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SAR EVALUATION REPORT

Applicant Name:
Microsoft Corporation
One Microsoft Way
Redmond, WA 98052 USA

Date of Testing:
09/08/2021– 10/04/2021
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
1M2109130107-01.C3K

FCC ID: **C3K1995**

APPLICANT: **MICROSOFT CORPORATION**

DUT Type: Portable Handset
Application Type: Class II Permissive Change
FCC Rule Part(s): CFR §2.1093
Model: 1995
Permissive Change(s): See FCC Change Document
Date of Original Certification: 9/17/2021

Equipment Class	Band & Mode	Tx Frequency	SAR					
			1g Head (W/kg)	1g Body-Worn (W/kg)	1g Hotspot (W/kg)	10g Phablet (W/kg)	1g UMPC (W/kg)	1g Body (W/kg)
PCE	GSM/GPRS 850	824.20 - 848.80 MHz	0.48	0.91	0.91	2.74	0.60	0.52
PCE	GSM/GPRS 1900	1850.20 - 1909.80 MHz	0.26	1.03	1.03	2.05	0.79	0.55
PCE	UMTS 850	826.40 - 846.60 MHz	0.35	0.93	0.93	N/A	0.62	0.70
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.85	0.41	0.41	N/A	0.95	0.72
PCE	LTE Band 71	665.5 - 695.5 MHz	0.53	0.66	0.66	N/A	0.97	0.57
PCE	LTE Band 12	699.7 - 715.3 MHz	0.78	0.71	0.71	N/A	0.87	0.59
PCE	LTE Band 13	779.5 - 784.5 MHz	0.90	0.87	0.87	N/A	0.96	0.66
PCE	LTE Band 14	790.5 - 795.5 MHz	0.90	0.84	0.84	N/A	0.98	0.55
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.93	0.89	0.89	N/A	0.49	0.67
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	0.82	1.03	1.03	N/A	0.63	0.73
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.71	0.91	0.91	1.75	1.00	0.73
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A	N/A	N/A	N/A	N/A
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.73	1.11	1.11	2.00	0.80	0.76
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A	N/A	N/A	N/A	N/A
PCE	LTE Band 30	2307.5 - 2312.5 MHz	0.41	0.62	0.62	N/A	0.65	0.65
PCE	LTE Band 7	2502.5 - 2567.5 MHz	0.58	0.80	0.80	2.68	0.86	0.72
CBE	LTE Band 48	3552.5 - 3697.5 MHz	0.16	0.47	0.62	N/A	0.59	0.61
PCE	LTE Band 41	2498.5 - 2687.5 MHz	0.80	0.71	0.77	2.59	0.90	0.71
PCE	NR Band n71	665.5 - 695.5 MHz	0.88	0.43	0.43	N/A	0.62	0.61
PCE	NR Band n5 (Cell)	826.5 - 846.5 MHz	0.54	0.60	0.60	N/A	0.64	0.64
PCE	NR Band n66 (AWS)	1712.5 - 1777.5 MHz	0.75	0.76	0.76	1.84	1.00	0.68
PCE	NR Band n25 (PCS)	1852.5 - 1912.5 MHz	0.69	0.91	0.91	1.79	0.91	0.67
PCE	NR Band n2 (PCS)	1852.5 - 1907.5 MHz	N/A	N/A	N/A	N/A	N/A	N/A
PCE	NR Band n41	2506.02 - 2679.99 MHz	0.69	0.99	1.15	2.43	0.89	0.67
DTS	2.4 GHz WLAN	2412 - 2472 MHz	0.33	0.21	0.10	N/A	0.30	0.30
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	0.24	N/A	N/A	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.35	0.56	N/A	1.10	0.67	0.56
NII	U-NII-2C	5500 - 5720 MHz	0.31	1.01	N/A	2.11	1.15	1.02
NII	U-NII-3	5745 - 5825 MHz	0.24	0.48	0.34	N/A	0.81	0.90
DSS/DTS	Bluetooth	2402 - 2480 MHz	< 0.1	< 0.1	< 0.1	N/A	< 0.1	0.20
DXX	NFC	13.56 MHz	N/A	N/A	N/A	N/A	N/A	< 0.1
Simultaneous SAR per KDB 690783 D01v01r03:			1.59	1.56	1.59	3.93	1.55	1.59

Note: The following test data was evaluated for the current test report. Please refer to RF Exposure Technical Report S/N 1M2105060048-01.C3K (Rev 2) for original compliance evaluation.
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.

Randy Ortanez
President

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

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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 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 48	Voice/Data	3552.5 - 3697.5 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
NR Band n71	Data	665.5 - 695.5 MHz
NR Band n5 (Cell)	Data	826.5 - 846.5 MHz
NR Band n66 (AWS)	Data	1712.5 - 1777.5 MHz
NR Band n25 (PCS)	Data	1852.5 - 1912.5 MHz
NR Band n2 (PCS)	Data	1852.5 - 1907.5 MHz
NR Band n41	Data	2506.02 - 2679.99 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2472 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
NR Band n260	Data	37000 - 40000 MHz
NR Band n261	Data	275000 - 28350 MHz
NFC	Data/Power	13.56 MHz

1.2 Time-Averaging Algorithm for RF Exposure Compliance

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

Note that WLAN operations are not enabled with Smart Transmit.

The Smart Transmit algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of *SAR_design_target* or *PD_design_target*, below the predefined time-averaged power limit (i.e., P_{limit} for sub-6 radio, and *input.power.limit* for 5G mmW NR), for each characterized technology and band (see RF Exposure Part 0 Test Report, report SN 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		Free Space	Head	Flip/Closed Body	Read	Flat	Maximum Tune-Up Output Power*
Averaging Volume		1g, 10g	1g	1g, 10g	1g	1g	
Spacing		-	0 mm	10 mm	5 mm	0 mm	
Configuration		Flip/Closed/ Read/Flat	Flip/Flat	Flip/Closed	Read	Flat	
DSI		3	2	4	5	6	
Technology/Band	Antenna						Pmax
GSM 850	South	30.0	29.6	24.8	21.2	15.7	26.3
GSM 1900	South	30.0	29.8	20.6	15.8	10.9	23.3
UMTS 850	South	30.0	29.9	25.4	21.2	15.7	24.3
UMTS 1900	South	30.0	28.0	20.6	15.0	10.9	24.3
LTE Band 71	South	30.0	31.8	27.0	23.8	17.1	24.3
LTE Band 71	North	30.0	18.7	27.1	23.0	18.1	24.3
LTE Band 12	South	30.0	30.8	26.8	23.5	17.7	24.3
LTE Band 12	North	30.0	18.4	26.1	22.8	17.5	24.3
LTE Band 13	South	30.0	30.2	25.8	21.2	16.4	24.3
LTE Band 13	North	30.0	17.7	26.1	22.0	17.6	24.3
LTE Band 14	South	30.0	30.4	25.9	21.7	16.6	24.3
LTE Band 14	North	30.0	17.5	24.8	22.6	16.7	24.3
LTE Band 26 (Cell)	South	30.0	29.9	23.8	21.2	15.7	24.3
LTE Band 26 (Cell)	North	30.0	17.7	25.9	21.7	16.3	24.3
LTE Band 5 (Cell)	South	30.0	30.5	25.3	21.2	15.7	24.3
LTE Band 5 (Cell)	North	30.0	17.7	25.8	21.7	16.3	24.3
LTE Band 66/4 (AWS)	South	30.0	28.3	17.5	14.5	10.5	24.3
LTE Band 66/4 (AWS)	North	30.0	11.6	17.7	14.2	11.1	24.3
LTE Band 25/2 (PCS)	South	30.0	28.3	20.6	15.8	10.9	24.3
LTE Band 25/2 (PCS)	North	30.0	12.2	18.7	14.9	11.0	24.3
LTE Band 30	South	30.0	28.5	20.9	18.1	9.8	22.4
LTE Band 30	North	30.0	13.8	21.6	17.7	11.8	21.4
LTE Band 7	South	30.0	29.4	18.8	15.2	8.7	24.3
LTE Band 7	North	30.0	12.5	20.0	16.2	9.3	24.3
LTE Band 48	South	30.0	29.7	18.3	13.7	8.8	20.6
LTE Band 41	South	30.0	29.2	18.5	15.7	8.1	22.3
LTE Band 41 (PC2)	South	30.0	29.2	18.5	15.7	8.1	21.7
LTE Band 41	North	30.0	11.9	20.0	15.8	9.3	22.3
LTE Band 41 (PC2)	North	30.0	11.9	20.0	15.8	9.3	20.7
NR Band n71	South	30.0	31.3	27.0	25.6	17.1	22.5
NR Band n71	North	30.0	18.0	26.0	27.1	18.1	22.5
NR Band n5 (Cell)	South	30.0	30.0	24.8	21.2	15.7	22.5
NR Band n5 (Cell)	North	30.0	17.7	25.5	21.7	16.3	22.5
NR Band n66 (AWS)	South	30.0	28.1	17.5	14.5	10.5	22.5
NR Band n66 (AWS)	North	30.0	11.6	17.7	15.1	11.1	22.5
NR Band n25/2 (PCS)	South	30.0	28.8	20.6	15.8	10.9	22.5
NR Band n25/2 (PCS)	North	30.0	12.2	18.7	14.9	11.0	22.5
NR Band n41	South	30.0	27.3	18.5	15.1	8.1	22.5
NR Band n41	North	30.0	11.9	20.0	15.8	9.3	22.5
NR Band n41	MIMO04	30.0	20.0	16.0	14.0	7.0	20.0
NR Band n41	MIMO03	30.0	10.0	16.0	14.0	7.0	20.0

*Note all P_{limit} EFS and maximum tune up output power P_{max} levels entered in above Table correspond to average power levels after accounting for duty cycle in the case of TDD modulation schemes (for e.g., GSM & LTE TDD).
*Maximum tune up output power P_{max} is used to configure EUT during RF tune up procedure. The maximum allowed output power is equal to maximum Tune up output power + 1dB device design uncertainty.

The maximum time-averaged output power (dBm) for any 2G/3G/4G/5G Sub6 WWAN technology, band, and DSI = minimum of "P_{limit} EFS" and "Maximum tune up output power P_{max}" + 1dB device uncertainty. SAR values in this report were scaled to this maximum time-averaged output power to determine compliance per KDB Publication 447498 D01v06.

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

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

1.3 Power Reduction for SAR

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

1.4 Nominal and Maximum Output Power Specifications

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

1.4.1 2G/3G/4G/5G Output Power

GSM/GPRS 850				
Power Level		Voice (in dBm)	Data - Burst Average GMSK (in dBm)	
		1 TX Slot	1 TX Slots	2 TX Slots
Pmax	Max Allowed Power	33.5	33.5	33.5
	Nominal	32.5	32.5	32.5
DSI = 2 (Head)	Max Allowed Power	33.5	33.5	33.5
	Nominal	32.5	32.5	32.5
DSI = 4 (Flip/Closed Body)	Max Allowed Power	33.5	33.5	32.0
	Nominal	32.5	32.5	31.0
DSI = 5 (Read)	Max Allowed Power	31.4	31.4	28.4
	Nominal	30.4	30.4	27.4
DSI = 6 (Flat)	Max Allowed Power	25.9	25.9	22.9
	Nominal	24.9	24.9	21.9
GSM/GPRS 1900				
Power Level		Voice (in dBm)	Data - Burst Average GMSK (in dBm)	
		1 TX Slot	1 TX Slots	2 TX Slots
Pmax	Max Allowed Power	30.5	30.5	30.5
	Nominal	29.5	29.5	29.5
DSI = 2 (Head)	Max Allowed Power	30.5	30.5	30.5
	Nominal	29.5	29.5	29.5
DSI = 4 (Flip/Closed Body)	Max Allowed Power	30.5	30.5	27.8
	Nominal	29.5	29.5	26.8
DSI = 5 (Read)	Max Allowed Power	26.0	26.0	23.0
	Nominal	25.0	25.0	22.0
DSI = 6 (Flat)	Max Allowed Power	21.1	21.1	18.1
	Nominal	20.1	20.1	17.1

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

UMTS Band 5 (850 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	25.3	25.3	25.3	25.3
	Nominal	24.3	24.3	24.3	24.3
DSI = 2 (Head)	Max Allowed Power	25.3	25.3	25.3	25.3
	Nominal	24.3	24.3	24.3	24.3
DSI = 4 (Flip/Closed Body)	Max Allowed Power	25.3	25.3	25.3	25.3
	Nominal	24.3	24.3	24.3	24.3
DSI = 5 (Read)	Max Allowed Power	22.2	22.2	22.2	22.2
	Nominal	21.2	21.2	21.2	21.2
DSI = 6 (Flat)	Max Allowed Power	16.7	16.7	16.7	16.7
	Nominal	15.7	15.7	15.7	15.7
UMTS Band 2 (1900 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	25.3	25.3	25.3	25.3
	Nominal	24.3	24.3	24.3	24.3
DSI = 2 (Head)	Max Allowed Power	25.3	25.3	25.3	25.3
	Nominal	24.3	24.3	24.3	24.3
DSI = 4 (Flip/Closed Body)	Max Allowed Power	21.6	21.6	21.6	21.6
	Nominal	20.6	20.6	20.6	20.6
DSI = 5 (Read)	Max Allowed Power	16.0	16.0	16.0	16.0
	Nominal	15.0	15.0	15.0	15.0
DSI = 6 (Flat)	Max Allowed Power	11.9	11.9	11.9	11.9
	Nominal	10.9	10.9	10.9	10.9

Mode / Band	Antenna		Modulated Average Output Power (in dBm)				
			Pmax	DSI =2 (Head)	DSI =4 (Flip/Closed Body)	DSI =5 (Read)	DSI =6 (Flat)
LTE Band 71	South	Max Allowed Power	25.3	25.3	25.3	24.8	18.1
		Nominal	24.3	24.3	24.3	23.8	17.1
LTE Band 71	North	Max Allowed Power	25.3	19.7	25.3	24.0	19.1
		Nominal	24.3	18.7	24.3	23.0	18.1
LTE Band 12	South	Max Allowed Power	25.3	25.3	25.3	24.5	18.7
		Nominal	24.3	24.3	24.3	23.5	17.7
LTE Band 12	North	Max Allowed Power	25.3	19.4	25.3	23.8	18.5
		Nominal	24.3	18.4	24.3	22.8	17.5
LTE Band 13	South	Max Allowed Power	25.3	25.3	25.3	22.2	17.4
		Nominal	24.3	24.3	24.3	21.2	16.4
LTE Band 13	North	Max Allowed Power	25.3	18.7	25.3	23.0	18.6
		Nominal	24.3	17.7	24.3	22.0	17.6
LTE Band 14	South	Max Allowed Power	25.3	25.3	25.3	22.7	17.6
		Nominal	24.3	24.3	24.3	21.7	16.6
LTE Band 14	North	Max Allowed Power	25.3	18.5	25.3	23.6	17.7
		Nominal	24.3	17.5	24.3	22.6	16.7
LTE Band 26 (Cell)	South	Max Allowed Power	25.3	25.3	24.8	22.2	16.7
		Nominal	24.3	24.3	23.8	21.2	15.7
LTE Band 26 (Cell)	North	Max Allowed Power	25.3	18.7	25.3	22.7	17.3
		Nominal	24.3	17.7	24.3	21.7	16.3
LTE Band 5 (Cell)	South	Max Allowed Power	25.3	25.3	25.3	22.2	16.7
		Nominal	24.3	24.3	24.3	21.2	15.7
LTE Band 5 (Cell)	North	Max Allowed Power	25.3	18.7	25.3	22.7	17.3
		Nominal	24.3	17.7	24.3	21.7	16.3
LTE Band 66 (AWS)	South	Max Allowed Power	25.3	25.3	18.5	15.5	11.5
		Nominal	24.3	24.3	17.5	14.5	10.5
LTE Band 66 (AWS)	North	Max Allowed Power	25.3	12.6	18.7	15.2	12.1
		Nominal	24.3	11.6	17.7	14.2	11.1
LTE Band 4 (AWS)	South	Max Allowed Power	25.3	25.3	18.5	15.5	11.5
		Nominal	24.3	24.3	17.5	14.5	10.5
LTE Band 4 (AWS)	North	Max Allowed Power	25.3	12.6	18.7	15.2	12.1
		Nominal	24.3	11.6	17.7	14.2	11.1
LTE Band 25 (PCS)	South	Max Allowed Power	25.3	25.3	21.6	16.8	11.9
		Nominal	24.3	24.3	20.6	15.8	10.9
LTE Band 25 (PCS)	North	Max Allowed Power	25.3	13.2	19.7	15.9	12.0
		Nominal	24.3	12.2	18.7	14.9	11.0
LTE Band 2 (PCS)	South	Max Allowed Power	25.3	25.3	21.6	16.8	11.9
		Nominal	24.3	24.3	20.6	15.8	10.9
LTE Band 2 (PCS)	North	Max Allowed Power	25.3	13.2	19.7	15.9	12.0
		Nominal	24.3	12.2	18.7	14.9	11.0
LTE Band 30	South	Max Allowed Power	23.4	23.4	21.9	19.1	10.8
		Nominal	22.4	22.4	20.9	18.1	9.8
LTE Band 30	North	Max Allowed Power	22.4	14.8	22.4	18.7	12.8
		Nominal	21.4	13.8	21.4	17.7	11.8
LTE Band 7	South	Max Allowed Power	25.3	25.3	19.8	16.2	9.7
		Nominal	24.3	24.3	18.8	15.2	8.7
LTE Band 7	North	Max Allowed Power	25.3	13.5	21.0	17.2	10.3
		Nominal	24.3	12.5	20.0	16.2	9.3
LTE Band 48 RB 1-7	South	Max Allowed Power	22.4	22.4	21.3	16.7	11.8
		Nominal	21.4	21.4	20.3	15.7	10.8
LTE Band 48 RB 8 and higher	South	Max Allowed Power	23.6	23.6	21.3	16.7	11.8
		Nominal	22.6	22.6	20.3	15.7	10.8
LTE Band 41	South	Max Allowed Power	25.3	25.3	21.5	18.7	11.1
		Nominal	24.3	24.3	20.5	17.7	10.1
LTE Band 41 (PC2)	South	Max Allowed Power	26.3	26.3	23.1	20.3	12.7
		Nominal	25.3	25.3	22.1	19.3	11.7
LTE Band 41	North	Max Allowed Power	25.3	14.9	23.0	18.8	12.3
		Nominal	24.3	13.9	22.0	17.8	11.3
LTE Band 41 (PC2)	North	Max Allowed Power	25.3	16.5	24.6	20.4	13.9
		Nominal	24.3	15.5	23.6	19.4	12.9

Mode / Band	Antenna		Modulated Average Output Power (in dBm)				
			Pmax	DSI =2 (Head)	DSI =4 (Flip/Closed Body)	DSI =5 (Read)	DSI =6 (Flat)
NR Band n71	South	Max Allowed Power	23.5	23.5	23.5	23.5	18.1
		Nominal	22.5	22.5	22.5	22.5	17.1
NR Band n71	North	Max Allowed Power	23.5	19.0	23.5	23.5	19.1
		Nominal	22.5	18.0	22.5	22.5	18.1
NR Band n5 (Cell)	South	Max Allowed Power	23.5	23.5	23.5	22.2	16.7
		Nominal	22.5	22.5	22.5	21.2	15.7
NR Band n5 (Cell)	North	Max Allowed Power	23.5	18.7	23.5	22.7	17.3
		Nominal	22.5	17.7	22.5	21.7	16.3
NR Band n66 (AWS)	South	Max Allowed Power	23.5	23.5	18.5	15.5	11.5
		Nominal	22.5	22.5	17.5	14.5	10.5
NR Band n66 (AWS)	North	Max Allowed Power	23.5	12.6	18.7	16.1	12.1
		Nominal	22.5	11.6	17.7	15.1	11.1
NR Band n25 (PCS)	South	Max Allowed Power	23.5	23.5	21.6	16.8	11.9
		Nominal	22.5	22.5	20.6	15.8	10.9
NR Band n25 (PCS)	North	Max Allowed Power	23.5	13.2	19.7	15.9	12.0
		Nominal	22.5	12.2	18.7	14.9	11.0
NR Band n2 (PCS)	South	Max Allowed Power	23.5	23.5	21.6	16.8	11.9
		Nominal	22.5	22.5	20.6	15.8	10.9
NR Band n2 (PCS)	North	Max Allowed Power	23.5	13.2	19.7	15.9	12.0
		Nominal	22.5	12.2	18.7	14.9	11.0
NR Band n41	South	Max Allowed Power	23.5	23.5	19.5	16.1	9.1
		Nominal	22.5	22.5	18.5	15.1	8.1
NR Band n41	North	Max Allowed Power	23.5	12.9	21.0	16.8	10.3
		Nominal	22.5	11.9	20.0	15.8	9.3
NR Band n41	MIMO04	Max Allowed Power	21.0	21.0	17.0	15.0	8.0
		Nominal	20.0	20.0	16.0	14.0	7.0
NR Band n41	MIMO03	Max Allowed Power	21.0	11.0	17.0	15.0	8.0
		Nominal	20.0	10.0	16.0	14.0	7.0

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

1.4.2 2.4 GHz Maximum Bluetooth and SISO/MIMO WLAN Output Power

Note: Targets for 802.11ax RU operations can be found in technical report S/N: 1M2105060048-01.C3K

Mode	Band	IEEE 802.11 (in dBm)															
		SISO Antenna 1 & Antenna 2								MIMO							
		b		g		n		ax (SU)		b (CDD + STBC)		g (CDD + STBC)		n (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
2.45 GHz WIFI	20 MHz	15.0 Ch. 12: 12.0 Ch. 13: 8.0	16.5 Ch. 12: 13.5 Ch. 13: 9.5	16.5 Ch.1 15.0 Ch. 11: 16.0 Ch. 12: 12.0 Ch. 13: 8.0	18.0 Ch.1 16.5 Ch. 11: 17.5 Ch. 12: 13.5 Ch. 13: 9.5	16.5 Ch.1 15.0 Ch. 11: 16.0 Ch. 12: 12.0 Ch. 13: 8.0	18.0 Ch.1 16.5 Ch. 11: 17.5 Ch. 12: 13.5 Ch. 13: 9.5	16.5 Ch.1 15.0 Ch. 11: 16.0 Ch. 12: 12.0 Ch. 13: 8.0	18.0 Ch.1 16.5 Ch. 11: 17.5 Ch. 12: 13.5 Ch. 13: 9.5	18.0 Ch. 12: 15.0 Ch. 13: 11.0	19.5 Ch. 12: 16.5 Ch. 13: 12.5	19.5 Ch.1 18.0 Ch. 11: 19.0 Ch. 12: 15.0 Ch. 13: 11.0	21.0 Ch.1 19.5 Ch. 11: 20.5 Ch. 12: 16.5 Ch. 13: 12.5	19.5 Ch.1 18.0 Ch. 11: 18.0 Ch. 12: 15.0 Ch. 13: 11.0	21.0 Ch.1 19.5 Ch. 11: 19.5 Ch. 12: 16.5 Ch. 13: 12.5	19.5 Ch.1 18.0 Ch. 11: 18.0 Ch. 12: 15.0 Ch. 13: 11.0	21.0 Ch.1 19.5 Ch. 11: 19.5 Ch. 12: 16.5 Ch. 13: 12.5
2.45 GHz WIFI	40 MHz					14.5 Ch. 3 13.0 Ch. 9 14.0 Ch. 10 12.5 Ch. 11 7.5	16.0 Ch. 3 14.5 Ch. 9 15.5 Ch. 10 14.0 Ch. 11 9.0	14.5 Ch. 3 13.0 Ch. 9 14.0 Ch. 10 12.5 Ch. 11 7.5	16.0 Ch. 3 14.5 Ch. 9 15.5 Ch. 10 14.0 Ch. 11 9.0					17.5 Ch. 3 16.0 Ch. 9 17.0 Ch. 10 15.5 Ch. 11 11.0	19.0 Ch. 3 17.5 Ch. 9 18.5 Ch. 10 17.0 Ch. 11 12.5	17.5 Ch. 3 16.0 Ch. 9 17.0 Ch. 10 15.5 Ch. 11 11.0	19.0 Ch. 3 17.5 Ch. 9 18.5 Ch. 10 17.0 Ch. 11 12.5

