



DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 1 of 2

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Date/s Tested: 01/26/2022 - 02/04/2022, 02/12/2022 - 02/13/2022, 02/22/2022 - 02/24/2022, 03/11/2022, 03/22/2022, 06/09/2022 - 06/10/2022, 06/30/2022-07/02/2022
Manufacturer: Motorola Solutions Inc.
DUT Description: Handheld Portable – APX N30 7/800 MODEL PORTABLE
 – APX N50 7/800 MODEL PORTABLE
Test TX mode(s): FM, BT & WLAN
Max. Power output: Refer Table 3, 3a
Tx Frequency Bands: Refer Table 3
Signaling type: FM (LMR), 802.11b/g/n/a/ac (WLAN), FHSS (Bluetooth / Bluetooth LE)
Model(s) Tested: H25UCF9PW6AN (PMUF1999A), H15UCF9PW6AN (PMUF1998A)
Model(s) Certified: H25UCF9PW6AN (PMUF1999A), H15UCF9PW6AN (PMUF1998A)
Serial Number(s): 657TYB0708, 657TYB0774, 657TYB0457 & 657TYK0099
Classification: Occupational/Controlled
Applicant Name: Motorola Solutions Inc.
Applicant Address: 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322
FCC ID: AZ489FT7161;
 This report contains results that are immaterial for FCC equipment approval, which are clearly identified.
IC: 109U-89FT7161;
 This report contains results that are immaterial for ISED equipment approval, which are clearly identified.
ISED Test Site registration: 24843
FCC Test Firm Registration Number: 823256

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).

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: 8/4/2022

Part 1 of 2

1.0	Introduction.....	4
2.0	FCC SAR Summary.....	4
3.0	Abbreviations / Definitions.....	5
4.0	Referenced Standards and Guidelines	6
5.0	SAR Limits	7
6.0	Description of Device Under Test (DUT)	7
7.0	Optional Accessories and Test Criteria.....	9
7.1	Antennas	9
7.2	Battery.....	9
7.3	Body worn Accessories.....	9
7.4	Audio Accessories	10
8.0	Description of Test System.....	11
8.1	Descriptions of Robotics/Probes/Readout Electronics	11
8.2	Description of Phantom(s).....	12
8.3	Description of Simulated Tissue.....	12
9.0	Additional Test Equipment.....	13
	SAR Measurement System Validation and Verification	14
8.4	System Validation.....	14
8.5	System Verification	15
8.6	Equivalent Tissue Test Results	16
11.0	Environmental Test Conditions	18
12.0	DUT Test Setup and Methodology	19
12.1	Measurements	19
12.2	DUT Configuration(s).....	19
12.3	DUT Positioning Procedures	19
12.3.1	Body.....	19
12.3.2	Head.....	20
12.3.3	Face.....	20
12.4	DUT Test Channels	20
12.5	SAR Result Scaling Methodology.....	20
12.6	DUT Test Plan	21
13.0	DUT Test Data for LMR.....	21
13.1	LMR assessments at the Body for 769-775MHz band	21
13.2	LMR assessments at the Body for 799-824MHz band	22
13.3	LMR assessments at the Body for 851-869MHz band	24
13.4	LMR assessment at the Face for 769-775MHz band.....	25
13.5	LMR assessments at the Face for 799-824MHz band	26
13.6	LMR assessments at the Face for 851-869MHz band	27
13.7	Assessment for ISED, Canada	28
13.8	Assessment for outside FCC Frequency range (7/800 MHz)	29
14.0	DUT Test Data for WLAN	30
14.1	Assessment for WLAN 2.4GHz (802.11 b/g/n).....	30

14.2	Assessment for WLAN 5.0 GHz (802.11 a/n/ac)	33
14.3	Assessment at the Bluetooth band	39
14.3.1	FCC Requirement	39
14.3.2	ISED Canada Requirement	40
15.0	Shortened Scan Assessment.....	41
16.0	Simultaneous Transmission	41
16.1	Simultaneous transmission exclusion for BT	42
16.2	Simultaneous Transmission for LMR, BT, WLAN 2.4GHz and 5GHz	42
17.0	Results Summary	43
18.0	Variability Assessment	43
19.0	System Uncertainty	43

APPENDICES

A	Measurement Uncertainty Budget	45
B	Probe Calibration Certificates	
C	Dipole Calibration Certificates	

Part 2 of 2

APPENDICES

D	System Verification Check Scans	2
E	DUT Scans	25
F	Shorten Scan of Highest SAR Configuration	64
G	DUT Test Position Photos	65
H	DUT, Body worn and audio accessories Photos	66

Report Revision History

Date	Revision	Comments
03/22/2022	A	Initial release
04/06/2022	B	Update antenna description and power table
04/20/2022	C	Update antenna description
05/23/2022	D	Update max power for WLAN 5GHz 802.11a
06/02/2022	E	Update max power for WLAN 2.4GHz 802.11g
06/21/2022	F	Revise Bluetooth assessment section based on KDB 447498 D04 Interim General RF Exposure Guidance v01
07/06/2022	G	Revise the Face Assessment section
08/04/2022	H	Revise max power for BT and BT LE

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 H25UCF9PW6AN (PMUF1999A) and H15UCF9PW6AN (PMUF1998A). These devices are 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	762 – 776 MHz (LMR)	1.41	1.43
	792 – 824 MHz (LMR)	1.52	1.59
	851 – 870 MHz (LMR)	1.75	1.98
DTS	2412 – 2462 MHz (WLAN 2.4 GHz)	0.150	0.037
NII	5180 – 5845 MHz WLAN 5 GHz	0.048	0.061
*DSS	2402-2480MHz (Bluetooth)	NA	NA
Simultaneous Results		1.90	2.04

*Results not required per KDB (refer to sections 14.3)

3.0 Abbreviations / Definitions

BT: Bluetooth
CNR: Calibration Not Required
CW: Continuous Wave
DSS: Direct Spread Spectrum
DUT: Device Under Test
EME: Electromagnetic Energy
FHSS: Frequency Hopping Spread Spectrum
FM: Frequency Modulation
NA: Not Applicable
LMR: Land Mobile Radio
OFDM: Orthogonal Frequency Division Multiplexing
GFSK: Gaussian Frequency-Shift Keying
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 standard 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 D04 Interim General RF Exposure Guidance v01
- 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 portable device operates in the LMR bands using frequency modulation (FM) incorporating traditional simplex two-way radio transmission protocol. This device also contains WLAN technology for data applications and Bluetooth technology for short range wireless devices.

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.

This device also incorporates GFSK Bluetooth transmission device which is a 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. The maximum duty cycle for BT is 77%.

