Celltech
Testing and Engineering Services Lab

Test Report Serial Number:	45461519 R2.0
Test Report Date:	3 September 2019
Project Number:	1443

SAR Test Report - Class II Permissive Change

Applicant:

HARRIS

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

Maximum Reported 1g SAR				
FCC	LMR	HEAD:	2.78	W/kg
		BODY:	4.28	
	Simultaneous:		5.41	
	Occupational Limit:		8.00	

FCC ID:
OWDTR-0145-E

Product Name / PMN
XL-200P (International)

Product Name / PMN
See Section 2.0

In Accordance With:

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

Approved By:

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

ilac-MRA ACCREDITED

Test Lab Certificate: 2470.01

Industry Canada

IC Registration 3874A-1

FCC Registration: 714830

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1.0 DOCUMENT CONTROL

Revision History				
Samples Tested By:	Whillock, Stanciu, Voss	**Date(s) of Evaluation:**		2 July - 23 July, 2019
Report Prepared By:	Art Voss, P.Eng.	**Report Reviewed By:**		Ben Hewson
Report Revision	**Description of Revision**	**Revised Section**	**Revised By**	**Revision Date**
0.1	Draft Release	n/a	Art Voss	23 July 2019
1.1	Revised per client email 20 August 2019	n/a	Art Voss	20 August 2019
2.0	Revised per client email 30 August 2019	n/a	Art Voss	3 September 2019

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-0145-E**
Type of Equipment:	Licensed Non-Broadcast Transmitter Held to Face (TNF) -LMRS (LMR)
	Licensed Non-Broadcast Station Transmitter (TNB) - LTE
	Digital Transmission System (DTS) - BLE / WiFi
	Digital Spread Spectrum (DSS) - BT
	Unlicensed National Information Infrastructure (NII) - WiFi
Device Marketing Name / PMN:	XL-200P (International)
Device Model(s) / HVIN:	XL-PFM2M-L, XL-PFM2Y-L, XL-PFM2P-L
	XL-PFM2M-NA, XL-PFM2Y-NA, XL-PFM2P-NA
	XS-PFS2M-L, XS-PFS2Y-L, XS-PFS2P-L
	XS-PFS2M-NA, XS-PFS2Y-NA, XS-PFS2P-NA
	XL-PPM2M-L, XL-PPM2Y-L, XL-PPM2P-L
	XL-PPM2M-NA, XL-PPM2Y-NA, XL-PPM2P-NA
	XS-PPS2M-L, XS-PPS2Y-L, XS-PPS2P-L
	XS-PPS2M-NA, XS-PPS2Y-NA, XS-PPS2P-NA
	XL-PFM2M-ANG
Test Sample Serial No.:	XL-PFM2M-ANG: A40304223968
	XL-PFM2M-L: A40304224128

The above model numbers are electronically identical in all respects with the exception of color, keypad options, LTE configuration and field upgradability options. The –L suffix is not factory shipped with the LTE module subassembly, the –NA suffix is factory shipped with LTE module subassembly. Both of these variants were examined during the course of this evaluation.

DUT Information (Cont.)	
Transmit Frequency Range:	VHF Band: 136-174MHz
	UHF Band: 378-522MHz
	700 Band: 769-775MHz, 799-805MHz
	800 Band: 806-824MHz, 851-869MHz
	BT/BLE: 2402-2480MHz
	WLAN 2.4G: 2412-2462MHz
	WLAN 5G: 5180-5240MHz, 5745-5825MHz
	LTE Uplink Bands: 2, 4, 5, 12, 13, 14, 17, 66
Number of Channels:	Programmable
Rated Output Power:	VHF Band: 6W (37.8dBm)
	UHF Band: 5W (37.0deBm)
	700 Band: 3W (34.8dBm)
	800 Band: 3W (34.8dBm)
	BT: 0.05W (17dBm)
	BLE: 0.0069W (8.5dBm)
	WLAN 2.4G: 0.240W (23.7dBm)
	WLAN 5G: 5180-5240MHz: 0.015W (11.8dBm)
	WLAN 5G: 5745-5825MHz: 0.008W (9.0dBm)
	LTE* Uplink, Bands 2, 5, 12, 13, 14, 17: 0.282W (24.5dBm)
	LTE* Uplink, Bands 4, 66: 0.200W (23dBm)
Duty Cycle:	LTE, BT/BLE, WLAN: 100%, LMR: 50% PTT Duty Cycle
DUT Power Source:	7.2 VDC Li-Ion 3100mAh Rechargeable Battery (Typical)
Deviation(s) from standard/procedure:	None
Modification of DUT:	None

* LTE: 3GPP Release 11
Carrier aggregation is supported for Downlink Only.

3.0 SCOPE OF EVALUATION/DATA REUSE

This Certification Report was prepared on behalf of:

Harris Corporation

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

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

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

Application:

This is an application for a Class II Permissive Change to replace the existing LTE transceiver module, FCC ID: **BV8BBPBM214** with LTE transceiver module FCC ID: **N7NEM75S,** IC ID: **2417C-EM75S**. The changes include relocation and redesign of the LTE antenna and modifications to the physical housing to accommodate such changes. The LMR, WiFi and Bluetooth transmitters including their antennas, output power, transmitter circuitry and PCB layout remain unchanged from the previous filings.

Scope:

Due to the nature of the changes, the scope of this evaluation is to re-evaluate the SAR for the changes implemented. It will include an extensive evaluation of the LTE transmitter and all simultaneous transmission conditions that can occur with this host device. However since the LMR, WiFi and Bluetooth transmitters remain unchanged, ONLY the worst case configurations from previous evaluations of these transmitters will be considered for both Standalone and Simultaneous Transmission SAR. The analysis of the Standalone and Simultaneous Transmission SAR if found in Section 11.0 of this report.

The Test Plan developed for this evaluation leverages SAR test data from previous evaluations of the XL-200P Non-Rebanded System Variant 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 will be re-evaluated during the course of this investigation to establish a base-line for comparison of test results and, where applicable, SAR test reduction and/or SAR test exclusion.

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 Title 47: Part 2.1093:	Code of Federal Regulations Telecommunication Radiofrequency Radiation Exposure Evaluation: Portable Devices
Health Canada Safety Code 6 (2015)	Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3kHz to 300GHz
Industry Canada Spectrum Management & Telecommunications Policy RSS-102 Issue 5:	Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
IEEE International Committee on Electromagnetic Safety 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 248227 D01v02r02	SAR Guidance for IEEE 802.11 (WiFi) Transmitters
FCC KDB KDB 447498 D01v06	Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies
FCC KDB KDB 643646 D01v01r03	SAR Test Reduction Considerations for Occupational PTT Radios
FCC KDB KDB 690783 D01v01r03	SAR Listings on Equipment Authorization Grants
FCC KDB KDB 865664 D01v01r04	SAR Measurement Requirements for 100MHz to 6GHz
FCC KDB KDB 941225 D05v02r05	SAR Evaluation Considerations for LTE Devices
* When the issue number or issue date is omitted, the latest version is assumed.	

5.0 STATEMENT OF COMPLIANCE

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

Applicant:	Model Name / PMN:	
Harris Corporation	XL-200P (International)	
Standard(s) Applied:	**Measurement Procedure(s):**	
FCC 47 CFR §2.1093 Health Canada's Safety Code 6	FCC KDB 865664, FCC KDB 447498, FCC KDB 643646, FCC KDB 941225 Industry Canada RSS-102 Issue 5 IEEE Standard 1528-2013, IEC 62209-2	
Reason For Issue:	**Use Group:**	**Limits Applied:**
☐ New Certification ☐ Class I Permissive Change ☒ Class II Permissive Change	☐ General Population / Uncontrolled ☒ Occupational / Controlled	☐ 1.6W/kg - 1g Volume ☒ 8.0W/kg - 1g Volume ☐ 4.0W/kg - 10g Volume
Reason for Change:		**Date(s) Evaluated:**
Replacement of LTE Transmitter Module		1 July - 19 July, 2019

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

I attest that the data reported herein is true and accurate within the tolerance of the Measurement Instrument Uncertainty; that all tests and measurements were performed in accordance with accepted practices or procedures; and that all tests and measurements were performed by me or by trained personnel under my direct supervision. The results of this investigation are based solely on the test sample(s) provided by the client which were not adjusted, modified or altered in any manner whatsoever, except as required to carry out specific tests or measurements. This test report has been completed in accordance with ISO/IEC 17025.	Art Voss, P.Eng. Technical Manager Celltech Labs Inc. 23 July 2019 Date

6.0 RF CONDUCTED POWER MEASUREMENT, BASE STATION

Conducted Power Overview:
The conducted power measurements reported in this section are measured using the LTE Base Station Simulator (BSS) connected directly to the antenna port of a modified DUT (CP DUT) that is identical in all aspects to the DUT used for Over-The-Air (OTA) SAR evaluation (OTA DUT). The CP DUT was configured using the BSS to set the channel, channel bandwidth, number of resource blocks (RB) and RB offsets.

All DUTs used during the course of this evaluation have the capability of being directly configured through the DUT's serial port using AT commands (Command Line) to set the channel, channel bandwidth, number of RBs and RB offset. The manufacturer has stated however that the maximum output power cannot be achieved using the Command Line method for DUT configuration but rather can be achieved using the BSS for DUT configuration. Since the BSS cannot configure the DUT for all possible RB offsets and modulations, the Command Line method was used to configure the CP DUT for the purposes of measuring the conducted power for the configurations not achievable by the BSS, and ONLY for the purposes of determining if the other RB offset or modulation configurations require SAR evaluation. The Command Line conducted power measurements are found in Appendix H of this report.

Table 6.1 Conducted Power Measurements – LTE Band 2, 20MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		2					Channel Bandwidth:		20MHz
Lower Band Edge		1850(MHz)					Upper Band Edge:		1910(MHz)
Modulation	RB Size	RB Offset	Low 18700 1860(MHz)		Mid 18900 1880(MHz)		High 19100 1900(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	24.31	-0.18	24.39	-0.10	24.46	-0.03	Lower
	1	50	24.24	-0.25	24.32	-0.17	24.48	-0.01	Mid
	1	99	24.22	-0.27	24.29	-0.20	24.45	-0.04	Upper
	50	0	24.20	-0.29	24.45	-0.04	24.43	-0.06	Lower
	50	50	24.19	-0.30	24.38	-0.11	24.44	-0.05	Upper
	100	0	24.13	-0.36	24.40	-0.09	24.39	-0.10	Mid
16QAM	1	0	24.10	-0.39	24.47	-0.02	24.31	-0.18	Lower
	1	50	24.49	0.00	24.39	-0.10	24.41	-0.08	Mid
	1	99	24.49	0.00	24.40	-0.09	24.33	-0.16	Upper
	50	0	24.27	-0.22	24.40	-0.09	24.32	-0.17	Lower
	50	50	24.23	-0.26	24.31	-0.18	24.16	-0.33	Upper
	100	0	24.24	-0.25	24.35	-0.14	24.25	-0.24	Mid
							Maximum Conducted Power Measured:		24.49

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.2 Conducted Power Measurements – LTE Band 2, 15MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		2					Channel Bandwidth:		15MHz
Lower Band Edge		1850(MHz)					Upper Band Edge:		1910(MHz)
Modulation	RB Size	RB Offset	Low 18675 1857.5(MHz)		Mid 18900 1880(MHz)		High 19125 1902.5(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	24.40	-0.06	24.39	-0.07	24.41	-0.05	Lower
	1	36	24.30	-0.16	24.30	-0.16	24.20	-0.26	Mid
	1	74	24.33	-0.13	24.30	-0.16	24.16	-0.30	Upper
	36	0	23.30	-1.16	24.41	-0.05	24.30	-0.16	Lower
	36	37	23.38	-1.08	24.40	-0.06	24.22	-0.24	Upper
	75	0	24.35	-0.11	24.37	-0.09	24.20	-0.26	Mid
16QAM	1	0	24.46	0.00	24.00	-0.46	24.38	-0.08	Lower
	1	36	24.36	-0.10	24.40	-0.06	24.36	-0.10	Mid
	1	74	24.36	-0.10	24.10	-0.36	24.33	-0.13	Upper
	36	0	23.02	-1.44	24.45	-0.01	24.37	-0.09	Lower
	36	37	22.90	-1.56	24.34	-0.12	24.24	-0.22	Upper
	75	0	23.94	-0.52	24.42	-0.04	24.28	-0.18	Mid
							Maximum Conducted Power Measured:		24.46

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.3 Conducted Power Measurements – LTE Band 2, 10MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		2					Channel Bandwidth:		10MHz
Lower Band Edge		1850(MHz)					Upper Band Edge:		1910(MHz)
Modulation	RB Size	RB Offset	Low 18650 1855(MHz)		Mid 18900 1880(MHz)		High 19150 1905(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	23.80	-0.60	24.10	-0.30	24.28	-0.12	Lower
	1	25	23.70	-0.70	24.03	-0.37	24.05	-0.35	Mid
	1	49	23.77	-0.63	24.02	-0.38	24.02	-0.38	Upper
	25	0	23.83	-0.57	24.07	-0.33	24.15	-0.25	Lower
	25	25	23.84	-0.56	24.07	-0.33	24.10	-0.30	Upper
	50	0	23.83	-0.57	24.04	-0.36	24.10	-0.30	Mid
16QAM	1	0	23.76	-0.64	24.04	-0.36	24.25	-0.15	Lower
	1	25	23.71	-0.69	24.04	-0.36	24.20	-0.20	Mid
	1	49	23.71	-0.69	24.00	-0.40	24.40	0.00	Upper
	25	0	23.67	-0.73	24.20	-0.20	24.20	-0.20	Lower
	25	25	23.67	-0.73	24.19	-0.21	24.19	-0.21	Upper
	50	0	23.65	-0.75	24.10	-0.30	24.15	-0.25	Mid
							Maximum Conducted Power Measured:		24.40

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.4 Conducted Power Measurements – LTE Band 2, 5MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		2					Channel Bandwidth:		5MHz
Lower Band Edge		1850(MHz)					Upper Band Edge:		1910(MHz)
Modulation	RB Size	RB Offset	Low 18625 1852.5(MHz)		Mid 18900 1880(MHz)		High 19175 1907.5(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	24.45	-0.04	24.10	-0.39	24.19	-0.30	Lower
	1	12	24.48	-0.01	24.10	-0.39	24.17	-0.32	Mid
	1	24	24.43	-0.06	24.03	-0.46	24.17	-0.32	Upper
	12	0	24.41	-0.08	24.03	-0.46	24.17	-0.32	Lower
	12	13	24.44	-0.05	24.04	-0.45	24.16	-0.33	Upper
	25	0	24.40	-0.09	23.99	-0.50	24.16	-0.33	Mid
16QAM	1	0	24.40	-0.09	24.30	-0.19	24.30	-0.19	Lower
	1	12	24.44	-0.05	24.38	-0.11	24.33	-0.16	Mid
	1	24	24.40	-0.09	24.33	-0.16	24.22	-0.27	Upper
	12	0	24.49	0.00	24.05	-0.44	24.15	-0.34	Lower
	12	13	24.45	-0.04	23.04	-1.45	24.14	-0.35	Upper
	25	0	24.43	-0.06	24.03	-0.46	24.20	-0.29	Mid
							Maximum Conducted Power Measured:		24.49

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.5 Conducted Power Measurements – LTE Band 2, 3MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		2					Channel Bandwidth:		3MHz
Lower Band Edge		1850(MHz)					Upper Band Edge:		1910(MHz)
Modulation	RB Size	RB Offset	Low 18615 1851.5(MHz)		Mid 18900 1880(MHz)		High 19185 1908.5(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	24.40	-0.04	24.00	-0.44	24.20	-0.24	Lower
	1	8	24.39	-0.05	23.98	-0.46	24.15	-0.29	Mid
	1	14	24.39	-0.05	23.95	-0.49	24.12	-0.32	Upper
	8	0	24.43	-0.01	24.03	-0.41	24.23	-0.21	Lower
	8	7	24.38	-0.06	24.03	-0.41	24.19	-0.25	Upper
	15	0	24.44	0.00	24.03	-0.41	24.15	-0.29	Mid
16QAM	1	0	23.78	-0.66	24.10	-0.34	24.34	-0.10	Lower
	1	8	23.71	-0.73	24.04	-0.40	24.30	-0.14	Mid
	1	14	23.74	-0.70	24.05	-0.39	24.24	-0.20	Upper
	8	0	23.80	-0.64	23.70	-0.74	24.20	-0.24	Lower
	8	7	23.83	-0.61	23.73	-0.71	24.20	-0.24	Upper
	15	0	23.79	-0.65	23.60	-0.84	24.17	-0.27	Mid
							Maximum Conducted Power Measured:		24.44

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.6 Conducted Power Measurements – LTE Band 2, 1.4MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		2					Channel Bandwidth:		1.4MHz
Lower Band Edge		1850(MHz)					Upper Band Edge:		1910(MHz)
Modulation	RB Size	RB Offset	Low 18607 1850.7(MHz)		Mid 18900 1880(MHz)		High 19193 1909.3(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	24.37	-0.08	23.90	-0.55	24.05	-0.40	Lower
	1	3	24.45	0.00	23.99	-0.46	24.13	-0.32	Mid
	1	6	24.38	-0.07	23.94	-0.51	24.07	-0.38	Upper
	3	0	24.43	-0.02	23.95	-0.50	24.11	-0.34	Lower
	3	4	24.40	-0.05	23.98	-0.47	24.11	-0.34	Upper
	7	0	24.39	-0.06	23.95	-0.50	24.09	-0.36	Mid
16QAM	1	0	24.37	-0.08	23.95	-0.50	24.08	-0.37	Lower
	1	3	24.45	0.00	24.02	-0.43	24.09	-0.36	Mid
	1	6	24.40	-0.05	23.99	-0.46	24.10	-0.35	Upper
	3	0	24.32	-0.13	24.01	-0.44	24.30	-0.15	Lower
	3	4	24.31	-0.14	24.04	-0.41	24.30	-0.15	Upper
	7	0	24.35	-0.10	23.90	-0.55	24.17	-0.28	Mid
							Maximum Conducted Power Measured:		24.45

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.7 Conducted Power Measurements – LTE Band 4, 20MHz BW

LTE Conducted Power Measurement - Command Line									
LTE Band:		4					Channel Bandwidth:		20MHz
Lower Band Edge		1710(MHz)					Upper Band Edge:		1755(MHz)
Modulation	RB Size	RB Offset	Low 20050 1720(MHz)		Mid 20175 1732.5(MHz)		High 20300 1745(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	22.58	-0.29	22.69	-0.18	22.61	-0.26	Lower
	1	50	22.52	-0.35	22.70	-0.17	22.72	-0.15	Mid
	1	99	22.47	-0.40	22.72	-0.15	22.62	-0.25	Upper
	50	0	22.81	-0.06	22.51	-0.36	22.63	-0.24	Lower
	50	50	22.50	-0.37	22.78	-0.09	22.66	-0.21	Upper
	100	0	22.56	-0.31	22.63	-0.24	22.83	-0.04	Mid
16QAM	1	0	22.54	-0.33	22.68	-0.19	22.43	-0.44	Lower
	1	50	22.71	-0.16	22.87	0.00	22.55	-0.32	Mid
	1	99	22.71	-0.16	22.72	-0.15	22.48	-0.39	Upper
	50	0	22.77	-0.10	22.55	-0.32	22.42	-0.45	Lower
	50	50	22.53	-0.34	22.81	-0.06	22.64	-0.23	Upper
	100	0	22.61	-0.26	22.43	-0.44	22.86	-0.01	Mid
							Maximum Conducted Power Measured:		22.87

