Test Report Serial Number:	45461392 R2.1
Test Report Date:	11 July 2017
Project Number:	1366

SAR Test Report - New Filing

Applicant:

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

Maximum Reported 1g SAR			
FCC	HEAD:	2.11	W/kg
	BODY:	4.08	
ISEDC	HEAD:	2.25	
	BODY:	4.33	
General Pop. Limit:		8.00	

FCC ID:
OWDTR-0144-E

IC Registration Number
3636B-0144

Product Model Number / HVIN
See Section 2.0

Product Name / PMN
XL-200P C1D1 Rebanded

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-1

FCC Registration: 714830

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1.0 DOCUMENT CONTROL

Samples Tested By:	**Trevor Whillock**
Report Prepared By:	**Art Voss**
Report Reviewed By:	**Ben Hewson**

Report Issue Number	Description	Section	By	Report Issue Date
R1.0	Initial Release		Art Voss	13 June 2017
R1.1	Corrected HVIN, P3, A3 and Spelling		Art Voss	20 June 2017
R1.2	Corrected Operating Frequency Range		Art Voss	22 June 2017
R2.0	Corrected Operating Frequency Range	2.0	Art Voss	6 July 2017
	Corrected HVIN and PMN	Cover, 2.0		
	Corrected FCC ID and ISEDC ID	Cover, 2.0		
	Corrected Errors Section 3.0	3.0		
	Added Additional Equipment Types	2.0		
	Corrected Photo IDs	App. D		
	Corrected Cal Cert	App. E		
R2.1	Corrected Duplicate HVIN	2.0	Art Voss	11 July 2017
	Corrected Cal Cert	App. F		

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2.0 CLIENT 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-0144-E**
	IC:	**3636B-0144**
Type of Equipment:	Licensed Non-Broadcast Transmitter Held to Face (TNF) FCC Part 90	
	Land Mobile Radio Transmitter/Receiver (27.41-960MHz) RSS-119	
	Digital Transmission System (DTS) FCC Part 15, RSS 247	
	Unlicensed National Information Infrastructure (NII) FCC Part 15	
	Spread Spectrum Transmitter (DSS) FCC Part 15	
Device Model(s) / HVIN:	XL-PFM1M-C1D1	
	XL-PFM1Y-C1D1	
	XL-PPM1M-C1D1	
	XL-PPM1Y-C1D1	
Device Marketing Name / PMN:	XL-200P C1D1 Rebanded	
Test Sample Serial No.:	T/A Sample - Identical Prototype	
Transmit Frequency Range:	VHF: 136-174MHz	
	UHF: 378-522MHz	
	700 Band: 768-776MHz, 798-806MHz	
	800 Band: 806-816MHz, 851-861MHz	
	WLAN: 2412-2462MHz, 5180-5825MHz	
	BT: 2402-2480MHz	
Number of Channels:	Programmable	
Manuf. Max. Rated Output Power:	VHF: 6W / UHF: 5W / 7/800: 3W / BT: 18.6mW WLAN 2.4G: 70mW / WLAN 5G: 70 mW	
Modulation:	LMR: FM	
Duty Cycle:	50% PTT Duty Cycle	
DUT Power Source:	7.2 VDC Li-Ion 3100mAh Rechargeable Battery - C1D1	
Deviation(s) from standard/procedure:	None	
Modification of DUT:	None	

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3.0 SCOPE OF EVALUATION

The **XL-200P C1D1 Rebanded**, FCC ID OWDTR-0144-E, ISEDC ID: 3636B-0144 is a multi-band, Push-To-Talk (PTT) Licensed Mobile Radio (LMR) transceiver intended for Occupational Use. It incorporates WiFi and BlueTooth transmitters. The **XL-200P C1D1 Rebanded** is identical in RF circuitry to the XL-200P (Rebanded), FCC ID OWDTR-0133-E, ISEDC ID: 3636B-0133 with the exception that it has been modified to meet C1D1 Safety Standards. It include the additions of a new battery, P/N 14034-4045-01, which has been designed to meet C1D1 Safety Standards. A metal shield is included and is placed between the battery pack and the DUT.

In this document, the following DUT references are made:

The **XL-200P C1D1 Rebanded**, FCC ID: OWDTR-0144-E, ISEDC ID: 3636B-0144 is referenced in this report as **XL-200P C1D1**

The XL-200P (Rebanded), FCC ID: OWDTR-0133-E, ISEDC ID: 3636B-0133 is referenced in this report as XL-200P

The Test Plan developed for this evaluation leverages SAR test data from previous evaluations of the XL-200P and is based on test channels, configurations and accessories which produced the highest (*worst case*) SAR. The previous *worst case* configurations of the XL-200P were re-evaluated during the course of this investigation to establish a base-line for comparison of test data from the XL-200P C1D1. It is important to note that the XL-200P C1D1 uses only a limited number of Body-Worn and Audio Accessories evaluated with the XL-200P. Additionally, the XL-200P C1D1 does not use any of the Batteries and only four (4) of the Antennas evaluated with the XL-200P. Conversly, the 14034-4045-01 battery is not supplied with the XL-200P. The base-line evaluation was made using the 14034-4000-01 battery for both the XL-200P and the XL-200P C1D1 as this enforced commonality between the two devices. All antennas used with the XL-200P C1D1 were evaluated. The basis for the *worst case* configurations of the XL-200P are as follows:

3.1 Previous XL-200P Test Data

Worst Case Test Data from XL-200P					
Model:	XL-200P				
FCC ID:	OWDTR-0133-E				
Variant:	System Radio				
Date Evaluated:	March 2015				
Frequency	**Configuration**	**Antenna**	**Accessory 1**	**Accessory 1**	**SAR (50% PTT)**
136	Head	14035-4000-01	n/a	n/a	0.69
156.8	Body	14035-4000-01	B1	A1	1.35
406	Head	14035-4420-01	n/a	n/a	1.85
406	Body	14035-4420-01	B1	A1	4.63
824	Head	14035-4420-01	n/a	n/a	1.06
806	Body	14035-4420-01	B1	A1	3.86

Note: The highest BlueTooth and WiFi SAR, when previously measured on the BlueTooth and WiFi channels of the XL-200P, was produced in the BODY configuration.

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4.0 NORMATIVE REFERENCES

Normative References*	
ANSI / ISO 17025:2005	General Requirements for competence of testing and calibration laboratories
FCC CFR Title 47 Part 2	Code of Federal Regulations
Title 47:	Telecommunication
Part 2.1093:	Radiofrequency Radiation Exposure Evaluation: Portable Devices
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	
IEEE 1528-2013:	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
IEC International Standard	
IEC 62209-2 2010	Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 2
FCC KDB	
KDB 865664 D01v01r04	SAR Measurement Requirements for 100MHz to 6GHz
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

* 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 / HVIN:	
Harris Corporation	XL-200P C1D1 Rebanded	
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 Industry Canada RSS-102 Issue 5 IEEE Standard 1528-2013, IEC 62209-2	
Reason For Issue:	**Use Group:**	**Limits Applied:**
[X] New Certification	[ ] General Population / Uncontrolled	[ ] 1.6W/kg - 1g Volume
[ ] Class I Permissive Change		[X] 8.0W/kg - 1g Volume
[ ] Class II Permissive Change	[X] Occupational / Controlled	[ ] 4.0W/kg - 10g Volume
Reason for Change:		**Date(s) Evaluated:**
Original Filing		31 May 2017 to 15 June 2017

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.

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6.0 RF CONDUCTED POWER MEASUREMENT

Table 6.0 Conducted Power Measurements VHF

Measured Conduced Power					
Frequency (MHz)	Measured Power (dBm)	Rated Power (dBm)	Rated Power (W)	Delta (dBm)	SAR Test Channel (Y/N)
136.0000	37.80	37.80	6.00	0.00	Y
138.0000	37.80	37.80	6.00	0.00	N
141.0000	37.80	37.80	6.00	0.00	N
144.0000	37.80	37.80	6.00	0.00	N
148.0000	37.80	37.80	6.00	0.00	N
150.0000	37.84	37.80	6.00	0.04	N
156.8000	37.80	37.80	6.00	0.00	Y
162.0000	37.80	37.80	6.00	0.00	N
174.0000	37.80	37.80	6.00	0.00	N

Notes:

The Conducted Power of the DUT was measured at the antenna port, with a fully charged battery and transmitting at 100% duty cycle.

Table 6.1 Conducted Power Measurements UHF

Measured Conduced Power					
Frequency (MHz)	Measured Power (dBm)	Rated Power (dBm)	Rated Power (W)	Delta (dBm)	SAR Test Channel (Y/N)
378.0000	36.90	37.00	5.00	-0.10	N
406.0000	36.90	37.00	5.00	-0.10	Y
418.0000	36.85	37.00	5.00	-0.15	N
430.0000	36.90	37.00	5.00	-0.10	N
450.0000	36.90	37.00	5.00	-0.10	N
454.0000	36.95	37.00	5.00	-0.05	N
456.0000	36.95	37.00	5.00	-0.05	N
459.0000	36.90	37.00	5.00	-0.10	N
470.0000	36.95	37.00	5.00	-0.05	N
512.0000	36.97	37.00	5.00	-0.03	N
522.0000	37.00	37.00	5.00	0.00	N

Notes:

The Conducted Power of the DUT was measured at the antenna port, with a fully charged battery and transmitting at 100% duty cycle.

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Table 6.2 Conducted Power Measurements 7/800 Band

Measured Conduced Power					
Frequency (MHz)	Measured Power (dBm)	Rated Power (dBm)	Rated Power (W)	Delta (dBm)	SAR Test Channel (Y/N)
768.0000	34.20	34.70	3.00	-0.50	Y
776.0000	34.20	34.70	3.00	-0.50	N
805.0000	34.20	34.70	3.00	-0.50	Y
806.0000	34.90	34.70	3.00	0.20	N
811.0000	34.90	34.70	3.00	0.20	N
816.0000	34.87	34.70	3.00	0.17	N
824.0000	34.87	34.70	3.00	0.17	Y
851.0000	35.00	34.70	3.00	0.30	N
856.0000	35.00	34.70	3.00	0.30	N
861.0000	35.00	34.70	3.00	0.30	Y

Notes:

The Conducted Power of the DUT was measured at the antenna port, with a fully charged battery and transmitting at 100% duty cycle.

7.0 NUMBER OF TEST CHANNELS (N_C)

This device is identical to the XL-200P (Rebanded), FCC ID OWDTR-0133-E, ISEDC ID: 3636B-0133 with the exception that this device has been modified to comply with C1D1 Safety Rating. The number of channels and channel frequencies tested are based on *worst case* configurations from previous test data from the original filing of this device. Reference **Section 3.0 Scope of Evaluation.**

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8.0 ACCESSORIES EVALUATED

Table 8.0 Manufacturer's Accessory List

Change History			
Change ID	Date	Change Type	Description of Change
1	15 June 2017	Initial	Initial Filing

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							
T4	14035-4000-01	Full Spectrum Whip Antenna	1			Y	Y
T5	14035-4420-01	Wideband Whip, UHF, 7/800 MHz	5			Y	Y
T6	14035-4440-01	1/2 Wave Whip Antenna, 7/800 MHz	4			Y	Y
T7	14035-4440-02	1/4 Wave Stub Antenna, 7/800 MHz	4			Y	Y
Battery							
P3	14034-4045-01	Li-Ion Battery 7.2VDC, 3100mAh C1D1	1			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
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
A28	12082-0600-03	Storm Speaker Microphone, 18"	6	7A	PB	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	-
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	-
A29	12082-0600-04	Storm Speaker Microphone 25.6"	1	7A	PB	Y	Y
A30	12082-0600-05	Storm Speaker Microphone, 30"	6	7A	PB	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
Body-Worn Accessory							
B1	12082-1290-01	Metal Belt Clip	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
	12082-1398-01	Side Connector Cover	3			Y	Y
B15	KRY 1011609/1	Leather Belt Loop	1			Y	Y

(1) From Table 6.0 - 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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9.0 SAR MEASUREMENT SUMMARY

Table 9.0: Measured Results – BODY

Measured SAR Results (1g) - BODY Configuration (FCC/ISEDC)															
Date	Plot ID	DUT		Test Frequency (*MHz*)	Modulation	Accessories				DUT Spacing		Conducted Power (*dBm*)	Measured SAR (10g)		SAR Drift (*dB*)
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID	DUT (*mm*)	Antenna (*mm*)		100% DC (*W/kg*)	50% DC (*W/kg*)	
7/800 BODY															
31 May 2017	SC1*	**XL-200P**	**0133-E**	806	**CW**	4420-01	4010-01	B1	A1	**20**	**30**	**34.8**	6.730	3.365	-0.222
31 May 2017	SC2*	**XL-200P C1D1**	**sys/RB**	806	**CW**	4420-01	4010-01	B1	A1	**20**	**30**	**34.9**	6.580	3.290	-0.131
01 Jun 2017	SC1*	**XL-200P**	**0145-E**	824	**CW**	4420-01	4010-01	B1	A1	**20**	**30**	**34.8**	7.370	3.685	-0.188
01 Jun 2017	SC2*	**XL-200P C1D1**	**sys2/NRB**	824	**CW**	4420-01	4010-01	B1	A1	**20**	**30**	**34.97**	6.970	3.485	-0.306
31 May 2017	B1	**XL-200P C1D1**	**sys/RB**	806	**CW**	4420-01	4045-01	B1	A1	**20**	**30**	**34.9**	6.740	3.370	-0.428
31 May 2017	B2	**XL-200P C1D1**	**sys/RB**	776	**CW**	4000-01	4045-01	B1	A1	**20**	**22**	**34.17**	6.580	3.290	-0.356
31 May 2017	B3	**XL-200P C1D1**	**sys/RB**	851	**CW**	4440-01	4045-01	B1	A1	**20**	**30**	**34.97**	5.820	2.910	-0.265
31 May 2017	B4	**XL-200P C1D1**	**sys/RB**	776	**CW**	4440-02	4045-01	B1	A1	**20**	**30**	**34.17**	7.820	3.910	-0.381
UHF BODY															
07 Jun 2017	SC5*	**XL-200P**	**0133-E**	406	**CW**	4420-01	4010-01	B1	A1	**20**	**30**	**37**	8.710	4.355	-0.092
07 Jun 2017	SC6*	**XL-200P C1D1**	**sys/RB**	406	**CW**	4420-01	4010-01	B1	A1	**20**	**30**	**36.89**	7.860	3.930	-0.320
07 Jun 2017	B5	**XL-200P C1D1**	**sys/RB**	406	**CW**	4420-01	4045-01	B1	A1	**20**	**30**	**36.89**	7.880	3.940	-0.257
08 Jun 2017	B6	**XL-200P C1D1**	**sys/RB**	406	**CW**	4000-01	4045-01	B1	A1	**20**	**22**	**36.89**	7.400	3.700	-0.281
VHF BODY															
12 Jun 2017	SC9*	**XL-200P**	**0133-E**	156.8	**CW**	4000-01	4010-01	B1	A1	**20**	**22**	**37.8**	3.550	1.775	-0.079
12 Jun 2017	SC10*	**XL-200P C1D1**	**sys/RB**	156.8	**CW**	4000-01	4010-01	B1	A1	**20**	**22**	**37.8**	2.580	1.290	-0.197
13 Jun 2017	B7	**XL-200P C1D1**	**sys/RB**	156.8	**CW**	4000-01	4045-01	B1	A1	**20**	**22**	**37.8**	4.300	2.150	-0.312
SAR Limit							**Spatial Peak**			**Head/Body**		**RF Exposure Category**			
FCC 47 CFR 2.1093				**Health Canada Safety Code 6**			**1 Gram Average**			**8.0 W/kg**		**Occupational/User Aware**			

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Table 9.1: Measured Results - BODY

Measured SAR Results (1g) - BODY Configuration (FCC/ISEDC)															
Date	Plot ID	DUT		Test Frequency (*MHz*)	Modulation	Accessories				DUT Spacing		Conducted Power (*dBm*)	Measured SAR (10g)		SAR Drift (*dB*)
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID	DUT (*mm*)	Antenna (*mm*)		100% DC (*W/kg*)	50% DC (*W/kg*)	
2.4GHz WiFi BODY															
13 Jun 2017	SC13*	**XL-200P**	**0133-E**	2437		4440-01	4010-01	n/a	n/a	**25**	**52**	**23.7**	0.005	n/a	(a)
13 Jun 2017	SC14*	**XL-200P C1D1**	**sys/RB**	2437		4440-01	4010-01	n/a	n/a	**25**	**52**	**23.7**	0.005	n/a	(a)
13 Jun 2017	B8	**XL-200P C1D1**	**sys/RB**	2437		4440-01	4045-01	n/a	n/a	**25**	**52**	**23.7**	0.005	n/a	(a)
2.4GHz BT BODY															
14 Jun 2017	SC15*	**XL-200P**	**0133-E**	2480		4440-01	4010-01	n/a	n/a	**25**	**52**	**12.7**	0.006	n/a	(a)
14 Jun 2017	SC16*	**XL-200P C1D1**	**sys/RB**	2480		4440-01	4010-01	n/a	n/a	**25**	**52**	**12.7**	0.006	n/a	(a)
14 Jun 2017	B10	**XL-200P C1D1**	**sys/RB**	2480		4440-01	4045-01	n/a	n/a	**25**	**52**	**12.7**	0.006	n/a	(a)
5GHz BT BODY															
15 Jun 2017	SC17*	**XL-200P**	**0133-E**	5260		4440-01	4010-01	n/a	n/a	**25**	**52**	**11.8**	0.031	n/a	(a)
15 Jun 2017	SC18*	**XL-200P C1D1**	**sys/RB**	5260		4440-01	4010-01	n/a	n/a	**25**	**52**	**11.8**	0.031	n/a	(a)
15 Jun 2017	B12	**XL-200P C1D1**	**sys/RB**	5260		4440-01	4045-01	n/a	n/a	**25**	**52**	**11.8**	0.031	n/a	(a)
SAR Limit							**Spatial Peak**			**Head/Body**		**RF Exposure Category**			
FCC 47 CFR 2.1093				**Health Canada Safety Code 6**			**1 Gram Average**			**8.0 W/kg**		**Occupational/User Aware**			

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Table 9.2: Measured Results - FACE

Measured SAR Results (1g) - FACE Configuration (FCC/ISEDC)															
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Spacing		Conducted Power (dBm)	Measured SAR (10g)		SAR Drift (dB)
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID	DUT (mm)	Antenna (mm)		100% DC (W/kg)	50% DC (W/kg)	
7/800 FACE															
05 Jun 2017	SC3*	XL-200P	0145-E	824	CW	4420-01	4010-01	n/a	n/a	25	55	34.8	1.860	0.930	-0.249
05 Jun 2017	SC4*	XL-200P C1D1	sys2/NRB	824	CW	4420-01	4010-01	n/a	n/a	25	55	34.97	2.090	1.045	-0.318
05 Jun 2017	F1	XL-200P C1D1	sys/RB	861	CW	4420-01	4045-01	n/a	n/a	25	55	34.97	1.790	0.895	-0.374
05 Jun 2017	F2	XL-200P C1D1	sys/RB	768	CW	4000-01	4045-01	n/a	n/a	25	52	34.97	2.390	1.195	-0.336
05 Jun 2017	F3	XL-200P C1D1	sys/RB	805	CW	4440-01	4045-01	n/a	n/a	25	55	34.17	1.650	0.825	-0.470
05 Jun 2017	F4	XL-200P C1D1	sys/RB	861	CW	4440-02	4045-01	n/a	n/a	25	55	34.97	2.160	1.080	-0.167
UHF FACE															
09 Jun 2017	SC7*	XL-200P	0133-E	406	CW	4420-01	4010-01	n/a	n/a	25	55	37	3.950	1.975	-0.059
09 Jun 2017	SC8*	XL-200P C1D1	sys/RB	406	CW	4420-01	4010-01	n/a	n/a	25	55	36.89	3.890	1.945	-0.102
09 Jun 2017	F5	XL-200P C1D1	sys/RB	406	CW	4420-01	4045-01	n/a	n/a	25	55	36.89	4.140	2.070	-0.077
09 Jun 2017	F6	XL-200P C1D1	sys/RB	406	CW	4000-01	4045-01	n/a	n/a	25	52	36.89	4.040	2.020	-0.282
VHF FACE															
12 Jun 2017	SC11*	XL-200P	0133-E	136	CW	4000-01	4010-01	n/a	n/a	25	52	37.8	1.680	0.840	-0.334
12 Jun 2017	SC12*	XL-200P C1D1	sys/RB	136	CW	4000-01	4010-01	n/a	n/a	25	52	37.8	1.540	0.770	-0.498
13 Jun 2017	F7	XL-200P C1D1	sys/RB	136	CW	4000-01	4045-01	n/a	n/a	25	52	37.8	1.720	0.860	-0.548
SAR Limit							**Spatial Peak**			**Head/Body**		**RF Exposure Category**			
FCC 47 CFR 2.1093				**Health Canada Safety Code 6**			**1 Gram Average**			**8.0 W/kg**		**Occupational/User Aware**			

* Baseline Measurements

(a) The BlueTooth and WiFi antennas are located on the side of the DUT. Due to the location of the BlueTooth and WiFi antennas, the minimum phantom separation distance in the BODY or FACE configurations that could be achieved is greater than 30mm. The measured SAR values approximated noise floor measurements resulting in inconsistent power drift measurements and are omitted in this table.

Note: The highest BlueTooth and WiFi SAR, when previously measured on the BlueTooth and WiFi channels of the XL-200P, was produced in the BODY configuration.

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10.0 ANALYSIS OF SIMULTANEOUS TRANSMISSION

Simultaneous Transmission Analysis

Introduction

The XL-200P C1D1 incorporates integrated WiFi and BlueTooth transmitters 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 and BT 1g SAR are subject to General Population limits of 1.6W/kg. The LMR 1g SAR is subject to Occupational 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 is 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. Only the Maximum maximum *reported* SAR for each is used in the Sum-of-the-Ratios calculation and the worst case of all possible combinations is considered.

Table 10.0 List of Possible Transmitters

List of Possible Transmitters				
Type	Class	Frequency Range		Rated Output Power (dBm)
		Lower (MHz)	Upper (MHz)	
LMR VHF	TNF	136.0	174.0	37.8
LMR UHF		378.0	522.0	37.0
LMR 7/800		762.0	870.0	34.8
BlueTooth	DSS	2402.0	2480.0	12.7
BLE	DTS	2402.0	2480.0	8.4
WiFi 2.4	DTS	2412.0	2462.0	23.7
WiFi 5	NII	5150.0	5850.0	11.8

Table 10.1 List of Possible Transmitters Combinations

Simultaneous Transmitter Combinations HEAD and BODY Configuration							
Configuration Number	Transmitter Type						
	LMR VHF	LMR UHF	LMR 7/800	BlueTooth	BLE	WiFi 2.4	WiFi 5
1	X			X		X	
2	X			X			X
3	X				X	X	
4	X				X		X
5		X		X		X	
6		X		X			X
7		X			X	X	
8		X			X		X
9			X	X		X	
10			X	X			X
11			X		X	X	
12			X		X		X

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Table 10.2 Analysis of Sum-of-the-Ratios

Analysis of Sum-of-the-Ratios
For All Transmitters and Configurations

Config.	Transmitter Type														Sum of Ratios
	LMR VHF		LMR UHF		LMR 7/800		BlueTooth		BLE		WiFi 2.4		WiFi 5		
	reported SAR (W/kg)	Ratio to Limit	*reported* SAR (W/kg)	Ratio to Limit	*reported* SAR (W/kg)	Ratio to Limit	*reported* SAR (W/kg)	Ratio to Limit	*reported* SAR (W/kg)	Ratio to Limit	*reported* SAR (W/kg)	Ratio to Limit	*reported* SAR (W/kg)	Ratio to Limit	
	SAR Limit = 8.0W/kg (Occupational)						*SAR Limit = 1.6W/kg (General Population)*								
HEAD	0.860	0.108					0.006	0.004			0.005	0.003			0.114
	0.860	0.108					0.006	0.004					0.031	0.019	0.131
	0.860	0.108							0.006	0.004	0.005	0.003			0.114
	0.860	0.108							0.006	0.004			0.031	0.019	0.131
			2.020	0.253			0.006	0.004			0.005	0.003			0.259
			2.020	0.253			0.006	0.004					0.031	0.019	0.276
			2.020	0.253					0.006	0.004	0.005	0.003			0.259
			2.020	0.253					0.006	0.004			0.031	0.019	0.276
					1.950	0.244	0.006	0.004			0.005	0.003			0.251
					1.950	0.244	0.006	0.004					0.031	0.019	0.267
					1.950	0.244			0.006	0.004	0.005	0.003			0.251
					1.950	0.244			0.006	0.004			0.031	0.019	0.267
BODY	2.150	0.269					0.006	0.004			0.005	0.003			0.276
	2.150	0.269					0.006	0.004					0.031	0.019	0.292
	2.150	0.269							0.006	0.004	0.005	0.003			0.276
	2.150	0.269							0.006	0.004			0.031	0.019	0.292
			3.940	0.493			0.006	0.004			0.005	0.003			0.499
			3.940	0.493			0.006	0.004					0.031	0.019	0.516
			3.940	0.493					0.006	0.004	0.005	0.003			0.499
			3.940	0.493					0.006	0.004			0.031	0.019	0.516
					3.910	0.489	0.006	0.004			0.005	0.003			0.496
					3.910	0.489	0.006	0.004					0.031	0.019	0.512
					3.910	0.489			0.006	0.004	0.005	0.003			0.496
					3.910	0.489			0.006	0.004			0.031	0.019	0.512

Indicates this combination is not possible.

