



**DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 1 of 2**

<b>Motorola Solutions Inc.</b> <b>EME Test Laboratory</b> Motorola Solutions Malaysia Sdn Bhd Plot 2A, Medan Bayan Lepas, Mukim 12 SWD 11900 Bayan Lepas Penang, Malaysia.	<b>Date of Report:</b> 04/10/2025 <b>Report Revision:</b> E
--	--

<b>Responsible Engineer:</b> <b>Report Author:</b> <b>Date/s Tested:</b> <b>Test Location:</b> <b>Manufacturer:</b> <b>Manufacturer Location:</b>  <b>DUT Description:</b> <b>Test TX mode(s):</b> <b>Max. Power output:</b> <b>Tx Frequency Bands:</b> <b>Signaling type:</b> <b>Model(s) Tested:</b> <b>Model(s) Certified:</b> (HVIN/PMN) <b>Serial Number(s):</b> <b>Classification:</b> <b>Applicant Name:</b> <b>Applicant Address:</b>  <b>Firmware Version (FVIN):</b> <b>FCC ID:</b>  <b>FCC Test Firm Registration Number:</b> <b>IC:</b>  <b>ISED Test Site registration:</b>	Puteri Alifah Ilyana Binti Nor Rahim (EME Engineer) Puteri Alifah Ilyana Binti Nor Rahim (EME Engineer) 1/21/2025-1/24/2025, 1/28/2025, 2/3/2025, 2/18/2025 Penang EME Laboratory Motorola Solutions Malaysia Sdn. Bhd. Plot 2A, Medan Bayan Lepas Mukim, 12 SWD, 11900 Bayan Lepas, Penang, Malaysia Portable – Video Remote Speaker Microphone Bluetooth, Bluetooth LE, WLAN 2.4GHz and WLAN 5.0GHz Refer Table 3 Refer Table 3 Refer Table 3 Refer Table 3 VX650 Refer 1.0 Introduction 9903EBA0273, 9903EBA0069, 9903EBA0042 Occupational/Controlled Environment Motorola Solutions Inc. Plot 2A, Medan Bayan Lepas Mukim, 12 SWD, 11900 Bayan Lepas, Penang, Malaysia 24.4.0 AZ499FT7186 This report contains results that are immaterial for FCC equipment approval, which are clearly identified. 823256 109U-99FT7186 This report contains results that are immaterial for ISED equipment approval, which are clearly identified. 24843 The test results clearly demonstrate compliance with General Population/Uncontrolled Environment RF Exposure limits of 1.6 W/kg averaged over 1 gram per the requirements of FCC 47 CFR § 2.1093 and RSS-102 (Issue 6)
--	---

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. The results and statements contained in this report pertain only to the device(s) evaluated.

  
**Saw Sun Hock (Approval Signatory)**  
**Approved Date: 04/11/2025**

**Table of Contents:**

**Part 1 of 2**

1.0 Introduction..... 5

2.0 FCC SAR Summary ..... 5

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 ..... 10

    7.1 Antenna ..... 10

    7.2 Battery..... 10

    7.3 Body worn Accessories ..... 10

    7.4 Audio Accessories ..... 11

8.0 Description of Test System..... 11

    8.1 Descriptions of Robotics/Probes/Readout Electronics ..... 13

    8.2 Description of Phantom(s) ..... 13

    8.3 Description of Simulated Tissue ..... 14

9.0 Additional Test Equipment..... 15

10.0 SAR Measurement System Validation and Verification..... 16

    10.1 System Validation ..... 16

    10.2 System Verification ..... 16

    10.3 Equivalent Tissue Test Results ..... 17

11.0 Environmental Test Conditions ..... 19

12.0 DUT Test Setup and Methodology ..... 19

12.1 Measurements..... 19

12.2 DUT Configuration(s)..... 20

12.3 DUT Positioning Procedures..... 20

    12.3.1 Body ..... 20

    12.3.2 Head..... 20

    12.3.3 Face ..... 20

12.4 DUT Test Channels ..... 21

12.5 SAR Result Scaling Methodology..... 21

12.6 DUT Test Plan..... 21

13.0 DUT Test Data for WLAN ..... 22

    13.1 WLAN 2.4GHz assessments at the Body for 802.11b/g/n (2412-2462MHz) ..... 22

    13.2 WLAN 5GHz assessments at the Body for 802.11a/n/ac (5180-5825MHz)..... 24

14.0 Assessment at the Bluetooth band (2402–2480MHz)..... 28

15.0 Simultaneous Transmission ..... 30

16.0 Results Summary ..... 31

17.0 Variability Assessment..... 31

18.0 System Uncertainty ..... 32

**APPENDICES**

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

**Part 2 of 2****APPENDICES**

- D System Verification Check Scans
- E DUT Scans
- F DUT Test Position Photos
- G DUT, Body worn and audio accessories Photos

**Report Revision History**

<b>Date</b>	<b>Revision</b>	<b>Comments</b>
02/21/2025	A	Initial release
02/24/2025	B	Update the BT SAR value
03/07/2025	C	To update the DUT description at front page
03/12/2025	D	To update the table 3
04/10/2025	E	To update the Product Marketing Name at section 1.0