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 (%)	Max Power (W)
LMR	762-776, 792-806	FM	*50	2.99
LMR	806-824, 851-870	FM	*50	3.60
WLAN 802.11 b (22 MHz)	2412-2462	DSSS	98.86	0.0631
WLAN 802.11 g (20 MHz)	2412-2462	OFDM	96.88	0.03162 (CH 1) 0.0631 (CH 6) 0.0398 (CH 11)
WLAN 802.11 n (20 MHz)	2412-2462	OFDM	98.01	0.03162 (CH 1 & 11) 0.05012 (CH 6)
WLAN 802.11 a (20 MHz)	5180-5825	OFDM	97.01	UNII-1, 2A: 0.0282 UNII-2C: 0.0158 (CH 100) UNII-2C: 0.0282 (Other Channels) UNII-3: 0.0282 (CH 132), 0.0158 (CH 140) UNII-3: 0.0224 (Other Channels)
WLAN 802.11 n (20 MHz)	5180-5825	OFDM	97.97	UNII-1, 2A: 0.0224 UNII-2C: 0.01122 (CH 100) UNII-2C: 0.0224 (Other Channels) UNII-3: 0.01122 (CH 140) UNII-3: 0.0224 (Other Channels)
WLAN 802.11 ac (20 MHz)	5180-5825	OFDM	97.97	UNII-1, 2A: 0.0224 UNII-2C: 0.01122 (CH 100) UNII-2C: 0.0224 (Other Channels) UNII-3: 0.01122 (CH 140) UNII-3: 0.0224 (Other Channels)
BT	2402 - 2480	GFSK	77	0.01413
BT LE (1M)	2402 - 2480	GFSK	62.74	0.00708

Note - * includes 50% PTT operation

To meet the margin requirement for RBE in EMC RE test, the max power for channel 11 in WLAN 2.4GHz 802.11g; channels 64, 100 & 140 in WLAN 5GHz 802.11a were reduced as shown in Table 3a, SAR test was already conducted at the higher power level hence it was not impacted.

Table 3a

Technologies	Band (MHz)	Transmission	Duty Cycle (%)	Max Power (W)
WLAN 802.11 g (20 MHz)	2412-2462	OFDM	96.88	0.03162 (CH 11)
WLAN 802.11 a (20 MHz)	5180-5825	OFDM	97.01	UNII-2A: 0.0224 (CH 64) UNII-2C: 0.00794 (CH 100) UNII-3: 0.0100 (CH 140)

The intended operating positions are “at the face” with the DUT at least 2.5cm 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 one removable antenna and one internal WLAN/BT antenna offered for this product. The Table below lists their descriptions.

Table 4

Antenna No.	Antenna Models	Description	Selected for test	Tested
1	AN000411A01	7/800 Whip Antenna (762-870MHz), ½ wavelength, 0 dBi gain	Yes	Yes
2	AN000410A01	Wifi/BT Antenna, 2.4-2.48GHz, 5.15-5.85GHz, ¼ wavelength, 2400-2480MHz (0dBi), 5150-5250MHz (4.0dBi), 5250-5350MHz (4.0dBi), 5470-5725MHz (2.5dBi), 5725-5850MHz (2.7dBi)	Yes	Yes

7.2 Battery

This is the only battery offered for this product. The Table below lists their descriptions.

Table 5

Battery No.	Battery Models	Description	Selected for test	Tested	Comments
1	PMNN4813A	BATT LIION IMPRES 2 IP68 2850T	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	PMLN8369A	CARRY ACCESSORY-BELT CLIP, APX N30/APX N50 2.0 BELT CLIP	Yes	Yes	
2	PMLN8370A	CARRY ACCESSORY-BELT CLIP, APX N30/APX N50 2.5 BELT CLIP	Yes	Yes	

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	PMMN4128A	RM780 IMPRES WINDPORTING REMOTE SPEAKER MICROPHONE, LARGE (IP68)	Yes	Yes	Default Audio
2	NMN6274B	IMPRES XP RSM FOR APX W/ DUAL MIC NOISE SUPPRESSION, 3.5MM THRD JACK.	Yes	*No	Paired with PMLN8334A
3	NMN6271A	IMPRES XP RSM FOR APX W/ DUAL MIC NOISE SUPPRESSION.	No	No	By Similarity to NMN6274B
4	PMLN6828A	ACCESSORY KIT,TACTICAL THROAT MICROPHONE	Yes	*No	Paired with PMLN6827A and PMLN8334A
5	PMLN6829A	TACTICAL EAR MICROPHONE	Yes	*No	Paired with PMLN6827A and PMLN8334A
6	PMLN8086A	OVER-THE-HEAD HEADSET	Yes	*No	
7	PMLN8085A	BEHIND-THE-HEAD HEADSET	No	No	By Similarity to PMLN8086A
8	PMLN8265A	HEADBAND HEADSET W/ NEXUS	Yes	*No	Paired with PMLN8297A
9	PMLN8266A	NECKBAND HEADSET W/ NEXUS	No	No	By Similarity to PMLN8265A
10	PMLN8267A	HARDHAT HEADSET W/ NEXUS	No	No	By Similarity to PMLN8265A
11	PMLN8295A	2-WIRE SWIVEL LOUD AUDIO EARPIECE WITH EARTIP	Yes	*No	
12	PMLN8342A	2-WIRE SURVEILLANCE KIT WITH LOUD AUDIO TRANSLUCENT TUBE	No	No	By Similarity to PMLN8295A
13	PMLN8337A	1-WIRE SINGLE EARBUD WITH REMOVABLE EARHOOK LOUD AUDIO EARPIECE	Yes	*No	
14	PMLN8341A	1-WIRE SURVEILLANCE KIT WITH LOUD AUDIO TRANSLUCENT TUBE	No	No	By Similarity to PMLN8337A
15	PMLN8343A	3-WIRE SURVEILLANCE KIT WITH LOUD AUDIO TRANSLUCENT TUBE	Yes	*No	
16	PMMN4140A	RM760 IMPRES WINDPORTING REMOTE SPEAKER MICROPHONE, LARGE (IP68)	No	No	By Similarity to PMLN4128A
17	PMMN4141A	AUDIO ACCESSORY-REMOTE SPEAKER MICROPHONE,XVP750 RSM	Yes	*No	
18	PMMN4142A	AUDIO ACCESSORY-REMOTE SPEAKER MICROPHONE,XVP730 RSM	No	No	By Similarity to PMLN4141A
19	PMLN6827A	ACCESSORY KIT,TACTICAL GCAI PTT INTERFACE MODULE	Yes	*No	Paired with PMLN6828A, PMLN6829A and PMLN8334A
20	PMLN8297A	GCAI-MINI PTT NEXUS ADAPTER	Yes	*No	Paired with PMLN8265A
21	PMLN8334A	CABLES-ADAPTER CABLES,GCAI MINI TO GCAI CABLE ADAPTER, FOR APX	Yes	*No	Paired with PMLN6828A, PMLN6829A and PMLN6827A

Note - * Intended for test. Per KDB provision tests not required.

