




DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 1 of 2

<p>Motorola Solutions Inc. EME Test Laboratory Motorola Solutions Malaysia Sdn Bhd Plot 2A, Medan Bayan Lepas, Mukim 12 SWD 11900 Bayan Lepas Penang, Malaysia.</p>	<p>Date of Report: 11/18/2021 Report Revision: A</p>
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<p>Responsible Engineer: Report Author: Date/s Tested: Manufacturer: DUT Descriptions: Test TX mode(s): Max. Power output: Nominal Power: Tx Frequency Bands: Signaling type: Model(s) Tested: Model(s) Certified: Serial Number(s): Classification: Applicant Name: Applicant Address: FCC ID:</p>	<p>Puteri Alifah Ilyana Binti Nor Rahim (EME Engineer) Puteri Alifah Ilyana Binti Nor Rahim (EME Engineer) 9/23/2021-10/4/2021, 11/2/2021-11/3/2021, 11/16/2021 Motorola Solutions Inc. Handheld Portable – CP200d 403-470M 4W ND CW (PTT) 4.8W 4.0W 403-470MHz FM AAH01QDC9JA2AN (PMUE4147C) / PMUE4147CAANAA AAH01QDC9JA2AN (PMUE4147C) / PMUE4147CAANAA; AAH01QDC9JC2AN (PMUE4147C) / PMUE4147CAANEA 752TXT0618, 752TXT0613 Occupational/Controlled Motorola Solutions Inc. 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322 AZ489FT4968; LMR 406.125-470 MHz</p>
<p>IC:</p>	<p>This report contains results that are immaterial for FCC equipment approval, which are clearly identified. 109U-89FT4968; This report contains results that are immaterial for ISED equipment approval, which are clearly identified.</p>
<p>ISED Test Site registration: FCC Test Firm Registration Number:</p>	<p>24843 823256</p>
<p>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 and RSS-102 (Issue 5).</p>	

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: 11/22/2021

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Report Revision History

Date	Revision	Comments
11/18/2021	A	Initial release

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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 handheld portable model number AAH01QDC9JA2AN (PMUE4147C) / PMUE4147CAANAA. This device is classified as Occupational/Controlled.

2.0 FCC SAR Summary

Table 1

Equipment Class	Frequency band (MHz)	Max Calc at Body (W/kg)	Max Calc at Face (W/kg)
		1g-SAR	1g-SAR
TNF	403-470MHz (LMR)	6.32	3.41

3.0 Abbreviations / Definitions

- CNR: Calibration Not Required
- CW: Continuous Wave
- DUT: Device Under Test
- EME: Electromagnetic Energy
- FM: Frequency Modulation
- LMR: Land Mobile Radio
- NA: Not Applicable
- PTT: Push to Talk
- RSM: Remote Speaker Microphone
- SAR: Specific Absorption Rate
- TNF: Licensed Non-Broadcast Transmitter Held to Face

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 – 643646 D01 SAR Test for PTT Radios v01r03
- 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

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)

Model AAH01QDC9JA2AN (PMUE4147C) / PMUE4147CAANAA operate using analog frequency modulation (FM) signaling incorporating traditional simplex two-way radio transmission protocol.

The LMR bands in this device operate in a half duplex system. A half duplex system only allows the user to transmit or receive. This device cannot transmit and receive simultaneously. The user must stop transmitting in order to receive a signal or listen for a response, regardless of PTT button or use of voice activated audio accessories. This type of operation, along with the RF safety booklet, which instructs the user to transmit no more than 50% of the time, justifies the use of 50% duty factor for this device.

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

Technology	Transmit Band (MHz)	Transmission	Duty Cycle (%)	Max Power (W)
LMR	403-470	FM	50 ⁽¹⁾	4.80

(1) includes 50% PTT operation

The intended operating positions are “at the face” with the DUT at least 1 inch from the mouth, and “at the body” by means of the offered body worn accessories. Body worn audio and PTT operation is accomplished by means of optional remote accessories that are connected to the radio. Operation at the body without an audio accessory attached is possible by means of BT accessories.

7.0 Optional Accessories and Test Criteria

These devices are offered with optional accessories. All accessories were individually evaluated during the test plan creation to determine if testing was required per the guidelines outlined in “SAR Test Reduction Considerations for Occupational PTT Radios” FCC KDB 643646 to assess compliance of this device. The following sections identify the test criteria and details for each accessory category. Refer to Exhibit 7B for antenna separation distances.

7.1 Antennas

There are optional removable antennas and one internal BT/WLAN antenna offered for this product. The Table below lists their descriptions.

Table 4

Antenna No.	Antenna Models	Description	Selected for test	Tested
1	PMAE4002A	UHF Stubby Antenna 403-433MHz, 1/4 wave, -1dBi gain	Yes	Yes
2	PMAE4003A	UHF Stubby Antenna 430-470MHz, 1/4 wave, -1dBi gain	Yes	Yes
3	PMAE4016A	UHF Whip Antenna, Stamped metal, 403-520MHz, 1/4 wave, 0dBi gain	Yes	Yes

7.2 Battery

There are twelve batteries offered for this product. The Table below lists their descriptions.

Table 5

Battery No.	Battery Models	Description	Selected for test	Tested	Comments
1	PMNN4450AR	Li-ion battery, 2250mAh	Yes	Yes	Default battery for face testing
2	NNTN4851A	NiMH battery, 1400mAh	Yes	Yes	
3	NNTN4497D	Li-ion battery, 1600mAh	Yes	Yes	
4	PMNN4098A	MagOne NiMH battery, 1400mAh	Yes	Yes	
5	PMNN4251B	NiMH battery, 1400mAh	Yes	Yes	
6	PMNN4253AR	NiMH battery, 1400mAh	Yes	Yes	
7	PMNN4254AR	Li-ion battery, 1600mAh	Yes	Yes	
8	PMNN4258AR	Li-ion battery, 2300mAh	Yes	Yes	
9	PMNN4259AR	Battery Pack, Batt Li-ion IP54 2900mAh	Yes	Yes	
10	NNTN4970A	Battery Pack, Batt MagOne Li-ion 2075mAh	Yes	Yes	Default battery for body testing
11	PMNN4458BR	Batt Li-ion IP54 2900mAh	Yes	Yes	
12	PMNN4072A	Battery Pack, Batt MagOne Li-ion 2150mAh	Yes	Yes	

7.3 Body worn Accessories

All body worn accessories were considered. The Table below lists the body worn accessories, and body worn accessory descriptions.

Table 6

Body worn No.	Body worn Models	Description	Selected for test	Tested	Comments
1	HLN6602A	Universal chest pack	Yes	Yes	
2	HLN8255B	Spring Belt Clip Black	Yes	Yes	
3	HLN9701B	Nylon Carrycase Short DTMF	Yes	Yes	Tested with NTN5243A
4	NTN5243A	Carry strap	Yes	Yes	Tested with RLN5383A or RLN5384B or HLN9701B
5	RLN4570A	Breakaway chest pack	Yes	Yes	
6	RLN4815A	Fanny pack carry accessory	Yes	Yes	
7	RLN5383A	Leather CC W/Belt Loop & D-Ring	Yes	Yes	Tested with NTN5243A
8	RLN5384B	Leather Case with 2.5 inch	Yes	Yes	Tested with NTN5243A
9	RLN5644A	2 inch Belt Clip	Yes	Yes	
10	RLN5385B	Leather Case With 3inch Swivel	No	No	by sim with RLN5384B

7.4 Audio Accessories

All audio accessories were considered. The Table below lists the offered audio accessories and their descriptions. Exhibit 7B illustrates photos of the tested audio accessories.

