0	23.05	23.07	23.01	0-0.5	0.0
	36	22	22.97	22.98	22.91	0	0.0
	36	43	23.03	23.00	22.97	0-0.5	0.0
	75	0	23.04	23.06	22.95		0.0
DFT-s-OFDM QPSK	1	1	23.15	23.22	23.07	0	0.0
	1	40	23.19	23.18	23.08		0.0
	1	77	23.28	23.20	23.05		0.0
	36	0	23.05	23.11	22.99	0-1	0.0
	36	22	23.00	23.01	22.91	0	0.0
	36	43	23.03	23.05	22.93	0-1	0.0
	75	0	23.00	23.04	22.92		0.0
DFT-s-OFDM 16QAM	1	1	23.18	23.29	23.16	0-1	0.0
CP-OFDM QPSK	1	1	23.17	23.16	23.20	0-1.5	0.0

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Table 9-61
NR Band n66 (AWS) Measured P_{limit} for all DSI - 10 MHz Bandwidth

NR Band n66 10 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	343000 (1715 MHz)	349000 (1745 MHz)	355000 (1775 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM $\pi/2$ BPSK	1	1	22.95	23.00	22.88	0	0.0
	1	26	22.92	23.04	22.85		0.0
	1	50	22.94	23.07	22.82		0.0
	25	0	22.93	22.89	22.82	0-0.5	0.0
	25	14	22.94	22.91	22.78	0	0.0
	25	27	22.90	22.92	22.75	0-0.5	0.0
	50	0	22.92	22.91	22.77		0.0
DFT-s-OFDM QPSK	1	1	23.09	23.07	22.91	0	0.0
	1	26	23.11	23.13	22.97		0.0
	1	50	23.13	23.09	22.88		0.0
	25	0	22.92	22.91	22.77	0-1	0.0
	25	14	22.91	22.93	22.79	0	0.0
	25	27	22.88	22.84	22.74	0-1	0.0
	50	0	22.96	22.93	22.81		0.0
DFT-s-OFDM 16QAM	1	1	23.13	23.08	22.95	0-1	0.0
CP-OFDM QPSK	1	1	23.00	23.12	22.97	0-1.5	0.0

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Table 9-62
NR Band n66 (AWS) Measured P_{limit} for all DSI - 5 MHz Bandwidth

NR Band n66 5 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	342500 (1712.5 MHz)	349000 (1745 MHz)	355500 (1777.5 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM $\pi/2$ BPSK	1	1	22.89	22.90	22.80	0	0.0
	1	13	22.93	22.96	22.79		0.0
	1	23	22.92	22.98	22.84		0.0
	12	0	22.90	22.93	22.75	0-0.5	0.0
	12	7	22.94	22.90	22.73	0	0.0
	12	13	22.87	22.99	22.74	0-0.5	0.0
	25	0	22.88	22.86	22.76		0.0
DFT-s-OFDM QPSK	1	1	22.99	23.14	23.02	0	0.0
	1	13	23.19	23.19	23.01		0.0
	1	23	23.08	23.12	22.84		0.0
	12	0	22.87	22.92	22.76	0-1	0.0
	12	7	22.93	22.91	22.78	0	0.0
	12	13	22.92	22.86	22.72	0-1	0.0
	25	0	22.87	22.86	22.72		0.0
DFT-s-OFDM 16QAM	1	1	22.99	23.01	22.94	0-1	0.0
CP-OFDM QPSK	1	1	23.03	23.11	22.87	0-1.5	0.0

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9.5.3

NR Band n2 (PCS)

Table 9-63
NR Band n2 (PCS) Measured P_{limit} for all DSI - 20 MHz Bandwidth

NR Band n2 20 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	372000 (1860 MHz)	376000 (1880 MHz)	380000 (1900 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM $\pi/2$ BPSK	1	1	22.95	22.89	22.94	0	0.0
	1	53	22.97	22.85	22.96		0.0
	1	104	22.89	22.96	22.95		0.0
	50	0	22.90	22.92	22.92	0-0.5	0.0
	50	28	22.92	22.91	22.96	0	0.0
	50	56	22.91	23.01	22.95	0-0.5	0.0
	100	0	22.94	22.88	22.93		0.0
DFT-s-OFDM QPSK	1	1	22.87	22.93	22.92	0	0.0
	1	53	23.00	22.94	22.88		0.0
	1	104	22.95	22.95	22.94		0.0
	50	0	22.81	22.97	22.96	0-1	0.0
	50	28	23.01	22.96	22.97	0	0.0
	50	56	22.97	22.92	22.96	0-1	0.0
	100	0	22.95	22.90	22.91		0.0
	DFT-s-OFDM 16QAM	1	1	22.60	22.66	22.61	0-1
CP-OFDM QPSK	1	1	22.97	23.04	23.03	0-1.5	0.0

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Table 9-64
NR Band n2 (PCS) Measured P_{limit} for all DSI - 15 MHz Bandwidth

NR Band n2 15 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	371500 (1857.5 MHz)	376000 (1880 MHz)	380500 (1902.5 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM $\pi/2$ BPSK	1	1	22.91	22.93	22.87	0	0.0
	1	40	22.96	22.86	22.90		0.0
	1	77	23.00	22.94	22.94		0.0
	36	0	22.86	22.87	22.83	0-0.5	0.0
	36	22	22.86	22.86	22.85	0	0.0
	36	43	22.98	22.93	22.93	0-0.5	0.0
	75	0	22.87	22.90	22.86		0.0
DFT-s-OFDM QPSK	1	1	23.12	23.05	23.04	0	0.0
	1	40	23.09	23.10	23.10		0.0
	1	77	23.14	23.13	23.08		0.0
	36	0	22.93	22.96	22.93	0-1	0.0
	36	22	22.89	22.89	22.89	0	0.0
	36	43	22.94	22.91	22.96	0-1	0.0
	75	0	22.91	22.92	22.93		0.0
DFT-s-OFDM 16QAM	1	1	23.01	22.97	23.12	0-1	0.0
CP-OFDM QPSK	1	1	22.86	22.98	22.93	0-1.5	0.0

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Table 9-65
NR Band n2 (PCS) Measured P_{limit} for all DSI - 10 MHz Bandwidth

NR Band n2 10 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	371000 (1855 MHz)	376000 (1880 MHz)	381000 (1905 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM $\pi/2$ BPSK	1	1	22.86	22.82	22.92	0	0.0
	1	26	22.87	22.88	22.96		0.0
	1	50	22.86	22.91	22.99		0.0
	25	0	22.83	22.84	22.84	0-0.5	0.0
	25	14	22.84	22.87	22.88	0	0.0
	25	27	22.84	22.90	22.89	0-0.5	0.0
	50	0	22.85	22.88	22.86		0.0
DFT-s-OFDM QPSK	1	1	22.87	22.95	23.02	0	0.0
	1	26	23.07	23.12	23.03		0.0
	1	50	22.92	23.03	23.00		0.0
	25	0	22.79	22.81	22.80	0-1	0.0
	25	14	22.84	22.86	22.82	0	0.0
	25	27	22.83	22.87	22.88	0-1	0.0
	50	0	22.86	22.88	22.81		0.0
DFT-s-OFDM 16QAM	1	1	22.85	22.93	22.93	0-1	0.0
CP-OFDM QPSK	1	1	22.98	22.91	23.04	0-1.5	0.0

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Table 9-66
NR Band n2 (PCS) Measured P_{limit} for all DSI - 5 MHz Bandwidth

NR Band n2 5 MHz Bandwidth							
			Channel			MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	370500 (1852.5 MHz)	376000 (1880 MHz)	381500 (1907.5 MHz)		
			Conducted Power [dBm]				
DFT-s-OFDM $\pi/2$ BPSK	1	1	22.80	22.79	22.74	0	0.0
	1	13	22.84	22.90	22.82		0.0
	1	23	22.86	22.91	22.78		0.0
	12	0	22.72	22.72	22.76	0-0.5	0.0
	12	7	22.72	22.74	22.80	0	0.0
	12	13	22.74	22.84	22.79	0-0.5	0.0
	25	0	22.70	22.71	22.78		0.0
DFT-s-OFDM QPSK	1	1	22.92	22.94	22.94	0	0.0
	1	13	22.99	23.09	23.11		0.0
	1	23	22.88	22.94	22.98		0.0
	12	0	22.71	22.67	22.76	0-1	0.0
	12	7	22.73	22.68	22.77	0	0.0
	12	13	22.76	22.82	22.80	0-1	0.0
	25	0	22.72	22.68	22.77		0.0
DFT-s-OFDM 16QAM	1	1	22.79	22.76	22.93	0-1	0.0
CP-OFDM QPSK	1	1	22.85	22.91	22.92	0-1.5	0.0

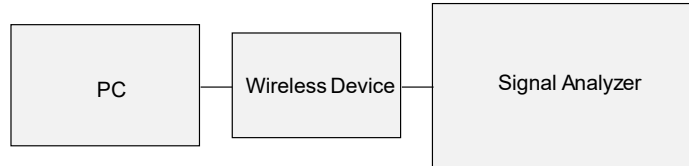


Figure 9-5
Power Measurement Setup

FCC ID: ZNFF100VM	 PCTEST Proud to be part of 	SAR EVALUATION REPORT	 LG	Approved by: Quality Manager
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9.6 WLAN Conducted Powers

Table 9-67
2.4 GHz WLAN Maximum Average RF Power – Ant 1

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
		Average	Average	Average	Average
2412	1	18.37	15.59	14.44	14.48
2437	6	18.31	15.44	14.44	14.22
2462	11	18.43	15.79	14.74	14.28

Table 9-68
2.4 GHz WLAN Maximum Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
		Average	Average	Average	Average
2412	1	18.88	15.93	14.97	14.95
2437	6	18.80	15.63	14.99	14.94
2462	11	18.87	15.92	14.93	14.89

Table 9-69
2.4 GHz WLAN Reduced Average RF Power– Ant 1

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
		Average	Average	Average	Average
2412	1	14.28	14.23	14.44	14.48
2437	6	14.25	14.36	14.44	14.22
2462	11	14.65	14.73	14.74	14.28

Table 9-70
2.4 GHz WLAN Reduced Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
		Average	Average	Average	Average
2412	1	14.06	14.05	14.97	14.95
2437	6	14.63	14.13	14.99	14.94
2462	11	14.36	14.69	14.93	14.89

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Table 9-71
2.4 GHz WLAN Reduced Average RF Power – MIMO

2.4GHz 802.11n Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
2412	1	14.44	14.97	17.72
2437	6	14.44	14.99	17.73
2462	11	14.74	14.93	17.85

Table 9-72
5 GHz WLAN Maximum Average RF Power – Ant 1

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
		Average	Average	Average
5180	36	16.66	15.40	15.47
5200	40	16.69	15.52	15.51
5220	44	16.74	15.44	15.52
5240	48	16.69	15.55	15.43
5260	52	16.36	15.37	15.29
5280	56	16.33	15.35	15.27
5300	60	16.25	15.81	15.07
5320	64	16.07	15.04	15.03
5500	100	16.43	15.36	15.32
5600	120	16.25	15.22	15.24
5620	124	16.51	15.38	15.41
5720	144	16.86	15.55	15.66
5745	149	16.53	15.35	15.59
5785	157	16.34	15.17	15.27
5825	165	16.33	15.42	15.23

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Table 9-73
5 GHz WLAN Maximum Average RF Power – Ant 2

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
		Average	Average	Average
5180	36	16.76	15.72	15.68
5200	40	16.81	15.76	15.87
5220	44	16.88	15.82	15.72
5240	48	16.90	15.75	15.73
5260	52	16.84	15.72	15.76
5280	56	16.96	15.69	15.89
5300	60	16.68	15.58	15.68
5320	64	16.71	15.63	15.69
5500	100	16.98	15.83	15.84
5600	120	16.96	15.91	15.85
5620	124	16.95	15.85	15.93
5720	144	16.93	15.89	15.87
5745	149	16.97	15.81	15.86
5785	157	16.92	15.73	15.68
5825	165	16.79	15.60	15.76

Table 9-74
5 GHz WLAN Maximum Average RF Power – MIMO

5GHz (20MHz) 802.11a Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
5180	36	16.66	16.76	19.72
5200	40	16.69	16.81	19.76
5220	44	16.74	16.88	19.82
5240	48	16.69	16.90	19.81
5260	52	16.36	16.84	19.62
5280	56	16.33	16.96	19.67
5300	60	16.25	16.68	19.48
5320	64	16.07	16.71	19.41
5500	100	16.43	16.98	19.72
5600	120	16.25	16.96	19.63
5620	124	16.51	16.95	19.75
5720	144	16.86	16.93	19.91
5745	149	16.53	16.97	19.77
5785	157	16.34	16.92	19.65
5825	165	16.33	16.79	19.58

FCC ID: ZNFF100VM	 PCTEST Proud to be part of element	SAR EVALUATION REPORT	 LG	Approved by: Quality Manager
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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.

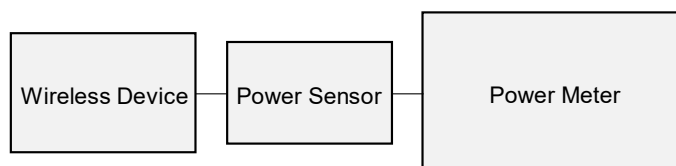


Figure 9-6
Power Measurement Setup

9.7 Bluetooth Conducted Powers

Table 9-75
Bluetooth Average RF Power

Frequency [MHz]	Data Rate [Mbps]	Mod.	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	1.0	GFSK	0	9.73	9.398
2441	1.0	GFSK	39	11.15	13.037
2480	1.0	GFSK	78	9.18	8.283
2402	2.0	$\pi/4$ -DQPSK	0	9.15	8.229
2441	2.0	$\pi/4$ -DQPSK	39	10.56	11.375
2480	2.0	$\pi/4$ -DQPSK	78	8.71	7.436
2402	3.0	8DPSK	0	9.25	8.416
2441	3.0	8DPSK	39	10.63	11.560
2480	3.0	8DPSK	78	8.71	7.424

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10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Tissue Properties - Head

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ϵ	% dev σ	% dev ϵ
09/17/2020	750 Head	21.9	700	0.884	42.868	0.889	42.201	-0.96%	1.58%
			710	0.887	42.845	0.890	42.149	-0.34%	1.65%
			750	0.902	42.740	0.894	41.942	0.89%	1.90%
			770	0.909	42.680	0.895	41.838	1.56%	2.01%
			785	0.915	42.634	0.896	41.760	2.12%	2.09%
09/16/2020	835 Head	21.9	800	0.921	42.590	0.897	41.882	2.88%	2.18%
			820	0.929	42.532	0.899	41.578	3.34%	2.30%
			835	0.934	42.489	0.900	41.500	3.78%	2.38%
			850	0.940	42.441	0.916	41.500	2.62%	2.27%
			820	0.914	41.949	0.899	41.578	1.67%	0.89%
09/22/2020	835 Head	20.8	835	0.920	41.940	0.900	41.500	2.22%	1.06%
			850	0.926	41.925	0.916	41.500	1.09%	1.02%
			820	0.930	40.985	0.899	41.578	3.45%	-1.43%
			835	0.935	40.931	0.900	41.500	3.89%	-1.37%
			850	0.941	40.882	0.916	41.500	2.73%	-1.49%
9/28/2020	835 Head	21.0	1710	1.355	40.336	1.348	40.142	0.52%	0.48%
			1720	1.365	40.298	1.354	40.126	0.81%	0.43%
			1745	1.391	40.181	1.368	40.087	1.68%	0.23%
			1750	1.397	40.157	1.371	40.079	1.80%	0.19%
			1770	1.419	40.066	1.383	40.047	2.60%	0.05%
9/8/2020	1750 Head	22.3	1790	1.440	39.981	1.394	40.016	3.30%	-0.09%
			1850	1.383	40.111	1.400	40.000	-1.21%	0.28%
			1860	1.393	40.070	1.400	40.000	-0.50%	0.18%
			1880	1.413	39.994	1.400	40.000	0.93%	-0.02%
			1900	1.433	39.920	1.400	40.000	2.36%	-0.20%
09/14/2020	1900 Head	23.6	1905	1.438	39.902	1.400	40.000	2.71%	-0.24%
			1910	1.444	39.883	1.400	40.000	3.14%	-0.29%
			2400	1.799	38.585	1.756	39.289	2.46%	-1.79%
			2450	1.853	38.424	1.800	39.200	2.94%	-1.98%
			2480	1.883	38.302	1.833	39.162	2.73%	-2.20%
09/01/2020	2450 Head	21.8	2400	1.821	40.531	1.756	39.289	3.70%	3.16%
			2450	1.860	40.460	1.800	39.200	3.33%	3.21%
			2480	1.881	40.421	1.833	39.162	2.82%	3.21%
			2500	1.898	40.405	1.855	39.136	2.32%	3.29%
			2510	1.910	39.604	1.866	39.123	2.96%	1.23%
09/10/2020	2450 Head	23.0	2535	1.939	39.518	1.893	39.092	2.43%	1.09%
			2550	1.957	39.456	1.909	39.073	2.51%	0.98%
			2560	1.969	39.414	1.920	39.060	2.55%	0.91%
			2600	2.017	39.252	1.964	39.009	2.70%	0.62%
			2650	2.077	39.060	2.018	38.945	2.82%	0.30%
09/16/2020	2450 Head	24.9	2680	2.112	38.933	2.051	38.907	2.97%	0.07%
			2700	2.136	38.852	2.073	38.882	3.04%	-0.08%
			2400	1.830	40.372	1.756	39.289	4.21%	2.76%
			2450	1.885	40.182	1.800	39.200	4.72%	2.51%
			2480	1.919	40.075	1.833	39.162	4.69%	2.33%
09/21/2020	2450 Head	23	3500	2.817	38.257	2.913	37.929	-3.30%	0.88%
			3550	2.857	38.169	2.964	37.871	-3.61%	0.79%
			3560	2.866	38.152	2.974	37.860	-3.63%	0.77%
			3600	2.903	38.131	3.015	37.814	-3.71%	0.84%
			3650	2.938	38.041	3.066	37.757	-4.17%	0.75%
9/21/2020	3600 Head	22.1	3690	2.976	38.003	3.107	37.711	-4.22%	0.77%
			3700	2.985	37.997	3.117	37.700	-4.23%	0.79%
			5180	4.409	34.994	4.635	36.009	-4.88%	-2.82%
			5190	4.420	34.983	4.645	35.998	-4.84%	-2.82%
			5200	4.430	34.965	4.655	35.986	-4.83%	-2.84%
08/26/2020	5200-5800 Head	22.4	5210	4.439	34.945	4.666	35.975	-4.86%	-2.86%
			5220	4.449	34.924	4.676	35.963	-4.85%	-2.89%
			5240	4.471	34.895	4.696	35.940	-4.79%	-2.91%
			5250	4.481	34.876	4.706	35.929	-4.78%	-2.93%
			5260	4.490	34.857	4.717	35.917	-4.81%	-2.95%
09/21/2020	5200-5800 Head	22.4	5270	4.502	34.834	4.727	35.906	-4.76%	-2.98%
			5280	4.516	34.817	4.737	35.894	-4.67%	-3.00%
			5290	4.532	34.800	4.748	35.883	-4.59%	-3.02%
			5300	4.546	34.785	4.758	35.871	-4.46%	-3.03%
			5310	4.554	34.768	4.768	35.860	-4.49%	-3.05%
08/26/2020	5200-5800 Head	22.4	5320	4.560	34.756	4.778	35.849	-4.56%	-3.05%
			5500	4.754	34.434	4.963	35.643	-4.21%	-3.38%
			5510	4.764	34.419	4.973	35.632	-4.20%	-3.40%
			5520	4.774	34.409	4.983	35.620	-4.19%	-3.40%
			5530	4.784	34.401	4.994	35.609	-4.21%	-3.39%
09/21/2020	5200-5800 Head	22.4	5540	4.794	34.390	5.004	35.597	-4.20%	-3.39%
			5550	4.799	34.373	5.014	35.586	-4.29%	-3.41%
			5560	4.806	34.352	5.024	35.574	-4.34%	-3.44%
			5580	4.834	34.312	5.045	35.551	-4.16%	-3.49%
			5600	4.867	34.275	5.065	35.529	-3.91%	-3.53%
08/26/2020	5200-5800 Head	22.4	5610	4.879	34.258	5.076	35.518	-3.88%	-3.55%
			5620	4.889	34.248	5.086	35.506	-3.87%	-3.54%
			5640	4.912	34.227	5.106	35.483	-3.80%	-3.54%
			5660	4.927	34.195	5.127	35.460	-3.90%	-3.57%
			5670	4.937	34.177	5.137	35.449	-3.89%	-3.59%
09/21/2020	5200-5800 Head	22.4	5680	4.951	34.153	5.147	35.437	-3.81%	-3.62%
			5690	4.963	34.117	5.158	35.426	-3.78%	-3.70%
			5700	4.977	34.098	5.168	35.414	-3.70%	-3.72%
			5710	4.989	34.086	5.178	35.403	-3.65%	-3.72%
			5720	5.003	34.077	5.188	35.391	-3.57%	-3.71%
08/26/2020	5200-5800 Head	22.4	5745	5.030	34.047	5.214	35.363	-3.53%	-3.72%
			5750	5.035	34.043	5.219	35.357	-3.53%	-3.72%
			5755	5.038	34.036	5.224	35.351	-3.56%	-3.72%
			5765	5.045	34.023	5.234	35.340	-3.61%	-3.73%
			5775	5.055	34.006	5.245	35.329	-3.62%	-3.74%
09/21/2020	5200-5800 Head	22.4	5785	5.064	33.988	5.255	35.317	-3.63%	-3.76%
			5795	5.077	33.959	5.265	35.305	-3.57%	-3.81%
			5800	5.084	33.951	5.270	35.300	-3.53%	-3.82%
			5805	5.090	33.941	5.275	35.294	-3.51%	-3.83%
			5825	5.117	33.904	5.296	35.271	-3.38%	-3.88%

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Table 10-2
Measured Tissue Properties – Body

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ϵ	% dev σ	% dev ϵ
09/21/2020	750 Body	21	700	0.934	55.127	0.959	55.726	-2.61%	-1.07%
			710	0.939	55.107	0.960	55.687	-2.19%	-1.04%
			750	0.955	55.001	0.964	55.531	-0.93%	-0.95%
			770	0.961	54.937	0.965	55.453	-0.41%	-0.93%
			785	0.967	54.930	0.966	55.395	0.10%	-0.84%
			800	0.974	54.908	0.967	55.336	0.72%	-0.77%
08/31/2020	835 Body	21.6	820	0.939	53.751	0.969	55.258	-3.10%	-2.73%
			835	0.955	53.593	0.970	55.200	-1.55%	-2.91%
			850	0.971	53.429	0.988	55.154	-1.72%	-3.13%
			820	0.953	53.320	0.969	55.258	-1.65%	-3.51%
9/20/2020	835 Body	21.3	835	0.969	53.152	0.970	55.200	-0.10%	-3.71%
			850	0.986	52.982	0.988	55.154	-0.20%	-3.94%
			820	0.939	53.206	0.969	55.258	-3.10%	-3.71%
9/22/2020	835 Body	21.2	835	0.955	53.042	0.970	55.200	-1.55%	-3.91%
			850	0.971	52.892	0.988	55.154	-1.72%	-4.10%
			820	0.936	52.819	0.969	55.258	-3.41%	-4.41%
9/24/2020	835 Body	21.9	835	0.952	52.663	0.970	55.200	-1.86%	-4.60%
			850	0.968	52.490	0.988	55.154	-2.02%	-4.83%
			1710	1.460	52.189	1.463	53.537	-0.21%	-2.52%
9/10/2020	1750 Body	22.1	1720	1.472	52.152	1.469	53.511	0.20%	-2.54%
			1745	1.500	52.072	1.485	53.445	1.01%	-2.57%
			1750	1.506	52.055	1.488	53.432	1.21%	-2.58%
			1770	1.526	51.974	1.501	53.379	1.67%	-2.63%
			1790	1.547	51.885	1.514	53.326	2.18%	-2.70%
			1710	1.467	53.109	1.463	53.537	0.27%	-0.80%
9/14/2020	1750 Body	20.9	1720	1.479	53.069	1.469	53.511	0.68%	-0.83%
			1745	1.508	53.003	1.485	53.445	1.55%	-0.83%
			1750	1.513	52.973	1.488	53.432	1.68%	-0.86%
			1770	1.533	52.913	1.501	53.379	2.13%	-0.87%
			1790	1.555	52.793	1.514	53.326	2.71%	-1.00%
			1710	1.487	52.498	1.463	53.537	1.64%	-1.94%
9/15/2020	1750 Body	20.9	1720	1.500	52.466	1.469	53.511	2.11%	-1.95%
			1745	1.529	52.386	1.485	53.445	2.96%	-1.98%
			1750	1.534	52.367	1.488	53.432	3.09%	-1.99%
			1770	1.556	52.277	1.501	53.379	3.66%	-2.06%
			1790	1.578	52.178	1.514	53.326	4.23%	-2.15%
			1850	1.521	51.391	1.520	53.300	0.07%	-3.58%
8/31/2020	1900 Body	22.4	1860	1.531	51.349	1.520	53.300	0.72%	-3.66%
			1880	1.554	51.274	1.520	53.300	2.24%	-3.80%
			1900	1.580	51.207	1.520	53.300	3.95%	-3.93%
			1905	1.586	51.190	1.520	53.300	4.34%	-3.96%
			1910	1.592	51.173	1.520	53.300	4.74%	-3.99%
			1850	1.526	51.376	1.520	53.300	0.39%	-3.61%
9/2/2020	1900 Body	23.9	1860	1.537	51.339	1.520	53.300	1.12%	-3.68%
			1880	1.558	51.270	1.520	53.300	2.50%	-3.81%
			1900	1.582	51.209	1.520	53.300	4.08%	-3.92%
			1905	1.588	51.195	1.520	53.300	4.47%	-3.95%
			1910	1.593	51.180	1.520	53.300	4.80%	-3.98%
			1850	1.515	53.174	1.520	53.300	-0.33%	-0.24%
9/9/2020	1900 Body	24.8	1860	1.526	53.142	1.520	53.300	0.39%	-0.30%
			1880	1.547	53.067	1.520	53.300	1.78%	-0.44%
			1900	1.569	52.990	1.520	53.300	3.22%	-0.58%
			1905	1.575	52.972	1.520	53.300	3.62%	-0.62%
			1910	1.581	52.953	1.520	53.300	4.01%	-0.65%
			1850	1.523	51.512	1.520	53.300	0.20%	-3.35%
9/11/2020	1900 Body	23.8	1860	1.534	51.480	1.520	53.300	0.92%	-3.41%
			1880	1.556	51.400	1.520	53.300	2.37%	-3.56%
			1900	1.579	51.311	1.520	53.300	3.88%	-3.73%
			1905	1.584	51.289	1.520	53.300	4.21%	-3.77%
			1910	1.590	51.267	1.520	53.300	4.61%	-3.81%
			1850	1.521	51.331	1.520	53.300	0.07%	-3.69%
09/14/2020	1900 Body	23.2	1860	1.530	51.289	1.520	53.300	0.66%	-3.77%
			1880	1.553	51.245	1.520	53.300	2.17%	-3.86%
			1900	1.574	51.170	1.520	53.300	3.55%	-4.00%
			1905	1.581	51.135	1.520	53.300	4.01%	-4.06%
			1910	1.588	51.123	1.520	53.300	4.47%	-4.08%
			1850	1.518	51.782	1.520	53.300	-0.13%	-2.85%
09/27/2020	1900 Body	24	1860	1.528	51.751	1.520	53.300	0.53%	-2.91%
			1880	1.549	51.691	1.520	53.300	1.91%	-3.02%
			1900	1.572	51.630	1.520	53.300	3.42%	-3.13%
			1905	1.577	51.614	1.520	53.300	3.75%	-3.16%
			1910	1.583	51.598	1.520	53.300	4.14%	-3.19%