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.8 Conducted Power Measurements – LTE Band 4, 15MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		4					Channel Bandwidth:		15MHz
Lower Band Edge		1710(MHz)					Upper Band Edge:		1755(MHz)
Modulation	RB Size	RB Offset	Low 20025 1717.5(MHz)		Mid 20175 1732.5(MHz)		High 20325 1747.5(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	22.88	-0.07	22.91	-0.04	22.90	-0.05	Lower
	1	36	22.70	-0.25	22.80	-0.15	22.68	-0.27	Mid
	1	74	22.56	-0.39	22.85	-0.10	22.55	-0.40	Upper
	36	0	22.85	-0.10	22.90	-0.05	22.77	-0.18	Lower
	36	37	22.68	-0.27	22.72	-0.23	22.70	-0.25	Upper
	75	0	22.83	-0.12	22.85	-0.10	22.76	-0.19	Mid
16QAM	1	0	22.50	-0.45	22.92	-0.03	22.95	0.00	Lower
	1	36	22.76	-0.19	22.67	-0.28	22.70	-0.25	Mid
	1	74	22.60	-0.35	22.45	-0.50	22.70	-0.25	Upper
	36	0	22.47	-0.48	22.17	-0.78	22.68	-0.27	Lower
	36	37	22.20	-0.75	22.10	-0.85	22.53	-0.42	Upper
	75	0	22.37	-0.58	22.12	-0.83	22.65	-0.30	Mid
							Maximum Conducted Power Measured:		22.95

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.9 Conducted Power Measurements – LTE Band 4, 10MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		4					Channel Bandwidth:		10MHz
Lower Band Edge		1710(MHz)					Upper Band Edge:		1755(MHz)
Modulation	RB Size	RB Offset	Low 20000 1715(MHz)		Mid 20175 1732.5(MHz)		High 20350 1750(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	22.84	-0.60	22.86	-0.58	22.70	-0.74	Lower
	1	25	22.75	-0.69	22.72	-0.72	22.50	-0.94	Mid
	1	49	22.58	-0.86	22.65	-0.79	23.44	0.00	Upper
	25	0	22.82	-0.62	22.82	-0.62	22.66	-0.78	Lower
	25	25	22.80	-0.64	22.76	-0.68	22.50	-0.94	Upper
	50	0	22.80	-0.64	22.80	-0.64	22.55	-0.89	Mid
16QAM	1	0	22.64	-0.80	22.33	-1.11	22.95	-0.49	Lower
	1	25	22.56	-0.88	22.20	-1.24	22.85	-0.59	Mid
	1	49	22.42	-1.02	22.10	-1.34	22.90	-0.54	Upper
	25	0	22.57	-0.87	22.20	-1.24	22.85	-0.59	Lower
	25	25	22.46	-0.98	22.08	-1.36	22.82	-0.62	Upper
	50	0	22.42	-1.02	22.08	-1.36	22.90	-0.54	Mid
							Maximum Conducted Power Measured:		23.44

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.10 Conducted Power Measurements – LTE Band 4, 5MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		4					Channel Bandwidth:		5MHz
Lower Band Edge		1710(MHz)					Upper Band Edge:		1755(MHz)
Modulation	RB Size	RB Offset	Low 19975 1712.5(MHz)		Mid 20175 1732.5(MHz)		High 20375 1752.5(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	22.91	-0.04	22.94	-0.01	22.81	-0.14	Lower
	1	12	22.90	-0.05	22.91	-0.04	22.80	-0.15	Mid
	1	24	22.88	-0.07	22.85	-0.10	22.73	-0.22	Upper
	12	0	22.62	-0.33	22.76	-0.19	22.72	-0.23	Lower
	12	13	22.60	-0.35	22.75	-0.20	22.70	-0.25	Upper
	25	0	22.53	-0.42	22.76	-0.19	22.74	-0.21	Mid
16QAM	1	0	22.91	-0.04	22.93	-0.02	22.93	-0.02	Lower
	1	12	22.91	-0.04	22.88	-0.07	22.85	-0.10	Mid
	1	24	22.85	-0.10	22.82	-0.13	22.86	-0.09	Upper
	12	0	22.60	-0.35	22.76	-0.19	22.90	-0.05	Lower
	12	13	22.59	-0.36	22.72	-0.23	22.92	-0.03	Upper
	25	0	22.56	-0.39	22.79	-0.16	22.95	0.00	Mid
							Maximum Conducted Power Measured:		22.95

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.11 Conducted Power Measurements – LTE Band 4, 3MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		4					Channel Bandwidth:		3MHz
Lower Band Edge		1710(MHz)					Upper Band Edge:		1755(MHz)
Modulation	RB Size	RB Offset	Low 19965 1711.5(MHz)		Mid 20175 1732.5(MHz)		High 20385 1753.5(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	22.90	-0.36	22.85	-0.41	22.89	-0.37	Lower
	1	8	22.83	-0.43	22.80	-0.46	22.86	-0.40	Mid
	1	14	22.86	-0.40	22.81	-0.45	22.84	-0.42	Upper
	8	0	22.86	-0.40	22.80	-0.46	22.95	-0.31	Lower
	8	7	22.87	-0.39	22.75	-0.51	22.93	-0.33	Upper
	15	0	22.86	-0.40	22.75	-0.51	22.90	-0.36	Mid
16QAM	1	0	22.70	-0.56	22.78	-0.48	23.26	0.00	Lower
	1	8	22.68	-0.58	22.71	-0.55	23.25	-0.01	Mid
	1	14	22.64	-0.62	22.71	-0.55	23.25	-0.01	Upper
	8	0	22.56	-0.70	22.85	-0.41	22.90	-0.36	Lower
	8	7	22.53	-0.73	22.80	-0.46	22.88	-0.38	Upper
	15	0	22.56	-0.70	22.80	-0.46	22.80	-0.46	Mid
							Maximum Conducted Power Measured:		23.26

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.12 Conducted Power Measurements – LTE Band 4, 1.4MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		4					Channel Bandwidth:		1.4MHz
Lower Band Edge		1710(MHz)					Upper Band Edge:		1755(MHz)
Modulation	RB Size	RB Offset	Low 19957 1710.7(MHz)		Mid 20175 1732.5(MHz)		High 20393 1754.3(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	22.80	-0.18	22.81	-0.17	22.86	-0.12	Lower
	1	3	22.84	-0.14	22.86	-0.12	22.93	-0.05	Mid
	1	6	22.80	-0.18	22.82	-0.16	22.86	-0.12	Upper
	3	0	22.84	-0.14	22.86	-0.12	22.91	-0.07	Lower
	3	4	22.84	-0.14	22.86	-0.12	22.92	-0.06	Upper
	7	0	22.80	-0.18	22.82	-0.16	22.94	-0.04	Mid
16QAM	1	0	22.80	-0.18	22.82	-0.16	22.88	-0.10	Lower
	1	3	22.85	-0.13	22.90	-0.08	22.98	0.00	Mid
	1	6	22.80	-0.18	22.85	-0.13	22.88	-0.10	Upper
	3	0	22.83	-0.15	22.77	-0.21	22.95	-0.03	Lower
	3	4	22.85	-0.13	22.76	-0.22	22.96	-0.02	Upper
	7	0	22.90	-0.08	22.78	-0.20	22.80	-0.18	Mid
							Maximum Conducted Power Measured:		22.98

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.13 Conducted Power Measurements – LTE Band 5, 10MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		5					Channel Bandwidth:		10MHz
Lower Band Edge		824(MHz)					Upper Band Edge:		849(MHz)
Modulation	RB Size	RB Offset	Low 20450 829(MHz)		Mid 20525 836.5(MHz)		High 20600 844(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	24.02	-0.35	24.26	-0.11	24.06	-0.31	Lower
	1	25	23.97	-0.40	24.23	-0.14	23.91	-0.46	Mid
	1	49	23.92	-0.45	24.16	-0.21	23.81	-0.56	Upper
	25	0	23.93	-0.44	24.37	0.00	23.99	-0.38	Lower
	25	25	23.96	-0.41	24.25	-0.12	23.92	-0.45	Upper
	50	0	24.04	-0.33	24.13	-0.24	24.01	-0.36	Mid
16QAM	1	0	23.56	-0.81	23.96	-0.41	23.64	-0.73	Lower
	1	25	23.60	-0.77	23.91	-0.46	23.64	-0.73	Mid
	1	49	23.47	-0.90	23.82	-0.55	23.58	-0.79	Upper
	25	0	23.02	-1.35	23.87	-0.50	23.70	-0.67	Lower
	25	25	23.03	-1.34	23.76	-0.61	24.08	-0.29	Upper
	50	0	24.03	-0.34	23.83	-0.54	24.02	-0.35	Mid
							Maximum Conducted Power Measured:		24.37

* Δ = Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.14 Conducted Power Measurements – LTE Band 5, 5MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		5					Channel Bandwidth:		5MHz
Lower Band Edge		824(MHz)					Upper Band Edge:		849(MHz)
Modulation	RB Size	RB Offset	Low 20425 826.5(MHz)		Mid 20525 836.5(MHz)		High 20625 846.5(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	23.92	-0.25	24.14	-0.03	24.01	-0.16	Lower
	1	12	23.94	-0.23	24.12	-0.05	24.03	-0.14	Mid
	1	24	23.91	-0.26	24.13	-0.04	24.13	-0.04	Upper
	12	0	23.84	-0.33	24.13	-0.04	24.00	-0.17	Lower
	12	13	23.92	-0.25	24.09	-0.08	23.92	-0.25	Upper
	25	0	23.93	-0.24	24.17	0.00	23.99	-0.18	Mid
16QAM	1	0	23.37	-0.80	23.45	-0.72	23.46	-0.71	Lower
	1	12	23.31	-0.86	23.44	-0.73	23.42	-0.75	Mid
	1	24	23.30	-0.87	23.32	-0.85	23.38	-0.79	Upper
	12	0	23.38	-0.79	23.68	-0.49	23.99	-0.18	Lower
	12	13	23.43	-0.74	23.64	-0.53	23.93	-0.24	Upper
	25	0	23.02	-1.15	23.67	-0.50	23.70	-0.47	Mid
							Maximum Conducted Power Measured:		24.17

* Δ = Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.15 Conducted Power Measurements – LTE Band 5, 3MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		5					Channel Bandwidth:		3MHz
Lower Band Edge		824(MHz)					Upper Band Edge:		849(MHz)
Modulation	RB Size	RB Offset	Low 20415 825.5(MHz)		Mid 20525 836.5(MHz)		High 20635 847.5(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	24.03	-0.23	24.09	-0.17	23.96	-0.30	Lower
	1	8	23.97	-0.29	24.02	-0.24	23.88	-0.38	Mid
	1	14	23.95	-0.31	24.00	-0.26	23.87	-0.39	Upper
	8	0	24.03	-0.23	24.09	-0.17	23.94	-0.32	Lower
	8	7	24.01	-0.25	24.08	-0.18	23.90	-0.36	Upper
	15	0	24.02	-0.24	24.08	-0.18	23.93	-0.33	Mid
16QAM	1	0	23.69	-0.57	23.75	-0.51	23.50	-0.76	Lower
	1	8	23.67	-0.59	23.69	-0.57	23.45	-0.81	Mid
	1	14	23.62	-0.64	23.65	-0.61	23.41	-0.85	Upper
	8	0	24.03	-0.23	24.26	0.00	23.99	-0.27	Lower
	8	7	24.00	-0.26	24.25	-0.01	23.96	-0.30	Upper
	15	0	24.00	-0.26	24.13	-0.13	23.98	-0.28	Mid
							Maximum Conducted Power Measured:		24.26

* Δ = Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.16 Conducted Power Measurements – LTE Band 5, 1.4MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		5					Channel Bandwidth:		1.4MHz
Lower Band Edge		824(MHz)					Upper Band Edge:		849(MHz)
Modulation	RB Size	RB Offset	Low 20407 824.7(MHz)		Mid 20525 836.5(MHz)		High 20643 848.3(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	23.86	-0.18	23.91	-0.13	23.76	-0.28	Lower
	1	3	23.88	-0.16	23.97	-0.07	23.78	-0.26	Mid
	1	6	23.85	-0.19	23.92	-0.12	23.73	-0.31	Upper
	3	0	23.84	-0.20	23.93	-0.11	23.73	-0.31	Lower
	3	4	23.81	-0.23	23.94	-0.10	23.68	-0.36	Upper
	7	0	23.81	-0.23	23.98	-0.06	23.74	-0.30	Mid
16QAM	1	0	23.93	-0.11	23.54	-0.50	23.35	-0.69	Lower
	1	3	23.93	-0.11	23.53	-0.51	23.37	-0.67	Mid
	1	6	23.95	-0.09	23.54	-0.50	23.38	-0.66	Upper
	3	0	24.03	-0.01	23.91	-0.13	23.95	-0.09	Lower
	3	4	24.04	0.00	23.90	-0.14	23.97	-0.07	Upper
	7	0	23.89	-0.15	24.02	-0.02	23.84	-0.20	Mid
							Maximum Conducted Power Measured:		24.04

* Δ = Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.17 Conducted Power Measurements – LTE Band 12, 10MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		12					Channel Bandwidth:		10MHz
Lower Band Edge		699(MHz)					Upper Band Edge:		716(MHz)
Modulation	RB Size	RB Offset	Low 23060 704(MHz)		Mid 23095 707.5(MHz)		High 23130 711(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	24.37	-0.12	24.38	-0.11	24.33	-0.16	Lower
	1	25	24.30	-0.19	24.38	-0.11	24.34	-0.15	Mid
	1	49	24.28	-0.21	24.40	-0.09	24.34	-0.15	Upper
	25	0	24.40	-0.09	24.39	-0.10	24.33	-0.16	Lower
	25	25	24.49	0.00	24.45	-0.04	24.33	-0.16	Upper
	50	0	24.40	-0.09	24.38	-0.11	24.38	-0.11	Mid
16QAM	1	0	24.38	-0.11	24.35	-0.14	24.25	-0.24	Lower
	1	25	24.35	-0.14	24.35	-0.14	24.22	-0.27	Mid
	1	49	24.38	-0.11	24.40	-0.09	24.28	-0.21	Upper
	25	0	24.35	-0.14	24.25	-0.24	24.25	-0.24	Lower
	25	25	24.25	-0.24	24.35	-0.14	24.26	-0.23	Upper
	50	0	24.28	-0.21	24.25	-0.24	24.25	-0.24	Mid
							Maximum Conducted Power Measured:		24.49

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.18 Conducted Power Measurements – LTE Band 12, 5MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		12					Channel Bandwidth:		5MHz
Lower Band Edge		699(MHz)					Upper Band Edge:		716(MHz)
Modulation	RB Size	RB Offset	Low 23035 701.5(MHz)		Mid 23095 707.5(MHz)		High 23155 713.5(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	24.34	-0.12	24.37	-0.09	24.36	-0.10	Lower
	1	12	24.32	-0.14	24.43	-0.03	24.37	-0.09	Mid
	1	24	24.25	-0.21	24.45	-0.01	24.40	-0.06	Upper
	12	0	24.32	-0.14	24.44	-0.02	24.42	-0.04	Lower
	12	13	24.25	-0.21	24.40	-0.06	24.40	-0.06	Upper
	25	0	24.28	-0.18	24.42	-0.04	24.36	-0.10	Mid
16QAM	1	0	24.43	-0.03	24.33	-0.13	24.44	-0.02	Lower
	1	12	24.46	0.00	24.43	-0.03	24.42	-0.04	Mid
	1	24	24.38	-0.08	24.45	-0.01	24.45	-0.01	Upper
	12	0	24.24	-0.22	24.17	-0.29	24.32	-0.14	Lower
	12	13	24.18	-0.28	24.15	-0.31	24.42	-0.04	Upper
	25	0	24.14	-0.32	24.10	-0.36	24.31	-0.15	Mid
							Maximum Conducted Power Measured:		24.46

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.19 Conducted Power Measurements – LTE Band 12, 3MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		12					Channel Bandwidth:		3MHz
Lower Band Edge		699(MHz)					Upper Band Edge:		716(MHz)
Modulation	RB Size	RB Offset	Low 23025 700.5(MHz)		Mid 23095 707.5(MHz)		High 23165 714.5(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	24.37	-0.11	24.31	-0.17	24.33	-0.15	Lower
	1	8	24.35	-0.13	24.34	-0.14	24.37	-0.11	Mid
	1	14	24.31	-0.17	24.33	-0.15	24.35	-0.13	Upper
	8	0	24.43	-0.05	24.41	-0.07	24.43	-0.05	Lower
	8	7	24.34	-0.14	24.38	-0.10	24.46	-0.02	Upper
	15	0	24.37	-0.11	24.38	-0.10	24.48	0.00	Mid
16QAM	1	0	24.39	-0.09	24.38	-0.10	24.36	-0.12	Lower
	1	8	24.33	-0.15	24.42	-0.06	24.44	-0.04	Mid
	1	14	24.30	-0.18	24.37	-0.11	24.38	-0.10	Upper
	8	0	24.34	-0.14	24.11	-0.37	24.33	-0.15	Lower
	8	7	24.26	-0.22	23.97	-0.51	24.31	-0.17	Upper
	15	0	24.32	-0.16	23.86	-0.62	24.31	-0.17	Mid
							Maximum Conducted Power Measured:		24.48

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.20 Conducted Power Measurements – LTE Band 12, 1.4MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		12					Channel Bandwidth:		1.4MHz
Lower Band Edge		699(MHz)					Upper Band Edge:		716(MHz)
Modulation	RB Size	RB Offset	Low 23017 699.7(MHz)		Mid 23095 707.5(MHz)		High 23173 715.3(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	24.38	-0.11	24.39	-0.10	24.40	-0.09	Lower
	1	3	24.41	-0.08	24.43	-0.06	24.45	-0.04	Mid
	1	6	24.38	-0.11	24.41	-0.08	24.39	-0.10	Upper
	3	0	24.38	-0.11	24.43	-0.06	24.44	-0.05	Lower
	3	4	24.41	-0.08	24.38	-0.11	24.47	-0.02	Upper
	7	0	24.43	-0.06	24.38	-0.11	24.41	-0.08	Mid
16QAM	1	0	24.33	-0.16	24.35	-0.14	24.45	-0.04	Lower
	1	3	24.33	-0.16	24.39	-0.10	24.49	0.00	Mid
	1	6	24.41	-0.08	24.33	-0.16	24.44	-0.05	Upper
	3	0	24.37	-0.12	24.45	-0.04	24.32	-0.17	Lower
	3	4	24.43	-0.06	24.46	-0.03	24.28	-0.21	Upper
	7	0	24.34	-0.15	24.30	-0.19	24.41	-0.08	Mid
							Maximum Conducted Power Measured:		24.49

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.21 Conducted Power Measurements – LTE Band 13, 10MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		13				Channel Bandwidth:			10MHz
Lower Band Edge		777(MHz)				Upper Band Edge:			787(MHz)
Modulation	RB Size	RB Offset	Low 23230 782(MHz)		Mid 23230 782(MHz)		High 23230 782(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0			24.29	-0.13			Lower
	1	25			24.32	-0.10			Mid
	1	49			24.25	-0.17			Upper
	25	0			24.42	0.00			Lower
	25	25			24.35	-0.07			Upper
	50	0			24.40	-0.02			Mid
16QAM	1	0			24.37	-0.05			Lower
	1	25			24.40	-0.02			Mid
	1	49			24.29	-0.13			Upper
	25	0			24.00	-0.42			Lower
	25	25			23.96	-0.46			Upper
	50	0			23.94	-0.48			Mid
						Maximum Conducted Power Measured:			24.42