## 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 VX650. These devices are classified as Occupational/Controlled Environment and models certified are listed as below:

Model	Hardware Version ID Number (HVIN)	Product Marketing Name (PMN)	Description
VX650	VX650	SVX	Video Remote Speaker Microphone

## 2.0 FCC SAR Summary

**Table 1**

Equipment Class	Frequency band (MHz)	Max Calc at Body (W/kg)
		1g-SAR
DTS	2412-2462MHz (WLAN 2.4GHz)	0.194
NII	5180-5825 (WLAN 5GHz)	0.302
DSS	2402-2480MHz (Bluetooth)	0.052
Simultaneous Results		0.354

## 3.0 Abbreviations / Definitions

BT:	Bluetooth
CNR:	Calibration Not Required
DSS	Part 15 Spread Spectrum Transmitter
DSSS:	Direct Sequence Spread Spectrum
DUT:	Device Under Test
EME:	Electromagnetic Energy
FHSS:	Frequency Hopping Spread Spectrum
NA:	Not Applicable
OFDM:	Orthogonal Frequency Division Multiplexing
SAR:	Specific Absorption Rate
WLAN:	Wireless Local Area Network

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.

- Federal Communications Commission, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields”, OET Bulletin 65, FCC, Washington, D.C.: 1997.
- Institute of Electrical and Electronics Engineers (IEEE) C95.1-2019
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 2020
- 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 6) – 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 700 of September 28, 2018 "Approves the Regulation on the Assessment of Human Exposure to Electric, Magnetic and Electromagnetic Fields Associated with the Operation of Radio communication Transmitting Stations.
- IEC/IEEE 62209-1528-2020- Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 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
- FCC KDB – 248227 D01 802.11 Wi-Fi SAR v02r02

## 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 WLAN technology for data applications and Bluetooth technology for short range wireless devices.

This device also incorporates a GFSK Bluetooth device which is a Frequency Hopping Spread Spectrum (FHSS) technology. The maximum actual transmission duty cycle is imposed by the Bluetooth standard. The maximum duty cycle for BT is 77% and BTLE is 62.5%.

This device included WLAN 2.4GHz 802.11b/g/n operate using Direct Sequence Spread Spectrum (DSSS) and Orthogonal Frequency-Division Multiplexing (OFDM) with channel bandwidth of 20MHz. The maximum duty cycle for WLAN 2.4GHz is 98.96%. WLAN 5GHz 802.11 a/n/ac operates using Orthogonal Frequency-Division Multiplexing (OFDM). The maximum duty cycle for WLAN 5GHz is 99%.

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 (%)	Conducted (Average Detector) Maximum Power (W)	
WLAN 2.4GHz 802.11b	2412-2462	DSSS	99.86	0.0631 (CH1), 0.1000 (CH6), 0.0794 (CH11)	
WLAN 2.4GHz 802.11g	2412-2462	OFDM	98.96	0.0251 (CH1, CH11), 0.0631 (CH6)	
WLAN 2.4GHz 802.11n (20MHz)	2412-2462	OFDM	98.96	0.0200 (CH1, CH11), 0.0501 (CH6)	
WLAN 2.4GHz 802.11n (40MHz)	2412-2462	OFDM	98.96	0.0200 (CH6)	
WLAN 5GHz 802.11a (20MHz)	5180-5240	OFMD	99	0.0398	UNII-1 (CH36, CH40), UNII-2A (CH60, CH64), UNII-2C (CH100), UNII-3 (CH165)
				0.0631	UNII-1 (CH44, CH48), UNII-2A (CH52, CH56), UNII-2C (CH120, CH144) UNII-3 (CH149, CH157)
WLAN 5GHz 802.11n (20MHz)	5180-5240	OFMD	99	0.0200	UNII-1 (CH36, CH40), UNII-2A (CH60, CH64), UNII-2C (CH100), UNII-3 (CH165)
				0.0398	UNII-1 (CH44, CH48), UNII-2A (CH52, CH56), UNII-2C (CH120, CH144), UNII-3 (CH149, CH157)

**Table 3 (Continued)**

Technology	Transmit Band (MHz)	Transmission	Duty Cycle (%)	Conducted (Average Detector) Maximum Power (W)	
WLAN 5GHz 802.11n (40MHz)	5190-5230	OFMD	99	0.0158	UNII-1 (CH38), UNII-2C (CH102)
				0.0398	UNII-1 (CH46), UNII-2A (CH54), UNII-2C (CH118), UNII-3 (CH151)
				0.0200	UNII-2A (CH62), UNII-3 (CH159)
				0.0316	UNII-2C (CH134)
WLAN 5GHz 802.11ac (20MHz)	5180-5240	OFMD	99	0.0200	UNII-1 (CH36, CH40), UNII-2A (CH60, CH64), UNII-2C (CH100), UNII-3 (CH165)
				0.0251	UNII-1 (CH44, CH48), UNII-2A (CH52, CH56), UNII-2C (CH120, CH144), UNII-3 (CH149-CH157)
WLAN 5GHz 802.11ac (40MHz)	5180-5240	OFMD	99	0.0158	
WLAN 5GHz 802.11ac (80MHz)	5190-5230	OFMD	99	0.0158	
Bluetooth	2402-2480	FHSS	77	0.0398	
Bluetooth LE (1M)			62.5	0.0398	

The intended operating positions are “at the body” by means of the offered body worn accessories.