Table 7

Audio No.	Audio Acc. Models	Description	Selected for test	Tested	Comments
1	PMMN4092A	RSM, MagOne	Yes	Yes	
2	PMLN6531A	Earpiece with in-lin mic/PTT/VOX, MagOne	Yes	Yes	
3	PMLN6532A	Swivel earpiece with mic/PTT, MagOne	Yes	Yes	
4	PMLN6541A	Lightweight temple transducer headset	Yes	Yes	
5	PMLN6538A	Lightweight headset with swivel boom mic	Yes	Yes	
6	PMLN6537A	Earset, Boom mic, in-line PTT/VOX, MagOne	Yes	Yes	
7	PMMN4013A	RSM, rx-jack (2pin)	Yes	Yes	Default Audio
8	PMLN6530A	2-wire with translucent tube, black	Yes	Yes	
9	PMLN6536A	2-wire with translucent tube, black	Yes	Yes	
10	PMLN7468A	Over the head heavy duty headset/Vox, 2pin	Yes	Yes	

Table 7 (Continued)

Audio No.	Audio Acc. Models	Description	Selected for test	Tested	Comments
11	PMLN6539A	Med Wt Over-The-Head Dual Muff HDST	Yes	Yes	
12	PMLN6540A	Accessory Kit, Heavy-Duty NC Boom Mic HDST	Yes	Yes	
13	MDPMMN4013A	RSM W/Jack IP 54	No	No	by sim to MDPMMN4013A
14	MDPMMN4029A	RSM w/o Jack IP57	No	No	by sim to PMMN4029A
15	PMLN6445A	2-Wire w/ Trans Tube, Black	No	No	by sim to PMLN6530A
16	PMLN6533A	Accessory Kit, Earset with Combined Microphone/PTT	No	No	by sim to PMLN6530A
17	PMLN6534A	Earbud with In-line Microphone/PTT/VOX, MagOne	No	No	by sim to PMLN6531A
18	PMLN6535A	D-Style Earpiece with Mic/PTT	No	No	by sim to PMLN6530A
19	PMLN6542A	Accessory Kit, Breeze Headset with Boom Microphone and PTT MagOne	No	No	by sim to PMLN6537A
20	PMLN6854A	Otto Headset ELP connector	No	No	by sim to PMLN7468A
21	PMMN4029A	Remote Speaker Mic, IP57	No	No	by sim to PMMN4013A

8.0 Description of Test System



8.1 Descriptions of Robotics/Probes/Readout Electronics

Table 8

Dosimetric System type	System version	DAE type	Probe Type
Schmid & Partner Engineering AG SPEAG DASY 5	52.10.4.1527	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 9

Phantom Type	Phantom(s) Used	Material Parameters	Phantom Dimensions LxWxD (mm)	Material Thickness (mm)	Support Structure Material	Loss Tangent (wood)
Triple Flat	NA	200MHz -6GHz; Er = 3-5, Loss Tangent = ≤0.05	280x175x175	2mm +/- 0.2mm	Wood	< 0.05
SAM	NA	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 10

Ingredients	450MHz
	Head
Sugar	56.0
Diacetin	0
De ionized –Water	39.1
Salt	3.8
HEC	1.0
Bact.	0.1

9.0 Additional Test Equipment

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

Table 11

Equipment Type	Model Number	Serial Number	Calibration Date	Calibration Due Date
SPEAG PROBE	EX3DV4	7534	4/19/2021	4/19/2022
SPEAG DAE	DAE4	1598	4/7/2021	4/7/2022
BI-DIRECTIONAL COUPLER	3020A	41931	7/27/2021	7/27/2022
POWER AMPLIFIER	50W 1000A	14715	CNR	CNR
POWER AMPLIFIER	5S4G11	312663	CNR	CNR
POWER AMPLIFIER	5S1G4	313326	CNR	CNR
VECTOR SIGNAL GENERATOR	E4438C	MY47272101	10/29/2019	10/29/2021
VECTOR SIGNAL GENERATOR	E4438C	MY45091270	9/9/2021	9/9/2022
POWER METER	E4419B	MY45103725	6/29/2021	6/29/2022
POWER METER	E4417A	GB41292245	11/27/2020	11/27/2021
POWER METER	E4418B	MY45100739	12/3/2020	12/3/2021
POWER SENSOR	E9301B	MY50280001	5/7/2021	5/7/2022
POWER SENSOR	E9301B	MY55210003	5/29/2021	5/29/2022
POWER SENSOR	E9301B	MY41495733	5/29/2021	5/29/2022
DATA LOGGER	DSB	16398306	11/24/2020	11/24/2021
TEMPERATURE PROBE	80PK-22	06032017	11/25/2020	11/25/2021
THERMOMETER	HH806AU	080307	11/25/2020	11/25/2021
DIELECTRIC ASSESSMENT KIT	DAK-3.5	1156	4/7/2021	4/7/2022
NETWORK ANALYZER	E5071B	MY42403147	12/1/2020	12/1/2021
THERMOMETER	HH202A	35881	12/3/2020	12/3/2021
TEMPERATURE PROBE	80PK-22	05032017	12/3/2020	12/3/2021
SPEAG DIPOLE	D450V3	1054	3/11/2019	3/11/2022

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 12

Dates	Probe Calibration Point	Probe SN	Measured Tissue Parameters		Validation			
			σ	ϵ_r	Sensitivity	Linearity	Isotropy	
CW								
04/29/2021	Head	450	7534	0.86	44.1	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 13

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
7534	IEEE/IEC Head	SPEAG D450V3 / 1054	4.57 +/- 10%	1.20	4.80	9/23/2021#
				1.23	4.92	9/24/2021#
				1.25	5.00	9/25/2021#
				1.19	4.76	9/27/2021
				1.19	4.76	9/28/2021
				1.17	4.68	9/29/2021
				1.18	4.72	9/30/2021#
				1.19	4.76	10/1/2021#
				1.21	4.84	10/2/2021#
				1.15	4.60	10/3/2021
				1.13	4.52	11/2/2021
				1.19	4.76	11/12/2021
1.19	4.76	11/16/2021				

“#” System verification covered for 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 14

Frequency (MHz)	Tissue Type	Conductivity Target (S/m)	Dielectric Constant Target	Conductivity Meas. (S/m)	Dielectric Constant Meas.	Tested Date
403	IEEE/IEC Head	0.87 (0.83-0.91)	44.1 (41.9-46.3)	0.85	43.0	10/02/2021#
				0.83	42.7	10/03/2021
				0.85	46.1	11/16/2021
406		0.87 (0.83-0.91)	44.0 (41.8-46.2)	0.84	43.4	09/25/2021#
				0.86	43.7	09/27/2021
				0.84	43.3	10/01/2021
				0.85	42.9	10/02/2021#
				0.84	42.7	10/03/2021
421		0.87 (0.83-0.91)	43.8 (41.7-46.0)	0.87	45.7	09/23/2021#
				0.85	42.5	09/24/2021#
				0.85	42.5	09/25/2021#
				0.87	43.4	09/27/2021
	0.88			43.1	09/28/2021	
	0.85			42.8	09/29/2021	
	0.86			42.8	09/30/2021#	
	0.85			42.9	10/01/2021#	
	0.87			42.6	10/02/2021#	
	0.85			43.3	10/04/2021	
0.87	42.6	11/02/2021				

“#” Tissue covered for next test day (within 24 hours)

Table 14 (Continued)

Frequency (MHz)	Tissue Type	Conductivity Target (S/m)	Dielectric Constant Target	Conductivity Meas. (S/m)	Dielectric Constant Meas.	Tested Date
421	IEEE/ IEC Head	0.87 (0.83-0.91)	43.8 (41.7-46.0)	0.86	44.7	11/12/2021
				0.86	45.7	11/16/2021
430		0.87 (0.83-0.91)	43.7 (41.6-45.9)	0.86	42.8	09/25/2021#
				0.88	43.2	09/27/2021
				0.86	42.7	10/01/2021#
				0.87	42.4	10/02/2021#
				0.86	42.1	10/03/2021
450		0.87 (0.83-0.91)	43.5 (41.3-45.7)	0.89	45.1	09/23/2021
				0.87	41.9	09/24/2021
				0.88	42.4	09/25/2021
				0.90	42.8	09/27/2021
				0.91	42.4	09/28/2021
				0.88	42.2	09/29/2021
				0.89	42.2	09/30/2021
	0.87			42.3	10/01/2021	
	0.89			41.9	10/02/2021	
	0.87			41.7	10/03/2021#	
	0.87			42.7	10/04/2021	
460	0.87 (0.83-0.91)	43.4 (41.3-45.6)	0.87	44.5	11/02/2021	
			0.86	44.1	11/12/2021	
			0.89	45.1	11/16/2021	
			0.90	45.0	09/23/2021#	
			0.88	41.7	09/24/2021#	
			0.88	42.2	09/25/2021#	
			0.91	42.6	09/27/2021	
			0.91	42.2	09/28/2021	
0.89	42.0	09/30/2021#				
0.88	42.1	10/01/2021				
0.90	41.8	10/02/2021				

“#” Tissue covered for 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 +/- 2°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 15

	Target	Measured
Ambient Temperature	18 – 25 °C	Range: 19.8 – 24.9 °C Avg. 22.4 °C
Tissue Temperature	18 – 25 °C	Range: 20.2 – 24.2 °C Avg. 22.2 °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

12.3 Measurements

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

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

Table 16

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° ± 1°	20° ± 1°
Maximum area scan spatial resolution: ΔxArea, ΔyArea		≤ 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 ≤ 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: ΔxZoom, ΔyZoom		≤ 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: ΔzZoom(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.			