From the above, the Sum-of-the-Ratios for any given simultaneous transmission combination, when applied to their respective SAR limit, exceeds 1.0. No further analysis is required.

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11.0 SCALING OF MAXIMUM MEASURE SAR

Table 11.0 SAR Scaling

Scaling of Maximum Measured SAR (1)

Plot ID	Configuration	Freq (MHz)	Measured Fluid Deviation Permittivity	Measured Fluid Deviation Conductivity	Measured Conducted Power (dBm)	Measured Drift (dB)	Measured SAR (1g) (W/kg)
F6	Face	406	3.28%	-2.99%	36.9	-0.282	2.020
B5	Body	406	-3.42%	0.65%	36.9	-0.257	3.940

Step 1

Fluid Sensitivity Adjustment

Plot ID	Scale Factor (%)	x	Measured SAR (W/kg)	=	Step 1 Adjusted SAR (1g) (W/kg)
F6	1.000%	x	2.020	=	2.020
B5	1.000%	x	3.940	=	3.940

Step 2

Manufacturer's Tune-Up Tolerance

Plot ID	Measured Conducted Power (dBm)	Rated Power (dBm)	Delta (dB)	+	Step 1 Adjusted SAR (W/kg)	=	Step 2 Adjusted SAR (1g) (W/kg)
F6	36.9	37.0	-0.11	+	2.020	=	2.072
B5	36.9	37.0	-0.11	+	3.940	=	4.041

Step 3

Simultaneous Transmission - Bluetooth and/or WiFi

Plot ID	Rated Output Power (Pmax) (mW)	Freq (MHz)	Separation Distance (mm)	Estimated SAR (W/kg)	+	Step 2 Adjusted SAR (W/kg)	=	Step 3 Adjusted SAR (1g) (W/kg)
F6				0.04	+	2.072	=	2.113
B5				0.04	+	4.041	=	4.082

Step 4

Drift Adjustment

Plot ID	Measured Drift (dB)	+	Step 3 Adjusted SAR (W/kg)	=	Step 4 Adjusted SAR (1g) (W/kg)
F6	-0.282	+	2.113	=	2.255
B5	-0.257	+	4.082	=	4.331

Step 5

Reported SAR

Plot ID	FCC From Steps 1 through 3 1g SAR (W/kg)	IC From Steps 1 through 4 1g SAR (W/kg)
F6	2.11	2.25
B5	4.08	4.33

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NOTES to Table 10.0
(1) Scaling of the Maximum Measured SAR is based on the highest, 100% duty cycle, 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 and Body 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 1 through 4. The Plot ID is for indentification of the SAR Measurement Plots in Annex A of this report. NOTE: Some of the scaling factors in Steps 1 through 4 may not apply and are identified by light gray text.
Step 1
Per IEC-62209-1 and FCC KDB 865664. Scaling required only when Measured Fluid Deviation is greater than 5%. If the Measured Fluid Deviation is greater than 5%, Table 10.1 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 KDB 447498. 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 KDB 447498 4.3.2. The SAR, either measured or calculated, of ANY and ALL simultaneous transmitters must be added together and includes all contributors.
Step 4
Per IEC 62209-1. Scaling required only when Measured Drift is (-) Negative. The absolute value of Measured Drift is added to Reported or Simultaneous Reported SAR.
Step 5
The Reported SAR is the Maximum Final Adjusted Cumulative SAR from the applicable Steps 1 through 4 and are reported on Page 1 of this report.

Table 11.1: Fluid Sensitivity Calculation

Fluid Sensitivity Calculation (1g)				
Delta SAR = Ce * Δe + Cσ*Δσ Ce = (-0.0007854*F^3) + (0.009402*F^2) - (0.02742*F) - 0.2026 Cσ = (0.009804*F^3) - (0.08661*F^2) + (0.02981*F) + 0.7829				
Attribute	**Plot ID**	**Freq. [F] (*GHz*)**	**Plot ID**	**Freq. [F] (*GHz*)**
	F1	**0.4625625**	**-**	**0**
Ce	-0.2133		-0.2026	
Cσ	0.7791		0.7829	
Δe	3.65%		0.00%	
Δσ	5.75%		0.00%	
ΔSAR	**3.70%**		**0.00%**	
Scaling of SAR only required for Positive ΔSAR				

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.	Trevor Whillock Test Lab Engineer Celltech Labs Inc. 13 June 2017 Date

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. 13 June 2017 Date

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12.0 SAR EXPOSURE LIMITS

Table 12.0 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

13.1 Day Log

Day Log							
Date	Ambient Temp °C	Fluid Temp °C	Humidity	TSL	Fluid Param	SPC	DUT Test
29 May 2017	25	22.9	20%	835B	X	X	
31 May 2017	25	23.7	22%	835B			X
01 Jun 2017	24	22.2	22%	835B			X
02 Jun 2017	25	21.2	21%	835H	X	X	
05 Jun 2017	23	21.6	16%	835H			X
06 Jun 2017	23	21.4	18%	835H			X
06 Jun 2017	22	22.9	22%	450B	X	X	
07 Jun 2017	25	22.9	21%	450H			X
07 Jun 2017	25	23.2	21%	450H			X
08 Jun 2017	25	22.7	22%	450H			X
09 Jun 2017	22	22.4	22%	450H			X
09 Jun 2017	25	23.5	18%	450H			X
11 Jun 2017	20	22.0	23%	150B	X	X	X
12 Jun 2017	21	19.9	23%	150B			X
12 Jun 2017	22	20.0	22%	150B			X
12 Jun 2017	25	20.8	21%	150B			X
12 Jun 2017	25	20.4	20%	150H	X	X	
13 Jun 2017	22	21.0	21%	150H			X
13 Jun 2017	25	23.9	0.18	2450B	X	X	
13 Jun 2017	25	24.0	0.19	2450B			X
14 Jun 2017	24	23.1	0.15	2450B			X
14 Jun 2017	24	23.1	0.15	2450B			X
14 Jun 2017	25	20.9	0.14	5250B	X	X	
15 Jun 2017	21	21.9	0.17	5250B			X

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13.2 DUT Setup and Configuration

DUT Setup and Configuration
Overview
The **XL-200P C1D1 Rebaned** is identical in electronic circuitry to the XL-200P with the exception that it had been designed to meet Class I Division I (C1D1) Explosion Proof Safety Rating. The **XL-200P C1D1 Rebanded** also employs the use of a C1D1 Safety Rated battery. The number of test channels and test configurations performed on this device were based on the antenna and accessory combinations which produced the highest, or worst case, SAR from previous SAR evaluations of the XL-200P, FCC ID: OWDTR-0133-E and ISEDC ID: 3636B-0133. Section 3.0 identifies those test channels and each channel was tested in the BODY and FACE configuration. Sample measurements of the original XL-200P in the worst case configurations were made and compared to previous measurement data taken from the same XL-200P in the same configurations from the original filing and used to establish a base-line. Measurements from the **XL-200P C1D1 Rebanded** in the same configurations were compared to the base-line measurements and were found to be within 5% of the base-line. From this, justification is made for the determination of test channels, configurations and accessory combinations. The **XL-200P C1D1 Rebanded** was evaluated at the maximum conducted output power level, preset by the manufacturer, with a fully charged battery in unmodulated continuous transmit operation (Continuous Wave 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). This was applied only to the LMR bands. The test procedures outlined in FCC KDB 643646 "SAR Test Reduction Considerations for Occupational PTT Radios" as well as FCC KDB 865664, ISEDC RSS-102 and IEEE 1528 were used throughout the evaluation of this device in the LMR bands.

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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.

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 $\pm$ 0.5^{o}C. The Active TSL temperature was maintained to within ±1.0^{o}C throughout the test series. TSL analysis and SPC were repeated when the Active TSL use exceeded 84 hours. An Area Scan exceeding the length and width of the DUT projection was performed and the locations of all maximas within 2dB of the Peak SAR recorded. A Zoom Scan centered over the Peak SAR location(s) was performed and the 1g and 10g SAR values recorded. The resolutions of the Area Scan and Zoom Scan are described in the Scan Resolution table(s) in this Section. A Power Reference Measurement was taken at the phantom reference point immediately prior to the Area Scan. A Power Drift measurement was taken at the phantom reference point immediately following the Zoom Scan to determine the power drift. A Z-Scan from the *Maximum Distance to Phantom Surface* to the fluid surface was performed following the power drift measurement.
Reporting
The 1g SAR, 10g SAR and power drift measurements are recorded in the SAR Measurement Summary tables in the SAR Measurement Summary Section of this report. The SAR values shown in the 100% DC (Duty Cycle) column are the SAR values reported by the SAR Measurement Server with the DUT operating at 100% transmit duty cycle. The SAR values in the 50% DC column have been scaled by 50% for 50% Push-To-Talk duty cycle compensation. These tables also include other information such as transmit channel and frequency, modulation, accessories tested and DUT-phantom separation distance. In the Scaling of Maximum Measured SAR Section of this report, the highest measured SAR in the BODY and FACE configurations, within the entire scope of this assessment, are, when applicable, scaled for Fluid Sensitivity, Manufacturer's Tune-Up Tolerance, Simultaneous Transmission and Drift. With the exception of Duty Cycle correction/compensation, SAR values are ONLY scaled up, not down. The final results of this scaling is the *reported SAR* which appears on the Cover Page of this report.

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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 FCC OET Bulletin 65 Supplement C 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 62201-1 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 IEEE 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 14.0 Measurement Uncertainty

UNCERTAINTY BUDGET FOR DEVICE EVALUATION (IEEE 1528-2013 Table 9)									
Uncertainty Component	**IEEE 1528 Section**	**Uncertainty Value ±%**	**Probability Distribution**	**Divisor**	**ci 1g**	**ci 10g**	**Uncertainty Value ±% (1g)**	**Uncertainty Value ±% (10g)**	**V_i or V_{eff}**
Measurement System									
Probe Calibration*	E.2.1	6.6	Normal	1	1	1	6.60	6.60	∞
Axial Isotropy*	E.2.2	4.7	Rectangular	1.732050808	0.7	0.7	1.9	1.9	∞
Hemispherical Isotropy*	E.2.2	9.6	Rectangular	1.732050808	0.7	0.7	3.9	3.9	∞
Boundary Effect*	E.2.3	8.3	Rectangular	1.732050808	1	1	4.8	4.8	∞
Linearity*	E.2.4	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
System Detection Limits*	E.2.4	1.0	Rectangular	1.732050808	1	1	0.6	0.6	∞
Modulation Response	E.2.5	4.0	Rectangular	1.732050808	1	1	2.3	2.3	∞
Readout Electronics*	E.2.6	1.0	Normal	1	1	1	1.0	1.0	∞
Response Time*	E.2.7	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Integration Time*	E.2.8	1.4	Rectangular	1.732050808	1	1	0.8	0.8	∞
RF Ambient Conditions - Noise	E.6.1	0.0	Rectangular	1.732050808	1	1	0.0	0.0	∞
RF Ambient Conditions - Reflection	E.6.1	0.0	Rectangular	1.732050808	1	1	0.0	0.0	∞
Probe Positioner Mechanical Tolerance*	E.6.2	0.4	Rectangular	1.732050808	1	1	0.2	0.2	∞
Probe Positioning wrt Phantom Shell*	E.6.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	∞
Extrapolation, interpolation & integration algorithms for max. SAR evaluation*	E.5	3.9	Rectangular	1.732050808	1	1	2.3	2.3	∞
Test Sample Related									
Test Sample Positioning	E.4.2	0.3	Normal	1	1	1	0.3	0.3	5
Device Holder Uncertainty*	E.4.1	3.6	Normal	1	1	1	3.6	3.6	∞
SAR Drift Measurement**	E.2.9	0.0	Rectangular	1.732050808	1	1	0.0	0.0	∞
SAR Scaling***	E.6.5	2.0	Rectangular	1.732050808	1	1	1.2	1.2	∞
Phantom and Tissue Parameters									
Phantom Uncertainty*	E.3.1	4.0	Rectangular	1.732050808	1	1	2.3	2.3	∞
SAR Correction Uncertainty	E.3.2	1.2	Normal	1	1	0.84	1.2	1.0	∞
Liquid Conductivity (measurement)	E.3.3	6.8	Normal	1	0.78	0.71	5.3	4.8	10
Liquid Permittivity (measurement)	E.3.3	5.3	Normal	1	0.23	0.26	1.2	1.4	10
Liquid Conductivity (Temperature)	E.3.2	0.1	Rectangular	1.732050808	0.78	0.71	0.1	0.0	∞
Liquid Permittivity Temperature)	E.3.2	0.0	Rectangular	1.732050808	0.23	0.26	0.0	0.0	∞
Effective Degrees of Freedom(1)								**V_{eff} =**	**873.2**
Combined Standard Uncertainty			**RSS**				**12.59**	**12.40**	
Expanded Uncertainty (95% Confidence Interval)			**k=2**				**25.18**	**24.80**	
Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003									

(1) The Effective Degrees of Freedom is > 30 therefore a coverage factor of k=2 represents an approximate confidence level of 95%.

* Provided by SPEAG

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Table 14.1 Calculation of Degrees of Freedom

Table 13.1	
Calculation of the Degrees and Effective Degrees of Freedom	
$v_i = n - 1$	$v_{eff} = \dfrac{u_c^4}{\sum_{i=1}^{m} \dfrac{c_i^4 u_i^4}{v_i}}$

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15.0 FLUID DIELECTRIC PARAMETERS

Table 15.0 Fluid Dielectric Parameters 835MHz BODY TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Thu 29/May/2017 04:50:55
Freq Frequency(GHz)
FCC_eH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eB	FCC_sB	Test_e	Test_s
0.7350	55.59	0.96	59.08	0.94
0.7450	55.55	0.96	59.17	0.95
0.7550	55.51	0.96	59.16	0.97
0.7650	55.47	0.96	58.65	0.98
0.7750	55.43	0.97	58.61	0.98
0.7850	55.39	0.97	58.40	0.99
0.7950	55.36	0.97	58.53	1.00
0.8050	55.32	0.97	58.31	1.01
0.8150	55.28	0.97	58.91	1.01
0.8250	55.24	0.97	57.87	1.00
0.8350	55.20	0.97	57.86	1.04
0.8450	55.17	0.98	58.25	1.06
0.8550	55.14	0.99	57.77	1.08
0.8650	55.11	1.01	57.56	1.06
0.8750	55.08	1.02	57.81	1.08
0.8850	55.05	1.03	57.39	1.10
0.8950	55.02	1.04	57.63	1.09
0.9050	55.00	1.05	57.55	1.10
0.9150	55.00	1.06	57.40	1.12
0.9250	54.98	1.06	57.46	1.12
0.9350	54.96	1.07	57.15	1.13

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FLUID DIELECTRIC PARAMETERS

Date:	29 May 2017	Fluid Temp:	22.9	Frequency:	835MHz	Tissue:	Body
Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
735.0000		59.0800	0.9400	55.5900	0.96	6.28%	-2.08%
745.0000		59.1700	0.9500	55.5500	0.96	6.52%	-1.04%
755.0000		59.1600	0.9700	55.5100	0.96	6.58%	1.04%
765.0000		58.6500	0.9800	55.4700	0.96	5.73%	2.08%
768.0000	*	58.6380	0.9800	55.4580	0.96	5.73%	1.77%
775.0000		58.6100	0.9800	55.4300	0.97	5.74%	1.03%
776.0000	*	58.5890	0.9810	55.4260	0.97	5.71%	1.13%
785.0000		58.4000	0.9900	55.3900	0.97	5.43%	2.06%
795.0000		58.5300	1.0000	55.3600	0.97	5.73%	3.09%
805.0000		58.3100	1.0100	55.3200	0.97	5.40%	4.12%
806.0000	*	58.3700	1.0100	55.3160	0.97	5.52%	4.12%
811.0000	*	58.6700	1.0100	55.2960	0.97	6.10%	4.12%
815.0000		58.9100	1.0100	55.2800	0.97	6.57%	4.12%
824.0000	*	57.9740	1.0010	55.2440	0.97	4.94%	3.20%
825.0000		57.8700	1.0000	55.2400	0.97	4.76%	3.09%
835.0000		57.8600	1.0400	55.2000	0.97	4.82%	7.22%
845.0000		58.2500	1.0600	55.1700	0.98	5.58%	8.16%
851.0000	*	57.9620	1.0720	55.1520	0.99	5.10%	8.72%
855.0000		57.7700	1.0800	55.1400	0.99	4.77%	9.09%
865.0000		57.5600	1.0600	55.1100	1.01	4.45%	4.95%
875.0000		57.8100	1.0800	55.0800	1.02	4.96%	5.88%
885.0000		57.3900	1.1000	55.0500	1.03	4.25%	6.80%
895.0000		57.6300	1.0900	55.0200	1.04	4.74%	4.81%
905.0000		57.5500	1.1000	55.0000	1.05	4.64%	4.76%
915.0000		57.4000	1.1200	55.0000	1.06	4.36%	5.66%
925.0000		57.4600	1.1200	54.9800	1.06	4.51%	5.66%
935.0000		57.1500	1.1300	54.9600	1.07	3.98%	5.61%

*Channel Frequency Tested

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Table 15.1 Fluid Dielectric Parameters 835MHz HEAD TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Mon 02/Jun/2017 09:15:16
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	43.35	0.82
0.7450	41.97	0.89	43.06	0.83
0.7550	41.92	0.89	42.86	0.84
0.7650	41.86	0.89	42.85	0.84
0.7750	41.81	0.90	42.43	0.83
0.7850	41.76	0.90	42.30	0.88
0.7950	41.71	0.90	42.41	0.88
0.8050	41.66	0.90	42.20	0.88
0.8150	41.60	0.90	41.59	0.90
0.8250	41.55	0.90	41.74	0.90
0.8350	41.50	0.90	41.69	0.90
0.8450	41.50	0.91	41.79	0.92
0.8550	41.50	0.92	41.41	0.93
0.8650	41.50	0.93	41.50	0.94
0.8750	41.50	0.94	41.23	0.94
0.8850	41.50	0.95	41.30	0.96
0.8950	41.50	0.96	41.10	0.97
0.9050	41.50	0.97	40.98	0.97
0.9150	41.50	0.98	41.07	0.99
0.9250	41.48	0.98	40.70	1.00
0.9350	41.46	0.99	40.82	1.01

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FLUID DIELECTRIC PARAMETERS

Date:	2 Jun 2017	Fluid Temp:	21.2	Frequency:	835MHz	Tissue:	Head
Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
735.0000		43.3500	0.8200	42.0200	0.89	3.17%	-7.87%
745.0000		43.0600	0.8300	41.9700	0.89	2.60%	-6.74%
755.0000		42.8600	0.8400	41.9200	0.89	2.24%	-5.62%
765.0000		42.8500	0.8400	41.8600	0.89	2.37%	-5.62%
768.0000	*	42.7240	0.8370	41.8450	0.89	2.10%	-6.27%
775.0000		42.4300	0.8300	41.8100	0.90	1.48%	-7.78%
776.0000	*	42.4170	0.8350	41.8050	0.90	1.46%	-7.22%
785.0000		42.3000	0.8800	41.7600	0.90	1.29%	-2.22%
795.0000		42.4100	0.8800	41.7100	0.90	1.68%	-2.22%
805.0000		42.2000	0.8800	41.6600	0.90	1.30%	-2.22%
806.0000	*	42.1390	0.8820	41.6540	0.90	1.16%	-2.00%
811.0000	*	41.8340	0.8920	41.6240	0.90	0.50%	-0.89%
815.0000		41.5900	0.9000	41.6000	0.90	-0.02%	0.00%
824.0000	*	41.7250	0.9000	41.5550	0.90	0.41%	0.00%
825.0000		41.7400	0.9000	41.5500	0.90	0.46%	0.00%
835.0000		41.6900	0.9000	41.5000	0.90	0.46%	0.00%
845.0000		41.7900	0.9200	41.5000	0.91	0.70%	1.10%
851.0000	*	41.5620	0.9260	41.5000	0.92	0.15%	1.09%
855.0000		41.4100	0.9300	41.5000	0.92	-0.22%	1.09%
865.0000		41.5000	0.9400	41.5000	0.93	0.00%	1.08%
875.0000		41.2300	0.9400	41.5000	0.94	-0.65%	0.00%
885.0000		41.3000	0.9600	41.5000	0.95	-0.48%	1.05%
895.0000		41.1000	0.9700	41.5000	0.96	-0.96%	1.04%
905.0000		40.9800	0.9700	41.5000	0.97	-1.25%	0.00%
915.0000		41.0700	0.9900	41.5000	0.98	-1.04%	1.02%
925.0000		40.7000	1.0000	41.4800	0.98	-1.88%	2.04%
935.0000		40.8200	1.0100	41.4600	0.99	-1.54%	2.02%

*Channel Frequency Tested

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Table 15.2 Fluid Dielectric Parameters 450MHz BODY TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Fri 06/Jun/2017 09:39:39
Freq Frequency(GHz)
FCC_eH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eB	FCC_sB	Test_e	Test_s
0.3500	57.70	0.93	56.26	0.88
0.3600	57.60	0.93	55.46	0.91
0.3700	57.50	0.93	56.48	0.91
0.3800	57.40	0.93	55.63	0.92
0.3900	57.30	0.93	54.98	0.92
0.4000	57.20	0.93	54.97	0.93
0.4100	57.10	0.93	55.33	0.94
0.4200	57.00	0.94	55.06	0.96
0.4300	56.90	0.94	55.13	0.95
0.4400	56.80	0.94	55.32	0.96
0.4500	56.70	0.94	54.84	0.97
0.4600	56.66	0.94	54.59	0.98
0.4700	56.62	0.94	54.52	1.00
0.4800	56.58	0.94	54.23	1.00
0.4900	56.54	0.94	53.83	1.00
0.5000	56.51	0.94	53.94	1.01
0.5100	56.47	0.94	53.79	1.04
0.5200	56.43	0.95	53.68	1.02
0.5300	56.39	0.95	53.65	1.06
0.5400	56.35	0.95	53.66	1.05
0.5500	56.31	0.95	53.00	1.06

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FLUID DIELECTRIC PARAMETERS

Date:	6 Jun 2017	Fluid Temp:	22.2	Frequency:	450MHz	Tissue:	Body
Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
350.0000		56.2600	0.8800	57.7000	0.93	-2.50%	-5.38%
360.0000		55.4600	0.9100	57.6000	0.93	-3.72%	-2.15%
370.0000		56.4800	0.9100	57.5000	0.93	-1.77%	-2.15%
378.0000	*	55.8000	0.9180	57.4200	0.93	-2.82%	-1.29%
380.0000		55.6300	0.9200	57.4000	0.93	-3.08%	-1.08%
390.0000		54.9800	0.9200	57.3000	0.93	-4.05%	-1.08%
400.0000		54.9700	0.9300	57.2000	0.93	-3.90%	0.00%
406.0000	*	55.1860	0.9360	57.1400	0.93	-3.42%	0.65%
410.0000		55.3300	0.9400	57.1000	0.93	-3.10%	1.08%
418.0000	*	55.1140	0.9560	57.0200	0.94	-3.34%	1.92%
420.0000		55.0600	0.9600	57.0000	0.94	-3.40%	2.13%
430.0000		55.1300	0.9500	56.9000	0.94	-3.11%	1.06%
440.0000		55.3200	0.9600	56.8000	0.94	-2.61%	2.13%
450.0000		54.8400	0.9700	56.7000	0.94	-3.28%	3.19%
460.0000		54.5900	0.9800	56.6600	0.94	-3.65%	4.26%
470.0000		54.5200	1.0000	56.6200	0.94	-3.71%	6.38%
480.0000		54.2300	1.0000	56.5800	0.94	-4.15%	6.38%
490.0000		53.8300	1.0000	56.5400	0.94	-4.79%	6.38%
500.0000		53.9400	1.0100	56.5100	0.94	-4.55%	7.45%
510.0000		53.7900	1.0400	56.4700	0.94	-4.75%	10.64%
520.0000		53.6800	1.0200	56.4300	0.95	-4.87%	7.37%
530.0000		53.6500	1.0600	56.3900	0.95	-4.86%	11.58%
540.0000		53.6600	1.0500	56.3500	0.95	-4.77%	10.53%
550.0000		53.0000	1.0600	56.3100	0.95	-5.88%	11.58%

