Test Report Serial Number:	45461759 R3.0
Test Report Date:	11 January 2023
Project Number:	1605

SAR Test Report - Class II Permissive Change

Applicant:

L3HARRIS™
FAST. FORWARD.

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

Maximum *reported* 1g SAR			
TNF	FACE:	2.81	W/kg
	BODY:	5.04	
PCS	FACE:	<0.1	
	BODY:	0.69	
DTS		<0.1	
DSS		<0.1	
NII		<0.1	
Simultaneous Face:		2.89	
Simultaneous Body:		5.73	
Occupationnal Limit:		8.00	

FCC ID:	ISED Registration Number
OWDTR-0145-E	**3636B-0145**
Product Name / PMN	Product Model Number / HVIN
XL-200P, XL-185P, XL-150P	**see Section 2.0**

In Accordance With:

FCC 47 CFR §2.1093

Radiofrequency Radiation Exposure Evaluation: Portable Devices

IC RSS-102 Issue 5

Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

Approved By:

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

Test Lab Certificate: 2470.01 **IC Registration 3874A** **FCC Registration: 714830**

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1.0 REVISION HISTORY

Revision History					
Samples Tested By:	Ben Hewson Trevor Whillock		**Date(s) of Evaluation:**		29 August - 17 October, 2022
Report Prepared By:	Art Voss, P.Eng.		**Report Reviewed By:**		Art Voss
Report Revision	**Description of Revision**		**Revised Section**	**Revised By**	**Revision Date**
0.1	Draft		n/a	Art Voss	14 October 2022
1.0	Initial Release		n/a	Art Voss	20 October 2022
2.0	Clerical Edits		n/a	Art Voss	15 December 2022
3.0	Revised Reported SAR		Cover	Art Voss	11 January 2023
	Corrected SPC Target Value		16		
	Added SPC and Fluid Data for 19 September 2022		15, 16		
	Corrected Maximim Face SAR and Simultaneous Evaluation		10, 11		

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2.0 APPLICANT AND DEVICE INFORMATION

Client Information		
Applicant Name	Harris Corporation	
Applicant Address	221 Jefferson Ridge Parkway	
	Lynchburg, VA, 24501	
	USA	
DUT Information		
Device Identifier(s):	FCC ID:	OWDTR-0145-E
	ISED:	3636B-0145
Device Marketing Name / PMN:	XL-200P, XL-185P, XL-150P	
Device Model(s) / HVIN:	**Full Keypad**	**Partial Keypad**
	XL-PFM2M	XL-PPM2M
	XL-PFM2M-L	XL-PPM2M-L
	XL-PFM2M-NA	XL-PPM2M-NA
	XL-PFM2M-ANG	
	XL-PFM2Y	XL-PPM2Y
	XL-PFM2Y-L	XL-PPM2Y-L
	XL-PFM2Y-NA	XL-PPM2Y-NA
	XL-PFM2P	XL-PPM2P
	XL-PFM2P -L	XL-PPM2P -L
	XL-PFM2P-NA	XL-PPM2P-NA
	XS-PFS2M	XS-PPS2M
	XS-PFS2M -L	XS-PPS2M -L
	XS-PFS2M-NA	XS-PPS2M-NA
	XS-PFS2Y	XS-PPS2Y
	XS-PFS2Y -L	XS-PPS2Y -L
	XS-PFS2Y-NA	XS-PPS2Y-NA
	XS-PFS2P	XS-PPS2P
	XS-PFS2P -L	XS-PPS2P -L
	XS-PFS2P-NA	XS-PPS2P-NA
	XV-PFS2M	
	XV-PFS2M -L	
	XV-PFS2M-NA	
	XL-PFM2T-L	
	XS-PFS2T-L	

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Client Information	
Applicant Name	**Harris Corporation**
Applicant Address	221 Jefferson Ridge Parkway
	Lynchburg, VA, 24501
	USA
DUT Information	
Test Sample Serial No.:	A40336000023
Equipment Class (FCC):	Licensed Non-Broadcast Transmitter Held to Face (TNF) FCC Part 90 - LMRS
Equipment Class (ISED):	Land Mobile Radio - Portable (27.41-960MHz) RSS-119
Transmit Frequency Range (FCC):	VHF Band: 136 - 174MHz
	UHF Band: 378 - 522MHz
	700 Band: 769 - 775MHz, 799 - 804MHz
	800 Band: 806 - 824MHz, 851 - 870MHz
Transmit Frequency Range (ISED):	VHF Band: 138 - 144MHz, 148 - 149.9MHz, 150.05 - 174MHz
	UHF Band: 406.1 - 430MHz, 450 - 470MHz
	700 Band: 768 - 776MHz, 798-806MHz
	800 Band: 806 - 824MHz, 851 - 870MHz
Number of Channels:	Programmable
Transmitter Rated Power (Max): Including Tune-Up Tolerance	VHF Band: 6.0W (37.8dBm) +/-0.2dB
	UHF Band: 5W (37.0dBm) +/-0.2dB
	700 Band: 3W (34.8dBm) +/-0.2dB
	800 Band: 3.2W (35.0dBm)+/-0.2dB
Number of Channels:	Programmable
Transmitter Rated Power Including Tune-Up Tolerance:	VHF: 37.8dBm +/- 0.2dB
	UHF: 37.0dBm +/- 0.2dB
	BT: 0.0016W (2dBm)
	WLAN 2.4G: 0.0083W (9.2dBm)
	WLAN 5G: 5180-5240MHz: 0.015W (11.76dBm)
	WLAN 5G: 5745-5825MHz: 0.003W (4.77dBm)
DUT Power Source:	7.4VDC Li-Ion Rechargeable Battery, AA Alkaline Battery
Deviation(s) from standard/procedure:	None
Modification of DUT:	None

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Integrated Module Information		
Module Manufacturer:	Texas Instruments Inc.	
Device Identifier(s):	**FCC ID:**	**Z64-WL18DBMOD**
	IC ID:	**451I-WL18DBMOD**
Device Type:	WiFi and BlueTooth Module	
Module Device Model(s) / HVIN:	WL1837MODGI	
Equipment Class (FCC):	Digital Transmission System (DTS)	
	Part 15 Spread Spectrum Transmitter (DSS)	
	Unlicensed National Information Infrastructure Transmitter (U-NII)	
Equipment Class (ISED):	Wireless Local Area Network Device	
Transmit Frequency Range: (1)	WiFi : 2412-2462MHz	
	U-NII-1: 5180 - 5240MHz, U-NII-3: 5745 - 5825MHz	
	Bluetooth: 2402 - 2480MHz	
Manuf. Max. Rated Output Power:	WiFi: 243.2mW (23.85dBm)	
	U-NII-1: 49.9mW (16.98dBm), U-NII-3: 61.4mW (17.88dBm)	
	Bluetooth: 14.6mW (11.6dBm)	

Integrated Module Information		
Module Manufacturer:	Sierra Wireless Inc.	
Device Identifier(s):	**FCC ID:**	**N7NEM75S**
	IC ID:	**2417C-EM75S**
Device Type:	LTE Module(3)	
Module Device Model(s) / HVIN:	EM7565-9	
Equipment Class (FCC):	PCS Licensed Transmitter	
Equipment Class (ISED):	Cellular Network - Other Portable Device	
Transmit Frequency Range: (1)(2)	LTE Band 2: 1850 - 1910MHz	
	LTE Band 4: 1710 - 1755MHz	
	LTE Band 5: 824 - 849MHz	
	LTE Band 7: 2500 - 2570MHz	
	LTE Band 12: 699 - 716MHz	
	LTE Band 13: 777-787MHz	
	LTE Band 14: 788 - 798MHz	
	LTE Band 17: 704 - 716MHz	
	LTE Band 26: 814 - 849MHz	
	LTE Band 66: 1710 - 1780MHz	
Manuf. Max. Rated Output Power:	282mW (24.5dBm)	

(1) The transmit modes and/or frequency bands indicated are those utilized by the host integrator and may not be indicative of all modes and/or frequency bands available for the modular device.
(2) Uplink frequencies.
(3) LTE: 3GPP Release 11. Carrier Aggregation supported for downlink Only.
Note: Per FCC KDB 941225, a PAG is not required for downlink-only carrier aggregation.

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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 and Innovation, Scientific and Economic Development (ISED) Canada rules 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.

As per FCC 47 CFR Part §2.1091 and §2.1093, an RF Exposure evaluation report is required for this *Equipment* and the results of the RF Exposure evaluation appear in this report.

Device Description:

The XL-200P, FCC ID: **OWDTR-0145-E** , IC ID: **3636B-0145**, is a multi-band VHF/UHF/7/800 Push-To-Talk (PTT), Licensed Mobile Radio Service (LMRS) transceiver intended for Occupational Use. This "host" employs WiFi, Bluetooth and LTE transceivers.

Application:

This is an application for a Class II Permissive Change.

Scope:

The scope of this investigation is to evaluate the SAR for intended use applications. It will include an extensive evaluation of the LMR, LTE, WiFi and Bluetooth transmitter and all simultaneous transmission conditions that can occur with this host device. The analysis of the Standalone and Simultaneous Transmission SAR if found in Section 11.0 of this report.

The Test Plan developed for this evaluation is based on the required test channels and configurations which produced the highest worst case SAR from previous evaluations of the XL-200P and where applicable, SAR test reduction and/or SAR test exclusion may be utilized. The DUT was evaluated for SAR at the maximum tune up tolerance and conducted output power level, preset by the manufacturer and in accordance with the procedures described in IEC/IEEE 62209-1528, FCC KDB 447498 D01v06r02, 643646, 248227, and RSS 102.

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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 Title 47: Part 2.1093:	Code of Federal Regulations Telecommunication Radiofrequency Radiation Exposure Evaluation: Portable Devices
Health Canada Safety Code 6 (2015)	Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3kHz to 300GHz
Industry Canada Spectrum Management & Telecommunications Policy RSS-102 Issue 5:	Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
IEEE International Committee on Electromagnetic Safety IEC/IEEE 62209-1528	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 KDB 248227 D01v02r02	SAR Guidance for IEEE 802.11 (WiFi) Transmitters
FCC KDB KDB 447498 D01v06	Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies
FCC KDB KDB 643646 D01v01r03	SAR Test Reduction Considerations for Occupational PTT Radios
FCC KDB KDB 690783 D01v01r03	SAR Listings on Equipment Authorization Grants
FCC KDB KDB 865664 D01v01r04	SAR Measurement Requirements for 100MHz to 6GHz
* When the issue number or issue date is omitted, the latest version is assumed.	

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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 Name / PMN:	
Harris Corporation	XL-200P	
Standard(s) Applied:	**Measurement Procedure(s):**	
FCC 47 CFR §2.1093 Health Canada's Safety Code 6	FCC KDB 865664, FCC KDB 447498, FCC KDB 643646, FCC KDB 248227 Industry Canada RSS-102 Issue 5 IEC/IEEE 62209-1528	
Reason For Issue:	**Use Group:**	**Limits Applied:**
☐ New Certification ☐ Class I Permissive Change ☒ Class II Permissive Change	☐ General Population / Uncontrolled ☒ Occupational / Controlled	☐ 1.6W/kg - 1g Volume ☒ 8.0W/kg - 1g Volume ☐ 4.0W/kg - 10g Volume
Reason for Change:		**Date(s) Evaluated:**
Class II Permissive Change		29 August - 17 October, 2022

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.	Art Voss, P.Eng. Technical Manager Celltech Labs Inc. 14 October 2022 2022 Date PROFESSIONAL PROVINCE OF A. F. VOSS # 31327 BRITISH COLUMBIA ENGINEER

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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

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7.0 RF CONDUCTED POWER MEASUREMENT

Table 7.1 Conducted Power Measurements TNF - VHF

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)
VHF	136.0125	CW	37.99	38.00	6.31	-0.01	100.0	1.00	
VHF	138.0125	CW	38.00	38.00	6.31	0.00	100.0	1.00	
VHF	141.0125	CW	37.98	38.00	6.31	-0.02	100.0	1.00	
VHF	144.0125	CW	37.99	38.00	6.31	-0.01	100.0	1.00	y
VHF	148.0125	CW	**38.00**	38.00	6.31	0.00	100.0	1.00	y
VHF	150.0125	CW	37.98	38.00	6.31	-0.02	100.0	1.00	
VHF	153.8000	CW	37.99	38.00	6.31	-0.01	100.0	1.00	
VHF	162.0125	CW	37.97	38.00	6.31	-0.03	100.0	1.00	
VHF	168.0000	CW	37.97	38.00	6.31	-0.03	100.0	1.00	
VHF	173.9875	CW	38.00	38.00	6.31	0.00	100.0	1.00	

(1) Includes Tune-Up Tolerance

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Table 7.2 Conducted Power Measurements TNF - UHF

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)
UHF	378.0125	CW	36.98	37.20	5.25	-0.22	100.0	1.00	Y
UHF	406.1000	CW	**37.20**	37.20	5.25	0.00	100.0	1.00	y
UHF	418.0125	CW	37.09	37.20	5.25	-0.11	100.0	1.00	y
UHF	430.0125	CW	37.01	37.20	5.25	-0.19	100.0	1.00	
UHF	450.0125	CW	37.08	37.20	5.25	-0.12	100.0	1.00	y
UHF	454.0125	CW	37.07	37.20	5.25	-0.13	100.0	1.00	
UHF	456.0125	CW	36.98	37.20	5.25	-0.22	100.0	1.00	
UHF	459.0125	CW	36.93	37.20	5.25	-0.27	100.0	1.00	
UHF	459.9750	CW	36.90	37.20	5.25	-0.30	100.0	1.00	
UHF	470.0125	CW	36.95	37.20	5.25	-0.25	100.0	1.00	
UHF	511.9875	CW	37.08	37.20	5.25	-0.12	100.0	1.00	Y
UHF	521.9875	CW	36.98	37.20	5.25	-0.22	100.0	1.00	

(1) Includes Tune-Up Tolerance

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Table 7.3 Conducted Power Measurements TNF – 7/800 Band

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	768.0125	CW	34.76	35.00	3.16	-0.24	100.0	1.00	y
7/800	769.0125	CW	34.77	35.00	3.16	-0.23	100.0	1.00	
7/800	771.0125	CW	34.72	35.00	3.16	-0.28	100.0	1.00	
7/800	775.0125	CW	34.80	35.00	3.16	-0.20	100.0	1.00	
7/800	775.9875	CW	**34.80**	35.00	3.16	-0.20	100.0	1.00	y
7/800	798.0125	CW	34.76	35.00	3.16	-0.24	100.0	1.00	y
7/800	799.0125	CW	34.76	35.00	3.16	-0.24	100.0	1.00	
7/800	801.0125	CW	34.78	35.00	3.16	-0.22	100.0	1.00	
7/800	805.0125	CW	34.78	35.00	3.16	-0.22	100.0	1.00	
7/800	805.9875	CW	34.74	35.00	3.16	-0.26	100.0	1.00	
7/800	806.0125	CW	34.74	35.00	3.16	-0.26	100.0	1.00	
7/800	806.0250	CW	**35.20**	35.20	3.31	0.00	100.0	1.00	y
7/800	815.0000	CW	35.20	35.20	3.31	0.00	100.0	1.00	
7/800	815.9875	CW	35.20	35.20	3.31	0.00	100.0	1.00	
7/800	823.9875	CW	35.20	35.20	3.31	0.00	100.0	1.00	y
7/800	851.0125	CW	35.20	35.20	3.31	0.00	100.0	1.00	
7/800	851.0250	CW	35.12	35.20	3.31	-0.08	100.0	1.00	
7/800	856.0250	CW	35.15	35.20	3.31	-0.05	100.0	1.00	y
7/800	860.0000	CW	35.15	35.20	3.31	-0.05	100.0	1.00	y
7/800	860.9875	CW	35.20	35.20	3.31	0.00	100.0	1.00	y

(1) Includes Tune-Up Tolerance

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Table 7.4 Conducted Power Measurements PCS – LTE Band 2

LTE Conducted Power Measurement									
LTE Band:		2	Channel Bandwidth:						20MHz
Lower Band Edge		1850(MHz)	Upper Band Edge:						1910(MHz)
Modulation	RB Size	RB Offset	Low 18700 1860(MHz)		Mid 18900 1880(MHz)		High 19100 1900(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)						RB Pos
				ID		ID		ID	
QPSK	1	0	24.10		24.32	RB1Y	24.44	RB1X	Low
	1	50	24.12		24.21		24.31		Mid
	1	99	24.13	RB1Z	24.20		24.15		High
	50	0	23.79	RB50Z	23.79	RB50Y	24.01	RB50X	Low
	50	50	23.74		23.78		23.85		High
	100	0	23.78		23.73		23.98	RB100X	Mid
16QAM	1	0	24.09		24.05		23.90		Low
	1	50	24.11	x	23.93		24.22	x	Mid
	1	99	24.11		23.95	x	24.09		High
	50	0	23.78	x	23.77	x	23.98	x	Low
	50	50	23.70		23.77		23.80		High
	100	0	22.74		22.75		23.00	x	Mid

= Required for highest conducted power
= Required if SAR > 0.8W/kg
= Required if SAR > 0.8W/kg or conducted power > conducted power of 1RB and 50% RB
= Required if SAR > 1.45W/kg or conducted power > 1/2dB of QPSK

Note: Device does not support 64QAM

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Table 7.5 Conducted Power Measurements PCS – LTE Band 4

LTE Conducted Power Measurement									
LTE Band:		4	Channel Bandwidth:						20MHz
Lower Band Edge		1710(MHz)	Upper Band Edge:						1755(MHz)
Modulation	RB Size	RB Offset	Low 20050 1720(MHz)		Mid 20175 1732.5(MHz)		High 20300 1745(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)						RB Pos
				X		X		X	
QPSK	1	0	23.96	x	23.89	x	24.03	x	Low
	1	50	23.85		23.75		23.88		Mid
	1	99	23.90		23.78		23.95		High
	50	0	23.92	x	23.87	x	23.99	x	Low
	50	50	23.83		23.86		23.94		High
	100	0	22.88		22.89		23.01	x	Mid
16QAM	1	0	23.20	x	23.18	x	23.61	x	Low
	1	50	23.05		23.08		23.49		Mid
	1	99	23.12		23.12		23.56		High
	50	0	22.90	x	22.85	x	22.95	x	Low
	50	50	22.81		22.85		22.93		High
	100	0	21.95		21.90		22.11	x	Mid

x = Required Test Channel

= Required for highest conducted power

= Required if SAR > 0.8W/kg or conducted power > 1 and 50% RB

= Required if SAR > 1.45W/kg oe conducted power > 1/2dB of QPSK

Note: Device does not support 64QAM

Note: LTE Band 66 encompasses the entire LTE Band 4, testing of LTE Band 4 is not required.

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Table 7.6 Conducted Power Measurements PCS – LTE Band 5

LTE Conducted Power Measurement									
LTE Band:		5	Channel Bandwidth:						10MHz
Lower Band Edge		824(MHz)	Upper Band Edge:						849(MHz)
Modulation	RB Size	RB Offset	Low 20450 829(MHz)		Mid 20525 836.5(MHz)		High 20600 844(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)						RB Pos
				ID		ID		ID	
QPSK	1	l	24.21		24.47	RB1X	24.32		Low
	1	m	24.25		24.43		24.25	RB1Z	Mid
	1	h	24.31	RB1Y	24.45		24.21		High
	25	L	24.15		24.30	RB25X	24.12	RB25Z	Low
	25	H	24.20	RB25Y	24.26		24.10		High
	50	M	24.20	RB50X	24.17		24.13		Mid
16QAM	1	0	23.50		23.83	x	23.57	x	Low
	1	25	23.53		23.75		23.53		Mid
	1	49	23.61	x	23.75		23.52		High
	25	0	24.08		24.18	x	24.10	x	Low
	25	25	24.18	x	24.15		24.07		High
	50	0	23.25	x	23.21		23.15		Mid

= Required for highest conducted power
= Required if SAR > 0.8W/kg
= Required if SAR > 0.8W/kg AND IF THE conducted power > conducted power of that of the 1RB and 50%
= Required if SAR > 1.45W/kg or conducted power > 1/2dB of QPSK

Note: Device does not support 64QAM

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Table 7.7 Conducted Power Measurements PCS – LTE Band 7

LTE Conducted Power Measurement									
LTE Band:		7	Channel Bandwidth:						20MHz
Lower Band Edge		2500(MHz)	Upper Band Edge:						2570(MHz)
Modulation	RB Size	RB Offset	Low 20850 2510(MHz)		Mid 21100 2535(MHz)		High 21350 2560(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)						RB Pos
				ID		ID		ID	
QPSK	1	0	24.31		24.47	RB1Xx	24.34	RB1Z	Low
	1	50	24.21		24.31		24.21		Mid
	1	99	24.36	RB1Y	24.21		24.18		High
	50	0	24.29		24.33		24.32	RB50Z	Low
	50	50	24.35	RB50Y	24.35	RB50X	24.14		High
	100	0	24.28	RB100X	24.26		24.23		Mid
16QAM	1	0	23.09		23.18	x	23.30	x	Low
	1	50	23.12		23.11		23.00		Mid
	1	99	23.17	x	23.10		22.77		High
	50	0	22.75		22.75		22.80	x	Low
	50	50	22.81	x	22.84	x	22.63		High
	100	0	21.91	x	21.87		21.72		Mid

= Required for highest conducted power
= Required if SAR > 0.8W/kg
= Required if SAR > 0.8W/kg or conducted power > conducted power of 1RB and 50% RB
= Required if SAR > 1.45W/kg or conducted power > 1/2dB of QPSK

Note: Device does not support 64QAM

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Table 7.8 Conducted Power Measurements PCS – LTE Band 12

LTE Conducted Power Measurement									
LTE Band:		12	Channel Bandwidth:						10MHz
Lower Band Edge		699(MHz)	Upper Band Edge:						716(MHz)
Modulation	RB Size	RB Offset	Low 23060 704(MHz)		Mid 23095 707.5(MHz)		High 23130 711(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)						RB Pos
				ID		ID		ID	
QPSK	1	L	24.32	RB1Y	24.29		23.39		Low
	1	M	24.32		24.33		23.46		Mid
	1	H	24.31		24.50	RB1 X	23.50	RB1Z	High
	25	L	23.90	RB25Z	23.85		23.82		Low
	25	H	23.86		24.08	RB20X	23.97	RB25Y	High
	50	L	23.90		23.92	RB50X	23.90		Mid
16QAM	1	0	23.50		23.85		23.37		Low
	1	25	23.40		23.87	x	23.46		Mid
	1	49	23.95	x	24.00		23.48	x	High
	25	0	23.88	x	23.35		23.82		Low
	25	25	23.86		23.57	x	23.97	x	High
	50	0	22.94	x	22.95		22.95		Mid