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	750MHz	835MHz	2450MHz	5GHz ⁽¹⁾
	Head	Head	Head	Head
Sugar	57.0	57.0	NA	NA
Diacetin	0	0	51.0	NA
De ionized - Water	40.12	40.45	48.75	NA
Salt	1.78	1.45	0.15	NA
HEC	1	1	NA	NA
Bact.	0.1	0.1	0.1	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 11

Equipment Type	Model Number	Serial Number	Calibration Date	Calibration Due Date
SPEAG PROBE*	EXDV4	7486	07/18/2021	06/18/2022
SPEAG PROBE*	EXDV4	7534	04/19/2021	04/19/2022
SPEAG PROBE	EX3DV4	7533	04/19/2021	04/19/2024
SPEAG PROBE	EX3DV4	7485	04/25/2022	04/25/2025
SPEAG DAE*	DAE4	1488	04/07/2021	04/07/2022
SPEAG DAE*	DAE4	1598	04/07/2021	04/07/2022
SPEAG DAE	DAE3	374	04/08/2021	04/08/2024
SPEAG DAE	DAE4	850	04/14/2022	04/14/2025
POWER AMPLIFIER	50W 1000A	14715	CNR	CNR
AMPLIFIER	5S1G4	313326	CNR	CNR
AMPLIFIER	5S4G11	312663	CNR	CNR
AMPLIFIER	5S4G11	312664	CNR	CNR
VECTOR SIGNAL GENERATOR	E4438C	MY42081753	08/27/2021	08/27/2022
VECTOR SIGNAL GENERATOR	E4438C	MY45091270	09/09/2021	09/09/2022
POWER SOURCE	SE UMS 160 CA	4251	04/13/2022	04/13/2023
POWER METER*	E4419B	MY45103725	06/29/2021	06/29/2022
POWER METER	E4418B	MY45107917	07/23/2021	07/23/2022
POWER METER	E4418B	MY45100911	08/20/2021	08/20/2022
POWER METER	E4416A	MY50001037	08/16/2020	08/16/2022
POWER METER	E4418B	MY45100739	12/08/2021	12/08/2022
POWER METER	E4417A	GB41292245	11/24/2021	11/24/2022
POWER SENSOR*	E9301B	MY55210003	05/29/2021	05/29/2022
POWER SENSOR*	E9301B	MY41495733	05/29/2021	05/29/2022
POWER SENSOR	E4412A	MY61060015	04/07/2022	04/07/2023
POWER SENSOR	E4412A	MY61020016	04/07/2022	04/07/2023
POWER SENSOR	E9301B	MY50280001	05/26/2022	05/26/2023
POWER SENSOR	E9301B	MY55210006	05/26/2022	05/26/2023
BI-DIRECTIONAL COUPLER	3020A	41931	07/27/2021	07/27/2022
BI-DIRECTIONAL COUPLER	3022	77115	07/27/2021	07/27/2022
BI-DIRECTIONAL COUPLER	3024	61136	07/27/2021	07/27/2022
BI-DIRECTIONAL COUPLER	3024	61182	07/08/2021	07/08/2022
DATA LOGGER	DSB	16398050	08/18/2021	08/18/2022
THERMOMETER	HH806AU	080307	11/26/2021	11/26/2022
TEMPERATURE PROBE	80PK-22	06032017	11/26/2021	11/26/2022
DIELECTRIC ASSESSMENT KIT*	DAK-3.5	1156	04/07/2021	04/07/2022
DIELECTRIC ASSESSMENT KIT	DAK-3.5	1120	10/06/2021	10/06/2022
DIGITAL THERMOMETER	1523	3492108	09/28/2021	09/28/2022
TEMPERATURE PROBE	PR-10L-4-100-1/4-6-BX	WNWR037791	09/17/2021	09/17/2022
NETWORK ANALYZER	E5071B	MY42403218	09/13/2021	09/13/2022

Note: * denotes that SAR assessment was done before calibration due date

Table 11 (Continue)

Equipment Type	Model Number	Serial Number	Calibration Date	Calibration Due Date
POWER SENSOR	E4418B	GB40206480	11/24/2021	11/24/2022
POWER SENSOR	NRP-Z11	120907	08/19/2020	08/19/2022
POWER METER*	E9301B	MY55210006	05/07/2021	05/07/2022
SPEAG DIPOLE	D750V3	1142	11/20/2019	11/20/2022
SPEAG DIPOLE	D835V2	4D029	08/27/2021	08/27/2024
SPEAG DIPOLE	D2450V2	782	02/20/2020	02/20/2023
SPEAG DIPOLE	D2450V2	781	10/13/2021	10/13/2024
SPEAG DIPOLE	D5GHzV2	1022	07/16/2021	07/16/2024

Note: * denotes that SAR assessment was done before calibration due date

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.

8.4 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								
07/10/2021	Head	750	7486	0.85	41.6	Pass	Pass	Pass
07/11/2021	Head	835		0.94	40.5	Pass	Pass	Pass
08/16/2021	Head	750	7534	0.85	41.4	Pass	Pass	Pass
08/14/2021	Head	2450		1.82	35.5	Pass	Pass	Pass
05/06/2021	Head	5250		4.47	33.3	Pass	Pass	Pass
05/07/2021	Head	5500		4.54	33.8	Pass	Pass	Pass
05/07/2021	Head	5600		4.64	33.6	Pass	Pass	Pass
05/08/2021	Head	5750		4.80	38.3	Pass	Pass	Pass
05/23/2021	Head	2450	7533	1.89	39.6	Pass	Pass	Pass
06/04/2022	Head	835	7485	0.94	42.3	Pass	Pass	Pass
06/08/2022	Head	2450		1.81	40.5	Pass	Pass	Pass
06/16/2022	Head	5250		4.27	32.8	Pass	Pass	Pass
WLAN								
05/05/2021	Head	2450	7534	1.78	37.6	Pass	Pass	Pass
05/06/2021	Head	5250		4.47	33.3	Pass	Pass	Pass
05/07/2021	Head	5500		4.54	33.8	Pass	Pass	Pass
05/07/2021	Head	5600		4.64	33.6	Pass	Pass	Pass
05/09/2021	Head	5750		5.27	38.0	Pass	Pass	Pass
05/24/2021	Head	2450	7533	1.89	39.6	Pass	Pass	Pass
06/08/2022	Head	2450	7485	1.81	40.5	Pass	Pass	Pass
06/16/2022	Head	5250		4.27	32.8	Pass	Pass	Pass

8.5 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
7486	IEEE/IEC Head	SPEAG D750V3 / 1142	8.52 ± 10%	1.96	7.84	01/26/2022#
				2.01	8.04	01/27/2022
				2.17	8.68	03/11/2022
		SPEAG D835V2 / 4D029	9.84 ± 10%	2.28	9.12	01/28/2022
				2.37	9.48	01/29/2022
				2.37	9.48	01/30/2022
				2.36	9.44	01/31/2022
7534		SPEAG D750V3 / 1142	8.52 ± 10%	1.97	7.88	03/22/2022
		SPEAG D2450V2 / 782	54.40 ± 10%	13.10	52.40	01/28/2022
		SPEAG D5250V2_5250MHz/1022	81.30 ± 10%	7.47	74.70	01/29/2022#
				7.98	79.80	01/31/2022#
				7.53	75.30	02/12/2022
		SPEAG D5600V2_5600MHz/1022	83.10 ± 10%	7.58	75.80	02/01/2022
				7.73	77.30	02/01/2022#
				8.40	84.00	02/02/2022#
				7.83	78.30	02/12/2022#
		SPEAG D5GHzV2_5750MHz/1022	81.50 ± 10%	7.66	76.60	02/03/2022#
7.48				74.80	02/04/2022#	
7533		SPEAG D2450V2 / 781	52.70 ± 10%	1.69	53.48	06/09/2022#
7485		SPEAG D835V2 / 4D029	9.84 ± 10%	2.47	9.88	06/30/2022
		SPEAG D2450V2 / 781	51.10 ± 10%	13.1	52.40	07/02/2022
	SPEAG D5250V2_5250MHz/1022	75.60 ± 10%	8.31	75.60	07/01/2022	