Mode	Single Antenna			
	South Antenna		North Antenna	
	Nominal	Maximum	Nominal	Maximum
Bluetooth (in dBm)	6.5	8.5	5.0	7.0
Bluetooth EDR (in dBm)	5.0	7.0	3.5	5.5
Bluetooth LE 2Mbps (in dBm)	6.0	8.5	4.5	7.0
Bluetooth LE 1Mbps, 125/500 kbps (in dBm)	6.0	8.5	4.5	7.0

1.4.3 2.4 GHz Reduced SISO/MIMO WLAN Output Power

Note: Targets for 802.11ax RU operations can be found in technical report S/N: 1M2105060048-01.C3K (Rev 2)

The below table is applicable in the following conditions:

- Flip/Closed Hotspot at 10 mm
- Read Body at 5 mm

Mode	Band	IEEE 802.11 (in dBm)								IEEE 802.11 (in dBm)							
		SISO Antenna 1 & Antenna 2								MIMO							
		b		g		n		ax (SU)		b (CDD + STBC)		g (CDD + STBC)		n (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
2.45 GHz WIFI	20 MHz	11.5 Ch. 13: 8.0	13.0 Ch. 13: 9.5	11.5 Ch. 13: 8.0	13.0 Ch. 13: 9.5	11.5 Ch. 13: 8.0	13.0 Ch. 13: 9.5	11.5 Ch. 13: 8.0	13.0 Ch. 13: 9.5	14.5 Ch. 13: 11.0	16.0 Ch. 13: 12.5	14.5 Ch. 13: 11.0	16.0 Ch. 13: 12.5	14.5 Ch. 13: 11.0	16.0 Ch. 13: 12.5	14.5 Ch. 13: 11.0	16.0 Ch. 13: 12.5
2.45 GHz WIFI	40 MHz					11.5 Ch. 11 7.5	13.0 Ch. 11 9.0	11.5 Ch. 11 7.5	13.0 Ch. 11 9.0					14.5 Ch. 11 11.0	16.0 Ch. 11 12.5	14.5 Ch. 11 11.0	16.0 Ch. 11 12.5

The below table is applicable in the following conditions:

- Read Body at 5 mm during simultaneous conditions with WWAN
- Flat at 0 mm

Mode	Band	IEEE 802.11 (in dBm)															
		SISO Antenna 1 & Antenna 2								MIMO							
		b		g		n		ax (SU)		b (CDD + STBC)		g (CDD + STBC)		n (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
2.45 GHz WIFI	20 MHz	5.5	7.0	5.5	7.0	5.5	7.0	5.5	7.0	8.5	10.0	8.5	10.0	8.5	10.0	8.5	10.0
2.45 GHz WIFI	40 MHz					5.5	7.0	5.5	7.0					8.5	10.0	8.5	10.0

The below table is applicable in the following conditions:

- Flat at 0 mm during simultaneous conditions with WWAN

Mode	Band	IEEE 802.11 (in dBm)															
		SISO Antenna 1 & Antenna 2								MIMO							
		b		g		n		ax (SU)		b (CDD + STBC)		g (CDD + STBC)		n (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
2.45 GHz WIFI	20 MHz	3.5	5.0	3.5	5.0	3.5	5.0	3.5	5.0	6.5	8.0	6.5	8.0	6.5	8.0	6.5	8.0
2.45 GHz WIFI	40 MHz					3.5	5.0	3.5	5.0					6.5	8.0	6.5	8.0

The below table is applicable in the following conditions:

- RCV Active

Mode	Band	IEEE 802.11 (in dBm)															
		SISO Antenna 1								SISO Antenna 2							
		b		g		n		ax (SU)		b		g		n		ax (SU)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
2.45 GHz WIFI	20 MHz	15.0 Ch. 12: 12.0 Ch. 13: 8.0	16.5 Ch. 12: 13.5 Ch. 13: 9.5	16.5 Ch.1 15.0 Ch. 11: 16.0 Ch. 12: 12.0 Ch. 13: 8.0	18.0 Ch.1 16.5 Ch. 11: 17.5 Ch. 12: 13.5 Ch. 13: 9.5	16.5 Ch.1 15.0 Ch. 11: 16.0 Ch. 12: 12.0 Ch. 13: 8.0	18.0 Ch.1 16.5 Ch. 11: 17.5 Ch. 12: 13.5 Ch. 13: 9.5	16.5 Ch.1 15.0 Ch. 11: 16.0 Ch. 12: 12.0 Ch. 13: 8.0	18.0 Ch.1 16.5 Ch. 11: 17.5 Ch. 12: 13.5 Ch. 13: 9.5	10.5 Ch. 13: 8.0	12.0 Ch. 13: 9.5	10.5 Ch. 13: 8.0	12.0 Ch. 13: 9.5	10.5 Ch. 13: 8.0	12.0 Ch. 13: 9.5	10.5 Ch. 13: 8.0	12.0 Ch. 13: 9.5
2.45 GHz WIFI	40 MHz					14.5 Ch. 3 13.0 Ch. 9 14.0 Ch. 10 12.5 Ch. 11 7.5	16.0 Ch. 3 14.5 Ch. 9 15.5 Ch. 10 14.0 Ch. 11 9.0	14.5 Ch. 3 13.0 Ch. 9 14.0 Ch. 10 12.5 Ch. 11 7.5	16.0 Ch. 3 14.5 Ch. 9 15.5 Ch. 10 14.0 Ch. 11 9.0					10.5 Ch. 11 7.5	12.0 Ch. 11 9.0	10.5 Ch. 11 7.5	12.0 Ch. 11 9.0

Mode	Band	IEEE 802.11 (in dBm)															
		MIMO Antenna 1								MIMO Antenna 2							
		b		g		n		ax (SU)		b		g		n		ax (SU)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
2.45 GHz WIFI	20 MHz	15.0 Ch. 12: 12.0 Ch. 13: 8.0	16.5 Ch. 12: 13.5 Ch. 13: 9.5	16.5 Ch.1 15.0 Ch. 11: 16.0 Ch. 12: 12.0 Ch. 13: 8.0	18.0 Ch.1 16.5 Ch. 11: 17.5 Ch. 12: 13.5 Ch. 13: 9.5	16.5 Ch.1 15.0 Ch. 11: 16.0 Ch. 12: 12.0 Ch. 13: 8.0	18.0 Ch.1 16.5 Ch. 11: 17.5 Ch. 12: 13.5 Ch. 13: 9.5	16.5 Ch.1 15.0 Ch. 11: 16.0 Ch. 12: 12.0 Ch. 13: 8.0	18.0 Ch.1 16.5 Ch. 11: 17.5 Ch. 12: 13.5 Ch. 13: 9.5	10.5 Ch. 13: 8.0	12.0 Ch. 13: 9.5	10.5 Ch. 13: 8.0	12.0 Ch. 13: 9.5	10.5 Ch. 13: 8.0	12.0 Ch. 13: 9.5	10.5 Ch. 13: 8.0	12.0 Ch. 13: 9.5
2.45 GHz WIFI	40 MHz					14.5 Ch. 3 13.0 Ch. 9 14.0 Ch. 10 12.5 Ch. 11 7.5	16.0 Ch. 3 14.5 Ch. 9 15.5 Ch. 10 14.0 Ch. 11 9.0	14.5 Ch. 3 13.0 Ch. 9 14.0 Ch. 10 12.5 Ch. 11 7.5	16.0 Ch. 3 14.5 Ch. 9 15.5 Ch. 10 14.0 Ch. 11 9.0					10.5 Ch. 11 7.5	12.0 Ch. 11 9.0	10.5 Ch. 11 7.5	12.0 Ch. 11 9.0

Note: In MIMO operations, each antenna transmits at the maximum allowed powers indicated above.

1.4.4 5 GHz Maximum SISO/MIMO WLAN Output Power

Note: Targets for 802.11ax RU operations can be found in technical report S/N: 1M2105060048-01.C3K (Rev 2)

Mode	Band	IEEE 802.11 (in dBm)															
		SISO Antenna 1 & Antenna 2								MIMO							
		a		n		ac		ax (SU)		a (CDD + STBC)		n (CDD + STBC, SDM)		ac (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
5 GHz WIFI (20MHz BW)	5200 MHz	12.0	13.5	12.0	13.5	12.0	13.5	12.0	13.5	12.5	14.0	12.5	14.0	12.5	14.0	12.5	14.0
	5300 MHz	16.5 Ch 52 16.0	18.0 Ch 52 17.5	16.0	17.5	16.0	17.5	16.0	17.5	19.5 Ch 52 19.0	21.0 Ch 52 20.5	19.0	20.5	19.0	20.5	19.0	20.5
	5500 MHz	16.5	18.0	16.0	17.5	16.0	17.5	16.0	17.5	19.5	21.0	19.0	20.5	19.0	20.5	19.0	20.5
	5800 MHz	16.5	18.0	16.0	17.5	16.0	17.5	16.0	17.5	19.5	21.0	19.0	20.5	19.0	20.5	19.0	20.5
5 GHz WIFI (40MHz BW)	5200 MHz			14.0	15.5	14.0	15.5	14.0	15.5			15.0	16.5	15.0	16.5	15.0	16.5
	5300 MHz			16.0 ch. 62 13.5	17.5 ch. 62 15.0	16.0 ch. 62 13.5	17.5 ch. 62 15.0	16.0 ch. 62 13.5	17.5 ch. 62 15.0			19.0 ch. 62 16.5	20.5 ch. 62 18.0	19.0 ch. 62 16.5	20.5 ch. 62 18.0	19.0 ch. 62 16.5	20.5 ch. 62 18.0
	5500 MHz			16.0 ch. 102 15.5	17.5 ch. 102 17.0	16.0 ch. 102 15.5	17.5 ch. 102 17.0	16.0 ch. 102 15.5	17.5 ch. 102 17.0			19.0 ch. 102 18.5	20.5 ch. 102 20.0	19.0 ch. 102 18.5	20.5 ch. 102 20.0	19.0 ch. 102 18.5	20.5 ch. 102 20.0
	5800 MHz			15.0	16.5	15.0	16.5	15.0	16.5			18.0	19.5	18.0	19.5	18.0	19.5
5 GHz WIFI (80MHz BW)	5200 MHz					14.0	15.5	14.0	15.5					15.0	16.5	15.0	16.5
	5300 MHz					12.0	13.5	12.0	13.5					15.0	16.5	15.0	16.5
	5500 MHz					15.0 ch. 106 13.5	16.5 ch. 106 15.0	15.0 ch. 106 13.5	16.5 ch. 106 15.0					18.0 ch. 106 16.5	19.5 ch. 106 18.0	18.0 ch. 106 16.5	19.5 ch. 106 18.0
	5800 MHz					15.0	16.5	15.0	16.5					18.0	19.5	18.0	19.5
5 GHz WIFI (160MHz BW)	5250 MHz					12.0	13.5	12.0	13.5					15.0	16.5	15.0	16.5
	5570 MHz					12.5	14.0	12.5	14.0					15.5	17.0	15.5	17.0

1.4.5 5 GHz Reduced WLAN Output Power

Note: Targets for 802.11ax RU operations can be found in technical report S/N: 1M2105060048-01.C3K (Rev 2)

The below table is applicable in the following conditions:

- Flip/Closed Hotspot at 10 mm
- Read Body at 5 mm

Mode	Band	IEEE 802.11 (in dBm)															
		SISO Antenna 1 & Antenna 2								MIMO							
		a		n		ac		ax (SU)		a (CDD + STBC)		n (CDD + STBC, SDM)		ac (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
5 GHz WIFI (20MHz BW)	5200 MHz	11.5	13.0	11.5	13.0	11.5	13.0	11.5	13.0	12.5	14.0	12.5	14.0	12.5	14.0	12.5	14.0
	5300 MHz	11.5	13.0	11.5	13.0	11.5	13.0	11.5	13.0	14.5	16.0	14.5	16.0	14.5	16.0	14.5	16.0
	5500 MHz	11.5	13.0	11.5	13.0	11.5	13.0	11.5	13.0	14.5	16.0	14.5	16.0	14.5	16.0	14.5	16.0
	5800 MHz	11.5	13.0	11.5	13.0	11.5	13.0	11.5	13.0	14.5	16.0	14.5	16.0	14.5	16.0	14.5	16.0
5 GHz WIFI (40MHz BW)	5200 MHz			11.5	13.0	11.5	13.0	11.5	13.0			14.5	16.0	14.5	16.0	14.5	16.0
	5300 MHz			11.5	13.0	11.5	13.0	11.5	13.0			14.5	16.0	14.5	16.0	14.5	16.0
	5500 MHz			11.5	13.0	11.5	13.0	11.5	13.0			14.5	16.0	14.5	16.0	14.5	16.0
	5800 MHz			11.5	13.0	11.5	13.0	11.5	13.0			14.5	16.0	14.5	16.0	14.5	16.0
5 GHz WIFI (80MHz BW)	5200 MHz					11.5	13.0	11.5	13.0					14.5	16.0	14.5	16.0
	5300 MHz					11.5	13.0	11.5	13.0					14.5	16.0	14.5	16.0
	5500 MHz					11.5	13.0	11.5	13.0					14.5	16.0	14.5	16.0
	5800 MHz					11.5	13.0	11.5	13.0					14.5	16.0	14.5	16.0
5 GHz WIFI (160MHz BW)	5250 MHz					11.5	13.0	11.5	13.0					14.5	16.0	14.5	16.0
	5570 MHz					11.5	13.0	11.5	13.0					14.5	16.0	14.5	16.0

The below table is applicable in the following conditions:

- Read Body at 5 mm during simultaneous conditions with WWAN
- Flat at 0 mm

Mode	Band	IEEE 802.11 (in dBm)															
		SISO Antenna 1 & Antenna 2								MIMO							
		a		n		ac		ax (SU)		a (CDD + STBC)		n (CDD + STBC, SDM)		ac (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
5 GHz WIFI (20MHz BW)	5200 MHz	5.5	7.0	5.5	7.0	5.5	7.0	5.5	7.0	8.5	10.0	8.5	10.0	8.5	10.0	8.5	10.0
	5300 MHz	5.5	7.0	5.5	7.0	5.5	7.0	5.5	7.0	8.5	10.0	8.5	10.0	8.5	10.0	8.5	10.0
	5500 MHz	5.5	7.0	5.5	7.0	5.5	7.0	5.5	7.0	8.5	10.0	8.5	10.0	8.5	10.0	8.5	10.0
	5800 MHz	5.5	7.0	5.5	7.0	5.5	7.0	5.5	7.0	8.5	10.0	8.5	10.0	8.5	10.0	8.5	10.0
5 GHz WIFI (40MHz BW)	5200 MHz			5.5	7.0	5.5	7.0	5.5	7.0			8.5	10.0	8.5	10.0	8.5	10.0
	5300 MHz			5.5	7.0	5.5	7.0	5.5	7.0			8.5	10.0	8.5	10.0	8.5	10.0
	5500 MHz			5.5	7.0	5.5	7.0	5.5	7.0			8.5	10.0	8.5	10.0	8.5	10.0
	5800 MHz			5.5	7.0	5.5	7.0	5.5	7.0			8.5	10.0	8.5	10.0	8.5	10.0
5 GHz WIFI (80MHz BW)	5200 MHz					5.5	7.0	5.5	7.0					8.5	10.0	8.5	10.0
	5300 MHz					5.5	7.0	5.5	7.0					8.5	10.0	8.5	10.0
	5500 MHz					5.5	7.0	5.5	7.0					8.5	10.0	8.5	10.0
	5800 MHz					5.5	7.0	5.5	7.0					8.5	10.0	8.5	10.0
5 GHz WIFI (160MHz BW)	5250 MHz					5.5	7.0	5.5	7.0					8.5	10.0	8.5	10.0
	5570 MHz					5.5	7.0	5.5	7.0					8.5	10.0	8.5	10.0

The below table is applicable in the following conditions:

- Flat at 0 mm during simultaneous conditions with WWAN

Mode	Band	IEEE 802.11 (in dBm)															
		SISO Antenna 1 & Antenna 2								MIMO							
		a		n		ac		ax (SU)		a		n		ac		ax (SU)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
5 GHz WIFI (20MHz BW)	5200 MHz	1.0	2.5	1.0	2.5	1.0	2.5	1.0	2.5	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
	5300 MHz	1.0	2.5	1.0	2.5	1.0	2.5	1.0	2.5	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
	5500 MHz	1.0	2.5	1.0	2.5	1.0	2.5	1.0	2.5	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
	5800 MHz	1.0	2.5	1.0	2.5	1.0	2.5	1.0	2.5	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
5 GHz WIFI (40MHz BW)	5200 MHz			1.0	2.5	1.0	2.5	1.0	2.5			4.0	5.5	4.0	5.5	4.0	5.5
	5300 MHz			1.0	2.5	1.0	2.5	1.0	2.5			4.0	5.5	4.0	5.5	4.0	5.5
	5500 MHz			1.0	2.5	1.0	2.5	1.0	2.5			4.0	5.5	4.0	5.5	4.0	5.5
	5800 MHz			1.0	2.5	1.0	2.5	1.0	2.5			4.0	5.5	4.0	5.5	4.0	5.5
5 GHz WIFI (80MHz BW)	5200 MHz					1.0	2.5	1.0	2.5					4.0	5.5	4.0	5.5
	5300 MHz					1.0	2.5	1.0	2.5					4.0	5.5	4.0	5.5
	5500 MHz					1.0	2.5	1.0	2.5					4.0	5.5	4.0	5.5
	5800 MHz					1.0	2.5	1.0	2.5					4.0	5.5	4.0	5.5
5 GHz WIFI (160MHz BW)	5250 MHz					1.0	2.5	1.0	2.5					4.0	5.5	4.0	5.5
	5570 MHz					1.0	2.5	1.0	2.5					4.0	5.5	4.0	5.5

The below table is applicable in the following conditions:

- RCV Active

Mode	Band	IEEE 802.11 (in dBm)															
		SISO Antenna 1								SISO Antenna 2							
		a		n		ac		ax (SU)		a		n		ac		ax (SU)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
5 GHz WIFI (20MHz BW)	5200 MHz	12.0	13.5	12.0	13.5	12.0	13.5	12.0	13.5	10.5	12.0	10.5	12.0	10.5	12.0	10.5	12.0
	5300 MHz	16.5 Ch 52 16.0	18.0 Ch 52 17.5	16.0	17.5	16.0	17.5	16.0	17.5	10.5	12.0	10.5	12.0	10.5	12.0	10.5	12.0
	5500 MHz	16.5	18.0	16.0	17.5	16.0	17.5	16.0	17.5	10.5	12.0	10.5	12.0	10.5	12.0	10.5	12.0
	5800 MHz	16.5	18.0	16.0	17.5	16.0	17.5	16.0	17.5	10.5	12.0	10.5	12.0	10.5	12.0	10.5	12.0
5 GHz WIFI (40MHz BW)	5200 MHz			14.0	15.5	14.0	15.5	14.0	15.5			10.5	12.0	10.5	12.0	10.5	12.0
	5300 MHz			16.0 ch. 62 13.5	17.5 ch. 62 15.0	16.0 ch. 62 13.5	17.5 ch. 62 15.0	16.0 ch. 62 13.5	17.5 ch. 62 15.0			10.5	12.0	10.5	12.0	10.5	12.0
	5500 MHz			16.0 ch. 102 15.5	17.5 ch. 102 17.0	16.0 ch. 102 15.5	17.5 ch. 102 17.0	16.0 ch. 102 15.5	17.5 ch. 102 17.0			10.5	12.0	10.5	12.0	10.5	12.0
	5800 MHz			15.0	16.5	15.0	16.5	15.0	16.5			10.5	12.0	10.5	12.0	10.5	12.0
5 GHz WIFI (80MHz BW)	5200 MHz					14.0	15.5	14.0	15.5					10.5	12.0	10.5	12.0
	5300 MHz					12.0	13.5	12.0	13.5					10.5	12.0	10.5	12.0
	5500 MHz					15.0 ch. 106 13.5	16.5 ch. 106 15.0	15.0 ch. 106 13.5	16.5 ch. 106 15.0					10.5	12.0	10.5	12.0
	5800 MHz					15.0	16.5	15.0	16.5					10.5	12.0	10.5	12.0
5 GHz WIFI (160MHz BW)	5250 MHz					12.0	13.5	12.0	13.5					10.5	12.0	10.5	12.0
	5570 MHz					12.5	14.0	12.5	14.0					10.5	12.0	10.5	12.0

Mode	Band	IEEE 802.11 (in dBm)															
		MIMO Antenna 1								MIMO Antenna 2							
		a		n		ac		ax (SU)		a		n		ac		ax (SU)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
5 GHz WIFI (20MHz BW)	5200 MHz	9.5	11.0	9.5	11.0	9.5	11.0	9.5	11.0	9.5	11.0	9.5	11.0	9.5	11.0	9.5	11.0
	5300 MHz	16.5 Ch 52 16.0	18.0 Ch 52 17.5	16.0	17.5	16.0	17.5	16.0	17.5	10.5	12.0	10.5	12.0	10.5	12.0	10.5	12.0
	5500 MHz	16.5	18.0	16.0	17.5	16.0	17.5	16.0	17.5	10.5	12.0	10.5	12.0	10.5	12.0	10.5	12.0
	5800 MHz	16.5	18.0	16.0	17.5	16.0	17.5	16.0	17.5	10.5	12.0	10.5	12.0	10.5	12.0	10.5	12.0
5 GHz WIFI (40MHz BW)	5200 MHz			12.0	13.5	12.0	13.5	12.0	13.5			10.5	12.0	10.5	12.0	10.5	12.0
	5300 MHz			16.0 ch. 62 13.5	17.5 ch. 62 15.0	16.0 ch. 62 13.5	17.5 ch. 62 15.0	16.0 ch. 62 13.5	17.5 ch. 62 15.0			10.5	12.0	10.5	12.0	10.5	12.0
	5500 MHz			16.0 ch. 102 15.5	17.5 ch. 102 17.0	16.0 ch. 102 15.5	17.5 ch. 102 17.0	16.0 ch. 102 15.5	17.5 ch. 102 17.0			10.5	12.0	10.5	12.0	10.5	12.0
	5800 MHz			15.0	16.5	15.0	16.5	15.0	16.5			10.5	12.0	10.5	12.0	10.5	12.0
5 GHz WIFI (80MHz BW)	5200 MHz					12.0	13.5	12.0	13.5					10.5	12.0	10.5	12.0
	5300 MHz					12.0	13.5	12.0	13.5					10.5	12.0	10.5	12.0
	5500 MHz					15.0 ch. 106 13.5	16.5 ch. 106 15.0	15.0 ch. 106 13.5	16.5 ch. 106 15.0					10.5	12.0	10.5	12.0
	5800 MHz					15.0	16.5	15.0	16.5					10.5	12.0	10.5	12.0
5 GHz WIFI (160MHz BW)	5250 MHz					12.0	13.5	12.0	13.5					10.5	12.0	10.5	12.0
	5570 MHz					12.5	14.0	12.5	14.0					10.5	12.0	10.5	12.0

Note: In MIMO operations, each antenna transmits at the maximum allowed powers indicated above.