= Required for highest conducted power
= Required if SAR > 0.8W/kg
= Required if SAR > 0.8W/kg or conducted power > conducted power of 1RB and 50% RB
= Required if SAR > 1.45W/kg or conducted power > 1/2dB of QPSK

Note: Device does not support 64QAM

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Table 7.9 Conducted Power Measurements PCS – LTE Band 13

LTE Conducted Power Measurement									
LTE Band:		13	Channel Bandwidth:						10MHz
Lower Band Edge		777(MHz)	Upper Band Edge:						787(MHz)
Modulation	RB Size	RB Offset	Low 23230 782(MHz)		Mid 23230 782(MHz)		High 23230 782(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)						RB Pos
				ID		ID		ID	
QPSK	1	l	n/a		24.21	RB1X	n/a		Low
	1	m	n/a		24.07	RB1Y	n/a		Mid
	1	h	n/a		23.97	RB1Z	n/a		High
	25	L	n/a		23.23	RB25Y	n/a		Low
	25	H	n/a		23.97	RB25X	n/a		High
	50	0	n/a		23.24	RB50X	n/a		Mid
16QAM	1	0			23.78				Low
	1	25			23.86	x			Mid
	1	49			23.60				High
	25	0			23.20	x			Low
	25	25			23.10				High
	50	0			22.21	x			Mid

= Required for highest conducted power
= Required if SAR > 0.8W/kg
= Required if SAR > 0.8W/kg or conducted power > conducted power of 1RB and 50% RB
= Required if SAR > 1.45W/kg or conducted power > 1/2dB of QPSK

Note: Device does not support 64QAM

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Table 7.10 Conducted Power Measurements PCS – LTE Band 14

LTE Conducted Power Measurement									
LTE Band:		14	Channel Bandwidth:						10MHz
Lower Band Edge		788(MHz)	Upper Band Edge:						798(MHz)
Modulation	RB Size	RB Offset	Low 23330 793(MHz)		Mid 23330 793(MHz)		High 23330 793(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)						RB Pos
				ID		ID		ID	
QPSK	1	0	n/a		24.48	RB1X	n/a		Low
	1	25	n/a		23.57	RB1Z	n/a		Mid
	1	49	n/a		24.20	RB1Y	n/a		High
	25	0	n/a		24.00	RB25Y	n/a		Low
	25	25	n/a		24.11	RB25X	n/a		High
	50	0	n/a		24.03	RB50X	n/a		Mid
16QAM	1	0			24.12				Low
	1	25			24.10				Mid
	1	49			24.20	x			High
	25	0			23.96				Low
	25	25			24.11	x			High
	50	0			23.13	x			Mid

= Required for highest conducted power
= Required if SAR > 0.8W/kg
= Required if SAR > 0.8W/kg or conducted power > conducted power of 1RB and 50% RB
= Required if SAR > 1.45W/kg or conducted power > 1/2dB of QPSK

Note: Device does not support 64QAM

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Table 7.11 Conducted Power Measurements PCS – LTE Band 17

LTE Conducted Power Measurement									
LTE Band:		17	Channel Bandwidth:						10MHz
Lower Band Edge		704(MHz)	Upper Band Edge:						716(MHz)
Modulation	RB Size	RB Offset	Low 23780 709(MHz)		Mid 23790 710(MHz)		High 23800 711(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)						RB Pos
				X		X		X	
QPSK	1	0	23.37		24.22	x	22.65		Lower
	1	25	23.49		24.02		23.33	x	Mid
	1	49	24.16	x	23.57		22.84		Upper
	25	0	23.02		23.35	x	23.36		Lower
	25	25	23.11	x	23.21		23.80	x	Upper
	50	0	23.07		23.25		23.79	x	Mid
16QAM	1	0	22.94		23.62	x	22.87		Lower
	1	25	22.59		23.16		23.05	x	Mid
	1	49	23.21	x	23.02		23.00		Upper
	25	0	23.62	x	23.18	x	23.10	x	Lower
	25	25	23.42		23.18		22.98		Upper
	50	0	22.55		22.87	x	22.28		Mid

x = Required Test Channel

= Required for highest conducted power

= Required if SAR > 0.8W/kg or conducted power > 1 and 50% RB

= Required if SAR > 1.45W/kg oe conducted power > 1/2dB of QPSK

Note: Device does not support 64QAM

Note: LTE Band 12 encompasses the entire LTE Band 17, testing of LTE Band 17 is not required.

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Table 7.12 Conducted Power Measurements PCS – LTE Band 26

LTE Conducted Power Measurement									
LTE Band:		26	Channel Bandwidth:						15MHz
Lower Band Edge		814(MHz)	Upper Band Edge:						849(MHz)
Modulation	RB Size	RB Offset	Low 20450 829(MHz)		Mid 20525 831.5(MHz)		High 20600 844(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)						RB Pos
				ID		ID		ID	
QPSK	1	l	24.15	RB1Y	23.78		23.56		Low
	1	m	23.89		24.19		23.64		Mid
	1	h	23.47		24.30	RB1X	23.89	RB1Z	High
	36	l	23.76		24.06		23.94	RB36Y	Low
	36	h	23.94	RB36Z	24.16	RB36X	23.85		High
	75	m	23.91	-	24.01	RB75	23.98	RB50X	Mid
16QAM	1	0					24.12		Low
	1	25					24.10		Mid
	1	49					24.20	x	High
	36	0					23.96		Low
	36	25					24.11	x	High
	75	0					23.13	x	Mid

= Required for highest conducted power
= Required if SAR > 0.8W/kg
= Required if SAR > 0.8W/kg or conducted power > conducted power of 1RB and 50% RB
= Required if SAR > 1.45W/kg or conducted power > 1/2dB of QPSK

Note: Device does not support 64QAM

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Table 7.13 Conducted Power Measurements PCS – LTE Band 66

LTE Conducted Power Measurement									
LTE Band:		66	Channel Bandwidth:						20MHz
Lower Band Edge		1710(MHz)	Upper Band Edge:						1780(MHz)
Modulation	RB Size	RB Offset	Low 132072 1720(MHz)		Mid 132322 1745(MHz)		High 132572 1770(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)						RB Pos
				ID		ID		ID	
QPSK	1	L	23.05		23.80	RB1Y	23.46		Low
	1	M	23.80	RB1Z	23.25		23.85	RB1X	Mid
	1	H	22.94		22.84		23.11		High
	50	L	22.93		23.58	RB50Y	23.76	RB50X	Low
	50	H	23.03	RB50Z	23.49		23.67		High
	100	M	22.27		22.64		22.71	RB100X	Mid
16QAM	1	0	22.66		23.07	x	23.40	x	Low
	1	50	22.71	x	22.13		22.67		Mid
	1	99	22.63		22.34		22.71		High
	50	0	22.25		21.86	x	22.87	x	Low
	50	50	22.43	x	22.80		22.23		High
	100	0	21.25		21.76	x	21.67		Mid

= Required for highest conducted power
= Required if SAR > 0.8W/kg
= Required if SAR > 0.8W/kg or conducted power > conducted power of 1RB and 50% RB
= Required if SAR > 1.45W/kg or conducted power > 1/2dB of QPSK

Note: Device does not support 64QAM

NOTE: The measured conducted power in the smaller bandwidths for each band and RB configuration was less than 1/2dB greater than the *equivalent* RB configuration of the respective largest bandwidth.

*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.

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8.0 NUMBER OF TEST CHANNELS (*Nc*)

The number of test channels for testing the LMR channel bands is based on the worst-case channels and configurations from the original filing as well the highest conducted output power channel obtained during this evaluation.

The *required test channels* used for the LTE evaluation is based on FCC KDB 941225 D05v02r05 as follows:

5.2.1. QPSK with 1 RB allocation
Start with the largest channel bandwidth then measure SAR for QPSK with 1 RB allocation, using the RB offset and *required test channel* combination with the highest maximum output power among RB offsets at the upper edge, middle, and lower edge of each *required test channel*. When the *reported SAR* is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and *required test channel*s is not required for 1 RB allocation; otherwise, SAR is required for the remaining *required test channel*s and only for the RB offset configuration with the highest output power for that channel.6 When the *reported SAR* of a *required test channel* is > 1.45 W/kg, SAR is required for all three RB offset configurations for that *required test channel*.

5.2.2. QPSK with 50% RB allocation
The procedures required for 1 RB allocation in 5.2.1 are applied to measure the SAR for QPSK with 50% RB allocation.

5.2.3. QPSK with 100% RB allocation
For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations, and the highest *reported SAR* for 1 RB and 50% RB allocation in 5.2.1 and 5.2.2 are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the *reported SAR* is > 1.45 W/kg, the remaining *required test channel*s must also be tested.

5.2.4. Higher order modulations
For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in 5.2.1, 5.2.2, and 5.2.3 to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the *reported SAR* for the QPSK configuration is > 1.45 W/kg.

5.3. Other channel bandwidth standalone SAR test requirements
For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in 5.2 to determine the channels and RB configurations that need SAR testing, then only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration, or the *reported SAR* of a configuration for the largest channel bandwidth is > 1.45 W/kg. The equivalent channel configuration for the RB allocation, RB offset and modulation, etc., is determined for the smaller channel bandwidth according to the same number of RB allocated in the largest channel bandwidth. For example, 50 RB in 10 MHz channel bandwidth does not apply to 5 MHz channel bandwidth; therefore, this cannot be tested in the smaller channel bandwidth. However, 50% RB allocation in 10 MHz channel bandwidth is equivalent to 100% RB allocation in 5 MHz channel bandwidth; therefore, these are the equivalent configurations to be compared to determine the specific channel and configuration in the smaller channel bandwidth that need SAR testing.

Note: LTE Band 66 completely encompassed Band 4, Band 12 completely encompasses Band 17. Only the channels and RB configurations having the highest conducted output power will be evaluated for band pair.

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9.0 ACCESSORIES EVALUATED

Table 9.1 Manufacturer's Accessory List
Note: Most of the accessories listed below were evaluated in part or in whole in previous filings.

Change History				
Change ID	Date	Change Type	Description of Change	Test Report Serial Number
5	14 Jan 2016	New Cert	Initial Filing	121815WD-1341-S
5	14 Jan 2016	C2PC	Added 14035-4420-01 Antenna	121815WD-1341-S
6	20 Jun 2016	C1PC	Added 12082-0600-03 Antenna/Spr/MIC	45461353
7	22 Aug 2016	C1PC	Added 14035-4010-04 Li-Ion Battery	45461356
8	23 Mar 2017	C2PC	Added 14035-4450-01, 14035-4450-02 Antennas	45461375
10	28 Apr 2017	C2PC	Added LTE Capability	45461382
12	9 Aug 2017	C1PC	Added 14035-4045-01 Battery	45461392
22	16 Oct 2017	C1PC	Added 14036-4001-01, -02, -4002-01, -02, -03 Body Accessories	45461404
23	9 Dec 2017	C1PC	Added Fema Green Variants	n/a
24	15 May 2018	C1PC	Added 14036-4003-01, -02 Body Accessories	45461441
24	15 May 2018	C1PC	Added 14036-4020-01, -02 Battery	45461441
27	17 Oct 2018	C1PC	Added 14035-4700-01,14035-4700-02 Audio Accessories	45461465
29	11 April 2019	C1PC	Added 14035-4750-01 Audio Accessories to ALL Splits	45461495
30	4 July 2019	C1PC	Added 14035-5050-01, -02 High Capacity Battery	45461519
31	23 July 2019	C2PC	Added Global LTE Option, -0133, -0143, -0145	45461519
32	23 July 2019	C2PC	Added 12082-3234-01 D-Swivel	45461519
33	23 July 2019	C2PC	Added 14036-4003-03 Body Accessory	45461531
34	23 July 2019	C2PC	Added 14036-4003-04 Body Accessory	45461531
35	10 Feb 2020	C1PC	Added XL-150P (FCC)	45461519
36	10 Feb 2020	C2PC	Added XL-150P (ISED) Family Addition	45461528
38	16 Oct 2020	C1PC	Added Model Variants to XL-200P and XL-185P (FCC) (X8)	n/a
39	7 Jan 2021	C1PC	Added Antenna KRE 1011219/21 Accessory to XL-185P (FCC/ISED)	45461640
43	9 Feb 2022	C1PC	Added 14035-4200-05 Case	45461711
45	15 March 2022	C1PC	Addition of FRSM and Cable 14100-4700-21 thru -33	45461711
48	17 June 2022	C1PC	Addition of 14036-4001-04 Tan Case (Same as 14036-4001-01	45461531

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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					
T1	KRE1011506/1	1/2 Wave Whip Antenna (764-870 MHz)	1			Y	Y
T2	KRE1011506/2	1/4 Wave Stub Antenna (764-870 MHz)	1			Y	Y
T3	KRE1011219/2	Helical VHF	1			Y	Y
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

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					
P1	14035-4010-01	Li-Ion Battery 7.2VDC, 3300mAh	1			Y	Y
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	Y
P5	14036-4020-01	Li-Ion Battery 7.2VDC, 3100mAh, 22Wh, LTE	24			Y	Y
P6	14036-4020-02	Li-Ion Battery 7.2VDC, 3100mAh, 22Wh, LTE, UL, C1D2	24			Y	Y
P7	14035-5050-01	Li-Ion Battery 7.2VDC, 4700mAh, 24Wh Standard	30			Y	Y
P8	14035-5050-02	Li-Ion Battery 7.2VDC, 4700mAh, 24Wh, C1D2	30			Y	Y

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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					
A1	12082-0600-01	Standard Speaker Microphone	1	7A	PB	Y	Y
A2	12082-0600-02	Storm Speaker Microphone	1	7A	PB	Y	Y
A3	12150-1000-01	Premium Speaker MIC, Fire, NC	1	9	PB	Y	Y
A4	12082-0650-01	Microphone, Palm, 2-Wire Black	1	7A	IL	Y	Y
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	Y
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	Y
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	Y
A16	12082-0650-13	Headset, Heavy Duty, BTH, w/PTT, XG-100P	3	7A	IL	Y	Y
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	Y
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	Y
A26	LS103239V1	Earphone, Lapel MIC, 2.5mm	3	n/a	n/a	Y	Y
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	Y
A29	12082-0600-04	Storm Speaker Microphone 25.6"	6	7A	PB	Y	Y
A30	12082-0600-05	Storm Speaker Microphone 30"	6	7A	PB	Y	Y
A31	12150-1000-05	Premium Speaker MIC, Fire, NC, Hi Vis Yellow	1	9	PB	Y	Y
A32	14035-4700-01	SPEAKER MIC, REVO NC2, C1D2 LMR	27	7A	PB	Y	Y
A33	14035-4700-02	SPEAKER MIC, REVO NC2	27	7A	PB	Y	Y
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

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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									
A38	14100-4700-22	ESM, GREEN FRSM, XL STRAIGHT CABLE			42, 45	10	PB	Y	Y
A38		14100-4700-01	FRSM Body		42, 45	10	PB	Y	Y
A38			-4700-15	Cable	42, 45	10	PB	Y	Y
A39	14100-4700-25	ESM, BLACK FRSM, XL STRAIGHT CABLE			42, 45	10	PB	Y	Y
A39		14100-4700-02	FRSM Body		42, 45	10	PB	Y	Y
A39			-4700-15	Cable	42, 45	10	PB	Y	Y
A40	14100-4700-28	ESM, YELLOW FRSM, XL STRAIGHT CABLE			42, 45	10	PB	Y	Y
A40		14100-4700-03	FRSM Body		42, 45	10	PB	Y	Y
A40			-4700-15	Cable	42, 45	10	PB	Y	Y
A41	14100-4700-31	ESM, GREEN FRSM, XG LEGACY CABLE			42, 45	10	PB	Y	Y
A41		14100-4700-01	FRSM Body		42, 45	10	PB	Y	Y
A41			-4700-13	Cable	42, 45	10	PB	Y	Y
A42	14100-4700-32	ESM, BLACK FRSM, XG LEGACY CABLE			42, 45	10	PB	Y	Y
A42		14100-4700-02	FRSM Body		42, 45	10	PB	Y	Y
A42			-4700-13	Cable	42, 45	10	PB	Y	Y
A43	14100-4700-33	ESM, YELLOW FRSM, XG LEGACY CABLE			42, 45	10	PB	Y	Y
A43		14100-4700-03	FRSM Body		42, 45	10	PB	Y	Y
A43			-4700-13	Cable	42, 45	10	PB	Y	Y

(1) From the Change History Table - Indicates which change the item was introduced or tested. A "***" in this column indicates these accessories were evaluated on similar product and are deemed compliant.
(2) UDC Group: 9 = 9 Pin, 7A = 7 Pin, 7B = 7 Pin Modified
(3) Type II Group: PB = Palm Button, IL = In-Line Pushbutton, PT = Pigtail Pushbutton, RB = Ring Pushbutton, BB = Body Button, BT = BlueTooth
(4) Accessories are categorized into groups of similar design and construction. Samples of individual groups are SAR Tested and the SAR results apply to ALL members of the Accessory Group. A "Y" in this column indicates the accessory is deemed acceptable.
(5) Accessories and/or Accessory Group members SAR Tested.

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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							
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	Y
B3	14002-0218-01	Premium Belt Loop	1			Y	Y
B4	14035-4200-01	Holster, Leather, Radio, Premium	3			Y	Y
B5	14035-4200-02	Holster, Leather w/Rings for Shoulder Strap, Radio, Premium	3			Y	Y
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	Y
B15	KRY 1011609/1	Leather Belt Loop	1			Y	Y
B16	12082-1398-01	Side Connector Cover	1			Y	Y
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	Y
B20	14036-4001-02	Case, Nylon, Black, Belt Loop, D-Swivel	22			Y	Y
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	Y
B26	14036-4003-02	Case, Leather, 3" Belt Loop	24			Y	Y
B1-02	12082-1290-02	Metal Belt Clip, 5mm - Prototype	1			Y	Y
B1-03	12082-1290-03	Metal Belt Clip, 10mm - Prototype	1			Y	Y
B1-04	12082-1290-04	Metal Belt Clip, 15mm - Prototype	1			Y	Y
B27	14036-4003-03	Case, Leather, Belt Loop, D-Swivel	33			Y	Y
B28	14036-4003-04	Case, Leather, 3" Belt Loop	34			Y	Y
B33	14036-4001-04	Case, Nylon, Tan, Molle Strap (Same as 14036-4001-01	48			Y	N

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10.0 SAR MEASUREMENT SUMMARY

Table 10.1: Measured Results – TNF BODY

Measured 1g SAR Results - BODY Configuration														
Date	Plot ID	Test Frequency (*MHz*)	DUT Configuration			Accessories				DUT Spacing		Measured SAR (*W/kg*)	50% SAR (W/kg)	SAR Drift (*dB*)
			Pos	Band	Mod	Antenna ID	Battery ID	Body ID	Audio ID	DUT (*mm*)	Antenna (*mm*)			
30 Aug 2022	B100	406.1	Body Touch	UHF	CW	T4	P7	B1	A1	0	20	5.520	2.760	-0.290
30 Aug 2022	B102	406.1	Body Touch	UHF	CW	T5	P7	B1	A1	0	20	9.260	4.630	-0.360
31 Aug 2022	B103	418.0125	Body Touch	UHF	CW	T5	P7	B1	A1	0	20	8.730	4.365	-0.410
31 Aug 2022	B105	450.0125	Body Touch	UHF	CW	T5	P7	B1	A1	0	20	8.980	4.490	-0.270
31 Aug 2022	B106	511.9875	Body Touch	UHF	CW	T5	P7	B1	A1	0	20	2.310	1.155	-1.660
3 Sep 2022	B120	148.0125	Body Touch	VHF	CW	T4	P7	B1	A1	0	20	3.120	1.560	-0.180
3 Sep 2022	B121	148.0125	Body Touch	VHF	CW	T3	P7	B1	A1	0	20	7.490	3.745	-0.410
3 Sep 2022	B122	144.0125	Body Touch	VHF	CW	T3	P7	B1	A1	0	20	3.290	1.645	-0.920
6 Sep 2022	B130	806.025	Body Touch	7/800	CW	T1/T6	P7	B1	A1	0	20	4.430	2.215	-0.300
6 Sep 2022	B131	775.9875	Body Touch	7/800	CW	T1/T6	P7	B1	A1	0	20	5.490	2.745	-0.680
12 Sep 2022	B148	868.9875	Body Touch	7/800	CW	T1/T6	P7	B1	A1	0	20	1.460	0.730	-0.160
6 Sep 2022	B133	860.9875	Body Touch	7/800	CW	T2/T7	P7	B1	A1	0	20	9.180	4.590	-0.270
12 Sep 2022	B144	860	Body Touch	7/800	CW	T2/T7	P7	B1	A1	0	20	5.780	2.890	-0.230
12 Sep 2022	B145	860.9875	Body Touch	7/800	CW	T2/T7	P7	B1	A1	0	20	**9.430**	**4.715**	-0.290
12 Sep 2022	B146	868.9875	Body Touch	7/800	CW	T2/T7	P7	B1	A1	0	20	8.870	4.435	-0.540
12 Sep 2022	B147	775.9875	Body Touch	7/800	CW	T2/T7	P7	B1	A1	0	20	3.560	1.780	-0.220
7 Sep 2022	B134	768.0125	Body Touch	7/800	CW	T4	P7	B1	A1	0	20	3.940	1.970	-0.380
10 Sep 2022	B143	806.025	Body Touch	7/800	CW	T4	P7	B1	A1	0	20	4.390	2.195	-0.740
9 Sep 2022	B135	823.9875	Body Touch	7/800	CW	T5	P7	B1	A1	0	20	5.810	2.905	-0.630
9 Sep 2022	B136	860.9875	Body Touch	7/800	CW	T8	P7	B1	A1	0	20	7.090	3.545	-0.620
9 Sep 2022	B137	860	Body Touch	7/800	CW	T8	P7	B1	A1	0	20	7.150	3.575	-0.690
9 Sep 2022	B138	856.025	Body Touch	7/800	CW	T8	P7	B1	A1	0	20	5.590	2.795	-0.240
10 Sep 2022	B139	860.9875	Body Touch	7/800	CW	T9	P7	B1	A1	0	20	9.830	4.915	-0.100
10 Sep 2022	B140	868.9875	Body Touch	7/800	CW	T9	P7	B1	A1	0	20	**9.900**	**4.950**	-0.080
10 Sep 2022	B141	806.025	Body Touch	7/800	CW	T9	P7	B1	A1	0	20	7.070	3.535	-0.580
Applicable SAR Limit						Use Group						Limit		
FCC CFR 2.1093			Health Canada Safety Code 6			Occupational/User Aware						8 W/kg		