*Channel Frequency Tested

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Table 15.3 Fluid Dielectric Parameters 450MHz HEAD TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Mon 09/Jun/2017 06:51:49
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	47.20	0.80
0.3600	44.58	0.87	46.65	0.82
0.3700	44.46	0.87	46.58	0.82
0.3800	44.34	0.87	46.77	0.83
0.3900	44.22	0.87	46.07	0.82
0.4000	44.10	0.87	45.86	0.85
0.4100	43.98	0.87	45.21	0.84
0.4200	43.86	0.87	44.62	0.85
0.4300	43.74	0.87	44.92	0.87
0.4400	43.62	0.87	43.94	0.88
0.4500	43.50	0.87	44.25	0.89
0.4600	43.45	0.87	44.46	0.89
0.4700	43.40	0.87	44.71	0.91
0.4800	43.34	0.87	43.70	0.92
0.4900	43.29	0.87	44.28	0.91
0.5000	43.24	0.87	43.78	0.92
0.5100	43.19	0.87	43.11	0.95
0.5200	43.14	0.88	43.21	0.95
0.5300	43.08	0.88	43.08	0.94
0.5400	43.03	0.88	43.02	0.96
0.5500	42.98	0.88	42.65	0.97

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FLUID DIELECTRIC PARAMETERS

Date:	2 Jun 2017	Fluid Temp:	23.5	Frequency:	450MHz	Tissue:	Head
Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
350.0000		47.2000	0.8000	44.7000	0.87	5.59%	-8.05%
360.0000		46.6500	0.8200	44.5800	0.87	4.64%	-5.75%
370.0000		46.5800	0.8200	44.4600	0.87	4.77%	-5.75%
378.0000	*	46.7320	0.8280	44.3640	0.87	5.34%	-4.83%
380.0000		46.7700	0.8300	44.3400	0.87	5.48%	-4.60%
390.0000		46.0700	0.8200	44.2200	0.87	4.18%	-5.75%
400.0000		45.8600	0.8500	44.1000	0.87	3.99%	-2.30%
406.0000	*	45.4700	0.8440	44.0280	0.87	3.28%	-2.99%
410.0000		45.2100	0.8400	43.9800	0.87	2.80%	-3.45%
418.0000	*	44.7380	0.8480	43.8840	0.87	1.95%	-2.53%
420.0000		44.6200	0.8500	43.8600	0.87	1.73%	-2.30%
430.0000		44.9200	0.8700	43.7400	0.87	2.70%	0.00%
440.0000		43.9400	0.8800	43.6200	0.87	0.73%	1.15%
450.0000		44.2500	0.8900	43.5000	0.87	1.72%	2.30%
460.0000		44.4600	0.8900	43.4500	0.87	2.32%	2.30%
470.0000		44.7100	0.9100	43.4000	0.87	3.02%	4.60%
480.0000		43.7000	0.9200	43.3400	0.87	0.83%	5.75%
490.0000		44.2800	0.9100	43.2900	0.87	2.29%	4.60%
500.0000		43.7800	0.9200	43.2400	0.87	1.25%	5.75%
510.0000		43.1100	0.9500	43.1900	0.87	-0.19%	9.20%
520.0000		43.2100	0.9500	43.1400	0.88	0.16%	7.95%
530.0000		43.0800	0.9400	43.0800	0.88	0.00%	6.82%
540.0000		43.0200	0.9600	43.0300	0.88	-0.02%	9.09%
550.0000		42.6500	0.9700	42.9800	0.88	-0.77%	10.23%

*Channel Frequency Tested

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Table 15.4 Fluid Dielectric Parameters 150MHz BODY TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Wed 11/Jun/2025 07:19:13
Freq Frequency(GHz)
FCC_eH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eB	FCC_sB	Test_e	Test_s
0.1000	63.13	0.76	67.12	0.71
0.1100	62.89	0.77	66.80	0.72
0.1200	62.64	0.78	66.49	0.73
0.1300	62.39	0.78	66.18	0.74
0.1400	62.15	0.79	65.86	0.75
0.1500	61.90	0.80	65.55	0.76
0.1600	61.65	0.81	65.23	0.77
0.1700	61.41	0.82	64.92	0.78
0.1800	61.16	0.82	64.61	0.79
0.1900	60.91	0.83	64.29	0.80
0.2000	60.67	0.84	63.98	0.81

FLUID DIELECTRIC PARAMETERS

Date:	11 Jun 2017	Fluid Temp:	21.5	Frequency:	150MHz	Tissue:	Body
Freq (MHz)		**Test_e**	**Test_s**	**Target_e**	**Target_s**	**Deviation Permittivity**	**Deviation Conductivity**
100.0000		67.1200	0.7100	63.1300	0.76	6.32%	-6.58%
110.0000		66.8000	0.7200	62.8900	0.77	6.22%	-6.49%
120.0000		66.4900	0.7300	62.6400	0.78	6.15%	-6.41%
130.0000		66.1800	0.7400	62.3900	0.78	6.07%	-5.13%
136.0000	*	65.9880	0.7460	62.2460	0.79	6.01%	-5.09%
140.0000		65.8600	0.7500	62.1500	0.79	5.97%	-5.06%
150.0000		65.5500	0.7600	61.9000	0.80	5.90%	-5.00%
156.8000	*	65.3324	0.7668	61.7300	0.81	5.84%	-4.96%
160.0000		65.2300	0.7700	61.6500	0.81	5.81%	-4.94%
170.0000		64.9200	0.7800	61.4100	0.82	5.72%	-4.88%
180.0000		64.6100	0.7900	61.1600	0.82	5.64%	-3.66%
190.0000		64.2900	0.8000	60.9100	0.83	5.55%	-3.61%
200.0000		63.9800	0.8100	60.6700	0.84	5.46%	-3.57%

*Channel Frequency Tested

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Table 15.5 Fluid Dielectric Parameters 150MHz HEAD TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Mon 12/Jun/2017 14:01:19
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	52.17	0.73
0.1100	54.17	0.73	56.53	0.74
0.1200	53.70	0.74	53.85	0.76
0.1300	53.23	0.75	50.39	0.78
0.1400	52.77	0.75	50.26	0.76
0.1500	52.30	0.76	48.95	0.77
0.1600	51.83	0.77	49.13	0.78
0.1700	51.37	0.77	47.94	0.78
0.1800	50.90	0.78	48.68	0.80
0.1900	50.43	0.79	48.24	0.79
0.2000	49.97	0.80	46.41	0.79

FLUID DIELECTRIC PARAMETERS

Date:	2 Jun 2017	Fluid Temp:	20.4	Frequency:	150MHz	Tissue:	Head
Freq (MHz)		**Test_e**	**Test_s**	**Target_e**	**Target_s**	**Deviation Permittivity**	**Deviation Conductivity**
100.0000		52.1700	0.7300	54.6300	0.72	-4.50%	1.39%
110.0000		56.5300	0.7400	54.1700	0.73	4.36%	1.37%
120.0000		53.8500	0.7600	53.7000	0.74	0.28%	2.70%
130.0000		50.3900	0.7800	53.2300	0.75	-5.34%	4.00%
136.0000	*	50.3120	0.7680	52.9540	0.75	-4.99%	2.40%
140.0000		50.2600	0.7600	52.7700	0.75	-4.76%	1.33%
150.0000		48.9500	0.7700	52.3000	0.76	-6.41%	1.32%
156.8000	*	49.0724	0.7768	51.9804	0.77	-5.59%	1.30%
160.0000		49.1300	0.7800	51.8300	0.77	-5.21%	1.30%
170.0000		47.9400	0.7800	51.3700	0.77	-6.68%	1.30%
180.0000		48.6800	0.8000	50.9000	0.78	-4.36%	2.56%
190.0000		48.2400	0.7900	50.4300	0.79	-4.34%	0.00%
200.0000		46.4100	0.7900	49.9700	0.80	-7.12%	-1.25%

*Channel Frequency Tested

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Table 15.6 Fluid Dielectric Parameters 2450MHz BODY TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Tue 13/Jun/2017 13:43:54
Freq Frequency(GHz)
FCC_eH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eB	FCC_sB	Test_e	Test_s
2.3500	52.83	1.85	50.89	1.87
2.3600	52.82	1.86	50.69	1.89
2.3700	52.81	1.87	50.63	1.90
2.3800	52.79	1.88	50.52	1.89
2.3900	52.78	1.89	50.76	1.92
2.4000	52.77	1.90	50.36	1.91
2.4100	52.75	1.91	50.26	1.95
2.4200	52.74	1.92	50.29	1.94
2.4300	52.73	1.93	50.40	1.94
2.4400	52.71	1.94	50.54	1.96
2.4500	52.70	1.95	50.34	2.03
2.4600	52.69	1.96	50.28	2.00
2.4700	52.67	1.98	50.39	2.00
2.4800	52.66	1.99	50.19	2.03
2.4900	52.65	2.01	50.28	2.05
2.5000	52.64	2.02	50.06	2.08
2.5100	52.62	2.04	50.20	2.07
2.5200	52.61	2.05	50.09	2.09
2.5300	52.60	2.06	50.03	2.11
2.5400	52.59	2.08	50.03	2.11
2.5500	52.57	2.09	49.96	2.13

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FLUID DIELECTRIC PARAMETERS

Date:	13 Jun 2017	Fluid Temp:	23.9	Frequency:	2450MHz	Tissue:	Body
Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
2350.0000		50.8900	1.8700	52.8300	1.85	-3.67%	1.08%
2360.0000		50.6900	1.8900	52.8200	1.86	-4.03%	1.61%
2370.0000		50.6300	1.9000	52.8100	1.87	-4.13%	1.60%
2380.0000		50.5200	1.8900	52.7900	1.88	-4.30%	0.53%
2390.0000		50.7600	1.9200	52.7800	1.89	-3.83%	1.59%
2400.0000		50.3600	1.9100	52.7700	1.90	-4.57%	0.53%
2410.0000		50.2600	1.9500	52.7500	1.91	-4.72%	2.09%
2420.0000		50.2900	1.9400	52.7400	1.92	-4.65%	1.04%
2430.0000		50.4000	1.9400	52.7300	1.93	-4.42%	0.52%
2440.0000		50.5400	1.9600	52.7100	1.94	-4.12%	1.03%
2450.0000		50.3400	2.0300	52.7000	1.95	-4.48%	4.10%
2460.0000		50.2800	2.0000	52.6900	1.96	-4.57%	2.04%
2470.0000		50.3900	2.0000	52.6700	1.98	-4.33%	1.01%
2480.0000		50.1900	2.0300	52.6600	1.99	-4.69%	2.01%
2490.0000		50.2800	2.0500	52.6500	2.01	-4.50%	1.99%
2500.0000		50.0600	2.0800	52.6400	2.02	-4.90%	2.97%
2510.0000		50.2000	2.0700	52.6200	2.04	-4.60%	1.47%
2520.0000		50.0900	2.0900	52.6100	2.05	-4.79%	1.95%
2530.0000		50.0300	2.1100	52.6000	2.06	-4.89%	2.43%
2540.0000		50.0300	2.1100	52.5900	2.08	-4.87%	1.44%
2550.0000		49.9600	2.1300	52.5700	2.09	-4.96%	1.91%

*Channel Frequency Tested

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Table 15.7 Fluid Dielectric Parameters 5200MHz BODY TSL

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Wed 14/Jun/2017 17:47:59
Freq Frequency(GHz)
FCC_eH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eB	FCC_sB	Test_e	Test_s
5.1500	49.08	5.24	47.19	5.47
5.1600	49.07	5.25	46.85	5.63
5.1700	49.06	5.26	47.02	5.67
5.1800	49.04	5.28	46.97	5.69
5.1900	49.03	5.29	47.02	5.75
5.2000	49.01	5.30	46.78	5.71
5.2100	49.00	5.31	47.04	5.59
5.2200	48.99	5.32	46.72	5.56
5.2300	48.97	5.33	46.66	5.69
5.2400	48.96	5.35	46.62	5.64
5.2500	48.95	5.36	46.38	5.65
5.2600	48.93	5.37	46.45	5.73
5.2700	48.92	5.38	46.23	5.75
5.2800	48.91	5.39	46.21	5.82
5.2900	48.89	5.40	46.34	5.78
5.3000	48.88	5.42	46.33	5.87
5.3100	48.87	5.43	46.11	5.82
5.3200	48.85	5.44	46.11	5.69
5.3300	48.84	5.45	46.03	5.77
5.3400	48.82	5.46	45.83	5.76
5.3500	48.81	5.47	45.88	5.72

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FLUID DIELECTRIC PARAMETERS

Date:	14 Jun 2017	Fluid Temp:	20.9	Frequency:	5250MHz	Tissue:	Body
Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
5150.0000		47.1900	5.4700	49.0800	5.24	-3.85%	4.39%
5160.0000		46.8500	5.6300	49.0700	5.25	-4.52%	7.24%
5170.0000		47.0200	5.6700	49.0600	5.26	-4.16%	7.79%
5180.0000		46.9700	5.6900	49.0400	5.28	-4.22%	7.77%
5190.0000		47.0200	5.7500	49.0300	5.29	-4.10%	8.70%
5200.0000		46.7800	5.7100	49.0100	5.30	-4.55%	7.74%
5210.0000		47.0400	5.5900	49.0000	5.31	-4.00%	5.27%
5220.0000		46.7200	5.5600	48.9900	5.32	-4.63%	4.51%
5230.0000		46.6600	5.6900	48.9700	5.33	-4.72%	6.75%
5240.0000		46.6200	5.6400	48.9600	5.35	-4.78%	5.42%
5250.0000		46.3800	5.6500	48.9500	5.36	-5.25%	5.41%
5260.0000		46.4500	5.7300	48.9300	5.37	-5.07%	6.70%
5270.0000		46.2300	5.7500	48.9200	5.38	-5.50%	6.88%
5280.0000		46.2100	5.8200	48.9100	5.39	-5.52%	7.98%
5290.0000		46.3400	5.7800	48.8900	5.40	-5.22%	7.04%
5300.0000		46.3300	5.8700	48.8800	5.42	-5.22%	8.30%
5310.0000		46.1100	5.8200	48.8700	5.43	-5.65%	7.18%
5320.0000		46.1100	5.6900	48.8500	5.44	-5.61%	4.60%
5330.0000		46.0300	5.7700	48.8400	5.45	-5.75%	5.87%
5340.0000		45.8300	5.7600	48.8200	5.46	-6.12%	5.49%
5350.0000		45.8800	5.7200	48.8100	5.47	-6.00%	4.57%

*Channel Frequency Tested

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16.0 SYSTEM VERIFICATION TEST RESULTS

Table 16.0 System Verification Results 835MHz BODY TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
29 May 2017		835	D835V2		4d075
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Body	22.9	25	20%	250	15
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
57.86	55.20	4.82%	1.04	0.97	7.22%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
2.43	2.42	0.41%	1.59	1.59	0.00%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
9.72	9.40	3.40%	6.36	6.21	2.42%

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 and IEC 62209-1.

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 835MHz HEAD TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
02 Jun 2017		835	D835V2		4d075
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	21.2	25	21%	250	15
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
41.69	41.50	0.46%	0.90	0.90	0.00%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
2.24	2.41	-7.05%	1.44	1.56	-7.69%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
8.96	9.30	-3.66%	5.76	6.07	-5.11%

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 and IEC 62209-1.

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 BODY TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
06 Jun 2017		450	D450V3		1068
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Body	22.9	22	22%	250	15
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
54.84	56.70	-3.28%	0.97	0.94	3.19%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
1.13	1.12	0.89%	0.76	0.74	2.85%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
4.52	4.42	2.26%	3.04	2.92	3.97%

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 and IEC 62209-1.

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 450MHz HEAD TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
09 Jun 2017		450	D450V3		1068
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	23.5	25	18%	250	15
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
44.25	43.50	1.72%	0.89	0.87	2.30%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
1.23	1.16	6.03%	0.83	0.78	6.30%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
4.92	4.49	9.58%	3.31	3.02	9.54%

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 and IEC 62209-1.

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 150MHz BODY TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
11 Jun 2017		150	CLA-150		4007
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Body	21.5	20	23%	1000	0
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
65.55	61.90	5.90%	0.76	0.80	-5.00%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
4.30	4.08	5.39%	2.89	2.70	7.04%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
4.30	4.01	7.23%	2.89	2.65	9.06%

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 and IEC 62209-1.

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 150MHz HEAD TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
12 Jun 2017		150	CLA-150		4007
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	20.4	25	20%	1000	0
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
48.95	52.30	-6.41%	0.77	0.76	1.32%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
4.12	3.90	5.64%	2.74	2.58	6.20%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
4.12	3.87	6.46%	2.74	2.56	7.03%

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 and IEC 62209-1.

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 2450MHz BODY TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
13 Jun 2017		2450	D2450V2		825
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Body	24.0	25	19%	250	10
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
50.34	52.70	-4.48%	2.03	1.95	4.10%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
13.20	13.00	1.54%	6.08	6.05	0.50%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
52.80	50.70	4.14%	24.32	23.80	2.18%

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 and IEC 62209-1.

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 5250MHz BODY TSL

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
14 June 2017		5250	D5GHzV2		1031
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Body	20.9	25	14%	50	10
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
46.38	48.95	-5.25%	5.65	5.36	5.41%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
3.57	3.63	1.70%	0.99	1.02	-3.00%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
71.40	72.20	-1.10%	19.80	20.30	-2.50%

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 and IEC 62209-1.

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 MEASUREMENT SYSTEM SPECIFICATIONS

Table 17.0 Measurement System Specifications

Measurement System Specification	
Specifications	
Positioner	Stäubli Unimation Corp. Robot Model: RX60L
Repeatability	0.02 mm
No. of axis	6
Data Acquisition Electronic (DAE) System	
Cell Controller	
Processor	AMD Athlon XP 2400+
Clock Speed	2.0 GHz
Operating System	Windows XP Professional
Data Converter	
Features	Signal Amplifier, multiplexer, A/D converter, and control logic
Software	Measurement Software: DASY
	Postprocessing Software: SEMCAD, V1.8 Build 186
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	PC/104 166MHz Pentium CPU; 32 MB chipdisk; 64 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	SAM
Shell Material	Fiberglass
Thickness	2mm +/- .2mm
Volume	> 30 Liter

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Measurement System Specification

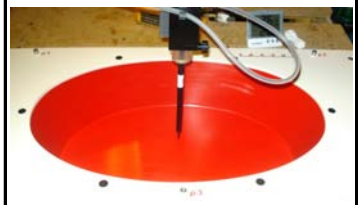
Probe Specification

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



ELI Phantom

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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18.0 TEST EQUIPMENT LIST

Table 18.0 Equipment List and Calibration

Test Equipment List				
DESCRIPTION	ASSET NO.	SERIAL NO.	DATE CALIBRATED	CALIBRATION INTERVAL
Schmid & Partner DASY System	-	-	-	-
-DASY Measurement Server	158	1078	CNR	CNR
-Robot	46	599396-01	CNR	CNR
-DAE4	19	353	24-Apr-17	Annual
-EX3DV4 E-Field Probe	213	3600	27-Apr-17	Annual
-CLA150 Validation Source	251	4007	27-Apr-17	Triennial
-D835V2 Validation Dipole	217	4D075	23-Apr-15	Triennial
-D450V3 Validation Dipole	221	1068	21-Apr-15	Triennial
-D2450V2 Validation Dipole	25	825	23-Apr-15	Triennial
-D5GHzV2 Validation Dipole	126	1031	20-Apr-15	Triennial
ELI Phantom	247	-	CNR	CNR
HP 85070C Dielectric Probe Kit	33	none	CNR	CNR
Gigatronics 8652A Power Meter	110	1835801	29-Feb-16	Triennial
Gigatronics 80701A Power Sensor	248	1833687	29-Feb-16	Triennial
HP 8753ET Network Analyzer	134	US39170292	22-Oct-14	Triennial
Generator	6	100104	29-May-17	Triennial
Amplifier	106	26235	CNR	CNR

CNR = Calibration Not Required

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19.0 FLUID COMPOSITION

Table 19.0 Fluid Composition 150MHz HEAD TSL

150			150MHz Head	
Tissue Simulating Liquid (TSL) Composition				
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 19.1 Fluid Composition 150MHz BODY TSL

150			150MHz Body	
Tissue Simulating Liquid (TSL) Composition				
Component by Percent Weight				
Water	**Sugar**	**Salt(1)**	**HEC(2)**	**Bacteriacide(3)**
46.6	49.7	2.6	1.0	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 19.2 Fluid Composition 450MHz HEAD TSL

450			450MHz Head	
Tissue Simulating Liquid (TSL) Composition				
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

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Table 19.3 Fluid Composition 450MHz BODY TSL

450			450MHz Body	
Tissue Simulating Liquid (TSL) Composition				
Component by Percent Weight				
Water	**Sugar**	**Salt(1)**	**HEC(2)**	**Bacteriacide(3)**
52.0	45.65	1.75	0.5	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 19.4 Fluid Composition 835MHz HEAD TSL

835			835MHz Head	
Tissue Simulating Liquid (TSL) Composition				
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 19.5 Fluid Composition 835MHz BODY TSL

835			835MHz Body	
Tissue Simulating Liquid (TSL) Composition				
Component by Percent Weight				
Water	**Sugar**	**Salt(1)**	**HEC(2)**	**Bacteriacide(3)**
53.79	45.13	0.98	0.0	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

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Table 19.6 Fluid Composition 2450MHz BODY TSL

2450			2450MHz Body	
Tissue Simulating Liquid (TSL) Composition				
Component by Percent Weight				
Water	**Glycol**	**Salt(1)**	**HEC(2)**	**Bacteriacide(3)**
69.98	30.0	0.02	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 19.7 Fluid Composition 5250MHz BODY TSL

This is a proprietary composition by SPEAG.