## 7.0 Optional Accessories and Test Criteria

This device is 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 Antenna

**Table 4**

Antenna No.	Antenna Models	Description	Selected for test	Tested	Comments
1	AN000478A01	BT/WIFI2.4GHz and WIFI 5GHz antenna, BT/BTLE: 2400-2485MHz, ¼ wave, 4dBi WLAN 2.4GHz: 2400-2485MHz, ¼ wave, 4dBi WLAN 5GHz: 5150-5250MHz, ¼ wave, 1.5dBi WLAN 5GHz: 5250-5725MHz, ¼ wave, 3.5dBi WLAN 5GHz: 5725-5850MHz, ¼ wave, 5.5dBi	Yes	Yes	Internal Antenna

### 7.2 Battery

**Table 5**

Battery No.	Battery Models	Description	Selected for test	Tested	Comments
1	PMNN4893A	BATTERY PACK,BATT LIION UL DIV2 IP68 4300T	Yes	Yes	Default battery for body testing

### 7.3 Body worn Accessories

**Table 6**

Body worn No.	Body worn Models	Description	Selected for test	Tested	Comments
1	WGP02798	Magnetic Mount	Yes	Yes	
2	WGP03085	Heavy Jacket Magnetic Mount	Yes	Yes	
3	WGA00668	Molle Clip Mount	Yes	Yes	
4	WGP03088	Heavy Jacket Clip	Yes	Yes	
5	WGP02697B	Shirt Clip	Yes	Yes	
6	PMLN8687A	Tether Hook	Yes	Yes	
7	PMLN8682A	Coil Lanyard	No	No	Secondary bodyworn

### 7.4 Audio Accessories

**Table 7**

Audio No.	Audio Models	Description	Selected for test	Tested	Comments
1	PMLN8708A	Extra Loud, 3.5mm earpiece W/Tran Tube, IP54	No	No	Receive Only
2	PMLN8709A	Extra Loud, 2-Wire Surveillance Kit With Translucent Tube, IP54	Yes	No	

### 8.0 Description of Test System

DASY5™ Test System



DASY6™ Test System



DASY8™ 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)
Schmid & Partner Engineering AG SPEAG DASY 6	V16.2.2.1588	DAE4	EX3DV4 (E-Field)
Schmid & Partner Engineering AG SPEAG DASY 8	V16.2.2.1588	DAE4	EX3DV4 (E-Field)

The **DASY5™**, **DASY6™** and **DASY8™** are operated per the instructions in the **DASY5™**, **DASY6™** and **DASY8™** 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.

## 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. 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	2.45GHz <sup>(1)</sup>	5GHz <sup>(1)</sup>
	Head	Head
Sugar	NA	NA
Diacetin	NA	NA
De ionized-Water	NA	NA
Salt	NA	NA
HEC	NA	NA
Bact.	NA	NA

Note: (1) SPEAG provides Motorola proprietary stimulant ingredients for the 2.4 GHz and 5 GHz bands.

## 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	7816	10/06/23	10/06/26
SPEAG PROBE	EX3DV4	7534	05/24/24	05/24/27
SPEAG PROBE	EX3DV4	7511	7/23/2024	7/23/2027
SPEAG DAE	DAE4	688	10/10/22	10/10/25
SPEAG DAE	DAE4	1598	05/13/24	05/13/27
SPEAG DAE	DAE4	1294	12/8/2023	12/8/2026
AMPLIFIER	5S4G11	312663	CNR	CNR
AMPLIFIER	5S1G4	313326	CNR	CNR
POWER SENSOR	E4412A	US38488023	05/31/24	05/31/25
POWER SENSOR	E4412A	MY61060015	08/31/24	08/31/25
POWER SENSOR	E4412A	MY61060011	4/29/2024	4/29/2025
POWER SENSOR	E9301B	MY41495733	9/12/2024	9/12/2025
VECTOR SIGNAL GENERATOR	E4438C	MY42081753	09/14/24	09/14/25
SIGNAL GENERATOR ( VECTOR ESG 250KHZ-6GHZ )	E4438C	MY45091093	8/17/2024	8/17/2025
POWER METER	E4419B	MY45102105	10/24/24	10/24/25
POWER METER	E4417A	MY45100552	10/10/24	10/10/25
POWER METER	E4419B	MY45103725	7/18/2024	7/18/2025
POWER METER	E4416A	MY50001037	9/6/2024	9/6/2025
BI-DIRECTIONAL COUPLER	3024	61182	06/13/24	06/13/25
BI-DIRECTIONAL COUPLER	3022	77115	8/5/2024	8/5/2025
POWERSOURCE	SE UMS 160 CB	4320	08/06/24	08/06/25
POWER SOURCE	SE UMS 160 CB	4302	08/09/24	08/09/25
POWER SOURCE	SE UMS 160 CA	4251	4/2/2024	4/2/2025
DIGITAL THERMOMETER	1523	3492108	01/23/24	01/23/25
THERMOMETER	HH806AU	080307	08/10/24	08/10/25
THERMOMETER	HH202A	35881	01/08/25	01/08/26
TEMPERATURE PROBE	PR-10L-4-100-1/4-6-BX	WNWR037791	01/26/24	01/26/25
TEMPERATURE PROBE	80PK-22	05032017	01/08/25	01/08/26
TEMPERATURE PROBE	80PK-22	06032017	10/16/2024	10/16/2025
DATA LOGGER	DSB	16326831	12/08/24	12/08/25
DATA LOGGER	DSB	16398050	09/07/24	09/07/25
DATA LOGGER	DSB	16326820	12/8/2024	12/8/2025
NETWORK ANALYZER	E5071B	MY42403147	06/06/24	06/06/25
DIELECTRIC ASSESSMENT KIT	DAK-3.5	1156	04/08/24	04/08/25
SPEAG DIPOLE	D2450V2	782	07/16/24	07/16/27
SPEAG DIPOLE	D5GHZV2	1026	07/17/24	07/17/27