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Table 10.2: Measured Results – TNF FACE

Measured 1g SAR Results - FACE Configuration														
Date	Plot ID	Test Frequency (*MHz*)	DUT Configuration			Accessories				DUT Spacing		Measured SAR (*W/kg*)	50% SAR (W/kg)	SAR Drift (*dB*)
			Pos	Band	Mod	Antenna ID	Battery ID	Body ID	Audio ID	DUT (*mm*)	Antenna (*mm*)			
30 Aug 2022	F100	406.1	**Face**	**UHF**	**CW**	T4	P7	B1	A1	**25**	**65**	2.840	1.420	-0.840
30 Aug 2022	F101	406.1	**Face**	**UHF**	**CW**	T5	P7	B1	A1	**25**	**65**	**4.990**	**2.495**	-0.270
3 Sep 2022	F121	148.0125	**Face**	**VHF**	**CW**	T3	P7	B1	A1	**25**	**65**	0.577	0.289	-0.880
6 Sep 2022	F130	806.025	**Face**	**7/800**	**CW**	T1/T6	P7	B1	A1	**25**	**65**	1.920	0.960	-0.160
6 Sep 2022	F132	775.9875	**Face**	**7/800**	**CW**	T2/T7	P7	B1	A1	**25**	**65**	1.850	0.925	-0.560
10 Sep 2022	F138	806.025	**Face**	**7/800**	**CW**	T2/T7	P7	B1	A1	**25**	**65**	1.450	0.725	-0.430
7 Sep 2022	F133	775.9875	**Face**	**7/800**	**CW**	T4	P7	B1	A1	**25**	**65**	1.380	0.690	-0.220
10 Sep 2022	F137	806.025	**Face**	**7/800**	**CW**	T4	P7	B1	A1	**25**	**65**	1.280	0.640	-0.200
9 Sep 2022	F134	823.9875	**Face**	**7/800**	**CW**	T5	P7	B1	A1	**25**	**65**	1.190	0.595	-0.630
10 Sep 2022	F135	860.9875	**Face**	**7/800**	**CW**	T8	P7	B1	A1	**25**	**65**	1.890	0.945	-0.290
10 Sep 2022	F136	798.0125	**Face**	**7/800**	**CW**	T9	P7	B1	A1	**25**	**65**	1.920	0.960	-0.240
Applicable SAR Limit						**Use Group**						**Limit**		
FCC CFR 2.1093			**Health Canada Safety Code 6**			**Occupational/User Aware**						**8 W/kg**		

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Table 10.3: Measured Results – PCS BODY

Measured 1g SAR Results - BODY Configuration															
Date	Plot ID	Test Frequency (*MHz*)	DUT Configuration					Accessories				DUT Spacing		Measured SAR (*W/kg*)	SAR Drift (*dB*)
			Pos	Band	BW	Mod	RB-Offset	Antenna ID	Battery ID	Body ID	Audio ID	DUT (*mm*)	Antenna (*mm*)		
13 Sep 2022	B200	836.5	Body	5	10 Mhz	QPSK	1- low	T2	P1	B1	-	0	20	0.525	0.150
13 Sep 2022	B201	836.5	Body	5	10 Mhz	QPSK	25- low	T2	P1	B1	-	0	20	0.431	0.030
13 Sep 2022	B202	782	Body	13	10 Mhz	QPSK	1-low	T2	P1	B1	-	0	20	0.364	-0.030
13 Sep 2022	B203	782	Body	13	10 Mhz	QPSK	25-high	T2	P1	B1	-	0	20	0.246	0.060
13 Sep 2022	B204	793	Body	14	10 Mhz	QPSK	1-low	T2	P1	B1	-	0	20	0.436	0.010
13 Sep 2022	B205	793	Body	14	10 Mhz	QPSK	25-high	T2	P1	B1	-	0	20	0.458	0.010
16 Sep 2022	B206	844	Body	26	15 Mhz	QPSK	1-high	T2	P1	B1	-	0	20	0.659	0.110
16 Sep 2022	B210-1	831.5	Body	26	15 Mhz	QPSK	1-high	T2	P1	B1	-	0	20	0.495	-0.260
16 Sep 2022	B210	829	Body	26	15 Mhz	QPSK	1-low	T2	P1	B1	-	0	20	0.558	-0.460
16 Sep 2022	B207	844	Body	26	15 Mhz	QPSK	36-high	T2	P1	B1	-	0	20	0.457	0.040
16 Sep 2022	B211	831.5	Body	26	15 Mhz	QPSK	36-high	T2	P1	B1	-	0	20	0.477	-0.060
14 Sep 2022	B208	707.5	Body	12/17	10 Mhz	QPSK	1-high	T2	P1	B1	-	0	20	0.674	-0.040
14 Sep 2022	B209	707.5	Body	12/17	10 Mhz	QPSK	25-high	T2	P1	B1	-	0	20	0.622	0.190
17 Oct 2022	B212	1770	Body	4/66	20 MHz	QPSK	1-mid	T2	P1	B1	-	0	20	0.445	0.070
17 Oct 2022	B213	1770	Body	4/66	20 MHz	QPSK	50-low	T2	P1	B1	-	0	20	0.450	0.000
17 Oct 2022	B214	1900	Body	2	20 MHz	QPSK	1-low	T2	P1	B1	-	0	20	0.432	0.120
17 Oct 2022	B215	1900	Body	2	20 MHz	QPSK	50-low	T2	P1	B1	-	0	20	0.425	0.010
17 Oct 2022	B216	2535	Body	7	20 MHz	QPSK	1-low	T2	P1	B1	-	0	20	0.541	-0.240
17 Oct 2022	B217	2535	Body	7	20 MHz	QPSK	50-hign	T2	P1	B1	-	0	20	0.541	0.160
Applicable SAR Limit								Use Group						Limit	
FCC CFR 2.1093			Health Canada Safety Code 6					General Population/User Unaware						1.6 W/kg	

Note: B208 had the highest measured SAR, both B208 and B206 had the same *reported* SAR.

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Table 10.4: Measured Results – PCS FACE

Measured 1g SAR Results - FACE Configuration															
Date	Plot ID	Test Frequency (*MHz*)	DUT Configuration					Accessories				DUT Spacing		Measured SAR (*W/kg*)	SAR Drift (*dB*)
			Pos	Band	BW	Mod	RB-Offset	Antenna ID	Battery ID	Body ID	Audio ID	DUT (*mm*)	Antenna (*mm*)		
13 Sep 2022	F200	836.5	Face	5	10 Mhz	QPSK	1- low	T2	P1	-	-	25	45	0.022	0.930
13 Sep 2022	F201	782	Face	13	10 Mhz	QPSK	1-low	T2	P1	-	-	25	45	0.037	1.640
13 Sep 2022	F202	793	Face	14	10 Mhz	QPSK	25-mid	T2	P1	-	-	25	45	0.077	0.270
16 Sep 2022	F203	844	Face	26	15 Mhz	QPSK	1-high	T2	P1	-	-	25	45	0.008	0.420
16 Sep 2022	F205	831.5	Face	26	15 Mhz	QPSK	1-high	T2	P1	-	-	25	45	0.008	4.570
14 Sep 2022	F204	707.5	Face	12/17	10 Mhz	QPSK	25-mid	T2	P1	-	-	25	45	0.052	-0.180
16 Sep 2022	F206	1770	Face	4/66	20 MHz	QPSK	1-mid	T2	P1	-	-	25	45	0.017	-0.070
16 Sep 2022	F207	1900	Face	2	20 MHz	QPSK	1-low	T2	P1	-	-	25	45	0.017	0.790
19 Sep 2022	F208	2535	Face	7	20 MHz	QPSK	1-low	T2	P1	-	-	25	45	0.010	0.100
Applicable SAR Limit								Use Group						Limit	
FCC CFR 2.1093			Health Canada Safety Code 6					General Population/User Unaware						1.6 W/kg	

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Table 10.5: Measured Results – Body - DTS/DSS
Note: Data below extracted from original filing, test report serial number 45461651 R4.0 dated 8 March 2021

Measured SAR Results (1g) - BODY Configuration (FCC/ISED)														
Date	Plot ID	DUT		Test Frequency (*MHz*)	Modulation	Accessories				DUT Spacing		Conducted Power (*dBm*)	Measured SAR (1g) (*W/kg*)	SAR Drift (*dB*)
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID	DUT (*mm*)	Antenna (*mm*)			
3/3/2021	B12	**FireRadio**	**PTT**	2412	**DSSS**	FireAnt	5050-01	Belt Clip	SpkrMic	**0**	**n/a**	**23.7**	0.000	-0.120
3/4/2021	B13	**FireRadio**	**PTT**	2437	**DSSS**	FireAnt	5050-01	Belt Clip	SpkrMic	**0**	**n/a**	**23.65**	0.000	0.000
3/4/2021	B14	**FireRadio**	**PTT**	2462	**DSSS**	FireAnt	5050-01	Belt Clip	SpkrMic	**0**	**n/a**	**23.72**	0.000	-0.150
3/7/2021	B15	**FireRadio**	**PTT**	5180	**OFDM**	FireAnt	5050-01	Belt Clip	SpkrMic	**0**	**n/a**	**16.52**	0.001	0.000
3/7/2021	B16	**FireRadio**	**PTT**	5660	**OFDM**	FireAnt	5050-01	Belt Clip	SpkrMic	**0**	**n/a**	**18.31**	0.000	0.000
3/4/2021	B17	**FireRadio**	**PTT**	2402	**GMSK**	FireAnt	5050-01	N/A	N/A	**0**	**n/a**	**4.3**	0.000	0.000
3/4/2021	B18	**FireRadio**	**PTT**	2480	**GMSK**	FireAnt	5050-01	N/A	N/A	**0**	**n/a**	**5.1**	0.000	0.000
SAR Limit							**Spatial Peak**			**Head/Body**		**RF Exposure Category**		
FCC 47 CFR 2.1093				**Health Canada Safety Code 6**			**1 Gram Average**			**1.6 W/kg**		**General Population**		

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Table 10.6: Measured Results – Face - DTS/DSS
Note: Data below extracted from original filing, test report serial number 45461651 R4.0 dated 8 March 2021

Measured SAR Results (1g) - FACE Configuration (FCC/ISED)														
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Spacing		Conducted Power (dBm)	Measured SAR (1g) (W/kg)	SAR Drift (dB)
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID	DUT (mm)	Antenna (mm)			
3/4/2021	F24	FireRadio	PTT	2412	DSSS	FireAnt	5050-01	N/A	N/A	25	n/a	23.7	0.000	0.000
3/4/2021	F25	FireRadio	PTT	2437	DSSS	FireAnt	5050-01	N/A	N/A	25	n/a	23.65	0.000	0.000
3/4/2021	F26	FireRadio	PTT	2462	DSSS	FireAnt	5050-01	N/A	N/A	25	n/a	23.72	0.000	0.000
3/4/2021	F27	FireRadio	PTT	2462	DSSS	FireAnt	5050-01	N/A	N/A	25	n/a	23.72	0.000	0.000
3/6/2021	F28	FireRadio	PTT	5180	OFDM	FireAnt	5050-01	N/A	N/A	25	n/a	16.52	0.002	0.000
3/7/2021	F29	FireRadio	PTT	5240	OFDM	FireAnt	5050-01	N/A	N/A	25	n/a	16.48	0.000	0.000
3/7/2021	F30	FireRadio	PTT	5660	OFDM	FireAnt	5050-01	N/A	N/A	25	n/a	18.31	0.000	0.000
3/4/2021	F31	FireRadio	PTT	2402	GMSK	FireAnt	5050-01	N/A	N/A	25	n/a	4.3	0.000	0.000
3/4/2021	F32	FireRadio	PTT	2480	GMSK	FireAnt	5050-01	N/A	N/A	25	n/a	5.1	0.000	0.000
SAR Limit							Spatial Peak			Head/Body		RF Exposure Category		
FCC 47 CFR 2.1093				Health Canada Safety Code 6			1 Gram Average			1.6 W/kg		General Population		

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11.0 SCALING OF MAXIMUM MEASURE SAR

Table 11.1 SAR Scaling – TNF

Scaling of Maximum Measured SAR (1g)					
Measured Parameters		Configuration			
		Face	Body	Body	
Plot ID		F101	B145	B140	
Maximum Measured SAR_M		2.495	4.715	4.950	(W/kg)
Frequency		406.1	860.9875	868.9875	(MHz)
Drift	Power Drift	-0.270	-0.290	-0.080	(dB)
Conducted Power		37.200	35.200	35.200	(dBm)
DC	Transmit Duty Cycle	100.000	100.0	100.0	(%)
Fluid Deviation from Target					
Δe	Permitivity	9.23%	-7.27%	-7.56%	
Δσ	Conductivity	-5.05%	3.67%	2.36%	

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)	0.4061	0.8609875	0.8689875	
Ce		-0.212	-0.220	-0.220	
Cσ		0.781	0.751	0.750	
Ce * Δe		-0.020	0.016	0.017	
Cσ * Δσ		-0.039	0.028	0.018	
ΔSAR		-0.059	0.044 (3)	0.034 (3)	(%)

Note(3): Delta SAR is Positive, SAR Adjustment for Fluid Sensitivity is not Required, in accordance with ISED Notice 2012-DRS0529

Manufacturer's Tuneup Tolerance				
Measured Conducted Power	37.200	35.200	35.200	(dBm)
Rated Conducted Power	37.200	35.200	35.200	(dBm)
ΔP	0.000	0.000 (4)	0.000 (4)	(dB)

Note(4): SAR was Evaluated at the Maximum Tuneup Tolerance. SAR Adjustment is not Required.

Crest Factor				
Transmit Duty Cycle (DC)	100.000	100.0	100.0	(%)
CF (1/DC)	1.000 (5)	1.00 (5)	1.00 (5)	

Note(5): Crest Factor = 1 (100% Duty Cycle), Crest Factor Adjustment not Required.

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Table 11.1 SAR Scaling – TNF (Cont.)

Scaling of Maximum Measured SAR (1g)				
Measured Parameters	Configuration			
	Face	Body	Body	
Plot ID	F101	B145	B140	
Maximum Measured SAR_M	2.495	4.715	4.950	(W/kg)
Frequency	406.1	860.9875	868.9875	(MHz)
Drift Power Drift	-0.270	-0.290	-0.080	(dB)
Conducted Power	37.200	35.200	35.200	(dBm)
DC Transmit Duty Cycle	100.000	100.0	100.0	(%)
SAR Adjustment for Fluid Sensitivity				
$SAR_1 = SAR_M$ X [ΔSAR]	2.642	4.715	4.950	(W/kg)
SAR Adjustment for Tuneup Tolerance				
$SAR_2 = SAR_1$ + [ΔP]	2.642	4.715	4.950	(W/kg)
SAR Adjustment for Drift				
$SAR_3 = SAR_2$ + [Drift]	2.812	5.041	5.042	(W/kg)
SAR Adjustment for Crest Factor				
$SAR_4 = SAR_3$ x [CF]	2.812	5.041	5.042	(W/kg)
***reported* 1g SAR**				
SAR_4	**2.81**	**5.04**	**5.04**	(W/kg)

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Table 11.2 SAR Scaling - PCS

Scaling of Maximum Measured SAR (1g)					
Measured Parameters		Configuration			
		Face	Body	Body	
Plot ID		F202	B206		
Maximum Measured SAR_M		0.077	0.659		(W/kg)
Frequency		793	844		(MHz)
Drift	Power Drift	0.270 (1)	0.110 (1)		(dB)
Conducted Power		24.110	24.300		(dBm)
DC	Transmit Duty Cycle	100.000	100.0		(%)
Fluid Deviation from Target					
Δe	Permitivity	-2.67% (2)	-7.83%		
Δσ	Conductivity	2.89% (2)	4.29%		

Note(1): Power Drift is Positive, Drift Adjustment not Required.

Note(2): Fluid Dielectric Parameters are Within 5% of Targets. SAR Adjustment for Fluid Sensitivity is not Required.

Fluid Sensitivity Calculation (1g)			IEC 62209-2 Annex F		
Delta SAR = Ce * Δe + Cσ * Δσ					(F.1)
$Ce = (-0.0007854*f^3) + (0.009402*f^2) - (0.02742*f) - 0.2026$					(F.2)
$C\sigma = (0.009804*f^3) - (0.08661*f^2) + (0.02981*f) + 0.7829$					(F.3)
f	Frequency (GHz)	0.793	0.844		
Ce		-0.219	-0.220		
Cσ		0.757	0.752		
Ce * Δe		0.006	0.017		
Cσ * Δσ		0.022	0.032		
ΔSAR		0.028 (3)	0.049 (3)		(%)

Note(3): Delta SAR is Positive, SAR Adjustment for Fluid Sensitivity is not Required, in accordance with ISED Notice 2012-DRS0529

Manufacturer's Tuneup Tolerance				
Measured Conducted Power	24.110	24.300		(dBm)
Rated Conducted Power	24.500	24.500		(dBm)
ΔP	-0.390	-0.200 (4)		(dB)

Note(4): SAR was Evaluated at the Maximum Tuneup Tolerance. SAR Adjustment is not Required.

Crest Factor				
Transmit Duty Cycle (DC)	100.000	100.0		(%)
CF (1/DC)	1.000 (5)	1.00 (5)		

Note(5): Crest Factor = 1 (100% Duty Cycle), Crest Factor Adjustment not Required.

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Table 11.2 SAR Scaling - PCS

Scaling of Maximum Measured SAR (1g)				
Measured Parameters	Configuration			
	Face	Body	Body	
Plot ID	F202	B206		
Maximum Measured SAR_M	0.077	0.659		(W/kg)
Frequency	793	844		(MHz)
SAR Adjustment for Fluid Sensitivity				
$SAR_1 = SAR_M$ X [ΔSAR]	0.077	0.659		(W/kg)
SAR Adjustment for Tuneup Tolerance				
$SAR_2 = SAR_1$ + [ΔP]	0.084	0.690		(W/kg)
SAR Adjustment for Drift				
$SAR_3 = SAR_2$ + [Drift]	0.084	0.690		(W/kg)
SAR Adjustment for Crest Factor				
$SAR_4 = SAR_3$ x [CF]	0.084	0.690		(W/kg)
***reported* 1g SAR**				
SAR_4	**0.08**	**0.69**		(W/kg)

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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.

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Simultaneous Transmission Analysis

Introduction

The XL-200P incorporates an integrated pre-certified WiFi/BlueTooth and LTE transceivers capable of simultaneously transmitting, in any combination, with the LMR transmitter. As per FCC KDB 447498, simultaneous transmission analysis is required for devices capable of simultaneous transmission. The WiFi/BT and LTE 1g SAR are subject to General Population limits of 1.6W/kg. The LMR 1g SAR is subject to Occupational limits of 8.0W/kg. To determine compliance when different SAR limits are applied to the different transmit modes, the Sum-of-the-Ratios of the SAR to the respective SAR limit are applied. When the Sum-of-the-Ratios is ≤ 1.0, simultaneous SAR test exclusion may be applied.

SAR for each transmission band, transmission mode and/or equipment class was evaluated with Body-Worn and Audio Accessories in the BODY and HEAD configurations. Since the modular WiFi/Bluetooth transciever, and the associated circuits, and the location of those cirtuits and radiating element has not changed since the original filing, and the proximity of the LTE module and radiating element is such that it would not impact the WiFi/Bluetooth SAR, the WiFi/Bluetooth SAR data from the original filing is appropriate. Only the Maximum maximum *reported* SAR for each band and equipment class is used in the Sum-of-the-Ratios calculation and the worst case of all possible combinations is considered.

Table 11.3 List of Possible Simultaneous Transmitter Combinations

Simultaneous Transmitter Combinations Worst Case HEAD and BODY Configuration				
Transmitter Type				
TNF	DSS	DTS	U-NII	PCS
X	X			X
X		X		X
X			X	X

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Table 11.4 Sum of the Ratios Analysis

Analysis of Sum-of-the-Ratios For All Simultaneous Transmitters Configurations																	
Config.	Transmitter Type															Sum of Ratios	Sum of SARs (W/kg)
	LMR (TNF)			BlueTooth (DSS)			WiFi 2.4 (DTS)			WiFi 5 (U-NII)			LTE (PCS)				
	Standalone SAR (W/kg)	Limit (W/kg)	Ratio to Limit	*Standalone* SAR (W/kg)	Limit (W/kg)	Ratio to Limit	*Standalone* SAR (W/kg)	Limit (W/kg)	Ratio to Limit	*Standalone* SAR (W/kg)	Limit (W/kg)	Ratio to Limit	*Standalone* SAR (W/kg)	Limit (W/kg)	Ratio to Limit		
HEAD	2.810	8.000	0.351	0.001	1.600	0.001							0.080	1.600	0.050	0.402	2.891
	2.810	8.000	0.351				0.001	1.600	0.001				0.080	1.600	0.050	0.402	2.891
	2.810	8.000	0.351							0.001	1.600	0.001	0.080	1.600	0.050	0.402	**2.891**
BODY	5.040	8.000	0.630	0.001	1.600	0.001							0.690	1.600	0.431	1.062	5.731
	5.040	8.000	0.630				0.001	1.600	0.001				0.690	1.600	0.431	1.062	5.731
	5.040	8.000	0.630							0.002	1.600	0.001	0.690	1.600	0.431	1.063	**5.732**

Since the sum of the ratios exceeds 1.0 in the Body configuration, simultaneous transmission SAR is considered and the highest SAR resulting from the sum of the SARs is the *reported* Simultaneous SAR.

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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.			