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Table 10-3
Measured Tissue Properties – Body Continued

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ϵ	% dev σ	% dev ϵ
08/31/2020	2450 Body	21.8	2400	1.982	52.255	1.902	52.767	4.21%	-0.97%
			2450	2.044	52.115	1.950	52.700	4.82%	-1.11%
			2480	2.078	52.020	1.993	52.662	4.26%	-1.22%
09/13/2020	2450 Body	23.0	2300	1.868	51.841	1.809	52.900	3.26%	-2.00%
			2310	1.880	51.815	1.816	52.887	3.52%	-2.03%
			2320	1.892	51.790	1.826	52.873	3.61%	-2.05%
09/16/2020	2450 Body	21.3	2400	1.984	51.061	1.902	52.767	4.31%	-3.23%
			2450	2.043	50.932	1.950	52.700	4.77%	-3.35%
			2480	2.075	50.856	1.993	52.662	4.11%	-3.43%
			2500	2.098	50.791	2.021	52.636	3.81%	-3.51%
			2510	2.110	50.758	2.035	52.623	3.69%	-3.54%
			2535	2.144	50.679	2.071	52.592	3.52%	-3.64%
			2550	2.164	50.643	2.092	52.573	3.44%	-3.67%
			2560	2.176	50.623	2.106	52.560	3.32%	-3.69%
			2600	2.220	50.510	2.163	52.509	2.64%	-3.81%
			2650	2.282	50.323	2.234	52.445	2.15%	-4.05%
			2680	2.320	50.250	2.277	52.407	1.89%	-4.12%
			2700	2.342	50.197	2.305	52.382	1.61%	-4.17%
09/14/2020	3600 Body	21.6	3500	3.392	50.136	3.314	51.321	2.35%	-2.31%
			3550	3.445	50.043	3.372	51.254	2.16%	-2.36%
			3560	3.458	50.029	3.384	51.240	2.19%	-2.36%
			3600	3.502	49.991	3.431	51.186	2.07%	-2.33%
			3650	3.552	49.894	3.489	51.118	1.81%	-2.39%
			3690	3.602	49.839	3.536	51.063	1.87%	-2.40%
			3700	3.613	49.839	3.548	51.050	1.83%	-2.37%
09/22/2020	5200-5800 Body	24.1	5180	5.324	48.703	5.276	49.041	0.91%	-0.69%
			5190	5.339	48.685	5.288	49.028	0.96%	-0.70%
			5200	5.357	48.673	5.299	49.014	1.09%	-0.70%
			5210	5.373	48.656	5.311	49.001	1.17%	-0.70%
			5220	5.386	48.636	5.323	48.987	1.18%	-0.72%
			5240	5.407	48.603	5.346	48.960	1.14%	-0.73%
			5250	5.418	48.595	5.358	48.947	1.12%	-0.72%
			5260	5.429	48.582	5.369	48.933	1.12%	-0.72%
			5270	5.439	48.560	5.381	48.919	1.08%	-0.73%
			5280	5.453	48.541	5.393	48.906	1.11%	-0.75%
			5290	5.466	48.526	5.404	48.892	1.15%	-0.75%
			5300	5.483	48.507	5.416	48.879	1.24%	-0.76%
			5310	5.497	48.494	5.428	48.865	1.27%	-0.76%
			5320	5.512	48.478	5.439	48.851	1.34%	-0.76%
			5500	5.746	48.196	5.650	48.607	1.70%	-0.85%
			5510	5.761	48.182	5.661	48.594	1.77%	-0.85%
			5520	5.774	48.178	5.673	48.580	1.78%	-0.83%
			5530	5.785	48.168	5.685	48.566	1.76%	-0.82%
			5540	5.795	48.155	5.696	48.553	1.74%	-0.82%
			5550	5.806	48.136	5.708	48.539	1.72%	-0.83%
			5560	5.819	48.104	5.720	48.526	1.73%	-0.87%
			5580	5.858	48.062	5.743	48.499	2.00%	-0.90%
			5600	5.889	48.045	5.766	48.471	2.13%	-0.88%
			5610	5.902	48.039	5.778	48.458	2.15%	-0.86%
			5620	5.915	48.025	5.790	48.444	2.16%	-0.86%
			5640	5.936	47.997	5.813	48.417	2.12%	-0.87%
			5660	5.956	47.959	5.837	48.390	2.04%	-0.89%
			5670	5.968	47.942	5.848	48.376	2.05%	-0.90%
			5680	5.987	47.915	5.860	48.363	2.17%	-0.93%
			5690	6.005	47.887	5.872	48.349	2.26%	-0.96%
			5700	6.023	47.866	5.883	48.336	2.38%	-0.97%
			5710	6.037	47.856	5.895	48.322	2.41%	-0.96%
			5720	6.051	47.854	5.907	48.309	2.44%	-0.94%
			5745	6.084	47.834	5.936	48.275	2.49%	-0.91%
			5750	6.090	47.829	5.942	48.268	2.49%	-0.91%
			5755	6.096	47.825	5.947	48.261	2.51%	-0.90%
			5765	6.105	47.814	5.959	48.248	2.45%	-0.90%
			5775	6.118	47.795	5.971	48.234	2.46%	-0.91%
			5785	6.131	47.761	5.982	48.220	2.49%	-0.95%
			5795	6.146	47.736	5.994	48.207	2.54%	-0.98%
			5800	6.155	47.726	6.000	48.200	2.58%	-0.98%
			5805	6.165	47.721	6.006	48.193	2.65%	-0.98%
			5825	6.200	47.703	6.029	48.166	2.84%	-0.96%

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

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10.2 Test System Verification

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

Table 10-4
System Verification Results – 1g

System Verification												
TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR _{1g} (W/kg)	1 W Target SAR _{1g} (W/kg)	1 W Normalized SAR _{1g} (W/kg)	Deviation _{1g} (%)
E	750	HEAD	09/17/2020	22.7	21.9	0.200	1161	3589	1.630	8.030	8.150	1.49%
E	835	HEAD	09/16/2020	22.7	22.2	0.200	4d047	3589	2.030	9.420	10.150	7.75%
E	835	HEAD	09/22/2020	23.1	21.8	0.200	4d047	3589	2.010	9.420	10.050	6.69%
E	835	HEAD	09/28/2020	22.8	22.0	0.200	4d133	3589	2.000	9.430	10.000	6.04%
L	1750	HEAD	09/08/2020	23.1	22.2	0.100	1148	7406	3.760	35.900	37.600	4.74%
L	1900	HEAD	09/14/2020	24.1	21.7	0.100	5d149	7406	4.170	39.300	41.700	6.11%
P	2300	HEAD	09/16/2020	23.7	23.3	0.100	1073	7308	4.770	49.200	47.700	-3.05%
K2	2450	HEAD	09/01/2020	20.8	21.8	0.100	882	7402	5.380	52.900	53.800	1.70%
E	2450	HEAD	09/10/2020	24.1	23.0	0.100	981	3589	5.170	52.300	51.700	-1.15%
P	2450	HEAD	09/16/2020	23.7	23.3	0.100	981	7308	5.150	52.300	51.500	-1.53%
K2	2450	HEAD	09/21/2020	22.5	23.0	0.100	882	7402	5.350	52.900	53.500	1.13%
P	2600	HEAD	09/16/2020	23.7	23.3	0.100	1064	7308	5.620	58.100	56.200	-3.27%
D	3500	HEAD	09/21/2020	22.6	22.1	0.100	1059	7488	6.400	64.600	64.000	-0.93%
D	3700	HEAD	09/21/2020	22.6	22.1	0.100	1018	7488	6.300	65.800	63.000	-4.26%
H	5250	HEAD	08/26/2020	24.5	22.4	0.050	1237	7357	3.690	81.300	73.800	-9.23%
H	5600	HEAD	08/26/2020	24.5	22.4	0.050	1237	7357	4.000	85.700	80.000	-6.65%
H	5750	HEAD	08/26/2020	24.5	22.4	0.050	1237	7357	3.710	80.600	74.200	-7.94%
O	750	BODY	09/21/2020	22.6	20.8	0.200	1161	7547	1.810	8.430	9.050	7.35%
P	835	BODY	08/31/2020	22.9	21.6	0.200	4d132	7551	2.070	9.960	10.350	3.92%
P	835	BODY	09/20/2020	21.0	21.3	0.200	4d132	7308	2.020	9.960	10.100	1.41%
P	835	BODY	09/22/2020	23.7	21.2	0.200	4d132	7308	1.870	9.960	9.350	-6.12%
P	835	BODY	09/24/2020	23.7	22.0	0.200	4d132	7308	1.900	9.960	9.500	-4.62%
I	1750	BODY	09/10/2020	21.6	22.1	0.100	1008	7570	3.920	37.400	39.200	4.81%
G	1750	BODY	09/14/2020	22.1	20.9	0.100	1008	7538	3.940	37.400	39.400	5.35%
I	1750	BODY	09/15/2020	20.7	20.9	0.100	1150	7570	3.880	36.600	38.800	6.01%
H	1900	BODY	08/31/2020	24.4	22.4	0.100	5d080	7357	4.100	39.200	41.000	4.59%
H	1900	BODY	09/02/2020	24.2	22.5	0.100	5d149	7357	4.260	39.400	42.600	8.12%
J	1900	BODY	09/09/2020	22.7	22.8	0.100	5d080	7571	4.210	39.200	42.100	7.40%
H	1900	BODY	09/14/2020	23.3	22.4	0.100	5d080	7357	4.000	39.200	40.000	2.04%
J	1900	BODY	09/27/2020	23.3	24.1	0.100	5d149	7571	4.160	39.400	41.600	5.58%
K	2300	BODY	09/13/2020	23.0	22.7	0.100	1073	7409	4.930	47.700	49.300	3.35%
K2	2450	BODY	08/31/2020	21.5	21.9	0.100	882	7402	5.330	51.500	53.300	3.50%
K	2450	BODY	09/16/2020	22.9	21.3	0.100	981	7409	5.130	50.900	51.300	0.79%
K	2600	BODY	09/16/2020	22.9	21.3	0.100	1064	7409	5.480	55.600	54.800	-1.44%
D	3500	BODY	09/14/2020	22.4	21.6	0.100	1059	7488	6.700	65.100	67.000	2.92%
D	3700	BODY	09/14/2020	22.4	21.6	0.100	1018	7488	6.680	64.300	66.800	3.89%
G	5250	BODY	09/22/2020	23.5	24.1	0.050	1237	7538	3.600	75.600	72.000	-4.76%
G	5600	BODY	09/22/2020	23.5	24.1	0.050	1237	7538	3.890	78.500	77.800	-0.89%
G	5750	BODY	09/22/2020	23.5	24.1	0.050	1237	7538	3.730	75.900	74.600	-1.71%

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Table 10-5
System Verification Results – Body 10g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR _{10g} (W/kg)	1 W Target SAR _{10g} (W/kg)	1 W Normalized SAR _{10g} (W/kg)	Deviation _{10g} (%)
G	1750	BODY	09/14/2020	22.1	20.9	0.100	1008	7538	2.050	19.900	20.500	3.02%
I	1750	BODY	09/15/2020	20.7	20.9	0.100	1150	7570	2.040	19.400	20.400	5.15%
H	1900	BODY	09/11/2020	23.5	23.0	0.100	5d080	7357	1.990	20.600	19.900	-3.40%
H	1900	BODY	09/14/2020	23.3	22.4	0.100	5d080	7357	2.060	20.600	20.600	0.00%
G	5250	BODY	09/22/2020	23.5	24.1	0.050	1237	7538	1.010	21.200	20.200	-4.72%
G	5600	BODY	09/22/2020	23.5	24.1	0.050	1237	7538	1.090	22.000	21.800	-0.91%
G	5750	BODY	09/22/2020	23.5	24.1	0.050	1237	7538	1.030	21.200	20.600	-2.83%

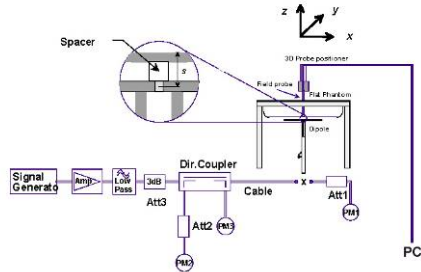


Figure 10-1
System Verification Setup Diagram



Figure 10-2
System Verification Setup Photo

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11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
Cell. CDMA Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Mechanical Mode	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.52	384	Cell. CDMA	RC3 / SO55	25.5	24.91	0.04	Right	Cheek	1	04304	1:1	0.058	1.146	0.066	
836.52	384	Cell. CDMA	RC3 / SO55	25.5	24.91	0.17	Right	Tilt	1	04304	1:1	0.047	1.146	0.054	
836.52	384	Cell. CDMA	RC3 / SO55	25.5	24.91	0.16	Left	Cheek	1	04304	1:1	0.070	1.146	0.080	
836.52	384	Cell. CDMA	RC3 / SO55	25.5	24.91	0.05	Left	Cheek	3	04304	1:1	0.119	1.146	0.136	A1
836.52	384	Cell. CDMA	RC3 / SO55	25.5	24.91	0.21	Left	Tilt	1	04304	1:1	0.046	1.146	0.053	
836.52	384	Cell. CDMA	EVDO Rev. A	25.5	24.92	0.09	Right	Cheek	1	04304	1:1	0.042	1.143	0.048	
836.52	384	Cell. CDMA	EVDO Rev. A	25.5	24.92	0.14	Right	Tilt	1	04304	1:1	0.042	1.143	0.048	
836.52	384	Cell. CDMA	EVDO Rev. A	25.5	24.92	0.07	Left	Cheek	1	04304	1:1	0.065	1.143	0.074	
836.52	384	Cell. CDMA	EVDO Rev. A	25.5	24.92	0.14	Left	Tilt	1	04304	1:1	0.044	1.143	0.050	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

Note: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

Table 11-2
PCS CDMA Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Mechanical Mode	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	600	PCS CDMA	RC3 / SO55	23.5	22.78	-0.07	Right	Cheek	1	04312	1:1	0.052	1.180	0.061	
1880.00	600	PCS CDMA	RC3 / SO55	23.5	22.78	0.11	Right	Tilt	1	04312	1:1	0.072	1.180	0.085	
1880.00	600	PCS CDMA	RC3 / SO55	23.5	22.78	0.03	Left	Cheek	1	04312	1:1	0.069	1.180	0.081	
1880.00	600	PCS CDMA	RC3 / SO55	23.5	22.78	0.17	Left	Tilt	1	04312	1:1	0.073	1.180	0.086	
1880.00	600	PCS CDMA	EVDO Rev. A	23.5	22.85	0.12	Right	Cheek	1	04312	1:1	0.055	1.161	0.064	
1880.00	600	PCS CDMA	EVDO Rev. A	23.5	22.85	0.03	Right	Tilt	1	04312	1:1	0.070	1.161	0.081	
1880.00	600	PCS CDMA	EVDO Rev. A	23.5	22.85	-0.16	Left	Cheek	1	04312	1:1	0.076	1.161	0.088	A2
1880.00	600	PCS CDMA	EVDO Rev. A	23.5	22.85	-0.12	Left	Cheek	3	04312	1:1	0.052	1.161	0.060	
1880.00	600	PCS CDMA	EVDO Rev. A	23.5	22.85	0.09	Left	Tilt	1	04312	1:1	0.076	1.161	0.088	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

Note: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

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Table 11-3
GSM 850 Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Mechanical Mode	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	34.0	32.82	0.05	Right	Cheek	1	04312	1	1:8.3	0.033	1.312	0.043	
836.60	190	GSM 850	GSM	34.0	32.82	0.03	Right	Tilt	1	04312	1	1:8.3	0.030	1.312	0.039	
836.60	190	GSM 850	GSM	34.0	32.82	-0.03	Left	Cheek	1	04312	1	1:8.3	0.046	1.312	0.060	
836.60	190	GSM 850	GSM	34.0	32.82	0.08	Left	Tilt	1	04312	1	1:8.3	0.028	1.312	0.037	
836.60	190	GSM 850	GPRS	32.0	31.29	-0.19	Right	Cheek	1	04312	2	1:4.15	0.037	1.178	0.044	
836.60	190	GSM 850	GPRS	32.0	31.29	-0.16	Right	Tilt	1	04312	2	1:4.15	0.032	1.178	0.038	
836.60	190	GSM 850	GPRS	32.0	31.29	0.11	Left	Cheek	1	04312	2	1:4.15	0.052	1.178	0.061	A3
836.60	190	GSM 850	GPRS	32.0	31.29	-0.16	Left	Cheek	3	04312	2	1:4.15	0.048	1.178	0.057	
836.60	190	GSM 850	GPRS	32.0	31.29	-0.17	Left	Tilt	1	04312	2	1:4.15	0.029	1.178	0.034	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram								

Note: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

Table 11-4
GSM 1900 Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Mechanical Mode	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	31.0	30.27	0.16	Right	Cheek	1	04312	1	1:8.3	0.029	1.183	0.034	
1880.00	661	GSM 1900	GSM	31.0	30.27	0.00	Right	Tilt	1	04312	1	1:8.3	0.035	1.183	0.041	
1880.00	661	GSM 1900	GSM	31.0	30.27	-0.12	Left	Cheek	1	04312	1	1:8.3	0.044	1.183	0.052	
1880.00	661	GSM 1900	GSM	31.0	30.27	0.11	Left	Tilt	1	04312	1	1:8.3	0.048	1.183	0.057	
1880.00	661	GSM 1900	GPRS	29.0	28.30	0.10	Right	Cheek	1	04312	2	1:4.15	0.030	1.175	0.035	
1880.00	661	GSM 1900	GPRS	29.0	28.30	-0.07	Right	Tilt	1	04312	2	1:4.15	0.039	1.175	0.046	
1880.00	661	GSM 1900	GPRS	29.0	28.30	-0.20	Left	Cheek	1	04312	2	1:4.15	0.048	1.175	0.056	
1880.00	661	GSM 1900	GPRS	29.0	28.30	-0.02	Left	Tilt	1	04312	2	1:4.15	0.052	1.175	0.061	A4
1880.00	661	GSM 1900	GPRS	29.0	28.30	-0.19	Left	Tilt	3	04312	2	1:4.15	0.024	1.175	0.028	
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: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

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Table 11-5
UMTS 850 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Mechanical Mode	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	4183	UMTS 850	RMC	25.5	25.27	0.12	Right	Cheek	1	04338	1:1	0.051	1.054	0.054	
836.60	4183	UMTS 850	RMC	25.5	25.27	0.14	Right	Tilt	1	04338	1:1	0.053	1.054	0.056	
836.60	4183	UMTS 850	RMC	25.5	25.27	0.00	Left	Cheek	1	04338	1:1	0.078	1.054	0.082	
836.60	4183	UMTS 850	RMC	25.5	25.27	-0.16	Left	Cheek	3	04338	1:1	0.131	1.054	0.138	A5
836.60	4183	UMTS 850	RMC	25.5	25.27	0.12	Left	Tilt	1	04338	1:1	0.052	1.054	0.055	
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: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

Table 11-6
UMTS 1750 Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Mechanical Mode	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	23.5	22.99	0.14	Right	Cheek	1	04312	N/A	1:1	0.052	1.125	0.059	
1732.40	1412	UMTS 1750	RMC	23.5	22.99	0.03	Right	Tilt	1	04312	N/A	1:1	0.072	1.125	0.081	
1732.40	1412	UMTS 1750	RMC	23.5	22.99	0.12	Left	Cheek	1	04312	N/A	1:1	0.077	1.125	0.087	
1732.40	1412	UMTS 1750	RMC	23.5	22.99	0.08	Left	Tilt	1	04312	N/A	1:1	0.079	1.125	0.089	A6
1732.40	1412	UMTS 1750	RMC	23.5	22.99	0.13	Left	Tilt	3	04312	N/A	1:1	0.036	1.125	0.041	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram								

Note: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

Table 11-7
UMTS 1900 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Mechanical Mode	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	23.5	22.94	0.19	Right	Cheek	1	04346	1:1	0.064	1.138	0.073	
1880.00	9400	UMTS 1900	RMC	23.5	22.94	0.15	Right	Tilt	1	04346	1:1	0.048	1.138	0.055	
1880.00	9400	UMTS 1900	RMC	23.5	22.94	-0.07	Left	Cheek	1	04346	1:1	0.073	1.138	0.083	A7
1880.00	9400	UMTS 1900	RMC	23.5	22.94	-0.03	Left	Cheek	3	04346	1:1	0.049	1.138	0.056	
1880.00	9400	UMTS 1900	RMC	23.5	22.94	0.00	Left	Tilt	1	04346	1:1	0.043	1.138	0.049	
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: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

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Table 11-8
LTE Band 12 Head SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Bandwidth [MHz]	Mechanical Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna State	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.																(W/kg)		(W/kg)		
707.50	23095	Mid	LTE Band 12	10	1	25.5	24.74	0.13	0	Right	Cheek	108	QPSK	1	0	04346	1:1	0.046	1.191	0.055	
707.50	23095	Mid	LTE Band 12	10	1	24.5	23.88	0.12	1	Right	Cheek	108	QPSK	25	12	04346	1:1	0.028	1.153	0.032	
707.50	23095	Mid	LTE Band 12	10	1	25.5	24.74	0.13	0	Right	Tilt	108	QPSK	1	0	04346	1:1	0.035	1.191	0.042	
707.50	23095	Mid	LTE Band 12	10	1	24.5	23.88	0.13	1	Right	Tilt	108	QPSK	25	12	04346	1:1	0.022	1.153	0.025	
707.50	23095	Mid	LTE Band 12	10	1	25.5	24.74	-0.01	0	Left	Cheek	108	QPSK	1	0	04346	1:1	0.055	1.191	0.066	A8
707.50	23095	Mid	LTE Band 12	10	3	25.5	24.74	0.12	0	Left	Cheek	108	QPSK	1	0	04346	1:1	0.047	1.191	0.056	
707.50	23095	Mid	LTE Band 12	10	1	24.5	23.88	0.10	1	Left	Cheek	108	QPSK	25	12	04346	1:1	0.036	1.153	0.042	
707.50	23095	Mid	LTE Band 12	10	1	25.5	24.74	0.14	0	Left	Tilt	108	QPSK	1	0	04346	1:1	0.037	1.191	0.044	
707.50	23095	Mid	LTE Band 12	10	1	24.5	23.88	0.15	1	Left	Tilt	108	QPSK	25	12	04346	1:1	0.027	1.153	0.031	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram										

Note: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

Table 11-9
LTE Band 13 Head SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Bandwidth [MHz]	Mechanical Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna State	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.																(W/kg)		(W/kg)		
782.00	23230	Mid	LTE Band 13	10	1	25.5	25.19	-0.14	0	Right	Cheek	105	QPSK	1	0	04346	1:1	0.069	1.074	0.074	
782.00	23230	Mid	LTE Band 13	10	3	25.5	25.19	0.18	0	Right	Cheek	105	QPSK	1	0	04346	1:1	0.096	1.074	0.103	A9
782.00	23230	Mid	LTE Band 13	10	1	24.5	24.15	-0.02	1	Right	Cheek	105	QPSK	25	0	04346	1:1	0.042	1.084	0.046	
782.00	23230	Mid	LTE Band 13	10	1	25.5	25.19	0.19	0	Right	Tilt	105	QPSK	1	0	04346	1:1	0.045	1.074	0.048	
782.00	23230	Mid	LTE Band 13	10	1	24.5	24.15	-0.02	1	Right	Tilt	105	QPSK	25	0	04346	1:1	0.030	1.084	0.033	
782.00	23230	Mid	LTE Band 13	10	1	25.5	25.19	0.12	0	Left	Cheek	105	QPSK	1	0	04346	1:1	0.067	1.074	0.072	
782.00	23230	Mid	LTE Band 13	10	1	24.5	24.15	-0.16	1	Left	Cheek	105	QPSK	25	0	04346	1:1	0.044	1.084	0.048	
782.00	23230	Mid	LTE Band 13	10	1	25.5	25.19	0.13	0	Left	Tilt	105	QPSK	1	0	04346	1:1	0.031	1.074	0.033	
782.00	23230	Mid	LTE Band 13	10	1	24.5	24.15	0.18	1	Left	Tilt	105	QPSK	25	0	04346	1:1	0.020	1.084	0.022	
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: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

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Table 11-10
LTE Band 14 Head SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Bandwidth [MHz]	Mechanical Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna State	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.																(W/kg)		(W/kg)		
793.00	23330	Mid	LTE Band 14	10	1	25.5	25.05	0.19	0	Right	Cheek	105	QPSK	1	0	04346	1:1	0.065	1.109	0.072	A10
793.00	23330	Mid	LTE Band 14	10	3	25.5	25.05	0.15	0	Right	Cheek	105	QPSK	1	0	04346	1:1	0.111	1.109	0.123	
793.00	23330	Mid	LTE Band 14	10	1	24.5	24.00	0.18	1	Right	Cheek	105	QPSK	25	12	04346	1:1	0.046	1.122	0.052	
793.00	23330	Mid	LTE Band 14	10	1	25.5	25.05	0.10	0	Right	Tilt	105	QPSK	1	0	04346	1:1	0.047	1.109	0.052	
793.00	23330	Mid	LTE Band 14	10	1	24.5	24.00	0.21	1	Right	Tilt	105	QPSK	25	12	04346	1:1	0.033	1.122	0.037	
793.00	23330	Mid	LTE Band 14	10	1	25.5	25.05	-0.04	0	Left	Cheek	105	QPSK	1	0	04346	1:1	0.064	1.109	0.071	
793.00	23330	Mid	LTE Band 14	10	1	24.5	24.00	0.20	1	Left	Cheek	105	QPSK	25	12	04346	1:1	0.049	1.122	0.055	
793.00	23330	Mid	LTE Band 14	10	1	25.5	25.05	0.17	0	Left	Tilt	105	QPSK	1	0	04346	1:1	0.032	1.109	0.035	
793.00	23330	Mid	LTE Band 14	10	1	24.5	24.00	0.18	1	Left	Tilt	105	QPSK	25	12	04346	1:1	0.021	1.122	0.024	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram											

