



DECLARATION OF COMPLIANCE SAR ASSESSMENT PCII Report Part 1 of 2

Motorola Solutions Inc.
EME Test Laboratory
 Motorola Solutions Malaysia Sdn Bhd
 Plot 2A, Medan Bayan Lepas,
 Mukim 12 SWD 11900 Bayan Lepas Penang, Malaysia.

Date of Report: 05/4/2021
Report Revision: A

Responsible Engineer: Saw Sun Hock (EME Engineer)
Report Author: Saw Sun Hock (EME Engineer)
Date/s Tested: 1/27/2021-1/29/2021, 2/14/2021, 3/1/2021-3/21/2021, 3/27/2021, 4/10/2021-4/13/2021, 4/18/2021-4/19/2021, 5/1/2021
Manufacturer: Motorola Solutions Inc.
DUT Description: LEX L11 Public Safety Handheld with LTE and 5GHz WiFi
Test TX mode(s): LTE, GSM/GPRS, UMTS, WLAN, BT and BT LE
Max. Power output: Refer to Table 3
Nominal Power: Refer to Table 3
Tx Frequency Bands: LTE: FDD B2, B4, B5, B7, B12, B14, B30, B66, B25, B13, B26 and TDD B41; GPRS/EGPRS: 850 and 1900; WCDMA B2, B4 and B5; WLAN : 2.4 GHz and 5GHz; BT & BT LE: 2.4 GHz; NFC
Signaling type: TDMA, QPSK, 16 QAM, SC-FDMA, DSSS, OFDM & FHSS
Model(s) Tested: HKUN4112B (LEX L11n)
Model(s) Certified: HKUN4112B (LEX L11n), HKUN4115B (LEX L11n)
Serial Number(s): 790TWX2961 & 790TWX2955
Classification: Occupational/Controlled
Applicant Name: Motorola Solutions Inc.
Applicant Address: 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322
FCC ID: AZ489FT7104; LTE: FDD B2, B4, B5, B7, B12, B14, B30, B66, B25, B13, B26 and TDD B41; GSM: 850 and 1900; WCDMA B2, B4 and B5; WLAN : 2.4 GHz and 5GHz; BT & BT LE: 2.4 GHz; NFC
 This report contains results that are immaterial for FCC equipment approval, which are clearly identified.
IC: 109U-89FT7104
 This report contains results that are immaterial for ISSED equipment approval, which are clearly identified.
ISSED Test Site registration: 24843
FCC Test Firm Registration Number: 823256

The test results clearly demonstrate compliance with FCC Occupational/Controlled RF Exposure limits of 1.6 W/kg averaged over 1 gram per the requirements of FCC 47 CFR § 2.1093 and RSS-102 (Issue 5).

Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the national and international reference standards and guidelines listed in section 4.0 of this report (no deviation from standard methods). This report shall not be reproduced without written approval from an officially designated representative of the Motorola Solutions Inc EME Laboratory.

I attest to the accuracy of the data and assume full responsibility for the completeness of these measurements. This reporting format is consistent with the suggested guidelines of the TIA TSB-150 December 2004. The results and statements contained in this report pertain only to the device(s) evaluated.

Saw Sun Hock
(Approved Signatory)
Approval Date: 5/4/2021

Part 1 of 2

1.0	Introduction.....	4
2.0	FCC SAR Summary.....	4
3.0	Abbreviations / Definitions.....	7
4.0	Referenced Standards and Guidelines	7
5.0	SAR Limits	9
6.0	Description of Device Under Test (DUT)	9
7.0	Optional Accessories and Test Criteria.....	12
7.1	Antennas	12
7.2	Battery	12
7.3	Body worn Accessory	12
7.4	Audio Accessory	12
8.0	Description of Test System	13
8.1	Descriptions of Robotics/Probes/Readout Electronics	13
8.2	Description of Phantom(s)	14
8.3	Description of Simulated Tissue	14
9.0	Additional Test Equipment	15
10.0	SAR Measurement System Validation and Verification	16
10.1	System Validation	16
10.2	System Verification	18
10.3	Equivalent Tissue Test Results	20
11.0	Environmental Test Conditions	25
12.0	DUT Test Setup and Methodology	25
12.1	Measurements	25
12.2	DUT Configuration(s).....	26
12.3	DUT Positioning Procedures	26
12.3.1	Body	26
12.3.2	Head	26
12.3.3	Hotspot.....	26
12.4	DUT Test Channels	27
12.5	SAR Result Scaling Methodology	27
12.6	DUT Test Plan	27
13.0	DUT Test Data.....	28
13.1	Assessment at the Body	28
13.1	Assessments for the Hotspot.....	30
13.2	Assessments at the Head.....	32
13.3	Assessments for Phablet condition (Product Specific 10g SAR Exposure)	34
11.3	Face Assessment	34
14	Additional assessment for ISED Canada	34
15	Simultaneous Transmissions	38
16	SPLSR (SAR to Peak Location Separation Ratio Analysis).....	41
14.0	Results Summary	43
15.0	Variability Assessment	44

16.0 System Uncertainty	47
-------------------------------	----

APPENDICES

A Measurement Uncertainty Budget	48
B Probe Calibration Certificates	
C Dipole Calibration Certificates	

Part 2 of 2**APPENDICES**

D System Verification Check Scans	2
E DUT Scans	34
F DUT Test Position Photos	51
G DUT, Body worn and audio accessories Photos	54

Report Revision History

Date	Revision	Comments
5/4/2021	A	Initial release

1.0 Introduction

This report details the utilization, test setup, test equipment, and test results of the Specific Absorption Rate (SAR) measurements performed at the Motorola Solutions Inc. EME Test Laboratory for model number HKUN4112B (LEX L11n). This device is classified as Occupational/Controlled.

The information herein is to show evidence of Class II Permissive Change compliance base on the SAR evaluation of a design change on Memory IC, RF filter, Front and Rear camera, EMI filter and PCB material of the DUT.

2.0 FCC SAR Summary

Table 1

Equipment Class	Frequency Band		Head	Hotspot	Body
			1g-SAR (W/kg)		
PCE	WCDMA	Band 2	1.15	1.47 ¹	1.21 ¹
		Band 4	1.00 ²	1.30 ²	0.71
		Band 5	0.49	0.50	0.50
	GSM	850	0.50	0.42	0.42
		1900	0.72 ³	0.51	0.51 ³
	LTE	Band 2	1.05 ⁴	1.34 ⁴	0.90 ⁴
		Band 4	0.79 ⁵	1.19 ⁵	0.72 ⁵
		Band 5	0.41	0.38	0.62
		Band 7	0.89	0.60	0.60
		Band 12	0.28	0.29	0.41
		Band 14	0.40	0.38	0.64
		Band 30	1.19 ⁶	1.03 ⁶	1.03 ⁶
		Band 66	0.89 ⁷	0.98 ⁷	0.75 ⁷
		Band 25	0.99 ⁸	1.27 ⁸	0.52
		Band 13	0.42	0.56	0.56
		Band 26	0.40 ⁹	0.59 ⁹	0.59 ⁹
		Band 41	0.50	0.69 ¹⁰	0.30

Table 1 (Continued)

Equipment Class	Frequency Band		Head	Hotspot	Body
			1g-SAR (W/kg)		
DTS	WLAN	2.4GHz WLAN	1.18 ¹¹	0.21 ¹¹	0.21 ¹¹
NII		5GHz WLAN	1.45 ¹²	0.75 ¹²	0.44
DSS	Bluetooth	2.4GHz Bluetooth	0.03 ¹³	0.02 ¹³	0.02 ¹³
Simultaneous Results			1.22	1.47 ¹⁴	1.52 ¹⁴
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg)		
NII	WLAN	5GHz WLAN	1.12 ¹⁵		
PCE	WCDMA	Band 4	2.79		

Notes:

¹ New highest SAR value at WCDMA B2 for Hotspot & Body are 1.47 & 1.21 W/kg compared to previous on file SAR value of 1.17 and 0.77 W/kg respectively. (Hotspot & Body required ISSED low, mid & high)

² New highest SAR value at WCDMA B4 for Head & Hotspot are 1.00 & 1.30 W/kg compared to previous on file SAR value of 0.98 & 1.21 W/kg respectively.

³ New highest SAR value at GSM 1900 for Head & Body are 0.72 & 0.51 W/kg compared to previous on file SAR value of 0.49 & 0.42 W/kg respectively. (Head required ISSED low, mid & high)

⁴ New highest SAR value at LTE B2 for Head, Hotspot & Body are 1.05, 1.34 & 0.90 W/kg compared to previous on file SAR value of 0.67, 0.88 & 0.66 W/kg respectively. (Head, Hotspot & Body required ISSED low, mid & high)

⁵ New highest SAR value at LTE B4 for Head, Hotspot & Body are 0.79, 1.19 & 0.72 W/kg compared to previous on file SAR value of 0.58, 0.77 & 0.57 W/kg respectively. (Head, Hotspot & Body required ISSED low, mid & high)

⁶ New highest SAR value at LTE B30 for Head, Hotspot & Body are 1.19, 1.03 & 1.03 W/kg compared to previous on file SAR value of 1.04, 0.81 & 0.81 W/kg respectively. (Head, Hotspot & Body required ISSED low, mid & high)

⁷ New highest SAR value at LTE B66 for Head, Hotspot & Body are 0.89, 0.98 & 0.75 W/kg compared to previous on file SAR value of 0.83, 0.71 & 0.55 W/kg respectively. (Hotspot & Body required ISSED low, mid & high)

⁸ New highest SAR value at LTE B25 for Head & Hotspot are 0.99 & 1.27 W/kg compared to previous on file SAR value of 0.82 & 1.09 W/kg respectively. (Head required ISED low, mid & high)

⁹ New highest SAR value at LTE B26 for Head, Hotspot & Body are 0.40, 0.59 & 0.59 W/kg compared to previous on file SAR value of 0.34, 0.48 & 0.48 W/kg respectively. (Head, Hotspot & Body required ISED low, mid & high)

¹⁰ New highest SAR value at LTE B41 for Hotspot is 0.69 W/kg compared to previous on file SAR value of 1.05 & 0.43 W/kg respectively. (Hotspot required ISED low, mid & high)

¹¹ New highest SAR value at WLAN 2.4GHz for Head, Hotspot & Body are 1.18, 0.21 & 0.21 W/kg compared to previous on file SAR value of 1.03, 0.15 & 0.15 W/kg respectively. (Head required ISED low, mid & high)

¹² New highest SAR value at WLAN 5GHz for Head & Hotspot are 1.45 & 0.75 W/kg compared to previous on file SAR value of 0.84 & 0.49 W/kg respectively. (Head & Hotspot required ISED low, mid & high)

¹³ New highest SAR value at Bluetooth for Head, Hotspot & Body are 0.03, 0.02 & 0.02 W/kg compared to previous on file SAR value of 0.00, 0.01 & 0.01 W/kg respectively

¹⁴ New highest SAR value at Simultaneous Results for Hotspot & Body are 1.47 & 1.52 W/kg compared to previous on file SAR value of 1.31 & 1.14 W/kg respectively.

¹⁵ New highest SAR value at WLAN 5GHz for Product specific 10g SAR is 1.12 W/kg compared to previous on file SAR value of 0.65 W/kg.

3.0 Abbreviations / Definitions

BT: Bluetooth
CNR: Calibration Not Required
CW: Continuous Wave
C4FM: Continuous 4 Level Frequency Modulation
CQPSK: Compatible Quadrature Phase Shift Keying
DPSK: Differential Phase-Shift Keying
DQPSK: Differential Quadrature Phase-Shift Keying
DSP: Digital Signal Processor
DSS: Direct Spread Spectrum
DUT: Device Under Test
EDR: Enhanced Data Rate
EME: Electromagnetic Energy
FHSS: Frequency Hopping Spread Spectrum
FM: Frequency Modulation
GFSK: Gaussian Frequency-Shift Keying
LMR: Land Mobile Radio
LTE: Long Term Evolution
NA: Not Applicable
OFDM: Orthogonal Frequency Division Multiplexing
PSM: Public Safety Microphone
PTT: Push to Talk
QPSK: Quadrature Pulse Shift Key
RB: Resource Blocks
RSM: Remote Speaker Microphone
SAR: Specific Absorption Rate
SC-FDMA: Single Carrier Frequency Division Multiple Access
TDD: Time Division Duplex
TDMA: Time Division Multiple Access
TNF: Licensed Non-Broadcast Transmitter Held to Face
VoLTE; Voice over LTE
4FSK: 4 Level Frequency Shift Keying
16QAM: 16 State Quadrature Amplitude Modulation

Audio accessories: These accessories allow communication while the DUT is worn on the body.

Body worn accessories: These accessories allow the DUT to be worn on the body of the user.

Maximum Power: Defined as the upper limit of the production line final test station.

4.0 Referenced Standards and Guidelines

This product is designed to comply with the following applicable national and international standards and guidelines.

