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

SAR EVALUATION REPORT

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

Date of Testing:
07/24/22 - 08/28/22
Test Site/Location:
Element, Columbia, MD, USA
Document Serial No.:
1M2208100088-01.A3L

FCC ID: **A3LSMF721U**

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

DUT Type:	Portable Handset
Application Type:	Class II Permissive Change
FCC Rule Part(s):	CFR §2.1093
Model(s):	SM-F721U
Additional Model(s):	SM-F721U1
Permissive Change(s):	See FCC Change Document
Date of Original Certification:	07/12/2022

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	UMTS 1750	1712.4 - 1752.6 MHz	< 0.1	0.74	0.84	0.85
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	< 0.1	0.77	0.63	1.04
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 30	2307.5 - 2312.5 MHz	< 0.1	0.42	1.01	2.17
PCE	LTE Band 7	2502.5 - 2567.5 MHz	< 0.1	0.38	0.24	1.30
PCE	LTE Band 41	2498.5 - 2687.5 MHz	0.12	0.29	0.47	2.40
PCE	LTE Band 38	2572.5 - 2617.5 MHz	N/A	N/A	N/A	N/A
PCE	NR Band n66 (AWS)	1712.5 - 1777.5 MHz	< 0.1	0.66	0.64	0.88
PCE	NR Band n30	2307.5 - 2312.5 MHz	< 0.1	0.32	0.90	2.21
PCE	NR Band n7	2502.5 - 2567.5 MHz	< 0.1	0.30	0.69	1.41
PCE	NR Band n41	2506.02 - 2679.99 MHz	< 0.1	< 0.1	< 0.1	N/A
PCE	NR Band n38	2580 - 2610 MHz	N/A	N/A	N/A	N/A
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.19	< 0.1	0.62	N/A
Simultaneous SAR per KDB 690783 D01v01r03:			1.56	1.16	1.59	3.43

Only operations relevant to this permissive change were evaluated for compliance. Please see the original compliance evaluation in RF Exposure Technical Report S/N 1M2204080051-19.A3L (Rev1) for complete evaluation of all other operating modes. The operational description includes a description of all changed items.

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

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

RJ Ortanez
Executive Vice President

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

TABLE OF CONTENTS

1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 71	Voice/Data	665.5 - 695.5 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 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 30	Voice/Data	2307.5 - 2312.5 MHz
LTE Band 7	Voice/Data	2502.5 - 2567.5 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
LTE Band 38	Voice/Data	2572.5 - 2617.5 MHz
LTE Band 48	Voice/Data	3552.5 - 3697.5 MHz
NR Band n71	Voice/Data	665.5 - 695.5 MHz
NR Band n12	Voice/Data	701.5 - 713.5 MHz
NR Band n5 (Cell)	Voice/Data	826.5 - 846.5 MHz
NR Band n66 (AWS)	Voice/Data	1712.5 - 1777.5 MHz
NR Band n25 (PCS)	Voice/Data	1852.5 - 1912.5 MHz
NR Band n2 (PCS)	Voice/Data	1852.5 - 1907.5 MHz
NR Band n30	Voice/Data	2307.5 - 2312.5 MHz
NR Band n7	Voice/Data	2502.5 - 2567.5 MHz
NR Band n41	Voice/Data	2506.02 - 2679.99 MHz
NR Band n38	Voice/Data	2575 - 2615 MHz
NR Band n48	Voice/Data	3555 - 3694.98 MHz
NR Band n77 DoD	Voice/Data	3455.01 - 3544.98 MHz
NR Band n77	Voice/Data	3705 - 3975 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
U-NII-4	Voice/Data	5845 - 5885 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
NR Band n258	Data	24250 - 24450 MHz; 24750 - 25250 MHz
NR Band n260	Data	37000 - 40000 MHz
NR Band n261	Data	27500 - 28350 MHz

1.2 Time-Averaging Algorithm for RF Exposure Compliance

This Device is enabled with the Qualcomm® Smart Transmit Gen1 feature. This feature performs time averaging algorithm in real time to control and manage transmitting power and ensure the time-averaged RF exposure is in compliance with FCC requirements all the time. Refer to Compliance Summary document for detailed description of Qualcomm® Smart Transmit feature (report SN could be found in Section 1.11 – Bibliography).

Note that WLAN operations are not enabled with Smart Transmit.

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

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

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

Exposure Senario		Body-Worn	Phablet Max	Grip Sensor Active	Head	Hotspot	Earjack	Maximum Tune-Up Output Power*
Averaging Volume		1g	10g	10g	1g	1g	10g	
Spacing		15 mm	8, 6, 12, 0 mm	0 mm	0 mm	10, 5 mm	0 mm	
DSI		0	0	1	2	3	4	
Technology/Band	Antenna							Pmax
UMTS 1750	A	25.4		N/A	22.0	19.0	N/A	24.0
LTE Band 66 (AWS)	A	25.9		N/A	35.4	18.5	N/A	23.5
LTE Band 4 (AWS)	A	25.9		N/A	35.4	18.0	N/A	23.5
LTE Band 30	B	27.1		21.0	36.7	17.0	21.0	22.0
LTE Band 7	B	26.8		20.5	34.0	17.5	20.5	23.5
LTE Band 41 (PC3)	B	24.0		24.0	32.9	18.0	24.0	22.0
LTE Band 41 (PC2)	B	24.0		24.0	32.9	18.0	24.0	22.0
NR Band n66 (AWS)	A	24.8		N/A	34.3	17.5	N/A	23.5
NR Band n30	B	28.2		21.5	35.9	18.0	21.5	22.5
NR Band n7	B	27.9		20.5	34.7	19.5	20.5	23.5
NR Band n41 (PC3)	C	10.0		N/A	10.0	10.0	N/A	13.5
NR Band n41 (PC2)	C	10.0		N/A	10.0	10.0	N/A	15.5

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

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

The maximum time-averaged output power (dBm) for any 2G/3G/4G/5G Sub6 WWAN technology, band, and DSI = minimum of "P_{limit} EFS" and "Maximum tune up output power P_{max}" + 1dB device uncertainty. SAR values in this report were scaled to this maximum time-averaged output power to determine compliance per KDB Publication 447498 D04v01.

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

1.4 Nominal and Maximum Output Power Specifications

This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D04v01.

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

1.4.1 3G/4G/5G Output Power

UMTS Band 4 (1750 MHz)					
Power Level		Modulated Average Output Power			
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6	3GPP DC-HSDPA Rel 8
Pmax	Max Allowed Power	25.0	24.0	24.0	24.0
	Nominal	24.0	23.0	23.0	23.0
DSI = 0 (Body-Worn or Phablet Max)	Max Allowed Power	25.0	24.0	24.0	24.0
	Nominal	24.0	23.0	23.0	23.0
DSI = 1 (Grip Sensor Active)	Max Allowed Power	22.0	21.0	21.0	21.0
	Nominal	21.0	20.0	20.0	20.0
DSI = 2 (Head)	Max Allowed Power	23.0	22.0	22.0	22.0
	Nominal	22.0	21.0	21.0	21.0
DSI = 3 (Hotspot)	Max Allowed Power	20.0	19.0	19.0	19.0
	Nominal	19.0	18.0	18.0	18.0
DSI = 4 (Earjack)	Max Allowed Power	22.0	21.0	21.0	21.0
	Nominal	21.0	20.0	20.0	20.0

Mode / Band	Antenna		Modulated Average Output Power (in dBm)					
			Pmax	DSI = 0 (Body-Worn or Phablet Max)	DSI = 1 (Grip Sensor Active)	DSI = 2 (Head)	DSI = 3 (Hotspot)	DSI = 4 (Earjack)
LTE Band 66 (AWS)	A	Max Allowed	24.5	24.5	21.5	24.5	19.5	21.5
		Nominal	23.5	23.5	20.5	23.5	18.5	20.5
LTE Band 4 (AWS)	A	Max Allowed	24.5	24.5	21.0	24.5	19.0	21.0
		Nominal	23.5	23.5	20.0	23.5	18.0	20.0
LTE Band 30	B	Max Allowed	23.0	23.0	22.0	23.0	18.0	22.0
		Nominal	22.0	22.0	21.0	22.0	17.0	21.0
LTE Band 7	B	Max Allowed	24.5	24.5	21.5	24.5	18.5	21.5
		Nominal	23.5	23.5	20.5	23.5	17.5	20.5
LTE Band 41 (PC3)	B	Max Allowed	25.0	25.0	25.0	25.0	21.0	25.0
		Nominal	24.0	24.0	24.0	24.0	20.0	24.0
LTE Band 41 (PC2)	B	Max Allowed	26.7	26.6	26.6	26.6	22.6	26.6
		Nominal	25.7	25.6	25.6	25.6	21.6	25.6

Mode / Band	Antenna		Modulated Average Output Power (in dBm)					
			Pmax	DSI = 0 (Body-Worn or Phablet Max)	DSI = 1 (Grip Sensor Active)	DSI = 2 (Head)	DSI = 3 (Hotspot)	DSI = 4 (Earjack)
NR Band n66 (AWS)	A	Max Allowed	24.5	24.5	20.5	24.5	18.5	20.5
		Nominal	23.5	23.5	19.5	23.5	17.5	19.5
NR Band n30	B	Max Allowed	23.5	23.5	22.5	23.5	19.0	22.5
		Nominal	22.5	22.5	21.5	22.5	18.0	21.5
NR Band n7	B	Max Allowed	24.5	24.5	21.5	24.5	20.5	21.5
		Nominal	23.5	23.5	20.5	23.5	19.5	20.5
NR Band n41 (PC3)	C	Max Allowed	14.5	11.0	11.0	11.0	11.0	11.0
		Nominal	13.5	10.0	10.0	10.0	10.0	10.0
NR Band n41 (PC2)	C	Max Allowed	16.5	11.0	11.0	11.0	11.0	11.0
		Nominal	15.5	10.0	10.0	10.0	10.0	10.0

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

1.4.2 2.4 GHz Maximum SISO WLAN Output Power

Mode	Band	IEEE 802.11 (in dBm)	
		SISO	
		Antenna 1	
		b	
Maximum / Nominal Power		Max	Nom.
2.4 GHz WIFI	2.45 GHz	19.0	18.0

(Upper tolerance: Target +1.0 dB)

1.4.3 2.4 GHz Reduced WLAN Output Powers

The below table is applicable in the following conditions:

- Simultaneous conditions with 5 GHz WLAN
- Simultaneous conditions with 5G FR1/FR2 NR
- Simultaneous conditions with 5G FR1/FR2 NR and 5 GHz WLAN
- RCV Active
- RCV Active during simultaneous conditions with 5 GHz WLAN
- RCV Active during simultaneous conditions with 5G FR1/FR2 NR
- RCV Active during simultaneous conditions with 5G FR1/FR2 NR and 5 GHz WLAN

Mode	Band	IEEE 802.11 (in dBm)	
		SISO	
		Antenna 1	
		b	
Maximum / Nominal Power		Max	Nom.
2.4 GHz WIFI	2.45 GHz	13.0	12.0

(Upper tolerance: Target +1.0 dB)

1.4.4 5 GHz Maximum SISO/MIMO WLAN and Bluetooth Output Power

Only operations relevant to this permissive change were evaluated for compliance. No other target changes have been made. Targets for all other bands/exposure conditions can be found in the original filing.

1.5 DUT Antenna Locations

A diagram showing the location of the device antennas for both open and closed configurations can be found in DUT Antenna Diagram and SAR Test Setup Photographs Appendix. When the device is open, the overall dimensions of this device are > 9 x 5 cm. Since the diagonal dimension of this device when open is > 160 mm and <200 mm, it is considered a “phablet.” and operates similar to a traditional portable handset. In the closed configuration, only a simple display/interaction of notifications occurs and overall dimensions are < 9 x5 cm. Therefore, when the device is closed, the only testing considered is for body-worn and hotspot.

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

Mode	Back	Front	Top	Bottom	Right	Left
UMTS 1750	Yes	Yes	No	Yes	Yes	Yes
LTE Band 66 (AWS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 30	Yes	Yes	No	Yes	No	Yes
LTE Band 7	Yes	Yes	No	Yes	No	Yes
LTE Band 41	Yes	Yes	No	Yes	No	Yes
NR Band n66 (AWS) Antenna A	Yes	Yes	No	Yes	Yes	Yes
NR Band n30 Antenna B	Yes	Yes	No	Yes	No	Yes
NR Band n7 Antenna B	Yes	Yes	No	Yes	No	Yes
NR Band n41 Antenna C	Yes	Yes	No	Yes	No	Yes

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

Mode	Back	Front	Top	Bottom	Right	Left
UMTS 1750	Yes	Yes	No	Yes	Yes	Yes
LTE Band 66 (AWS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 30	Yes	Yes	No	Yes	No	Yes
LTE Band 7	Yes	Yes	No	Yes	No	Yes
LTE Band 41	Yes	Yes	No	Yes	No	Yes
NR Band n66 (AWS) Antenna A	Yes	Yes	No	Yes	Yes	Yes
NR Band n30 Antenna B	Yes	Yes	No	Yes	No	Yes
NR Band n7 Antenna B	Yes	Yes	No	Yes	No	Yes
NR Band n41 Antenna C	Yes	Yes	Yes	Yes	No	Yes

Note: Particular DUT edges were not required to be evaluated for wireless router SAR or phablet SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v02r01 Section III and FCC KDB Publication 648474 D04v01r03. The distances between the transmit antennas and the edges of the device are included in the filing. When wireless router mode is enabled, U-NII-1, U-NII-2A, U-NII-2C, UNII-4 operations are disabled.

1.6 Near Field Communications (NFC) Antenna

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

1.7 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D04v01, 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 D04v01 procedures.

Table 1-3
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Phablet	Notes
1	GSM voice + 2.4 GHz WLAN Ant 1	Yes	Yes	N/A	Yes	
2	GSM voice + 2.4 GHz WLAN Ant 2	Yes	Yes	N/A	Yes	
3	GSM voice + 2.4 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
4	GSM voice + 5 GHz WLAN Ant 1	Yes	Yes	N/A	Yes	
5	GSM voice + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
6	GSM voice + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
7	GSM voice + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
8	GSM voice + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
9	GSM voice + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
10	GSM voice + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
11	GSM voice + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
12	GSM voice + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN Ant 1	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
13	GSM voice + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN MIMO	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
14	GSM voice + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN Ant 1	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
15	GSM voice + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN MIMO	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
16	GSM voice + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
17	GSM voice + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
18	UMTS + 2.4 GHz WLAN Ant 1	Yes	Yes	Yes	Yes	
19	UMTS + 2.4 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	
20	UMTS + 2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
21	UMTS + 5 GHz WLAN Ant 1	Yes	Yes	Yes	Yes	
22	UMTS + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
23	UMTS + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
24	UMTS + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
25	UMTS + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
26	UMTS + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
27	UMTS + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
28	UMTS + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
29	UMTS + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
30	UMTS + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
31	UMTS + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
32	UMTS + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
33	UMTS + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
34	UMTS + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
35	LTE + 2.4 GHz WLAN Ant 1	Yes	Yes	Yes	Yes	
36	LTE + 2.4 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	
37	LTE + 2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
38	LTE + 5 GHz WLAN Ant 1	Yes	Yes	Yes	Yes	
39	LTE + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
40	LTE + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
41	LTE + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
42	LTE + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
43	LTE + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
44	LTE + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
45	LTE + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
46	LTE + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
47	LTE + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
48	LTE + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
49	LTE + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
50	LTE + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
51	LTE + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
52	LTE + NR	Yes	Yes	N/A	Yes	
53	LTE + NR + 2.4 GHz WLAN Ant 1	Yes	Yes	Yes	Yes	
54	LTE + NR + 2.4 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	
55	LTE + NR + 2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
56	LTE + NR + 5 GHz WLAN Ant 1	Yes	Yes	Yes	Yes	
57	LTE + NR + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
58	LTE + NR + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
59	LTE + NR + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
60	LTE + NR + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
61	LTE + NR + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
62	LTE + NR + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
63	LTE + NR + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
64	LTE + NR + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
65	LTE + NR + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
66	LTE + NR + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
67	LTE + NR + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
68	LTE + NR + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
69	LTE + NR + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
70	NR + 2.4 GHz WLAN Ant 1	Yes	Yes	Yes	Yes	
71	NR + 2.4 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	
72	NR + 2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
73	NR + 5 GHz WLAN Ant 1	Yes	Yes	Yes	Yes	
74	NR + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
75	NR + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
76	NR + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
77	NR + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
78	NR + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
79	NR + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
80	NR + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
81	NR + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
82	NR + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
83	NR + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
84	NR + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
85	NR + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
86	NR + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
87	GPRS/EDGE + 2.4 GHz WLAN Ant 1	N/A	N/A	Yes	Yes	
88	GPRS/EDGE + 2.4 GHz WLAN Ant 2	N/A	N/A	Yes	Yes	
89	GPRS/EDGE + 2.4 GHz WLAN MIMO	N/A	N/A	Yes	Yes	
90	GPRS/EDGE + 5 GHz WLAN Ant 1	N/A	N/A	Yes	Yes	
91	GPRS/EDGE + 5 GHz WLAN MIMO	N/A	N/A	Yes	Yes	
92	GPRS/EDGE + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN MIMO	N/A	N/A	Yes	Yes	
93	GPRS/EDGE + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	N/A	N/A	Yes	Yes	
94	GPRS/EDGE + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	N/A	N/A	Yes	Yes	
95	GPRS/EDGE + 2.4 GHz Bluetooth Ant 1	N/A	N/A	Yes^	Yes	^ Bluetooth Tethering is considered
96	GPRS/EDGE + 2.4 GHz Bluetooth Ant 2	N/A	N/A	Yes^	Yes	^ Bluetooth Tethering is considered
97	GPRS/EDGE + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2	N/A	N/A	Yes^	Yes	^ Bluetooth Tethering is considered
98	GPRS/EDGE + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN Ant 1	N/A	N/A	Yes^	Yes	^ Bluetooth Tethering is considered
99	GPRS/EDGE + 2.4 GHz Bluetooth Ant 1 + 5 GHz WLAN MIMO	N/A	N/A	Yes^	Yes	^ Bluetooth Tethering is considered
100	GPRS/EDGE + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN Ant 1	N/A	N/A	Yes^	Yes	^ Bluetooth Tethering is considered
101	GPRS/EDGE + 2.4 GHz Bluetooth Ant 2 + 5 GHz WLAN MIMO	N/A	N/A	Yes^	Yes	^ Bluetooth Tethering is considered
102	GPRS/EDGE + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1	N/A	N/A	Yes^	Yes	^ Bluetooth Tethering is considered
103	GPRS/EDGE + 2.4 GHz Bluetooth Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO	N/A	N/A	Yes^	Yes	^ Bluetooth Tethering is considered

1. 2.4 GHz WLAN ant 1 and 2.4 GHz Bluetooth ant 1 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 not expected to be used in conjunction with a held-to-ear or body-worn accessory voice call. Therefore, there are no simultaneous transmission scenarios involving WIFI direct beyond that listed in the above table.
4. 5 GHz Wireless Router is only supported for the U-NII-3 by S/W, therefore U-NII-1, U-NII-2A, U-NII-2C, and U-NII-4 were not evaluated for wireless router conditions.
5. This device supports 2x2 MIMO Tx for WLAN 802.11a/g/n/ac/ax. 802.11a/g/n/ac/ax supports CDD and STBC and 802.11n/ac/ax additionally supports SDM.
6. This device supports VoWIFI.
7. This device supports Bluetooth Tethering.
8. This device supports VoLTE.
9. This device supports VoNR.
10. LTE + 5G NR FR1 Scenarios are limited to EN-DC combinations with anchor bands as shown in the NR FR1 checklist.
11. 5G NR FR2 n258, n260, and n261 cannot transmit simultaneously.
12. LTE + 5G NR FR2 Scenarios are limited to EN-DC combinations with anchor bands as shown in the NR FR2 checklist.

1.8 Miscellaneous SAR Test Considerations

When on the device dimensions when closed, hotspot SAR in the closed configuration was performed at 5mm per KDB Publication 941225 D06v02r01.

(A) WIFI/BT

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

Since Wireless Router operations are not allowed by the chipset firmware using U-NII-1, U-NII-2A, U-NII-2C, and U-NII-4 WIFI, only 2.4 GHz WIFI, 2.4 GHz Bluetooth, and U-NII-3 WIFI Hotspot SAR tests and combinations are considered for SAR with respect to Wireless Router configurations according to FCC KDB 941225 D06v02r01.

This device supports IEEE 802.11ax with the following features:

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

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" in open configuration since the diagonal dimension is greater than 160mm and less than 200mm. Phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Because wireless router operations are not supported for U-NII-1, U-NII-2A, U-NII-2C, and U-NII-4 WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for 2.4 GHz and U-NII-3 WLAN operations since wireless router 1g SAR was < 1.2 W/kg.

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

(B) Licensed Transmitter(s)

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

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

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

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

This device supports downlink 4x4 MIMO operations for some LTE Bands. Per May 2017 TCB Workshop Notes, SAR for 4x4 DL MIMO was not needed since the maximum average output power in 4x4 DL MIMO mode was not more than 0.25 dB higher than the maximum output power with 4x4 DL MIMO inactive. Additionally, SAR for 4x4 MIMO Downlink Carrier Aggregation was not needed since the maximum average output power in 4x4 MIMO Downlink Carrier Aggregation mode was not more than 0.25 dB higher than the maximum output power with 4x4 MIMO Downlink and downlink carrier aggregation inactive.

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

This device supports both Power Class 2 (PC2) and Power Class 3 (PC3) for LTE Band 41. Per May 2017 TCB Workshop Notes, SAR tests were performed with Power Class 3 (given the specific UL/DL limitations for Power Class 2). Additionally, SAR testing for the power class 2 condition was evaluated for the highest configuration in Power Class 3 for each test configuration to confirm the results were scalable linearly (See Section 13).
This device supports LTE Carrier Aggregation (CA) for LTE Band 41, LTE Band 5, LTE Band 66, and LTE Band 48 with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per 2017 Fall TCB Workshop Notes.

This device supports 5G NR for Bands n258, n260, and n261. RF Exposure assessment and simultaneous transmission analysis for these bands can be found in the Near Field PD Report (report SN can be found in Section 1.11 – Bibliography).

NR implementation supports SA and NSA mode. In EN-DC mode, NR operates with the LTE Bands shown in the NR FR1 checklist acting as anchor bands. Per FCC guidance, SAR tests for NR Bands and LTE Anchors Bands were performed separately due to limitations in SAR probe calibration factors.

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

1.9 Guidance Applied

- IEEE 1528-2013
- FCC KDB Publication 941225 D01v03r01, D05v02r05, D05Av01r02, D06v02r01 (2G/3G/4G and Hotspot)

- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D04v01 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D04v01r03 (Phablet Procedures)
- FCC KDB Publication 616217 D04v01r02 (Proximity Sensor)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)
- May 2017 TCB Workshop Notes (LTE 4x4 Downlink MIMO, LTE Band 41 Power Class 2/3)
- November 2017, April 2018, October 2018 TCB Workshop Notes (LTE Carrier Aggregation)
- April 2019 TCB Workshop Notes (IEEE 802.11ax)

1.10 Device Serial Numbers

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

1.11 Bibliography

Report Type	Report Serial Number
RF Exposure Compliance Summary Report	1M2208100088-03.A3L
RF Exposure Part 1 Test Report - Original filing	1M2204080051-19.A3L
RF Exposure Part 0 Test Report	1M2208100088-02.A3L

2 LTE AND NR INFORMATION

LTE Information					
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 71 (665.5 - 695.5 MHz)				
	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 26 (Cell) (814.7 - 848.3 MHz)				
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)				
	LTE Band 66 (AWS) (1710.7 - 1779.3 MHz)				
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 30 (2307.5 - 2312.5 MHz)				
	LTE Band 7 (2502.5 - 2567.5 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
	LTE Band 38 (2572.5 - 2617.5 MHz)				
	LTE Band 48 (3552.5 - 3697.5 MHz)				
Channel Bandwidths	LTE Band 71: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	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 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 66 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 30: 5 MHz, 10 MHz				
	LTE Band 7: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 38: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 48: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 71: 5 MHz	665.5 (133147)		680.5 (133297)	695.5 (133447)	
LTE Band 71: 10 MHz	668 (133172)		680.5 (133297)	693 (133422)	
LTE Band 71: 15 MHz	670.5 (133197)		680.5 (133297)	690.5 (133397)	
LTE Band 71: 20 MHz	673 (133222)		680.5 (133297)	688 (133372)	
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 26 (Cell): 1.4 MHz	814.7 (26697)		831.5 (26865)	848.3 (27033)	
LTE Band 26 (Cell): 3 MHz	815.5 (26705)		831.5 (26865)	847.5 (27025)	
LTE Band 26 (Cell): 5 MHz	816.5 (26715)		831.5 (26865)	846.5 (27015)	
LTE Band 26 (Cell): 10 MHz	819 (26740)		831.5 (26865)	844 (26990)	
LTE Band 26 (Cell): 15 MHz	821.5 (26765)		831.5 (26865)	841.5 (26965)	
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)		836.5 (20525)	848.3 (20643)	
LTE Band 5 (Cell): 3 MHz	825.5 (20415)		836.5 (20525)	847.5 (20635)	
LTE Band 5 (Cell): 5 MHz	826.5 (20425)		836.5 (20525)	846.5 (20625)	
LTE Band 5 (Cell): 10 MHz	829 (20450)		836.5 (20525)	844 (20600)	
LTE Band 66 (AWS): 1.4 MHz	1710.7 (131979)		1745 (132322)	1779.3 (132665)	
LTE Band 66 (AWS): 3 MHz	1711.5 (131987)		1745 (132322)	1778.5 (132657)	
LTE Band 66 (AWS): 5 MHz	1712.5 (131997)		1745 (132322)	1777.5 (132647)	
LTE Band 66 (AWS): 10 MHz	1715 (132022)		1745 (132322)	1775 (132622)	
LTE Band 66 (AWS): 15 MHz	1717.5 (132047)		1745 (132322)	1772.5 (132597)	
LTE Band 66 (AWS): 20 MHz	1720 (132072)		1745 (132322)	1770 (132572)	
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)		1732.5 (20175)	1754.3 (20393)	
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)		1732.5 (20175)	1753.5 (20385)	
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)		1732.5 (20175)	1752.5 (20375)	
LTE Band 4 (AWS): 10 MHz	1715 (20000)		1732.5 (20175)	1750 (20350)	
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)		1732.5 (20175)	1747.5 (20325)	
LTE Band 4 (AWS): 20 MHz	1720 (20050)		1732.5 (20175)	1745 (20300)	
LTE Band 25 (PCS): 1.4 MHz	1850.7 (26047)		1882.5 (26365)	1914.3 (26683)	
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)		1882.5 (26365)	1913.5 (26675)	
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)		1882.5 (26365)	1912.5 (26665)	
LTE Band 25 (PCS): 10 MHz	1855 (26090)		1882.5 (26365)	1910 (26640)	
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)		1882.5 (26365)	1907.5 (26615)	
LTE Band 25 (PCS): 20 MHz	1860 (26140)		1882.5 (26365)	1905 (26590)	
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)		1880 (18900)	1909.3 (19193)	
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)		1880 (18900)	1908.5 (19185)	
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)		1880 (18900)	1907.5 (19175)	
LTE Band 2 (PCS): 10 MHz	1855 (18650)		1880 (18900)	1905 (19150)	
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)		1880 (18900)	1902.5 (19125)	
LTE Band 2 (PCS): 20 MHz	1860 (18700)		1880 (18900)	1900 (19100)	
LTE Band 30: 5 MHz	2307.5 (27685)		2310 (27710)	2312.5 (27735)	
LTE Band 30: 10 MHz	N/A		2310 (27710)	N/A	
LTE Band 7: 5 MHz	2502.5 (20775)		2535 (21100)	2567.5 (21425)	
LTE Band 7: 10 MHz	2505 (20800)		2535 (21100)	2565 (21400)	
LTE Band 7: 15 MHz	2507.5 (20825)		2405 (21100)	2562.5 (21375)	
LTE Band 7: 20 MHz	2510 (20850)		2535 (21100)	2560 (21350)	
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2549.5 (40185)	2593 (40620)	2636.5 (41055)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2549.5 (40185)	2593 (40620)	2636.5 (41055)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2549.5 (40185)	2593 (40620)	2636.5 (41055)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2549.5 (40185)	2593 (40620)	2636.5 (41055)
LTE Band 38: 5 MHz	2572.5 (37775)		2595 (38000)	2617.5 (38225)	
LTE Band 38: 10 MHz	2575 (37800)		2595 (38000)	2615 (38200)	
LTE Band 38: 15 MHz	2577.5 (37825)		2595 (38000)	2612.5 (38175)	
LTE Band 38: 20 MHz	2580 (37850)		2595 (38000)	2610 (38150)	
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)
UE Category	DL UE Cat 20, UL UE Cat 18				
Modulations Supported in UL	QPSK, 16QAM, 64QAM, 256QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	YES				
A-MPR (Additional MPR) disabled for SAR Testing?	YES				
LTE Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations				
LTE Additional Information	This device does not support full CA features on 3GPP Release 16. It supports carrier aggregation, downlink MIMO, LAA features as shown in the origial filing. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. The following LTE Release 16 Features are not supported: Relay, HetNet, Enhanced MIMO, eICIC, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