Note: '#' indicates that system verification check covers next test day

8.6 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
750	IEEE/ IEC Head	0.89 (0.85-0.93)	41.9 (39.8-44.0)	0.90	42.5	01/26/2022#
				0.89	41.8	01/27/2022
				0.86	42.1	03/11/2022
				0.86	40.9	03/22/2022
762		0.89 (0.85-0.94)	41.8 (39.8-43.9)	0.91	42.4	01/26/2022#
				0.87	40.7	03/22/2022
769		0.89 (0.85-0.94)	41.8 (39.7-43.9)	0.92	42.3	01/26/2022#
				0.91	41.5	01/27/2022
772		0.89 (0.85-0.94)	41.8 (39.7-43.9)	0.92	42.2	01/26/2022#
				0.88	41.8	03/11/2022
775		0.89 (0.85-0.94)	41.8 (39.7-43.9)	0.92	42.2	01/26/2022#
				0.89	41.8	03/11/2022
792		0.89 (0.85-0.94)	41.7 (39.6-43.8)	0.90	41.8	01/28/2022
799		0.89 (0.85-0.94)	41.7 (39.6-43.8)	0.90	41.7	01/28/2022
812		0.90 (0.85-0.94)	41.6 (39.5-43.7)	0.92	41.5	01/28/2022
824		0.90 (0.85-0.94)	41.6 (39.5-43.6)	0.93	41.4	01/28/2022
835		0.90 (0.86-0.95)	41.5 (39.4-43.6)	0.94	41.2	01/28/2022
				0.94	41.2	01/29/2022
				0.91	40.5	01/30/2022
				0.94	41.0	06/30/2022
851	0.92 (0.87-0.96)	0.91		40.5	01/29/2022	
		0.92		40.3	01/30/2022	
		0.91		40.5	01/29/2022	
860	0.93 (0.88-0.97)	41.5 (39.4-43.6)		0.92	40.4	01/29/2022
		0.97	40.7	06/30/2022		
869	0.94 (0.89-0.98)	41.5 (39.4-43.6)	0.93	40.3	01/29/2022	
			0.97	40.6	06/30/2022	
2412	1.77 (1.68-1.86)	39.3 (35.3-43.2)	1.81	37.4	01/28/2022	
			1.79	39.8	06/09/2022#	
			1.84	38.1	07/02/2022	

Note: '#' indicates that tissue test result covers 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
2437	IEEE/ IEC Head	1.79 (1.70-1.88)	39.2 (35.3-43.1)	1.83	37.4	01/28/2022
2450		1.80 (1.71-1.89)	39.2 (35.3-43.1)	1.79	37.4	07/01/2022
				1.84	37.3	01/28/2022
				1.85	36.2	02/23/2022
				1.87	37.0	02/24/2022
				1.82	39.8	06/09/2022#
				1.80	37.4	07/01/2022
2462		1.81 (1.72-1.90)	39.2 (35.3-43.1)	1.87	38.0	07/02/2022
				1.85	37.3	01/28/2022
5250		4.71 (4.24-5.18)	36.0 (32.4-39.5)	1.81	37.4	07/01/2022
				4.42	32.4	01/29/2022#
				4.51	34.5	01/31/2022
				4.32	33.3	02/12/2022
5260		4.72 (4.25-5.19)	35.9 (32.3-39.5)	4.33	32.7	07/01/2022
				4.43	32.4	01/29/2022#
				4.33	33.3	02/12/2022
5300		4.76 (4.28-5.24)	35.9 (32.3-39.5)	4.34	32.7	07/01/2022
				4.47	32.4	01/29/2022#
5320		4.78 (4.30-5.26)	35.9 (32.3-39.6)	4.36	33.3	02/12/2022
				4.49	32.3	01/29/2022#
				4.59	34.3	01/31/2022
				4.65	32.9	02/01/2022#
				4.73	32.5	02/02/2022#
5560		5.03 (4.54-5.55)	35.5 (32.0-39.1)	4.40	32.6	07/01/2022
				4.85	33.8	01/31/2022#
5600		5.07 (4.56-5.58)	35.5 (31.9-39.0)	4.71	32.8	02/01/2022#
				4.90	33.7	01/31/2022#
				4.75	32.7	02/01/2022#
5640		5.11 (4.60-5.62)	35.5 (31.9-39.0)	4.83	32.3	02/02/2022#
				4.80	32.6	02/01/2022#
5660		5.13 (4.62-5.64)	35.4 (31.9-39.0)	4.87	32.2	02/02/2022#
5745		5.22 (4.70-5.74)	35.4 (31.8-38.9)	4.75	34.7	02/03/2022#
5750		5.22 (4.70-5.74)	35.4 (31.8-38.9)	4.72	32.2	02/04/2022#
				4.84	34.5	02/03/2022
5825		5.30 (4.77-5.83)	35.3 (31.7-38.8)	4.72	32.2	02/04/2022
				4.79	32.1	02/04/2022#

Note: '#' indicates that 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 15

	Target	Measured
Ambient Temperature	18 – 25 °C	Range: 21.2 – 25°C Avg. 23.1 °C
Tissue Temperature	18 – 25 °C	Range: 18.8-22.1°C Avg. 20.5°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 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: 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 ≤ 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 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. KDB 248227 D01 applied to WLAN test configurations.

12.3 DUT Positioning Procedures

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

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

Not applicable.

12.3.3 Face

The DUT was positioned with its' front sides separated 2.5cm 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 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:

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

P_{max} = Maximum Power (W)

P_{int} = Initial Power (W)

Drift = DASY drift results (dB)

SAR_meas = Measured 1-g 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. All tests were performed in CW modes 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 769-775MHz band

Battery PMNN4813A was selected as the default battery for assessments at the Body because it is the only offered 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 (769-775MHz) 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).

Table 17

Test Freq (MHz)	Power (W)
769.0125	2.900
772.0000	2.920
774.9875	2.900

Assessments at the Body with Body worn PMLN8369A

DUT assessment with offered antenna, default battery and the above mentioned body worn accessory per KDB 643646. Refer to Table 17 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in Appendix E.

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#
AN000411A01	PMNN4813A	PMLN8369A	PMMN4128A	769.0125	2.92	-0.47	2.28	1.30	FZ-AB-220126-06
				772.0000					
				774.9875					

Assessments at the Body with Body worn PMLN8370A

DUT assessment with offered antenna, default battery and the above mentioned body worn accessory per KDB 643646. Refer to Table 17 for highest output power channel. SAR plots of the highest results per Table (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#
AN000411A01	PMNN4813A	PMLN8370A	PMMN4128A	769.0125	2.92	-0.39	2.26	1.27	FZ-AB-220126-07
				772.0000					
				774.9875					

Assessment at the Body with other audio accessories

Assessment per “KDB 643646 Body SAR Test Consideration for Audio Accessories without Built-in Antenna; Sec 1, A. when overall ≤ 4.0 W/kg, SAR tested for that audio accessory is not necessary.” This was applicable to all remaining accessories.

Assessment of wireless BT configuration

Assessment using the overall highest SAR configuration at the body from above without an audio accessory attached. SAR plots of the highest results per Table (bolded) are presented in Appendix E.

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#
AN000411A01	PMNN4813A	PMLN8369A	None	769.0125	2.92	-0.92	2.23	1.41	FZ-AB-220127-01#
				772.0000					
				774.9875					

13.2 LMR assessments at the Body for 799-824MHz band

Battery PMNN4813A was selected as the default battery for assessments at the Body because it is the only offered 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 (799-824MHz) which are listed in Table 21. The channel with the highest conducted power will be identified as the default channel per KDB 643646 (SAR Test for PTT Radios).