* Δ = Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.22 Conducted Power Measurements – LTE Band 13, 5MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		13					Channel Bandwidth:		5MHz
Lower Band Edge		777(MHz)					Upper Band Edge:		787(MHz)
Modulation	RB Size	RB Offset	Low 23205 779.5(MHz)		Mid 23230 782(MHz)		High 23255 784.5(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	23.56	-0.46	23.97	-0.05	23.73	-0.29	Lower
	1	12	23.41	-0.61	23.99	-0.03	23.58	-0.44	Mid
	1	24	23.61	-0.41	23.87	-0.15	23.54	-0.48	Upper
	12	0	23.38	-0.64	24.00	-0.02	23.44	-0.58	Lower
	12	13	23.42	-0.60	23.98	-0.04	23.74	-0.28	Upper
	25	0	23.36	-0.66	24.02	0.00	23.58	-0.44	Mid
16QAM	1	0	23.15	-0.87	23.42	-0.60	23.36	-0.66	Lower
	1	12	23.31	-0.71	23.45	-0.57	23.22	-0.80	Mid
	1	24	23.27	-0.75	23.36	-0.66	23.24	-0.78	Upper
	12	0	23.31	-0.71	23.52	-0.50	23.29	-0.73	Lower
	12	13	23.30	-0.72	23.44	-0.58	23.31	-0.71	Upper
	25	0	23.16	-0.86	23.60	-0.42	23.50	-0.52	Mid
							Maximum Conducted Power Measured:		24.02

* Δ = Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.23 Conducted Power Measurements – LTE Band 14, 10MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		14				Channel Bandwidth:		10MHz
Lower Band Edge		788(MHz)				Upper Band Edge:		798(MHz)
Modulation	RB Size	RB Offset	Low 23330 793(MHz)		Mid 23330 793(MHz)		High 23330 793(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0			24.32	-0.12			Lower
	1	25			24.27	-0.17			Mid
	1	49			24.34	-0.10			Upper
	25	0			24.35	-0.09			Lower
	25	25			24.44	0.00			Upper
	50	0			24.33	-0.11			Mid
16QAM	1	0			23.91	-0.53			Lower
	1	25			23.90	-0.54			Mid
	1	49			23.95	-0.49			Upper
	25	0			23.99	-0.45			Lower
	25	25			24.06	-0.38			Upper
	50	0			24.38	-0.06			Mid
						Maximum Conducted Power Measured:			24.44

* Δ = Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.24 Conducted Power Measurements – LTE Band 14, 5MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		14					Channel Bandwidth:		5MHz
Lower Band Edge		788(MHz)					Upper Band Edge:		798(MHz)
Modulation	RB Size	RB Offset	Low 23305 790.5(MHz)		Mid 23330 793(MHz)		High 23355 795.5(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	23.87	-0.32	24.12	-0.07	23.61	-0.58	Lower
	1	12	23.78	-0.41	24.13	-0.06	23.87	-0.32	Mid
	1	24	23.90	-0.29	24.05	-0.14	23.94	-0.25	Upper
	12	0	24.09	-0.10	24.19	0.00	24.02	-0.17	Lower
	12	13	24.02	-0.17	24.18	-0.01	24.05	-0.14	Upper
	25	0	24.03	-0.16	24.15	-0.04	24.05	-0.14	Mid
16QAM	1	0	23.67	-0.52	23.08	-1.11	23.92	-0.27	Lower
	1	12	23.68	-0.51	23.11	-1.08	23.75	-0.44	Mid
	1	24	23.76	-0.43	23.04	-1.15	23.91	-0.28	Upper
	12	0	23.56	-0.63	23.69	-0.50	23.78	-0.41	Lower
	12	13	23.81	-0.38	23.67	-0.52	23.81	-0.38	Upper
	25	0	23.85	-0.34	23.79	-0.40	23.96	-0.23	Mid
							Maximum Conducted Power Measured:		24.19

* Δ = Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.25 Conducted Power Measurements – LTE Band 66, 20MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		66					Channel Bandwidth:		20MHz
Lower Band Edge		1710(MHz)					Upper Band Edge:		1780(MHz)
Modulation	RB Size	RB Offset	Low 132072 1720(MHz)		Mid 132322 1745(MHz)		High 132572 1770(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	22.82	-0.11	22.70	-0.23	22.93	0.00	Lower
	1	50	22.77	-0.16	22.71	-0.22	22.72	-0.21	Mid
	1	99	22.84	-0.09	22.71	-0.22	22.89	-0.04	Upper
	50	0	22.85	-0.08	22.86	-0.07	22.85	-0.09	Lower
	50	50	22.84	-0.09	22.62	-0.31	22.77	-0.16	Upper
	100	0	22.83	-0.10	22.81	-0.12	22.75	-0.18	Mid
16QAM	1	0	22.71	-0.22	22.74	-0.19	22.61	-0.32	Lower
	1	50	22.70	-0.23	22.40	-0.53	22.40	-0.53	Mid
	1	99	22.75	-0.18	22.31	-0.62	22.65	-0.28	Upper
	50	0	22.79	-0.14	22.81	-0.12	22.86	-0.07	Lower
	50	50	22.86	-0.07	22.57	-0.36	22.75	-0.18	Upper
	100	0	22.88	-0.05	22.83	-0.10	22.76	-0.17	Mid
							Maximum Conducted Power Measured:		22.93

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.26 Conducted Power Measurements – LTE Band 66, 15MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		66					Channel Bandwidth:		15MHz
Lower Band Edge		1710(MHz)					Upper Band Edge:		1780(MHz)
Modulation	RB Size	RB Offset	Low 132047 1717.5(MHz)		Mid 132322 1745(MHz)		High 132597 1772.5(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	22.40	-0.14	22.04	-0.50	22.04	-0.50	Lower
	1	36	22.20	-0.34	21.91	-0.63	21.91	-0.63	Mid
	1	74	22.10	-0.44	21.81	-0.73	21.98	-0.56	Upper
	36	0	22.37	-0.17	21.99	-0.55	21.95	-0.59	Lower
	36	37	22.17	-0.37	21.98	-0.56	21.99	-0.55	Upper
	75	0	22.33	-0.21	21.96	-0.58	21.99	-0.55	Mid
16QAM	1	0	22.39	-0.15	22.25	-0.29	22.54	0.00	Lower
	1	36	22.30	-0.24	22.04	-0.50	22.34	-0.20	Mid
	1	74	22.38	-0.16	21.95	-0.59	22.40	-0.14	Upper
	36	0	22.42	-0.12	22.06	-0.48	21.99	-0.55	Lower
	36	37	22.25	-0.29	21.95	-0.59	22.01	-0.53	Upper
	75	0	22.25	-0.29	22.04	-0.50	21.96	-0.58	Mid
							Maximum Conducted Power Measured:		22.54

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.27 Conducted Power Measurements – LTE Band 66, 10MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		66					Channel Bandwidth:		10MHz
Lower Band Edge		1710(MHz)					Upper Band Edge:		1780(MHz)
Modulation	RB Size	RB Offset	Low 132022 1715(MHz)		Mid 132322 1745(MHz)		High 132622 1775(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	22.58	-0.41	22.85	-0.14	22.90	-0.09	Lower
	1	25	22.54	-0.45	22.75	-0.24	22.92	-0.07	Mid
	1	49	22.41	-0.58	22.66	-0.33	22.92	-0.07	Upper
	25	0	22.73	-0.26	22.85	-0.14	22.95	-0.04	Lower
	25	25	22.65	-0.34	22.85	-0.14	22.96	-0.03	Upper
	50	0	22.68	-0.31	22.83	-0.16	22.94	-0.05	Mid
16QAM	1	0	22.92	-0.07	22.90	-0.09	22.90	-0.09	Lower
	1	25	22.90	-0.09	22.91	-0.08	22.95	-0.04	Mid
	1	49	22.91	-0.08	22.81	-0.18	22.96	-0.03	Upper
	25	0	22.80	-0.19	22.92	-0.07	22.95	-0.04	Lower
	25	25	22.72	-0.27	22.85	-0.14	22.91	-0.08	Upper
	50	0	22.69	-0.30	22.75	-0.24	22.99	0.00	Mid
							Maximum Conducted Power Measured:		22.99

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.28 Conducted Power Measurements – LTE Band 66, 5MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		66					Channel Bandwidth:		5MHz
Lower Band Edge		1710(MHz)					Upper Band Edge:		1780(MHz)
Modulation	RB Size	RB Offset	Low 131997 1712.5(MHz)		Mid 132322 1745(MHz)		High 132647 1777.5(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	22.81	-0.17	22.85	-0.13	22.93	-0.05	Lower
	1	12	22.83	-0.15	22.75	-0.23	22.98	0.00	Mid
	1	24	22.77	-0.21	22.66	-0.32	22.97	-0.01	Upper
	12	0	22.77	-0.21	22.85	-0.13	22.95	-0.03	Lower
	12	13	22.76	-0.22	22.85	-0.13	22.90	-0.08	Upper
	25	0	22.78	-0.20	22.83	-0.15	22.95	-0.03	Mid
16QAM	1	0	22.78	-0.20	22.90	-0.08	22.94	-0.04	Lower
	1	12	22.78	-0.20	22.91	-0.07	22.92	-0.06	Mid
	1	24	22.75	-0.23	22.81	-0.17	22.95	-0.03	Upper
	12	0	22.78	-0.20	22.92	-0.06	22.90	-0.08	Lower
	12	13	22.80	-0.18	22.85	-0.13	22.94	-0.04	Upper
	25	0	22.87	-0.11	22.75	-0.23	22.98	0.00	Mid
							Maximum Conducted Power Measured:		22.98

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.29 Conducted Power Measurements – LTE Band 66, 3MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		66					Channel Bandwidth:		3MHz
Lower Band Edge		1710(MHz)					Upper Band Edge:		1780(MHz)
Modulation	RB Size	RB Offset	Low 131987 1711.5(MHz)		Mid 132322 1745(MHz)		High 132657 1778.5(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	21.90	-1.08	22.83	-0.15	22.93	-0.05	Lower
	1	8	22.87	-0.11	22.81	-0.17	22.89	-0.09	Mid
	1	14	22.88	-0.10	22.80	-0.18	22.90	-0.08	Upper
	8	0	22.87	-0.11	22.80	-0.18	22.92	-0.06	Lower
	8	7	22.91	-0.07	22.85	-0.13	22.95	-0.03	Upper
	15	0	22.89	-0.09	22.83	-0.15	22.92	-0.06	Mid
16QAM	1	0	22.98	0.00	22.85	-0.13	22.88	-0.10	Lower
	1	8	22.88	-0.10	22.80	-0.18	22.86	-0.12	Mid
	1	14	22.98	0.00	22.81	-0.17	22.88	-0.10	Upper
	8	0	22.90	-0.08	22.92	-0.06	22.79	-0.19	Lower
	8	7	22.88	-0.10	22.91	-0.07	22.87	-0.11	Upper
	15	0	22.90	-0.08	22.89	-0.09	22.89	-0.09	Mid
							Maximum Conducted Power Measured:		22.98

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

Table 6.30 Conducted Power Measurements – LTE Band 66, 1.4MHz BW

LTE Conducted Power Measurement - Base Station									
LTE Band:		66					Channel Bandwidth:		1.4MHz
Lower Band Edge		1710(MHz)					Upper Band Edge:		1780(MHz)
Modulation	RB Size	RB Offset	Low 131979 1710.7(MHz)		Mid 132322 1745(MHz)		High 132665 1779.3(MHz)		Chan Pos EARFCN Chan Freq
			Conducted Power (dBm)*						RB Pos
			Meas.	Δ	Meas.	Δ	Meas.	Δ	
QPSK	1	0	22.82	-0.16	22.72	-0.26	22.86	-0.12	Lower
	1	3	22.87	-0.11	22.80	-0.18	22.92	-0.06	Mid
	1	6	22.82	-0.16	22.72	-0.26	22.87	-0.11	Upper
	3	0	22.87	-0.11	22.74	-0.24	22.90	-0.08	Lower
	3	4	22.82	-0.16	22.76	-0.22	22.89	-0.09	Upper
	7	0	22.73	-0.25	22.75	-0.23	22.88	-0.10	Mid
16QAM	1	0	22.90	-0.08	22.75	-0.23	22.80	-0.18	Lower
	1	3	22.98	0.00	22.81	-0.17	22.91	-0.07	Mid
	1	6	22.90	-0.08	22.78	-0.20	22.85	-0.13	Upper
	3	0	22.86	-0.12	22.84	-0.14	22.91	-0.07	Lower
	3	4	22.87	-0.11	22.83	-0.15	22.89	-0.09	Upper
	7	0	22.88	-0.10	22.70	-0.28	22.86	-0.12	Mid
							Maximum Conducted Power Measured:		22.98

* Relative to the maximum measured conducted power for this BW, across all channels, RBs, RB Offsets and modulations.

7.0 NUMBER OF TEST CHANNELS (N_C)

LTE *Required Test Channels*:

As per FCC KDB 941225, the *required test channels* are:
- 100% RB Allocation (1)
- 50% RB Allocation offset to the lower, middle and upper edge of the channel bandwidth (3)
- 1RB Allocation offset to the lower, middle and upper edge of the channel bandwidth (3)
- For each of the Low, Mid and High channels (3)
  AND
- For each of the QPSK, 16QAM and 64QAM modulations (3)
  AND
- For each of the channel bandwidths (n).

For each channel bandwidth there are a total of:
63 *required test channels* when the channel bandwidth is less than the width of the LTE band
21 *required test channels* when the channel bandwidth is equal to the width of the LTE band

Test Reduction:

For QPSK, 1RB & Offset w/ highest output power:
- Testing of all other 1RB & Offset not required when: *reported* SAR ≤ **0.8W/kg**
- Testing of only 1RB & Offset with highest output power for each other channel when: **0.8W/kg** < *reported* SAR ≤ **1.45W/kg**
- No test reduction when: *reported* SAR > **1.45W/kg**

For QPSK, 50%RB & Offset w/ highest output power:
- Testing of all other 50%RB & Offset not required when: *reported* SAR ≤ **0.8W/kg**
- Testing of only 50%RB & Offset with highest output power for each other channel when: **0.8W/kg** < *reported* SAR ≤ **1.45W/kg**
- No test reduction when: *reported* SAR > **1.45W/kg**

For QPSK, 100%RB w/ highest output power:
- Testing of 100%RB w/ highest output power not required when the 100%RB output power is less than the 1RB & Offset w/ highest output power AND the 50%RB & Offset w/ highest output power and the *reported* SAR from above is ≤ **0.8W/kg**
- Testing of only 100%RB w/ highest output power when the 100%RB output power is greater than the 1RB & Offset w/ highest output power OR the 50%RB & Offset w/ highest output power AND the *reported* SAR from 1RB AND 50%RB is:
0.8W/kg < *reported* SAR ≤ **1.45W/kg**
- No test reduction when the 1RB OR 50%RB *reported* SAR > **1.45W/kg**

For 16QAM or 64QAM:
- Testing not required when the QAM highest output power is ≤ **0.5dB** for the same QPSK configuration and the *reported* SAR from above is ≤ **1.45W/kg.**
- Test only QAM configuration when QAM highest output power is > **1/2dB** greater than the output power of the QAM configuration.
- Test the QAM configuration when the SAR of the same QPSK configuration is > **1.45W/kg.**

For other Channel Bandwidths.
- Testing not required when the highest output power of the smaller bandwidth is ≤ **0.5dB** of the output power of the similar configuration in the larger bandwidth and the *reported* SAR from above is ≤ **1.45W/kg.**
- Test only the configuration when the highest output power of the smaller bandwidth is > **1/2dB** of the output power of the similar configuration in the larger bandwidth.
- Test the configuration in the smaller bandwidth when the SAR of the similar configuration in the larger bandwidth is > 1.45W/kg.

Overlapping Channels:

Per TCB Council Workshop – April 2015, overlapping channels may be exclude provided:

"The maximum output power, including tolerance, for the smaller band must be ≤ the larger band to qualify for the SAR test exclusion. The channel bandwidth and other operating parameters for the smaller band must be fully supported by the larger band "

LTE Band 66 includes all of LTE Band 4, Band 4 is excluded.
LTE Band 12 includes all of LTE Band 17, Band 17 is excluded.

LMR, WiFi, BlueTooth *Required Channels*:

Since the circuitry, layout, power amplifiers, etc. of these transmitters have not been modified, only the worst case configurations from previous SAR evaluations will be considered for Standalone and Simultaneous Transmission SAR evaluation.

8.0 ACCESSORIES EVALUATED

Table 8.1 Manufacturer's Accessory List

Change History				
Change ID	Date	Change Type	Description of Change	Test Report Serial Number
5	14 Jan 2016	New Cert	Initial Filing	121815WD-1341-S
5	14 Jan 2016	C2PC	Added 14035-4420-01 Antenna	121815WD-1341-S
6	20 Jun 2016	C1PC	Added 12082-0600-03 Antenna/Spr/MIC	45461353
7	22 Aug 2016	C1PC	Added 14035-4010-04 Li-Ion Battery	45461356
8	23 Mar 2017	C2PC	Added KRE101223/02, 14035-4450-01, 14035-4450-02 Antennas	45461375
10	28 Apr 2017	C2PC	Added LTE Capability	45461382
12	9 Aug 2017	C1PC	Added 14035-4045-01 Battery	45461392
22	16 Oct 2017	C1PC	Added 14036-4001-01, -02, -4002-01, -02, -03 Body Accessories	45461404
23	9 Dec 2017	C1PC	Added Fema Green Variants	n/a
24	15 May 2018	C1PC	Added 14036-4003-01, -02 Body Accessories	45461441
24	15 May 2018	C1PC	Added 14036-4020-01, -02 Battery	45461441
27	17 Oct 2018	C1PC	Added 14035-4700-01,14035-4700-02 Audio Accessories	45461465
29	11 April 2019	C1PC	Added 14035-4750-01 Audio Accessories to ALL Splits	45461495
30	4 July 2019	C1PC	Added 14035-5050-01, -02 High Capacity Battery	45461519
31	23 July 2019	C2PC	Added Global LTE Option, -0133, -0143, -0145	45461519
32	23 July 2019	C2PC	Added 12082-3234-01 D-Swivel	45461519

Manufacturer's Accessory List							
Test Report ID Number	Manufacturer's Part Number	Description	Change ID[1]	UDC Group[2]	Type II Group[3]	SAR[4] Evaluated	SAR[5] Tested
		Antenna					
T1	KRE1011506/1	1/2 Wave Whip Antenna (764-870 MHz)	1			Y	Y
T2	KRE1011506/2	1/4 Wave Stub Antenna (764-870 MHz)	1			Y	Y
T3	KRE1011219/2	Helical VHF	1			Y	Y
T4	14035-4000-01	Full Spectrum Helical Antenna, Flex (136-870 MHz)	1			Y	Y
T5	14035-4420-01	Dual-Band Whip, UHF, 7/800 MHz	5			Y	Y
T6	14035-4440-01	1/2 Wave Whip Antenna (762-870 MHz)	4			Y	Y
T7	14035-4440-02	1/4 Wave Whip Antenna (762-870 MHz)	4			Y	Y
T8	14035-4450-01	1/2 Wave Whip (762-944 MHz)	8			Y	Y
T9	14035-4450-02	1/4 Wave Whip (762-944 MHz)	8			Y	Y