Note: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

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

MEASUREMENT RESULTS																							
1 CC Uplink 2 CC Uplink	Component Carrier	FREQUENCY		Mode	Bandwidth [MHz]	Mechanical Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna State	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
		MHz	Ch.																(W/kg)		(W/kg)		
1 CC Uplink	N/A	836.50	20525	Md	LTE Band 5 (Cell)	10	1	25.5	25.17	0.12	0	Right	Cheek	14	QPSK	1	0	04346	1:1	0.056	1.079	0.060	A11
1 CC Uplink	N/A	836.50	20525	Md	LTE Band 5 (Cell)	10	1	24.5	24.19	0.14	1	Right	Cheek	5	QPSK	25	0	04346	1:1	0.035	1.074	0.038	
1 CC Uplink	N/A	836.50	20525	Md	LTE Band 5 (Cell)	10	1	25.5	25.17	0.13	0	Right	Tilt	5	QPSK	1	0	04346	1:1	0.049	1.079	0.053	
1 CC Uplink	N/A	836.50	20525	Md	LTE Band 5 (Cell)	10	1	24.5	24.19	0.03	1	Right	Tilt	5	QPSK	25	0	04346	1:1	0.031	1.074	0.033	
1 CC Uplink	N/A	836.50	20525	Md	LTE Band 5 (Cell)	10	1	25.5	25.17	0.17	0	Left	Cheek	5	QPSK	1	0	04346	1:1	0.069	1.079	0.074	
1 CC Uplink	N/A	836.50	20525	Md	LTE Band 5 (Cell)	10	3	25.5	25.17	-0.03	0	Left	Cheek	8	QPSK	1	0	04346	1:1	0.139	1.079	0.150	
1 CC Uplink	N/A	836.50	20525	Md	LTE Band 5 (Cell)	10	1	24.5	24.19	0.17	1	Left	Cheek	5	QPSK	25	0	04346	1:1	0.040	1.074	0.043	
2 CC Uplink	PCC	836.50	20525	Md	LTE Band 5 (Cell)	10	1	25.5	25.40	0.21	0	Left	Cheek	12	QPSK	1	0	04346	1:1	0.061	1.023	0.062	
	SCC	829.30	20453	Md	LTE Band 5 (Cell)	5										1	24						
1 CC Uplink	N/A	836.50	20525	Md	LTE Band 5 (Cell)	10	1	25.5	25.17	0.13	0	Left	Tilt	5	QPSK	1	0	04346	1:1	0.044	1.079	0.047	A11
1 CC Uplink	N/A	836.50	20525	Md	LTE Band 5 (Cell)	10	1	24.5	24.19	0.19	1	Left	Tilt	5	QPSK	25	0	04346	1:1	0.036	1.074	0.039	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT															Head								
Spatial Peak															1.6 W/kg (mW/g)								
Uncontrolled Exposure/General Population															averaged over 1 gram								

Note: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

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Table 11-12
LTE Band 66 (AWS) Head SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Bandwidth [MHz]	Mechanical Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna Config.	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.																(W/kg)		(W/kg)		
1770.00	132572	High	LTE Band 66 (AWS)	20	1	23.5	23.12	0.14	0	Right	Cheek	Ant 2	QPSK	1	99	04312	1:1	0.066	1.091	0.072	
1770.00	132572	High	LTE Band 66 (AWS)	20	3	23.5	23.12	0.14	0	Right	Cheek	Ant 2	QPSK	1	99	04312	1:1	0.040	1.091	0.044	
1770.00	132572	High	LTE Band 66 (AWS)	20	1	23.5	23.13	0.04	0	Right	Cheek	Ant 2	QPSK	50	50	04312	1:1	0.066	1.089	0.072	
1770.00	132572	High	LTE Band 66 (AWS)	20	1	23.5	23.12	-0.06	0	Right	Tilt	Ant 2	QPSK	1	99	04312	1:1	0.035	1.091	0.038	
1770.00	132572	High	LTE Band 66 (AWS)	20	1	23.5	23.13	0.15	0	Right	Tilt	Ant 2	QPSK	50	50	04312	1:1	0.042	1.089	0.046	
1770.00	132572	High	LTE Band 66 (AWS)	20	1	23.5	23.12	0.15	0	Left	Cheek	Ant 2	QPSK	1	99	04312	1:1	0.065	1.091	0.071	
1770.00	132572	High	LTE Band 66 (AWS)	20	1	23.5	23.13	0.14	0	Left	Cheek	Ant 2	QPSK	50	50	04312	1:1	0.053	1.089	0.058	
1770.00	132572	High	LTE Band 66 (AWS)	20	1	23.5	23.12	0.19	0	Left	Tilt	Ant 2	QPSK	1	99	04312	1:1	0.043	1.091	0.047	
1770.00	132572	High	LTE Band 66 (AWS)	20	1	23.5	23.13	0.11	0	Left	Tilt	Ant 2	QPSK	50	50	04312	1:1	0.041	1.089	0.045	
1720.00	132072	Low	LTE Band 66 (AWS)	20	1	23.5	22.58	0.19	0	Right	Cheek	Ant 3	QPSK	1	50	04338	1:1	0.088	1.236	0.109	A12
1720.00	132072	Low	LTE Band 66 (AWS)	20	3	23.5	22.58	0.16	0	Right	Cheek	Ant 3	QPSK	1	50	04338	1:1	0.070	1.236	0.087	
1720.00	132072	Low	LTE Band 66 (AWS)	20	1	23.5	22.70	-0.14	0	Right	Cheek	Ant 3	QPSK	50	50	04338	1:1	0.087	1.202	0.105	
1720.00	132072	Low	LTE Band 66 (AWS)	20	1	23.5	22.58	-0.11	0	Right	Tilt	Ant 3	QPSK	1	50	04338	1:1	0.042	1.236	0.052	
1720.00	132072	Low	LTE Band 66 (AWS)	20	1	23.5	22.70	0.13	0	Right	Tilt	Ant 3	QPSK	50	50	04338	1:1	0.040	1.202	0.048	
1720.00	132072	Low	LTE Band 66 (AWS)	20	1	23.5	22.58	0.14	0	Left	Cheek	Ant 3	QPSK	1	50	04338	1:1	0.050	1.236	0.062	
1720.00	132072	Low	LTE Band 66 (AWS)	20	1	23.5	22.70	0.18	0	Left	Cheek	Ant 3	QPSK	50	50	04338	1:1	0.051	1.202	0.061	
1720.00	132072	Low	LTE Band 66 (AWS)	20	1	23.5	22.58	0.17	0	Left	Tilt	Ant 3	QPSK	1	50	04338	1:1	0.042	1.236	0.052	
1720.00	132072	Low	LTE Band 66 (AWS)	20	1	23.5	22.70	0.19	0	Left	Tilt	Ant 3	QPSK	50	50	04338	1:1	0.037	1.202	0.044	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Head											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

Note: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

Table 11-13
LTE Band 2 (PCS) Head SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Bandwidth [MHz]	Mechanical Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna Config.	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.																(W/kg)		(W/kg)		
1880.00	18900	Mid	LTE Band 2 (PCS)	20	1	23.5	23.07	-0.01	0	Right	Cheek	Ant 2	QPSK	1	50	04312	1:1	0.056	1.104	0.062	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	1	23.5	23.23	0.04	0	Right	Cheek	Ant 2	QPSK	50	25	04312	1:1	0.056	1.064	0.060	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	1	23.5	23.07	0.12	0	Right	Tilt	Ant 2	QPSK	1	50	04312	1:1	0.043	1.104	0.047	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	1	23.5	23.23	0.03	0	Right	Tilt	Ant 2	QPSK	50	25	04312	1:1	0.045	1.064	0.048	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	1	23.5	23.07	0.04	0	Left	Cheek	Ant 2	QPSK	1	50	04312	1:1	0.062	1.104	0.068	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	1	23.5	23.23	0.05	0	Left	Cheek	Ant 2	QPSK	50	25	04312	1:1	0.066	1.064	0.070	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	3	23.5	23.23	0.08	0	Left	Cheek	Ant 2	QPSK	50	25	04312	1:1	0.052	1.064	0.055	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	1	23.5	23.07	0.12	0	Left	Tilt	Ant 2	QPSK	1	50	04312	1:1	0.054	1.104	0.060	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	1	23.5	23.23	0.03	0	Left	Tilt	Ant 2	QPSK	50	25	04312	1:1	0.054	1.064	0.057	
1900.00	19100	High	LTE Band 2 (PCS)	20	1	23.5	22.54	0.16	0	Right	Cheek	Ant 3	QPSK	1	0	04346	1:1	0.069	1.247	0.086	A13
1900.00	19100	High	LTE Band 2 (PCS)	20	3	23.5	22.54	0.05	0	Right	Cheek	Ant 3	QPSK	1	0	04346	1:1	0.047	1.247	0.059	
1900.00	19100	High	LTE Band 2 (PCS)	20	1	23.5	22.59	0.13	0	Right	Cheek	Ant 3	QPSK	50	25	04346	1:1	0.061	1.233	0.075	
1900.00	19100	High	LTE Band 2 (PCS)	20	1	23.5	22.54	-0.13	0	Right	Tilt	Ant 3	QPSK	1	0	04346	1:1	0.065	1.247	0.081	
1900.00	19100	High	LTE Band 2 (PCS)	20	1	23.5	22.59	0.06	0	Right	Tilt	Ant 3	QPSK	50	25	04346	1:1	0.055	1.233	0.068	
1900.00	19100	High	LTE Band 2 (PCS)	20	1	23.5	22.54	0.16	0	Left	Cheek	Ant 3	QPSK	1	0	04346	1:1	0.050	1.247	0.062	
1900.00	19100	High	LTE Band 2 (PCS)	20	1	23.5	22.59	0.15	0	Left	Cheek	Ant 3	QPSK	50	25	04346	1:1	0.046	1.233	0.057	
1900.00	19100	High	LTE Band 2 (PCS)	20	1	23.5	22.54	0.14	0	Left	Tilt	Ant 3	QPSK	1	0	04346	1:1	0.053	1.247	0.066	
1900.00	19100	High	LTE Band 2 (PCS)	20	1	23.5	22.59	0.08	0	Left	Tilt	Ant 3	QPSK	50	25	04346	1:1	0.051	1.233	0.063	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Head											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

Note: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

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Table 11-14
LTE Band 30 Head SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Bandwidth [MHz]	Mechanical Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna Config.	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.																(W/kg)		(W/kg)		
2310.00	27710	Mid	LTE Band 30	10	1	25.0	24.80	0.19	0	Right	Cheek	Ant 2	QPSK	1	0	04304	1:1	0.015	1.047	0.016	
2310.00	27710	Mid	LTE Band 30	10	1	24.5	24.50	0.17	0.5	Right	Cheek	Ant 2	QPSK	25	12	04304	1:1	0.011	1.000	0.011	
2310.00	27710	Mid	LTE Band 30	10	1	25.0	24.80	0.10	0	Right	Tilt	Ant 2	QPSK	1	0	04304	1:1	0.009	1.047	0.009	
2310.00	27710	Mid	LTE Band 30	10	1	24.5	24.50	0.15	0.5	Right	Tilt	Ant 2	QPSK	25	12	04304	1:1	0.006	1.000	0.006	
2310.00	27710	Mid	LTE Band 30	10	1	25.0	24.80	0.13	0	Left	Cheek	Ant 2	QPSK	1	0	04304	1:1	0.017	1.047	0.018	A14
2310.00	27710	Mid	LTE Band 30	10	3	25.0	24.80	0.17	0	Left	Cheek	Ant 2	QPSK	1	0	04304	1:1	0.013	1.047	0.014	
2310.00	27710	Mid	LTE Band 30	10	1	24.5	24.50	0.17	0.5	Left	Cheek	Ant 2	QPSK	25	12	04304	1:1	0.013	1.000	0.013	
2310.00	27710	Mid	LTE Band 30	10	1	25.0	24.80	0.14	0	Left	Tilt	Ant 2	QPSK	1	0	04304	1:1	0.003	1.047	0.003	
2310.00	27710	Mid	LTE Band 30	10	1	24.5	24.50	0.15	0.5	Left	Tilt	Ant 2	QPSK	25	12	04304	1:1	0.002	1.000	0.002	
2310.00	27710	Mid	LTE Band 30	10	1	25.0	24.22	0.06	0	Right	Cheek, Mouth-Jaw	Ant 1	QPSK	1	0	04338	1:1	0.006	1.197	0.007	
2310.00	27710	Mid	LTE Band 30	10	3	25.0	24.22	0.19	0	Right	Cheek, Mouth-Jaw	Ant 1	QPSK	1	0	04338	1:1	0.004	1.197	0.005	
2310.00	27710	Mid	LTE Band 30	10	1	24.5	24.07	0.17	0.5	Right	Cheek, Mouth-Jaw	Ant 1	QPSK	25	12	04338	1:1	0.005	1.104	0.006	
2310.00	27710	Mid	LTE Band 30	10	1	25.0	24.22	0.15	0	Right	Tilt, Mouth-Jaw	Ant 1	QPSK	1	0	04338	1:1	0.000	1.197	0.000	
2310.00	27710	Mid	LTE Band 30	10	1	24.5	24.07	0.00	0.5	Right	Tilt, Mouth-Jaw	Ant 1	QPSK	25	12	04338	1:1	0.000	1.104	0.000	
2310.00	27710	Mid	LTE Band 30	10	1	25.0	24.22	0.18	0	Left	Cheek, Mouth-Jaw	Ant 1	QPSK	1	0	04338	1:1	0.003	1.197	0.004	
2310.00	27710	Mid	LTE Band 30	10	1	24.5	24.07	0.13	0.5	Left	Cheek, Mouth-Jaw	Ant 1	QPSK	25	12	04338	1:1	0.002	1.104	0.002	
2310.00	27710	Mid	LTE Band 30	10	1	25.0	24.22	0.09	0	Left	Tilt, Mouth-Jaw	Ant 1	QPSK	1	0	04338	1:1	0.002	1.197	0.002	
2310.00	27710	Mid	LTE Band 30	10	1	24.5	24.07	-0.04	0.5	Left	Tilt, Mouth-Jaw	Ant 1	QPSK	25	12	04338	1:1	0.001	1.104	0.001	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT											Head 1.6 W/kg (mW/g) averaged over 1 gram										
Spatial Peak																					
Uncontrolled Exposure/General Population																					

Note: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

Table 11-15
LTE Band 48 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Mechanical Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.	(W/kg)															(W/kg)			
3690.00	56640	High	LTE Band 48	20	1	22.5	21.92	-0.16	0	Right	Cheek	QPSK	1	99	04338	1:1.58	0.094	1.143	0.107	
3690.00	56640	High	LTE Band 48	20	1	22.5	22.00	0.14	0	Right	Cheek	QPSK	50	25	04338	1:1.58	0.099	1.122	0.111	
3690.00	56640	High	LTE Band 48	20	1	22.5	21.92	0.01	0	Right	Tilt	QPSK	1	99	04338	1:1.58	0.078	1.143	0.089	
3690.00	56640	High	LTE Band 48	20	1	22.5	22.00	0.06	0	Right	Tilt	QPSK	50	25	04338	1:1.58	0.087	1.122	0.098	
3690.00	56640	High	LTE Band 48	20	1	22.5	21.92	-0.14	0	Left	Cheek	QPSK	1	99	04338	1:1.58	0.305	1.143	0.349	
3690.00	56640	High	LTE Band 48	20	1	22.5	22.00	-0.15	0	Left	Cheek	QPSK	50	25	04338	1:1.58	0.323	1.122	0.362	A15
3690.00	56640	High	LTE Band 48	20	3	22.5	22.00	-0.14	0	Left	Cheek	QPSK	50	25	04338	1:1.58	0.831	1.122	0.932	A16
3690.00	56640	High	LTE Band 48	20	1	22.5	21.92	-0.08	0	Left	Tilt	QPSK	1	99	04338	1:1.58	0.109	1.143	0.125	
3690.00	56640	High	LTE Band 48	20	1	22.5	22.00	-0.06	0	Left	Tilt	QPSK	50	25	04338	1:1.58	0.118	1.122	0.132	
3690.00	56640	High	LTE Band 48	20	3	22.5	22.00	-0.13	0	Left	Cheek	QPSK	50	25	04338	1:1.58	0.827	1.122	0.928	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT											Head									
Spatial Peak											1.6 W/kg (mW/g)									
Uncontrolled Exposure/General Population											averaged over 1 gram									

Note: 1) Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel). 2) Blue entry represents variability measurement.

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Table 11-16
LTE Band 41 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Mechanical Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
2593.00	40620	Mid	LTE Band 41	20	1	25.0	24.15	0.14	0	Right	Cheek	QPSK	1	50	04304	1:1.58	0.022	1.216	0.027	A17
2593.00	40620	Mid	LTE Band 41	20	3	25.0	24.15	0.13	0	Right	Cheek	QPSK	1	50	04304	1:1.58	0.013	1.216	0.016	
2593.00	40620	Mid	LTE Band 41	20	1	24.5	24.13	0.16	0.5	Right	Cheek	QPSK	50	25	04304	1:1.58	0.021	1.089	0.023	
2593.00	40620	Mid	LTE Band 41	20	1	25.0	24.15	0.04	0	Right	Tilt	QPSK	1	50	04304	1:1.58	0.021	1.216	0.026	
2593.00	40620	Mid	LTE Band 41	20	1	24.5	24.13	0.13	0.5	Right	Tilt	QPSK	50	25	04304	1:1.58	0.018	1.089	0.020	
2593.00	40620	Mid	LTE Band 41	20	1	25.0	24.15	0.12	0	Left	Cheek	QPSK	1	50	04304	1:1.58	0.021	1.216	0.026	
2593.00	40620	Mid	LTE Band 41	20	1	24.5	24.13	0.16	0.5	Left	Cheek	QPSK	50	25	04304	1:1.58	0.018	1.089	0.020	
2593.00	40620	Mid	LTE Band 41	20	1	25.0	24.15	0.14	0	Left	Tilt	QPSK	1	50	04304	1:1.58	0.009	1.216	0.011	
2593.00	40620	Mid	LTE Band 41	20	1	24.5	24.13	0.06	0.5	Left	Tilt	QPSK	50	25	04304	1:1.58	0.009	1.089	0.010	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Head										
Spatial Peak										1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population										averaged over 1 gram										

Note: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

Table 11-17
NR Band n5 (Cell) Head SAR

MEASUREMENT RESULTS																						
FREQUENCY		Mode	Bandwidth [MHz]	Mechanical Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna State	Waveform	Modulation	RB Size	RB Offset	Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.																	(W/kg)		(W/kg)		
836.50	167300	Mid	NR Band n5 (Cell)	20	1	25.5	25.06	0.04	0	Right	Cheek	14	DFT-S-OFDM	QPSK	1	1	04304	1:1	0.057	1.107	0.063	
836.50	167300	Mid	NR Band n5 (Cell)	20	1	25.5	24.83	-0.02	0	Right	Cheek	5	DFT-S-OFDM	QPSK	50	28	04304	1:1	0.051	1.167	0.060	
836.50	167300	Mid	NR Band n5 (Cell)	20	1	25.5	25.06	0.13	0	Right	Tilt	5	DFT-S-OFDM	QPSK	1	1	04304	1:1	0.046	1.107	0.051	
836.50	167300	Mid	NR Band n5 (Cell)	20	1	25.5	24.83	0.21	0	Right	Tilt	5	DFT-S-OFDM	QPSK	50	28	04304	1:1	0.039	1.167	0.046	
836.50	167300	Mid	NR Band n5 (Cell)	20	1	25.5	25.06	0.20	0	Left	Cheek	5	DFT-S-OFDM	QPSK	1	1	04304	1:1	0.061	1.107	0.068	
836.50	167300	Mid	NR Band n5 (Cell)	20	1	25.5	24.83	0.16	0	Left	Cheek	5	DFT-S-OFDM	QPSK	50	28	04304	1:1	0.063	1.167	0.074	
836.50	167300	Mid	NR Band n5 (Cell)	20	3	25.5	24.83	0.02	0	Left	Cheek	8	DFT-S-OFDM	QPSK	50	28	04304	1:1	0.099	1.167	0.116	A18
836.50	167300	Mid	NR Band n5 (Cell)	20	1	24.0	23.22	0.20	1.5	Left	Cheek	5	CP-OFDM	QPSK	1	1	04304	1:1	0.056	1.197	0.067	
836.50	167300	Mid	NR Band n5 (Cell)	20	1	25.5	25.06	0.12	0	Left	Tilt	5	DFT-S-OFDM	QPSK	1	1	04304	1:1	0.037	1.107	0.041	
836.50	167300	Mid	NR Band n5 (Cell)	20	1	25.5	24.83	0.16	0	Left	Tilt	5	DFT-S-OFDM	QPSK	50	28	04304	1:1	0.036	1.167	0.042	
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: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

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Table 11-18
NR Band n66 (AWS) Head SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Bandwidth [MHz]	Mechanical Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Waveform	Modulation	RB Size	RB Offset	Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.																(W/kg)		(W/kg)		
1720.00	344000	Low	NR Band n66 (AWS)	20	1	23.5	23.14	-0.10	0	Right	Cheek	DFT-S-OFDM	QPSK	1	104	04338	1:1	0.083	1.086	0.090	A19
1720.00	344000	Low	NR Band n66 (AWS)	20	3	23.5	23.14	0.09	0	Right	Cheek	DFT-S-OFDM	QPSK	1	104	04338	1:1	0.076	1.086	0.083	
1720.00	344000	Low	NR Band n66 (AWS)	20	1	23.5	23.12	0.04	0	Right	Cheek	DFT-S-OFDM	QPSK	50	56	04338	1:1	0.081	1.091	0.088	
1770.00	354000	High	NR Band n66 (AWS)	20	1	23.5	23.21	0.15	0	Right	Cheek	CP-OFDM	QPSK	1	1	04338	1:1	0.082	1.069	0.088	
1720.00	344000	Low	NR Band n66 (AWS)	20	1	23.5	23.14	0.07	0	Right	Tilt	DFT-S-OFDM	QPSK	1	104	04338	1:1	0.040	1.086	0.043	
1720.00	344000	Low	NR Band n66 (AWS)	20	1	23.5	23.12	0.12	0	Right	Tilt	DFT-S-OFDM	QPSK	50	56	04338	1:1	0.041	1.091	0.045	
1720.00	344000	Low	NR Band n66 (AWS)	20	1	23.5	23.14	-0.05	0	Left	Cheek	DFT-S-OFDM	QPSK	1	104	04338	1:1	0.060	1.086	0.065	
1720.00	344000	Low	NR Band n66 (AWS)	20	1	23.5	23.12	0.18	0	Left	Cheek	DFT-S-OFDM	QPSK	50	56	04338	1:1	0.063	1.091	0.069	
1720.00	344000	Low	NR Band n66 (AWS)	20	1	23.5	23.14	-0.14	0	Left	Tilt	DFT-S-OFDM	QPSK	1	104	04338	1:1	0.052	1.086	0.056	
1720.00	344000	Low	NR Band n66 (AWS)	20	1	23.5	23.12	0.13	0	Left	Tilt	DFT-S-OFDM	QPSK	50	56	04338	1:1	0.049	1.091	0.053	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Head											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

Note: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

Table 11-19
NR Band n2 (PCS) Head SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Bandwidth [MHz]	Mechanical Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Waveform	Modulation	RB Size	RB Offset	Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.																(W/kg)		(W/kg)		
1860.00	372000	Low	NR Band n2 (PCS)	20	1	23.5	23.00	0.14	0	Right	Cheek	DFT-S-OFDM	QPSK	1	53	04346	1:1	0.087	1.122	0.098	
1860.00	372000	Low	NR Band n2 (PCS)	20	1	23.5	23.01	0.01	0	Right	Cheek	DFT-S-OFDM	QPSK	50	28	04346	1:1	0.086	1.119	0.096	
1860.00	372000	Low	NR Band n2 (PCS)	20	1	23.5	23.00	-0.08	0	Right	Tilt	DFT-S-OFDM	QPSK	1	53	04346	1:1	0.091	1.122	0.102	A20
1860.00	372000	Low	NR Band n2 (PCS)	20	3	23.5	23.00	0.18	0	Right	Tilt	DFT-S-OFDM	QPSK	1	53	04346	1:1	0.035	1.122	0.039	
1860.00	372000	Low	NR Band n2 (PCS)	20	1	23.5	23.01	0.03	0	Right	Tilt	DFT-S-OFDM	QPSK	50	28	04346	1:1	0.086	1.119	0.096	
1880.00	376000	Mid	NR Band n2 (PCS)	20	1	23.5	23.04	0.01	0	Right	Tilt	CP-OFDM	QPSK	1	1	04346	1:1	0.072	1.112	0.080	
1860.00	372000	Low	NR Band n2 (PCS)	20	1	23.5	23.00	0.03	0	Left	Cheek	DFT-S-OFDM	QPSK	1	53	04346	1:1	0.068	1.122	0.076	
1860.00	372000	Low	NR Band n2 (PCS)	20	1	23.5	23.01	0.13	0	Left	Cheek	DFT-S-OFDM	QPSK	50	28	04346	1:1	0.068	1.119	0.076	
1860.00	372000	Low	NR Band n2 (PCS)	20	1	23.5	23.00	0.13	0	Left	Tilt	DFT-S-OFDM	QPSK	1	53	04346	1:1	0.079	1.122	0.089	
1860.00	372000	Low	NR Band n2 (PCS)	20	1	23.5	23.01	0.21	0	Left	Tilt	DFT-S-OFDM	QPSK	50	28	04346	1:1	0.081	1.119	0.091	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Head											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

Note: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

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**Table 11-20
DTS Head SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Mechanical Mode	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.														W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	19.0	18.43	-0.06	Right	Cheek	1	1	04320	1	98.2	0.403	0.250	1.140	1.018	0.290	
2462	11	802.11b	DSSS	22	19.0	18.43	0.04	Right	Cheek	1	3	04320	1	98.2	1.353	0.970	1.140	1.018	1.126	A22
2462	11	802.11b	DSSS	22	19.0	18.43	0.12	Right	Tilt	1	1	04320	1	98.2	0.325	0.197	1.140	1.018	0.229	
2462	11	802.11b	DSSS	22	19.0	18.43	0.16	Left	Cheek	1	1	04320	1	98.2	0.170	0.157	1.140	1.018	0.182	
2462	11	802.11b	DSSS	22	19.0	18.43	0.15	Left	Tilt	1	1	04320	1	98.2	0.148	0.063	1.140	1.018	0.073	
2412	1	802.11b	DSSS	22	19.0	18.88	0.04	Right	Cheek	2	1	04320	1	98.9	0.456	0.255	1.028	1.011	0.265	
2412	1	802.11b	DSSS	22	19.0	18.88	-0.03	Right	Tilt	2	1	04320	1	98.9	0.560	0.320	1.028	1.011	0.333	A21
2412	1	802.11b	DSSS	22	19.0	18.88	0.07	Right	Tilt	2	3	04320	1	98.9	0.932	0.830	1.028	1.011	0.863	
2412	1	802.11b	DSSS	22	19.0	18.88	0.14	Left	Cheek	2	1	04320	1	98.9	0.203	0.125	1.028	1.011	0.130	
2412	1	802.11b	DSSS	22	19.0	18.88	0.20	Left	Tilt	2	1	04320	1	98.9	0.214	0.120	1.028	1.011	0.125	
2462	11	802.11b	DSSS	22	19.0	18.43	0.11	Right	Cheek	1	3	04320	1	98.2	1.560	0.969	1.140	1.018	1.125	
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: 1) Green entries represent additional Head SAR Position (Mechanical Mode #3: Swivel). 2) Blue entry represents variability measurement.