NR Information								
Form Factor	Portable Handset							
Frequency Range of each NR transmission band	NR Band n71 (665.5 - 695.5 MHz) NR Band n12 (701.5 - 713.5 MHz) NR Band n5 (Cell) (826.5 - 846.5 MHz) NR Band n66 (AWS) (1712.5 - 1777.5 MHz) NR Band n25 (PCS) (1852.5 - 1912.5 MHz) NR Band n2 (PCS) (1852.5 - 1907.5 MHz) NR Band n30 (2307.5 - 2312.5 MHz) NR Band n7 (2502.5 - 2567.5 MHz) NR Band n41 (2506.02 - 2679.99 MHz) NR Band n38 (2575 - 2615 MHz) NR Band n48 (3555 - 3694.98 MHz) NR Band n77 DoD (3455.01 - 3544.98 MHz) NR Band n77 (3705 - 3975 MHz)							
Channel Bandwidths	NR Band n71: 5 MHz, 10 MHz, 15 MHz, 20 MHz NR Band n12: 5 MHz, 10 MHz, 15 MHz NR Band n5 (Cell): 5 MHz, 10 MHz, 15 MHz, 20 MHz NR Band n66 (AWS): 5 MHz, 10 MHz, 15 MHz, 20 MHz, 30 MHz, 40 MHz NR Band n25 (PCS): 5 MHz, 10 MHz, 15 MHz, 20 MHz, 25 MHz, 30 MHz, 40 MHz NR Band n2 (PCS): 5 MHz, 10 MHz, 15 MHz, 20 MHz NR Band n30: 5 MHz, 10 MHz NR Band n7: 5 MHz, 10 MHz, 15 MHz, 20 MHz, 25 MHz, 30 MHz, 40 MHz NR Band n41: 20 MHz, 30 MHz, 40 MHz, 50 MHz, 60 MHz, 70 MHz, 80 MHz, 90 MHz, 100 MHz NR Band n38: 10 MHz, 15 MHz, 20 MHz, 30 MHz, 40 MHz NR Band n48: 10 MHz, 20 MHz, 30 MHz, 40 MHz NR Band n77 DoD: 10 MHz, 15 MHz, 20 MHz, 30 MHz, 40 MHz, 50 MHz, 60 MHz, 70 MHz, 80 MHz, 90 MHz, 100 MHz NR Band n77: 10 MHz, 15 MHz, 20 MHz, 30 MHz, 40 MHz, 50 MHz, 60 MHz, 70 MHz, 80 MHz, 90 MHz, 100 MHz							
Channel Numbers and Frequencies (MHz)								
NR Band n71: 5 MHz	665.5 (133147)		680.5 (136100)		695.5 (133447)			
NR Band n71: 10 MHz	668 (133600)		680.5 (136100)		693 (138600)			
NR Band n71: 15 MHz	670.5 (134100)		680.5 (136100)		690.5 (138100)			
NR Band n71: 20 MHz	673 (134600)		680.5 (136100)		688 (137600)			
NR Band n12: 5 MHz	701.5 (140300)		707.5 (141500)		713.5 (142700)			
NR Band n12: 10 MHz	704 (140800)		707.5 (141500)		711 (142200)			
NR Band n12: 15 MHz	706.5 (141300)		707.5 (141500)		708.5 (141700)			
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 n66 (AWS): 30 MHz	1725 (345000)		1745 (349000)		1765 (353000)			
NR Band n66 (AWS): 40 MHz	1730 (346000)		1745 (349000)		1760 (352000)			
NR Band n25 (PCS): 5 MHz	1852.5 (370500)		1882.5 (376500)		1912.5 (382500)			
NR Band n25 (PCS): 10 MHz	1855 (371000)		1882.5 (376500)		1910 (382000)			
NR Band n25 (PCS): 15 MHz	1857.5 (371500)		1882.5 (376500)		1907.5 (381500)			
NR Band n25 (PCS): 20 MHz	1860 (372000)		1882.5 (376500)		1905 (381000)			
NR Band n25 (PCS): 25 MHz	1862.5 (372500)		1882.5 (376500)		1902.5 (380500)			
NR Band n25 (PCS): 30 MHz	1865 (373000)		1882.5 (376500)		1900 (380000)			
NR Band n25 (PCS): 40 MHz	1870 (374000)		1882.5 (376500)		1895 (379000)			
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)			
NR Band n30: 5 MHz	2307.5 (461500)		2310 (462000)		2312.5 (462500)			
NR Band n30: 10 MHz	N/A		2310 (462000)		N/A			
NR Band n7: 5 MHz	2502.5 (500500)		2535 (507000)		2567.5 (513500)			
NR Band n7: 10 MHz	2505 (501000)		2535 (507000)		2565 (513000)			
NR Band n7: 15 MHz	2507.5 (20825)		680.5 (133297)		2562.5 (21375)			
NR Band n7: 20 MHz	2510 (502000)		2535 (507000)		2560 (512000)			
NR Band n7: 25 MHz	2512.5 (502500)		2535 (507000)		2557.5 (511500)			
NR Band n7: 30 MHz	2515 (503000)		2535 (507000)		2555 (511000)			
NR Band n7: 40 MHz	2520 (504000)		2535 (507000)		2550 (510000)			
NR Band n41: 20 MHz	2506.02 (501204)	2549.49 (509898)	2592.99 (518598)		2636.49 (527298)	2679.99 (535998)		
NR Band n41: 30 MHz	2511 (502200)	2552.01 (510402)	2592.99 (518598)		2634 (526800)	2674.98 (534996)		
NR Band n41: 40 MHz	2516.01 (503202)	2567.34 (513468)	N/A		2618.67 (523734)	2670 (534000)		
NR Band n41: 50 MHz	2521.02 (504204)		2592.99 (518598)		2664.99 (532998)			
NR Band n41: 60 MHz	2526 (505200)		2592.99 (518598)		2659.98 (531996)			
NR Band n41: 70 MHz	2531.01 (506202)		N/A		2655 (531000)			
NR Band n41: 80 MHz	2536.02 (507204)		N/A		2649.99 (529998)			
NR Band n41: 90 MHz	2541 (508200)		N/A		2644.98 (528996)			
NR Band n41: 100 MHz	2546.01 (509202)		2592.99 (518598)		2640 (528000)			
NR Band n38: 10 MHz	2575 (515000)		2595 (519000)		2615 (523000)			
NR Band n38: 15 MHz	2577.5 (515500)		2595 (519000)		2612.5 (522500)			
NR Band n38: 20 MHz	2580 (516000)		2595 (519000)		2610 (522000)			
NR Band n38: 30 MHz	2585 (517000)		2595 (519000)		2605 (521000)			
NR Band n38: 40 MHz	2590 (518000)		2595 (519000)		2600 (520000)			
NR Band n48: 10 MHz	3555 (637000)	3601.68 (640112)	N/A		3648.33 (643222)	3694.98 (646332)		
NR Band n48: 20 MHz	3560.01 (637334)	3603.33 (640222)	N/A		3646.68 (643112)	3690 (646000)		
NR Band n48: 30 MHz	3565.02 (637668)	3605.01 (640334)	N/A		3645 (643000)	3684.99 (645666)		
NR Band n48: 40 MHz	3570 (638000)	N/A	3624.99 (641666)		N/A	3679.98 (645332)		
NR Band n77 DoD: 10 MHz	3455.01 (630334)		3500.01 (633334)		3544.98 (636332)			
NR Band n77 DoD: 15 MHz	3457.5 (630500)		3500.01 (633334)		3542.49 (636166)			
NR Band n77 DoD: 20 MHz	3460.02 (630668)		3500.01 (633334)		3540 (636000)			
NR Band n77 DoD: 30 MHz	3465 (631000)		3500.01 (633334)		3534.99 (635666)			
NR Band n77 DoD: 40 MHz	3470.01 (631334)		N/A		3470.01 (631334)			
NR Band n77 DoD: 50 MHz	3475.02 (631668)		N/A		3475.02 (631668)			
NR Band n77 DoD: 60 MHz	N/A		3500.01(633334)		N/A			
NR Band n77 DoD: 70 MHz	N/A		3500.01(633334)		N/A			
NR Band n77 DoD: 80 MHz	N/A		3500.01(633334)		N/A			
NR Band n77 DoD: 90 MHz	N/A		3500.01(633334)		N/A			
NR Band n77 DoD: 100 MHz	N/A		3500.01(633334)		N/A			
NR Band n77: 10 MHz	3705 (647000)	3759 (650600)	3813 (654200)	3867 (657800)	3921 (661400)	3975 (665000)		
NR Band n77: 15 MHz	3707.52 (647168)	3760.5 (650700)	3813.51 (654234)	3866.49 (657766)	3919.5 (661300)	3972.48 (664832)		
NR Band n77: 20 MHz	3710.01 (647334)	3762 (650800)	3813.99 (654266)	3866.01 (657734)	3918 (661200)	3969.99 (664666)		
NR Band n77: 30 MHz	3715.02 (647668)	3765 (651000)	3815.01 (654334)	3864.99 (657666)	3915 (661000)	3964.98 (664332)		
NR Band n77: 40 MHz	3720 (648000)	3768 (651200)	3816 (654400)	3864 (657600)	3912 (660800)	3960 (664000)		
NR Band n77: 50 MHz	3725.01 (648334)	3782.49 (652166)	3840 (656000)		3897.51 (659834)	3954.99 (663666)		
NR Band n77: 60 MHz	3730.02 (648668)	3803.34 (653556)	N/A	N/A	3876.66 (658444)	3949.98 (663332)		
NR Band n77: 70 MHz	3735 (649000)	3804.99 (653666)	N/A		3875.01 (658334)	3945 (663000)		
NR Band n77: 80 MHz	3740.01 (649334)	N/A	3840 (656000)		N/A	3939.99 (662666)		
NR Band n77: 90 MHz	3745.02 (649668)	N/A	3840 (656000)		N/A	3934.98 (662332)		
NR Band n77: 100 MHz	3750 (650000)	N/A	N/A	N/A	N/A	3930 (662000)		
SCS for NR Band n71/n12n5/n66/n25/n2/n30/n7	15 kHz							
SCS for NR Band n41/n38/n48/n77	30 kHz							
Modulations Supported in UL	DFT-s-OFDM: π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM							
A-MPR (Additional MPR) disabled for SAR Testing?	YES							
EN-DC Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations							
LTE Anchor Bands for NR Band n71	LTE Band 2/48/66							
LTE Anchor Bands for NR Band n12	LTE Band 2/48/66							
LTE Anchor Bands for NR Band n5 (Cell)	LTE Band 2/30/48/66							
LTE Anchor Bands for NR Band n66 (AWS)	LTE Band 2/5/12/13/14/30/48							
LTE Anchor Bands for NR Band n25 (PCS)	LTE Band 12/66							
LTE Anchor Bands for NR Band n2 (PCS)	LTE Band 5/12/13/14/30/48/66							
LTE Anchor Bands for NR Band n30	LTE Band 2/5/12/14/66							
LTE Anchor Bands for NR Band n7	N/A							
LTE Anchor Bands for NR Band n41	LTE Band 2/66							
LTE Anchor Bands for NR Band n38	N/A							
LTE Anchor Bands for NR Band n48	LTE Band 2/66							
LTE Anchor Bands for NR Band n77	LTE Band 2/5/12/13/14/30/66							

3 INTRODUCTION

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

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

3.1 SAR Definition

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

Equation 3-1
SAR Mathematical Equation

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

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

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

where:

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

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

4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

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

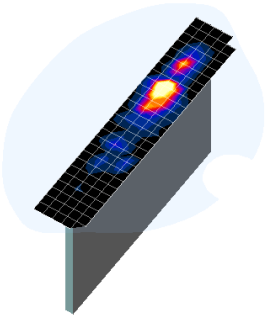


Figure 4-1
Sample SAR Area Scan

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

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

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

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

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

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

*Also compliant to IEEE 1528-2013 Table 6

5 DEFINITION OF REFERENCE POINTS

5.1 EAR REFERENCE POINT

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

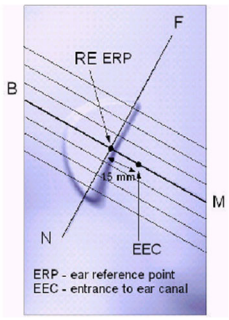


Figure 5-1
Close-Up Side view of ERP

5.2 HANDSET REFERENCE POINTS

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

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

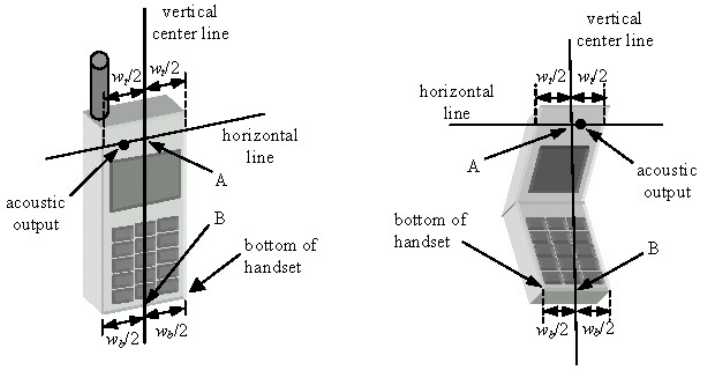


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

6 TEST CONFIGURATION POSITIONS

6.1 Device Holder

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

6.2 Positioning for Cheek

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

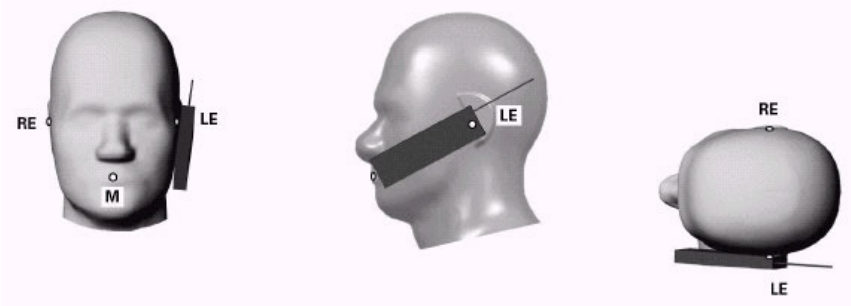


Figure 6-1 Front, Side and Top View of Cheek Position

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

6.3 Positioning for Ear / 15º Tilt

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

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

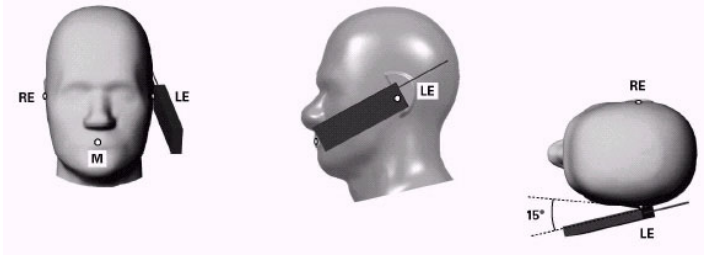


Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

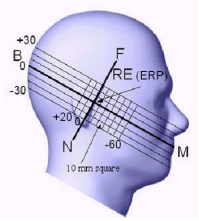


Figure 6-3
Side view w/ relevant markings

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

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

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

6.5 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6-4). Per FCC KDB Publication 648474 D04v01r03, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D04v01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

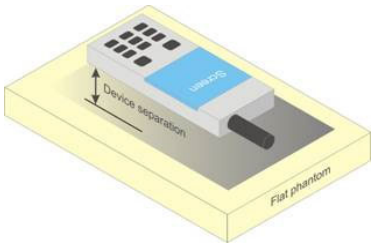


Figure 6-4
Sample Body-Worn Diagram

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

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

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

6.6 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions; i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. The 1g body and 10g extremity SAR Exclusion Thresholds found in KDB Publication 447498 D04v01 should be applied to determine SAR test requirements.

Per KDB Publication 447498 D04v01, Cell phones (handsets) are not normally designed to be used on extremities or operated in extremity only exposure conditions. The maximum output power levels of handsets generally do not require extremity SAR testing to show compliance. Therefore, extremity SAR was not evaluated for this device.

6.7 Wireless Router Configurations

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

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D04v01 procedures. The "Portable Hotspot" feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

6.8 Phablet Configurations

For smart phones with a display diagonal dimension > 150 mm or an overall diagonal dimension > 160 mm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04v01r03

should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. In addition to the normally required head and body-worn accessory SAR test procedures required for handsets, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna <=25 mm from that surface or edge, in direct contact with the phantom, for 10g SAR. The UMPC mini-tablet 1g SAR at 5 mm is not required. When hotspot mode applies, 10g SAR is required only for the surfaces and edges with hotspot mode 1g SAR > 1.2 W/kg.

6.9 Proximity Sensor Considerations

This device uses a power reduction mechanism to reduce output powers in certain use conditions when the device is used close the user's body.

When the device's antenna is within a certain distance of the user, the sensor activates and reduces the maximum allowed output power. However, the sensor is not active when the device is moved beyond the sensor triggering distance and the maximum output power is no longer limited. Therefore, additional evaluation is needed in the vicinity of the triggering distance to ensure SAR is compliant when the device is allowed to operate at a non-reduced output power level. FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device at these additional test positions. Sensor triggering distance summary data is included in Power Reduction Verification Appendix of the original filing.

The sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the sensor entirely covers the antennas.

7 RF EXPOSURE LIMITS

7.1 Uncontrolled Environment

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

7.2 Controlled Environment

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

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

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

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

8 FCC MEASUREMENT PROCEDURES

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

8.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D04v01, when SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as *reported* SAR. The highest *reported* SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

8.2 3G SAR Test Reduction Procedure

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

8.3 Procedures Used to Establish RF Signal for SAR

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

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

8.4 SAR Measurement Conditions for UMTS

8.4.1 Output Power Verification

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

8.4.2 Head SAR Measurements

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

8.4.3 Body SAR Measurements

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

8.4.4 SAR Measurements with Rel 5 HSDPA

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

8.4.5 SAR Measurements with Rel 6 HSUPA

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

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

8.4.6 SAR Measurement Conditions for DC-HSDPA

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

8.5 SAR Measurement Conditions for LTE

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

8.5.1 Spectrum Plots for RB Configurations

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

8.5.2 MPR

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

8.5.3 A-MPR

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

8.5.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r04:

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

8.5.5 TDD

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

8.5.6 Downlink Only Carrier Aggregation

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

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

8.6 SAR Testing with 802.11 Transmitters

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

8.6.1 General Device Setup

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

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

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

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

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

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

8.6.4 Initial Test Position Procedure

For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode or UMPC mini-tablet, procedures for initial test position can be applied. Using the transmission

mode determined by the DSSS procedure or initial test configuration, area scans are measured for all positions in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.5 2.4 GHz SAR Test Requirements

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

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

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

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

8.6.6 OFDM Transmission Mode and SAR Test Channel Selection

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

8.6.7 Initial Test Configuration Procedure

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

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is ≤ 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest

802.11 mode is considered for SAR measurements (See Section 8.6.6). When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.8 Subsequent Test Configuration Procedures

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

8.6.9 MIMO SAR considerations

Per KDB Publication 248227 D01v02r02, the simultaneous SAR provisions in KDB Publication 447498 D04v01 should be applied to determine simultaneous transmission SAR test exclusion for WIFI MIMO. If the sum of 1g single transmission chain SAR measurements is <1.6 W/kg, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

9 RF CONDUCTED POWERS

All conducted power measurements for 3G/4G/5G Sub6 WWAN technologies and bands in this section were performed by setting *Reserve_power_margin* (Qualcomm® Smart Transmit EFS entry) to 0dB, so that the EUT transmits continuously at minimum (P_{limit}, maximum tune up output power P_{max}).

9.1 UMTS Conducted Powers

Table 9-1
Measured P_{max}

3GPP Release Version	Mode	3GPP 34.121 Subtest	AWS Band [dBm]			3GPP MPR [dB]
			1312	1412	1513	
99	WCDMA	12.2 kbps RMC	24.33	24.13	24.22	-
99		12.2 kbps AMR	24.49	24.09	24.17	-
6	HSDPA	Subtest 1	23.87	23.62	23.56	0
6		Subtest 2	23.90	23.64	23.67	0
6		Subtest 3	23.45	23.15	23.22	0.5
6		Subtest 4	23.44	23.13	23.15	0.5
6	HSUPA	Subtest 1	23.92	23.64	23.72	0
6		Subtest 2	21.87	21.59	21.66	2
6		Subtest 3	22.92	22.57	22.69	1
6		Subtest 4	21.93	21.67	21.71	2
6		Subtest 5	23.93	23.70	23.74	0
8	DC-HSDPA	Subtest 1	23.97	23.69	23.79	0
8		Subtest 2	23.98	23.76	23.84	0
8		Subtest 3	23.48	23.22	23.30	0.5
8		Subtest 4	23.50	23.27	23.32	0.5

Table 9-2
Measured P_{limit} for DSI = 3 (Hotspot mode)

3GPP Release Version	Mode	3GPP 34.121 Subtest	AWS Band [dBm]			3GPP MPR [dB]
			1312	1412	1513	
99	WCDMA	12.2 kbps RMC	19.12	19.17	19.30	-
99		12.2 kbps AMR	19.23	19.10	19.17	-
6	HSDPA	Subtest 1	17.87	17.69	17.99	0
6		Subtest 2	17.89	17.69	18.00	0
6		Subtest 3	17.39	17.13	17.45	0.5
6		Subtest 4	17.31	17.13	17.49	0.5
6	HSUPA	Subtest 1	18.72	18.42	18.51	0
6		Subtest 2	16.70	16.40	16.53	2
6		Subtest 3	17.68	17.41	17.51	1
6		Subtest 4	16.71	16.42	16.55	2
6		Subtest 5	18.65	18.37	18.51	0
8	DC-HSDPA	Subtest 1	18.68	18.14	18.48	0
8		Subtest 2	18.63	18.41	18.46	0
8		Subtest 3	18.14	17.90	17.96	0.5
8		Subtest 4	18.14	17.89	17.97	0.5

Table 9-3
Measured P_{limit} for DSI = 2 (Head)

3GPP Release Version	Mode	3GPP 34.121 Subtest	AWS Band [dBm]			3GPP MPR [dB]
			1312	1412	1513	
99	WCDMA	12.2 kbps RMC	21.23	21.05	21.22	-
99		12.2 kbps AMR	21.21	21.05	21.20	-
6	HSDPA	Subtest 1	20.86	20.69	21.03	0
6		Subtest 2	20.91	20.73	21.07	0
6		Subtest 3	20.38	20.16	20.54	0.5
6		Subtest 4	20.41	20.21	20.57	0.5
6	HSUPA	Subtest 1	20.83	20.63	20.95	0
6		Subtest 2	18.84	18.64	18.97	2
6		Subtest 3	19.79	19.61	19.93	1
6		Subtest 4	18.85	18.69	19.00	2
6		Subtest 5	20.88	20.69	21.02	0
8	DC-HSDPA	Subtest 1	20.25	20.03	20.35	0
8		Subtest 2	20.25	20.00	20.32	0
8		Subtest 3	19.74	19.50	19.87	0.5
8		Subtest 4	19.73	19.56	19.83	0.5

DC-HSDPA considerations

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

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

Figure 9-1
Power Measurement Setup

9.2 LTE Conducted Powers

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

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

LTE Carrier Aggregation Notes:

1. This device supports uplink carrier aggregation for LTE CA_66B, LTE CA_66C, and LTE CA_41C with a maximum of two component carriers. For intraband contiguous carrier aggregation scenarios, 3GPP 36.101 Table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when non-contiguous RB allocation is implemented. The conducted powers and MPR settings in this device are permanently implemented per the above 3GPP requirements.
2. Per FCC Guidance, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.

9.2.1 LTE Band 66

Table 9-4
LTE Band 66 (AWS) Measured P_{Max} for DSI = 2 (Head) or DSI = 0 (Body-worn, or Phablet with grip sensor inactive) - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth						
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	Designed MPR [dB]
			Conducted Power [dBm]			
QPSK	1	0	23.62	23.50	23.81	0
	1	50	23.69	23.58	23.97	0
	1	99	23.52	23.39	**24.02**	0
	50	0	21.58	21.45	21.71	2
	50	25	21.65	21.54	21.89	2
	50	50	21.54	21.41	**21.93**	2
	100	0	21.56	21.45	21.80	2
16QAM	1	0	22.80	22.79	23.44	1
	1	50	23.47	23.01	23.41	1
	1	99	22.90	23.07	23.39	1
	50	0	21.61	21.50	21.75	2
	50	25	21.70	21.60	21.88	2
	50	50	21.53	21.51	21.91	2
	100	0	21.61	21.48	21.77	2
64QAM	1	0	21.57	21.44	22.00	2
	1	50	21.79	21.76	22.03	2
	1	99	21.55	21.54	22.31	2
	50	0	20.55	20.51	20.76	3
	50	25	20.65	20.58	20.89	3
	50	50	20.56	20.45	20.94	3
	100	0	20.60	20.46	20.78	3
256QAM	1	0	18.59	18.43	18.74	5
	1	50	18.93	18.73	19.21	5
	1	99	18.51	18.42	19.09	5
	50	0	18.54	18.47	18.75	5
	50	25	18.55	18.52	18.89	5
	50	50	18.58	18.48	18.87	5
	100	0	18.54	18.48	18.79	5

Table 9-5
LTE Band 66 (AWS) Uplink Carrier Aggregation Measured P_{Max} for DSI = 2 (Head) or DSI = 0 (Body-worn, or Phablet with grip sensor inactive) - 20 MHz Bandwidth

	PCC									SCC									Power	
Combination	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)
CA_66C	LTE B66	20	132072	1720.0	66536	2120.0	QPSK	1	99	LTE B66	20	132270	1739.8	66734	2139.8	QPSK	1	0	**23.85**	23.52
CA_66C	LTE B66	20	132572	1770.0	67036	2170.0	QPSK	1	0	LTE B66	20	132374	1750.2	66838	2150.2	QPSK	1	99	**24.00**	23.81

Table 9-6
LTE Band 66 (AWS) Measured P_{Max} for DSI = 2 (Head) or DSI = 0 (Body-worn, or Phablet with grip sensor inactive) - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth						
Modulation	RB Size	RB Offset	Low Channel 132022 (1715.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132622 (1775.0 MHz)	Designed MPR [dB]
			Conducted Power [dBm]			
QPSK	1	0	23.61	23.51	23.86	0
	1	25	24.01	23.89	24.39	0
	1	49	23.68	23.77	24.24	0
	25	0	22.01	21.93	22.19	2
	25	12	22.00	22.03	22.25	2
	25	25	22.03	21.87	22.27	2
	50	0	22.03	21.94	22.25	2
16QAM	1	0	22.75	22.64	22.98	1
	1	25	23.09	22.94	23.37	1
	1	49	22.70	22.72	23.20	1
	25	0	21.72	21.61	21.97	2
	25	12	21.75	21.73	22.18	2
	25	25	21.63	21.61	22.10	2
	50	0	21.67	21.62	22.07	2
64QAM	1	0	21.54	21.53	21.89	2
	1	25	21.83	21.87	22.32	2
	1	49	21.53	21.65	22.10	2
	25	0	20.70	20.60	20.95	3
	25	12	20.70	20.70	21.10	3
	25	25	20.57	20.61	21.05	3
	50	0	20.60	20.60	21.05	3
256QAM	1	0	18.59	18.43	18.75	5
	1	25	18.89	18.74	19.25	5
	1	49	18.46	18.54	19.06	5
	25	0	18.69	18.62	18.91	5
	25	12	18.70	18.72	19.14	5
	25	25	18.62	18.61	19.04	5
	50	0	18.60	18.61	19.02	5

Table 9-7
LTE Band 66 (AWS) Uplink Carrier Aggregation Measured P_{Max} for DSI = 2 (Head) or DSI = 0 (Body-worn, or Phablet with grip sensor inactive) - 10 MHz Bandwidth

	PCC										SCC									Power	
Combination	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)
CA_66B	LTE B66	10	132022	1715.0	66486	2115.0	QPSK	1	49	LTE B66	10	132121	1724.9	66585	2124.9	QPSK	1	0	**23.91**	23.68
CA_66B	LTE B66	10	132622	1775.0	67086	2175.0	QPSK	1	0	LTE B66	10	132523	1765.1	66987	2165.1	QPSK	1	49	**24.05**	23.86