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

Manufacturer's Accessory List							
Test Report ID Number	Manufacturer's Part Number	Description	Change ID[1]	UDC Group[2]	Type II Group[3]	SAR[4] Evaluated	SAR[5] Tested
		Body-Worn Accessory					
B1	12082-1290-01	Metal Belt Clip, 0mm	1			Y	Y
B2	12082-3230-01	D-Swivel (Used w/ 14002-0218-01 and KRY 1011609/1)	1			Y	Y
B3	14002-0218-01	Premium Belt Loop	1			Y	Y
B4	14035-4200-01	Holster, Leather, Radio, Premium	3			Y	Y
B5	14035-4200-02	Holster, Leather w/Rings for Shoulder Strap, Radio, Premium	3			Y	Y
B6	14035-4200-03	Holster, Nylon, Black, Radio, Premium	**			Y	N
B7	14035-4200-04	Holster, Ring, Leather, Radio, Premium	**			Y	N
B8	14035-4201-01	Case, Leather, Premium, Shoulder Strap	**			Y	N
B9	14035-4201-02	Case, Leather, Premium, Shoulder Strap	**			Y	N
B10	14035-4202-01	Holster, Leather, Radio, Standard	**			Y	N
B11	14035-4202-02	Holster, Leather w/Rings for Shoulder Strap, Radio, Standard	**			Y	N
B12	14035-4202-03	Holster, Nylon, Black, Radio, Standard	**			Y	N
B13	14035-4202-04	Holster, Ring, Leather, Radio, Standard	**			Y	N
B14	CC103333V1	Shoulder Strap	1			Y	Y
B15	KRY 1011609/1	Leather Belt Loop	1			Y	Y
B16	12082-1398-01	Side Connector Cover	1			Y	Y
B17	14036-4000-01	Holster, Leather, Premium	**			Y	N
B18	14036-4000-02	Holster, Leather, Premium, Rings	**			Y	N
B19	14036-4001-01	Case, Nylon, Black, Molle Strap	22			Y	Y
B20	14036-4001-02	Case, Nylon, Black, Belt Loop, D-Swivel	22			Y	Y
B21	14036-4002-01	Case, Leather, W/ Belt Loop, BLK HDW	22			Y	N
B22	14036-4002-02	Case, Leather, Belt Loop, D-Swivel	22			Y	N
B23	14036-4001-03	Case, Nylon, W/ Belt Loop, D-Swivel, BLK HDW	22			Y	N
B24	14036-4002-03	Case, Leather, Belt Loop, D-Swivel, BLK HDW	22			Y	N
B25	14036-4003-01	Case, Leather, Belt Loop, D-Swivel	24			Y	Y
B26	14036-4003-02	Case, Leather, 3" Belt Loop	24			Y	Y
B27	12082-3234-01	D-Swivel, XL-200P, LTE	32			Y	Y
B1-02	12082-1290-02	Metal Belt Clip, 5mm - Prototype	1			Y	Y
B1-03	12082-1290-03	Metal Belt Clip, 10mm - Prototype	1			Y	Y
B1-04	12082-1290-04	Metal Belt Clip, 15mm - Prototype	1			Y	Y

9.0 SAR MEASUREMENT SUMMARY

Table 9.1: Measured Results LTE Band 2 – BODY

Measured SAR Results (1g) - BODY Configuration - LTE Band 2																
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Power Setting (dBm)	Conducted Power (dBm)	Measured SAR (1g)		SAR Drift (dB)	DUT Spacing	
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID			100% DC (W/kg)	[redacted]		DUT (mm)	Antenna* (mm)
19 July 2019	B99	XL-PFM2M-NA	LTE	1900	LTE-QPSK, RB1, RB Offset M, BW=20MHz	T9	P2	B26/Strap	A1	24.5	24.48	0.490		-0.280	<5mm	15
19 July 2019	B100	XL-PFM2M-NA	LTE	1900	LTE-QPSK, RB1, RB Offset M, BW=20MHz	T9	P7	B26/Strap	A1	24.5	24.48	0.416		-0.340	<5mm	22
19 July 2019	B101	XL-PFM2M-NA	LTE	1900	LTE-QPSK, RB1, RB Offset M, BW=20MHz	T9	P2	B1	A1	24.5	24.48	1.020		-0.030	<5mm	13
19 July 2019	B109	XL-PFM2M-NA	LTE	1900	LTE-QPSK, RB1, RB Offset M, BW=20MHz	T9	P7	B1	A1	24.5	24.48	1.080		0.200	<5mm	13
19 July 2019	B102	XL-PFM2M-NA	LTE	1900	LTE-QPSK, RB1, RB Offset M, BW=20MHz	T9	P7	B1-02	A1	24.5	24.48	0.722		-0.010	<5mm	18
19 July 2019	B103	XL-PFM2M-NA	LTE	1900	LTE-QPSK, RB1, RB Offset M, BW=20MHz	T9	P7	B1-03	A1	24.5	24.48	0.596		-0.150	<5mm	23
19 July 2019	B104	XL-PFM2M-NA	LTE	1900	LTE-QPSK, RB1, RB Offset M, BW=20MHz	T9	P7	B1-04	A1	24.5	24.48	0.680		-0.010	<5mm	25
19 July 2019	B105	XL-PFM2M-NA	LTE	1880	LTE-QPSK, RB1, RB Offset L, BW=20MHz	T9	P7	B1	A1	24.5	24.39	0.944		-0.860	<5mm	13
19 July 2019	B106	XL-PFM2M-NA	LTE	1860	LTE-QPSK, RB1, RB Offset L, BW=20MHz	T9	P7	B1	A1	24.5	24.31	0.514		0.960	<5mm	13
19 July 2019	B107	XL-PFM2M-NA	LTE	1880	LTE-QPSK, RB 50, RB Offset L, BW=20MHz	T9	P7	B1	A1	24.5	24.45	0.570		-0.490	<5mm	13
19 July 2019	B108	XL-PFM2M-NA	LTE	1880	LTE-QPSK, RB 100, RB Offset L, BW=20MHz	T9	P7	B1	A1	24.5	24.40	0.596		-0.360	<5mm	13
SAR Limit							Spatial Peak			Head/Body	RF Exposure Category					
FCC 47 CFR 2.1093				Health Canada Safety Code 6			1 Gram Average			1.6 W/kg	General Population					

* Approximate spacing to LTE Antenna

Table 9.2: Measured Results LTE Band 2 – FACE

Measured SAR Results (1g) - FACE Configuration - LTE Band 2																
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Power Setting (dBm)	Conducted Power (dBm)	Measured SAR (1g)		SAR Drift (dB)	DUT Spacing	
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID			100% DC (W/kg)	[redacted]		DUT (mm)	Antenna* (mm)
20 July 2019	F23	XL-PFM2M-NA	LTE	1900	LTE-QPSK, RB1, RB Offset M, BW=20MHz	T9	P2	n/a	n/a	24.5	24.48	0.008		-0.050	25.4	75
20 July 2019	F24	XL-PFM2M-NA	LTE	1900	LTE-QPSK, RB1, RB Offset M, BW=20MHz	T9	P7	n/a	n/a	24.5	24.48	0.016		0.200	25.4	75
20 July 2019	F25	XL-PFM2M-NA	LTE	1880	LTE-QPSK, RB 50, RB Offset L, BW=20MHz	T9	P7	n/a	n/a	24.5	24.45	0.011		-0.830	25.4	75
23 July 2019	F37	XL-PFM2M-NA	LTE	1900	LTE-QPSK, RB1, RB Offset M, BW=20MHz	P7	T9	B27	n/a	24.5	24.48	0.120		1.060	25.4	75
SAR Limit							Spatial Peak			Head/Body	RF Exposure Category					
FCC 47 CFR 2.1093				Health Canada Safety Code 6			1 Gram Average			1.6 W/kg	General Population					

* Approximate spacing to LTE Antenna

Table 9.3: Measured Results LTE Band 5 – BODY

Measured SAR Results (1g) - BODY Configuration - LTE Band 5																
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Power Setting (dBm)	Conducted Power (dBm)	Measured SAR (1g)		SAR Drift (dB)	DUT Spacing	
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID			100% DC (W/kg)	[redacted]		DUT (mm)	Antenna* (mm)
11 July 2019	B24	XL-PFM2M-NA	LTE	836.5	LTE-QPSK, RB 1, RB Offset L, BW=10MHz	T9	P7	B1-03	A1	24.5	24.26	0.164		0.040	<5mm	23
10 July 2019	B23	XL-PFM2M-NA	LTE	836.5	LTE-QPSK, RB 1, RB Offset L, BW=10MHz	T9	P2	B1-03	A1	24.5	24.26	0.271		0.110	<5mm	23
11 July 2019	B41	XL-PFM2M-NA	LTE	836.5	LTE-QPSK, RB 1, RB Offset L, BW=10MHz	T9	P2	B1-02	A1	24.5	24.26	0.075		0.140	<5mm	18
11 July 2019	B42	XL-PFM2M-NA	LTE	836.5	LTE-QPSK, RB 1, RB Offset L, BW=10MHz	T9	P7	B1-02	A1	24.5	24.26	0.132		0.900	<5mm	18
11 July 2019	B43	XL-PFM2M-NA	LTE	836.5	LTE-QPSK, RB 1, RB Offset L, BW=10MHz	T9	P7	B1-03	A1	24.5	24.26	0.108		-0.160	<5mm	23
11 July 2019	B44	XL-PFM2M-NA	LTE	836.5	LTE-QPSK, RB 1, RB Offset L, BW=10MHz	T9	P7	B1-04	A1	24.5	24.26	0.117		2.580	<5mm	25
11 July 2019	B45	XL-PFM2M-NA	LTE	836.5	LTE-QPSK, RB 1, RB Offset L, BW=10MHz	T9	P2	B25	A1	24.5	24.26	0.021		-0.690	<5mm	25
11 July 2019	B46	XL-PFM2M-NA	LTE	836.5	LTE-QPSK, RB 1, RB Offset L, BW=10MHz	T9	P7	B25	A1	24.5	24.26	0.015		0.960	<5mm	33
11 July 2019	B47	XL-PFM2M-NA	LTE	836.5	LTE-QPSK, RB 1, RB Offset L, BW=10MHz	T9	P2	B26	A1	24.5	24.26	0.018		0.450	<5mm	31
11 July 2019	B48	XL-PFM2M-NA	LTE	836.5	LTE-QPSK, RB 1, RB Offset L, BW=10MHz	T9	P2	B26/Strap	A1	24.5	24.26	0.320		0.260	<5mm	15
12 July 2019	B49	XL-PFM2M-NA	LTE	836.5	LTE-QPSK, RB 25, RB Offset L, BW=10MHz	T9	P2	B26/Strap	A1	24.5	24.37	0.223		0.650	<5mm	15
12 July 2019	B50	XL-PFM2M-NA	LTE	836.5	LTE-QPSK, RB 25, RB Offset L, BW=10MHz	T9	P7	B26/Strap	A1	24.5	24.37	0.228		2.530	<5mm	22
SAR Limit							Spatial Peak			Head/Body	RF Exposure Category					
FCC 47 CFR 2.1093				Health Canada Safety Code 6			1 Gram Average			1.6 W/kg	General Population					

* Approximate spacing to LTE Antenna

Table 9.4: Measured Results LTE Band 5 – FACE

Measured SAR Results (1g) - FACE Configuration - LTE Band 5																
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Power Setting (dBm)	Conducted Power (dBm)	Measured SAR (1g)		SAR Drift (dB)	DUT Spacing	
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID			100% DC (W/kg)	[redacted]		DUT (mm)	Antenna* (mm)
12 July 2019	F9	XL-PFM2M-NA	LTE	836.5	LTE-QPSK, RB 1, RB Offset L, BW=10MHz	T9	P2	n/a	n/a	24.5	24.26	0.043		0.530	25.4	75
12 July 2019	F10	XL-PFM2M-NA	LTE	836.5	LTE-QPSK, RB 1, RB Offset L, BW=10MHz	T9	P7	n/a	n/a	24.5	24.26	0.007		1.410	25.4	75
12 July 2019	F11	XL-PFM2M-NA	LTE	836.5	LTE-QPSK, RB 25, RB Offset L, BW=10MHz	T9	P2	n/a	n/a	24.5	24.37	0.005		1.290	25.4	75
SAR Limit							Spatial Peak			Head/Body	RF Exposure Category					
FCC 47 CFR 2.1093				Health Canada Safety Code 6			1 Gram Average			1.6 W/kg	General Population					

* Approximate spacing to LTE Antenna

Table 9.5: Measured Results LTE Band 12 – BODY

Measured SAR Results (1g) - BODY Configuration - LTE Band 12																
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Power Setting (dBm)	Conducted Power (dBm)	Measured SAR (1g)		SAR Drift (dB)	DUT Spacing	
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID			100% DC (W/kg)	[redacted]		DUT (mm)	Antenna* (mm)
16 July 2019	B76	XL-PFM2M-NA	LTE	707.5	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P2	B26/Strap	A1	24.5	24.40	0.059		-1.450	<5mm	15
16 July 2019	B77	XL-PFM2M-NA	LTE	707.5	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P7	B26/Strap	A1	24.5	24.40	0.081		-2.370	<5mm	22
16 July 2019	B78	XL-PFM2M-NA	LTE	707.5	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P2	B1-02	A1	24.5	24.40	0.064		-0.020	<5mm	18
16 July 2019	B79	XL-PFM2M-NA	LTE	707.5	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P7	B1-02	A1	24.5	24.40	0.038		0.040	<5mm	18
16 July 2019	B80	XL-PFM2M-NA	LTE	707.5	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P7	B1-03	A1	24.5	24.40	0.023		-0.690	<5mm	23
16 July 2019	B81	XL-PFM2M-NA	LTE	707.5	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P7	B1-04	A1	24.5	24.40	0.020		-0.270	<5mm	25
16 July 2019	B82	XL-PFM2M-NA	LTE	704	LTE-QPSK, RB 25, RB Offset H, BW=10MHz	T9	P7	B1-02	A1	24.5	24.49	0.049		0.270	<5mm	18
16 July 2019	B83	XL-PFM2M-NA	LTE	704	LTE-QPSK, RB 50, RB Offset L, BW=10MHz	T9	P7	B1-02	A1	24.5	24.40	0.047		0.580	<5mm	18
SAR Limit							Spatial Peak			Head/Body	RF Exposure Category					
FCC 47 CFR 2.1093				Health Canada Safety Code 6			1 Gram Average			1.6 W/kg	General Population					

* Approximate spacing to LTE Antenna

Table 9.6: Measured Results LTE Band 12 – FACE

Measured SAR Results (1g) - FACE Configuration - LTE Band 12																
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Power Setting (dBm)	Conducted Power (dBm)	Measured SAR (1g)		SAR Drift (dB)	DUT Spacing	
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID			100% DC (W/kg)	[redacted]		DUT (mm)	Antenna* (mm)
16 July 2019	F19	XL-PFM2M-NA	LTE	707.5	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P2	n/a	n/a	24.5	24.40	0.021		0.760	25.4	75
16 July 2019	F20	XL-PFM2M-NA	LTE	707.5	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P7	n/a	n/a	24.5	24.40	0.016		0.220	25.4	75
16 July 2019	F21	XL-PFM2M-NA	LTE	704	LTE-QPSK, RB 25, RB Offset H, BW=10MHz	T9	P2	n/a	n/a	24.5	24.49	0.001		-1.690	25.4	75
16 July 2019	F22	XL-PFM2M-NA	LTE	704	LTE-QPSK, RB 50, RB Offset L, BW=10MHz	T9	P2	n/a	n/a	24.5	24.40	0.000		-1.240	25.4	75
SAR Limit							Spatial Peak			Head/Body	RF Exposure Category					
FCC 47 CFR 2.1093				Health Canada Safety Code 6			1 Gram Average			1.6 W/kg	General Population					

* Approximate spacing to LTE Antenna

Table 9.7: Measured Results LTE Band 13 – BODY

Measured SAR Results (1g) - BODY Configuration - LTE Band 13																
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Power Setting (dBm)	Conducted Power (dBm)	Measured SAR (1g)		SAR Drift (dB)	DUT Spacing	
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID			100% DC (W/kg)	[redacted]		DUT (mm)	Antenna* (mm)
12 July 2019	B53	XL-PFM2M-NA	LTE	782	LTE-QPSK, RB 1, RB Offset M, BW=10MHz	T9	P2	B26	A1	24.5	24.32	0.068		-0.520	<5mm	31
12 July 2019	B54	XL-PFM2M-NA	LTE	782	LTE-QPSK, RB 1, RB Offset M, BW=10MHz	T9	P2	B25	A1	24.5	24.32	0.303		1.600	<5mm	25
12 July 2019	B55	XL-PFM2M-NA	LTE	782	LTE-QPSK, RB 1, RB Offset M, BW=10MHz	T9	P2	B1-02	A1	24.5	24.32	0.474		-0.170	<5mm	18
12 July 2019	B56	XL-PFM2M-NA	LTE	782	LTE-QPSK, RB 1, RB Offset M, BW=10MHz	T9	P7	B1-02	A1	24.5	24.32	0.613		-0.020	<5mm	18
12 July 2019	B57	XL-PFM2M-NA	LTE	782	LTE-QPSK, RB 1, RB Offset M, BW=10MHz	T9	P2	B1-03	A1	24.5	24.32	0.135		-0.270	<5mm	23
12 July 2019	B58	XL-PFM2M-NA	LTE	782	LTE-QPSK, RB 1, RB Offset M, BW=10MHz	T9	P7	B1-03	A1	24.5	24.32	0.232		0.120	<5mm	23
12 July 2019	B59	XL-PFM2M-NA	LTE	782	LTE-QPSK, RB 1, RB Offset M, BW=10MHz	T9	P2	B1-04	A1	24.5	24.32	0.092		-0.950	<5mm	25
12 July 2019	B60	XL-PFM2M-NA	LTE	782	LTE-QPSK, RB 1, RB Offset M, BW=10MHz	T9	P7	B1-04	A1	24.5	24.32	0.164		0.130	<5mm	25
12 July 2019	B51/R2	XL-PFM2M-NA	LTE	782	LTE-QPSK, RB 1, RB Offset M, BW=10MHz	T9	P2	B26/Strap	A1	24.5	24.32	0.398		1.270	<5mm	15
16 July 2019	B75	XL-PFM2M-NA	LTE	782	LTE-QPSK, RB 50, RB Offset L, BW=10MHz	T9	P7	B26/Strap	A1	24.5	24.40	0.296		0.150	<5mm	22
16 July 2019	B61	XL-PFM2M-NA	LTE	782	LTE-QPSK, RB 25, RB Offset L, BW=10MHz	T9	P7	B26/Strap	A1	24.5	24.42	0.773		-0.020	<5mm	22
17 July 2019	B84	XL-PFM2M-NA	LTE	782	LTE-QPSK, RB 25, RB Offset H, BW=10MHz	T9	P7	B26/Strap	A1	24.5	24.20	0.156		0.190	<5mm	22
SAR Limit							Spatial Peak			Head/Body	RF Exposure Category					
FCC 47 CFR 2.1093				Health Canada Safety Code 6			1 Gram Average			1.6 W/kg	General Population					