**Table 11-21
DTS Head SAR for Conditions with 5G NR FR2 Active**

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Mechanical Mode	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.														W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	15.0	14.65	-0.08	Right	Cheek	1	1	04320	1	98.2	0.179	0.134	1.084	1.018	0.148	
2462	11	802.11b	DSSS	22	15.0	14.65	0.16	Right	Cheek	1	3	04320	1	98.2	0.541	0.412	1.084	1.018	0.455	
2462	11	802.11b	DSSS	22	15.0	14.65	0.03	Right	Tilt	1	1	04320	1	98.2	0.144	-	1.084	1.018	-	
2462	11	802.11b	DSSS	22	15.0	14.65	0.19	Left	Cheek	1	1	04320	1	98.2	0.098	-	1.084	1.018	-	
2462	11	802.11b	DSSS	22	15.0	14.65	-0.09	Left	Tilt	1	1	04320	1	98.2	0.078	-	1.084	1.018	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram											

Note: Green entries represent additional Head SAR Position (Mechanical Mode #3: Swivel).

**Table 11-22
DTS MIMO Head SAR for Conditions with 5G NR FR2 Active**

MEASUREMENT RESULTS																						
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Mechanical Mode	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.																W/kg	(W/kg)			(W/kg)	
2462	11	802.11n	OFDM	20	15.0	14.74	15.0	14.93	0.18	Right	Cheek	MIMO	1	04320	13	96.9	0.242	-	1.062	1.032	-	
2462	11	802.11n	OFDM	20	15.0	14.74	15.0	14.93	0.07	Right	Tilt	MIMO	1	04320	13	96.9	0.282	0.159	1.062	1.032	0.174	
2462	11	802.11n	OFDM	20	15.0	14.74	15.0	14.93	0.07	Right	Tilt	MIMO	3	04320	13	96.9	0.587	0.518	1.062	1.032	0.568	
2462	11	802.11n	OFDM	20	15.0	14.74	15.0	14.93	0.12	Left	Cheek	MIMO	1	04320	13	96.9	0.094	-	1.062	1.032	-	
2462	11	802.11n	OFDM	20	15.0	14.74	15.0	14.93	0.13	Left	Tilt	MIMO	1	04320	13	96.9	0.101	-	1.062	1.032	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT											Head											
Spatial Peak											1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population											averaged over 1 gram											

Notes: 1) Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel). 2) To achieve the 18.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 15.0 dBm.

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**Table 11-23
NII Head SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna State	Mechanical Mode	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.														W/kg	(W/kg)			(W/kg)	
5260	52	802.11a	OFDM	20	17.0	16.36	0.16	Right	Cheek	1	1	04395	6	98.5	0.582	-	1.159	1.015	-	
5260	52	802.11a	OFDM	20	17.0	16.36	0.15	Right	Tilt	1	1	04395	6	98.5	0.597	0.242	1.159	1.015	0.285	
5260	52	802.11a	OFDM	20	17.0	16.36	0.13	Right	Tilt	1	3	04395	6	98.5	0.305	0.203	1.159	1.015	0.239	
5260	52	802.11a	OFDM	20	17.0	16.36	0.19	Left	Cheek	1	1	04395	6	98.5	0.394	-	1.159	1.015	-	
5260	52	802.11a	OFDM	20	17.0	16.36	0.19	Left	Tilt	1	1	04395	6	98.5	0.435	-	1.159	1.015	-	
5280	56	802.11a	OFDM	20	17.0	16.96	-0.13	Right	Cheek	2	1	04395	6	98.5	0.465	-	1.009	1.015	-	
5280	56	802.11a	OFDM	20	17.0	16.96	0.15	Right	Tilt	2	1	04395	6	98.5	0.542	0.243	1.009	1.015	0.249	
5280	56	802.11a	OFDM	20	17.0	16.96	0.19	Right	Tilt	2	3	04395	6	98.5	0.463	0.263	1.009	1.015	0.269	A23
5280	56	802.11a	OFDM	20	17.0	16.96	0.18	Left	Cheek	2	1	04395	6	98.5	0.279	-	1.009	1.015	-	
5280	56	802.11a	OFDM	20	17.0	16.96	-0.17	Left	Tilt	2	1	04395	6	98.5	0.310	-	1.009	1.015	-	
5720	144	802.11a	OFDM	20	17.0	16.86	0.16	Right	Cheek	1	1	04395	6	98.5	0.362	0.176	1.033	1.015	0.185	
5720	144	802.11a	OFDM	20	17.0	16.86	0.18	Right	Tilt	1	1	04395	6	98.5	0.203	-	1.033	1.015	-	
5720	144	802.11a	OFDM	20	17.0	16.86	0.14	Left	Cheek	1	1	04395	6	98.5	0.218	-	1.033	1.015	-	
5720	144	802.11a	OFDM	20	17.0	16.86	0.19	Left	Tilt	1	1	04395	6	98.5	0.170	-	1.033	1.015	-	
5500	100	802.11a	OFDM	20	17.0	16.98	0.19	Right	Cheek	2	1	04395	6	98.5	0.244	-	1.005	1.015	-	
5500	100	802.11a	OFDM	20	17.0	16.98	0.19	Right	Tilt	2	1	04395	6	98.5	0.245	0.103	1.005	1.015	0.105	
5500	100	802.11a	OFDM	20	17.0	16.98	0.13	Left	Cheek	2	1	04395	6	98.5	0.239	-	1.005	1.015	-	
5500	100	802.11a	OFDM	20	17.0	16.98	-0.15	Left	Tilt	2	1	04395	6	98.5	0.224	-	1.005	1.015	-	
5745	149	802.11a	OFDM	20	17.0	16.53	0.19	Right	Cheek	1	1	04395	6	98.5	0.390	0.139	1.114	1.015	0.157	
5745	149	802.11a	OFDM	20	17.0	16.53	0.16	Right	Tilt	1	1	04395	6	98.5	0.262	-	1.114	1.015	-	
5745	149	802.11a	OFDM	20	17.0	16.53	0.08	Left	Cheek	1	1	04395	6	98.5	0.254	-	1.114	1.015	-	
5745	149	802.11a	OFDM	20	17.0	16.53	0.17	Left	Tilt	1	1	04395	6	98.5	0.235	-	1.114	1.015	-	
5745	149	802.11a	OFDM	20	17.0	16.97	0.01	Right	Cheek	2	1	04395	6	98.5	0.181	0.117	1.007	1.015	0.120	
5745	149	802.11a	OFDM	20	17.0	16.97	0.15	Right	Tilt	2	1	04395	6	98.5	0.117	-	1.007	1.015	-	
5745	149	802.11a	OFDM	20	17.0	16.97	0.13	Left	Cheek	2	1	04395	6	98.5	0.107	-	1.007	1.015	-	
5745	149	802.11a	OFDM	20	17.0	16.97	0.04	Left	Tilt	2	1	04395	6	98.5	0.102	-	1.007	1.015	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Head												
Spatial Peak								1.6 W/kg (mW/g)												
Uncontrolled Exposure/General Population								averaged over 1 gram												

Note: Green entries represent additional Head SAR Position (Mechanical Mode #3: Swivel)

**Table 11-24
DSS Head SAR**

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Mechanical Mode	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)			(W/kg)	
2441.00	39	Bluetooth	FHSS	12.0	11.15	0.04	Right	Cheek	1	04395	1	77.9	0.052	1.216	1.284	0.081	
2441.00	39	Bluetooth	FHSS	12.0	11.15	-0.08	Right	Cheek	3	04395	1	77.9	0.170	1.216	1.284	0.265	A24
2441.00	39	Bluetooth	FHSS	12.0	11.15	-0.04	Right	Tilt	1	04395	1	77.9	0.044	1.216	1.284	0.069	
2441.00	39	Bluetooth	FHSS	12.0	11.15	0.17	Left	Cheek	1	04395	1	77.9	0.013	1.216	1.284	0.020	
2441.00	39	Bluetooth	FHSS	12.0	11.15	-0.16	Left	Tilt	1	04395	1	77.9	0.017	1.216	1.284	0.027	
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: Green entry represents additional Head SAR Position (Mechanical Mode #3: Swivel)

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11.2 Standalone Body-Worn SAR Data

Table 11-25
GSM/UMTS/CDMA Body-Worn SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.											(W/kg)			
836.52	384	Cell. CDMA	TDSO / SO32	25.5	24.92	-0.02	10 mm	04338	N/A	1:1	back	0.450	1.143	0.514	A25
1851.25	25	PCS CDMA	TDSO / SO32	23.5	22.88	-0.02	10 mm	04346	N/A	1:1	back	0.657	1.153	0.758	A27
1880.00	600	PCS CDMA	TDSO / SO32	23.5	22.84	0.01	10 mm	04346	N/A	1:1	back	0.652	1.164	0.759	
1908.75	1175	PCS CDMA	TDSO / SO32	23.5	22.75	0.01	10 mm	04346	N/A	1:1	back	0.598	1.189	0.711	
836.60	190	GSM 850	GSM	34.0	32.82	-0.02	10 mm	04338	1	1:8.3	back	0.387	1.312	0.508	
836.60	190	GSM 850	GPRS	32.0	31.29	0.07	10 mm	04338	2	1:4.15	back	0.433	1.178	0.510	A29
1880.00	661	GSM 1900	GSM	31.0	30.27	0.03	10 mm	04346	1	1:8.3	back	0.440	1.183	0.521	
1880.00	661	GSM 1900	GPRS	29.0	28.30	-0.04	10 mm	04346	2	1:4.15	back	0.486	1.175	0.571	A30
836.60	4183	UMTS 850	RMC	25.5	25.27	-0.03	10 mm	04338	N/A	1:1	back	0.478	1.054	0.504	A32
1712.40	1312	UMTS 1750	RMC	23.5	22.92	0.04	10 mm	04346	N/A	1:1	back	0.628	1.143	0.718	
1732.40	1412	UMTS 1750	RMC	23.5	22.99	0.10	10 mm	04346	N/A	1:1	back	0.667	1.125	0.750	A33
1752.60	1513	UMTS 1750	RMC	23.5	22.96	-0.02	10 mm	04346	N/A	1:1	back	0.655	1.132	0.741	
1852.40	9262	UMTS 1900	RMC	23.5	23.02	0.00	10 mm	04346	N/A	1:1	back	0.684	1.117	0.764	A35
1880.00	9400	UMTS 1900	RMC	23.5	22.94	0.02	10 mm	04346	N/A	1:1	back	0.678	1.138	0.772	
1907.60	9538	UMTS 1900	RMC	23.5	22.80	0.03	10 mm	04346	N/A	1:1	back	0.628	1.175	0.738	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-26
LTE Band 12/13/14 Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
707.50	23095	Mid	LTE Band 12	10	25.5	24.74	-0.06	0	101	04312	QPSK	1	0	10 mm	back	1:1	0.288	1.191	0.343	A37
707.50	23095	Mid	LTE Band 12	10	24.5	23.88	-0.07	1	101	04312	QPSK	25	12	10 mm	back	1:1	0.190	1.153	0.219	
782.00	23230	Mid	LTE Band 13	10	25.5	25.19	0.18	0	41	04312	QPSK	1	0	10 mm	back	1:1	0.492	1.074	0.528	A38
782.00	23230	Mid	LTE Band 13	10	24.5	24.15	-0.05	1	41	04312	QPSK	25	0	10 mm	back	1:1	0.315	1.084	0.341	
793.00	23330	Mid	LTE Band 14	10	25.5	25.05	-0.05	0	16	04312	QPSK	1	0	10 mm	back	1:1	0.425	1.109	0.471	A39
793.00	23330	Mid	LTE Band 14	10	24.5	24.00	-0.01	1	16	04312	QPSK	25	12	10 mm	back	1:1	0.305	1.122	0.342	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram										

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Table 11-27
LTE Band 5 Body-Worn SAR

MEASUREMENT RESULTS																						
1 CC Uplink 2 CC Uplink	Component Carrier	FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
		MHz	Ch.															(W/kg)		(W/kg)		
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.17	-0.02	0	12	04346	QPSK	1	0	10 mm	back	1:1	0.574	1.079	0.619	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.19	-0.05	1	12	04346	QPSK	25	0	10 mm	back	1:1	0.362	1.074	0.389	
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.40	-0.12	0	12	04346	QPSK	1	0	10 mm	back	1:1	0.605	1.023	0.619	A40
	SCC	829.30	20453	Mid	LTE Band 5 (Cell)	5								1	24							
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak												Body 1.6 W/kg (mW/g) averaged over 1 gram										
Uncontrolled Exposure/General Population																						

Table 11-28
LTE Band 66/2/30 Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	22.71	0.02	0	Ant 2	04338	QPSK	1	99	10 mm	back	1:1	0.588	1.199	0.705	A41
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	23.00	-0.02	0	Ant 2	04338	QPSK	1	50	10 mm	back	1:1	0.622	1.122	0.698	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	23.12	-0.06	0	Ant 2	04338	QPSK	1	99	10 mm	back	1:1	0.566	1.091	0.618	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	23.13	-0.07	0	Ant 2	04338	QPSK	50	50	10 mm	back	1:1	0.557	1.089	0.607	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	22.58	-0.04	0	Ant 3	04338	QPSK	1	50	10 mm	back	1:1	0.285	1.236	0.352	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	22.70	-0.01	0	Ant 3	04338	QPSK	50	50	10 mm	back	1:1	0.294	1.202	0.353	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	22.91	0.03	0	Ant 2	04346	QPSK	1	99	10 mm	back	1:1	0.582	1.146	0.667	A43
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.5	23.07	-0.03	0	Ant 2	04346	QPSK	1	50	10 mm	back	1:1	0.597	1.104	0.659	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	23.00	-0.02	0	Ant 2	04346	QPSK	1	0	10 mm	back	1:1	0.539	1.122	0.605	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.22	-0.01	0	Ant 2	04346	QPSK	50	50	10 mm	back	1:1	0.577	1.067	0.616	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.5	23.23	0.00	0	Ant 2	04346	QPSK	50	25	10 mm	back	1:1	0.603	1.064	0.642	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	23.03	0.01	0	Ant 2	04346	QPSK	50	50	10 mm	back	1:1	0.568	1.114	0.633	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	22.54	-0.15	0	Ant 3	04346	QPSK	1	0	10 mm	back	1:1	0.323	1.247	0.403	A45
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	22.59	-0.17	0	Ant 3	04346	QPSK	50	25	10 mm	back	1:1	0.354	1.233	0.436	
2310.00	27710	Mid	LTE Band 30	10	25.0	24.80	0.11	0	Ant 2	04304	QPSK	1	0	10 mm	back	1:1	0.307	1.047	0.321	
2310.00	27710	Mid	LTE Band 30	10	24.5	24.50	0.04	0.5	Ant 2	04304	QPSK	25	12	10 mm	back	1:1	0.286	1.000	0.286	
2310.00	27710	Mid	LTE Band 30	10	25.0	24.22	0.00	0	Ant 1	04338	QPSK	1	0	10 mm	back	1:1	0.017	1.197	0.020	
2310.00	27710	Mid	LTE Band 30	10	24.5	24.07	0.18	0.5	Ant 1	04338	QPSK	25	12	10 mm	back	1:1	0.018	1.104	0.020	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-29
LTE Band 48/41 Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
3690.00	56640	High	LTE Band 48	20	22.5	21.92	0.05	0	04346	QPSK	1	99	10 mm	back	1:1.58	0.164	1.143	0.187	
3690.00	56640	High	LTE Band 48	20	22.5	22.00	-0.05	0	04346	QPSK	50	25	10 mm	back	1:1.58	0.177	1.122	0.199	A47
2593.00	40620	Mid	LTE Band 41	20	25.0	24.15	0.02	0	04338	QPSK	1	50	10 mm	back	1:1.58	0.192	1.216	0.233	A49
2593.00	40620	Mid	LTE Band 41	20	24.5	24.13	0.07	0.5	04338	QPSK	50	25	10 mm	back	1:1.58	0.192	1.089	0.209	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT									Body										
Spatial Peak									1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population									averaged over 1 gram										

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Table 11-30
NR Body-Worn SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna State	Serial Number	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.																(W/kg)		(W/kg)		
836.50	167300	Md	NR Band n5 (Cell)	20	25.5	25.06	-0.01	0	12	04346	DFT-S-OFDM	QPSK	1	1	10 mm	back	1:1	0.475	1.107	0.526	
836.50	167300	Md	NR Band n5 (Cell)	20	25.5	24.83	-0.03	0	12	04346	DFT-S-OFDM	QPSK	50	28	10 mm	back	1:1	0.499	1.167	0.582	A51
836.50	167300	Md	NR Band n5 (Cell)	20	24.0	23.22	0.00	1.5	12	04346	CP-OFDM	QPSK	1	1	10 mm	back	1:1	0.425	1.197	0.509	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.5	23.14	-0.03	0	N/A	04338	DFT-S-OFDM	QPSK	1	104	10 mm	back	1:1	0.361	1.086	0.392	A52
1720.00	344000	Low	NR Band n66 (AWS)	20	23.5	23.12	-0.04	0	N/A	04338	DFT-S-OFDM	QPSK	50	56	10 mm	back	1:1	0.336	1.091	0.367	
1770.00	354000	High	NR Band n66 (AWS)	20	23.5	23.21	0.06	0	N/A	04338	CP-OFDM	QPSK	1	1	10 mm	back	1:1	0.348	1.069	0.372	
1860.00	372000	Low	NR Band n2 (PCS)	20	23.5	23.00	-0.04	0	N/A	04304	DFT-S-OFDM	QPSK	1	53	10 mm	back	1:1	0.278	1.122	0.312	
1860.00	372000	Low	NR Band n2 (PCS)	20	23.5	23.01	-0.05	0	N/A	04304	DFT-S-OFDM	QPSK	50	28	10 mm	back	1:1	0.283	1.119	0.317	A54
1880.00	376000	Md	NR Band n2 (PCS)	20	23.5	23.04	-0.06	0	N/A	04304	CP-OFDM	QPSK	1	1	10 mm	back	1:1	0.256	1.112	0.285	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-31
DTS Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	19.0	18.43	0.03	10 mm	1	04320	1	back	98.2	0.264	0.173	1.140	1.018	0.201	A55
2412	1	802.11b	DSSS	22	19.0	18.88	0.02	10 mm	2	04320	1	back	98.9	0.157	0.103	1.028	1.011	0.107	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-32
NII Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5260	52	802.11a	OFDM	20	17.0	16.36	0.17	10 mm	1	04312	6	back	98.5	0.413	0.195	1.159	1.015	0.229	
5280	56	802.11a	OFDM	20	17.0	16.96	0.13	10 mm	2	04312	6	back	98.5	0.186	0.072	1.009	1.015	0.074	
5720	144	802.11a	OFDM	20	17.0	16.86	0.13	10 mm	1	04312	6	back	98.5	0.249	0.092	1.033	1.015	0.096	
5500	100	802.11a	OFDM	20	17.0	16.98	0.12	10 mm	2	04312	6	back	98.5	0.359	0.155	1.005	1.015	0.158	
5745	149	802.11a	OFDM	20	17.0	16.53	0.19	10 mm	1	04312	6	back	98.5	0.201	0.062	1.114	1.015	0.070	
5745	149	802.11a	OFDM	20	17.0	16.97	0.18	10 mm	2	04312	6	back	98.5	0.313	0.129	1.007	1.015	0.132	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body											
Spatial Peak								1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population								averaged over 1 gram											

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Table 11-33
NII MIMO Body-Worn SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [Ant 1] [dBm]	Conducted Power [Ant 1] [dBm]	Maximum Allowed Power [Ant 2] [dBm]	Conducted Power [Ant 2] [dBm]	Power Drift [dB]	Spacing	Antenna State	Device Serial Number	Data Rate [Mbps]	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR [1g]	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR [1g]	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
5280	56	802.11a	OFDM	20	17.0	16.33	17.0	16.96	0.06	10 mm	MIMO	04312	6	back	98.8	0.434	0.221	1.167	1.012	0.261	A57
5720	144	802.11a	OFDM	20	17.0	16.86	17.0	16.93	0.13	10 mm	MIMO	04312	6	back	98.8	0.453	0.186	1.033	1.012	0.194	
5745	149	802.11a	OFDM	20	17.0	16.53	17.0	16.97	-0.20	10 mm	MIMO	04312	6	back	98.8	0.451	0.180	1.114	1.012	0.203	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Body											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

Note: To achieve the 20.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 17.0 dBm.

Table 11-34
DSS Body-Worn SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	12.0	11.15	0.12	10 mm	04395	1	back	77.9	0.031	1.216	1.284	0.048	A59
ANSI / IEEE C95.1 1992 - SAFETY LIMIT							Body									
Spatial Peak							1.6 W/kg (mW/g)									
Uncontrolled Exposure/General Population							averaged over 1 gram									

FCC ID: ZNFF100VM	 PCTEST Proud to be part of  element	SAR EVALUATION REPORT	 LG	Approved by: Quality Manager
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11.3 Standalone Hotspot SAR Data

Table 11-35
GPRS/UMTS/CDMA Hotspot SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Mechanical Mode	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.5	24.95	0.04	10 mm	1	04338	N/A	1:1	back	0.473	1.135	0.537	A26
836.52	384	Cell. CDMA	EVDO Rev. 0	25.5	24.95	0.02	10 mm	1	04338	N/A	1:1	front	0.237	1.135	0.269	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.5	24.95	0.03	10 mm	1	04338	N/A	1:1	bottom	0.189	1.135	0.215	
836.52	384	Cell. CDMA	EVDO Rev. 0	25.5	24.95	-0.04	10 mm	1	04338	N/A	1:1	right	0.213	1.135	0.242	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.5	22.85	-0.01	10 mm	1	04346	N/A	1:1	back	0.635	1.161	0.737	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.5	22.85	-0.02	10 mm	1	04346	N/A	1:1	front	0.269	1.161	0.312	
1851.25	25	PCS CDMA	EVDO Rev. 0	23.5	22.90	-0.04	10 mm	1	04346	N/A	1:1	bottom	0.833	1.148	0.956	A28
1880.00	600	PCS CDMA	EVDO Rev. 0	23.5	22.85	-0.06	10 mm	1	04346	N/A	1:1	bottom	0.788	1.161	0.915	
1908.75	1175	PCS CDMA	EVDO Rev. 0	23.5	22.76	-0.05	10 mm	1	04346	N/A	1:1	bottom	0.619	1.186	0.734	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.5	22.85	0.02	10 mm	1	04346	N/A	1:1	left	0.201	1.161	0.233	
836.60	190	GSM 850	GPRS	32.0	31.29	0.07	10 mm	1	04338	2	1:4.15	back	0.433	1.178	0.510	A29
836.60	190	GSM 850	GPRS	32.0	31.29	-0.04	10 mm	1	04338	2	1:4.15	front	0.190	1.178	0.224	
836.60	190	GSM 850	GPRS	32.0	31.29	-0.11	10 mm	1	04338	2	1:4.15	bottom	0.177	1.178	0.209	
836.60	190	GSM 850	GPRS	32.0	31.29	0.02	10 mm	1	04338	2	1:4.15	right	0.167	1.178	0.197	
1880.00	661	GSM 1900	GPRS	29.0	28.30	-0.04	10 mm	1	04346	2	1:4.15	back	0.486	1.175	0.571	
1880.00	661	GSM 1900	GPRS	29.0	28.30	0.02	10 mm	1	04346	2	1:4.15	front	0.205	1.175	0.241	
1850.20	512	GSM 1900	GPRS	29.0	28.24	-0.01	10 mm	1	04346	2	1:4.15	bottom	0.687	1.191	0.818	A31
1880.00	661	GSM 1900	GPRS	29.0	28.30	-0.03	10 mm	1	04346	2	1:4.15	bottom	0.620	1.175	0.729	
1909.80	810	GSM 1900	GPRS	29.0	28.11	-0.04	10 mm	1	04346	2	1:4.15	bottom	0.559	1.227	0.686	
1880.00	661	GSM 1900	GPRS	29.0	28.30	0.13	10 mm	1	04346	2	1:4.15	left	0.140	1.175	0.165	
836.60	4183	UMTS 850	RMC	25.5	25.27	-0.03	10 mm	1	04338	N/A	1:1	back	0.478	1.054	0.504	A32
836.60	4183	UMTS 850	RMC	25.5	25.27	0.04	10 mm	1	04338	N/A	1:1	front	0.231	1.054	0.243	
836.60	4183	UMTS 850	RMC	25.5	25.27	-0.01	10 mm	1	04338	N/A	1:1	bottom	0.169	1.054	0.178	
836.60	4183	UMTS 850	RMC	25.5	25.27	-0.01	10 mm	1	04338	N/A	1:1	right	0.206	1.054	0.217	
1712.40	1312	UMTS 1750	RMC	23.5	22.92	0.04	10 mm	1	04346	N/A	1:1	back	0.628	1.143	0.718	
1732.40	1412	UMTS 1750	RMC	23.5	22.99	0.10	10 mm	1	04346	N/A	1:1	back	0.667	1.125	0.750	
1752.60	1513	UMTS 1750	RMC	23.5	22.96	-0.02	10 mm	1	04346	N/A	1:1	back	0.655	1.132	0.741	
1732.40	1412	UMTS 1750	RMC	23.5	22.99	0.00	10 mm	1	04346	N/A	1:1	front	0.372	1.125	0.419	
1712.40	1312	UMTS 1750	RMC	23.5	22.92	0.02	10 mm	1	04346	N/A	1:1	bottom	0.777	1.143	0.888	
1732.40	1412	UMTS 1750	RMC	23.5	22.99	0.04	10 mm	1	04346	N/A	1:1	bottom	0.871	1.125	0.980	
1752.60	1513	UMTS 1750	RMC	23.5	22.96	0.02	10 mm	1	04346	N/A	1:1	bottom	0.905	1.132	1.024	A34
1752.60	1513	UMTS 1750	RMC	23.5	22.96	-0.05	10 mm	2	04346	N/A	1:1	bottom	0.822	1.132	0.931	
1732.40	1412	UMTS 1750	RMC	23.5	22.99	0.02	10 mm	1	04346	N/A	1:1	left	0.289	1.125	0.325	
1752.60	1513	UMTS 1750	RMC	23.5	22.96	0.02	10 mm	1	04346	N/A	1:1	bottom	0.900	1.132	1.019	
1852.40	9262	UMTS 1900	RMC	23.5	23.02	0.00	10 mm	1	04346	N/A	1:1	back	0.684	1.117	0.764	
1880.00	9400	UMTS 1900	RMC	23.5	22.94	0.02	10 mm	1	04346	N/A	1:1	back	0.678	1.138	0.772	
1907.60	9538	UMTS 1900	RMC	23.5	22.80	0.03	10 mm	1	04346	N/A	1:1	back	0.628	1.175	0.738	
1880.00	9400	UMTS 1900	RMC	23.5	22.94	0.12	10 mm	1	04346	N/A	1:1	front	0.259	1.138	0.295	
1852.40	9262	UMTS 1900	RMC	23.5	23.02	-0.01	10 mm	1	04346	N/A	1:1	bottom	0.881	1.117	0.984	A36
1880.00	9400	UMTS 1900	RMC	23.5	22.94	-0.01	10 mm	1	04346	N/A	1:1	bottom	0.831	1.138	0.946	
1907.60	9538	UMTS 1900	RMC	23.5	22.80	-0.04	10 mm	1	04346	N/A	1:1	bottom	0.682	1.175	0.801	
1880.00	9400	UMTS 1900	RMC	23.5	22.94	0.01	10 mm	1	04346	N/A	1:1	left	0.191	1.138	0.217	
1852.40	9262	UMTS 1900	RMC	23.5	23.02	-0.05	10 mm	1	04346	N/A	1:1	bottom	0.858	1.117	0.958	
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: 1) Purple entry represents additional Hotspot SAR Position (Mechanical Mode #2: Normal + Pop-up). 2) Blue entry represents variability measurement.