- IEC62209-1 (2016) Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)
 - Federal Communications Commission, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields”, OET Bulletin 65, FCC, Washington, D.C.: 1997.
 - IEEE 1528 (2013), Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
 - American National Standards Institute (ANSI) / Institute of Electrical and Electronics Engineers (IEEE) C95. 1-1992
 - Institute of Electrical and Electronics Engineers (IEEE) C95.1-2005
 - International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998
 - Ministry of Health (Canada) Safety Code 6 (2015), Limits of Human Exposure to Radio frequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz
 - RSS-102 (Issue 5) – Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands)
 - Australian Communications Authority Radio communications (Electromagnetic Radiation - Human Exposure) Standard (2014)
 - ANATEL, Brazil Regulatory Authority, Resolution No. 303 of July 2, 2002 "Regulation of the limitation of exposure to electrical, magnetic, and electromagnetic fields in the radio frequency range between 9 kHz and 300 GHz." and “Attachment to resolution # 303 from July 2, 2002”
 - IEC62209-2 Edition 1.0 2010-03, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures – Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz).
-
- FCC KDB – 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
 - FCC KDB – 865664 D02 RF Exposure Reporting v01r02
 - FCC KDB – 447498 D01 General RF Exposure Guidance v06
 - FCC KDB – 941225 D05 SAR for LTE Devices v02r05
 - FCC KDB – 941225 D01 3G SAR Procedures v03r01
 - FCC KDB – 248227 D01 802.11 Wi-Fi SAR v02r02
 - FCC KDB - 648474 D04 Handset SAR v01r03

5.0 SAR Limits

Table 2

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average - ANSI - (averaged over the whole body)	0.08	0.4
Spatial Peak - ANSI - (averaged over any 1-g of tissue)	1.6	8.0
Spatial Peak – ICNIRP/ANSI - (hands/wrists/feet/ankles averaged over 10-g)	4.0	20.0
Spatial Peak - ICNIRP - (Head and Trunk 10-g)	2.0	10.0

6.0 Description of Device Under Test (DUT)

This device includes LTE technology, which is capable of OFDM (Orthogonal Frequency Division Multiplexing) on the downlink and SC-FDMA (Single Carrier Frequency Division Multiple Access) on the uplink. Rel 10 Carrier Aggregation (1 uplink and 2 Downlinks) does support.

This device includes GSM/EDGE/GPRS technologies which operate in Time Division Multiple Access (TDMA). The DUT is designated class B, multi-slot class 10 supporting maximum 2 UL or 4 DL with a total maximum of 5 slots. This device does not support DTM. The maximum duty cycles and output powers are defined in Table 2.

This device includes WCDMA technology which operates in Wideband Code Division Multiple Access. The device supports HSPA+ (QPSK only on the uplink) but does not support Dual-Carrier HSPA. The maximum duty cycles and output powers are defined in Table 2.

This device operates in the WLAN technology for data capabilities over 802.11 b/g/n (2.4GHz), 802.11ac/n (5GHz) wireless network and Bluetooth technology for short range wireless device.

This device also incorporates a Bluetooth v4.0, which include classis Bluetooth, and Bluetooth low energy. It is Class 1 Bluetooth device with Frequency Hopping Spread Spectrum (FHSS) technology. The Bluetooth radio modem is used to wireless link audio accessories. The maximum actual transmission duty cycle is imposed by the Bluetooth standard. The maximum duty cycle for BT is derived from 5-slots packet type operation which consists of receiving on 1-slot and transmitting on 5-slots and thus maximum duty cycle=78%

WLAN 2.4GHz 802.11 b/g/n operate using Direct Sequence Spread Spectrum (DSSS) and Orthogonal Frequency-Division Multiplexing (OFDM) with channel bandwidth of 20 MHz

and 40 MHz . WLAN 5 GHz 802.11 a/ n/ ac operate using Orthogonal Frequency-Division Multiplexing (OFDM) with channel bandwidth of 20MHz, 40MHz, 80MHz. This device supports WLAN 2x2 MIMO.

Table 3 below summarizes the technologies, bands, maximum duty cycles and maximum output powers. Maximum output powers are defined as upper limit of the production line final test station.

Table 3

Technologies	Band (MHz)	Transmission	Duty Cycle (%)	Nominal Power (mW)	Max Power (mW)
LTE-B2	1850.7-1909.3	FDD, SC-FDMA	100	199.5	251.2
LTE-B4	1710.7-1754.3	FDD, SC-FDMA	100	199.5	251.2
LTE-B5	824.7-848.3	FDD, SC-FDMA	100	199.5	251.2
LTE-B7	2502.5-2567.5	FDD, SC-FDMA	100	199.5	223.9
LTE-B12	699.7-715.3	FDD, SC-FDMA	100	199.5	251.2
*LTE-B17	706.5-713.5	FDD, SC-FDMA	100	199.5	251.2
LTE-B14	790.5-795.5	FDD, SC-FDMA	100	199.5	251.2
*LTE B29	717-728	FDD, SC-FDMA	100	199.5	251.2
LTE-B30	2307.5-2312.5	FDD, SC-FDMA	100	199.5	251.2
LTE-B66	1710.7-1779.3	FDD, SC-FDMA	100	199.5	251.2
LTE-B25	1850.7-1914.3	FDD, SC-FDMA	100	199.5	251.2
LTE-B13	779.5-784.5	FDD, SC-FDMA	100	199.5	251.2
LTE-B26	814.7-848.3	FDD, SC-FDMA	100	199.5	251.2
LTE-B41	2498.5-2687.5	TDD, SC-FDMA	63.33	199.5	251.2
WCDMA-B2	1852.4-1907.6	QPSK	100	251.2	316.2
WCDMA-B4	1712.4-1752.6	QPSK	100	223.9	251.2
WCDMA-B5	880-915	QPSK	100	251.2	316.2
GSM/GPRS/EGPRS – 1900	1850.2-1909.8	TDMA	25	891.3	1258.9
GSM/GPRS/EGPRS – 850	824.2-848.8	TDMA	25	1778.3	2511.9

Note: “**”

1. LTE Band 29 downlink only
2. These devices support LTE B12 and 17. Since the supported frequency span for LTE B17 falls within the support frequency span for LTE B12 and both LTE bands have the same maximum power as well as sharing the same transmission path, therefore, SAR was only assessed for LTE B12.

Table 3 (Continued)

Technologies	Band (MHz)	Transmission	Duty Cycle (%)	Nominal Power (mW)	Max Power (mW)
2.4 GHz WLAN - 802.11b	2412-2485	DSSS	97.5	63.1	89.1
2.4 GHz WLAN - 802.11g	2412-2485	OFDM	97.5	44.7	56.2
2.4 GHz WLAN - 802.11n (20 MHz)	2412-2485	OFDM	87	44.7	56.2
2.4 GHz WLAN - 802.11n (40 MHz)	2412-2485	OFDM	87	22.4	25.1
5 GHz WLAN - 802.11a	5150-5725	OFDM	87	50.1	70.8
5 GHz WLAN - 802.11n (20 MHz)	5150-5725	OFDM	87	50.1	70.8
5 GHz WLAN - 802.11n (40 MHz)	5150-5725	OFDM	87	39.8	56.2
5 GHz WLAN - 802.11ac (20 MHz)	5150-5725	OFDM	87	50.1	70.8
5 GHz WLAN - 802.11ac (40 MHz)	5150-5725	OFDM	87	39.8	56.2
5 GHz WLAN - 802.11ac (80 MHz)	5150-5725	OFDM	87	31.6	35.5
BT	2.4 GHz	FHSS	100	5.7	11.3
BT LE	2.4 GHz	DSSS	87	0.4	1.3

The intended operating positions are “at the head” with the DUT positioned touching the ear and either touching the cheek or tilted 15° from the cheek, and “at the body” by means of the offered body worn accessories as well as “hotspot mode” with the DUT position at a separation distance of 10mm from the phantom.

7.0 Optional Accessories and Test Criteria

This device is offered with optional accessories. The following sections identify the test criteria and details for each accessory category applicable for this PCII filing only. Detail listing of all approved offered accessories available in the original filing report.

7.1 Antennas

There are internal GSM/LTE/WCDMA and WLAN/BT antenna in this product. The Table below lists their descriptions.

Table 4

Antenna Models	Description	Tested
AN000246A01 (Ant 1)	Low Band Primary Antenna, Tx/Rx, ILA, Tunable, 699-960 MHz, -2.8 dBd	Yes
AN000247A01 (Ant 2)	Mid/High Band Primary Antenna, Tx/Rx, ILA, Non-Tunable, 1710-2690MHz, -0.5 dBd	Yes
AN000243A01 (Ant 4)	WIFI/BT Antenna, Tx/Rx, ILA, Dual Band Matching 2402-2492 MHz, 5170-5835MHz, 2.5GHz -3 dBd, 5GHz -1.6 dBd	Yes
AN000249A01 (Ant 7)	WIFI/MIMO Antenna, Tx/RX, ILA, Dual Band Matching, 2402-2492 MHz, 5170-5835MHz, 2.5GHz -2.2 dBd, 5GHz -2.7 dBd	Yes

Note: * Diversity antennas for receive only.

7.2 Battery

There are two batteries applicable for this PCII filing. The Table below lists their descriptions.

Table 4

Battery Models	Description	Tested	Comments
PMNN4545A	Standard Battery 2500 mAh	Yes	
PMNN4546A	High Capacity battery 5000 mAh	Yes	

7.3 Body worn Accessory

These are the body worn applicable for this PCII filing. The Table below lists their descriptions.

Table 5

Body worn Models	Description	Tested	Comments
PMLN7875A	Carry Holster with metal chest mount	Yes	
PMLN7845A + GMDN0566A	Carry Holster with Peter Jones (ILG) Klick Fast leather belt loop and dock	Yes	

7.4 Audio Accessory

No audio accessories are applicable for this PCII filing.

8.0 Description of Test System



8.1 Descriptions of Robotics/Probes/Readout Electronics

Table 6

Dosimetric System type	System version	DAE type	Probe Type
Schmid & Partner Engineering AG SPEAG DASY 5	52.10.2.1527	DAE4	EX3DV4 (E-Field)

The DASY5™ system is operated per the instructions in the DASY5™ Users Manual. The complete manual is available directly from SPEAG™. All measurement equipment used to assess SAR compliance was calibrated according to ISO/IEC 17025 A2LA guidelines. Section 9.0 presents additional test equipment information. Appendices B and C present the applicable calibration certificates. The E-field probe first scans a coarse grid over a large area inside the phantom in order to locate the interpolated maximum SAR distribution. After the coarse scan measurement, the probe is automatically moved to a position at the interpolated maximum. The subsequent scan can directly use this position as reference for the cube evaluations.

8.2 Description of Phantom(s)

Table 7

Phantom Type	Phantom(s) Used	Material Parameters	Phantom Dimensions LxWxD (mm)	Material Thickness (mm)	Support Structure Material	Loss Tangent (wood)
Triple Flat	√	200MHz -6GHz; Er = 3-5, Loss Tangent = ≤0.05	280x175x175	2mm +/- 0.2mm	Wood	< 0.05
SAM	√	300MHz -6GHz; Er = < 5, Loss Tangent = ≤0.05	Human Model			
Oval Flat	√	300MHz -6GHz; Er = 4+/- 1, Loss Tangent = ≤0.05	600x400x190			

8.3 Description of Simulated Tissue

The sugar based simulate tissue is produced by placing the correct measured amount of De-ionized water into a large container. Each of the dried ingredients are weighed and added to the water carefully to avoid clumping. If the solution has a high sugar concentration the water is pre-heated to aid in dissolving the ingredients. For Diacetin and similar type simulates, sugar and HEC ingredients are not needed. The solution is mixed thoroughly, covered, and allowed to sit overnight prior to use.

The simulated tissue mixture was mixed based on the Simulated Tissue Composition indicated in Table 10. During the daily testing of this product, the applicable mixture was used to measure the Di-electric parameters at each of the tested frequencies to verify that the Di-electric parameters were within the tolerance of the tissue specifications.

Simulated Tissue Composition (percent by mass)

Table 8

Ingredients	750MHz		835MHz		1800MHz		1900MHz	
	Head	Body	Head	Head	Head	Body	Head	Body
Sugar	57.0	46	57.0	NA	NA	NA	NA	NA
Diacetin	0	0	0	51.5	51.5	35.0	51.5	34.5
De ionized - Water	40.12	51.8	40.12	47.82	47.82	64.35	48.03	64.97
Salt	1.78	1.1	1.78	0.58	0.58	0.55	0.37	0.43
HEC	1	1	1	NA	NA	NA	NA	NA
Bact.	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Table 8 (Continued)

Ingredients	2300MHz		2450MHz		2600MHz		5GHz ⁽¹⁾	
	Head	Body	Head	Body	Head	Body	Head	Body
Sugar	Head	Body	NA	NA	NA	NA	NA	NA
Diacetin	NA	NA	51.0	34.5	51.0	34.5	NA	NA
De ionized - Water	51.0	34.5	48.75	65.20	48.75	65.20	NA	NA
Salt	48.75	65.20	0.15	0.20	0.15	0.20	NA	NA
HEC	0.15	0.20	NA	NA	NA	NA	NA	NA
Bact.	NA	NA	0.1	0.1	0.1	0.1	NA	NA

Note: (1) SPEAG provides Motorola proprietary stimulant ingredients for the 5GHz band.

9.0 Additional Test Equipment

The Table below lists additional test equipment used during the SAR assessment.