**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		
				$\sigma$	$\epsilon_r$	Sensitivity	Linearity	Isotropy
<b>CW</b>								
6/10/2024	Head	2450	7534	1.67	40.75	Pass	Pass	Pass
9/27/2024	Head	5250	7816	4.35	33.50	Pass	Pass	Pass
9/27/2024	Head	5600		4.71	34.11	Pass	Pass	Pass
9/27/2024	Head	5800		4.92	33.74	Pass	Pass	Pass
2/18/2025	Head	5250	7511	4.38	33.82	Pass	Pass	Pass
2/18/2025	Head	5800		5.00	38.39	Pass	Pass	Pass
<b>WLAN</b>								
2/18/2025	Head	5250	7511	4.38	33.82	Pass	Pass	Pass
2/18/2025	Head	5800		5.00	38.39	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 with the largest deviation from the qualified source SAR target for each dipole (bolded). 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	Deviation (%)
7534	IEEE/IEC Head	SPEAG D2450V2 / 782	52.8 ± 10%	1.77	56.01	01/21/25@	6.1
				1.79	56.65	01/22/25@	<b>7.3</b>
				1.69	53.48	02/03/25	1.3
7816	IEEE/IEC Head	SPEAG D5250V2 / 1026	78.7 ± 10%	7.79	77.90	01/22/25	-1.0
				SPEAG D5600V2 / 1026	82.2 ± 10%	8.61	86.1
		SPEAG D5800V2 / 1026	80.7 ± 10%			8.12	81.2
				8.28	82.8	01/23/25	2.6
				7.87	78.7	01/28/25	-2.5

Table 13 (Continued)

Probe Serial #	Tissue Type	Dipole Kit / Serial #	Ref SAR @ 1W (W/kg)	System Check Results Measured (W/kg)	System Check Test Results when normalized to 1W (W/kg)	Tested Date	Deviation (%)
7511	IEEE/IEC Head	SPEAG D5250V2 / 1026	78.7 ± 10%	7.31	73.10	2/18/2025	-8.8
		SPEAG D5800V2 / 1026	80.7 ± 10%	7.36	73.60	2/18/2025	-7.1

Note: '@' indicates that system verification result covers next test day (within 24 hours)

### 10.3 Equivalent Tissue Test Results

Simulated tissue prepared for SAR measurements is measured daily and within 24 hours prior to actual SAR testing to verify that the tissue is within +/- 5% & +/-10% 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
2402	IEEE/IEC Head	1.76 (1.67-1.85)	39.3 (35.4-43.2)	1.775	41.552	01/22/25@
2412	IEEE/IEC Head	1.77 (1.68-1.86)	39.3 (35.3-43.2)	1.762	41.395	01/21/25@
2437	IEEE/IEC Head	1.79 (1.7-1.88)	39.2 (35.3-43.1)	1.783	41.361	01/21/25@
2441	IEEE/IEC Head	1.79 (1.7-1.88)	39.2 (35.3-43.1)	1.947	35.635	02/03/25

Table 14 (Continued)