1.5 DUT Antenna Locations

The overall dimensions of this device are > 9 x 5 cm. A diagram showing the location of the device antennas can be found in Appendix F. This device is considered a "phablet" when it is in Flip configuration, a handset when it is closed configuration, a tablet in Flat configuration and a "UMPC mini-tablet" when it is in read configuration. Exact antenna dimensions and separation distances are shown in the Technical Descriptions in the FCC filing

Table 1-1
Device Edges/Sides for Flip/Closed Configuration SAR Testing

Device Sides/Edges for SAR Testing						
Mode	Back	Front	Top	Bottom	Right	Left
GSM 850 South	Yes	Yes	No	Yes	Yes	No
GSM 1900 South	Yes	Yes	No	Yes	Yes	No
UMTS 850 South	Yes	Yes	No	Yes	Yes	No
UMTS 1900 South	Yes	Yes	No	Yes	Yes	No
LTE Band 71 South	Yes	Yes	No	Yes	Yes	No
LTE Band 12 South	Yes	Yes	No	Yes	Yes	No
LTE Band 13 South	Yes	Yes	No	Yes	Yes	No
LTE Band 14 South	Yes	Yes	No	Yes	Yes	No
LTE Band 26 (Cell) South	Yes	Yes	No	Yes	Yes	No
LTE Band 5 (Cell) South	Yes	Yes	No	Yes	Yes	No
LTE Band 66 (AWS) South	Yes	Yes	No	Yes	Yes	No
LTE Band 25 (PCS) South	Yes	Yes	No	Yes	Yes	No
LTE Band 30 South	Yes	Yes	No	Yes	Yes	No
LTE Band 7 South	Yes	Yes	No	Yes	Yes	No
LTE Band 48 South	Yes	Yes	No	Yes	Yes	No
LTE Band 41 South	Yes	Yes	No	Yes	Yes	No
LTE Band 71 North	Yes	Yes	Yes	No	Yes	No
LTE Band 12 North	Yes	Yes	Yes	No	Yes	No
LTE Band 13 North	Yes	Yes	Yes	No	Yes	No
LTE Band 14 North	Yes	Yes	Yes	No	Yes	No
LTE Band 26 (Cell) North	Yes	Yes	Yes	No	Yes	No
LTE Band 5 (Cell) North	Yes	Yes	Yes	No	Yes	No
LTE Band 66 (AWS) North	Yes	Yes	Yes	No	Yes	No
LTE Band 25 (PCS) North	Yes	Yes	Yes	No	Yes	No
LTE Band 30 North	Yes	Yes	Yes	No	Yes	No
LTE Band 7 North	Yes	Yes	Yes	No	Yes	No
LTE Band 41 North	Yes	Yes	Yes	No	Yes	No
NR Band n71 South	Yes	Yes	No	Yes	Yes	No
NR Band n5 (Cell) South	Yes	Yes	No	Yes	Yes	No
NR Band n66 (AWS) South	Yes	Yes	No	Yes	Yes	No
NR Band n25 (PCS) South	Yes	Yes	No	Yes	Yes	No
NR Band n41 South	Yes	Yes	No	No	No	No
NR Band n41 MIMO4	Yes	Yes	No	Yes	No	No
NR Band n71 North	Yes	Yes	Yes	No	Yes	No
NR Band n5 (Cell) North	Yes	Yes	Yes	No	Yes	No
NR Band n66 (AWS) North	Yes	Yes	Yes	No	Yes	No
NR Band n25 (PCS) North	Yes	Yes	Yes	No	Yes	No
NR Band n41 North	Yes	Yes	No	No	No	No
NR Band n41 MIMO3	Yes	Yes	Yes	No	No	Yes
2.4 GHz WLAN Ant 1	Yes	Yes	No	Yes	No	No
2.4 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN Ant 1	Yes	Yes	No	Yes	No	No
5 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes
Bluetooth Ant 1	Yes	Yes	No	Yes	No	No
Bluetooth Ant 2	Yes	Yes	Yes	No	No	Yes

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

Device Sides/Edges for SAR Testing						
Mode	Back	Front	Top	Bottom	Right	Left
GPRS 850 South	Yes	No	No	Yes	Yes	No
GPRS 1900 South	Yes	No	No	Yes	Yes	No
UMTS 850 South	Yes	No	No	Yes	Yes	No
UMTS 1900 South	Yes	No	No	Yes	Yes	No
LTE Band 71 South	Yes	No	No	Yes	Yes	No
LTE Band 12 South	Yes	No	No	Yes	Yes	No
LTE Band 13 South	Yes	No	No	Yes	Yes	No
LTE Band 14 South	Yes	No	No	Yes	Yes	No
LTE Band 26 (Cell) South	Yes	No	No	Yes	Yes	No
LTE Band 5 (Cell) South	Yes	No	No	Yes	Yes	No
LTE Band 66 (AWS) South	Yes	No	No	Yes	Yes	No
LTE Band 25 (PCS) South	Yes	No	No	Yes	Yes	No
LTE Band 30 South	Yes	No	No	Yes	Yes	No
LTE Band 7 South	Yes	No	No	Yes	Yes	No
LTE Band 48 South	Yes	No	No	Yes	Yes	No
LTE Band 41 South	Yes	No	No	Yes	Yes	No
LTE Band 71 North	Yes	No	Yes	No	Yes	No
LTE Band 12 North	Yes	No	Yes	No	Yes	No
LTE Band 13 North	Yes	No	Yes	No	Yes	No
LTE Band 14 North	Yes	No	Yes	No	Yes	No
LTE Band 26 (Cell) North	Yes	No	Yes	No	Yes	No
LTE Band 5 (Cell) North	Yes	No	Yes	No	Yes	No
LTE Band 66 (AWS) North	Yes	No	Yes	No	Yes	No
LTE Band 25 (PCS) North	Yes	No	Yes	No	Yes	No
LTE Band 30 North	Yes	No	Yes	No	Yes	No
LTE Band 7 North	Yes	No	Yes	No	Yes	No
LTE Band 48 North	Yes	No	Yes	No	Yes	No
LTE Band 41 North	Yes	No	Yes	No	Yes	No
NR Band n71 South	Yes	No	No	Yes	Yes	No
NR Band n5 (Cell) South	Yes	No	No	Yes	Yes	No
NR Band n66 (AWS) South	Yes	No	No	Yes	Yes	No
NR Band n25 (PCS) South	Yes	No	No	Yes	Yes	No
NR Band n41 South	Yes	No	No	Yes	Yes	No
NR Band n41 MIMO4	Yes	No	No	Yes	No	No
NR Band n71 North	Yes	No	Yes	No	Yes	No
NR Band n5 (Cell) North	Yes	No	Yes	No	Yes	No
NR Band n66 (AWS) North	Yes	No	Yes	No	Yes	No
NR Band n25 (PCS) North	Yes	No	Yes	No	Yes	No
NR Band n41 North	Yes	No	Yes	No	Yes	No
NR Band n41 MIMO3	Yes	No	Yes	No	No	No
2.4 GHz WLAN Ant 1	Yes	No	No	Yes	No	No
2.4 GHz WLAN Ant 2	Yes	No	Yes	No	No	No
5 GHz WLAN Ant 1	Yes	No	No	Yes	No	No
5 GHz WLAN Ant 2	Yes	No	Yes	No	No	No
Bluetooth Ant 1	Yes	No	No	Yes	No	No
Bluetooth Ant 2	Yes	No	Yes	No	No	No

Table 1-3
Device Edges/Sides for Flat Configuration SAR Testing

Device Sides/Edges for SAR Testing						
Mode	Back	Front	Top	Bottom	Right	Left
GPRS 850 South	Yes	No	No	Yes	Yes	No
GPRS 1900 South	Yes	No	No	Yes	Yes	No
UMTS 850 South	Yes	No	No	Yes	Yes	No
UMTS 1900 South	Yes	No	No	Yes	Yes	No
LTE Band 71 South	Yes	No	No	Yes	Yes	No
LTE Band 12 South	Yes	No	No	Yes	Yes	No
LTE Band 13 South	Yes	No	No	Yes	Yes	No
LTE Band 14 South	Yes	No	No	Yes	Yes	No
LTE Band 26 (Cell) South	Yes	No	No	Yes	Yes	No
LTE Band 5 (Cell) South	Yes	No	No	Yes	Yes	No
LTE Band 66 (AWS) South	Yes	No	No	Yes	Yes	No
LTE Band 25 (PCS) South	Yes	No	No	Yes	Yes	No
LTE Band 30 South	Yes	No	No	Yes	Yes	No
LTE Band 7 South	Yes	No	No	Yes	Yes	No
LTE Band 48 South	Yes	No	No	Yes	Yes	No
LTE Band 41 South	Yes	No	No	Yes	Yes	No
LTE Band 71 North	Yes	No	Yes	No	Yes	No
LTE Band 12 North	Yes	No	Yes	No	Yes	No
LTE Band 13 North	Yes	No	Yes	No	Yes	No
LTE Band 14 North	Yes	No	Yes	No	Yes	No
LTE Band 26 (Cell) North	Yes	No	Yes	No	Yes	No
LTE Band 5 (Cell) North	Yes	No	Yes	No	Yes	No
LTE Band 66 (AWS) North	Yes	No	Yes	No	Yes	No
LTE Band 25 (PCS) North	Yes	No	Yes	No	Yes	No
LTE Band 30 North	Yes	No	Yes	No	Yes	No
LTE Band 7 North	Yes	No	Yes	No	Yes	No
LTE Band 48 North	Yes	No	Yes	No	Yes	No
LTE Band 41 North	Yes	No	Yes	No	Yes	No
NR Band n71 South	Yes	No	No	Yes	Yes	No
NR Band n5 (Cell) South	Yes	No	No	Yes	Yes	No
NR Band n66 (AWS) South	Yes	No	No	Yes	Yes	No
NR Band n25 (PCS) South	Yes	No	No	Yes	Yes	No
NR Band n41 South	Yes	No	No	Yes	Yes	No
NR Band n41 MIMO4	Yes	No	No	Yes	No	No
NR Band n71 North	Yes	No	Yes	No	Yes	No
NR Band n5 (Cell) North	Yes	No	Yes	No	Yes	No
NR Band n66 (AWS) North	Yes	No	Yes	No	Yes	No
NR Band n25 (PCS) North	Yes	No	Yes	No	Yes	No
NR Band n41 North	Yes	No	Yes	No	Yes	No
NR Band n41 MIMO3	Yes	No	Yes	No	No	No
2.4 GHz WLAN Ant 1	Yes	No	No	Yes	No	No
2.4 GHz WLAN Ant 2	Yes	No	Yes	No	No	No
5 GHz WLAN Ant 1	Yes	No	No	Yes	No	No
5 GHz WLAN Ant 2	Yes	No	Yes	No	No	No
Bluetooth Ant 1	Yes	No	No	Yes	No	No
Bluetooth Ant 2	Yes	No	Yes	No	No	No

Some additional edges were evaluated per manufacturer's request

Note: Particular DUT edges were not required to be evaluated for wireless router SAR, phablet SAR or UMPC mini-tablet SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v02r01 Section III, FCC KDB Publication 941225 D07v01r02 and FCC KDB Publication 648474 D04v01r03. Per FCC KDB Publication 616217 D04v01r01, particular edges were not required to be evaluated for SAR in flat configuration based on the SAR exclusion threshold in KDB 447498 D01V06. The distances between the transmit antennas and the edges of the device are included in the filing. When wireless router mode is enabled, U-NII-2A, U-NII-2C operations are disabled. UMPC mini-tablet Front Side is excluded per KDB inquiry

1.6 Near Field Communications (NFC) Antenna

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

This device supports an accessory cover with NFC antenna integrated to wirelessly charge an accessory pen. WPT transmission is supported via NFC when the accessory cover with the pen is attached. NFC SAR testing was performed with WPT accessory cover with pen attached on flat phantom in approved configurations per FCC Guidance. Additionally, additional checks with the accessory cover for WWAN and WLAN were performed on the worst case configurations from the original filing.

1.7 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D01v06, transmitters are considered to be operating simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds.
This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB Publication 447498 D01v06 4.3.2 procedures.

Table 1-4
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Phablet	Flat (Body)	Read (Extremity)	Notes
1	GSM voice + 2.4 GHz WLAN	Yes	Yes	N/A	Yes	Yes	Yes	
2	GSM voice + 5 GHz WLAN	Yes	Yes	N/A	Yes	Yes	Yes	
3	GSM voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
4	GSM voice + 2.4 GHz WLAN Ant 1 + 2.4 GHz WLAN Ant 2	Yes	Yes	N/A	Yes	Yes	Yes	
5	GSM voice + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes	Yes	N/A	Yes	Yes	Yes	
6	GSM voice + 2.4 GHz WLAN Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes	Yes	N/A	Yes	Yes	Yes	
7	GSM voice + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes	Yes	N/A	Yes	Yes	Yes	
8	GSM voice + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
9	GSM voice + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
10	GSM voice + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
11	GSM voice + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
12	GSM voice + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
13	GSM voice + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
14	UMTS + 2.4 GHz WLAN	Yes	Yes	Yes	Yes	Yes	Yes	
15	UMTS + 5 GHz WLAN	Yes	Yes	Yes	Yes	Yes	Yes	
16	UMTS + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
17	UMTS + 2.4 GHz WLAN Ant 1 + 2.4 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	Yes	Yes	
18	UMTS + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	Yes	Yes	
19	UMTS + 2.4 GHz WLAN Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	Yes	Yes	
20	UMTS + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	Yes	Yes	
21	UMTS + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
22	UMTS + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
23	UMTS + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
24	UMTS + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
25	UMTS + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
26	UMTS + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
27	LTE + 2.4 GHz WLAN	Yes	Yes	Yes	Yes	Yes	Yes	
28	LTE + 5 GHz WLAN	Yes	Yes	Yes	Yes	Yes	Yes	
29	LTE + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
30	LTE + 2.4 GHz WLAN Ant 1 + 2.4 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	Yes	Yes	
31	LTE + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	Yes	Yes	
32	LTE + 2.4 GHz WLAN Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	Yes	Yes	
33	LTE + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	Yes	Yes	
34	LTE + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
35	LTE + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
36	LTE + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
37	LTE + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
38	LTE + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
39	LTE + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
40	LTE + NR	Yes	Yes	N/A	Yes	Yes	Yes	
41	LTE + NR + 2.4 GHz WLAN	Yes	Yes	Yes	Yes	Yes	Yes	
42	LTE + NR + 5 GHz WLAN	Yes	Yes	Yes	Yes	Yes	Yes	
43	LTE + NR + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
44	LTE + NR + 2.4 GHz WLAN Ant 1 + 2.4 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	Yes	Yes	
45	LTE + NR + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	Yes	Yes	
46	LTE + NR + 2.4 GHz WLAN Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	Yes	Yes	
47	LTE + NR + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	Yes	Yes	
48	LTE + NR + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
49	LTE + NR + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
50	LTE + NR + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
51	LTE + NR + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
52	LTE + NR + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
53	LTE + NR + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	Yes^	Yes	Yes	Yes	^ Bluetooth Tethering is considered
54	GPRS + 2.4 GHz WLAN	Yes*	Yes*	Yes	Yes	Yes	Yes	* Pre-installed VOIP applications are considered.
55	GPRS + 5 GHz WLAN	Yes*	Yes*	Yes	Yes	Yes	Yes	* Pre-installed VOIP applications are considered.
56	GPRS + 2.4 GHz Bluetooth	Yes*^	Yes*	Yes^	Yes	Yes	Yes	* Pre-installed VOIP applications are considered. ^ Bluetooth Tethering is considered
57	GPRS + 2.4 GHz WLAN Ant 1 + 2.4 GHz WLAN Ant 2	Yes*	Yes*	Yes	Yes	Yes	Yes	* Pre-installed VOIP applications are considered.
58	GPRS + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes*	Yes*	Yes	Yes	Yes	Yes	* Pre-installed VOIP applications are considered.
59	GPRS + 2.4 GHz WLAN Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes*	Yes*	Yes	Yes	Yes	Yes	* Pre-installed VOIP applications are considered.
60	GPRS + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes*	Yes*	Yes	Yes	Yes	Yes	* Pre-installed VOIP applications are considered.
61	GPRS + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 2.4 GHz Bluetooth Ant 2	Yes*^	Yes*	Yes^	Yes	Yes	Yes	* Pre-installed VOIP applications are considered. ^ Bluetooth Tethering is considered
62	GPRS + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes*^	Yes*	Yes^	Yes	Yes	Yes	* Pre-installed VOIP applications are considered. ^ Bluetooth Tethering is considered
63	GPRS + 2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 2	Yes*^	Yes*	Yes^	Yes	Yes	Yes	* Pre-installed VOIP applications are considered. ^ Bluetooth Tethering is considered
64	GPRS + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes*^	Yes*	Yes^	Yes	Yes	Yes	* Pre-installed VOIP applications are considered. ^ Bluetooth Tethering is considered
65	GPRS + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes*^	Yes*	Yes^	Yes	Yes	Yes	* Pre-installed VOIP applications are considered. ^ Bluetooth Tethering is considered
66	GPRS + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 2	Yes*^	Yes*	Yes^	Yes	Yes	Yes	* Pre-installed VOIP applications are considered. ^ Bluetooth Tethering is considered
67	2.4 GHz WLAN Ant 1 + 2.4 GHz WLAN Ant 2	Yes	Yes	N/A	Yes	Yes	Yes	
68	5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes	Yes	N/A	Yes	Yes	Yes	
69	2.4 GHz WLAN Ant 1 + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes	Yes	N/A	Yes	Yes	Yes	
70	2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2	Yes	Yes	N/A	Yes	Yes	Yes	
71	2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
72	2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
73	2.4 GHz WLAN Ant 1 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
74	2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
75	5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 1	Yes^	Yes	N/A	Yes	Yes	Yes	^ Bluetooth Tethering is considered
76	5 GHz WLAN Ant 1 + 5 GHz WLAN Ant 2 + 2.4 GHz Bluetooth Ant 2	Yes^	Yes	N/A	Yes	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. 2.4 GHz WLAN ant 2, and 2.4 GHz Bluetooth ant 2 share the same antenna path and cannot transmit simultaneously.
3. 2.4 GHz Bluetooth ant 1, and 2.4 GHz Bluetooth ant 2 cannot transmit simultaneously
4. All licensed modes share the same antenna path and cannot transmit simultaneously.
5. 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.
6. Per the manufacturer, WIFI Direct is expected to be used in conjunction with a held-to-ear or body-worn accessory voice call. Therefore, there are no simultaneous transmission scenarios involving WIFI direct beyond that listed in the above table.

7. 5 GHz Wireless Router is only supported for U-NII-1 and U-NII-3 by S/W, therefore U-NII-2A, and U-NII-2C were not evaluated for wireless router conditions.
8. This device supports 2x2 MIMO Tx for WLAN 802.11a/b/g/n/ac/ax. 802.11a/b/g/n/ac/ax supports CDD and STBC and 802.11n/ac/ax additionally supports SDM.
9. This device supports VOLTE.
10. This device supports VOWIFI.
11. This device supports Bluetooth Tethering.
12. LTE + 5G NR FR1 Scenarios are limited to EN-DC combinations with anchor bands as shown in the NR FR1 checklist.
13. 5G NR FR2 n260 and n261 cannot transmit simultaneously.
14. LTE + 5G NR FR2 Scenarios are limited to EN-DC combinations with anchor bands as shown in the NR FR2 checklist.
15. NFC can transmit simultaneously with all licensed and unlicensed transmitters.

1.8 Miscellaneous SAR Test Considerations

(A) WIFI/BT

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

This device supports channel 1-13 for 2.4 GHZ WLAN. However, because channel 12/13 targets are not higher than that of channels 1-11, default channels for SAR testing are determined per FCC KDB 248227 D01v02r02.

Since Wireless Router operations are not allowed by the chipset firmware using U-NII-2A & U-NII-2C WIFI, only 2.4 GHz WLAN, 2.4 GHz Bluetooth, U-NII-1 WLAN, and U-NII-3 WLAN 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 40 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" when it is in a closed 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-2A & U-NII-2C WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for 2.4 GHz WLAN, 2.4 GHz Bluetooth, U-NII-1, and U-NII-3 WLAN operations since wireless router 1g SAR was < 1.2 W/kg.

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

Per FCC Guidance, WLAN was additionally tested with the accessory cover for the worst case Head SAR and Body SAR at 10mm for each applicable antenna for flip posture. The original compliance evaluation contains full data for all WLAN Modes

(B) Licensed Transmitter(s)

Only operations relevant to this permissive change were evaluated for compliance. Please see original compliance evaluation in RF Exposure Technical Report S/N 1M2105060048-01.C3K (Rev 2) for complete

evaluation of all other operating modes. The operational description includes a description of all changed items.
GSM/GPRS DTM is not supported for US bands. Therefore, the GSM Voice modes in this report do not transmit simultaneously with GPRS Data.

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

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

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

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" when it is closed 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 FR1 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 technical report S/N: 1M2105060048-01.C3K (Rev 2) Section 4 of Appendix A1 and Appendix A2).

This device supports LTE Carrier Aggregation (CA) for LTE Band 5, LTE Band 66, LTE Band 7, LTE Band 41, 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 64QAM on the uplink and 256QAM on the downlink for LTE Operations.
Conducted powers for 64QAM uplink configurations were measured per Section 5.1 of FCC KDB Publication 941225D05v02r05. SAR was not required for 64QAM since the highest maximum output power for 64QAM is ≤ ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45W/kg, per Section 5.2.4 of FCC KDB Publication 941225 D05v02r05.

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

NR implementation supports 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.

Per FCC Guidance, WWAN was additionally tested with the accessory cover for the worst case Head SAR and Body SAR at 10mm for each applicable antenna for flip posture for the worst case GSM, UMTS, LTE and 5G FR1 SAR results for each applicable antenna. The original compliance evaluation contains full data for all WWAN Modes.

1.9 DUT Configuration Information

Note the DUT can operate in 4 distinct configurations:

- **Flip (Handset)**: Device is folded in half with both displays facing out and used like a typical phablet. Only the right display turns on and acts as the default phablet display for voice calling as it contains the only earpiece speaker. Hotspot mode can be enabled.
- **Closed (Handset)**: Device is folded in half with both displays facing inward and disabled. Calls can be taken using a headset only. Hotspot mode can be enabled.
- **Read (UMPC):** The displays are at a nominal angle of 150 degrees relative to each other in portrait and landscape mode respectively. Calls are intended to be made over headset or speaker only, although the earpiece is not disabled. Hotspot mode can be enabled. Note that for testing purpose the device was open with both displays facing out, side by side.
- **Flat (Body):** Device is open with both displays facing out, side by side. Calls are intended to be made over headset or speaker only, although the earpiece is not disabled. Hotspot mode can be enabled.