Table 9

Equipment Type	Model Number	Serial Number	Calibration Date	Calibration Due Date
Speag Probe	EX3DV4	7364	8/20/2020	8/20/2021
Speag Probe	EX3DV4	7519	5/29/2020	5/29/2021
Speag Probe	EX3DV4	7485	8/20/2020	8/20/2021
Speag DAE	DAE4	1483	8/12/2020	8/12/2021
Speag DAE	DAE4	1294	5/27/2020	5/27/2021
Speag DAE	DAE4	688	8/13/2020	8/13/2021
AMPLIFIER	5S1G4	312988	CNR	CNR
AMPLIFIER	50W 1000A	14715	CNR	CNR
AMPLIFIER	5S1G4	313326	CNR	CNR
BI-DIRECTIONAL COUPLER	3020A	41935	8/21/2020	8/21/2021
BI-DIRECTIONAL COUPLER	3022	77115	7/9/2020	7/9/2021
BI-DIRECTIONAL COUPLER	3020A	41931	7/9/2020	7/9/2021
BI-DIRECTIONAL COUPLER	3022	81639	9/2/2020	9/2/2021
BI-DIRECTIONAL COUPLER	3020	61178	11/23/2020	11/23/2021
POWER SENSOR	8481B	3318A10982	11/3/2020	11/3/2021
POWER METER	E4419B	MY45103725	6/10/2020	6/10/2021
POWER METER	E4418B	MY45100911	8/30/2019	8/30/2021
POWER SENSOR	E9301B	MY50280001	4/22/2020	4/22/2021
POWER METER	E4418B	MY45100739	12/3/2020	12/3/2021
POWER METER	E4416A	MY50001037	8/30/2019	8/30/2021
POWER SENSOR	E9301B	MY41495733	5/18/2020	5/18/2021
*POWER SENSOR	E9301B	MY55210006	4/22/2020	4/22/2021
VECTOR SIGNAL GENERATOR	E4438C	MY47272101	10/29/2019	10/29/2021
POWER SENSOR	8481B	MY41091243	11/3/2020	11/3/2021
POWER METER	E4418B	MY45107917	7/1/2020	7/1/2021

*Equipment used for SAR evaluation prior to calibration due date

Table 9 (Continued)

Equipment Type	Model Number	Serial Number	Calibration Date	Calibration Due Date
TEMPERATURE & HUMINIDITY LOGGER	DSB	16398050	8/3/2020	8/3/2021
THERMOMETER	HH806AU	080307	11/25/2020	11/25/2021
TEMPERATURE PROBE	80PK-22	06032017	11/25/2020	11/25/2021
NETWORK ANALYZER	E5071B	MY42403147	12/1/2020	12/1/2021
*DIELECTRIC ASSESSMENT KIT	DAK-3.5	1156	2/25/2020	2/25/2021
DIELECTRIC ASSESSMENT KIT	DAK-3.5	1120	8/12/2020	8/12/2021
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	153170	11/10/2020	11/10/2022
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	154550	7/23/2019	7/23/2021
WLAN Power Sensor	NRP-Z11	120907	08/19/2020	08/19/2021
Speag Dipole	D750V3	1098	10/15/2018	10/15/2021
Speag Dipole	D835V2	4D030	10/15/2018	10/15/2021
Speag Dipole	D835V2	4D029	2/24/2020	2/24/2023
Speag Dipole	D900V2	085	10/15/2018	10/15/2021
Speag Dipole	D1800V2	278	10/15/2018	10/15/2021
Speag Dipole	D1800V2	2D119	5/17/2018	5/17/2021
Speag Dipole	D1900V2	5D065	10/30/2019	10/30/2022
Speag Dipole	D1900V2	5D064	9/18/2019	9/18/2022
Speag Dipole	D2300V2	1007	2/27/2019	2/27/2022
Speag Dipole	D2450V2	782	2/20/2020	2/20/2023
Speag Dipole	D2600V2	1002	4/9/2019	4/9/2022
Speag Dipole	D5GHZV2	1026	10/18/2018	10/18/2021

*Equipment used for SAR evaluation prior to calibration due date

10.0 SAR Measurement System Validation and Verification

DASY output files of the probe/dipole calibration certificates and system verification test results are included in appendices B, C & D respectively.

10.1 System Validation

The SAR measurement system was validated according to procedures in KDB 865664. The validation status summary Table is below.

Table 10

Dates	Probe Calibration Point		Probe SN	Measured Tissue Parameters		Validation			
				σ	ε _r	Sensitivity	Linearity	Isotropy	
CW									
9/30/2020	Head	750	7485	0.85	41.4	Pass	Pass	Pass	
9/30/2020		835		0.93	40.3	Pass	Pass	Pass	
10/4/2020		1800		1.33	39.9	Pass	Pass	Pass	
10/4/2020		1900		1.43	39.5	Pass	Pass	Pass	
10/2/2020		2300		1.67	36.3	Pass	Pass	Pass	
10/2/2020		2450		1.82	35.8	Pass	Pass	Pass	
10/2/2020		2600		1.98	35.3	Pass	Pass	Pass	
1/10/2021		5500		4.70	32.5	Pass	Pass	Pass	
1/11/2021		5750		4.79	32.3	Pass	Pass	Pass	
10/1/2020		Body		750	0.92	53.9	Pass	Pass	Pass
10/1/2020	835			1.00	53.0	Pass	Pass	Pass	
10/6/2020	1800			1.47	52.6	Pass	Pass	Pass	
10/6/2020	1900			1.59	52.3	Pass	Pass	Pass	
10/5/2020	2300			1.80	55.1	Pass	Pass	Pass	
10/5/2020	2450			1.97	54.7	Pass	Pass	Pass	
10/5/2020	2600			2.14	54.3	Pass	Pass	Pass	
1/11/2021	5250			5.47	44.9	Pass	Pass	Pass	
7/5/2020	Head	1800		7519	1.35	40.5	Pass	Pass	Pass
7/6/2020	Body	1800			1.48	51.7	Pass	Pass	Pass
7/6/2020		1900			1.59	51.3	Pass	Pass	Pass
7/10/2020		2600	2.21		51.8	Pass	Pass	Pass	
9/18/2020	Head	2450	7364	1.84	35.6	Pass	Pass	Pass	
9/22/2020		5250		4.36	32.6	Pass	Pass	Pass	
9/21/2021		5600		4.64	32.2	Pass	Pass	Pass	
9/22/2021		5750		4.88	31.9	Pass	Pass	Pass	
9/17/2020	Body	900		1.07	52.5	Pass	Pass	Pass	
9/25/2020		5250		5.23	44.5	Pass	Pass	Pass	
9/25/2020		5600		5.66	44.0	Pass	Pass	Pass	
9/25/2020		5750		5.86	43.7	Pass	Pass	Pass	
LTE									
9/30/2020	Head	750 (1RB)		7485	0.85	41.4	Pass	Pass	Pass
9/30/2020		835 (1RB)			0.93	40.3	Pass	Pass	Pass
10/4/2020		1800 (1RB)			1.33	39.9	Pass	Pass	Pass
10/4/2020		1900 (1RB)	1.43		39.5	Pass	Pass	Pass	
10/2/2020		2300 (1RB)	1.67		36.3	Pass	Pass	Pass	
10/2/2020		2600 (1RB)	1.98		35.3	Pass	Pass	Pass	
10/1/2020	Body	750 (1RB)	0.92		53.9	Pass	Pass	Pass	
10/1/2020		835 (1RB)	1.00		53.0	Pass	Pass	Pass	
10/6/2020		1800 (1RB)	1.47		52.6	Pass	Pass	Pass	
10/6/2020		1900 (1RB)	1.59		52.3	Pass	Pass	Pass	
10/5/2020		2300 (1RB)	1.80		55.1	Pass	Pass	Pass	
10/5/2020		2600 (1RB)	2.14		54.3	Pass	Pass	Pass	
7/5/2020	Head	1800	7519	1.35	40.5	Pass	Pass	Pass	
7/6/2020	Body	1800		1.48	51.7	Pass	Pass	Pass	
7/6/2020		1900		1.59	51.3	Pass	Pass	Pass	
7/10/2020		2600		2.21	51.8	Pass	Pass	Pass	
9/17/2020	Body	900	7364	1.07	52.5	Pass	Pass	Pass	

Table 10 (Continue)

Dates	Probe Calibration Point		Probe SN	Measured Tissue Parameters		Validation		
				σ	ϵ_r	Sensitivity	Linearity	Isotropy
WLAN 802.11								
1/10/2021	Head	5500	7485	4.70	32.5	Pass	Pass	Pass
1/11/2021		5750		4.79	32.3	Pass	Pass	Pass
1/11/2021	Body	5250		5.47	44.9	Pass	Pass	Pass
9/22/2020	Head	5250	7364	4.36	32.6	Pass	Pass	Pass
9/21/2021		5600		4.64	32.2	Pass	Pass	Pass
9/22/2021		5750		4.88	31.9	Pass	Pass	Pass
9/25/2020	Body	5250		5.23	44.5	Pass	Pass	Pass
9/25/2020		5600		5.66	44.0	Pass	Pass	Pass
9/25/2020		5750		5.86	43.7	Pass	Pass	Pass

10.2 System Verification

System verification checks were conducted each day during the SAR assessment. The results are normalized to 1W. Appendix D includes DASY plots for each day during the SAR assessment. The Table below summarizes the daily system check results used for the SAR assessment.

Table 11

Probe Serial #	Tissue Type	Dipole Kit / Serial #	Ref SAR @ 1W (W/kg)	System Check Results Measured (W/kg)	System Check Test Results when normalized to 1W (W/kg)	Tested Date
7485	IEEE/IEC Head	SPEAG D750V3 / 1098	8.23 +/- 10%	2.16	8.64	3/12/2021
	FCC Body		8.63 +/- 10%	2.26	9.04	3/12/2021
	IEEE/IEC Head	SPEAG D835V2 / 4D030	9.55 +/- 10%	2.43	9.72	3/11/2021
	FCC Body			2.37	9.48	3/15/2021
	FCC Body	9.63 +/- 10%	2.52	10.08	3/10/2021	
	IEEE/IEC Head	SPEAG D835V2 / 4D029	9.70 +/- 10%	2.36	9.44	4/12/2021
	IEEE/IEC Head	SPEAG D1800V2 / 278	38.70 +/- 10%	10.00	40.00	3/12/2021
				9.76	39.04	3/13/2021
				9.35	37.40	3/16/2021
				9.90	39.60	5/1/2021
	FCC Body		39.60 +/- 10%	10.20	40.80	3/9/2021
				9.31	37.24	4/12/2021
			10.40	41.60	4/18/2021	
IEEE/IEC Head	SPEAG D1900V2 / 5D064	39.90 +/- 10%	9.97	39.88	3/13/2021	

Note: # denotes that the system verification check covers next test day (within 24 hours)

Table 11 (Continued)

Probe Serial #	Tissue Type	Dipole Kit / Serial #	Ref SAR @ 1W (W/kg)	System Check Results Measured (W/kg)	System Check Test Results when normalized to 1W (W/kg)	Tested Date
7485	IEEE/IEC Head	SPEAG D1900V2 / 5D065	40.50 +/- 10%	9.12	36.48	3/15/2021
				9.81	39.24	4/10/2021
				9.63	38.52	4/12/2021
	FCC Body	SPEAG D1900V2 / 5D065	39.50 +/- 10%	10.00	40.00	3/15/2021
				9.98	39.92	4/11/2021
				9.92	39.68	4/12/2021
	IEEE/IEC Head	SPEAG D2300V2 / 1007	48.10 +/- 10%	12.90	51.60	3/14/2021
	FCC Body		47.10 +/- 10%	12.50	50.00	3/14/2021
	IEEE/IEC Head	SPEAG D2600V2 / 1002	56.10 +/- 10%	15.30	61.20	3/14/2021
	FCC Body		54.60 +/- 10%	13.90	55.60	3/14/2021
				15.00	60.00	4/13/2021
	IEEE/IEC Head	SPEAG D2450V2 / 782	54.40 +/- 10%	13.50	54.00	3/17/2021
	FCC Body		51.90 +/- 10%	13.40	53.60	3/27/2021
						3/16/2021
	IEEE/IEC Head	SPEAG D2450V2 / 703	52.90 +/- 10%	9.90	39.60	5/1/2021
7364	IEEE/IEC Head	SPEAG D5GHzV2_5500MHz / 1026	84.70 +/- 10%	8.72	87.20	4/19/2021
	IEEE/IEC Head	SPEAG D5GHzV2_5750MHz / 1026	82.00 +/- 10%	8.13	81.30	4/19/2021
	FCC Body	SPEAG D5GHzV2_5250MHz / 1026	74.50 +/- 10%	7.97	79.70	4/20/2021
	FCC Body	SPEAG D900V2 / 085	10.80 +/- 10%	2.56	10.24	1/29/2021
	IEEE/IEC Head	SPEAG D2450V2 / 782	54.40 +/- 10%	14.00	56.00	3/18/2021
	IEEE/IEC Head	SPEAG D5GHzV2_5250MHz / 1026	81.00 +/- 10%	7.88	78.80	1/28/2021
	FCC Body		74.50 +/- 10%	7.69	76.90	1/28/2021
				7.92	79.20	3/19/2021
	IEEE/IEC Head	SPEAG D5GHzV2_5600MHz / 1026	85.90 +/- 10%	7.76	77.60	1/27/2021
	FCC Body		77.70 +/- 10%	8.33	83.30	3/21/2021
				8.04	80.40	1/29/2021
	IEEE/IEC Head	SPEAG D5GHzV2_5750MHz / 1026	82.00 +/- 10%	7.78	77.80	1/28/2021
	FCC Body		75.40 +/- 10%	7.88	78.80	2/14/2021

Note: # denotes that the system verification check covers next test day (within 24 hours)

Table 11 (Continued)

Probe Serial #	Tissue Type	Dipole Kit / Serial #	Ref SAR @ 1W (W/kg)	System Check Results Measured (W/kg)	System Check Test Results when normalized to 1W (W/kg)	Tested Date
7519	IEEE/IEC Head	SPEAG D1800V2 / 2D119	39.30 +/- 10%	9.84	39.36	3/1/2021
	FCC Body		38.00 +/- 10%	9.69	38.76	3/1/2021
	FCC Body	SPEAG D1900V2 / 5D065	39.50 +/- 10%	10.30	41.20	3/5/2021
	FCC Body	SPEAG D2600V2 / 1002	54.60 +/- 10%	14.50	58.00	3/1/2021

Note: # denotes that the system verification check covers next test day (within 24 hours)

10.3 Equivalent Tissue Test Results

Simulated tissue prepared for SAR measurements is measured daily and within 24 hours prior to actual SAR testing to verify that the tissue is within +/- 5% of target parameters at the center of the transmit band. This measurement is done using the applicable equipment indicated in section 9.0. The Table below summarizes the measured tissue parameters used for the SAR assessment.