12.4 DUT Configuration(s)

The DUT is a portable device operational at the body and face as described in section 6.0 while using the applicable accessories listed in section 7.0. All accessories listed in section 7.0 of this report were considered when implementing the guidelines specified in KDB 643646.

12.5 DUT Positioning Procedures

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

12.5.1 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.

12.5.2 Head

Not applicable.

12.5.3 Face

The DUT was positioned with its' front side separated 2.5cm from the phantom.

12.6 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.

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

Where

N_c = Number of channels

F_{high} = Upper channel

F_{low} = Lower channel

F_c = Center channel

12.7 SAR Result Scaling Methodology

The calculated 1-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. Appendix F includes a shortened scan to justify SAR scaling for drift. For this device the “Max Calc. 1g-SAR” is scaled using the following formula:

$$Max_Calc = SAR_meas \cdot 10^{\frac{-Drift}{10}} \cdot \frac{P_max}{P_int} \cdot DC$$

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

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.

12.8 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. All tests were performed in CW and 50% duty cycle was applied to PTT configurations in the final results.

13.0 DUT Test Data for LMR

13.1 LMR assessments at the Body for 406.125 – 480 MHz band

Battery NNTN4970A was selected as the default battery for assessments at the Body because it is the thinnest battery (refer to Exhibit 7B for battery illustration). The default battery was used during conducted power measurements for all test channels within FCC allocated frequency range (406.125-470MHz) which are listed in Table 17. The channel with the highest conducted power will be identified as the default channel per KDB 643646 (SAR Test for PTT Radios). SAR plots of the highest results per Table (bolded) are presented in Appendix E.

Table 17

Test Freq (MHz)	Power (W)
406.200	4.72
420.900	4.76
430.000	4.68
433.000	4.65
438.100	4.63
443.300	4.62
450.000	4.66
455.400	4.72
460.000	4.74
470.000	4.73

Assessments at the Body with Body worn RLN5644A

DUT assessment with offered antennas, default battery and, default body worn accessory per KDB 643646. Optional batteries were tested per the requirements of KDB 643646. Refer to Table 17 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in Appendix F.

Table 18

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#									
PMAE4002A	NNTN4970A	RLN5644A	PMMN4013A	406.200														
				420.900	4.80	-0.54	3.58	2.03	MFR-AB-210924-10#									
				430.000														
				433.000														
PMAE4003A				NNTN4970A	RLN5644A	PMMN4013A	430.000											
							443.300											
							450.000											
							455.400											
PMAE4016A							NNTN4970A	RLN5644A	PMMN4013A	460.000	4.75	-0.76	3.38	2.03	MFR-AB-210924-11#			
										470.000								
										406.200								
										420.900	4.80	-0.56	5.63	3.20	MFR-AB-210924-12#			
										430.000								
										438.100								
										450.000								
										455.400								
PMAE4016A	NNTN4970A	RLN5644A	PMMN4013A							460.000								
										470.000								
										Additional batteries								
										PMAE4016A	NNTN4851A	RLN5644A	PMMN4013A	406.200				
				420.900	4.80	-0.76								6.35	3.78	MFR-AB-210924-13#		
				430.000														
				438.100														
				450.000														
				455.400														
				460.000														
				470.000														
				PMAE4016A	NNTN4497D	RLN5644A	PMMN4013A	406.200										
								420.900	4.80	-0.42	5.93			3.27	MFR-AB-210924-14#			
								430.000										
								438.100										
								450.000										
455.400																		
460.000																		
470.000																		

Table 18 (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#
PMAE4016A	PMNN4098A	RLN5644A	PMMN4013A	406.200					
				420.900	4.80	-0.08	5.51	2.81	MFR-AB-210924-16#
				430.000					
				438.100					
				450.000					
				455.400					
				460.000					
				470.000					
	406.200								
	420.900			4.80	-0.64	5.57	3.23	AF(SAN)-AB-210925-01#	
	430.000								
	438.100								
	450.000								
	455.400								
	460.000								
	470.000								
	406.200								
	420.900			4.80	-0.12	5.27	2.71	AF(SAN)-AB-210925-02#	
	430.000								
	438.100								
	450.000								
	455.400								
	460.000								
	470.000								
	406.200								
	420.900			4.72	-0.40	5.73	3.19	AF(SAN)-AB-210925-03#	
	430.000								
	438.100								
	450.000								
	455.400								
460.000									
470.000									
406.200									
420.900	4.78	-0.44	5.33	2.96	AF(SAN)-AB-210925-04#				
430.000									
438.100									
450.000									
455.400									
460.000									
470.000									

Table 18 (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#
PMAE4016A	PMNN4259AR	RLN5644A	PMMN4013A	406.200					
				420.900	4.80	-0.56	5.49	3.12	AF(SAN)-AB-210925-05#
				430.000					
				438.100					
				450.000					
				455.400					
				460.000					
	470.000								
	406.200								
	420.900			4.80	-0.32	5.92	3.19	AF(SAN)-AB-210925-06#	
	430.000								
	438.100								
	450.000								
	455.400								
	460.000								
	470.000								
	406.200								
	420.900			4.45	-0.19	5.72	3.22	AF(SAN)-AB-210925-07#	
	430.000								
	438.100								
	450.000								
	455.400								
	460.000								
	470.000								
	406.200								
	420.900			4.76	-0.52	5.38	3.06	MFR-AB-211102-18	
	430.000								
	438.100								
450.000									
455.400									
460.000									
470.000									
	PMNN4458BR								
	PMNN4072A								
	PMNN4450AR								

Assessments at the Body with Body worn HLN8255B

DUT assessment with offered antennas, default battery and, default body worn accessory per KDB 643646. Optional batteries were tested per the requirements of KDB 643646. Refer to Table 17 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in Appendix F.

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#						
PMAE4002A	NNTN4970A	HLN8255B	PMMN4013A	406.200											
				420.900	4.80	-0.36	3.86	2.10	MFR-AB-210925-08#						
				430.000											
433.000															
PMAE4003A				NNTN4970A	HLN8255B	PMMN4013A	430.000								
							443.300								
							450.000								
455.400															
460.000							4.80	-0.66	3.82	2.22	MFR-AB-210925-09#				
470.000															
PMAE4016A							NNTN4970A	HLN8255B	PMMN4013A	406.200					
										420.900	4.80	-0.50	6.56	3.68	MFR-AB-210925-10#
										430.000					
										438.100					
										450.000					
	455.400														
460.000	4.80	-0.68	3.13							1.83	MFR-AB-210925-11#				
470.000															
Additional batteries															
PMAE4016A	NNTN4851A	HLN8255B	PMMN4013A	406.200											
				420.900	4.80	-0.35				6.92	3.75	MFR-AB-210925-12#			
				430.000											
				438.100											
				450.000											
				455.400											
				460.000											
	470.000														
	NNTN4497D			NNTN4497D	HLN8255B	PMMN4013A	406.200								
							420.900	4.80	-0.42	6.52	3.59	MFR-AB-210925-13#			
							430.000								
							438.100								
							450.000								
455.400															
460.000															
470.000															