Table 21

Test Freq (MHz)	Power (W)
799.0125	2.940
811.5000	3.520
823.9875	3.500

Assessments at the Body with Body worn PMLN8369A

DUT assessment with offered antenna, default battery and, above mentioned body worn accessory per KDB 643646. Refer to Table 21 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in Appendix E.

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#
AN000411A01	PMNN4813A	PMLN8369A	PMMN4128A	799.0125					
				811.5000	3.58	-0.21	2.74	1.45	FZ-AB-220128-03
				823.9875					

Assessments at the Body with Body worn PMLN8370A

DUT assessment with offered antenna, default battery and, above mentioned body worn accessory per KDB 643646. Refer to Table 21 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in Appendix E.

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#
AN000411A01	PMNN4813A	PMLN8370A	PMMN4128A	799.0125					
				811.5000	3.56	-0.34	2.53	1.38	FZ-AB-220128-04
				823.9875					

Assessment at the Body with other audio accessories

Assessment per “KDB 643646 Body SAR Test Consideration for Audio Accessories without Built-in Antenna; Sec 1, A. when overall ≤ 4.0 W/kg, SAR tested for that audio accessory is not necessary.” This was applicable to all remaining accessories.

Assessment of wireless BT configuration

Assessment using the overall highest SAR configuration at the body from above without an audio accessory attached. SAR plots of the highest results per Table (bolded) are presented in Appendix E.

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#
AN000411A01	PMNN4813A	PMLN8369A	None	799.0125					
				811.5000	3.56	-0.15	2.71	1.42	AF-AB-220128-05
				823.9875					

13.3 LMR assessments at the Body for 851-869MHz band

Battery PMNN4813A was selected as the default battery for assessments at the Body because it is the only offered 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 (851-869MHz) which are listed in Table 25. 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 25

Test Freq (MHz)	Power (W)
851.0125	3.520
860.0000	3.520
868.9875	3.510

Assessments at the Body with Body worn PMLN8369A

DUT assessment with offered antennas, default battery and, above mentioned body worn accessory per KDB 643646. Refer to Table 25 for highest output power channel. 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#
AN000411A01	PMNN4813A	PMLN8369A	PMMN4128A	851.0125	3.57	-0.49	2.25	1.27	AF-AB-220129-14
				860.0000					
				868.9875					

Assessments at the Body with Body worn PMLN8370A

DUT assessment with offered antennas, default battery and, above mentioned body worn accessory per KDB 643646. Refer to Table 25 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in Appendix E.

Table 27

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#
AN000411A01	PMNN4813A	PMLN8370A	PMMN4128A	851.0125	3.60	-0.15	2.32	1.20	AF-AB-220129-15
				860.0000					
				868.9875					

Assessment at the Body with other audio accessories

Assessment per “KDB 643646 Body SAR Test Consideration for Audio Accessories without Built-in Antenna; Sec 1, A. when overall ≤ 4.0 W/kg, SAR tested for that audio accessory is not necessary.” This was applicable to all remaining accessories.

Assessment of wireless BT configuration

Assessment using the overall highest SAR configuration at the body from above without an audio accessory attached. 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#
AN000411A01	PMNN4813A	PMLN8369A	None	851.0125	3.51	-0.91	2.77	1.75	MHI-AB-220130-11
				860.0000					
				868.9875					

13.4 LMR assessment at the Face for 769-775MHz band

Battery PMNN4813A was selected as the default battery for assessments at the Face because it is the only offered 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 (769-775MHz) which are listed in Table 29. The channel with the highest conducted power will be identified as the default channel per KDB 643646 (SAR Test for PTT Radios).

Table 29

Test Freq (MHz)	Power (W)
769.0125	2.900
772.0000	2.920
774.9875	2.900

DUT assessment with offered antenna, default battery with front of DUT positioned 2.5cm facing phantom per KDB 643646. Refer to Table 29 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in Appendix E.

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#
AN000411A01	PMNN4813A	Radio @ front 2.5cm	None	769.0125	2.90	-0.45	2.50	1.43	FZ-FACE-220127-25
				772.0000					
				774.9875					

13.5 LMR assessments at the Face for 799-824MHz band

Battery PMNN4813A was selected as the default battery for assessments at the Face because it is the only offered 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 (799-824MHz) which are listed in Table 31. 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 31

Test Freq (MHz)	Power (W)
799.0125	2.940
811.5000	3.520
823.9875	3.500

DUT assessment with offered antenna, default battery with front of DUT positioned 2.5cm facing phantom per KDB 643646. Refer to Table 31 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in Appendix E.

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#
AN000411A01	PMNN4813A	Radio @ front 2.5cm	None	799.0125					
				811.5000	3.60	-0.07	3.11	1.58	AF-FACE-220128-06
				823.9875					

13.6 LMR assessments at the Face for 851-869MHz band

Battery PMNN4813A was selected as the default battery for assessments at the Face because it is the only offered 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 (851-869MHz) which are listed in Table 33. 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 33

Test Freq (MHz)	Power (W)
851.0125	3.520
860.0000	3.520
868.9875	3.510

DUT assessment with offered antennas, default battery with front of DUT positioned 2.5cm facing phantom per KDB 643646 SAR. Refer to Table 33 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in Appendix E.

Table 34

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#
AN000411A01	PMNN4813A	Radio @ front 2.5cm	None	851.0125	3.58	-0.29	3.60	1.94	AF-FACE-220129-17
				860.0000					
				868.9875					

13.7 Assessment for ISED, Canada

Based on the assessment results for body and face per KDB643646 D01, additional tests were not required for the Industry Canada frequency range (7/800 MHz) as the testing performed is in compliance with Industry Canada frequency range.

As per ISED Notice 2016-DRS001, additional tests were required for the low, mid and high frequency channels for the configuration with the highest SAR value. The SAR results are in Tables below. SAR plot is included in Appendix for the highest configuration.

Table 35

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 (768-775 MHz)									
AN000411A01	PMNN4813A	PMLN8369A	None	769.0125	2.92	-0.92	2.23	1.41	FZ-AB-220127-01#
				772.0000	2.92	-0.89	2.21	1.39	MHI-AB-220311-02
				774.9875	2.91	-0.36	2.22	1.24	MHI-AB-220311-03
Face (768-775 MHz)									
AN000411A01	PMNN4813A	Radio @ front 2.5cm	None	769.0125	2.90	-0.45	2.50	1.43	FZ-FACE-220127-25
				772.0000	2.98	-0.93	2.16	1.34	FZ-FACE-220127-05#
				774.9875	2.96	-0.72	2.11	1.26	FZ-FACE-220127-06#

Table 36

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 (798-824 MHz)									
AN000411A01	PMNN4813A	PMLN8369A	PMMN4128A	799.0125	3.57	-0.34	2.22	1.21	AF-AB-220128-10
				811.5000	3.58	-0.21	2.74	1.45	FZ-AB-220128-03
				823.9875	3.58	-0.23	2.86	1.52	AF-AB-220128-11
Face (798-824 MHz)									
AN000411A01	PMNN4813A	Radio @ front 2.5cm	None	799.0125	3.60	-0.12	2.39	1.23	AF-FACE-220128-08
				811.5000	3.60	-0.07	3.11	1.58	AF-FACE-220128-06
				823.9875	3.60	-0.14	3.07	1.59	AF-FACE-220128-09