* Approximate spacing to LTE Antenna

Table 9.8: Measured Results LTE Band 13 – FACE

Measured SAR Results (1g) - FACE Configuration - LTE Band 13																
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Power Setting (dBm)	Conducted Power (dBm)	Measured SAR (1g)		SAR Drift (dB)	DUT Spacing	
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID			100% DC (W/kg)	[redacted]		DUT (mm)	Antenna* (mm)
14 July 2019	F15	XL-PFM2M-NA	LTE	782	LTE-QPSK, RB 1, RB Offset M, BW=10MHz	T9	P7	n/a	n/a	24.5	24.32	0.004		2.120	25.4	75
14 July 2019	F16	XL-PFM2M-NA	LTE	782	LTE-QPSK, RB 1, RB Offset M, BW=10MHz	T9	P2	n/a	n/a	24.5	24.32	0.004		0.180	25.4	75
14 July 2019	F17	XL-PFM2M-NA	LTE	782	LTE-QPSK, RB 25, RB Offset L, BW=10MHz	T9	P2	n/a	n/a	24.5	24.42	0.003		6.740	25.4	75
16 July 2019	F18	XL-PFM2M-NA	LTE	782	LTE-QPSK, RB 50, RB Offset L, BW=10MHz	T9	P2	n/a	n/a	24.5	24.40	0.0005		0.550	25.4	75
SAR Limit							Spatial Peak			Head/Body	RF Exposure Category					
FCC 47 CFR 2.1093				Health Canada Safety Code 6			1 Gram Average			1.6 W/kg	General Population					

* Approximate spacing to LTE Antenna

Table 9.9: Measured Results LTE Band 14 – BODY

Measured SAR Results (1g) - BODY Configuration - LTE Band 14																
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Power Setting (dBm)	Conducted Power (dBm)	Measured SAR (1g)		SAR Drift (dB)	DUT Spacing	
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID			100% DC (W/kg)	[redacted]		DUT (mm)	Antenna* (mm)
13 July 2019	B63	XL-PFM2M-NA	LTE	793	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P7	B26/Strap	A1	24.5	24.34	0.099		0.940	<5mm	55
13 July 2019	B64	XL-PFM2M-NA	LTE	793	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P7	B1-02	A1	24.5	24.34	0.084		-0.350	<5mm	18
13 July 2019	B65	XL-PFM2M-NA	LTE	793	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P7	B1-03	A1	24.5	24.34	0.083		0.000	<5mm	23
13 July 2019	B66R2	XL-PFM2M-NA	LTE	793	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P7	B1-04	A1	24.5	24.34	0.131		-0.030	<5mm	25
13 July 2019	B67	XL-PFM2M-NA	LTE	793	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P2	B1-02	A1	24.5	24.34	0.255		0.140	<5mm	18
13 July 2019	B68	XL-PFM2M-NA	LTE	793	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P2	B25	A1	24.5	24.34	0.065		0.030	<5mm	25
13 July 2019	B69	XL-PFM2M-NA	LTE	793	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P2	B26	A1	24.5	24.34	0.089		-0.640	<5mm	31
13 July 2019	B70	XL-PFM2M-NA	LTE	793	LTE-QPSK, RB 25, RB Offset H, BW=10MHz	T9	P2	B1-02	A1	24.5	24.44	0.192		0.580	<5mm	18
SAR Limit							Spatial Peak			Head/Body	RF Exposure Category					
FCC 47 CFR 2.1093				Health Canada Safety Code 6			1 Gram Average			1.6 W/kg	General Population					

* Approximate spacing to LTE Antenna

Table 9.10: Measured Results LTE Band 14 – FACE

Measured SAR Results (1g) - FACE Configuration - LTE Band 14																
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Power Setting (dBm)	Conducted Power (dBm)	Measured SAR (1g)		SAR Drift (dB)	DUT Spacing	
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID			100% DC (W/kg)	[redacted]		DUT (mm)	Antenna* (mm)
13 July 2019	F12	XL-PFM2M-NA	LTE	793	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P7	n/a	n/a	24.5	24.34	0.007		-1.250	25.4	75
13 July 2019	F13	XL-PFM2M-NA	LTE	793	LTE-QPSK, RB 1, RB Offset H, BW=10MHz	T9	P2	n/a	n/a	24.5	24.34	0.003		0.600	25.4	75
13 July 2019	F14	XL-PFM2M-NA	LTE	793	LTE-QPSK, RB 25, RB Offset H, BW=10MHz	T9	P7	n/a	n/a	24.5	24.44	0.003		-0.070	25.4	75
SAR Limit							Spatial Peak			Head/Body	RF Exposure Category					
FCC 47 CFR 2.1093				Health Canada Safety Code 6			1 Gram Average			1.6 W/kg	General Population					

* Approximate spacing to LTE Antenna

Table 9.11: Measured Results LTE Band 66 – BODY

Measured SAR Results (1g) - BODY Configuration - LTE Band 66																
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Power** Setting (dBm)	Conducted Power (dBm)	Measured SAR (1g)		SAR Drift (dB)	DUT Spacing	
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID			100% DC (W/kg)	[redacted]		DUT (mm)	Antenna* (mm)
19 July 2019	B110	XL-PFM2M-NA	LTE	1770	LTE-QPSK, RB 1, RB Offset L, BW=20MHz	T9	P2	B26/Strap	A1	23	22.93	0.227		0.250	<5mm	15
19 July 2019	B111	XL-PFM2M-NA	LTE	1770	LTE-QPSK, RB 1, RB Offset L, BW=20MHz	T9	P7	B26/Strap	A1	23	22.93	0.187		0.290	<5mm	22
19 July 2019	B112	XL-PFM2M-NA	LTE	1770	LTE-QPSK, RB 1, RB Offset L, BW=20MHz	T9	P2	B1-02	A1	23	22.93	0.632		0.080	<5mm	18
19 July 2019	B113	XL-PFM2M-NA	LTE	1770	LTE-QPSK, RB 1, RB Offset L, BW=20MHz	T9	P7	B1-02	A1	23	22.93	0.577		0.230	<5mm	18
19 July 2019	B114	XL-PFM2M-NA	LTE	1770	LTE-QPSK, RB 1, RB Offset L, BW=20MHz	T9	P2	B1-03	A1	23	22.93	0.524		0.150	<5mm	23
19 July 2019	B115	XL-PFM2M-NA	LTE	1770	LTE-QPSK, RB 1, RB Offset L, BW=20MHz	T9	P2	B1-04	A1	23	22.93	0.427		-0.180	<5mm	25
19 July 2019	B116	XL-PFM2M-NA	LTE	1745	LTE-QPSK, RB 50, RB Offset H, BW=20MHz	T9	P2	B1-02	A1	23	22.86	0.427		0.690	<5mm	18
SAR Limit							Spatial Peak			Head/Body	RF Exposure Category					
FCC 47 CFR 2.1093				Health Canada Safety Code 6			1 Gram Average			1.6 W/kg	General Population					

* Approximate spacing to LTE Antenna
** Due to PTCRB requirements, this device can only transmit at 23dBm in LTE Bands 66 and 4.

Table 9.12: Measured Results LTE Band 66 – FACE

Measured SAR Results (1g) - FACE Configuration - LTE Band 66																
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Power** Setting (dBm)	Conducted Power (dBm)	Measured SAR (1g)		SAR Drift (dB)	DUT Spacing	
		M/N	Type			Antenna ID	Battery ID	Body ID	Audio ID			100% DC (W/kg)	[redacted]		DUT (mm)	Antenna* (mm)
20 July 2019	F26	XL-PFM2M-NA	LTE	1770	LTE-QPSK, RB 1, RB Offset L, BW=20MHz	T9	P2	n/a	n/a	23	22.93	0.007		-3.520	25.4	75
20 July 2019	F27	XL-PFM2M-NA	LTE	1770	LTE-QPSK, RB 1, RB Offset L, BW=20MHz	T9	P7	n/a	n/a	23	22.93	0.005		1.300	25.4	75
20 July 2019	F28	XL-PFM2M-NA	LTE	1745	LTE-QPSK, RB 50, RB Offset L, BW=10MHz	T9	P2	n/a	n/a	23	22.86	0.007		5.040	25.4	75
SAR Limit							Spatial Peak			Head/Body	RF Exposure Category					
FCC 47 CFR 2.1093				Health Canada Safety Code 6			1 Gram Average			1.6 W/kg	General Population					

* Approximate spacing to LTE Antenna
** Due to PTCRB requirements, this device can only transmit at 23dBm in LTE Bands 66 and 4.

Table 9.13: Measured Results LMR 7/800 Band – BODY

Measured SAR Results (1g) - BODY Configuration - LMR 7/800 Band															
Date	Plot ID	DUT		Test Frequency (*MHz*)	Modulation	Accessories				DUT Spacing		Conducted Power (*dBm*)	Measured SAR (1g)		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*)	
14 July 2019	B11	XL-PFM2M-NA	LTE	806	LMR-CW	T9	P7	B1-02	A1	<5mm	42	34.6	5.790	2.895	-0.120
14 July 2019	B12	XL-PFM2M-NA	LTE	806	LMR-CW	T9	P2	B1-02	A1	<5mm	42	34.6	5.250	2.625	-0.540
14 July 2019	B71	XL-PFM2M-NA	LTE	806	LMR-CW	T9	P7	B1-03	A1	<5mm	47	34.6	5.730	2.865	-0.460
14 July 2019	B72	XL-PFM2M-NA	LTE	806	LMR-CW	T9	P7	B1-04	A1	<5mm	49	34.6	4.950	2.475	-0.500
14 July 2019	B73	XL-PFM2M-NA	LTE	806	LMR-CW	T9	P7	B26/Strap	A1	<5mm	46	34.6	2.540	1.270	-0.370
15 July 2019	B74	XL-PFM2M-L	LUE+	806	LMR-CW	T9	P7	B1-02	A1	<5mm	42	34.6	2.350	1.175	-0.150
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			

* Approximate spacing to center of LMR Antenna

Table 9.14: Measured Results LMR 7/800 Band – FACE

Measured SAR Results (1g) - FACE Configuration - LMR 7/800 Band															
Date	Plot ID	DUT		Test Frequency (*MHz*)	Modulation	Accessories				DUT Spacing		Conducted Power (*dBm*)	Measured SAR (1g)		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*)	
04 July 2019	F4	XL-PFM2M-NA	LTE	806	LMR-CW	T9	P7	n/a	n/a	25.4	55	34.6	2.000	1.000	-0.140
04 July 2019	F5	XL-PFM2M-NA	LTE	806	LMR-CW	T9	P2	n/a	n/a	25.4	55	34.6	1.870	0.935	-0.360
04 July 2019	F6	XL-PFM2M-L	LUE+	806	LMR-CW	T9	P7	n/a	n/a	25.4	55	34.6	2.400	1.200	-0.140
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			

* Approximate spacing to center of LMR Antenna

Table 9.15: Measured Results LMR UHF Band – BODY

Measured SAR Results (1g) - BODY Configuration - LMR UHF															
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Spacing		Conducted Power (dBm)	Measured SAR (1g)		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)	
20 July 2019	B117-O	Orig	PTT	418	LMR-CW S	P2	T5	B1	A1	<5mm	42	37	8.1	4.050	-0.07
20 July 2019	B118	XL-PFM2M-NA	LTE	418	LMR-CW	P7	T5	B1-02	A1	<5mm	42	37	8.550	4.275	-0.16
20 July 2019	B119	XL-PFM2M-NA	LTE	418	LMR-CW	P2	T5	B1-02	A1	<5mm	42	37	6.940	3.470	-0.130
20 July 2019	B120	XL-PFM2M-NA	LTE	418	LMR-CW	P7	T5	B1-03	A1	<5mm	47	37	7.940	3.970	-0.100
20 July 2019	B121	XL-PFM2M-NA	LTE	418	LMR-CW	P7	T5	B1-04	A1	<5mm	49	37	6.780	3.390	-0.110
20 July 2019	B122	XL-PFM2M-NA	LTE	418	LMR-CW	P7	T5	B26/Strap	A1	<5mm	46	37	7.750	3.875	-0.130
20 July 2019	B123	XL-PFM2M-L	LUE+	418	LMR-CW	P7	T5	B1-02	A1	<5mm	42	37	8.100	4.050	-0.170
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			

* Approximate spacing to center of LMR Antenna

Table 9.16: Measured Results LMR UHF Band – FACE

Measured SAR Results (1g) - FACE Configuration - LMR UHF Band															
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Spacing		Conducted Power (dBm)	Measured SAR (1g)		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)	
20 July 2019	F29-O	XL-PFM2M-NA	PTT	418	LMR-CW S	P2	T5	n/a	n/a	25.4	55	37	4.680	2.340	-0.010
20 July 2019	F30	XL-PFM2M-NA	LTE	418	LMR-CW	P2	T5	n/a	n/a	25.4	55	37	4.670	2.335	0.000
20 July 2019	F31	XL-PFM2M-NA	LTE	418	LMR-CW	P7	T5	n/a	n/a	25.4	55	37	4.740	2.370	-0.020
20 July 2019	F32	XL-PFM2M-L	LUE+	418	LMR-CW	P7	T5	n/a	n/a	25.4	55	37	5.550	2.775**	0.260
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			

* Approximate spacing to center of LMR Antenna
* *The LUE+ is not LTE equipped and this SAR is not used for Simultaneous but will be for reporting of Max SAR for FACE (HEAD) Configuration.

Table 9.17: Measured Results LMR VHF Band – BODY

Measured SAR Results (1g) - BODY Configuration - LMR VHF																
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Spacing		Conducted Power (dBm)	Measured SAR (1g)		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)	
21 July 2019	B124-O	Orig	PTT	156.8	LMR-CW S	P2	T4	B1	A1	<5mm	42	37.8	4.210	2.105	-0.090
21 July 2019	B125	XL-PFM2M-NA	LTE	156.8	LMR-CW	P7	T4	B1-02	A1	<5mm	42	37.8	3.900	1.950	-0.170
21 July 2019	B126	XL-PFM2M-NA	LTE	156.8	LMR-CW	P2	T4	B1-02	A1	<5mm	42	37.8	4.500	2.250	-0.160
21 July 2019	B127	XL-PFM2M-NA	LTE	156.8	LMR-CW	P2	T4	B1-03	A1	<5mm	47	37.8	6.460	3.230	-0.080
21 July 2019	B128	XL-PFM2M-NA	LTE	156.8	LMR-CW	P2	T4	B1-04	A1	<5mm	49	37.8	5.320	2.660	-0.280
21 July 2019	B129	XL-PFM2M-NA	LTE	156.8	LMR-CW	P2	T4	B26/Strap	A1	<5mm	46	37.8	5.950	2.975	-0.210
21 July 2019	B130	XL-PFM2M-L	LUE+	156.8	LMR-CW	P2	T4	B1-02	A1	<5mm	46	37.8	2.290	1.145	-0.210
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			

* Approximate spacing to center of LMR Antenna

Table 9.18: Measured Results LMR VHF Band – FACE

Measured SAR Results (1g) - FACE Configuration - LMR VHF																
Date	Plot ID	DUT		Test Frequency (MHz)	Modulation	Accessories				DUT Spacing		Conducted Power (dBm)	Measured SAR (1g)		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)	
21 July 2019	F33-O	XL-PFM2M-NA	PTT	156.8	LMR-CW S	P2	T5	n/a	n/a	25.4	75	37.8	0.999	0.500	-0.330
21 July 2019	F34	XL-PFM2M-NA	LTE	156.8	LMR-CW	P2	T5	n/a	n/a	25.4	75	37.8	0.999	0.500	-0.090
21 July 2019	F35	XL-PFM2M-NA	LTE	156.8	LMR-CW	P7	T5	n/a	n/a	25.4	75	37.8	1.060	0.530	-0.100
21 July 2019	F36	XL-PFM2M-L	LUE+	156.8	LMR-CW	P7	T5	n/a	n/a	25.4	75	37.8	1.110	0.555	-0.300
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			

* Approximate spacing to center of LMR Antenna

10.0 SCALING OF MAXIMUM MEASURE SAR

Table 10.1 SAR Scaling – LTE

Scaling of Maximum Measured SAR (1g)					
Measured Parameters		Configuration			
		Face	Body	Head	
Plot ID		F19	B109		
Maximum Measured SAR_M		0.021	1.080		(W/kg)
Frequency		707.5	1900		(MHz)
Power Drift		0.760 (1)	0.200 (1)		(dB)
Conducted Power		24.400	24.480		(dBm)
Fluid Deviation from Target					
Δe	Permitivity	8.54% (2)	-2.58% (2)		
Δσ	Conductivity	-7.87% (2)	1.43% (2)		

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

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

Fluid Sensitivity Calculation (1g)			IEC 62209-2 Annex F		
Delta SAR = Ce * Δe + Cσ * Δσ					(F.1)
$Ce = (-0.0007854*f^3) + (0.009402*f^2) - (0.02742*f) - 0.2026$					(F.2)
$Cσ = (0.009804*f^3) - (0.08661*f^2) + (0.02981*f) + 0.7829$					(F.3)
f	Frequency (GHz)	0.7075	1.9		
Ce		-0.218	-0.226		
Cσ		0.764	0.594		
Ce * Δe		-0.019	0.006		
Cσ * Δσ		-0.060	0.008		
ΔSAR		-0.079 (3)	0.014		(%)

Note(3): Delta SAR is negative, SAR Adjustment for Fluid Sensitivity is not Required.

Manufacturer's Tuneup Tolerance				
Measured Conducted Power	24.400	24.480		(dBm)
Rated Conducted Power	24.500	24.500		(dBm)
ΔP	-0.100 (4)	-0.020 (4)		(dB)

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

SAR Adjustment for Fluid Sensitivity				
$SAR_1 = SAR_M * ΔSAR$	0.021	1.080		(W/kg)

SAR Adjustment for Tuneup Tolerance				
$SAR_2 = SAR_1 + [ΔP]$	0.021	1.085		(W/kg)

SAR Adjustment for Drift				
$SAR_3 = SAR_2 + Drift$	0.021	1.085		(W/kg)

reported SAR				
$FCC = SAR_2$	**0.02**	**1.08**		(W/kg)
$ISED = SAR_3$	**0.02**	**1.08**		(W/kg)

Table 10.2 SAR Scaling – LMR

Scaling of Maximum Measured SAR (1g)					
Measured Parameters		Configuration			
		Face	Body	Head	
Plot ID		F31	B118		
Maximum Measured SAR_M		2.370	4.275		(W/kg)
Frequency		418	418		(MHz)
Power Drift		-0.020 (1)	-0.160 (1)		(dB)
Conducted Power		37.000	37.000		(dBm)
Fluid Deviation from Target					
Δe	Permitivity	4.06% (2)	4.06% (2)		
Δσ	Conductivity	-0.46% (2)	-0.46% (2)		

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

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

Fluid Sensitivity Calculation (1g)			IEC 62209-2 Annex F		
Delta SAR = Ce * Δe + Cσ * Δσ					(F.1)
$Ce = (-0.0007854*f^3) + (0.009402*f^2) - (0.02742*f) - 0.2026$					(F.2)
$C\sigma = (0.009804*f^3) - (0.08661*f^2) + (0.02981*f) + 0.7829$					(F.3)
f	Frequency (GHz)	0.418	0.418		
Ce		-0.212	-0.212		
Cσ		0.781	0.781		
Ce * Δe		-0.009	-0.009		
Cσ * Δσ		-0.004	-0.004		
ΔSAR		-0.012 (3)	-0.012		(%)

Note(3): Delta SAR is negative, SAR Adjustment for Fluid Sensitivity is not Required.