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#		
PMAE4016A	PMNN4098A	HLN8255B	PMMN4013A	406.200							
				420.900	4.80	-0.16	6.33	3.28	MFR-AB-210925-14#		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4251B			406.200							
				420.900	4.76	-0.45	6.26	3.50	AF(SAN)-AB-210926-01#		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4253AR			406.200							
				420.900	4.80	-0.10	6.00	3.07	AF(SAN)-AB-210926-02#		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4254AR			406.200							
				420.900	4.80	-0.42	6.26	3.45	AF(SAN)-AB-210926-03#		
				430.000							
				438.100							
				450.000							
				455.400							
460.000											
470.000											
PMNN4258AR	406.200										
	420.900	4.80	-0.35	6.02	3.26	AF(SAN)-AB-210926-04#					
	430.000										
	438.100										
	450.000										
	455.400										
	460.000										
	470.000										

Table 18 (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#		
PMAE4016A	PMNN4259AR	HLN8255B	PMMN4013A	406.200							
				420.900	4.80	-0.49	6.03	3.38	AF(SAN)-AB-210926-05#		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4458BR			406.200							
				420.900	4.80	-0.46	6.50	3.61	AF(SAN)-AB-210926-05#		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4072A			406.200							
				420.900	4.80	-0.20	6.42	3.36	AF(SAN)-AB-210926-07#		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4450AR			406.200							
				420.900	4.73	-0.25	5.71	3.07	MFR-AB-211103-01#		
				430.000							
				438.100							
450.000											
455.400											
460.000											
470.000											

Assessments at the Body with Body worn HLN6602A

DUT assessment with offered antennas, default battery and, default body worn accessory per KDB 643646. Optional batteries were tested per the requirements of KDB 643646. Refer to Table 17 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in Appendix F.

Table 20

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#									
PMAE4002A	NNTN4970A	HLN6602A	PMMN4013A	406.200														
				420.900	4.80	-0.40	4.51	2.47	AF(SAN)-AB-210926-08#									
				430.000														
				433.000														
PMAE4003A				NNTN4970A	HLN6602A	PMMN4013A	430.000											
							443.300											
							450.000											
							455.400											
PMAE4016A							NNTN4970A	HLN6602A	PMMN4013A	460.000	4.80	-0.36	5.20	2.82	AF(SAN)-AB-210926-10#			
										470.000								
										406.200	4.80	-0.15	8.35	4.32	AF(SAN)-AB-210926-12#			
										420.900	4.80	-0.39	9.49	5.19	AF(SAN)-AB-210926-11#			
										430.000	4.80	-0.41	8.26	4.54	AF(SAN)-AB-210926-13#			
										438.100								
										450.000								
										455.400								
PMAE4016A	NNTN4970A	HLN6602A	PMMN4013A							460.000	4.80	-0.69	5.66	3.32	AF(SAN)-AB-210926-14#			
										470.000								
										Additional batteries								
										PMAE4016A	NNTN4851A	HLN6602A	PMMN4013A	406.200				
				420.900	4.80	-0.41								9.09	4.99	MFR-AB-210926-15#		
				430.000														
				438.100														
				450.000														
455.400																		
460.000																		
470.000																		

Table 20 (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#		
PMAE4016A	NNTN4497D	HLN6602A	PMMN4013A	406.200							
				420.900	4.80	-0.50	8.18	4.59	MFR-AB-210926-16#		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4098A			406.200							
				420.900	4.65	-0.16	7.86	4.21	MFR-AB-210926-17#		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4251B			406.200							
				420.900	4.80	-0.43	8.36	4.62	MFR-AB-210926-18#		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4253AR			406.200							
				420.900	4.75	-0.17	6.39	3.36	MFR-AB-210926-19#		
				430.000							
				438.100							
				450.000							
				455.400							
460.000											
470.000											
PMNN4254AR	406.200										
	420.900	4.80	-0.45	8.13	4.51	MFR-AB-210926-20#					
	430.000										
	438.100										
	450.000										
	455.400										
	460.000										
470.000											

Table 20 (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#		
PMAE4016A	PMNN4258AR	HLN6602A	PMMN4013A	406.200							
				420.900	4.80	-0.41	8.10	4.45	MFR-AB-210926-21#		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4259AR			406.200							
				420.900	4.80	-0.61	8.52	4.90	AF(SAN)-AB-210926-22#		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4458BR			406.200							
				420.900	4.80	-0.34	9.55	5.16	AF(SAN)-AB-210926-23#		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4072A			406.200							
				420.900	4.80	-0.11	9.04	4.64	AF(SAN)-AB-210926-24#		
				430.000							
				438.100							
				450.000							
				455.400							
460.000											
470.000											
PMNN4450AR	406.200										
	420.900	4.80	-0.37	6.12	3.33	MFR-AB-211103-02#					
	430.000										
	438.100										
	450.000										
	455.400										
	460.000										
470.000											

Assessments at the Body with Body worn RLN4815A

DUT assessment with offered antennas, default battery and, default body worn accessory per KDB 643646. Optional batteries were tested per the requirements of KDB 643646. Refer to Table 17 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in Appendix F.

Table 21

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#									
PMAE4002A	NNTN4970A	RLN4815A	PMMN4013A	406.200														
				420.900	4.80	-0.32	2.82	1.52	AF(SAN)-AB-210927-05									
				430.000														
				433.000														
PMAE4003A				NNTN4970A	RLN4815A	PMMN4013A	430.000											
							443.300											
							450.000											
							455.400											
PMAE4016A							NNTN4970A	RLN4815A	PMMN4013A	460.000	4.80	-0.09	2.62	1.34	AF(SAN)-AB-210927-03			
										470.000								
										406.200								
										420.900	4.80	-0.42	4.36	2.40	AF(SAN)-AB-210927-04			
										430.000								
										438.100								
										450.000								
										455.400								
PMAE4016A	NNTN4970A	RLN4815A	PMMN4013A							460.000								
										470.000								
										Additional batteries								
										PMAE4016A	NNTN4851A	RLN4815A	PMMN4013A	406.200				
				420.900	4.80	-0.44								4.27	2.36	AF(SAN)-AB-210927-06		
				430.000														
				438.100														
				450.000														
455.400																		
460.000																		
470.000																		

Table 21 (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#		
PMAE4016A	NNTN4497D	RLN4815A	PMMN4013A	406.200							
				420.900	4.80	-0.28	4.38	2.34	AF(SAN)-AB-210927-07		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
	470.000										
	PMNN4098A			406.200							
				420.900	4.80	-0.04	3.45	1.74	AF(SAN)-AB-210927-08		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
	470.000										
	PMNN4251B			406.200							
				420.900	4.80	-0.55	4.00	4.00	BL-AB-210927-09		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
	470.000										
	PMNN4253AR			406.200							
				420.900	4.73	-0.34	4.33	2.38	BL-AB-210927-10		
				430.000							
				438.100							
				450.000							
				455.400							
460.000											
470.000											
PMNN4254AR	406.200										
	420.900	4.80	-0.47	4.38	2.44	BL-AB-210927-11					
	430.000										
	438.100										
	450.000										
	455.400										
	460.000										
470.000											

Table 21 (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#		
PMAE4016A	PMNN4258AR	RLN4815A	PMMN4013A	406.200							
				420.900	4.80	-0.40	4.38	2.40	BL-AB-210927-12		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4259AR			406.200							
				420.900	4.80	-0.61	4.32	2.49	BL-AB-210927-13		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4458BR			406.200							
				420.900	4.80	-0.49	4.65	2.60	BL-AB-210927-14		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4072A			406.200							
				420.900	4.80	-0.33	4.26	2.40	BL-AB-210927-15		
				430.000							
				438.100							
				450.000							
				455.400							
460.000											
470.000											
PMNN4450AR	406.200										
	420.900	4.80	-0.38	5.09	2.78	MFR-AB-211103-03#					
	430.000										
	438.100										
	450.000										
	455.400										
	460.000										
	470.000										

Assessments at the Body with Body worn RLN4570A

DUT assessment with offered antennas, default battery and, default body worn accessory per KDB 643646. Optional batteries were tested per the requirements of KDB 643646. Refer to Table 17 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in Appendix F.