Table 12

Frequency (MHz)	Tissue Type	Conductivity Target (S/m)	Dielectric Constant Target	Conductivity Meas. (S/m)	Dielectric Constant Meas.	Tested Date
711	IEEE/IEC Head	0.89 (0.84-0.93)	42.1 (40.0-44.2)	0.84	44.1	3/12/2021
	FCC Body	0.96 (0.91-1.01)	55.7 (52.9-58.5)	0.91	58.2	3/12/2021
750	IEEE/IEC Head	0.89 (0.85-0.93)	41.9 (39.8-44)	0.88	43.6	3/12/2021
	FCC Body	0.96 (0.92-1.01)	55.5 (52.8-58.3)	0.95	57.8	3/12/2021
782	IEEE/IEC Head	0.89 (0.85-0.94)	41.7 (39.7-43.8)	0.89	42.0	3/11/2021
	FCC Body	0.97 (0.92-1.01)	55.4 (52.6-58.2)	0.93	53.3	3/10/2021#
793	IEEE/IEC Head	0.90 (0.85-0.94)	41.7 (39.6-43.8)	0.90	41.8	3/11/2021
	FCC Body	0.97 (0.92-1.02)	55.4 (52.6-58.1)	0.94	53.2	3/10/2021#
829	IEEE/IEC Head	0.90 (0.85-0.94)	41.5 (39.5-43.6)	0.94	41.3	3/11/2021
	FCC Body	0.97 (0.92-1.02)	55.2 (52.5-58.0)	0.98	52.8	3/10/2021#
832	IEEE/IEC Head	0.90 (0.85-0.94)	41.5 (39.4-43.6)	0.94	41.3	3/11/2021
	FCC Body	0.97 (0.92-1.02)	55.2 (52.5-58.0)	0.98	52.8	3/10/2021#

Note: # denotes that the tissue test result covers next test day (within 24 hours)

Table 12 (Continued)

Frequency (MHz)	Tissue Type	Conductivity Target (S/m)	Dielectric Constant Target	Conductivity Meas. (S/m)	Dielectric Constant Meas.	Tested Date
835	IEEE/IEC Head	0.90 (0.86-0.95)	41.5 (39.4-43.6)	0.94	41.3	3/11/2021
				0.93	39.8	3/15/2021
				0.92	40.2	4/12/2021
	FCC Body	0.97 (0.92-1.02)	55.2 (52.4-58.0)	0.98	52.8	3/10/2021#
836	IEEE/IEC Head	0.90 (0.86-0.95)	41.5 (39.4-43.6)	0.94	41.2	3/11/2021
				0.92	40.2	4/12/2021#
	FCC Body	0.97 (0.92-1.02)	55.2 (52.4-58.0)	0.98	52.8	3/10/2021#
849	FCC Body	0.99 (0.94-1.04)	55.2 (52.4-57.9)	1.04	53.1	1/29/2021
900	FCC Body	1.05 (0.92-1.01)	55.0 (52.3-57.8)	1.09	52.6	1/29/2021
1720	IEEE/IEC Head	1.35 (1.29-1.42)	40.1 (38.1-42.1)	1.30	39.9	3/12/2021
	FCC Body	1.47 (1.40-1.54)	53.5 (50.8-56.2)	1.40	52.2	3/9/2021
1733	IEEE/IEC Head	1.36 (1.29-1.43)	40.1 (38.1-42.1)	1.40	38.7	3/1/2021
	FCC Body	1.48 (1.40-1.55)	53.5 (50.8-56.2)	1.43	51.4	3/1/2021#
				1.44	52.2	4/18/2021#
1745	FCC Body	1.49 (1.41-1.56)	53.4 (50.8-56.1)	1.42	51.5	4/12/2021
1753	IEEE/IEC Head	1.37 (1.30-1.44)	40.1 (38.1-42.1)	1.31	38.7	3/13/2021
				1.41	39.3	5/1/2021
	FCC Body	1.49 (1.42-1.56)	53.4 (50.8-56.1)	1.44	52.0	3/9/2021
1770	FCC Body	1.50 (1.43-1.58)	53.4 (50.7-56.0)	1.45	51.4	4/12/2021
1800	IEEE/IEC Head	1.40 (1.33-1.47)	40.0 (38-42)	1.47	38.4	3/1/2021
				1.37	39.6	3/12/2021
				1.35	38.5	3/13/2021
				1.38	38.8	3/16/2021
				1.45	39.1	5/1/2021
	FCC Body	1.52 (1.44-1.60)	53.3 (50.6-56.0)	1.50	51.1	3/1/2021#
				1.49	51.9	3/9/2021#
				1.49	51.2	4/12/2021
				1.51	51.9	4/18/2021#
1850	IEEE/IEC Head	1.40 (1.33-1.47)	40.0 (38.0-42.0)	1.34	39.6	4/12/2021#
1852	FCC Body	1.52 (1.44-1.60)	53.3 (50.6-56.0)	1.54	51.7	3/9/2021
				1.53	51.9	4/11/2021

Note: # denotes that the tissue test result covers next test day (within 24 hours)

Table 12 (Continued)

Frequency (MHz)	Tissue Type	Conductivity Target (S/m)	Dielectric Constant Target	Conductivity Meas. (S/m)	Dielectric Constant Meas.	Tested Date
1860	IEEE/IEC Head	1.40 (1.33-1.47)	40.0 (38.0-42.0)	1.43	39.3	3/12/2021
				1.34	40.5	4/10/2021#
	FCC Body	1.52 (1.44-1.60)	53.3 (50.6-56.0)	1.57	50.9	3/1/2021#
				1.54	51.9	4/11/2021
				1.58	51.7	4/18/2021#
1880	IEEE/IEC Head	1.40 (1.33-1.47)	40.0 (38.0-42.0)	1.45	39.3	3/12/2021
				1.45	38.5	3/16/2021
				1.36	40.4	4/10/2021#
	FCC Body	1.52 (1.44-1.60)	53.3 (50.6-56.0)	1.59	50.8	3/1/2021#
				1.49	52.4	3/5/2021
				1.57	51.6	3/9/2021#
				1.56	51.8	4/11/2021
				1.54	52.8	4/12/2021
1900	IEEE/IEC Head	1.40 (1.33-1.47)	40.0 (38.0-42.0)	1.44	38.1	3/13/2021
				1.38	40.4	4/10/2021#
				1.39	39.3	4/12/2021#
	FCC Body	1.52 (1.44-1.60)	53.3 (50.6-56.0)	1.51	52.4	3/5/2021
				1.53	51.9	3/15/2021
				1.58	51.7	4/11/2021
1905	FCC Body	1.52 (1.44-1.60)	53.3 (50.6-56.0)	1.53	51.9	4/12/2021
1908	IEEE/IEC Head	1.40 (1.33-1.47)	40.0 (38.0-42.0)	1.44	38.1	3/13/2021
	FCC Body	1.52 (1.44-1.60)	53.3 (50.6-56.0)	1.59	51.7	4/11/2021
				1.57	52.74	4/12/2021
1910	IEEE/IEC Head	1.40 (1.33-1.47)	40.0 (38.0-42.0)	1.40	39.3	4/12/2021#
2300	IEEE/IEC Head	1.67 (1.59-1.75)	39.5 (35.6-43.5)	1.68	36.8	3/13/2021#
	FCC Body	1.81 (1.72-1.90)	52.9 (47.6-58.2)	1.86	51.3	3/14/2021#
2310	IEEE/IEC Head	1.68 (1.59-1.76)	39.5 (35.5-43.4)	1.69	36.7	3/13/2021#
	FCC Body	1.82 (1.73-1.91)	52.9 (47.6-58.2)	1.87	51.3	3/14/2021#
2402	IEEE/IEC Head	1.76 (1.67-1.85)	39.3 (35.4-43.2)	1.76	35.7	3/17/2021#
	FCC Body	1.90 (1.81-2.00)	52.8 (47.5-58.0)	1.98	50.8	3/16/2021#
2412	IEEE/IEC Head	1.77 (1.68-1.86)	39.3 (35.3-43.2)	1.79	36.3	5/1/2021

Note: # denotes that the tissue test result covers next test day (within 24 hours)

Table 12 (Continued)

Frequency (MHz)	Tissue Type	Conductivity Target (S/m)	Dielectric Constant Target	Conductivity Meas. (S/m)	Dielectric Constant Meas.	Tested Date
2437	IEEE/IEC Head	1.79 (1.70-1.88)	39.2 (35.3-43.1)	1.84	35.5	3/27/2021#
2450	IEEE/IEC Head	1.80 (1.71-1.89)	39.2 (35.3-43.1)	1.81	35.5	3/17/2021#
				1.86	35.4	3/27/2021#
				1.83	36.2	5/1/2021
	FCC Body	1.95 (1.85-2.05)	52.7 (47.4-58.0)	2.04	50.6	3/16/2021#
2462	IEEE/IEC Head	1.81 (1.72-1.90)	39.2 (35.3-43.1)	1.82	35.4	3/17/2021#
				1.84	36.2	5/1/2021
	FCC Body	1.97 (1.87-2.07)	52.7 (47.4-58.0)	2.06	50.6	3/16/2021#
2506	FCC Body	2.03 (1.93-2.13)	52.6 (47.4-57.9)	2.12	48.7	4/13/2021
2535	IEEE/IEC Head	1.89 (1.80-1.99)	39.1 (35.2-43.0)	1.92	35.9	3/13/2021#
	FCC Body	2.07 (1.97-2.17)	52.6 (47.3-57.9)	2.13	50.5	3/14/2021#
2593	FCC Body	2.15 (2.05-2.26)	52.5 (47.3-57.8)	2.23	48.4	4/13/2021
2600	IEEE/IEC Head	1.96 (1.86-2.06)	39.0 (35.1-42.9)	1.99	35.6	3/13/2021#
	FCC Body	2.16 (2.05-2.027)	52.5 (47.3-57.8)	2.17	48.3	3/1/2021
				2.21	50.3	3/14/2021#
				2.24	48.3	4/13/2021
2637	IEEE/IEC Head	2.00 (1.90-2.10)	39.0 (35.1-42.8)	2.03	35.5	3/13/2021#
	FCC Body	2.22 (2.10-2.33)	52.5 (47.2-57.7)	2.22	48.2	3/1/2021
2680	FCC Body	2.28 (2.16-2.39)	52.4 (47.2-57.6)	2.32	50.0	3/14/2021#
5180	FCC Body	5.28 (4.75-5.80)	49.0 (44.1-53.9)	5.44	44.5	4/20/2021
5200	FCC Body	5.30 (4.77-5.83)	49.0 (44.1-53.9)	5.57	44.5	3/19/2021#
5240	IEEE/IEC Head	5.35 (4.81-5.88)	49.0 (44.1-53.9)	5.53	44.6	1/28/2021#
				5.53	44.6	1/28/2021#
	FCC Body	5.35 (4.81-5.88)	49.0 (44.1-53.9)	5.62	44.4	3/19/2021#

Note: # denotes that the tissue test result covers next test day (within 24 hours)

Table 12 (Continued)