1.10 Guidance Applied

- IEEE 1528-2013
- FCC KDB Publication 941225 D01v03r01, D05v02r04, D05Av01r02, D06v02r01 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v06 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D04v01r03 (Phablet Procedures)
- FCC KDB Publication 616217 D04v01r02 (Tablet)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)
- May 2017 TCB Workshop Notes (LTE 4x4 Downlink MIMO, LTE Band 41 Power Class 2/3)
- April 2018 TCB Workshop Notes (LTE Carrier Aggregation)
- April 2019 TCB Workshop Notes (IEEE 802.11ax, Dynamic Antenna Tuning)
- FCC KDB Publication 941225 D07v01r02 (UMPC Mini-Tablet Devices)

1.11 Device Serial Numbers

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

1.12 Bibliography

Report Type	Report Serial Number
Original Compliance Evaluation	1M2105060048-01.C3K
RF Exposure Part 0 Test Report	1M2109130107-06.C3K
Near Field PD Report (Part 1)	1M2109130107-05.C3K

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 48 (3552.5 - 3697.5 MHz)				
	LTE Band 41 (2498.5 - 2687.5 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 48: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 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)		2535 (21100)	2562.5 (21375)	
LTE Band 7: 20 MHz	2510 (20850)		2535 (21100)	2560 (21350)	
LTE Band 48: 5 MHz	3552.5 (55265)	3600.8 (55748)	N/A	3649.2 (56232)	3697.5 (56715)
LTE Band 48: 10 MHz	3555 (55290)	3601.7 (55757)	N/A	3648.3 (56223)	3695 (56690)
LTE Band 48: 15 MHz	3557.5 (55315)	3602.5 (55765)	N/A	3647.5 (56215)	3692.5 (56665)
LTE Band 48: 20 MHz	3560 (55340)	3603.3 (55773)	N/A	3646.7 (56207)	3690 (56640)
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	DL UE Cat 20, UL UE Cat 13				
Modulations Supported in UL	QPSK, 16QAM, 64QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	YES				
A-MPR (Additional MPR) disabled for SAR Testing?	YES				
LTE Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations				
LTE Additional Information	This device does not support full CA features on 3GPP Release 14. It supports carrier aggregation, downlink MIMO, LAA features as shown in RF Exposure Technical Report S/N: 1M2105060048-01.C3K Appendix H and Section 1 of Appendix A1 and A2. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. The following LTE Release 14 Features are not supported: Relay, HetNet, Enhanced MIMO, eICIC, eMBMS, 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 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 n41 (2506.02 - 2679.99 MHz)					
Channel Bandwidths	NR Band n71: 5 MHz, 10 MHz, 15 MHz, 20 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 n41: 20 MHz, 30 MHz, 40 MHz, 50 MHz, 60 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 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 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: 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)	
SCS for NR Band n71/n5/n66/n25/n2	15 kHz					
SCS for NR Band n41	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 66/2					
LTE Anchor Bands for NR Band n5 (Cell)	LTE Band 66/2/30/7					
LTE Anchor Bands for NR Band n66 (AWS)	LTE Band 12/13/14/5/2/30					
LTE Anchor Bands for NR Band n25 (PCS)	LTE Band 12/66					
LTE Anchor Bands for NR Band n2 (PCS)	LTE Band 12/13/14/5/66/30					
LTE Anchor Bands for NR Band n41	LTE Band 12/66/2					

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:

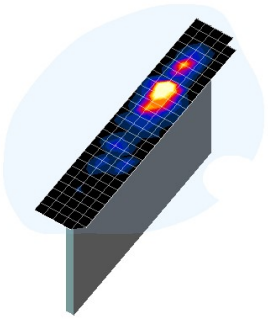

Figure 4-1
Sample SAR Area Scan

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

*Also compliant to IEEE 1528-2013 Table 6

5 DEFINITION OF REFERENCE POINTS

5.1 EAR REFERENCE POINT

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

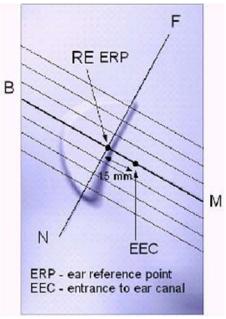

Figure 5-1
Close-Up Side view of ERP

5.2 HANDSET REFERENCE POINTS

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

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

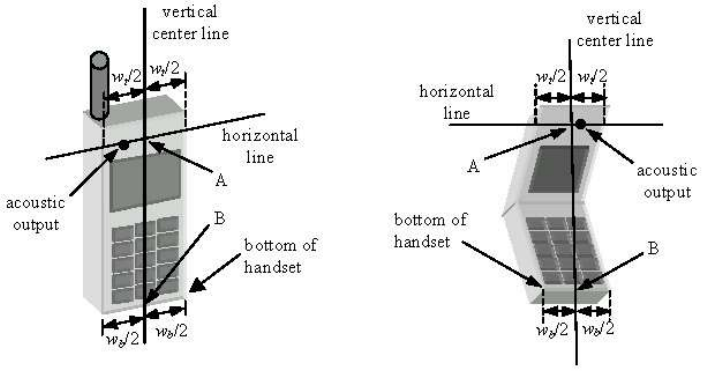

Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

6 TEST CONFIGURATION POSITIONS

6.1 Device Holder

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

6.2 Positioning for Cheek

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

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

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

6.3 Positioning for Ear / 15º Tilt

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

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

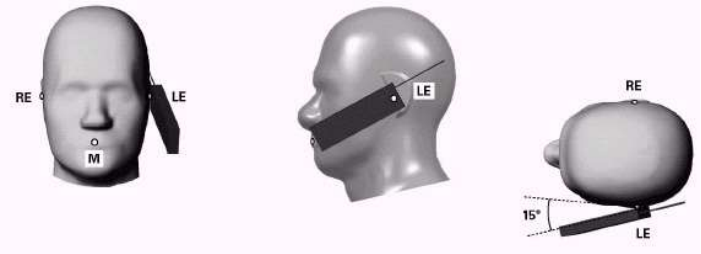

Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

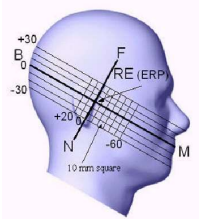

Figure 6-3
Side view w/ relevant markings

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

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

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

6.5 Body-Worn Accessory Configurations

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

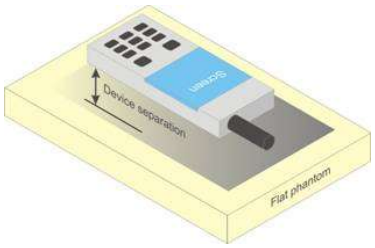

Figure 6-4
Sample Body-Worn Diagram

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

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

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

6.6 Extremity Exposure Configurations

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

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

6.7 Wireless Router Configurations

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

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

6.8 Phablet Configurations

For smart phones with a display diagonal dimension > 150 mm or an overall diagonal dimension > 160 mm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04v01r03 should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and

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

6.9 UMPC Mini-Tablet Configurations

Small hand-held tablets (and devices of similar form factors that are designed primarily for interactive hand-held use next to or near the body of users) require body SAR and extremity SAR evaluation. These types of mini-tablets are normally optimized for mobile web access and multimedia use. UMPC test procedures are applicable for devices with displays and overall diagonal dimension ≤ 20 cm. Devices are to be set up according to KDB publication 941225 D07v01r02 requirements and are configured with maximum output power during SAR assessment for a worst case SAR evaluation.

Per KDB Publication 941225 D07v01r02, UMPC mini-tablet devices must be tested for all surfaces and edges ≤ 25 mm from a transmitting antenna. A test separation distance of 5 mm may be considered for 1g SAR. UMPC mini-tablet Front Side is excluded per FCC Guidance.

6.10 NFC Test Configurations

This device supported NFC transmission with accessory cover with pen attached. NFC SAR testing was performed with WPT accessory cover with pen attached on flat phantom in approved configurations per FCC KDB Inquiry.

7 RF EXPOSURE LIMITS

7.1 Uncontrolled Environment

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

7.2 Controlled Environment

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

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

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

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

8 FCC MEASUREMENT PROCEDURES

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

8.1 Measured and Reported SAR

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

8.2 3G SAR Test Reduction Procedure

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

8.3 Procedures Used to Establish RF Signal for SAR

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

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

8.4 SAR Measurement Conditions for UMTS

8.4.1 Output Power Verification

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

8.4.2 Head SAR Measurements

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

8.4.3 Body SAR Measurements

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

8.4.4 SAR Measurements with Rel 5 HSDPA

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

8.4.5 SAR Measurements with Rel 6 HSUPA

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

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

8.4.6 SAR Measurement Conditions for DC-HSDPA

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

8.5 SAR Measurement Conditions for LTE

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

8.5.1 Spectrum Plots for RB Configurations

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

8.5.2 MPR

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

8.5.3 A-MPR

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

8.5.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r04:

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

8.5.5 TDD

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

8.5.6 Downlink Only Carrier Aggregation

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

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

8.6 SAR Testing with 802.11 Transmitters

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

8.6.1 General Device Setup

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

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

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

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

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

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

8.6.4 Initial Test Position Procedure

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

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

8.6.5 2.4 GHz SAR Test Requirements

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

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

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

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

8.6.6 OFDM Transmission Mode and SAR Test Channel Selection

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

8.6.7 Initial Test Configuration Procedure

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

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

8.6.8 Subsequent Test Configuration Procedures

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

8.6.9 MIMO SAR considerations

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

9 RF CONDUCTED POWERS

Note: please refer to technical report 1M2105060048-01.C3K (Rev 2) for all additional RF conducted Powers.

9.1 NR Conducted Powers

Note: 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 appendix F.

9.1.1 NR Band n41

Table 9-1
NR Band n41 MIMO4 Antenna Measured P_{max} for DSI =2 (Head) - 100 MHz Bandwidth

NR Band n41 100 MHz Bandwidth					
			Channel		
Modulation	RB Size	RB Offset	518598 (2592.99 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
DFT-s-OFDM π/2 BPSK	1	1	19.46	0	0.0
	1	137	19.34		0.0
	1	271	19.21		0.0
	135	0	19.58	0-0.5	0.5
	135	69	19.38	0	0.0
	135	138	19.38	0-0.5	0.5
	270	0	19.47		0.5
DFT-s-OFDM QPSK	1	1	**19.56**	0	0.0
	1	137	19.36		0.0
	1	271	18.51		0.0
	135	0	18.94	0-1	1.0
	135	69	**19.39**	0	0.0
	135	138	18.23	0-1	1.0
	270	0	18.65		1.0
DFT-s-OFDM 16QAM	1	1	19.07	0-1	1.0
CP-OFDM QPSK	1	1	18.80	0-1.5	1.5

Note: NR Band n41 at 100 MHz bandwidth does not support non-overlapping channels. Per FCC Guidance, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 9-2
NR Band n41 MIMO4 Antenna Measured P_{limit} for DSI = 4 (Flip/Closed Body/Extremity) - 100 MHz Bandwidth

NR Band n41 100 MHz Bandwidth					
			Channel		
Modulation	RB Size	RB Offset	518598 (2592.99 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
DFT-s-OFDM π/2 BPSK	1	1	15.31	0	0.0
	1	137	15.28		0.0
	1	271	14.95		0.0
	135	0	15.35	0-0.5	0.0
	135	69	15.25	0	0.0
	135	138	15.07	0-0.5	0.0
	270	0	15.27		0.0
DFT-s-OFDM QPSK	1	1	**15.41**	0	0.0
	1	137	15.26		0.0
	1	271	15.01		0.0
	135	0	**15.35**	0-1	0.0
	135	69	15.22	0	0.0
	135	138	15.08	0-1	0.0
	270	0	15.25		0.0
DFT-s-OFDM 16QAM	1	1	15.63	0-1	0.0
CP-OFDM QPSK	1	1	15.47	0-1.5	0.0

Note: NR Band n41 at 100 MHz bandwidth does not support non-overlapping channels. Per FCC Guidance, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 9-3
NR Band n41 MIMO4 Antenna Measured P_{limit} for DSI = 5 (Read UMPC Body) - 100 MHz Bandwidth

NR Band n41 100 MHz Bandwidth					
			Channel		
Modulation	RB Size	RB Offset	518598 (2592.99 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
DFT-s-OFDM π/2 BPSK	1	1	13.06	0	0.0
	1	137	12.98		0.0
	1	271	12.57		0.0
	135	0	13.15	0-0.5	0.0
	135	69	12.96	0	0.0
	135	138	12.79	0-0.5	0.0
	270	0	13.01		0.0
DFT-s-OFDM QPSK	1	1	**13.18**	0	0.0
	1	137	13.07		0.0
	1	271	12.59		0.0
	135	0	**13.10**	0-1	0.0
	135	69	12.94	0	0.0
	135	138	12.79	0-1	0.0
	270	0	13.00		0.0
DFT-s-OFDM 16QAM	1	1	13.33	0-1	0.0
CP-OFDM QPSK	1	1	13.21	0-1.5	0.0

Note: NR Band n41 at 100 MHz bandwidth does not support non-overlapping channels. Per FCC Guidance, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 9-4
NR Band n41 MIMO4 Antenna Measured P_{limit} for DSI = 6 (Flat Body) - 100 MHz Bandwidth

NR Band n41 100 MHz Bandwidth					
			Channel		
Modulation	RB Size	RB Offset	518598 (2592.99 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
DFT-s-OFDM π/2 BPSK	1	1	6.15	0	0.0
	1	137	5.96		0.0
	1	271	5.60		0.0
	135	0	6.09	0-0.5	0.0
	135	69	5.87	0	0.0
	135	138	5.74	0-0.5	0.0
	270	0	5.95		0.0
DFT-s-OFDM QPSK	1	1	**6.08**	0	0.0
	1	137	5.91		0.0
	1	271	5.51		0.0
	135	0	**6.15**	0-1	0.0
	135	69	5.89	0	0.0
	135	138	5.84	0-1	0.0
	270	0	6.03		0.0
DFT-s-OFDM 16QAM	1	1	6.31	0-1	0.0
CP-OFDM QPSK	1	1	6.20	0-1.5	0.0

Note: NR Band n41 at 100 MHz bandwidth does not support non-overlapping channels. Per FCC Guidance, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 9-5
NR Band n41 MIMO3 Antenna Measured P_{limit} for DSI =2 (Head) - 100 MHz Bandwidth

NR Band n41 100 MHz Bandwidth					
			Channel		
Modulation	RB Size	RB Offset	518598 (2592.99 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
DFT-s-OFDM π/2 BPSK	1	1	9.46	0	0.0
	1	137	9.67		0.0
	1	271	9.56		0.0
	135	0	9.60	0-0.5	0.0
	135	69	9.59	0	0.0
	135	138	9.57	0-0.5	0.0
	270	0	9.60		0.0
DFT-s-OFDM QPSK	1	1	9.47	0	0.0
	1	137	**9.68**		0.0
	1	271	9.53		0.0
	135	0	**9.63**	0-1	0.0
	135	69	9.62	0	0.0
	135	138	9.58	0-1	0.0
	270	0	9.58		0.0
DFT-s-OFDM 16QAM	1	1	9.23	0-1	0.0
CP-OFDM QPSK	1	1	9.41	0-1.5	0.0

Note: NR Band n41 at 100 MHz bandwidth does not support non-overlapping channels. Per FCC Guidance, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 9-6
NR Band n41 MIMO3 Antenna Measured P_{limit} for DSI = 4 (Flip/Closed Body/Extremity) - 100 MHz Bandwidth

NR Band n41 100 MHz Bandwidth					
			Channel		
Modulation	RB Size	RB Offset	518598 (2592.99 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
DFT-s-OFDM π/2 BPSK	1	1	15.55	0	0.0
	1	137	15.86		0.0
	1	271	15.71		0.0
	135	0	15.69	0-0.5	0.0
	135	69	15.78	0	0.0
	135	138	15.78	0-0.5	0.0
	270	0	15.77		0.0
DFT-s-OFDM QPSK	1	1	15.66	0	0.0
	1	137	**15.80**		0.0
	1	271	15.73		0.0
	135	0	15.75	0-1	0.0
	135	69	15.69	0	0.0
	135	138	**15.77**	0-1	0.0
	270	0	15.76		0.0
DFT-s-OFDM 16QAM	1	1	15.49	0-1	0.0
CP-OFDM QPSK	1	1	15.50	0-1.5	0.0

Note: NR Band n41 at 100 MHz bandwidth does not support non-overlapping channels. Per FCC Guidance, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 9-7
NR Band n41 MIMO3 Antenna Measured P_{limit} for DSI = 5 (Read UMPC Body) - 100 MHz Bandwidth

NR Band n41 100 MHz Bandwidth					
			Channel		
Modulation	RB Size	RB Offset	518598 (2592.99 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
DFT-s-OFDM π/2 BPSK	1	1	13.42	0	0.0
	1	137	13.70		0.0
	1	271	13.48		0.0
	135	0	13.55	0-0.5	0.0
	135	69	13.59	0	0.0
	135	138	13.60	0-0.5	0.0
	270	0	13.62		0.0
DFT-s-OFDM QPSK	1	1	13.36	0	0.0
	1	137	**13.67**		0.0
	1	271	13.40		0.0
	135	0	13.52	0-1	0.0
	135	69	**13.69**	0	0.0
	135	138	13.59	0-1	0.0
	270	0	13.66		0.0
DFT-s-OFDM 16QAM	1	1	13.35	0-1	0.0
CP-OFDM QPSK	1	1	13.31	0-1.5	0.0

Note: NR Band n41 at 100 MHz bandwidth does not support non-overlapping channels. Per FCC Guidance, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 9-8
NR Band n41 MIMO3 Antenna Measured P_{limit} for DSI = 6 (Flat Body) - 100 MHz Bandwidth

NR Band n41 100 MHz Bandwidth					
			Channel		
Modulation	RB Size	RB Offset	518598 (2592.99 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]		
DFT-s-OFDM π/2 BPSK	1	1	6.56	0	0.0
	1	137	6.64		0.0
	1	271	6.50		0.0
	135	0	6.60	0-0.5	0.0
	135	69	6.57	0	0.0
	135	138	6.55	0-0.5	0.0
	270	0	6.57		0.0
DFT-s-OFDM QPSK	1	1	6.45	0	0.0
	1	137	**6.59**		0.0
	1	271	6.46		0.0
	135	0	6.62	0-1	0.0
	135	69	**6.63**	0	0.0
	135	138	6.53	0-1	0.0
	270	0	6.58		0.0
DFT-s-OFDM 16QAM	1	1	6.27	0-1	0.0
CP-OFDM QPSK	1	1	6.50	0-1.5	0.0

Note: NR Band n41 at 100 MHz bandwidth does not support non-overlapping channels. Per FCC Guidance, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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
10/04/2021	750 Head	22.0	680	0.882	41.579	0.888	42.305	-0.68%	-1.72%
			695	0.886	41.552	0.889	42.227	-0.34%	-1.60%
			700	0.888	41.541	0.889	42.201	-0.11%	-1.56%
			710	0.891	41.514	0.890	42.149	0.11%	-1.51%
			725	0.896	41.455	0.891	42.071	0.56%	-1.46%
			750	0.904	41.373	0.894	41.942	1.12%	-1.36%
			770	0.910	41.326	0.895	41.838	1.68%	-1.22%
			785	0.916	41.296	0.896	41.760	2.23%	-1.11%
			800	0.922	41.254	0.897	41.682	2.79%	-1.03%
10/04/2021	835 Head	22.0	815	0.928	41.204	0.898	41.594	3.34%	-0.94%
			820	0.930	41.184	0.899	41.578	3.45%	-0.95%
			835	0.936	41.127	0.900	41.500	4.00%	-0.90%
			850	0.940	41.084	0.916	41.500	2.62%	-1.00%
10/04/2021	1750 Head	22.0	1710	1.348	39.441	1.348	40.142	0.00%	-1.75%
			1720	1.354	39.420	1.354	40.126	0.00%	-1.76%
			1745	1.369	39.359	1.368	40.087	0.07%	-1.82%
			1750	1.372	39.347	1.371	40.079	0.07%	-1.83%
			1770	1.383	39.309	1.383	40.047	0.00%	-1.84%
			1790	1.395	39.280	1.394	40.016	0.07%	-1.84%
10/04/2021	1900 Head	22.0	1850	1.426	39.176	1.400	40.000	1.86%	-2.06%
			1860	1.432	39.157	1.400	40.000	2.29%	-2.11%
			1880	1.444	39.129	1.400	40.000	3.14%	-2.18%
			1900	1.457	39.113	1.400	40.000	4.07%	-2.22%
			1905	1.460	39.111	1.400	40.000	4.29%	-2.22%
			1910	1.463	39.109	1.400	40.000	4.50%	-2.23%
10/03/2021	2450 Head	22.2	2300	1.745	39.186	1.670	39.500	4.49%	-0.79%
			2310	1.753	39.167	1.679	39.480	4.41%	-0.79%
			2320	1.761	39.150	1.687	39.460	4.39%	-0.79%
			2400	1.821	39.022	1.756	39.289	3.70%	-0.68%
			2450	1.859	38.938	1.800	39.200	3.28%	-0.67%
			2480	1.881	38.892	1.833	39.162	2.62%	-0.69%
			2500	1.896	38.860	1.855	39.136	2.21%	-0.71%
			2510	1.904	38.842	1.866	39.123	2.04%	-0.72%
			2535	1.925	38.801	1.893	39.092	1.69%	-0.74%
			2550	1.937	38.779	1.909	39.073	1.47%	-0.75%
			2560	1.945	38.764	1.920	39.060	1.30%	-0.76%
			2600	1.977	38.702	1.964	39.009	0.66%	-0.79%
			2650	2.017	38.623	2.018	38.945	-0.05%	-0.83%
			2680	2.042	38.583	2.051	38.907	-0.44%	-0.83%
			2700	2.058	38.553	2.073	38.882	-0.72%	-0.85%
10/01/2021	5200-5800 Head	20.5	5180	4.661	35.533	4.635	36.009	0.56%	-1.32%
			5190	4.670	35.515	4.645	35.998	0.54%	-1.34%
			5200	4.680	35.495	4.655	35.986	0.54%	-1.36%
			5210	4.693	35.467	4.666	35.975	0.58%	-1.41%
			5220	4.705	35.440	4.676	35.963	0.62%	-1.45%
			5240	4.731	35.390	4.696	35.940	0.75%	-1.53%
			5250	4.746	35.367	4.706	35.929	0.85%	-1.56%
			5260	4.761	35.350	4.717	35.917	0.93%	-1.58%
			5270	4.773	35.336	4.727	35.906	0.97%	-1.59%
			5280	4.785	35.324	4.737	35.894	1.01%	-1.59%
			5290	4.796	35.318	4.748	35.883	1.01%	-1.57%
			5300	4.805	35.314	4.758	35.871	0.99%	-1.55%
			5310	4.817	35.304	4.768	35.860	1.03%	-1.55%
			5320	4.829	35.287	4.778	35.849	1.07%	-1.57%
			5500	5.045	34.981	4.963	35.643	1.65%	-1.86%
			5510	5.060	34.967	4.973	35.632	1.75%	-1.87%
			5520	5.075	34.955	4.983	35.620	1.85%	-1.87%
			5530	5.090	34.944	4.994	35.609	1.92%	-1.87%
			5540	5.103	34.934	5.004	35.597	1.98%	-1.86%
			5550	5.116	34.922	5.014	35.586	2.03%	-1.87%
			5560	5.127	34.910	5.024	35.574	2.05%	-1.87%
			5580	5.146	34.867	5.045	35.551	2.00%	-1.92%
			5600	5.170	34.815	5.065	35.529	2.07%	-2.01%
			5610	5.184	34.792	5.076	35.518	2.13%	-2.04%
			5620	5.198	34.772	5.086	35.506	2.20%	-2.07%
			5640	5.223	34.748	5.106	35.483	2.29%	-2.07%
			5660	5.248	34.737	5.127	35.460	2.36%	-2.04%
			5670	5.257	34.732	5.137	35.449	2.34%	-2.02%
			5680	5.264	34.715	5.147	35.437	2.27%	-2.04%
			5690	5.274	34.684	5.158	35.426	2.25%	-2.09%
			5700	5.285	34.654	5.168	35.414	2.26%	-2.15%
			5710	5.297	34.632	5.178	35.403	2.30%	-2.18%
			5720	5.311	34.610	5.188	35.391	2.37%	-2.21%
			5745	5.343	34.555	5.214	35.363	2.47%	-2.28%
			5750	5.349	34.550	5.219	35.357	2.49%	-2.28%
			5755	5.354	34.545	5.224	35.351	2.49%	-2.28%
			5765	5.367	34.536	5.234	35.340	2.54%	-2.28%
			5775	5.376	34.522	5.245	35.329	2.50%	-2.28%
			5785	5.387	34.503	5.255	35.317	2.51%	-2.30%
			5795	5.397	34.482	5.265	35.305	2.51%	-2.33%
			5800	5.402	34.470	5.270	35.300	2.50%	-2.35%
			5800	5.402	34.470	5.270	35.300	2.50%	-2.35%
			5805	5.407	34.459	5.275	35.294	2.50%	-2.37%
			5825	5.422	34.405	5.296	35.271	2.38%	-2.46%