Table 37

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 (851-869MHz)									
AN000411A01	PMNN4813A	PMLN8369A	None	851.0125	3.51	-0.91	2.77	1.75	MHI-AB-220130-11
				860.0000	3.60	-0.31	2.71	1.46	AF-AB-220129-19
				868.9875	3.59	-0.22	2.40	1.27	AF-AB-220129-20
Face (851-869MHz)									
AN000411A01	PMNN4813A	Radio @ front 2.5cm	None	851.0125	3.58	-0.29	3.60	1.94	AF-FACE-220129-17
				860.0000	3.50	-0.27	3.62	1.98	FZ-FACE-220630-05
				868.9875	3.20	-0.16	3.18	1.86	FZ-FACE-220630-06

13.8 Assessment for outside FCC Frequency range (7/800 MHz)

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

Table 38

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 (762-776MHz)									
AN000411A01	PMNN4813A	PMLN8369A	None	762.0125	2.97	-0.54	1.93	1.10	AF-AB-220322-09
Face (762-776MHz)									
AN000411A01	PMNN4813A	Radio @ front 2.5cm	None	762.0125	2.96	-0.21	1.49	0.79	FZ-FACE-220127-07#

Table 39

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 (792-824MHz)									
AN000411A01	PMNN4813A	PMLN8369A	PMMN4128A	792.0125	3.58	-0.16	1.74	0.91	AF-AB-220128-12
Face (792-824MHz)									
AN000411A01	PMNN4813A	Radio @ front 2.5cm	None	792.0125	3.60	-0.17	1.93	1.00	AF-FACE-220128-13

14.0 DUT Test Data for WLAN

SAR test reduction is applied using the following criteria according to KDB 248227 D01:

- For 2.4GHz 802.11 g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by ratio of OFDM to DSSS specified maximum output power and adjusted SAR is ≤ 1.2 W/kg.
- U-NII-1 SAR testing not required when U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg.
- For all positions/configurations, when reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required test positions/configurations are tested.

14.1 Assessment for WLAN 2.4GHz (802.11 b/g/n)

Output Power Data

These power measurements were used to determine the necessary modes for SAR testing according to KDB 248227.

Table 40

Band	802.11	Ch. BW	Ch.	Freq. (MHz)	Measured conducted power (W)
2.4 GHz	b	20	1	2412	0.047
			6	2437	0.046
			11	2462	0.045
	g	20	1	2412	0.023
			6	2437	0.045
			11	2462	0.028
	n	20	1	2412	0.025
			6	2437	0.037
			11	2462	0.023

Assessments at the Body with offered body worn accessories

DUT assessment with WLAN internal antenna, offered battery and without any cable accessory attached against the phantom with the offered body worn accessories. SAR plots of the highest results per Table (bolded) are presented in the Appendix E.

Table 41

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#
802.11b									
AN000410A01	PMNN4813A	PMLN8369A	None	2412.0000	0.052	-0.30	0.114	0.150	BAD-AB-220610-01#
		PMLN8370A		2412.0000	0.047	-0.14	0.074	0.104	SAN-AB-220128-08

Assessments at the Face

DUT assessment with WLAN internal antenna and offered battery with front of DUT positioned 2.5cm facing phantom. SAR plots of the highest results per Table (bolded) are presented in the Appendix E.

Table 42

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#
802.11b									
AN000410A01	PMNN4813A	Radio @ front 2.5cm	None	2412.0000	0.047	0.07	0.027	0.037	BL-FACE-220702-02

Assessments for ISED Canada

Based on the assessment results for body and face per KDB643646 D01, additional tests were not required for the Industry Canada frequency range (2412-2462 MHz) as the testing performed is in compliance with Industry Canada frequency range.

As per ISED Notice 2016-DRS001, additional tests were required for the low, mid and high frequency channels for the configuration with the highest SAR value. The SAR results are in Tables below. SAR plot is included in Appendix for the highest configuration.

Table 43

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#
802.11b									
Body									
AN000410A01	PMNN4813A	PMLN8369A	None	2412.0000	0.052	-0.30	0.114	0.150	BAD-AB-220610-01#
				2437.0000	0.046	-0.27	0.075	0.110	SAN-AB-220128-09
				2462.0000	0.045	-0.18	0.061	0.091	SAN-AB-220128-10
Face									
AN000410A01	PMNN4813A	Radio @ front 2.5cm	None	2412.0000	0.047	0.07	0.027	0.037	BL-FACE-220702-02
				2437.0000	0.046	0.11	0.018	0.025	BL-FACE-220701-03
				2462.0000	0.045	-0.17	0.008	0.021	BL-FACE-220701-04

14.2 Assessment for WLAN 5.0 GHz (802.11 a/n/ac)

Output Power Data

These power measurements were used to determine the necessary modes for SAR testing according to KDB 248227.

Table 44

Band	802.11	Ch. BW	Ch.	Freq. (MHz)	Measured conducted power (W)
U-NII-1 (5.15-5.25GHz)	a	20	36	5180	0.023
			40	5200	0.023
			44	5220	0.022
			48	5240	0.021
	n	20	36	5180	0.019
			40	5200	0.019
			44	5220	0.018
			48	5240	0.017
	ac	20	36	5180	0.016
			40	5200	0.015
			44	5220	0.015
			48	5240	0.014
U-NII-2A (5.25-5.35GHz)	a	20	52	5260	0.020
			56	5280	0.023
			60	5300	0.024
			64	5320	0.024
	n	20	52	5260	0.020
			56	5280	0.019
			60	5300	0.020
			64	5320	0.020
	ac	20	52	5260	0.016
			56	5280	0.016
			60	5300	0.017
			64	5320	0.016
U-NII-2C (5.47-5.65 GHz)	a	20	100	5500	0.014
			112	5560	0.026
			116	5580	0.024
			128	5640	0.020
	n	20	100	5500	0.009
			112	5560	0.021
			116	5580	0.020
			128	5640	0.021
	ac	20	100	5500	0.008
			112	5560	0.018
			116	5580	0.017
			128	5640	0.017

Table 44 (Continued)

Band	802.11	Ch. BW	Ch.	Freq. (MHz)	Measured conducted power (W)
U-NII-3 (5.65-5.85 GHz)	a	20	132	5660	0.023
			149	5745	0.021
			165	5825	0.019
	n	20	132	5660	0.019
			149	5745	0.018
			165	5825	0.020
	ac	20	132	5660	0.016
			149	5745	0.015
			165	5825	0.016

Assessments at the Body U-NII-2A (5.25-5.35GHz)

DUT assessment with WLAN internal antenna, offered battery and without any cable accessory attached against the phantom with the offered body worn accessories. SAR plots of the highest results per Table (bolded) are presented in the Appendix E.

Table 45

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#
802.11a, 20MHz BW									
AN000410A01	PMNN4813A	PMLN8369A	None	5300.0000	0.024	-0.45	0.021	0.028	MFR-AB-220130-02#
		PMLN8370A		5300.0000	0.024	0.07	0.022	0.027	SAN-AB-220130-04#

Assessments at the Face U-NII-2A (5.25-5.35GHz)

DUT assessment with WLAN internal antenna and offered battery with front of DUT positioned 2.5cm facing phantom. SAR plots of the highest results per Table (bolded) are presented in the Appendix E.