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APPENDIX A – SYSTEM VERIFICATION PLOTS

Date/Time: 29/05/2017 11:56:41 AM

Test Laboratory: Celltech Labs

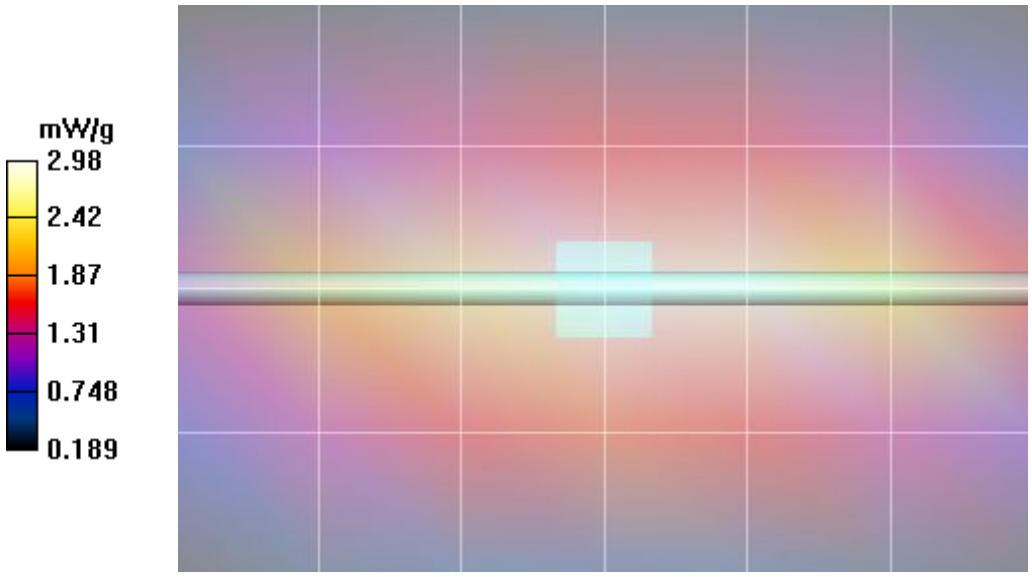
DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d075; Calibrated: 04/20/2015
Program Name: SPC 835B

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 1.04 mho/m; ε_r = 57.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(8.22, 8.22, 8.22); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

Body d=15mm Pin=250mW. TS=[2.178][2.42][2.662]W/kg/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.98 mW/g

Body d=15mm Pin=250mW. TS=[2.178][2.42][2.662]W/kg/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 53.8 V/m; Power Drift = 0.041 dB
Peak SAR (extrapolated) = 3.64 W/kg
SAR(1 g) = 2.43 mW/g; SAR(10 g) = 1.59 mW/g
Maximum value of SAR (measured) = 2.61 mW/g



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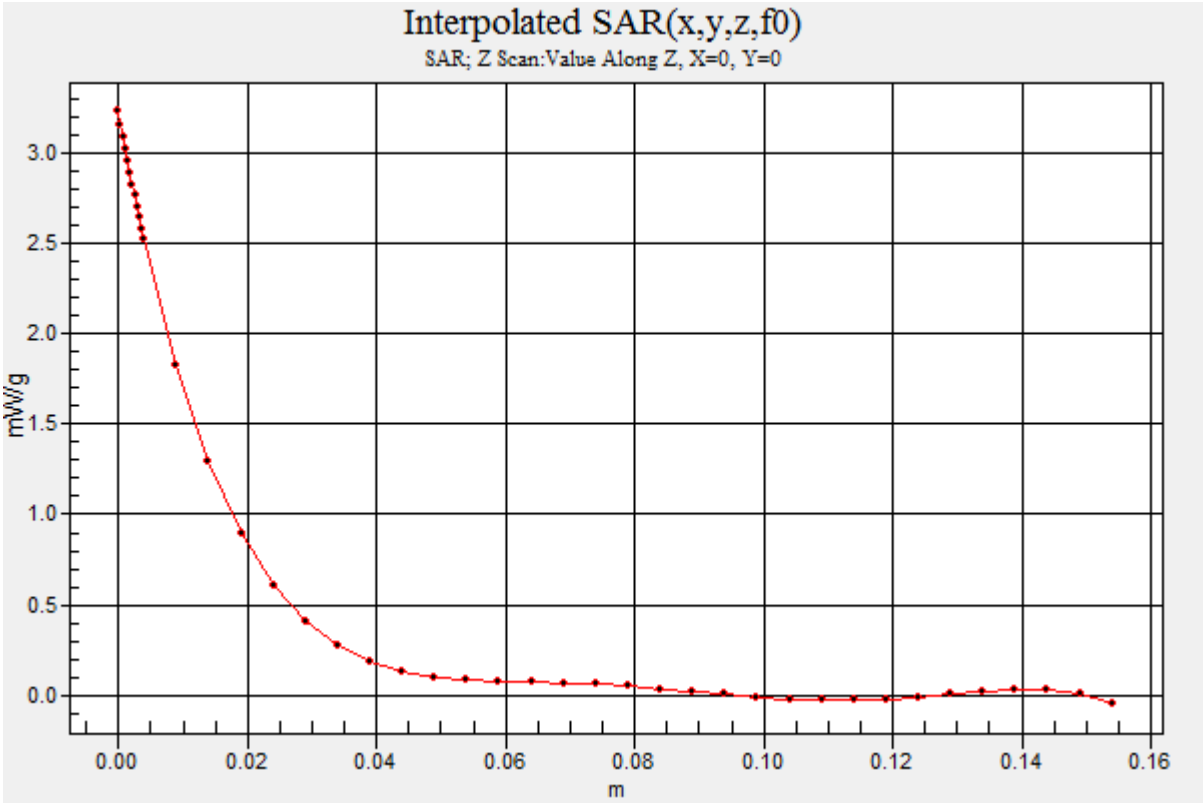

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Date/Time: 02/06/2016 10:50:40 AM

Test Laboratory: Celltech Labs

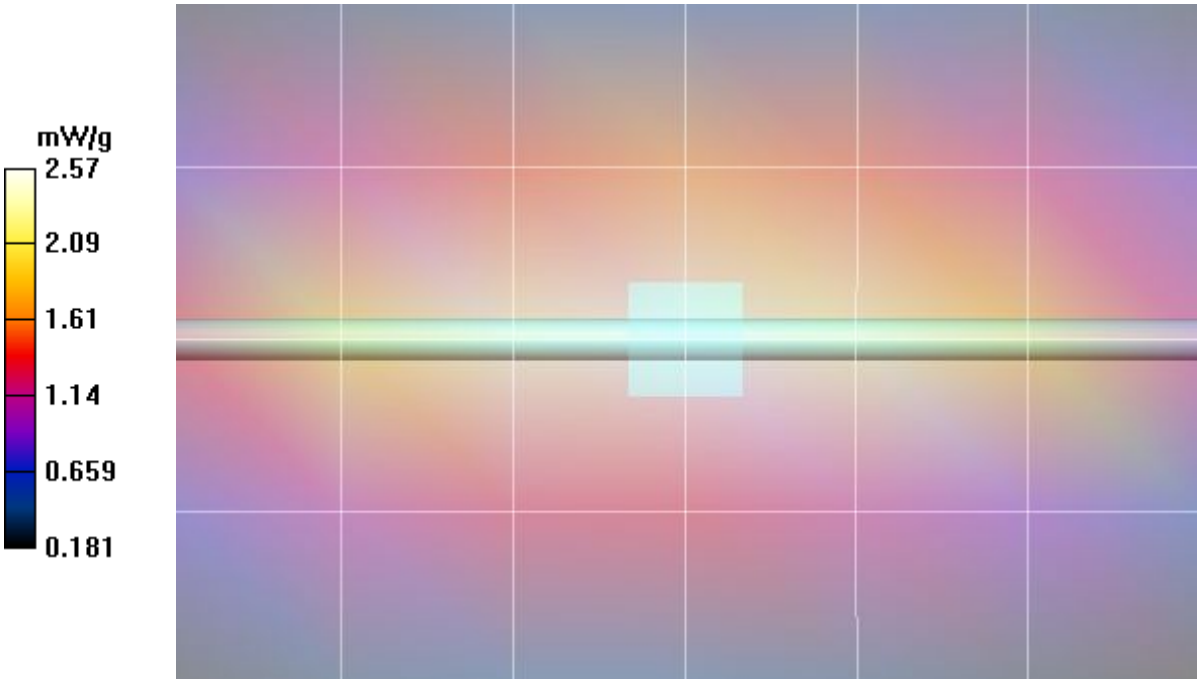
DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d075; Calibrated: 04/20/2015
Program Name: SPC 835H

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.94 mho/m; ε_r = 42.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3600 2016; ConvF(8.12, 8.12, 8.12); Calibrated: 27/04/2016
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353 2016; Calibrated: 20/04/2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Head d=15mm Pin=250mW. TS=[2.169][2.41][2.651]W/kg/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.57 mW/g

Head d=15mm Pin=250mW. TS=[2.169][2.41][2.651]W/kg/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 51.8 V/m; Power Drift = 0.058 dB
Peak SAR (extrapolated) = 3.63 W/kg
SAR(1 g) = 2.37 mW/g; SAR(10 g) = 1.52 mW/g
Maximum value of SAR (measured) = 2.56 mW/g



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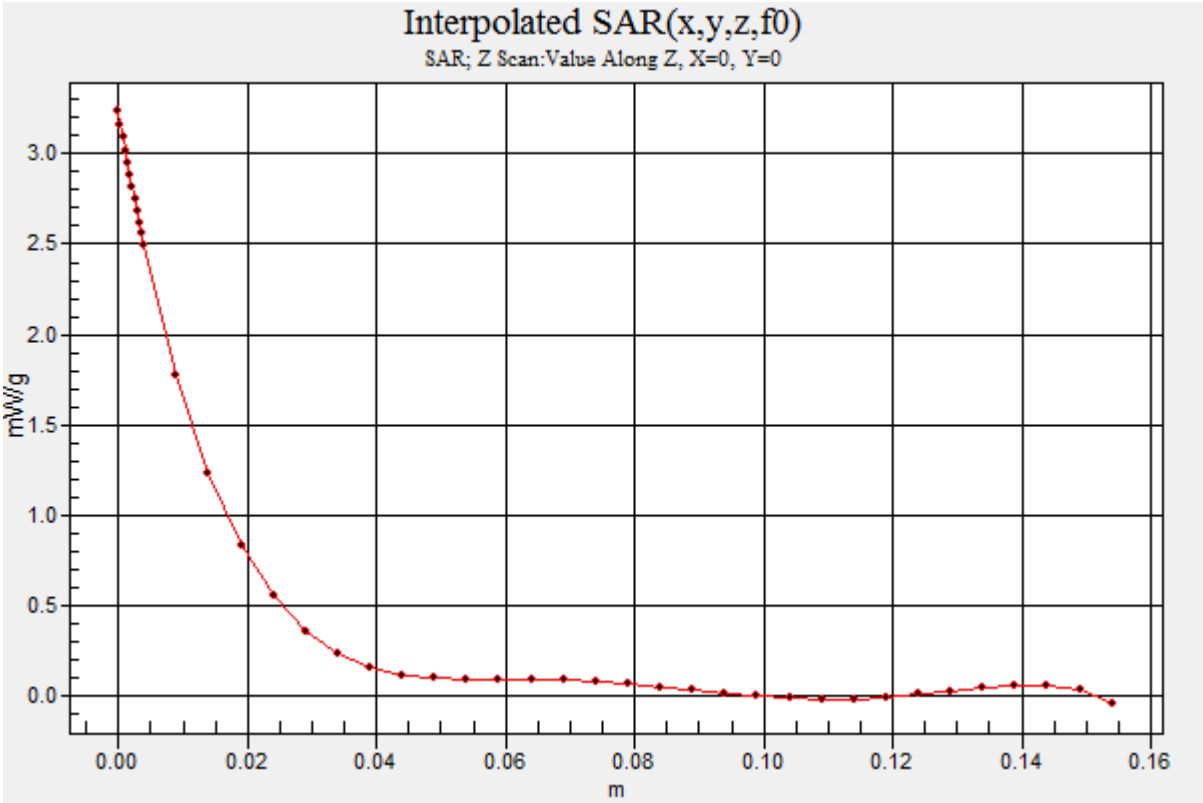

Interpolated SAR(x,y,z,f0)
SAR; Z Scan:Value Along Z, X=0, Y=0
mW/g
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
m

Date/Time: 07/06/2017 8:44:19 AM

Test Laboratory: Celltech Labs

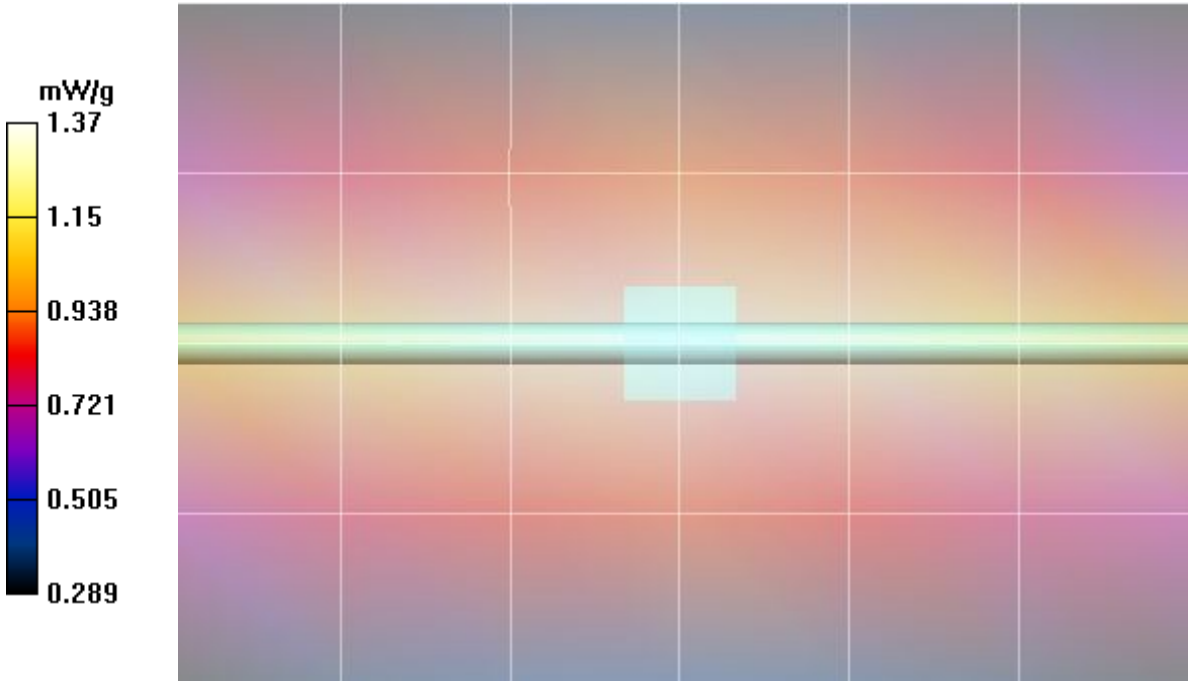
DUT: Dipole 450 MHz; Type: D450V3; Serial: 1068; Calibrated: 04/15/2015
Program Name: SPC 450B

Communication System: CW; Frequency: 450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 450 MHz; σ = 0.97 mho/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(9.22, 9.22, 9.22); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

Body d=15mm Pin=250mW, TS=[1.008][1.12][1.232]/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.37 mW/g

Body d=15mm Pin=250mW, TS=[1.008][1.12][1.232]/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 37.9 V/m; Power Drift = -0.225 dB
Peak SAR (extrapolated) = 1.67 W/kg
SAR(1 g) = 1.13 mW/g; SAR(10 g) = 0.759 mW/g
Maximum value of SAR (measured) = 1.21 mW/g



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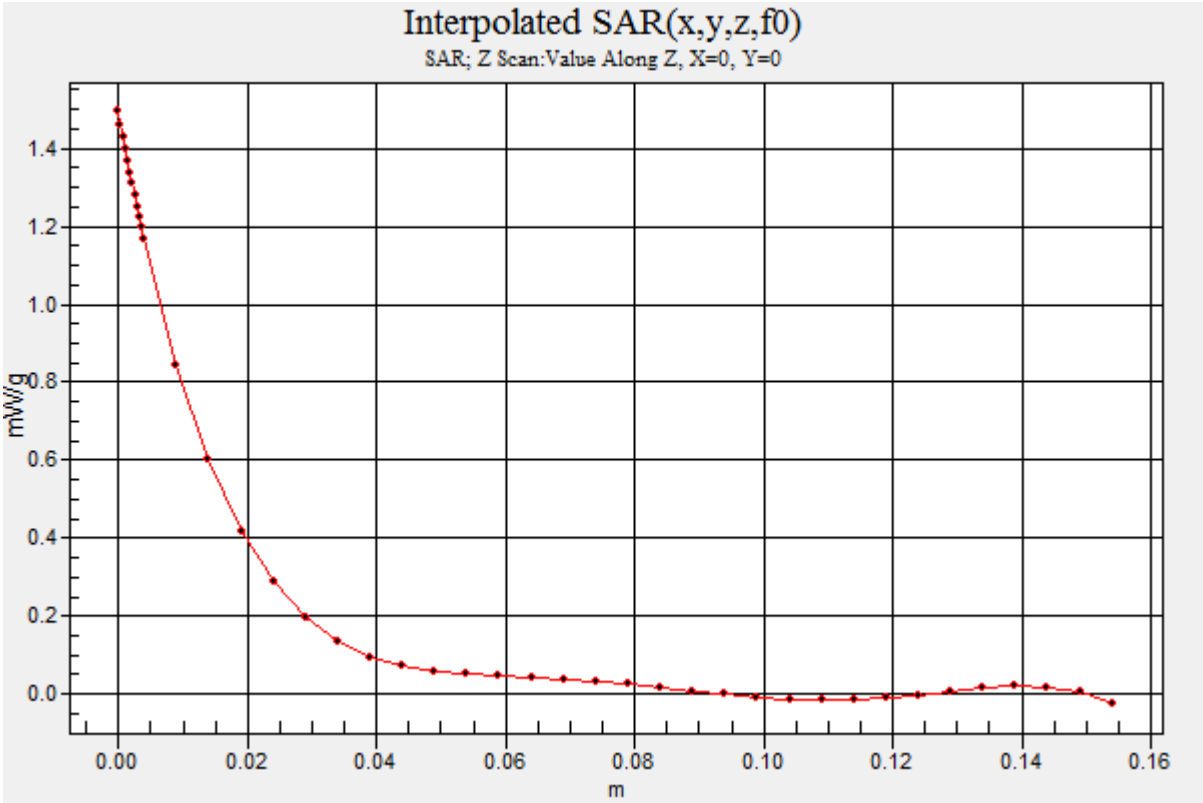

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Date/Time: 09/06/2017 1:18:04 PM

Test Laboratory: Celltech Labs

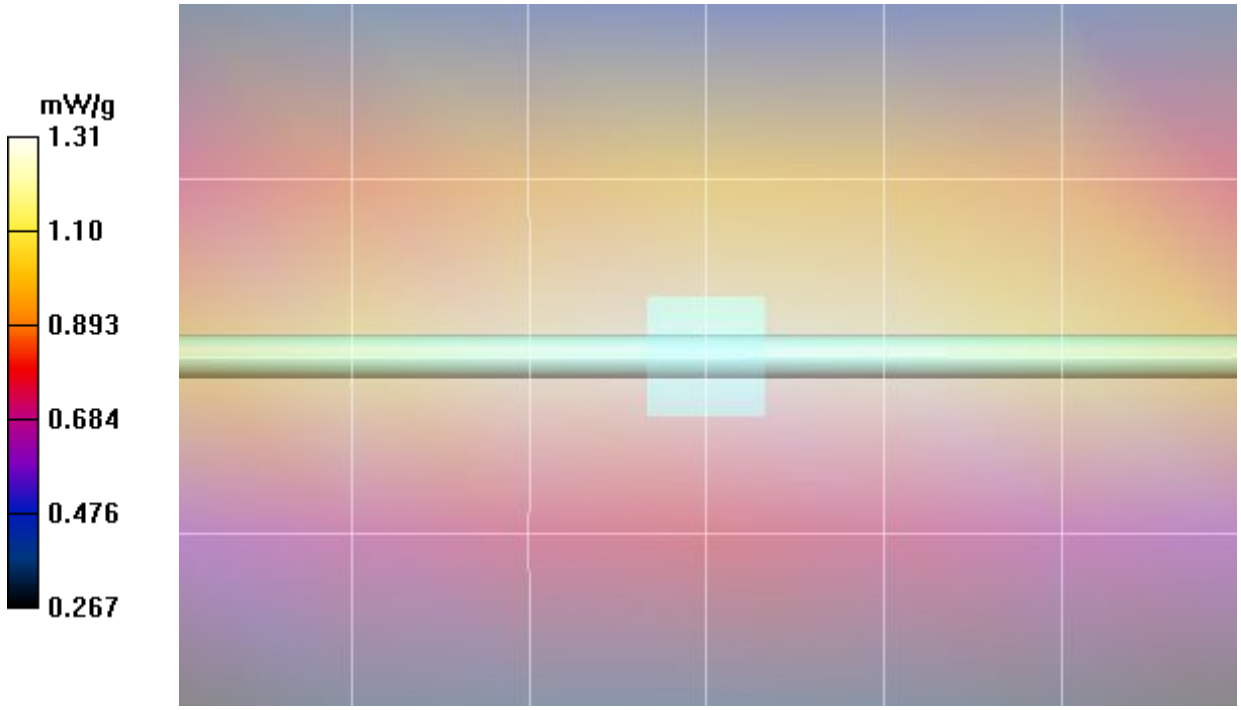
DUT: Dipole 450 MHz; Type: D450V3; Serial: 1068; Calibrated: 04/15/2015
Program Name: SPC 450H

Communication System: CW; Frequency: 450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 450 MHz; σ = 0.89 mho/m; ε_r = 44.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(9.49, 9.49, 9.49); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

Head d=15mm Pin=250mW, TS=[1.044][1.16][1.276]/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.31 mW/g

Head d=15mm Pin=250mW, TS=[1.044][1.16][1.276]/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 38.5 V/m; Power Drift = -0.031 dB
Peak SAR (extrapolated) = 1.81 W/kg
SAR(1 g) = 1.23 mW/g; SAR(10 g) = 0.827 mW/g



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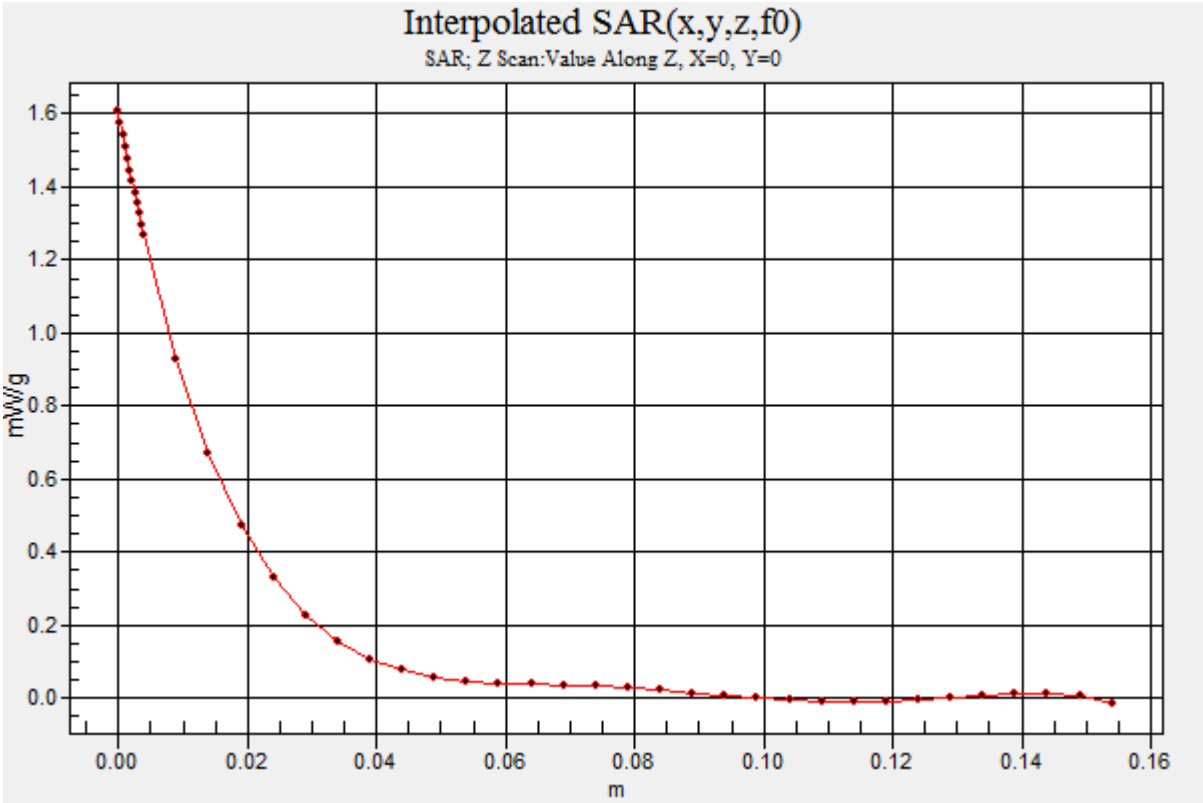

Interpolated SAR(x,y,z,f0)
SAR; Z Scan:Value Along Z, X=0, Y=0
mW/g
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
m