Table 9-8
LTE Band 66 (AWS) Measured P_{Limit} for DSI = 3 (Hotspot Mode) - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.69	18.71	19.10	0	0
	1	50	19.07	19.07	**19.19**		0
	1	99	18.85	18.82	19.06		0
	50	0	18.90	19.11	19.20	0-1	0
	50	25	19.07	19.19	**19.28**		0
	50	50	19.01	19.09	19.08		0
	100	0	19.00	19.12	19.18		0
16QAM	1	0	19.02	19.22	19.45	0-1	0
	1	50	19.46	19.40	19.40		0
	1	99	19.29	19.32	19.30		0
	50	0	18.90	19.11	19.22	0-2	0
	50	25	19.09	19.22	19.28		0
	50	50	19.04	19.13	19.08		0
	100	0	19.00	19.12	19.19		0
64QAM	1	0	18.84	19.17	19.46	0-2	0
	1	50	19.21	19.50	19.41		0
	1	99	18.95	19.26	19.36		0
	50	0	18.90	19.12	19.21	0-3	0
	50	25	19.08	19.24	19.29		0
	50	50	19.02	19.12	19.11		0
	100	0	19.00	19.14	19.17		0
256QAM	1	0	18.83	19.09	19.13	0-5	0
	1	50	19.16	19.49	19.46		0
	1	99	19.01	19.06	19.13		0
	50	0	18.89	19.12	19.24		0
	50	25	19.08	19.21	19.28		0
	50	50	19.00	19.12	19.11		0
	100	0	18.96	19.00	19.09		0

Table 9-9
LTE Band 66 (AWS) Uplink Carrier Aggregation Measured P_{Limit} for DSI = 3 (Hotspot Mode) - 20 MHz Bandwidth

	PCC									SCC									Power	
Combination	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)
CA_66C	LTE B66	20	132572	1770.0	67036	2170.0	QPSK	1	0	LTE B66	20	132374	1750.2	66838	2150.2	QPSK	1	99	18.93	19.10

Table 9-10
LTE Band 66 (AWS) Measured P_{Limit} for DSI = 3 (Hotspot Mode) - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132022 (1715.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132622 (1775.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.86	19.04	19.05	0	0
	1	25	19.17	19.37	19.32		0
	1	49	18.96	19.04	19.08		0
	25	0	19.09	19.27	19.32	0-1	0
	25	12	19.18	19.33	19.43		0
	25	25	19.08	19.23	19.32		0
	50	0	19.09	19.24	19.32		0
16QAM	1	0	19.10	19.25	19.40	0-1	0
	1	25	19.40	19.49	19.46		0
	1	49	19.18	19.27	19.40		0
	25	0	19.12	19.31	19.36	0-2	0
	25	12	19.20	19.38	19.45		0
	25	25	19.11	19.26	19.33		0
	50	0	19.09	19.28	19.34		0
64QAM	1	0	18.97	19.24	19.30	0-2	0
	1	25	19.38	19.45	19.41		0
	1	49	19.09	19.32	19.18		0
	25	0	19.16	19.28	19.34	0-3	0
	25	12	19.24	19.36	19.41		0
	25	25	19.11	19.24	19.32		0
	50	0	19.13	19.24	19.34		0
256QAM	1	0	18.93	19.12	19.27	0-5	0
	1	25	19.33	19.39	19.42		0
	1	49	19.04	19.00	19.18		0
	25	0	19.13	19.26	19.33		0
	25	12	19.22	19.36	19.41		0
	25	25	19.10	19.24	19.30		0
	50	0	19.12	19.23	19.33		0

Table 9-11
LTE Band 66 (AWS) Uplink Carrier Aggregation Measured P_{Limit} for DSI = 3 (Hotspot Mode) - 10 MHz Bandwidth

	PCC									SCC									Power	
Combination	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)
CA_66B	LTE B66	10	132622	1775.0	67086	2175.0	QPSK	1	0	LTE B66	10	132523	1765.1	66987	2165.1	QPSK	1	49	19.07	19.05

9.2.2 LTE Band 30

Table 9-12
LTE Band 30 Measured P_{Max} for DSI = 2 (Head) or DSI = 0 (Body-worn, or Phablet with grip sensor inactive) - 10 MHz Bandwidth

LTE Band 30 10 MHz Bandwidth				
Modulation	RB Size	RB Offset	Mid Channel 27710 (2310.0 MHz) Conducted Power [dBm]	Designed MPR [dB]
QPSK	1	0	21.97	0
	1	25	22.00	0
	1	49	**22.03**	0
	25	0	**20.33**	2
	25	12	20.26	2
	25	25	20.32	2
	50	0	20.26	2
16QAM	1	0	21.17	1
	1	25	21.13	1
	1	49	21.21	1
	25	0	19.84	2
	25	12	19.82	2
	25	25	19.84	2
	50	0	19.86	2
64QAM	1	0	20.23	2
	1	25	20.26	2
	1	49	20.23	2
	25	0	19.10	3
	25	12	19.15	3
	25	25	19.05	3
	50	0	18.87	3
256QAM	1	0	16.95	5
	1	25	17.25	5
	1	49	16.90	5
	25	0	17.01	5
	25	12	17.02	5
	25	25	17.11	5
	50	0	17.00	5

Table 9-13
LTE Band 30 Measured P_{Limit} for DSI = 3 (Hotspot Mode) - 10 MHz Bandwidth

LTE Band 30 10 MHz Bandwidth					
Modulation	**RB Size**	**RB Offset**	**Mid Channel** **27710** **(2310.0 MHz)** **Conducted Power [dBm]**	**MPR Allowed per 3GPP [dB]**	**MPR [dB]**
QPSK	1	0	17.15	0	0
	1	25	17.25		0
	1	49	**17.26**		0
	25	0	17.11	0-1	0
	25	12	**17.27**		0
	25	25	17.25		0
	50	0	17.14		0
16QAM	1	0	17.46	0-1	0
	1	25	17.53		0
	1	49	17.51		0
	25	0	17.14	0-2	0
	25	12	17.25		0
	25	25	17.08		0
	50	0	17.16		0
64QAM	1	0	17.30	0-2	0
	1	25	17.37		0
	1	49	17.36		0
	25	0	17.17	0-3	0
	25	12	17.30		0
	25	25	17.11		0
	50	0	17.17		0
256QAM	1	0	17.10	0-5	0
	1	25	17.46		0
	1	49	16.98		0
	25	0	17.18		0
	25	12	17.27		0
	25	25	17.12		0
	50	0	17.22		0

Table 9-14
LTE Band 30 Measured P_{limit} for DSI = 1 (Phablet with grip sensor active) and/or DSI = 4 (Earjack active) - 10 MHz Bandwidth

LTE Band 30 10 MHz Bandwidth					
Modulation	**RB Size**	**RB Offset**	**Mid Channel 27710 (2310.0 MHz) Conducted Power [dBm]**	**MPR Allowed per 3GPP [dB]**	**MPR [dB]**
QPSK	1	0	21.11	0	0
	1	25	21.13		0
	1	49	**21.14**		0
	25	0	20.31	0-1	1
	25	12	**20.33**		1
	25	25	20.30		1
	50	0	20.31		1
16QAM	1	0	21.25	0-1	0
	1	25	21.27		0
	1	49	21.28		0
	25	0	20.04	0-2	1
	25	12	20.08		1
	25	25	20.07		1
	50	0	20.08		1
64QAM	1	0	20.25	0-2	1
	1	25	20.29		1
	1	49	20.19		1
	25	0	19.07	0-3	2
	25	12	19.08		2
	25	25	19.11		2
	50	0	19.04		2
256QAM	1	0	16.83	0-5	4
	1	25	17.01		4
	1	49	17.06		4
	25	0	17.09		4
	25	12	17.10		4
	25	25	17.00		4
	50	0	17.00		4

9.2.3 LTE Band 7

Table 9-15
LTE Band 7 Measured P_{Max} for DSI = 2 (Head) or DSI = 0 (Body-worn, or Phablet with grip sensor inactive) - 20 MHz Bandwidth

LTE Band 7 20 MHz Bandwidth						
Modulation	RB Size	RB Offset	Low Channel 20850 (2510.0 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21350 (2560.0 MHz)	Designed MPR [dB]
			Conducted Power [dBm]			
QPSK	1	0	**23.60**	23.55	23.21	0
	1	50	23.57	23.34	23.18	0
	1	99	23.55	23.30	23.50	0
	50	0	**21.70**	21.33	21.13	2
	50	25	21.58	21.27	21.18	2
	50	50	21.51	21.19	21.13	2
	100	0	21.53	21.19	21.10	2
16QAM	1	0	23.25	22.77	22.78	1
	1	50	23.25	22.96	22.82	1
	1	99	23.07	22.78	22.82	1
	50	0	21.73	21.39	21.14	2
	50	25	21.66	21.28	21.17	2
	50	50	21.57	21.23	21.21	2
	100	0	21.52	21.19	21.12	2
64QAM	1	0	22.15	21.63	21.30	2
	1	50	22.02	21.61	21.35	2
	1	99	22.09	21.45	21.45	2
	50	0	20.70	20.36	20.12	3
	50	25	20.63	20.27	20.18	3
	50	50	20.59	20.20	20.14	3
	100	0	20.54	20.15	20.10	3
256QAM	1	0	18.58	18.28	18.10	5
	1	50	19.14	18.68	18.58	5
	1	99	18.58	18.29	18.00	5
	50	0	18.56	18.26	18.02	5
	50	25	18.53	18.27	18.17	5
	50	50	18.48	18.18	18.04	5
	100	0	18.49	18.10	18.06	5

Table 9-16
LTE Band 7 Measured P_{Limit} for DSI = 3 (Hotspot Mode) - 20 MHz Bandwidth

LTE Band 7 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20850 (2510.0 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21350 (2560.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	17.51	17.79	18.11	0	0
	1	50	17.73	17.92	18.25		0
	1	99	17.77	17.93	**18.33**		0
	50	0	17.54	17.79	18.11	0-1	0
	50	25	17.62	17.87	18.14		0
	50	50	17.70	17.91	**18.20**		0
	100	0	17.55	17.79	18.05		0
16QAM	1	0	17.85	18.10	18.26	0-1	0
	1	50	18.04	18.31	18.35		0
	1	99	18.10	18.27	18.37		0
	50	0	17.52	17.79	18.07	0-2	0
	50	25	17.69	17.88	18.12		0
	50	50	17.73	17.94	18.24		0
	100	0	17.56	17.78	18.03		0
64QAM	1	0	17.69	18.01	18.36	0-2	0
	1	50	17.93	18.06	18.38		0
	1	99	17.88	18.12	18.42		0
	50	0	17.52	17.77	18.12	0-3	0
	50	25	17.66	17.89	18.10		0
	50	50	17.76	17.96	18.24		0
	100	0	17.59	17.78	18.08		0
256QAM	1	0	17.20	17.61	18.01	0-5	0
	1	50	17.84	18.09	18.27		0
	1	99	17.69	17.87	18.07		0
	50	0	17.41	17.67	18.03		0
	50	25	17.68	17.88	18.12		0
	50	50	17.67	17.83	18.08		0
	100	0	17.56	17.78	18.02		0

Table 9-17
LTE Band 7 Measured P_{limit} for DSI = 1 (Phablet with grip sensor active) and/or DSI = 4 (Earjack active) - 20 MHz Bandwidth

LTE Band 7 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20850 (2510.0 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21350 (2560.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	20.66	20.88	21.22	0	0
	1	50	20.83	20.76	21.11		0
	1	99	20.94	20.77	**21.31**		0
	50	0	20.63	20.78	21.00	0-1	0
	50	25	20.74	20.81	21.01		0
	50	50	20.78	20.84	**21.17**		0
	100	0	20.72	20.80	20.82		0
16QAM	1	0	20.62	20.88	21.33	0-1	0
	1	50	20.90	21.11	21.16		0
	1	99	20.95	20.95	21.27		0
	50	0	20.64	20.97	21.00	0-2	0
	50	25	20.83	20.78	20.93		0
	50	50	20.75	20.92	21.10		0
	100	0	20.74	20.83	20.91		0
64QAM	1	0	20.87	20.83	21.19	0-2	0
	1	50	21.20	21.01	21.10		0
	1	99	21.03	20.84	21.15		0
	50	0	20.70	20.67	20.95	0-3	0
	50	25	20.78	20.84	21.09		0
	50	50	20.85	20.94	21.14		0
	100	0	20.78	20.74	20.96		0
256QAM	1	0	18.45	18.56	18.76	0-5	2
	1	50	18.55	18.84	18.84		2
	1	99	18.75	18.66	18.50		2
	50	0	18.47	18.63	18.84		2
	50	25	18.77	18.83	18.88		2
	50	50	18.76	18.77	18.91		2
	100	0	18.74	18.74	18.90		2

9.2.1 LTE Band 41

Table 9-18
LTE Band 41 PC3 Measured P_{Max} for DSI = 2 (Head) or DSI = 0 (Body-worn, or Phablet with grip sensor inactive), or DSI = 1 (Phablet with grip sensor active) and/or DSI = 4 (Earjack Active) - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	23.55	23.67	23.68	23.85	23.87	0	0
	1	50	23.35	23.88	23.95	24.01	**24.11**		0
	1	99	23.48	23.98	23.76	23.62	23.99		0
	50	0	22.34	22.77	22.94	23.10	22.87	0-1	1
	50	25	22.43	22.82	23.09	23.09	23.10		1
	50	50	22.34	22.90	23.02	22.99	**23.17**		1
	100	0	22.35	22.66	23.04	23.03	22.97		1
16QAM	1	0	22.25	22.90	22.65	22.59	22.75	0-1	1
	1	50	22.34	22.92	22.86	22.98	22.90		1
	1	99	22.36	22.93	22.81	22.64	23.04		1
	50	0	21.34	21.85	22.08	21.95	21.91	0-2	2
	50	25	21.46	21.90	22.22	22.14	22.04		2
	50	50	21.30	21.91	22.01	22.05	22.17		2
	100	0	21.34	21.79	22.16	22.10	22.01		2
64QAM	1	0	21.45	21.71	21.70	21.67	21.80	0-2	2
	1	50	21.58	21.78	22.50	21.92	22.02		2
	1	99	21.56	21.83	22.00	21.77	22.29		2
	50	0	20.33	20.82	21.04	21.09	20.98	0-3	3
	50	25	20.47	20.83	21.13	21.16	20.94		3
	50	50	20.36	20.99	21.02	20.98	21.21		3
	100	0	20.39	20.72	21.10	21.11	21.04		3
256QAM	1	0	17.97	18.39	18.83	18.98	18.54	0-5	5
	1	50	18.09	18.84	19.13	19.36	19.32		5
	1	99	18.09	18.72	18.74	19.04	18.80		5
	50	0	18.25	18.68	19.00	19.01	18.96		5
	50	25	18.45	18.83	19.20	19.16	19.11		5
	50	50	18.30	18.84	19.09	19.04	19.14		5
	100	0	18.28	18.74	19.12	19.03	19.09		5

Table 9-19
LTE Band 41 Uplink Carrier Aggregation Measured P_{Max} for DSI = 2 (Head) or DSI = 0 (Body-worn, or Phablet with grip sensor inactive), or DSI = 1 (Phablet with grip sensor active) and/or DSI = 4 (Earjack Active) - 20 MHz Bandwidth

Table 9-20
LTE Band 41 PC3 Measured P_{Limit} for DSI = 3 (Hotspot Mode) - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	19.34	19.70	19.72	19.71	19.53	0	0
	1	50	19.36	19.95	**20.10**	20.03	19.95		0
	1	99	19.30	19.81	19.81	19.63	19.87		0
	50	0	19.34	19.79	20.00	19.93	19.82	0-1	0
	50	25	19.38	19.83	**20.12**	20.04	19.90		0
	50	50	19.36	19.78	19.91	19.99	20.00		0
	100	0	19.32	19.66	19.97	19.96	19.78		0
16QAM	1	0	19.33	19.79	19.56	19.84	19.56	0-1	0
	1	50	19.40	19.90	19.97	19.75	19.98		0
	1	99	19.63	19.72	19.74	19.62	19.75		0
	50	0	19.44	19.77	19.92	19.94	19.74	0-2	0
	50	25	19.37	19.80	20.15	20.12	19.83		0
	50	50	19.22	19.76	19.93	19.93	19.99		0
	100	0	19.31	19.74	19.95	20.04	19.81		0
64QAM	1	0	19.35	19.58	19.55	20.06	19.65	0-2	0
	1	50	19.50	19.90	19.95	20.01	19.95		0
	1	99	19.26	19.79	19.82	19.60	19.92		0
	50	0	19.34	19.82	19.89	19.90	19.79	0-3	0
	50	25	19.38	19.79	20.05	20.05	19.89		0
	50	50	19.35	19.83	19.95	19.92	20.04		0
	100	0	19.33	19.68	19.99	19.96	19.95		0
256QAM	1	0	18.11	18.23	18.43	18.56	18.58	0-5	1
	1	50	18.20	18.65	18.68	18.75	18.62		1
	1	99	18.17	18.55	18.53	18.72	18.86		1
	50	0	18.19	18.54	18.81	18.86	18.79		1
	50	25	18.22	18.55	18.96	18.93	18.80		1
	50	50	18.16	18.67	18.74	18.80	18.94		1
	100	0	18.18	18.68	18.77	18.84	18.81		1

Table 9-21
LTE Band 41 Uplink Carrier Aggregation Measured P_{Limit} for DSI = 3 (Hotspot Mode) - 20 MHz Bandwidth

	PCC							SCC							Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41C	LTE B41	20	40620	2593.0	QPSK	50	0	LTE B41	20	40422	2573.2	QPSK	50	50	19.97	20.00

Table 9-22
LTE Band 41 PC2 Measured P_{Max} for DSI = 2 (Head) or DSI = 0 (Body-worn, or Phablet with grip sensor inactive), or DSI = 1 (Phablet with grip sensor active) and/or DSI = 4 (Earjack Active) - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	25.29	25.44	25.79	25.40	25.40	0	0
	1	50	25.48	25.53	26.08	25.84	25.73		0
	1	99	25.49	25.65	25.92	25.59	25.95		0
	50	0	24.07	24.55	24.66	24.66	24.60	0-1	0.9
	50	25	24.15	24.49	24.85	24.89	24.65		0.9
	50	50	24.11	24.69	24.62	24.70	24.75		0.9
	100	0	24.01	24.45	24.76	24.75	24.64		0.9

Table 9-23
LTE Band 41 Uplink Carrier Aggregation Measured P_{Max} for DSI = 2 (Head) or DSI = 0 (Body-worn, or Phablet with grip sensor inactive), or DSI = 1 (Phablet with grip sensor active) and/or DSI = 4 (Earjack Active) - 20 MHz Bandwidth

	PCC							SCC							Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41C	LTE B41 PC2	20	39750	2506.0	QPSK	1	99	LTE B41 PC2	20	39948	2525.8	QPSK	1	0	25.48	25.49
CA_41C	LTE B41 PC2	20	41490	2680.0	QPSK	1	0	LTE B41 PC2	20	41292	2660.2	QPSK	1	99	26.00	25.40

Table 9-24
LTE Band 41 PC2 Measured P_{Limit} for DSI = 3 (Hotspot Mode) - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	21.25	21.57	21.39	21.56	21.72	0	0
	1	50	21.38	21.74	22.02	22.00	22.01		0
	1	99	21.66	21.81	21.88	21.74	21.80		0
	50	0	21.25	21.66	21.68	21.73	21.58	0-1	0
	50	25	21.27	21.62	21.82	21.80	21.72		0
	50	50	21.17	21.79	21.68	21.74	21.79		0
	100	0	21.12	21.54	21.67	21.73	21.68		0

Table 9-25
LTE Band 41 Uplink Carrier Aggregation Measured P_{Limit} for DSI = 3 (Hotspot Mode) - 20 MHz Bandwidth

	PCC							SCC							Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41C	LTE B41 PC2	20	40620	2593.0	QPSK	50	0	LTE B41 PC2	20	40422	2573.2	QPSK	50	50	21.69	21.68

9.3 NR Conducted Powers

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

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

9.3.1 NR Band n66 Antenna A

Table 9-26
NR Band n66 Antenna A Measured P_{Max} for DSI = 2 (Head) or DSI = 0 (Body-worn, or Phablet with grip sensor inactive) - 40 MHz Bandwidth

NR Band n66 40 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	349000 (1745 MHz) Conducted Power [dBm]		
DFT-s-OFDM π/2 BPSK	1	1	23.60	0	0.0
	1	108	23.99		0.0
	1	214	24.03		0.0
	108	0	23.33	0-0.5	0.5
	108	54	23.84	0	0.0
	108	108	23.55	0-0.5	0.5
	216	0	23.30		0.5
DFT-s-OFDM QPSK	1	1	23.34	0	0.0
	1	108	23.43		0.0
	1	214	**23.54**		0.0
	108	0	23.00	0-1	1.0
	108	54	**23.72**	0	0.0
	108	108	23.10	0-1	1.0
	216	0	22.85		1.0
DFT-s-OFDM 16QAM	1	1	22.51	0-1	1.0
CP-OFDM QPSK	1	1	21.92	0-1.5	1.5

Table 9-27
NR Band n66 Antenna A Measured P_{Limit} for DSI = 3 (Hotspot Mode) - 40 MHz Bandwidth

NR Band n66 40 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	349000 (1745 MHz) Conducted Power [dBm]		
DFT-s-OFDM π/2 BPSK	1	1	17.98	0	0.0
	1	108	18.05		0.0
	1	214	18.16		0.0
	108	0	18.09	0-0.5	0.0
	108	54	18.14	0	0.0
	108	108	18.31	0-0.5	0.0
	216	0	18.13		0.0
DFT-s-OFDM QPSK	1	1	17.98	0	0.0
	1	108	18.10		0.0
	1	214	**18.23**		0.0
	108	0	18.09	0-1	0.0
	108	54	18.14	0	0.0
	108	108	**18.28**	0-1	0.0
	216	0	18.13		0.0
DFT-s-OFDM 16QAM	1	1	18.31	0-1	0.0
CP-OFDM QPSK	1	1	17.94	0-1.5	0.0

9.3.2 NR Band n30 Antenna B

Table 9-28
NR Band n30 Antenna B Measured P_{Max} for DSI = 2 (Head) or DSI = 0 (Body-worn, or Phablet with grip sensor inactive)- 10 MHz Bandwidth

NR Band n30 10 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	462000 (2310 MHz) Conducted Power [dBm]		
DFT-s-OFDM π/2 BPSK	1	1	23.26	0	0.0
	1	26	23.20		0.0
	1	50	23.19		0.0
	25	0	22.96	0-0.5	0.5
	25	14	23.45	0	0.0
	25	27	22.90	0-0.5	0.5
	50	0	22.89		0.5
DFT-s-OFDM QPSK	1	1	23.33	0	0.0
	1	26	23.28		0.0
	1	50	**23.50**		0.0
	25	0	22.35	0-1	1.0
	25	14	**23.47**	0	0.0
	25	27	22.47	0-1	1.0
	50	0	22.47		1.0
DFT-s-OFDM 16QAM	1	1	22.50	0-1	1.0
CP-OFDM QPSK	1	1	22.00	0-1.5	1.5

Table 9-29
NR Band n30 Antenna B Measured P_{Limit} for DSI = 3 (Hotspot Mode)
- 10 MHz Bandwidth

NR Band n30 10 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	462000 (2310 MHz) Conducted Power [dBm]		
DFT-s-OFDM π/2 BPSK	1	1	18.24	0	0.0
	1	26	18.25		0.0
	1	50	18.01		0.0
	25	0	18.14	0-0.5	0.0
	25	14	18.13	0	0.0
	25	27	18.07	0-0.5	0.0
	50	0	18.11		0.0
DFT-s-OFDM QPSK	1	1	18.00	0	0.0
	1	26	**18.05**		0.0
	1	50	17.77		0.0
	25	0	18.03	0-1	0.0
	25	14	**18.09**	0	0.0
	25	27	18.05	0-1	0.0
	50	0	18.04		0.0
DFT-s-OFDM 16QAM	1	1	18.37	0-1	0.0
CP-OFDM QPSK	1	1	18.22	0-1.5	0.0

Table 9-30
NR Band n30 Antenna B Measured P_{Limit} for DSI = 1 (Phablet with Grip Sensor Active) and/or DSI = 4 (Earjack Active) - 10 MHz Bandwidth

NR Band n30 10 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	462000 (2310 MHz) Conducted Power [dBm]		
DFT-s-OFDM π/2 BPSK	1	1	21.63	0	0.0
	1	26	21.61		0.0
	1	50	21.42		0.0
	25	0	21.54	0-0.5	0.0
	25	14	21.56	0	0.0
	25	27	21.55	0-0.5	0.0
	50	0	21.57		0.0
DFT-s-OFDM QPSK	1	1	21.49	0	0.0
	1	26	**21.59**		0.0
	1	50	21.28		0.0
	25	0	21.59	0-1	0.0
	25	14	21.58	0	0.0
	25	27	**21.60**	0-1	0.0
	50	0	21.58		0.0
DFT-s-OFDM 16QAM	1	1	21.63	0-1	0.0
CP-OFDM QPSK	1	1	20.99	0-1.5	0.5

9.3.1 NR Band n7 Antenna B

Table 9-31
NR Band n7 Antenna B Measured P_{Max} for DSI = 2 (Head) or DSI = 0 (Body-worn, or Phablet with grip sensor inactive)- 40 MHz Bandwidth

NR Band n7 40 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	507000 (2535 MHz) Conducted Power [dBm]		
DFT-s-OFDM π/2 BPSK	1	1	23.96	0	0.0
	1	108	24.33		0.0
	1	214	24.19		0.0
	108	0	23.31	0-0.5	0.5
	108	54	24.04	0	0.0
	108	108	24.00	0-0.5	0.5
	216	0	23.91		0.5
DFT-s-OFDM QPSK	1	1	23.83	0	0.0
	1	108	**24.27**		0.0
	1	214	24.19		0.0
	108	0	23.50	0-1	1.0
	108	54	**24.14**	0	0.0
	108	108	23.42	0-1	1.0
	216	0	23.08		1.0
DFT-s-OFDM 16QAM	1	1	23.06	0-1	1.0
CP-OFDM QPSK	1	1	22.46	0-1.5	1.5

Table 9-32
NR Band n7 Antenna B Measured P_{Limit} for DSI = 3 (Hotspot Mode) - 40 MHz Bandwidth

NR Band n7 40 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	507000 (2535 MHz) Conducted Power [dBm]		
DFT-s-OFDM π/2 BPSK	1	1	19.47	0	0.0
	1	108	19.77		0.0
	1	214	19.80		0.0
	108	0	19.61	0-0.5	0.0
	108	54	19.73	0	0.0
	108	108	19.84	0-0.5	0.0
	216	0	19.74		0.0
DFT-s-OFDM QPSK	1	1	19.39	0	0.0
	1	108	**19.71**		0.0
	1	214	19.64		0.0
	108	0	19.63	0-1	0.0
	108	54	19.70	0	0.0
	108	108	**19.86**	0-1	0.0
	216	0	19.69		0.0
DFT-s-OFDM 16QAM	1	1	19.79	0-1	0.0
CP-OFDM QPSK	1	1	19.54	0-1.5	0.0

Table 9-33
NR Band n7 Antenna B Measured P_{Limit} for DSI = 1 (Phablet with Grip Sensor Active) and/or DSI = 4 (Earjack Active) - 40 MHz Bandwidth

NR Band n7 40 MHz Bandwidth					
			Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
Modulation	RB Size	RB Offset	507000 (2535 MHz) Conducted Power [dBm]		
DFT-s-OFDM π/2 BPSK	1	1	20.38	0	0.0
	1	108	20.71		0.0
	1	214	20.73		0.0
	108	0	20.55	0-0.5	0.0
	108	54	20.60	0	0.0
	108	108	20.74	0-0.5	0.0
	216	0	20.61		0.0
DFT-s-OFDM QPSK	1	1	20.33	0	0.0
	1	108	20.62		0.0
	1	214	**20.66**		0.0
	108	0	20.57	0-1	0.0
	108	54	20.72	0	0.0
	108	108	**20.83**	0-1	0.0
	216	0	20.60		0.0
DFT-s-OFDM 16QAM	1	1	20.64	0-1	0.0
CP-OFDM QPSK	1	1	20.50	0-1.5	0.0

9.3.2 NR Band n41 Antenna C

Table 9-34
NR Band n41 Antenna C Measured P_{Limit} for all DSI – 100 MHz Bandwidth