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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
29 Aug 2022	22.2	23.2	42%	101.5	X	X	X	450H LMR
30 Aug 2022	19.4	20.6	42%	101.5			X	450H LMR
31 Aug 2022	22.8	21.6	41%	101.6			X	450H LMR
01 Sep 2022	23.0	22.5	42%	101.6	X	X	X	150H LMR
02 Sep 2022	23.5	23.6	30%	101.0			X	150H LMR
03 Sep 2022	23.2	23.5	40%	101.5			X	150H LMR
05 Sep 2022	23.9	21.3	31%	101.8	X	X	X	835H LMR
06 Sep 2022	25.6	20.8	30%	102.1			X	835H LMR
07 Sep 2022	22.3	21.5	34%	101.4			X	835H LMR
09 Sep 2022	24.9	21.5	30%	102.2	X	X	X	835H LMR
10 Sep 2022	25.1	23.5	27%	102.2			X	835H LMR
12 Sep 2022	23.7	23.4	43%	101.7			X	835H LMR
13 Sep 2022	25.2	22.6	49%	101.1	X	X	X	835H LTE
14 Sep 2022	23.9	22.9	41%	101.3	X	X	X	750H LTE
16 Sep 2022	25.2	22.6	49%	101.1	X	X	X	835H LTE
16 Sep 2022	23.1	23.9	43%	101.2	X	X	X	1800H LTE
19 Sep 2022	22.2	24.2	34%	101.4	X	X	X	2450H LTE
17 Oct 2022	23.5	23.0	35%	101.2	X	X	X	1800H LTE
17 Oct 2022	23.8	24.8	34%	101.2	X	X	X	2450H LTE

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13.2 DUT Setup and Configuration

DUT Setup and Configuration
Overview
The XL-200P was evaluated for *Body* and *Face* SAR at the maximum conducted output power level, preset by the manufacturer, with a fully charged battery in unmodulated continuous transmit operation (FM mode at 100% duty cycle) with the transmit key continuously depressed. For a Push-To-Talk (PTT) device with a manually operated transmit pushbutton, a 50% duty cycle compensation for the *reported SAR* was used, as per FCC KDB 447498 (6.1).

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.

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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 ±2.0°C throughout the test series. The liquid parameters shall be measured within 24 hours before the start of a test series and if it takes longer than 48 hours, the liquid parameters shall also be measured at the end of the test series. 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.
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. 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 configuration, 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.

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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	

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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	

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14.0 MEASUREMENT UNCERTAINTIES

Table 14.1 Measurement Uncertainty

UNCERTAINTY BUDGET FOR DEVICE EVALUATION (IEC/IEEE 62209-1528 Table 9)									
Source of Uncertainty	**Ref. Section**	**Toler ±%**	**Prob Dist**	**Div**	**c_i**	**c_i**	**Stand Unct ±%**	**Stand Unct ±%**	**V_i or V_{eff}**
Measurement System					(1g)	(10g)	(1g)	(10g)	
EX3DV4 Probe Calibration** (*k*=1)	E.2.1	6.7	N	1	1	1	**6.7**	**6.7**	∞
Axial Isotropy** (*k*=1)	E.2.2	0.6	R	√3	0.7	0.7	**0.2**	**0.2**	∞
Hemispherical Isotropy** (*k*=1)	E.2.2	3.2	R	√3	0.7	0.7	**1.3**	**1.3**	∞
Boundary Effect*	E.2.3	1.0	R	√3	1	1	0.6	0.6	∞
Linearity** (*k*=1)	E.2.4	**0.5**	R	√3	1	1	**0.3**	**0.3**	∞
System Detection Limits*	E.2.4	1.0	R	√3	1	1	0.6	0.6	∞
Modulation Response** (*k*=1)	E.2.5	**8.3**	R	√3	1	1	**4.8**	**4.8**	∞
Readout Electronics*	E.2.6	0.3	N	1	1	1	0.3	0.3	∞
Response Time*	E.2.7	0.8	R	√3	1	1	0.5	0.5	∞
Integration Time*	E.2.8	2.6	R	√3	1	1	1.5	1.5	∞
RF Ambient Conditions - Noise	E.6.1	**0.0**	R	√3	1	1	0.0	0.0	**10**
RF Ambient Conditions - Reflection	E.6.1	**0.0**	R	√3	1	1	0.0	0.0	**10**
Probe Positioner Mechanical Tolerance*	E.6.2	0.0	R	√3	1	1	0.0	0.0	∞
Probe Positioning wrt Phantom Shell*	E.6.3	0.4	R	√3	1	1	0.2	0.2	∞
Post-processing*	E.5	2.0	R	√3	1	1	1.2	1.2	∞
Test Sample Related									
Test Sample Positioning	E.4.2	**2.2**	N	1	1	1	2.2	2.2	**5**
Device Holder Uncertainty*	E.4.1	3.6	N	1	1	1	3.6	3.6	∞
SAR Drift Measurement(2)	E.2.9	0.0	R	√3	1	1	0.0	0.0	∞
SAR Power Scaling(3)	E.6.5	0.0	R	√3	1	1	0.0	0.0	∞
Phantom and Tissue Parameters									
Phantom Uncertainty*	E.3.1	6.1	R	√3	1	1	3.5	3.5	∞
SAR Correction Uncertainty	E.3.2	**1.6**	N	1	1	0.84	1.6	1.3	∞
Liquid Conductivity (measurement)	E.3.3	**5.0**	N	1	0.78	0.71	3.9	3.6	**10**
Liquid Permittivity (measurement)	E.3.3	**5.0**	N	1	0.23	0.26	1.2	1.3	**10**
Liquid Conductivity (Temperature)	E.3.2	**0.4**	R	√3	0.78	0.71	0.2	0.2	**10**
Liquid Permittivity Temperature)	E.3.2	**0.2**	R	√3	0.23	0.26	0.0	0.0	**10**
Effective Degrees of Freedom(1)								**V_{eff} =**	**1141**
Combined Standard Uncertainty			**RSS**				**11.1**	**11.0**	
Expanded Uncertainty (95% Confidence Interval)			**k=2**				**22.2**	**21.9**	
Measurement Uncertainty Table in accordance with IEC/IEEE 62209-1528									

(1) The Effective Degrees of Freedom is > 30

Therefore a coverage factor of k=2 represents an approximate confidence level of 95%.

(2) The SAR Value is compensated for Drift

(3) SAR Power Scaling not Required

* Provided by SPEAG for DASY4

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Table 14.2 Calculation of Degrees of Freedom

Calculation of the Degrees and Effective Degrees of Freedom	
$v_i = n - 1$	$v_{eff} = \dfrac{u_c^4}{\sum_{i=1}^{m} \dfrac{c_i^4 u_i^4}{v_i}}$

15.0 FLUID DIELECTRIC PARAMETERS

Table 15.1 Fluid Dielectric Parameters 150MHz HEAD TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Thu 01/Sep/2022 09:07:03
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.1000	54.63	0.72	66.30	0.79
0.1100	54.17	0.73	57.30	0.77
0.1200	53.70	0.74	59.01	0.77
0.1300	53.23	0.75	53.50	0.81
0.1400	52.77	0.75	54.16	0.80
0.1500	52.30	0.76	55.90	0.83
0.1600	51.83	0.77	52.17	0.80
0.1700	51.37	0.77	53.17	0.82
0.1800	50.90	0.78	52.45	0.83
0.1900	50.43	0.79	52.42	0.85
0.2000	49.97	0.80	50.69	0.85

FLUID DIELECTRIC PARAMETERS

Date:	1 Sep 2022	Fluid Temp:	22.5	Frequency:	150MHz	Tissue:	Head
Freq (MHz)		**Test_e**	**Test_s**	**Target_e**	**Target_s**	**Deviation Permittivity**	**Deviation Conductivity**
100.0000		66.3000	0.7900	54.6300	0.72	21.36%	9.72%
110.0000		57.3000	0.7700	54.1700	0.73	5.78%	5.48%
120.0000		59.0100	0.7700	53.7000	0.74	9.89%	4.05%
130.0000		53.5000	0.8100	53.2300	0.75	0.51%	8.00%
140.0000		54.1600	0.8000	52.7700	0.75	2.63%	6.67%
144.0125	*	54.8582	0.8120	52.5814	0.75	4.33%	7.70%
148.0125	*	55.5542	0.8240	52.3934	0.76	6.03%	8.71%
150.0000		55.9000	0.8300	52.3000	0.76	6.88%	9.21%
160.0000		52.1700	0.8000	51.8300	0.77	0.66%	3.90%
170.0000		53.1700	0.8200	51.3700	0.77	3.50%	6.49%
180.0000		52.4500	0.8300	50.9000	0.78	3.05%	6.41%
190.0000		52.4200	0.8500	50.4300	0.79	3.95%	7.59%
200.0000		50.6900	0.8500	49.9700	0.80	1.44%	6.25%

*Channel Frequency Tested

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Table 15.2 Fluid Dielectric Parameters 450MHz HEAD TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Mon 29/Aug/2022 10:24:56
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.3500	44.70	0.87	49.63	0.77
0.3600	44.58	0.87	49.22	0.79
0.3700	44.46	0.87	48.70	0.78
0.3800	44.34	0.87	48.19	0.80
0.3900	44.22	0.87	48.18	0.80
0.4000	44.10	0.87	48.19	0.82
0.4100	43.98	0.87	48.03	0.83
0.4200	43.86	0.87	47.92	0.84
0.4300	43.74	0.87	46.70	0.85
0.4400	43.62	0.87	47.44	0.87
0.4500	43.50	0.87	46.80	0.88
0.4600	43.45	0.87	46.51	0.88
0.4700	43.40	0.87	46.48	0.90
0.4800	43.34	0.87	46.38	0.90
0.4900	43.29	0.87	45.91	0.89
0.5000	43.24	0.87	45.85	0.91
0.5100	43.19	0.87	45.82	0.94
0.5200	43.14	0.88	45.27	0.93
0.5300	43.08	0.88	45.14	0.95
0.5400	43.03	0.88	44.75	0.95
0.5500	42.98	0.88	44.48	0.96

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FLUID DIELECTRIC PARAMETERS

Date:	29 Aug 2022	Fluid Temp:	22.2	Frequency:	450MHz	Tissue:	Head
Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
350.0000		49.6300	0.7700	44.7000	0.87	11.03%	-11.49%
360.0000		49.2200	0.7900	44.5800	0.87	10.41%	-9.20%
370.0000		48.7000	0.7800	44.4600	0.87	9.54%	-10.34%
378.0125	*	48.2914	0.7960	44.3639	0.87	8.85%	-8.50%
380.0000		48.1900	0.8000	44.3400	0.87	8.68%	-8.05%
390.0000		48.1800	0.8000	44.2200	0.87	8.96%	-8.05%
400.0000		48.1900	0.8200	44.1000	0.87	9.27%	-5.75%
406.1000	*	48.0924	0.8261	44.0268	0.87	9.23%	-5.05%
410.0000		48.0300	0.8300	43.9800	0.87	9.21%	-4.60%
418.0125	*	47.9419	0.8380	43.8839	0.87	9.25%	-3.68%
420.0000		47.9200	0.8400	43.8600	0.87	9.26%	-3.45%
430.0000		46.7000	0.8500	43.7400	0.87	6.77%	-2.30%
440.0000		47.4400	0.8700	43.6200	0.87	8.76%	0.00%
450.0000		46.8000	0.8800	43.5000	0.87	7.59%	1.15%
450.0125	*	46.7996	0.8800	43.4999	0.87	7.59%	1.15%
460.0000		46.5100	0.8800	43.4500	0.87	7.04%	1.15%
470.0000		46.4800	0.9000	43.4000	0.87	7.10%	3.45%
480.0000		46.3800	0.9000	43.3400	0.87	7.01%	3.45%
490.0000		45.9100	0.8900	43.2900	0.87	6.05%	2.30%
500.0000		45.8500	0.9100	43.2400	0.87	6.04%	4.60%
510.0000		45.8200	0.9400	43.1900	0.87	6.09%	8.05%
511.9875	*	45.7107	0.9380	43.1801	0.87	5.86%	7.57%
520.0000		45.2700	0.9300	43.1400	0.88	4.94%	5.68%
530.0000		45.1400	0.9500	43.0800	0.88	4.78%	7.95%
540.0000		44.7500	0.9500	43.0300	0.88	4.00%	7.95%
550.0000		44.4800	0.9600	42.9800	0.88	3.49%	9.09%

*Channel Frequency Tested

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Table 15.3 Fluid Dielectric Parameters 750MHz HEAD TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Wed 14/Sep/2022 12:27:05
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.6500	42.46	0.89	45.70	0.86
0.6600	42.41	0.89	45.20	0.88
0.6700	42.36	0.89	45.51	0.88
0.6800	42.31	0.89	45.58	0.90
0.6900	42.25	0.89	45.48	0.90
0.7000	42.20	0.89	45.32	0.92
0.7100	42.15	0.89	45.15	0.93
0.7200	42.10	0.89	44.76	0.93
0.7300	42.05	0.89	44.21	0.94
0.7400	41.99	0.89	43.87	0.94
0.7500	41.94	0.89	43.71	0.95
0.7600	41.89	0.89	43.81	0.95
0.7700	41.84	0.89	43.52	0.99
0.7800	41.79	0.90	43.48	0.97
0.7900	41.73	0.90	43.61	0.99
0.8000	41.68	0.90	43.31	0.99
0.8100	41.63	0.90	43.18	1.00
0.8200	41.58	0.90	43.10	1.01
0.8300	41.53	0.90	42.74	1.02
0.8400	41.50	0.91	42.65	1.04
0.8500	41.50	0.92	42.54	1.05

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FLUID DIELECTRIC PARAMETERS

Date:	14 Sep 2022	Fluid Temp:	23.4	Frequency:	750MHz	Tissue:	Head
Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
650.0000		45.7000	0.8600	42.4600	0.89	7.63%	-3.37%
660.0000		45.2000	0.8800	42.4100	0.89	6.58%	-1.12%
670.0000		45.5100	0.8800	42.3600	0.89	7.44%	-1.12%
680.0000		45.5800	0.9000	42.3100	0.89	7.73%	1.12%
690.0000		45.4800	0.9000	42.2500	0.89	7.64%	1.12%
700.0000		45.3200	0.9200	42.2000	0.89	7.39%	3.37%
707.5000	*	45.1500	0.9300	42.1500	0.89	7.12%	4.49%
710.0000		45.1500	0.9300	42.1500	0.89	7.12%	4.49%
720.0000		44.7600	0.9300	42.1000	0.89	6.32%	4.49%
730.0000		44.2100	0.9400	42.0500	0.89	5.14%	5.62%
740.0000		43.8700	0.9400	41.9900	0.89	4.48%	5.62%
750.0000		43.7100	0.9500	41.9400	0.89	4.22%	6.74%
760.0000		43.8100	0.9500	41.8900	0.89	4.58%	6.74%
768.0125	*	43.5776	0.9821	41.8499	0.89	4.13%	10.34%
770.0000		43.5200	0.9900	41.8400	0.89	4.02%	11.24%
780.0000		43.4800	0.9700	41.7900	0.90	4.04%	7.78%
790.0000		43.6100	0.9900	41.7300	0.90	4.51%	10.00%
798.0125	*	43.3696	0.9900	41.6899	0.90	4.03%	10.00%
800.0000		43.3100	0.9900	41.6800	0.90	3.91%	10.00%
806.0250	*	43.2317	0.9960	41.6499	0.90	3.80%	10.67%
810.0000		43.1800	1.0000	41.6300	0.90	3.72%	11.11%
820.0000		43.1000	1.0100	41.5800	0.90	3.66%	12.22%
823.9875	*	42.9565	1.0140	41.5601	0.90	3.36%	12.67%
830.0000		42.7400	1.0200	41.5300	0.90	2.91%	13.33%
840.0000		42.6500	1.0400	41.5000	0.91	2.77%	14.29%
850.0000		42.5400	1.0500	41.5000	0.92	2.51%	14.13%

*Channel Frequency Tested

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Table 15.4 Fluid Dielectric Parameters 835MHz HEAD TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Fri 09/Sep/2022 12:24:07
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.7350	42.02	0.89	40.67	0.84
0.7450	41.97	0.89	40.51	0.86
0.7550	41.92	0.89	40.83	0.86
0.7650	41.86	0.89	40.64	0.87
0.7750	41.81	0.90	39.60	0.85
0.7850	41.76	0.90	39.69	0.87
0.7950	41.71	0.90	39.26	0.87
0.8050	41.66	0.90	39.03	0.87
0.8150	41.60	0.90	39.18	0.89
0.8250	41.55	0.90	38.93	0.89
0.8350	41.50	0.90	38.75	0.92
0.8450	41.50	0.91	38.42	0.93
0.8550	41.50	0.92	38.55	0.96
0.8650	41.50	0.93	38.44	0.96
0.8750	41.50	0.94	38.25	0.95
0.8850	41.50	0.95	38.32	0.98
0.8950	41.50	0.96	38.02	0.98
0.9050	41.50	0.97	37.27	0.98
0.9150	41.50	0.98	37.03	0.98
0.9250	41.48	0.98	36.93	0.98
0.9350	41.46	0.99	36.55	0.99

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FLUID DIELECTRIC PARAMETERS

Date:	9 Sep 2022	Fluid Temp:	21.5	Frequency:	835MHz	Tissue:	Head
Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
735.0000		40.6700	0.8400	42.0200	0.89	-3.21%	-5.62%
745.0000		40.5100	0.8600	41.9700	0.89	-3.48%	-3.37%
755.0000		40.8300	0.8600	41.9200	0.89	-2.60%	-3.37%
765.0000		40.6400	0.8700	41.8600	0.89	-2.91%	-2.25%
768.0125	*	40.3267	0.8640	41.8449	0.89	-3.63%	-3.25%
775.0000		39.6000	0.8500	41.8100	0.90	-5.29%	-5.56%
785.0000		39.6900	0.8700	41.7600	0.90	-4.96%	-3.33%
795.0000		39.2600	0.8700	41.7100	0.90	-5.87%	-3.33%
798.0125	*	39.1907	0.8700	41.6949	0.90	-6.01%	-3.33%
805.0000		39.0300	0.8700	41.6600	0.90	-6.31%	-3.33%
806.0250	*	39.0454	0.8721	41.6539	0.90	-6.26%	-3.11%
815.0000		39.1800	0.8900	41.6000	0.90	-5.82%	-1.11%
823.9875	*	38.9553	0.8900	41.5551	0.90	-6.26%	-1.11%
825.0000		38.9300	0.8900	41.5500	0.90	-6.31%	-1.11%
835.0000		38.7500	0.9200	41.5000	0.90	-6.63%	2.22%
845.0000		38.4200	0.9300	41.5000	0.91	-7.42%	2.20%
855.0000		38.5500	0.9600	41.5000	0.92	-7.11%	4.35%
856.0250	*	38.5387	0.9600	41.5000	0.92	-7.14%	4.23%
860.0000	*	38.4950	0.9600	41.5000	0.93	-7.24%	3.78%
860.9875	*	38.4841	0.9600	41.5000	0.93	-7.27%	3.67%
865.0000		38.4400	0.9600	41.5000	0.93	-7.37%	3.23%
868.9875	*	38.3642	0.9560	41.5000	0.93	-7.56%	2.36%
875.0000		38.2500	0.9500	41.5000	0.94	-7.83%	1.06%
885.0000		38.3200	0.9800	41.5000	0.95	-7.66%	3.16%
895.0000		38.0200	0.9800	41.5000	0.96	-8.39%	2.08%
905.0000		37.2700	0.9800	41.5000	0.97	-10.19%	1.03%
915.0000		37.0300	0.9800	41.5000	0.98	-10.77%	0.00%
925.0000		36.9300	0.9800	41.4800	0.98	-10.97%	0.00%
935.0000		36.5500	0.9900	41.4600	0.99	-11.84%	0.00%

*Channel Frequency Tested

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Table 15.5 Fluid Dielectric Parameters 835MHz HEAD TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Tue 13/Sep/2022 10:02:29
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.7350	42.02	0.89	41.54	0.86
0.7450	41.97	0.89	41.26	0.88
0.7550	41.92	0.89	41.24	0.88
0.7650	41.86	0.89	40.86	0.90
0.7750	41.81	0.90	40.88	0.91
0.7850	41.76	0.90	40.95	0.91
0.7950	41.71	0.90	40.52	0.93
0.8050	41.66	0.90	40.41	0.93
0.8150	41.60	0.90	40.37	0.94
0.8250	41.55	0.90	40.34	0.95
0.8350	41.50	0.90	39.90	0.96
0.8450	41.50	0.91	39.92	0.96
0.8550	41.50	0.92	39.66	0.97
0.8650	41.50	0.93	39.88	0.98
0.8750	41.50	0.94	39.30	1.00
0.8850	41.50	0.95	39.26	0.99
0.8950	41.50	0.96	39.47	1.01
0.9050	41.50	0.97	39.18	1.03
0.9150	41.50	0.98	39.16	1.03
0.9250	41.48	0.98	39.00	1.05
0.9350	41.46	0.99	38.70	1.04

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FLUID DIELECTRIC PARAMETERS

Date:	13 Sep 2022	Fluid Temp:	22.6	Frequency:	835MHz	Tissue:	Head
Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
735.0000		41.5400	0.8600	42.0200	0.89	-1.14%	-3.37%
745.0000		41.2600	0.8800	41.9700	0.89	-1.69%	-1.12%
755.0000		41.2400	0.8800	41.9200	0.89	-1.62%	-1.12%
765.0000		40.8600	0.9000	41.8600	0.89	-2.39%	1.12%
768.0125	*	40.8660	0.9030	41.8449	0.89	-2.34%	1.12%
775.0000		40.8800	0.9100	41.8100	0.90	-2.22%	1.11%
782.0000	*	40.9290	0.9100	41.7750	0.90	-2.03%	1.11%
785.0000		40.9500	0.9100	41.7600	0.90	-1.94%	1.11%
793.0000	*	40.6060	0.9260	41.7200	0.90	-2.67%	2.89%
795.0000		40.5200	0.9300	41.7100	0.90	-2.85%	3.33%
798.0125	*	40.4869	0.9300	41.6949	0.90	-2.90%	3.33%
805.0000		40.4100	0.9300	41.6600	0.90	-3.00%	3.33%
806.0250	*	40.4059	0.9310	41.6539	0.90	-3.00%	3.45%
815.0000		40.3700	0.9400	41.6000	0.90	-2.96%	4.44%
823.9875	*	40.3430	0.9490	41.5551	0.90	-2.92%	5.44%
825.0000		40.3400	0.9500	41.5500	0.90	-2.91%	5.56%
829.0000	*	40.1640	0.9540	41.5300	0.90	-3.29%	6.00%
831.5000	*	40.0540	0.9565	41.5175	0.90	-3.53%	6.28%
835.0000		39.9000	0.9600	41.5000	0.90	-3.86%	6.67%
836.5000	*	39.9030	0.9600	41.5000	0.90	-3.85%	6.49%
844.0000	*	39.9180	0.9600	41.5000	0.91	-3.81%	5.61%
845.0000		39.9200	0.9600	41.5000	0.91	-3.81%	5.49%
855.0000		39.6600	0.9700	41.5000	0.92	-4.43%	5.43%
865.0000		39.8800	0.9800	41.5000	0.93	-3.90%	5.38%
875.0000		39.3000	1.0000	41.5000	0.94	-5.30%	6.38%
885.0000		39.2600	0.9900	41.5000	0.95	-5.40%	4.21%
895.0000		39.4700	1.0100	41.5000	0.96	-4.89%	5.21%
905.0000		39.1800	1.0300	41.5000	0.97	-5.59%	6.19%
915.0000		39.1600	1.0300	41.5000	0.98	-5.64%	5.10%
925.0000		39.0000	1.0500	41.4800	0.98	-5.98%	7.14%
935.0000		38.7000	1.0400	41.4600	0.99	-6.66%	5.05%

