Celltech
Testing and Engineering Services Lab

Test Report Serial Number:	45461973 R2.0
Test Report Date:	8 August 2024
Project Number:	1673

SAR Test Report - C2PC

Applicant:

L3HARRIS™
FAST. FORWARD.

L3Harris Corporation
221 Jefferson Ridge Parkway
Lynchburg, VA, 24501
USA

Maximum *reported* 1g SAR*			
Equipment Class	Head	Body	
LMR:	1.70	5.26	W/kg
Limit:	8.00	8.00	

FCC ID:
OWDTR-0143-E

Product Model Number / HVIN
See Section 2.0

Product Name / PMN
XL-185P

In Accordance With:

FCC 47 CFR §2.1093
Radiofrequency Radiation Exposure Evaluation: Portable Devices

Approved By:

Ben Hewson, President
Celltech Labs Inc.
21-364 Lougheed Rd.
Kelowna, BC, V1X 7R8
Canada

ilac-MRA A2LA ACCREDITED
Test Lab Certificate: 2470.01

Industry Canada
IC Registration 3874A

FC
FCC Registration: CA3874

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1.0 REVISION HISTORY

Revision History					
Samples Tested By:	Ben Hewson/Trevor Whillock		**Date(s) of Evaluation:**	25 June 2024	
Report Prepared By:	Ben Hewson		**Report Reviewed By:**	Art Voss	
Report Revision	**Description of Revision**		**Revised Section**	**Revised By**	**Revision Date**
0.1	Draft		n/a	Ben Hewson	8 July 2024
1.0	Initial Release		n/a	Art Voss	10 July 2024
2.0	DUT info & Accessory. ref correction		Sec 2.0 App. B	Ben Hewson	8 August 2024

2.0 APPLICANT AND DEVICE INFORMATION

Applicant Information	
Applicant Name	**L3Harris Corporation**
Applicant Address	221 Jefferson Ridge Parkway
	Lynchburg, VA, 24501
	USA
DUT Information	
Device Identifier(s):	**FCC ID:** **OWDTR-0143-E**
Device Marketing Name / PMN:	XL-185P
Host Marketing Name / HMN:	XL-185P
Device Model(s) / HVIN:	XS-PFM9M,, XS-PFM9M-L, XS-PFM9M-NA, XS-PPM9M, XS-PPM9M-L, XS-PPM9M-NA
	XS-PFM9Y, XS-PFM9Y-L, XS-PFM9Y-NA, XS-PPM9Y, XS-PPM9Y-L, XS-PPM9Y-NA
	XS-PFM9P, XS-PFM9P-L, XS-PFM9P-NA, XS-PPM9P, XS-PPM9P-L, XS-PPM9P-NA
	XV-PFS9M-L, XV-PFS9M-NA
Test Sample Serial No.:	A40340000015
Equipment Class (FCC):	Licensed Non-Broadcast Transmitter Held to Face (TNF) FCC Part 90 - LMRS
	Digital Transmission System (DTS) FCC Part 15C - WiFi
	Spread Spectrum Transmitter (DSS) FCC Part 15C - BT
	Unlicensed National Information Infrastructure (NII) FCC Part 15E - WiFi
Frequency Bands	700 Band: 799 - 805MHz
	800 Band: 806-817, 851 - 862, 896 - 901MHz
	900 Band: 935 - 940, 941 - 944MHz
	BT: 2402-2480MHz
	WiFI 2.4G: 2412-2462MHz
	WiFi 5G: 5180-5240MHz, 5745-5825MHz
Number of Channels:	Programmable
Transmitter Rated Power (Max): Including Tune-Up Tolerance	700 Band: 3W (34.8dBm)
	800 Band: 3W (34.8dBm)
	BT: 50mW (17dBm) ; BLE 7mW (8.5dBm)
	WLAN 2.4G: 234mW (23.7dBm)
	WLAN 5G: 5180-5240MHz: 15mW (11.8dBm)
	WLAN 5G: 5745-5825MHz: 8mW (9.0dBm)
Duty Cycle:	LMR: 50% PTT Duty Cycle
DUT Power Source:	7.2VDC Li-Ion Rechargeable Battery Pack
Deviation(s) from standard/procedure:	None
Modification of DUT:	None

3.0 SCOPE OF EVALUATION

This Certification Report was prepared on behalf of:

L3Harris Corporation

,(the '*Applicant*"), in accordance with the applicable Federal Communications Commission (FCC) CFR 47 parts and regulations (the 'Rules ') . The scope of this investigation was limited to only the equipment, devices and accessories (the '*Equipment*') supplied by the *Applicant*. The tests and measurements performed on this *Equipment* were only those set forth in the applicable *Rules* and/or the Test and Measurement Standards they reference. The *Rules* applied and the Test and Measurement Standards used during this evaluation appear in the Normative References section of this report. The limits set forth in the technical requirements of the applicable *Rules* were applied to the measurement results obtained during this evaluation and ,unless otherwise noted, these limits were used as the Pass/Fail criteria. The Pass/Fail statements made in this report apply to only the tests and measurements performed on only the *Equipment* tested during this evaluation. Where applicable and permissible, information including test and measurement data and/or results from previous evaluations of same or similar equipment, devices and/or accessories may be cited in this report.

Device Description:

The XL-185P, FCC ID: OWDTR-0143-E is an Occupational multiband (UHF, 7/800 Band) LMR transceiver containing a pre-certified WiFi/Bluetooth module. All transmitters are capable of simultaneous transmission.

Regulatory Requirement:

As per FCC 47 CFR Part §2.1093, an RF Exposure (SAR) evaluation report is required for this *Equipment* and the results of the RF Exposure evaluation appear in this report.

Filing:

This is an application Class II Permissive Change to extend the 800 Band channels, between 816-817MHz and 861-862MHz.

Scope:

The scope of this investigation is to evaluate the SAR for intended use applications. The SAR for the XL-185P was originally evaluated for the LMR, WiFi/Bluetooth bands. The Test Plan includes the evaluation of the enabled 816.9875MHz and 861.9875MHz channels. The Test Plan considered data from the original filing and is based on configurations and accessories producing the highest worst case SAR. Where applicable, SAR test reduction and/or SAR test exclusion may be utilized. Test procedures are based on the requirements IEC/IEEE 62209-1528, IEC 62209-2, FCC KDB 865646, 447498 and 643646.

4.0 NORMATIVE REFERENCES

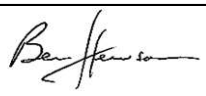
Normative References*	
ANSI / ISO 17025:2017	General Requirements for competence of testing and calibration laboratories
FCC CFR Title 47 Part 2	Code of Federal Regulations
Title 47:	Telecommunication
Part 2.1093:	Radiofrequency Radiation Exposure Evaluation: Portable Devices
IEC International Standard /IEEE International Committee on Electromagnetic Safety	
IEC/IEEE 62209-1528	Measurement procudeure for the assessment of sepcific absorption rate of human expoure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1528; Human models, insturmentation, and procedures (Frequency range of 4 MHz to 10 GHz)
FCC KDB	
KDB 865664 D01v01r04	SAR Measurement Requirements for 100MHz to 6GHz
KDB 865664 D02v01r02	RF Exposure Compliance Reporting and Documentation Considerations
FCC KDB	
KDB 447498 D04v01	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices Interim General RF Exposure Guidance
FCC KDB	
KDB 643646 D01v01r03	SAR Test Reduction Consideratons for Occupational PTT Radios
* When the issue number or issue date is omitted, the latest version is assumed.	

5.0 STATEMENT OF COMPLIANCE

This measurement report demonstrates that samples of the product model(s) were evaluated for Specific Absorption Rate (SAR) on the date(s) shown, in accordance with the Measurement Procedures cited and were found to comply with the Standard(s) Applied based on the Exposure Limits of the Use Group indicated for which the product is intended to be used.

Applicant:	Model / HVIN:	
L3Harris Corporation	XL-185P	
Standard(s) Applied:	**Measurement Procedure(s):**	
FCC 47 CFR §2.1093	FCC KDB 865664, FCC KDB 447498, FCC KDB 248227 IEC/IEEE Standard 62209-1528	
Reason For Issue:	**Use Group:**	**Limits Applied:**
☐ New Certification	☐ General Population / Uncontrolled	☐ 1.6W/kg - 1g Volume
☐ Class I Permissive Change		☒ 8.0W/kg - 1g Volume
☒ Class II Permissive Change	☒ Occupational / Controlled	☐ 4.0W/kg - 10g Volume
Reason for Change:		**Date(s) Evaluated:**
Extend 7/800 MHz Band		25 June 2024

The results of this investigation are based solely on the test sample(s) provided by the applicant which was not adjusted, modified or altered in any manner whatsoever except as required to carry out specific tests or measurements. A description of the device, operating configuration, detailed summary of the test results, methodologies and procedures used during this evaluation, the equipment used and the various provisions of the rules are included in this test report.