Frequency (MHz)	Tissue Type	Conductivity Target (S/m)	Dielectric Constant Target	Conductivity Meas. (S/m)	Dielectric Constant Meas.	Tested Date
2450	IEEE/ IEC Head	1.8 (1.71-1.89)	39.2 (35.3-43.1)	1.794	41.342	01/21/25
				1.813	41.439	01/22/25
				1.950	35.610	02/03/25
2462	IEEE/ IEC Head	1.81 (1.72-1.9)	39.2 (35.3-43.1)	1.804	41.323	01/21/25@
2480	IEEE/ IEC Head	1.83 (1.74-1.92)	39.2 (35.2-43.1)	1.836	41.365	01/22/25@
5250	IEEE/ IEC Head	4.71 (4.24-5.18)	36 (32.4-39.5)	4.615	36.701	01/22/25@
				4.239	38.355	02/18/2025
5260	IEEE/ IEC Head	4.72 (4.25-5.19)	35.9 (32.3-39.5)	4.625	36.677	01/22/25
				4.250	38.342	02/18/2025
5280	IEEE/ IEC Head	4.74 (4.27-5.21)	35.9 (32.3-39.5)	4.646	36.628	01/22/25
5320	IEEE/ IEC Head	4.78 (4.3-5.26)	35.9 (32.3-39.5)	4.689	36.557	01/22/25
5500	IEEE/ IEC Head	4.97 (4.47-5.46)	35.7 (32.1-39.2)	4.493	33.888	01/23/25@
5600	IEEE/ IEC Head	5.07 (4.56-5.58)	35.5 (32-39.1)	4.990	36.015	01/22/25
				4.600	33.690	01/23/25@
5720	IEEE/ IEC Head	5.19 (4.67-5.71)	35.4 (31.8-38.9)	4.722	33.477	01/23/25@
5745	IEEE/ IEC Head	5.22 (4.69-5.74)	35.4 (31.8-38.9)	5.149	35.732	01/22/25@
				4.810	37.648	01/28/25
				4.785	37.533	02/18/2025
5785	IEEE/ IEC Head	5.26 (4.73-5.78)	35.3 (31.8-38.8)	4.777	33.385	01/23/25
5800	IEEE/ IEC Head	5.27 (4.74-5.8)	35.3 (31.8-38.8)	4.794	33.337	01/23/25
				4.871	37.555	01/28/25
				4.847	37.427	02/18/2025
5825	IEEE/ IEC Head	5.3 (4.77-5.83)	35.3 (31.7-38.8)	4.826	33.288	01/23/25

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 +/- 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
<b>Ambient Temperature</b>	18 – 25 °C	Range: 21.6 – 23.6°C Avg. 22.6 °C
<b>Tissue Temperature</b>	18 – 25 °C	Range: 20.9-23.5°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

### 12.1 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 testing.

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

Table 16

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

## 12.2 DUT Configuration(s)

The DUT is a portable device operational at the body 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.

## 12.3 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 without the offered audio accessory.

### 12.3.2 Head

Not applicable.

### 12.3.3 Face

Not applicable.

## 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

$F_{\text{high}}$  = Upper channel

$F_{\text{low}}$  = 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 are scaled using the following formula:

$$\text{Max\_Calc} = \text{SAR\_meas} \cdot 10^{\frac{-\text{Drift}}{10}} \cdot \frac{P_{\text{max}}}{P_{\text{int}}} \cdot \text{DC}$$

$P_{\text{max}}$  = Maximum Power (W)

$P_{\text{int}}$  = Initial Power (W)

Drift = DASY drift results (dB)

SAR\_meas = Measured 1-g

DC = Transmission mode duty cycle in % where applicable

50% duty cycle is applied for PTT operation

**Note:** for conservative results, the following are applied:

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

Drift = 1 for positive drift

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

## 12.6 DUT Test Plan

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

### 13.0 DUT Test Data for WLAN

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

- a. 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  $\leq 1.2$  W/kg.
- b. U-NII-1 SAR testing not required when U-NII-2A band highest reported SAR for a test configuration is  $\leq 1.2$  W/kg.
- c. 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  $\leq 1.2$  W/kg or all required test positions/configurations are tested

### 13.1 WLAN 2.4GHz assessments at the Body for 802.11b/g/n (2412-2462MHz)

#### Output Power Data

Battery PMNN4893A was selected as the default battery for assessments at the Body because it is the default 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 (2412-2462MHz) which are listed in Table 17. These power measurements were used to determine the necessary modes for SAR testing according to KDB 248227 D01.

**Table 17**

Band	802.11	Ch. BW	Ch.	Freq. (MHz)	Measured conducted power (W)
<b>2.4 GHz</b>	b	20	1	2412	0.0548
			6	2437	0.0789
			11	2462	0.0655
	g	20	1	2412	0.0212
			6	2437	0.0507
			11	2462	0.0206
	n	20	1	2412	0.0178
			6	2437	0.0417
			11	2462	0.0166
	n	40	6	2437	0.0168

**Assessments at the Body for WLAN 2.4GHz (2412-2462MHz)**

DUT assessment with WLAN internal antenna, offered batteries and without any cable accessory attached against the phantom with the offered body worn accessories. Refer to Table 17 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in the 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#
802.11b, 20MHz BW - Body									
AN000478A01	PMNN4893A	WGP02798	None	2437.000	0.079	-0.15	0.148	<b>0.194</b>	BAD-AB-250121-23
		WGP02697B		2437.000	0.079	0.00	0.096	0.122	BAD-AB-250122-01@
		WGP03088		2437.000	0.079	0.00	0.142	0.180	BAD-AB-250122-02@
		WGP03085		2437.000	0.079	0.20	0.066	0.084	BAD-AB-250122-03@
		WGA00668		2437.000	0.079	-0.01	0.148	0.188	BAD-AB-250122-04@