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
10/03/2021	835 Body	20.4	815	0.926	54.743	0.968	55.271	-4.34%	-0.96%
			820	0.931	54.692	0.969	55.258	-3.92%	-1.02%
			835	0.947	54.545	0.970	55.200	-2.37%	-1.19%
			850	0.963	54.402	0.988	55.154	-2.53%	-1.36%
09/30/2021	1900 Body	23.8	1850	1.512	51.671	1.520	53.300	-0.53%	-3.06%
			1860	1.524	51.638	1.520	53.300	0.26%	-3.12%
			1880	1.548	51.566	1.520	53.300	1.84%	-3.25%
			1900	1.571	51.494	1.520	53.300	3.36%	-3.39%
			1905	1.577	51.475	1.520	53.300	3.75%	-3.42%
			1910	1.583	51.457	1.520	53.300	4.14%	-3.46%
10/04/2021	1900 Body	23.9	1850	1.482	51.044	1.520	53.300	-2.50%	-4.23%
			1860	1.493	50.981	1.520	53.300	-1.78%	-4.35%
			1880	1.517	50.899	1.520	53.300	-0.20%	-4.50%
			1900	1.541	50.885	1.520	53.300	1.38%	-4.53%
			1905	1.547	50.889	1.520	53.300	1.78%	-4.52%
			1910	1.552	50.891	1.520	53.300	2.11%	-4.52%
09/28/2021	2450 Body	20.3	2300	1.818	54.436	1.809	52.900	0.50%	2.90%
			2310	1.831	54.413	1.816	52.887	0.83%	2.89%
			2320	1.843	54.381	1.826	52.873	0.93%	2.85%
			2400	1.954	54.116	1.902	52.767	2.73%	2.56%
			2450	2.025	53.930	1.950	52.700	3.85%	2.33%
			2480	2.068	53.812	1.993	52.662	3.76%	2.18%
			2500	2.096	53.740	2.021	52.636	3.71%	2.10%
			2510	2.111	53.704	2.035	52.623	3.73%	2.05%
			2535	2.148	53.608	2.071	52.592	3.72%	1.93%
			2550	2.169	53.546	2.092	52.573	3.68%	1.85%
			2560	2.184	53.506	2.106	52.560	3.70%	1.80%
			2600	2.239	53.361	2.163	52.509	3.51%	1.62%
			2650	2.310	53.140	2.234	52.445	3.40%	1.33%
			2680	2.354	53.038	2.277	52.407	3.38%	1.20%
09/13/2021	2450 Body	23.7	2300	1.865	52.764	1.809	52.900	3.10%	-0.26%
			2310	1.877	52.735	1.816	52.887	3.36%	-0.29%
			2320	1.889	52.706	1.826	52.873	3.45%	-0.32%
			2400	1.983	52.492	1.902	52.767	4.26%	-0.52%
			2450	2.042	52.355	1.950	52.700	4.72%	-0.65%
			2480	2.077	52.282	1.993	52.662	4.21%	-0.72%
			2500	2.102	52.226	2.021	52.636	4.01%	-0.78%
			2510	2.114	52.194	2.035	52.623	3.88%	-0.82%
			2535	2.145	52.118	2.071	52.592	3.57%	-0.90%
			2550	2.164	52.074	2.092	52.573	3.44%	-0.95%
			2560	2.176	52.047	2.106	52.560	3.32%	-0.98%
			2600	2.224	51.930	2.163	52.509	2.82%	-1.10%
			2650	2.284	51.772	2.234	52.445	2.24%	-1.28%
			2680	2.321	51.679	2.277	52.407	1.93%	-1.39%
			2700	2.345	51.613	2.305	52.382	1.74%	-1.47%
09/27/2021	5200-5800 Body	20.0	5180	5.335	49.858	5.276	49.041	1.12%	1.67%
			5190	5.350	49.843	5.288	49.028	1.17%	1.66%
			5200	5.366	49.826	5.299	49.014	1.26%	1.66%
			5210	5.383	49.811	5.311	49.001	1.36%	1.65%
			5220	5.400	49.790	5.323	48.987	1.45%	1.64%
			5240	5.429	49.750	5.346	48.960	1.55%	1.61%
			5250	5.445	49.730	5.358	48.947	1.62%	1.60%
			5260	5.457	49.711	5.369	48.933	1.64%	1.59%
			5270	5.468	49.699	5.381	48.919	1.62%	1.59%
			5280	5.481	49.658	5.393	48.906	1.63%	1.54%
			5290	5.494	49.626	5.404	48.892	1.67%	1.50%
			5300	5.508	49.606	5.416	48.879	1.70%	1.49%
			5310	5.522	49.591	5.428	48.865	1.73%	1.49%
			5320	5.535	49.576	5.439	48.851	1.77%	1.48%
			5500	5.795	49.183	5.650	48.607	2.57%	1.19%
			5510	5.811	49.160	5.661	48.594	2.65%	1.16%
			5520	5.828	49.134	5.673	48.580	2.73%	1.14%
			5530	5.845	49.114	5.685	48.566	2.81%	1.13%
			5540	5.861	49.087	5.696	48.553	2.90%	1.10%
			5550	5.877	49.064	5.708	48.539	2.96%	1.08%
			5560	5.895	49.044	5.720	48.526	3.06%	1.07%
			5580	5.926	49.013	5.743	48.499	3.19%	1.06%
			5600	5.954	48.976	5.766	48.471	3.26%	1.04%
			5610	5.970	48.956	5.778	48.458	3.32%	1.03%
			5620	5.985	48.933	5.790	48.444	3.37%	1.01%
			5640	6.013	48.895	5.813	48.417	3.44%	0.99%
			5660	6.048	48.845	5.837	48.390	3.61%	0.94%
			5670	6.065	48.834	5.848	48.376	3.71%	0.95%
			5680	6.081	48.825	5.860	48.363	3.77%	0.96%
			5690	6.096	48.811	5.872	48.349	3.81%	0.96%
			5700	6.111	48.792	5.883	48.336	3.88%	0.94%
			5710	6.125	48.773	5.895	48.322	3.90%	0.93%
			5720	6.141	48.759	5.907	48.309	3.96%	0.93%
			5745	6.181	48.707	5.936	48.275	4.13%	0.89%
			5750	6.189	48.697	5.942	48.268	4.16%	0.89%
			5755	6.196	48.687	5.947	48.261	4.19%	0.88%
			5765	6.210	48.661	5.959	48.248	4.21%	0.86%
			5775	6.222	48.648	5.971	48.234	4.20%	0.86%
			5785	6.236	48.637	5.982	48.220	4.25%	0.86%
			5795	6.253	48.637	5.994	48.207	4.32%	0.89%
			5800	6.261	48.632	6.000	48.200	4.35%	0.90%
			5805	6.268	48.623	6.006	48.193	4.36%	0.89%
			5825	6.295	48.572	6.029	48.166	4.41%	0.84%

Table 10-3
Measured 13 MHz Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
09/08/2021	13 MHz	21.2	12	0.744	52.746	0.750	55.000	-0.80%	-4.10%
			13	0.744	53.216	0.750	55.000	-0.80%	-3.24%
			14	0.744	53.284	0.750	55.000	-0.80%	-3.12%

Per FCC Guidance, the IEC 30 MHz target values were used for the evaluation.

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

10.2 Test System Verification

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

Table 10-4
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 (%)
A	750	HEAD	10/04/2021	24.0	22.0	0.20	1003	7406	1.640	8.78	8.200	-6.61%
A	835	HEAD	10/04/2021	24.0	22.0	0.20	4d132	7406	2.030	9.66	10.150	5.07%
A	1750	HEAD	10/04/2021	24.0	22.0	0.10	1150	7406	3.840	36.50	38.400	5.21%
A	1900	HEAD	10/04/2021	24.0	22.0	0.10	5d080	7406	4.320	39.80	43.200	8.54%
B	2450	HEAD	10/03/2021	24.1	22.2	0.10	981	7660	4.920	52.30	49.200	-5.93%
B	2600	HEAD	10/03/2021	24.1	22.2	0.10	1071	7660	5.400	56.10	54.000	-3.74%
J	5250	HEAD	10/01/2021	19.5	20.5	0.05	1057	7526	3.730	79.70	74.600	-6.40%
J	5600	HEAD	10/01/2021	19.5	20.5	0.05	1057	7526	4.010	83.80	80.200	-4.30%
J	5750	HEAD	10/01/2021	19.5	20.5	0.05	1057	7526	3.730	80.10	74.600	-6.87%
H	835	BODY	10/03/2021	21.5	20.9	0.20	4d133	7409	2.020	9.75	10.100	3.59%
P	1900	BODY	09/30/2021	21.3	21.9	0.10	5d148	7410	4.090	39.10	40.900	4.60%
P	1900	BODY	10/04/2021	21.9	22.0	0.10	5d148	7410	4.180	39.10	41.800	6.91%
K	2450	BODY	09/13/2021	22.2	22.2	0.10	981	3914	5.010	50.10	50.100	0.00%
L	2450	BODY	09/28/2021	20.7	20.6	0.10	797	7539	4.940	49.40	49.400	0.00%
K	2600	BODY	09/13/2021	22.2	22.2	0.10	1071	3914	5.580	54.30	55.800	2.76%
L	2600	BODY	09/28/2021	20.7	20.6	0.10	1004	7539	5.450	55.40	54.500	-1.62%
J	5250	BODY	09/27/2021	19.7	20.0	0.05	1057	7526	3.880	74.30	77.600	4.44%
J	5600	BODY	09/27/2021	19.7	20.0	0.05	1057	7526	4.180	77.40	83.600	8.01%
J	5750	BODY	09/27/2021	19.7	20.0	0.05	1057	7526	3.760	72.80	75.200	3.30%

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 (%)
H	835	BODY	10/03/2021	21.5	20.9	0.20	4d133	7409	1.330	6.40	6.650	3.91%
L	2450	BODY	09/28/2021	20.7	20.6	0.10	797	7539	2.240	23.40	22.400	-4.27%
L	2600	BODY	09/28/2021	20.7	20.6	0.10	1004	7539	2.380	24.80	23.800	-4.03%
J	5250	BODY	09/27/2021	19.7	20.0	0.05	1057	7526	1.080	20.70	21.600	4.35%
J	5600	BODY	09/27/2021	19.7	20.0	0.05	1057	7526	1.150	21.40	23.000	7.48%
J	5750	BODY	09/27/2021	19.7	20.0	0.05	1057	7526	1.050	20.00	21.000	5.00%

Table 10-6
System Verification Results – 13 MHz

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 (%)
K	13	HEAD	09/08/2021	22.2	21.2	1.00	1002	3914	0.514	0.544	0.514	-5.51%

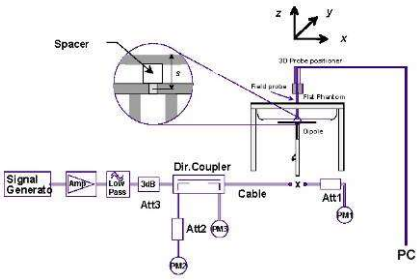

Figure 10-1
System Verification Setup Diagram (>13 MHz)

Figure 10-2
System Verification Setup Photo (> 13 MHz)

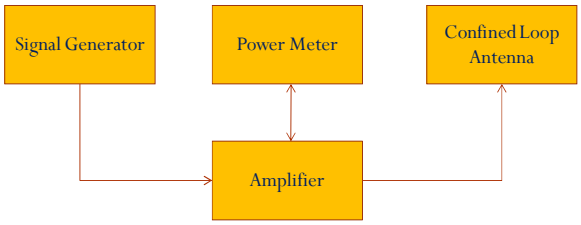

Figure 10-3
13 MHz System Verification Setup Diagram

11 SAR TEST NOTES

11.1 Standalone Head SAR Data

Table 11-1
GSM 850 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	Side	Test Position	Antenna Config.	DUT Configuration	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																	
836.60	190	GSM 850	GPRS	33.5	31.61	WPT	-0.02	Right	Cheek	South	Flip	J2211	2	1:4.15	0.271	1.545	0.419	A1
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
UMTS 1900 Head SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	Side	Test Position	Antenna Config.	DUT Configuration	Device Serial Number	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																
1880.00	9400	UMTS 1900	RMC	25.3	24.46	WPT	-0.02	Right	Cheek	South	Flip	J2211	1:1	0.703	1.213	0.853	A2
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 14 Head SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna Config.	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																					
793.00	23330	Mid	LTE Band 14	10	Flip	18.5	18.09	WPT	-0.14	0	Left	Cheek	North	QPSK	50	0	L8211	1:1	0.622	1.099	0.684	A3
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 66 (AWS) Head SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna Config.	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																					
1720.00	132072	Low	LTE Band 66 (AWS)	20	Flip	25.3	23.79	WPT	0.01	0	Right	Cheek	South	QPSK	1	99	LE211	1:1	0.396	1.416	0.561	A4
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
NR Band n66 (AWS) Head SAR

MEASUREMENT RESULTS																							
FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Antenna Config	Power Drift [dB]	MPR [dB]	Side	Test Position	Cover Type	Waveform	Modulation	RB Size	RB Offset	Serial Number	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																						
1745.00	349000	Mid	NR Band n66 (AWS)	40	Flip	12.6	11.45	North	-0.06	0	Left	Cheek	WPT	CP-OFDM	QPSK	1	1	H7211	1:1	0.555	1.303	0.723	A5
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 n41 Head SAR

MEASUREMENT RESULTS																								
FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Antenna Config	Power Drift [dB]	MPR [dB]	Side	Test Position	Cover Type	Waveform	Modulation	RB Size	RB Offset	Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																			(W/kg)		(W/kg)	
2592.99	518598	Mid	NR Band n41	100	Flip	23.5	22.44	South	-0.19	0	Right	Cheek	WPT	DFT-S-OFDM	QPSK	1	137	HR211	1:1	0.311	1.276	0.397	A6
2592.99	518598	Mid	NR Band n41	100	Flip	21.0	19.56	MIMO04	-0.19	0	Right	Cheek	N/A	DFT-S-OFDM	QPSK	1	1	LG211	1:1	0.025	1.393	0.035	
2592.99	518598	Mid	NR Band n41	100	Flip	21.0	19.39	MIMO04	-0.02	0	Right	Cheek	N/A	DFT-S-OFDM	QPSK	135	69	LG211	1:1	0.022	1.449	0.032	
2592.99	518598	Mid	NR Band n41	100	Flip	19.5	18.80	MIMO04	0.16	1.5	Right	Cheek	N/A	CP-OFDM	QPSK	1	1	LG211	1:1	0.017	1.175	0.020	
2592.99	518598	Mid	NR Band n41	100	Flip	21.0	19.56	MIMO04	-0.09	0	Right	Tilt	N/A	DFT-S-OFDM	QPSK	1	1	LG211	1:1	0.008	1.393	0.011	
2592.99	518598	Mid	NR Band n41	100	Flip	21.0	19.39	MIMO04	0.09	0	Right	Tilt	N/A	DFT-S-OFDM	QPSK	135	69	LG211	1:1	0.007	1.449	0.010	
2592.99	518598	Mid	NR Band n41	100	Flip	21.0	19.56	MIMO04	-0.06	0	Left	Cheek	N/A	DFT-S-OFDM	QPSK	1	1	LG211	1:1	0.008	1.393	0.011	
2592.99	518598	Mid	NR Band n41	100	Flip	21.0	19.39	MIMO04	-0.18	0	Left	Cheek	N/A	DFT-S-OFDM	QPSK	135	69	LG211	1:1	0.011	1.449	0.016	
2592.99	518598	Mid	NR Band n41	100	Flip	21.0	19.56	MIMO04	-0.02	0	Left	Tilt	N/A	DFT-S-OFDM	QPSK	1	1	LG211	1:1	0.008	1.393	0.011	
2592.99	518598	Mid	NR Band n41	100	Flip	21.0	19.39	MIMO04	-0.13	0	Left	Tilt	N/A	DFT-S-OFDM	QPSK	135	69	LG211	1:1	0.004	1.449	0.006	
2592.99	518598	Mid	NR Band n41	100	Flip	21.0	19.56	MIMO04	0.04	0	Right	Cheek	WPT	DFT-S-OFDM	QPSK	1	1	LG211	1:1	0.065	1.393	0.091	
2592.99	518598	Mid	NR Band n41	100	Flip	11.0	9.68	MIMO03	-0.12	0	Right	Cheek	N/A	DFT-S-OFDM	QPSK	1	137	X2211	1:1	0.132	1.355	0.179	
2592.99	518598	Mid	NR Band n41	100	Flip	11.0	9.63	MIMO03	-0.09	0	Right	Cheek	N/A	DFT-S-OFDM	QPSK	135	0	X2211	1:1	0.139	1.371	0.191	
2592.99	518598	Mid	NR Band n41	100	Flip	11.0	9.41	MIMO03	-0.17	0	Right	Cheek	N/A	CP-OFDM	QPSK	1	1	X2211	1:1	0.130	1.442	0.187	
2592.99	518598	Mid	NR Band n41	100	Flip	11.0	9.68	MIMO03	-0.01	0	Right	Tilt	N/A	DFT-S-OFDM	QPSK	1	137	X2211	1:1	0.125	1.355	0.169	
2592.99	518598	Mid	NR Band n41	100	Flip	11.0	9.63	MIMO03	-0.09	0	Right	Tilt	N/A	DFT-S-OFDM	QPSK	135	0	X2211	1:1	0.128	1.371	0.175	
2592.99	518598	Mid	NR Band n41	100	Flip	11.0	9.68	MIMO03	-0.02	0	Left	Cheek	N/A	DFT-S-OFDM	QPSK	1	137	X2211	1:1	0.032	1.355	0.043	
2592.99	518598	Mid	NR Band n41	100	Flip	11.0	9.63	MIMO03	-0.10	0	Left	Cheek	N/A	DFT-S-OFDM	QPSK	135	0	X2211	1:1	0.025	1.371	0.034	
2592.99	518598	Mid	NR Band n41	100	Flip	11.0	9.68	MIMO03	0.04	0	Left	Tilt	N/A	DFT-S-OFDM	QPSK	1	137	X2211	1:1	0.037	1.355	0.050	
2592.99	518598	Mid	NR Band n41	100	Flip	11.0	9.63	MIMO03	0.10	0	Left	Tilt	N/A	DFT-S-OFDM	QPSK	135	0	X2211	1:1	0.028	1.371	0.038	
2592.99	518598	Mid	NR Band n41	100	Flip	11.0	9.63	MIMO03	0.03	0	Right	Cheek	WPT	DFT-S-OFDM	QPSK	135	0	X2211	1:1	0.117	1.371	0.160	
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
NII SISO Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	Side	Test Position	Antenna Config.	DUT Configuration	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)			(W/kg)	
5280	56	802.11a	OFDM	20	18.0	17.91	None	0.12	Right	Cheek	1	Flip	HD211	6	99.1	0.017	1.021	1.009	0.018	
5290	58	802.11ac	OFDM	80	12.0	10.79	WPT	-0.19	Right	Tilt	2	Flip	HD211	29.3	99.6	0.194	1.321	1.004	**0.257**	A7
5720	144	802.11a	OFDM	20	18.0	17.98	None	-0.17	Right	Cheek	1	Flip	HD211	6	99.1	0.028	1.005	1.009	0.028	
5825	165	802.11a	OFDM	20	18.0	17.91	None	-0.19	Right	Cheek	1	Flip	HD211	6	99.1	0.027	1.021	1.009	0.028	
5825	165	802.11a	OFDM	20	18.0	17.91	WPT	0.12	Left	Cheek	1	Flip	HD211	6	99.1	0.047	1.021	1.009	0.048	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram											

11.1 Standalone Body-Worn SAR Data

Table 11-8
GSM Flip Configuration Body-Worn SAR Data

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	Position	Spacing	Antenna Config.	DUT Configuration	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
848.80	251	GSM 850	GPRS	32.0	31.51	WPT	-0.14	Body	10 mm	South	Flip	J2211	2	1:4.15	front	0.770	1.119	0.862	A8
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 11-9
UMTS Flip Configuration Body-Worn SAR Data

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	Position	Spacing	Antenna Config.	DUT Configuration	Device Serial Number	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.														(W/kg)		(W/kg)	
836.60	4183	UMTS 850	RMC	25.3	24.68	WPT	0.04	Body	10 mm	South	Flip	GH211	1:1	front	0.808	1.153	0.932	A9
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 11-10
LTE Band 5 Flip Configuration Body-Worn SAR

MEASUREMENT RESULTS																												
1 CC Uplink | 2 CC Uplink	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
		MHz	Ch.																					
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	Flip	25.3	24.94	WPT	-0.05	0	South	JJ211	QPSK	1	49	10 mm	front	1:1	0.944	1.086	1.025	A10
	SCC	843.70	20597			5										1	0							
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-11
LTE Band 25 Flip Configuration Body-Worn SAR

MEASUREMENT RESULTS																							
FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																					
1860.00	26140	Low	LTE Band 25 (PCS)	20	Flip	19.7	18.43	WPT	-0.03	0	North	JW211	QPSK	1	99	10 mm	front	1:1	0.830	1.340	1.112	A11
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
NR n25 Flip Configuration Body-Worn SAR