Table 22

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#	
PMAE4002A	NNTN4970A	RLN4570A	PMMN4013A	406.200						
				420.900	4.80	-0.58	4.77	2.73	BL-AB-210927-16	
				430.000						
433.000										
PMAE4003A				430.000						
				443.300						
				450.000						
PMAE4016A				455.400						
				460.000	4.80	-0.27	5.06	2.69	MHI-AB-210927-17	
				470.000						
				406.200	4.80	-0.11	8.16	4.18	MHI-AB-210927-19	
				420.900	4.80	-0.49	9.77	5.47	MHI-AB-210927-18	
				430.000	4.80	-0.58	7.91	4.52	MHI-AB-210927-20	
				438.100						
				450.000						
455.400										
460.000	4.80	-0.94	4.64	2.88	MHI-AB-210927-21					
470.000										
Additional batteries										
PMAE4016A	NNTN4851A	RLN4570A	PMMN4013A	406.200						
				420.900	4.80	-0.50	9.51	5.35	MHI-AB-210928-02	
				430.000						
				438.100						
				450.000						
				455.400						
				460.000						
				470.000						
	NNTN4497D			406.200						
				420.900	4.80	-0.44	8.73	4.83	MHI-AB-210928-03	
				430.000						
				438.100						
				450.000						
				455.400						
				460.000						
470.000										

Table 22 (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#		
PMAE4016A	PMNN4098A	RLN4570A	PMMN4013A	406.200							
				420.900	4.63	-0.34	8.54	4.79	MHI-AB-210928-04		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4251B			406.200							
				420.900	4.80	-0.58	9.23	5.27	MHI-AB-210928-05		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4253AR			406.200							
				420.900	4.74	-0.27	8.79	4.74	MHI-AB-210928-06		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4254AR			406.200							
				420.900	4.74	-0.45	8.49	4.77	MHI-AB-210928-07		
				430.000							
				438.100							
450.000											
455.400											
460.000											
470.000											
PMNN4258AR	406.200										
	420.900	4.80	-0.40	7.99	4.38	MHI-AB-210928-08					
	430.000										
	438.100										
	450.000										
	455.400										

Table 22 (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#		
PMAE4016A	PMNN4259AR	RLN4570A	PMMN4013A	406.200							
				420.900	4.80	-0.56	8.77	4.99	MHI-AB-210928-09		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4458BR			406.200							
				420.900	4.80	-0.44	8.56	4.74	MHI-AB-210928-10		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4072A			406.200							
				420.900	4.80	-0.37	9.09	4.95	MHI-AB-210928-11		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4450AR			406.200							
				420.900	4.80	-0.39	6.89	3.77	MFR-AB-211103-04#		
				430.000							
				438.100							
450.000											
455.400											
460.000											
470.000											

Assessments at the Body with Body worn RLN5383A w/ NTN5243A

DUT assessment with offered antennas, default battery and, default body worn accessory per KDB 643646. Optional batteries were tested per the requirements of KDB 643646. Refer to Table 17 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in Appendix F.

Table 23

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#	
PMAE4002A	NNTN4970A	RLN5383A w/ NTN5243 A	PMMN4013A	406.200						
				420.900	4.80	-0.58	1.79	1.02	AF-AB-210928-12	
				430.000						
433.000										
PMAE4003A				430.000						
				443.300						
				450.000						
PMAE4016A				455.400						
				460.000	4.80	-0.72	2.20	1.30	AF-AB-210928-15	
				470.000						
				406.200						
				420.900	4.80	-0.95	2.71	1.69	AF-AB-210928-17	
				430.000						
				438.100						
				450.000						
455.400										
460.000										
470.000										
Additional batteries										
PMAE4016A	NNTN4851A	RLN5383A w/ NTN5243 A	PMMN4013A	406.200						
				420.900	4.80	-1.01	3.31	2.09	AF-AB-210928-19	
				430.000						
				438.100						
				450.000						
				455.400						
				460.000						
	NNTN4497D			470.000						
				406.200						
				420.900	4.80	-0.52	2.24	1.26	MHI-AB-210928-21	
				430.000						
				438.100						
				450.000						
				455.400						
460.000										
470.000										

Table 23 (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#
PMAE4016A	PMNN4098A	RLN5383A w/ NTN5243 A	PMMN4013A	406.200					
				420.900	4.64	-0.09	2.23	1.18	AF-AB-210929-06
				430.000					
				438.100					
				450.000					
				455.400					
				460.000					
	470.000								
	406.200								
	420.900			4.80	-0.22	2.78	1.46	AF-AB-210929-07	
	430.000								
	438.100								
	450.000								
	455.400								
	460.000								
	470.000								
	406.200								
	420.900			4.80	-0.26	2.25	1.35	AF-AB-210929-08	
	430.000								
	438.100								
	450.000								
	455.400								
	460.000								
	470.000								
	406.200								
	420.900			4.80	-0.45	2.53	1.40	AF-AB-210929-09	
	430.000								
	438.100								
	450.000								
	455.400								
460.000									
470.000									
406.200									
420.900	4.80	-0.80	2.49	1.50	AF-AB-210929-11				
430.000									
438.100									
450.000									
455.400									
460.000									
470.000									

Table 23 (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#		
PMAE4016A	PMNN4259AR	RLN5383A w/ NTN5243 A	PMMN4013A	406.200							
				420.900	4.80	-0.23	1.99	1.05	MHI-AB-210929-14		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4458BR			406.200							
				420.900	4.80	-0.83	2.14	1.30	MHI-AB-210930-03		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4072A			406.200							
				420.900	4.80	-0.29	2.29	1.22	MHI-AB-210930-04		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4450AR			406.200							
				420.900	4.80	-0.34	2.43	1.31	MHI-AB-210930-05#		
				430.000							
				438.100							
450.000											
455.400											
460.000											
470.000											

Assessments at the Body with Body worn RLN5384B w/ NTN5243A

DUT assessment with offered antennas, default battery and, default body worn accessory per KDB 643646. Optional batteries were tested per the requirements of KDB 643646. Refer to Table 17 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in Appendix F.

Table 24

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#						
PMAE4002A	NNTN4970A	RLN5384B w/ NTN5243 A	PMMN4013A	406.200											
				420.900	4.80	-0.69	1.25	0.68	BL(SAN)-AB-210930-05						
				430.000											
				433.000											
PMAE4003A				NNTN4970A	RLN5384B w/ NTN5243 A	PMMN4013A	430.000								
							443.300								
							450.000								
							455.400								
PMAE4016A							NNTN4970A	RLN5384B w/ NTN5243 A	PMMN4013A	460.000	4.80	-0.16	1.36	0.71	BL(SAN)-AB-210930-06
										470.000					
										406.200					
										420.900	4.80	-0.37	1.55	0.84	BL(SAN)-AB-210930-07
	430.000														
	438.100														
	450.000														
Additional batteries															
PMAE4016A	NNTN4851A	RLN5384B w/ NTN5243 A	PMMN4013A	406.200											
				420.900	4.80	-0.20				1.57	0.82	BL(SAN)-AB-210930-08			
				430.000											
				438.100											
				450.000											
				455.400											
				460.000											
	NNTN4497D			NNTN4497D	RLN5384B w/ NTN5243 A	PMMN4013A	470.000								
							406.200								
							420.900	4.80	-0.36	1.48	0.80	BL(SAN)-AB-210930-09			
							430.000								
							438.100								
							450.000								
							455.400								
460.000															
470.000															

Table 24 (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#		
PMAE4016A	PMNN4098A	RLN5384B w/ NTN5243 A	PMMN4013A	406.200							
				420.900	4.80	-0.04	1.28	0.65	BL(SAN)-AB-210930-11		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
	PMNN4251B			470.000							
				406.200							
				420.900	4.80	-0.27	1.49	0.79	BL(SAN)-AB-210930-12		
				430.000							
				438.100							
				450.000							
				455.400							
	PMNN4253AR			460.000							
				470.000							
				406.200							
				420.900	4.80	-0.19	1.48	0.77	BL(SAN)-AB-210930-13		
				430.000							
				438.100							
				450.000							
	PMNN4254AR			455.400							
				460.000							
				470.000							
406.200											
420.900		4.80	-0.42	1.30	0.72	BL(SAN)-AB-210930-14					
430.000											
438.100											

Table 24 (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#		
PMAE4016A	PMNN4258AR	RLN5384B w/ NTN5243 A	PMMN4013A	406.200							
				420.900	4.80	-0.35	1.30	0.70	BL(SAN)-AB-210930-15		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
	470.000										
	PMNN4259AR			406.200							
				420.900	4.80	-0.69	1.33	0.78	BL(SAN)-AB-210930-16		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
	470.000										
	PMNN4458BR			406.200							
				420.900	4.80	-0.59	1.47	0.84	BL(SAN)-AB-210930-17		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
	470.000										
	PMNN4072A			406.200							
				420.900	4.62	0.14	1.40	0.73	BL(SAN)-AB-210930-18		
				430.000							
				438.100							
				450.000							
				455.400							
460.000											
470.000											
PMNN4450AR	406.200										
	420.900	4.80	-0.42	2.63	1.46	MFR-AB-211116-03					
	430.000										
	438.100										
	450.000										
	455.400										
	460.000										
470.000											

Assessments at the Body with Body worn HLN9701B w/ NTN5243A

DUT assessment with offered antennas, default battery and, default body worn accessory per KDB 643646. Optional batteries were tested per the requirements of KDB 643646. Refer to Table 17 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in Appendix F.