I attest that the data reported herein is true and accurate within the tolerance of the Measurement Instrument Uncertainty; that all tests and measurements were performed in accordance with accepted practices or procedures; and that all tests and measurements were performed by me or by trained personnel under my direct supervision. The results of this investigation are based solely on the test sample(s) provided by the client which were not adjusted, modified or altered in any manner whatsoever, except as required to carry out specific tests or measurements. This test report has been completed in accordance with ISO/IEC 17025.	 Ben Hewson Celltech Labs Inc. 8 July 2024 Date

6.0 SAR MEASUREMENT SYSTEM

SAR Measurement System

Celltech Labs Inc. SAR measurement facility employs a Dosimetric Assessment System (DASY™) manufactured by Schmid & Partner Engineering AG (SPEAG™) of Zurich, Switzerland. The DASY6 measurement system is comprised of the measurement server, a robot controller, a computer, a near-field probe, a probe alignment sensor, an Elliptical Planar Phantom (ELI) phantom and a specific anthropomorphic mannequin (SAM) phantom for Head and/or Body SAR evaluations. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF). A cell controller system contains the power supply, robot controller and a teach pendant (Joystick) to control the robot's servo motors. The Staubli robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical form the DAE to digital electronic signal and transfers data to the DASY6 measurement server. The DAE4 utilizes a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16-bit AD-converter, a command decoder and a control logic unit. Transmission to the DASY6 measurement server is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe-mounting device includes two different sensor systems for frontal and sidewise probe contacts. The sensor systems are also used for mechanical surface detection and probe collision detection. The robot utilizes a controller with built in VME-bus computer.

DASY 6 SAR System

DASY 6 Measurement Controller

7.0 RF CONDUCTED POWER MEASUREMENT

Table 7.1 Conducted Power Measurements 7/800 PCS

The device was provided by the client pre-programmed for channels 816.9875MHz and 861.9875MHz to be used for the SAR evaluation.

LMR Conducted Power									
Channel Band	Frequency (MHz)	Modulation	Measured Power (dBm)	Rated(1) Power (dBm)	Rated(1) Power (W)	Delta (dBm)	Duty Cycle (%)	Crest Factor (n)	Test Channel (Y)
7/800	816.9875	CW	34.49	34.80	3.0	-0.31	100.0	1.00	y
7/800	861.9875	CW	34.56	34.80	3.0	-0.24	100.0	1.00	y

(1) Includes Tune-Up Tolerance

*The rated power and tolerance are stated for typical transmission modes and data rates. Some modes and data rates may produce lower than rated conducted power levels. Continuous Wave (CW) mode is a test mode not typical with normal transmission modes and may produce higher than rated conducted power levels Power measurements taken across the various channels, modes and data rates did not produce levels in excess of the Rated Power plus Tolerance. SAR was evaluated using .CW mode at the Maximum output power level setting and produced the most conservative SAR. The *reported* SAR was not scaled down.

8.0 NUMBER OF TEST CHANNELS (N_C)

The required test channels used for the PCS evaluation is based on FCC KDB 447498 as follows:

Frequency			Number of Channels
f_{LOW} (MHz)	f_{HIGH} (MHz)	f_C (MHz)	KDB 447498 (N_C)
816	817	**816.5**	**1**
861	862	**861.5**	**1**

KDB 447498: NC = RoundUp { [100 (FHIGH - FLOW)/Fc]$^{0.5}$ X (FC/100)$^{0.2}$ }

9.0 ACCESSORIES EVALUATED

Table 9.1 Manufacturer's Accessory List – Antenna, Battery, Body & Audio

All antennae available for this device that operate in the frequency were evaluated in Face and Body configuration, with prior worse case SAR accessories

Manufacturer's Accessory List							
Test Report ID Number	Manufacturer's Part Number	Description	Change ID[1]	UDC Group[2]	Type II Group[3]	SAR[4] Evaluated	SAR[5] Tested
		Antenna	**17**				
T4	14035-4000-01	Full Spectrum Antenna (136-870 MHz)	1			Y	Y
T5	14035-4420-01	Wideband Whip Antenna (378-520MHz, 762-870 MHz)	5			Y	Y
T6	14035-4440-01	1/2 Wave Whip Antenna (762-870 MHz)	4			Y	Y
T7	14035-4440-02	1/4 Wave Whip Antenna (762-870 MHz)	4			Y	Y
T8	14035-4450-01	1/2 Wave Whip Antenna (762-944 MHz)	8			Y	Y
T9	14035-4450-02	1/4 Wave Whip Antenna (762-944 MHz)	8			Y	Y
T11	E75-0286-001	1/2 Wave Whip Antenna (890-960 MHz)	39			Y	Y

Manufacturer's Accessory List							
Test Report ID Number	Manufacturer's Part Number	Description	Change ID[1]	UDC Group[2]	Type II Group[3]	SAR[4] Evaluated	SAR[5] Tested
		Battery	**13**				
P1	14035-4010-01	Li-Ion Battery 7.2VDC, 3300mAh	1			Y	N
P2	14035-4010-04	Li-Ion Battery 7.2VDC, 3100mAh, 22Wh	7			Y	Y
P4	14035-4010-05	Li-Ion Battery 7.2VDC, 3100mAh, 22Wh UL	12			Y	N
P5	14036-4020-01	Li-Ion Battery 7.2VDC, 3100mAh, 22Wh, LTE	24			Y	N
P6	14036-4020-02	Li-Ion Battery 7.2VDC, 3100mAh, 22Wh, LTE, UL, C1D2	24			Y	N
P7	14035-5050-01	Li-Ion Battery 7.2VDC, 4700mAh, 24Wh Standard	30			Y	N
P8	14035-5050-02	Li-Ion Battery 7.2VDC, 4700mAh, 24Wh, C1D2	30			Y	N

Manufacturer's Accessory List							
Test Report ID Number	Manufacturer's Part Number	Description	Change ID[1]	UDC Group[2]	Type II Group[3]	SAR[4] Evaluated	SAR[5] Tested
		Body-Worn Accessory	39				
B1	12082-1290-01	Metal Belt Clip, 0mm	1			Y	Y
B2	12082-3230-01	D-Swivel (Used w/ 14002-0218-01 and KRY 1011609/1)	1			Y	N
B3	14002-0218-01	Premium Belt Loop	1			Y	N
B4	14035-4200-01	Holster, Leather, Radio, Premium	3			Y	N
B5	14035-4200-02	Holster, Leather w/Rings for Shoulder Strap, Radio, Premium	3			Y	N
B6	14035-4200-03	Holster, Nylon, Black, Radio, Premium	**			Y	N
B7	14035-4200-04	Holster, Ring, Leather, Radio, Premium	**			Y	N
B33	14035-4200-05	Holster, Leather, No D Post, w/ Rings, Radio, Premium	43			Y	N
B8	14035-4201-01	Case, Leather, Premium, Shoulder Strap	**			Y	N
B9	14035-4201-02	Case, Leather, Premium, Shoulder Strap	**			Y	N
B10	14035-4202-01	Holster, Leather, Radio, Standard	**			Y	N
B11	14035-4202-02	Holster, Leather w/Rings for Shoulder Strap, Radio, Standard	**			Y	N
B12	14035-4202-03	Holster, Nylon, Black, Radio, Standard	**			Y	N
B13	14035-4202-04	Holster, Ring, Leather, Radio, Standard	**			Y	N
B14	CC103333V1	Shoulder Strap	1			Y	N
B15	KRY 1011609/1	Leather Belt Loop	1			Y	N
B16	12082-1398-01	Side Connector Cover	1			Y	N
B17	14036-4000-01	Holster, Leather, Premium	**			Y	N
B18	14036-4000-02	Holster, Leather, Premium, Rings	**			Y	N
B19	14036-4001-01	Case, Nylon, Black, Molle Strap	22			Y	N
B20	14036-4001-02	Case, Nylon, Black, Belt Loop, D-Swivel	22			Y	N
B21	14036-4002-01	Case, Leather, W/ Belt Loop, BLK HDW	22			Y	N
B22	14036-4002-02	Case, Leather, Belt Loop, D-Swivel	22			Y	N
B23	14036-4001-03	Case, Nylon, W/ Belt Loop, D-Swivel, BLK HDW	22			Y	N
B24	14036-4002-03	Case, Leather, Belt Loop, D-Swivel, BLK HDW	22			Y	N
B25	14036-4003-01	Case, Leather, Belt Loop, D-Swivel	24			Y	N
B26	14036-4003-02	Case, Leather, 3" Belt Loop	24			Y	N
B1-02	12082-1290-02	Metal Belt Clip, 5mm - Prototype	1			Y	N
B1-03	12082-1290-03	Metal Belt Clip, 10mm - Prototype	1			Y	N
B1-04	12082-1290-04	Metal Belt Clip, 15mm - Prototype	1			Y	N
B27	14036-4003-03	Case, Leather, Belt Loop, D-Swivel	33			Y	N
B28	14036-4003-04	Case, Leather, 3" Belt Loop	34			Y	N
B33	14036-4001-04	Case, Nylon, Tan, Molle Strap (Same as 14036-4001-01	48			Y	N
B36	14035-4204-01	HOLSTER, XL LEGACY,KYDEX, BELT CLIP	57			Y	N
B37	14035-4204-02	HOLSTER, XL LEGACY,KYDEX, BELT CLIP	57			Y	N
B38	14035-4204-03	HOLSTER, XL LEGACY,KYDEX, BELT CLIP, Coyote Brown	59			Y	N
B39	14035-4204-04	HOLSTER, XL LEGACY,KYDEX, BELT CLIP, Coyote Brown	60			Y	N
B40	14035-4204-03	HOLSTER, XL LEGACY,KYDEX, BELT CLIP, AT&T Blue	61			Y	N
B41	14035-4204-04	HOLSTER, XL LEGACY,KYDEX, BELT CLIP, AT&T Blue	62			Y	N
B42	14100-1290-01	Belt Clip - Modification to 12082-1290-01	65			Y	N
B42	14100-1290-01	Belt Clip - Modification to 12082-1290-01	65			Y	N