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Table 11-36
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
707.50	23095	Mid	LTE Band 12	10	25.5	24.74	-0.06	0	101	04312	QPSK	1	0	10 mm	back	1:1	0.288	1.191	0.343	A37
707.50	23095	Mid	LTE Band 12	10	24.5	23.88	-0.07	1	101	04312	QPSK	25	12	10 mm	back	1:1	0.190	1.153	0.219	
707.50	23095	Mid	LTE Band 12	10	25.5	24.74	0.03	0	101	04312	QPSK	1	0	10 mm	front	1:1	0.084	1.191	0.100	
707.50	23095	Mid	LTE Band 12	10	24.5	23.88	0.04	1	101	04312	QPSK	25	12	10 mm	front	1:1	0.054	1.153	0.062	
707.50	23095	Mid	LTE Band 12	10	25.5	24.74	0.09	0	101	04312	QPSK	1	0	10 mm	bottom	1:1	0.096	1.191	0.114	
707.50	23095	Mid	LTE Band 12	10	24.5	23.88	-0.06	1	101	04312	QPSK	25	12	10 mm	bottom	1:1	0.058	1.153	0.067	
707.50	23095	Mid	LTE Band 12	10	25.5	24.74	-0.04	0	101	04312	QPSK	1	0	10 mm	right	1:1	0.082	1.191	0.098	
707.50	23095	Mid	LTE Band 12	10	24.5	23.88	-0.07	1	101	04312	QPSK	25	12	10 mm	right	1:1	0.053	1.153	0.061	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body 1.6 W/kg (mW/g) averaged over 1 gram												
Spatial Peak Uncontrolled Exposure/General Population																				

Table 11-37
LTE Band 13 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
782.00	23230	Mid	LTE Band 13	10	25.5	25.19	0.18	0	41	04312	QPSK	1	0	10 mm	back	1:1	0.492	1.074	0.528	A38
782.00	23230	Mid	LTE Band 13	10	24.5	24.15	-0.05	1	41	04312	QPSK	25	0	10 mm	back	1:1	0.315	1.084	0.341	
782.00	23230	Mid	LTE Band 13	10	25.5	25.19	-0.08	0	41	04312	QPSK	1	0	10 mm	front	1:1	0.199	1.074	0.214	
782.00	23230	Mid	LTE Band 13	10	24.5	24.15	-0.05	1	41	04312	QPSK	25	0	10 mm	front	1:1	0.129	1.084	0.140	
782.00	23230	Mid	LTE Band 13	10	25.5	25.19	0.07	0	41	04312	QPSK	1	0	10 mm	bottom	1:1	0.164	1.074	0.176	
782.00	23230	Mid	LTE Band 13	10	24.5	24.15	-0.04	1	41	04312	QPSK	25	0	10 mm	bottom	1:1	0.108	1.084	0.117	
782.00	23230	Mid	LTE Band 13	10	25.5	25.19	-0.02	0	41	04312	QPSK	1	0	10 mm	right	1:1	0.189	1.074	0.203	
782.00	23230	Mid	LTE Band 13	10	24.5	24.15	-0.05	1	41	04312	QPSK	25	0	10 mm	right	1:1	0.114	1.084	0.124	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram												

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Table 11-38
LTE Band 14 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
793.00	23330	Mid	LTE Band 14	10	25.5	25.05	-0.05	0	16	04312	QPSK	1	0	10 mm	back	1:1	0.425	1.109	0.471	A39
793.00	23330	Mid	LTE Band 14	10	24.5	24.00	-0.01	1	16	04312	QPSK	25	12	10 mm	back	1:1	0.305	1.122	0.342	
793.00	23330	Mid	LTE Band 14	10	25.5	25.05	-0.02	0	16	04312	QPSK	1	0	10 mm	front	1:1	0.180	1.109	0.200	
793.00	23330	Mid	LTE Band 14	10	24.5	24.00	0.03	1	16	04312	QPSK	25	12	10 mm	front	1:1	0.128	1.122	0.144	
793.00	23330	Mid	LTE Band 14	10	25.5	25.05	0.13	0	16	04312	QPSK	1	0	10 mm	bottom	1:1	0.136	1.109	0.151	
793.00	23330	Mid	LTE Band 14	10	24.5	24.00	-0.03	1	16	04312	QPSK	25	12	10 mm	bottom	1:1	0.099	1.122	0.111	
793.00	23330	Mid	LTE Band 14	10	25.5	25.05	-0.01	0	16	04312	QPSK	1	0	10 mm	right	1:1	0.152	1.109	0.169	
793.00	23330	Mid	LTE Band 14	10	24.5	24.00	-0.01	1	16	04312	QPSK	25	12	10 mm	right	1:1	0.110	1.122	0.123	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram												

Table 11-39
LTE Band 5 (Cell) Hotspot SAR

MEASUREMENT RESULTS																						
1 CC Uplink 2 CC Uplink	Component Carrier	FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
		MHz	Ch.															(W/kg)		(W/kg)		
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.17	-0.02	0	12	04346	QPSK	1	0	10 mm	back	1:1	0.574	1.079	0.619	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.19	-0.05	1	12	04346	QPSK	25	0	10 mm	back	1:1	0.362	1.074	0.389	
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.40	-0.12	0	12	04346	QPSK	1	0	10 mm	back	1:1	0.605	1.023	0.619	A40
	SCC	829.30	20453	Mid	LTE Band 5 (Cell)	5								1	24							
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.17	0.13	0	14	04346	QPSK	1	0	10 mm	front	1:1	0.330	1.079	0.356	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.19	0.03	1	14	04346	QPSK	25	0	10 mm	front	1:1	0.203	1.074	0.218	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.17	-0.10	0	14	04346	QPSK	1	0	10 mm	bottom	1:1	0.255	1.079	0.275	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.19	0.02	1	14	04346	QPSK	25	0	10 mm	bottom	1:1	0.151	1.074	0.162	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.17	0.03	0	12	04346	QPSK	1	0	10 mm	right	1:1	0.261	1.079	0.282	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.19	-0.01	1	12	04346	QPSK	25	0	10 mm	right	1:1	0.166	1.074	0.178	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT												Body										
Spatial Peak												1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population												averaged over 1 gram										

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Table 11-40
LTE Band 66 (AWS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	22.71	0.02	0	Ant 2	04338	QPSK	1	99	10 mm	back	1:1	0.588	1.199	0.705	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	23.00	-0.02	0	Ant 2	04338	QPSK	1	50	10 mm	back	1:1	0.622	1.122	0.698	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	23.12	-0.06	0	Ant 2	04338	QPSK	1	99	10 mm	back	1:1	0.566	1.091	0.618	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	23.13	-0.07	0	Ant 2	04338	QPSK	50	50	10 mm	back	1:1	0.557	1.089	0.607	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	23.12	-0.06	0	Ant 2	04338	QPSK	1	99	10 mm	front	1:1	0.271	1.091	0.296	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	23.13	-0.05	0	Ant 2	04338	QPSK	50	50	10 mm	front	1:1	0.264	1.089	0.287	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	22.71	-0.04	0	Ant 2	04338	QPSK	1	99	10 mm	bottom	1:1	0.683	1.199	0.819	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	23.00	-0.04	0	Ant 2	04338	QPSK	1	50	10 mm	bottom	1:1	0.763	1.122	0.856	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	23.12	-0.08	0	Ant 2	04338	QPSK	1	99	10 mm	bottom	1:1	0.834	1.091	0.910	A42
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	23.12	-0.06	0	Ant 2	04338	QPSK	50	25	10 mm	bottom	1:1	0.712	1.091	0.777	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	23.10	-0.04	0	Ant 2	04338	QPSK	50	25	10 mm	bottom	1:1	0.791	1.096	0.867	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	23.13	-0.06	0	Ant 2	04338	QPSK	50	50	10 mm	bottom	1:1	0.816	1.089	0.889	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	23.11	-0.08	0	Ant 2	04338	QPSK	100	0	10 mm	bottom	1:1	0.829	1.094	0.907	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	23.12	-0.06	0	Ant 2	04338	QPSK	1	99	10 mm	left	1:1	0.237	1.091	0.259	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	23.13	-0.01	0	Ant 2	04338	QPSK	50	50	10 mm	left	1:1	0.245	1.089	0.267	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	22.58	-0.04	0	Ant 3	04338	QPSK	1	50	10 mm	back	1:1	0.285	1.236	0.352	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	22.70	-0.01	0	Ant 3	04338	QPSK	50	50	10 mm	back	1:1	0.294	1.202	0.353	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	22.58	-0.07	0	Ant 3	04338	QPSK	1	50	10 mm	front	1:1	0.104	1.236	0.129	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	22.70	0.06	0	Ant 3	04338	QPSK	50	50	10 mm	front	1:1	0.110	1.202	0.132	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	22.58	-0.06	0	Ant 3	04338	QPSK	1	50	10 mm	bottom	1:1	0.054	1.236	0.067	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	22.70	-0.18	0	Ant 3	04338	QPSK	50	50	10 mm	bottom	1:1	0.061	1.202	0.073	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	22.58	-0.01	0	Ant 3	04338	QPSK	1	50	10 mm	right	1:1	0.442	1.236	0.546	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	22.70	0.12	0	Ant 3	04338	QPSK	50	50	10 mm	right	1:1	0.445	1.202	0.535	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram												

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Table 11-41
LTE Band 2 (PCS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
Mhz	Ch.															(W/kg)		(W/kg)		
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	22.91	0.03	0	Ant 2	04346	QPSK	1	99	10 mm	back	1:1	0.582	1.146	0.667	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.5	23.07	-0.03	0	Ant 2	04346	QPSK	1	50	10 mm	back	1:1	0.597	1.104	0.659	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	23.00	-0.02	0	Ant 2	04346	QPSK	1	0	10 mm	back	1:1	0.539	1.122	0.605	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.22	-0.01	0	Ant 2	04346	QPSK	50	50	10 mm	back	1:1	0.577	1.067	0.616	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.5	23.23	0.00	0	Ant 2	04346	QPSK	50	25	10 mm	back	1:1	0.603	1.064	0.642	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	23.03	0.01	0	Ant 2	04346	QPSK	50	50	10 mm	back	1:1	0.568	1.114	0.633	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.5	23.07	0.02	0	Ant 2	04346	QPSK	1	50	10 mm	front	1:1	0.248	1.104	0.274	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.5	23.23	0.05	0	Ant 2	04346	QPSK	50	25	10 mm	front	1:1	0.247	1.064	0.263	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	22.91	-0.02	0	Ant 2	04346	QPSK	1	99	10 mm	bottom	1:1	0.738	1.146	0.846	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.5	23.07	-0.03	0	Ant 2	04346	QPSK	1	50	10 mm	bottom	1:1	0.776	1.104	0.857	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	23.00	-0.04	0	Ant 2	04346	QPSK	1	0	10 mm	bottom	1:1	0.640	1.122	0.718	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.22	-0.05	0	Ant 2	04346	QPSK	50	50	10 mm	bottom	1:1	0.729	1.067	0.778	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.5	23.23	-0.04	0	Ant 2	04346	QPSK	50	25	10 mm	bottom	1:1	0.790	1.064	0.841	A44
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	23.03	-0.03	0	Ant 2	04346	QPSK	50	50	10 mm	bottom	1:1	0.707	1.114	0.788	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.5	23.04	-0.03	0	Ant 2	04346	QPSK	100	0	10 mm	bottom	1:1	0.751	1.112	0.835	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.5	23.07	0.01	0	Ant 2	04346	QPSK	1	50	10 mm	left	1:1	0.162	1.104	0.179	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.5	23.23	0.00	0	Ant 2	04346	QPSK	50	25	10 mm	left	1:1	0.157	1.064	0.167	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	22.54	-0.15	0	Ant 3	04346	QPSK	1	0	10 mm	back	1:1	0.323	1.247	0.403	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	22.59	-0.17	0	Ant 3	04346	QPSK	50	25	10 mm	back	1:1	0.354	1.233	0.436	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	22.54	0.06	0	Ant 3	04346	QPSK	1	0	10 mm	front	1:1	0.050	1.247	0.062	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	22.59	0.06	0	Ant 3	04346	QPSK	50	25	10 mm	front	1:1	0.051	1.233	0.063	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	22.54	-0.03	0	Ant 3	04346	QPSK	1	0	10 mm	bottom	1:1	0.381	1.247	0.475	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	22.59	-0.04	0	Ant 3	04346	QPSK	50	25	10 mm	bottom	1:1	0.354	1.233	0.436	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	22.54	-0.09	0	Ant 3	04346	QPSK	1	0	10 mm	right	1:1	0.393	1.247	0.490	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	22.59	-0.15	0	Ant 3	04346	QPSK	50	25	10 mm	right	1:1	0.387	1.233	0.477	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram												

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Table 11-42
LTE Band 30 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
2310.00	27710	Mid	LTE Band 30	10	25.0	24.80	0.11	0	Ant 2	04304	QPSK	1	0	10 mm	back	1:1	0.307	1.047	0.321	
2310.00	27710	Mid	LTE Band 30	10	24.5	24.50	0.04	0.5	Ant 2	04304	QPSK	25	12	10 mm	back	1:1	0.286	1.000	0.286	
2310.00	27710	Mid	LTE Band 30	10	25.0	24.80	0.14	0	Ant 2	04304	QPSK	1	0	10 mm	front	1:1	0.123	1.047	0.129	
2310.00	27710	Mid	LTE Band 30	10	24.5	24.50	0.18	0.5	Ant 2	04304	QPSK	25	12	10 mm	front	1:1	0.116	1.000	0.116	
2310.00	27710	Mid	LTE Band 30	10	25.0	24.80	0.01	0	Ant 2	04304	QPSK	1	0	10 mm	bottom	1:1	0.563	1.047	0.589	A46
2310.00	27710	Mid	LTE Band 30	10	24.5	24.50	0.03	0.5	Ant 2	04304	QPSK	25	12	10 mm	bottom	1:1	0.527	1.000	0.527	
2310.00	27710	Mid	LTE Band 30	10	25.0	24.80	0.02	0	Ant 2	04304	QPSK	1	0	10 mm	left	1:1	0.062	1.047	0.065	
2310.00	27710	Mid	LTE Band 30	10	24.5	24.50	0.20	0.5	Ant 2	04304	QPSK	25	12	10 mm	left	1:1	0.058	1.000	0.058	
2310.00	27710	Mid	LTE Band 30	10	25.0	24.22	0.00	0	Ant 1	04338	QPSK	1	0	10 mm	back	1:1	0.017	1.197	0.020	
2310.00	27710	Mid	LTE Band 30	10	24.5	24.07	0.18	0.5	Ant 1	04338	QPSK	25	12	10 mm	back	1:1	0.018	1.104	0.020	
2310.00	27710	Mid	LTE Band 30	10	25.0	24.22	0.16	0	Ant 1	04338	QPSK	1	0	10 mm	front	1:1	0.004	1.197	0.005	
2310.00	27710	Mid	LTE Band 30	10	24.5	24.07	0.20	0.5	Ant 1	04338	QPSK	25	12	10 mm	front	1:1	0.003	1.104	0.003	
2310.00	27710	Mid	LTE Band 30	10	25.0	24.22	0.19	0	Ant 1	04338	QPSK	1	0	10 mm	bottom	1:1	0.018	1.197	0.022	
2310.00	27710	Mid	LTE Band 30	10	24.5	24.07	0.12	0.5	Ant 1	04338	QPSK	25	12	10 mm	bottom	1:1	0.019	1.104	0.021	
2310.00	27710	Mid	LTE Band 30	10	25.0	24.22	0.19	0	Ant 1	04338	QPSK	1	0	10 mm	right	1:1	0.009	1.197	0.011	
2310.00	27710	Mid	LTE Band 30	10	24.5	24.07	0.19	0.5	Ant 1	04338	QPSK	25	12	10 mm	right	1:1	0.008	1.104	0.009	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram												

Table 11-43
LTE Band 48 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
3690.00	56640	High	LTE Band 48	20	22.5	21.92	0.05	0	04346	QPSK	1	99	10 mm	back	1:1.58	0.164	1.143	0.187	
3690.00	56640	High	LTE Band 48	20	22.5	22.00	-0.05	0	04346	QPSK	50	25	10 mm	back	1:1.58	0.177	1.122	0.199	
3690.00	56640	High	LTE Band 48	20	22.5	21.92	0.17	0	04346	QPSK	1	99	10 mm	front	1:1.58	0.062	1.143	0.071	
3690.00	56640	High	LTE Band 48	20	22.5	22.00	-0.09	0	04346	QPSK	50	25	10 mm	front	1:1.58	0.063	1.122	0.071	
3690.00	56640	High	LTE Band 48	20	22.5	21.92	0.00	0	04346	QPSK	1	99	10 mm	top	1:1.58	0.120	1.143	0.137	
3690.00	56640	High	LTE Band 48	20	22.5	22.00	-0.09	0	04346	QPSK	50	25	10 mm	top	1:1.58	0.123	1.122	0.138	
3690.00	56640	High	LTE Band 48	20	22.5	21.92	0.02	0	04346	QPSK	1	99	10 mm	right	1:1.58	0.354	1.143	0.405	
3690.00	56640	High	LTE Band 48	20	22.5	22.00	0.01	0	04346	QPSK	50	25	10 mm	right	1:1.58	0.361	1.122	0.405	A48
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

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Table 11-44
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.	(W/kg)														(W/kg)			
2593.00	40620	Mid	LTE Band 41	20	25.0	24.15	0.02	0	04338	QPSK	1	50	10 mm	back	1:1.58	0.192	1.216	0.233	
2593.00	40620	Mid	LTE Band 41	20	24.5	24.13	0.07	0.5	04338	QPSK	50	25	10 mm	back	1:1.58	0.192	1.089	0.209	
2593.00	40620	Mid	LTE Band 41	20	25.0	24.15	0.18	0	04338	QPSK	1	50	10 mm	front	1:1.58	0.072	1.216	0.088	
2593.00	40620	Mid	LTE Band 41	20	24.5	24.13	0.15	0.5	04338	QPSK	50	25	10 mm	front	1:1.58	0.072	1.089	0.078	
2593.00	40620	Mid	LTE Band 41	20	25.0	24.15	0.14	0	04338	QPSK	1	50	10 mm	bottom	1:1.58	0.438	1.216	0.533	A50
2593.00	40620	Mid	LTE Band 41	20	24.5	24.13	-0.01	0.5	04338	QPSK	50	25	10 mm	bottom	1:1.58	0.432	1.089	0.470	
2593.00	40620	Mid	LTE Band 41	20	25.0	24.15	0.13	0	04338	QPSK	1	50	10 mm	left	1:1.58	0.056	1.216	0.068	
2593.00	40620	Mid	LTE Band 41	20	24.5	24.13	0.12	0.5	04338	QPSK	50	25	10 mm	left	1:1.58	0.055	1.089	0.060	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT																			
Spatial Peak								Body											
Uncontrolled Exposure/General Population								1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-45
NR Band n5 (Cell) Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna State	Serial Number	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.																(W/kg)		(W/kg)		
836.50	167300	Mid	NR Band n5 (Cell)	20	25.5	25.06	-0.01	0	12	04346	DFT-S-OFDM	QPSK	1	1	10 mm	back	1:1	0.475	1.107	0.526	A51
836.50	167300	Mid	NR Band n5 (Cell)	20	25.5	24.83	-0.03	0	12	04346	DFT-S-OFDM	QPSK	50	28	10 mm	back	1:1	0.499	1.167	0.582	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.22	0.00	1.5	12	04346	CP-OFDM	QPSK	1	1	10 mm	back	1:1	0.425	1.197	0.509	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.5	25.06	0.07	0	14	04346	DFT-S-OFDM	QPSK	1	1	10 mm	front	1:1	0.270	1.107	0.299	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.5	24.83	0.08	0	14	04346	DFT-S-OFDM	QPSK	50	28	10 mm	front	1:1	0.259	1.167	0.302	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.5	25.06	0.06	0	14	04346	DFT-S-OFDM	QPSK	1	1	10 mm	bottom	1:1	0.210	1.107	0.232	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.5	24.83	0.06	0	14	04346	DFT-S-OFDM	QPSK	50	28	10 mm	bottom	1:1	0.190	1.167	0.222	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.5	25.06	-0.03	0	12	04346	DFT-S-OFDM	QPSK	1	1	10 mm	right	1:1	0.195	1.107	0.216	
836.50	167300	Mid	NR Band n5 (Cell)	20	25.5	24.83	0.09	0	12	04346	DFT-S-OFDM	QPSK	50	28	10 mm	right	1:1	0.192	1.167	0.224	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body													
Spatial Peak								1.6 W/kg (mW/g)													
Uncontrolled Exposure/General Population								averaged over 1 gram													

Table 11-46
NR Band n66 (AWS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
																	(W/kg)		(W/kg)	
MHz	Ch.																			
1720.00	344000	Low	NR Band n66 (AWS)	20	23.5	23.14	-0.03	0	04338	DFT-S-OFDM	QPSK	1	104	10 mm	back	1:1	0.361	1.086	0.392	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.5	23.12	-0.04	0	04338	DFT-S-OFDM	QPSK	50	56	10 mm	back	1:1	0.336	1.091	0.367	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.5	23.14	-0.01	0	04338	DFT-S-OFDM	QPSK	1	104	10 mm	front	1:1	0.126	1.086	0.137	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.5	23.12	0.06	0	04338	DFT-S-OFDM	QPSK	50	56	10 mm	front	1:1	0.124	1.091	0.135	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.5	23.14	-0.20	0	04338	DFT-S-OFDM	QPSK	1	104	10 mm	bottom	1:1	0.043	1.086	0.047	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.5	23.12	0.12	0	04338	DFT-S-OFDM	QPSK	50	56	10 mm	bottom	1:1	0.041	1.091	0.045	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.5	23.14	0.01	0	04338	DFT-S-OFDM	QPSK	1	104	10 mm	right	1:1	0.552	1.086	0.599	A53
1720.00	344000	Low	NR Band n66 (AWS)	20	23.5	23.12	0.00	0	04338	DFT-S-OFDM	QPSK	50	56	10 mm	right	1:1	0.525	1.091	0.573	
1770.00	354000	High	NR Band n66 (AWS)	20	23.5	23.21	-0.14	0	04338	CP-OFDM	QPSK	1	1	10 mm	right	1:1	0.492	1.069	0.526	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body												
Spatial Peak								1.6 W/kg (mW/g)												
Uncontrolled Exposure/General Population								averaged over 1 gram												

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Table 11-47
NR Band n2 (PCS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.															(W/kg)		(W/kg)		
1860.00	372000	Low	NR Band n2 (PCS)	20	23.5	23.00	-0.04	0	04304	DFT-S-OFDM	QPSK	1	53	10 mm	back	1:1	0.278	1.122	0.312	
1860.00	372000	Low	NR Band n2 (PCS)	20	23.5	23.01	-0.05	0	04304	DFT-S-OFDM	QPSK	50	28	10 mm	back	1:1	0.283	1.119	0.317	A54
1880.00	376000	Mid	NR Band n2 (PCS)	20	23.5	23.04	-0.06	0	04304	CP-OFDM	QPSK	1	1	10 mm	back	1:1	0.256	1.112	0.285	
1860.00	372000	Low	NR Band n2 (PCS)	20	23.5	23.00	0.02	0	04304	DFT-S-OFDM	QPSK	1	53	10 mm	front	1:1	0.204	1.122	0.229	
1860.00	372000	Low	NR Band n2 (PCS)	20	23.5	23.01	0.01	0	04304	DFT-S-OFDM	QPSK	50	28	10 mm	front	1:1	0.209	1.119	0.234	
1860.00	372000	Low	NR Band n2 (PCS)	20	23.5	23.00	0.05	0	04304	DFT-S-OFDM	QPSK	1	53	10 mm	bottom	1:1	0.259	1.122	0.291	
1860.00	372000	Low	NR Band n2 (PCS)	20	23.5	23.01	0.02	0	04304	DFT-S-OFDM	QPSK	50	28	10 mm	bottom	1:1	0.259	1.119	0.290	
1860.00	372000	Low	NR Band n2 (PCS)	20	23.5	23.00	-0.02	0	04304	DFT-S-OFDM	QPSK	1	53	10 mm	right	1:1	0.267	1.122	0.300	
1860.00	372000	Low	NR Band n2 (PCS)	20	23.5	23.01	-0.03	0	04304	DFT-S-OFDM	QPSK	50	28	10 mm	right	1:1	0.266	1.119	0.298	
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 11-48
WLAN Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	19.0	18.43	0.03	10 mm	1	04320	1	back	98.2	0.264	0.173	1.140	1.018	0.201	
2462	11	802.11b	DSSS	22	19.0	18.43	0.14	10 mm	1	04320	1	front	98.2	0.109	-	1.140	1.018	-	
2462	11	802.11b	DSSS	22	19.0	18.43	0.06	10 mm	1	04320	1	top	98.2	0.103	-	1.140	1.018	-	
2462	11	802.11b	DSSS	22	19.0	18.43	-0.01	10 mm	1	04320	1	left	98.2	0.402	0.259	1.140	1.018	0.301	A56
2412	1	802.11b	DSSS	22	19.0	18.88	0.02	10 mm	2	04320	1	back	98.9	0.157	-	1.028	1.011	-	
2412	1	802.11b	DSSS	22	19.0	18.88	0.01	10 mm	2	04320	1	front	98.9	0.058	-	1.028	1.011	-	
2412	1	802.11b	DSSS	22	19.0	18.88	0.06	10 mm	2	04320	1	top	98.9	0.235	0.151	1.028	1.011	0.157	
2412	1	802.11b	DSSS	22	19.0	18.88	0.13	10 mm	2	04320	1	left	98.9	0.036	-	1.028	1.011	-	
5220	44	802.11a	OFDM	20	17.0	16.74	-0.13	10 mm	1	04312	6	back	98.5	0.403	0.200	1.062	1.015	0.216	A58
5220	44	802.11a	OFDM	20	17.0	16.74	0.00	10 mm	1	04312	6	front	98.5	0.140	-	1.062	1.015	-	
5220	44	802.11a	OFDM	20	17.0	16.74	-0.17	10 mm	1	04312	6	top	98.5	0.339	-	1.062	1.015	-	
5220	44	802.11a	OFDM	20	17.0	16.74	0.15	10 mm	1	04312	6	left	98.5	0.356	-	1.062	1.015	-	
5240	48	802.11a	OFDM	20	17.0	16.90	0.13	10 mm	2	04312	6	back	98.5	0.161	0.069	1.023	1.015	0.072	
5240	48	802.11a	OFDM	20	17.0	16.90	0.19	10 mm	2	04312	6	front	98.5	0.023	-	1.023	1.015	-	
5240	48	802.11a	OFDM	20	17.0	16.90	0.15	10 mm	2	04312	6	top	98.5	0.090	-	1.023	1.015	-	
5240	48	802.11a	OFDM	20	17.0	16.90	0.12	10 mm	2	04312	6	left	98.5	0.141	-	1.023	1.015	-	
5745	149	802.11a	OFDM	20	17.0	16.53	0.19	10 mm	1	04312	6	back	98.5	0.201	0.062	1.114	1.015	0.070	
5745	149	802.11a	OFDM	20	17.0	16.53	0.17	10 mm	1	04312	6	front	98.5	0.028	-	1.114	1.015	-	
5745	149	802.11a	OFDM	20	17.0	16.53	0.16	10 mm	1	04312	6	top	98.5	0.074	-	1.114	1.015	-	
5745	149	802.11a	OFDM	20	17.0	16.53	0.16	10 mm	1	04312	6	left	98.5	0.147	-	1.114	1.015	-	
5745	149	802.11a	OFDM	20	17.0	16.97	0.18	10 mm	2	04312	6	back	98.5	0.313	0.129	1.007	1.015	0.132	
5745	149	802.11a	OFDM	20	17.0	16.97	0.19	10 mm	2	04312	6	front	98.5	0.021	-	1.007	1.015	-	
5745	149	802.11a	OFDM	20	17.0	16.97	0.00	10 mm	2	04312	6	top	98.5	0.017	-	1.007	1.015	-	
5745	149	802.11a	OFDM	20	17.0	16.97	0.19	10 mm	2	04312	6	left	98.5	0.134	-	1.007	1.015	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body											
Spatial Peak								1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population								averaged over 1 gram											