MEASUREMENT RESULTS																							
FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Antenna Config	Power Drift [dB]	MPR [dB]	Cover Type	Serial Number	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																						
1882.50	376500	Mid	NR Band n25 (PCS)	40	Flip	21.6	19.78	South	-0.04	0	WPT	KF211	CP-OFDM	QPSK	1	1	10 mm	front	1:1	0.589	1.521	0.896	A12
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 11-13
NR n41 Flip Configuration Body-Worn SAR

MEASUREMENT RESULTS																							
FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Antenna Config	Power Drift [dB]	MPR [dB]	Cover Type	Serial Number	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																						
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.41	MIMO04	-0.06	0	N/A	LG211	DFT-S-OFDM	QPSK	1	1	10 mm	back	1:1	0.068	1.442	0.098	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.35	MIMO04	0.03	0	N/A	LG211	DFT-S-OFDM	QPSK	135	0	10 mm	back	1:1	0.064	1.462	0.094	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.41	MIMO04	-0.04	0	N/A	LG211	DFT-S-OFDM	QPSK	1	1	10 mm	front	1:1	0.205	1.442	0.296	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.35	MIMO04	-0.02	0	N/A	LG211	DFT-S-OFDM	QPSK	135	0	10 mm	front	1:1	0.214	1.462	0.313	A13
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.47	MIMO04	0.05	0	N/A	LG211	CP-OFDM	QPSK	1	1	10 mm	front	1:1	0.172	1.422	0.245	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.35	MIMO04	0.17	0	WPT	LG211	DFT-S-OFDM	QPSK	135	0	10 mm	front	1:1	0.166	1.462	0.243	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.80	MIMO03	-0.06	0	N/A	X2211	DFT-S-OFDM	QPSK	1	137	10 mm	back	1:1	0.016	1.318	0.021	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.77	MIMO03	-0.05	0	N/A	X2211	DFT-S-OFDM	QPSK	135	138	10 mm	back	1:1	0.017	1.327	0.023	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.80	MIMO03	-0.03	0	N/A	X2211	DFT-S-OFDM	QPSK	1	137	10 mm	front	1:1	0.076	1.318	0.100	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.77	MIMO03	0.01	0	N/A	X2211	DFT-S-OFDM	QPSK	135	138	10 mm	front	1:1	0.068	1.327	0.090	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.50	MIMO03	-0.06	0	N/A	X2211	CP-OFDM	QPSK	1	1	10 mm	front	1:1	0.079	1.413	0.112	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.50	MIMO03	-0.03	0	WPT	X2211	CP-OFDM	QPSK	1	1	10 mm	front	1:1	0.082	1.413	0.116	
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 11-14
NR n41 Closed Configuration Body-Worn SAR

MEASUREMENT RESULTS																							
FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Antenna Config	Power Drift [dB]	MPR [dB]	Serial Number	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																					
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.41	MIMO04	0.06	0	LG211	DFT-S-OFDM	QPSK	1	1	10 mm	back	1:1	0.062	1.442	0.089	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.35	MIMO04	-0.03	0	LG211	DFT-S-OFDM	QPSK	135	0	10 mm	back	1:1	0.070	1.462	0.102	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.41	MIMO04	-0.02	0	LG211	DFT-S-OFDM	QPSK	1	1	10 mm	front	1:1	0.083	1.442	0.120	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.35	MIMO04	-0.05	0	LG211	DFT-S-OFDM	QPSK	135	0	10 mm	front	1:1	0.090	1.462	0.132	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.47	MIMO04	-0.03	0	LG211	CP-OFDM	QPSK	1	1	10 mm	front	1:1	0.077	1.422	0.109	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.80	MIMO03	-0.02	0	X2211	DFT-S-OFDM	QPSK	1	137	10 mm	back	1:1	0.022	1.318	0.029	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.77	MIMO03	-0.10	0	X2211	DFT-S-OFDM	QPSK	135	138	10 mm	back	1:1	0.028	1.327	0.037	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.50	MIMO03	-0.06	0	X2211	CP-OFDM	QPSK	1	1	10 mm	back	1:1	0.016	1.413	0.023	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.80	MIMO03	0.03	0	X2211	DFT-S-OFDM	QPSK	1	137	10 mm	front	1:1	0.025	1.318	0.033	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.77	MIMO03	0.03	0	X2211	DFT-S-OFDM	QPSK	135	138	10 mm	front	1:1	0.024	1.327	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 11-15
NII Flip Configuration Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	Spacing	Antenna Config.	DUT Configuration	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																			
5300	60	802.11a	OFDM	20	18.0	17.82	WPT	0.07	10 mm	2	Flip	HB211	6	front	99.2	0.211	1.042	1.008	0.222	
5720	144	802.11a	OFDM	20	18.0	17.98	WPT	-0.02	10 mm	1	Flip	HB211	6	front	99.1	0.316	1.005	1.009	0.320	A15
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram												

11.2 Standalone Hotspot SAR Data

Table 11-16
GPRS Flip Configuration Hotspot SAR Data

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	Position	Spacing	Antenna Config.	DUT Configuration	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																		
848.80	251	GSM 850	GPRS	32.0	31.51	WPT	-0.14	Body	10 mm	South	Flip	J2211	2	1:4.15	front	0.770	1.119	0.862	A8
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
UMTS Flip Configuration Hotspot SAR Data

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	Position	Spacing	Antenna Config.	DUT Configuration	Device Serial Number	Duty Cycle	Side	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																	
836.60	4183	UMTS 850	RMC	25.3	24.68	WPT	0.04	Body	10 mm	South	Flip	GH211	1:1	front	0.808	1.153	0.932	A9
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
LTE Band 5 (Cell) Flip Configuration Hotspot SAR

MEASUREMENT RESULTS																										
1 CC Uplink | 2 CC Uplink	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
		MHz	Ch.																					
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	Flip	25.3	24.94	WPT	-0.05	0	South	JJ211	QPSK	1	49	10 mm	front	1:1	0.944	1.086	1.025	A10
	SCC	843.70	20597			5										1	0							
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram																

Table 11-19
LTE Band 25 (PCS) Flip Configuration Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																					
1860.00	26140	Low	LTE Band 25 (PCS)	20	Flip	19.7	18.43	WPT	-0.03	0	North	JW211	QPSK	1	99	10 mm	front	1:1	0.830	1.340	1.112	A11
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
NR Band n25 (PCS) Flip Configuration Hotspot SAR

MEASUREMENT RESULTS																								
FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Antenna Config	Power Drift [dB]	MPR [dB]	Cover Type	Serial Number	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																			(W/kg)		(W/kg)	
1882.50	376500	Mid	NR Band n25 (PCS)	40	Flip	21.6	19.78	South	-0.04	0	WPT	KF211	CP-OFDM	QPSK	1	1	10 mm	front	1:1	0.589	1.521	0.896	A12
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram													

Table 11-21
NR Band n41 Flip Configuration Hotspot SAR

MEASUREMENT RESULTS																							
FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Antenna Config	Power Drift [dB]	MPR [dB]	Cover Type	Serial Number	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																			(W/kg)		(W/kg)	
2592.99	518598	Mid	NR Band n41	100	Flip	21.0	19.72	North	-0.04	0	WPT	M1211	CP-OFDM	QPSK	1	1	10 mm	top	1:1	0.678	1.343	0.911	A14
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.41	MIMO04	-0.06	0	N/A	LG211	DFT-S-OFDM	QPSK	1	1	10 mm	back	1:1	0.068	1.442	0.098	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.35	MIMO04	0.03	0	N/A	LG211	DFT-S-OFDM	QPSK	135	0	10 mm	back	1:1	0.064	1.462	0.094	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.41	MIMO04	-0.04	0	N/A	LG211	DFT-S-OFDM	QPSK	1	1	10 mm	front	1:1	0.205	1.442	0.296	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.35	MIMO04	-0.02	0	N/A	LG211	DFT-S-OFDM	QPSK	135	0	10 mm	front	1:1	0.214	1.462	0.313	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.47	MIMO04	0.05	0	N/A	LG211	CP-OFDM	QPSK	1	1	10 mm	front	1:1	0.172	1.422	0.245	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.41	MIMO04	0.00	0	N/A	LG211	DFT-S-OFDM	QPSK	1	1	10 mm	bottom	1:1	0.198	1.442	0.286	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.35	MIMO04	0.07	0	N/A	LG211	DFT-S-OFDM	QPSK	135	0	10 mm	bottom	1:1	0.149	1.462	0.218	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.35	MIMO04	0.17	0	WPT	LG211	DFT-S-OFDM	QPSK	135	0	10 mm	front	1:1	0.166	1.462	0.243	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.80	MIMO03	-0.06	0	N/A	X2211	DFT-S-OFDM	QPSK	1	137	10 mm	back	1:1	0.016	1.318	0.021	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.77	MIMO03	-0.05	0	N/A	X2211	DFT-S-OFDM	QPSK	135	138	10 mm	back	1:1	0.017	1.327	0.023	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.80	MIMO03	-0.03	0	N/A	X2211	DFT-S-OFDM	QPSK	1	137	10 mm	front	1:1	0.076	1.318	0.100	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.77	MIMO03	0.01	0	N/A	X2211	DFT-S-OFDM	QPSK	135	138	10 mm	front	1:1	0.068	1.327	0.090	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.50	MIMO03	-0.06	0	N/A	X2211	CP-OFDM	QPSK	1	1	10 mm	front	1:1	0.079	1.413	0.112	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.80	MIMO03	0.16	0	N/A	X2211	DFT-S-OFDM	QPSK	1	137	10 mm	top	1:1	0.065	1.318	0.086	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.77	MIMO03	-0.02	0	N/A	X2211	DFT-S-OFDM	QPSK	135	138	10 mm	top	1:1	0.069	1.327	0.092	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.80	MIMO03	-0.06	0	N/A	X2211	DFT-S-OFDM	QPSK	1	137	10 mm	left	1:1	0.011	1.318	0.014	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.77	MIMO03	0.17	0	N/A	X2211	DFT-S-OFDM	QPSK	135	138	10 mm	left	1:1	0.009	1.327	0.012	
2592.99	518598	Mid	NR Band n41	100	Flip	17.0	15.50	MIMO03	-0.03	0	WPT	X2211	CP-OFDM	QPSK	1	1	10 mm	front	1:1	0.082	1.413	0.116	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram													

Table 11-22
NR Band n41 Closed Configuration Hotspot SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Antenna Config	Power Drift [dB]	MPR [dB]	Serial Number	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																		(W/kg)		(W/kg)	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.41	MIMO04	0.06	0	LG211	DFT-S-OFDM	QPSK	1	1	10 mm	back	1:1	0.062	1.442	0.089	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.35	MIMO04	-0.03	0	LG211	DFT-S-OFDM	QPSK	135	0	10 mm	back	1:1	0.070	1.462	0.102	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.41	MIMO04	-0.02	0	LG211	DFT-S-OFDM	QPSK	1	1	10 mm	front	1:1	0.083	1.442	0.120	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.35	MIMO04	-0.05	0	LG211	DFT-S-OFDM	QPSK	135	0	10 mm	front	1:1	0.090	1.462	0.132	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.41	MIMO04	0.02	0	LG211	DFT-S-OFDM	QPSK	1	1	10 mm	bottom	1:1	0.128	1.442	0.185	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.35	MIMO04	-0.06	0	LG211	DFT-S-OFDM	QPSK	135	0	10 mm	bottom	1:1	0.155	1.462	0.227	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.47	MIMO04	0.07	0	LG211	CP-OFDM	QPSK	1	1	10 mm	bottom	1:1	0.131	1.422	0.186	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.80	MIMO03	-0.02	0	X2211	DFT-S-OFDM	QPSK	1	137	10 mm	back	1:1	0.022	1.318	0.029	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.77	MIMO03	-0.10	0	X2211	DFT-S-OFDM	QPSK	135	138	10 mm	back	1:1	0.028	1.327	0.037	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.80	MIMO03	0.03	0	X2211	DFT-S-OFDM	QPSK	1	137	10 mm	front	1:1	0.025	1.318	0.033	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.77	MIMO03	0.03	0	X2211	DFT-S-OFDM	QPSK	135	138	10 mm	front	1:1	0.024	1.327	0.032	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.80	MIMO03	-0.12	0	X2211	DFT-S-OFDM	QPSK	1	137	10 mm	top	1:1	0.069	1.318	0.091	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.77	MIMO03	-0.03	0	X2211	DFT-S-OFDM	QPSK	135	138	10 mm	top	1:1	0.073	1.327	0.097	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.50	MIMO03	0.03	0	X2211	CP-OFDM	QPSK	1	1	10 mm	top	1:1	0.082	1.413	0.116	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.80	MIMO03	0.06	0	X2211	DFT-S-OFDM	QPSK	1	137	10 mm	left	1:1	0.010	1.318	0.013	
2592.99	518598	Mid	NR Band n41	100	Closed	17.0	15.77	MIMO03	-0.11	0	X2211	DFT-S-OFDM	QPSK	135	138	10 mm	left	1:1	0.009	1.327	0.012	
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 Phablet SAR Data

Table 11-23
GPRS Phablet SAR Data

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	Position	Spacing	Antenna Config.	DUT Configuration	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
848.80	251	GSM 850	GPRS	32.0	31.51	WPT	-0.18	Body	0 mm	South	Flip	GH211	2	1:4.15	front	2.020	1.119	2.260	A16
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 11-24
LTE Band 7 Phablet SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	MPR [dB]	Antenna Config.	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																		(W/kg)		(W/kg)	
2560.00	21350	High	LTE Band 7	20	Flip	19.8	18.73	WPT	0.05	0	South	YT212	QPSK	50	0	0 mm	front	1:1	1.210	1.279	1.548	
2535.00	21100	Mid	LTE Band 7	20	Flip	21.0	19.71	WPT	-0.03	0	North	GH211	QPSK	1	99	0 mm	front	1:1	1.420	1.346	1.911	A17
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 11-25
NR Band n41 Phablet SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Antenna Config	Power Drift [dB]	MPR [dB]	Cover Type	Serial Number	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																			(W/kg)		(W/kg)	
2592.99	518598	Mid	NR Band n41	100	Flip	19.5	18.75	South	-0.03	0	WPT	LT211	DFT-S-OFDM	QPSK	1	137	0 mm	front	1:1	1.250	1.189	1.486	A18
2592.99	518598	Mid	NR Band n41	100	Flip	21.0	19.72	North	-0.06	0	WPT	YT212	CP-OFDM	QPSK	1	1	0 mm	top	1:1	1.180	1.343	1.585	
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 11-26
WLAN Phablet SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Cover Type	Power Drift [dB]	Spacing	Antenna Config.	DUT Configuration	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.															(W/kg)			(W/kg)	
5300	60	802.11a	OFDM	20	18.0	17.82	WPT	-0.10	0 mm	2	Flip	HB211	6	top	99.2	1.020	1.042	1.008	1.071	
5500	100	802.11a	OFDM	20	18.0	17.56	WPT	0.00	0 mm	1	Flip	HB211	6	bottom	99.1	1.890	1.107	1.009	2.111	A19
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Phablet 4.0 W/kg (mW/g) averaged over 10 grams											

11.4 Standalone Read UMPC Body SAR Data

Table 11-27
NR Band n41 UMPC Body SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Antenna Config	Power Drift [dB]	MPR [dB]	Serial Number	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																		(W/kg)		(W/kg)	
2592.99	518598	Mid	NR Band n41	100	Read	15.0	13.18	MIMO4	0.00	0	LG211	DFT-S-OFDM	QPSK	1	1	5 mm	back	1:1	0.281	1.521	0.427	
2592.99	518598	Mid	NR Band n41	100	Read	15.0	13.10	MIMO4	0.03	0	LG211	DFT-S-OFDM	QPSK	135	0	5 mm	back	1:1	0.291	1.549	0.451	A20
2592.99	518598	Mid	NR Band n41	100	Read	15.0	13.21	MIMO4	-0.02	0	LG211	CP-OFDM	QPSK	1	1	5 mm	back	1:1	0.273	1.510	0.412	
2592.99	518598	Mid	NR Band n41	100	Read	15.0	13.18	MIMO4	-0.05	0	LG211	DFT-S-OFDM	QPSK	1	1	5 mm	bottom	1:1	0.212	1.521	0.322	
2592.99	518598	Mid	NR Band n41	100	Read	15.0	13.10	MIMO4	-0.10	0	LG211	DFT-S-OFDM	QPSK	135	0	5 mm	bottom	1:1	0.219	1.549	0.339	
2592.99	518598	Mid	NR Band n41	100	Read	15.0	13.67	MIMO3	-0.01	0	X2211	DFT-S-OFDM	QPSK	1	137	5 mm	back	1:1	0.083	1.358	0.113	
2592.99	518598	Mid	NR Band n41	100	Read	15.0	13.69	MIMO3	0.05	0	X2211	DFT-S-OFDM	QPSK	135	69	5 mm	back	1:1	0.050	1.352	0.068	
2592.99	518598	Mid	NR Band n41	100	Read	15.0	13.67	MIMO3	-0.05	0	X2211	DFT-S-OFDM	QPSK	1	137	5 mm	top	1:1	0.133	1.358	0.181	
2592.99	518598	Mid	NR Band n41	100	Read	15.0	13.69	MIMO3	0.04	0	X2211	DFT-S-OFDM	QPSK	135	69	5 mm	top	1:1	0.088	1.352	0.119	
2592.99	518598	Mid	NR Band n41	100	Read	15.0	13.31	MIMO3	0.08	0	X2211	CP-OFDM	QPSK	1	1	5 mm	top	1:1	0.139	1.476	0.205	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram									

11.5 Standalone Flat Body SAR Data

Table 11-28
NR Band n41 Flat Body SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	DUT Configuration	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Antenna Config	Power Drift [dB]	MPR [dB]	Serial Number	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																		(W/kg)		(W/kg)	
2592.99	518598	Mid	NR Band n41	100	Flat	8.0	6.08	MIMO4	-0.13	0	LG211	DFT-S-OFDM	QPSK	1	1	0 mm	back	1:1	0.217	1.556	0.338	
2592.99	518598	Mid	NR Band n41	100	Flat	8.0	6.15	MIMO4	-0.06	0	LG211	DFT-S-OFDM	QPSK	135	0	0 mm	back	1:1	0.229	1.531	0.351	
2592.99	518598	Mid	NR Band n41	100	Flat	8.0	6.20	MIMO4	-0.03	0	LG211	CP-OFDM	QPSK	1	1	0 mm	back	1:1	0.240	1.514	0.363	A21
2592.99	518598	Mid	NR Band n41	100	Flat	8.0	6.08	MIMO4	0.08	0	LG211	DFT-S-OFDM	QPSK	1	1	0 mm	bottom	1:1	0.177	1.556	0.275	
2592.99	518598	Mid	NR Band n41	100	Flat	8.0	6.15	MIMO4	0.06	0	LG211	DFT-S-OFDM	QPSK	135	0	0 mm	bottom	1:1	0.196	1.531	0.300	
2592.99	518598	Mid	NR Band n41	100	Flat	8.0	6.59	MIMO3	0.01	0	X2211	DFT-S-OFDM	QPSK	1	137	0 mm	back	1:1	0.069	1.384	0.095	
2592.99	518598	Mid	NR Band n41	100	Flat	8.0	6.63	MIMO3	-0.02	0	X2211	DFT-S-OFDM	QPSK	135	69	0 mm	back	1:1	0.070	1.371	0.096	
2592.99	518598	Mid	NR Band n41	100	Flat	8.0	6.59	MIMO3	0.09	0	X2211	DFT-S-OFDM	QPSK	1	137	0 mm	top	1:1	0.136	1.384	0.188	
2592.99	518598	Mid	NR Band n41	100	Flat	8.0	6.63	MIMO3	-0.02	0	X2211	DFT-S-OFDM	QPSK	135	69	0 mm	top	1:1	0.127	1.371	0.174	
2592.99	518598	Mid	NR Band n41	100	Flat	8.0	6.50	MIMO3	0.15	0	X2211	CP-OFDM	QPSK	1	1	0 mm	top	1:1	0.146	1.413	0.206	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram									

11.6 Standalone NFC Body SAR Data

Table 11-29
NFC Body SAR

MEASUREMENT RESULTS									
FREQUENCY MHz	Mode	Power Drift [dB]	Spacing	Posture	Cover Type	Device Serial Number	Side	SAR (1g) (W/kg)	Plot #
13.56	NFC	-0.14	0 mm	Closed	WPT Accessory Case (with Pen)	YM212	front	0.000	
13.56	NFC	0.20	0 mm	Closed	WPT Accessory Case (with Pen)	YM212	bottom	0.000	
13.56	NFC	-0.15	0 mm	Closed	WPT Accessory Case (with Pen)	YM212	right	0.000	
13.56	NFC	-0.16	0 mm	Flip	WPT Accessory Case (with Pen)	YM212	front	0.000	
13.56	NFC	-0.17	0 mm	Flat	WPT Accessory Case (with Pen)	YM212	front of sleeve/pen	0.000	
13.56	NFC	0.15	0 mm	Flat	WPT Accessory Case (with Pen)	YM212	front	0.000	
13.56	NFC	-0.19	0 mm	Flat	WPT Accessory Case (with Pen)	YM212	bottom	0.000	A22
13.56	NFC	0.21	0 mm	Flat	WPT Accessory Case (with Pen)	YM212	left	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**					**Body** **1.6 W/kg (mW/g)** averaged over 1 gram				

11.7 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. 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).
9. Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" when it is in closed 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.

10. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the equivalent thresholds.
11. Per FCC KDB Publication 941225 D07v01r02, this device is considered a "UMPC mini-tablet" when it is in read configuration. UMPC body 1g SAR tests are required on all surfaces and edges ≤ 25 mm from a transmitting antenna except for Front side per KDB inquiry.
12. This device uses Qualcomm Smart Transmit for 2G/3G/4G/5G operations to control and manage transmitting power in real time to ensure RF Exposure compliance. Per FCC Guidance, compliance for was assessed at the minimum of the time averaged power and the maximum output power for each band/mode/exposure condition (DSI).
13. For head modes, for the highest SAR configuration for each channel in each band per test position found to exceed 0.6 W/kg in Flip configuration testing, SAR was additionally evaluated in the Flat configuration.
14. Per FCC Guidance, WWAN/WLAN modes were tested with the accessory cover for the worst case Head SAR and Body SAR at 10mm for each applicable antenna for flip posture for each applicable antenna from the original certification. The original compliance evaluation contains full data for all WWAN Modes.

GSM Test Notes:

1. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
2. Justification for reduced test configurations per KDB Publication 941225 D01v03r01 and October 2013 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all GPRS slot configurations. The configuration with the highest target frame averaged output power was evaluated for hotspot SAR. When the maximum frame-averaged powers are equivalent across two or more slots (within 0.25 dB), the configuration with the most number of time slots was tested.
3. GPRS was additionally evaluated for head and body-worn exposure conditions to address possible VoIP scenarios.

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.

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. 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.
5. 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.
6. For LTE Band 5, per FCC guidance, SAR was first measured with only a single carrier active in the uplink (carrier aggregation not active). For each exposure condition, the uplink CA scenario with two component carriers was additionally tested for the configuration with the highest SAR when carrier aggregation was not active. The SCC was configured with the closest available contiguous channel. The two component

carriers were configured so the resource blocks are physically allocated side by side to achieve the maximum output power.