Antenna	Channel
	518598 (2592.99 MHz)
	Conducted Power [dBm]
SRS#4 Ant C	10.28

Figure 9-2
Power Measurement Setup – NR FDD

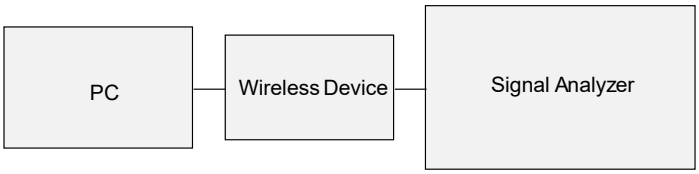


Figure 9-3
Power Measurement Setup – NR TDD

9.4 WLAN Conducted Powers

Table 9-35
2.4 GHz WLAN Maximum Average RF Power – Ant 1

2.4GHz Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11b
		Average
2412	1	18.95
2437	6	18.54
2462	11	18.78

Table 9-36
2.4 GHz WLAN Reduced Average RF Power with RCV Active and/or During Conditions with 5 GHz WLAN and/or 5G NR – Ant 1

2.4GHz Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11b
		Average
2412	1	12.62
2437	6	12.53
2462	11	12.60

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

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

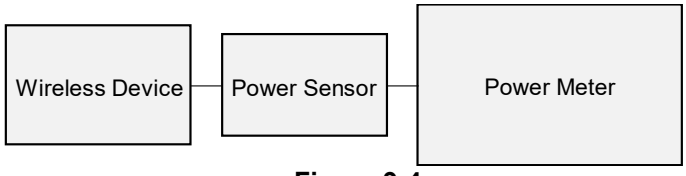


Figure 9-4
Power Measurement Setup

10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Head Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (˚C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
07/26/2022	1750 Head	19.6	1710	1.317	41.262	1.348	40.142	-2.30%	2.79%
			1720	1.324	41.247	1.354	40.126	-2.22%	2.79%
			1745	1.338	41.210	1.368	40.087	-2.19%	2.80%
			1750	1.341	41.203	1.371	40.079	-2.19%	2.80%
			1770	1.352	41.159	1.383	40.047	-2.24%	2.78%
			1790	1.364	41.110	1.394	40.016	-2.15%	2.73%
08/01/2022	1750 Head	21.4	1710	1.337	39.487	1.348	40.142	-0.82%	-1.63%
			1720	1.348	39.445	1.354	40.126	-0.44%	-1.70%
			1745	1.374	39.344	1.368	40.087	0.44%	-1.85%
			1750	1.379	39.323	1.371	40.079	0.58%	-1.89%
			1770	1.399	39.234	1.383	40.047	1.16%	-2.03%
			1790	1.418	39.135	1.394	40.016	1.72%	-2.20%
08/01/2022	2450 Head	20.6	2300	1.683	40.812	1.670	39.500	0.76%	3.32%
			2310	1.694	40.770	1.679	39.480	0.89%	3.27%
			2320	1.706	40.730	1.687	39.460	1.13%	3.22%
			2400	1.797	40.423	1.756	39.289	2.33%	2.89%
			2450	1.853	40.211	1.800	39.200	2.94%	2.58%
			2480	1.890	40.101	1.833	39.162	3.11%	2.40%
			2500	1.912	40.032	1.855	39.136	3.07%	2.29%
			2510	1.923	39.995	1.866	39.123	3.05%	2.23%
			2535	1.952	39.882	1.893	39.092	3.12%	2.02%
			2550	1.971	39.816	1.909	39.073	3.25%	1.90%
			2560	1.984	39.779	1.920	39.060	3.33%	1.84%
			2600	2.030	39.653	1.964	39.009	3.36%	1.65%
			2650	2.089	39.420	2.018	38.945	3.52%	1.22%
			2680	2.127	39.331	2.051	38.907	3.71%	1.09%
			2700	2.148	39.268	2.073	38.882	3.62%	0.99%
08/02/2022	2450 Head	23.5	2300	1.652	40.559	1.670	39.500	-1.08%	2.68%
			2310	1.663	40.516	1.679	39.480	-0.95%	2.62%
			2320	1.675	40.478	1.687	39.460	-0.71%	2.58%
			2400	1.763	40.195	1.756	39.289	0.40%	2.31%
			2450	1.822	40.026	1.800	39.200	1.22%	2.11%
			2480	1.855	39.907	1.833	39.162	1.20%	1.90%
			2500	1.879	39.824	1.855	39.136	1.29%	1.76%
			2510	1.891	39.787	1.866	39.123	1.34%	1.70%
			2535	1.923	39.701	1.893	39.092	1.58%	1.56%
			2550	1.941	39.646	1.909	39.073	1.68%	1.47%
			2560	1.953	39.607	1.920	39.060	1.72%	1.40%
			2600	1.997	39.446	1.964	39.009	1.68%	1.12%
			2650	2.058	39.261	2.018	38.945	1.98%	0.81%
			2680	2.092	39.131	2.051	38.907	2.00%	0.58%
			2700	2.114	39.054	2.073	38.882	1.98%	0.44%
08/04/2022	2450 Head	24.9	2300	1.671	40.005	1.670	39.500	0.06%	1.28%
			2310	1.683	39.964	1.679	39.480	0.24%	1.23%
			2320	1.695	39.930	1.687	39.460	0.47%	1.19%
			2400	1.790	39.624	1.756	39.289	1.94%	0.85%
			2450	1.853	39.433	1.800	39.200	2.94%	0.59%
			2480	1.888	39.323	1.833	39.162	3.00%	0.41%
			2500	1.912	39.231	1.855	39.136	3.07%	0.24%
			2510	1.925	39.188	1.866	39.123	3.16%	0.17%
			2535	1.957	39.090	1.893	39.092	3.38%	-0.01%
			2550	1.976	39.035	1.909	39.073	3.51%	-0.10%
			2560	1.988	39.002	1.920	39.060	3.54%	-0.15%
			2600	2.034	38.855	1.964	39.009	3.56%	-0.39%
			2650	2.095	38.642	2.018	38.945	3.82%	-0.78%
			2680	2.132	38.536	2.051	38.907	3.95%	-0.95%
			2700	2.154	38.468	2.073	38.882	3.91%	-1.06%
08/07/2022	2450 Head	24.2	2300	1.642	40.996	1.670	39.500	-1.68%	3.79%
			2310	1.653	40.954	1.679	39.480	-1.55%	3.73%
			2320	1.665	40.918	1.687	39.460	-1.30%	3.69%
			2400	1.758	40.599	1.756	39.289	0.11%	3.33%
			2450	1.819	40.408	1.800	39.200	1.06%	3.08%
			2480	1.853	40.293	1.833	39.162	1.09%	2.89%
			2500	1.875	40.207	1.855	39.136	1.08%	2.74%
			2510	1.887	40.167	1.866	39.123	1.13%	2.67%
			2535	1.917	40.079	1.893	39.092	1.27%	2.52%
			2550	1.936	40.026	1.909	39.073	1.41%	2.44%
			2560	1.948	39.992	1.920	39.060	1.46%	2.39%
			2600	1.994	39.853	1.964	39.009	1.53%	2.16%
			2650	2.054	39.657	2.018	38.945	1.78%	1.83%
			2680	2.092	39.560	2.051	38.907	2.00%	1.68%
			2700	2.115	39.491	2.073	38.882	2.03%	1.57%
08/09/2022	2450 Head	20.3	2300	1.743	40.222	1.670	39.500	4.37%	1.83%
			2310	1.751	40.211	1.679	39.480	4.29%	1.85%
			2320	1.759	40.202	1.687	39.460	4.27%	1.88%
			2400	1.820	40.081	1.756	39.289	3.64%	2.02%
			2450	1.862	40.001	1.800	39.200	3.44%	2.04%
			2480	1.886	39.955	1.833	39.162	2.89%	2.02%
			2500	1.903	39.921	1.855	39.136	2.59%	2.01%
			2510	1.911	39.899	1.866	39.123	2.41%	1.98%
			2535	1.932	39.846	1.893	39.092	2.06%	1.93%
			2550	1.946	39.817	1.909	39.073	1.94%	1.90%
			2560	1.954	39.797	1.920	39.060	1.77%	1.89%
			2600	1.987	39.739	1.964	39.009	1.17%	1.87%
			2650	2.028	39.625	2.018	38.945	0.50%	1.75%
			2680	2.055	39.568	2.051	38.907	0.20%	1.70%
			2700	2.071	39.551	2.073	38.882	-0.10%	1.72%

Table 10-2
Measured Body Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
07/24/2022	1750 Body	21.9	1710	1.468	52.610	1.463	53.537	0.34%	-1.73%
			1720	1.475	52.596	1.469	53.511	0.41%	-1.71%
			1745	1.492	52.557	1.485	53.445	0.47%	-1.66%
			1750	1.495	52.551	1.488	53.432	0.47%	-1.65%
			1770	1.508	52.518	1.501	53.379	0.47%	-1.61%
			1790	1.521	52.480	1.514	53.326	0.46%	-1.59%
07/26/2022	1750 Body	21.9	1710	1.455	52.819	1.463	53.537	-0.55%	-1.34%
			1720	1.463	52.815	1.469	53.511	-0.41%	-1.30%
			1745	1.479	52.784	1.485	53.445	-0.40%	-1.24%
			1750	1.482	52.773	1.488	53.432	-0.40%	-1.23%
			1770	1.494	52.715	1.501	53.379	-0.47%	-1.24%
			1790	1.506	52.662	1.514	53.326	-0.53%	-1.25%
07/28/2022	1750 Body	21.6	1710	1.475	52.698	1.463	53.537	0.82%	-1.57%
			1720	1.482	52.677	1.469	53.511	0.88%	-1.56%
			1745	1.499	52.635	1.485	53.445	0.94%	-1.52%
			1750	1.502	52.626	1.488	53.432	0.94%	-1.51%
			1770	1.515	52.582	1.501	53.379	0.93%	-1.49%
			1790	1.528	52.538	1.514	53.326	0.92%	-1.48%
08/01/2022	1750 Body	20.6	1710	1.490	52.999	1.463	53.537	1.85%	-1.00%
			1720	1.502	52.958	1.469	53.511	2.25%	-1.03%
			1745	1.531	52.860	1.485	53.445	3.10%	-1.09%
			1750	1.536	52.839	1.488	53.432	3.23%	-1.11%
			1770	1.558	52.753	1.501	53.379	3.80%	-1.17%
			1790	1.579	52.665	1.514	53.326	4.29%	-1.24%
07/24/2022	2450 Body	20.7	2300	1.859	50.493	1.809	52.900	2.76%	-4.55%
			2310	1.868	50.467	1.816	52.887	2.86%	-4.58%
			2320	1.878	50.448	1.826	52.873	2.85%	-4.59%
			2400	1.950	50.335	1.902	52.767	2.52%	-4.61%
			2450	1.999	50.269	1.950	52.700	2.51%	-4.61%
			2480	2.023	50.215	1.993	52.662	1.51%	-4.65%
			2500	2.040	50.168	2.021	52.636	0.94%	-4.69%
			2510	2.050	50.152	2.035	52.623	0.74%	-4.70%
			2535	2.076	50.128	2.071	52.592	0.24%	-4.69%
			2550	2.091	50.112	2.092	52.573	-0.05%	-4.68%
			2560	2.100	50.098	2.106	52.560	-0.28%	-4.68%
			2600	2.135	50.007	2.163	52.509	-1.29%	-4.76%
			2650	2.185	49.949	2.234	52.445	-2.19%	-4.76%
			2680	2.211	49.887	2.277	52.407	-2.90%	-4.81%
			2700	2.230	49.839	2.305	52.382	-3.25%	-4.85%
07/26/2022	2450 Body	21.2	2300	1.861	50.815	1.809	52.900	2.87%	-3.94%
			2310	1.869	50.806	1.816	52.887	2.92%	-3.93%
			2320	1.877	50.794	1.826	52.873	2.79%	-3.93%
			2400	1.949	50.697	1.902	52.767	2.47%	-3.92%
			2450	1.992	50.599	1.950	52.700	2.15%	-3.99%
			2480	2.023	50.569	1.993	52.662	1.51%	-3.97%
			2500	2.040	50.554	2.021	52.636	0.94%	-3.96%
			2510	2.049	50.535	2.035	52.623	0.69%	-3.97%
			2535	2.071	50.458	2.071	52.592	0.00%	-4.06%
			2550	2.087	50.417	2.092	52.573	-0.24%	-4.10%
			2560	2.098	50.404	2.106	52.560	-0.38%	-4.10%
			2600	2.136	50.377	2.163	52.509	-1.25%	-4.06%
			2650	2.183	50.233	2.234	52.445	-2.28%	-4.22%
			2680	2.213	50.218	2.277	52.407	-2.81%	-4.18%
			2700	2.228	50.186	2.305	52.382	-3.34%	-4.19%
08/01/2022	2450 Body	21.4	2300	1.857	53.048	1.809	52.900	2.65%	0.28%
			2310	1.869	53.022	1.816	52.887	2.92%	0.26%
			2320	1.881	52.997	1.826	52.873	3.01%	0.23%
			2400	1.973	52.797	1.902	52.767	3.73%	0.06%
			2450	2.033	52.670	1.950	52.700	4.26%	-0.06%
			2480	2.068	52.590	1.993	52.662	3.76%	-0.14%
			2500	2.092	52.529	2.021	52.636	3.51%	-0.20%
			2510	2.104	52.501	2.035	52.623	3.39%	-0.23%
			2535	2.136	52.432	2.071	52.592	3.14%	-0.30%
			2550	2.154	52.390	2.092	52.573	2.96%	-0.35%
			2560	2.166	52.363	2.106	52.560	2.85%	-0.37%
			2600	2.212	52.239	2.163	52.509	2.27%	-0.51%
			2650	2.274	52.067	2.234	52.445	1.79%	-0.72%
			2680	2.311	51.980	2.277	52.407	1.49%	-0.81%
			2700	2.335	51.915	2.305	52.382	1.30%	-0.89%
08/06/2022	2450 Body	23.4	2300	1.800	52.804	1.809	52.900	-0.50%	-0.18%
			2310	1.813	52.770	1.816	52.887	-0.17%	-0.22%
			2320	1.825	52.736	1.826	52.873	-0.05%	-0.26%
			2400	1.931	52.477	1.902	52.767	1.52%	-0.55%
			2450	2.000	52.283	1.950	52.700	2.56%	-0.79%
			2480	2.041	52.201	1.993	52.662	2.41%	-0.88%
			2500	2.067	52.131	2.021	52.636	2.28%	-0.96%
			2510	2.079	52.085	2.035	52.623	2.16%	-1.02%
			2535	2.115	51.960	2.071	52.592	2.12%	-1.20%
			2550	2.138	51.902	2.092	52.573	2.20%	-1.28%
			2560	2.153	51.871	2.106	52.560	2.23%	-1.31%
			2600	2.208	51.763	2.163	52.509	2.08%	-1.42%
			2650	2.275	51.523	2.234	52.445	1.84%	-1.76%
			2680	2.322	51.422	2.277	52.407	1.98%	-1.88%
			2700	2.350	51.381	2.305	52.382	1.95%	-1.91%

Table 10-3
Measured Body Tissue Properties (Cont.)

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
08/08/2022	2450 Body	22.3	2300	1.784	52.506	1.809	52.900	-1.38%	-0.74%
			2310	1.797	52.465	1.816	52.887	-1.05%	-0.80%
			2320	1.811	52.428	1.826	52.873	-0.82%	-0.84%
			2400	1.919	52.154	1.902	52.767	0.89%	-1.16%
			2450	1.989	51.937	1.950	52.700	2.00%	-1.45%
			2480	2.030	51.855	1.993	52.662	1.86%	-1.53%
			2500	2.055	51.780	2.021	52.636	1.68%	-1.63%
			2510	2.067	51.732	2.035	52.623	1.57%	-1.69%
			2535	2.100	51.599	2.071	52.592	1.40%	-1.89%
			2550	2.122	51.539	2.092	52.573	1.43%	-1.97%
			2560	2.138	51.508	2.106	52.560	1.52%	-2.00%
			2600	2.193	51.415	2.163	52.509	1.39%	-2.08%
			2650	2.256	51.163	2.234	52.445	0.98%	-2.44%
			2680	2.305	51.069	2.277	52.407	1.23%	-2.55%
			2700	2.334	51.038	2.305	52.382	1.26%	-2.57%
08/08/2022	2450 Body	21.3	2300	1.812	52.396	1.809	52.900	0.17%	-0.95%
			2310	1.828	52.366	1.816	52.887	0.66%	-0.99%
			2320	1.842	52.327	1.826	52.873	0.88%	-1.03%
			2400	1.957	52.013	1.902	52.767	2.89%	-1.43%
			2450	2.032	51.837	1.950	52.700	4.21%	-1.64%
			2480	2.071	51.688	1.993	52.662	3.91%	-1.85%
			2500	2.100	51.597	2.021	52.636	3.91%	-1.97%
			2510	2.116	51.563	2.035	52.623	3.98%	-2.01%
			2535	2.156	51.497	2.071	52.592	4.10%	-2.08%
			2550	2.178	51.453	2.092	52.573	4.11%	-2.13%
			2560	2.191	51.419	2.106	52.560	4.04%	-2.17%
			2600	2.237	51.226	2.163	52.509	3.42%	-2.44%
			2650	2.310	51.040	2.234	52.445	3.40%	-2.68%
			2680	2.353	50.962	2.277	52.407	3.34%	-2.76%
			2700	2.373	50.879	2.305	52.382	2.95%	-2.87%
08/11/2022	2450 Body	21.3	2300	1.827	51.674	1.809	52.900	1.00%	-2.32%
			2310	1.841	51.648	1.816	52.887	1.38%	-2.34%
			2320	1.855	51.617	1.826	52.873	1.59%	-2.38%
			2400	1.961	51.290	1.902	52.767	3.10%	-2.80%
			2450	2.030	51.124	1.950	52.700	4.10%	-2.99%
			2480	2.071	50.961	1.993	52.662	3.91%	-3.23%
			2500	2.098	50.881	2.021	52.636	3.81%	-3.33%
			2510	2.111	50.850	2.035	52.623	3.73%	-3.37%
			2535	2.147	50.787	2.071	52.592	3.67%	-3.43%
			2550	2.169	50.740	2.092	52.573	3.68%	-3.49%
			2560	2.183	50.695	2.106	52.560	3.66%	-3.55%
			2600	2.237	50.489	2.163	52.509	3.42%	-3.85%
			2650	2.309	50.326	2.234	52.445	3.36%	-4.04%
			2680	2.351	50.220	2.277	52.407	3.25%	-4.17%
			2700	2.377	50.131	2.305	52.382	3.12%	-4.30%
08/15/2022	2450 Body	23.0	2300	1.822	52.676	1.809	52.900	0.72%	-0.42%
			2310	1.837	52.647	1.816	52.887	1.16%	-0.45%
			2320	1.851	52.615	1.826	52.873	1.37%	-0.49%
			2400	1.963	52.342	1.902	52.767	3.21%	-0.81%
			2450	2.037	52.172	1.950	52.700	4.46%	-1.00%
			2480	2.078	52.062	1.993	52.662	4.26%	-1.14%
			2500	2.107	51.977	2.021	52.636	4.26%	-1.25%
			2510	2.122	51.938	2.035	52.623	4.28%	-1.30%
			2535	2.160	51.847	2.071	52.592	4.30%	-1.42%
			2550	2.183	51.798	2.092	52.573	4.35%	-1.47%
			2560	2.197	51.765	2.106	52.560	4.32%	-1.51%
			2600	2.251	51.611	2.163	52.509	4.07%	-1.71%
			2650	2.325	51.399	2.234	52.445	4.07%	-1.99%
			2680	2.368	51.296	2.277	52.407	4.00%	-2.12%
			2700	2.394	51.226	2.305	52.382	3.86%	-2.21%
08/28/2022	2450 Body	23.0	2300	1.808	52.545	1.809	52.900	-0.06%	-0.67%
			2310	1.822	52.523	1.816	52.887	0.33%	-0.69%
			2320	1.836	52.498	1.826	52.873	0.55%	-0.71%
			2400	1.938	52.181	1.902	52.767	1.89%	-1.11%
			2450	2.010	52.026	1.950	52.700	3.08%	-1.28%
			2480	2.050	51.905	1.993	52.662	2.86%	-1.44%
			2500	2.076	51.824	2.021	52.636	2.72%	-1.54%
			2510	2.089	51.785	2.035	52.623	2.65%	-1.59%
			2535	2.124	51.700	2.071	52.592	2.56%	-1.70%
			2550	2.146	51.651	2.092	52.573	2.58%	-1.75%
			2560	2.162	51.613	2.106	52.560	2.66%	-1.80%
			2600	2.217	51.448	2.163	52.509	2.50%	-2.02%
			2650	2.284	51.249	2.234	52.445	2.24%	-2.28%
			2680	2.329	51.141	2.277	52.407	2.28%	-2.42%
			2700	2.357	51.070	2.305	52.382	2.26%	-2.50%

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

10.2 Test System Verification

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

Table 10-4
System Verification Results – 1g

System Verification TARGET & MEASURED												
SAR System	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp. (C)	Liquid Temp. (C)	Input Power (W)	Source SN	Probe SN	Measured SAR1g (W/kg)	1W Target SAR1g (W/kg)	1W Normalized SAR 1g (W/kg)	Deviation1g (%)
L	1750	Head	07/26/2022	21.5	20.0	0.10	1148	7670	3.630	37.20	36.300	-2.42%
G	1750	Head	08/01/2022	22.0	21.9	0.10	1150	7527	3.740	36.90	37.400	1.36%
P	2300	Head	08/02/2022	19.7	21.5	0.10	1073	7409	4.840	49.50	48.400	-2.22%
P	2300	Head	08/04/2022	23.5	23.8	0.10	1073	7409	5.040	49.50	50.400	1.82%
O	2450	Head	08/01/2022	19.9	20.6	0.10	719	7417	5.220	55.00	52.200	-5.09%
P	2450	Head	08/02/2022	19.7	21.5	0.10	797	7409	5.270	52.40	52.700	0.57%
E	2450	Head	08/07/2022	22.3	22.2	0.10	981	7538	5.180	53.90	51.800	-3.90%
P	2450	Head	08/09/2022	20.3	21.1	0.10	981	7409	5.320	53.90	53.200	-1.30%
P	2600	Head	08/02/2022	19.7	21.5	0.10	1064	7409	5.500	56.40	55.000	-2.48%
E	2600	Head	08/07/2022	22.3	22.2	0.10	1071	7538	5.500	56.10	55.000	-1.96%
P	2600	Head	08/09/2022	20.3	21.1	0.10	1004	7409	6.070	57.80	60.700	5.02%
I	1750	Body	07/24/2022	23.4	21.9	0.10	1150	7660	3.850	37.80	38.500	1.85%
I	1750	Body	07/26/2022	21.9	21.6	0.10	1150	7660	3.620	37.80	36.200	-4.23%
I	1750	Body	07/28/2022	22.6	21.4	0.10	1008	7660	3.610	37.80	36.100	-4.50%
I	1750	Body	08/01/2022	20.9	20.2	0.10	1150	7660	3.730	37.80	37.300	-1.32%
E	2300	Body	07/24/2022	22.3	21.3	0.10	1073	7538	4.890	48.40	48.900	1.03%
E	2300	Body	07/26/2022	21.5	21.5	0.10	1073	7538	4.910	48.40	49.100	1.45%
E	2450	Body	08/01/2022	21.0	20.4	0.10	797	7538	4.980	49.40	49.800	0.81%
O	2450	Body	08/06/2022	21.8	21.5	0.10	981	7417	4.780	50.30	47.800	-4.97%
O	2450	Body	08/08/2022	22.4	21.9	0.10	797	7417	4.780	49.40	47.800	-3.24%
J	2450	Body	08/08/2022	23.5	21.5	0.10	719	7570	5.260	52.00	52.600	1.15%
O	2600	Body	08/06/2022	21.8	21.5	0.10	1071	7417	5.460	54.30	54.600	0.55%
O	2600	Body	08/08/2022	22.4	21.9	0.10	1064	7417	5.460	54.60	54.600	0.00%
J	2600	Body	08/08/2022	23.5	21.5	0.10	1071	7570	5.580	54.30	55.800	2.76%

Table 10-5
System Verification Results – 10g

System Verification TARGET & MEASURED												
SAR System	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp. (C)	Liquid Temp. (C)	Input Power (W)	Source SN	Probe SN	Measured SAR10g (W/kg)	1W Target SAR10g (W/kg)	1W Normalized SAR10g (W/kg)	Deviation10g (%)
I	1750	Body	07/24/2022	23.4	21.9	0.10	1150	7660	2.040	20.00	20.400	2.00%
I	1750	Body	07/26/2022	21.9	21.6	0.10	1150	7660	1.920	20.00	19.200	-4.00%
I	1750	Body	07/28/2022	22.6	21.4	0.10	1008	7660	1.900	19.90	19.000	-4.52%
E	2300	Body	07/24/2022	22.3	21.3	0.10	1073	7538	2.330	23.40	23.300	-0.43%
J	2300	Body	08/15/2022	22.0	21.6	0.10	1116	7570	2.300	23.70	23.000	-2.95%
O	2450	Body	08/11/2022	21.9	21.0	0.10	797	7417	2.230	23.40	22.300	-4.70%
S	2450	Body	08/28/2022	22.0	21.0	0.10	981	7488	2.390	23.70	23.900	0.84%
O	2600	Body	08/08/2022	22.4	21.9	0.10	1064	7417	2.430	24.40	24.300	-0.41%
O	2600	Body	08/11/2022	21.9	21.0	0.10	1064	7417	2.490	24.40	24.900	2.05%
S	2600	Body	08/28/2022	22.0	21.0	0.10	1004	7488	2.240	24.80	22.400	-9.68%

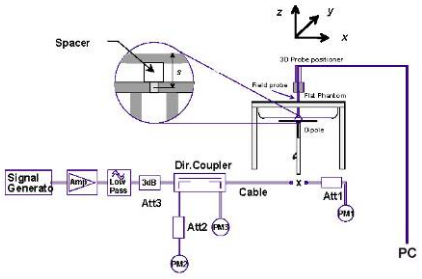


Figure 10-1
System Verification Setup Diagram

Figure 10-2
System Verification Setup Photo

11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
UMTS 1750 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1712.40	1312	Right	Cheek	UMTS 1750	RMC	A	0646M	23.0	21.23	-0.02	1:1	0.043	1.503	0.065	
1712.40	1312	Right	Tilt	UMTS 1750	RMC	A	0646M	23.0	21.23	0.09	1:1	0.024	1.503	0.036	
1712.40	1312	Left	Cheek	UMTS 1750	RMC	A	0646M	23.0	21.23	0.11	1:1	0.056	1.503	0.084	A1
1712.40	1312	Left	Tilt	UMTS 1750	RMC	A	0646M	23.0	21.23	0.07	1:1	0.019	1.503	0.029	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-2
LTE Band 66 (AWS) Head SAR