*Channel Frequency Tested

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Table 15.6 Fluid Dielectric Parameters 835MHz HEAD TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Fri 16/Sep/2022 12:05:21
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.7350	42.02	0.89	42.16	0.88
0.7450	41.97	0.89	41.68	0.87
0.7550	41.92	0.89	41.36	0.90
0.7650	41.86	0.89	40.84	0.90
0.7750	41.81	0.90	40.75	0.92
0.7850	41.76	0.90	40.42	0.93
0.7950	41.71	0.90	39.54	0.93
0.8050	41.66	0.90	39.45	0.94
0.8150	41.60	0.90	39.12	0.95
0.8250	41.55	0.90	38.86	0.94
0.8350	41.50	0.90	38.61	0.93
0.8450	41.50	0.91	38.21	0.95
0.8550	41.50	0.92	37.79	0.94
0.8650	41.50	0.93	37.36	0.96
0.8750	41.50	0.94	37.40	0.97
0.8850	41.50	0.95	37.13	0.98
0.8950	41.50	0.96	37.05	0.97
0.9050	41.50	0.97	36.96	1.00
0.9150	41.50	0.98	37.03	1.00
0.9250	41.48	0.98	36.62	1.01
0.9350	41.46	0.99	36.48	1.01

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FLUID DIELECTRIC PARAMETERS

Date:	16 Sep 2022	Fluid Temp:	24.9	Frequency:	835MHz	Tissue:	Head
Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
735.0000		42.1600	0.8800	42.0200	0.89	0.33%	-1.12%
745.0000		41.6800	0.8700	41.9700	0.89	-0.69%	-2.25%
755.0000		41.3600	0.9000	41.9200	0.89	-1.34%	1.12%
765.0000		40.8400	0.9000	41.8600	0.89	-2.44%	1.12%
775.0000		40.7500	0.9200	41.8100	0.90	-2.54%	2.22%
782.0000	*	40.5190	0.9270	41.7750	0.90	-3.01%	3.00%
785.0000		40.4200	0.9300	41.7600	0.90	-3.21%	3.33%
793.0000	*	39.7160	0.9300	41.7200	0.90	-4.80%	3.33%
795.0000		39.5400	0.9300	41.7100	0.90	-5.20%	3.33%
805.0000		39.4500	0.9400	41.6600	0.90	-5.30%	4.44%
815.0000		39.1200	0.9500	41.6000	0.90	-5.96%	5.56%
825.0000		38.8600	0.9400	41.5500	0.90	-6.47%	4.44%
829.0000	*	38.7600	0.9360	41.5300	0.90	-6.67%	4.00%
831.5000	*	38.6975	0.9335	41.5175	0.90	-6.79%	3.72%
835.0000		38.6100	0.9300	41.5000	0.90	-6.96%	3.33%
836.5000	*	38.5500	0.9330	41.5000	0.90	-7.11%	3.49%
844.0000	*	38.2500	0.9480	41.5000	0.91	-7.83%	4.29%
845.0000		38.2100	0.9500	41.5000	0.91	-7.93%	4.40%
855.0000		37.7900	0.9400	41.5000	0.92	-8.94%	2.17%
865.0000		37.3600	0.9600	41.5000	0.93	-9.98%	3.23%
875.0000		37.4000	0.9700	41.5000	0.94	-9.88%	3.19%
885.0000		37.1300	0.9800	41.5000	0.95	-10.53%	3.16%
895.0000		37.0500	0.9700	41.5000	0.96	-10.72%	1.04%
905.0000		36.9600	1.0000	41.5000	0.97	-10.94%	3.09%
915.0000		37.0300	1.0000	41.5000	0.98	-10.77%	2.04%
925.0000		36.6200	1.0100	41.4800	0.98	-11.72%	3.06%
935.0000		36.4800	1.0100	41.4600	0.99	-12.01%	2.02%

*Channel Frequency Tested

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Table 15.7 Fluid Dielectric Parameters 1800MHz HEAD TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Mon 17/Oct/2022 11:07:13
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
1.7000	40.16	1.34	37.58	1.23
1.7100	40.14	1.35	37.51	1.25
1.7200	40.13	1.35	37.55	1.28
1.7300	40.11	1.36	37.55	1.30
1.7400	40.09	1.37	37.47	1.30
1.7500	40.08	1.37	37.38	1.31
1.7600	40.06	1.38	37.53	1.30
1.7700	40.05	1.38	37.53	1.34
1.7800	40.03	1.39	37.38	1.32
1.7900	40.02	1.39	37.28	1.35
1.8000	40.00	1.40	37.21	1.34
1.8100	40.00	1.40	37.10	1.35
1.8200	40.00	1.40	37.19	1.38
1.8300	40.00	1.40	36.92	1.39
1.8400	40.00	1.40	37.10	1.39
1.8500	40.00	1.40	37.12	1.40
1.8600	40.00	1.40	37.11	1.42
1.8700	40.00	1.40	36.85	1.43
1.8800	40.00	1.40	36.94	1.45
1.8900	40.00	1.40	36.71	1.44
1.9000	40.00	1.40	36.76	1.47

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FLUID DIELECTRIC PARAMETERS

Date:	17 Oct 2022	Fluid Temp:	23	Frequency:	1800MHz	Tissue:	Head
Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
1700.0000		37.5800	1.2300	40.1600	1.34	-6.42%	-8.21%
1710.0000		37.5100	1.2500	40.1400	1.35	-6.55%	-7.41%
1720.0000	*	37.5500	1.2800	40.1300	1.35	-6.43%	-5.19%
1730.0000		37.5500	1.3000	40.1100	1.36	-6.38%	-4.41%
1740.0000		37.4700	1.3000	40.0900	1.37	-6.54%	-5.11%
1745.0000	*	37.4250	1.3050	40.0850	1.37	-6.64%	-4.74%
1750.0000		37.3800	1.3100	40.0800	1.37	-6.74%	-4.38%
1760.0000		37.5300	1.3000	40.0600	1.38	-6.32%	-5.80%
1770.0000	*	37.5300	1.3400	40.0500	1.38	-6.29%	-2.90%
1780.0000		37.3800	1.3200	40.0300	1.39	-6.62%	-5.04%
1790.0000		37.2800	1.3500	40.0200	1.39	-6.85%	-2.88%
1800.0000		37.2100	1.3400	40.0000	1.40	-6.98%	-4.29%
1810.0000		37.1000	1.3500	40.0000	1.40	-7.25%	-3.57%
1820.0000		37.1900	1.3800	40.0000	1.40	-7.03%	-1.43%
1830.0000		36.9200	1.3900	40.0000	1.40	-7.70%	-0.71%
1840.0000		37.1000	1.3900	40.0000	1.40	-7.25%	-0.71%
1850.0000		37.1200	1.4000	40.0000	1.40	-7.20%	0.00%
1860.0000	*	37.1100	1.4200	40.0000	1.40	-7.23%	1.43%
1870.0000		36.8500	1.4300	40.0000	1.40	-7.88%	2.14%
1880.0000	*	36.9400	1.4500	40.0000	1.40	-7.65%	3.57%
1890.0000		36.7100	1.4400	40.0000	1.40	-8.23%	2.86%
1900.0000		36.7600	1.4700	40.0000	1.40	-8.10%	5.00%

*Channel Frequency Tested

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Table 15.8 Fluid Dielectric Parameters 2600MHz HEAD TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Mon 17/Oct/2022 15:24:05
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
2.3500	39.38	1.71	38.25	1.76
2.3600	39.36	1.72	38.37	1.78
2.3700	39.34	1.73	38.34	1.77
2.3800	39.32	1.74	38.31	1.81
2.3900	39.31	1.75	38.23	1.81
2.4000	39.29	1.76	38.42	1.82
2.4100	39.27	1.76	38.34	1.82
2.4200	39.25	1.77	38.33	1.84
2.4300	39.24	1.78	38.28	1.84
2.4400	39.22	1.79	38.25	1.84
2.4500	39.20	1.80	38.06	1.84
2.4600	39.19	1.81	38.20	1.87
2.4700	39.17	1.82	38.13	1.87
2.4800	39.16	1.83	38.06	1.89
2.4900	39.15	1.84	37.99	1.91
2.5000	39.14	1.85	38.15	1.91
2.5100	39.12	1.87	38.06	1.94
2.5200	39.11	1.88	38.11	1.95
2.5300	39.10	1.89	37.96	1.92
2.5400	39.09	1.90	37.83	1.95
2.5500	39.07	1.91	37.92	1.98

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FLUID DIELECTRIC PARAMETERS

Date:	17 Oct 2022	Fluid Temp:	24.8	Frequency:	2450MHz	Tissue:	Head
Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
2350.0000		38.2500	1.7600	39.3800	1.71	-2.87%	2.92%
2360.0000		38.3700	1.7800	39.3600	1.72	-2.52%	3.49%
2370.0000		38.3400	1.7700	39.3400	1.73	-2.54%	2.31%
2380.0000		38.3100	1.8100	39.3200	1.74	-2.57%	4.02%
2390.0000		38.2300	1.8100	39.3100	1.75	-2.75%	3.43%
2400.0000		38.4200	1.8200	39.2900	1.76	-2.21%	3.41%
2410.0000		38.3400	1.8200	39.2700	1.76	-2.37%	3.41%
2420.0000		38.3300	1.8400	39.2500	1.77	-2.34%	3.95%
2430.0000		38.2800	1.8400	39.2400	1.78	-2.45%	3.37%
2440.0000		38.2500	1.8400	39.2200	1.79	-2.47%	2.79%
2450.0000		38.0600	1.8400	39.2000	1.80	-2.91%	2.22%
2460.0000		38.2000	1.8700	39.1900	1.81	-2.53%	3.31%
2470.0000		38.1300	1.8700	39.1700	1.82	-2.66%	2.75%
2480.0000		38.0600	1.8900	39.1600	1.83	-2.81%	3.28%
2490.0000		37.9900	1.9100	39.1500	1.84	-2.96%	3.80%
2500.0000		38.1500	1.9100	39.1400	1.85	-2.53%	3.24%
2510.0000	*	38.0600	1.9400	39.1200	1.87	-2.71%	3.74%
2520.0000		38.1100	1.9500	39.1100	1.88	-2.56%	3.72%
2530.0000		37.9600	1.9200	39.1000	1.89	-2.92%	1.59%
2535.0000	*	37.8950	1.9350	39.0950	1.90	-3.07%	2.11%
2540.0000		37.8300	1.9500	39.0900	1.90	-3.22%	2.63%
2550.0000		37.9200	1.9800	39.0700	1.91	-2.94%	3.66%

*Channel Frequency Tested

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Table 15.9 Fluid Dielectric Parameters 2450 MHz HEAD TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Mon 19/Sep/2022 10:44:15
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
2.3500	39.38	1.71	36.50	1.70
2.3600	39.36	1.72	36.49	1.68
2.3700	39.34	1.73	36.65	1.68
2.3800	39.32	1.74	36.47	1.68
2.3900	39.31	1.75	36.34	1.69
2.4000	39.29	1.76	36.50	1.70
2.4100	39.27	1.76	36.27	1.69
2.4200	39.25	1.77	36.23	1.73
2.4300	39.24	1.78	36.30	1.76
2.4400	39.22	1.79	36.30	1.75
2.4500	39.20	1.80	36.10	1.76
2.4600	39.19	1.81	36.08	1.80
2.4700	39.17	1.82	36.24	1.81
2.4800	39.16	1.83	35.92	1.83
2.4900	39.15	1.84	36.05	1.83
2.5000	39.14	1.85	36.00	1.84
2.5100	39.12	1.87	35.95	1.85
2.5200	39.11	1.88	35.88	1.85
2.5300	39.10	1.89	35.87	1.87
2.5400	39.09	1.90	35.63	1.88
2.5500	39.07	1.91	35.65	1.89

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FLUID DIELECTRIC PARAMETERS

Date:	19 Sep 2022	Fluid Temp:	24.2	Frequency:	2450MHz	Tissue:	Head
Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
2350.0000		36.5000	1.7000	39.3800	1.71	-7.31%	-0.58%
2360.0000		36.4900	1.6800	39.3600	1.72	-7.29%	-2.33%
2370.0000		36.6500	1.6800	39.3400	1.73	-6.84%	-2.89%
2380.0000		36.4700	1.6800	39.3200	1.74	-7.25%	-3.45%
2390.0000		36.3400	1.6900	39.3100	1.75	-7.56%	-3.43%
2400.0000		36.5000	1.7000	39.2900	1.76	-7.10%	-3.41%
2410.0000		36.2700	1.6900	39.2700	1.76	-7.64%	-3.98%
2420.0000		36.2300	1.7300	39.2500	1.77	-7.69%	-2.26%
2430.0000		36.3000	1.7600	39.2400	1.78	-7.49%	-1.12%
2440.0000		36.3000	1.7500	39.2200	1.79	-7.45%	-2.23%
2450.0000		36.1000	1.7600	39.2000	1.80	-7.91%	-2.22%
2460.0000		36.0800	1.8000	39.1900	1.81	-7.94%	-0.55%
2470.0000		36.2400	1.8100	39.1700	1.82	-7.48%	-0.55%
2480.0000		35.9200	1.8300	39.1600	1.83	-8.27%	0.00%
2490.0000		36.0500	1.8300	39.1500	1.84	-7.92%	-0.54%
2500.0000		36.0000	1.8400	39.1400	1.85	-8.02%	-0.54%
2510.0000		35.9500	1.8500	39.1200	1.87	-8.10%	-1.07%
2520.0000		35.8800	1.8500	39.1100	1.88	-8.26%	-1.60%
2530.0000		35.8700	1.8700	39.1000	1.89	-8.26%	-1.06%
2535.0000	*	35.7500	1.8750	39.0950	1.90	-8.56%	-1.06%
2540.0000		35.6300	1.8800	39.0900	1.90	-8.85%	-1.05%
2550.0000		35.6500	1.8900	39.0700	1.91	-8.75%	-1.05%

*Channel Frequency Tested

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16.0 SYSTEM VERIFICATION TEST RESULTS

Table 16.1 System Verification Results 150MHz HEAD TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
01 Sep 2022		150	CLA-150		4007
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	22.5	23	42%	1000	0
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
55.90	52.30	6.88%	0.83	0.76	9.21%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
4.14	3.89	6.43%	2.75	2.57	7.00%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
4.14	3.87	6.98%	2.75	2.56	7.42%

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 IEEE 1528-2013, FCC KDB 846224, IEC 62209-1 and IEC/IEEE 62209-1528.

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.

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Table 16.2 System Verification Results 450MHz HEAD TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
29 Aug 2022		450	D450V3		1068
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	23.2	22	42%	250	15
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
46.80	43.50	7.59%	0.88	0.87	1.15%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
1.14	1.20	-5.28%	0.78	0.79	-1.14%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
4.56	4.81	-5.28%	3.12	3.16	-1.14%

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 IEEE 1528-2013, FCC KDB 846224, IEC 62209-1 and IEC/IEEE 62209-1528

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.

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Table 16.3 System Verification Results 750MHz HEAD TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
14 Sep 2022		750	D750V3		1061
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	22.9	24	41%	250	15
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
43.71	41.94	4.22%	0.95	0.89	6.74%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
2.15	2.17	-0.92%	1.44	1.42	1.41%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
8.60	8.66	-0.69%	5.76	5.67	1.59%

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 IEEE 1528-2013, FCC KDB 846224, IEC 62209-1 and IEC/IEEE 62209-1528

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.

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Table 16.4 System Verification Results 835MHz HEAD TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
09 Sep 2022		835	D835V2		4d075
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	21.5	25	30%	250	15
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
38.75	41.50	-6.63%	0.92	0.90	2.22%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
2.19	2.33	-6.01%	1.43	1.50	-4.86%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
8.76	9.32	-6.00%	5.72	6.01	-4.84%

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 IEEE 1528-2013, FCC KDB 846224, IEC 62209-1 and IEC 62209-1528.

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.

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Table 16.5 System Verification Results 835MHz HEAD TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
13 Sep 2022		835	D835V2		4d075
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	22.6	25	49%	250	15
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
39.90	41.50	-3.86%	0.96	0.90	6.67%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
2.37	2.33	1.72%	1.56	1.50	3.79%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
9.48	9.32	1.73%	6.24	6.01	3.81%

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 IEEE 1528-2013, FCC KDB 846224, IEC 62209-1 and IEC 62209-1528.

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.

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Table 16.6 System Verification Results 835MHz HEAD TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
16 Sep 2022		835	D835V2		4d075
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	22.6	25	49%	250	15
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
38.61	41.50	-6.96%	0.93	0.90	3.33%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
2.41	2.33	3.43%	1.50	1.50	-0.20%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
9.64	9.32	3.44%	6.00	6.01	-0.18%

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 IEEE 1528-2013, FCC KDB 846224, IEC 62209-1 and IEC 62209-1528.

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.

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Table 16.7 System Verification Results 1800MHz HEAD TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
17 Oct 2022		1800	D1800V2		247
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	24.8	24	34%	250	10
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
37.21	40.00	-6.98%	1.34	1.40	-4.29%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
9.97	9.75	2.26%	5.18	5.10	1.57%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
39.88	39.60	0.71%	20.72	20.60	0.58%

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 IEEE 1528-2013, FCC KDB 846224, IEC 62209-1 and IEC/IEEE 62209-1528

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.

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Table 16.8 System Verification Results 2600MHz HEAD TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
17 Oct 2022		2450	D2450V2		825
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	23.0	24	35%	250	10
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
38.06	39.20	-2.91%	1.84	1.80	2.22%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
12.90	13.18	-2.12%	5.95	6.01	-0.92%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
51.60	52.72	-2.12%	23.80	24.02	-0.90%

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 IEEE 1528-2013, FCC KDB 846224, IEC 62209-1 and IEC/IEEE 62209-1528

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.

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Table 16.9 System Verification Results 2450MHz HEAD TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
19 Sep 2022		2450	D2450V2		825
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	24.2	22	34%	250	10
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
36.10	39.20	-7.91%	1.76	1.80	-2.22%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
13.80	13.18	4.70%	6.25	6.01	4.08%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
55.20	52.72	4.71%	25.00	24.02	4.10%

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 IEEE 1528-2013, FCC KDB 846224, IEC 62209-1 and IEC 62209-1528.

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.

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17.0 SYSTEM VALIDATION SUMMARY

Table 17.1 System Validation Summary

SAR Validation SummaryChart					
Validation Date	Validation Source	Validation Frequency	Linearity	Isotropy	Extrapolation
✓	= Complete	✓	= Not Required		
27-May-22	CLA150	150	✓	✓	✓
14-Jul-22	D450V2	450	✓	✓	✓
28-Aug-22	D750V3	750			
19-Jul-22	D835V2	835	✓	✓	✓
22-Aug-22	D1800V2	1800	✓	✓	✓
3-May-22	D2450V2	2450	✓	✓	✓

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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
Serial No.	3600
Construction	Triangular core fiber optic detection system
Frequency	10 MHz to 6 GHz
Linearity	±0.2 dB (30 MHz to 3 GHz)
Phantom	
Type	ELI Elliptical Planar Phantom
Shell Material	Fiberglass
Thickness	2mm +/- .2mm
Volume	> 30 Liter

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Measurement System Specification

Probe Specification

Construction:	Symmetrical design with triangular core; Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, glycol)
Calibration:	In air from 10 MHz to 2.5 GHz In head simulating tissue at frequencies of 900 MHz and 1.8 GHz (accuracy ± 8%)
Frequency:	10 MHz to > 6 GHz; Linearity: ± 0.2 dB (30 MHz to 3 GHz)
Directivity:	± 0.2 dB in head tissue (rotation around probe axis) ± 0.4 dB in head tissue (rotation normal to probe axis)
Dynamic Range:	5 µW/g to > 100 mW/g; Linearity: ± 0.2 dB
Surface Detect:	± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces
Dimensions:	Overall length: 330 mm; Tip length: 16 mm; Body diameter: 12 mm; Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm
Application:	General dosimetry up to 3 GHz; Compliance tests of mobile phone

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/IEEE 62209-1528, IEC 62209-1 and IEC 62209-2.