Date/Time: 11/06/2017 2:03:52 PM

Test Laboratory: Celltech Labs

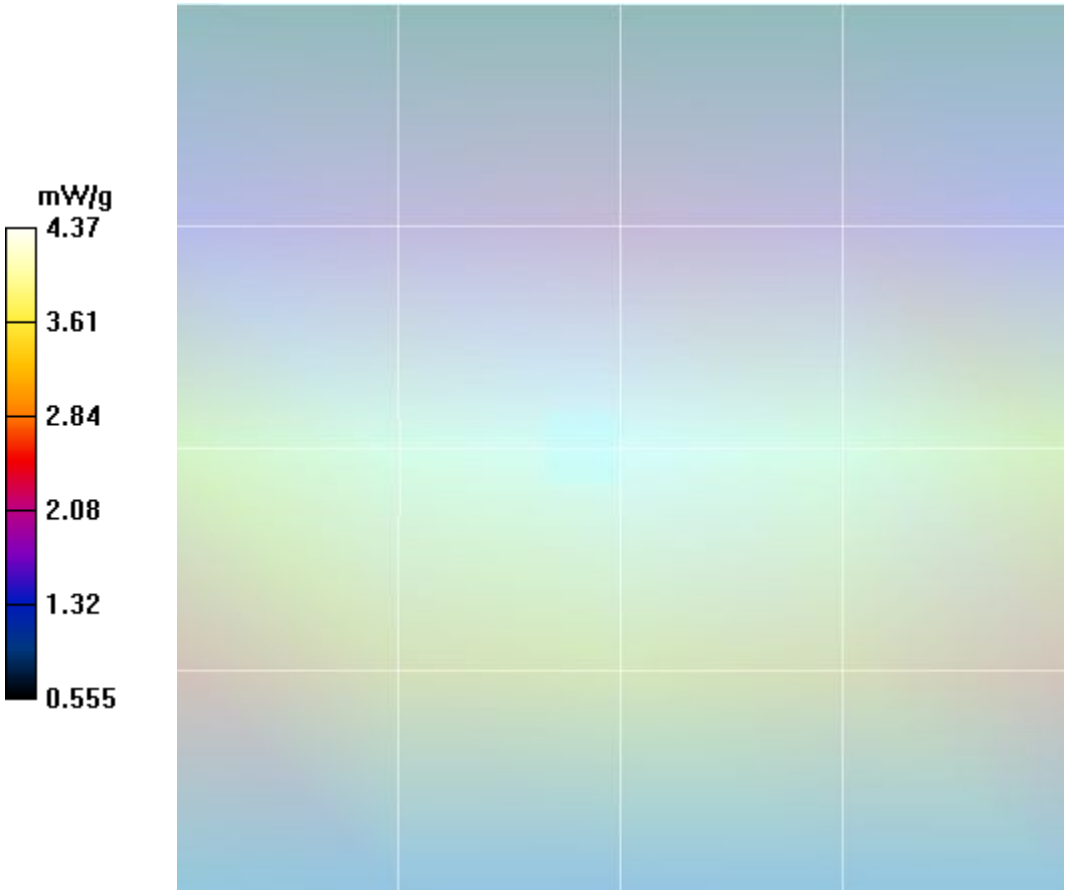
DUT: Dipole 150 MHz CLA-150; Type: CLA-150; Serial: 4007; Calibrated:17 April 2017
Program Name: 150 MHz Body SPC

Communication System: CW; Frequency: 150 MHz;Duty Cycle: 1:1
Medium parameters used: f = 150 MHz; σ = 0.76 mho/m; ε_r = 65.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(9.25, 9.25, 9.25); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

Body d=0mm, Pin = 1.0W, TS = [3.672][4.08][4.488]/Area Scan (5x5x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 4.37 mW/g

Body d=0mm, Pin = 1.0W, TS = [3.672][4.08][4.488]/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 76.3 V/m; Power Drift = 0.055 dB
Peak SAR (extrapolated) = 6.54 W/kg
SAR(1 g) = 4.3 mW/g; SAR(10 g) = 2.89 mW/g
Maximum value of SAR (measured) = 4.58 mW/g



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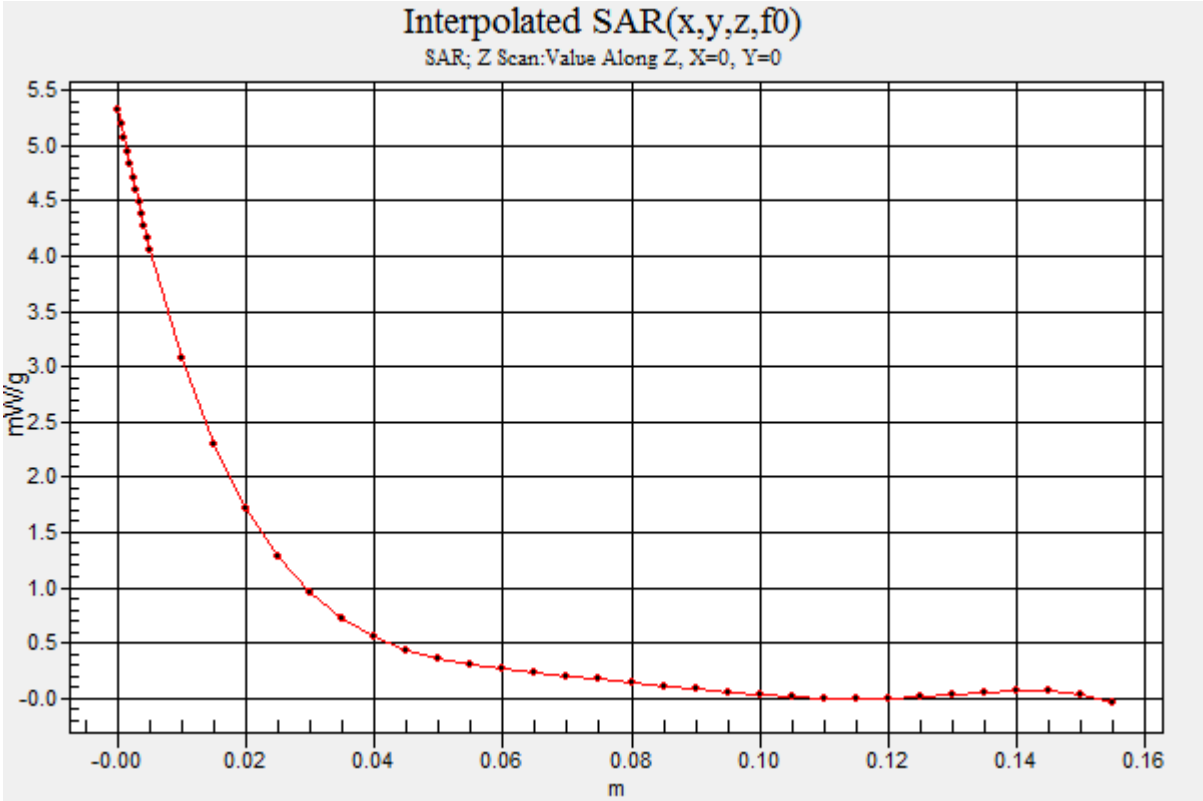

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Date/Time: 12/06/2017 2:19:59 PM

Test Laboratory: Celltech Labs

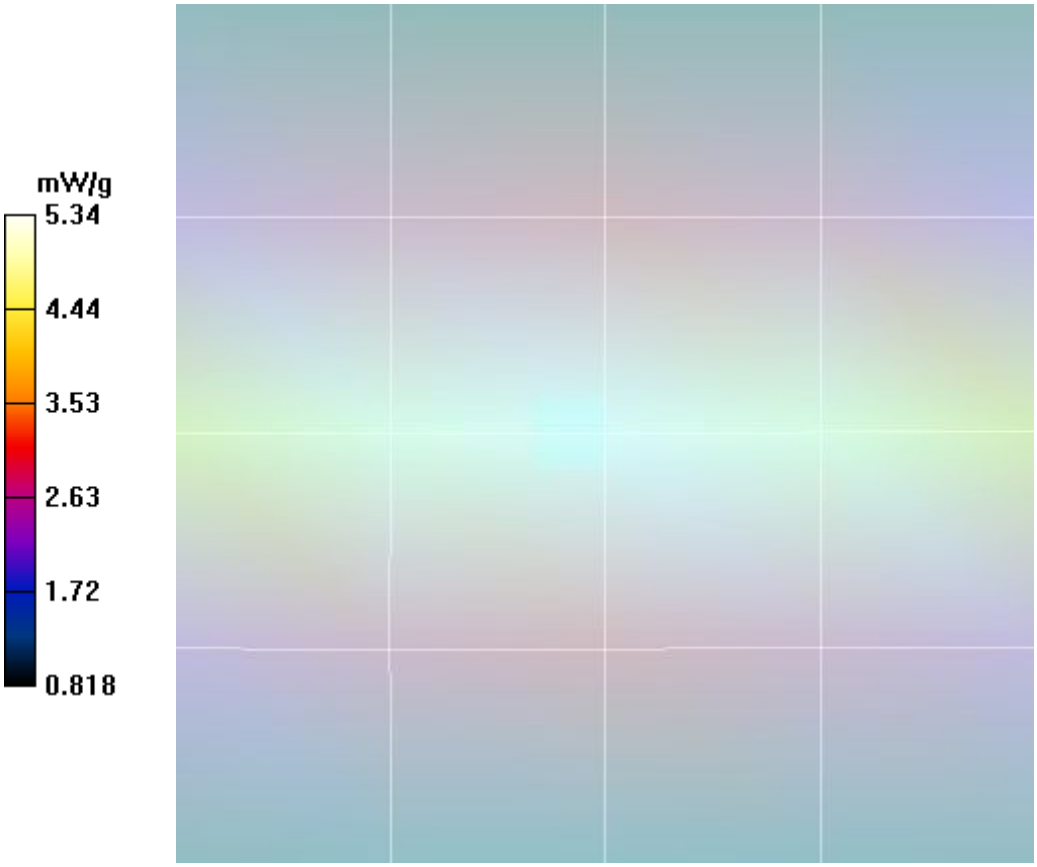
DUT: Dipole 150 MHz CLA-150; Type: CLA-150; Serial: 4007; Calibrated: 17 April 2017
Program Name: 150 MHz Head SPC

Communication System: CW; Frequency: 150 MHz;Duty Cycle: 1:1
Medium parameters used: f = 150 MHz; σ = 0.77 mho/m; ε_r = 49; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(9.58, 9.58, 9.58); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

Head d=0mm, Pin = 1.0W, TS = [3.483][3.87][4.257]/Area Scan (5x5x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 5.34 mW/g

Head d=0mm, Pin = 1.0W, TS = [3.483][3.87][4.257]/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 83.5 V/m; Power Drift = -0.063 dB
Peak SAR (extrapolated) = 6.35 W/kg
SAR(1 g) = 4.12 mW/g; SAR(10 g) = 2.74 mW/g
Maximum value of SAR (measured) = 4.40 mW/g



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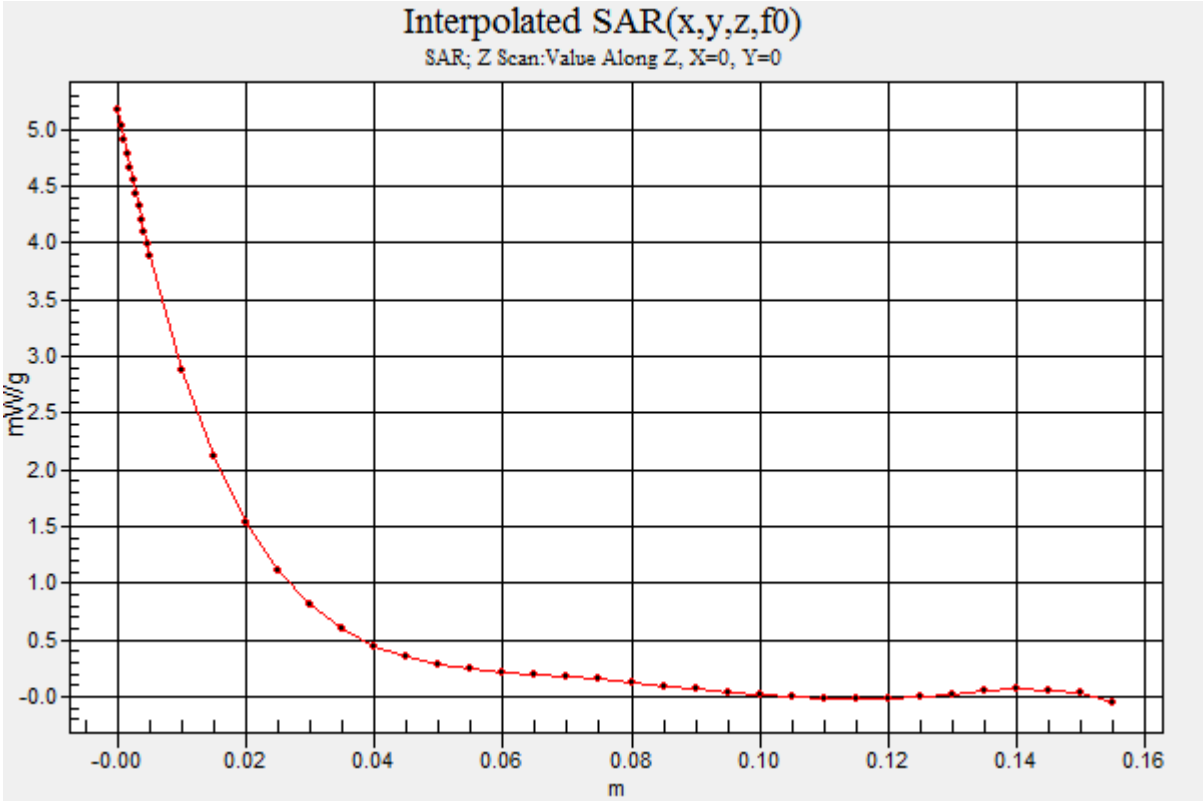

Interpolated SAR(x,y,z,f0)
SAR; Z Scan:Value Along Z, X=0, Y=0
mW/g
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
-0.0
-0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
m

Date/Time: 13/06/2017 2:18:32 PM

Test Laboratory: Celltech Labs

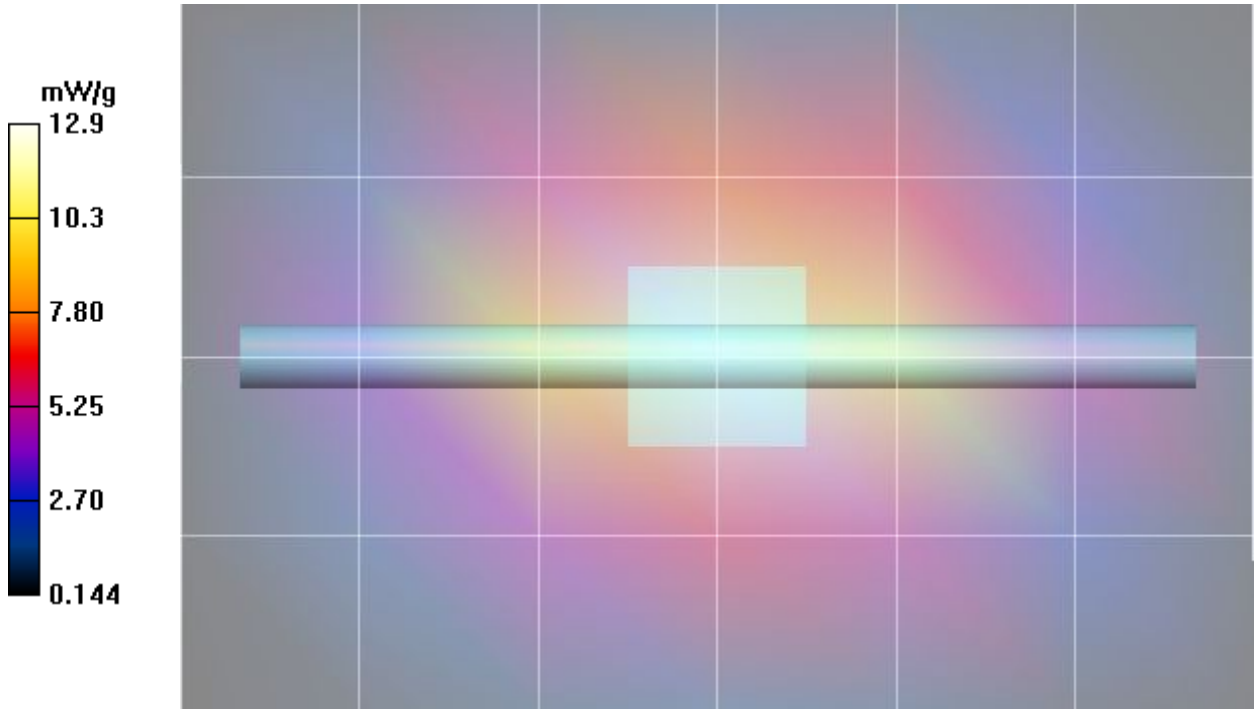
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 825; Calibrated: 15/04/2015
Program Name: 2450MHz Body SPC

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 2.03 mho/m; ε_r = 50.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(6.56, 6.56, 6.56); Calibrated: 27/04/2017
- Sensor-Surface: 5mm (Mechanical Surface Detection)Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

2450MHz Body Dipole d=10mm P=250mW TS=[11.7][13.0][14.3]/Area Scan (5x7x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 12.9 mW/g

2450MHz Body Dipole d=10mm P=250mW TS=[11.7][13.0][14.3]/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.4 V/m; Power Drift = -0.033 dB
Peak SAR (extrapolated) = 28.1 W/kg
SAR(1 g) = 13.2 mW/g; SAR(10 g) = 6.08 mW/g
Maximum value of SAR (measured) = 17.0 mW/g



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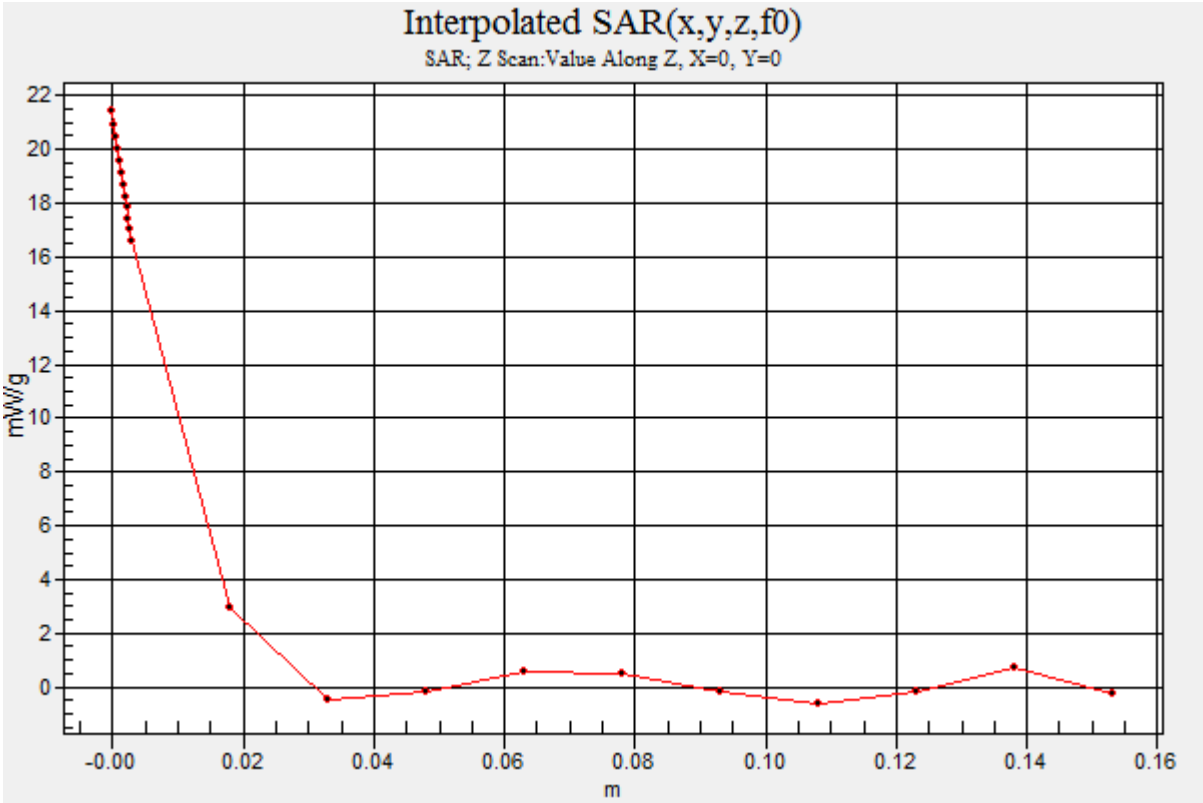

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Date/Time: 14/06/2017 7:00:38 PM

Test Laboratory: Celltech Labs

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: 1031; Calibrated: 04/15/2015
Program Name: 5250 MHz SPC

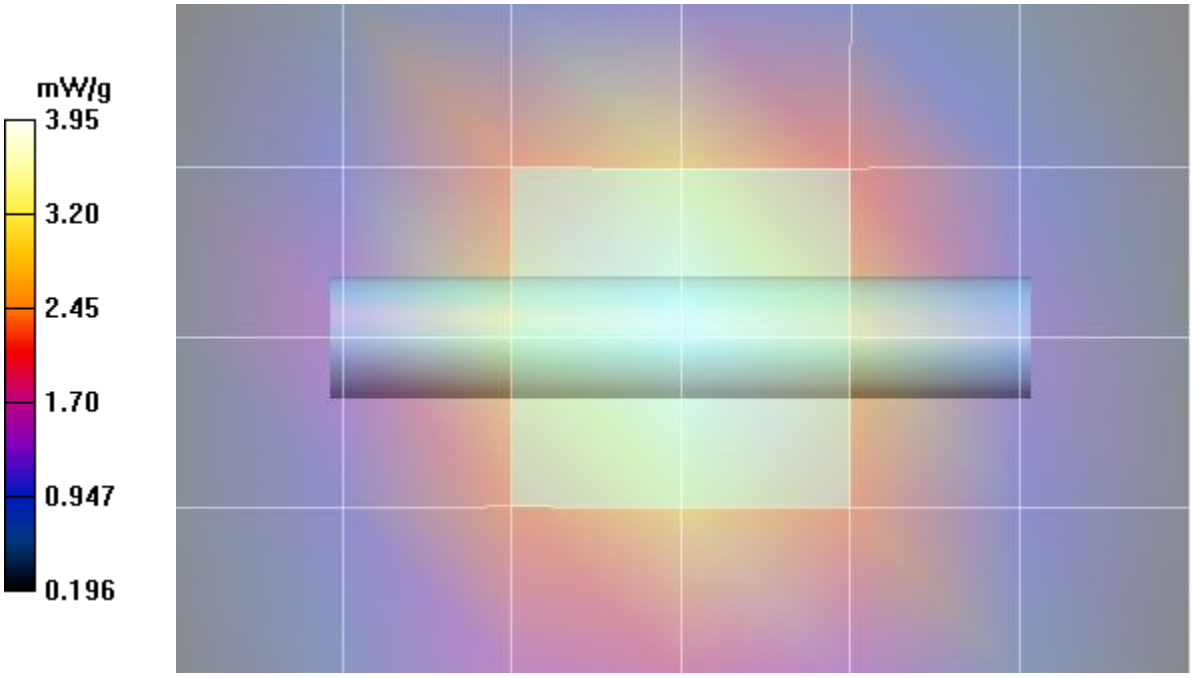
Communication System: CW; Frequency: 5250 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5250 MHz; σ = 5.65 mho/m; ε_r = 46.4; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(4.18, 4.18, 4.18); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

5200-5800 MHz Dipole d=10mm P=50mW, TS=3.63/Area Scan (5x7x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of SAR (measured) = 3.95 mW/g

5200-5800 MHz Dipole d=10mm P=50mW, TS=3.63/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 39.0 V/m; Power Drift = 0.030 dB
Peak SAR (extrapolated) = 15.8 W/kg
SAR(1 g) = 3.57 mW/g; SAR(10 g) = 0.989 mW/g