Table 25

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#
PMAE4002A	NNTN4970A	HLN9701B w/ NTN5243 A	PMMN4013A	406.200					
				420.900	4.80	-0.51	3.74	2.10	MFR-AB-211001-01#
				430.000					
433.000									
PMAE4003A				430.000					
				443.300					
				450.000					
PMAE4016A				455.400					
				460.000	4.80	-0.87	3.60	2.20	MFR-AB-211001-02#
				470.000					
				406.200	4.80	-0.13	6.08	3.13	MFR-AB-211001-05
				420.900	4.80	-0.61	7.33	4.22	MFR-AB-211001-04
				430.000	4.80	-0.48	4.74	2.65	MFR-AB-211001-06
				438.100					
				450.000					
	455.400								
460.000	4.80	-0.27	3.97	2.11	MFR-AB-211001-08				
470.000									
Additional batteries									
PMAE4016A	NNTN4851A	HLN9701B w/ NTN5243 A	PMMN4013A	406.200					
				420.900	4.80	-0.25	6.33	3.35	MFR-AB-211001-09
				430.000					
				438.100					
				450.000					
				455.400					
				460.000					
				470.000					
				NNTN4497D	406.200				
	420.900				4.80	-0.36	5.70	3.10	MFR-AB-211001-10
	430.000								
	438.100								
	450.000								
	455.400								
	460.000								
470.000									

Table 25 (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#		
PMAE4016A	PMNN4098A	HLN9701B w/ NTN5243 A	PMMN4013A	406.200							
				420.900	4.80	-0.06	6.21	3.15	BL(SAN)-AB-211001-11		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4251B			406.200							
				420.900	4.80	-0.37	6.57	3.58	BL(SAN)-AB-211001-12		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4253AR			406.200							
				420.900	4.80	-0.33	5.56	3.00	BL(SAN)-AB-211001-13		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
	PMNN4254AR			406.200							
				420.900	4.80	-0.31	6.90	3.71	BL(SAN)-AB-211001-14		
				430.000							
				438.100							
450.000											
455.400											
460.000											
470.000											

Table 25 (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#		
PMAE4016A	PMNN4258AR	HLN9701B w/ NTN5243 A	PMMN4013A	406.200							
				420.900	4.80	-0.34	6.33	3.42	BL(SAN)-AB-211001-15		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
	470.000										
	PMNN4259AR			406.200							
				420.900	4.80	-0.50	6.03	3.38	BL(SAN)-AB-211001-16		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
	470.000										
	PMNN4458BR			406.200							
				420.900	4.80	-0.33	6.72	3.63	BL(SAN)-AB-211001-17		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
	470.000										
	PMNN4072A			406.200							
				420.900	4.80	-0.06	6.52	3.31	BL(SAN)-AB-211001-18		
				430.000							
				438.100							
				450.000							
				455.400							
460.000											
470.000											
PMNN4450AR	406.200										
	420.900	4.80	-0.42	6.76	3.72	MFR-AB-211103-08#					
	430.000										
	438.100										
	450.000										
	455.400										
	460.000										
470.000											

Assessment at the Body with other audio accessories

DUT assessment of additional audio accessories per “KDB 643646 Body SAR Test Consideration for Audio Accessories without Built-in Antenna” Section 1, A. SAR plots of the highest results per Table (bolded) are presented in Appendix E.

Table 26

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#		
PMAE4016A	NNTN4970A	RLN4570A	PMLN6530A	406.200							
				420.900	4.80	-0.48	9.57	5.34	MFR-AB-211001-19		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
			PMLN6531A	406.200							
				420.900	4.80	-0.49	10.20	5.71	MFR-AB-211001-20		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
			PMLN6532A	406.200							
				420.900	4.80	-0.46	10.10	5.61	MFR-AB-211001-21		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
			PMLN6536A	406.200							
				420.900	4.80	-0.49	10.00	5.60	MFR-AB-211001-22		
				430.000							
				438.100							
450.000											
455.400											
460.000											
470.000											

Table 26 (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#		
PMAE4016A	NNTN4970A	RLN4570A	PMLN6537A	406.200							
				420.900	4.80	-0.45	10.30	5.71	MFR-AB-211001-23		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
			PMLN6538A	406.200							
				420.900	4.80	-0.51	10.30	5.79	MFR-AB-211002-01#		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
			PMLN6539A	406.200							
				420.900	4.80	-0.50	9.61	5.39	MFR-AB-211002-02#		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
			PMLN6540A	406.200							
				420.900	4.80	-0.48	10.60	5.92	MFR-AB-211002-03#		
				430.000							
				438.100							
				450.000							
				455.400							
				460.000							
				470.000							
PMLN6541A	406.200										
	420.900	4.80	-0.49	9.89	5.54	MFR-AB-211002-04#					
	430.000										
	438.100										
	450.000										
	455.400										
	460.000										
	470.000										

Table 26 (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#
PMAE4016A	NNTN4970A	RLN4570A	PMLN7468A	406.200					
				420.900	4.80	-0.48	10.20	5.70	MFR-AB-211002-05#
				430.000					
				438.100					
				450.000					
				455.400					
				460.000					
				470.000					
			PMMN4092A	406.200	4.80	-0.17	10.30	5.36	MFR-AB-211002-08
				420.900	4.80	-0.49	11.30	6.32	MFR-AB-211002-07
				430.000	4.80	-0.62	8.34	4.81	MFR-AB-211002-09
				438.100					
				450.000					
				455.400					
				460.000					
470.000									

13.2 LMR assessments at the Face for 406.125 – 480 MHz band

Battery PMNN4450AR was selected as the default battery for assessments at the Face because it has the highest capacity (refer to Exhibit 7B for battery illustration). The default battery was used during conducted power measurements for all test channels within FCC allocated frequency range (406.125-480MHz) which are listed in Table 27. The channel with the highest conducted power will be identified as the default channel per KDB 643646 (SAR Test for PTT Radios). SAR plots of the highest results per Table (bolded) are presented in Appendix F.

Table 27

Test Freq (MHz)	Power (W)
406.200	4.74
420.900	4.79
430.000	4.73
433.000	4.70
438.100	4.68
443.300	4.69
450.000	4.73
455.400	4.79
460.000	4.80
470.000	4.80

DUT assessment with offered antennas, default battery with front of DUT positioned 2.5cm facing phantom per KDB 643646. Optional batteries were tested per the requirements of KDB 643646. Refer to Table 27 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in Appendix E.