MEASUREMENT RESULTS																						
# CC Uplink	Component Carrier	FREQUENCY			Side	Test Position	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
		MHz	Ch.																(W/kg)		(W/kg)	
1 CC Uplink	N/A	1770.00	132572	High	Right	Cheek	LTE Band 66 (AWS)	A	0424M	20	QPSK	1	0	24.5	23.81	0	0.17	1:1	0.058	1.172	0.068	
1 CC Uplink	N/A	1770.00	132572	High	Right	Cheek	LTE Band 66 (AWS)	A	0424M	20	QPSK	1	99	24.5	24.02	0	-0.03	1:1	0.073	1.117	0.082	A2
1 CC Uplink	N/A	1770.00	132572	High	Right	Cheek	LTE Band 66 (AWS)	A	0424M	20	QPSK	50	50	22.5	21.93	2	0.03	1:1	0.043	1.140	0.049	
1 CC Uplink	N/A	1775.00	132622	High	Right	Cheek	LTE Band 66 (AWS)	A	0424M	10	QPSK	1	0	24.5	23.86	0	-0.04	1:1	0.063	1.159	0.073	
2 CC Uplink CA_66C	PCC	1770.00	132572	High	Right	Cheek	LTE Band 66 (AWS)	A	0424M	20	QPSK	1	0	24.5	24.00	0	0.08	1:1	0.052	1.122	0.058	
	SCC	1750.20	132374										99									
2 CC Uplink CA_66B	PCC	1775.00	132622	High	Right	Cheek	LTE Band 66 (AWS)	A	0424M	10	QPSK	1	0	24.5	24.05	0	-0.01	1:1	0.060	1.109	0.067	
	SCC	1765.10	132523										49									
1 CC Uplink	N/A	1770.00	132572	High	Right	Tilt	LTE Band 66 (AWS)	A	0424M	20	QPSK	1	99	24.5	24.02	0	-0.06	1:1	0.045	1.117	0.050	
1 CC Uplink	N/A	1770.00	132572	High	Right	Tilt	LTE Band 66 (AWS)	A	0424M	20	QPSK	50	50	22.5	21.93	2	-0.08	1:1	0.035	1.140	0.040	
1 CC Uplink	N/A	1770.00	132572	High	Left	Cheek	LTE Band 66 (AWS)	A	0424M	20	QPSK	1	99	24.5	24.02	0	-0.16	1:1	0.063	1.117	0.070	
1 CC Uplink	N/A	1770.00	132572	High	Left	Cheek	LTE Band 66 (AWS)	A	0424M	20	QPSK	50	50	22.5	21.93	2	-0.12	1:1	0.036	1.140	0.041	
1 CC Uplink	N/A	1770.00	132572	High	Left	Tilt	LTE Band 66 (AWS)	A	0424M	20	QPSK	1	99	24.5	24.02	0	-0.03	1:1	0.048	1.117	0.054	
1 CC Uplink	N/A	1770.00	132572	High	Left	Tilt	LTE Band 66 (AWS)	A	0424M	20	QPSK	50	50	22.5	21.93	2	-0.06	1:1	0.023	1.140	0.026	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-3
LTE Band 30 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Side	Test Position	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
2310.00	27710	Mid	Right	Cheek	LTE Band 30	B	0414M	10	QPSK	1	49	23.0	22.03	0	0.01	1:1	0.027	1.250	0.034	A3
2310.00	27710	Mid	Right	Cheek	LTE Band 30	B	0414M	10	QPSK	25	0	21.0	20.33	2	0.07	1:1	0.011	1.167	0.013	
2310.00	27710	Mid	Right	Tilt	LTE Band 30	B	0414M	10	QPSK	1	49	23.0	22.03	0	0.20	1:1	0.006	1.250	0.008	
2310.00	27710	Mid	Right	Tilt	LTE Band 30	B	0414M	10	QPSK	25	0	21.0	20.33	2	0.03	1:1	0.005	1.167	0.006	
2310.00	27710	Mid	Left	Cheek	LTE Band 30	B	0414M	10	QPSK	1	49	23.0	22.03	0	0.04	1:1	0.018	1.250	0.023	
2310.00	27710	Mid	Left	Cheek	LTE Band 30	B	0414M	10	QPSK	25	0	21.0	20.33	2	0.05	1:1	0.011	1.167	0.013	
2310.00	27710	Mid	Left	Tilt	LTE Band 30	B	0414M	10	QPSK	1	49	23.0	22.03	0	0.04	1:1	0.007	1.250	0.009	
2310.00	27710	Mid	Left	Tilt	LTE Band 30	B	0414M	10	QPSK	25	0	21.0	20.33	2	0.04	1:1	0.012	1.167	0.014	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-4
LTE Band 7 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Side	Test Position	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
2510.00	20850	Low	Right	Cheek	LTE Band 7	B	0414M	20	QPSK	1	0	24.5	23.60	0	0.02	1:1	0.023	1.230	0.028	A4
2510.00	20850	Low	Right	Cheek	LTE Band 7	B	0414M	20	QPSK	50	0	22.5	21.70	2	0.06	1:1	0.004	1.202	0.005	
2510.00	20850	Low	Right	Tilt	LTE Band 7	B	0414M	20	QPSK	1	0	24.5	23.60	0	0.08	1:1	0.005	1.230	0.006	
2510.00	20850	Low	Right	Tilt	LTE Band 7	B	0414M	20	QPSK	50	0	22.5	21.70	2	0.06	1:1	0.000	1.202	0.000	
2510.00	20850	Low	Left	Cheek	LTE Band 7	B	0414M	20	QPSK	1	0	24.5	23.60	0	0.09	1:1	0.019	1.230	0.023	
2510.00	20850	Low	Left	Cheek	LTE Band 7	B	0414M	20	QPSK	50	0	22.5	21.70	2	0.06	1:1	0.012	1.202	0.014	
2510.00	20850	Low	Left	Tilt	LTE Band 7	B	0414M	20	QPSK	1	0	24.5	23.60	0	0.04	1:1	0.010	1.230	0.012	
2510.00	20850	Low	Left	Tilt	LTE Band 7	B	0414M	20	QPSK	50	0	22.5	21.70	2	0.05	1:1	0.003	1.202	0.004	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-5
LTE Band 41 Head SAR

MEASUREMENT RESULTS																						
# CC Uplink, Power Class	Component Carrier	FREQUENCY			Side	Test Position	Mode	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
		MHz	Ch.																(W/kg)		(W/kg)	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	Right	Cheek	LTE Band 41	B	0424M	20	QPSK	1	50	25.0	24.11	0	0.04	1:1.58	0.024	1.227	0.029	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	Right	Cheek	LTE Band 41	B	0424M	20	QPSK	50	50	24.0	23.17	1	0.09	1:1.58	0.017	1.211	0.021	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	Right	Tilt	LTE Band 41	B	0424M	20	QPSK	1	50	25.0	24.11	0	0.08	1:1.58	0.013	1.227	0.016	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	Right	Tilt	LTE Band 41	B	0424M	20	QPSK	50	50	24.0	23.17	1	0.18	1:1.58	0.016	1.211	0.019	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	Left	Cheek	LTE Band 41	B	0424M	20	QPSK	1	0	25.0	23.87	0	-0.01	1:1.58	0.092	1.297	**0.119**	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	Left	Cheek	LTE Band 41	B	0424M	20	QPSK	1	50	25.0	24.11	0	-0.14	1:1.58	0.098	1.227	**0.120**	A5
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	Left	Cheek	LTE Band 41	B	0424M	20	QPSK	50	50	24.0	23.17	1	-0.01	1:1.58	0.078	1.211	0.094	
1 CC Uplink - Power Class 2	N/A	2680.00	41490	High	Left	Cheek	LTE Band 41	B	0424M	20	QPSK	1	0	26.6	25.40	0	-0.02	1:2.31	0.083	1.318	0.109	
1 CC Uplink - Power Class 2	N/A	2680.00	41490	High	Left	Cheek	LTE Band 41	B	0424M	20	QPSK	1	50	26.6	25.73	0	-0.14	1:2.31	0.098	1.222	**0.120**	
2 CC Uplink - Power Class 3	PCC	2680.00	41490	High	Left	Cheek	LTE Band 41	B	0424M	20	QPSK	1	0	25.0	24.25	0	-0.14	1:1.58	0.096	1.189	0.114	
	SCC	2660.20	41292										99									
2 CC Uplink - Power Class 2	PCC	2680.00	41490	High	Left	Cheek	LTE Band 41	B	0424M	20	QPSK	1	0	26.6	26.00	0	0.01	1:2.31	0.095	1.148	0.109	
	SCC	2660.20	41292										50									
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	Left	Tilt	LTE Band 41	B	0424M	20	QPSK	1	50	25.0	24.11	0	0.09	1:1.58	0.015	1.227	0.018	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	Left	Tilt	LTE Band 41	B	0424M	20	QPSK	50	50	24.0	23.17	1	0.02	1:1.58	0.012	1.211	0.015	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-6
NR Band n66 Antenna A Head SAR

MEASUREMENT RESULTS																							
FREQUENCY			Side	Test Position	Mode	Antenna Config	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
1745.00	349000	Mid	Right	Cheek	NR Band n66 (AWS)	A	0416M	40	DFT-S-OFDM	QPSK	1	214	24.5	23.54	0	0.16	1:1	0.024	1.247	0.030	
1745.00	349000	Mid	Right	Cheek	NR Band n66 (AWS)	A	0416M	40	DFT-S-OFDM	QPSK	108	54	24.5	23.72	0	-0.10	1:1	0.031	1.197	0.037	
1745.00	349000	Mid	Right	Tilt	NR Band n66 (AWS)	A	0416M	40	DFT-S-OFDM	QPSK	1	214	24.5	23.54	0	0.03	1:1	0.017	1.247	0.021	
1745.00	349000	Mid	Right	Tilt	NR Band n66 (AWS)	A	0416M	40	DFT-S-OFDM	QPSK	108	54	24.5	23.72	0	0.02	1:1	0.019	1.197	0.023	
1745.00	349000	Mid	Left	Cheek	NR Band n66 (AWS)	A	0416M	40	DFT-S-OFDM	QPSK	1	214	24.5	23.54	0	-0.18	1:1	0.035	1.247	0.044	
1745.00	349000	Mid	Left	Cheek	NR Band n66 (AWS)	A	0416M	40	DFT-S-OFDM	QPSK	108	54	24.5	23.72	0	-0.10	1:1	0.037	1.197	0.044	A6
1745.00	349000	Mid	Left	Cheek	NR Band n66 (AWS)	A	0416M	40	CP-OFDM	QPSK	1	1	23.0	21.92	1.5	-0.09	1:1	0.032	1.282	0.041	
1745.00	349000	Mid	Left	Tilt	NR Band n66 (AWS)	A	0416M	40	DFT-S-OFDM	QPSK	1	214	24.5	23.54	0	0.02	1:1	0.007	1.247	0.009	
1745.00	349000	Mid	Left	Tilt	NR Band n66 (AWS)	A	0416M	40	DFT-S-OFDM	QPSK	108	54	24.5	23.72	0	-0.12	1:1	0.013	1.197	0.016	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-7
NR Band n30 Antenna B Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Test Position	Mode	Antenna Config	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
2310.00	462000	Mid	Right	Cheek	NR Band n30	B	0414M	10	DFT-S-OFDM	QPSK	1	50	23.5	23.50	0	0.04	1:1	0.026	1.000	0.026	
2310.00	462000	Mid	Right	Cheek	NR Band n30	B	0414M	10	DFT-S-OFDM	QPSK	25	14	23.5	23.47	0	-0.04	1:1	0.036	1.007	0.036	A7
2310.00	462000	Mid	Right	Cheek	NR Band n30	B	0414M	10	CP-OFDM	QPSK	1	1	22.0	22.00	1.5	-0.01	1:1	0.029	1.000	0.029	
2310.00	462000	Mid	Right	Tilt	NR Band n30	B	0414M	10	DFT-S-OFDM	QPSK	1	50	23.5	23.50	0	0.08	1:1	0.010	1.000	0.010	
2310.00	462000	Mid	Right	Tilt	NR Band n30	B	0414M	10	DFT-S-OFDM	QPSK	25	14	23.5	23.47	0	0.06	1:1	0.012	1.007	0.012	
2310.00	462000	Mid	Left	Cheek	NR Band n30	B	0414M	10	DFT-S-OFDM	QPSK	1	50	23.5	23.50	0	-0.20	1:1	0.020	1.000	0.020	
2310.00	462000	Mid	Left	Cheek	NR Band n30	B	0414M	10	DFT-S-OFDM	QPSK	25	14	23.5	23.47	0	0.09	1:1	0.022	1.007	0.022	
2310.00	462000	Mid	Left	Tilt	NR Band n30	B	0414M	10	DFT-S-OFDM	QPSK	1	50	23.5	23.50	0	0.08	1:1	0.008	1.000	0.008	
2310.00	462000	Mid	Left	Tilt	NR Band n30	B	0414M	10	DFT-S-OFDM	QPSK	25	14	23.5	23.47	0	-0.01	1:1	0.009	1.007	0.009	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-8
NR Band n7 Antenna B Head SAR

MEASUREMENT RESULTS																						
FREQUENCY			Side	Test Position	Mode	Antenna Config	DUT Configuration	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																		(W/kg)		(W/kg)	
2535.00	507000	Mid	Right	Cheek	NR Band n7	B	Open	0414M	40	DFT-S-OFDM	QPSK	1	108	24.5	24.27	0	0.01	1:1	0.032	1.054	0.034	
2535.00	507000	Mid	Right	Cheek	NR Band n7	B	Open	0414M	40	DFT-S-OFDM	QPSK	108	54	24.5	24.14	0	0.07	1:1	0.031	1.086	0.034	
2535.00	507000	Mid	Right	Tilt	NR Band n7	B	Open	0414M	40	DFT-S-OFDM	QPSK	1	108	24.5	24.27	0	0.14	1:1	0.009	1.054	0.009	
2535.00	507000	Mid	Right	Tilt	NR Band n7	B	Open	0414M	40	DFT-S-OFDM	QPSK	108	54	24.5	24.14	0	0.14	1:1	0.010	1.086	0.011	
2535.00	507000	Mid	Left	Cheek	NR Band n7	B	Open	0414M	40	DFT-S-OFDM	QPSK	1	108	24.5	24.27	0	-0.18	1:1	0.032	1.054	0.034	
2535.00	507000	Mid	Left	Cheek	NR Band n7	B	Open	0414M	40	DFT-S-OFDM	QPSK	108	54	24.5	24.14	0	0.03	1:1	0.034	1.086	0.037	A8
2535.00	507000	Mid	Left	Cheek	NR Band n7	B	Open	0414M	40	CP-OFDM	QPSK	1	1	23.0	22.46	1.5	0.06	1:1	0.024	1.132	0.027	
2535.00	507000	Mid	Left	Tilt	NR Band n7	B	Open	0414M	40	DFT-S-OFDM	QPSK	1	108	24.5	24.27	0	0.02	1:1	0.010	1.054	0.011	
2535.00	507000	Mid	Left	Tilt	NR Band n7	B	Open	0414M	40	DFT-S-OFDM	QPSK	108	54	24.5	24.14	0	0.06	1:1	0.010	1.086	0.011	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-9
NR Band n41 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY			Side	Test Position	Mode	Antenna Config	DUT Configuration	Serial Number	Bandwidth [MHz]	Waveform	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2592.99	518598	Mid	Right	Cheek	NR Band n41	C	Open	0646M	100	CW/SRS	11.0	10.28	N/A	0.07	1:1	0.014	1.180	0.017	
2592.99	518598	Mid	Right	Tilt	NR Band n41	C	Open	0646M	100	CW/SRS	11.0	10.28	N/A	0.14	1:1	0.012	1.180	0.014	
2592.99	518598	Mid	Left	Cheek	NR Band n41	C	Open	0646M	100	CW/SRS	11.0	10.28	N/A	0.19	1:1	0.030	1.180	0.035	A9
2592.99	518598	Mid	Left	Tilt	NR Band n41	C	Open	0646M	100	CW/SRS	11.0	10.28	N/A	0.07	1:1	0.008	1.180	0.009	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-10
DTS Head SISO SAR

MEASUREMENT RESULTS																			
FREQUENCY		Side	Test Position	Mode	Service	Antenna Config.	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	Right	Cheek	802.11b	DSSS	1	0903M	22	1	13.0	12.62	-0.03	99.42	0.240	0.174	1.091	1.006	0.191	A10
2412	1	Right	Tilt	802.11b	DSSS	1	0903M	22	1	13.0	12.62	0.02	99.42	0.186	0.133	1.091	1.006	0.146	
2412	1	Left	Cheek	802.11b	DSSS	1	0903M	22	1	13.0	12.62	-0.04	99.42	0.126	0.082	1.091	1.006	0.090	
2412	1	Left	Tilt	802.11b	DSSS	1	0903M	22	1	13.0	12.62	-0.04	99.42	0.114	0.075	1.091	1.006	0.082	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram								

11.2 Standalone Body-Worn SAR Data

Table 11-11
UMTS Body-Worn SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	DUT Configuration	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1712.40	1312	back	15 mm	UMTS 1750	RMC	A	Open	0414M	25.0	24.33	0.00	1:1	0.637	1.167	0.743	A11
1732.40	1412	back	15 mm	UMTS 1750	RMC	A	Open	0414M	25.0	24.13	0.00	1:1	0.590	1.222	0.721	
1752.60	1513	back	15 mm	UMTS 1750	RMC	A	Open	0414M	25.0	24.22	0.01	1:1	0.570	1.197	0.682	
1712.40	1312	back	15 mm	UMTS 1750	RMC	A	Closed	0414M	25.0	24.33	-0.03	1:1	0.184	1.167	0.215	
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 11-12
LTE Band 66 (AWS) Body-Worn SAR

MEASUREMENT RESULTS																									
# CC Uplink, Power Class	Component Carrier	FREQUENCY MHz	FREQUENCY Ch.		Side	Spacing	Mode	Antenna Config.	DUT Configuration	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
1 CC Uplink	N/A	1720.00	132072	Low	back	15 mm	LTE Band 66 (AWS)	A	Open	0414M	20	QPSK	1	50	24.5	23.69	0	-0.18	1:1	0.636	1.205	**0.766**	A12
1 CC Uplink	N/A	1720.00	132072	Low	back	15 mm	LTE Band 66 (AWS)	A	Open	0414M	20	QPSK	1	99	24.5	23.52	0	-0.07	1:1	0.554	1.253	0.694	
1 CC Uplink	N/A	1745.00	132322	Mid	back	15 mm	LTE Band 66 (AWS)	A	Open	0414M	20	QPSK	1	50	24.5	23.58	0	0.00	1:1	0.540	1.236	0.667	
1 CC Uplink	N/A	1770.00	132572	High	back	15 mm	LTE Band 66 (AWS)	A	Open	0414M	20	QPSK	1	99	24.5	24.02	0	0.01	1:1	0.633	1.117	0.707	
1 CC Uplink	N/A	1770.00	132572	High	back	15 mm	LTE Band 66 (AWS)	A	Open	0414M	20	QPSK	50	50	22.5	21.93	2	0.01	1:1	0.405	1.140	0.462	
1 CC Uplink	N/A	1715.00	132022	Low	back	15 mm	LTE Band 66 (AWS)	A	Open	0414M	10	QPSK	1	49	24.5	23.68	0	-0.01	1:1	0.584	1.208	0.705	
2 CC Uplink CA_66C	PCC	1720.00	132072	Low	back	15 mm	LTE Band 66 (AWS)	A	Open	0414M	20	QPSK	1	99	24.5	23.85	0	-0.01	1:1	0.596	1.161	0.692	
	SCC	1739.80	132270											0									
2 CC Uplink CA_66B	PCC	1715.00	132022	Low	back	15 mm	LTE Band 66 (AWS)	A	Open	0414M	10	QPSK	1	49	24.5	23.91	0	-0.01	1:1	0.622	1.146	0.713	
	SCC	1724.90	132121											0									
1 CC Uplink	N/A	1770.00	132572	High	back	15 mm	LTE Band 66 (AWS)	A	Closed	0414M	20	QPSK	1	99	24.5	24.02	0	-0.11	1:1	0.145	1.117	0.162	
1 CC Uplink	N/A	1770.00	132572	High	back	15 mm	LTE Band 66 (AWS)	A	Closed	0414M	20	QPSK	50	50	22.5	21.93	2	0.03	1:1	0.086	1.140	0.098	

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 11-13
LTE Band 30 Body-Worn SAR

MEASUREMENT RESULTS																						
FREQUENCY MHz	FREQUENCY Ch.		Side	Spacing	Mode	Antenna Config.	DUT Configuration	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
2310.00	27710	Mid	back	15 mm	LTE Band 30	B	Open	0651M	10	QPSK	1	49	23.0	22.03	0	0.02	1:1	0.332	1.250	0.415	A13
2310.00	27710	Mid	back	15 mm	LTE Band 30	B	Open	0651M	10	QPSK	25	0	21.0	20.33	2	0.02	1:1	0.212	1.167	0.247	
2310.00	27710	Mid	back	15 mm	LTE Band 30	B	Closed	0651M	10	QPSK	1	49	23.0	22.03	0	0.03	1:1	0.201	1.250	0.251	
2310.00	27710	Mid	back	15 mm	LTE Band 30	B	Closed	0651M	10	QPSK	25	0	21.0	20.33	2	0.09	1:1	0.117	1.167	0.137	

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 11-14
LTE Band 7 Body-Worn SAR

MEASUREMENT RESULTS																						
FREQUENCY MHz	FREQUENCY Ch.		Side	Spacing	Mode	Antenna Config.	DUT Configuration	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
2510.00	20850	Low	back	15 mm	LTE Band 7	B	Open	0646M	20	QPSK	1	0	24.5	23.60	0	-0.03	1:1	0.309	1.230	0.380	A14
2510.00	20850	Low	back	15 mm	LTE Band 7	B	Open	0646M	20	QPSK	50	0	22.5	21.70	2	0.02	1:1	0.186	1.202	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 11-15
LTE Band 41 Body-Worn SAR

MEASUREMENT RESULTS																									
# CC Uplink, Power Class	Component Carrier	FREQUENCY MHz	FREQUENCY Ch.		Side	Spacing	Mode	Antenna Config.	DUT Configuration	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	back	15 mm	LTE Band 41	B	Open	0646M	20	QPSK	1	0	25.0	23.87	0	-0.01	1:1.58	0.204	1.297	0.265	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	back	15 mm	LTE Band 41	B	Open	0646M	20	QPSK	1	50	25.0	24.11	0	-0.01	1:1.58	0.217	1.227	0.266	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	back	15 mm	LTE Band 41	B	Open	0646M	20	QPSK	50	50	24.0	23.17	1	0.03	1:1.58	0.173	1.211	0.210	
1 CC Uplink - Power Class 2	N/A	2680.00	41490	High	back	15 mm	LTE Band 41	B	Open	0646M	20	QPSK	1	0	26.6	25.40	0	0.04	1:2.31	0.220	1.318	0.290	
1 CC Uplink - Power Class 2	N/A	2680.00	41490	High	back	15 mm	LTE Band 41	B	Open	0646M	20	QPSK	1	50	26.6	25.73	0	0.01	1:2.31	0.237	1.222	0.290	
2 CC Uplink - Power Class 3	PCC	2680.00	41490	High	back	15 mm	LTE Band 41	B	Open	0646M	20	QPSK	1	0	25.0	24.25	0	0.05	1:1.58	0.240	1.189	0.285	
	SCC	2660.20	41292											99									
2 CC Uplink - Power Class 2	PCC	2680.00	41490	High	back	15 mm	LTE Band 41	B	Open	0646M	20	QPSK	1	0	26.6	26.00	0	0.04	1:2.31	0.252	1.148	0.289	A15
	SCC	2660.20	41292											99									

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 11-16
NR Band 66 Antenna A Body-Worn SAR

MEASUREMENT RESULTS																							
FREQUENCY			Side	Spacing	Mode	Antenna Config	DUT Configuration	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																					
1745.00	349000	Mid	back	15 mm	NR Band n66 (AWS)	A	Open	0661M	40	DFT-S-OFDM	QPSK	1	214	24.5	23.54	0	-0.10	1:1	0.469	1.247	0.585	
1745.00	349000	Mid	back	15 mm	NR Band n66 (AWS)	A	Open	0661M	40	DFT-S-OFDM	QPSK	108	54	24.5	23.72	0	0.01	1:1	0.552	1.197	0.661	A16
1745.00	349000	Mid	back	15 mm	NR Band n66 (AWS)	A	Open	0661M	40	CP-OFDM	QPSK	1	1	23.0	21.92	1.5	0.05	1:1	0.388	1.282	0.497	
1745.00	349000	Mid	back	15 mm	NR Band n66 (AWS)	A	Closed	0661M	40	DFT-S-OFDM	QPSK	1	214	24.5	23.54	0	-0.02	1:1	0.164	1.247	0.205	
1745.00	349000	Mid	back	15 mm	NR Band n66 (AWS)	A	Closed	0661M	40	DFT-S-OFDM	QPSK	108	54	24.5	23.72	0	0.05	1:1	0.166	1.197	0.199	
1745.00	349000	Mid	back	15 mm	NR Band n66 (AWS)	A	Closed	0661M	40	CP-OFDM	QPSK	1	1	23.0	21.92	1.5	0.01	1:1	0.123	1.282	0.158	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Body 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-17
NR Band 30 Antenna B Body-Worn SAR

MEASUREMENT RESULTS																							
FREQUENCY			Side	Spacing	Mode	Antenna Config	DUT Configuration	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																					
2310.00	462000	Mid	back	15 mm	NR Band n30	B	Open	0651M	10	DFT-S-OFDM	QPSK	1	50	23.5	23.50	0	-0.15	1:1	0.322	1.000	0.322	A17
2310.00	462000	Mid	back	15 mm	NR Band n30	B	Open	0651M	10	DFT-S-OFDM	QPSK	25	14	23.5	23.47	0	-0.07	1:1	0.279	1.007	0.281	
2310.00	462000	Mid	back	15 mm	NR Band n30	B	Open	0651M	10	CP-OFDM	QPSK	1	1	22.0	22.00	1.5	0.03	1:1	0.241	1.000	0.241	
2310.00	462000	Mid	back	15 mm	NR Band n30	B	Closed	0651M	10	DFT-S-OFDM	QPSK	1	50	23.5	23.50	0	0.04	1:1	0.217	1.000	0.217	
2310.00	462000	Mid	back	15 mm	NR Band n30	B	Closed	0651M	10	DFT-S-OFDM	QPSK	25	14	23.5	23.47	0	0.02	1:1	0.150	1.007	0.151	
2310.00	462000	Mid	back	15 mm	NR Band n30	B	Closed	0651M	10	CP-OFDM	QPSK	1	1	22.0	22.00	1.5	0.02	1:1	0.110	1.000	0.110	
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 11-18
NR Band 7 Antenna B Body-Worn SAR

MEASUREMENT RESULTS																							
FREQUENCY			Side	Spacing	Mode	Antenna Config	DUT Configuration	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																					
2535.00	507000	Mid	back	15 mm	NR Band n7	B	Open	0651M	40	DFT-S-OFDM	QPSK	1	108	24.5	24.27	0	0.07	1:1	0.244	1.054	0.257	
2535.00	507000	Mid	back	15 mm	NR Band n7	B	Open	0651M	40	DFT-S-OFDM	QPSK	108	54	24.5	24.14	0	-0.04	1:1	0.274	1.086	0.298	A18
2535.00	507000	Mid	back	15 mm	NR Band n7	B	Open	0651M	40	CP-OFDM	QPSK	1	1	23.0	22.46	1.5	0.02	1:1	0.183	1.132	0.207	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Body 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-19
NR Band 41 Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY			Side	Spacing	Mode	Antenna Config	DUT Configuration	Serial Number	Bandwidth [MHz]	Waveform	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																		
2592.99	518598	Mid	back	15 mm	NR Band n41	C	Open	0419M	100	CW/SRS	11.0	10.28	N/A	0.14	1:1	0.012	1.180	0.014	A19
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 11-20
DTS SISO Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	DUT Configuration	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle (%)	Peak SAR of Area Scan W/kg	SAR (1g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																			
2412	1	back	15 mm	802.11b	DSSS	1	Open	1309M	22	1	19.0	18.95	-0.10	99.42	0.091	0.073	1.012	1.006	0.074	A20
2412	1	back	15 mm	802.11b	DSSS	1	Closed	1309M	22	1	19.0	18.95	-0.04	99.42	0.049	0.039	1.012	1.006	0.040	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram								

11.3 Standalone Hotspot SAR Data

Table 11-21
UMTS Hotspot SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	DUT Configuration	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1752.60	1513	back	10 mm	UMTS 1750	RMC	A	Open	0414M	20.0	19.30	0.00	1:1	0.366	1.175	0.430	
1752.60	1513	front	10 mm	UMTS 1750	RMC	A	Open	0414M	20.0	19.30	0.02	1:1	0.255	1.175	0.300	
1712.40	1312	bottom	10 mm	UMTS 1750	RMC	A	Open	0414M	20.0	19.12	0.01	1:1	0.510	1.225	0.625	
1732.40	1412	bottom	10 mm	UMTS 1750	RMC	A	Open	0414M	20.0	19.17	0.01	1:1	0.517	1.211	0.626	
1752.60	1513	bottom	10 mm	UMTS 1750	RMC	A	Open	0414M	20.0	19.30	0.03	1:1	0.526	1.175	0.618	
1752.60	1513	right	10 mm	UMTS 1750	RMC	A	Open	0414M	20.0	19.30	0.15	1:1	0.021	1.175	0.025	
1752.60	1513	left	10 mm	UMTS 1750	RMC	A	Open	0414M	20.0	19.30	-0.02	1:1	0.092	1.175	0.108	
1752.60	1513	back	5 mm	UMTS 1750	RMC	A	Closed	0414M	20.0	19.30	-0.01	1:1	0.547	1.175	0.643	
1752.60	1513	front	5 mm	UMTS 1750	RMC	A	Closed	0414M	20.0	19.30	-0.02	1:1	0.062	1.175	0.073	
1712.40	1312	bottom	5 mm	UMTS 1750	RMC	A	Closed	0414M	20.0	19.12	-0.01	1:1	0.634	1.225	0.777	
1732.40	1412	bottom	5 mm	UMTS 1750	RMC	A	Closed	0414M	20.0	19.17	0.00	1:1	0.618	1.211	0.748	
1752.60	1513	bottom	5 mm	UMTS 1750	RMC	A	Closed	0414M	20.0	19.30	-0.01	1:1	0.712	1.175	0.837	A21
1752.60	1513	right	5 mm	UMTS 1750	RMC	A	Closed	0414M	20.0	19.30	0.16	1:1	0.035	1.175	0.041	
1752.60	1513	left	5 mm	UMTS 1750	RMC	A	Closed	0414M	20.0	19.30	0.07	1:1	0.269	1.175	0.316	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-22
LTE Band 66 (AWS) Hotspot SAR