Table 46

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#
802.11a, 20MHz BW									
AN000410A01	PMNN4813A	Radio @ front 2.5cm	None	5260.0000	0.020	0.16	0.027	0.040	BL-FACE-220701-11

Assessments for ISED Canada

Based on the assessment results for body and face per KDB643646 D01, additional tests were not required for the Industry Canada frequency range (U-NII-2A) as the testing performed is in compliance with Industry Canada frequency range.

As per ISED Notice 2016-DRS001, additional tests were required for the low, mid and high frequency channels for the configuration with the highest SAR value. The SAR results are in Tables below. SAR plot is included in Appendix for the highest configuration.

Table 47

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#
802.11a, 20MHz BW									
Body									
AN000410A01	PMNN4813A	PMLN8369A	None	5260.0000	0.020	-0.44	0.029	0.048	MFR-AB-220212-08
				5300.0000	0.024	-0.45	0.021	0.028	MFR-AB-220130-02#
				5320.0000	0.024	0.30	0.011	0.014	SAN-AB-220130-08#
Face									
AN000410A01	PMNN4813A	Radio @ front 2.5cm	None	5260.0000	0.020	0.16	0.027	0.040	BL-FACE-220701-11
				5300.0000	0.024	-0.16	0.010	0.012	SAN-FACE-220130-06#
				5320.0000	0.024	-0.33	0.014	0.018	FZ-FACE-220701-08

Assessments at the Body U-NII-2C (5.47-5.65 GHz)

DUT assessment with WLAN internal antenna, offered battery and without any cable accessory attached against the phantom with the offered body worn accessories. SAR plots of the highest results per Table (bolded) are presented in the Appendix E.

Table 48

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#
802.11a, 20MHz BW									
AN000410A01	PMNN4813A	PMLN8369A	None	5560.0000	0.026	0.35	0.009	0.010	MFR-AB-220201-06#
		PMLN8370A		5560.0000	0.026	-0.35	0.012	0.015	MFR-AB-220201-09#

Assessments at the Face U-NII-2C (5.47-5.65 GHz)

DUT assessment with WLAN internal antenna and offered battery with front of DUT positioned 2.5cm facing phantom. SAR plots of the highest results per Table (bolded) are presented in the Appendix E.

Table 49

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#
802.11a, 20MHz BW									
AN000410A01	PMNN4813A	Radio @ front 2.5cm	None	5560.0000	0.026	-0.24	0.025	0.030	SAN-FACE-220202-02#

Additional Assessments for ISED Canada

Based on the assessment results for body and face per KDB643646 D01, additional tests were not required for the Industry Canada frequency range (U-NII-2C) as the testing performed is in compliance with Industry Canada frequency range.

As per ISED Notice 2016-DRS001, additional tests were required for the low, mid and high frequency channels for the configuration with the highest SAR value. The SAR results are in Tables below. SAR plot is included in Appendix for the highest configuration.

Table 50

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#
802.11a, 20MHz BW									
Body									
AN000410A01	PMNN4813A	PMLN8370A	None	5500.0000	0.014	0.39	0.002	0.002	MFR-AB-220202-07#
				5560.0000	0.026	-0.35	0.012	0.015	MFR-AB-220201-09#
				5640.0000	0.020	0.37	0.023	0.033	MFR-AB-220202-09#
Face`									
AN000410A01	PMNN4813A	Radio @ front 2.5cm	None	5500.0000	0.014	-0.07	0.006	0.007	SAN-FACE-220203-01#
				5560.0000	0.026	-0.24	0.025	0.030	SAN-FACE-220202-02#
				5640.0000	0.020	-0.18	0.037	0.056	SAN-FACE-220203-02#

Assessments at the Body U-NII-3 (5.65-5.85 GHz)

DUT assessment with WLAN internal antenna, offered battery and without any cable accessory attached against the phantom with the offered body worn accessories. SAR plots of the highest results per Table (bolded) are presented in the Appendix E.

Table 51

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#
802.11a, 20MHz BW									
AN000410A01	PMNN4813A	PMLN8369A	None	5660.0000	0.023	-0.30	0.010	0.028	AF-AB-220204-02#
		PMLN8370A		5660.0000	0.023	0.11	0.033	0.043	SAN-AB-220213-03#

Assessments at the Face U-NII-3 (5.65-5.85 GHz)

DUT assessment with WLAN internal antenna and offered battery with front of DUT positioned 2.5cm facing phantom. SAR plots of the highest results per Table (bolded) are presented in the Appendix E.

Table 52

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#
802.11a, 20MHz BW									
AN000410A01	PMNN4813A	Radio @ front 2.5cm	None	5660.0000	0.023	-0.40	0.043	0.061	AF-FACE-220204-12

Additional Assessments for ISED Canada

Based on the assessment results for body and face per KDB643646 D01, additional tests were not required for the Industry Canada frequency range (U-NII-3) as the testing performed is in compliance with Industry Canada frequency range.

As per ISED Notice 2016-DRS001, additional tests were required for the low, mid and high frequency channels for the configuration with the highest SAR value. The SAR results are in Tables below. SAR plot is included in Appendix for the highest configuration.

Table 53

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#
802.11a, 20MHz BW									
Body									
AN000410A01	PMNN4813A	PMLN8370A	None	5660.0000	0.023	0.11	0.033	0.043	SAN-AB-220213-03#
				5745.0000	0.021	-0.37	0.020	0.024	MFR-AB-220205-05#
				5825.0000	0.019	-0.26	0.015	0.020	MFR-AB-220205-07#
Face									
AN000410A01	PMNN4813A	Radio @ front 2.5cm	None	5660.0000	0.023	-0.40	0.043	0.061	AF-FACE-220204-12
				5745.0000	0.021	-0.37	0.045	0.054	AF-FACE-220205-02#
				5825.0000	0.019	0.08	0.028	0.034	AF-FACE-220205-03#

14.3 Assessment at the Bluetooth band

14.3.1 FCC Requirement

Per guidelines in KDB 447498 D04 Interim General RF Exposure Guidance v01, SAR-based thresholds are derived based on frequency, power and separation distance of the RF source.

The SAR-based exemption formula indicated below, applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, or less than or equal to the threshold P_{th} (mW) refer to Table B.2.

$$P_{th} \text{ (mW)} = ERP_{20cm} \left(\frac{d}{20} \right)^x \text{ for distance } d \leq 20 \text{ cm}$$

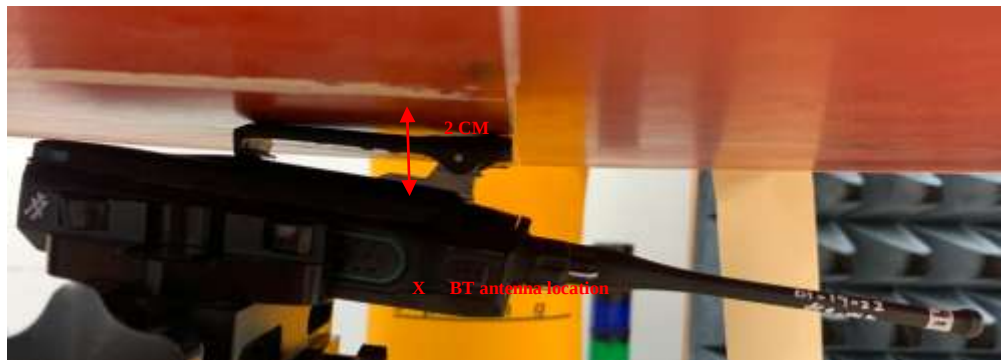
$$\text{Where } x = -\log_{10} \left(\frac{60}{ERP_{20} \sqrt{f}} \right)$$

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive).