Manufacturer's Tuneup Tolerance				
Measured Conducted Power	37.000	37.000		(dBm)
Rated Conducted Power	37.000	37.000		(dBm)
ΔP	0.000 (4)	0.000 (4)		(dB)

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

SAR Adjustment for Fluid Sensitivity				
$SAR_1 = SAR_M * \Delta SAR$	2.370	4.275		(W/kg)

SAR Adjustment for Tuneup Tolerance				
$SAR_2 = SAR_1 + [\Delta P]$	2.370	4.275		(W/kg)

SAR Adjustment for Drift				
$SAR_3 = SAR_2 + Drift$	2.381	4.435		(W/kg)

reported SAR				
FCC = SAR_2	**2.37**	**4.28**		(W/kg)
ISED = SAR_3	**2.38**	**4.44**		(W/kg)

11.0 ANALYSIS OF SIMULTANEOUS TRANSMISSION

Simultaneous Transmission Analysis

The XL-200P employs Wi-Fi, BlueTooth and LTE transmitters capable of simultaneously transmitting with the LMR transmitter. The Wi-Fi and BlueTooth transmitters share the same antenna and the transmissions are interleaved such that only one transmitter is transmitting at a time. As per FCC KDB 447498, simultaneous transmission analysis is required for devices capable of simultaneous transmission. The Wi-Fi, BT and LTE SAR are subject to General Population limits of 1.6W/kg. The LMR SAR is subject to Occupational limits of 8.0W/kg. To determine Simultaneous Transmission SAR Test Exclusion 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 Transmission SAR Test Exclusion may be applied.

When the Sum-of-the-Ratios exceeds 1.0, the SAR to Peak Location Separation Ration (SPLSR) may be used to determine simultaneous transmission SAR test exclusion. However, the equation for determining this exclusion applies to General Population limits only. Reference Operation Description Part 2. When mixed Occupational and General Population exposure limits are used, the SAR of the Occupational configuration is normalize to the General Population limit. For example if $SAR_{Occupational}$ = 6.4W/kg and SAR_{GenPop} = 0.65W/kg, normalizing the Occupational SAR to General Population limits yields $SAR_{OccNorm}$ = 1.28W/kg. The SPLSR equation of KDB 447498 4.3.2 c) becomes

$$(SAR_1 + SAR_2)^{1.5}/R_i \leq 0.04 = (SAR_{OccNorm} + SAR_{GenPop})^{1.5}/R_i = (1.28 + 0.65)^{1.5}/R_i \leq 0.04$$

SAR for each transmission band, transmission mode and/or equipment class was evaluated with Body-Worn and Audio Accessories in the BODY configuration and with no Accessories in the HEAD configurations. The DUT was configured with the maximum Transmit Time Invertal (TTI) at 100% trasmit duty cycle. Only the Maximum *reported* SAR for BODY and HEAD configuration is used in the Sum-of-the-Ratios or SPLSR calculation and the worst case of all possible combinations is considered.

Table 11.1 List of Possible Transmitters

List of Possible Transmitters				
Type	Class	Frequency Range		Rated Output Power (dBm)
		Lower (MHz)	Upper (MHz)	
LMR 7/800	TNF	768.0	861.0	34.8
LMR UHF	TNF	768.0	861.0	34.8
LMR VHF	TNF	768.0	861.0	34.8
BlueTooth	DSS	2402.0	2480.0	17.0
BLE	DTS	2402.0	2480.0	8.5
WiFi 2.4	DTS	2412.0	2462.0	23.7
WiFi 5	NII	5150.0	5240.0	11.8
WiFi 5	NII	5745.0	5825.0	9.0
LTE	TNB	Bands 2,5,12,13,14,17		24.5
LTE	TNB	Bands 4,66		23.0

Table 11.2 List of Possible Transmitters Combinations

Simultaneous Transmitter Combinations						
Configuration Number	Transmitter					
	LMR 7/800	BlueTooth	BLE	WiFi 2.4	WiFi 5	LTE
1	X	X				X
2	X		X			X
3	X			X		X
4	X				X	X
5	X					X

Simultaneous Transmitter Combinations						
Configuration Number	Transmitter					
	LMR UHF	BlueTooth	BLE	WiFi 2.4	WiFi 5	LTE
1	X	X				X
2	X		X			X
3	X			X		X
4	X				X	X
5	X					X

Simultaneous Transmitter Combinations						
Configuration Number	Transmitter					
	LMR VHF	BlueTooth	BLE	WiFi 2.4	WiFi 5	LTE
1	X	X				X
2	X		X			X
3	X			X		X
4	X				X	X
5	X					X

Indicates this configuration is not supported

Table 11.3 Analysis of Sum-of-the-Ratios

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

Configuration Number	Configuration	Transmitter Type												Sum of Ratios	Sum of SARs
		LMR Band		BlueTooth		BLE		WiFi 2.4		WiFi 5		LTE			
		stand-alone SAR (W/kg)	Ratio to Limit	*stand-alone* SAR (W/kg)	Ratio to Limit	*stand-alone* SAR (W/kg)	Ratio to Limit	*stand-alone* SAR (W/kg)	Ratio to Limit	*stand-alone* SAR (W/kg)	Ratio to Limit	*stand-alone* SAR (W/kg)	Ratio to Limit		
		SAR Limit = 8.0W/kg (Occupational)		*SAR Limit = 1.6W/kg (General Population)*											(W/kg)
1	HEAD	2.370	0.296	0.006	0.004							0.020	0.013	0.313	2.396
2						0.048	0.030							0.339	**2.438**
3								0.040	0.025					0.334	2.430
4										0.031	0.019			0.328	2.421
1	BODY	4.280	0.535	0.006	0.004							1.080	0.675	1.214	5.366
2						0.048	0.030							1.240	**5.408**
3								0.040	0.025					1.235	5.400
4										0.031	0.019			1.229	5.391

Indicates this combination is not supported

Simultaneous Transmission SAR Test Exclusion may be determined by applying the Sum-of-the-Ratios for the worst case combinations of all simultaneously transmitting transmitters. From the above table, none of the stand-alone transmitters exceed their respective limit. Additionally, the Sum-of-the-Ratios for the worst case combinations of the transmitters with General Population limits do not exceed 1.0. However the Sum-of-the-Ratios for the worst case combinations of transmitters with both General Population and Occupational limits do exceed 1.0. When the Sum-of-the-Ratios exceeds 1.0, Simultaneous Transmission SAR Test Exclusion may be determined the SAR to Peak Location Separation Ratio (SPLSR) as described above. The SAR Peak Location separation distance was determined to be less than 1cm between the LMR and LTE transmitters in most cases. From the above table, the worst case LMR SAR is 4.28W/kg and the LTE SAR is 1.08W/kg. Normalizing the Occupational SAR to General Population Limits gives: LMR SAR = 0.856. Applying the equation from FCC KDB 447498 D01v06 4.3.2 c) and the guidance by the FCC, the following yields:

$(SAR_1 + SAR_2)^{1.5}/_{Ri} \leq 0.04 = (SAR_{OccNorm} + SAR_{GenPop})^{1.5}/R_i = (0.856 + 1.08)^{1.5}/10 = 0.27$

The above results are greater than 0.04 therefore Simultaneous Transmission SAR Test Exclusion cannot be applied. As per the guidance provided by the FCC, when the Simultaneous Transmission SAR is evaluated, as indicated above, the sum of the SAR is applied to Occupational Limits.

Test Exclusion of the BlueTooth Low Energy (BLE) transmitter is evaluated using Max Power = 8.4dBm (7mW), Separation Distance = 30mm*, Transmit Frequency = 2.480GHz.

Per KDB 447498, SAR Test Exclusion is given by:

[(Max Power, mW) / (Separation Distance, mm)] * [$\sqrt{}$f, GHz] ≤ 3.0 for 1g SAR
[(7)/(30)] * [($\sqrt{}$2.480)] = 0.362 ≤ 3.0

Therefore the BlueTooth transmitter meets the SAR Test Exclusion criteria.

For reference only, per KDB 447498, the estimated BlueTooth SAR is given by:

[(Max Power, mW) / (Separation Distance, mm)] * [($\sqrt{}$f, GHz) / (x)], where x = 7.5 for 1g SAR
[(7)/(30)] * [($\sqrt{}$2.480) / (7.5)] = 0.048W/kg

Note: The WiFi and BlueTooth SAR values shown in this table are the highest *worst case* SAR values from all configurations and transmission modes from all variants of the and XL-200P and XL-185P series of radios. They are applied in this table to illustrate the most conservative ratio. Since the WiFi and BlueTooth transmitters and antenna location have not changed they would not be influenced by the addition of the LTE Transmitter/antenna.

* 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.

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. 23 July 2019 Date

12.0 SAR EXPOSURE LIMITS

Table 12.1 Exposure Limits

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

13.0 DETAILS OF SAR EVALUATION

Table 13.1 Day Log

DAY LOG								
Date	Ambient Temp °C	Fluid Temp °C	Pressure kPa	Humidity	Fluid Dielectric	SPC	Test	
03 July 2019	25	22.7	101.5	30%	X	X		LTE Band 5- 835H Fluids/SPC
03 July 2019	22	22.3	101.4	30%			X	Preliminary Scans
04 July 2019	25	22.3	101.4	32%			X	7/800 LMR, 7\8NRB
05 July 2019	24	22.6	101.9	33%	X		X	*Per IEEE 1528 Fluid Check
06 July 2019	22	22.1	101.6	39%			X	Preliminary Scans
08 July 2019	21	22.5	101.4	34%	X	X	X	LTE Band 13-835H
09 July 2019	24	22.6	101.6	28%			X	LTE Band 13-835H
10 July 2019	23	22.3	101.4	32%			X	LTE Band 13 & 5-835H
11 July 2019	20	21.8	101.9	50%	X	X	X	LTE Band 5-835H
12 July 2019	21	22.1	101.7	36%			X	LTE Band 5-835H
13 July 2019	24	21.8	101.4	31%			X	LTE Band 14-835H
14 July 2019	23	21.9	101.5	30%			X	LTE Band 14-835H
14 July 2019	23	21.3	101.7	29%	X		X	*Per IEEE 1528 Fluid Check
15 July 2019	24	21.2	101.4	28%	X	X	X	LTE Band 12&17 Fluids/SPC
16 July 2019	23	21.0	101.6	34%			X	LTE Band 12&17 & Band 13
17 July 2019	23	21.7	100.7	32%			X	LTE 13-750H
17 July 2019	23	23.1	100.8	39%	X	X	X	LTE Band 66,2 & Fluids/SPC
18 July 2019	21	22.7	101.0	34%			X	LTE Band 66,2-1800H
19 July 2019	23	22.9	101.7	34%			X	LTE Band 66,2 -1800H
20 July 2019	22	22.6	102.1	39%	X		X	*Per IEEE 1528 Fluid Check
20 July 2019	24	23.5	102.1	35%	X	X	X	LMR 450H
21 July 2019	22	22.8	102.0	39%	X	X	X	LMR 150H
23 July 2019	22	22.9	102%	42%	X	X	X	LTE Band 2-1800H Retest

Table 13.2 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.

Table 13.3 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°C. The Active TSL temperature was maintained to within ±1.0°C throughout the test series. TSL analysis and SPC were repeated when the Active TSL use exceeded 84 hours. An Area Scan exceeding the length and width of the DUT projection was performed and the locations of all maximas within 2dB of the Peak SAR recorded. A Zoom Scan centered over the Peak SAR location(s) was performed and the 1g and 10g SAR values recorded. The resolutions of the Area Scan and Zoom Scan are described in the Scan Resolution table(s) in this Section. A Power Reference Measurement was taken at the phantom reference point immediately prior to the Area Scan. A Power Drift measurement was taken at the phantom reference point immediately following the Zoom Scan to determine the power drift. A Z-Scan from the *Maximum Distance to Phantom Surface* to the fluid surface was performed following the power drift measurement.
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.

Table 13.4 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.

Table 13.5 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	

Table 13.6 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	

Table 13.7 Scan Resolution 5GHz to 6GHz

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

14.0 MEASUREMENT UNCERTAINTIES

Table 14.1 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

Table 14.2 Calculation of Degrees of Freedom

Table 13.1

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

15.0 FLUID DIELECTRIC PARAMETERS

Table 15.1 Fluid Dielectric Parameters 835MHz HEAD TSL, 2 July 2019

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Aprel Laboratory
Test Result for UIM Dielectric Parameter
Tue 02/Jul/2019 11:49:08
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.7350	42.02	0.89	42.86	0.79
0.7450	41.97	0.89	42.96	0.79
0.7550	41.92	0.89	42.48	0.81
0.7650	41.86	0.89	42.46	0.84
0.7750	41.81	0.90	42.54	0.83
0.7850	41.76	0.90	41.82	0.84
0.7950	41.71	0.90	42.01	0.85
0.8050	41.66	0.90	41.65	0.87
0.8150	41.60	0.90	42.00	0.87
0.8250	41.55	0.90	41.86	0.89
0.8350	41.50	0.90	41.50	0.90
0.8450	41.50	0.91	41.39	0.91
0.8550	41.50	0.92	41.25	0.92
0.8650	41.50	0.93	41.09	0.92
0.8750	41.50	0.94	41.15	0.95
0.8850	41.50	0.95	41.10	0.94
0.8950	41.50	0.96	40.85	0.95
0.9050	41.50	0.97	40.57	0.97
0.9150	41.50	0.98	40.75	0.99
0.9250	41.48	0.98	40.81	0.99
0.9350	41.46	0.99	40.67	1.01

FLUID DIELECTRIC PARAMETERS

Date:	2 Jul 2019	Fluid Temp:	22.7	Frequency:	835MHz	Tissue:	Head

Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
735.0000		42.8600	0.7900	42.0200	0.89	2.00%	-11.24%
745.0000		42.9600	0.7900	41.9700	0.89	2.36%	-11.24%
755.0000		42.4800	0.8100	41.9200	0.89	1.34%	-8.99%
765.0000		42.4600	0.8400	41.8600	0.89	1.43%	-5.62%
775.0000		42.5400	0.8300	41.8100	0.90	1.75%	-7.78%
785.0000		41.8200	0.8400	41.7600	0.90	0.14%	-6.67%
795.0000		42.0100	0.8500	41.7100	0.90	0.72%	-5.56%
805.0000		41.6500	0.8700	41.6600	0.90	-0.02%	-3.33%
815.0000		42.0000	0.8700	41.6000	0.90	0.96%	-3.33%
825.0000		41.8600	0.8900	41.5500	0.90	0.75%	-1.11%
829.0000	*	41.7160	0.8940	41.5300	0.90	0.45%	-0.67%
835.0000		41.5000	0.9000	41.5000	0.90	0.00%	0.00%
836.2500	*	41.4863	0.9013	41.5000	0.90	-0.03%	0.00%
844.0000	*	41.4010	0.9090	41.5000	0.91	-0.24%	0.00%
845.0000		41.3900	0.9100	41.5000	0.91	-0.27%	0.00%
855.0000		41.2500	0.9200	41.5000	0.92	-0.60%	0.00%
865.0000		41.0900	0.9200	41.5000	0.93	-0.99%	-1.08%
875.0000		41.1500	0.9500	41.5000	0.94	-0.84%	1.06%
885.0000		41.1000	0.9400	41.5000	0.95	-0.96%	-1.05%
895.0000		40.8500	0.9500	41.5000	0.96	-1.57%	-1.04%
905.0000		40.5700	0.9700	41.5000	0.97	-2.24%	0.00%
915.0000		40.7500	0.9900	41.5000	0.98	-1.81%	1.02%
925.0000		40.8100	0.9900	41.4800	0.98	-1.62%	1.02%
935.0000		40.6700	1.0100	41.4600	0.99	-1.91%	2.02%

*Channel Frequency Tested

Table 15.2 Fluid Dielectric Parameters 835MHz HEAD TSL, 5 July 2019

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Aprel Laboratory
Test Result for UIM Dielectric Parameter
Fri 05/Jul/2019 13:43:09
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.7350	42.02	0.89	41.50	0.76
0.7450	41.97	0.89	41.04	0.76
0.7550	41.92	0.89	41.11	0.77
0.7650	41.86	0.89	40.98	0.78
0.7750	41.81	0.90	40.84	0.79
0.7850	41.76	0.90	41.41	0.80
0.7950	41.71	0.90	40.67	0.80
0.8050	41.66	0.90	40.56	0.83
0.8150	41.60	0.90	40.69	0.81
0.8250	41.55	0.90	40.54	0.84
0.8350	41.50	0.90	40.57	0.84
0.8450	41.50	0.91	40.43	0.86
0.8550	41.50	0.92	40.32	0.87
0.8650	41.50	0.93	40.44	0.87
0.8750	41.50	0.94	40.17	0.88
0.8850	41.50	0.95	40.11	0.89
0.8950	41.50	0.96	39.89	0.90
0.9050	41.50	0.97	40.10	0.92
0.9150	41.50	0.98	39.92	0.93
0.9250	41.48	0.98	39.80	0.93
0.9350	41.46	0.99	39.88	0.95

*Per IEEE1528 Fluid Parameters measured at end of test series

FLUID DIELECTRIC PARAMETERS

Date:	5 Jul 2019	Fluid Temp:	22.6	Frequency:	835MHz	Tissue:	Head

Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
735.0000		41.5000	0.7600	42.0200	0.89	-1.24%	-14.61%
745.0000		41.0400	0.7600	41.9700	0.89	-2.22%	-14.61%
755.0000		41.1100	0.7700	41.9200	0.89	-1.93%	-13.48%
765.0000		40.9800	0.7800	41.8600	0.89	-2.10%	-12.36%
775.0000		40.8400	0.7900	41.8100	0.90	-2.32%	-12.22%
785.0000		41.4100	0.8000	41.7600	0.90	-0.84%	-11.11%
795.0000		40.6700	0.8000	41.7100	0.90	-2.49%	-11.11%
805.0000		40.5600	0.8300	41.6600	0.90	-2.64%	-7.78%
815.0000		40.6900	0.8100	41.6000	0.90	-2.19%	-10.00%
825.0000		40.5400	0.8400	41.5500	0.90	-2.43%	-6.67%
829.0000	*	40.5520	0.8400	41.5300	0.90	-2.35%	-6.67%
835.0000		40.5700	0.8400	41.5000	0.90	-2.24%	-6.67%
836.2500	*	40.5525	0.8425	41.5000	0.90	-2.28%	-6.52%
844.0000	*	40.4440	0.8580	41.5000	0.91	-2.54%	-5.61%
845.0000		40.4300	0.8600	41.5000	0.91	-2.58%	-5.49%
855.0000		40.3200	0.8700	41.5000	0.92	-2.84%	-5.43%
865.0000		40.4400	0.8700	41.5000	0.93	-2.55%	-6.45%
875.0000		40.1700	0.8800	41.5000	0.94	-3.20%	-6.38%
885.0000		40.1100	0.8900	41.5000	0.95	-3.35%	-6.32%
895.0000		39.8900	0.9000	41.5000	0.96	-3.88%	-6.25%
905.0000		40.1000	0.9200	41.5000	0.97	-3.37%	-5.15%
915.0000		39.9200	0.9300	41.5000	0.98	-3.81%	-5.10%
925.0000		39.8000	0.9300	41.4800	0.98	-4.05%	-5.10%
935.0000		39.8800	0.9500	41.4600	0.99	-3.81%	-4.04%

*Channel Frequency Tested

Table 15.3 Fluid Dielectric Parameters 835MHz HEAD TSL, 8 July 2019

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Mon 08/Jul/2019 09:59:53
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.7350	42.02	0.89	41.18	0.78
0.7450	41.97	0.89	41.64	0.80
0.7550	41.92	0.89	41.46	0.80
0.7650	41.86	0.89	41.30	0.81
0.7750	41.81	0.90	41.32	0.83
0.7850	41.76	0.90	41.30	0.84
0.7950	41.71	0.90	41.14	0.84
0.8050	41.66	0.90	40.84	0.85
0.8150	41.60	0.90	40.76	0.86
0.8250	41.55	0.90	40.47	0.88
0.8350	41.50	0.90	40.64	0.89
0.8450	41.50	0.91	40.81	0.88
0.8550	41.50	0.92	40.60	0.91
0.8650	41.50	0.93	40.13	0.91
0.8750	41.50	0.94	40.29	0.92
0.8850	41.50	0.95	39.98	0.94
0.8950	41.50	0.96	40.00	0.93
0.9050	41.50	0.97	39.94	0.95
0.9150	41.50	0.98	40.15	0.96
0.9250	41.48	0.98	40.02	0.99
0.9350	41.46	0.99	39.70	1.00