MEASUREMENT RESULTS																							
# CC Uplink	Component Carrier	FREQUENCY			Side	Spacing	Mode	Antenna Config.	DUT Configuration	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
		MHz	Ch.																				
1 CC Uplink	N/A	1770.00	132572	High	back	10 mm	LTE Band 66 (AWS)	A	Open	0414M	20	QPSK	1	50	19.5	19.19	0	0.00	1:1	0.380	1.074	0.408	
1 CC Uplink	N/A	1770.00	132572	High	back	10 mm	LTE Band 66 (AWS)	A	Open	0414M	20	QPSK	50	25	19.5	19.28	0	0.00	1:1	0.372	1.052	0.391	
1 CC Uplink	N/A	1770.00	132572	High	front	10 mm	LTE Band 66 (AWS)	A	Open	0414M	20	QPSK	1	50	19.5	19.19	0	-0.03	1:1	0.308	1.074	0.331	
1 CC Uplink	N/A	1770.00	132572	High	front	10 mm	LTE Band 66 (AWS)	A	Open	0414M	20	QPSK	50	25	19.5	19.28	0	0.03	1:1	0.298	1.052	0.313	
1 CC Uplink	N/A	1770.00	132572	High	bottom	10 mm	LTE Band 66 (AWS)	A	Open	0414M	20	QPSK	1	50	19.5	19.19	0	-0.01	1:1	0.459	1.074	0.493	
1 CC Uplink	N/A	1770.00	132572	High	bottom	10 mm	LTE Band 66 (AWS)	A	Open	0414M	20	QPSK	50	25	19.5	19.28	0	0.00	1:1	0.480	1.052	0.505	
1 CC Uplink	N/A	1770.00	132572	High	right	10 mm	LTE Band 66 (AWS)	A	Open	0414M	20	QPSK	1	50	19.5	19.19	0	0.05	1:1	0.035	1.074	0.038	
1 CC Uplink	N/A	1770.00	132572	High	right	10 mm	LTE Band 66 (AWS)	A	Open	0414M	20	QPSK	50	25	19.5	19.28	0	0.03	1:1	0.034	1.052	0.036	
1 CC Uplink	N/A	1770.00	132572	High	left	10 mm	LTE Band 66 (AWS)	A	Open	0414M	20	QPSK	1	50	19.5	19.19	0	0.04	1:1	0.086	1.074	0.092	
1 CC Uplink	N/A	1770.00	132572	High	left	10 mm	LTE Band 66 (AWS)	A	Open	0414M	20	QPSK	50	25	19.5	19.28	0	-0.02	1:1	0.086	1.052	0.090	
1 CC Uplink	N/A	1770.00	132572	High	back	5 mm	LTE Band 66 (AWS)	A	Closed	0414M	20	QPSK	1	50	19.5	19.19	0	0.07	1:1	0.350	1.074	0.376	
1 CC Uplink	N/A	1770.00	132572	High	back	5 mm	LTE Band 66 (AWS)	A	Closed	0414M	20	QPSK	50	25	19.5	19.28	0	0.01	1:1	0.355	1.052	0.373	
1 CC Uplink	N/A	1770.00	132572	High	front	5 mm	LTE Band 66 (AWS)	A	Closed	0414M	20	QPSK	1	50	19.5	19.19	0	0.06	1:1	0.136	1.074	0.146	
1 CC Uplink	N/A	1770.00	132572	High	front	5 mm	LTE Band 66 (AWS)	A	Closed	0414M	20	QPSK	50	25	19.5	19.28	0	-0.05	1:1	0.136	1.052	0.143	
1 CC Uplink	N/A	1770.00	132572	High	bottom	5 mm	LTE Band 66 (AWS)	A	Closed	0414M	20	QPSK	1	0	19.5	19.10	0	0.00	1:1	0.566	1.096	0.620	
1 CC Uplink	N/A	1770.00	132572	High	bottom	5 mm	LTE Band 66 (AWS)	A	Closed	0414M	20	QPSK	1	50	19.5	19.19	0	0.01	1:1	0.548	1.074	0.589	
1 CC Uplink	N/A	1770.00	132572	High	bottom	5 mm	LTE Band 66 (AWS)	A	Closed	0414M	20	QPSK	50	25	19.5	19.28	0	-0.03	1:1	0.546	1.052	0.574	
1 CC Uplink	N/A	1775.00	132622	High	bottom	5 mm	LTE Band 66 (AWS)	A	Closed	0414M	10	QPSK	1	0	19.5	19.05	0	-0.03	1:1	0.548	1.109	0.608	
2 CC Uplink CA_66C	PCC	1770.00	132572	High	bottom	5 mm	LTE Band 66 (AWS)	A	Closed	0414M	20	QPSK	1	0	19.5	18.93	0	-0.02	1:1	0.543	1.140	0.619	
	SCC	1750.20	132374											99									
2 CC Uplink CA_66B	PCC	1775.00	132622	High	bottom	5 mm	LTE Band 66 (AWS)	A	Closed	0414M	10	QPSK	1	0	19.5	19.07	0	-0.01	1:1	0.573	1.104	0.633	A22
	SCC	1765.10	132523											49									
1 CC Uplink	N/A	1770.00	132572	High	right	5 mm	LTE Band 66 (AWS)	A	Closed	0414M	20	QPSK	1	50	19.5	19.19	0	0.03	1:1	0.040	1.074	0.043	
1 CC Uplink	N/A	1770.00	132572	High	right	5 mm	LTE Band 66 (AWS)	A	Closed	0414M	20	QPSK	50	25	19.5	19.28	0	0.04	1:1	0.038	1.052	0.040	
1 CC Uplink	N/A	1770.00	132572	High	left	5 mm	LTE Band 66 (AWS)	A	Closed	0414M	20	QPSK	1	50	19.5	19.19	0	0.02	1:1	0.223	1.074	0.240	
1 CC Uplink	N/A	1770.00	132572	High	left	5 mm	LTE Band 66 (AWS)	A	Closed	0414M	20	QPSK	50	25	19.5	19.28	0	0.00	1:1	0.220	1.052	0.231	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-23
LTE Band 30 Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Antenna Config.	DUT Configuration	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
2310.00	27710	Mid	back	10 mm	LTE Band 30	B	Open	0651M	10	QPSK	1	49	18.0	17.26	0	-0.02	1:1	0.272	1.186	0.323	
2310.00	27710	Mid	back	10 mm	LTE Band 30	B	Open	0651M	10	QPSK	25	12	18.0	17.27	0	0.04	1:1	0.275	1.183	0.325	
2310.00	27710	Mid	front	10 mm	LTE Band 30	B	Open	0651M	10	QPSK	1	49	18.0	17.26	0	0.01	1:1	0.204	1.186	0.242	
2310.00	27710	Mid	front	10 mm	LTE Band 30	B	Open	0651M	10	QPSK	25	12	18.0	17.27	0	0.05	1:1	0.209	1.183	0.247	
2310.00	27710	Mid	bottom	10 mm	LTE Band 30	B	Open	0651M	10	QPSK	1	49	18.0	17.26	0	0.01	1:1	0.530	1.186	0.629	
2310.00	27710	Mid	bottom	10 mm	LTE Band 30	B	Open	0651M	10	QPSK	25	12	18.0	17.27	0	-0.10	1:1	0.503	1.183	0.595	
2310.00	27710	Mid	left	10 mm	LTE Band 30	B	Open	0651M	10	QPSK	1	49	18.0	17.26	0	0.00	1:1	0.052	1.186	0.062	
2310.00	27710	Mid	left	10 mm	LTE Band 30	B	Open	0651M	10	QPSK	25	12	18.0	17.27	0	-0.03	1:1	0.053	1.183	0.063	
2310.00	27710	Mid	back	5 mm	LTE Band 30	B	Closed	0651M	10	QPSK	1	49	18.0	17.26	0	0.00	1:1	0.395	1.186	0.468	
2310.00	27710	Mid	back	5 mm	LTE Band 30	B	Closed	0651M	10	QPSK	25	12	18.0	17.27	0	0.08	1:1	0.385	1.183	0.455	
2310.00	27710	Mid	front	5 mm	LTE Band 30	B	Closed	0651M	10	QPSK	1	49	18.0	17.26	0	-0.02	1:1	0.056	1.186	0.066	
2310.00	27710	Mid	front	5 mm	LTE Band 30	B	Closed	0651M	10	QPSK	25	12	18.0	17.27	0	0.07	1:1	0.054	1.183	0.064	
2310.00	27710	Mid	bottom	5 mm	LTE Band 30	B	Closed	0651M	10	QPSK	1	49	18.0	17.26	0	0.01	1:1	0.849	1.186	**1.007**	A23
2310.00	27710	Mid	bottom	5 mm	LTE Band 30	B	Closed	0651M	10	QPSK	25	12	18.0	17.27	0	0.06	1:1	0.847	1.183	1.002	
2310.00	27710	Mid	bottom	5 mm	LTE Band 30	B	Closed	0651M	10	QPSK	50	0	18.0	17.14	0	-0.02	1:1	0.823	1.219	1.003	
2310.00	27710	Mid	left	5 mm	LTE Band 30	B	Closed	0651M	10	QPSK	1	49	18.0	17.26	0	0.11	1:1	0.240	1.186	0.285	
2310.00	27710	Mid	left	5 mm	LTE Band 30	B	Closed	0651M	10	QPSK	25	12	18.0	17.27	0	0.04	1:1	0.237	1.183	0.280	
2310.00	27710	Mid	bottom	5 mm	LTE Band 30	B	Closed	0651M	10	QPSK	1	49	18.0	17.26	0	0.00	1:1	0.712	1.186	0.844	
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: Blue entry represents variability measurement.

Table 11-24
LTE Band 7 Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Antenna Config.	DUT Configuration	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
2560.00	21350	High	back	10 mm	LTE Band 7	B	Open	0646M	20	QPSK	1	99	18.5	18.33	0	0.02	1:1	0.138	1.040	0.144	
2560.00	21350	High	back	10 mm	LTE Band 7	B	Open	0646M	20	QPSK	50	50	18.5	18.20	0	-0.01	1:1	0.142	1.072	0.152	
2560.00	21350	High	front	10 mm	LTE Band 7	B	Open	0646M	20	QPSK	1	99	18.5	18.33	0	-0.01	1:1	0.115	1.040	0.120	
2560.00	21350	High	front	10 mm	LTE Band 7	B	Open	0646M	20	QPSK	50	50	18.5	18.20	0	0.03	1:1	0.115	1.072	0.123	
2560.00	21350	High	bottom	10 mm	LTE Band 7	B	Open	0646M	20	QPSK	1	99	18.5	18.33	0	0.02	1:1	0.228	1.040	0.237	A24
2560.00	21350	High	bottom	10 mm	LTE Band 7	B	Open	0646M	20	QPSK	50	50	18.5	18.20	0	0.03	1:1	0.226	1.072	0.242	
2560.00	21350	High	left	10 mm	LTE Band 7	B	Open	0646M	20	QPSK	1	99	18.5	18.33	0	0.20	1:1	0.021	1.040	0.022	
2560.00	21350	High	left	10 mm	LTE Band 7	B	Open	0646M	20	QPSK	50	50	18.5	18.20	0	-0.07	1:1	0.021	1.072	0.023	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**														**Body** **1.6 W/kg (mW/g)** averaged over 1 gram							

Table 11-25
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																								
# CC Uplink, Power Class	Component Carrier	FREQUENCY			Side	Spacing	Mode	Antenna Config.	DUT Configuration	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
		MHz	Ch.																	(W/kg)		(W/kg)	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	back	10 mm	LTE Band 41	B	Open	0646M	20	QPSK	1	50	21.0	20.10	0	-0.04	1:1.58	0.173	1.230	0.213	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	back	10 mm	LTE Band 41	B	Open	0646M	20	QPSK	50	25	21.0	20.12	0	0.02	1:1.58	0.170	1.225	0.208	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	front	10 mm	LTE Band 41	B	Open	0646M	20	QPSK	1	50	21.0	20.10	0	-0.13	1:1.58	0.125	1.230	0.154	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	front	10 mm	LTE Band 41	B	Open	0646M	20	QPSK	50	25	21.0	20.12	0	-0.02	1:1.58	0.123	1.225	0.151	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	bottom	10 mm	LTE Band 41	B	Open	0646M	20	QPSK	1	50	21.0	20.10	0	-0.18	1:1.58	0.378	1.230	0.465	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	bottom	10 mm	LTE Band 41	B	Open	0646M	20	QPSK	50	0	21.0	20.00	0	0.03	1:1.58	0.359	1.259	0.452	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	bottom	10 mm	LTE Band 41	B	Open	0646M	20	QPSK	50	25	21.0	20.12	0	-0.02	1:1.58	0.380	1.225	0.466	A25
1 CC Uplink - Power Class 2	N/A	2593.00	40620	Mid	bottom	10 mm	LTE Band 41	B	Open	0646M	20	QPSK	50	0	22.6	21.68	0	0.00	1:2.31	0.363	1.236	0.449	
1 CC Uplink - Power Class 2	N/A	2593.00	40620	Mid	bottom	10 mm	LTE Band 41	B	Open	0646M	20	QPSK	50	25	22.6	21.82	0	-0.03	1:2.31	0.378	1.197	0.452	
2 CC Uplink - Power Class 3	PCC	2593.00	40620	Mid	bottom	10 mm	LTE Band 41	B	Open	0646M	20	QPSK	50	0	21.0	19.97	0	0.05	1:1.58	0.358	1.268	0.454	
	SCC	2573.20	40422											50									
2 CC Uplink - Power Class 2	PCC	2593.00	40620	Mid	bottom	10 mm	LTE Band 41	B	Open	0646M	20	QPSK	50	0	22.6	21.69	0	0.01	1:2.31	0.363	1.233	0.448	
	SCC	2573.20	40422											50									
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	left	10 mm	LTE Band 41	B	Open	0646M	20	QPSK	1	50	21.0	20.10	0	-0.08	1:1.58	0.025	1.230	0.031	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	left	10 mm	LTE Band 41	B	Open	0646M	20	QPSK	50	25	21.0	20.12	0	0.15	1:1.58	0.026	1.225	0.032	
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
NR Band n66 Antenna A Hotspot SAR

MEASUREMENT RESULTS																							
FREQUENCY			Side	Spacing	Mode	Antenna Config	DUT Configuration	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																		(W/kg)		(W/kg)	
1745.00	349000	Mid	back	10 mm	NR Band n66 (AWS)	A	Open	0661M	40	DFT-S-OFDM	QPSK	1	214	18.5	18.23	0	0.00	1:1	0.257	1.064	0.273	
1745.00	349000	Mid	back	10 mm	NR Band n66 (AWS)	A	Open	0661M	40	DFT-S-OFDM	QPSK	108	108	18.5	18.28	0	-0.02	1:1	0.277	1.052	0.291	
1745.00	349000	Mid	front	10 mm	NR Band n66 (AWS)	A	Open	0661M	40	DFT-S-OFDM	QPSK	1	214	18.5	18.23	0	-0.04	1:1	0.187	1.064	0.199	
1745.00	349000	Mid	front	10 mm	NR Band n66 (AWS)	A	Open	0661M	40	DFT-S-OFDM	QPSK	108	108	18.5	18.28	0	0.01	1:1	0.198	1.052	0.208	
1745.00	349000	Mid	bottom	10 mm	NR Band n66 (AWS)	A	Open	0661M	40	DFT-S-OFDM	QPSK	1	214	18.5	18.23	0	-0.02	1:1	0.371	1.064	0.395	
1745.00	349000	Mid	bottom	10 mm	NR Band n66 (AWS)	A	Open	0661M	40	DFT-S-OFDM	QPSK	108	108	18.5	18.28	0	-0.01	1:1	0.397	1.052	0.418	
1745.00	349000	Mid	bottom	10 mm	NR Band n66 (AWS)	A	Open	0661M	40	CP-OFDM	QPSK	1	1	18.5	17.94	0	0.00	1:1	0.439	1.138	0.500	
1745.00	349000	Mid	right	10 mm	NR Band n66 (AWS)	A	Open	0661M	40	DFT-S-OFDM	QPSK	1	214	18.5	18.23	0	0.01	1:1	0.016	1.064	0.017	
1745.00	349000	Mid	right	10 mm	NR Band n66 (AWS)	A	Open	0661M	40	DFT-S-OFDM	QPSK	108	108	18.5	18.28	0	0.03	1:1	0.017	1.052	0.018	
1745.00	349000	Mid	left	10 mm	NR Band n66 (AWS)	A	Open	0661M	40	DFT-S-OFDM	QPSK	1	214	18.5	18.23	0	-0.02	1:1	0.073	1.064	0.078	
1745.00	349000	Mid	left	10 mm	NR Band n66 (AWS)	A	Open	0661M	40	DFT-S-OFDM	QPSK	108	108	18.5	18.28	0	-0.05	1:1	0.078	1.052	0.082	
1745.00	349000	Mid	back	5 mm	NR Band n66 (AWS)	A	Closed	0661M	40	DFT-S-OFDM	QPSK	1	214	18.5	18.23	0	-0.02	1:1	0.307	1.064	0.327	
1745.00	349000	Mid	back	5 mm	NR Band n66 (AWS)	A	Closed	0661M	40	DFT-S-OFDM	QPSK	108	108	18.5	18.28	0	0.01	1:1	0.317	1.052	0.333	
1745.00	349000	Mid	front	5 mm	NR Band n66 (AWS)	A	Closed	0661M	40	DFT-S-OFDM	QPSK	1	214	18.5	18.23	0	0.05	1:1	0.103	1.064	0.110	
1745.00	349000	Mid	front	5 mm	NR Band n66 (AWS)	A	Closed	0661M	40	DFT-S-OFDM	QPSK	108	108	18.5	18.28	0	-0.02	1:1	0.110	1.052	0.116	
1745.00	349000	Mid	bottom	5 mm	NR Band n66 (AWS)	A	Closed	0661M	40	DFT-S-OFDM	QPSK	1	214	18.5	18.23	0	0.03	1:1	0.498	1.064	0.530	
1745.00	349000	Mid	bottom	5 mm	NR Band n66 (AWS)	A	Closed	0661M	40	DFT-S-OFDM	QPSK	108	108	18.5	18.28	0	0.00	1:1	0.512	1.052	0.539	
1745.00	349000	Mid	bottom	5 mm	NR Band n66 (AWS)	A	Closed	0661M	40	CP-OFDM	QPSK	1	1	18.5	17.94	0	0.00	1:1	0.560	1.138	0.637	A26
1745.00	349000	Mid	right	5 mm	NR Band n66 (AWS)	A	Closed	0661M	40	DFT-S-OFDM	QPSK	1	214	18.5	18.23	0	0.02	1:1	0.024	1.064	0.026	
1745.00	349000	Mid	right	5 mm	NR Band n66 (AWS)	A	Closed	0661M	40	DFT-S-OFDM	QPSK	108	108	18.5	18.28	0	-0.01	1:1	0.029	1.052	0.031	
1745.00	349000	Mid	left	5 mm	NR Band n66 (AWS)	A	Closed	0661M	40	DFT-S-OFDM	QPSK	1	214	18.5	18.23	0	0.01	1:1	0.160	1.064	0.170	
1745.00	349000	Mid	left	5 mm	NR Band n66 (AWS)	A	Closed	0661M	40	DFT-S-OFDM	QPSK	108	108	18.5	18.28	0	0.12	1:1	0.166	1.052	0.175	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-27
NR Band n30 Antenna B Hotspot SAR

MEASUREMENT RESULTS																						
FREQUENCY			Side	Spacing	Mode	Antenna Config	DUT Configuration	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																					
2310.00	462000	Mid	back	10 mm	NR Band n30	B	Open	0651M	10	DFT-S-OFDM	QPSK	1	26	19.0	18.05	0	0.06	1:1	0.243	1.245	0.303	
2310.00	462000	Mid	back	10 mm	NR Band n30	B	Open	0651M	10	DFT-S-OFDM	QPSK	25	14	19.0	18.09	0	0.03	1:1	0.245	1.233	0.302	
2310.00	462000	Mid	front	10 mm	NR Band n30	B	Open	0651M	10	DFT-S-OFDM	QPSK	1	26	19.0	18.05	0	-0.02	1:1	0.204	1.245	0.254	
2310.00	462000	Mid	front	10 mm	NR Band n30	B	Open	0651M	10	DFT-S-OFDM	QPSK	25	14	19.0	18.09	0	-0.05	1:1	0.206	1.233	0.254	
2310.00	462000	Mid	bottom	10 mm	NR Band n30	B	Open	0651M	10	DFT-S-OFDM	QPSK	1	26	19.0	18.05	0	0.05	1:1	0.519	1.245	0.646	
2310.00	462000	Mid	bottom	10 mm	NR Band n30	B	Open	0651M	10	DFT-S-OFDM	QPSK	25	14	19.0	18.09	0	0.08	1:1	0.525	1.233	0.647	
2310.00	462000	Mid	bottom	10 mm	NR Band n30	B	Open	0651M	10	CP-OFDM	QPSK	1	1	19.0	18.22	0	0.01	1:1	0.509	1.197	0.609	
2310.00	462000	Mid	left	10 mm	NR Band n30	B	Open	0651M	10	DFT-S-OFDM	QPSK	1	26	19.0	18.05	0	-0.06	1:1	0.048	1.245	0.060	
2310.00	462000	Mid	left	10 mm	NR Band n30	B	Open	0651M	10	DFT-S-OFDM	QPSK	25	14	19.0	18.09	0	0.03	1:1	0.047	1.233	0.058	
2310.00	462000	Mid	back	5 mm	NR Band n30	B	Closed	0651M	10	DFT-S-OFDM	QPSK	1	26	19.0	18.05	0	0.12	1:1	0.338	1.245	0.421	
2310.00	462000	Mid	back	5 mm	NR Band n30	B	Closed	0651M	10	DFT-S-OFDM	QPSK	25	14	19.0	18.09	0	0.08	1:1	0.332	1.233	0.409	
2310.00	462000	Mid	front	5 mm	NR Band n30	B	Closed	0651M	10	DFT-S-OFDM	QPSK	1	26	19.0	18.05	0	0.19	1:1	0.059	1.245	0.073	
2310.00	462000	Mid	front	5 mm	NR Band n30	B	Closed	0651M	10	DFT-S-OFDM	QPSK	25	14	19.0	18.09	0	0.02	1:1	0.058	1.233	0.072	
2310.00	462000	Mid	bottom	5 mm	NR Band n30	B	Closed	0651M	10	DFT-S-OFDM	QPSK	1	26	19.0	18.05	0	-0.01	1:1	0.724	1.245	0.901	
2310.00	462000	Mid	bottom	5 mm	NR Band n30	B	Closed	0651M	10	DFT-S-OFDM	QPSK	25	14	19.0	18.09	0	0.00	1:1	0.730	1.233	0.900	A27
2310.00	462000	Mid	bottom	5 mm	NR Band n30	B	Closed	0651M	10	DFT-S-OFDM	QPSK	50	0	19.0	18.04	0	0.06	1:1	0.712	1.247	0.888	
2310.00	462000	Mid	bottom	5 mm	NR Band n30	B	Closed	0651M	10	CP-OFDM	QPSK	1	1	19.0	18.22	0	0.02	1:1	0.719	1.197	0.861	
2310.00	462000	Mid	left	5 mm	NR Band n30	B	Closed	0651M	10	DFT-S-OFDM	QPSK	1	26	19.0	18.05	0	-0.11	1:1	0.204	1.245	0.254	
2310.00	462000	Mid	left	5 mm	NR Band n30	B	Closed	0651M	10	DFT-S-OFDM	QPSK	25	14	19.0	18.09	0	0.13	1:1	0.202	1.233	0.249	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-28
NR Band n7 Antenna B Hotspot SAR

MEASUREMENT RESULTS																						
FREQUENCY			Side	Spacing	Mode	Antenna Config	DUT Configuration	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																					
2535.00	507000	Mid	back	10 mm	NR Band n7	B	Open	0651M	40	DFT-S-OFDM	QPSK	1	108	20.5	19.71	0	0.01	1:1	0.242	1.199	0.290	
2535.00	507000	Mid	back	10 mm	NR Band n7	B	Open	0651M	40	DFT-S-OFDM	QPSK	108	108	20.5	19.86	0	0.07	1:1	0.235	1.159	0.272	
2535.00	507000	Mid	front	10 mm	NR Band n7	B	Open	0651M	40	DFT-S-OFDM	QPSK	1	108	20.5	19.71	0	0.07	1:1	0.175	1.199	0.210	
2535.00	507000	Mid	front	10 mm	NR Band n7	B	Open	0651M	40	DFT-S-OFDM	QPSK	108	108	20.5	19.86	0	-0.08	1:1	0.167	1.159	0.194	
2535.00	507000	Mid	bottom	10 mm	NR Band n7	B	Open	0651M	40	DFT-S-OFDM	QPSK	1	108	20.5	19.71	0	-0.05	1:1	0.551	1.199	0.661	A28
2535.00	507000	Mid	bottom	10 mm	NR Band n7	B	Open	0651M	40	DFT-S-OFDM	QPSK	108	108	20.5	19.86	0	0.04	1:1	0.528	1.159	0.612	
2535.00	507000	Mid	bottom	10 mm	NR Band n7	B	Open	0651M	40	CP-OFDM	QPSK	1	1	20.5	19.54	0	0.03	1:1	0.551	1.247	0.687	
2535.00	507000	Mid	left	10 mm	NR Band n7	B	Open	0651M	40	DFT-S-OFDM	QPSK	1	108	20.5	19.71	0	0.05	1:1	0.060	1.199	0.072	
2535.00	507000	Mid	left	10 mm	NR Band n7	B	Open	0651M	40	DFT-S-OFDM	QPSK	108	108	20.5	19.86	0	0.19	1:1	0.050	1.159	0.058	
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
NR Band n41 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY			Side	Spacing	Mode	Antenna Config	DUT Configuration	Serial Number	Bandwidth [MHz]	Waveform	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2592.99	518598	Mid	back	10 mm	NR Band n41	C	Open	0419M	100	CW/SRS	11.0	10.28	N/A	0.06	1:1	0.039	1.180	0.046	
2592.99	518598	Mid	front	10 mm	NR Band n41	C	Open	0419M	100	CW/SRS	11.0	10.28	N/A	-0.01	1:1	0.027	1.180	0.032	
2592.99	518598	Mid	bottom	10 mm	NR Band n41	C	Open	0419M	100	CW/SRS	11.0	10.28	N/A	0.09	1:1	0.009	1.180	0.011	
2592.99	518598	Mid	left	10 mm	NR Band n41	C	Open	0419M	100	CW/SRS	11.0	10.28	N/A	0.02	1:1	0.057	1.180	0.067	A29
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Body 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-30
DTS SISO WLAN Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	DUT Configuration	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.														W/kg	(W/kg)			(W/kg)	
2412	1	back	10 mm	802.11b	DSSS	1	Open	1309M	22	1	19.0	18.95	-0.01	99.42	0.156	0.126	1.012	1.006	0.128	
2412	1	front	10 mm	802.11b	DSSS	1	Open	1309M	22	1	19.0	18.95	-0.03	99.42	0.206	0.166	1.012	1.006	0.169	
2412	1	top	10 mm	802.11b	DSSS	1	Open	1309M	22	1	19.0	18.95	0.12	99.42	0.083	0.067	1.012	1.006	0.068	
2412	1	left	10 mm	802.11b	DSSS	1	Open	1309M	22	1	19.0	18.95	0.04	99.42	0.375	0.290	1.012	1.006	0.295	
2412	1	back	5 mm	802.11b	DSSS	1	Closed	1309M	22	1	19.0	18.95	-0.07	99.42	0.197	0.145	1.012	1.006	0.148	
2412	1	front	5 mm	802.11b	DSSS	1	Closed	1309M	22	1	19.0	18.95	0.09	99.42	0.310	0.260	1.012	1.006	0.265	
2412	1	bottom	5 mm	802.11b	DSSS	1	Closed	1309M	22	1	19.0	18.95	-0.03	99.42	0.557	0.431	1.012	1.006	0.439	
2412	1	left	5 mm	802.11b	DSSS	1	Closed	1309M	22	1	19.0	18.95	0.09	99.42	0.735	0.604	1.012	1.006	**0.615**	A30
2437	6	left	5 mm	802.11b	DSSS	1	Closed	1309M	22	1	19.0	18.54	0.10	99.42	0.681	0.533	1.112	1.006	0.596	
2462	11	left	5 mm	802.11b	DSSS	1	Closed	1309M	22	1	19.0	18.78	0.15	99.42	0.669	0.545	1.052	1.006	0.577	
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 SISO WLAN Hotspot SAR for Conditions with 5 GHz WLAN SAR and/or with 5G NR