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**Table 11-49
DSS Hotspot SAR**

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	12.0	11.15	0.12	10 mm	04395	1	back	77.9	0.031	1.216	1.284	0.048	
2441	39	Bluetooth	FHSS	12.0	11.15	0.17	10 mm	04395	1	front	77.9	0.010	1.216	1.284	0.016	
2441	39	Bluetooth	FHSS	12.0	11.15	0.18	10 mm	04395	1	top	77.9	0.014	1.216	1.284	0.022	
2441	39	Bluetooth	FHSS	12.0	11.15	-0.01	10 mm	04395	1	left	77.9	0.046	1.216	1.284	0.072	A60
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram									

11.4 Standalone Phablet SAR Data

**Table 11-50
CDMA/UMTS Phablet SAR Data**

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Mechanical Mode	Device Serial Number	Duty Cycle	Side	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1851.25	25	PCS CDMA	EVDO Rev. 0	23.5	22.90	-0.07	0 mm	1	04346	1:1	bottom	1.780	1.148	2.043	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.5	22.85	-0.11	0 mm	1	04346	1:1	bottom	1.650	1.161	1.916	
1908.75	1175	PCS CDMA	EVDO Rev. 0	23.5	22.76	-0.09	0 mm	1	04346	1:1	bottom	1.450	1.186	1.720	
1851.25	25	PCS CDMA	EVDO Rev. 0	23.5	22.90	-0.16	0 mm	3	04346	1:1	bottom	1.970	1.148	2.262	A61
1712.40	1312	UMTS 1750	RMC	23.5	22.92	-0.07	0 mm	1	04346	1:1	bottom	1.680	1.143	1.920	
1732.40	1412	UMTS 1750	RMC	23.5	22.99	-0.05	0 mm	1	04346	1:1	bottom	1.790	1.125	2.014	A62
1752.60	1513	UMTS 1750	RMC	23.5	22.96	-0.09	0 mm	1	04346	1:1	bottom	1.750	1.132	1.981	
1732.40	1412	UMTS 1750	RMC	23.5	22.99	-0.03	0 mm	3	04346	1:1	bottom	1.700	1.125	1.913	
1852.40	9262	UMTS 1900	RMC	23.5	23.02	0.01	0 mm	1	04346	1:1	back	2.290	1.117	2.558	
1880.00	9400	UMTS 1900	RMC	23.5	22.94	0.15	0 mm	1	04346	1:1	back	2.420	1.138	2.754	A63
1907.60	9538	UMTS 1900	RMC	23.5	22.80	-0.02	0 mm	1	04346	1:1	back	2.380	1.175	2.797	
1907.60	9538	UMTS 1900	RMC	23.5	22.80	-0.13	0 mm	2	04346	1:1	back	2.100	1.175	2.468	
1907.60	9538	UMTS 1900	RMC	23.5	22.80	0.15	0 mm	3	04346	1:1	back	2.200	1.175	2.585	
1880.00	9400	UMTS 1900	RMC	23.5	22.94	-0.04	0 mm	1	04346	1:1	bottom	1.730	1.138	1.969	
1880.00	9400	UMTS 1900	RMC	23.5	22.94	-0.04	0 mm	1	04346	1:1	back	2.320	1.138	2.640	
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: 1) Green entries represent additional Phablet SAR Position (Mechanical Mode #3: Swivel) 2) Purple entries represent additional Phablet SAR Position (Mechanical Mode #2: Normal + Pop-up) 3) Blue entry represents variability measurement.

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**Table 11-51
LTE Phablet SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Bandwidth [MHz]	Mechanical Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna Config.	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #	
MHz	Ch.																(W/kg)		(W/kg)		
1770.00	132572	High	LTE Band 66 (AWS)	20	1	23.5	23.12	-0.03	0	Ant 2	04338	QPSK	1	99	0 mm	bottom	1:1	1.500	1.091	1.637	
1720.00	132072	Low	LTE Band 66 (AWS)	20	1	23.5	23.12	-0.04	0	Ant 2	04338	QPSK	50	25	0 mm	bottom	1:1	1.550	1.091	1.691	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	1	23.5	23.10	-0.02	0	Ant 2	04338	QPSK	50	25	0 mm	bottom	1:1	1.590	1.096	1.743	A64
1745.00	132322	Mid	LTE Band 66 (AWS)	20	3	23.5	23.10	-0.01	0	Ant 2	04338	QPSK	50	25	0 mm	bottom	1:1	1.490	1.096	1.633	
1770.00	132572	High	LTE Band 66 (AWS)	20	1	23.5	23.13	-0.03	0	Ant 2	04338	QPSK	50	50	0 mm	bottom	1:1	1.570	1.089	1.710	
1860.00	18700	Low	LTE Band 2 (PCS)	20	1	23.5	22.91	-0.13	0	Ant 2	04304	QPSK	1	99	0 mm	bottom	1:1	1.340	1.146	1.536	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	1	23.5	23.07	0.17	0	Ant 2	04304	QPSK	1	50	0 mm	bottom	1:1	1.540	1.104	1.700	
1900.00	19100	High	LTE Band 2 (PCS)	20	1	23.5	23.00	-0.19	0	Ant 2	04304	QPSK	1	0	0 mm	bottom	1:1	1.570	1.122	1.762	A65
1900.00	19100	High	LTE Band 2 (PCS)	20	3	23.5	23.00	-0.05	0	Ant 2	04304	QPSK	1	0	0 mm	bottom	1:1	1.520	1.122	1.705	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	1	23.5	23.23	-0.13	0	Ant 2	04304	QPSK	50	25	0 mm	bottom	1:1	1.570	1.064	1.670	
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: 1) Green entry represents additional Phablet SAR Position (Mechanical Mode #3: Swivel)

**Table 11-52
WLAN Phablet SAR**

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Mechanical Mode	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.														W/kg	(W/kg)			(W/kg)	
5260	52	802.11a	OFDM	20	17.0	16.36	0.17	0 mm	1	1	04320	6	back	98.5	3.577	0.325	1.159	1.015	0.382	
5260	52	802.11a	OFDM	20	17.0	16.36	0.00	0 mm	1	3	04320	6	back	98.5	2.816	0.257	1.159	1.015	0.302	
5260	52	802.11a	OFDM	20	17.0	16.36	0.04	0 mm	1	1	04320	6	front	98.5	1.626	-	1.159	1.015	-	
5260	52	802.11a	OFDM	20	17.0	16.36	-0.12	0 mm	1	1	04320	6	top	98.5	3.520	-	1.159	1.015	-	
5260	52	802.11a	OFDM	20	17.0	16.36	-0.19	0 mm	1	1	04320	6	left	98.5	5.337	0.422	1.159	1.015	0.496	
5280	56	802.11a	OFDM	20	17.0	16.96	-0.13	0 mm	2	1	04320	6	back	98.5	3.858	0.460	1.009	1.015	0.471	A66
5280	56	802.11a	OFDM	20	17.0	16.96	-0.13	0 mm	2	3	04320	6	back	98.5	3.295	0.359	1.009	1.015	0.368	
5280	56	802.11a	OFDM	20	17.0	16.96	0.19	0 mm	2	1	04320	6	front	98.5	0.261	-	1.009	1.015	-	
5280	56	802.11a	OFDM	20	17.0	16.96	0.13	0 mm	2	1	04320	6	top	98.5	2.504	-	1.009	1.015	-	
5280	56	802.11a	OFDM	20	17.0	16.96	-0.19	0 mm	2	1	04320	6	left	98.5	2.765	-	1.009	1.015	-	
5720	144	802.11a	OFDM	20	17.0	16.86	0.18	0 mm	1	1	04320	6	back	98.5	2.103	0.250	1.033	1.015	0.262	
5720	144	802.11a	OFDM	20	17.0	16.86	0.19	0 mm	1	1	04320	6	front	98.5	0.825	-	1.033	1.015	-	
5720	144	802.11a	OFDM	20	17.0	16.86	-0.16	0 mm	1	1	04320	6	top	98.5	0.664	-	1.033	1.015	-	
5720	144	802.11a	OFDM	20	17.0	16.86	0.00	0 mm	1	1	04320	6	left	98.5	2.940	0.261	1.033	1.015	0.274	
5500	100	802.11a	OFDM	20	17.0	16.98	-0.13	0 mm	2	1	04320	6	back	98.5	2.939	0.380	1.005	1.015	0.388	
5500	100	802.11a	OFDM	20	17.0	16.98	0.19	0 mm	2	1	04320	6	front	98.5	0.408	-	1.005	1.015	-	
5500	100	802.11a	OFDM	20	17.0	16.98	0.15	0 mm	2	1	04320	6	top	98.5	2.049	-	1.005	1.015	-	
5500	100	802.11a	OFDM	20	17.0	16.98	0.19	0 mm	2	1	04320	6	left	98.5	2.377	-	1.005	1.015	-	
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: 1) Green entries represent additional Phablet SAR Position (Mechanical Mode #3: Swivel)

11.5 SAR Test Notes

General Notes:

- The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
- Batteries are fully charged at the beginning of the SAR measurements.
- Liquid tissue depth was at least 15.0 cm for all frequencies.

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4. The orange highlights throughout the report represents the highest SAR per FCC Equipment Class reflected on the FCC Grant.
5. 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.
6. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
7. 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.
8. 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.
9. 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 13 for variability analysis.
10. 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).
11. Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is > 160 mm and < 200 mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg.
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 Qualcomm Smart Transmit for 2G/3G/4G/5G operations to control and manage transmitting power in real time to ensure RF Exposure compliance. Per FCC Guidance, compliance was assessed at the minimum of the time averaged power and the maximum output power for each band/mode/exposure condition (DSI).
14. SAR with the additional mechanical mode #3 (swivel mode) was measured for the configurations with the highest reported SAR for each wireless technology, frequency band, operating mode for head and phablet exposure conditions.
15. SAR with mechanical mode #2 (normal mode + pop-up) or mechanical mode #4 (swivel mode + pop-up) was measured for the highest overall reported hotspot and phablet SAR configurations.

GSM Test Notes:

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

CDMA Notes:

1. Head SAR for CDMA2000 mode was tested under RC3/SO55 per FCC KDB Publication 941225 D01v03r01.

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2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. EVDO Rev0 and RevA and TDSO / SO32 FCH+SCH SAR tests were not required per the 3G SAR Test Reduction Procedure in FCC KDB Publication 941225 D01v03r01.
3. CDMA Wireless Router SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 according to KDB 941225 D01v03r01 procedures for data devices. Wireless Router SAR tests for Subtype 2 of Rev.A and 1x RTT configurations were not required per the 3G SAR Test Reduction Policy in KDB Publication 941225 D01v03r01.
4. Head SAR was additionally evaluated using EVDO Rev. A to determine compliance for VoIP operations.
5. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.

UMTS Notes:

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

LTE Notes:

1. LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 8.6.4.
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 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D01v06, when the reported LTE Band 41 and LTE Band 48 SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg for 1g evaluations, testing at the other channels was required for such test configurations.
5. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r04. Testing was performed using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.
6. Per KDB Publication 941225 D05Av01r02, SAR for downlink only LTE CA operations was not needed since the maximum average output power in LTE CA mode was not > 0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.
7. For LTE Band 5, per FCC guidance, SAR was first measured with only a single carrier active in the uplink (carrier aggregation not active). For each exposure condition, the uplink CA scenario with two component carriers was additionally tested for the configuration with the highest SAR when carrier aggregation was not active. The SCC was configured with the closest available contiguous channel. The two component carriers were configured so the resource blocks are physically allocated side by side to achieve the maximum output power.

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NR Notes:

1. NR implementation in EN-DC mode 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 was performed using test mode software to establish the connection.
3. Simultaneous transmission analysis for EN-DC operations is addressed in the Part 2 Test Report (Serial Number can be found in the bibliography in section 1-12).
4. This device additionally supports some EN-DC conditions where additional LTE carriers are added on the downlink only.
5. Per FCC Guidance, NR modulations and RB Sizes/Offsets were selected for testing such that configurations with the highest output power were evaluated for SAR tests.

WLAN Notes:

1. For held-to-ear, 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) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.7.5 for more information.
3. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg for 1g evaluations. See Section 8.7.6 for more information.
4. 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.
5. 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.
6. Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D01v06 by either evaluating the sum of the 1g SAR values of each antenna transmitting independently or making a SAR measurement with both antennas transmitting simultaneously. Please see Section 12 for complete analysis.

Bluetooth Notes

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

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12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

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

12.2 Simultaneous Transmission Procedures

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

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

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

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

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12.3 Head SAR Simultaneous Transmission Analysis

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

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Cell. CDMA/EVDO	0.136	1.126	0.863	1.262	0.999	See Table Below
	PCS CDMA/EVDO	0.088	1.126	0.863	1.214	0.951	See Table Below
	GSM/GPRS 850	0.061	1.126	0.863	1.187	0.924	See Table Below
	GSM/GPRS 1900	0.061	1.126	0.863	1.187	0.924	See Table Below
	UMTS 850	0.138	1.126	0.863	1.264	1.001	See Table Below
	UMTS 1750	0.089	1.126	0.863	1.215	0.952	See Table Below
	UMTS 1900	0.083	1.126	0.863	1.209	0.946	See Table Below
	LTE Band 12	0.066	1.126	0.863	1.192	0.929	See Table Below
	LTE Band 13	0.103	1.126	0.863	1.229	0.966	See Table Below
	LTE Band 14	0.123	1.126	0.863	1.249	0.986	See Table Below
	LTE Band 5 (Cell)	0.150	1.126	0.863	1.276	1.013	See Table Below
	LTE Band 66 (AWS)	0.072	1.126	0.863	1.198	0.935	See Table Below
	LTE Band 66 (AWS) Ant 3	0.109	1.126	0.863	1.235	0.972	See Table Below
	LTE Band 2 (PCS)	0.070	1.126	0.863	1.196	0.933	See Table Below
	LTE Band 2 (PCS) Ant 3	0.086	1.126	0.863	1.212	0.949	See Table Below
	LTE Band 30	0.018	1.126	0.863	1.144	0.881	See Table Below
	LTE Band 30 Ant 1	0.007	1.126	0.863	1.133	0.870	See Table Below
	LTE Band 48	0.932	1.126	0.863	See Table Below	See Table Below	See Table Below
	LTE Band 41	0.027	1.126	0.863	1.153	0.890	See Table Below
	NR Band n5 (Cell)	0.116	1.126	0.863	1.242	0.979	See Table Below
	NR Band n66 (AWS)	0.090	1.126	0.863	1.216	0.953	See Table Below
	NR Band n2 (PCS)	0.102	1.126	0.863	1.228	0.965	See Table Below

Simult Tx	Configuration	LTE Band 48 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.111	1.126	0.265	1.237	0.376	1.502
	Right Tilt	0.098	0.229	0.863	0.327	0.961	1.190
	Left Cheek	0.932	0.182	0.130	1.114	1.062	1.244
	Left Tilt	0.132	0.073	0.125	0.205	0.257	0.330

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Head SAR	Right Cheek	0.066	1.126	0.265	1.457	Head SAR	Right Cheek	0.048	1.126	0.265	1.439
	Right Tilt	0.054	0.229	0.863	1.146		Right Tilt	0.048	0.229	0.863	1.140
	Left Cheek	0.136	0.182	0.130	0.448		Left Cheek	0.074	0.182	0.130	0.386
	Left Tilt	0.053	0.073	0.125	0.251		Left Tilt	0.050	0.073	0.125	0.248
Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Head SAR	Right Cheek	0.061	1.126	0.265	1.452	Head SAR	Right Cheek	0.064	1.126	0.265	1.455
	Right Tilt	0.085	0.229	0.863	1.177		Right Tilt	0.081	0.229	0.863	1.173
	Left Cheek	0.081	0.182	0.130	0.393		Left Cheek	0.088	0.182	0.130	0.400
	Left Tilt	0.086	0.073	0.125	0.284		Left Tilt	0.088	0.073	0.125	0.286

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Simult Tx	Configuration	GSM 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Head SAR	Right Cheek	0.043	1.126	0.265	1.434	Head SAR	Right Cheek	0.044	1.126	0.265	1.435
	Right Tilt	0.039	0.229	0.863	1.131		Right Tilt	0.038	0.229	0.863	1.130
	Left Cheek	0.060	0.182	0.130	0.372		Left Cheek	0.061	0.182	0.130	0.373
	Left Tilt	0.037	0.073	0.125	0.235		Left Tilt	0.034	0.073	0.125	0.232
Simult Tx	Configuration	GSM 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Head SAR	Right Cheek	0.034	1.126	0.265	1.425	Head SAR	Right Cheek	0.035	1.126	0.265	1.426
	Right Tilt	0.041	0.229	0.863	1.133		Right Tilt	0.046	0.229	0.863	1.138
	Left Cheek	0.052	0.182	0.130	0.364		Left Cheek	0.056	0.182	0.130	0.368
	Left Tilt	0.057	0.073	0.125	0.255		Left Tilt	0.061	0.073	0.125	0.259
Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Head SAR	Right Cheek	0.054	1.126	0.265	1.445	Head SAR	Right Cheek	0.059	1.126	0.265	1.450
	Right Tilt	0.056	0.229	0.863	1.148		Right Tilt	0.081	0.229	0.863	1.173
	Left Cheek	0.138	0.182	0.130	0.450		Left Cheek	0.087	0.182	0.130	0.399
	Left Tilt	0.055	0.073	0.125	0.253		Left Tilt	0.089	0.073	0.125	0.287
Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Head SAR	Right Cheek	0.073	1.126	0.265	1.464	Head SAR	Right Cheek	0.055	1.126	0.265	1.446
	Right Tilt	0.055	0.229	0.863	1.147		Right Tilt	0.042	0.229	0.863	1.134
	Left Cheek	0.083	0.182	0.130	0.395		Left Cheek	0.066	0.182	0.130	0.378
	Left Tilt	0.049	0.073	0.125	0.247		Left Tilt	0.044	0.073	0.125	0.242
Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 14 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Head SAR	Right Cheek	0.103	1.126	0.265	1.494	Head SAR	Right Cheek	0.123	1.126	0.265	1.514
	Right Tilt	0.048	0.229	0.863	1.140		Right Tilt	0.052	0.229	0.863	1.144
	Left Cheek	0.072	0.182	0.130	0.384		Left Cheek	0.071	0.182	0.130	0.383
	Left Tilt	0.033	0.073	0.125	0.231		Left Tilt	0.035	0.073	0.125	0.233
Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Head SAR	Right Cheek	0.060	1.126	0.265	1.451	Head SAR	Right Cheek	0.072	1.126	0.265	1.463
	Right Tilt	0.053	0.229	0.863	1.145		Right Tilt	0.046	0.229	0.863	1.138
	Left Cheek	0.150	0.182	0.130	0.462		Left Cheek	0.071	0.182	0.130	0.383
	Left Tilt	0.047	0.073	0.125	0.245		Left Tilt	0.047	0.073	0.125	0.245
Simult Tx	Configuration	LTE Band 66 (AWS) Ant 3 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Head SAR	Right Cheek	0.109	1.126	0.265	1.500	Head SAR	Right Cheek	0.062	1.126	0.265	1.453
	Right Tilt	0.052	0.229	0.863	1.144		Right Tilt	0.048	0.229	0.863	1.140
	Left Cheek	0.062	0.182	0.130	0.374		Left Cheek	0.070	0.182	0.130	0.382
	Left Tilt	0.052	0.073	0.125	0.250		Left Tilt	0.060	0.073	0.125	0.258

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Simult Tx	Configuration	LTE Band 2 (PCS) Ant 3 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Head SAR	Right Cheek	0.086	1.126	0.265	1.477	Head SAR	Right Cheek	0.016	1.126	0.265	1.407
	Right Tilt	0.081	0.229	0.863	1.173		Right Tilt	0.009	0.229	0.863	1.101
	Left Cheek	0.062	0.182	0.130	0.374		Left Cheek	0.018	0.182	0.130	0.330
	Left Tilt	0.066	0.073	0.125	0.264		Left Tilt	0.003	0.073	0.125	0.201
Simult Tx	Configuration	LTE Band 30 Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Head SAR	Right Cheek	0.007	1.126	0.265	1.398	Head SAR	Right Cheek	0.027	1.126	0.265	1.418
	Right Tilt	0.000	0.229	0.863	1.092		Right Tilt	0.026	0.229	0.863	1.118
	Left Cheek	0.004	0.182	0.130	0.316		Left Cheek	0.026	0.182	0.130	0.338
	Left Tilt	0.002	0.073	0.125	0.200		Left Tilt	0.011	0.073	0.125	0.209
Simult Tx	Configuration	NR Band n5 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	NR Band n66 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Head SAR	Right Cheek	0.063	1.126	0.265	1.454	Head SAR	Right Cheek	0.090	1.126	0.265	1.481
	Right Tilt	0.051	0.229	0.863	1.143		Right Tilt	0.045	0.229	0.863	1.137
	Left Cheek	0.116	0.182	0.130	0.428		Left Cheek	0.069	0.182	0.130	0.381
	Left Tilt	0.042	0.073	0.125	0.240		Left Tilt	0.056	0.073	0.125	0.254
Simult Tx	Configuration	NR Band n2 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	NR Band n2 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Head SAR	Right Cheek	0.098	1.126	0.265	1.489	Head SAR	Right Cheek	0.098	1.126	0.265	1.489
	Right Tilt	0.102	0.229	0.863	1.194		Right Tilt	0.102	0.229	0.863	1.194
	Left Cheek	0.076	0.182	0.130	0.388		Left Cheek	0.076	0.182	0.130	0.388
	Left Tilt	0.091	0.073	0.125	0.289		Left Tilt	0.091	0.073	0.125	0.289

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

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Cell. CDMA/EVDO	0.136	0.285	0.269	0.421	0.405	0.690
	PCS CDMA/EVDO	0.088	0.285	0.269	0.373	0.357	0.642
	GSM/GPRS 850	0.061	0.285	0.269	0.346	0.330	0.615
	GSM/GPRS 1900	0.061	0.285	0.269	0.346	0.330	0.615
	UMTS 850	0.138	0.285	0.269	0.423	0.407	0.692
	UMTS 1750	0.089	0.285	0.269	0.374	0.358	0.643
	UMTS 1900	0.083	0.285	0.269	0.368	0.352	0.637
	LTE Band 12	0.066	0.285	0.269	0.351	0.335	0.620
	LTE Band 13	0.103	0.285	0.269	0.388	0.372	0.657
	LTE Band 14	0.123	0.285	0.269	0.408	0.392	0.677
	LTE Band 5 (Cell)	0.150	0.285	0.269	0.435	0.419	0.704
	LTE Band 66 (AWS)	0.072	0.285	0.269	0.357	0.341	0.626
	LTE Band 66 (AWS) Ant 3	0.109	0.285	0.269	0.394	0.378	0.663
	LTE Band 2 (PCS)	0.070	0.285	0.269	0.355	0.339	0.624
	LTE Band 2 (PCS) Ant 3	0.086	0.285	0.269	0.371	0.355	0.640
	LTE Band 30	0.018	0.285	0.269	0.303	0.287	0.572
	LTE Band 30 Ant 1	0.007	0.285	0.269	0.292	0.276	0.561
	LTE Band 48	0.932	0.285	0.269	1.217	1.201	1.486
	LTE Band 41	0.027	0.285	0.269	0.312	0.296	0.581
	NR Band n5 (Cell)	0.116	0.285	0.269	0.401	0.385	0.670
	NR Band n66 (AWS)	0.090	0.285	0.269	0.375	0.359	0.644
	NR Band n2 (PCS)	0.102	0.285	0.269	0.387	0.371	0.656

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Table 12-3
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Held to Ear)

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	1	2	1+2+3
Head SAR	Cell. CDMA/EVDO	0.136	1.126	0.269	1.531
	PCS CDMA/EVDO	0.088	1.126	0.269	1.483
	GSM/GPRS 850	0.061	1.126	0.269	1.456
	GSM/GPRS 1900	0.061	1.126	0.269	1.456
	UMTS 850	0.138	1.126	0.269	1.533
	UMTS 1750	0.089	1.126	0.269	1.484
	UMTS 1900	0.083	1.126	0.269	1.478
	LTE Band 12	0.066	1.126	0.269	1.461
	LTE Band 13	0.103	1.126	0.269	1.498
	LTE Band 14	0.123	1.126	0.269	1.518
	LTE Band 5 (Cell)	0.150	1.126	0.269	1.545
	LTE Band 66 (AWS)	0.072	1.126	0.269	1.467
	LTE Band 66 (AWS) Ant 3	0.109	1.126	0.269	1.504
	LTE Band 2 (PCS)	0.070	1.126	0.269	1.465
	LTE Band 2 (PCS) Ant 3	0.086	1.126	0.269	1.481
	LTE Band 30	0.018	1.126	0.269	1.413
	LTE Band 30 Ant 1	0.007	1.126	0.269	1.402
	LTE Band 48	0.932	1.126	0.269	See Table Below
	LTE Band 41	0.027	1.126	0.269	1.422
	NR Band n5 (Cell)	0.116	1.126	0.269	1.511
	NR Band n66 (AWS)	0.090	1.126	0.269	1.485
	NR Band n2 (PCS)	0.102	1.126	0.269	1.497