Manufacturer's Accessory List								
Test Report ID Number	Manufacturer's Part Number	Description			Change ID[1]	UDC Group[2]	Type II Group[3]	SAR[4] Evaluated	SAR[5] Tested
		Audio Accessory			63				
A1	12082-0600-01	Standard Speaker Microphone			1	7A	PB	Y	Y
A2	12082-0600-02	Storm Speaker Microphone			1	7A	PB	Y	N
A3	12150-1000-01	Premium Speaker MIC, Fire, NC			1	9	PB	Y	N
A4	12082-0650-01	Microphone, Palm, 2-Wire Black			1	7A	IL	Y	N
A5	12082-0650-02	Microphone, Palm, 2-Wire Beige			3	7A	IL	Y	N
A6	12082-0650-03	Microphone, Mini Lapel, 3-Wire Black			1	7A	IL	Y	N
A7	12082-0650-04	Microphone, Mini Lapel, 3-Wire Beige			3	7A	IL	Y	N
A8	12082-0650-05	Earphone Kit, Black, XG-100P			**	7A	IL	Y	N
A9	12082-0650-06	Earphone Kit, Beige, XG-100P			**	7A	IL	Y	N
A10	12082-0650-07	Headset, In-Ear, Boom MIC, In-Line PTT			3	7A	IL	Y	N
A11	12082-0650-08	Headset, LTWT, OTH, Single Ear, IN-Line PTT			3	7A	IL	Y	N
A12	12082-0650-09	Headset, LTWT, BTH, Dual Ear, In_Line PTT			3	7A	IL	Y	N
A13	12082-0650-10	Headset, LTWT, BTH, Dual Ear, Pig Tail PTT			3	7A	PT	Y	N
A14	12082-0650-11	Headset, LTWT, BTH, Dual In-Ear, In_Line PTT			3	7A	IL	Y	N
A15	12082-0650-12	Headset, LTWT, BTH, Dual In-Ear, Pig Tail PTT			3	7A	PT	Y	N
A16	12082-0650-13	Headset, Heavy Duty, BTH, w/PTT, XG-100P			3	7A	IL	Y	N
A17	12082-0650-14	Headset, Heavy Duty, OTH, w/PTT, XG-100P			3	7A	IL	Y	N
A18	12082-0650-15	Headset, BTH, Boom MIC, Earpiece, w/PTT			**	7A	IL	Y	N
A19	12082-0650-16	Headset, Tactical, Boom MIC, Earpiece, w/PTT			3	7A	PT	Y	N
A20	12082-0650-17	Skull MIC, w/Body PTT, Earcup, XG-100P			3	9	BB	Y	N
A21	12082-0650-18	Throat MIC, w/Acoustic Tube, Body PTT			3	9	BB	Y	N
A22	12082-0650-19	Throat MIC, w/Acoustic Tube, Body & Ring PTT			3	9	RB	Y	N
A23	12082-0681-01	Speaker MIC, Wireless Bluetooth			3	BT	PB	Y	N
A24	12082-0684-01	BlueTooth, Covert, Earpiece, MIC, PTT			3	BT	n/a	Y	N
A25	14002-0197-01	Hirose to Unity Adapter			1	7B	n/a	Y	N
A26	LS103239V1	Earphone, Lapel MIC, 2.5mm			3	n/a	n/a	Y	N
A27	LS103239V2	Earphone, Lapel MIC, 2.5mm, Right Angle			4	n/a	n/a	Y	N
A28	12082-0600-03	Storm Speaker Microphone 18"			6	7A	PB	Y	N
A29	12082-0600-04	Storm Speaker Microphone 25.6"			6	7A	PB	Y	N
A30	12082-0600-05	Storm Speaker Microphone 30"			6	7A	PB	Y	N
A31	12150-1000-05	Premium Speaker MIC, Fire, NC, Hi Vis Yellow			1	9	PB	Y	N
A32	14035-4700-01	SPEAKER MIC, REVO NC2, C1D2 LMR			27	7A	PB	Y	N
A33	14035-4700-02	See A45			27	7A	PB	Y	N
A34	14035-4750-01	SPEAKER MIC, 500F, C1D1 LMR			29	9	PB	Y	N
A35	12082-0800-02	SPEAKER MIC,WIRELESS,BLUETOOTH,ADVANCED					BT	Y	N
A36	12082-0800-03	SPEAKER MIC,WIRELESS,BLUETOOTH,ADV,ANZ					BT	Y	N
A37	14002-0197-01	Adapter, 6-Pin HIROSE, Ext Cable			1		Adpt	Y	N
A38	14100-4700-22	ESM, GREEN FRSM, XL STRAIGHT CABLE			42, 45	10	PB	Y	N
A38		14100-4700-01	FRSM Body		42, 45	10	PB	Y	N
A38			-4700-15	Cable	42, 45	10	PB	Y	N
A39	14100-4700-25	ESM, BLACK FRSM, XL STRAIGHT CABLE			42, 45	10	PB	Y	N
A39		14100-4700-02	FRSM Body		42, 45	10	PB	Y	N
A39			-4700-15	Cable	42, 45	10	PB	Y	N
A40	14100-4700-28	ESM, YELLOW FRSM, XL STRAIGHT CABLE			42, 45	10	PB	Y	N
A40		14100-4700-03	FRSM Body		42, 45	10	PB	Y	N
A40			-4700-15	Cable	42, 45	10	PB	Y	N
A41	14100-4700-31	ESM, GREEN FRSM, XG LEGACY CABLE			42, 45	10	PB	Y	N
A41		14100-4700-01	FRSM Body		42, 45	10	PB	Y	N
A41			-4700-13	Cable	42, 45	10	PB	Y	N
A42	14100-4700-32	ESM, BLACK FRSM, XG LEGACY CABLE			42, 45	10	PB	Y	N
A42		14100-4700-02	FRSM Body		42, 45	10	PB	Y	N
A42			-4700-13	Cable	42, 45	10	PB	Y	N
A43	14100-4700-33	ESM, YELLOW FRSM, XG LEGACY CABLE			42, 45	10	PB	Y	N
A43		14100-4700-03	FRSM Body		42, 45	10	PB	Y	N
A43			-4700-13	Cable	42, 45	10	PB	Y	N
A45	14035-4700-02	SPEAKER MIC, REVO NC2, C1D2 w/ 3.5mm Earphone Jack			53	7A	PB	Y	N
A47	A06-0052-001	SPEAKER MIC, OTTO V2-GR2HD5212			54	7A	PB	Y	N
A48	A06-0052-002	Earphone, Lapel, Mic, 3.5mm Plug, OTTO V1-10305			56	7A	PB	Y	N
A48	A06-0052-002	Earphone, Lapel, Mic, 3.5mm Plug, OTTO V1-10305			56	7A	PB	Y	N
A48	A06-0052-002	Earphone, Lapel, Mic, 3.5mm Plug, OTTO V1-10305			56	7A	PB	Y	N

10.0 SAR MEASUREMENT SUMMARY

Table 10.1: Measured Results – BODY

Measured 1g SAR Results - BODY Configuration																	
Date	Plot ID	Test Frequency (MHz)	DUT Configuration				Accessories	Spacing		Measured SAR (W/kg)	SAR Drift (dB)	Delta Power (dB)	Crest Factor (n)	Fluid Sensitivity (n)	Duty Factor (%)	reported SAR (W/kg)
			Pos	Mode	Band	Mod		DUT (mm)	Antenna (mm)							
Area Scan																
6/25/2024	B1	816.9875	Body Touch	LMR	800	CW	P2 T4 B1 A1	0	20	3.870	-0.340	-0.310	1.000	1.000	50.000	2.247
6/25/2024	B2	861.9875	Body Touch	LMR	800	CW	P2 T4 B1 A1	0	20	3.320	-0.430	-0.240	1.000	1.000	50.000	1.937
6/25/2024	B3	816.9875	Body Touch	LMR	800	CW	P2 T5 B1 A1	0	20	4.680	-0.160	-0.310	1.000	1.000	50.000	2.607
6/25/2024	B4	861.9875	Body Touch	LMR	800	CW	P2 T5 B1 A1	0	20	3.700	-0.160	-0.240	1.000	1.000	50.000	2.028
6/25/2024	B5	816.9875	Body Touch	LMR	800	CW	P2 T6 B1 A1	0	20	6.620	-0.020	-0.310	1.000	1.000	50.000	3.571
6/25/2024	B6	861.9875	Body Touch	LMR	800	CW	P2 T6 B1 A1	0	20	4.260	-0.250	-0.240	1.000	1.000	50.000	2.384
6/25/2024	B7	816.9875	Body Touch	LMR	800	CW	P2 T7 B1 A1	0	20	6.920	-0.170	-0.310	1.000	1.000	50.000	3.864
6/25/2024	B8	861.9875	Body Touch	LMR	800	CW	P2 T7 B1 A1	0	20	7.800	-0.130	-0.240	1.000	1.000	50.000	4.247
6/25/2024	B9	816.9875	Body Touch	LMR	800	CW	P2 T8 B1 A1	0	20	4.500	-0.380	-0.310	1.000	1.000	50.000	2.637
6/25/2024	B10	861.9875	Body Touch	LMR	800	CW	P2 T8 B1 A1	0	20	7.120	-0.350	-0.240	1.000	1.000	50.000	4.078
6/25/2024	B11	816.9875	Body Touch	LMR	800	CW	P2 T9 B1 A1	0	20	7.600	-0.260	-0.310	1.000	1.000	50.000	4.333
6/25/2024	B12	861.9875	Body Touch	LMR	800	CW	P2 T9 B1 A1	0	20	11.800	-0.130	-0.240	1.000	1.000	50.000	6.425
6/25/2024	B12R	861.9875	Body Touch	LMR	800	CW	P2 T9 B1 A1	0	20	10.700	-0.230	-0.240	1.000	1.000	50.000	5.961
6/25/2024	B13	816.9875	Body Touch	LMR	800	CW	P2 T11 B1 A1	0	20	4.260	-0.190	-0.310	1.000	1.000	50.000	2.390
6/25/2024	B14	861.9875	Body Touch	LMR	800	CW	P2 T11 B1 A1	0	20	6.380	0.030	-0.240	1.000	1.000	50.000	3.371
Zoom Scan																
6/25/2024	B12Z	861.9875	Body Touch	LMR	800	CW	P2 T9 B1 A1	0	20	9.480	-0.210	-0.240	1.000	1.000	50.000	5.257
Applicable SAR Limit							Use Group					Limit				
FCC CFR 2.1093			Health Canada Safety Code 6				General Population/User Unaware					1.6 W/kg				