MEASUREMENT RESULTS																			
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	DUT Configuration	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.														W/kg	(W/kg)			(W/kg)	
2412	1	back	5 mm	802.11b	DSSS	1	Closed	1309M	22	1	13.0	12.62	0.05	99.42	0.042	0.031	1.091	1.006	0.034	
2412	1	front	5 mm	802.11b	DSSS	1	Closed	1309M	22	1	13.0	12.62	-0.12	99.42	0.067	0.057	1.091	1.006	0.063	
2412	1	bottom	5 mm	802.11b	DSSS	1	Closed	1309M	22	1	13.0	12.62	-0.04	99.42	0.110	0.084	1.091	1.006	0.092	
2412	1	left	5 mm	802.11b	DSSS	1	Closed	1309M	22	1	13.0	12.62	0.06	99.42	0.170	0.115	1.091	1.006	0.126	
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 11-32
UMTS Phablet SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Antenna Config.	DUT Configuration	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1712.40	1312	back	8 mm	UMTS 1750	RMC	A	Open	0414M	25.0	24.33	-0.01	1:1	0.706	1.167	0.824	
1712.40	1312	front	6 mm	UMTS 1750	RMC	A	Open	0414M	25.0	24.33	-0.02	1:1	0.727	1.167	0.848	A31
1712.40	1312	bottom	12 mm	UMTS 1750	RMC	A	Open	0414M	25.0	24.33	-0.02	1:1	0.643	1.167	0.750	
1712.40	1312	right	0 mm	UMTS 1750	RMC	A	Open	0414M	25.0	24.33	0.00	1:1	0.171	1.167	0.200	
1712.40	1312	left	0 mm	UMTS 1750	RMC	A	Open	0414M	25.0	24.33	-0.04	1:1	0.504	1.167	0.588	

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

Table 11-33
LTE Band 66 (AWS) Phablet SAR

MEASUREMENT RESULTS																						
# CC Uplink	Component Carrier	FREQUENCY			Side	Spacing	Mode	Antenna Config.	Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
		MHz	Ch.																(W/kg)		(W/kg)	
1 CC Uplink	N/A	1770.00	132572	High	back	8 mm	LTE Band 66 (AWS)	A	0661M	20	QPSK	1	99	24.5	24.02	0	0.02	1:1	0.642	1.117	0.717	
1 CC Uplink	N/A	1770.00	132572	High	back	8 mm	LTE Band 66 (AWS)	A	0661M	20	QPSK	50	50	22.5	21.93	2	0.00	1:1	0.390	1.140	0.445	
1 CC Uplink	N/A	1770.00	132572	High	front	6 mm	LTE Band 66 (AWS)	A	0661M	20	QPSK	1	0	24.5	23.81	0	0.01	1:1	0.809	1.172	0.948	
1 CC Uplink	N/A	1770.00	132572	High	front	6 mm	LTE Band 66 (AWS)	A	0661M	20	QPSK	1	99	24.5	24.02	0	0.04	1:1	0.927	1.117	1.035	A32
1 CC Uplink	N/A	1770.00	132572	High	front	6 mm	LTE Band 66 (AWS)	A	0661M	20	QPSK	50	50	22.5	21.93	2	0.00	1:1	0.557	1.140	0.635	
1 CC Uplink	N/A	1775.00	132622	High	front	6 mm	LTE Band 66 (AWS)	A	0661M	10	QPSK	1	0	24.5	23.86	0	0.03	1:1	0.795	1.159	0.921	
2 CC Uplink CA_66C	PCC	1770.00	132572	High	front	6 mm	LTE Band 66 (AWS)	A	0661M	20	QPSK	1	0	24.5	24.00	0	-0.10	1:1	0.768	1.122	0.862	
	SCC	1750.20	132374										99									
2 CC Uplink CA_66B	PCC	1775.00	132622	High	front	6 mm	LTE Band 66 (AWS)	A	0661M	10	QPSK	1	0	24.5	24.05	0	0.02	1:1	0.797	1.109	0.884	
	SCC	1765.10	132523										49									
1 CC Uplink	N/A	1770.00	132572	High	bottom	12 mm	LTE Band 66 (AWS)	A	0661M	20	QPSK	1	99	24.5	24.02	0	0.07	1:1	0.440	1.117	0.491	
1 CC Uplink	N/A	1770.00	132572	High	bottom	12 mm	LTE Band 66 (AWS)	A	0661M	20	QPSK	50	50	22.5	21.93	2	0.01	1:1	0.282	1.140	0.321	
1 CC Uplink	N/A	1770.00	132572	High	right	0 mm	LTE Band 66 (AWS)	A	0661M	20	QPSK	1	99	24.5	24.02	0	0.04	1:1	0.246	1.117	0.275	
1 CC Uplink	N/A	1770.00	132572	High	right	0 mm	LTE Band 66 (AWS)	A	0661M	20	QPSK	50	50	22.5	21.93	2	0.06	1:1	0.149	1.140	0.170	
1 CC Uplink	N/A	1770.00	132572	High	left	0 mm	LTE Band 66 (AWS)	A	0661M	20	QPSK	1	99	24.5	24.02	0	-0.01	1:1	0.409	1.117	0.457	
1 CC Uplink	N/A	1770.00	132572	High	left	0 mm	LTE Band 66 (AWS)	A	0661M	20	QPSK	50	50	22.5	21.93	2	0.02	1:1	0.245	1.140	0.279	

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

Table 11-34
LTE Band 30 Phablet SAR

MEASUREMENT RESULTS																				
FREQUENCY			Side	Spacing	Mode	Antenna Config.	Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
2310.00	27710	Mid	back	8 mm	LTE Band 30	B	0651M	10	QPSK	1	49	23.0	22.03	0	0.06	1:1	0.407	1.250	0.509	
2310.00	27710	Mid	back	8 mm	LTE Band 30	B	0651M	10	QPSK	25	0	21.0	20.33	2	-0.07	1:1	0.255	1.167	0.298	
2310.00	27710	Mid	front	6 mm	LTE Band 30	B	0651M	10	QPSK	1	49	23.0	22.03	0	-0.14	1:1	0.466	1.250	0.583	
2310.00	27710	Mid	front	6 mm	LTE Band 30	B	0651M	10	QPSK	25	0	21.0	20.33	2	0.07	1:1	0.290	1.167	0.338	
2310.00	27710	Mid	bottom	12 mm	LTE Band 30	B	0651M	10	QPSK	1	49	23.0	22.03	0	0.03	1:1	0.531	1.250	0.664	
2310.00	27710	Mid	bottom	12 mm	LTE Band 30	B	0651M	10	QPSK	25	0	21.0	20.33	2	-0.05	1:1	0.322	1.167	0.376	
2310.00	27710	Mid	left	0 mm	LTE Band 30	B	0651M	10	QPSK	1	49	23.0	22.03	0	0.08	1:1	0.473	1.250	0.591	
2310.00	27710	Mid	left	0 mm	LTE Band 30	B	0651M	10	QPSK	25	0	21.0	20.33	2	-0.02	1:1	0.407	1.167	0.475	
2310.00	27710	Mid	back	0 mm	LTE Band 30	B	0651M	10	QPSK	1	49	22.0	21.14	0	0.03	1:1	1.780	1.219	2.170	A33
2310.00	27710	Mid	back	0 mm	LTE Band 30	B	0651M	10	QPSK	25	12	21.0	20.33	1	0.06	1:1	1.380	1.167	1.610	
2310.00	27710	Mid	back	0 mm	LTE Band 30	B	0651M	10	QPSK	50	0	21.0	20.31	1	-0.03	1:1	1.360	1.172	1.594	
2310.00	27710	Mid	front	0 mm	LTE Band 30	B	0651M	10	QPSK	1	49	22.0	21.14	0	0.02	1:1	0.997	1.219	1.215	
2310.00	27710	Mid	front	0 mm	LTE Band 30	B	0651M	10	QPSK	25	12	21.0	20.33	1	-0.02	1:1	0.809	1.167	0.944	
2310.00	27710	Mid	bottom	0 mm	LTE Band 30	B	0651M	10	QPSK	1	49	22.0	21.14	0	0.03	1:1	1.220	1.219	1.487	
2310.00	27710	Mid	bottom	0 mm	LTE Band 30	B	0651M	10	QPSK	25	12	21.0	20.33	1	-0.01	1:1	0.948	1.167	1.106	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Phablet 4.0 W/kg (mW/g) averaged over 10 grams							

Table 11-35
LTE Band 7 Phablet SAR

MEASUREMENT RESULTS																				
FREQUENCY			Side	Spacing	Mode	Antenna Config.	Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
2510.00	20850	Low	back	8 mm	LTE Band 7	B	0646M	20	QPSK	1	0	24.5	23.60	0	-0.03	1:1	0.316	1.230	0.389	
2510.00	20850	Low	back	8 mm	LTE Band 7	B	0646M	20	QPSK	50	0	22.5	21.70	2	0.03	1:1	0.191	1.202	0.230	
2510.00	20850	Low	front	6 mm	LTE Band 7	B	0646M	20	QPSK	1	0	24.5	23.60	0	0.04	1:1	0.369	1.230	0.454	
2510.00	20850	Low	front	6 mm	LTE Band 7	B	0646M	20	QPSK	50	0	22.5	21.70	2	0.03	1:1	0.234	1.202	0.281	
2510.00	20850	Low	bottom	12 mm	LTE Band 7	B	0646M	20	QPSK	1	0	24.5	23.60	0	0.06	1:1	0.482	1.230	0.593	
2510.00	20850	Low	bottom	12 mm	LTE Band 7	B	0646M	20	QPSK	50	0	22.5	21.70	2	0.00	1:1	0.295	1.202	0.355	
2510.00	20850	Low	left	0 mm	LTE Band 7	B	0646M	20	QPSK	1	0	24.5	23.60	0	0.06	1:1	1.020	1.230	1.255	
2510.00	20850	Low	left	0 mm	LTE Band 7	B	0646M	20	QPSK	50	0	22.5	21.70	2	0.02	1:1	0.587	1.202	0.706	
2560.00	21350	High	back	0 mm	LTE Band 7	B	0646M	20	QPSK	1	99	21.5	21.31	0	-0.03	1:1	0.798	1.045	0.834	
2560.00	21350	High	back	0 mm	LTE Band 7	B	0646M	20	QPSK	50	50	21.5	21.17	0	-0.07	1:1	0.796	1.079	0.859	
2560.00	21350	High	front	0 mm	LTE Band 7	B	0646M	20	QPSK	1	99	21.5	21.31	0	0.02	1:1	0.470	1.045	0.491	
2560.00	21350	High	front	0 mm	LTE Band 7	B	0646M	20	QPSK	50	50	21.5	21.17	0	-0.01	1:1	0.466	1.079	0.503	
2560.00	21350	High	bottom	0 mm	LTE Band 7	B	0646M	20	QPSK	1	99	21.5	21.31	0	0.01	1:1	1.180	1.045	1.233	
2560.00	21350	High	bottom	0 mm	LTE Band 7	B	0646M	20	QPSK	50	50	21.5	21.17	0	0.02	1:1	1.200	1.079	1.295	A34
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Phablet 4.0 W/kg (mW/g) averaged over 10 grams							

Table 11-36
LTE Band 41 Phablet SAR

MEASUREMENT RESULTS																							
# CC Uplink, Power Class	Component Carrier	FREQUENCY			Side	Spacing	Mode	Antenna Config.	Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
		MHz	Ch.																(W/kg)		(W/kg)	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	0 mm	LTE Band 41	B	0424M	20	QPSK	1	0	25.0	23.55	0	-0.04	1:1.58	1.720	1.396	2.401	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	0 mm	LTE Band 41	B	0424M	20	QPSK	1	99	25.0	23.48	0	-0.04	1:1.58	1.210	1.419	1.717	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	bottom	0 mm	LTE Band 41	B	0424M	20	QPSK	1	99	25.0	23.98	0	-0.01	1:1.58	1.720	1.265	2.176	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	bottom	0 mm	LTE Band 41	B	0424M	20	QPSK	1	50	25.0	23.95	0	0.03	1:1.58	1.760	1.274	2.242	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	bottom	0 mm	LTE Band 41	B	0424M	20	QPSK	1	50	25.0	24.01	0	0.02	1:1.58	1.680	1.256	2.110	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	bottom	0 mm	LTE Band 41	B	0424M	20	QPSK	1	50	25.0	24.11	0	0.01	1:1.58	1.770	1.227	2.172	A35
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	bottom	0 mm	LTE Band 41	B	0424M	20	QPSK	50	25	24.0	22.43	1	0.00	1:1.58	1.350	1.435	1.937	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	bottom	0 mm	LTE Band 41	B	0424M	20	QPSK	50	50	24.0	22.90	1	-0.01	1:1.58	1.400	1.288	1.803	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	bottom	0 mm	LTE Band 41	B	0424M	20	QPSK	50	25	24.0	23.09	1	0.01	1:1.58	1.420	1.233	1.751	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	bottom	0 mm	LTE Band 41	B	0424M	20	QPSK	50	0	24.0	23.10	1	0.02	1:1.58	1.360	1.230	1.673	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	bottom	0 mm	LTE Band 41	B	0424M	20	QPSK	50	50	24.0	23.17	1	0.04	1:1.58	1.380	1.211	1.671	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	bottom	0 mm	LTE Band 41	B	0424M	20	QPSK	100	0	24.0	23.04	1	0.02	1:1.58	1.370	1.247	1.708	
1 CC Uplink - Power Class 2	N/A	2506.00	39750	Low	bottom	0 mm	LTE Band 41	B	0424M	20	QPSK	1	0	26.6	25.29	0	-0.03	1:2.31	1.700	1.352	2.298	
1 CC Uplink - Power Class 2	N/A	2506.00	39750	Low	bottom	0 mm	LTE Band 41	B	0424M	20	QPSK	1	99	26.6	25.49	0	0.01	1:2.31	1.420	1.291	1.833	
2 CC Uplink - Power Class 3	PCC	2506.00	39750	Low	bottom	0 mm	LTE Band 41	B	0424M	20	QPSK	1	99	25.0	23.66	0	0.02	1:1.58	1.300	1.361	1.769	
	SCC	2525.80	39948					B					0									
2 CC Uplink - Power Class 2	PCC	2506.00	39750	Low	bottom	0 mm	LTE Band 41	B	0424M	20	QPSK	1	99	26.6	25.48	0	0.00	1:2.31	1.460	1.294	1.889	
	SCC	2525.80	39948					B					0									

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

Table 11-37
NR Band n66 Antenna A Phablet SAR

MEASUREMENT RESULTS																						
FREQUENCY			Side	Spacing	Mode	Antenna Config	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
1745.00	349000	Mid	back	8 mm	NR Band n66 (AWS)	A	0661M	40	DFT-S-OFDM	QPSK	1	214	24.5	23.54	0	0.01	1:1	0.598	1.247	0.746	
1745.00	349000	Mid	back	8 mm	NR Band n66 (AWS)	A	0661M	40	DFT-S-OFDM	QPSK	108	54	24.5	23.72	0	0.01	1:1	0.713	1.197	0.853	
1745.00	349000	Mid	front	6 mm	NR Band n66 (AWS)	A	0661M	40	DFT-S-OFDM	QPSK	1	214	24.5	23.54	0	0.00	1:1	0.631	1.247	0.787	
1745.00	349000	Mid	front	6 mm	NR Band n66 (AWS)	A	0661M	40	DFT-S-OFDM	QPSK	108	54	24.5	23.72	0	0.06	1:1	0.738	1.197	0.883	A36
1745.00	349000	Mid	front	6 mm	NR Band n66 (AWS)	A	0661M	40	CP-OFDM	QPSK	1	1	23.0	21.92	1.5	0.02	1:1	0.523	1.282	0.670	
1745.00	349000	Mid	bottom	12 mm	NR Band n66 (AWS)	A	0661M	40	DFT-S-OFDM	QPSK	1	214	24.5	23.54	0	0.02	1:1	0.648	1.247	0.808	
1745.00	349000	Mid	bottom	12 mm	NR Band n66 (AWS)	A	0661M	40	DFT-S-OFDM	QPSK	108	54	24.5	23.72	0	0.06	1:1	0.704	1.197	0.843	
1745.00	349000	Mid	right	0 mm	NR Band n66 (AWS)	A	0661M	40	DFT-S-OFDM	QPSK	1	214	24.5	23.54	0	-0.07	1:1	0.148	1.247	0.185	
1745.00	349000	Mid	right	0 mm	NR Band n66 (AWS)	A	0661M	40	DFT-S-OFDM	QPSK	108	54	24.5	23.72	0	-0.01	1:1	0.172	1.197	0.206	
1745.00	349000	Mid	left	0 mm	NR Band n66 (AWS)	A	0661M	40	DFT-S-OFDM	QPSK	1	214	24.5	23.54	0	-0.04	1:1	0.494	1.247	0.616	
1745.00	349000	Mid	left	0 mm	NR Band n66 (AWS)	A	0661M	40	DFT-S-OFDM	QPSK	108	54	24.5	23.72	0	0.02	1:1	0.496	1.197	0.594	

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

Table 11-38
NR Band n30 Antenna B Phablet SAR

MEASUREMENT RESULTS																						
FREQUENCY			Side	Spacing	Mode	Antenna Config	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
2310.00	462000	Mid	back	8 mm	NR Band n30	B	0651M	10	DFT-S-OFDM	QPSK	1	50	23.5	23.50	0	0.00	1:1	0.551	1.000	0.551	
2310.00	462000	Mid	back	8 mm	NR Band n30	B	0651M	10	DFT-S-OFDM	QPSK	25	14	23.5	23.47	0	0.01	1:1	0.562	1.007	0.566	
2310.00	462000	Mid	front	6 mm	NR Band n30	B	0651M	10	DFT-S-OFDM	QPSK	1	50	23.5	23.50	0	0.04	1:1	0.616	1.000	0.616	
2310.00	462000	Mid	front	6 mm	NR Band n30	B	0651M	10	DFT-S-OFDM	QPSK	25	14	23.5	23.47	0	0.04	1:1	0.646	1.007	0.651	
2310.00	462000	Mid	bottom	12 mm	NR Band n30	B	0651M	10	DFT-S-OFDM	QPSK	1	50	23.5	23.50	0	0.01	1:1	0.598	1.000	0.598	
2310.00	462000	Mid	bottom	12 mm	NR Band n30	B	0651M	10	DFT-S-OFDM	QPSK	25	14	23.5	23.47	0	0.01	1:1	0.598	1.007	0.602	
2310.00	462000	Mid	left	0 mm	NR Band n30	B	0651M	10	DFT-S-OFDM	QPSK	1	50	23.5	23.50	0	-0.14	1:1	0.586	1.000	0.586	
2310.00	462000	Mid	left	0 mm	NR Band n30	B	0651M	10	DFT-S-OFDM	QPSK	25	14	23.5	23.47	0	0.02	1:1	0.513	1.007	0.517	
2310.00	462000	Mid	back	0 mm	NR Band n30	B	0646M	10	DFT-S-OFDM	QPSK	1	26	22.5	21.59	0	0.04	1:1	1.760	1.233	2.170	
2310.00	462000	Mid	back	0 mm	NR Band n30	B	0646M	10	DFT-S-OFDM	QPSK	25	27	22.5	21.60	0	0.03	1:1	1.800	1.230	2.214	A37
2310.00	462000	Mid	back	0 mm	NR Band n30	B	0651M	10	DFT-S-OFDM	QPSK	50	0	22.5	21.58	0	0.02	1:1	1.790	1.236	2.212	
2310.00	462000	Mid	back	0 mm	NR Band n30	B	0646M	10	CP-OFDM	QPSK	1	1	22.0	20.99	0.5	0.01	1:1	1.560	1.262	1.969	
2310.00	462000	Mid	front	0 mm	NR Band n30	B	0651M	10	DFT-S-OFDM	QPSK	1	26	22.5	21.59	0	-0.02	1:1	1.050	1.233	1.295	
2310.00	462000	Mid	front	0 mm	NR Band n30	B	0651M	10	DFT-S-OFDM	QPSK	25	27	22.5	21.60	0	0.02	1:1	1.070	1.230	1.316	
2310.00	462000	Mid	bottom	0 mm	NR Band n30	B	0651M	10	DFT-S-OFDM	QPSK	1	26	22.5	21.59	0	0.12	1:1	1.210	1.233	1.492	
2310.00	462000	Mid	bottom	0 mm	NR Band n30	B	0651M	10	DFT-S-OFDM	QPSK	25	27	22.5	21.60	0	0.05	1:1	1.200	1.230	1.476	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Phablet 4.0 W/kg (mW/g) averaged over 10 grams												

Table 11-39
NR Band n7 Antenna B Phablet SAR

MEASUREMENT RESULTS																						
FREQUENCY			Side	Spacing	Mode	Antenna Config	Serial Number	Bandwidth [MHz]	Waveform	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
2535.00	507000	Mid	back	8 mm	NR Band n7	B	0651M	40	DFT-S-OFDM	QPSK	1	108	24.5	24.27	0	0.02	1:1	0.351	1.054	0.370	
2535.00	507000	Mid	back	8 mm	NR Band n7	B	0651M	40	DFT-S-OFDM	QPSK	108	54	24.5	24.14	0	-0.01	1:1	0.416	1.086	0.452	
2535.00	507000	Mid	front	6 mm	NR Band n7	B	0651M	40	DFT-S-OFDM	QPSK	1	108	24.5	24.27	0	-0.02	1:1	0.423	1.054	0.446	
2535.00	507000	Mid	front	6 mm	NR Band n7	B	0651M	40	DFT-S-OFDM	QPSK	108	54	24.5	24.14	0	0.03	1:1	0.424	1.086	0.460	
2535.00	507000	Mid	bottom	12 mm	NR Band n7	B	0651M	40	DFT-S-OFDM	QPSK	1	108	24.5	24.27	0	0.06	1:1	0.371	1.054	0.391	
2535.00	507000	Mid	bottom	12 mm	NR Band n7	B	0651M	40	DFT-S-OFDM	QPSK	108	54	24.5	24.14	0	-0.06	1:1	0.467	1.086	0.507	
2535.00	507000	Mid	left	0 mm	NR Band n7	B	0651M	40	DFT-S-OFDM	QPSK	1	108	24.5	24.27	0	0.03	1:1	1.170	1.054	1.233	A38
2535.00	507000	Mid	left	0 mm	NR Band n7	B	0651M	40	DFT-S-OFDM	QPSK	108	54	24.5	24.14	0	0.17	1:1	1.070	1.086	1.162	
2535.00	507000	Mid	back	0 mm	NR Band n7	B	0651M	40	DFT-S-OFDM	QPSK	1	214	21.5	20.66	0	-0.01	1:1	1.030	1.213	1.249	
2535.00	507000	Mid	back	0 mm	NR Band n7	B	0651M	40	DFT-S-OFDM	QPSK	108	108	21.5	20.83	0	-0.03	1:1	1.060	1.167	1.237	
2535.00	507000	Mid	front	0 mm	NR Band n7	B	0651M	40	DFT-S-OFDM	QPSK	1	214	21.5	20.66	0	0.01	1:1	0.603	1.213	0.731	
2535.00	507000	Mid	front	0 mm	NR Band n7	B	0651M	40	DFT-S-OFDM	QPSK	108	108	21.5	20.83	0	0.01	1:1	0.621	1.167	0.725	
2535.00	507000	Mid	bottom	0 mm	NR Band n7	B	0651M	40	DFT-S-OFDM	QPSK	1	214	21.5	20.66	0	0.00	1:1	1.090	1.213	1.322	
2535.00	507000	Mid	bottom	0 mm	NR Band n7	B	0651M	40	DFT-S-OFDM	QPSK	108	108	21.5	20.83	0	0.18	1:1	1.150	1.167	1.342	
2535.00	507000	Mid	bottom	0 mm	NR Band n7	B	0651M	40	CP-OFDM	QPSK	1	1	21.5	20.50	0	-0.01	1:1	1.120	1.259	1.410	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Phablet 4.0 W/kg (mW/g) averaged over 10 grams												

11.5 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D04v01.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.

5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D04v01.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 15 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. Per FCC KDB 865664 D01v01r04, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 12 for variability analysis.
9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v02r01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.7 for more details).
10. Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" when it is in open configuration since the diagonal dimension is > 160 mm and < 200 mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg.
11. Additional SAR tests for phablet SAR were evaluated per KDB 616217 Section 6 (See Section 6.9 for more information).
12. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the 1g thresholds for the equivalent test cases.
13. This device uses Qualcomm Smart Transmit for 2G/3G/4G/5G operations to control and manage transmitting power in real time to ensure RF Exposure compliance. Per FCC Guidance, compliance for was assessed at the minimum of the time averaged power and the maximum output power for each band/mode/exposure condition (DSI).
14. This device has an open and closed configuration. When closed, 1g SAR test are required for back side at a test separation distance of 15mm for body-worn, and on all surfaces and edges with an antenna <=25 mm from that surface or edge at a test separation distance 5mm for hotspot.

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 D04v01, if the reported (scaled) SAR measured at the highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s).

LTE Notes:

1. LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 8.5.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 and MCC=001 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D04v01, when the reported 1g SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg for LTE B41, testing at the other channels was required for such test configurations.
5. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r04. Testing was performed using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic

prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.

6. Per KDB Publication 941225 D05Av01r02, SAR for downlink only LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.
7. This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per FCC Guidance, all SAR tests were performed using Power Class 3. SAR with power class 2 at the available duty factor was additionally performed for the power class 3 configuration with the highest SAR configuration for each exposure conditions. Please see Section 13 for linearity results.
8. For LTE Band 66 and LTE Band 41, per FCC guidance, SAR was first measured with only a single carrier active in the uplink (carrier aggregation not active). For each exposure condition, the uplink CA scenario with two component carriers was additionally tested for the configuration with the highest SAR when carrier aggregation was not active. The SCC was configured with the closest available contiguous channel. The two component carriers were configured so the resource blocks are physically allocated side by side to achieve the maximum output power.
9. This device supports LTE Band 41 ULCA active with Power Class 2. Highest SAR test configuration for each exposure condition in Power Class 3 with ULCA active was repeated with Power Class 2 with ULCA active.

NR Notes:

1. NR implementation supports SA and NSA mode. In EN-DC mode, NR operates with the LTE Bands shown in the NR FR1 checklist acting as anchor bands. Per FCC guidance, SAR tests for NR Bands and LTE Anchors Bands were performed separately due to limitations in SAR probe calibration factors.
2. Due to test setup limitations, SAR testing for NR TDD was performed using test mode software to establish the connection.
3. Simultaneous transmission analysis for EN-DC operations is addressed in the Part 2 Test Report (Serial Number can be found in the bibliography).
4. This device additionally supports some EN-DC conditions where additional LTE carriers are added on the downlink only.
5. Per FCC Guidance, NR modulations and RB Sizes/Offsets were selected for testing such that configurations with the highest output power were evaluated for SAR tests.
6. Per FCC KDB Publication 447498 D04v01, when the reported NR Band n41 SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg for 1g evaluations and > 1.5 W/kg for 10g evaluation, testing at the other channels was required for such test configurations.
7. SRS was tested with CW signal per Qualcomm guidance in 80-w2112-4.
8. For final implementation, NR Band n41 slot configuration is synchronized using maximum duty cycle of 100%. SAR testing was performed using FTM mode with a 100% duty cycle applied to match final duty cycle.