Simult Tx	Configuration	LTE Band 48 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Right Cheek	0.111	1.126	0.120	1.357
	Right Tilt	0.098	0.229	0.269	0.596
	Left Cheek	0.932	0.182	0.269*	1.383
	Left Tilt	0.132	0.073	0.269*	0.474

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

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	Cell. CDMA/EVDO	0.136	0.265	0.401
	PCS CDMA/EVDO	0.088	0.265	0.353
	GSM/GPRS 850	0.061	0.265	0.326
	GSM/GPRS 1900	0.061	0.265	0.326
	UMTS 850	0.138	0.265	0.403
	UMTS 1750	0.089	0.265	0.354
	UMTS 1900	0.083	0.265	0.348
	LTE Band 12	0.066	0.265	0.331
	LTE Band 13	0.103	0.265	0.368
	LTE Band 14	0.123	0.265	0.388
	LTE Band 5 (Cell)	0.150	0.265	0.415
	LTE Band 66 (AWS)	0.072	0.265	0.337
	LTE Band 66 (AWS) Ant 3	0.109	0.265	0.374
	LTE Band 2 (PCS)	0.070	0.265	0.335
	LTE Band 2 (PCS) Ant 3	0.086	0.265	0.351
	LTE Band 30	0.018	0.265	0.283
	LTE Band 30 Ant 1	0.007	0.265	0.272
	LTE Band 48	0.932	0.265	1.197
	LTE Band 41	0.027	0.265	0.292
	NR Band n5 (Cell)	0.116	0.265	0.381
	NR Band n66 (AWS)	0.090	0.265	0.355
	NR Band n2 (PCS)	0.102	0.265	0.367

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

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	Bluetooth SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Cell. CDMA/EVDO	0.136	0.265	0.863	1.264
	PCS CDMA/EVDO	0.088	0.265	0.863	1.216
	GSM/GPRS 850	0.061	0.265	0.863	1.189
	GSM/GPRS 1900	0.061	0.265	0.863	1.189
	UMTS 850	0.138	0.265	0.863	1.266
	UMTS 1750	0.089	0.265	0.863	1.217
	UMTS 1900	0.083	0.265	0.863	1.211
	LTE Band 12	0.066	0.265	0.863	1.194
	LTE Band 13	0.103	0.265	0.863	1.231
	LTE Band 14	0.123	0.265	0.863	1.251
	LTE Band 5 (Cell)	0.150	0.265	0.863	1.278
	LTE Band 66 (AWS)	0.072	0.265	0.863	1.200
	LTE Band 66 (AWS) Ant 3	0.109	0.265	0.863	1.237
	LTE Band 2 (PCS)	0.070	0.265	0.863	1.198
	LTE Band 2 (PCS) Ant 3	0.086	0.265	0.863	1.214
	LTE Band 30	0.018	0.265	0.863	1.146
	LTE Band 30 Ant 1	0.007	0.265	0.863	1.135
	LTE Band 48	0.932	0.265	0.863	See Table Below
	LTE Band 41	0.027	0.265	0.863	1.155
	NR Band n5 (Cell)	0.116	0.265	0.863	1.244
	NR Band n66 (AWS)	0.090	0.265	0.863	1.218
	NR Band n2 (PCS)	0.102	0.265	0.863	1.230

Simult Tx	Configuration	LTE Band 48 SAR (W/kg)	Bluetooth SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Right Cheek	0.111	0.265	0.265	0.641
	Right Tilt	0.098	0.069	0.863	1.030
	Left Cheek	0.932	0.020	0.130	1.082
	Left Tilt	0.132	0.027	0.125	0.284

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Table 12-6
Simultaneous Transmission Scenario with 5 GHz Antenna 1 WLAN and Bluetooth (Held to Ear)

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Cell. CDMA/EVDO	0.136	0.265	0.285	0.686
	PCS CDMA/EVDO	0.088	0.265	0.285	0.638
	GSM/GPRS 850	0.061	0.265	0.285	0.611
	GSM/GPRS 1900	0.061	0.265	0.285	0.611
	UMTS 850	0.138	0.265	0.285	0.688
	UMTS 1750	0.089	0.265	0.285	0.639
	UMTS 1900	0.083	0.265	0.285	0.633
	LTE Band 12	0.066	0.265	0.285	0.616
	LTE Band 13	0.103	0.265	0.285	0.653
	LTE Band 14	0.123	0.265	0.285	0.673
	LTE Band 5 (Cell)	0.150	0.265	0.285	0.700
	LTE Band 66 (AWS)	0.072	0.265	0.285	0.622
	LTE Band 66 (AWS) Ant 3	0.109	0.265	0.285	0.659
	LTE Band 2 (PCS)	0.070	0.265	0.285	0.620
	LTE Band 2 (PCS) Ant 3	0.086	0.265	0.285	0.636
	LTE Band 30	0.018	0.265	0.285	0.568
	LTE Band 30 Ant 1	0.007	0.265	0.285	0.557
	LTE Band 48	0.932	0.265	0.285	1.482
	LTE Band 41	0.027	0.265	0.285	0.577
	NR Band n5 (Cell)	0.116	0.265	0.285	0.666
	NR Band n66 (AWS)	0.090	0.265	0.285	0.640
	NR Band n2 (PCS)	0.102	0.265	0.285	0.652

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Table 12-7
Simultaneous Transmission Scenario with 5 GHz Antenna 2 WLAN and Bluetooth (Held to Ear)

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Cell. CDMA/EVDO	0.136	0.265	0.269	0.670
	PCS CDMA/EVDO	0.088	0.265	0.269	0.622
	GSM/GPRS 850	0.061	0.265	0.269	0.595
	GSM/GPRS 1900	0.061	0.265	0.269	0.595
	UMTS 850	0.138	0.265	0.269	0.672
	UMTS 1750	0.089	0.265	0.269	0.623
	UMTS 1900	0.083	0.265	0.269	0.617
	LTE Band 12	0.066	0.265	0.269	0.600
	LTE Band 13	0.103	0.265	0.269	0.637
	LTE Band 14	0.123	0.265	0.269	0.657
	LTE Band 5 (Cell)	0.150	0.265	0.269	0.684
	LTE Band 66 (AWS)	0.072	0.265	0.269	0.606
	LTE Band 66 (AWS) Ant 3	0.109	0.265	0.269	0.643
	LTE Band 2 (PCS)	0.070	0.265	0.269	0.604
	LTE Band 2 (PCS) Ant 3	0.086	0.265	0.269	0.620
	LTE Band 30	0.018	0.265	0.269	0.552
	LTE Band 30 Ant 1	0.007	0.265	0.269	0.541
	LTE Band 48	0.932	0.265	0.269	1.466
	LTE Band 41	0.027	0.265	0.269	0.561
	NR Band n5 (Cell)	0.116	0.265	0.269	0.650
	NR Band n66 (AWS)	0.090	0.265	0.269	0.624
	NR Band n2 (PCS)	0.102	0.265	0.269	0.636

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

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Head SAR	Cell. CDMA/EVDO	0.136	0.265	0.285	0.269	0.955
	PCS CDMA/EVDO	0.088	0.265	0.285	0.269	0.907
	GSM/GPRS 850	0.061	0.265	0.285	0.269	0.880
	GSM/GPRS 1900	0.061	0.265	0.285	0.269	0.880
	UMTS 850	0.138	0.265	0.285	0.269	0.957
	UMTS 1750	0.089	0.265	0.285	0.269	0.908
	UMTS 1900	0.083	0.265	0.285	0.269	0.902
	LTE Band 12	0.066	0.265	0.285	0.269	0.885
	LTE Band 13	0.103	0.265	0.285	0.269	0.922
	LTE Band 14	0.123	0.265	0.285	0.269	0.942
	LTE Band 5 (Cell)	0.150	0.265	0.285	0.269	0.969
	LTE Band 66 (AWS)	0.072	0.265	0.285	0.269	0.891
	LTE Band 66 (AWS) Ant 3	0.109	0.265	0.285	0.269	0.928
	LTE Band 2 (PCS)	0.070	0.265	0.285	0.269	0.889
	LTE Band 2 (PCS) Ant 3	0.086	0.265	0.285	0.269	0.905
	LTE Band 30	0.018	0.265	0.285	0.269	0.837
	LTE Band 30 Ant 1	0.007	0.265	0.285	0.269	0.826
	LTE Band 48	0.932	0.265	0.285	0.269	See Table Below
	LTE Band 41	0.027	0.265	0.285	0.269	0.846
	NR Band n5 (Cell)	0.116	0.265	0.285	0.269	0.935
	NR Band n66 (AWS)	0.090	0.265	0.285	0.269	0.909
	NR Band n2 (PCS)	0.102	0.265	0.285	0.269	0.921

Simult Tx	Configuration	LTE Band 48 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	2	3	1+2+3+4
Head SAR	Right Cheek	0.111	0.265	0.185	0.120	0.681
	Right Tilt	0.098	0.069	0.285	0.269	0.721
	Left Cheek	0.932	0.020	0.285*	0.269*	1.506
	Left Tilt	0.132	0.027	0.285*	0.269*	0.713

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12.4 Body-Worn Simultaneous Transmission Analysis

Table 12-9
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body - Worn SAR	Cell. CDMA	0.514	0.201	0.107	0.715	0.621	0.822
	PCS CDMA	0.759	0.201	0.107	0.960	0.866	1.067
	GSM/GPRS 850	0.510	0.201	0.107	0.711	0.617	0.818
	GSM/GPRS 1900	0.571	0.201	0.107	0.772	0.678	0.879
	UMTS 850	0.504	0.201	0.107	0.705	0.611	0.812
	UMTS 1750	0.750	0.201	0.107	0.951	0.857	1.058
	UMTS 1900	0.772	0.201	0.107	0.973	0.879	1.080
	LTE Band 12	0.343	0.201	0.107	0.544	0.450	0.651
	LTE Band 13	0.528	0.201	0.107	0.729	0.635	0.836
	LTE Band 14	0.471	0.201	0.107	0.672	0.578	0.779
	LTE Band 5 (Cell)	0.619	0.201	0.107	0.820	0.726	0.927
	LTE Band 66 (AWS)	0.705	0.201	0.107	0.906	0.812	1.013
	LTE Band 66 (AWS) Ant 3	0.353	0.201	0.107	0.554	0.460	0.661
	LTE Band 2 (PCS)	0.667	0.201	0.107	0.868	0.774	0.975
	LTE Band 2 (PCS) Ant 3	0.436	0.201	0.107	0.637	0.543	0.744
	LTE Band 30	0.321	0.201	0.107	0.522	0.428	0.629
	LTE Band 30 Ant 1	0.020	0.201	0.107	0.221	0.127	0.328
	LTE Band 48	0.199	0.201	0.107	0.400	0.306	0.507
	LTE Band 41	0.233	0.201	0.107	0.434	0.340	0.541
	NR Band n5 (Cell)	0.582	0.201	0.107	0.783	0.689	0.890
	NR Band n66 (AWS)	0.392	0.201	0.107	0.593	0.499	0.700
	NR Band n2 (PCS)	0.317	0.201	0.107	0.518	0.424	0.625

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

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body - Worn SAR	Cell. CDMA	0.514	0.229	0.158	0.743	0.672	0.901
	PCS CDMA	0.759	0.229	0.158	0.988	0.917	1.146
	GSM/GPRS 850	0.510	0.229	0.158	0.739	0.668	0.897
	GSM/GPRS 1900	0.571	0.229	0.158	0.800	0.729	0.958
	UMTS 850	0.504	0.229	0.158	0.733	0.662	0.891
	UMTS 1750	0.750	0.229	0.158	0.979	0.908	1.137
	UMTS 1900	0.772	0.229	0.158	1.001	0.930	1.159
	LTE Band 12	0.343	0.229	0.158	0.572	0.501	0.730
	LTE Band 13	0.528	0.229	0.158	0.757	0.686	0.915
	LTE Band 14	0.471	0.229	0.158	0.700	0.629	0.858
	LTE Band 5 (Cell)	0.619	0.229	0.158	0.848	0.777	1.006
	LTE Band 66 (AWS)	0.705	0.229	0.158	0.934	0.863	1.092
	LTE Band 66 (AWS) Ant 3	0.353	0.229	0.158	0.582	0.511	0.740
	LTE Band 2 (PCS)	0.667	0.229	0.158	0.896	0.825	1.054
	LTE Band 2 (PCS) Ant 3	0.436	0.229	0.158	0.665	0.594	0.823
	LTE Band 30	0.321	0.229	0.158	0.550	0.479	0.708
	LTE Band 30 Ant 1	0.020	0.229	0.158	0.249	0.178	0.407
	LTE Band 48	0.199	0.229	0.158	0.428	0.357	0.586
	LTE Band 41	0.233	0.229	0.158	0.462	0.391	0.620
	NR Band n5 (Cell)	0.582	0.229	0.158	0.811	0.740	0.969
	NR Band n66 (AWS)	0.392	0.229	0.158	0.621	0.550	0.779
	NR Band n2 (PCS)	0.317	0.229	0.158	0.546	0.475	0.704

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Table 12-11
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Body - Worn SAR	Cell. CDMA	0.514	0.201	0.158	0.873
	PCS CDMA	0.759	0.201	0.158	1.118
	GSM/GPRS 850	0.510	0.201	0.158	0.869
	GSM/GPRS 1900	0.571	0.201	0.158	0.930
	UMTS 850	0.504	0.201	0.158	0.863
	UMTS 1750	0.750	0.201	0.158	1.109
	UMTS 1900	0.772	0.201	0.158	1.131
	LTE Band 12	0.343	0.201	0.158	0.702
	LTE Band 13	0.528	0.201	0.158	0.887
	LTE Band 14	0.471	0.201	0.158	0.830
	LTE Band 5 (Cell)	0.619	0.201	0.158	0.978
	LTE Band 66 (AWS)	0.705	0.201	0.158	1.064
	LTE Band 66 (AWS) Ant 3	0.353	0.201	0.158	0.712
	LTE Band 2 (PCS)	0.667	0.201	0.158	1.026
	LTE Band 2 (PCS) Ant 3	0.436	0.201	0.158	0.795
	LTE Band 30	0.321	0.201	0.158	0.680
	LTE Band 30 Ant 1	0.020	0.201	0.158	0.379
	LTE Band 48	0.199	0.201	0.158	0.558
	LTE Band 41	0.233	0.201	0.158	0.592
	NR Band n5 (Cell)	0.582	0.201	0.158	0.941
	NR Band n66 (AWS)	0.392	0.201	0.158	0.751
	NR Band n2 (PCS)	0.317	0.201	0.158	0.676

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

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body - Worn SAR	Cell. CDMA	0.514	0.048	0.562
	PCS CDMA	0.759	0.048	0.807
	GSM/GPRS 850	0.510	0.048	0.558
	GSM/GPRS 1900	0.571	0.048	0.619
	UMTS 850	0.504	0.048	0.552
	UMTS 1750	0.750	0.048	0.798
	UMTS 1900	0.772	0.048	0.820
	LTE Band 12	0.343	0.048	0.391
	LTE Band 13	0.528	0.048	0.576
	LTE Band 14	0.471	0.048	0.519
	LTE Band 5 (Cell)	0.619	0.048	0.667
	LTE Band 66 (AWS)	0.705	0.048	0.753
	LTE Band 66 (AWS) Ant 3	0.353	0.048	0.401
	LTE Band 2 (PCS)	0.667	0.048	0.715
	LTE Band 2 (PCS) Ant 3	0.436	0.048	0.484
	LTE Band 30	0.321	0.048	0.369
	LTE Band 30 Ant 1	0.020	0.048	0.068
	LTE Band 48	0.199	0.048	0.247
	LTE Band 41	0.233	0.048	0.281
	NR Band n5 (Cell)	0.582	0.048	0.630
	NR Band n66 (AWS)	0.392	0.048	0.440
	NR Band n2 (PCS)	0.317	0.048	0.365

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Table 12-13
Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2 and Bluetooth (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	Bluetooth SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Body - Worn SAR	Cell. CDMA	0.514	0.048	0.107	0.669
	PCS CDMA	0.759	0.048	0.107	0.914
	GSM/GPRS 850	0.510	0.048	0.107	0.665
	GSM/GPRS 1900	0.571	0.048	0.107	0.726
	UMTS 850	0.504	0.048	0.107	0.659
	UMTS 1750	0.750	0.048	0.107	0.905
	UMTS 1900	0.772	0.048	0.107	0.927
	LTE Band 12	0.343	0.048	0.107	0.498
	LTE Band 13	0.528	0.048	0.107	0.683
	LTE Band 14	0.471	0.048	0.107	0.626
	LTE Band 5 (Cell)	0.619	0.048	0.107	0.774
	LTE Band 66 (AWS)	0.705	0.048	0.107	0.860
	LTE Band 66 (AWS) Ant 3	0.353	0.048	0.107	0.508
	LTE Band 2 (PCS)	0.667	0.048	0.107	0.822
	LTE Band 2 (PCS) Ant 3	0.436	0.048	0.107	0.591
	LTE Band 30	0.321	0.048	0.107	0.476
	LTE Band 30 Ant 1	0.020	0.048	0.107	0.175
	LTE Band 48	0.199	0.048	0.107	0.354
	LTE Band 41	0.233	0.048	0.107	0.388
	NR Band n5 (Cell)	0.582	0.048	0.107	0.737
	NR Band n66 (AWS)	0.392	0.048	0.107	0.547
	NR Band n2 (PCS)	0.317	0.048	0.107	0.472

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Table 12-14

Simultaneous Transmission Scenario with 5 GHz Antenna 1 WLAN and Bluetooth (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Body - Worn SAR	Cell. CDMA	0.514	0.048	0.229	0.791
	PCS CDMA	0.759	0.048	0.229	1.036
	GSM/GPRS 850	0.510	0.048	0.229	0.787
	GSM/GPRS 1900	0.571	0.048	0.229	0.848
	UMTS 850	0.504	0.048	0.229	0.781
	UMTS 1750	0.750	0.048	0.229	1.027
	UMTS 1900	0.772	0.048	0.229	1.049
	LTE Band 12	0.343	0.048	0.229	0.620
	LTE Band 13	0.528	0.048	0.229	0.805
	LTE Band 14	0.471	0.048	0.229	0.748
	LTE Band 5 (Cell)	0.619	0.048	0.229	0.896
	LTE Band 66 (AWS)	0.705	0.048	0.229	0.982
	LTE Band 66 (AWS) Ant 3	0.353	0.048	0.229	0.630
	LTE Band 2 (PCS)	0.667	0.048	0.229	0.944
	LTE Band 2 (PCS) Ant 3	0.436	0.048	0.229	0.713
	LTE Band 30	0.321	0.048	0.229	0.598
	LTE Band 30 Ant 1	0.020	0.048	0.229	0.297
	LTE Band 48	0.199	0.048	0.229	0.476
	LTE Band 41	0.233	0.048	0.229	0.510
	NR Band n5 (Cell)	0.582	0.048	0.229	0.859
	NR Band n66 (AWS)	0.392	0.048	0.229	0.669
	NR Band n2 (PCS)	0.317	0.048	0.229	0.594

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Table 12-15

Simultaneous Transmission Scenario with 5 GHz Antenna 2 WLAN and Bluetooth (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Body - Worn SAR	Cell. CDMA	0.514	0.048	0.158	0.720
	PCS CDMA	0.759	0.048	0.158	0.965
	GSM/GPRS 850	0.510	0.048	0.158	0.716
	GSM/GPRS 1900	0.571	0.048	0.158	0.777
	UMTS 850	0.504	0.048	0.158	0.710
	UMTS 1750	0.750	0.048	0.158	0.956
	UMTS 1900	0.772	0.048	0.158	0.978
	LTE Band 12	0.343	0.048	0.158	0.549
	LTE Band 13	0.528	0.048	0.158	0.734
	LTE Band 14	0.471	0.048	0.158	0.677
	LTE Band 5 (Cell)	0.619	0.048	0.158	0.825
	LTE Band 66 (AWS)	0.705	0.048	0.158	0.911
	LTE Band 66 (AWS) Ant 3	0.353	0.048	0.158	0.559
	LTE Band 2 (PCS)	0.667	0.048	0.158	0.873
	LTE Band 2 (PCS) Ant 3	0.436	0.048	0.158	0.642
	LTE Band 30	0.321	0.048	0.158	0.527
	LTE Band 30 Ant 1	0.020	0.048	0.158	0.226
	LTE Band 48	0.199	0.048	0.158	0.405
	LTE Band 41	0.233	0.048	0.158	0.439
	NR Band n5 (Cell)	0.582	0.048	0.158	0.788
	NR Band n66 (AWS)	0.392	0.048	0.158	0.598
	NR Band n2 (PCS)	0.317	0.048	0.158	0.523

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Table 12-16
Simultaneous Transmission Scenario with 5 GHz MIMO WLAN and Bluetooth (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body - Worn SAR	Cell. CDMA	0.514	0.048	0.229	0.158	0.949
	PCS CDMA	0.759	0.048	0.229	0.158	1.194
	GSM/GPRS 850	0.510	0.048	0.229	0.158	0.945
	GSM/GPRS 1900	0.571	0.048	0.229	0.158	1.006
	UMTS 850	0.504	0.048	0.229	0.158	0.939
	UMTS 1750	0.750	0.048	0.229	0.158	1.185
	UMTS 1900	0.772	0.048	0.229	0.158	1.207
	LTE Band 12	0.343	0.048	0.229	0.158	0.778
	LTE Band 13	0.528	0.048	0.229	0.158	0.963
	LTE Band 14	0.471	0.048	0.229	0.158	0.906
	LTE Band 5 (Cell)	0.619	0.048	0.229	0.158	1.054
	LTE Band 66 (AWS)	0.705	0.048	0.229	0.158	1.140
	LTE Band 66 (AWS) Ant 3	0.353	0.048	0.229	0.158	0.788
	LTE Band 2 (PCS)	0.667	0.048	0.229	0.158	1.102
	LTE Band 2 (PCS) Ant 3	0.436	0.048	0.229	0.158	0.871
	LTE Band 30	0.321	0.048	0.229	0.158	0.756
	LTE Band 30 Ant 1	0.020	0.048	0.229	0.158	0.455
	LTE Band 48	0.199	0.048	0.229	0.158	0.634
	LTE Band 41	0.233	0.048	0.229	0.158	0.668
	NR Band n5 (Cell)	0.582	0.048	0.229	0.158	1.017
	NR Band n66 (AWS)	0.392	0.048	0.229	0.158	0.827
	NR Band n2 (PCS)	0.317	0.048	0.229	0.158	0.594

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12.5 Hotspot SAR Simultaneous Transmission Analysis

Table 12-17
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot	Cell. EVDO	0.537	0.301	0.157	0.838	0.694	0.995
	PCS EVDO	0.956	0.301	0.157	1.257	1.113	1.414
	GPRS 850	0.510	0.301	0.157	0.811	0.667	0.968
	GPRS 1900	0.818	0.301	0.157	1.119	0.975	1.276
	UMTS 850	0.504	0.301	0.157	0.805	0.661	0.962
	UMTS 1750	1.024	0.301	0.157	1.325	1.181	1.482
	UMTS 1900	0.984	0.301	0.157	1.285	1.141	1.442
	LTE Band 12	0.343	0.301	0.157	0.644	0.500	0.801
	LTE Band 13	0.528	0.301	0.157	0.829	0.685	0.986
	LTE Band 14	0.471	0.301	0.157	0.772	0.628	0.929
	LTE Band 5 (Cell)	0.619	0.301	0.157	0.920	0.776	1.077
	LTE Band 66 (AWS)	0.910	0.301	0.157	1.211	1.067	1.368
	LTE Band 66 (AWS) Ant 3	0.546	0.301	0.157	0.847	0.703	1.004
	LTE Band 2 (PCS)	0.857	0.301	0.157	1.158	1.014	1.315
	LTE Band 2 (PCS) Ant 3	0.490	0.301	0.157	0.791	0.647	0.948
	LTE Band 30	0.589	0.301	0.157	0.890	0.746	1.047
	LTE Band 30 Ant 1	0.022	0.301	0.157	0.323	0.179	0.480
	LTE Band 48	0.405	0.301	0.157	0.706	0.562	0.863
	LTE Band 41	0.533	0.301	0.157	0.834	0.690	0.991
	NR Band n5 (Cell)	0.582	0.301	0.157	0.883	0.739	1.040
	NR Band n66 (AWS)	0.599	0.301	0.157	0.900	0.756	1.057
	NR Band n2 (PCS)	0.317	0.301	0.157	0.618	0.474	0.775

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Table 12-18
Simultaneous Transmission Scenario with 5 GHz WLAN (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot	Cell. EVDO	0.537	0.216	0.132	0.753	0.669	0.885
	PCS EVDO	0.956	0.216	0.132	1.172	1.088	1.304
	GPRS 850	0.510	0.216	0.132	0.726	0.642	0.858
	GPRS 1900	0.818	0.216	0.132	1.034	0.950	1.166
	UMTS 850	0.504	0.216	0.132	0.720	0.636	0.852
	UMTS 1750	1.024	0.216	0.132	1.240	1.156	1.372
	UMTS 1900	0.984	0.216	0.132	1.200	1.116	1.332
	LTE Band 12	0.343	0.216	0.132	0.559	0.475	0.691
	LTE Band 13	0.528	0.216	0.132	0.744	0.660	0.876
	LTE Band 14	0.471	0.216	0.132	0.687	0.603	0.819
	LTE Band 5 (Cell)	0.619	0.216	0.132	0.835	0.751	0.967
	LTE Band 66 (AWS)	0.910	0.216	0.132	1.126	1.042	1.258
	LTE Band 66 (AWS) Ant 3	0.546	0.216	0.132	0.762	0.678	0.894
	LTE Band 2 (PCS)	0.857	0.216	0.132	1.073	0.989	1.205
	LTE Band 2 (PCS) Ant 3	0.490	0.216	0.132	0.706	0.622	0.838
	LTE Band 30	0.589	0.216	0.132	0.805	0.721	0.937
	LTE Band 30 Ant 1	0.022	0.216	0.132	0.238	0.154	0.370
	LTE Band 48	0.405	0.216	0.132	0.621	0.537	0.753
	LTE Band 41	0.533	0.216	0.132	0.749	0.665	0.881
	NR Band n5 (Cell)	0.582	0.216	0.132	0.798	0.714	0.930
	NR Band n66 (AWS)	0.599	0.216	0.132	0.815	0.731	0.947
	NR Band n2 (PCS)	0.317	0.216	0.132	0.533	0.449	0.665