Table 10.2: Measured Results – FACE

Measured 1g SAR Results - FACE Configuration																	
Date	Plot ID	Test Frequency (MHz)	DUT Configuration				Accessories	Spacing		Measured SAR (W/kg)	SAR Drift (dB)	Delta Power (dB)	Crest Factor (n)	Fluid Sensitivity (n)	Duty Factor (%)	reported SAR (W/kg)
			Pos	Mode	Band	Mod		DUT (mm)	Antenna (mm)							
Area Scan																
6/25/2024	F1	816.9875	Face	LMR	800	CW	P2 T4 - -	25	65	1.480	-0.360	-0.310	1.000	1.000	50.000	0.863
6/25/2024	F2	861.9875	Face	LMR	800	CW	P2 T4 - -	25	65	1.540	-0.380	-0.240	1.000	1.000	50.000	0.888
6/25/2024	F3	816.9875	Face	LMR	800	CW	P2 T5 - -	25	65	2.180	-0.290	-0.310	1.000	1.000	50.000	1.251
6/25/2024	F4	861.9875	Face	LMR	800	CW	P2 T5 - -	25	65	2.640	-0.190	-0.240	1.000	1.000	50.000	1.457
6/25/2024	F5	816.9875	Face	LMR	800	CW	P2 T6 - -	25	65	2.410	0.040	-0.310	1.000	1.000	50.000	1.294
6/25/2024	F6	861.9875	Face	LMR	800	CW	P2 T6 - -	25	65	2.970	-0.020	-0.240	1.000	1.000	50.000	1.577
6/25/2024	F7	816.9875	Face	LMR	800	CW	P2 T7 - -	25	65	1.790	-0.110	-0.310	1.000	1.000	50.000	0.986
6/25/2024	F8	861.9875	Face	LMR	800	CW	P2 T7 - -	25	65	3.160	-0.160	-0.240	1.000	1.000	50.000	1.732
6/25/2024	F9	816.9875	Face	LMR	800	CW	P2 T8 - -	25	65	2.130	-0.200	-0.310	1.000	1.000	50.000	1.198
6/25/2024	F10	861.9875	Face	LMR	800	CW	P2 T8 - -	25	65	2.480	-0.310	-0.240	1.000	1.000	50.000	1.407
6/25/2024	F11	816.9875	Face	LMR	800	CW	P2 T9 - -	25	65	2.270	-0.380	-0.310	1.000	1.000	50.000	1.330
6/25/2024	F12	861.9875	Face	LMR	800	CW	P2 T9 - -	25	65	3.250	-0.050	-0.240	1.000	1.000	50.000	1.737
6/25/2024	F13	816.9875	Face	LMR	800	CW	P2 T11 - -	25	65	1.880	-0.100	-0.310	1.000	1.000	50.000	1.033
6/25/2024	F14	861.9875	Face	LMR	800	CW	P2 T11 - -	25	65	2.740	-0.010	-0.240	1.000	1.000	50.000	1.451
Zoom Scan																
6/25/2024	F12Z	861.9875	Face	LMR	800	CW	P2 T9 - -	25	65	3.150	-0.100	-0.240	1.000	1.000	50.000	1.703
Applicable SAR Limit							Use Group					Limit				
FCC CFR 2.1093			Health Canada Safety Code 6				General Population/User Unaware					1.6 W/kg				

11.0 SCALING OF MAXIMUM MEASURE SAR

Table 11.2 SAR Scaling

Scaling of Maximum Measured SAR (1g)						
Measured Parameters		Configuration				
		Body	Face			
Plot ID		B12Z	F12Z			
Maximum Measured SAR_M		9.480	3.150			(W/kg)
Frequency		861.9875	861.9875			(MHz)
Drift	Power Drift	-0.210	-0.100			(dB)
Conducted Power		34.560	34.560			(dBm)
DC	Transmiter Duty Cycle	(2)	(4)			(%)
DF	Use Duty Factor	50.0	50.0			(%)
Fluid Deviation from Target						
Δe	Permitivity	-5.95%	-5.95%			
Δσ	Conductivity	9.71%	9.71%			

Fluid Sensitivity Calculation (1g) IEC/IEEE 62209-1528 7.8.2						
Delta SAR = Ce * Δe + Cσ * Δσ (8)						
$Ce = (-0.0007854*f^3) + (0.009402*f^2) - (0.02742*f) - 0.2026$ (9)						
$C\sigma = (0.009804*f^3) - (0.08661*f^2) + (0.02981*f) + 0.7829$ (10)						
f	Frequency (GHz)	0.8619875	0.8619875			
Ce		-0.220	-0.220			
Cσ		0.751	0.751			
Ce * Δe		0.013	0.013			
Cσ * Δσ		0.073	0.073			
ΔSAR		0.086 (1)	0.086 (3)			(%)

Manufacturer's Tuneup Tolerance					
Measured Conducted Power	34.560	34.560			(dBm)
Rated Conducted Power	34.800	34.800			(dBm)
ΔP	-0.240	-0.240			(dB)

Transmitter Duty Cycle [Crest Factor]					
Transmiter Duty Cycle (DC)	100.0	100.0			(%)
CF (1/DC)	1.00 (2)	1.00 (4)			

SAR Adjustment for Fluid Sensitivity					
$SAR_1 = SAR_M$ X [ΔSAR]	9.480 (1)	3.150 (3)			(W/kg)

SAR Adjustment for Tuneup Tolerance					
$SAR_2 = SAR_1 + [\Delta P]$	**10.019**	**3.329**			(W/kg)

SAR Adjustment for Drift					
$SAR_3 = SAR_2 + [Drift]$	**10.515**	**3.407**			(W/kg)

SAR Adjustment for Transmitter Duty Cycle [Crest Factor]					
$SAR_4 = SAR_3$ x [CF]	10.515 (2)	3.407 (4)			(W/kg)

SAR Adjustment for Use Duty Factor					
$SAR_5 = SAR_4$ x [DF]	**5.257**	**1.703**			(W/kg)

reported 1g SAR					
reported SAR	**5.26**	**1.70**			(W/kg)

NOTES to Table
Scaling of the Maximum Measured SAR is based on the highest Face, Body and/or Head SAR measured of ALL test channels, configurations and accessories used during THIS evaluation. The Measured Fluid Deviation parameters apply only to deviation of the tissue equivalent fluids used at the frequencies which produced the highest measured SAR. The Measured Conducted Power applies to the Conducted Power measured at the frequencies producing the highest Face, Body and/or Head SAR. The Measured Drift is the SAR drift associated with that specific SAR measurement. The Reported SAR is the accumulation of all SAR Adjustments from the applicable steps above. The Plot ID is for indentification of the SAR Measurement Plo(s) in the Annexes of this report. NOTE: Some of the scaling factors in Steps 1 through 4may not apply and are identified by grayed fields.
Step 1
Per IEC/IEEE 62209-1528, FCC KDB 865664, ISED RSS-102 and ISED Notice 2012-DRS0529 . Scaling required only when Measured Fluid Deviation is greater than 5%. If the Measured Fluid Deviation is greater than 5%, The above table will be shown and will indicate the SAR scaling factor in percent (%). SAR is MULTIPLIED by this scaling factor only when the scaling factor is positive (+).
Step 2
Per IEC/IEEE 62209-1528, FCC KDB 865664 and ISED RSS-102. Scaling required only when the difference (Delta) between the Measured Conducted Power and the Manufacturer's Rated Conducted Power is (-) Negative. The absolute value of Delta is ADDED to the SAR.
Step 3
Per IEC/IEEE 62209-1528, FCC KDB 865664 and ISED RSS-102. Scaling required only when Measured Drift is (-) Negative. The absolute value of Measured Drift is added to Reported.
Step 4
Per IEC/IEEE 62209-1528, FCC KDB 865664 and ISED RSS-102. When the transmit Duty Cyle (DC) is less than 100%, the *reported* SAR must be scaled to 100% by the Crest Factor (CF). CF = 1/DC where DC is in decimal.
Step 5
The Reported SAR is the Maximum Final Adjusted SAR from the applicable steps above and are reported on the cover page of this report.