FLUID DIELECTRIC PARAMETERS

Date:	8 Jul 2019	Fluid Temp:	22.5	Frequency:	835MHz	Tissue:	Head

Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
735.0000		41.1800	0.7800	42.0200	0.89	-2.00%	-12.36%
745.0000		41.6400	0.8000	41.9700	0.89	-0.79%	-10.11%
755.0000		41.4600	0.8000	41.9200	0.89	-1.10%	-10.11%
765.0000		41.3000	0.8100	41.8600	0.89	-1.34%	-8.99%
775.0000		41.3200	0.8300	41.8100	0.90	-1.17%	-7.78%
785.0000		41.3000	0.8400	41.7600	0.90	-1.10%	-6.67%
795.0000		41.1400	0.8400	41.7100	0.90	-1.37%	-6.67%
805.0000		40.8400	0.8500	41.6600	0.90	-1.97%	-5.56%
815.0000		40.7600	0.8600	41.6000	0.90	-2.02%	-4.44%
825.0000		40.4700	0.8800	41.5500	0.90	-2.60%	-2.22%
829.0000	*	40.5380	0.8840	41.5300	0.90	-2.39%	-1.78%
835.0000		40.6400	0.8900	41.5000	0.90	-2.07%	-1.11%
836.2500	*	40.6613	0.8888	41.5000	0.90	-2.02%	-1.39%
844.0000	*	40.7930	0.8810	41.5000	0.91	-1.70%	-3.08%
845.0000		40.8100	0.8800	41.5000	0.91	-1.66%	-3.30%
855.0000		40.6000	0.9100	41.5000	0.92	-2.17%	-1.09%
865.0000		40.1300	0.9100	41.5000	0.93	-3.30%	-2.15%
875.0000		40.2900	0.9200	41.5000	0.94	-2.92%	-2.13%
885.0000		39.9800	0.9400	41.5000	0.95	-3.66%	-1.05%
895.0000		40.0000	0.9300	41.5000	0.96	-3.61%	-3.12%
905.0000		39.9400	0.9500	41.5000	0.97	-3.76%	-2.06%
915.0000		40.1500	0.9600	41.5000	0.98	-3.25%	-2.04%
925.0000		40.0200	0.9900	41.4800	0.98	-3.52%	1.02%
935.0000		39.7000	1.0000	41.4600	0.99	-4.25%	1.01%

*Channel Frequency Tested

Table 15.4 Fluid Dielectric Parameters 835MHz HEAD TSL, 11 July 2019

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Thu 11/Jul/2019 10:09:14
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.7350	42.02	0.89	40.53	0.77
0.7450	41.97	0.89	40.45	0.78
0.7550	41.92	0.89	40.10	0.78
0.7650	41.86	0.89	40.29	0.79
0.7750	41.81	0.90	40.08	0.82
0.7850	41.76	0.90	40.16	0.81
0.7950	41.71	0.90	39.73	0.82
0.8050	41.66	0.90	40.05	0.82
0.8150	41.60	0.90	39.68	0.85
0.8250	41.55	0.90	39.50	0.85
0.8350	41.50	0.90	39.53	0.86
0.8450	41.50	0.91	39.58	0.87
0.8550	41.50	0.92	39.20	0.88
0.8650	41.50	0.93	39.36	0.90
0.8750	41.50	0.94	38.90	0.91
0.8850	41.50	0.95	39.09	0.90
0.8950	41.50	0.96	38.92	0.93
0.9050	41.50	0.97	38.75	0.93
0.9150	41.50	0.98	38.81	0.92
0.9250	41.48	0.98	38.66	0.94
0.9350	41.46	0.99	38.48	0.94

FLUID DIELECTRIC PARAMETERS

Date:	11 Jul 2019	Fluid Temp:	21.8	Frequency:	835MHz	Tissue:	Head

Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
735.0000		40.5300	0.7700	42.0200	0.89	-3.55%	-13.48%
745.0000		40.4500	0.7800	41.9700	0.89	-3.62%	-12.36%
755.0000		40.1000	0.7800	41.9200	0.89	-4.34%	-12.36%
765.0000		40.2900	0.7900	41.8600	0.89	-3.75%	-11.24%
775.0000		40.0800	0.8200	41.8100	0.90	-4.14%	-8.89%
785.0000		40.1600	0.8100	41.7600	0.90	-3.83%	-10.00%
795.0000		39.7300	0.8200	41.7100	0.90	-4.75%	-8.89%
805.0000		40.0500	0.8200	41.6600	0.90	-3.86%	-8.89%
815.0000		39.6800	0.8500	41.6000	0.90	-4.62%	-5.56%
825.0000		39.5000	0.8500	41.5500	0.90	-4.93%	-5.56%
829.0000	*	39.5120	0.8540	41.5300	0.90	-4.86%	-5.11%
835.0000		39.5300	0.8600	41.5000	0.90	-4.75%	-4.44%
836.2500	*	39.5363	0.8613	41.5000	0.90	-4.73%	-4.44%
844.0000	*	39.5750	0.8690	41.5000	0.91	-4.64%	-4.40%
845.0000		39.5800	0.8700	41.5000	0.91	-4.63%	-4.40%
855.0000		39.2000	0.8800	41.5000	0.92	-5.54%	-4.35%
865.0000		39.3600	0.9000	41.5000	0.93	-5.16%	-3.23%
875.0000		38.9000	0.9100	41.5000	0.94	-6.27%	-3.19%
885.0000		39.0900	0.9000	41.5000	0.95	-5.81%	-5.26%
895.0000		38.9200	0.9300	41.5000	0.96	-6.22%	-3.12%
905.0000		38.7500	0.9300	41.5000	0.97	-6.63%	-4.12%
915.0000		38.8100	0.9200	41.5000	0.98	-6.48%	-6.12%
925.0000		38.6600	0.9400	41.4800	0.98	-6.80%	-4.08%
935.0000		38.4800	0.9400	41.4600	0.99	-7.19%	-5.05%

*Channel Frequency Tested

Table 15.5 Fluid Dielectric Parameters 835MHz HEAD TSL, 14 July 2019

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Mon 14/Jul/2019 09:46:33
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	44.80	0.86
0.7450	41.97	0.89	44.65	0.87
0.7550	41.92	0.89	44.50	0.88
0.7650	41.86	0.89	44.35	0.89
0.7750	41.81	0.90	44.20	0.90
0.7850	41.76	0.90	44.06	0.91
0.7950	41.71	0.90	43.91	0.92
0.8050	41.66	0.90	43.76	0.93
0.8150	41.60	0.90	43.61	0.94
0.8250	41.55	0.90	43.46	0.95
0.8350	41.50	0.90	43.32	0.96
0.8450	41.50	0.91	43.17	0.96
0.8550	41.50	0.92	43.02	0.97
0.8650	41.50	0.93	42.87	0.98
0.8750	41.50	0.94	42.72	0.99
0.8850	41.50	0.95	42.57	1.00
0.8950	41.50	0.96	42.43	1.01
0.9050	41.50	0.97	42.28	1.02
0.9150	41.50	0.98	42.13	1.03
0.9250	41.48	0.98	41.98	1.04
0.9350	41.46	0.99	41.83	1.05

*Per IEEE1528 Fluid Parameters measured at end of test series

FLUID DIELECTRIC PARAMETERS

Date:	14 Jul 2019	Fluid Temp:	21.3	Frequency:	835MHz	Tissue:	Head

Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
735.0000		44.8000	0.8600	42.0200	0.89	6.62%	-3.37%
745.0000		44.6500	0.8700	41.9700	0.89	6.39%	-2.25%
755.0000		44.5000	0.8800	41.9200	0.89	6.15%	-1.12%
765.0000		44.3500	0.8900	41.8600	0.89	5.95%	0.00%
775.0000		44.2000	0.9000	41.8100	0.90	5.72%	0.00%
785.0000		44.0600	0.9100	41.7600	0.90	5.51%	1.11%
795.0000		43.9100	0.9200	41.7100	0.90	5.27%	2.22%
805.0000		43.7600	0.9300	41.6600	0.90	5.04%	3.33%
815.0000		43.6100	0.9400	41.6000	0.90	4.83%	4.44%
825.0000		43.4600	0.9500	41.5500	0.90	4.60%	5.56%
829.0000	*	43.4040	0.9540	41.5300	0.90	4.51%	6.00%
835.0000		43.3200	0.9600	41.5000	0.90	4.39%	6.67%
836.2500	*	43.3013	0.9600	41.5000	0.90	4.34%	6.52%
844.0000	*	43.1850	0.9600	41.5000	0.91	4.06%	5.61%
845.0000		43.1700	0.9600	41.5000	0.91	4.02%	5.49%
855.0000		43.0200	0.9700	41.5000	0.92	3.66%	5.43%
865.0000		42.8700	0.9800	41.5000	0.93	3.30%	5.38%
875.0000		42.7200	0.9900	41.5000	0.94	2.94%	5.32%
885.0000		42.5700	1.0000	41.5000	0.95	2.58%	5.26%
895.0000		42.4300	1.0100	41.5000	0.96	2.24%	5.21%
905.0000		42.2800	1.0200	41.5000	0.97	1.88%	5.15%
915.0000		42.1300	1.0300	41.5000	0.98	1.52%	5.10%
925.0000		41.9800	1.0400	41.4800	0.98	1.21%	6.12%
935.0000		41.8300	1.0500	41.4600	0.99	0.89%	6.06%

*Channel Frequency Tested

Table 15.6 Fluid Dielectric Parameters 750MHz HEAD TSL, 15 July 2019

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Mon 15/Jul/2019 14:46:32
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.6500	42.46	0.89	46.25	0.76
0.6600	42.41	0.89	46.20	0.78
0.6700	42.36	0.89	46.08	0.79
0.6800	42.31	0.89	45.94	0.78
0.6900	42.25	0.89	45.89	0.81
0.7000	42.20	0.89	45.95	0.82
0.7100	42.15	0.89	45.70	0.82
0.7200	42.10	0.89	45.40	0.83
0.7300	42.05	0.89	45.22	0.85
0.7400	41.99	0.89	45.10	0.85
0.7500	41.94	0.89	44.91	0.86
0.7600	41.89	0.89	44.68	0.88
0.7700	41.84	0.89	44.74	0.87
0.7800	41.79	0.90	44.71	0.89
0.7900	41.73	0.90	44.41	0.90
0.8000	41.68	0.90	44.51	0.92
0.8100	41.63	0.90	44.43	0.94
0.8200	41.58	0.90	44.28	0.93
0.8300	41.53	0.90	44.23	0.93
0.8400	41.50	0.91	43.81	0.95
0.8500	41.50	0.92	43.81	0.96

FLUID DIELECTRIC PARAMETERS

Date:	15 Jul 2019	Fluid Temp:	21.2	Frequency:	750MHz	Tissue:	Head

Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
650.0000		46.2500	0.7600	42.4600	0.89	8.93%	-14.61%
660.0000		46.2000	0.7800	42.4100	0.89	8.94%	-12.36%
670.0000		46.0800	0.7900	42.3600	0.89	8.78%	-11.24%
680.0000		45.9400	0.7800	42.3100	0.89	8.58%	-12.36%
690.0000		45.8900	0.8100	42.2500	0.89	8.62%	-8.99%
700.0000		45.9500	0.8200	42.2000	0.89	8.89%	-7.87%
704.0000	*	45.8500	0.8200	42.1800	0.89	8.70%	-7.87%
707.5000	*	45.7625	0.8200	42.1625	0.89	8.54%	-7.87%
710.0000		45.7000	0.8200	42.1500	0.89	8.42%	-7.87%
711.0000	*	45.6700	0.8210	42.1450	0.89	8.36%	-7.75%
720.0000		45.4000	0.8300	42.1000	0.89	7.84%	-6.74%
730.0000		45.2200	0.8500	42.0500	0.89	7.54%	-4.49%
740.0000		45.1000	0.8500	41.9900	0.89	7.41%	-4.49%
750.0000		44.9100	0.8600	41.9400	0.89	7.08%	-3.37%
760.0000		44.6800	0.8800	41.8900	0.89	6.66%	-1.12%
770.0000		44.7400	0.8700	41.8400	0.89	6.93%	-2.25%
780.0000		44.7100	0.8900	41.7900	0.90	6.99%	-1.11%
790.0000		44.4100	0.9000	41.7300	0.90	6.42%	0.00%
800.0000		44.5100	0.9200	41.6800	0.90	6.79%	2.22%
810.0000		44.4300	0.9400	41.6300	0.90	6.73%	4.44%
820.0000		44.2800	0.9300	41.5800	0.90	6.49%	3.33%
830.0000		44.2300	0.9300	41.5300	0.90	6.50%	3.33%
840.0000		43.8100	0.9500	41.5000	0.91	5.57%	4.40%
850.0000		43.8100	0.9600	41.5000	0.92	5.57%	4.35%

*Channel Frequency Tested

Table 15.7 Fluid Dielectric Parameters 1800MHz HEAD TSL, 17 July 2019

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Wed 17/Jul/2019 11:41:05
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
1.7000	40.16	1.34	39.83	1.26
1.7100	40.14	1.35	39.75	1.27
1.7200	40.13	1.35	39.94	1.27
1.7300	40.11	1.36	39.86	1.28
1.7400	40.09	1.37	39.72	1.30
1.7500	40.08	1.37	39.75	1.30
1.7600	40.06	1.38	39.57	1.29
1.7700	40.05	1.38	39.62	1.32
1.7800	40.03	1.39	39.43	1.32
1.7900	40.02	1.39	39.40	1.31
1.8000	40.00	1.40	39.47	1.35
1.8100	40.00	1.40	39.33	1.36
1.8200	40.00	1.40	39.32	1.37
1.8300	40.00	1.40	39.25	1.38
1.8400	40.00	1.40	39.29	1.38
1.8500	40.00	1.40	39.22	1.38
1.8600	40.00	1.40	39.29	1.38
1.8700	40.00	1.40	39.24	1.40
1.8800	40.00	1.40	39.28	1.40
1.8900	40.00	1.40	39.04	1.43
1.9000	40.00	1.40	38.97	1.42

FLUID DIELECTRIC PARAMETERS

Date:	17 Jul 2019	Fluid Temp:	23.3	Frequency:	1800MHz	Tissue:	Head

Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
1700.0000		39.8300	1.2600	40.1600	1.34	-0.82%	-5.97%
1710.0000		39.7500	1.2700	40.1400	1.35	-0.97%	-5.93%
1720.0000	*	39.9400	1.2700	40.1300	1.35	-0.47%	-5.93%
1730.0000		39.8600	1.2800	40.1100	1.36	-0.62%	-5.88%
1732.5000	*	39.8250	1.2850	40.1050	1.36	-0.70%	-5.69%
1740.0000		39.7200	1.3000	40.0900	1.37	-0.92%	-5.11%
1750.0000		39.7500	1.3000	40.0800	1.37	-0.82%	-5.11%
1760.0000		39.5700	1.2900	40.0600	1.38	-1.22%	-6.52%
1770.0000		39.6200	1.3200	40.0500	1.38	-1.07%	-4.35%
1780.0000		39.4300	1.3200	40.0300	1.39	-1.50%	-5.04%
1790.0000		39.4000	1.3100	40.0200	1.39	-1.55%	-5.76%
1800.0000		39.4700	1.3500	40.0000	1.40	-1.33%	-3.57%
1810.0000		39.3300	1.3600	40.0000	1.40	-1.68%	-2.86%
1820.0000		39.3200	1.3700	40.0000	1.40	-1.70%	-2.14%
1830.0000		39.2500	1.3800	40.0000	1.40	-1.88%	-1.43%
1840.0000		39.2900	1.3800	40.0000	1.40	-1.78%	-1.43%
1850.0000		39.2200	1.3800	40.0000	1.40	-1.95%	-1.43%
1860.0000	*	39.2900	1.3800	40.0000	1.40	-1.78%	-1.43%
1870.0000		39.2400	1.4000	40.0000	1.40	-1.90%	0.00%
1880.0000	*	39.2800	1.4000	40.0000	1.40	-1.80%	0.00%
1890.0000		39.0400	1.4300	40.0000	1.40	-2.40%	2.14%
1900.0000	*	38.9700	1.4200	40.0000	1.40	-2.58%	1.43%

*Channel Frequency Tested

Table 15.8 Fluid Dielectric Parameters 1800MHz HEAD TSL, 20 July 2019

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Sat 20/Jul/2019 11:48:55
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
1.7000	40.16	1.34	37.41	1.22
1.7100	40.14	1.35	37.40	1.23
1.7200	40.13	1.35	37.48	1.22
1.7300	40.11	1.36	37.33	1.24
1.7400	40.09	1.37	37.22	1.26
1.7500	40.08	1.37	37.10	1.27
1.7600	40.06	1.38	37.09	1.27
1.7700	40.05	1.38	37.20	1.28
1.7800	40.03	1.39	37.04	1.29
1.7900	40.02	1.39	36.90	1.29
1.8000	40.00	1.40	37.00	1.30
1.8100	40.00	1.40	37.01	1.32
1.8200	40.00	1.40	36.99	1.31
1.8300	40.00	1.40	36.90	1.33
1.8400	40.00	1.40	36.75	1.35
1.8500	40.00	1.40	36.76	1.35
1.8600	40.00	1.40	36.88	1.36
1.8700	40.00	1.40	36.64	1.36
1.8800	40.00	1.40	36.63	1.37
1.8900	40.00	1.40	36.59	1.39
1.9000	40.00	1.40	36.34	1.38

*Per IEEE1528 Fluid Parameters measured at end of test series

FLUID DIELECTRIC PARAMETERS

Date:	20 Jul 2019	Fluid Temp:	22.6	Frequency:	1800MHz	Tissue:	Head

Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
1700.0000		37.4100	1.2200	40.1600	1.34	-6.85%	-8.96%
1710.0000		37.4000	1.2300	40.1400	1.35	-6.83%	-8.89%
1720.0000	*	37.4800	1.2200	40.1300	1.35	-6.60%	-9.63%
1730.0000		37.3300	1.2400	40.1100	1.36	-6.93%	-8.82%
1740.0000		37.2200	1.2600	40.0900	1.37	-7.16%	-8.03%
1745.0000	*	37.1600	1.2650	40.0850	1.37	-7.30%	-7.66%
1750.0000		37.1000	1.2700	40.0800	1.37	-7.44%	-7.30%
1760.0000		37.0900	1.2700	40.0600	1.38	-7.41%	-7.97%
1770.0000	*	37.2000	1.2800	40.0500	1.38	-7.12%	-7.25%
1780.0000		37.0400	1.2900	40.0300	1.39	-7.47%	-7.19%
1790.0000		36.9000	1.2900	40.0200	1.39	-7.80%	-7.19%
1800.0000		37.0000	1.3000	40.0000	1.40	-7.50%	-7.14%
1810.0000		37.0100	1.3200	40.0000	1.40	-7.48%	-5.71%
1820.0000		36.9900	1.3100	40.0000	1.40	-7.53%	-6.43%
1830.0000		36.9000	1.3300	40.0000	1.40	-7.75%	-5.00%
1840.0000		36.7500	1.3500	40.0000	1.40	-8.13%	-3.57%
1850.0000		36.7600	1.3500	40.0000	1.40	-8.10%	-3.57%
1860.0000	*	36.8800	1.3600	40.0000	1.40	-7.80%	-2.86%
1870.0000		36.6400	1.3600	40.0000	1.40	-8.40%	-2.86%
1880.0000	*	36.6300	1.3700	40.0000	1.40	-8.42%	-2.14%
1890.0000		36.5900	1.3900	40.0000	1.40	-8.52%	-0.71%
1900.0000	*	36.3400	1.3800	40.0000	1.40	-9.15%	-1.43%