ELI 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°. 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

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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	22-Apr-21	22-Apr-22
-EX3DV4 E-Field Probe	00213	3600	20-Apr-21	20-Apr-22
-CLA 30 Validation Dipole	00300	1005	18-Mar-20	18-Mar-23
-CLA150 Validation Dipole	00251	4007	18-Mar-20	18-Mar-23
-D450V3 Validation Dipole	00221	1068	27-Apr-21	27-Apr-24
-D750V3 Validation Dipole	00238	1061	21-Mar-19	21-Mar-22
-D835V2 Validation Dipole	00217	4D075	27-Apr-21	27-Apr-24
-D900V2 Validation Dipole	00020	54	16-Mar-20	16-Mar-23
ALS-D-01640-S-2	00299	207-00102	15-Dec-20	15-Dec-23
-D1800V2 Validation Dipole	00222	247	16-Mar-20	16-Mar-23
-D1900V2 Validation Dipole	00218	5d107	16-Mar-20	16-Mar-23
ALS-D-2300-S-2	00328	218-00201	26-Feb-19	26-Feb-22
-D2450V2 Validation Dipole	00219	825	24-Apr-21	24-Apr-24
ALS-D-2600-S-2	00327	225-00926	26-Feb-19	26-Feb-22
-D5GHzV2 Validation Dipole	00126	1031	27-Apr-21	27-Apr-24
ELI Phantom	00247	1234	CNR	CNR
SAM Phantom	00154	1033	CNR	CNR
HP 85070C Dielectric Probe Kit	00033	none	CNR	CNR
Gigatronics 8652A Power Meter	00007	1835801	26-Mar-19	26-Mar-22
Gigatronics 80701A Power Sensor	00186	1837002	COU	COU
Gigatronics 80334A Power Sensor	00237	1837001	26-Mar-19	26-Mar-22
HP 8753ET Network Analyzer	00134	US39170292	6-Jan-21	6-Jan-24
Rohde & Schwarz SMR20 Signal Generator	00006	100104	11-Aug-20	11-Aug-23
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
Kangaroo VWR Humidity/Thermometer	00334	192385455	5-Aug-19	6-Aug-22
Digital Multi Meter DMR-1800	00250	TE182	23-Jun-20	23-Jun-23
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	29-Jun-20	29-Jun-23
RF Cable-SMA	00311	-	CNR	CNR
HP Calibration Kit	00145	-	CNR	CNR

CNR = Calibration Not Required

COU = Calibrate on Use

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20.0 FLUID COMPOSITION

Table 20.1 Fluid Composition 150MHz HEAD TSL

Tissue Simulating Liquid (TSL) Composition				150MHz Head
Component by Percent Weight				
Water	Sugar	Salt(1)	HEC(2)	Bacteriacide(3)
38.35	55.5	5.15	0.9	0.1

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

Table 20.2 Fluid Composition 450MHz HEAD TSL

Tissue Simulating Liquid (TSL) Composition				450MHz Head
Component by Percent Weight				
Water	Sugar	Salt(1)	HEC(2)	Bacteriacide(3)
38.56	56.32	3.95	0.98	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

Table 20.3 Fluid Composition 750MHz HEAD TSL

Tissue Simulating Liquid (TSL) Composition				750MHz 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

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Table 20.4 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

Table 20.5 Fluid Composition 1800MHz HEAD TSL

Tissue Simulating Liquid (TSL) Composition				1800MHz Head
Component by Percent Weight				
Water	Glycol	Salt(1)	HEC(2)	Bacteriacide(3)
54.8	44.9	0.3	0.0	0.0

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

Table 20.6 Fluid Composition 2600MHz HEAD TSL

Tissue Simulating Liquid (TSL) Composition				2450MHz Head
Component by Percent Weight				
Water	Glycol	Salt(1)	HEC(2)	Bacteriacide(3)
52.0	48.0	0.0	0.0	0.0

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

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APPENDIX A – SYSTEM VERIFICATION PLOTS

DUT: CLA-150; Type: CLA-150; Serial: 4007
Procedure Name: SPC 150H Input=1.0W, Target[3.5][3.89][4.3]W/kg_ 2 2 2

Communication System: UID 0, CW (0); Frequency: 150 MHz;Duty Cycle: 1:1
Medium parameters used: f = 150 MHz; σ = 0.83 S/m; ε_r = 55.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 9/1/2022 10:15:06 AM

DASY5 Configuration:

- Probe: EX3DV4 - SN3600; ConvF(9.65, 9.65, 9.65) @ 150 MHz; Calibrated: 4/20/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 4/14/2022
- 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 150H Input=1.0W, Target[3.5][3.89][4.3]W/kg_ 2 2 2/Area Scan (9x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 4.46 W/kg

SPC/SPC 150H Input=1.0W, Target[3.5][3.89][4.3]W/kg_ 2 2 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 74.09 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 6.39 W/kg
SAR(1 g) = 4.14 W/kg; SAR(10 g) = 2.75 W/kg
Ratio of SAR at M2 to SAR at M1 = 67.6%
Maximum value of SAR (measured) = 4.43 W/kg

SPC/SPC 150H Input=1.0W, Target[3.5][3.89][4.3]W/kg_ 2 2 2/Z Scan (1x1x36): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Penetration depth = 14.80 (12.77, 16.37) [mm]
Maximum value of SAR (interpolated) = 5.72 W/kg

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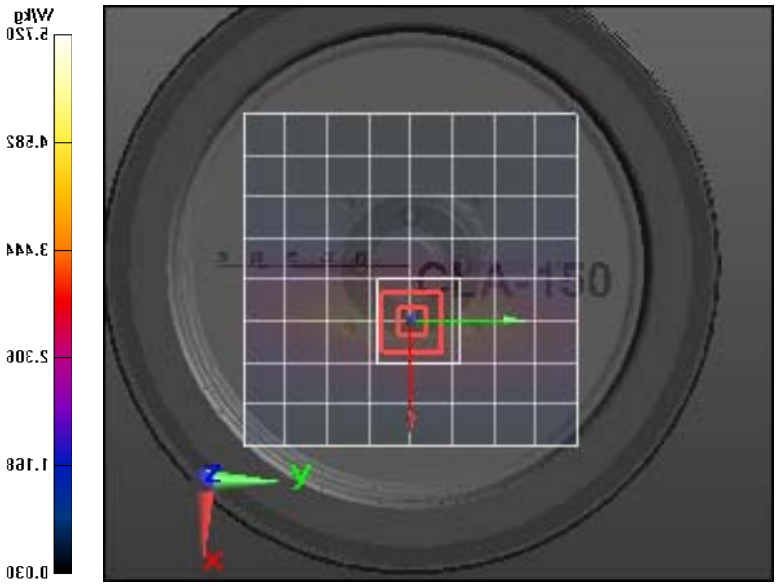

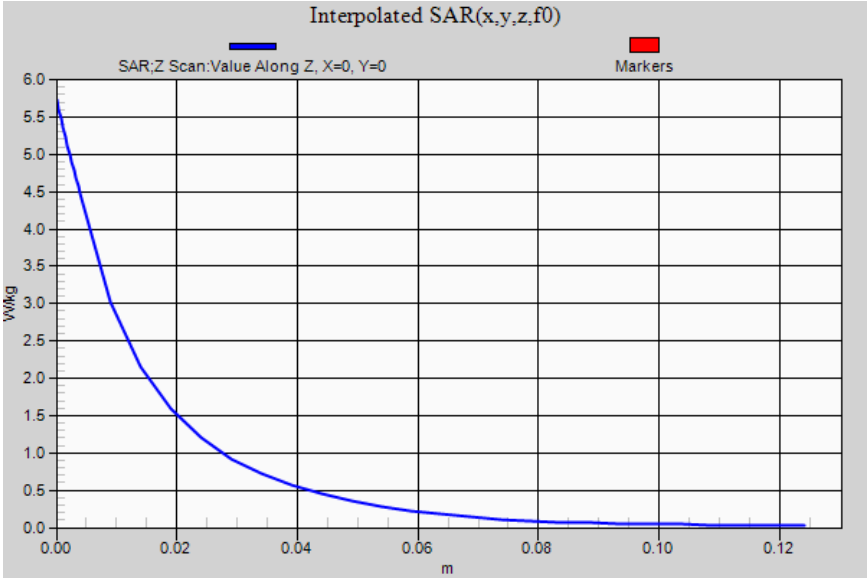

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DUT: Dipole 450 MHz D450V3; Type: D450V3; Serial: D450V3 - SN:1068
Procedure Name: SPC 450H, Input 250mW, Taget[1.08315][1.2035][1.32385] W/kg_ 2 2

Communication System: UID 0, CW (0); Frequency: 450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 450 MHz; σ = 0.88 S/m; ε_r = 46.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 8/29/2022 11:22:03 AM

DASY5 Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.78, 8.78, 8.78) @ 450 MHz; Calibrated: 4/20/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 4/14/2022
- 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 450H, Input 250mW, Taget[1.08315][1.2035][1.32385] W/kg_ 2 2/Area Scan (6x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.22 W/kg

SPC/SPC 450H, Input 250mW, Taget[1.08315][1.2035][1.32385] W/kg_ 2 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 37.08 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.66 W/kg
SAR(1 g) = 1.14 W/kg; SAR(10 g) = 0.781 W/kg
Ratio of SAR at M2 to SAR at M1 = 69.2%
Maximum value of SAR (measured) = 1.22 W/kg

SPC/SPC 450H, Input 250mW, Taget[1.08315][1.2035][1.32385] W/kg_ 2 2/Z Scan (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Penetration depth = 14.63 (13.78, 15.42) [mm]
Maximum value of SAR (interpolated) = 1.56 W/kg

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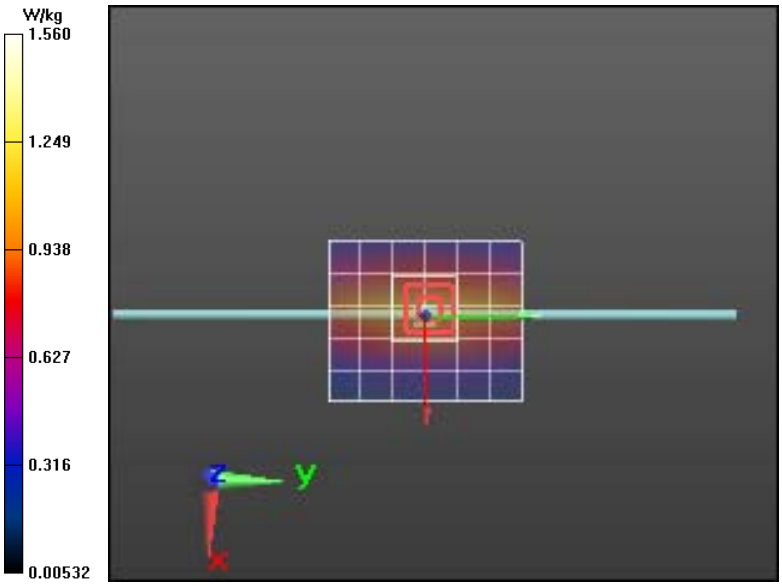

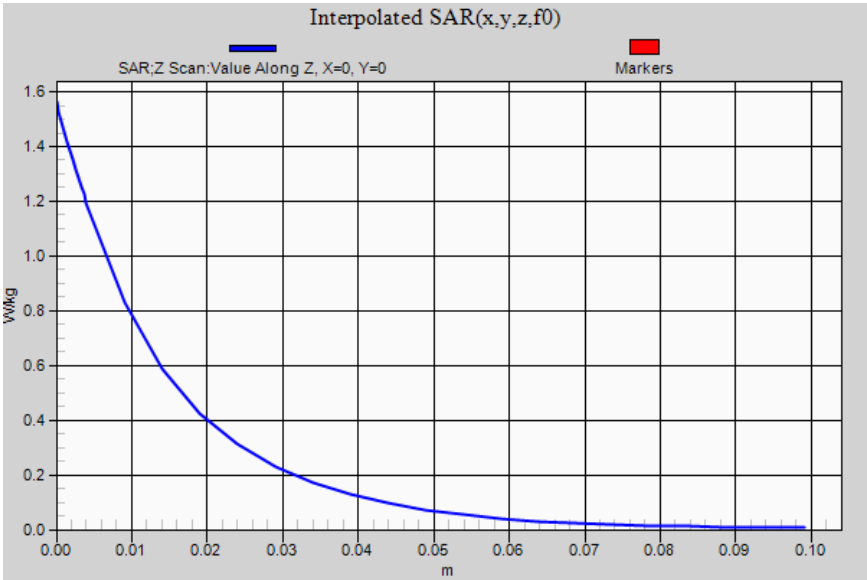

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DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:4d075
Procedure Name: SPC 835H, 1W Target=9.319W/kg ,6.011W/kg ,Input 250mW Target=2.33, 1.50

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.92 S/m; ε_r = 38.75; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 9/9/2022 1:43:37 PM

DASY5 Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.11, 8.11, 8.11) @ 835 MHz; Calibrated: 4/20/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 4/14/2022
- 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, 1W Target=9.319W/kg ,6.011W/kg ,Input 250mW Target=2.33, 1.50/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.35 W/kg

SPC/SPC 835H, 1W Target=9.319W/kg ,6.011W/kg ,Input 250mW Target=2.33, 1.50/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 51.05 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 3.30 W/kg
SAR(1 g) = 2.19 W/kg; SAR(10 g) = 1.43 W/kg
Ratio of SAR at M2 to SAR at M1 = 66.6%
Maximum value of SAR (measured) = 2.36 W/kg

SPC/SPC 835H, 1W Target=9.319W/kg ,6.011W/kg ,Input 250mW Target=2.33, 1.50/Z Scan (1x1x28): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Penetration depth = 12.94 (12.16, 13.48) [mm]
Maximum value of SAR (interpolated) = 3.20 W/kg

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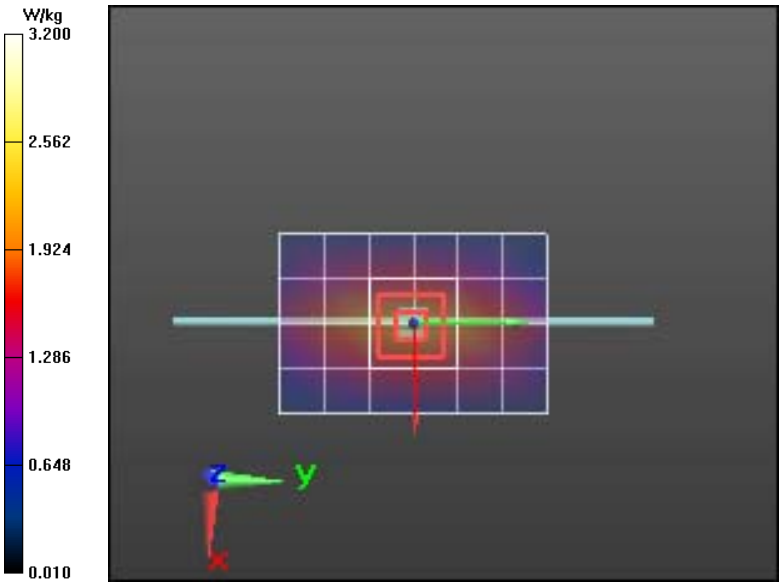

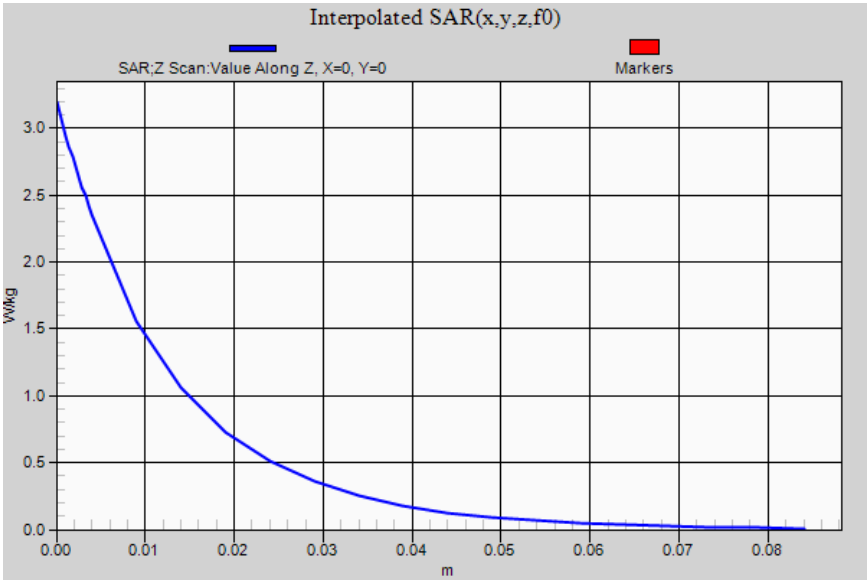

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DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:4d075
Procedure Name: SPC 835H, 1W Target=9.319W/kg ,6.011W/kg ,Input 250mW Target=2.33, 1.50_

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.96 S/m; ε_r = 39.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 9/13/2022 10:53:54 AM

DASY5 Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.11, 8.11, 8.11) @ 835 MHz; Calibrated: 4/20/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 4/14/2022
- 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, 1W Target=9.319W/kg ,6.011W/kg ,Input 250mW Target=2.33, 1.50_/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.54 W/kg

SPC/SPC 835H, 1W Target=9.319W/kg ,6.011W/kg ,Input 250mW Target=2.33, 1.50_/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 51.32 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.53 W/kg
SAR(1 g) = 2.37 W/kg; SAR(10 g) = 1.56 W/kg
Ratio of SAR at M2 to SAR at M1 = 67%
Maximum value of SAR (measured) = 2.55 W/kg

SPC/SPC 835H, 1W Target=9.319W/kg ,6.011W/kg ,Input 250mW Target=2.33, 1.50_/Z Scan (1x1x28): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Penetration depth = 13.12 (12.52, 13.62) [mm]
Maximum value of SAR (interpolated) = 3.42 W/kg

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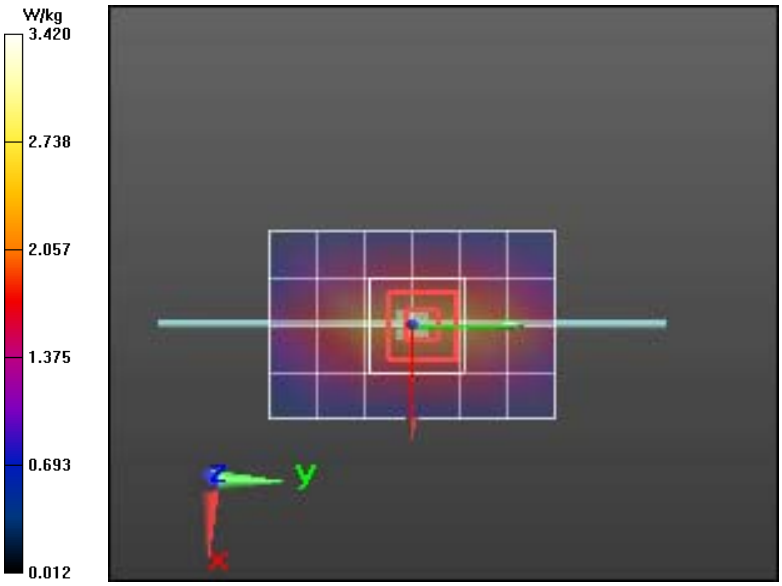

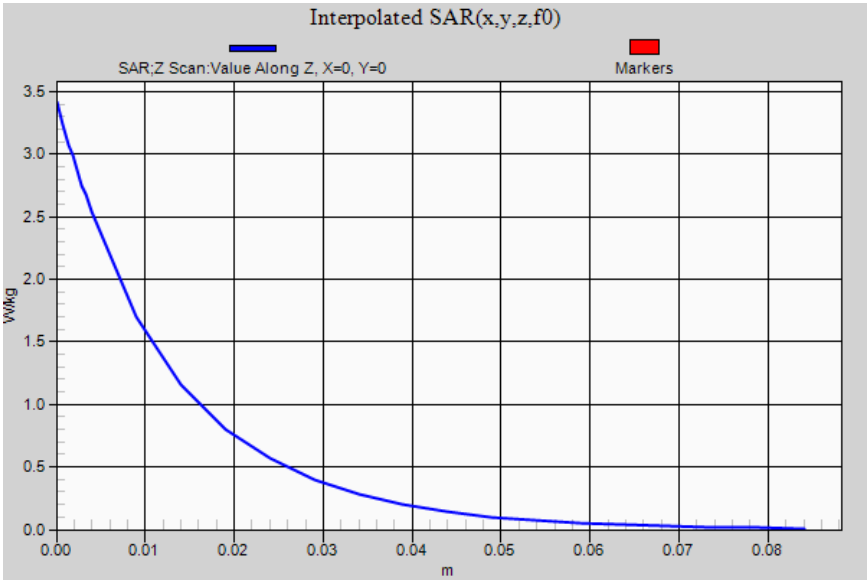

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DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:4d075
Procedure Name: SPC 835H, 1W Target=9.319W/kg ,6.011W/kg ,Input 250mW Target=2.33, 1.50

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.93 S/m; ε_r = 38.61; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 9/16/2022 1:58:15 PM

DASY5 Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.11, 8.11, 8.11) @ 835 MHz; Calibrated: 4/20/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 4/14/2022
- 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, 1W Target=9.319W/kg ,6.011W/kg ,Input 250mW Target=2.33, 1.50/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.52 W/kg

SPC/SPC 835H, 1W Target=9.319W/kg ,6.011W/kg ,Input 250mW Target=2.33, 1.50/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 52.90 V/m; Power Drift = -0.29 dB
Peak SAR (extrapolated) = 3.50 W/kg
SAR(1 g) = 2.31 W/kg; SAR(10 g) = 1.5 W/kg
Ratio of SAR at M2 to SAR at M1 = 66.1%
Maximum value of SAR (measured) = 2.48 W/kg

SPC/SPC 835H, 1W Target=9.319W/kg ,6.011W/kg ,Input 250mW Target=2.33, 1.50/Z Scan (1x1x28): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Penetration depth = 12.94 (12.12, 13.45) [mm]
Maximum value of SAR (interpolated) = 3.25 W/kg

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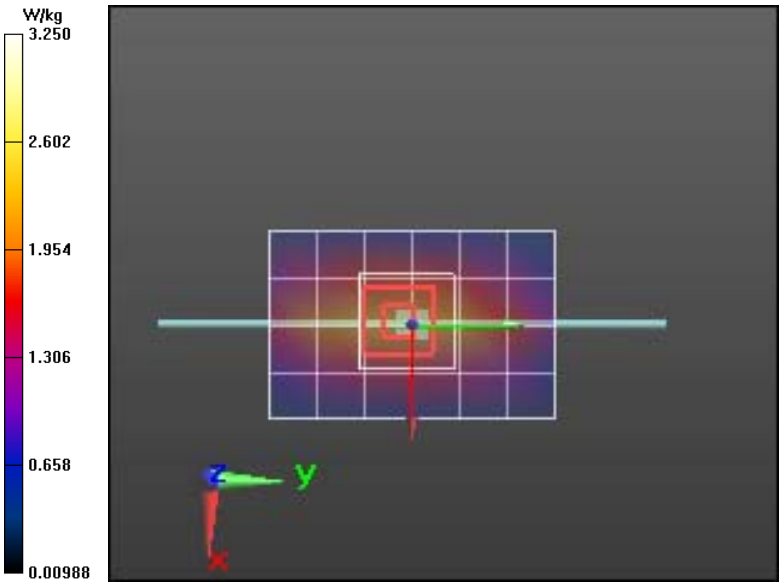
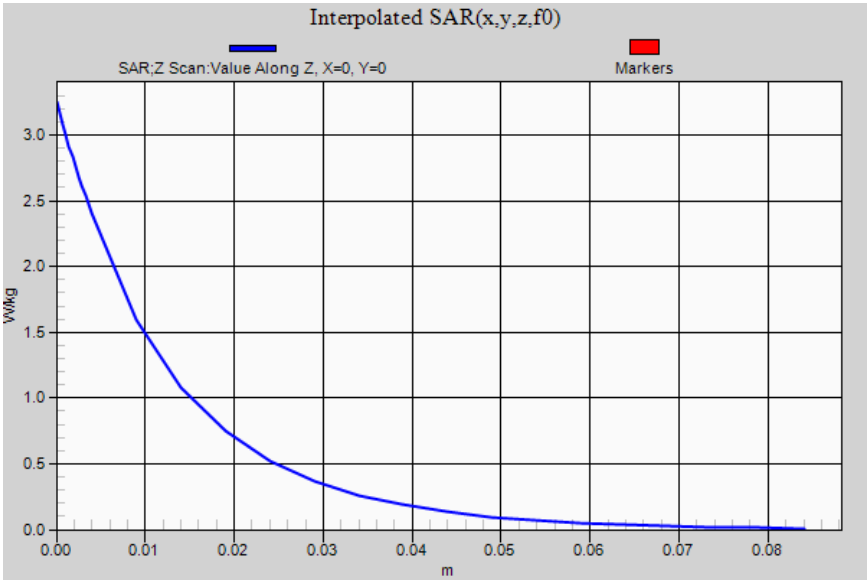