### Assessments for ISED Canada

Based on the assessment results for body per KDB643646 D01, additional tests were not required for the Industry Canada frequency range (2412-2462MHz) 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 plots of the highest results per Tables (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#
802.11b, 20MHz BW - Body									
AN000478A01	PMNN4893A	WGP02798	None	2412.0000	0.055	0.18	0.131	0.151	BAD-AB-250122-06@
				2437.0000	0.079	-0.15	0.148	<b>0.194</b>	BAD-AB-250121-23
				2462.0000	0.066	0.08	0.129	0.157	BAD-AB-250122-07@

### 13.2 WLAN 5GHz assessments at the Body for 802.11a/n/ac (5180-5825MHz)

#### Output Power Data

Battery PMNN4893A was selected as the default battery for assessments at the Body because it is the default 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 (5180-5825MHz) which are listed in Table 20. These power measurements were used to determine the necessary modes for SAR testing according to KDB 248227 D01.

Table 20

Band	802.11	Ch. BW (MHz)	Ch.	Freq. (MHz)	Measured conducted power (W)
U-NII-1 (5.15-5.25GHz)	a	20	36	5180	0.0288
			40	5200	0.0312
			44	5220	0.0485
			48	5240	0.0490
	n	20	36	5180	0.0149
			40	5200	0.0152
			44	5220	0.0317
			48	5240	0.0308
		40	38	5190	0.0116
			46	5230	0.0295
	ac	20	36	5180	0.0146
			40	5200	0.0151
			44	5220	0.0197
			48	5240	0.0197
		40	38	5190	0.0114
46			5230	0.0121	
80			42	5210	0.0123
U-NII-2A (5.25-5.35GHz)	a	20	52	5260	0.0519
			56	5280	0.0515
			60	5300	0.0314
			64	5320	0.0315
	n	20	52	5260	0.0333
			56	5280	0.0330
			60	5300	0.0164
			64	5320	0.0160
		40	54	5270	0.0321
			62	5310	0.0160
	ac	20	52	5260	0.0207
			56	5280	0.0205
			60	5300	0.0162
			64	5320	0.0160
		40	54	5270	0.0125
			62	5310	0.0122
		80	58	5290	0.0130

Table 20 (Continued)

Band	802.11	Ch. BW (MHz)	Ch.	Freq. (MHz)	Measured conducted power (W)
<b>U-NII-2C (5.47-5.65 GHz)</b>	a	20	100	5500	0.0354
			120	5600	0.0627
			140	5720	0.0537
	n	20	100	5500	0.0169
			120	5600	0.0397
			140	5720	0.0351
		40	102	5510	0.0133
			118	5590	0.0388
			134	5670	0.0283
<b>U-NII-2C (5.47-5.65 GHz)</b>	ac	20	100	5500	0.0167
			120	5600	0.0247
			140	5720	0.0221
		40	102	5510	0.0133
			118	5590	0.0151
			134	5670	0.0146
	80	106	5530	0.0142	
		122	5610	0.0157	
		149	5745	0.0575	
<b>U-NII-3 (5.65-5.85 GHz)</b>	a	20	157	5785	0.0541
			165	5825	0.0371
			149	5745	0.0369
	n	20	149	5785	0.0342
			165	5825	0.0184
		40	151	5755	0.0344
			159	5795	0.0169
	ac	20	149	5745	0.0225
			157	5785	0.0220
			165	5825	0.0190
		40	151	5755	0.0139
			159	5795	0.0138
		80	155	5775	0.0144

### Assessments at the Body for WLAN 5GHz (U-NII-2A, U-NII-2C, U-NII-3)

DUT assessment with WLAN internal antenna, offered batteries and without any cable accessory attached against the phantom with the offered body worn accessories. Refer to Table 20 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in the Appendix E.

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#
UNII-2A: 802.11a, 20MHz BW - Body									
AN000478A01	PMNN4893A	WGP02798	None	5260.000	0.052	-0.03	0.086	0.106	KM-AB-250122-02
		WGP02697B		5260.000	0.052	-0.40	0.074	0.100	KM-AB-250122-04
		WGP03088		5260.000	0.052	-0.26	0.070	0.091	MFR-AB-250218-07
		WGP03085		5260.000	0.052	-0.14	0.091	0.115	AR-AB-250122-08
		WGA00668		5260.000	0.052	0.39	0.119	0.146	AR-AB-250122-09
UNII-2C: 802.11a, 20MHz BW - Body									
AN000478A01	PMNN4893A	WGP02798	None	5600.000	0.063	0.15	0.268	0.272	AR-AB-250123-16
		WGP02697B		5600.000	0.063	-0.24	0.215	0.231	KM-AB-250122-16
		WGP03088		5600.000	0.063	-0.11	0.117	0.122	KM-AB-250122-18
		WGP03085		5600.000	0.063	-0.43	0.185	0.208	KM-AB-250122-19
		WGA00668		5600.000	0.063	0.10	0.297	<b>0.302</b>	AR-AB-250124-03@
UNII-3: 802.11a, 20MHz BW - Body									
AN000478A01	PMNN4893A	WGP02798	None	5745.000	0.058	0.11	0.161	0.178	DAN-AB-250123-04
		WGP02697B		5745.000	0.058	-0.06	0.105	0.118	MFR-AB-250218-10
		WGP03088		5745.000	0.058	-1.03	0.064	0.090	DAN-AB-250128-05
		WGP03085		5745.000	0.058	-0.04	0.100	0.112	DAN-AB-250123-09
		WGA00668		5745.000	0.058	0.32	0.153	0.170	DAN-AB-250123-10