Table 28

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#	
PMAE4002A	PMNN4450AR	None, @front	NA	406.200						
				420.900	4.80	-0.39	3.89	2.13	MFR-FACE-211002-10	
				430.000						
433.000										
PMAE4003A				430.000						
				443.300						
				450.000						
				455.400						
PMAE4016A				460.000	4.80	-0.76	3.17	1.89	MFR-FACE-211002-11	
				470.000						
				406.200						
				420.900						
				430.000						
				438.100						
				450.000						
	455.400									
	460.000	4.80	-0.59	3.05	1.75	MFR-FACE-211002-12				
	470.000									
Additional batteries										
PMAE4002A	NNTN4851A	None, @front	NA	406.200						
				420.900	4.80	-0.31	3.68	1.98	AF(SAN)-FACE-211002-13	
				430.000						
				433.000						
	NNTN4497D			406.200						
				420.900	4.80	-0.47	4.23	2.36	AF(SAN)-FACE-211002-14	
				430.000						
	PMNN4098A			433.000						
				406.200						
				420.900	4.80	-0.38	3.28	1.79	AF(SAN)-FACE-211002-15	
				430.000						
	PMNN4251B			433.000						
				406.200						
420.900		4.80	-0.29	3.86	2.06	AF(SAN)-FACE-211002-16				
430.000										
				433.000						

Table 28 (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#
PMAE4002A	PMNN4253AR	None, @front	NA	406.200					
				420.900	4.80	-0.27	3.44	1.83	AF(SAN)-FACE-211002-17
				430.000					
	433.000								
	406.200								
	PMNN4254AR			420.900	4.80	-0.39	3.86	2.11	AF(SAN)-FACE-211002-18
				430.000					
				433.000					
	406.200								
	PMNN4258AR			420.900	4.80	-0.30	3.79	2.03	AF(SAN)-FACE-211002-19
				430.000					
				433.000					
	406.200								
	PMNN4259AR			420.900	4.80	-0.52	3.95	2.23	AF(SAN)-FACE-211002-20
				430.000					
				433.000					
	406.200								
	NNTN4970A			420.900	4.80	-0.56	3.17	1.80	AF(SAN)-FACE-211002-21
				430.000					
				433.000					
	406.200								
	PMNN4458BR			420.900	4.80	-0.34	3.83	2.07	AF(SAN)-FACE-211002-22
				430.000					
				433.000					
406.200									
PMNN4072A	420.900	4.80	-0.14	3.31	1.71	AF(SAN)-FACE-211002-23			
	430.000								
	433.000								

13.3 Assessment for ISED, Canada

Assessment results for body and face per ISED Canada frequency range (406.1-430MHz, 450-470MHz).

Table 29

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 (406.125-430 MHz)									
PMAE4016A	NNTN4970A	RLN4570A	PMNN4092A	420.900	4.80	-0.49	11.30	6.32	MFR-AB-211002-07
PMAE4002A	NNTN4970A	RLN4570A	PMMN4013A	420.900	4.80	-0.58	4.77	2.73	BL-AB-210927-16
Body (450-470 MHz)									
PMAE4016A	NNTN4970A	HLN6602A	PMMN4013A	460.000	4.80	-0.36	5.20	2.82	MFR-AB-210926-10#
PMAE4003A	NNTN4970A	HLN6602A	PMMN4013A	460.000	4.80	-0.69	5.66	3.32	MFR-AB-210926-14#
Face (406.125-430 MHz)									
PMAE4016A	NNTN4497D	@ front	None	420.900	4.80	-0.47	4.23	2.36	AF(SAN)-FACE-211002-14
PMAE4002A	NNTN4497D	@ front	None	420.900	4.80	-0.41	6.20	3.41	MFR-FACE-211003-01#
Face (450-470 MHz)									
PMAE4016A	PMNN4450AR	@ front	None	460.000	4.80	-0.59	3.05	1.75	AF(SAN)-FACE-211002-12
PMAE4003A	PMNN4450AR	@ front	None	460.000	4.80	-0.76	3.17	1.89	AF(SAN)-FACE-211002-11

As per ISSED Notice 2016-DRS001, additional tests were required for the low, mid and high frequency channels for the configuration with the highest SAR value.

Table 30

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									
PMAE4016A	NNTN4970A	RLN4570A	PMNN4092A	406.200	4.80	-0.14	10.60	5.47	AF(SAN)-AB-211003-07
PMAE4016A	NNTN4970A	RLN4570A	PMNN4092A	420.900	4.80	-0.49	11.30	6.32	MFR-AB-211002-07
PMAE4016A	NNTN4970A	RLN4570A	PMNN4092A	430.000	4.80	-0.44	8.30	4.59	AF(SAN)-AB-211003-08
Face									
PMAE4016A	NNTN4497D	@ front	None	406.200	4.80	-0.15	4.37	2.26	MFR-FACE-211003-02#
PMAE4016A	NNTN4497D	@ front	None	420.900	4.80	-0.41	6.20	3.41	MFR-FACE-211003-01#
PMAE4016A	NNTN4497D	@ front	None	430.000	4.80	-0.48	5.30	2.96	MFR-FACE-211003-03#

13.4 Assessment for outside FCC frequency range (Overall Range)

Assessment of outside FCC frequency range using the highest SAR configuration from above. SAR plots of the highest results per Table (bolded) are presented in Appendix F.

Table 31

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									
PMAE4002A	NNTN4970A	RLN4570A	PMNN4092A	403.000	4.45	-0.13	8.97	4.98	MFR-AB-211116-05
PMAE4016A					4.80	-0.16	9.58	4.97	AF(SAN)-AB-211003-12
Face									
PMAE4002A	NNTN4497D	@ front	None	403.000	4.80	-0.34	4.42	2.39	MFR-FACE-211003-04#
PMAE4016A					4.80	-0.52	3.69	2.08	AF(SAN)-FACE-211003-11

13.5 Shortened Scan Assessment

A “shortened” scan using the highest SAR configuration overall from above was performed to validate the SAR drift of the full DASY5™ coarse and zoom scans. Note that the shortened scan represents the zoom scan performance result; this is obtained by first running a coarse scan to find the peak area and then, using a newly charged battery, a zoom scan only was performed. The results of the shortened cube scan presented in Appendix D demonstrate that the scaling methodology used to determine the calculated SAR results presented herein are valid. The SAR result from the Table below is provided in Appendix F.

Table 32

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#
PMAE4016A	NNTN4970A	RLN4570A	PMNN4092A	420.900	4.80	-0.28	10.40	5.55	MHI-AB-211112-09

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 average SAR values found for this filing:

Table 33

Designator	Frequency band (MHz)	Max Calc at Body (W/kg)	Max Calc at Face (W/kg)
		1g-SAR	1g-SAR
FCC			
LMR	406.125-470	6.32	3.41
ISED Canada			
LMR	406.125-430 450-470	6.32	3.41
Overall Range			
LMR	403-470	6.32	3.41

All results are scaled to the maximum output power.

The test results clearly demonstrate compliance with FCC Occupational/Controlled RF Exposure limits of 8.0 W/kg averaged over 1 gram per the requirements of FCC 47 CFR § 2.1093 and RSS-102 (Issue 5).

15.0 Variability Assessment

Per the guidelines in KDB 865664 SAR variability assessment is required because SAR results are above 4.0W/kg (Occupational)

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).

Table 34

Run#	Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq. (MHz)	Adj Cal c. 1g-SAR (W/kg)	Ratio	Comments
MFR-AB-211002-07	PMAE4016A	NNTN4970A	RLN4570A	PMMN4092A	420.900	6.32	1.14	No additional repeated scans is required due to the Ratio (SAR_{high}/SAR_{low}) < 1.20
MFR-AB-211004-15						5.55		

16.0 System Uncertainty

A system uncertainty analysis is not required for this report per KDB 865664 because the highest report SAR value for Occupational exposure is less than 7.5W/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 System Validation (Dipole & Flat Phantom) for 450 MHz

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e = f(d,k)</i>	<i>f</i>	<i>g</i>	<i>h = c x f / e</i>	<i>i = c x g / 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	6.7	N	1.00	1	1	6.7	6.7	∞
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				10	9	99999
Expanded Uncertainty (95% CONFIDENCE LEVEL)			<i>k</i> =2				19	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

Uncertainty Budget for Device Under Test, for 450 MHz

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	$\frac{e}{f(d,k)}$	<i>f</i>	<i>g</i>	$\frac{h = c \times f / e}{e}$	$\frac{i = c \times g / e}{e}$	<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	6.7	N	1.00	1	1	6.7	6.7	∞
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							12	11	482
Expanded Uncertainty (95% CONFIDENCE LEVEL)							23	23	