Maximum value of SAR (measured) = 7.69 mW/g



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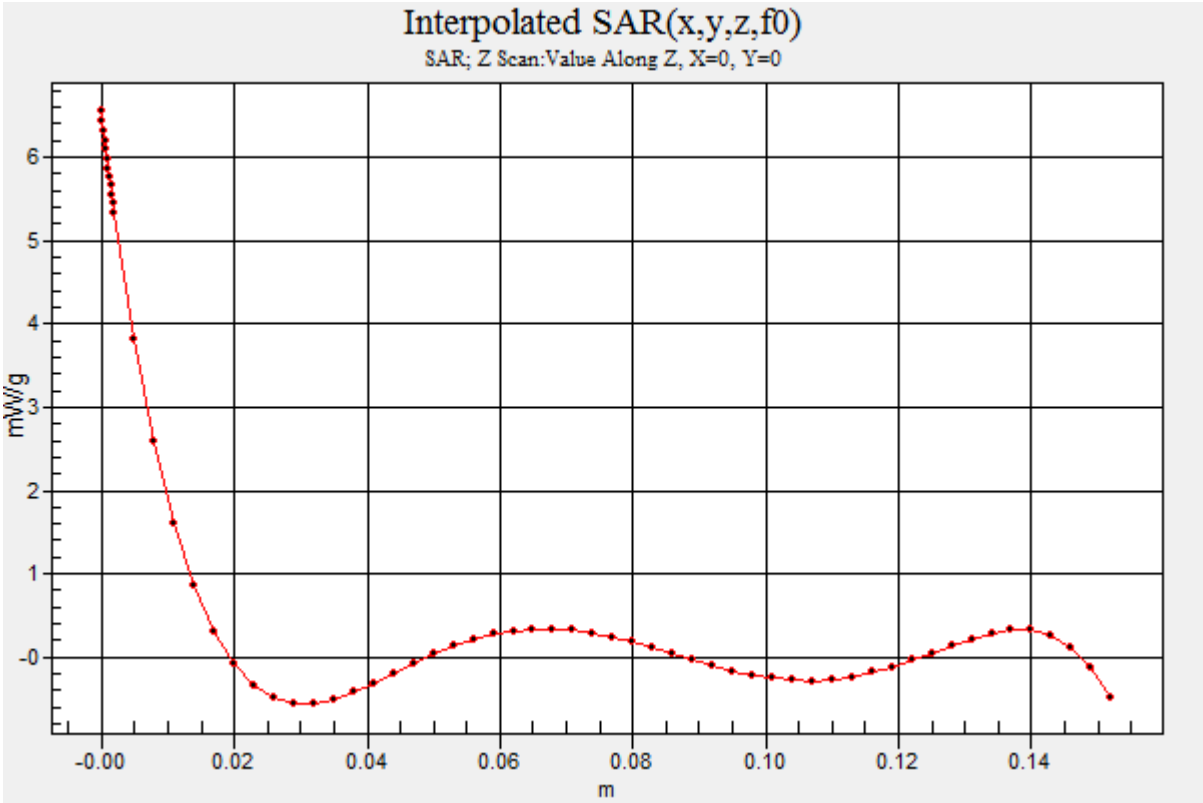

Interpolated SAR(x,y,z,f0)
SAR; Z Scan:Value Along Z, X=0, Y=0
mW/g
6
5
4
3
2
1
-0
-0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
m

APPENDIX B – MEASUREMENT PLOTS OF MAXIMUM MEASURED SAR

Plot SC1

Date/Time: 31/05/2017 9:42:59 AM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 835B

Communication System: Harris; Frequency: 824 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 824 MHz; σ = 1 mho/m; ε_r = 58; ρ = 1000 kg/m^3
Phantom section: Flat Section

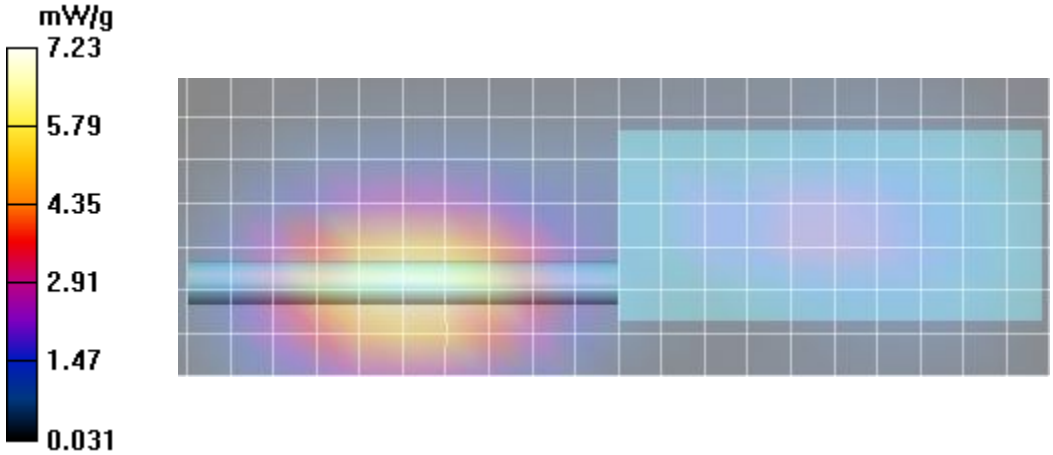
DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(8.22, 8.22, 8.22); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

B1 Body, SYS_RB,0133-E Eclipse XL-200P 7/800 , 806MHz, bc, spk-mic, ant 4420-01, bat 4010-01(Spot check)/Area Scan (8x23x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 7.23 mW/g

B1 Body, SYS_RB,0133-E Eclipse XL-200P 7/800 , 806MHz, bc, spk-mic, ant 4420-01, bat 4010-01(Spot check)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 33.0 V/m; Power Drift = -0.222 dB
Peak SAR (extrapolated) = 9.09 W/kg
SAR(1 g) = 6.73 mW/g; SAR(10 g) = 4.82 mW/g

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 7.16 mW/g



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Plot SC2

Date/Time: 31/05/2017 10:05:04 AM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 835B

Communication System: Harris; Frequency: 824 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 824 MHz; σ = 1 mho/m; ε_r = 58; ρ = 1000 kg/m^3
Phantom section: Flat Section

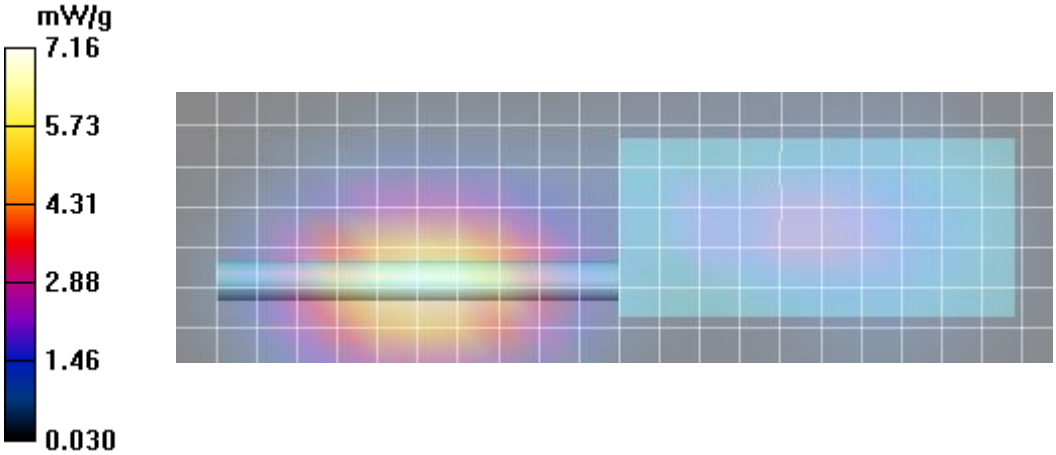
DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(8.22, 8.22, 8.22); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

B2 Body, SYS_RB,Eclipse XL-200P 7/800 , 806MHz, bc, spk-mic, ant 4420-01, bat 4010-01 (Spot check)/Area Scan (8x23x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 7.16 mW/g

B2 Body, SYS_RB,Eclipse XL-200P 7/800 , 806MHz, bc, spk-mic, ant 4420-01, bat 4010-01 (Spot check)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 32.5 V/m; Power Drift = -0.131 dB
Peak SAR (extrapolated) = 8.87 W/kg
SAR(1 g) = 6.58 mW/g; SAR(10 g) = 4.71 mW/g

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 6.97 mW/g



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Plot B1

Date/Time: 31/05/2017 10:26:04 AM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 835B

Communication System: Harris; Frequency: 824 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 824 MHz; σ = 1 mho/m; ε_r = 58; ρ = 1000 kg/m^3
Phantom section: Flat Section

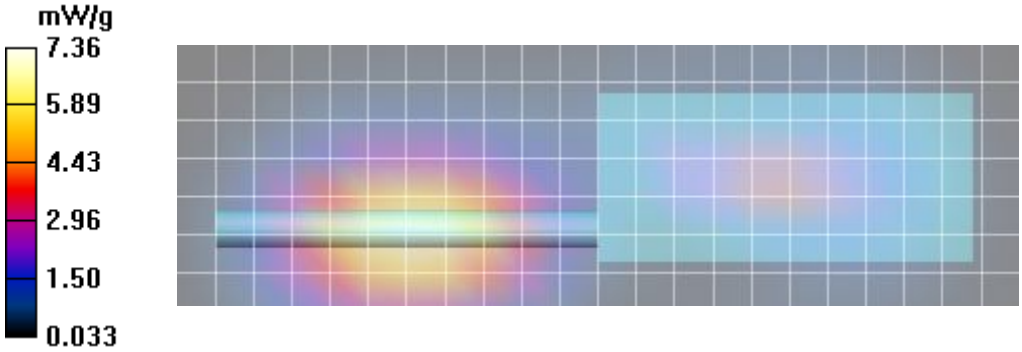
DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(8.22, 8.22, 8.22); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

B1 Body, SYS_RB,Eclipse XL-200P 7/800 , 806MHz, bc, spk-mic, ant 4420-01, bat 4045-01/Area Scan (8x23x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 7.36 mW/g

B1 Body, SYS_RB,Eclipse XL-200P 7/800 , 806MHz, bc, spk-mic, ant 4420-01, bat 4045-01/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 33.1 V/m; Power Drift = -0.428 dB
Peak SAR (extrapolated) = 9.10 W/kg
SAR(1 g) = 6.74 mW/g; SAR(10 g) = 4.81 mW/g

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 7.15 mW/g



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Plot B2

Date/Time: 31/05/2017 11:02:50 AM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 835B

Communication System: Harris; Frequency: 776 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 776 MHz; σ = 0.981 mho/m; ε_r = 58.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

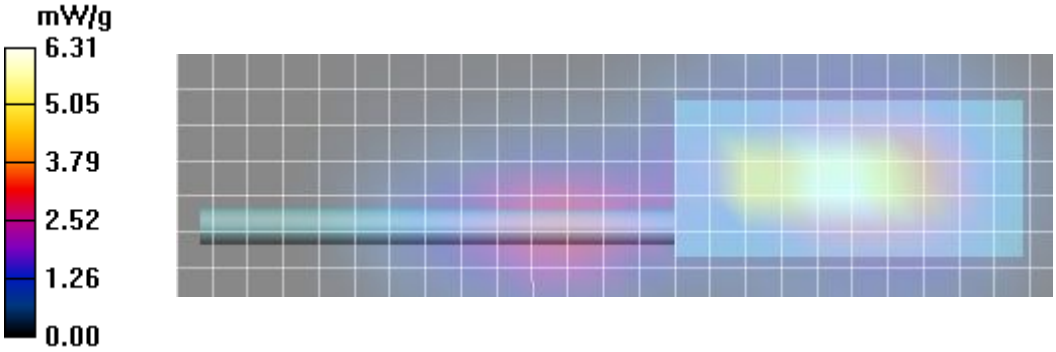
DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(8.22, 8.22, 8.22); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

B2 Body, SYS_RB,Eclipse XL-200P 7/800 , 776MHz, bc, spk-mic, ant 4000-01, bat 4045-01/Area Scan (8x26x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 6.31 mW/g

B2 Body, SYS_RB,Eclipse XL-200P 7/800 , 776MHz, bc, spk-mic, ant 4000-01, bat 4045-01/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 40.1 V/m; Power Drift = -0.356 dB
Peak SAR (extrapolated) = 8.85 W/kg
SAR(1 g) = 6.58 mW/g; SAR(10 g) = 4.6 mW/g

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 6.94 mW/g



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Plot B3

Date/Time: 31/05/2017 12:22:16 PM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 835B

Communication System: Harris; Frequency: 851 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 851 MHz; σ = 1.07 mho/m; ε_r = 58; ρ = 1000 kg/m^3
Phantom section: Flat Section

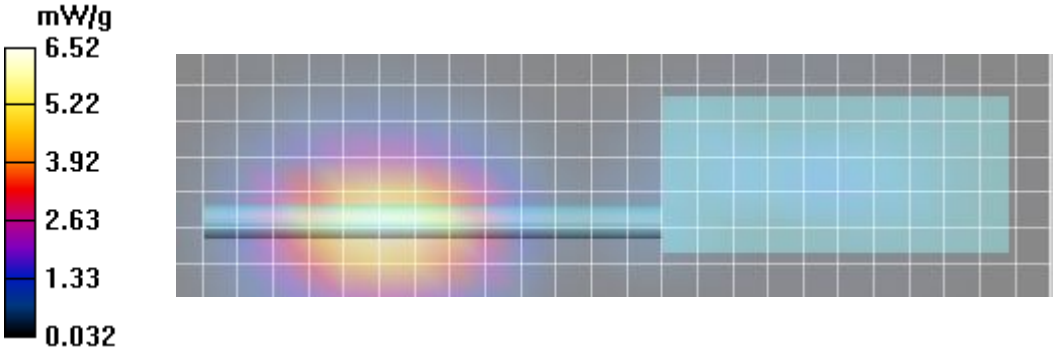
DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(8.22, 8.22, 8.22); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

B3 Body, SYS_RB,Eclipse XL-200P 7/800 , 851MHz, bc, spk-mic, ant 4440-01, bat 4045-01/Area Scan (8x26x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 6.52 mW/g

B3 Body, SYS_RB,Eclipse XL-200P 7/800 , 851MHz, bc, spk-mic, ant 4440-01, bat 4045-01/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 24.2 V/m; Power Drift = -0.265 dB
Peak SAR (extrapolated) = 7.93 W/kg
SAR(1 g) = 5.82 mW/g; SAR(10 g) = 4.13 mW/g

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 6.17 mW/g



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Plot B4

Date/Time: 31/05/2017 1:07:10 PM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 835B

Communication System: Harris; Frequency: 776 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 776 MHz; σ = 0.981 mho/m; ε_r = 58.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

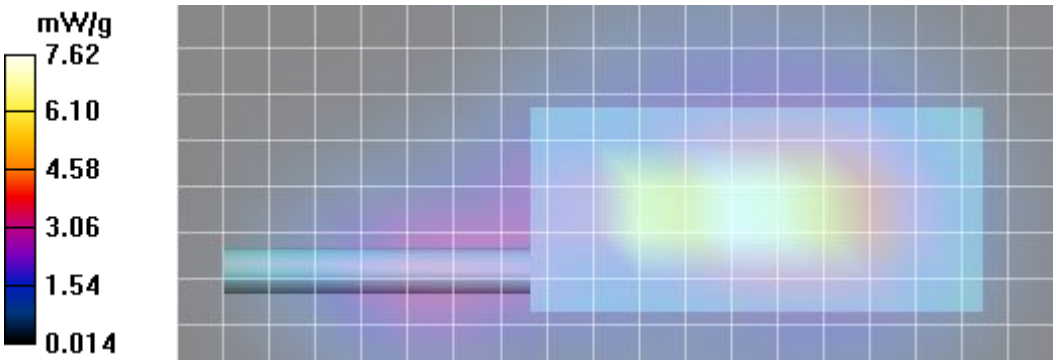
DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(8.22, 8.22, 8.22); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

B4 Body, SYS_RB,Eclipse XL-200P 7/800 , 776MHz, bc, spk-mic, ant 4440-02, bat 4045-01/Area Scan (9x20x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 7.62 mW/g

B4 Body, SYS_RB,Eclipse XL-200P 7/800 , 776MHz, bc, spk-mic, ant 4440-02, bat 4045-01/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 49.2 V/m; Power Drift = -0.381 dB
Peak SAR (extrapolated) = 10.4 W/kg
SAR(1 g) = 7.82 mW/g; SAR(10 g) = 5.55 mW/g

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 8.25 mW/g



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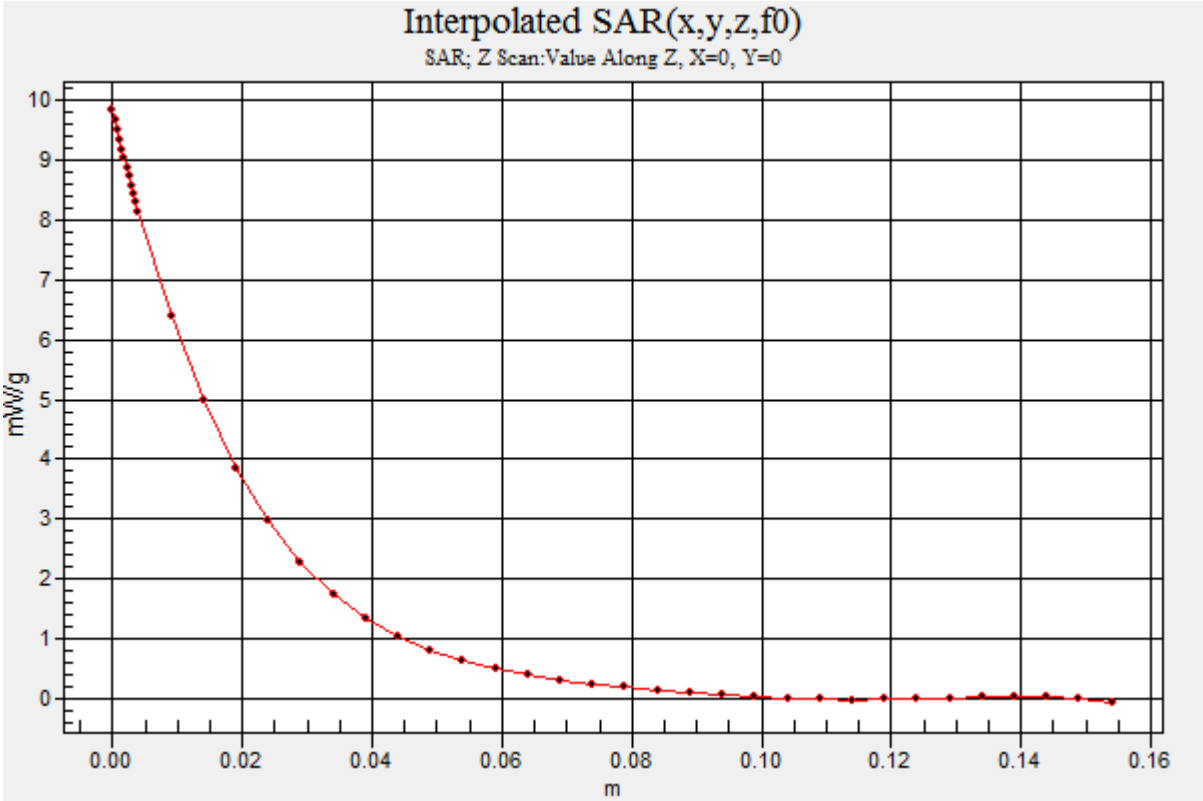

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Plot F1

Date/Time: 05/06/2017 10:05:06 AM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 835H

Communication System: Harris; Frequency: 861 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 861 MHz; σ = 0.936 mho/m; ε_r = 41.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

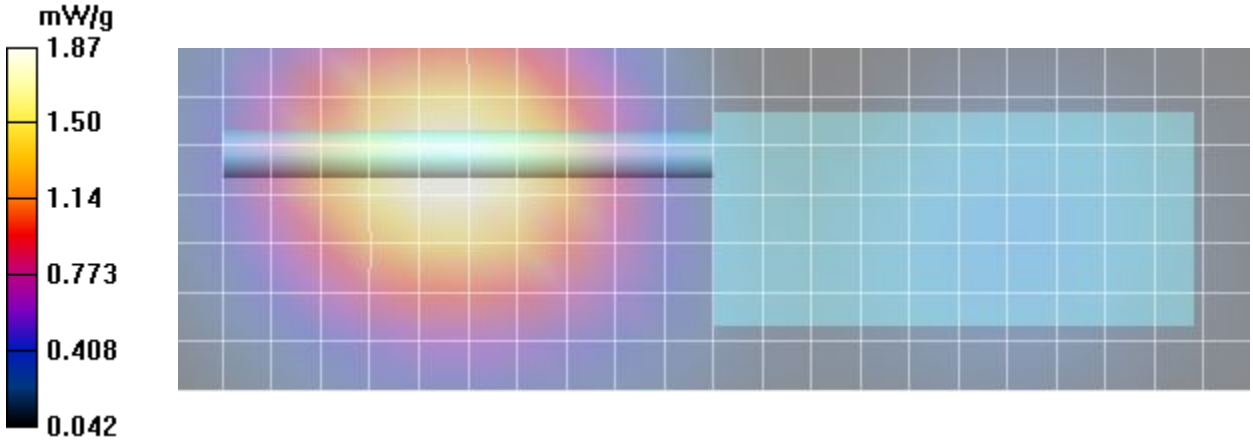
DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(8.25, 8.25, 8.25); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

F1 Face, SYS_RB,Eclipse XL-200P 7/800 , 861MHz, ant 4420-01, bat 4045-01/Area Scan (8x23x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 1.87 mW/g

F1 Face, SYS_RB,Eclipse XL-200P 7/800 , 861MHz, ant 4420-01, bat 4045-01/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 16.8 V/m; Power Drift = -0.374 dB
Peak SAR (extrapolated) = 2.40 W/kg
SAR(1 g) = 1.79 mW/g; SAR(10 g) = 1.3 mW/g

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 1.89 mW/g



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Plot F2

Date/Time: 05/06/2017 10:40:46 AM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 835H

Communication System: Harris; Frequency: 768 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 768 MHz; σ = 0.837 mho/m; ε_r = 42.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

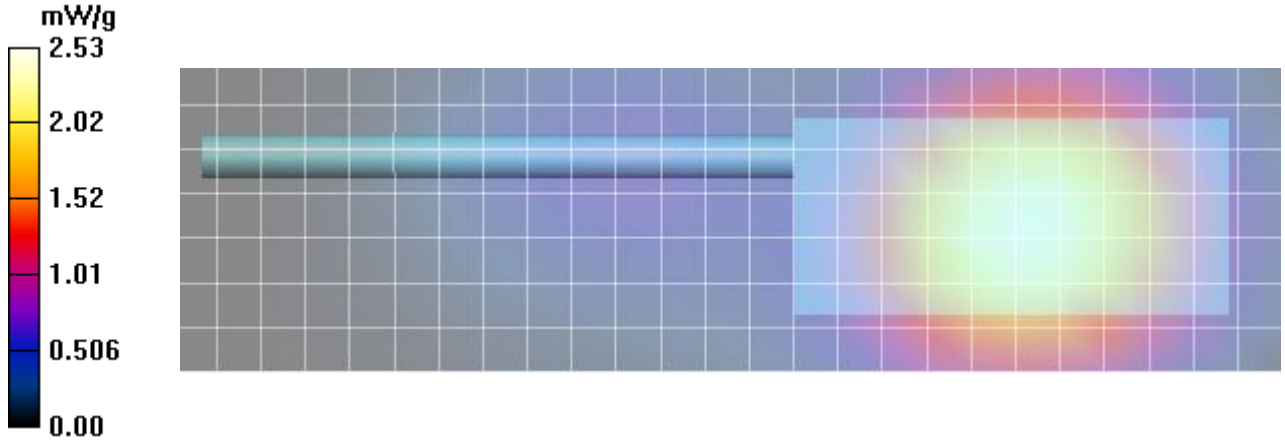
DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(8.39, 8.39, 8.39); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

F2 Body, SYS_RB,Eclipse XL-200P 7/800 , 768MHz, ant 4000-01, bat 4045-01/Area Scan (8x26x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 2.53 mW/g

F2 Body, SYS_RB,Eclipse XL-200P 7/800 , 768MHz, ant 4000-01, bat 4045-01/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 25.1 V/m; Power Drift = -0.336 dB
Peak SAR (extrapolated) = 3.05 W/kg
SAR(1 g) = 2.39 mW/g; SAR(10 g) = 1.81 mW/g