12.0 SAR EXPOSURE LIMITS

Table 12.1 Exposure Limits

SAR RF EXPOSURE LIMITS			
FCC 47 CFR§2.1093	**Health Canada Safety Code 6**	**General Population / Uncontrolled Exposure(4)**	**Occupational / Controlled Exposure(5)**
Spatial Average(1) (averaged over the whole body)		0.08 W/kg	0.4 W/kg
Spatial Peak(2) (Head and Trunk averaged over any 1 g of tissue)		1.6 W/kg	**8.0 W/kg**
Spatial Peak(3) (Hands/Wrists/Feet/Ankles averaged over 10 g)		4.0 W/kg	20.0 W/kg
(1) The Spatial Average value of the SAR averaged over the whole body.			
(2) The Spatial Peak value of the SAR averaged over any 1 gram of tissue, defined as a tissue volume in the shape of a cube and over the appropriate averaging time.			
(3) The Spatial Peak value of the SAR averaged over any 10 grams of tissue, defined as a tissue volume in the shape of a cube and over the appropriate averaging time.			
(4) Uncontrolled environments are defined as locations where there is potential exposure to individuals who have no knowledge or control of their potential exposure.			
(5) Controlled environments are defined as locations where there is potential exposure to individuals who have knowledge of their potential exposure and can exercise control over their exposure.			

13.0 DETAILS OF SAR EVALUATION

Table 13.1 Day Log

DAY LOG								
Date	Ambient Temp (° C)	Fluid Temp (° C)	Relative Humidity (%)	Barometric Pressure (kPa)	Fluid Dielectric	SPC	Test	Task
25 Jun 2024	23.0	24.4	41%	101.0	X	X	X	835H Fluids, SPC & SAR Testing

13.2 DUT Setup and Configuration

DUT Setup and Configuration
Overview
The XL-185P was evaluated for *Body* and *Face* SAR at the maximum conducted output power level, preset by the manufacturer, with a fully charged battery and configured to transmit on the 800 band at 816.9875MHz and 861.9875MHz.

13.3 DUT Positioning

DUT Positioning
Positioning
The DUT Positioner was securely fastened to the Phantom Platform. Registration marks were placed on the DUT and the Positioner to ensure consistent positioning of the DUT for each test evaluation.
FACE Configuration
The DUT was securely clamped into the device holder with the surface of the DUT normally held to the user's face facing the phantom. The device holder was adjusted to ensure that the horizontal axis of the DUT was parallel to the bottom of the phantom. A 25mm spacer block was used to set the separation distance between the DUT and the phantom to 25mm. When applicable and unless by design, the antenna of the DUT was prevented from sagging away from the phantom. The spacer block was removed before testing.
BODY Configuration
Body-Worn and Audio Accessories were affixed to the DUT in the manner in which they are intended to be used. The DUT, with its accessories, were securely clamped into the device holder with the surface of the DUT normally in contact with the body in direct contact with the bottom of the phantom, or 0mm separation from the DUT's accessory to the phantom. Body-Worn Accessory straps, linkages, etc. were positioned in a fashion resembling that for which they were intended to be used. Audio Accessory cables, etc., were positioned in a fashion resembling that for which they were intended to be used.
HEAD Configuration
This device is not intended to be held to the ear and was not tested in the HEAD configuration.
NEAR-BODY Configuration
This device does not support wireless routing and was not tested in the NEAR-BODY configuration (≤ 5mm).

13.4 General Procedures and Report

General Procedures and Reporting

General Procedures

The fluid dielectric parameters of the Active Tissue Simulating Liquid (TSL) were measured as described in this Section, recorded and entered into the DASY Measurement Server. Active meaning the TSL used during the SAR evaluation of the DUT. The temperature of the Active TSL was measured and recorded prior to performing a System Performance Check (SPC). An SPC was performed with the Active TSL prior to the start of the test series. The temperature of the Active TSL was measured throughout the day and the Active TSL temperature was maintained to ± 0.5°C. The Active TSL temperature was maintained to within ±1.0°C throughout the test series. TSL analysis and SPC were repeated when the Active TSL use exceeded 84 hours.

An Area Scan exceeding the length and width of the DUT projection was performed and the locations of all maximas within 2dB of the Peak SAR recorded. A Zoom Scan centered over the Peak SAR location(s) was performed and the 1g and 10g SAR values recorded. The resolutions of the Area Scan and Zoom Scan are described in the Scan Resolution table(s) in this Section. A Power Reference Measurement was taken at the phantom reference point immediately prior to the Area Scan. A Power Drift measurement was taken at the phantom reference point immediately following the Zoom Scan to determine the power drift. A Z-Scan from the *Maximum Distance to Phantom Surface* to the fluid surface was performed following the power drift measurement.

When 1-g SAR Estimates Based on Area Scans in accordance with KDB 447498 are udertaken, the 1-g SAR is estimated using an area scan and the SAR is ≤ 1.0 W/kg, then zoom scan is not requred for that test condition. A Zoom scan is required for the highest estimated SAR test configuration. For estimated 1-g SAR to be acceptable the test system has been validated by the manufacturer to obtain estimated SAR with an accuracy of ±10% and there shall be no warning messages from the SAR measurement system during the scan. For occupational exposure, zoom scan measurement are not required when the estimated 1-g SAR is ≤ 6.0 W/kg. When supported by the SAR measuring system, the 1-g SAR estimation procedures may also be used for 10-g SAR measurements by scaling the results according to the ratio of general population to occupational SAR limit.

Reporting

The 1g SAR, 10g SAR and power drift measurements are recorded in the SAR Measurement Summary tables in the SAR Measurement Summary Section of this report. The SAR values shown in the 100% DC (Duty Cycle) column are the SAR values reported by the SAR Measurement Server with the DUT operating at 100% transmit duty cycle. The SAR values in the 50% DC column have been scaled by 50% for 50% Push-To-Talk duty cycle compensation. These tables also include other information such as transmit channel and frequency, modulation, accessories tested and DUT-phantom separation distance.

In the Scaling of Maximum Measured SAR Section of this report, the highest measured SAR in the BODY and FACE configurations, within the entire scope of this assessment, are, when applicable, scaled for Fluid Sensitivity, Manufacturer's Tune-Up Tolerance, Simultaneous Transmission and Drift. With the exception of Duty Cycle correction/compensation, SAR values are ONLY scaled up, not down. The final results of this scaling is the *reported SAR* which appears on the Cover Page of this report.

13.5 Fluid Dielectric and Systems Performance Check

Fluid Dielectric and Systems Performance Check

Fluid Dielectric Measurement Procedure

The fluid dielectric parameters of the Tissue Simulating Liquid (TSL) are measured using the Open-Ended Coax Method connected to an Agilent 8753ET Network Analyzer connected to a measurement server running Aprel Dielectric Property Measurement System. A frequency range of ± 100MHz for frequencies > 300MHz and ± 50MHz for frequencies ≤ 300MHz with frequency step size of 10MHz is used. The center frequency is centered around the SAR measurement probe's calibration point for that TSL frequency range. A calibration of the setup is performed using a short-open-deionized water (at 23°C in a 300ml beaker) method. A sample of the TSL is placed in a 300ml beaker and the open-ended coax is submerged approximately 8mm below the fluid surface in the approximate center of the beaker. A check of the setup is made to ensure no air is trapped under the open-ended coax. The sample of TSL is measured and compared to the IEC/IEEE 62209-1528 targets for HEAD or BODY for the entire fluid measurement range. Fluid adjustment are made if the dielectric parameters are > 5% in range that the DUT is to be tested. If the adjustments fail to bring the parameters to ≤ 5% but are < 10%, the SAR Fluid Sensitivity as per IEC/IEEE 62209-1528 and FCC KDB 865664 are applied to the highest measured SAR. A TSL with dielectric parameters > 10% in the DUT test frequency range are not used.

Systems Performance Check

The fluid dielectric parameters of the Active TSL are entered into the DASY Measurement Server at each of the 10MHz step size intervals. Active meaning the TSL used during the SAR evaluation of the DUT. The DASY Measurement System will automatically interpolate the dielectric parameters for DUT test frequencies that fall between the 10MHz step intervals.

A Systems Performance Check (SPC) is performed in accordance with IEC/IEEE 62209-1528 "System Check" and FCC KDB 865664 "System Verification". A validation source, dipole or Confined Loop Antenna (CLA), is placed under the geometric center of the phantom and separated from the phantom in accordance to the validation source's Calibration Certificate data. A CW signal set to the frequency of the validate source's and SAR measurement probe's calibration frequency with a forward power set to the validation source's Calibration Certificate data power setting is applied to the validation source. An Area Scan is centered over the projection of the validation source's feed point and an Area Scan is taken. A Zoom Scan centered over the Peak SAR measurement of the Area Scan and the 1g and 10g SAR is measured. The measured 1g and 10g SAR is compared to the 1g and 10g SAR measurements from the validation source's Calibration Certificate. When required, the measured SAR is normalized to 1.0W and compared to the normalized SAR indicated on the validation source's Calibration Certificate. The SPC is considered valid when the measured and normalized SAR is ≤ 10% of the measured and normalize SAR of the validation source's Calibration Certificate.