Frequency (MHz)	Tissue Type	Conductivity Target (S/m)	Dielectric Constant Target	Conductivity Meas. (S/m)	Dielectric Constant Meas.	Tested Date
5250	IEEE/IEC Head	5.36 (4.82-5.89)	48.9 (44.1-53.8)	5.54	44.6	1/28/2021#
	FCC Body	5.36 (4.82-5.89)	48.9 (44.1-53.8)	55.4	44.6	1/28/2021#
				5.64	44.4	3/19/2021#
				5.53	44.3	4/20/2021
5260	FCC Body	5.37 (4.83-5.91)	48.9 (44.0-53.8)	5.28	44.4	1/28/2021#
5500	IEEE/IEC Head	4.97 (4.47-5.46)	35.7 (32.1-39.2)	4.59	33.5	4/19/2021#
5600	IEEE/IEC Head	5.07 (4.56-5.58)	35.5 (32.0-39.1)	4.86	33.1	1/27/2021
				4.65	33.0	3/21/2021#
	FCC Body	5.77 (5.19-6.34)	48.5 (43.6-53.3)	5.70	43.9	1/29/2021
5620	IEEE/IEC Head	5.09 (4.58-5.60)	35.5 (31.9-39.0)	4.89	33.1	1/27/2021
				4.67	33.0	3/21/2021#
	FCC Body	5.79 (5.21-6.37)	48.4 (43.6-53.3)	5.72	43.8	1/29/2021
5720	IEEE/IEC Head	5.19 (4.67-5.46)	35.4 (31.8-38.9)	4.81	33.2	4/19/2021#
5750	IEEE/IEC Head	5.22 (4.70-5.74)	35.4 (31.8-38.9)	5.02	32.9	1/27/2021#
				4.84	33.2	4/19/2021#
	FCC Body	5.94 (5.35-6.54)	48.3 (43.4-53.1)	6.11	44.2	2/13/2021#
5785	IEEE/IEC Head	5.26 (4.73-5.78)	35.3 (31.8-38.8)	5.06	32.9	1/27/2021#
	FCC Body	5.98 (5.38-6.58)	48.2 (43.4-53.0)	6.16	44.1	2/13/2021#

Note: # denotes that the tissue test result covers next test day (within 24 hours)

11.0 Environmental Test Conditions

The EME Laboratory's ambient environment is well controlled resulting in very stable simulated tissue temperature and therefore stable dielectric properties. Simulated tissue temperature is measured prior to each scan to insure it is within $\pm 2^{\circ}\text{C}$ of the temperature at which the dielectric properties were determined. The liquid depth within the phantom used for measurements was at least 15cm. Additional precautions are routinely taken to ensure the stability of the simulated tissue such as covering the phantoms when scans are not actively in process in order to minimize evaporation. The lab environment is continuously monitored. The Table below presents the range and average environmental conditions during the SAR tests reported herein:

Table 13

	Target	Measured
Ambient Temperature	18 – 25 °C	Range: 21.3 – 23.4°C Avg. 22.0 °C
Tissue Temperature	18 – 25 °C	Range: 20.7-22.6°C Avg. 21.6°C

Relative humidity target range is a recommended target

The EME Lab RF environment uses a Spectrum Analyzer to monitor for extraneous large signal RF contaminants that could possibly affect the test results. If such unwanted signals are discovered the SAR scans are repeated.

12.0 DUT Test Setup and Methodology

12.1 Measurements

SAR measurements were performed using the DASY system described in section 8.0 using zoom scans. Oval flat phantoms, SAM phantom and triple flat phantom are filled with applicable simulated tissue were used for body and Head testing.

The Table below includes the step sizes and resolution of area and zoom scans per KDB 865664 requirements.

Table 14

Description		≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface		5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location		$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}		≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
		When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom} , Δy_{Zoom}		≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.			

12.2 DUT Configuration(s)

The DUT is a portable device operational at the body and head as described in section 6.0 while using the applicable accessories listed in section 7.0. KDB 941225 D05 and D01 were applied to GSM, LTE & WCDMA test configuration and KDB 248227 D01 applied to WLAN test configurations. CMW500 Communication Test set was used for GSM, LTE & WCDMA testing.

12.3 DUT Positioning Procedures

The positioning of the device for each body location is described below and illustrated in Appendix F.

12.3.1 Body

The DUT was positioned in normal use configuration against the phantom with the offered body worn accessory as well as with and without the offered audio accessories as applicable.

12.3.2 Head

The DUT was positioned touching the ear while either touching the cheek or tilted 15° from the cheek.

12.3.3 Hotspot

The DUT was positioned with a test separation of 10mm from the phantom.

12.4 DUT Test Channels

The number of test channels was determined by using the following IEEE 1528 equation. The use of this equation produces the same or more test channels compared to the FCC KDB 447498 number of test channels formula.

$$N_c = 2 * \text{roundup}[10 * (f_{\text{high}} - f_{\text{low}}) / f_c] + 1$$

Where

N_c = Number of channels

F_{high} = Upper channel

F_{low} = Lower channel

F_c = Center channel

12.5 SAR Result Scaling Methodology

The calculated 1-gram and 10-gram averaged SAR results indicated as “Max Calc. 1g-SAR” in the data Tables is determined by scaling the measured SAR to account for power leveling variations and drift. For this device the “Max Calc. 1g-SAR” are scaled using the following formula:

$$\text{Max_Calc} = \text{SAR_meas} \cdot 10^{\frac{-\text{Drift}}{10}} \cdot \frac{P_{\text{max}}}{P_{\text{int}}} \cdot \text{DC}$$

P_{max} = Maximum Power (W)

P_{int} = Initial Power (W)

Drift = DASY drift results (dB)

SAR_meas = Measured 1-g or 10-g Avg. SAR (W/kg)

DC = Transmission mode duty cycle in % where applicable

50% duty cycle is applied for PTT operation

Note: for conservative results, the following are applied:

If $P_{\text{int}} > P_{\text{max}}$, then $P_{\text{max}}/P_{\text{int}} = 1$.

Drift = 1 for positive drift

Additional SAR scaling was applied using the methodologies outlined in FCC KDB 865664 using tissue sensitivity values. SAR was scaled for conditions where the tissue permittivity was measured above the nominal target and for tissue conductivity that was measured below the nominal target. Negative or reduced SAR scaling is not permitted.

12.6 DUT Test Plan

The guidelines and requirements outlined in section 4.0 were used to assess compliance of this device. All modes of operation identified in section 6.0 were considered during the development of the test plan

13.0 DUT Test Data

13.1 Assessment at the Body

The changed radio was assessed with the previous highest applicable configuration for each of the applicable technologies WWAN (GSM, LTE & WCDMA), WLAN 2.4GHz, WLAN 5GHz & Bluetooth. SAR plots of the highest results per technology (bolded) are presented in Appendix E.

Table 15

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
GSM850									
AN000246A01 (Ant 1)	PMNN4546A	Back of DUT @ 10mm	None	848.8000	0.81	-0.03	0.27	0.42	ZZ-AB-210130-01#
GSM1900									
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1880.0000	0.57	0.03	0.46	0.51	AMN(MHI)-AB-210310-03#
WCDMA B2									
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1907.6000	0.27	-0.13	1.02	1.21	MA-AB-210411-09
WCDMA B4									
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1752.6000	0.25	-0.23	0.67	0.71	AR(FZ)-AB-210310-08#
WCDMA B5									
AN000246A01 (Ant 1)	PMNN4546A	Back of DUT @ 10mm	None	836.4000	0.29	-0.02	0.45	0.50	MA-AB-210310-13
LTE B2									
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1900.000	0.18	-0.01	0.64	0.90	MA-AB-210411-05
LTE B4									
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1732.5000	0.21	-0.05	0.59	0.72	AMN(MHI)-AB-210419-07#
LTE B5									
AN000246A01 (Ant 1)	PMNN4546A	PMLN7875A @ Front of DUT	None	829.0000	0.240	-0.12	0.58	0.62	MA-AB-210310-14
LTE B7									
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	2535.0000	0.18	-0.16	0.45	0.60	AR(FZ)-AB-210314-15
LTE B12									
AN000246A01 (Ant 1)	PMNN4546A	PMLN7875A @ Front of DUT	None	711.0000	0.25	0.02	0.40	0.41	AMN(FZ)-AB-210312-06

Table 15 (Continued)

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
LTE B14									
AN000246A01 (Ant 1)	PMNN4546A	PMLN7875A @ Front of DUT	None	793.0000	0.230	-0.08	0.58	0.64	MA(SAN)-AB-210311-03#
LTE B30									
AN000247A01 (Ant 2)	PMNN4545A	Front of DUT @ 10mm	None	2310.0000	0.202	-0.04	0.82	1.03	AR(FZ)-AB-210314-16
LTE B66									
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1720.0000	0.24	0.10	0.72	0.75	AMN(MHI)-AB-210309-13
LTE B25									
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1905.0000	0.204	-0.19	0.40	0.52	AR(FZ)-AB-210315-03
LTE B13									
AN000246A01 (Ant 1)	PMNN4546A	Front of DUT @ 10mm	None	782.0000	0.212	-0.17	0.46	0.56	MA(SAN)-AB-210311-06#
LTE B26									
AN000246A01 (Ant 1)	PMNN4546A	Front of DUT @ 10mm	None	831.5000	0.229	-0.05	0.53	0.59	AR(FZ)-AB-210311-08#
LTE B41									
AN000247A01 (Ant 2)	PMNN4546A	PMLN7845A w/ GMDN0566 AC @ Front of DUT	None	2636.5000	0.201	0.24	0.24	0.30	AMN-AB-210301-06
WLAN 2.4GHz									
AN000249A01 (Ant 7)	PMNN4546A	Front of DUT @ 10mm	None	2462.0000	0.08	-0.16	0.18	0.21	AR(FZ)-AB-210317-04#
WLAN 5.3GHz									
AN000243A01 (Ant 4)	PMNN4546A	Back of DUT @ 10 mm	None	5240.0000	0.06	0.14	0.31	0.44	AR-AB-210128-16
WLAN 5.5GHz									
AN000243A01 (Ant 4)+ AN000249A01 (Ant 7)	PMNN4546A	Back of DUT @ 10mm	None	5620.0000	0.10	-0.20	0.30	0.49	AR-AB-210129-04#
WLAN 5.8GHz									
AN000243A01 (Ant 4)	PMNN4546A	Back of DUT @ 10 mm	None	5785.0000	0.06	-0.16	0.17	0.20	AR-AB-210214-04#
Bluetooth									
AN000243A01 (Ant 4)	PMNN4546A	Left Side of DUT @ 10mm	None	2402.0000	0.01	-0.04	0.02	0.02	MA-AB-210317-13#

13.1 Assessments for the Hotspot

The changed radio was assessed with the previous highest applicable configuration for each of the applicable technologies WWAN (GSM, LTE & WCDMA), WLAN 2.4GHz, WLAN 5GHz & Bluetooth. SAR plots of the highest results per technology (bolded) are presented in Appendix E.

Table 16

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
GSM850									
AN000246A01 (Ant 1)	PMNN4546A	Back of DUT @ 10mm	None	848.8000	0.81	-0.03	0.27	0.42	ZZ-AB-210130-01#
GSM1900									
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1880.0000	0.57	0.03	0.46	0.51	AMN(MHI)-AB-210310-03#
WCDMA B2									
AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1880.0000	0.280	-0.05	1.29	1.47	MA-AB-210412-08
WCDMA B4									
AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1752.6000	0.25	0.17	1.30	1.30	AR(FZ)-AB-210310-09#
WCDMA B5									
AN000246A01 (Ant 1)	PMNN4546A	Right Side of DUT @ 10mm	None	836.4000	0.285	-0.02	0.45	0.50	MA-AB-210310-13
LTE B2									
AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1860.0000	0.197	0.14	1.05	1.34	AMN-AB-210301-05
LTE B4									
AN000247A01	PMNN4546A	Right Side of DUT @ 10mm	None	1732.5000	0.21	0.10	0.98	1.19	BL-AB-210302-02#
LTE B5									
AN000246A01 (Ant 1)	PMNN4546A	Back of DUT @ 10mm	None	829.0000	0.240	0.09	0.37	0.38	MA(SAN)-AB-210311-02#
LTE B7									
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	2535.0000	0.18	-0.16	0.45	0.60	AR(FZ)-AB-210314-15
LTE B12									
AN000246A01 (Ant 1)	PMNN4546A	Back of DUT @ 10mm	None	711.0000	0.25	-0.21	0.27	0.29	AMN(FZ)-AB-210312-07

Table 16 (Continued)

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
LTE B14									
AN000246A01 (Ant 1)	PMNN4546A	Back of DUT @ 10mm	None	793.0000	0.230	0.01	0.35	0.38	MA(SAN)-AB-210311-04#
LTE B30									
AN000247A01 (Ant 2)	PMNN4545A	Front of DUT @ 10mm	None	2310.0000	0.202	-0.04	0.82	1.03	AR(FZ)-AB-210314-16
LTE B66									
AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1720.0000	0.24	0.02	0.94	0.98	AMN(MHI)-AB-210310-01#
LTE B25									
AN000247A01	PMNN4546A	Right Side of DUT @ 10mm	None	1860.0000	0.21	0.09	1.07	1.27	AMN(MHI)-AB-210419-04#
LTE B13									
AN000246A01 (Ant 1)	PMNN4546A	Front of DUT @ 10mm	None	782.0000	0.212	-0.17	0.46	0.56	MA(SAN)-AB-210311-06#
LTE B26									
AN000246A01 (Ant 1)	PMNN4546A	Front of DUT @ 10mm	None	831.5000	0.229	-0.05	0.53	0.59	AR(FZ)-AB-210311-08#
LTE B41									
AN000247A01	PMNN4546A	Right Side of DUT @ 10mm	None	2680.0000	0.159	-0.15	0.42	0.69	AR(FZ)-AB-210315-01#
WLAN 2.4GHz									
AN000249A01 (Ant 7)	PMNN4546A	Front of DUT @ 10mm	None	2462.0000	0.08	-0.16	0.18	0.21	AR(FZ)-AB-210317-04#
WLAN 5.3GHz									
AN000243A01 (Ant 4)+ AN000249A01 (Ant 7)	PMNN4546A	Left Side of DUT @ 10 mm	None	5240.0000	0.11	0.17	0.52	0.75	BL(MFR)-AB-210319-11#
WLAN 5.5GHz									
AN000243A01 (Ant 4)+ AN000249A01 (Ant 7)	PMNN4546A	Back of DUT @ 10mm	None	5620.0000	0.10	-0.20	0.30	0.49	AR-AB-210129-04#
WLAN 5.8GHz									
AN000243A01 (Ant 4)	PMNN4546A	Back of DUT @ 10 mm	None	5785.0000	0.06	-0.16	0.17	0.20	AR-AB-210214-04#
Bluetooth									
AN000243A01 (Ant 4)	PMNN4546A	Left Side of DUT @ 10mm	None	2402.0000	0.01	-0.04	0.02	0.02	MA-AB-210317-13#

13.2 Assessments at the Head

The changed radio was assessed with the previous highest applicable configuration for each of the applicable technologies WWAN (GSM, LTE & WCDMA), WLAN 2.4GHz, WLAN 5GHz & Bluetooth. SAR plots of the highest results per technology (bolded) are presented in Appendix E.