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 2.51 mW/g



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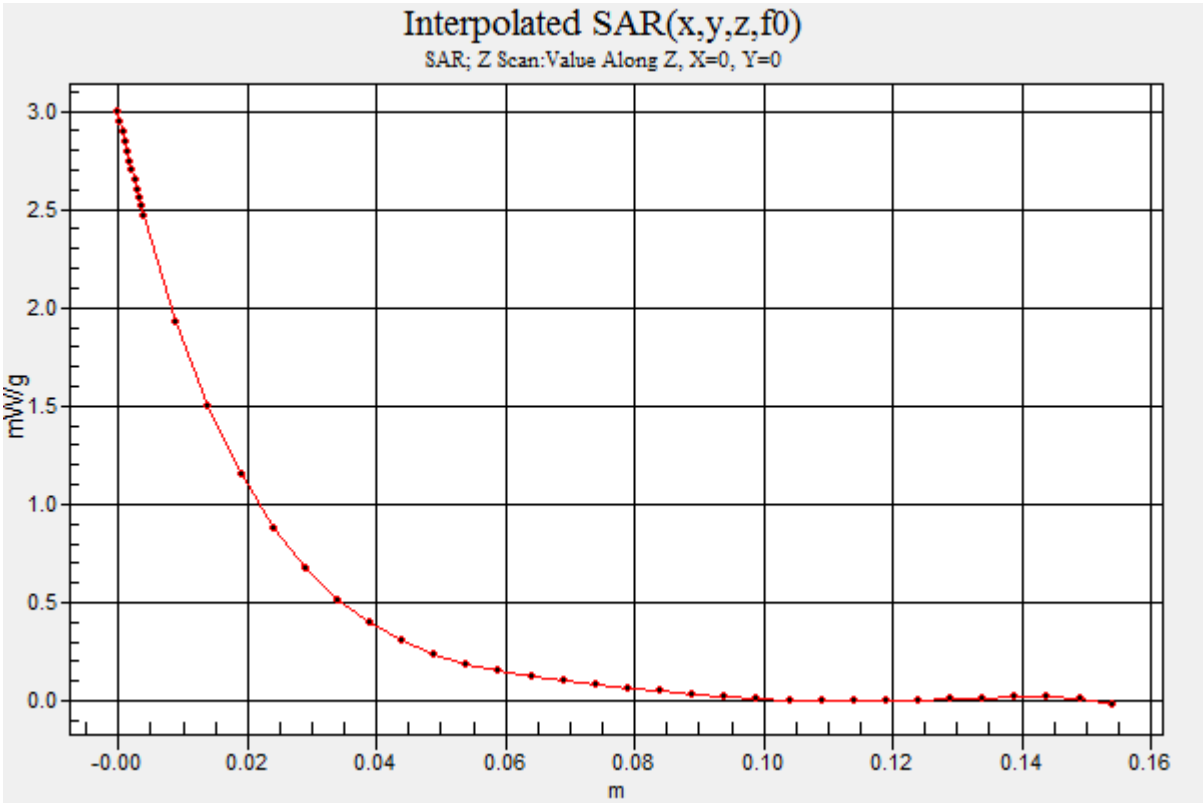

Interpolated SAR(x,y,z,f0)
SAR; Z Scan:Value Along Z, X=0, Y=0
mW/g
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
m

Plot F3

Date/Time: 05/06/2017 12:14:13 PM

Test Laboratory: Celltech Labs

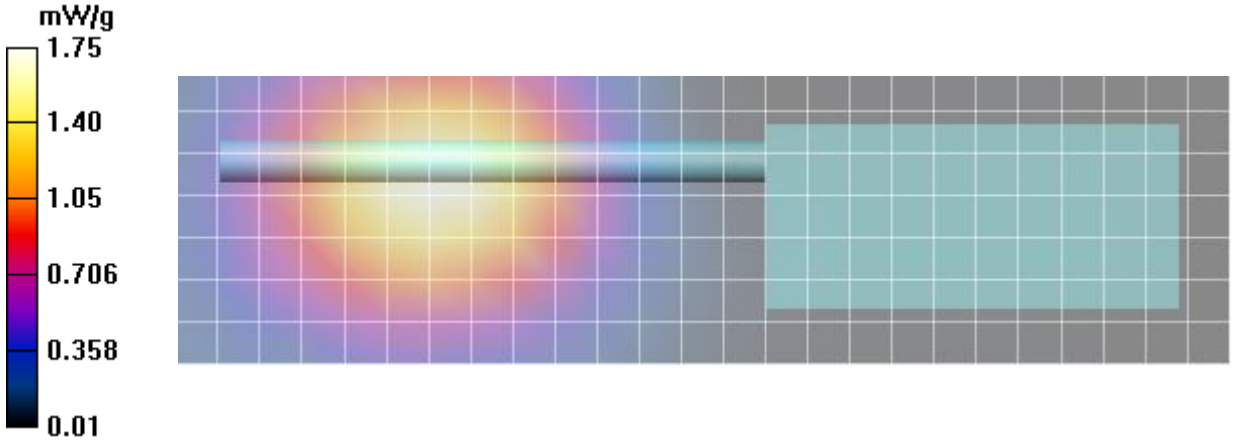
DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 835H

Communication System: Harris; Frequency: 805 MHz;Duty Cycle: 1:1
Medium parameters used: f = 805 MHz; σ = 0.88 mho/m; ε_r = 42.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(8.39, 8.39, 8.39); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

F3 Face, SYS_RB,Eclipse XL-200P 7/800 , 805MHz, ant 4440-01, bat 4045-01/Area Scan (8x26x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.75 mW/g

F3 Face, SYS_RB,Eclipse XL-200P 7/800 , 805MHz, ant 4440-01, bat 4045-01/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 8.45 V/m; Power Drift = -0.470 dB
Peak SAR (extrapolated) = 2.15 W/kg
SAR(1 g) = 1.65 mW/g; SAR(10 g) = 1.22 mW/g
Maximum value of SAR (measured) = 1.74 mW/g



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Plot F4

Date/Time: 05/06/2017 12:56:56 PM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 835H

Communication System: Harris; Frequency: 861 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 861 MHz; σ = 0.936 mho/m; ε_r = 41.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

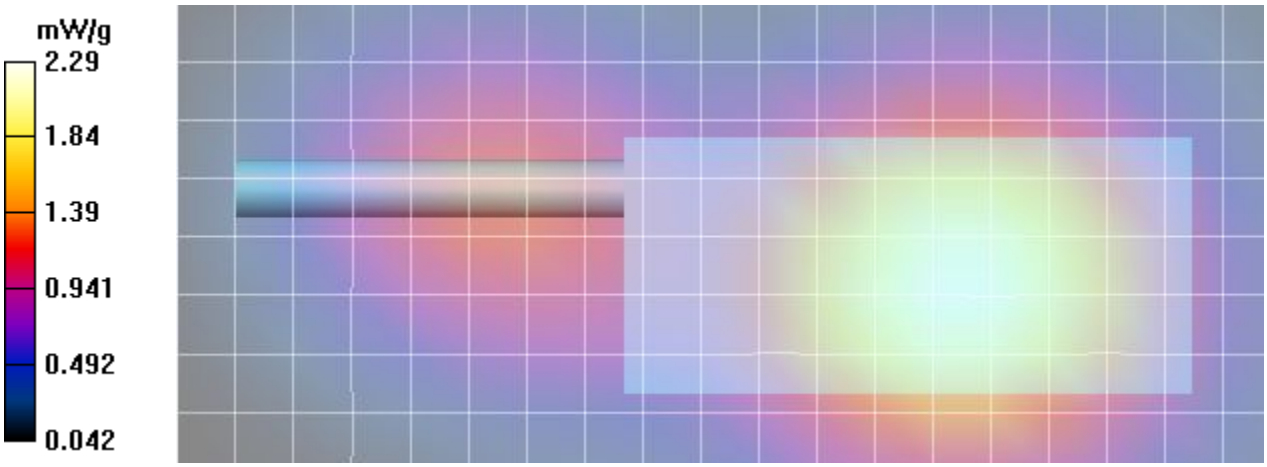
DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(8.25, 8.25, 8.25); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

F4 Face, SYS_RB,Eclipse XL-200P 7/800 , 861 MHz, ant 4440-02, bat 4045-01/Area Scan (9x20x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 2.29 mW/g

F4 Face, SYS_RB,Eclipse XL-200P 7/800 , 861 MHz, ant 4440-02, bat 4045-01/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 32.3 V/m; Power Drift = -0.167 dB
Peak SAR (extrapolated) = 2.86 W/kg
SAR(1 g) = 2.16 mW/g; SAR(10 g) = 1.59 mW/g

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 2.27 mW/g



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UHF

Plot B5

Date/Time: 07/06/2017 12:52:36 PM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 450B

Communication System: Harris UHF; Frequency: 406 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 406 MHz; σ = 0.936 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(9.22, 9.22, 9.22); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

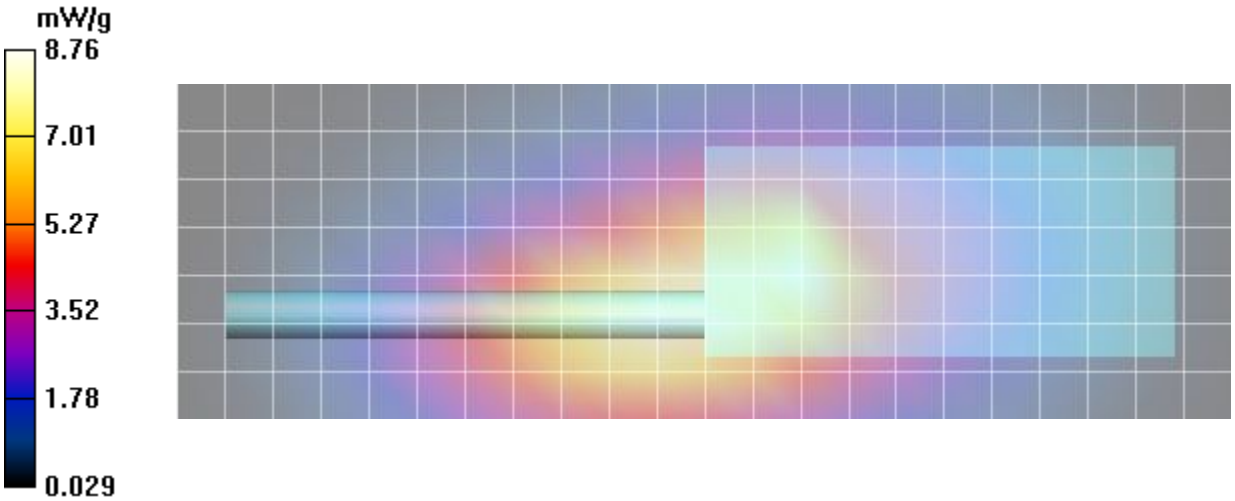
B5 Body, SYS_RB Eclipse XL-200P UHF , 406MHz, bc, spk-mic, ant 4420-01, bat 4045-01/Area Scan (8x23x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 8.76 mW/g

B5 Body, SYS_RB Eclipse XL-200P UHF , 406MHz, bc, spk-mic, ant 4420-01, bat 4045-01/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 87.6 V/m; Power Drift = -0.257 dB
Peak SAR (extrapolated) = 11.2 W/kg
SAR(1 g) = 7.88 mW/g; SAR(10 g) = 5.69 mW/g

Info: Interpolated medium parameters used for SAR evaluation!

Maximum value of SAR (measured) = 8.42 mW/g



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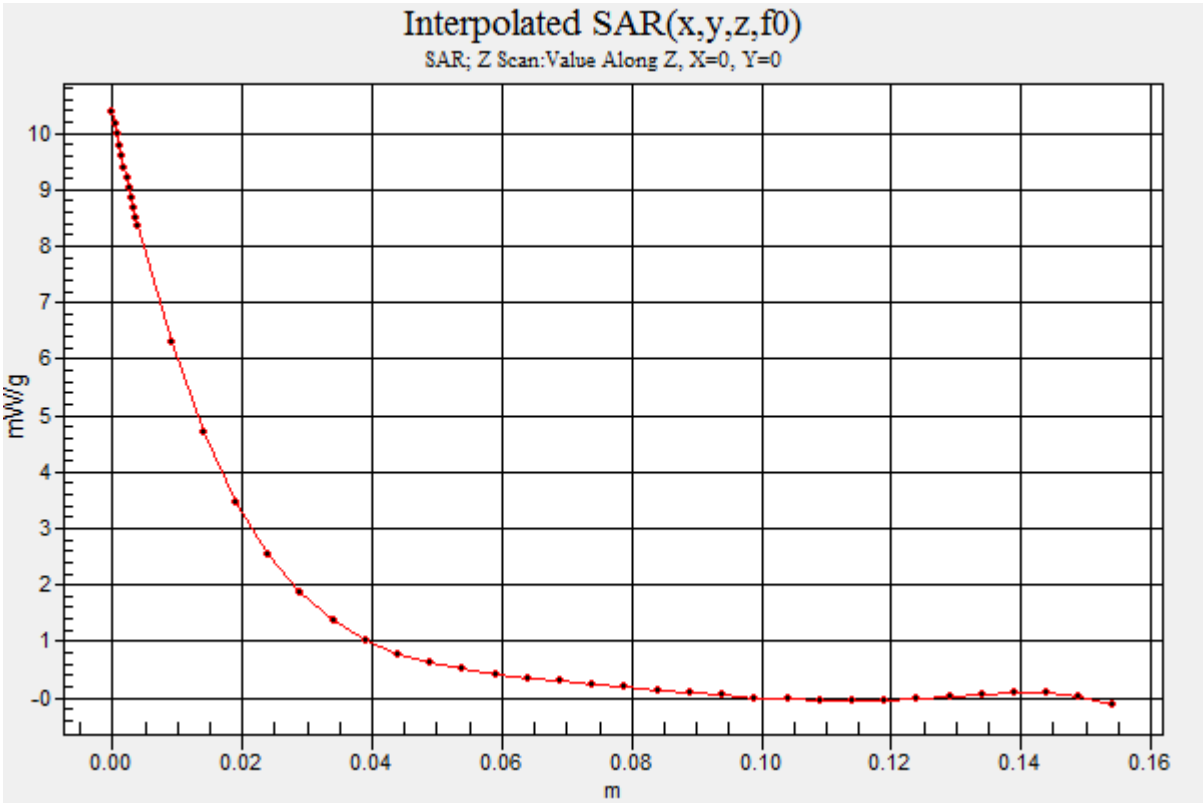

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Plot F5

Date/Time: 09/06/2017 3:05:49 PM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 450B

Communication System: Harris UHF; Frequency: 406 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 406 MHz; σ = 0.844 mho/m; ε_r = 45.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

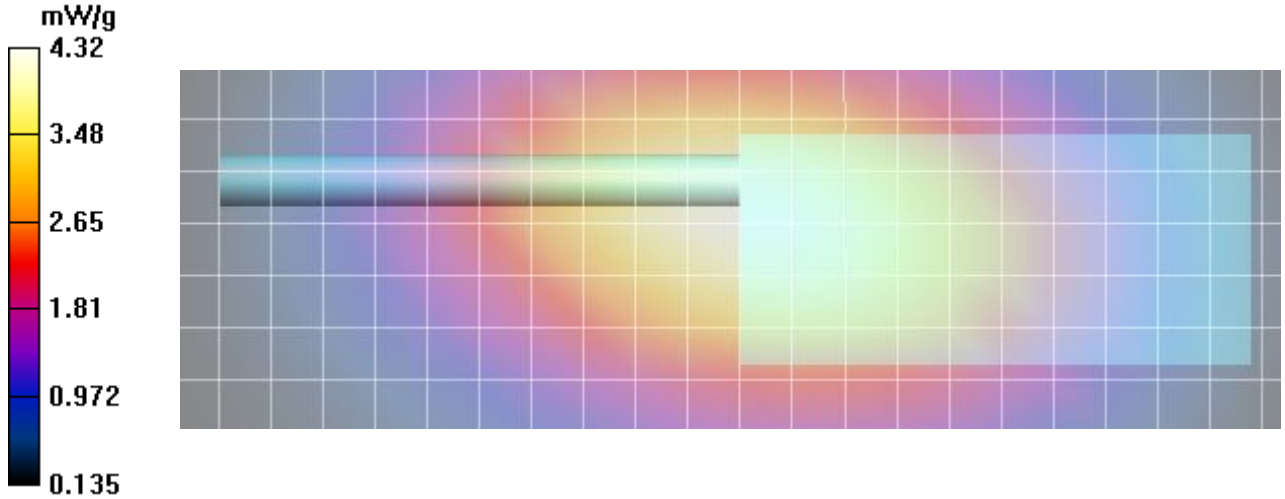
DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(9.49, 9.49, 9.49); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

F5 Body, SYS_RB Eclipse XL-200P UHF , 406MHz, ant 4420-01, bat 4045-01/Area Scan (8x23x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 4.32 mW/g

F5 Body, SYS_RB Eclipse XL-200P UHF , 406MHz, ant 4420-01, bat 4045-01/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 71.1 V/m; Power Drift = -0.077 dB
Peak SAR (extrapolated) = 5.27 W/kg
SAR(1 g) = 4.14 mW/g; SAR(10 g) = 3.16 mW/g

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 4.34 mW/g



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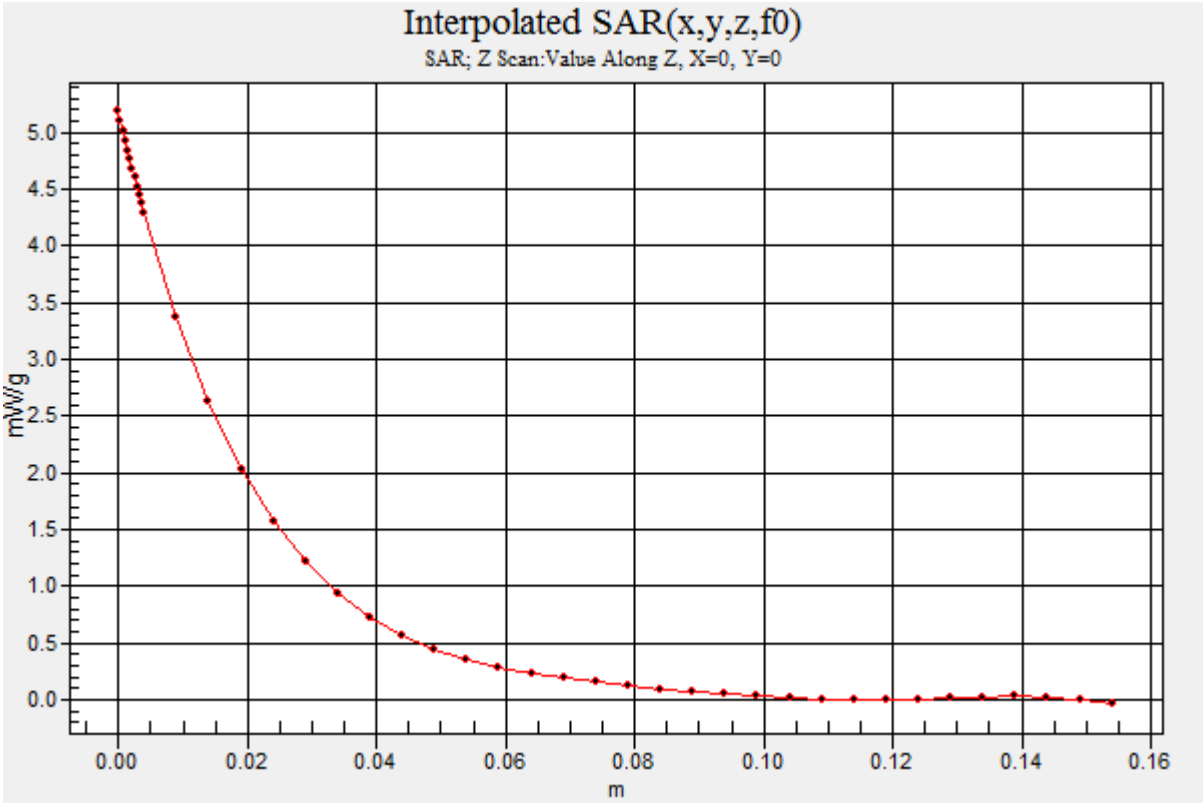

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VHF

Plot B7

Date/Time: 12/06/2017 9:30:40 AM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 150B

Communication System: VHF; Frequency: 156.8 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 156.8 MHz; σ = 0.767 mho/m; ε_r = 65.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

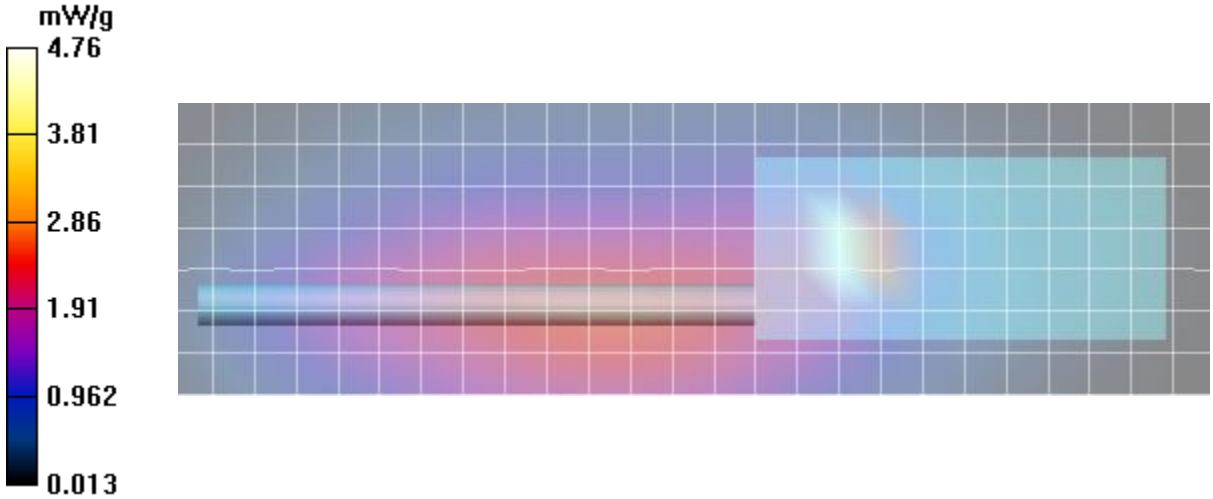
DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(9.25, 9.25, 9.25); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

B7 Body, SYS_RB Eclipse XL-200P VHF , 156.8MHz, bc, spk-mic, ant 4000-01, bat 4045-01/Area Scan (8x26x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 4.76 mW/g

B7 Body, SYS_RB Eclipse XL-200P VHF , 156.8MHz, bc, spk-mic, ant 4000-01, bat 4045-01/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 49.5 V/m; Power Drift = -0.312 dB
Peak SAR (extrapolated) = 10.9 W/kg
SAR(1 g) = 4.3 mW/g; SAR(10 g) = 2.28 mW/g

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 4.20 mW/g



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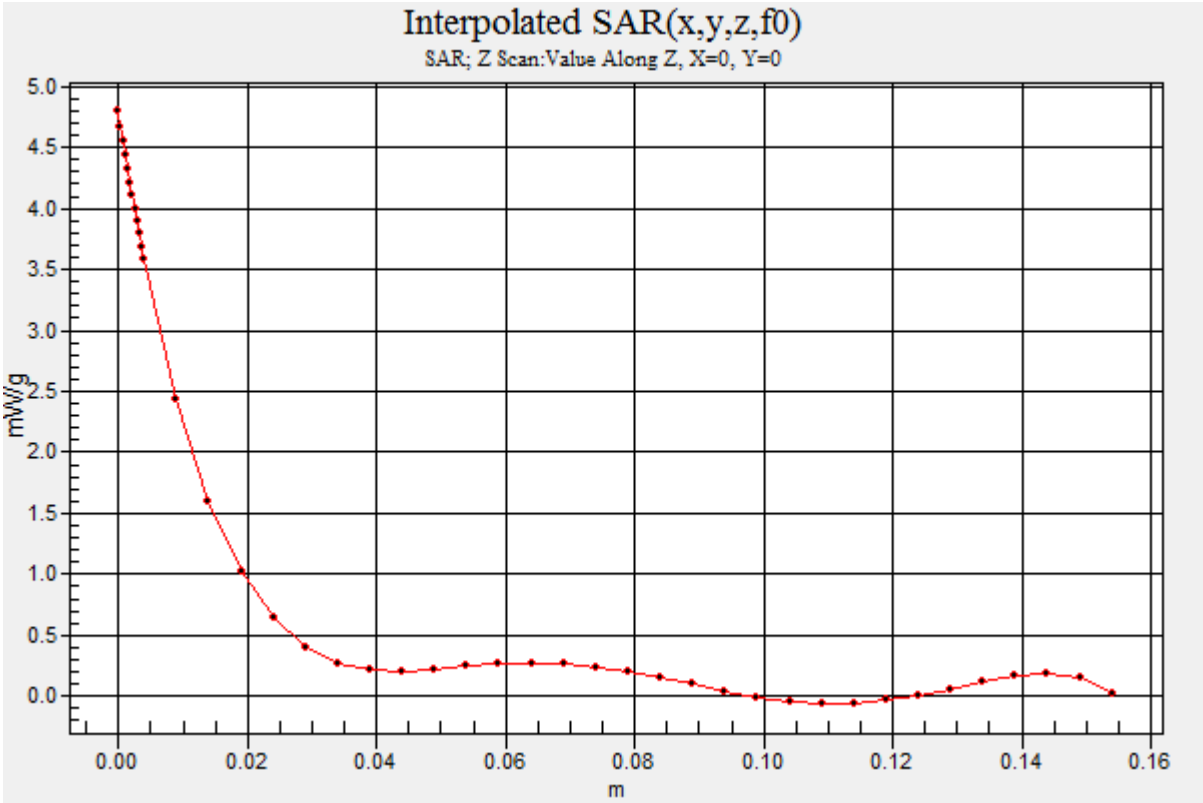