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)										
		5	10	15	20	25	30	35	40	45	50
	300	39	65	88	110	129	148	166	184	201	217
	450	22	44	67	89	112	135	158	180	203	226
	835	9	25	44	66	90	116	145	175	207	240
	1900	3	12	26	44	66	92	122	157	195	236
	2450	3	10	22	38	59	83	111	143	179	219
	3600	2	8	18	32	49	71	96	125	158	195
	5800	1	6	14	25	40	58	80	106	136	169

The closest separation distance from the outer housing (location of the antenna will be indicated in Ex7B) to the phantom is 2 cm with a belt clip, as indicated in the picture below.



The BT maximum power of the device is 14.13 mW with 77% duty cycle, therefore the standalone Bluetooth transmitter operates at maximum time-averaged power:

$$\begin{aligned} &= 14.13 \text{ mW} * 77\% \\ &= 10.88 \text{ mW or } 10.37 \text{ dBm} \end{aligned}$$

According to Table B.2, at the distance 20 mm, the power threshold, P_{th} at frequency 2450 MHz is 38 mW.

Since the maximum time-averaged power of the device is lower than the power threshold, routine evaluation can be exempted.

14.3.2 ISED Canada Requirement

Based on RSS-102 Issue 5, exemption limits for SAR evaluation for controlled devices at Bluetooth frequency band with separation distance ≤ 5 mm was 20 mW.

Standalone Bluetooth transmitter operates at maximum time-averaged power:

$$\begin{aligned} &= 14.13 \text{ mW} * 77\% \\ &= 10.88 \text{ mW or } 10.37 \text{ dBm} \end{aligned}$$

Equivalent isotropically radiated power (EIRP):

$$\begin{aligned} &= \text{Maximum conducted power, dBm} + \text{Antenna gain, dBi} \\ &= 10.37 \text{ dBm} + (0 \text{ dBi}) \\ &= 10.37 \text{ dBm or } 10.88 \text{ mW} \end{aligned}$$

Since the output power level, 10.88 mW is below the threshold power level of 20 mW, SAR test is not required for Bluetooth.

15.0 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 54

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#
AN000411A01	PMNN4813A	Radio @ front 2.5cm	None	860.0000	3.60	-0.26	3.36	1.78	FZ-FACE-220630-09

16.0 Simultaneous Transmission

The Table below summarizes the simultaneous transmission conditions for this device.

Table 55

Exposure Conditions	Item	Capable Simultaneous Transmit Configurations
Body-Worn	1	LMR + WLAN 2.4 GHz
	2	LMR + WLAN 5 GHz
	3	LMR + BT
Face	1	LMR + WLAN 2.4 GHz
	2	LMR + WLAN 5 GHz
	3	LMR + BT

BT, WLAN 2.4 GHz and 5GHz are sharing the same antenna, only one technology to transmit at a single time.

16.1 Simultaneous transmission exclusion for BT

Per guidelines in KDB 447498 D04 Interim General RF Exposure Guidance v01, SAR-based exemption may be considered for test exemption for portable device exposure conditions; therefore, the following formula was used to determine exemption for simultaneous transmission:

$$[(P_i/P_{th}) + (Evaluated_k / Exposure Limit_k)] = 0.53, \text{ which is } < 1$$

where:

the available maximum time-averaged power (P_i)
= 10.88 mW (14.13 mW * 77% duty cycle)

the exemption threshold power (P_{th}) according to Table B.2 in 13.10 = 38 mW

the maximum reported SAR portable RF source k in the device from an existing evaluation ($Evaluated_k$) = 1.98 W/kg

the occupational/controlled specific absorption rate (SAR) limit for portable sources ($Exposure Limit_k$) = 8 W/kg

Per the result from the calculation above, simultaneous exclusion is applied and therefore SAR results are not reported herein.

16.2 Simultaneous Transmission for LMR, BT, WLAN 2.4GHz and 5GHz

Table 56

Exposure condition	Standalone SAR (W/kg)			Sum of SAR (W/kg)	
	LMR	2.4GHz	5GHz	LMR + 2.4GHz	LMR + 5GHz
Body worn Exposure	1.75	0.150	0.048	1.90	1.80
Face Exposure	1.98	0.037	0.061	2.02	2.04

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.

17.0 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 57

Designator	Frequency band (MHz)	Max Calc at Body (W/kg)	Max Calc at Face (W/kg)
		1g-SAR	1g-SAR
FCC US			
LMR	7/800 MHz	1.75	1.98
WLAN	2412-2462	0.150	0.037
	5180 - 5825	0.048	0.061
Simultaneous Results		1.90	2.04
ISED Canada			
LMR	7/800 MHz	1.75	1.98
WLAN	2412-2462	0.150	0.037
	5180 - 5825	0.048	0.061
Simultaneous Results		1.90	2.04
Overall			
LMR	7/800 MHz	1.75	1.98
WLAN	2412-2472	0.150	0.037
	5180 - 5825	0.048	0.061
Simultaneous Results		1.90	2.04

All results are scaled to the maximum output power.

18.0 Variability Assessment

Per the guidelines in KDB 865664 SAR variability assessment is not required because SAR results are below 4.0W/kg (Occupational).

19.0 System Uncertainty

A system uncertainty analysis is not required for this report per KDB 865664 because the highest report SAR value 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 300 MHz to 800 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	6.0	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:

- Column headings *a-k* are given for reference.
- Tol. - tolerance in influence quantity.
- Prob. Dist. – Probability distribution
- N, R - normal, rectangular probability distributions
- Div. - divisor used to translate tolerance into normally distributed standard uncertainty
- c_i* - sensitivity coefficient that should be applied to convert the variability of the uncertainty component into a variability of SAR.
- u_i* – SAR uncertainty
- 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 800 MHz to 3 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	6.0	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
Expanded Uncertainty (95% CONFIDENCE LEVEL)			<i>k</i> =2				18	17	

Notes for uncertainty budget Tables:

- Column headings *a-k* are given for reference.
- Tol. - tolerance in influence quantity.
- Prob. Dist. – Probability distribution
- N, R - normal, rectangular probability distributions
- Div. - divisor used to translate tolerance into normally distributed standard uncertainty
- c_i* - sensitivity coefficient that should be applied to convert the variability of the uncertainty component into a variability of SAR.
- u_i* – SAR uncertainty
- 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	7.0	N	1.00	1	1	7.0	7.0	∞
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	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				10	10	9999 9
Expanded Uncertainty (95% CONFIDENCE LEVEL)			<i>k</i> =2				19	19	

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 100 MHz to 800 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 800 MHz to 3 GHz

<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	6.0	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	7.0	N	1.00	1	1	7.0	7.0	∞
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	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				12	12	504
Expanded Uncertainty (95% CONFIDENCE LEVEL)			<i>k</i> =2				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