### Assessments for ISED Canada

Based on the assessment results for body per KDB643646 D01, additional tests were not required for the Industry Canada frequency range (2412-2462MHz) 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 plots of the highest results per Tables (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#
UNII-2A: 802.11a, 20MHz BW - Body									
AN000478A01	PMNN4893A	WGA00668	None	5260.0000	0.052	0.39	0.119	0.146	AR-AB-250122-09
				5280.0000	0.052	-0.29	0.115	0.152	AR-AB-250122-10
				5320.0000	0.032	-0.25	0.079	0.107	AR-AB-250122-13
UNII-2C: 802.11a, 20MHz BW - Body									
AN000478A01	PMNN4893A	WGA00668	None	5500.0000	0.035	-0.03	0.116	0.133	AR-AB-250124-01@
				5600.0000	0.063	0.10	0.297	<b>0.302</b>	AR-AB-250124-03@
				5720.0000	0.054	-0.20	0.222	0.276	AR-AB-250124-02@
UNII-3: 802.11a, 20MHz BW - Body									
AN000478A01	PMNN4893A	WGP02798	None	5745.0000	0.058	0.11	0.161	0.178	DAN-AB-250123-04
				5785.0000	0.054	-0.41	0.166	0.215	DAN-AB-250123-11
				5825.0000	0.037	0.22	0.082	0.089	DAN-AB-250123-12

## 14.0 Assessment at the Bluetooth band (2402–2480MHz)

### Output Power Data

Battery PMNN4893A was selected as the default battery for assessments at the Body because it is the default 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 (2402-2480MHz) which are listed in Table 23.

**Table 23**

Band	Ch.	Freq. (MHz)	Measured conducted power (W)
<b>2.4 GHz</b>	0	2402	0.0212
	39	2441	0.0200
	78	2480	0.0192

**Assessments at the Body for BT 2.4GHz (2402-2480MHz)**

DUT assessment with WLAN internal antenna, offered batteries and without any cable accessory attached against the phantom with the offered body worn accessories. Refer to Table 23 for highest output power channel. SAR plots of the highest results per Table (bolded) are presented in the 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#
Body									
AN000478A01	PMNN4893A	WGP02798	None	2402.000	0.021	-0.12	0.022	<b>0.043</b>	BAD-AB-250122-16
		WGP02697B		2402.000	0.021	-0.43	0.011	0.023	BAD-AB-250123-01@
		WGP03088		2402.000	0.021	-0.11	0.012	0.023	BAD-AB-250123-11@
		WGP03085		2402.000	0.021	0.03	0.007	0.013	BAD-AB-250123-04@
		WGA00668		2402.000	0.021	0.02	0.020	0.038	BAD-AB-250123-05@

## Assessments for ISED Canada

Based on the assessment results for body per KDB643646 D01, additional tests were not required for the Industry Canada frequency range (2402-2480MHz) 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 plots of the highest results per Tables (bolded) are presented in Appendix E.

**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#
802.11b, 20MHz BW - Body									
AN000478A01	PMNN4893A	WGP02798	None	2402.0000	0.021	-0.12	0.022	0.043	BAD-AB-250122-16
				2441.0000	0.020	-0.19	0.025	<b>0.052</b>	BAD-AB-250203-04
				2480.0000	0.019	-0.15	0.018	0.039	BAD-AB-250123-08@

## 15.0 Simultaneous Transmission

The Table below summarizes the simultaneous transmissions between LMR and WLAN bands for this device.

**Table 26**

Exposure Conditions	Item	Capable Simultaneous Transmit Configurations
Body-Worn	1	BT + WLAN 5.0 GHz

BT, WLAN 2.4 GHz and 5 GHz are sharing the same antenna, but only BT and WLAN 5.0 GHz can transmit simultaneously. WLAN 2.4GHz and BT cannot be simultaneous transmit but will be time multiplexed. There is a coexistence mechanism help to ensure BT and WLAN 2.4 GHz not using over-lap frequency at the same time. The antenna will only select either BT or WLAN 2.4 GHz through antenna fast switching.