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Plot F7

Date/Time: 13/06/2017 8:47:22 AM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 150F TSL

Communication System: VHF; Frequency: 136 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 136 MHz; σ = 0.768 mho/m; ε_r = 50.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

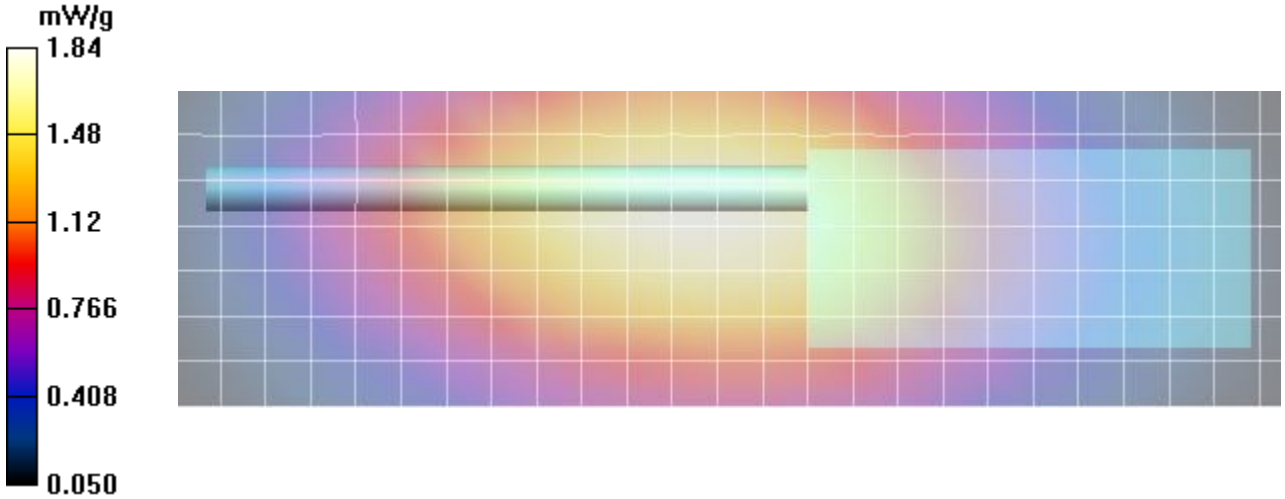
DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(9.58, 9.58, 9.58); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

F7 Face, SYS_RB Eclipse XL-200P VHF , 136MHz, ant 4000-01, bat 4045-01/Area Scan (8x26x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 1.84 mW/g

F7 Face, SYS_RB Eclipse XL-200P VHF , 136MHz, ant 4000-01, bat 4045-01/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 48.0 V/m; Power Drift = -0.548 dB
Peak SAR (extrapolated) = 2.14 W/kg
SAR(1 g) = 1.72 mW/g; SAR(10 g) = 1.37 mW/g

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 1.78 mW/g



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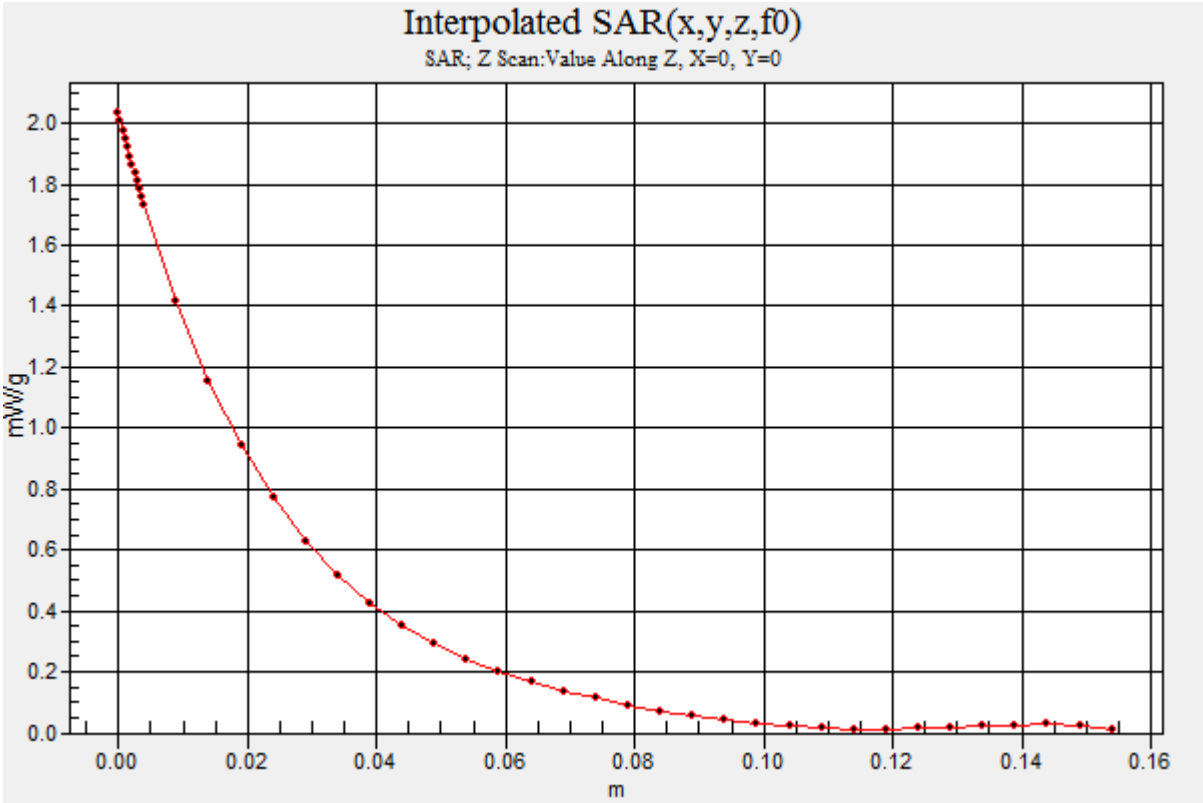

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2.4 G WIFI

Plot B8

Date/Time: 13/06/2017 5:58:18 PM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 2450B

Communication System: WiFi; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.95 mho/m; ε_r = 50.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

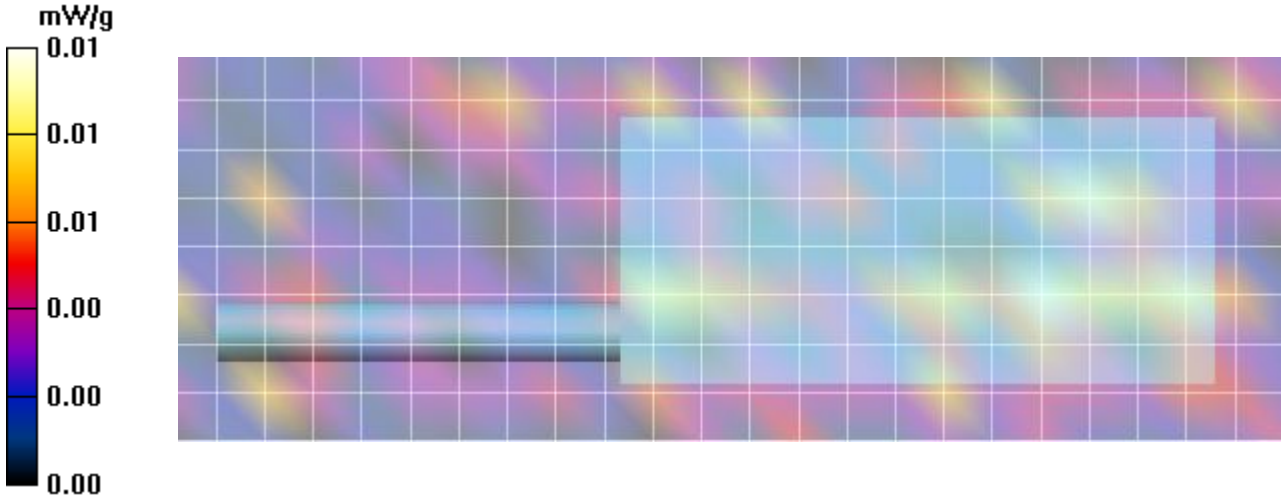
DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(6.56, 6.56, 6.56); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

B8 Body, SYS_RB Eclipse XL-200P Wifi, 2437MHz, bc, spk-mic, ant 4440-02, bat 4045-01/Area Scan (9x24x1): Measurement grid: dx=12mm, dy=12mm

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 0.01 mW/g

B8 Body, SYS_RB Eclipse XL-200P Wifi, 2437MHz, bc, spk-mic, ant 4440-02, bat 4045-01/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.950 V/m; Power Drift = 5.29 dB
Peak SAR (extrapolated) = 0.01 W/kg
SAR(1 g) = 0.00224 mW/g; SAR(10 g) = 0.000973 mW/g

Info: Interpolated medium parameters used for SAR evaluation!



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Plot B9

Date/Time: 14/06/2017 3:25:21 PM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 2450B

Communication System: WiFi; Frequency: 2437 MHz;Duty Cycle: 1:1.2
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.95 mho/m; ε_r = 50.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

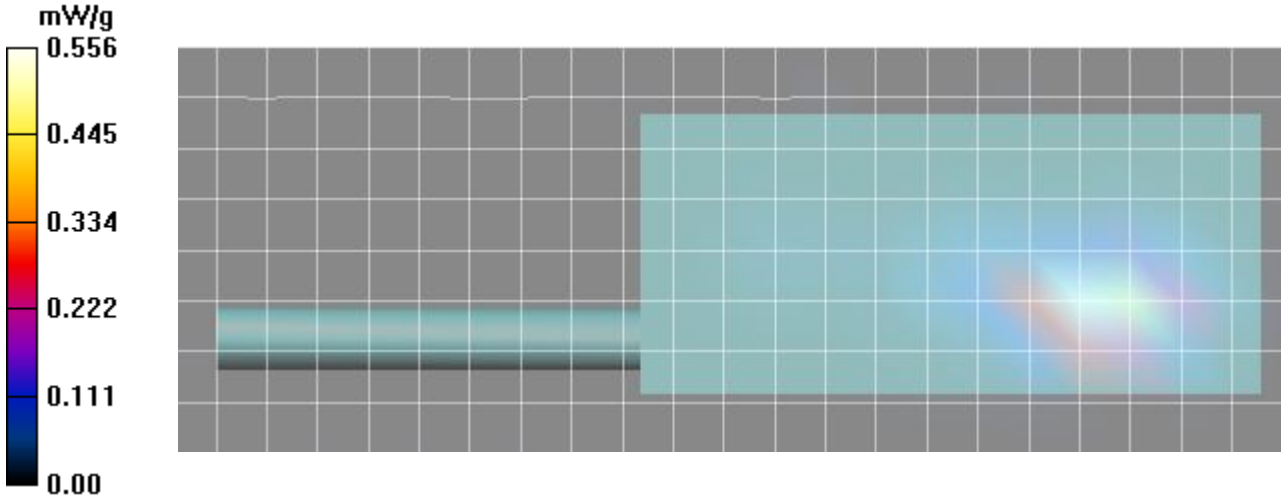
DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(6.56, 6.56, 6.56); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

B9 Body/side, SYS_RB Eclipse XL-200P Wifi, 2437 MHz, no bc, spk-mic, ant 4440-02, bat 4045-01/Area Scan (9x24x1):
Measurement grid: dx=12mm, dy=12mm

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 0.556 mW/g

B9 Body/side, SYS_RB Eclipse XL-200P Wifi, 2437 MHz, no bc, spk-mic, ant 4440-02, bat 4045-01/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.160 V/m; Power Drift = 7.09 dB
Peak SAR (extrapolated) = 1.36 W/kg
SAR(1 g) = 0.505 mW/g; SAR(10 g) = 0.216 mW/g

Info: Interpolated medium parameters used for SAR evaluation!
Maximum value of SAR (measured) = 0.555 mW/g



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2.4G BT

Plot B10

Date/Time: 14/06/2017 1:43:26 PM

Test Laboratory: Celltech Labs

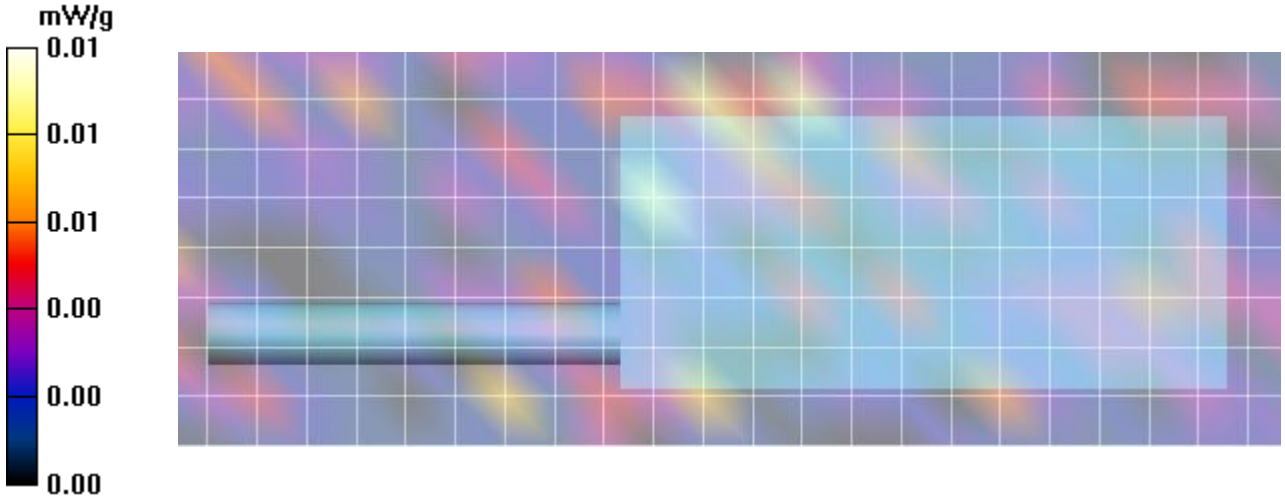
DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 2450B

Communication System: WiFi; Frequency: 2480 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2480 MHz; σ = 2.03 mho/m; ε_r = 50.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(6.56, 6.56, 6.56); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

B10 Body, SYS_RB Eclipse XL-200P BT, 2480 MHz, bc, spk-mic, ant 4440-02, bat 4045-01/Area Scan (9x24x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.01 mW/g

B10 Body, SYS_RB Eclipse XL-200P BT, 2480 MHz, bc, spk-mic, ant 4440-02, bat 4045-01/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.649 V/m; Power Drift = 8.60 dB
Peak SAR (extrapolated) = 0.018 W/kg
SAR(1 g) = 0.00147 mW/g; SAR(10 g) = 0.000415 mW/g



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Plot B11

Date/Time: 14/06/2017 2:16:03 PM

Test Laboratory: Celltech Labs

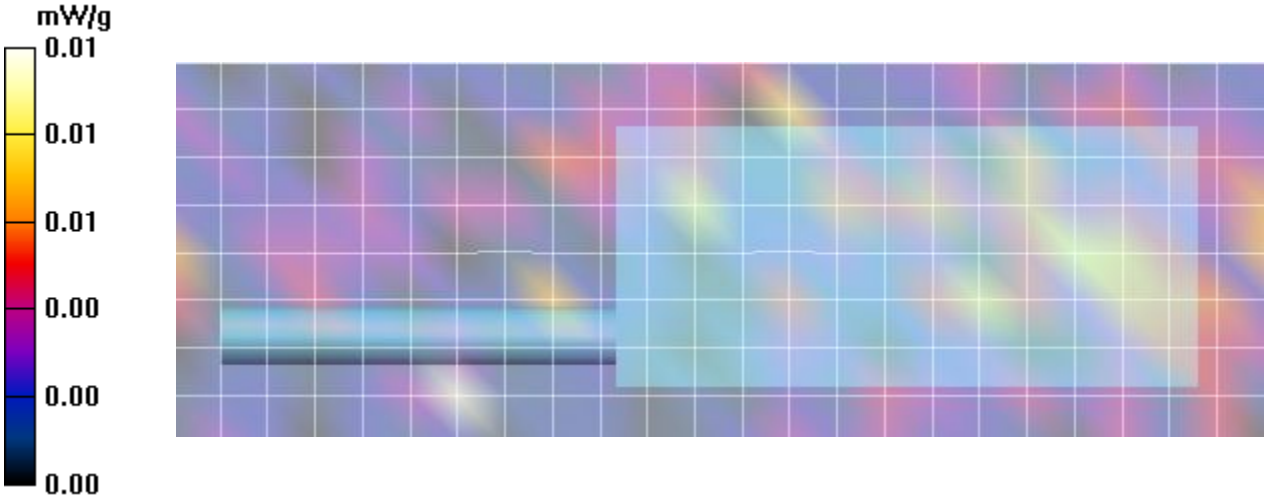
DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 2450B

Communication System: WiFi; Frequency: 2480 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2480 MHz; σ = 2.03 mho/m; ε_r = 50.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(6.56, 6.56, 6.56); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

B11 Body, SYS_RB Eclipse XL-200P BT, 2480 MHz, no bc, spk-mic, ant 4440-02, bat 4045-01/Area Scan (9x24x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.01 mW/g

B11 Body, SYS_RB Eclipse XL-200P BT, 2480 MHz, no bc, spk-mic, ant 4440-02, bat 4045-01/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.356 V/m; Power Drift = 15.3 dB
Peak SAR (extrapolated) = 0.020 W/kg
SAR(1 g) = 0.0023 mW/g; SAR(10 g) = 0.000414 mW/g



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5GWIFI

Plot B12

Date/Time: 15/06/2017 10:36:53 AM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 5250B

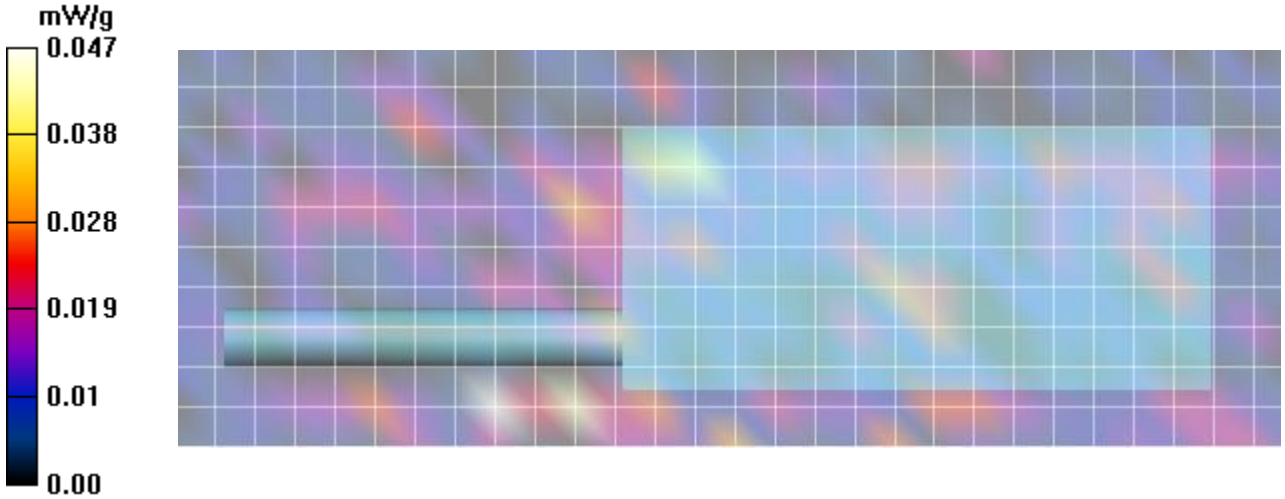
Communication System: Wifi; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5260 MHz; σ = 5.73 mho/m; ε_r = 46.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(4.18, 4.18, 4.18); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

B12 Body, SYS_RB Eclipse XL-200P Wifi, 5260 MHz, bc, spk-mic, ant 4440-02, bat 4045-01/Area Scan (11x29x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.047 mW/g

B12 Body, SYS_RB Eclipse XL-200P Wifi, 5260 MHz, bc, spk-mic, ant 4440-02, bat 4045-01/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=4mm
Reference Value = 0.392 V/m; Power Drift = -999.0 dB
Peak SAR (extrapolated) = 0.048 W/kg
SAR(1 g) = 0.00476 mW/g; SAR(10 g) = 0.00099 mW/g

Maximum value of SAR (measured) = 0.044 mW/g



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Plot B13

Date/Time: 15/06/2017 11:05:45 AM

Test Laboratory: Celltech Labs

DUT: Harris; Type: PTT Radio Transceiver;
Program Name: 5250B

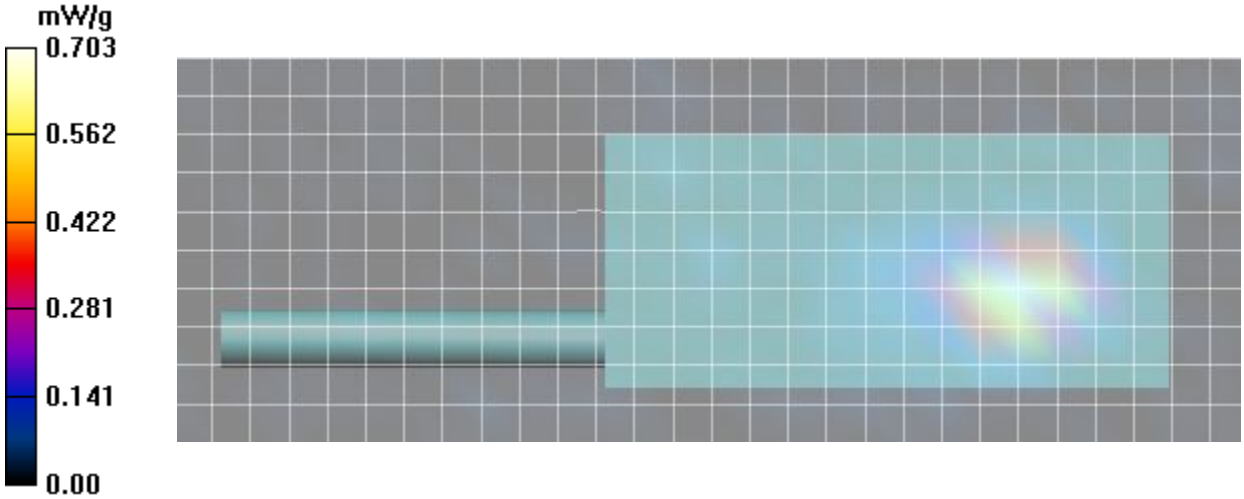
Communication System: Wifi; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5260 MHz; σ = 5.73 mho/m; ε_r = 46.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3600; ConvF(4.18, 4.18, 4.18); Calibrated: 27/04/2017
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 24/04/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 145

B13 Body/Side, SYS_RB Eclipse XL-200P Wifi, 5260 MHz, no bc,ant 4440-02, bat 4045-01/Area Scan (11x29x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.703 mW/g

B13 Body/Side, SYS_RB Eclipse XL-200P Wifi, 5260 MHz, no bc,ant 4440-02, bat 4045-01/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=4mm
Reference Value = 1.27 V/m; Power Drift = 7.59 dB
Peak SAR (extrapolated) = 1.49 W/kg
SAR(1 g) = 0.629 mW/g; SAR(10 g) = 0.241 mW/g

Maximum value of SAR (measured) = 0.741 mW/g



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