WLAN Notes:

1. For held-to-ear, and hotspot, and phablet operations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg for 1g evaluations, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n/ax) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.6.5 for more information.
3. Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D04v01 by either evaluating the sum of the 1g SAR values of each antenna transmitting independently or making a SAR measurement with both antennas transmitting simultaneously. Please see Multi-Tx and Antenna SAR Consideration Appendix for complete analysis.
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. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

12 SAR MEASUREMENT VARIABILITY

12.1 Measurement Variability

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

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

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

Table 12-1
Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS															
Band	FREQUENCY		Mode	Service	Side	Spacing	Antenna Config	DUT Configuration	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)	
2300	2310.00	27710	LTE Band 30, 10 MHz Bandwidth	QPSK, 1 RB, 49 RB Offset	bottom	5 mm	B	Closed	0.849	0.712	1.19	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									

12.2 Measurement Uncertainty

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

13 ADDITIONAL TESTING PER FCC GUIDANCE

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

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

Table 13-1
LTE Band 41 Head Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.0	26.6
Measured Output Power (dBm)	24.11	25.73
Measured SAR (W/kg)	0.098	0.098
Measured Power (mW)	257.63	374.11
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	163.08	161.99
% deviation from expected linearity		0.67%

Figure 13-1
LTE Band 41 Head Linearity

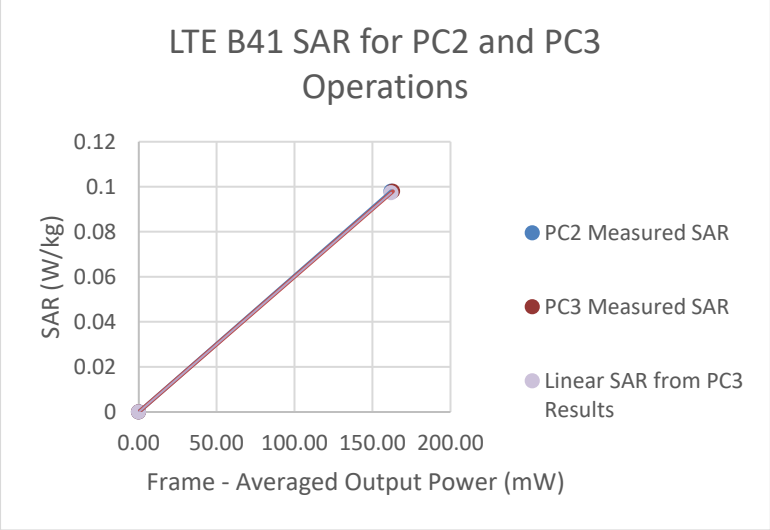


Table 13-2
LTE Band 41 ULCA Head Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.0	26.6
Measured Output Power (dBm)	24.25	26.00
Measured SAR (W/kg)	0.096	0.095
Measured Power (mW)	266.07	398.11
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	168.42	172.38
% deviation from expected linearity		-3.31%

Figure 13-2
LTE Band 41 ULCA Head Linearity

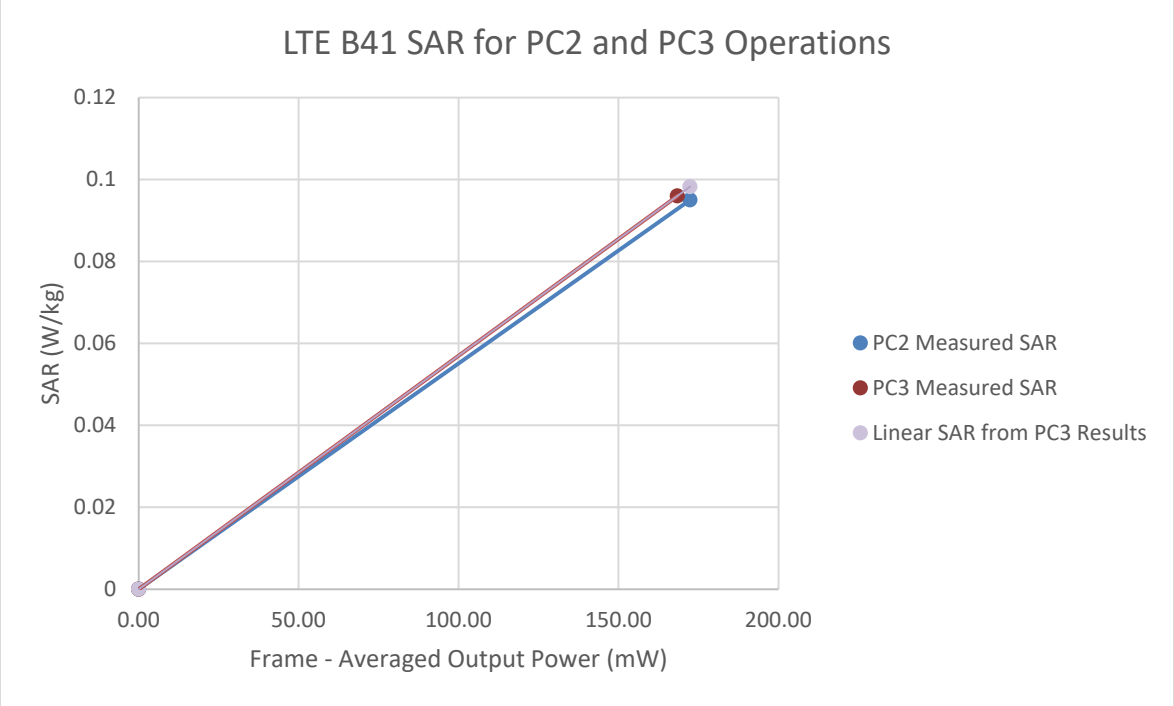


Table 13-3
LTE Band 41 Body-Worn Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.0	26.6
Measured Output Power (dBm)	24.11	25.73
Measured SAR (W/kg)	0.217	0.237
Measured Power (mW)	257.63	374.11
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	163.08	161.99
% deviation from expected linearity		9.95%

Figure 13-3
LTE Band 41 Body-Worn Linearity

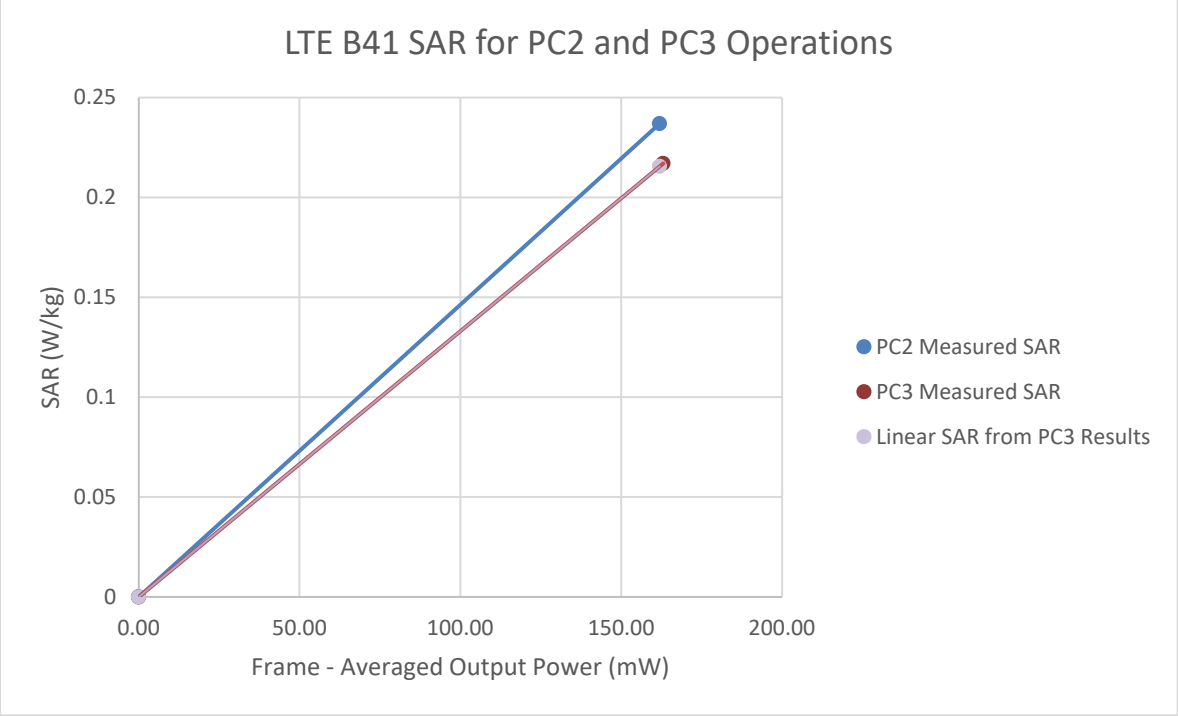


Table 13-4
LTE Band 41 ULCA Body-Worn Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.0	26.6
Measured Output Power (dBm)	24.25	26.00
Measured SAR (W/kg)	0.240	0.252
Measured Power (mW)	266.07	398.11
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	168.42	172.38
% deviation from expected linearity		2.59%

Figure 13-4
LTE Band 41 ULCA Body-Worn Linearity

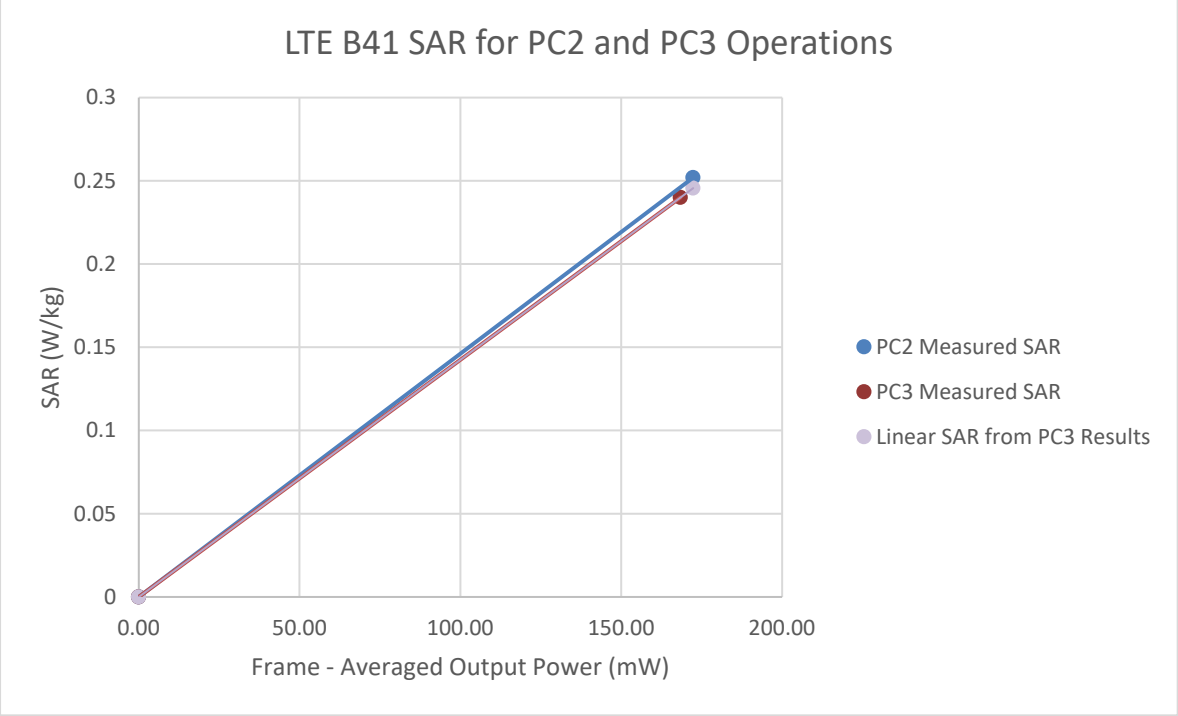


Table 13-5
LTE Band 41 Hotspot Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	21.0	22.6
Measured Output Power (dBm)	20.12	21.82
Measured SAR (W/kg)	0.380	0.378
Measured Power (mW)	102.80	152.05
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	65.07	65.84
% deviation from expected linearity		-1.68%

Figure 13-5
LTE Band 41 Hotspot Linearity

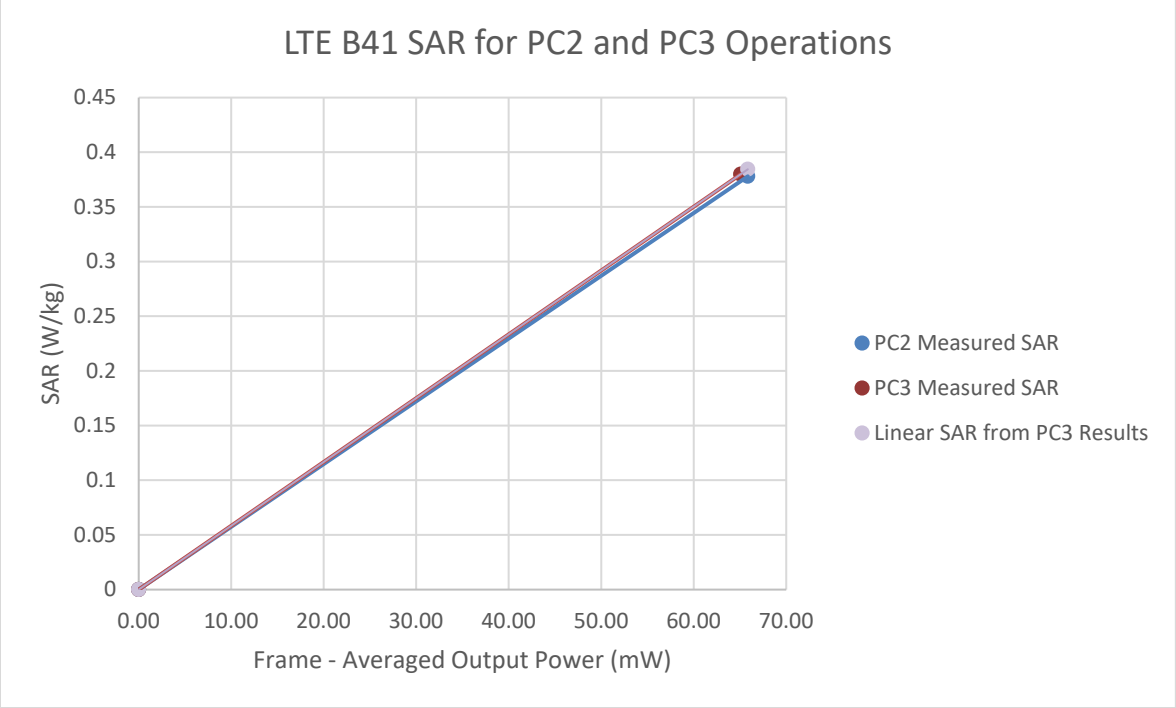


Table 13-6
LTE Band 41 ULCA Hotspot Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	21.0	22.6
Measured Output Power (dBm)	19.97	21.69
Measured SAR (W/kg)	0.358	0.363
Measured Power (mW)	99.31	147.57
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	62.86	63.90
% deviation from expected linearity		-0.24%

Figure 13-6
LTE Band 41 ULCA Hotspot Linearity

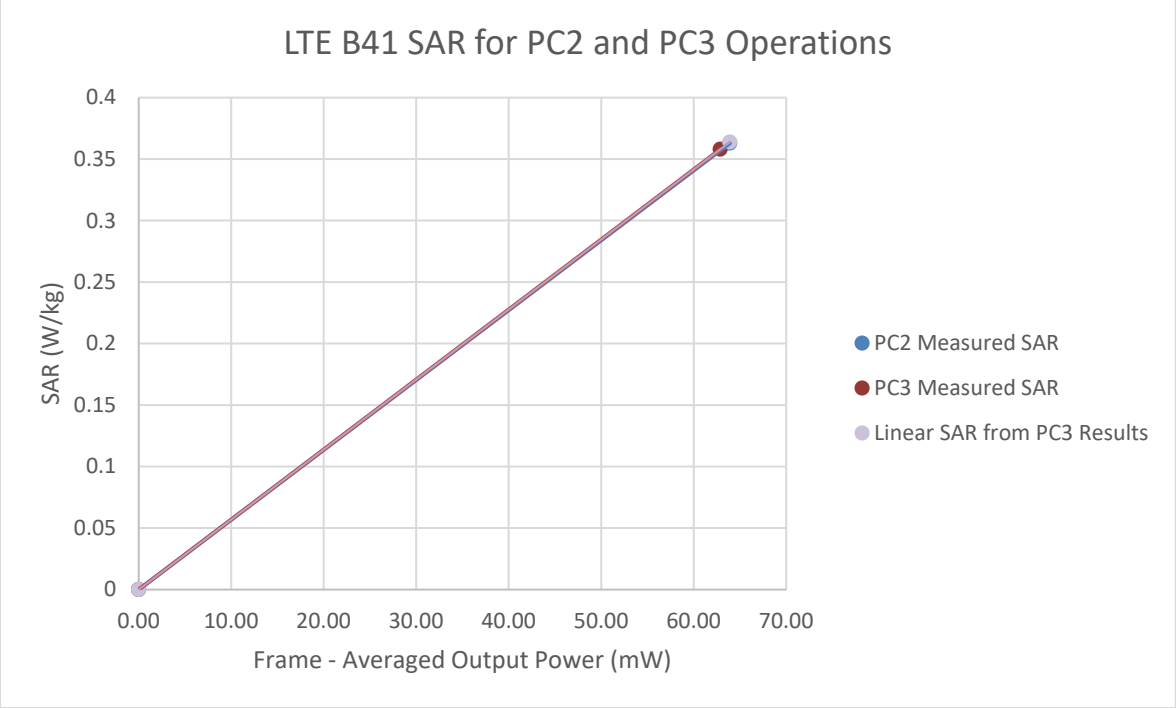


Table 13-7
LTE Band 41 Phablet Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.0	26.6
Measured Output Power (dBm)	23.55	25.29
Measured SAR (W/kg)	1.720	1.700
Measured Power (mW)	226.46	338.06
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	143.35	146.38
% deviation from expected linearity		-3.21%

Figure 13-7
LTE Band 41 Phablet Linearity

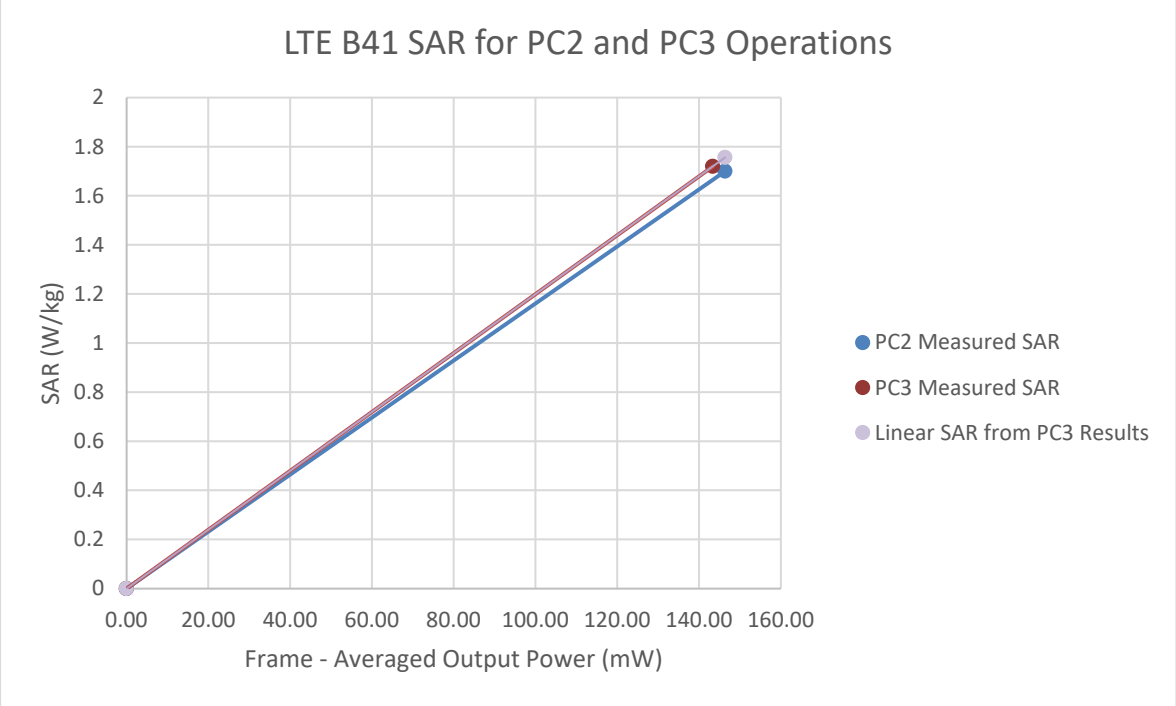
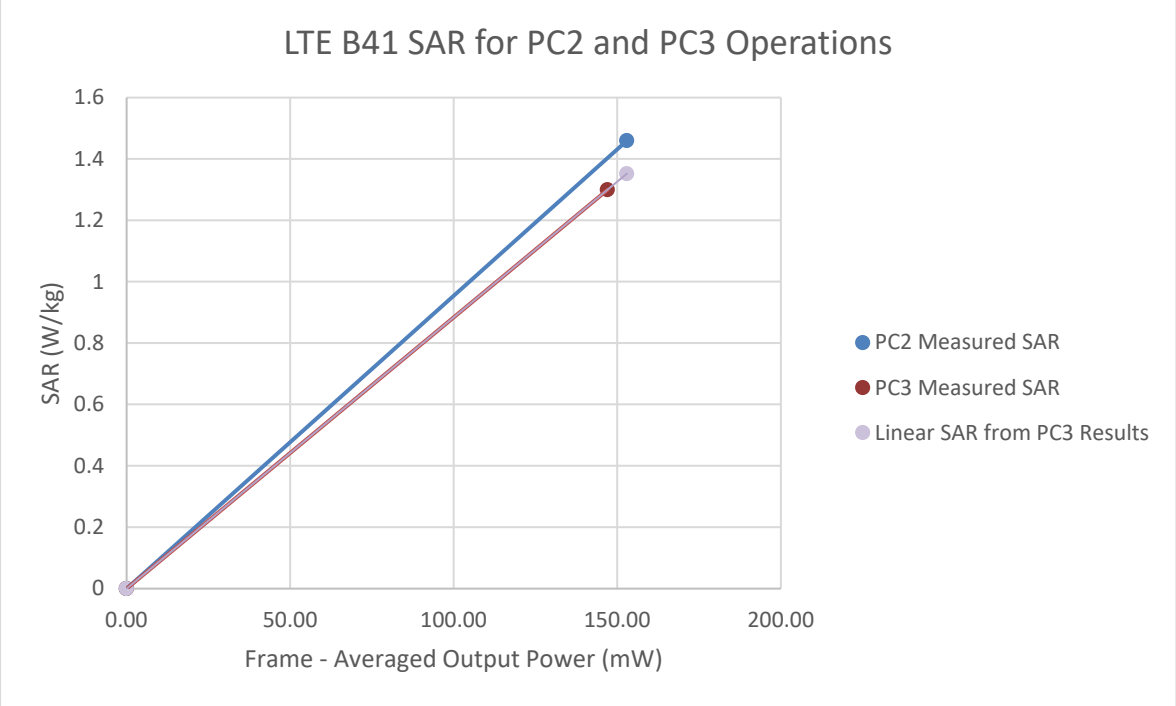


Table 13-8
LTE Band 41 ULCA Phablet Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.0	26.6
Measured Output Power (dBm)	23.66	25.48
Measured SAR (W/kg)	1.300	1.460
Measured Power (mW)	232.27	353.18
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	147.03	152.93
% deviation from expected linearity		7.98%

Figure 13-8
LTE Band 41 ULCA Phablet Linearity



14 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E4404B	Spectrum Analyzer	N/A	N/A	N/A	MY45113242
Agilent	E4438C	ESG Vector Signal Generator	5/10/2022	Annual	5/10/2023	MY42082659
Agilent	E4438C	ESG Vector Signal Generator	2/14/2022	Annual	2/14/2023	MY42082385
Agilent	N5182A	MXG Vector Signal Generator	6/21/2022	Annual	6/21/2023	MY47420651
Agilent	8753ES	S-Parameter Vector Network Analyzer	2/11/2022	Annual	2/11/2023	MY40003841
Agilent	8753ES	S-Parameter Vector Network Analyzer	12/17/2021	Annual	12/17/2022	MY40000670
Agilent	E5515C	Wireless Communications Test Set	5/12/2022	Annual	5/12/2023	GB43304278
Agilent	E5515C	Wireless Communications Test Set	1/14/2020	Triennial	1/14/2023	GB43304447
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433974
Amplifier Research	15S1G6	Amplifier	9/15/2021	Annual	9/15/2022	433971
Rohde & Schwarz	NRX	Power Meter	11/22/2021	Annual	11/22/2022	102583
Anritsu	ML2496A	Power Meter	3/31/2022	Annual	3/31/2023	1138001
Anritsu	MA2411B	Pulse Power Sensor	4/29/2022	Annual	4/29/2023	1207470
Anritsu	MA2411B	Pulse Power Sensor	9/21/2021	Annual	9/21/2022	1339008
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	3/31/2022	Annual	3/31/2023	6201664756
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	9/26/2021	Annual	9/26/2022	6201524637
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	8/10/2021	Annual	8/10/2022	6262150000
Anritsu	MT8000A	Radio Communication Test Station	8/2/2021	Annual	8/2/2022	6272337438
Anritsu	MT8000A	Radio Communication Test Station	3/30/2022	Annual	3/30/2023	6261914237
Anritsu	MT8000A	Radio Communication Test Station	4/20/2022	Annual	4/20/2023	6262036828
Anritsu	MA24106A	USB Power Sensor	6/1/2022	Annual	6/1/2023	1349514
Anritsu	MA24106A	USB Power Sensor	3/22/2022	Annual	3/22/2023	2205501
Control Company	4353	Long Stem Thermometer	10/28/2020	Biennial	10/28/2022	200670623
Control Company	4353	Long Stem Thermometer	10/28/2020	Biennial	10/28/2022	200670633
Control Company	4353	Long Stem Thermometer	10/28/2020	Biennial	10/28/2022	200670635
Control Company	4040	Therm./ Clock/ Humidity Monitor	1/21/2022	Annual	1/21/2023	160574418
Control Company	4040	Therm./ Clock/ Humidity Monitor	3/12/2021	Biennial	3/12/2023	210202100
Mitutoyo	500-196-30	CD-6"ASX 6Inch Digital Caliper	2/16/2022	Triennial	2/16/2025	A20238413
Keysight Technologies	N6705B	DC Power Analyzer	5/5/2021	Triennial	5/5/2024	MY53004059
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
Mini-Circuits	VLF-6000+	Low Pass Filter DC to 6000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mini-Circuits	ZUDC10-83-S+	Directional Coupler	CBT	N/A	CBT	2050
Mini-Circuits	ZUDC10-83-S+	Directional Coupler	9/15/2021	Annual	9/15/2022	2111
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Pasternack	PE5011-1	Torque Wrench	12/21/2021	Biennial	12/21/2023	82475
Huber + Suhner	74Z-0-0-21	Torque Wrench	4/6/2022	Biennial	4/6/2024	83881
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/18/2022	Annual	4/18/2023	128633
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	3/29/2022	Annual	3/29/2023	171075
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/8/2022	Annual	4/8/2023	162125
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/7/2022	Annual	4/7/2023	167283
SPEAG	DAK-3.5	Dielectric Assessment Kit	1/6/2022	Annual	1/6/2023	1278
SPEAG	DAK-3.5	Dielectric Assessment Kit	10/20/2021	Annual	10/20/2022	1091
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	8/18/2021	Annual	8/18/2022	1041
SPEAG	DAK-3.5	Dielectric Assessment Kit	1/6/2022	Annual	1/6/2023	1278
SPEAG	MAIA	Modulation and Audio Interference Analyzer	N/A	N/A	N/A	1379
SPEAG	D1765V2	1750 MHz SAR Dipole	5/14/2021	Biennial	5/14/2023	1008
SPEAG	D1750V2	1750 MHz SAR Dipole	1/18/2022	Annual	1/18/2023	1148
SPEAG	D1750V2	1750 MHz SAR Dipole	10/22/2021	Annual	10/22/2022	1150
SPEAG	D2300V2	2300 MHz SAR Dipole	8/18/2021	Annual	8/18/2022	1073
SPEAG	D2300V2	2300 MHz SAR Dipole	6/3/2021	Biennial	6/3/2023	1116
SPEAG	D2450V2	2450 MHz SAR Dipole	8/18/2021	Annual	8/18/2022	719
SPEAG	D2450V2	2450 MHz SAR Dipole	11/25/2021	Annual	11/25/2022	981
SPEAG	D2450V2	2450 MHz SAR Dipole	9/20/2020	Biennial	9/20/2022	797
SPEAG	D2600V2	2600 MHz SAR Dipole	4/14/2021	Biennial	4/14/2023	1004
SPEAG	D2600V2	2600 MHz SAR Dipole	11/12/2019	Triennial	11/12/2022	1071
SPEAG	D2300V2	2300 MHz SAR Dipole	11/10/2020	Biennial	11/10/2022	1064
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/3/2021	Annual	8/3/2022	1681
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/10/2021	Annual	11/10/2022	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/16/2022	Annual	3/16/2023	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/10/2022	Annual	5/10/2023	1678
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/14/2022	Annual	6/14/2023	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/22/2022	Annual	2/22/2023	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/14/2022	Annual	1/14/2023	1558
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/23/2022	Annual	2/23/2023	1415
SPEAG	EX3DV4	SAR Probe	8/5/2021	Annual	8/5/2022	7670
SPEAG	EX3DV4	SAR Probe	6/16/2022	Annual	6/16/2023	7409
SPEAG	EX3DV4	SAR Probe	11/16/2021	Annual	11/16/2022	7538
SPEAG	EX3DV4	SAR Probe	2/22/2022	Annual	2/22/2023	7417
SPEAG	EX3DV4	SAR Probe	5/18/2022	Annual	5/18/2023	7660
SPEAG	EX3DV4	SAR Probe	3/21/2022	Annual	3/21/2023	7527
SPEAG	EX3DV4	SAR Probe	1/19/2022	Annual	1/19/2023	7570
SPEAG	EX3DV4	SAR Probe	2/21/2022	Annual	2/21/2023	7488

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

15 MEASUREMENT UNCERTAINTIES

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

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

16 CONCLUSION

16.1 Measurement Conclusion

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

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

17 REFERENCES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

[28] FCC General RF Exposure Guidance and SAR Procedures for Dongles, KDB Publication 447498, D01-D04

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

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