Table 17

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
GSM850									
AN000246A01 (Ant 1)	PMNN4546A	Touch	None	836.4000	0.79	-0.05	0.39	0.62	AMN(MHI)-REAR-210413-01#
GSM1900									
AN000247A01 (Ant 2)	PMNN4546A	Touch	None	1909.8000	0.53	-0.34	0.61	0.79	AMN(MHI)-REAR-210413-03#
WCDMA B2									
AN000247A01 (Ant 2)	PMNN4546A	Touch	None	1907.6000	0.274	-0.04	0.99	1.15	MA(MHI)-REAR-210313-17
WCDMA B4									
AN000247A01 (Ant 2)	PMNN4546A	Touch	None	1752.6000	0.254	-0.02	0.99	1.00	MA(MHI)-REAR-210313-14
WCDMA B5									
AN000246A01 (Ant 1)	PMNN4546A	Touch	None	836.4000	0.285	-0.17	0.43	0.49	MA-LEAR-210311-22
LTE B2									
AN000247A01 (Ant 2)	PMNN4546A	Right Cheek	None	1880.0000	0.19	0.04	0.77	1.05	AR(FZ)-REAR-210312-13
LTE B4									
AN000247A01 (Ant 2)	PMNN4546A	Right Cheek	None	1732.5000	0.206	0.05	0.65	0.79	BL-REAR-210301-08
LTE B5									
AN000246A01 (Ant 1)	PMNN4546A	Touch	None	829.0000	0.240	-0.41	0.35	0.41	AR(FZ)-LEAR-210311-10
LTE B7									
AN000247A01 (Ant 2)	PMNN4546A	Touch	None	2535.0000	0.175	0.01	0.69	0.89	MA-REAR-210314-03#
LTE B12									
AN000246A01 (Ant 1)	PMNN4546A	Touch	None	711.0000	0.245	-0.14	0.27	0.28	MA-LEAR-210312-02

Table 17 (Continued)

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
LTE B14									
AN000246A01 (Ant 1)	PMNN4546A	Touch	None	793.0000	0.230	-0.23	0.34	0.40	AR(FZ)-LEAR-210311-11
LTE B30									
AN000247A01 (Ant 2)	PMNN4546A	Touch	None	2310.0000	0.202	-0.14	0.93	1.19	MA-REAR-210314-05#
LTE B66									
AN000247A01 (Ant 2)	PMNN4546A	Touch	None	1720.0000	0.240	0.07	0.85	0.89	MA-REAR-210312-15
LTE B25									
AN000247A01 (Ant 2)	PMNN4546A	Touch	None	1860.0000	0.218	-0.01	0.86	0.99	MA-REAR-210312-16
LTE B13									
AN000246A01 (Ant 1)	PMNN4546A	Touch	None	782.0000	0.212	-0.42	0.32	0.42	AR(FZ)-LEAR-210311-12
LTE B26									
AN000246A01 (Ant 1)	PMNN4546A	Touch	None	831.5000	0.229	-0.15	0.36	0.40	AR(FZ)-LEAR-210311-13
LTE B41									
AN000247A01 (Ant 2)	PMNN4546A	Touch	None	2636.5000	0.201	-0.14	0.39	0.50	MA-REAR-210314-06#
WLAN 2.4GHz									
AN000249A01 (Ant 7)	PMNN4546A	Touch	None	2437.0000	0.07	-0.18	0.85	1.18	AR(FZ)-LEAR-210328-01#
WLAN 5.3GHz									
AN000249A01 (Ant 7)	PMNN4546A	Touch	None	5240.0000	0.05	-0.10	0.29	0.44	MA(AF)-REAR-210128-11
WLAN 5.5GHz									
AN000243A01 (Ant 4)+ AN000249A01 (Ant 7)	PMNN4546A	Touch	None	5500.0000	0.10	-0.05	0.88	1.45	AR(FZ)-LEAR-210420-01#
WLAN 5.8GHz									
AN000249A01 (Ant 7)	PMNN4546A	Touch	None	5785.0000	0.05	0.18	0.59	0.86	AR-LEAR-210128-01#
Bluetooth									
AN000243A01 (Ant 4)	PMNN4546A	Touch	None	2402.0000	0.01	-0.22	0.03	0.03	MA(AF)-REAR-210318-06

13.3 Assessments for Phablet condition (Product Specific 10g SAR Exposure)

The changed radio was assessed with the previous highest applicable configuration for WCDMA B4 and WLAN 5GHz with Phablet test condition. SAR plots of the highest result (bolded) are presented in Appendix E.

Table 18

Antenna	Battery	Separation distance	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 10g-SAR (W/kg)	Max Calc. 10g-SAR (W/kg)	Run#
WLAN 5GHz									
AN000243A01 (Ant 4)+ AN000249A01 (Ant 7)	PMNN4546A	Left Side of DUT @ 0mm	None	5260.0000	0.10	-0.29	0.75	1.12	AR-AB-210129-02#
WCDMA B4									
AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 0mm	None	1752.6000	0.25	-0.15	2.70	2.79	BL(MHI)-AB-210501-09

11.3 Face Assessment

Not applicable.

14 Additional assessment for ISED Canada

As per ISED Notice 2016-DRS001, additional tests only required the low, mid and high frequency channels for the highest configuration from Body, Hotspot and Head that higher than previous original filing (exceeded 1 system uncertainty). The SAR results are in Tables below. SAR plots of the highest result (bolded) are presented in Appendix E.

Table 19

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
Hotspot									
WCDMA B2									
AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1852.4000	0.29	0.00	1.26	1.39	AR(FZ)-AB-210310-11#
AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1880.0000	0.28	-0.05	1.29	1.47	MA-AB-210412-08
AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1907.6000	0.27	-0.18	1.17	1.41	MA-AB-210412-09

Table 19 (Continued)

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
Hotspot									
LTE B2									
AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1860.0000	0.20	0.14	1.05	1.34	AMN-AB-210301-05
AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1880.0000	0.20	-0.18	0.99	1.31	MA-AB-210411-06
AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1900.0000	0.19	-0.19	0.89	1.24	MA-AB-210411-07
LTE B66									
AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1720.0000	0.24	0.02	0.94	0.98	AMN(MHI)-AB-210310-01#
AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1745.0000	0.24	-0.08	0.89	0.94	AMN(MHI)-AB-210412-06
AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1770.0000	0.24	-0.02	0.92	0.97	AMN(MHI)-AB-210412-05
LTE B41									
AN000247A01	PMNN4546A	Right Side of DUT @ 10mm	None	2680.0000	0.16	-0.15	0.42	0.69	AR(FZ)-AB-210315-01#
AN000247A01	PMNN4546A	Right Side of DUT @ 10mm	None	2506.0000	0.22	-0.01	0.29	0.33	MA-AB-210413-05
AN000247A01	PMNN4546A	Right Side of DUT @ 10mm	None	2593.0000	0.22	-0.02	0.25	0.29	MA-AB-210413-06
WLAN 5GHz									
AN000243A01 (Ant 4)+ AN000249A01 (Ant 7)	PMNN4546A	Left Side of DUT @ 10 mm	None	5240.0000	0.11	0.17	0.52	0.75	BL(MFR)-AB-210319-11#
AN000243A01 (Ant 4)+ AN000249A01 (Ant 7)	PMNN4546A	Left Side of DUT @ 10 mm	None	5180.0000	0.10	0.09	0.40	0.63	AMN(MHI)-AB-210420-05
AN000243A01 (Ant 4)+ AN000249A01 (Ant 7)	PMNN4546A	Left Side of DUT @ 10 mm	None	5200.0000	0.11	-0.10	0.49	0.71	AMN(MHI)-AB-210420-06

Note:

1. Not applicable for LTE Band 13 with bandwidth 10 MHz as only one channel.
2. Not applicable for LTE Band 4 with bandwidth 20 MHz as only one channel.
3. Not applicable for LTE Band 30 with bandwidth 10 MHz as only one channel.
4. Not applicable for LTE Band 26 with bandwidth 15 MHz as only one channel.

Table 19 (continued)

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
Head									
GSM 1900									
AN000247A01 (Ant 2)	PMNN4546A	Touch	None	1850.2000	0.61	-0.19	0.55	0.60	AMN(MHI)-REAR-210413-02#
AN000247A01 (Ant 2)	PMNN4546A	Touch	None	1880.0000	0.57	-0.05	0.64	0.72	ZZ(MHI)-REAR-210316-05
AN000247A01 (Ant 2)	PMNN4546A	Touch	None	1909.8000	0.53	-0.34	0.61	0.79	AMN(MHI)-REAR-210413-03#
LTE B2									
AN000247A01 (Ant 2)	PMNN4546A	Right Cheek	None	1880.0000	0.19	0.04	0.77	1.05	AR(FZ)-REAR-210312-13
AN000247A01 (Ant 2)	PMNN4546A	Right Cheek	None	1860.0000	0.18	-0.28	0.46	0.66	AR(FZ)-REAR-210410-06
AN000247A01 (Ant 2)	PMNN4546A	Right Cheek	None	1900.0000	0.18	0.01	0.48	0.68	AR(FZ)-REAR-210410-07
LTE B25									
AN000247A01 (Ant 2)	PMNN4546A	Touch	None	1860.0000	0.22	-0.01	0.86	0.99	MA-REAR-210312-16
AN000247A01 (Ant 2)	PMNN4546A	Touch	None	1880.0000	0.22	0.01	0.60	0.68	AR(FZ)-REAR-210411-01#
AN000247A01 (Ant 2)	PMNN4546A	Touch	None	1900.0000	0.20	-0.14	0.64	0.83	AR(FZ)-REAR-210411-02#
WLAN 2.4GHz									
AN000249A01 (Ant 7)	PMNN4546A	Touch	None	2437.0000	0.07	-0.18	0.85	1.18	AR(FZ)-LEAR-210328-01#
AN000249A01 (Ant 7)	PMNN4546A	Touch	None	2412.0000	0.07	-0.38	0.73	1.03	BL(MHI)-LEAR-210501-07
AN000249A01 (Ant 7)	PMNN4546A	Touch	None	2462.0000	0.08	-0.33	0.93	1.17	BL(MHI)-LEAR-210501-06
WLAN 5GHz									
AN000243A01 (Ant 4)+ AN000249A01 (Ant 7)	PMNN4546A	Touch	None	5620.0000	0.10	-0.05	0.66	1.03	AR-LEAR-210127-16
AN000243A01 (Ant 4)+ AN000249A01 (Ant 7)	PMNN4546A	Touch	None	5500.0000	0.10	-0.05	0.88	1.45	AR(FZ)-LEAR-210420-01#
AN000243A01 (Ant 4)+ AN000249A01 (Ant 7)	PMNN4546A	Touch	None	5720.0000	0.10	-0.17	0.67	1.08	AR(FZ)-LEAR-210419-13

Table 19 (continued)

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
Body									
WCDMA B2									
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1880.0000	0.28	0.03	0.93	1.05	BL-AB-210305-08
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1852.4000	0.29	-0.07	0.99	1.11	MA-AB-210411-08
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1907.6000	0.27	-0.13	1.02	1.21	MA-AB-210411-09
LTE B2									
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1880.0000	0.21	-0.01	0.70	0.86	AMN-AB-210301-03
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1860.0000	0.18	-0.11	0.54	0.75	AR(FZ)-AB-210411-04
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1900.0000	0.18	-0.01	0.64	0.90	MA-AB-210411-05
LTE B66									
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1720.0000	0.24	0.10	0.72	0.75	AMN(MHI)-AB-210309-13
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1745.0000	0.24	-0.01	0.65	0.67	AMN(MHI)-AB-210412-02
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1770.0000	0.24	-0.04	0.63	0.66	AMN(MHI)-AB-210412-03

15 Simultaneous Transmissions

The Table below summarizes the simultaneous transmissions between highest configuration WWAN (GSM, LTE & WCDMA), WLAN 2.4GHz, WLAN 5GHz and Bluetooth.