NR Notes:

1. NR implementation supports 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 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. 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. 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.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg for 1g evaluations. See Section 8.6.6 for more information.
3. 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.

NFC Notes:

1. NFC SAR testing was performed with WPT accessory cover with pen attached on flat phantom in approved configurations per FCC KDB Inquiry.
2. NFC SAR test cases were determined through KDB inquiry.
3. At the start of the test, the pen was at 0% battery level to ensure WPT operations for the duration of the SAR tests.

12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

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

12.2 Simultaneous Transmission Procedures

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

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

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

For each position, the highest SAR value across all modes for the applicable cellular band antenna was considered for summation to determine simultaneous SAR test exclusion.

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

The modes/bands from the supplemental data were evaluated for simultaneous transmission compliance. Please refer to RF Exposure Technical Report S/N 1M2106210048-01.C3K for original compliance evaluation.

NFC can transmit simultaneously with all licensed and unlicensed transmitters. Since all SAR results are 0 W/kg, there is no further evaluation needed for simultaneous transmission scenarios involving NFC operations.

12.3 Head SAR Simultaneous Transmission Analysis – MIMO4 & MIMO3 Antennas

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

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 16.5 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	MIMO4 Antenna	0.091	0.035	0.328	0.126	0.419	0.454
	MIMO3 Antenna	0.191	0.035	0.328	0.226	0.519	0.554

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

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 18.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	MIMO4 Antenna	0.091	0.058	0.347	0.149	0.438	0.496
	MIMO3 Antenna	0.191	0.058	0.347	0.249	0.538	**0.596**

Table 12-3
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz Bluetooth (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Head SAR	MIMO4 Antenna	0.091	0.004	0.068	0.095	0.159
	MIMO3 Antenna	0.191	0.004	0.068	0.195	0.259

Table 12-4
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN and 5 GHz WLAN (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 16.5 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 18.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Head SAR	MIMO4 Antenna	0.091	0.035	0.328	0.058	0.347	0.859
	MIMO3 Antenna	0.191	0.035	0.328	0.058	0.347	**0.959**

Table 12-5
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN Antenna 1 and Bluetooth Antenna 2 (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 16.5 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 18.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Head SAR	MIMO4 Antenna	0.091	0.035	0.058	0.068	0.252
	MIMO3 Antenna	0.191	0.035	0.058	0.068	**0.352**

Table 12-6
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN Antenna 2 and Bluetooth Antenna 1 (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Head SAR	MIMO4 Antenna	0.091	0.328	0.347	0.004	0.770
	MIMO3 Antenna	0.191	0.328	0.347	0.004	**0.870**

Table 12-7
Simultaneous Transmission Scenario for Flip Configuration with 5 GHz WLAN and Bluetooth Antenna 1 (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 18.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Head SAR	MIMO4 Antenna	0.091	0.058	0.347	0.004	0.500
	MIMO3 Antenna	0.191	0.058	0.347	0.004	**0.600**

Table 12-8
Simultaneous Transmission Scenario for Flip Configuration with 5 GHz WLAN and Bluetooth Antenna 2 (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 18.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Head SAR	MIMO4 Antenna	0.091	0.058	0.347	0.068	0.564
	MIMO3 Antenna	0.191	0.058	0.347	0.068	**0.664**

Table 12-9
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN and Bluetooth Antenna 2 (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 16.5 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 18.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Head SAR	MIMO4 Antenna	0.091	0.035	0.058	0.347	0.068	0.599
	MIMO3 Antenna	0.191	0.035	0.058	0.347	0.068	**0.699**

Table 12-10
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN and Bluetooth Antenna 1 (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 18.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Head SAR	MIMO4 Antenna	0.091	0.328	0.058	0.347	0.004	0.828
	MIMO3 Antenna	0.191	0.328	0.058	0.347	0.004	**0.928**

12.4 Body-Worn Simultaneous Transmission Analysis Flip Configuration – MIMO4 & MIMO3 Antennas

Table 12-11
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body - Worn SAR	MIMO4 Antenna	0.313	0.094	0.064	0.407	0.377	0.471
	MIMO3 Antenna	0.116	0.094	0.064	0.210	0.180	0.274

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

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body - Worn SAR	MIMO4 Antenna	0.313	0.195	0.062	0.508	0.375	0.570
	MIMO3 Antenna	0.116	0.195	0.062	0.311	0.178	0.373

Table 12-13
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz Bluetooth (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Body - Worn SAR	MIMO4 Antenna	0.313	0.018	0.000	0.331	0.313
	MIMO3 Antenna	0.116	0.018	0.000	0.134	0.116

Table 12-14
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN and 5 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Body - Worn SAR	MIMO4 Antenna	0.313	0.094	0.064	0.195	0.062	**0.728**
	MIMO3 Antenna	0.116	0.094	0.064	0.195	0.062	0.531

Table 12-15
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN Antenna 1 and Bluetooth Antenna 2 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body - Worn SAR	MIMO4 Antenna	0.313	0.094	0.195	0.000	**0.602**
	MIMO3 Antenna	0.116	0.094	0.195	0.000	0.405

Table 12-16
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN Antenna 2 and Bluetooth Antenna 1 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body - Worn SAR	MIMO4 Antenna	0.313	0.064	0.062	0.018	**0.457**
	MIMO3 Antenna	0.116	0.064	0.062	0.018	0.260

Table 12-17
Simultaneous Transmission Scenario for Flip Configuration with 5 GHz WLAN and Bluetooth Antenna 1 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body - Worn SAR	MIMO4 Antenna	0.313	0.195	0.062	0.018	**0.588**
	MIMO3 Antenna	0.116	0.195	0.062	0.018	0.391

Table 12-18
Simultaneous Transmission Scenario for Flip Configuration with 5 GHz WLAN and Bluetooth Antenna 2 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body - Worn SAR	MIMO4 Antenna	0.313	0.195	0.062	0.000	**0.570**
	MIMO3 Antenna	0.116	0.195	0.062	0.000	0.373

Table 12-19
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN and Bluetooth Antenna 2 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Body - Worn SAR	MIMO4 Antenna	0.313	0.094	0.195	0.062	0.000	**0.664**
	MIMO3 Antenna	0.116	0.094	0.195	0.062	0.000	0.467

Table 12-20
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN and Bluetooth Antenna 1 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Body - Worn SAR	MIMO4 Antenna	0.313	0.064	0.195	0.062	0.018	**0.652**
	MIMO3 Antenna	0.116	0.064	0.195	0.062	0.018	0.455

12.5 Body-Worn Simultaneous Transmission Analysis Closed Configuration – MIMO4 & MIMO3 Antennas

Table 12-21
Simultaneous Transmission Scenario for Closed Configuration with 2.4 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body - Worn SAR	MIMO04 Antenna	0.132	0.066	0.052	0.198	0.184	**0.250**
	MIMO03 Antenna	0.037	0.066	0.052	0.103	0.089	0.155

Table 12-22
Simultaneous Transmission Scenario for Closed Configuration with 5 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body - Worn SAR	MIMO04 Antenna	0.132	0.305	0.061	0.437	0.193	**0.498**
	MIMO03 Antenna	0.037	0.305	0.061	0.342	0.098	0.403

Table 12-23
Simultaneous Transmission Scenario for Closed Configuration with 2.4 GHz Bluetooth (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Body - Worn SAR	MIMO04 Antenna	0.132	0.015	0.002	**0.147**	0.134
	MIMO03 Antenna	0.037	0.015	0.002	0.052	0.039

Table 12-24
Simultaneous Transmission Scenario for Closed Configuration with 2.4 GHz WLAN and 5 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Body - Worn SAR	MIMO04 Antenna	0.132	0.066	0.052	0.305	0.061	**0.616**
	MIMO03 Antenna	0.037	0.066	0.052	0.305	0.061	0.521

Table 12-25
Simultaneous Transmission Scenario for Closed Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN Antenna 1 and Bluetooth Antenna 2 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body - Worn SAR	MIMO04 Antenna	0.132	0.066	0.305	0.002	**0.505**
	MIMO03 Antenna	0.037	0.066	0.305	0.002	0.410

Table 12-26
Simultaneous Transmission Scenario for Closed Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN Antenna 2 and Bluetooth Antenna 1 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body - Worn SAR	MIMO04 Antenna	0.132	0.052	0.061	0.015	**0.260**
	MIMO03 Antenna	0.037	0.052	0.061	0.015	0.165

Table 12-27
Simultaneous Transmission Scenario for Closed Configuration with 5 GHz WLAN and Bluetooth Antenna 1 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body - Worn SAR	MIMO04 Antenna	0.132	0.305	0.061	0.015	**0.513**
	MIMO03 Antenna	0.037	0.305	0.061	0.015	0.418

Table 12-28
Simultaneous Transmission Scenario for Closed Configuration with 5 GHz WLAN and Bluetooth Antenna 2 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body - Worn SAR	MIMO04 Antenna	0.132	0.305	0.061	0.002	**0.500**
	MIMO03 Antenna	0.037	0.305	0.061	0.002	0.405

Table 12-29
Simultaneous Transmission Scenario for Closed Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN and Bluetooth Antenna 2 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Body - Worn SAR	MIMO04 Antenna	0.132	0.066	0.305	0.061	0.002	**0.566**
	MIMO03 Antenna	0.037	0.066	0.305	0.061	0.002	0.471

Table 12-30
Simultaneous Transmission Scenario for Closed Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN and Bluetooth Antenna 1 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Body - Worn SAR	MIMO04 Antenna	0.132	0.052	0.305	0.061	0.015	**0.565**
	MIMO03 Antenna	0.037	0.052	0.305	0.061	0.015	0.470

12.6 Hotspot SAR Simultaneous Transmission Analysis Flip Configuration – MIMO4 & MIMO3 Antennas

Table 12-31
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	MIMO4 Antenna	0.313	0.096	0.073	0.409	0.386	**0.482**
	MIMO3 Antenna	0.116	0.096	0.073	0.212	0.189	0.285

Table 12-32
Simultaneous Transmission Scenario for Flip Configuration with 5 GHz WLAN (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	MIMO4 Antenna	0.313	0.234	0.103	0.547	0.416	**0.650**
	MIMO3 Antenna	0.116	0.234	0.103	0.350	0.219	0.453

Table 12-33
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz Bluetooth (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Hotspot SAR	MIMO4 Antenna	0.313	0.018	0.006	**0.331**	0.319
	MIMO3 Antenna	0.116	0.018	0.006	0.134	0.122

Table 12-34
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN and 5 GHz WLAN (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	MIMO4 Antenna	0.313	0.096	0.073	0.234	0.103	**0.819**
	MIMO3 Antenna	0.116	0.096	0.073	0.234	0.103	0.622

Table 12-35
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN Antenna 1 and Bluetooth Antenna 2 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	MIMO4 Antenna	0.313	0.096	0.234	0.006	**0.649**
	MIMO3 Antenna	0.116	0.096	0.234	0.006	0.452

Table 12-36
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN Antenna 2 and Bluetooth Antenna 1 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	MIMO4 Antenna	0.313	0.073	0.103	0.018	**0.507**
	MIMO3 Antenna	0.116	0.073	0.103	0.018	0.310

Table 12-37
Simultaneous Transmission Scenario for Flip Configuration with 5 GHz WLAN and Bluetooth Antenna 1 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	MIMO4 Antenna	0.313	0.234	0.103	0.018	**0.668**
	MIMO3 Antenna	0.116	0.234	0.103	0.018	0.471

Table 12-38
Simultaneous Transmission Scenario for Flip Configuration with 5 GHz WLAN and Bluetooth Antenna 2 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	MIMO4 Antenna	0.313	0.234	0.103	0.006	**0.656**
	MIMO3 Antenna	0.116	0.234	0.103	0.006	0.459

Table 12-39
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN and Bluetooth Antenna 2 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	MIMO4 Antenna	0.313	0.096	0.234	0.103	0.006	**0.752**
	MIMO3 Antenna	0.116	0.096	0.234	0.103	0.006	0.555

Table 12-40
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN and Bluetooth Antenna 1 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	MIMO4 Antenna	0.313	0.073	0.234	0.103	0.018	**0.741**
	MIMO3 Antenna	0.116	0.073	0.234	0.103	0.018	0.544

12.7 Hotspot SAR Simultaneous Transmission Analysis Closed Configuration – MIMO4 & MIMO3 Antennas

Table 12-41
Simultaneous Transmission Scenario for Closed Configuration with 2.4 GHz WLAN (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	MIMO04 Antenna	0.227	0.066	0.079	0.293	0.306	**0.372**
	MIMO03 Antenna	0.116	0.066	0.079	0.182	0.195	0.261

Table 12-42
Simultaneous Transmission Scenario for Closed Configuration with 5 GHz WLAN (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	MIMO04 Antenna	0.227	0.335	0.104	0.562	0.331	**0.666**
	MIMO03 Antenna	0.116	0.335	0.104	0.451	0.220	0.555

Table 12-43
Simultaneous Transmission Scenario for Closed Configuration with 2.4 GHz Bluetooth (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	2	1+2	1+3
Hotspot SAR	MIMO04 Antenna	0.227	0.015	0.006	**0.242**	0.233
	MIMO03 Antenna	0.116	0.015	0.006	0.131	0.122

Table 12-44
Simultaneous Transmission Scenario for Closed Configuration with 2.4 GHz WLAN and 5 GHz WLAN (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	MIMO04 Antenna	0.227	0.066	0.079	0.335	0.104	**0.811**
	MIMO03 Antenna	0.116	0.066	0.079	0.335	0.104	0.700

Table 12-45
Simultaneous Transmission Scenario for Closed Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN Antenna 1 and Bluetooth Antenna 2 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	MIMO04 Antenna	0.227	0.066	0.335	0.006	**0.634**
	MIMO03 Antenna	0.116	0.066	0.335	0.006	0.523

Table 12-46
Simultaneous Transmission Scenario for Closed Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN Antenna 2 and Bluetooth Antenna 1 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	MIMO04 Antenna	0.227	0.079	0.104	0.015	**0.425**
	MIMO03 Antenna	0.116	0.079	0.104	0.015	0.314

Table 12-47
Simultaneous Transmission Scenario for Closed Configuration with 5 GHz WLAN and Bluetooth Antenna 1 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	MIMO04 Antenna	0.227	0.335	0.104	0.015	**0.681**
	MIMO03 Antenna	0.116	0.335	0.104	0.015	0.570

Table 12-48
Simultaneous Transmission Scenario for Closed Configuration with 5 GHz WLAN and Bluetooth Antenna 2 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	MIMO04 Antenna	0.227	0.335	0.104	0.006	**0.672**
	MIMO03 Antenna	0.116	0.335	0.104	0.006	0.561

Table 12-49
Simultaneous Transmission Scenario for Closed Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN and Bluetooth Antenna 2 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	MIMO04 Antenna	0.227	0.066	0.335	0.104	0.006	**0.738**
	MIMO03 Antenna	0.116	0.066	0.335	0.104	0.006	0.627

Table 12-50
Simultaneous Transmission Scenario for Closed Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN and Bluetooth Antenna 1 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	MIMO04 Antenna	0.227	0.079	0.335	0.104	0.015	**0.760**
	MIMO03 Antenna	0.116	0.079	0.335	0.104	0.015	0.649

12.8 UMPC Body SAR Simultaneous Transmission Analysis Read Configuration – MIMO4 & MIMO3 Antennas

Table 12-51
Simultaneous Transmission Scenario for Read Configuration with 2.4 GHz WLAN (UMPC Body at 0.5 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 7.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 7.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
UMPC Body SAR	MIMO04 Antenna	0.451	0.055	0.051	0.506	0.502	**0.557**
	MIMO03 Antenna	0.205	0.055	0.051	0.260	0.256	0.311

Table 12-52
Simultaneous Transmission Scenario for Read Configuration with 5 GHz WLAN (UMPC Body at 0.5 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 7.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 7.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
UMPC Body SAR	MIMO04 Antenna	0.451	0.174	0.063	0.625	0.514	**0.688**
	MIMO03 Antenna	0.205	0.174	0.063	0.379	0.268	0.442

Table 12-53
Simultaneous Transmission Scenario for Read Configuration with 2.4 GHz Bluetooth (UMPC Body at 0.5 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	2	1+2	1+3
UMPC Body SAR	MIMO04 Antenna	0.451	0.040	0.015	**0.491**	0.466
	MIMO03 Antenna	0.205	0.040	0.015	0.245	0.220

Table 12-54
Simultaneous Transmission Scenario for Read Configuration with 2.4 GHz WLAN and 5 GHz WLAN (UMPC Body at 0.5 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 7.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 7.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 7.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 7.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
UMPC Body SAR	MIMO04 Antenna	0.451	0.055	0.051	0.174	0.063	**0.794**
	MIMO03 Antenna	0.205	0.055	0.051	0.174	0.063	0.548

Table 12-55
Simultaneous Transmission Scenario for Read Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN Antenna 1 and Bluetooth Antenna 2 (UMPC Body at 0.5 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 7.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 7.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Body SAR	MIMO04 Antenna	0.451	0.055	0.174	0.015	**0.695**
	MIMO03 Antenna	0.205	0.055	0.174	0.015	0.449

Table 12-56
Simultaneous Transmission Scenario for Read Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN Antenna 2 and Bluetooth Antenna 1 (UMPC Body at 0.5 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 7.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 7.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Body SAR	MIMO04 Antenna	0.451	0.051	0.063	0.040	**0.605**
	MIMO03 Antenna	0.205	0.051	0.063	0.040	0.359

Table 12-57
Simultaneous Transmission Scenario for Read Configuration with 5 GHz WLAN and Bluetooth Antenna 1 (UMPC Body at 0.5 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 7.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 7.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Body SAR	MIMO04 Antenna	0.451	0.174	0.063	0.040	**0.728**
	MIMO03 Antenna	0.205	0.174	0.063	0.040	0.482

Table 12-58
Simultaneous Transmission Scenario for Read Configuration with 5 GHz WLAN and Bluetooth Antenna 2 (UMPC Body at 0.5 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 7.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 7.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
UMPC Body SAR	MIMO04 Antenna	0.451	0.174	0.063	0.015	**0.703**
	MIMO03 Antenna	0.205	0.174	0.063	0.015	0.457

Table 12-59
Simultaneous Transmission Scenario for Read Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN and Bluetooth Antenna 2 (UMPC Body at 0.5 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 7.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 7.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 7.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
UMPC Body SAR	MIMO04 Antenna	0.451	0.055	0.174	0.063	0.015	**0.758**
	MIMO03 Antenna	0.205	0.055	0.174	0.063	0.015	0.512

Table 12-60
Simultaneous Transmission Scenario for Read Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN and Bluetooth Antenna 1 (UMPC Body at 0.5 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 7.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 7.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 7.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
UMPC Body SAR	MIMO04 Antenna	0.451	0.051	0.174	0.063	0.040	**0.779**
	MIMO03 Antenna	0.205	0.051	0.174	0.063	0.040	0.533

12.9 Body SAR Simultaneous Transmission Analysis Flat Configuration – MIMO4 & MIMO3 Antennas

Table 12-61
Simultaneous Transmission Scenario for Flat Configuration with 2.4 GHz WLAN (Body at 0.0 cm)

Simult Tx	Configuration	MIMO4 Antenna SAR (W/kg)	2.4 GHz WLAN Ant 1 at 5.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 5.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body SAR	Back	0.363	0.113	0.042	0.476	0.405	0.518
	Top	0.400	0.400	0.119	0.800	0.519	0.919
	Bottom	0.300	0.090	0.400	0.390	0.700	0.790
	Right	0.400	0.400	0.400	0.800	0.800	**1.200**
	Left	0.400	0.400	0.400	0.800	0.800	**1.200**
Simult Tx	Configuration	MIMO3 Antenna SAR (W/kg)	2.4 GHz WLAN Ant 1 at 5.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 5.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body SAR	Back	0.096	0.113	0.042	0.209	0.138	0.251
	Top	0.206	0.400	0.119	0.606	0.325	0.725
	Bottom	0.400	0.090	0.400	0.490	0.800	0.890
	Right	0.400	0.400	0.400	0.800	0.800	**1.200**
	Left	0.400	0.400	0.400	0.800	0.800	**1.200**

Table 12-62
Simultaneous Transmission Scenario for Flat Configuration with 5 GHz WLAN (Body at 0.0 cm)

Simult Tx	Configuration	MIMO4 Antenna SAR (W/kg)	5 GHz WLAN Ant 1 at 2.5 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 2.5 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body SAR	Back	0.363	0.291	0.152	0.654	0.515	**0.806**
	Top	0.400	0.000	0.103	0.400	0.503	0.503
	Bottom	0.300	0.371	0.000	0.671	0.300	0.671
	Right	0.400	0.000	0.000	0.400	0.400	0.400
	Left	0.400	0.000	0.000	0.400	0.400	0.400
Simult Tx	Configuration	MIMO3 Antenna SAR (W/kg)	5 GHz WLAN Ant 1 at 2.5 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 2.5 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body SAR	Back	0.096	0.291	0.152	0.387	0.248	0.539
	Top	0.206	0.000	0.103	0.206	0.309	0.309
	Bottom	0.400	0.371	0.000	**0.771**	0.400	**0.771**
	Right	0.400	0.000	0.000	0.400	0.400	0.400
	Left	0.400	0.000	0.000	0.400	0.400	0.400

Table 12-63
Simultaneous Transmission Scenario for Flat Configuration with 2.4 GHz Bluetooth (Body at 0.0 cm)

Simult Tx	Configuration	MIMO4 Antenna SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Body SAR	Back	0.363	0.197	0.046	0.560	0.409
	Top	0.400	0.400	0.000	**0.800**	0.400
	Bottom	0.300	0.148	0.400	0.448	0.700
	Right	0.400	0.400	0.400	**0.800**	**0.800**
	Left	0.400	0.400	0.400	**0.800**	**0.800**
Simult Tx	Configuration	MIMO3 Antenna SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Body SAR	Back	0.096	0.197	0.046	0.293	0.142
	Top	0.206	0.400	0.000	0.606	0.206
	Bottom	0.400	0.148	0.400	0.548	**0.800**
	Right	0.400	0.400	0.400	**0.800**	**0.800**
	Left	0.400	0.400	0.400	**0.800**	**0.800**

Table 12-64
Simultaneous Transmission Scenario for Flat Configuration with 2.4 GHz WLAN and 5 GHz WLAN (Body at 0.0 cm)

Simult Tx	Configuration	MIMO4 Antenna SAR (W/kg)	2.4 GHz WLAN Ant 1 at 5.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 5.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 2.5 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 2.5 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	Back	0.363	0.113	0.042	0.291	0.152	0.961
	Top	0.400	0.400	0.119	0.000	0.103	1.022
	Bottom	0.300	0.090	0.400	0.371	0.000	1.161
	Right	0.400	0.400	0.400	0.000	0.000	**1.200**
	Left	0.400	0.400	0.400	0.000	0.000	**1.200**
Simult Tx	Configuration	MIMO3 Antenna SAR (W/kg)	2.4 GHz WLAN Ant 1 at 5.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 5.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 2.5 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 2.5 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	Back	0.096	0.113	0.042	0.291	0.152	0.694
	Top	0.206	0.400	0.119	0.000	0.103	0.828
	Bottom	0.400	0.090	0.400	0.371	0.000	**1.261**
	Right	0.400	0.400	0.400	0.000	0.000	1.200
	Left	0.400	0.400	0.400	0.000	0.000	1.200