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Table 12-19
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot	Cell. EVDO	0.537	0.301	0.132	0.970
	PCS EVDO	0.956	0.301	0.132	1.389
	GPRS 850	0.510	0.301	0.132	0.943
	GPRS 1900	0.818	0.301	0.132	1.251
	UMTS 850	0.504	0.301	0.132	0.937
	UMTS 1750	1.024	0.301	0.132	1.457
	UMTS 1900	0.984	0.301	0.132	1.417
	LTE Band 12	0.343	0.301	0.132	0.776
	LTE Band 13	0.528	0.301	0.132	0.961
	LTE Band 14	0.471	0.301	0.132	0.904
	LTE Band 5 (Cell)	0.619	0.301	0.132	1.052
	LTE Band 66 (AWS)	0.910	0.301	0.132	1.343
	LTE Band 66 (AWS) Ant 3	0.546	0.301	0.132	0.979
	LTE Band 2 (PCS)	0.857	0.301	0.132	1.290
	LTE Band 2 (PCS) Ant 3	0.490	0.301	0.132	0.923
	LTE Band 30	0.589	0.301	0.132	1.022
	LTE Band 30 Ant 1	0.022	0.301	0.132	0.455
	LTE Band 48	0.405	0.301	0.132	0.838
	LTE Band 41	0.533	0.301	0.132	0.966
	NR Band n5 (Cell)	0.582	0.301	0.132	1.015
	NR Band n66 (AWS)	0.599	0.301	0.132	1.032
	NR Band n2 (PCS)	0.317	0.301	0.132	0.750

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Table 12-20
Simultaneous Transmission Scenario with Bluetooth (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	Cell. EVDO	0.537	0.072	0.609
	PCS EVDO	0.956	0.072	1.028
	GPRS 850	0.510	0.072	0.582
	GPRS 1900	0.818	0.072	0.890
	UMTS 850	0.504	0.072	0.576
	UMTS 1750	1.024	0.072	1.096
	UMTS 1900	0.984	0.072	1.056
	LTE Band 12	0.343	0.072	0.415
	LTE Band 13	0.528	0.072	0.600
	LTE Band 14	0.471	0.072	0.543
	LTE Band 5 (Cell)	0.619	0.072	0.691
	LTE Band 66 (AWS)	0.910	0.072	0.982
	LTE Band 66 (AWS) Ant 3	0.546	0.072	0.618
	LTE Band 2 (PCS)	0.857	0.072	0.929
	LTE Band 2 (PCS) Ant 3	0.490	0.072	0.562
	LTE Band 30	0.589	0.072	0.661
	LTE Band 30 Ant 1	0.022	0.072	0.094
	LTE Band 48	0.405	0.072	0.477
	LTE Band 41	0.533	0.072	0.605
	NR Band n5 (Cell)	0.582	0.072	0.654
	NR Band n66 (AWS)	0.599	0.072	0.671
	NR Band n2 (PCS)	0.317	0.072	0.389

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Table 12-21
Simultaneous Transmission Scenario with 2.4 GHz WLAN Antenna 2 and Bluetooth (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	Bluetooth SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot	Cell. EVDO	0.537	0.072	0.157	0.766
	PCS EVDO	0.956	0.072	0.157	1.185
	GPRS 850	0.510	0.072	0.157	0.739
	GPRS 1900	0.818	0.072	0.157	1.047
	UMTS 850	0.504	0.072	0.157	0.733
	UMTS 1750	1.024	0.072	0.157	1.253
	UMTS 1900	0.984	0.072	0.157	1.213
	LTE Band 12	0.343	0.072	0.157	0.572
	LTE Band 13	0.528	0.072	0.157	0.757
	LTE Band 14	0.471	0.072	0.157	0.700
	LTE Band 5 (Cell)	0.619	0.072	0.157	0.848
	LTE Band 66 (AWS)	0.910	0.072	0.157	1.139
	LTE Band 66 (AWS) Ant 3	0.546	0.072	0.157	0.775
	LTE Band 2 (PCS)	0.857	0.072	0.157	1.086
	LTE Band 2 (PCS) Ant 3	0.490	0.072	0.157	0.719
	LTE Band 30	0.589	0.072	0.157	0.818
	LTE Band 30 Ant 1	0.022	0.072	0.157	0.251
	LTE Band 48	0.405	0.072	0.157	0.634
	LTE Band 41	0.533	0.072	0.157	0.762
	NR Band n5 (Cell)	0.582	0.072	0.157	0.811
	NR Band n66 (AWS)	0.599	0.072	0.157	0.828
	NR Band n2 (PCS)	0.317	0.072	0.157	0.546

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Table 12-22
Simultaneous Transmission Scenario with 5 GHz Antenna 1 WLAN and Bluetooth (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot	Cell. EVDO	0.537	0.072	0.216	0.825
	PCS EVDO	0.956	0.072	0.216	1.244
	GPRS 850	0.510	0.072	0.216	0.798
	GPRS 1900	0.818	0.072	0.216	1.106
	UMTS 850	0.504	0.072	0.216	0.792
	UMTS 1750	1.024	0.072	0.216	1.312
	UMTS 1900	0.984	0.072	0.216	1.272
	LTE Band 12	0.343	0.072	0.216	0.631
	LTE Band 13	0.528	0.072	0.216	0.816
	LTE Band 14	0.471	0.072	0.216	0.759
	LTE Band 5 (Cell)	0.619	0.072	0.216	0.907
	LTE Band 66 (AWS)	0.910	0.072	0.216	1.198
	LTE Band 66 (AWS) Ant 3	0.546	0.072	0.216	0.834
	LTE Band 2 (PCS)	0.857	0.072	0.216	1.145
	LTE Band 2 (PCS) Ant 3	0.490	0.072	0.216	0.778
	LTE Band 30	0.589	0.072	0.216	0.877
	LTE Band 30 Ant 1	0.022	0.072	0.216	0.310
	LTE Band 48	0.405	0.072	0.216	0.693
	LTE Band 41	0.533	0.072	0.216	0.821
	NR Band n5 (Cell)	0.582	0.072	0.216	0.870
	NR Band n66 (AWS)	0.599	0.072	0.216	0.887
	NR Band n2 (PCS)	0.317	0.072	0.216	0.605

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Table 12-23
Simultaneous Transmission Scenario with 5 GHz Antenna 2 WLAN and Bluetooth (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot	Cell. EVDO	0.537	0.072	0.132	0.741
	PCS EVDO	0.956	0.072	0.132	1.160
	GPRS 850	0.510	0.072	0.132	0.714
	GPRS 1900	0.818	0.072	0.132	1.022
	UMTS 850	0.504	0.072	0.132	0.708
	UMTS 1750	1.024	0.072	0.132	1.228
	UMTS 1900	0.984	0.072	0.132	1.188
	LTE Band 12	0.343	0.072	0.132	0.547
	LTE Band 13	0.528	0.072	0.132	0.732
	LTE Band 14	0.471	0.072	0.132	0.675
	LTE Band 5 (Cell)	0.619	0.072	0.132	0.823
	LTE Band 66 (AWS)	0.910	0.072	0.132	1.114
	LTE Band 66 (AWS) Ant 3	0.546	0.072	0.132	0.750
	LTE Band 2 (PCS)	0.857	0.072	0.132	1.061
	LTE Band 2 (PCS) Ant 3	0.490	0.072	0.132	0.694
	LTE Band 30	0.589	0.072	0.132	0.793
	LTE Band 30 Ant 1	0.022	0.072	0.132	0.226
	LTE Band 48	0.405	0.072	0.132	0.609
	LTE Band 41	0.533	0.072	0.132	0.737
	NR Band n5 (Cell)	0.582	0.072	0.132	0.786
	NR Band n66 (AWS)	0.599	0.072	0.132	0.803
	NR Band n2 (PCS)	0.317	0.072	0.132	0.521

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

Configuration	Mode	2G/3G/4G /5G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	Cell. EVDO	0.537	0.072	0.216	0.132	0.957
	PCS EVDO	0.956	0.072	0.216	0.132	1.376
	GPRS 850	0.510	0.072	0.216	0.132	0.930
	GPRS 1900	0.818	0.072	0.216	0.132	1.238
	UMTS 850	0.504	0.072	0.216	0.132	0.924
	UMTS 1750	1.024	0.072	0.216	0.132	1.444
	UMTS 1900	0.984	0.072	0.216	0.132	1.404
	LTE Band 12	0.343	0.072	0.216	0.132	0.763
	LTE Band 13	0.528	0.072	0.216	0.132	0.948
	LTE Band 14	0.471	0.072	0.216	0.132	0.891
	LTE Band 5 (Cell)	0.619	0.072	0.216	0.132	1.039
	LTE Band 66 (AWS)	0.910	0.072	0.216	0.132	1.330
	LTE Band 66 (AWS) Ant 3	0.546	0.072	0.216	0.132	0.966
	LTE Band 2 (PCS)	0.857	0.072	0.216	0.132	1.277
	LTE Band 2 (PCS) Ant 3	0.490	0.072	0.216	0.132	0.910
	LTE Band 30	0.589	0.072	0.216	0.132	1.009
	LTE Band 30 Ant 1	0.022	0.072	0.216	0.132	0.442
	LTE Band 48	0.405	0.072	0.216	0.132	0.825
	LTE Band 41	0.533	0.072	0.216	0.132	0.953
	NR Band n5 (Cell)	0.582	0.072	0.216	0.132	1.002
	NR Band n66 (AWS)	0.599	0.072	0.216	0.132	1.019
	NR Band n2 (PCS)	0.317	0.072	0.216	0.132	0.737

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12.6 Phablet Simultaneous Transmission Analysis

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

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

Table 12-25
Simultaneous Transmission Scenario with 5 GHz WLAN (Phablet)

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Phablet SAR	Back	-	0.382	0.471	0.382	0.471	0.853
	Front	-	0.496*	0.471*	0.496	0.471	0.967
	Top	-	0.496*	0.471*	0.496	0.471	0.967
	Bottom	2.262	-	-	2.262	2.262	2.262
	Right	-	-	-	-	-	-
	Left	-	0.496	0.471*	0.496	0.471	0.967
Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Phablet SAR	Back	2.797	0.382	0.471	3.179	3.268	3.650
	Front	-	0.496*	0.471*	0.496	0.471	0.967
	Top	-	0.496*	0.471*	0.496	0.471	0.967
	Bottom	1.969	-	-	1.969	1.969	1.969
	Right	-	-	-	-	-	-
	Left	-	0.496	0.471*	0.496	0.471	0.967

Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Phablet SAR	Back	-	0.382	0.471	0.382	0.471	0.853
	Front	-	0.496*	0.471*	0.496	0.471	0.967
	Top	-	0.496*	0.471*	0.496	0.471	0.967
	Bottom	1.762	-	-	1.762	1.762	1.762
	Right	-	-	-	-	-	-
	Left	-	0.496	0.471*	0.496	0.471	0.967

12.7 Simultaneous Transmission Conclusion

The above numerical summed SAR results for all the worst-case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06 and IEEE 1528-2013 Section 6.3.4.1.2.

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13 SAR MEASUREMENT VARIABILITY

13.1 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 ($\sim 10\%$ 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 13-1
Head SAR Measurement Variability Results

HEAD VARIABILITY RESULTS															
Band	FREQUENCY		Mode	Service	Side	Test Position	Mechanical Mode	Data Rate (Mbps)	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)			
3700	3690.00	56640	LTE Band 48, 20 MHz Bandwidth	QPSK, 50 RB, 25 RB Offset	Left	Cheek	3	N/A	0.831	0.827	1.00	N/A	N/A	N/A	N/A
2450	2462.00	11	802.11b, 22 MHz Bandwidth	DSSS , ANT 1	Right	Cheek	3	1	0.970	0.969	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									

Table 13-2
Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS													
Band	FREQUENCY		Mode	Service	Side	Spacing	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)	
1750	1752.60	1513	UMTS 1750	RMC	bottom	10 mm	0.905	0.900	1.01	N/A	N/A	N/A	N/A
1900	1852.40	9262	UMTS 1900	RMC	bottom	10 mm	0.881	0.858	1.03	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Body 1.6 W/kg (mW/g) averaged over 1 gram							

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Table 13-3
Phablet SAR Measurement Variability Results

PHABLET VARIABILITY RESULTS														
Band	FREQUENCY		Mode	Service	Mechanical Mode	Side	Spacing	Measured SAR (10g)	1st Repeated SAR (10g)	Ratio	2nd Repeated SAR (10g)	Ratio	3rd Repeated SAR (10g)	Ratio
	MHz	Ch.						(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1900	1880.00	9400	UMTS 1900	RMC	1	back	0 mm	2.420	2.320	1.04	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Phablet 4.0 W/kg (mW/g) averaged over 10 grams							

13.2 Measurement Uncertainty

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

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14 TUNER TESTING

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

To evaluate all the tuner states, the 130 tuner states were divided among the aggregate band, mode and exposure combinations. Single point time-sweep measurements were performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state was able to be established remotely so that the device was not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe remained stationary at the same position throughout the entire series of single point measurements for each combination. When the single point SAR or 1g SAR was > 1.2 W/kg for a particular band/mode/exposure condition, point SAR measurements were made for all 130 states.

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

Table 14-1
Supplemental Head SAR Data

Supplemental Head SAR Data									
LTE B12		LTE B13		LTE B14		LTE B5		NR Band n5	
QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		DFT-s-OFDM, QPSK, 20 MHz Bandwidth, 50 RB, 28 RB Offset	
Test Position	Left Cheek	Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Left Cheek	Test Position	Left Cheek
Frequency (MHz)	707.5	Frequency (MHz)	782.0	Frequency (MHz)	793.0	Frequency (MHz)	836.5	Frequency (MHz)	836.5
Channel	23095	Channel	23230	Channel	23330	Channel	20525	Channel	167300
Measured 1g SAR (W/kg)	0.055	Measured 1g SAR (W/kg)	0.069	Measured 1g SAR (W/kg)	0.065	Measured 1g SAR (W/kg)	0.069	Measured 1g SAR (W/kg)	0.063
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 108)	0.063	Auto-tune (State 105)	0.086	Auto-tune (State 105)	0.086	Auto-tune (State 5)	0.081	Auto-tune (State 5)	0.083
Default (State 24)	0.040	Default (State 16)	0.074	Default (State 16)	0.075	Default (State 10)	0.078	Default (State 10)	0.076
State 1	0.015	State 5	0.059	State 4	0.051	State 0	0.014	State 5	0.083
State 17	0.010	State 13	0.049	State 9	0.014	State 3	0.067	State 8	0.062
State 29	0.031	State 22	0.089	State 15	0.058	State 5	0.082	State 10	0.076
State 31	0.047	State 25	0.016	State 23	0.076	State 8	0.071	State 14	0.081
State 37	0.060	State 30	0.072	State 28	0.061	State 19	0.073	State 20	0.073
State 46	0.042	State 35	0.052	State 41	0.080	State 29	0.076	State 27	0.077
State 61	0.039	State 39	0.065	State 48	0.044	State 36	0.034	State 33	0.002
State 80	0.034	State 53	0.086	State 59	0.030	State 47	0.077	State 45	0.069
State 96	0.035	State 72	0.080	State 75	0.016	State 49	0.067	State 52	0.061
State 99	0.062	State 88	0.088	State 90	0.014	State 71	0.079	State 56	0.048
State 102	0.063	State 99	0.025	State 92	0.032	State 82	0.016	State 66	0.008
State 107	0.057	State 100	0.057	State 104	0.075	State 91	0.034	State 76	0.058
State 108	0.064	State 105	0.089	State 105	0.082	State 97	0.056	State 87	0.055
State 109	0.068	State 106	0.009	State 112	0.042	State 101	0.061	State 89	0.040
State 110	0.054	State 108	0.045	State 118	0.075	State 115	0.028	State 103	0.061
State 119	0.029	State 117	0.085	State 125	0.069	State 119	0.054	State 121	0.030
State 127	0.034	State 126	0.082	State 129	0.047	State 123	0.023	State 122	0.005

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Table 14-2
Supplemental Body SAR Data

Supplemental Body SAR Data									
LTE B12		LTE B13		LTE B14		LTE B5		NR Band n5	
QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset		DFT-s-OFDM, QPSK, 20 MHz Bandwidth, 50 RB, 28 RB Offset	
Test Position	Back	Test Position	Back	Test Position	Back	Test Position	Back	Test Position	Back
Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm
Frequency (MHz)	707.5	Frequency (MHz)	782.0	Frequency (MHz)	793.0	Frequency (MHz)	836.5	Frequency (MHz)	836.5
Channel	23095	Channel	23230	Channel	23330	Channel	20525	Channel	167300
Measured 1g SAR (W/kg)	0.288	Measured 1g SAR (W/kg)	0.492	Measured 1g SAR (W/kg)	0.425	Measured 1g SAR (W/kg)	0.574	Measured 1g SAR (W/kg)	0.499
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 101)	0.393	Auto-tune (State 41)	0.738	Auto-tune (State 16)	0.618	Auto-tune (State 12)	0.856	Auto-tune (State 12)	0.674
Default (State 24)	0.318	Default (State 16)	0.687	Default (State 16)	0.626	Default (State 10)	0.699	Default (State 10)	0.612
State 11	0.150	State 2	0.369	State 6	0.585	State 2	0.655	State 1	0.336
State 21	0.226	State 6	0.631	State 15	0.586	State 12	0.792	State 7	0.644
State 25	0.097	State 8	0.651	State 16	0.626	State 14	0.823	State 12	0.674
State 38	0.345	State 12	0.458	State 26	0.276	State 16	0.677	State 13	0.670
State 50	0.243	State 24	0.707	State 44	0.346	State 28	0.786	State 14	0.659
State 55	0.242	State 32	0.695	State 51	0.297	State 42	0.091	State 18	0.456
State 60	0.316	State 41	0.747	State 58	0.147	State 62	0.663	State 34	0.094
State 70	0.297	State 43	0.199	State 62	0.593	State 64	0.608	State 40	0.583
State 84	0.255	State 54	0.718	State 65	0.531	State 68	0.627	State 46	0.628
State 86	0.246	State 57	0.555	State 71	0.607	State 69	0.757	State 63	0.483
State 93	0.280	State 67	0.242	State 74	0.093	State 73	0.642	State 66	0.115
State 101	0.398	State 81	0.635	State 77	0.448	State 79	0.810	State 69	0.602
State 105	0.301	State 83	0.317	State 85	0.595	State 87	0.622	State 78	0.618
State 116	0.341	State 94	0.678	State 95	0.589	State 107	0.556	State 98	0.068
State 122	0.259	State 111	0.645	State 98	0.110	State 113	0.606	State 110	0.521
State 128	0.265	State 120	0.657	State 114	0.147	State 117	0.579	State 122	0.088
State 129	0.200	State 128	0.613	State 121	0.456	State 127	0.566	State 124	0.407

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15 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	85033E	3 mm Standard Calibration Kit	6/6/2020	Annual	6/6/2021	MY3402332
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	8753ES	Network Analyzer	3/5/2020	Annual	3/5/2021	MY40001472
Agilent	8753ES	S-Parameter Network Analyzer	12/31/2019	Annual	12/31/2020	US39170122
Agilent	E4438C	ESG Vector Signal Generator	12/13/2019	Annual	12/13/2020	MY42082659
Agilent	E4438C	ESG Vector Signal Generator	3/8/2019	Biennial	3/8/2021	MY42082385
Agilent	E5515C	8960 Series 10 Wireless Communications Test Set	2/10/2020	Annual	2/10/2021	GB42230325
Agilent	E5515C	Wireless Communications Test Set	2/26/2020	Annual	2/26/2021	GB44408060
Agilent	E5515C	Wireless Communications Test Set	1/14/2020	Triennial	1/14/2023	GB43304447
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB44450273
Agilent	N5182A	MXG Vector Signal Generator	2/19/2020	Annual	2/19/2021	MY47420651
Agilent	N5182A	MXG Vector Signal Generator	5/13/2020	Annual	5/13/2021	MY47420603
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	353468
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	353469
Anritsu	MA24106A	USB Power Sensor	10/10/2019	Annual	10/10/2020	1344545
Anritsu	MA24106A	USB Power Sensor	10/10/2019	Annual	10/10/2020	1344559
Anritsu	MA24106A	USB Power Sensor	12/9/2019	Annual	12/9/2020	1349593
Anritsu	MA24106A	USB Power Sensor	12/9/2019	Annual	12/9/2020	1344554
Anritsu	MA2411B	Pulse Power Sensor	12/4/2019	Annual	12/4/2020	1126066
Anritsu	MA2411B	Pulse Power Sensor	1/21/2020	Annual	1/21/2021	1207470
Anritsu	ML2495A	Power Meter	11/15/2019	Annual	11/15/2020	1039008
Anritsu	ML2495A	Power Meter	12/1/2019	Annual	12/1/2020	941001
Anritsu	MT8820C	Radio Communication Analyzer	9/17/2020	Annual	9/17/2021	6201300731
Anritsu	MT8821C	Radio Communication Analyzer	10/2/2019	Annual	10/2/2020	6201664756
Anritsu	MT8821C	Radio Communication Analyzer	11/23/2019	Annual	11/23/2020	6262044715
Anritsu	MT8821C	Radio Communication Analyzer	2/22/2020	Annual	2/22/2021	6261895213
Anritsu	MT8821C	Radio Communication Analyzer	3/10/2020	Annual	3/10/2021	6200901190
Control Company	4040	Therm./ Clock/ Humidity Monitor	10/9/2018	Biennial	10/9/2020	181647811
Control Company	4040	Therm./ Clock/ Humidity Monitor	10/9/2018	Biennial	10/9/2020	181647802
Control Company	4352	Long Stem Thermometer	6/26/2019	Biennial	6/26/2021	192282744
Control Company	4352	Long Stem Thermometer	6/26/2019	Biennial	6/26/2021	192282739
Keyight	7120	CBT	N/A	CBT	N/A	MY51180215
Keyight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3 mm)	9/1/2020	Annual	9/1/2021	MY53401181
Keyight Technologies	AT/N6705B	DC Power Supply	N/A	N/A	N/A	MY53001315
Keyight Technologies	N9020A	MXA Signal Analyzer	8/14/2020	Annual	8/14/2021	US46470561
Keyight Technologies	N9030A	PXA Signal Analyzer (44GHz)	8/17/2020	Annual	8/17/2021	MY52350166
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
MiniCircuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
MiniCircuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
MiniCircuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-53W2	Attenuator (3dB)	CBT	N/A	CBT	120
Pasternack	NC-100	Torque Wrench	8/4/2020	Biennial	8/4/2022	N/A
Pasternack	NC-100	Torque Wrench	8/4/2020	Biennial	8/4/2022	1445
Pasternack	PE2208-6	Bi-directional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bi-directional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMW500	Radio Communication Tester	10/4/2019	Annual	10/4/2020	166462
Rohde & Schwarz	CMW500	Radio Communication Tester	10/15/2019	Annual	10/15/2020	109366
Rohde & Schwarz	CMW500	Radio Communication Tester	3/27/2020	Annual	3/27/2021	128633
Rohde & Schwarz	ZNLE6	Vector Network Analyzer	10/11/2019	Annual	10/11/2020	101307
SPEAG	D1750V2	1750 MHz SAR Dipole	10/23/2018	Biennial	10/23/2020	1150
SPEAG	D1750V2	1750 MHz SAR Dipole	5/12/2020	Annual	5/12/2021	1149
SPEAG	D1765V2	1765 MHz SAR Dipole	5/23/2018	Triennial	5/23/2021	1008
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Biennial	10/23/2020	50080
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Biennial	10/23/2020	50149
SPEAG	D2300V2	2300 MHz SAR Dipole	8/13/2018	Triennial	8/13/2021	1073
SPEAG	D2450V2	2450 MHz SAR Dipole	2/10/2020	Annual	2/10/2021	882
SPEAG	D2450V2	2450 MHz SAR Dipole	8/16/2018	Triennial	8/16/2021	981
SPEAG	D2600V2	2600 MHz SAR Dipole	6/24/2019	Biennial	6/24/2021	1064
SPEAG	D3500V2	3500 MHz SAR Dipole	1/17/2018	Triennial	1/17/2021	1059
SPEAG	D3700V2	3700 MHz SAR Dipole	1/17/2018	Triennial	1/17/2021	1018
SPEAG	DSGHV2	5 GHz SAR Dipole	8/10/2018	Triennial	8/10/2021	1237
SPEAG	D750V3	750 MHz SAR Dipole	10/19/2018	Biennial	10/19/2020	1161
SPEAG	D835V2	835 MHz SAR Dipole	10/19/2018	Biennial	10/19/2020	46133
SPEAG	D835V2	835 MHz SAR Dipole	1/13/2020	Annual	1/13/2021	46132
SPEAG	D835V2	835 MHz SAR Dipole	3/13/2019	Biennial	3/13/2021	46047
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/13/2020	Annual	1/13/2021	1530
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/13/2020	Annual	1/13/2021	1558
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/12/2020	Annual	3/12/2021	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/15/2020	Annual	4/15/2021	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/14/2020	Annual	5/14/2021	1583
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/20/2020	Annual	5/20/2021	728
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/18/2020	Annual	6/18/2021	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/11/2020	Annual	8/11/2021	1450
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/12/2020	Annual	8/12/2021	1423
SPEAG	DAE4	Dasy Data Acquisition Electronics	12/5/2019	Annual	12/5/2020	1533
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/15/2020	Annual	4/15/2021	1502
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/17/2019	Annual	9/17/2020	1333
SPEAG	DAK-3.5	Dielectric Assessment Kit	10/22/2019	Annual	10/22/2020	1091
SPEAG	EX3DV4	SAR Probe	12/11/2019	Annual	12/11/2020	7570
SPEAG	EX3DV4	SAR Probe	12/11/2019	Annual	12/11/2020	7571
SPEAG	EX3DV4	SAR Probe	1/21/2020	Annual	1/21/2021	3589
SPEAG	EX3DV4	SAR Probe	1/21/2020	Annual	1/21/2021	7488
SPEAG	EX3DV4	SAR Probe	4/21/2020	Annual	4/21/2021	7257
SPEAG	EX3DV4	SAR Probe	4/21/2020	Annual	4/21/2021	7402
SPEAG	EX3DV4	SAR Probe	5/18/2020	Annual	5/18/2021	7538
SPEAG	EX3DV4	SAR Probe	6/23/2020	Annual	6/23/2021	7406
SPEAG	EX3DV4	SAR Probe	6/23/2020	Annual	6/23/2021	7409
SPEAG	EX3DV4	SAR Probe	7/31/2020	Annual	7/31/2021	7308
SPEAG	EX3DV4	SAR Probe	8/19/2020	Annual	8/19/2021	7547
SPEAG	EX3DV4	SAR Probe	9/19/2019	Annual	9/19/2020	7551

Notes: 1) Equipment was solely used during its calibration period

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

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16 MEASUREMENT UNCERTAINTIES

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

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17 CONCLUSION

17.1 Measurement Conclusion

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

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

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