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

**Table 27**

Exposure condition	Standalone SAR (W/kg)		Sum of SAR (W/kg)
	Wifi 5GHz	BT	Wifi 5 GHz + BT
Body worn Exposure	0.302	0.052	0.354

## 16.0 Results Summary

The test results are 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 28**

Designator	Frequency band (MHz)	Max Calc at Body (W/kg)
		1g-SAR
<b>FCC US</b>		
WLAN 2.4 GHz	2412 - 2462	0.194
WLAN 5 GHz	5180-5825	0.302
BT	2402 - 2480	0.052
Highest Simultaneous Transmission SAR	Sum of SAR (W/kg)	0.354
<b>ISED Canada</b>		
WLAN 2.4 GHz	2412 - 2462	0.194
WLAN 5 GHz	5180-5825	0.302
BT	2402 - 2480	0.052
Highest Simultaneous Transmission SAR	Sum of SAR (W/kg)	0.354

All results are scaled to the maximum output power.

The test results clearly demonstrate compliance with FCC/ISED General Population/Uncontrolled Environment RF Exposure limits of 1.6 W/kg averaged over 1 gram per the requirements of FCC 47 CFR § 2.1093 and RSS-102 (Issue 6).

## 17.0 Variability Assessment

Per the guidelines in KDB 865664 SAR variability assessment is not required because SAR results are below 0.8 W/kg (Occupational).

## 18.0 System Uncertainty

A system uncertainty analysis is not required for this report per KDB 865664 because the highest report SAR value for General Population exposure is less than 1.5 W/kg.

Per the guidelines of ISO/IEC 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 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>
<b>Uncertainty Component</b>	IEEE 1528 section	Tol. (± %)	Prob. Dist.	Div.	<i>c<sub>i</sub></i> (1 g)	<i>c<sub>i</sub></i> (10 g)	1 g <i>u<sub>i</sub></i> (±%)	10 g <i>u<sub>i</sub></i> (±%)	<i>v<sub>i</sub></i>
<b>Measurement System</b>									
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	□
<b>Dipole</b>									
Dipole Axis to Liquid Distance	<sup>8</sup> , 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	□
<b>Phantom and Tissue Parameters</b>									
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	□
<b>Combined Standard Uncertainty</b>			RSS				9	9	99999
<b>Expanded Uncertainty</b> (95% CONFIDENCE LEVEL)			<i>k</i> =2				18	17	

Notes for uncertainty budget Tables:

- a) Column headings *a-k* are given for reference.
- b) Tol. - tolerance in influence quantity.
- c) Prob. Dist. – Probability distribution
- d) N, R - normal, rectangular probability distributions
- e) Div. - divisor used to translate tolerance into normally distributed standard uncertainty
- f) *c<sub>i</sub>* - sensitivity coefficient that should be applied to convert the variability of the uncertainty component into a variability of SAR.
- g) *u<sub>i</sub>* – SAR uncertainty
- h) *v<sub>i</sub>* - 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>
<b>Uncertainty Component</b>	IEEE 1528 section	Tol. (± %)	Prob Dist	Div.	<i>c<sub>i</sub></i> (1 g)	<i>c<sub>i</sub></i> (10 g)	1 g <i>u<sub>i</sub></i> (±%)	10 g <i>u<sub>i</sub></i> (±%)	<i>v<sub>i</sub></i>
<b>Measurement System</b>									
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	□
<b>Test sample Related</b>									
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	□
<b>Phantom and Tissue Parameters</b>									
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	□
<b>Combined Standard Uncertainty</b>			RSS				11	11	419
<b>Expanded Uncertainty</b> (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<sub>i</sub>* - sensitivity coefficient that should be applied to convert the variability of the uncertainty component into a variability of SAR.
- g) *u<sub>i</sub>* – SAR uncertainty
- h) *v<sub>i</sub>* - 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 = 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<sub>i</sub></i> (1 g)	<i>c<sub>i</sub></i> (10 g)	1 g <i>u<sub>i</sub></i> (±%)	10 g <i>u<sub>i</sub></i> (±%)	<i>v<sub>i</sub></i>
<b>Measurement System</b>									
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	□
<b>Dipole</b>									
Dipole Axis to Liquid Distance	<sup>8,</sup> 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	□
<b>Phantom and Tissue Parameters</b>									
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	□
<b>Combined Standard Uncertainty</b>			RSS				10	10	99999
<b>Expanded Uncertainty</b> (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<sub>i</sub>* - sensitivity coefficient that should be applied to convert the variability of the uncertainty component into a variability of SAR.
- g) *u<sub>i</sub>* – SAR uncertainty
- h) *v<sub>i</sub>* - 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>	$e = f(d,k)$	<i>f</i>	<i>g</i>	$h = c \times f / e$	$i = c \times g / e$	<i>k</i>
Uncertainty Component	IEEE 1528 section	Tol. ( $\pm \%$ )	Prob Dist	Div.	$c_i$ (1 g)	$c_i$ (10 g)	1 g $u_i$ ( $\pm\%$ )	10 g $u_i$ ( $\pm\%$ )	$v_i$
<b>Measurement System</b>									
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	□
<b>Test sample Related</b>									
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	□
<b>Phantom and Tissue Parameters</b>									
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	□
<b>Combined Standard Uncertainty</b>							12	12	504
<b>Expanded Uncertainty (95% CONFIDENCE LEVEL)</b>							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