Table 12-65
Simultaneous Transmission Scenario for Flat Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN Antenna 1 and Bluetooth Antenna 2 (Body at 0.0 cm)

Simult Tx	Configuration	MIMO4 Antenna SAR (W/kg)	2.4 GHz WLAN Ant 1 at 5.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 2.5 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body SAR	Back	0.363	0.113	0.291	0.046	0.813
	Top	0.400	0.400	0.000	0.000	0.800
	Bottom	0.300	0.090	0.371	0.400	1.161
	Right	0.400	0.400	0.000	0.400	**1.200**
	Left	0.400	0.400	0.000	0.400	**1.200**
Simult Tx	Configuration	MIMO3 Antenna SAR (W/kg)	2.4 GHz WLAN Ant 1 at 5.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 2.5 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body SAR	Back	0.096	0.113	0.291	0.046	0.546
	Top	0.206	0.400	0.000	0.000	0.606
	Bottom	0.400	0.090	0.371	0.400	**1.261**
	Right	0.400	0.400	0.000	0.400	1.200
	Left	0.400	0.400	0.000	0.400	1.200

Table 12-66
Simultaneous Transmission Scenario for Flat Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN Antenna 2 and Bluetooth Antenna 1 (Body at 0.0 cm)

Simult Tx	Configuration	MIMO4 Antenna SAR (W/kg)	2.4 GHz WLAN Ant 2 at 5.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 2.5 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	2	1+2+3+4
Body SAR	Back	0.363	0.042	0.152	0.197	0.754
	Top	0.400	0.119	0.103	0.400	1.022
	Bottom	0.300	0.400	0.000	0.148	0.848
	Right	0.400	0.400	0.000	0.400	**1.200**
	Left	0.400	0.400	0.000	0.400	**1.200**
Simult Tx	Configuration	MIMO3 Antenna SAR (W/kg)	2.4 GHz WLAN Ant 2 at 5.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 2.5 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	2	1+2+3+4
Body SAR	Back	0.096	0.042	0.152	0.197	0.487
	Top	0.206	0.119	0.103	0.400	0.828
	Bottom	0.400	0.400	0.000	0.148	0.948
	Right	0.400	0.400	0.000	0.400	**1.200**
	Left	0.400	0.400	0.000	0.400	**1.200**

Table 12-67
Simultaneous Transmission Scenario for Flat Configuration with 5 GHz WLAN and Bluetooth Antenna 1 (Body at 0.0 cm)

Simult Tx	Configuration	MIMO4 Antenna SAR (W/kg)	5 GHz WLAN Ant 1 at 2.5 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 2.5 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	2	1+2+3+4
Body SAR	Back	0.363	0.291	0.152	0.197	**1.003**
	Top	0.400	0.000	0.103	0.400	0.903
	Bottom	0.300	0.371	0.000	0.148	0.819
	Right	0.400	0.000	0.000	0.400	0.800
	Left	0.400	0.000	0.000	0.400	0.800
Simult Tx	Configuration	MIMO3 Antenna SAR (W/kg)	5 GHz WLAN Ant 1 at 2.5 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 2.5 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	2	1+2+3+4
Body SAR	Back	0.096	0.291	0.152	0.197	0.736
	Top	0.206	0.000	0.103	0.400	0.709
	Bottom	0.400	0.371	0.000	0.148	**0.919**
	Right	0.400	0.000	0.000	0.400	0.800
	Left	0.400	0.000	0.000	0.400	0.800

Table 12-68
Simultaneous Transmission Scenario for Flat Configuration with 5 GHz WLAN and Bluetooth Antenna 2 (Body at 0.0 cm)

Simult Tx	Configuration	MIMO4 Antenna SAR (W/kg)	5 GHz WLAN Ant 1 at 2.5 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 2.5 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body SAR	Back	0.363	0.291	0.152	0.046	0.852
	Top	0.400	0.000	0.103	0.000	0.503
	Bottom	0.300	0.371	0.000	0.400	**1.071**
	Right	0.400	0.000	0.000	0.400	0.800
	Left	0.400	0.000	0.000	0.400	0.800
Simult Tx	Configuration	MIMO3 Antenna SAR (W/kg)	5 GHz WLAN Ant 1 at 2.5 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 2.5 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body SAR	Back	0.096	0.291	0.152	0.046	0.585
	Top	0.206	0.000	0.103	0.000	0.309
	Bottom	0.400	0.371	0.000	0.400	**1.171**
	Right	0.400	0.000	0.000	0.400	0.800
	Left	0.400	0.000	0.000	0.400	0.800

Table 12-69
Simultaneous Transmission Scenario for Flat Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN and Bluetooth Antenna 2 (Body at 0.0 cm)

Simult Tx	Configuration	MIMO4 Antenna SAR (W/kg)	2.4 GHz WLAN Ant 1 at 5.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 2.5 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 2.5 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	Back	0.363	0.113	0.291	0.152	0.046	0.965
	Top	0.400	0.400	0.000	0.103	0.000	0.903
	Bottom	0.300	0.090	0.371	0.000	0.400	1.161
	Right	0.400	0.400	0.000	0.000	0.400	**1.200**
	Left	0.400	0.400	0.000	0.000	0.400	**1.200**
Simult Tx	Configuration	MIMO3 Antenna SAR (W/kg)	2.4 GHz WLAN Ant 1 at 5.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 2.5 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 2.5 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	Back	0.096	0.113	0.291	0.152	0.046	0.698
	Top	0.206	0.400	0.000	0.103	0.000	0.709
	Bottom	0.400	0.090	0.371	0.000	0.400	**1.261**
	Right	0.400	0.400	0.000	0.000	0.400	1.200
	Left	0.400	0.400	0.000	0.000	0.400	1.200

Table 12-70
Simultaneous Transmission Scenario for Flat Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN and Bluetooth Antenna 1 (Body at 0.0 cm)

Simult Tx	Configuration	MIMO4 Antenna SAR (W/kg)	2.4 GHz WLAN Ant 2 at 5.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 2.5 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 2.5 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	Back	0.363	0.042	0.291	0.152	0.197	1.045
	Top	0.400	0.119	0.000	0.103	0.400	1.022
	Bottom	0.300	0.400	0.371	0.000	0.148	**1.219**
	Right	0.400	0.400	0.000	0.000	0.400	1.200
	Left	0.400	0.400	0.000	0.000	0.400	1.200
Simult Tx	Configuration	MIMO3 Antenna SAR (W/kg)	2.4 GHz WLAN Ant 2 at 5.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 2.5 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 2.5 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	Back	0.096	0.042	0.291	0.152	0.197	0.778
	Top	0.206	0.119	0.000	0.103	0.400	0.828
	Bottom	0.400	0.400	0.371	0.000	0.148	**1.319**
	Right	0.400	0.400	0.000	0.000	0.400	1.200
	Left	0.400	0.400	0.000	0.000	0.400	1.200

12.10 Head SAR Simultaneous Transmission Analysis – North & South Antennas

Table 12-71
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 16.5 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	South Antenna	0.853	0.035	0.328	0.888	1.181	1.216

Table 12-72
Simultaneous Transmission Scenario for Flip Configuration with 5 GHz WLAN (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 18.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	South Antenna	0.853	0.058	0.347	0.911	1.200	1.258

Table 12-73
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz Bluetooth (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Head SAR	South Antenna	0.853	0.004	0.068	0.857	0.921

Table 12-74
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN and 5 GHz WLAN (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 16.5 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 18.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Head SAR	South Antenna	0.853	0.035	0.328	0.058	0.347	See Table Below

Simult Tx	Configuration	South Antenna SAR (W/kg)	2.4 GHz WLAN Ant 1 at 16.5 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 18.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Head SAR	Right Cheek	0.853	0.035	0.328	0.028	0.338	**1.582**
	Right Tilt	0.290	0.035*	0.328*	0.058*	0.347	1.023
	Left Cheek	0.332	0.035*	0.094	0.058	0.182	0.666
	Left Tilt	0.292	0.035*	0.328*	0.058*	0.347*	1.025

Table 12-75
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN Antenna 1 and Bluetooth Antenna 2 (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 16.5 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 18.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Head SAR	South Antenna	0.853	0.035	0.058	0.068	1.014

Table 12-76
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN Antenna 2 and Bluetooth Antenna 1 (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Head SAR	South Antenna	0.853	0.328	0.347	0.004	**1.532**

Table 12-77
Simultaneous Transmission Scenario for Flip Configuration with 5 GHz WLAN and Bluetooth Antenna 1 (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 18.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Head SAR	South Antenna	0.853	0.058	0.347	0.004	1.262

Table 12-78
Simultaneous Transmission Scenario for Flip Configuration with 5 GHz WLAN and Bluetooth Antenna 2 (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 18.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Head SAR	South Antenna	0.853	0.058	0.347	0.068	1.326

Table 12-79
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN and Bluetooth Antenna 2 (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 16.5 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 18.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Head SAR	South Antenna	0.853	0.035	0.058	0.347	0.068	1.361

Table 12-80
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN and Bluetooth Antenna 1 (Held to Ear)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 18.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 12.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Head SAR	South Antenna	0.853	0.328	0.058	0.347	0.004	**1.590**

12.11 Body-Worn Simultaneous Transmission Analysis Flip Configuration – North & South Antennas

Table 12-81
Simultaneous Transmission Scenario for Flip Configuration for 5 GHz WLAN only (Body-Worn at 1.0 cm)

Configuration	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
	1	2	1+2
Body - Worn SAR	0.488	0.222	**0.710**

Table 12-82
Simultaneous Transmission Scenario for Flip Configuration for 2.4 GHz WLAN and 5 GHz WLAN only (Body-Worn at 1.0 cm)

Configuration	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
	1	2	3	4	1+2+3+4
Body - Worn SAR	0.211	0.128	0.488	0.222	**1.049**

Table 12-83
Simultaneous Transmission Scenario for Flip Configuration for 2.4 GHz WLAN Antenna 2, 5 GHz WLAN Antenna 2 and Bluetooth Antenna 1 only (Body-Worn at 1.0 cm)

Configuration	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
	1	2	3	1+2+3
Body - Worn SAR	0.128	0.222	0.018	**0.368**

Table 12-84
Simultaneous Transmission Scenario for Flip Configuration for 5 GHz WLAN and Bluetooth Antenna 1 only (Body-Worn at 1.0 cm)

Configuration	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
	1	2	3	1+2+3
Body - Worn SAR	0.488	0.222	0.018	**0.728**

Table 12-85
Simultaneous Transmission Scenario for Flip Configuration for 5 GHz WLAN and Bluetooth Antenna 2 only (Body-Worn at 1.0 cm)

Configuration	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
	1	2	3	1+2+3
Body - Worn SAR	0.488	0.222	0.000	**0.710**

Table 12-86
Simultaneous Transmission Scenario for Flip Configuration for 2.4 GHz WLAN Antenna 1, 5 GHz WLAN and Bluetooth Antenna 2 only (Body-Worn at 1.0 cm)

Configuration	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
	1	2	3	4	1+2+3+4
Body - Worn SAR	0.211	0.488	0.222	0.000	**0.921**

Table 12-87
Simultaneous Transmission Scenario for Flip Configuration for 2.4 GHz WLAN Antenna 2, 5 GHz WLAN and Bluetooth Antenna 1 only (Body-Worn at 1.0 cm)

Configuration	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
	1	2	3	4	1+2+3+4
Body - Worn SAR	0.128	0.488	0.222	0.018	**0.856**

Table 12-88
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body - Worn SAR	South Antenna	1.025	0.094	0.064	1.119	1.089	1.183
	North Antenna	1.112	0.094	0.064	1.206	1.176	**1.270**

Table 12-89
Simultaneous Transmission Scenario for Flip Configuration with 5 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body - Worn SAR	South Antenna	1.025	0.195	0.062	1.220	1.087	1.282
	North Antenna	1.112	0.195	0.062	1.307	1.174	**1.369**

Table 12-90
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz Bluetooth (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Body - Worn SAR	South Antenna	1.025	0.018	0.000	1.043	1.025
	North Antenna	1.112	0.018	0.000	**1.130**	1.112

Table 12-91
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN and 5 GHz WLAN (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Body - Worn SAR	South Antenna	1.025	0.094	0.064	0.195	0.062	1.440
	North Antenna	1.112	0.094	0.064	0.195	0.062	**1.527**

Table 12-92
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN Antenna 1 and Bluetooth Antenna 2 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body - Worn SAR	South Antenna	1.025	0.094	0.195	0.000	1.314
	North Antenna	1.112	0.094	0.195	0.000	**1.401**

Table 12-93
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN Antenna 2 and Bluetooth Antenna 1 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body - Worn SAR	South Antenna	1.025	0.064	0.062	0.018	1.169
	North Antenna	1.112	0.064	0.062	0.018	**1.256**

Table 12-94
Simultaneous Transmission Scenario for Flip Configuration with 5 GHz WLAN and Bluetooth Antenna 1 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body - Worn SAR	South Antenna	1.025	0.195	0.062	0.018	1.300
	North Antenna	1.112	0.195	0.062	0.018	**1.387**

Table 12-95
Simultaneous Transmission Scenario for Flip Configuration with 5 GHz WLAN and Bluetooth Antenna 2 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body - Worn SAR	South Antenna	1.025	0.195	0.062	0.000	1.282
	North Antenna	1.112	0.195	0.062	0.000	**1.369**

Table 12-96
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN and Bluetooth Antenna 2 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Body - Worn SAR	South Antenna	1.025	0.094	0.195	0.062	0.000	1.376
	North Antenna	1.112	0.094	0.195	0.062	0.000	**1.463**

Table 12-97
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN and Bluetooth Antenna 1 (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Body - Worn SAR	South Antenna	1.025	0.064	0.195	0.062	0.018	1.364
	North Antenna	1.112	0.064	0.195	0.062	0.018	**1.451**

12.12 Hotspot SAR Simultaneous Transmission Analysis Flip Configuration – South Antenna

Table 12-98
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	South Antenna	1.025	0.096	0.073	1.121	1.098	1.194

Table 12-99
Simultaneous Transmission Scenario for Flip Configuration with 5 GHz WLAN (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	South Antenna	1.025	0.234	0.103	1.259	1.128	1.362

Table 12-100
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz Bluetooth (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Hotspot SAR	South Antenna	1.025	0.018	0.006	1.043	1.031

Table 12-101
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN and 5 GHz WLAN (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	South Antenna	1.025	0.096	0.073	0.234	0.103	**1.531**

Table 12-102
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN Antenna 1 and Bluetooth Antenna 2 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	South Antenna	1.025	0.096	0.234	0.006	1.361

Table 12-103
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN Antenna 2 and Bluetooth Antenna 1 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	South Antenna	1.025	0.073	0.103	0.018	1.219

Table 12-104
Simultaneous Transmission Scenario for Flip Configuration with 5 GHz WLAN and Bluetooth Antenna 1 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	South Antenna	1.025	0.234	0.103	0.018	1.380

Table 12-105
Simultaneous Transmission Scenario for Flip Configuration with 5 GHz WLAN and Bluetooth Antenna 2 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	South Antenna	1.025	0.234	0.103	0.006	1.368

Table 12-106
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 1, 5 GHz WLAN and Bluetooth Antenna 2 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	South Antenna	1.025	0.096	0.234	0.103	0.006	1.464

Table 12-107
Simultaneous Transmission Scenario for Flip Configuration with 2.4 GHz WLAN Antenna 2, 5 GHz WLAN and Bluetooth Antenna 1 (Hotspot at 1.0 cm)

Configuration	Mode	2G/3G/4G/5G SAR (W/kg)	2.4 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 1 at 13.0 dBm SAR (W/kg)	5 GHz WLAN Ant 2 at 13.0 dBm SAR (W/kg)	2.4 GHz Bluetooth Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	South Antenna	1.025	0.073	0.234	0.103	0.018	1.453

12.13 Simultaneous Transmission Conclusion

The above numerical summed SAR results are sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06 and IEEE 1528- 2013 Section 6.3.4.1.

13 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	CBT	N/A	CBT	3051A00187
Agilent	85033E	3.5mm Standard Calibration Kit	7/7/2021	Annual	7/7/2022	MY53402352
Agilent	E4438C	ESG Vector Signal Generator	12/14/2020	Biennial	12/14/2022	MY42082385
Agilent	E4432B	ESG-D Series Signal Generator	2/24/2021	Annual	2/24/2022	US40053896
Agilent	N5182A	MXG Vector Signal Generator	6/21/2021	Annual	6/21/2022	MY47420603
Agilent	N5182A	MXG Vector Signal Generator	6/15/2021	Annual	6/15/2022	MY47420800
Agilent	8753ES	S-Parameter Vector Network Analyzer	2/2/2021	Annual	2/2/2022	US39170122
Agilent	E5515C	Wireless Communications Test Set	2/4/2021	Annual	2/4/2022	GB43193563
Agilent	E5515C	Wireless Communications Test Set	5/6/2021	Annual	5/6/2022	GB44400860
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	353317
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	353468
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433976
Anritsu	MN8110B	I/O Adaptor	CBT	N/A	CBT	6261747881
Anritsu	ML2496A	Power Meter	3/3/2021	Annual	3/3/2022	1306009
Anritsu	ML2496A	Power Meter	4/21/2021	Annual	4/21/2022	1351001
Anritsu	MA2411B	Pulse Power Sensor	12/18/2020	Annual	12/18/2021	1126066
Anritsu	MT8821C	Radio Communication Analyzer	7/18/2021	Annual	7/18/2022	6262150047
Anritsu	MA24106A	USB Power Sensor	3/2/2021	Annual	3/2/2022	1244524
Anritsu	MA24106A	USB Power Sensor	6/25/2021	Annual	6/25/2022	1520504
Anritsu	MT8862A	Wireless Connectivity Test Set	10/29/2020	Annual	10/29/2021	6261782395
COMTech	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M1S5A00-009
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
Control Company	4352	Long Stem Thermometer	1/24/2020	Biennial	1/24/2022	200043588
Control Company	4352	Long Stem Thermometer	1/24/2020	Biennial	1/24/2022	200043655
Control Company	4352	Long Stem Thermometer	5/16/2020	Biennial	5/16/2022	200294604
Control Company	4040	Therm./ Clock/ Humidity Monitor	2/17/2020	Biennial	2/17/2022	200113269
Control Company	4040	Therm./ Clock/ Humidity Monitor	3/6/2020	Biennial	3/6/2022	200170289
Control Company	4040	Therm./ Clock/ Humidity Monitor	3/6/2020	Biennial	3/6/2022	200170313
Insize	1108-150	Digital Caliper	1/17/2020	Biennial	1/17/2022	409193536
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
Keysight Technologies	N6705B	DC Power Analyzer	5/5/2021	Triennial	5/5/2024	MY53004059
Keysight Technologies	N9020A	MXA Signal Analyzer	2/24/2021	Annual	2/24/2022	MY48010233
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
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	TVA-11-422	RF Power Amp	CBT	N/A	CBT	QA1303002
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	NC-100	Torque Wrench	8/4/2020	Biennial	8/4/2022	1445
Pasternack	NC-100	Torque Wrench	8/4/2020	Biennial	8/4/2022	N/A
Rohde & Schwarz	CMW500	Radio Communication Tester	2/18/2021	Annual	2/18/2022	101767
Rohde & Schwarz	CMW500	Radio Communication Tester	3/19/2021	Annual	3/19/2022	128633
Rohde & Schwarz	CMW500	Radio Communication Tester	3/22/2021	Annual	3/22/2022	167283
SPEAG	CLA-13	Confined Loop Antenna	9/11/2020	Annual	9/11/2021	1002
SPEAG	D750V3	750 MHz SAR Dipole	3/16/2020	Biennial	3/16/2022	1003
SPEAG	D835V2	835 MHz SAR Dipole	1/21/2021	Annual	1/21/2022	4d132
SPEAG	D835V2	835 MHz SAR Dipole	10/19/2018	Triennial	10/19/2021	4d133
SPEAG	D1750V2	1750 MHz SAR Dipole	10/22/2018	Triennial	10/22/2021	1150
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Triennial	10/23/2021	5d080
SPEAG	D1900V2	1900 MHz SAR Dipole	2/21/2019	Triennial	2/21/2022	5d148
SPEAG	D2450V2	2450 MHz SAR Dipole	1/19/2021	Annual	1/19/2022	981
SPEAG	D2450V2	2450 MHz SAR Dipole	9/9/2020	Annual	9/9/2022	797
SPEAG	D2600V2	2600 MHz SAR Dipole	4/14/2021	Annual	4/14/2022	1004
SPEAG	D2600V2	2600 MHz SAR Dipole	11/12/2019	Triennial	11/12/2021	1071
SPEAG	D5GHzV2	5 GHz SAR Dipole	1/20/2021	Annual	1/20/2022	1057
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/11/2021	Annual	5/11/2022	728
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/18/2021	Annual	3/18/2022	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/15/2021	Annual	6/15/2022	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/10/2021	Annual	3/10/2022	1415
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/13/2021	Annual	7/13/2022	1583
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/21/2021	Annual	6/21/2022	1676
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/22/2021	Annual	6/22/2022	1677
SPEAG	DAK-3.5	Dielectric Assessment Kit	10/14/2020	Annual	10/14/2021	1091
SPEAG	DAK-12	Dielectric Assessment Kit (10MHz - 3GHz)	3/10/2021	Annual	3/10/2022	1102
SPEAG	EX3DV4	SAR Probe	5/18/2021	Annual	5/18/2022	3914
SPEAG	EX3DV4	SAR Probe	7/20/2021	Annual	7/20/2022	7406
SPEAG	EX3DV4	SAR Probe	6/21/2021	Annual	6/21/2022	7409
SPEAG	EX3DV4	SAR Probe	7/20/2021	Annual	7/20/2022	7410
SPEAG	EX3DV4	SAR Probe	3/16/2021	Annual	3/16/2022	7526
SPEAG	EX3DV4	SAR Probe	10/20/2020	Annual	10/20/2021	7539
SPEAG	EX3DV4	SAR Probe	6/28/2021	Annual	6/28/2022	7660

Note: 1. Each equipment item was used solely within its respective calibration period.
2. CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.

14 MEASUREMENT UNCERTAINTIES

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	IEEE 1528 Sec.	Tol. (± %)	Prob. Dist.	Div.	c_i 1gm	c_i 10 gms	1gm u_i (± %)	10gms u_i (± %)	v_i
Measurement System									
Probe Calibration	E.2.1	7	N	1	1	1	7.0	7.0	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	E.2.3	2	R	1.73	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	1.73	1	1	0.1	0.1	∞
Modulation Response	E.2.5	4.8	R	1.73	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	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1	1	1.5	1.5	∞
RF Ambient Conditions - Noise	E.6.1	3	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	3	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.8	R	1.73	1	1	0.5	0.5	∞
Probe Positioning w/ respect to Phantom	E.6.3	6.7	R	1.73	1	1	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	4	R	1.73	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	1.73	1	1	2.9	2.9	∞
SAR Scaling	E.6.5	0	R	1.73	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	1.73	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Unceritainty	E.3.4	0.6	R	1.73	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	

15 CONCLUSION

15.1 Measurement Conclusion

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

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

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