Table 20

Simultaneous TX Combination	Capable Transmit Configuration	Body	Head
1	WWAN + 2.4 GHz WLAN	Yes	Yes
2	WWAN + 5 GHz WLAN	Yes	Yes
3	WWAN + BT	Yes	Yes
4	WWAN + 2.4 GHz WLAN Ant 4 + 5GHz WLAN Ant 7	Yes	Yes
5	WWAN + 2.4 GHz WLAN Ant 7 + BT Ant 4	Yes	Yes
6	WWAN + 5GHz WLAN Ant 7 + BT Ant 4	Yes	Yes

Remarks:

1. The device will choose either GSM, WCDMA or LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
2. 2.4GHz WLAN supports hotspot operation and Bluetooth supports tethering applications.
3. 2.4GHz WLAN Ant 4 will not operate simultaneous with Bluetooth Ant 4.
4. WLAN 2.4GHz and WLAN 5GHz is choosing the highest configuration to do the simultaneous transmission analysis/summation.

The highest SAR configuration for Head, Body-worn and Hotspot are at the WWAN bands. Additional scans were performed at the similar use-case configuration as the highest SAR configuration for each of the applicable simultaneous transmission technologies.

Table 21 (Body)

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
WWAN (WCDMA B2)									
AN000247A01 (Ant 2)	PMNN4546A	Front of DUT @ 10mm	None	1907.6000	0.27	-0.13	1.02	1.21	MA-AB-210411-09
WLAN 2.4GHz									
AN000249A01 (Ant 7)	PMNN4546A	Front of DUT @ 10mm	None	2462.0000	0.08	-0.16	0.18	0.21	AR(FZ)-AB-210317-04#
AN000243A01 (Ant 4)+ AN000249A01 (Ant 7)	PMNN4546A	Front of DUT @ 10mm	None	2462.0000	0.15	-0.07	0.05	0.06	MA-AB-210317-12#
AN000243A01 (Ant 4)	PMNN4546A	Front of DUT @ 10mm	None	2462.0000	0.07	-0.16	0.05	0.07	AR(FZ)-AB-210317-03#

Table 21 (Body) (Continued)

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
WLAN 5GHz									
AN000243A01 (Ant 4)	PMNN4546A	Front of DUT @ 10mm	None	5200.0000	0.05	-0.21	0.20	0.31	MA(AF)-AB-210320-07#
AN000249A01 (Ant 7)	PMNN4546A	Front of DUT @ 10mm	None	5200.0000	0.06	0.18	0.07	0.10	AR(MFR)-AB-210320-09#
AN000243A01 (Ant 4)+ AN000249A01 (Ant 7)	PMNN4546A	Front of DUT @ 10mm	None	5200.0000	0.11	-0.17	0.19	0.27	MA(AF)-AB-210320-06#
Bluetooth									
AN000243A01 (Ant 4)	PMNN4546A	Front of DUT @ 10mm	None	2402.0000	0.01	-0.02	0.005	0.005	MA-AB-210317-12#

Table 22 (Hotspot)

Antenna	Battery	Separation distance	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
WWAN (WCDMA B2)									
AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1880.0000	0.28	-0.05	1.29	1.47	MA-AB-210412-08

Note: No additional test configuration Right side of DUT @10mm for WLAN 2.4GHz, WLAN 5GHz and Bluetooth. Details available in the original filing report.

Table 23 (Head)

Antenna	Battery	Head Position	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
WWAN (LTE B30)									
AN000247A01 (Ant 2)	PMNN4546A	Touch	None	2310.0000	0.20	-0.14	0.93	1.19	MA-REAR-210314-05#
WLAN 2.4GHz									
AN000243A01 (Ant 4)+ AN000249A01 (Ant 7)	PMNN4546A	Touch	None	2462.0000	0.15	-0.15	0.23	0.29	MA(AF)-REAR-210318-04
AN000243A01 (Ant 4)	PMNN4546A	Touch	None	2462.0000	0.07	0.11	0.24	0.31	AR(FZ)-REAR-210318-06#
AN000249A01 (Ant 7)	PMNN4546A	Touch	None	2462.0000	0.08	-0.18	0.53	0.64	MA(AF)-REAR-210318-05
WLAN 5GHz									
AN000243A01 (Ant 4)+ AN000249A01 (Ant 7)	PMNN4546A	Touch	None	5620.0000	0.14	0.40	0.31	0.32	AR(MFR)-REAR-210322-01#
AN000243A01 (Ant 4)	PMNN4546A	Touch	None	5620.0000	0.06	0.26	0.30	0.38	AR(MFR)-REAR-210322-03#
AN000249A01 (Ant 7)	PMNN4546A	Touch	None	5620.0000	0.05	-0.01	0.44	0.70	AR-REAR-210322-05#
Bluetooth									
AN000243A01 (Ant 4)	PMNN4546A	Touch	None	2402.0000	0.01	-0.22	0.03	0.03	MA(AF)-REAR-210318-06

The combined 1g-SAR results for each of the simultaneous configurations for the applicable test positions are indicated in the following Table:

Table 24

Designator	Frequency bands	Combined 1g-SAR (W/kg)
Body		
FCC/ISED	WWAN + 2.4 GHz WLAN	1.42
	WWAN + 5 GHz WLAN	1.52
	WWAN + BT	1.21
	WWAN + 2.4 GHz WLAN Ant 4 + 5GHz WLAN Ant 7	1.38
	WWAN + 2.4 GHz WLAN Ant 7 + BT Ant 4	1.42
	WWAN + 5GHz WLAN Ant 7 + BT Ant 4	1.31
Hotspot		
FCC/ISED	WWAN	1.47
Head		
FCC/ISED	WWAN + 2.4 GHz WLAN	*1.83
	WWAN + 5 GHz WLAN	*1.89
	WWAN + BT	1.22
	WWAN + 2.4 GHz WLAN Ant 4 + 5GHz WLAN Ant 7	*2.20
	WWAN + 2.4 GHz WLAN Ant 7 + BT Ant 4	*1.86
	WWAN + 5GHz WLAN Ant 7 + BT Ant 4	*1.92

Note: "*" required SPLSR

16 SPLSR (SAR to Peak Location Separation Ratio Analysis)

The simultaneous transmitting antennas in each operating mode and exposure condition combination are considered one pair at a time to determine the SPLSR.

When the SPLSR is ≤ 0.04 , the simultaneous transmission SAR is not required.

WWAN + 2.4 GHz WLAN

Technology	Exposure Conditions	Test Position	SAR value (W/kg)	Peack Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
LTE Band 30	Head	REAR Touch	1.19	63.91	0.03	SPLSR ≤ 0.04 , Not required
WLAN 2.4GHz - Ant 7			0.64			

WWAN + 5 GHz WLAN

Technology	Exposure Conditions	Test Position	SAR value (W/kg)	Peack Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
LTE Band 30	Head	REAR Touch	1.19	66.06	0.02	SPLSR ≤ 0.04 , Not required
WLAN 5GHz - Ant 7			0.70			

WWAN + 2.4 GHz WLAN Ant 4 + 5GHz WLAN Ant 7

Technology	Exposure Conditions	Test Position	SAR value (W/kg)	Peack Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
LTE Band 30	Head	REAR Touch	1.19	66.47	0.02	SPLSR ≤ 0.04 , Not required
WLAN 2.4GHz - Ant 4			0.31			
LTE Band 30	Head	REAR Touch	1.19	66.06	0.02	SPLSR ≤ 0.04 , Not required
WLAN 5GHz - Ant 7			0.70			
WLAN 2.4GHz - Ant 4	Head	REAR Touch	0.31	57.72	0.01	SPLSR ≤ 0.04 , Not required
WLAN 5GHz - Ant 7			0.70			

WWAN + 2.4 GHz WLAN Ant 7 + BT Ant 4

Technology	Exposure Conditions	Test Position	SAR value (W/kg)	Peack Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
LTE Band 30	Head	REAR Touch	1.19	63.91	0.03	SPLSR $\leq$ 0.04, Not required
WLAN 2.4GHz - Ant 7			0.64			
WLAN 2.4GHz - Ant 7	Head	REAR Touch	0.64	68.82	0.01	SPLSR $\leq$ 0.04, Not required
BT - Ant 4			0.03			
LTE Band 30	Head	REAR Touch	1.19	67.05	0.01	SPLSR $\leq$ 0.04, Not required
BT - Ant 4			0.03			

WWAN + 5GHz WLAN Ant 7 + BT Ant 4

Technology	Exposure Conditions	Test Position	SAR value (W/kg)	Peack Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
LTE Band 30	Head	REAR Touch	1.19	66.06	0.02	SPLSR $\leq$ 0.04, Not required
WLAN 5GHz - Ant 7			0.70			
WLAN 5GHz - Ant 7	Head	REAR Touch	0.70	63.16	0.01	SPLSR $\leq$ 0.04, Not required
BT - Ant 4			0.03			
LTE Band 30	Head	REAR Touch	1.19	67.05	0.01	SPLSR $\leq$ 0.04, Not required
BT - Ant 4			0.03			

14.0 Results Summary

Based on the test guidelines from section 4.0 and satisfying frequencies within FCC bands and ISED Canada Frequency bands, the highest Operational Maximum Calculated 1-gram and 10-gram average SAR values found for this filing:

Table 25

Equipment Class	Frequency Band		Head	Hotspot	Body
			1g-SAR (W/kg)		
PCE	WCDMA	Band 2	1.15	1.47 ¹	1.21 ¹
		Band 4	1.00 ²	1.30 ²	0.71
		Band 5	0.49	0.50	0.50
	GSM	850	0.50	0.42	0.42
		1900	0.72 ³	0.51	0.51 ³
	LTE	Band 2	1.05 ⁴	1.34 ⁴	0.90 ⁴
		Band 4	0.79 ⁵	1.19 ⁵	0.72 ⁵
		Band 5	0.41	0.38	0.62
		Band 7	0.89	0.60	0.60
		Band 12	0.28	0.29	0.41
		Band 14	0.40	0.38	0.64
		Band 30	1.19 ⁶	1.03 ⁶	1.03 ⁶
		Band 66	0.89 ⁷	0.98 ⁷	0.75 ⁷
		Band 25	0.99 ⁸	1.27 ⁸	0.52
		Band 13	0.42	0.56	0.56
		Band 26	0.40 ⁹	0.59 ⁹	0.59 ⁹
		Band 41	0.50	0.69 ¹⁰	0.30

Table 25 (Continued)

Equipment Class	Frequency Band		Head	Hotspot	Body
			1g-SAR (W/kg)		
DTS	WLAN	2.4GHz WLAN	1.18 ¹¹	0.21 ¹¹	0.21 ¹¹
NII		5GHz WLAN	1.45 ¹²	0.75 ¹²	0.44
DSS	Bluetooth	2.4GHz Bluetooth	0.03 ¹³	0.02 ¹³	0.02 ¹³
Simultaneous Results			1.22	1.47 ¹⁴	1.52 ¹⁴
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg)		
NII	WLAN	5GHz WLAN	1.12 ¹⁵		
PCE	WCDMA	Band 4	2.79		

The test results clearly demonstrate compliance with FCC Occupational/Controlled RF Exposure limits of 8 W/kg averaged over 1 gram per the requirements of FCC 47 CFR § 2.1093.

15.0 Variability Assessment

Per the guidelines in KDB 865664 SAR variability assessment is required because SAR results are above 0.8W/kg (General population),

The Table below includes test results of the original measurement(s), the repeated measurement(s), and the ratio (SAR_{high}/SAR_{low}) for the applicable test configuration(s) in each frequency band.

Table 26 (WCDMA B2)

Run#	Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq. (MHz)	Adj Calc. 1g-SAR (W/kg)	Ratio	Comments
MA-AB-210412-08	AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1880.0000	1.30	0.98	No additional repeated scans is required due to the Ratio (SAR_{high}/SAR_{low}) < 1.20
AMN(MHI)-AB-210420-09						1.28		

Table 27 (WCDMA B4)

Run#	Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq. (MHz)	Adj Calc. 1g-SAR (W/kg)	Ratio	Comments
HvH-Ab-140313-08	AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1752.6000	1.30	0.91	No additional repeated scans is required due to the Ratio $(SAR_{high}/SAR_{low}) < 1.20$
HvH-Ab-140313-07						1.18		

Table 28 (LTE B2)

Run#	Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq. (MHz)	Adj Calc. 1g-SAR (W/kg)	Ratio	Comments
AMN-AB-210301-05	AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1860.0000	1.05	0.91	No additional repeated scans is required due to the Ratio $(SAR_{high}/SAR_{low}) < 1.20$
AMN(MHI)-AB-210419-08#						1.01		

Table 29 (LTE B4)

Run#	Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq. (MHz)	Adj Calc. 1g-SAR (W/kg)	Ratio	Comments
BL-AB-210302-02#	AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1732.5000	0.98	0.96	No additional repeated scans is required due to the Ratio $(SAR_{high}/SAR_{low}) < 1.20$
AMN(MHI)-AB-210419-06#						0.94		

Table 30 (LTE B30)

Run#	Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq. (MHz)	Adj Calc. 1g-SAR (W/kg)	Ratio	Comments
MA-REAR-210314-05#	AN000247A01 (Ant 2)	PMNN4546A	Touch	None	2310.0000	0.96	0.99	No additional repeated scans is required due to the Ratio $(SAR_{high}/SAR_{low}) < 1.20$
MA-REAR-210314-04#						0.95		

Table 31 (LTE B66)

Run#	Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq. (MHz)	Adj Calc. 1g-SAR (W/kg)	Ratio	Comments
AMN(MHI)-AB-210310-01#	AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1720.0000	0.94	0.96	No additional repeated scans is required due to the Ratio $(SAR_{high}/SAR_{low}) < 1.20$
AMN(MHI)-AB-210419-05#						0.90		

Table 32 (LTE B25)

Run#	Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq. (MHz)	Adj Calc. 1g-SAR (W/kg)	Ratio	Comments
AMN(MHI)-AB-210419-04#	AN000247A01 (Ant 2)	PMNN4546A	Right Side of DUT @ 10mm	None	1860.0000	1.07	0.94	No additional repeated scans is required due to the Ratio (SAR _{high} /SAR _{low}) < 1.20
AR(FZ)-AB-210312-11						1.01		

Table 33 (WLAN 2.4GHz)

Run#	Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq. (MHz)	Adj Calc. 1g-SAR (W/kg)	Ratio	Comments
AR(FZ)-LEAR-210328-01#	AN000249A01 (Ant 7)	PMNN4546A	Touch	None	2437.0000	1.18	0.99	No additional repeated scans is required due to the Ratio (SAR _{high} /SAR _{low}) < 1.20
BL-LEAR-210501-03						1.17		

Table 34 (WLAN 5GHz)

Run#	Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq. (MHz)	Adj Calc. 1g-SAR (W/kg)	Ratio	Comments
AR(FZ)-LEAR-210420-01#	AN000243A01 (Ant 4)+	PMNN4546A	Touch	None	5500.0000	1.00	0.88	No additional repeated scans is required due to the Ratio (SAR _{high} /SAR _{low}) < 1.20
BL-LEAR-210430-03	AN000249A01 (Ant 7)					0.88		

16.0 System Uncertainty

A system uncertainty analysis is required for this report per KDB 865664 because the highest report SAR value for General Population exposure is more than 1.5W/kg.