W/kg
3.250
2.602
1.954
1.306
0.658
0.00988
y
z
x


Interpolated SAR(x,y,z,f0)
SAR;Z Scan:Value Along Z, X=0, Y=0
Markers
W/kg
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
m

DUT: Dipole 1800 MHz D1800V2; Type: D1800V2; Serial: D1800V2 - SN:247
Procedure Name: SPC 1800H Input=250mW, Target=[9.63][5.03]W/kg 2

Communication System: UID 0, CW (0); Frequency: 1800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1800 MHz; σ = 1.34 S/m; ε_r = 37.21; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 10/17/2022 11:28:10 AM

DASY5 Configuration:

- Probe: EX3DV4 - SN3600; ConvF(7.35, 7.35, 7.35) @ 1800 MHz; Calibrated: 4/20/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 4/14/2022
- 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 1800H Input=250mW, Target=[9.63][5.03]W/kg 2/Area Scan (4x4x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 10.5 W/kg

SPC/SPC 1800H Input=250mW, Target=[9.63][5.03]W/kg 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 90.66 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 18.6 W/kg
SAR(1 g) = 9.97 W/kg; SAR(10 g) = 5.18 W/kg
Smallest distance from peaks to all points 3 dB below = 12 mm
Ratio of SAR at M2 to SAR at M1 = 54.7%
Maximum value of SAR (measured) = 11.2 W/kg

SPC/SPC 1800H Input=250mW, Target=[9.63][5.03]W/kg 2/Z Scan (1x1x19): Measurement grid: dx=20mm, dy=20mm, dz=20mm
Penetration depth = n/a (n/a, 9.085) [mm]
Maximum value of SAR (interpolated) = 14.3 W/kg

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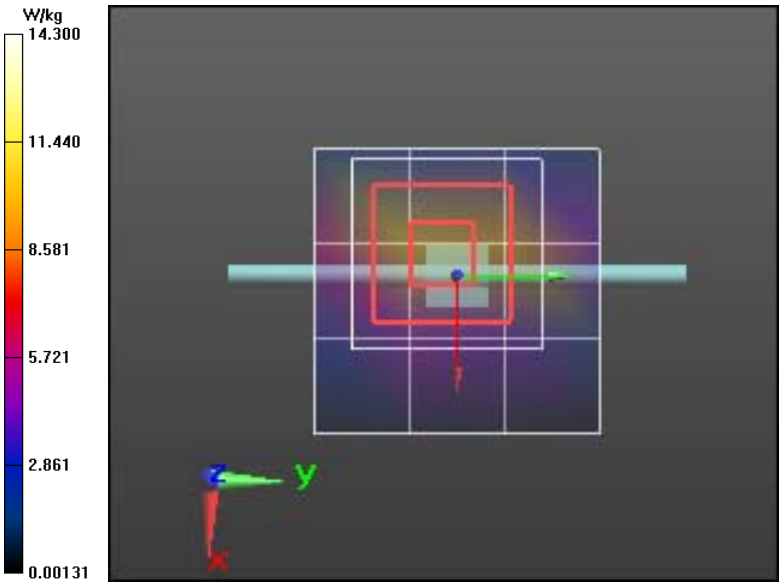
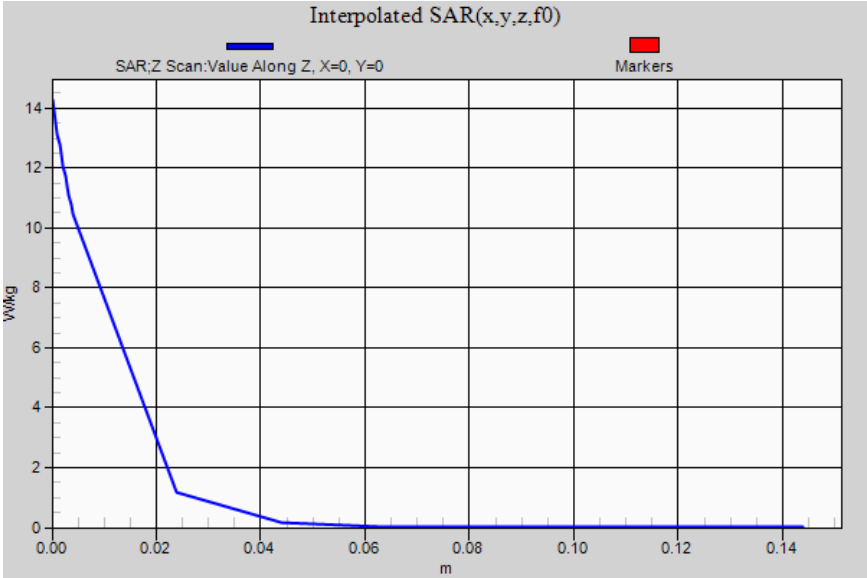

W/kg
14.300
11.440
8.581
5.721
2.861
0.00131
y
z
x


Interpolated SAR(x,y,z,f0)
SAR;Z Scan:Value Along Z, X=0, Y=0
Markers
W/kg
14
12
10
8
6
4
2
0
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
m

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: D2450V2 - SN:825
Procedure Name: SPC 2450H_Input=250mw, Target=[11.86]13.18][14.50]W/kg 1G target = 52.719 2 2 2

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.84 S/m; ε_r = 38.06; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 10/17/2022 3:49:43 PM

DASY5 Configuration:

- Probe: EX3DV4 - SN3600; ConvF(6.58, 6.58, 6.58) @ 2450 MHz; Calibrated: 4/20/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 4/14/2022
- 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 2450H_Input=250mw, Target=[11.86]13.18][14.50]W/kg 1G target = 52.719 2 2 2/Area Scan (4x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 12.6 W/kg

SPC/SPC 2450H_Input=250mw, Target=[11.86]13.18][14.50]W/kg 1G target = 52.719 2 2 2/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.87 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 27.6 W/kg
SAR(1 g) = 12.9 W/kg; SAR(10 g) = 5.95 W/kg
Smallest distance from peaks to all points 3 dB below = 10.2 mm
Ratio of SAR at M2 to SAR at M1 = 47.9%
Maximum value of SAR (measured) = 14.7 W/kg

SPC/SPC 2450H_Input=250mw, Target=[11.86]13.18][14.50]W/kg 1G target = 52.719 2 2 2/Z Scan (1x1x22): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Penetration depth = 7.121 (6.828, 7.253) [mm]
Maximum value of SAR (interpolated) = 24.3 W/kg

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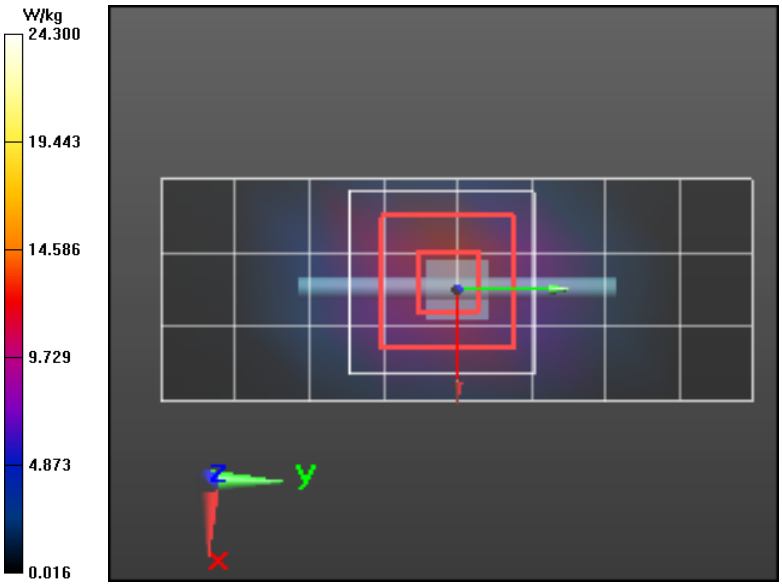
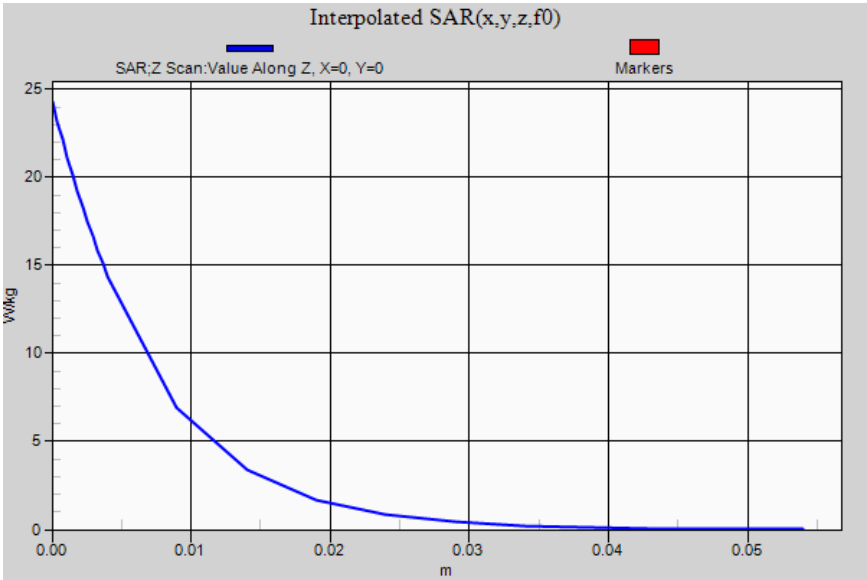

W/kg
24.300
19.443
14.586
9.729
4.873
0.016
y
x


Interpolated SAR(x,y,z,f0)
SAR;Z Scan:Value Along Z, X=0, Y=0
Markers
W/kg
25
20
15
10
5
0
0.00
0.01
0.02
0.03
0.04
0.05
m

DUT: Dipole 750 MHz D750V3; Type: D750V3; Serial: D750V3 - SN:1061
Procedure Name: SPC 750H,Target=[1.95][2.17] [2.39] W/kg,Input_250mW

Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 750 MHz; σ = 0.95 S/m; ε_r = 43.71; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 9/14/2022 1:20:06 PM

DASY5 Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.23, 8.23, 8.23) @ 750 MHz; Calibrated: 4/20/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 4/14/2022
- 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 750H,Target=[1.95][2.17] [2.39] W/kg,Input_250mW/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.32 W/kg

SPC/SPC 750H,Target=[1.95][2.17] [2.39] W/kg,Input_250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 50.03 V/m; Power Drift = -0.30 dB
Peak SAR (extrapolated) = 3.17 W/kg
SAR(1 g) = 2.15 W/kg; SAR(10 g) = 1.44 W/kg
Ratio of SAR at M2 to SAR at M1 = 68.1%
Maximum value of SAR (measured) = 2.30 W/kg

SPC/SPC 750H,Target=[1.95][2.17] [2.39] W/kg,Input_250mW/Z Scan (1x1x29): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Penetration depth = 13.96 (13.12, 14.48) [mm]
Maximum value of SAR (interpolated) = 2.92 W/kg

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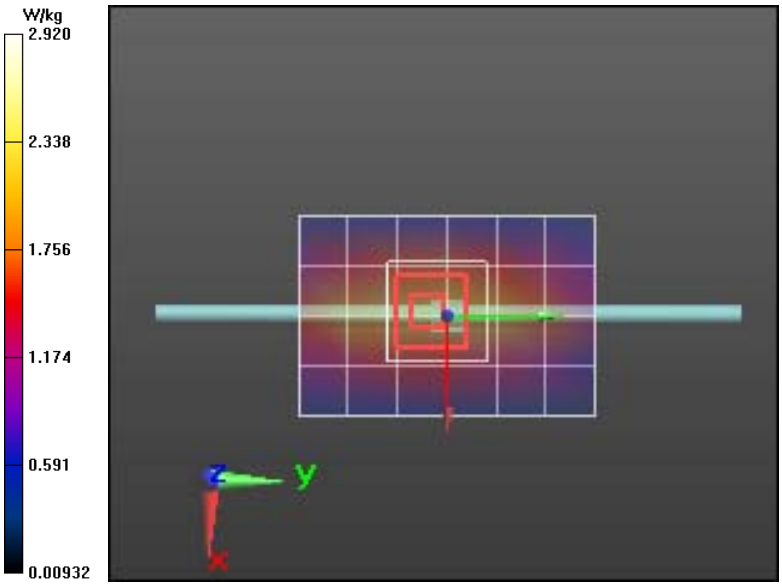

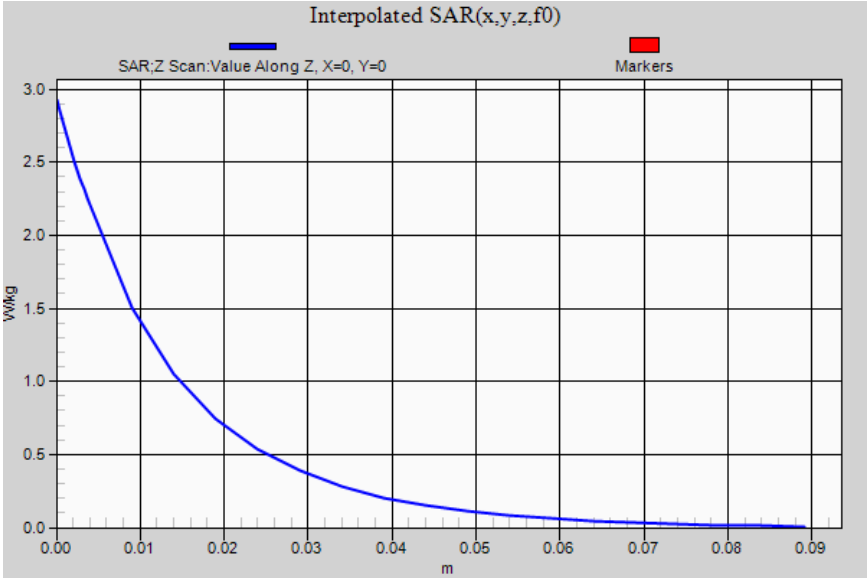

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DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: D2450V2 - SN:825
Procedure Name: SPC 2450H_Input=250mw, Target=[11.86]13.18][14.50]W/kg 1G target = 52.719 2 2

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.76 S/m; ε_r = 36.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 9/19/2022 11:39:45 AM

DASY5 Configuration:

- Probe: EX3DV4 - SN3600; ConvF(6.58, 6.58, 6.58) @ 2450 MHz; Calibrated: 4/20/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 4/14/2022
- 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 2450H_Input=250mw, Target=[11.86]13.18][14.50]W/kg 1G target = 52.719 2 2/Area Scan (4x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 15.7 W/kg

SPC/SPC 2450H_Input=250mw, Target=[11.86]13.18][14.50]W/kg 1G target = 52.719 2 2/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.36 V/m; Power Drift = 0.25 dB
Peak SAR (extrapolated) = 29.3 W/kg
SAR(1 g) = 13.8 W/kg; SAR(10 g) = 6.25 W/kg
Smallest distance from peaks to all points 3 dB below = 10 mm
Ratio of SAR at M2 to SAR at M1 = 48.7%
Maximum value of SAR (measured) = 15.7 W/kg

SPC/SPC 2450H_Input=250mw, Target=[11.86]13.18][14.50]W/kg 1G target = 52.719 2 2/Z Scan (1x1x22): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Penetration depth = 7.344 (7.325, 7.436) [mm]
Maximum value of SAR (interpolated) = 22.1 W/kg

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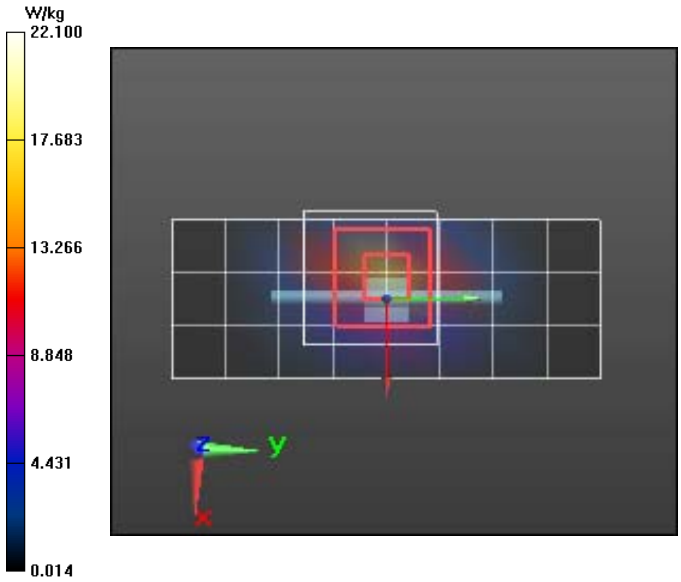

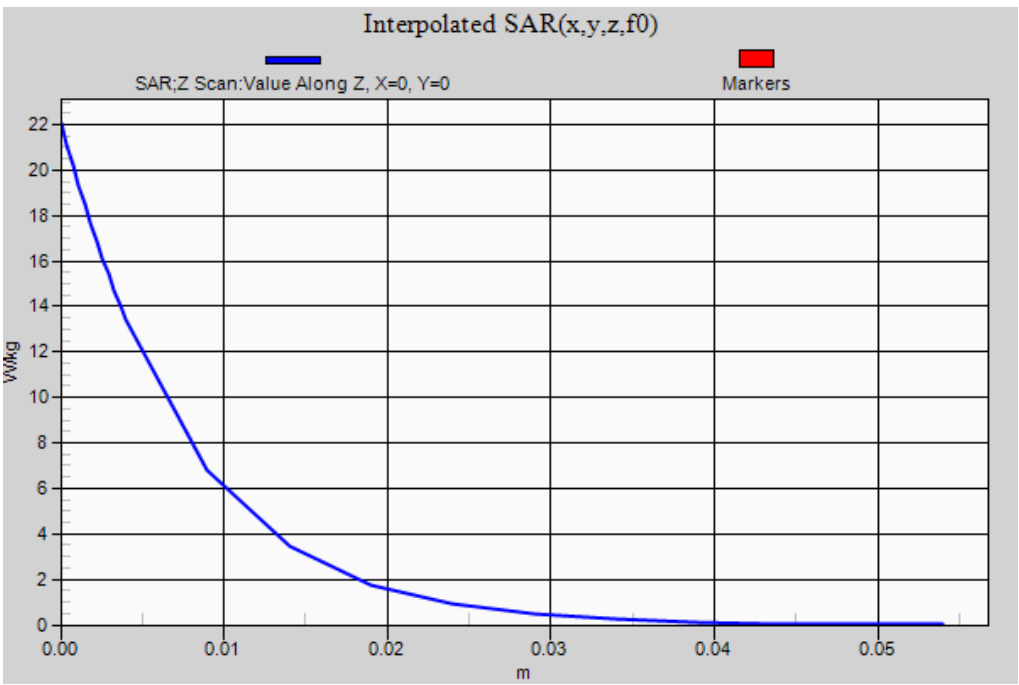

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APPENDIX B – MEASUREMENT PLOTS OF MAXIMUM MEASURED SAR

F101

DUT: Harris XL-200P; Type: PTT; Serial: Sample Prototype
Procedure Name: F101-Harris XL-200P, 406.1MHz, Face Config 25mm, Ant 4420-01,Bat P7-w/c

Communication System: UID 0, CW (0); Frequency: 406.1 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 406.1 MHz; σ = 0.826 S/m; ε_r = 48.092; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 8/30/2022 9:18:43 PM

DASY5 Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.78, 8.78, 8.78) @ 406.1 MHz; Calibrated: 4/20/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn353; Calibrated: 4/14/2022
- 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)

450H/F101-Harris XL-200P, 406.1MHz, Face Config 25mm, Ant 4420-01,Bat P7-w/c/Z Scan (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 21.96 (22.00, 22.41) [mm]
Maximum value of SAR (interpolated) = 6.20 W/kg

450H/F101-Harris XL-200P, 406.1MHz, Face Config 25mm, Ant 4420-01,Bat P7-w/c/Area Scan (8x18x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 5.20 W/kg

450H/F101-Harris XL-200P, 406.1MHz, Face Config 25mm, Ant 4420-01,Bat P7-w/c/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 80.28 V/m; Power Drift = -0.28 dB
Peak SAR (extrapolated) = 6.19 W/kg
SAR(1 g) = 4.99 W/kg; SAR(10 g) = 3.92 W/kg
Ratio of SAR at M2 to SAR at M1 = 79.5%