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

Appendix B
SAR Summary Results Table for FCC PAG review

Table D.1 UHF SAR Summary Result

Table #	Body / Head / Face	Antenna No.	Battery No.	Body Worn No.	Audio No.	Front / Back	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
							406.2000	420.9000	430.0000	433.0000	438.1000	443.3000	450.0000	455.4000	460.0000	470.0000
18	Body	1	10	9	7	Back		2.03								
18	Body	2	10	9	7	Back									2.03	
18	Body	3	10	9	7	Back		3.20								
18	Body	3	2	9	7	Back		3.78								
18	Body	3	3	9	7	Back		3.27								
18	Body	3	4	9	7	Back		2.81								
18	Body	3	5	9	7	Back		3.23								
18	Body	3	6	9	7	Back		2.71								
18	Body	3	7	9	7	Back		3.19								
18	Body	3	8	9	7	Back		2.96								
18	Body	3	9	9	7	Back		3.12								
18	Body	3	11	9	7	Back		3.19								
18	Body	3	12	9	7	Back		3.22								
18	Body	3	1	9	7	Back		3.06								
19	Body	1	10	2	7	Back		2.10								
19	Body	2	10	2	7	Back									2.22	
19	Body	3	10	2	7	Back		3.68							1.83	
19	Body	3	2	2	7	Back		3.75								
19	Body	3	3	2	7	Back		3.59								
19	Body	3	4	2	7	Back		3.28								
19	Body	3	5	2	7	Back		3.50								
19	Body	3	6	2	7	Back		3.07								
19	Body	3	7	2	7	Back		3.45								
19	Body	3	8	2	7	Back		3.26								
19	Body	3	9	2	7	Back		3.38								
19	Body	3	11	2	7	Back		3.61								
19	Body	3	12	2	7	Back		3.36								
19	Body	3	1	2	7	Back		3.07								
20	Body	1	10	1	7	Back		2.47								
20	Body	2	10	1	7	Back									2.82	
20	Body	3	10	1	7	Back	4.32	5.19	4.54						3.32	
20	Body	3	2	1	7	Back		4.99								
20	Body	3	3	1	7	Back		4.59								
20	Body	3	4	1	7	Back		4.21								
20	Body	3	5	1	7	Back		4.62								
20	Body	3	6	1	7	Back		3.36								
20	Body	3	7	1	7	Back		4.51								
20	Body	3	8	1	7	Back		4.45								
20	Body	3	9	1	7	Back		4.90								
20	Body	3	11	1	7	Back		5.16								
20	Body	3	12	1	7	Back		4.64								
20	Body	3	1	1	7	Back		3.33								

Table D.1 UHF SAR Summary Result (Continued)

Table #	Body / Head / Face	Antenna No.	Battery No.	Body Worn No.	Audio No.	Front / Back	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
							406.2000	420.9000	430.0000	433.0000	438.1000	443.3000	450.0000	455.4000	460.0000	470.0000
21	Body	1	10	6	7	Back		1.52								
21	Body	2	10	6	7	Back									1.34	
21	Body	3	10	6	7	Back		2.40								
21	Body	3	2	6	7	Back		2.36								
21	Body	3	3	6	7	Back		2.34								
21	Body	3	4	6	7	Back		1.74								
21	Body	3	5	6	7	Back		4.00								
21	Body	3	6	6	7	Back		2.38								
21	Body	3	7	6	7	Back		2.44								
21	Body	3	8	6	7	Back		2.40								
21	Body	3	9	6	7	Back		2.49								
21	Body	3	11	6	7	Back		2.60								
21	Body	3	12	6	7	Back		2.40								
21	Body	3	1	6	7	Back		2.78								
22	Body	1	10	5	7	Back		2.73								
22	Body	2	10	5	7	Back									2.69	
22	Body	3	10	5	7	Back	4.18	5.47	4.52						2.88	
22	Body	3	2	5	7	Back		5.35								
22	Body	3	3	5	7	Back		4.83								
22	Body	3	4	5	7	Back		4.79								
22	Body	3	5	5	7	Back		5.27								
22	Body	3	6	5	7	Back		4.74								
22	Body	3	7	5	7	Back		4.77								
22	Body	3	8	5	7	Back		4.38								
22	Body	3	9	5	7	Back		4.99								
22	Body	3	11	5	7	Back		4.74								
22	Body	3	12	5	7	Back		4.95								
22	Body	3	1	5	7	Back		3.77								
23	Body	1	10	7&4	7	Back		1.02								
23	Body	2	10	7&4	7	Back									1.30	
23	Body	3	10	7&4	7	Back		1.69								
23	Body	3	2	7&4	7	Back		2.09								
23	Body	3	3	7&4	7	Back		1.26								
23	Body	3	4	7&4	7	Back		1.18								
23	Body	3	5	7&4	7	Back		1.46								
23	Body	3	6	7&4	7	Back		1.35								
23	Body	3	7	7&4	7	Back		1.40								
23	Body	3	8	7&4	7	Back		1.50								
23	Body	3	9	7&4	7	Back		1.05								
23	Body	3	11	7&4	7	Back		1.30								
23	Body	3	12	7&4	7	Back		1.22								
23	Body	3	1	7&4	7	Back		1.31								

Table D.1 UHF SAR Summary Result (Continued)

Table #	Body / Head / Face	Antenna No.	Battery No.	Body Worn No.	Audio No.	Front / Back	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
							406.2000	420.9000	430.0000	433.0000	438.1000	443.3000	450.0000	455.4000	460.0000	470.0000
24	Body	1	10	8&4	7	Back		0.68								
24	Body	2	10	8&4	7	Back									0.71	
24	Body	3	10	8&4	7	Back		0.84								
24	Body	3	2	8&4	7	Back		0.82								
24	Body	3	3	8&4	7	Back		0.80								
24	Body	3	4	8&4	7	Back		0.65								
24	Body	3	5	8&4	7	Back		0.79								
24	Body	3	6	8&4	7	Back		0.77								
24	Body	3	7	8&4	7	Back		0.72								
24	Body	3	8	8&4	7	Back		0.70								
24	Body	3	9	8&4	7	Back		0.78								
24	Body	3	11	8&4	7	Back		0.84								
24	Body	3	12	8&4	7	Back		0.73								
24	Body	3	1	8&4	7	Back		1.46								
25	Body	1	10	3&4	7	Back		2.10								
25	Body	2	10	3&4	7	Back									2.20	
25	Body	3	10	3&4	7	Back	3.13	4.22	2.65						2.11	
25	Body	3	2	3&4	7	Back		3.35								
25	Body	3	3	3&4	7	Back		3.10								
25	Body	3	4	3&4	7	Back		3.15								
25	Body	3	5	3&4	7	Back		3.58								
25	Body	3	6	3&4	7	Back		3.00								
25	Body	3	7	3&4	7	Back		3.71								
25	Body	3	8	3&4	7	Back		3.42								
25	Body	3	9	3&4	7	Back		3.38								
25	Body	3	11	3&4	7	Back		3.63								
25	Body	3	12	3&4	7	Back		3.31								
25	Body	3	1	3&4	7	Back		3.72								
26	Body	3	10	5	8	Back		5.34								
26	Body	3	10	5	2	Back		5.71								
26	Body	3	10	5	3	Back		5.61								
26	Body	3	10	5	9	Back		5.60								
26	Body	3	10	5	6	Back		5.71								
26	Body	3	10	5	5	Back		5.79								
26	Body	3	10	5	11	Back		5.39								
26	Body	3	10	5	12	Back		5.92								
26	Body	3	10	5	4	Back		5.54								
26	Body	3	10	5	10	Back		5.70								
26	Body	3	10	5	1	Back	5.36	6.32	4.81							

Table D.1 UHF SAR Summary Result (Continued)

Table #	Body / Head / Face	Antenna No.	Battery No.	Body Worn No.	Audio No.	Front / Back	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	
							406.2000	420.9000	430.0000	433.0000	438.1000	443.3000	450.0000	455.4000	460.0000	470.0000	
28	Face	1	1			Front		2.13									
28	Face	2	1			Front									1.89		
28	Face	3	1			Front		1.75									
28	Face	1	2			Front		1.98									
28	Face	1	3			Front		2.36									
28	Face	1	4			Front		1.79									
28	Face	1	5			Front		2.06									
28	Face	1	6			Front		1.83									
28	Face	1	7			Front		2.11									
28	Face	1	8			Front		2.03									
28	Face	1	9			Front		2.23									
28	Face	1	10			Front		1.80									
28	Face	1	11			Front		2.07									
28	Face	1	12			Front		1.71									