The fluid dielectric parameters of the Active TSL and SPC are repeated when the Active TSL has been in use for greater than 84 hours or if the Active TSL temperature has exceed ± 1°C of the initial fluid analysis.

13.6 Scan Resolution 100MHz to 2GHz

Scan Resolution 100MHz to 2GHz	
Maximum distance from the closest measurement point to phantom surface: (Geometric Center of Probe Center)	**4 ± 1 mm**
Maximum probe angle normal to phantom surface. (Flat Section ELI Phantom)	**5° ± 1°**
Area Scan Spatial Resolution ΔX, ΔY	**15 mm**
Zoom Scan Spatial Resolution ΔX, ΔY	**7.5 mm**
Zoom Scan Spatial Resolution ΔZ (Uniform Grid)	**5 mm**
Zoom Scan Volume X, Y, Z	**30 mm**
Phantom	**ELI**
Fluid Depth	**150 ± 5 mm**
An Area Scan with an area extending beyond the device was used to locate the candidate maximas within 2dB of the global maxima.	
A Zoom Scan centered over the peak SAR location(s) determined by the Area Scan was used to determine the 1-gram and 10-gram peak spatial-average SAR	

13.7 Scan Resolution 2GHz to 3GHz

Scan Resolution 2GHz to 3GHz	
Maximum distance from the closest measurement point to phantom surface: (Geometric Center of Probe Center)	**4 ± 1 mm**
Maximum probe angle normal to phantom surface. (Flat Section ELI Phantom)	**5° ± 1°**
Area Scan Spatial Resolution ΔX, ΔY	**12 mm**
Zoom Scan Spatial Resolution ΔX, ΔY	**5 mm**
Zoom Scan Spatial Resolution ΔZ (Uniform Grid)	**5 mm**
Zoom Scan Volume X, Y, Z	**30 mm**
Phantom	**ELI**
Fluid Depth	**150 ± 5 mm**
An Area Scan with an area extending beyond the device was used to locate the candidate maximas within 2dB of the global maxima.	
A Zoom Scan centered over the peak SAR location(s) determined by the Area Scan was used to determine the 1-gram and 10-gram peak spatial-average SAR	

13.8 Scan Resolution 5GHz to 6GHz

Scan Resolution 5GHz to 6GHz	
Maximum distance from the closest measurement point to phantom surface: (Geometric Center of Probe Center)	**4 ± 1 mm**
Maximum probe angle normal to phantom surface. (Flat Section ELI Phantom)	**5° ± 1°**
Area Scan Spatial Resolution ΔX, ΔY	**10 mm**
Zoom Scan Spatial Resolution ΔX, ΔY	**4 mm**
Zoom Scan Spatial Resolution ΔZ (Uniform Grid)	**2 mm**
Zoom Scan Volume X, Y, Z	**22 mm**
Phantom	**ELI**
Fluid Depth	**100 ± 5 mm**
An Area Scan with an area extending beyond the device was used to locate the candidate maximas within 2dB of the global maxima.	
A Zoom Scan centered over the peak SAR location(s) determined by the Area Scan was used to determine the 1-gram and 10-gram peak spatial-average SAR	

14.0 MEASUREMENT UNCERTAINTIES

Per FCC KDB 865664 D01v01r04, 2.8.2, SAR Measurement Uncertainty is only required when the reported SAR is:

- ≥ 1.5 W/kg (General Population) 1g
- ≥ 3.75 W/kg (General Population) 10g Extremity
- ≥ 7.5 W/kg (Occupational) 1g
- ≥ 18.75 W/kg (Occupational) 10g Extremity

The highest reported SAR for this evaluation is < 7.5 W/kg Occupational 1g .

15.0 FLUID DIELECTRIC PARAMETERS

Table 15.1 Fluid Dielectric Parameters 835MHz HEAD TSL

FLUID DIELECTRIC PARAMETERS								Fluid Sensitivity Calculation IEC/IEEE 62209-1528 7.8.2			
Date: 25-Jun-2024		Fluid Temp: 24.4		Frequency: 835MHz		Tissue:	Head	ΔSAR	ΔSAR	SAR Correction Factor (1)	
Freq (MHz)		Test ε	Test σ (S/m)	Target ε	Target σ (S/m)	Deviation Permittivity	Deviation Conductivity	1g	10g	1g	10g
815.0000		39.9200	0.9700	41.6000	0.90	-4.04%	7.78%	0.068	0.053	1.000	1.000
816.9875	*	39.8008	0.9700	41.5901	0.90	-4.30%	7.78%	0.068	0.053	1.000	1.000
825.0000		39.3200	0.9700	41.5500	0.90	-5.37%	7.78%	0.070	0.054	1.000	1.000
835.0000		39.5300	0.9800	41.5000	0.90	-4.75%	8.89%	0.077	0.060	1.000	1.000
855.0000		39.1700	1.0100	41.5000	0.92	-5.61%	9.78%	0.086	0.066	1.000	1.000
861.9875	*	39.0303	1.0170	41.5000	0.93	-5.95%	9.71%	0.086	0.066	1.000	1.000
865.0000		38.9700	1.0200	41.5000	0.93	-6.10%	9.68%	0.086	0.066	1.000	1.000

*Channel Frequency Tested

16.0 SYSTEM VERIFICATION TEST RESULTS

Table 16.1 System Verification Results 835MHz HEAD TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
25 Jun 2024		835	D835V2		4d075
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	24.4	23	41%	250	15
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
39.53	41.50	-4.75%	0.98	0.90	8.89%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
2.68	2.46	8.94%	1.74	1.60	8.75%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
10.72	9.75	9.95%	6.96	6.34	9.78%

Prior to the SAR evaluations, system checks were performed on the planar section of the phantom and a SPEAG validation dipole in accordance with the procedures described in IEC/IEEE 62209-1528 and FCC KDB 865664,

The dielectric parameters of the simulated tissue mixture were measured prior to the system performance check using a Dielectric Probe Kit and a Network Analyzer.

The forward power was applied to the dipole and the system was verified to a tolerance of +10% from the system manufacturer's dipole calibration target SAR value.

The forward power applied was same forward power applied by the calibration lab during the calibration of this validation source.

17.0 SYSTEM VALIDATION SUMMARY

Table 17.1 System Validation Summary

SAR Validation SummaryChart							
Validation Date	Validation Source	Source S/N	Validation Frequency	Tissue	Linearity	Isotropy	Extrapolation
✓	= Complete			✓	= Not Required		
31-May-24	D835V2		835		✓	✓	✓

18.0 MEASUREMENT SYSTEM SPECIFICATIONS

Table 18.1 Measurement System Specifications

Measurement System Specification	
Specifications	
Positioner	Stäubli Unimation Corp. Robot Model: TX90XL
Repeatability	+/- 0.035 mm
No. of axis	6.0
Data Acquisition Electronic (DAE) System	
Cell Controller	
Processor	Intel(R) Core(TM) i7-7700
Clock Speed	3.60 GHz
Operating System	Windows 10 Professional
Data Converter	
Features	Signal Amplifier, multiplexer, A/D converter, and control logic
Software	Measurement Software: DASY6, V 6.4.0.12171 / DASY52 V52.10.0.1446
	Postprocessing Software: SEMCAD X, V14.6.10(Deployment Build)
Connecting Lines	Optical downlink for data and status info., Optical uplink for commands and clock
DASY Measurement Server	
Function	Real-time data evaluation for field measurements and surface detection
Hardware	Intel ULV Celeron CPU 400 MHz; 128 MB chip disk; 128 MB RAM
Connections	COM1, COM2, DAE, Robot, Ethernet, Service Interface
E-Field Probe	
Model	EX3DV4
Construction	Triangular core fiber optic detection system
Frequency	4 MHz to 10 GHz
Linearity	±0.2 dB (30 MHz to 10 GHz)
Phantom	
Type	ELI Elliptical Planar Phantom
Shell Material	Fiberglass
Thickness	2mm +/- .2mm
Volume	> 30 Liter
Phantom	
Type	SAM Flat Planar Phantom
Shell Material	Fiberglass
Thickness	2mm +/- .2mm
Volume	approx. 25 Liter
Phantom	
Type	MFP Flat Planar Phantom
Shell Material	Fiberglass
Thickness	2mm +/- .2mm
Volume	approx.8.1 Liter

Measurement System Specification (Continued)

Probe Specification

Construction:	Symmetrical design with triangular core; Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents (e.g. DGBE)
Calibration:	ISO/IEC 17025
Frequency:	4 MHz - 10 GHz; Linearity: ± 0.2 dB (30 MHz - 10 GHz)
Directivity:	± 0.1 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)
Dynamic Range:	10 μW/g to > 100 mW/g; Linearity: ± 0.2 dB (noise: typically <1 mW/g)
Dimensions:	Overall length: 337 mm; (tip: 20 mm) Tip diameter: 2.5 mm; Tip (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application:	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better than 30%

EX3DV4 E-Field Probe

Phantom Specification

The ELI V5.0 phantom is an elliptical planar fiberglass shell phantom with a shell thickness of 2.0mm +/- .2mm at the planar area. This phantom conforms to OET Bulletin 65, Supplement C, IEEE 1528-2013, IEC 62209-1 and IEC 62209-2.