Per the guidelines of ISO 17025 a reported system uncertainty is required and therefore measurement uncertainty budget is included in Appendix A.

Appendix A

Measurement Uncertainty Budget

Uncertainty Budget for Device Under Test, for 650 MHz to 2700 MHz

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i> = <i>f</i> (<i>d</i> , <i>k</i>)	<i>f</i>	<i>g</i>	<i>h</i> = <i>c</i> × <i>f</i> / <i>e</i>	<i>i</i> = <i>c</i> × <i>g</i> / <i>e</i>	<i>k</i>
Uncertainty Component	IEEE 1528 section	Tol. (± %)	Prob Dist	Div.	<i>c_i</i> (1 g)	<i>c_i</i> (10 g)	1 g <i>u_i</i> (±%)	10 g <i>u_i</i> (±%)	<i>v_i</i>
Measurement System									
Probe Calibration	E.2.1	6.0	N	1.00	1	1	6.0	6.0	∞
Axial Isotropy	E.2.2	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Hemispherical Isotropy	E.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effect	E.2.3	1.0	R	1.73	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	0.3	N	1.00	1	1	0.3	0.3	∞
Response Time	E.2.7	1.1	R	1.73	1	1	0.6	0.6	∞
Integration Time	E.2.8	1.1	R	1.73	1	1	0.6	0.6	∞
RF Ambient Conditions - Noise	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	0.0	R	1.73	1	1	0.0	0.0	∞
Probe Positioner Mech. Tolerance	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning w.r.t Phantom	E.6.3	1.4	R	1.73	1	1	0.8	0.8	∞
Max. SAR Evaluation (ext., int., avg.)	E.5	3.4	R	1.73	1	1	2.0	2.0	∞
Test sample Related									
Test Sample Positioning	E.4.2	3.2	N	1.00	1	1	3.2	3.2	29
Device Holder Uncertainty	E.4.1	4.0	N	1.00	1	1	4.0	4.0	8
SAR drift	6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (measurement)	E.3.3	3.3	N	1.00	0.64	0.43	2.1	1.4	∞
Liquid Permittivity (target)	E.3.2	5.0	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measurement)	E.3.3	1.9	N	1.00	0.6	0.49	1.1	0.9	∞
Combined Standard Uncertainty			RSS				11	11	419
Expanded Uncertainty (95% CONFIDENCE LEVEL)			<i>k</i> =2				22	22	

Notes for uncertainty budget Tables:

a) Column headings *a-k* are given for reference.

b) Tol. - tolerance in influence quantity.

c) Prob. Dist. – Probability distribution

d) N, R - normal, rectangular probability distributions

e) Div. - divisor used to translate tolerance into normally distributed standard uncertainty

f) *c_i* - sensitivity coefficient that should be applied to convert the variability of the uncertainty component into a variability of SAR.

g) *u_i* – SAR uncertainty

h) *v_i* - degrees of freedom for standard uncertainty and effective degrees of freedom for the expanded uncertainty

Uncertainty Budget for Device Under Test for 3 to 6 GHz

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i> = <i>f</i> (<i>d</i> , <i>k</i>)	<i>f</i>	<i>g</i>	<i>h</i> = <i>c</i> × <i>f</i> / <i>e</i>	<i>i</i> = <i>c</i> × <i>g</i> / <i>e</i>	<i>k</i>
Uncertainty Component	IEEE 1528 section	Tol. (± %)	Prob Dist	Div.	<i>c_i</i> (1 g)	<i>c_i</i> (10 g)	1 g <i>u_i</i> (±%)	10 g <i>u_i</i> (±%)	<i>v_i</i>
Measurement System									
Probe Calibration	E.2.1	6.6	N	1.00	1	1	6.6	6.6	∞
Axial Isotropy	E.2.2	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Hemispherical Isotropy	E.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effect	E.2.3	2.0	R	1.73	1	1	1.2	1.2	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	0.3	N	1.00	1	1	0.3	0.3	∞
Response Time	E.2.7	1.1	R	1.73	1	1	0.6	0.6	∞
Integration Time	E.2.8	1.1	R	1.73	1	1	0.6	0.6	∞
RF Ambient Conditions - Noise	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	0.0	R	1.73	1	1	0.0	0.0	∞
Probe Positioner Mech. Tolerance	E.6.2	1.0	R	1.73	1	1	0.6	0.6	∞
Probe Positioning w.r.t Phantom	E.6.3	4.0	R	1.73	1	1	2.3	2.3	∞
Max. SAR Evaluation (ext., int., avg.)	E.5	2.1	R	1.73	1	1	1.2	1.2	∞
Test sample Related									
Test Sample Positioning	E.4.2	3.2	N	1.00	1	1	3.2	3.2	29
Device Holder Uncertainty	E.4.1	4.0	N	1.00	1	1	4.0	4.0	8
SAR drift	6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Dielectric Parameter Correction	--	1.4	N	1.00	1	0.79	1.4	1.1	∞
Liquid Conductivity (measurement)	E.3.3	3.3	N	1.00	0.64	0.43	2.1	1.4	∞
Liquid Permittivity (measurement)	E.3.3	1.9	N	1.00	0.6	0.49	1.1	0.9	∞
Combined Standard Uncertainty			RSS				11	11	460
Expanded Uncertainty (95% CONFIDENCE LEVEL)			<i>k</i> =2				23	22	

Notes for uncertainty budget Tables:

a) Column headings *a-k* are given for reference.

b) Tol. - tolerance in influence quantity.

c) Prob. Dist. – Probability distribution

d) N, R - normal, rectangular probability distributions

e) Div. - divisor used to translate tolerance into normally distributed standard uncertainty

f) *c_i* - sensitivity coefficient that should be applied to convert the variability of the uncertainty component into a variability of SAR.

g) *u_i* – SAR uncertainty

h) *v_i* - degrees of freedom for standard uncertainty and effective degrees of freedom for the expanded uncertainty

Uncertainty Budget for System Validation (dipole & flat phantom) for 650 MHz to 2700 MHz

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i> = <i>f</i> (<i>d</i> , <i>k</i>)	<i>f</i>	<i>g</i>	<i>h</i> = <i>c</i> × <i>f</i> / <i>e</i>	<i>i</i> = <i>c</i> × <i>g</i> / <i>e</i>	<i>k</i>
Uncertainty Component	IEEE 1528 section	Tol. (± %)	Prob. Dist.	Div.	<i>c_i</i> (1 g)	<i>c_i</i> (10 g)	1 g <i>u_i</i> (±%)	10 g <i>u_i</i> (±%)	<i>v_i</i>
Measurement System									
Probe Calibration	E.2.1	6.0	N	1.00	1	1	6.0	6.0	∞
Axial Isotropy	E.2.2	4.7	R	1.73	1	1	2.7	2.7	∞
Spherical Isotropy	E.2.2	9.6	R	1.73	0	0	0.0	0.0	∞
Boundary Effect	E.2.3	1.0	R	1.73	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	0.3	N	1.00	1	1	0.3	0.3	∞
Response Time	E.2.7	1.1	R	1.73	1	1	0.6	0.6	∞
Integration Time	E.2.8	0.0	R	1.73	1	1	0.0	0.0	∞
RF Ambient Conditions - Noise	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	0.0	R	1.73	1	1	0.0	0.0	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning w.r.t. Phantom	E.6.3	1.4	R	1.73	1	1	0.8	0.8	∞
Max. SAR Evaluation (ext., int., avg.)	E.5	3.4	R	1.73	1	1	2.0	2.0	∞
Dipole									
Dipole Axis to Liquid Distance	⁸ , E.4.2	2.0	R	1.73	1	1	1.2	1.2	∞
Input Power and SAR Drift Measurement	⁸ , 6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (measurement)	E.3.3	3.3	R	1.73	0.64	0.43	1.2	0.8	∞
Liquid Permittivity (target)	E.3.2	5.0	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measurement)	E.3.3	1.9	R	1.73	0.6	0.49	0.6	0.5	∞
Combined Standard Uncertainty			RSS				9	9	9999 9
Expanded Uncertainty (95% CONFIDENCE LEVEL)			<i>k</i> =2				18	17	

Notes for uncertainty budget Tables:

- a) Column headings *a-k* are given for reference.
- b) Tol. - tolerance in influence quantity.
- c) Prob. Dist. – Probability distribution
- d) N, R - normal, rectangular probability distributions
- e) Div. - divisor used to translate tolerance into normally distributed standard uncertainty
- f) *c_i* - sensitivity coefficient that should be applied to convert the variability of the uncertainty component into a variability of SAR.
- g) *u_i* – SAR uncertainty
- h) *v_i* - degrees of freedom for standard uncertainty and effective degrees of freedom for the expanded uncertainty

Uncertainty Budget for System Validation (dipole & flat phantom) for 3 to 6 GHz

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i> = <i>f</i> (<i>d</i> , <i>k</i>)	<i>f</i>	<i>g</i>	<i>h</i> = <i>c</i> × <i>f</i> / <i>e</i>	<i>i</i> = <i>c</i> × <i>g</i> / <i>e</i>	<i>k</i>
Uncertainty Component	IEEE 1528 section	Tol. (± %)	Prob. Dist.	Div.	<i>c_i</i> (1 g)	<i>c_i</i> (10 g)	1 g <i>u_i</i> (±%)	10 g <i>u_i</i> (±%)	<i>v_i</i>
Measurement System									
Probe Calibration	E.2.1	6.6	N	1.00	1	1	6.6	6.6	∞
Axial Isotropy	E.2.2	4.7	R	1.73	1	1	2.7	2.7	∞
Spherical Isotropy	E.2.2	9.6	R	1.73	0	0	0.0	0.0	∞
Boundary Effect	E.2.3	2.0	R	1.73	1	1	1.2	1.2	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	0.3	N	1.00	1	1	0.3	0.3	∞
Response Time	E.2.7	1.1	R	1.73	1	1	0.6	0.6	∞
Integration Time	E.2.8	0.0	R	1.73	1	1	0.0	0.0	∞
RF Ambient Conditions - Noise	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	0.0	R	1.73	1	1	0.0	0.0	∞
Probe Positioner Mechanical Tolerance	E.6.2	1.0	R	1.73	1	1	0.6	0.6	∞
Probe Positioning w.r.t. Phantom	E.6.3	4.0	R	1.73	1	1	2.3	2.3	∞
Max. SAR Evaluation (ext., int., avg.)	E.5	2.1	R	1.73	1	1	1.2	1.2	∞
Dipole									
Dipole Axis to Liquid Distance	8, E.4.2	2.0	R	1.73	1	1	1.2	1.2	∞
Input Power and SAR Drift Measurement	8, 6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Dielectric Parameter Correction	--	1.4	N	1.00	1	0.79	1.4	1.1	∞
Liquid Conductivity (measurement)	E.3.3	3.3	R	1.73	0.64	0.43	1.2	0.8	∞
Liquid Permittivity (measurement)	E.3.3	1.9	R	1.73	0.6	0.49	0.6	0.5	∞
Combined Standard Uncertainty			RSS				9	9	9999 9
Expanded Uncertainty (95% CONFIDENCE LEVEL)			<i>k</i> =2				18	18	

Notes for uncertainty budget Tables:

a) Column headings *a-k* are given for reference.

b) Tol. - tolerance in influence quantity.

c) Prob. Dist. – Probability distribution

d) N, R - normal, rectangular probability distributions

e) Div. - divisor used to translate tolerance into normally distributed standard uncertainty

f) *c_i* - sensitivity coefficient that should be applied to convert the variability of the uncertainty component into a variability of SAR.

g) *u_i* – SAR uncertainty

h) *v_i* - degrees of freedom for standard uncertainty and effective degrees of freedom for the expanded uncertainty