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 5.21 W/kg

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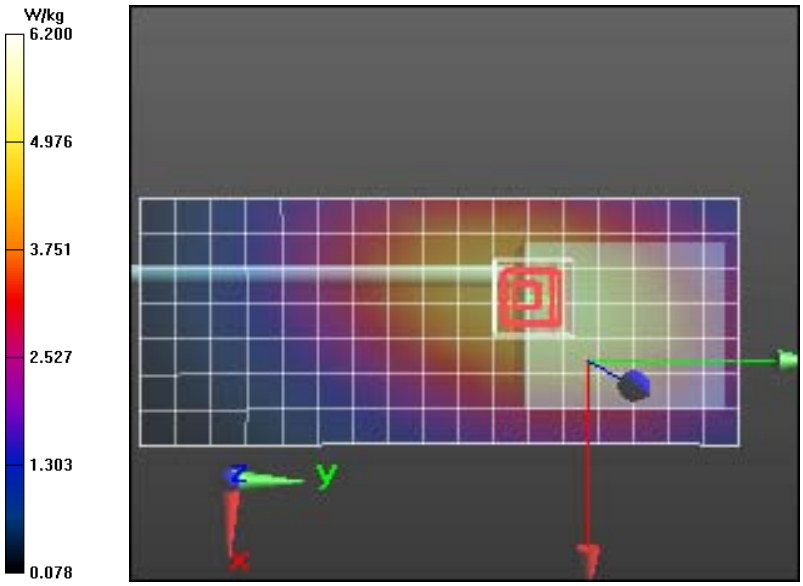

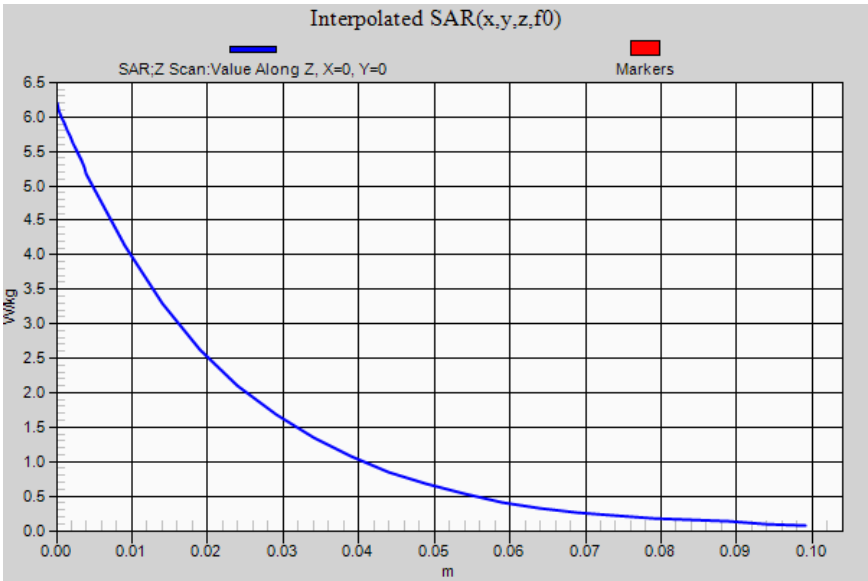

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B140

DUT: Harris XL-200P; Type: PTT; Serial: Sample Prototype
Procedure Name: B140-Harris XL-200P,868.9875MHz Body Config, Ant T9 -4450-02,Bat-P7 w/c, A1,B1

Communication System: UID 0, CW (0); Frequency: 868.987 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 868.987 MHz; σ = 0.956 S/m; ε_r = 38.364; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 9/10/2022 12:41:55 PM

DASY5 Configuration:

- Probe: EX3DV4 - SN3600; ConvF(7.99, 7.99, 7.99) @ 868.987 MHz; Calibrated: 4/20/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 4/14/2022
- 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/B140-Harris XL-200P,868.9875MHz Body Config, Ant T9 -4450-02,Bat-P7 w/c, A1,B1/Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 10.2 W/kg

835H/B140-Harris XL-200P,868.9875MHz Body Config, Ant T9 -4450-02,Bat-P7 w/c, A1,B1/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 43.79 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 14.0 W/kg
SAR(1 g) = 9.9 W/kg; SAR(10 g) = 6.6 W/kg
Smallest distance from peaks to all points 3 dB below = 18.3 mm
Ratio of SAR at M2 to SAR at M1 = 70.8%

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 10.6 W/kg

835H/B140-Harris XL-200P,868.9875MHz Body Config, Ant T9 -4450-02,Bat-P7 w/c, A1,B1/Z Scan (1x1x28): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 14.73 (14.45, 14.84) [mm]
Maximum value of SAR (interpolated) = 13.7 W/kg

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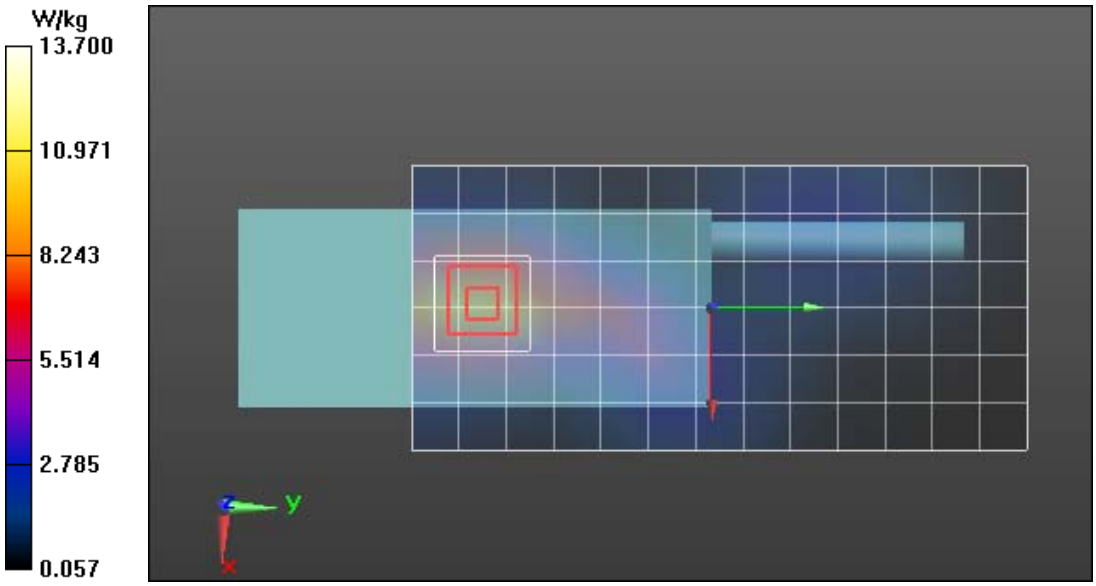

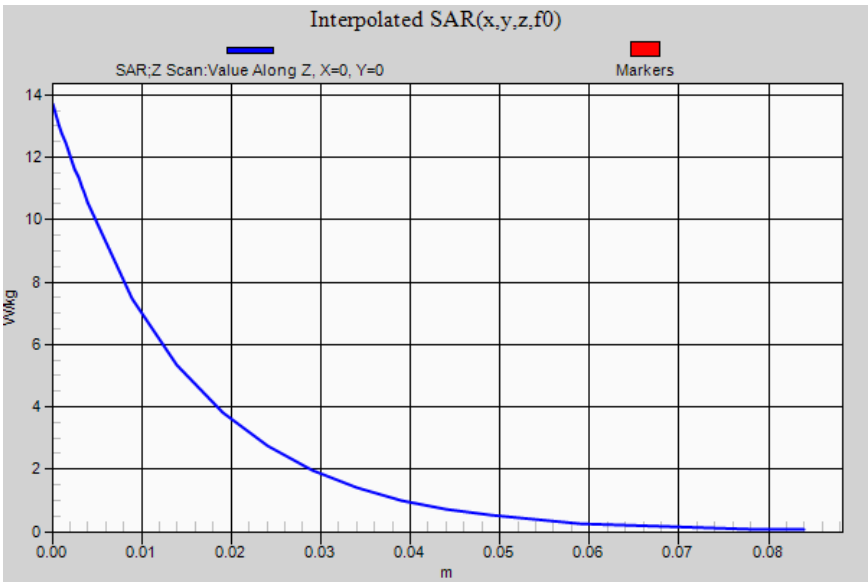

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B145

DUT: Harris XL-200P; Type: PTT; Serial: Sample Prototype
Procedure Name: B145-Harris XL-200P,860.9875MHz Body Config, Ant T7 -4440/2,Bat-P7 w/c, A1,B1 2

Communication System: UID 0, CW (0); Frequency: 860.987 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 860.987 MHz; σ = 0.96 S/m; ε_r = 38.484; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 9/12/2022 11:04:19 AM

DASY5 Configuration:

- Probe: EX3DV4 - SN3600; ConvF(7.99, 7.99, 7.99) @ 860.987 MHz; Calibrated: 4/20/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 4/14/2022
- 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/B145-Harris XL-200P,860.9875MHz Body Config, Ant T7 -4440/2,Bat-P7 w/c, A1,B1 2/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 9.43 W/kg

835H/B145-Harris XL-200P,860.9875MHz Body Config, Ant T7 -4440/2,Bat-P7 w/c, A1,B1 2/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 48.25 V/m; Power Drift = -0.29 dB
Peak SAR (extrapolated) = 13.2 W/kg
SAR(1 g) = 9.43 W/kg; SAR(10 g) = 6.31 W/kg
Smallest distance from peaks to all points 3 dB below = 18.8 mm
Ratio of SAR at M2 to SAR at M1 = 71.7%

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

835H/B145-Harris XL-200P,860.9875MHz Body Config, Ant T7 -4440/2,Bat-P7 w/c, A1,B1 2/Z Scan (1x1x28): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 15.03 (14.88, 15.10) [mm]
Maximum value of SAR (interpolated) = 12.2 W/kg

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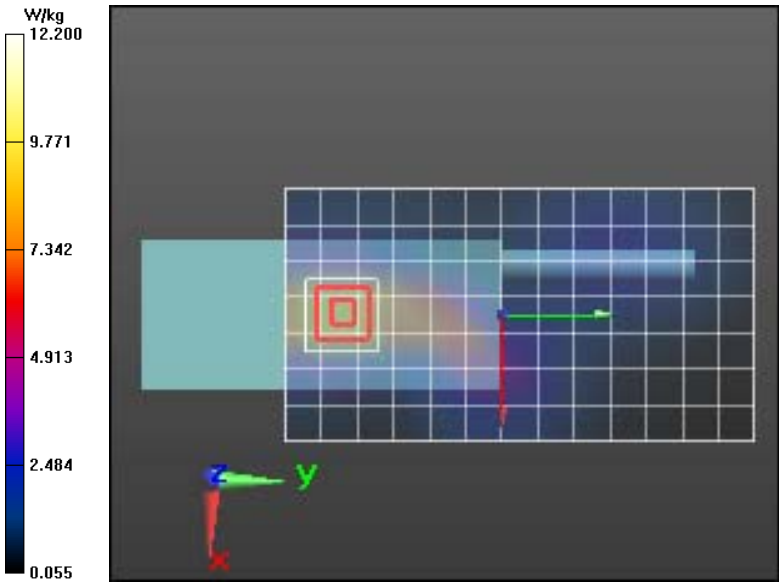

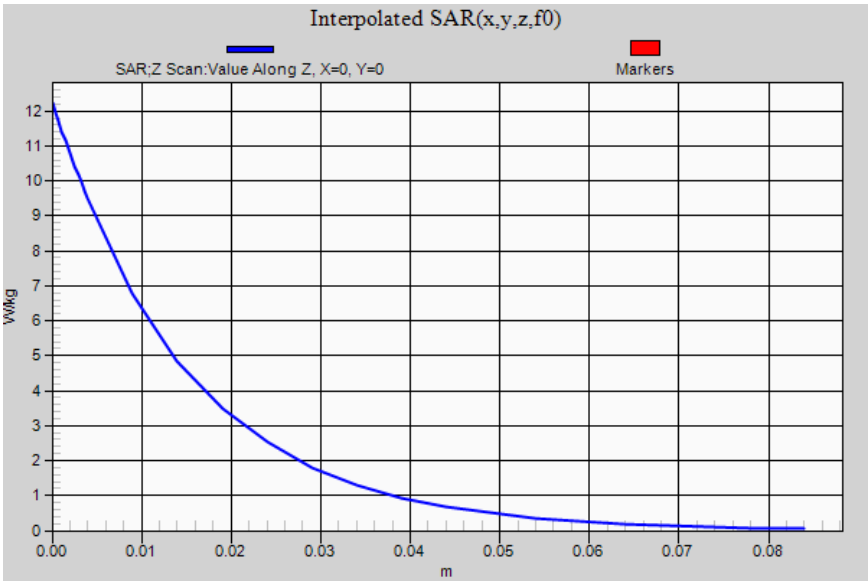

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B206

DUT: Harris XL-200P; Type: PTT; Serial: Sample Prototype
Procedure Name: B206-Harris XL-200P,LTE B26 844MHz RB-1 OS- High Body Config, Ant T2 -11506/2,Bat-P7 w/c,B1

Communication System: UID 0, CW (0); Frequency: 844 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 844 MHz; σ = 0.96 S/m; ε_r = 39.918; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 9/16/2022 10:16:37 AM

DASY5 Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.11, 8.11, 8.11) @ 844 MHz; Calibrated: 4/20/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 4/14/2022
- 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 LTE/B206-Harris XL-200P,LTE B26 844MHz RB-1 OS- High Body Config, Ant T2 -11506/2,Bat-P7 w/c,B1/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.706 W/kg

835H LTE/B206-Harris XL-200P,LTE B26 844MHz RB-1 OS- High Body Config, Ant T2 -11506/2,Bat-P7 w/c,B1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 10.92 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.46 W/kg
SAR(1 g) = 0.659 W/kg; SAR(10 g) = 0.320 W/kg
Smallest distance from peaks to all points 3 dB below = 10.5 mm
Ratio of SAR at M2 to SAR at M1 = 51.6%

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.712 W/kg

835H LTE/B206-Harris XL-200P,LTE B26 844MHz RB-1 OS- High Body Config, Ant T2 -11506/2,Bat-P7 w/c,B1/Z Scan (1x1x28):
Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 9.076 (7.551, 10.07) [mm]
Maximum value of SAR (interpolated) = 1.10 W/kg

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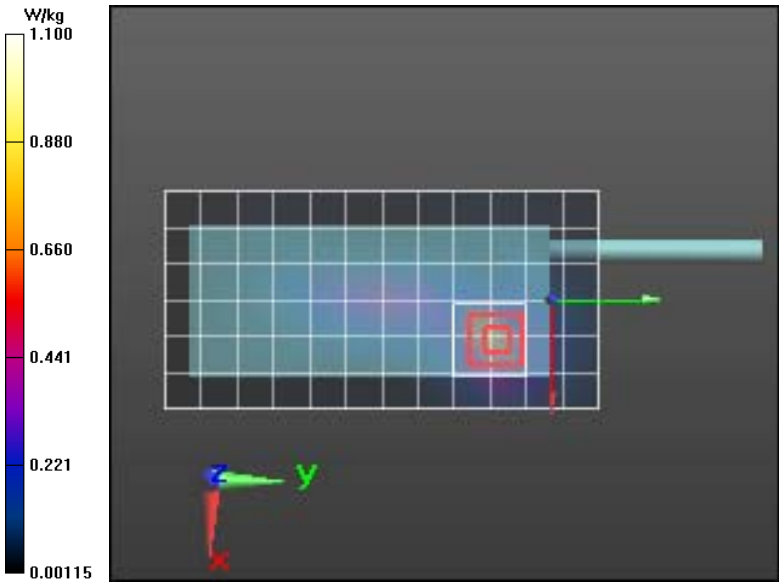

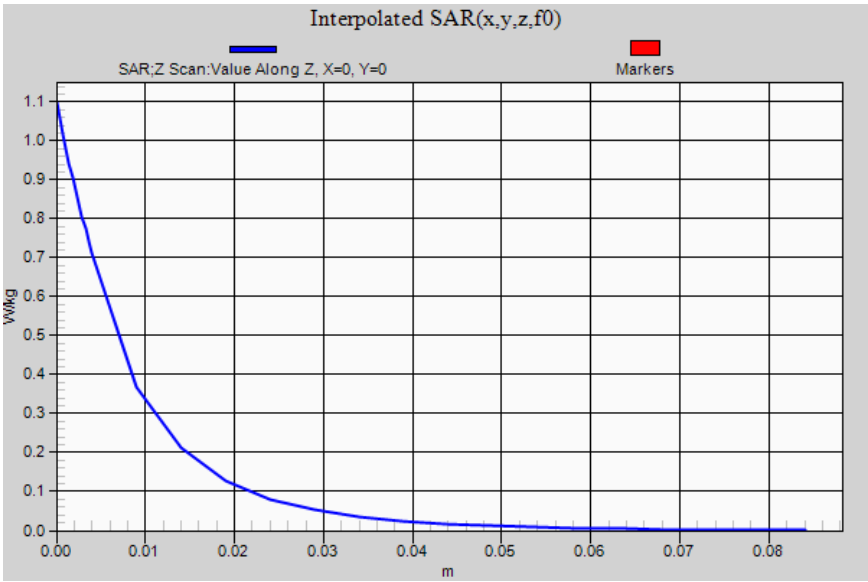

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F202

DUT: Harris XL-200P; Type: PTT; Serial: Sample Prototype
Procedure Name: F202 Harris XL-200P,LTE B14 793MHz RB-25 (50%) OS-high Face Config, Ant T2 -11506/2,Bat-P7

Communication System: UID 0, CW (0); Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.96 S/m; ε_r = 39.903; ρ = 1000 kg/m^3
Phantom section: Flat Section

Date/Time: 9/13/2022 8:40:13 PM

DASY5 Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.11, 8.11, 8.11) @ 836.5 MHz; Calibrated: 4/20/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 4/14/2022
- 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 LTE/F202 Harris XL-200P,LTE B14 793MHz RB-25 (50%) OS-high Face Config, Ant T2 -11506/2,Bat-P7/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.0814 W/kg

835H LTE/F202 Harris XL-200P,LTE B14 793MHz RB-25 (50%) OS-high Face Config, Ant T2 -11506/2,Bat-P7/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 3.011 V/m; Power Drift = 0.27 dB
Peak SAR (extrapolated) = 0.101 W/kg
SAR(1 g) = 0.077 W/kg; SAR(10 g) = 0.057 W/kg
Ratio of SAR at M2 to SAR at M1 = 74.7%

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.0808 W/kg

835H LTE/F202 Harris XL-200P,LTE B14 793MHz RB-25 (50%) OS-high Face Config, Ant T2 -11506/2,Bat-P7/Z Scan (1x1x28): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 21.06 (18.87, 15.97) [mm]
Maximum value of SAR (interpolated) = 0.00939 W/kg

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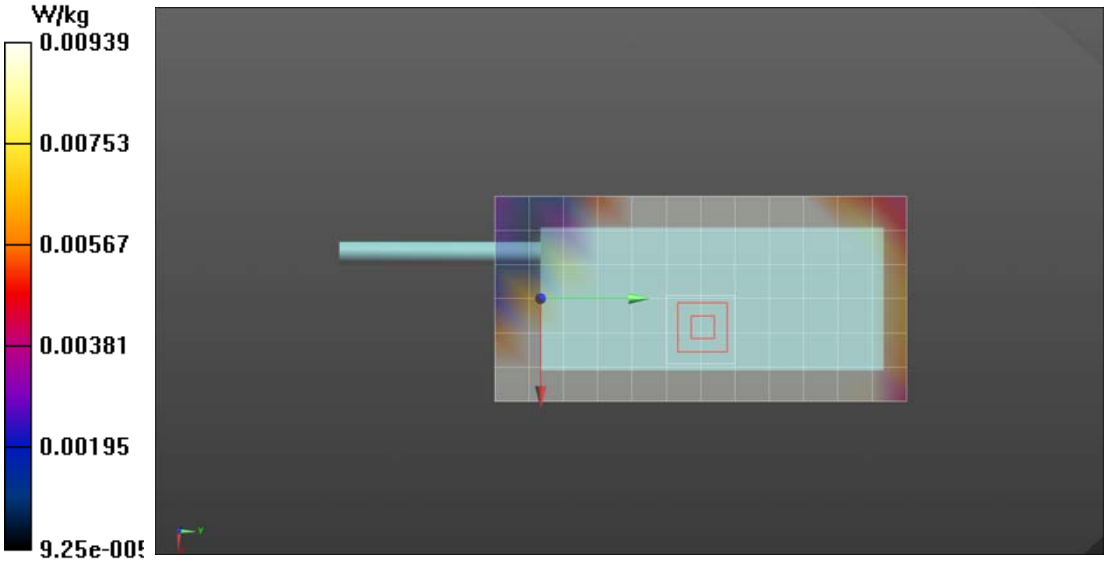

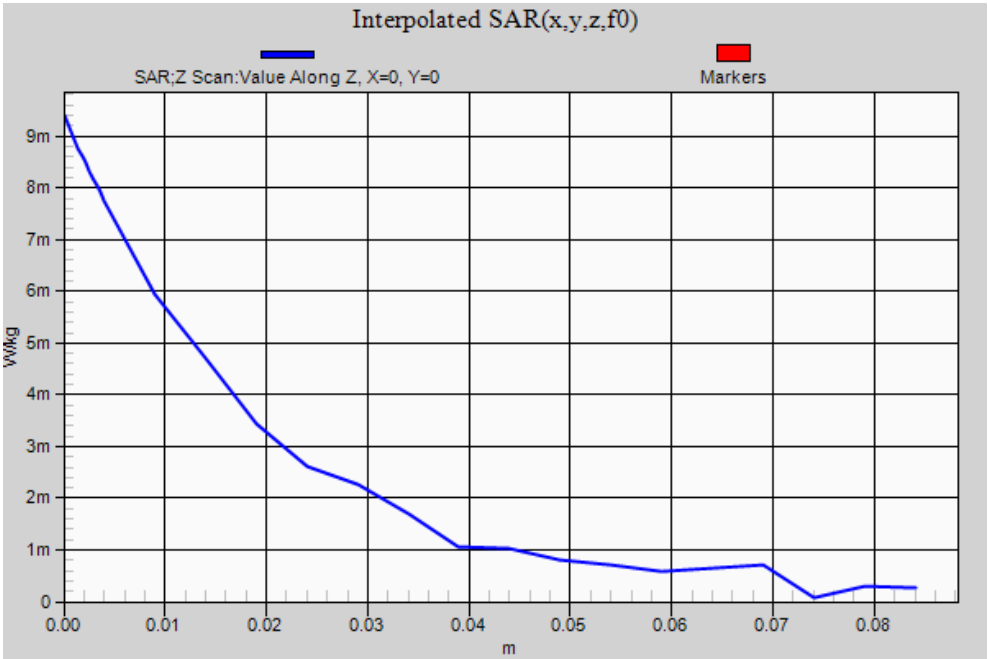

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