ELI Phantom

Phantom Specification

The SAM V4.0 phantom is a flat planar fiberglass shell phantom with a shell thickness of 2.0mm +/- .2mm at the planar area. This phantom conforms to OET Bulletin 65, Supplement C, IEEE 1528-2013, IEC 62209-1 and IEC 62209-2.

SAM Phantom

Phantom Specification

The MFP V5.1C phantom is a flat planar fiberglass shell phantom with a shell thickness of 2.0mm +/- .2mm at the planar area. This phantom conforms to OET Bulletin 65, Supplement C, IEEE 1528-2013, IEC 62209-1 and IEC 62209-2.

MFP Phantom

Device Positioner Specification

The DASY device positioner has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65^{O}. The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections.

Device Positioner

19.0 TEST EQUIPMENT LIST

Table 19.1 Equipment List and Calibration

Test Equipment List				
DESCRIPTION	**ASSET NO.**	**SERIAL NO.**	**DATE CALIBRATED**	**CALIBRATION DUE**
Schmid & Partner DASY 6 System	-	-	-	-
-DASY Measurement Server	00158	1078	CNR	CNR
-Robot	00046	599396-01	CNR	CNR
-DAE4	00019	353	13-May-24	13-May-25
-EX3DV4 E-Field Probe	00357	7826	15-May-24	15-May-25
-D835V2 Validation Dipole	00217	4D075	10-May-24	10-May-27
ELI Phantom	00247	1234	CNR	CNR
SAM Phantom	00154	1033	CNR	CNR
MFP Phantom	00355	1177/2	CNR	CNR
HP 85070C Dielectric Probe Kit	00033	none	CNR	CNR
Gigatronics 8652A Power Meter	00007	1835801	10-May-22	10-May-25
Gigatronics 80701A Power Sensor	00186	1837002	COU	COU
Gigatronics 80334A Power Sensor	00237	1837001	10-May-22	10-May-25
HP 8753ET Network Analyzer	00134	US39170292	6-Jan-24	6-Jan-27
Rohde & Schwarz SMR20 Signal Generator	00006	100104	COU	COU
Amplifier Research 10W1000C Power Amplifier	00041	27887	CNR	CNR
Amplifier Research 5S1G4 Power Amplifier	00106	26235	CNR	CNR
Narda Directional Coupler 3020A	00064	-	CNR	CNR
Bipolar Power Supply 6299A	00086	1144A02155	CNR	CNR
DC-18G 10W 30db Attenuator	00102	-	COU	COU
R&S FSP40 Spectrum Analyzer	00241	100500	9-Aug-21	9-Aug-24
HP 8566B Spectrum Analyzer	00051	2747A055100	6-Jul-24	6-Jul-27
RF Cable-SMA	00311	-	CNR	CNR
HP Calibration Kit	00145	-	CNR	CNR

CNR = Calibration Not Required
SB=Stand By
COU = Calibrate on Use

20.0 FLUID COMPOSITION

Table 20.1 Fluid Composition 835MHz HEAD TSL

Tissue Simulating Liquid (TSL) Composition				835MHz Head
Component by Percent Weight				
Water	Sugar	Salt(1)	HEC(2)	Bacteriacide(3)
40.71	56.63	1.48	0.99	0.19

(1) Non-Iodinized
(2) **H**ydroxy**E**thyl-**C**ellulose: Sigma-Aldrich P/N 54290-500g
(3) Dow Chemical Dowicil 75 Antimicrobial Perservative

APPENDIX A – SYSTEM VERIFICATION PLOTS

DUT: D835V2 - SN4d075; Type: D835V2; Serial: SN4d075
Procedure Name: SPC 835H, Input 250mW Target=[2.214 - 2.46 - 2.706]1g, [1.44 - 1.60 - 1.76]10g 2

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.98 S/m; ε_r = 39.53; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 6/25/2024 3:03:34 PM

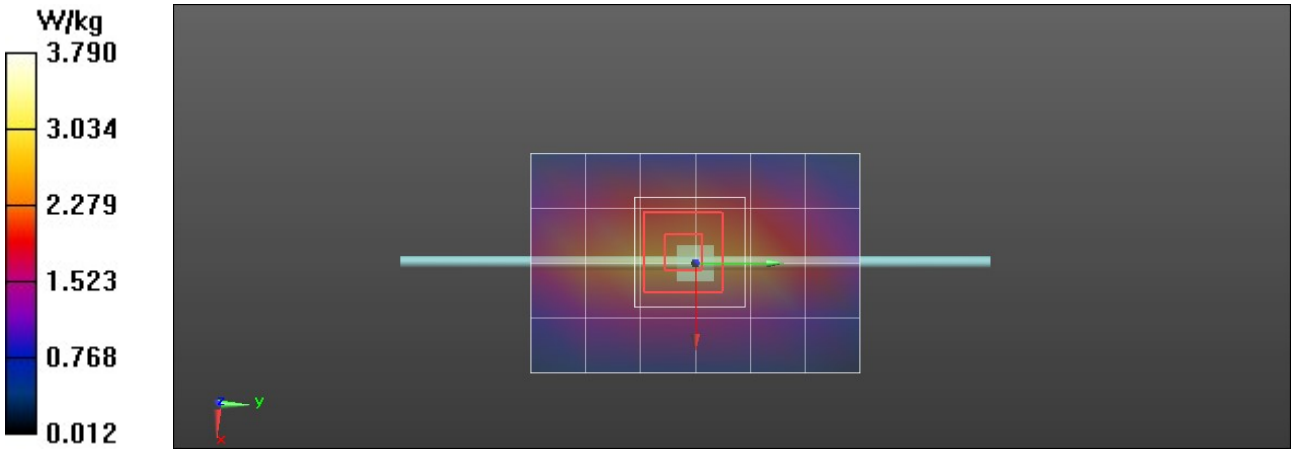
DASY5 Configuration:

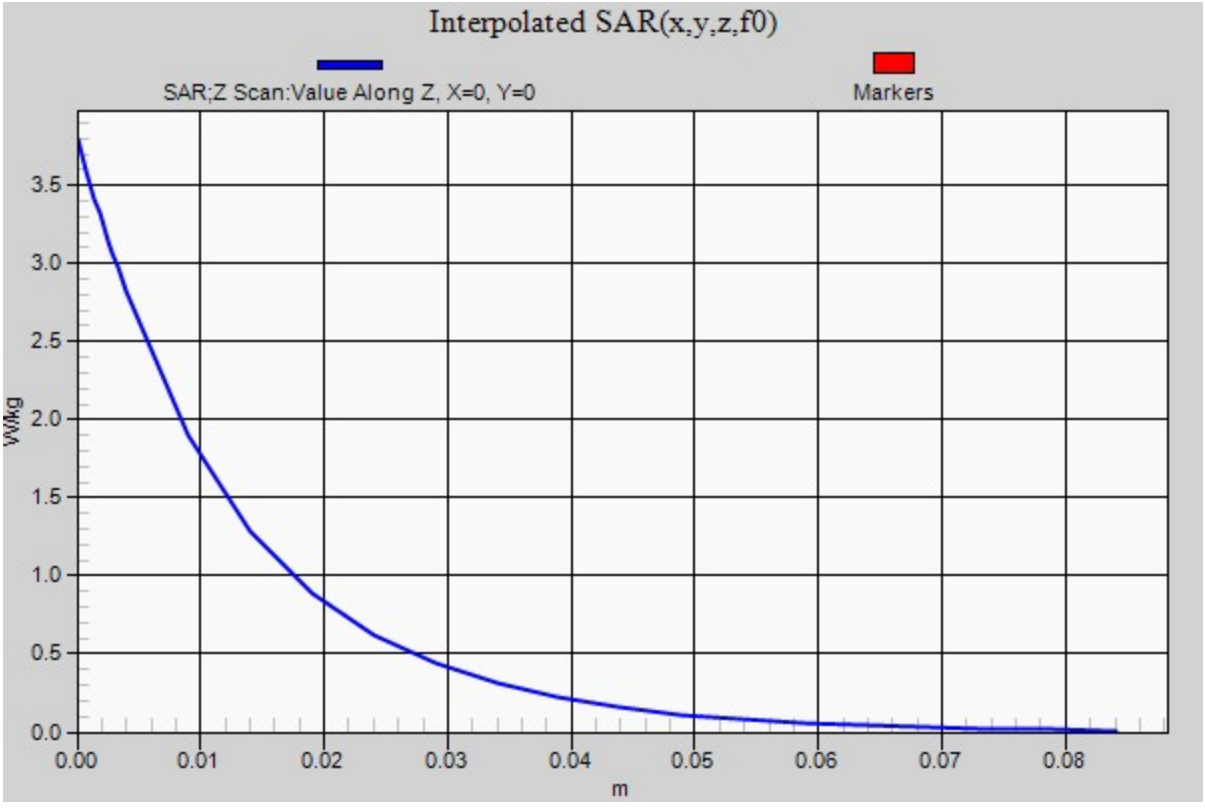
- Probe: EX3DV4 - SN7826; ConvF(9.27, 8.89, 9.16) @ 835 MHz; Calibrated: 5/15/2024
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 5/13/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax; Serial: 1234
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

SPC/SPC 835H, Input 250mW Target=[2.214 - 2.46 - 2.706]1g, [1.44 - 1.60 - 1.76]10g 2/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.82 W/kg

SPC/SPC 835H, Input 250mW Target=[2.214 - 2.46 - 2.706]1g, [1.44 - 1.60 - 1.76]10g 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 54.26 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.98 W/kg
SAR(1 g) = 2.68 W/kg; SAR(10 g) = 1.74 W/kg
Ratio of SAR at M2 to SAR at M1 = 66.8%
Maximum value of SAR (measured) = 2.89 W/kg

SPC/SPC 835H, Input 250mW Target=[2.214 - 2.46 - 2.706]1g, [1.44 - 1.60 - 1.76]10g 2/Z Scan (1x1x28): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Penetration depth = 12.91 (12.56, 13.49) [mm]
Maximum value of SAR (interpolated) = 3.79 W/kg





APPENDIX B – MEASUREMENT PLOTS OF MAXIMUM MEASURED SAR

B12/B12Z

DUT: Harris XL-185P ; Type: PTT; Serial: E40340000015
Procedure Name: B12-L3Harris XL-185P, LMRS band, 862 MHz, Body Config, T9,P2,B1,A1

Communication System: UID 0, CW (0); Frequency: 861.987 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 861.987 MHz; σ = 1.017 S/m; ε_r = 39.03; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 6/26/2024 3:06:13 PM

DASY5 Configuration:

- Probe: EX3DV4 - SN7826; ConvF(9.14, 8.62, 8.9) @ 861.987 MHz; Calibrated: 5/15/2024
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 5/13/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax; Serial: 1234
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

835H/B12-L3Harris XL-185P, LMRS band, 862 MHz, Body Config, T9,P2,B1,A1/Area Scan (5x14x1): Measurement grid: dx=15mm, dy=15mm

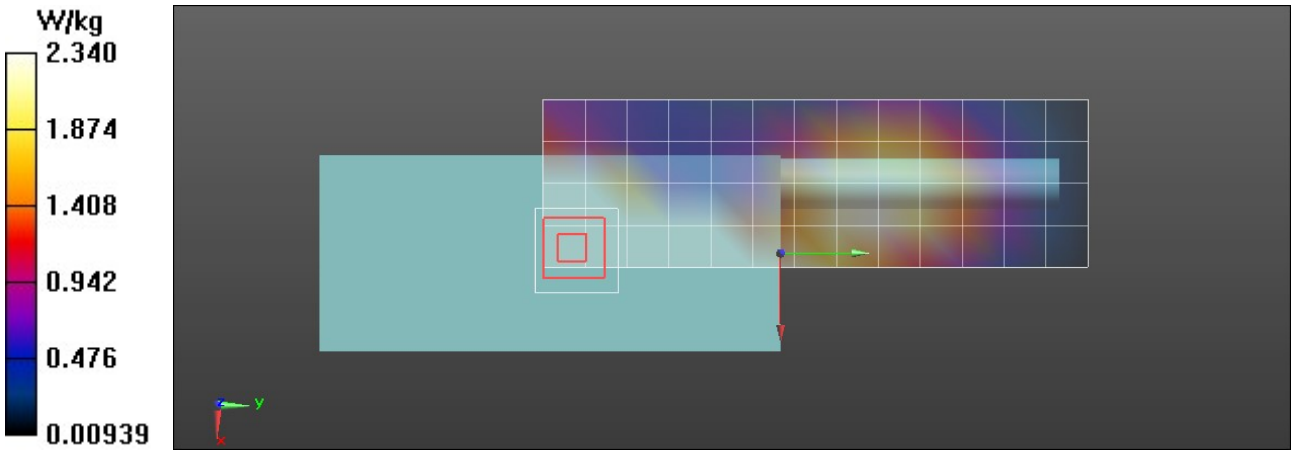
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 11.7 W/kg

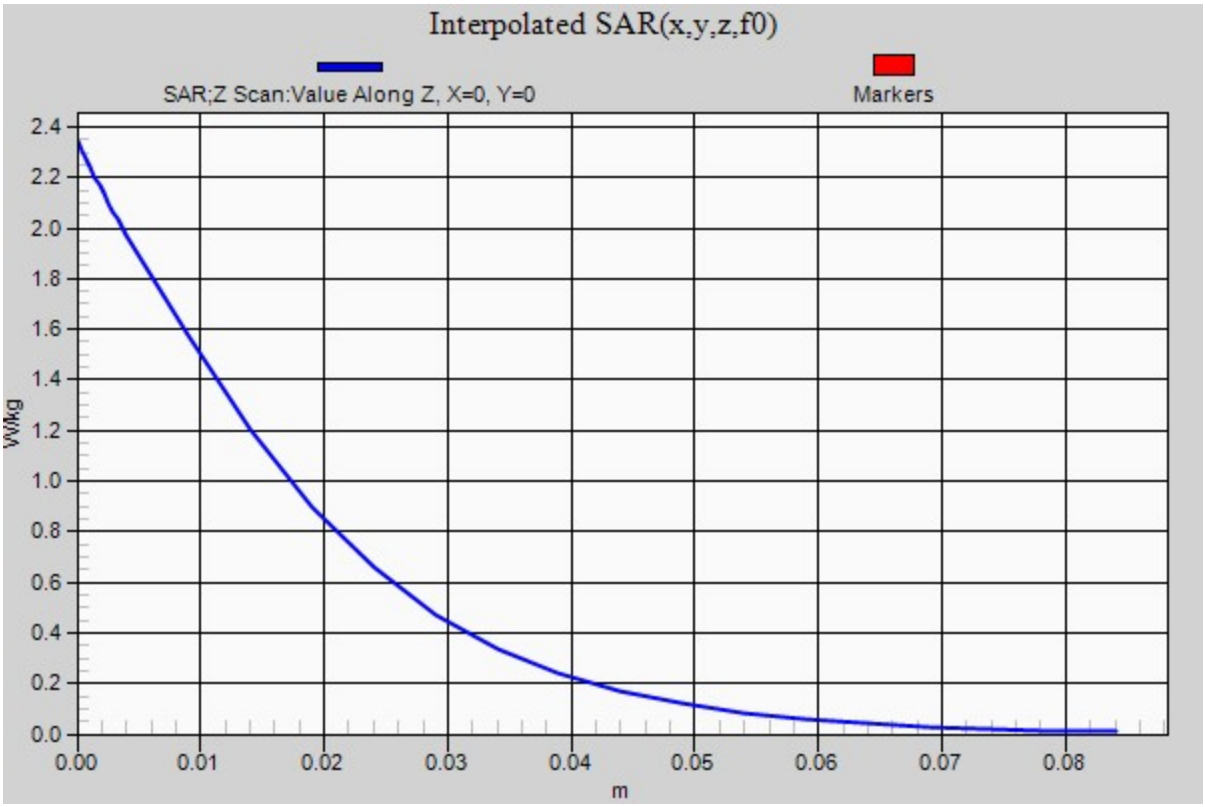
835H/B12-L3Harris XL-185P, LMRS band, 862 MHz, Body Config, T9,P2,B1,A1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 44.06 V/m; Power Drift = -0.21 dB
Peak SAR (extrapolated) = 13.4 W/kg
SAR(1 g) = 9.48 W/kg; SAR(10 g) = 6.25 W/kg
Smallest distance from peaks to all points 3 dB below = 16.5 mm
Ratio of SAR at M2 to SAR at M1 = 71.1%

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 10.1 W/kg

835H/B12-L3Harris XL-185P, LMRS band, 862 MHz, Body Config, T9,P2,B1,A1/Z Scan (1x1x28): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 18.70 (22.37, 16.92) [mm]
Maximum value of SAR (interpolated) = 2.34 W/kg





F12/F12Z

DUT: Harris XL-185P ; Type: PTT; Serial: E40340000015
Procedure Name: F12-L3Harris XL-185P, LMRS band, 862 MHz, Face Config, T9,P2

Communication System: UID 0, CW (0); Frequency: 861.987 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 861.987 MHz; σ = 1.017 S/m; ε_r = 39.03; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 6/26/2024 4:30:53 PM

DASY5 Configuration:

- Probe: EX3DV4 - SN7826; ConvF(9.14, 8.62, 8.9) @ 861.987 MHz; Calibrated: 5/15/2024
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 5/13/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax; Serial: 1234
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

835H/F12-L3Harris XL-185P, LMRS band, 862 MHz, Face Config, T9,P2/Area Scan (5x14x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.39 W/kg

835H/F12-L3Harris XL-185P, LMRS band, 862 MHz, Face Config, T9,P2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 33.75 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 4.05 W/kg
SAR(1 g) = 3.15 W/kg; SAR(10 g) = 2.34 W/kg
Ratio of SAR at M2 to SAR at M1 = 75.5%

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.31 W/kg

835H/F12-L3Harris XL-185P, LMRS band, 862 MHz, Face Config, T9,P2/Z Scan (1x1x28): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 16.21 (16.81, 16.21) [mm]
Maximum value of SAR (interpolated) = 1.40 W/kg