*Channel Frequency Tested

Table 15.9 Fluid Dielectric Parameters 450MHz HEAD TSL, 20 July 2019

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Sat 20/Jul/2019 13:07:37
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	47.39	0.81
0.3600	44.58	0.87	46.92	0.82
0.3700	44.46	0.87	47.26	0.81
0.3800	44.34	0.87	46.40	0.81
0.3900	44.22	0.87	46.01	0.85
0.4000	44.10	0.87	45.18	0.83
0.4100	43.98	0.87	45.28	0.85
0.4200	43.86	0.87	45.76	0.87
0.4300	43.74	0.87	45.02	0.87
0.4400	43.62	0.87	45.03	0.86
0.4500	43.50	0.87	44.48	0.89
0.4600	43.45	0.87	44.88	0.89
0.4700	43.40	0.87	44.47	0.91
0.4800	43.34	0.87	44.14	0.91
0.4900	43.29	0.87	44.26	0.92
0.5000	43.24	0.87	44.49	0.92
0.5100	43.19	0.87	44.08	0.94
0.5200	43.14	0.88	43.41	0.95
0.5300	43.08	0.88	43.48	0.95
0.5400	43.03	0.88	43.11	0.97
0.5500	42.98	0.88	43.35	1.00

FLUID DIELECTRIC PARAMETERS

Date:	20 Jul 2019	Fluid Temp:	23.5	Frequency:	450MHz	Tissue:	Head

Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
350.0000		47.3900	0.8100	44.7000	0.87	6.02%	-6.90%
360.0000		46.9200	0.8200	44.5800	0.87	5.25%	-5.75%
370.0000		47.2600	0.8100	44.4600	0.87	6.30%	-6.90%
380.0000		46.4000	0.8100	44.3400	0.87	4.65%	-6.90%
390.0000		46.0100	0.8500	44.2200	0.87	4.05%	-2.30%
400.0000		45.1800	0.8300	44.1000	0.87	2.45%	-4.60%
410.0000		45.2800	0.8500	43.9800	0.87	2.96%	-2.30%
418.0000	*	45.6640	0.8660	43.8840	0.87	4.06%	-0.46%
420.0000		45.7600	0.8700	43.8600	0.87	4.33%	0.00%
430.0000		45.0200	0.8700	43.7400	0.87	2.93%	0.00%
440.0000		45.0300	0.8600	43.6200	0.87	3.23%	-1.15%
450.0000		44.4800	0.8900	43.5000	0.87	2.25%	2.30%
460.0000		44.8800	0.8900	43.4500	0.87	3.29%	2.30%
470.0000		44.4700	0.9100	43.4000	0.87	2.47%	4.60%
480.0000		44.1400	0.9100	43.3400	0.87	1.85%	4.60%
490.0000		44.2600	0.9200	43.2900	0.87	2.24%	5.75%
500.0000		44.4900	0.9200	43.2400	0.87	2.89%	5.75%
510.0000		44.0800	0.9400	43.1900	0.87	2.06%	8.05%
520.0000		43.4100	0.9500	43.1400	0.88	0.63%	7.95%
530.0000		43.4800	0.9500	43.0800	0.88	0.93%	7.95%
540.0000		43.1100	0.9700	43.0300	0.88	0.19%	10.23%
550.0000		43.3500	1.0000	42.9800	0.88	0.86%	13.64%

*Channel Frequency Tested

Table 15.10 Fluid Dielectric Parameters 150MHz HEAD TSL, 21 July 2019

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Sun 21/Jul/2019 11:15:41
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	59.04	0.66
0.1100	54.17	0.73	59.24	0.68
0.1200	53.70	0.74	56.87	0.69
0.1300	53.23	0.75	55.33	0.71
0.1400	52.77	0.75	52.62	0.71
0.1500	52.30	0.76	52.19	0.72
0.1600	51.83	0.77	49.22	0.72
0.1700	51.37	0.77	48.37	0.71
0.1800	50.90	0.78	49.18	0.73
0.1900	50.43	0.79	47.73	0.75
0.2000	49.97	0.80	46.70	0.76

FLUID DIELECTRIC PARAMETERS

Date:	21 Jul 2019	Fluid Temp:	22.8	Frequency:	150MHz	Tissue:	Head

Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
100.0000		59.0400	0.6600	54.6300	0.72	8.07%	-8.33%
110.0000		59.2400	0.6800	54.1700	0.73	9.36%	-6.85%
120.0000		56.8700	0.6900	53.7000	0.74	5.90%	-6.76%
130.0000		55.3300	0.7100	53.2300	0.75	3.95%	-5.33%
140.0000		52.6200	0.7100	52.7700	0.75	-0.28%	-5.33%
150.0000		52.1900	0.7200	52.3000	0.76	-0.21%	-5.26%
156.8000	*	50.1704	0.7200	51.9804	0.77	-3.48%	-6.10%
160.0000		49.2200	0.7200	51.8300	0.77	-5.04%	-6.49%
170.0000		48.3700	0.7100	51.3700	0.77	-5.84%	-7.79%
180.0000		49.1800	0.7300	50.9000	0.78	-3.38%	-6.41%
190.0000		47.7300	0.7500	50.4300	0.79	-5.35%	-5.06%
200.0000		46.7000	0.7600	49.9700	0.80	-6.54%	-5.00%

*Channel Frequency Tested

Table 15.11 Fluid Dielectric Parameters 1800MHz HEAD TSL, 23 July 2019

****
Aprel Laboratory
Test Result for UIM Dielectric Parameter
Tue 23/Jul/2019 09:23:33
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
1.7000	40.16	1.34	38.49	1.23
1.7100	40.14	1.35	38.33	1.24
1.7200	40.13	1.35	38.48	1.26
1.7300	40.11	1.36	38.34	1.26
1.7400	40.09	1.37	38.28	1.27
1.7500	40.08	1.37	38.13	1.29
1.7600	40.06	1.38	38.06	1.29
1.7700	40.05	1.38	38.13	1.28
1.7800	40.03	1.39	38.20	1.32
1.7900	40.02	1.39	38.02	1.32
1.8000	40.00	1.40	37.73	1.34
1.8100	40.00	1.40	37.95	1.35
1.8200	40.00	1.40	37.92	1.35
1.8300	40.00	1.40	37.82	1.36
1.8400	40.00	1.40	37.94	1.35
1.8500	40.00	1.40	37.73	1.36
1.8600	40.00	1.40	37.66	1.38
1.8700	40.00	1.40	37.69	1.39
1.8800	40.00	1.40	37.69	1.39
1.8900	40.00	1.40	37.83	1.41
1.9000	40.00	1.40	37.46	1.42

FLUID DIELECTRIC PARAMETERS

Date:	23 Jul 2019	Fluid Temp:	22.9	Frequency:	1800MHz	Tissue:	Head

Freq (MHz)		Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
1700.0000		38.4900	1.2300	40.1600	1.34	-4.16%	-8.21%
1710.0000		38.3300	1.2400	40.1400	1.35	-4.51%	-8.15%
1720.0000	*	38.4800	1.2600	40.1300	1.35	-4.11%	-6.67%
1730.0000		38.3400	1.2600	40.1100	1.36	-4.41%	-7.35%
1740.0000		38.2800	1.2700	40.0900	1.37	-4.51%	-7.30%
1745.0000	*	38.2050	1.2800	40.0850	1.37	-4.69%	-6.57%
1750.0000		38.1300	1.2900	40.0800	1.37	-4.87%	-5.84%
1760.0000		38.0600	1.2900	40.0600	1.38	-4.99%	-6.52%
1770.0000	*	38.1300	1.2800	40.0500	1.38	-4.79%	-7.25%
1780.0000		38.2000	1.3200	40.0300	1.39	-4.57%	-5.04%
1790.0000		38.0200	1.3200	40.0200	1.39	-5.00%	-5.04%
1800.0000		37.7300	1.3400	40.0000	1.40	-5.68%	-4.29%
1810.0000		37.9500	1.3500	40.0000	1.40	-5.12%	-3.57%
1820.0000		37.9200	1.3500	40.0000	1.40	-5.20%	-3.57%
1830.0000		37.8200	1.3600	40.0000	1.40	-5.45%	-2.86%
1840.0000		37.9400	1.3500	40.0000	1.40	-5.15%	-3.57%
1850.0000		37.7300	1.3600	40.0000	1.40	-5.68%	-2.86%
1860.0000	*	37.6600	1.3800	40.0000	1.40	-5.85%	-1.43%
1870.0000		37.6900	1.3900	40.0000	1.40	-5.78%	-0.71%
1880.0000	*	37.6900	1.3900	40.0000	1.40	-5.78%	-0.71%
1890.0000		37.8300	1.4100	40.0000	1.40	-5.43%	0.71%
1900.0000		37.4600	1.4200	40.0000	1.40	-6.35%	1.43%

*Channel Frequency Tested

16.0 SYSTEM VERIFICATION TEST RESULTS

Table 16.1 System Verification Results 835MHz HEAD TSL, 2 July 2019

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
02 July 2019		835	D835V2		4d075
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	22.7	25	30%	250	15
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
41.50	41.50	0.00%	0.90	0.90	0.00%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
2.42	2.41	0.41%	1.57	1.55	0.64%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
9.68	9.45	2.38%	6.28	6.11	2.71%

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.

Table 16.2 System Verification Results 835MHz HEAD TSL, 8 July 2019

System Verification Test Results

Date		Frequency (MHz)	Validation Source		
			P/N		S/N
08 July 2019		835	D835V2		4d075
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	22.5	21	34%	250	15

Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
40.64	41.50	-2.07%	0.89	0.90	-1.11%

Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
2.37	2.41	-1.66%	1.54	1.55	-1.28%

Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
9.48	9.45	0.32%	6.16	6.11	0.82%

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.

Table 16.3 System Verification Results 835MHz HEAD TSL, 11 July 2019

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
11 July 2019		835	D835V2		4d075
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	21.8	20	50%	250	15
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
39.53	41.50	-4.75%	0.86	0.90	-4.44%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
2.33	2.41	-3.32%	1.52	1.55	-2.56%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
9.32	9.45	-1.38%	6.08	6.11	-0.49%

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.

Table 16.4 System Verification Results 750MHz HEAD TSL, 15 July 2019

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
15 Jul 2019		750	D750V3		1061
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	21.2	24	28%	250	15
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
44.91	41.94	7.08%	0.86	0.89	-3.37%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
2.10	2.08	0.96%	1.39	1.37	1.46%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
8.40	8.33	0.84%	5.56	5.48	1.46%

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.

Table 16.5 System Verification Results 1800MHz HEAD TSL, 17 July 2019

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
17 July 2019		1800	D1800V2		247
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	23.1	23	39%	250	10
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
39.47	40.00	-1.33%	1.35	1.40	-3.57%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
9.56	9.63	-0.73%	5.03	5.03	0.00%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
38.24	38.50	-0.68%	20.12	20.10	0.10%

Prior to the SAR evaluations, system checks were performed on the planar section of the phantom and a SPEAG validation dipole in accordance with the procedures described in IEEE 1528-2013, FCC KDB 846224 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.

Table 16.6 System Verification Results 450MHz HEAD TSL, 20 July 2019

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
20 July 2019		450	D450V3		1068
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	23.5	24	35%	250	15
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
44.48	43.50	2.25%	0.89	0.87	2.30%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
1.17	1.13	3.54%	0.78	0.75	3.98%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
4.68	4.53	3.31%	3.13	3.02	3.71%

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.

Table 16.7 System Verification Results 150MHz HEAD TSL, 21 July 2019

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
21 July 2019		150	CLA-150		4007
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	22.8	22	39%	1000	0
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
52.19	52.30	-0.21%	0.72	0.76	-5.26%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
3.94	3.90	1.03%	2.60	2.58	0.78%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
3.94	3.87	1.81%	2.60	2.56	1.56%

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.

Table 16.7 System Verification Results 1800MHz HEAD TSL, 23 July 2019

System Verification Test Results					
Date		Frequency (MHz)	Validation Source		
			P/N		S/N
23 July 2019		1800	D1800V2		247
Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Source Spacing (mm)
Head	22.9	22	42%	250	10
Fluid Parameters					
Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation
37.73	40.00	-5.68%	1.34	1.40	-4.29%
Measured SAR					
1 gram			10 gram		
Measured	Target	Deviation	Measured	Target	Deviation
10.20	9.63	5.92%	5.36	5.03	6.56%
Measured SAR Normalized to 1.0W					
1 gram			10 gram		
Normalized	Target	Deviation	Normalized	Target	Deviation
40.80	38.50	5.97%	21.44	20.10	6.67%

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.

17.0 MEASUREMENT SYSTEM SPECIFICATIONS

Table 17.1 Measurement System

SAR Measurement System	
Celltech Labs Inc. SAR measurement facility employs a Dosimetric Assessment System (DASY™) manufactured by Schmid & Partner Engineering AG (SPEAG™) of Zurich, Switzerland. The DASY6 measurement system is comprised of the measurement server, a robot controller, a computer, a near-field probe, a probe alignment sensor, an Elliptical Planar Phantom (ELI) phantom and a specific anthropomorphic mannequin (SAM) phantom for Head and/or Body SAR evaluations. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF). A cell controller system contains the power supply, robot controller and a teach pendant (Joystick) to control the robot's servo motors. The Staubli robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical form the DAE to digital electronic signal and transfers data to the DASY6 measurement server. The DAE4 utilizes a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16-bit AD-converter, a command decoder and a control logic unit. Transmission to the DASY6 measurement server is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe-mounting device includes two different sensor systems for frontal and sidewise probe contacts. The sensor systems are also used for mechanical surface detection and probe collision detection. The robot utilizes a controller with built in VME-bus computer.	
	
DASY 6 SAR System with SAM Phantom	**DASY 6 Measurement Controller**

Table 17.2 Measurement System Specifications

Measurement System Specification	
Specifications	
Positioner	Stäubli Unimation Corp. Robot Model: TX90XL
Repeatability	+/- 0.035 mm
No. of axis	6.0
Data Acquisition Electronic (DAE) System	
Cell Controller	
Processor	Intel(R) Core(TM) i7-7700
Clock Speed	3.60 GHz
Operating System	Windows 10 Professional
Data Converter	
Features	Signal Amplifier, multiplexer, A/D converter, and control logic
Software	Measurement Software: DASY6, V 6.4.0.12171 / DASY52 V52.10.0.1446
	Postprocessing Software: SEMCAD X, V14.6.10(Deployment Build)
Connecting Lines	Optical downlink for data and status info., Optical uplink for commands and clock
DASY Measurement Server	
Function	Real-time data evaluation for field measurements and surface detection
Hardware	Intel ULV Celeron CPU 400 MHz; 128 MB chip disk; 128 MB RAM
Connections	COM1, COM2, DAE, Robot, Ethernet, Service Interface
E-Field Probe	
Model	EX3DV4
Serial No.	3600
Construction	Triangular core fiber optic detection system
Frequency	10 MHz to 6 GHz
Linearity	±0.2 dB (30 MHz to 3 GHz)
Phantom	
Type	ELI Elliptical Planar Phantom
Shell Material	Fiberglass
Thickness	2mm +/- .2mm
Volume	> 30 Liter

Measurement System Specification

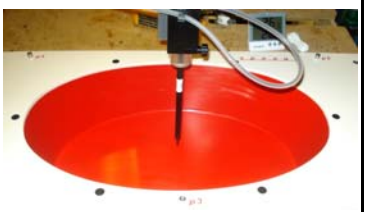
Probe Specification

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 DASY4 device positioner has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65^{O}. The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections.

Device Positioner

18.0 TEST EQUIPMENT LIST

Table 18.1 Equipment List and Calibration

Test Equipment List				
DESCRIPTION	ASSET NO.	SERIAL NO.	DATE CALIBRATED	CALIBRATION DUE
Schmid & Partner DASY 6 System	-	-	-	-
-DASY Measurement Server	00158	1078	CNR	CNR
-Robot	00046	599396-01	CNR	CNR
-DAE4	00019	353	19-Mar-19	19-Mar-20
-EX3DV4 E-Field Probe	00213	3600	26-Mar-19	26-Mar-20
-CLA 30 Validation Dipole	00300	1005	23-Nov-17	23-Nov-20
-CLA150 Validation Dipole	00251	4007	27-Apr-17	27-Apr-20
-D450V3 Validation Dipole	00221	1068	23-Apr-18	23-Apr-21
-D750V3 Validation Dipole	00238	1061	19-Mar-19	19-Mar-22
-D835V2 Validation Dipole	00217	4D075	20-Apr-18	20-Apr-21
-D900V2 Validation Dipole	00020	54	24-Apr-17	24-Apr-20
-D1640/1620-S-2 Validation Dipole	00299	207-00102	7-Nov-17	7-Nov-20
-D2450V2 Validation Dipole*	00219	825	24-Apr-18	24-Apr-21
-D5GHzV2 Validation Dipole	00126	1031	26-Apr-18	26-Apr-21
ELI Phantom	00247	1234	CNR	CNR
SAM Phantom	00154	1033	CNR	CNR
HP 85070C Dielectric Probe Kit	00033	none	CNR	CNR
Gigatronics 8652A Power Meter	00007	1835801	26-Mar-19	26-Mar-22
Gigatronics 80701A Power Sensor	00248	1833687	26-Mar-19	26-Mar-22
Gigatronics 80334A Power Sensor	00237	1837001	26-Mar-19	26-Mar-22
HP 8753ET Network Analyzer	00134	US39170292	29-Dec-17	29-Dec-20
Rohde & Schwarz SMR20 Signal Generator	00006	100104	29-May-17	29-May-20
Amplifier Research 10W1000C Power Amplifier	00041	27887	CNR	CNR
Amplifier Research 5S1G4 Power Amplifier	00106	26235	CNR	CNR
Narda Directional Coupler 3020A	00064	-	CNR	CNR
Traceable VWR Thermometer	00291	-	19-Nov-16	19-Nov-19
Traceable VWR Jumbo Humidity/Thermometer	00295	170120555	17-Feb-17	17-Feb-20
Digital Multi Meter DMR-1800	00250	TE182	6-22-17	6-22-20
Bipolar Power Supply 6299A	00086	1144A02155	CNR	CNR
DC-18G 10W 30db Attenuator	00102	-	COU	COU
R&S FSP40 Spectrum Analyzer	00241	100500	15-May-18	15-May-21
RF Cable-SMA	00311	-	CNR	CNR
HP Calibration Kit	00145	-	10-Feb-17	10-Feb-20
Rental Equipment				
R&S Base Station (Mobile Phone)	n/a	153128	8-Apr-19	8-Apr-20

CNR = Calibration Not Required

SB=Stand By

COU = Calibrate on Use

* Per KDB 865664 3.2.2; Supporting documentation is included in the report for validation dipoles exceeding the recommended anual calibration cycle.
When applicable, reference Appendix F

19.0 SYSTEM VALIDATION SUMMARY

System Validation Summary											
Frequency (MHz)	Validation Date	Probe Model	Probe S/N	Validation Source	Source S/N	Tissue	Tissue Dielectrics		Validation Results		
							Permitivity	Conductivity	Sensitivity	Linearity	Isotropy
30	31-May-19	EX3DV4	3600	CLA-30	1005	Head	52.40	0.75	Pass	Pass	Pass
150	27-Jun-18	EX3DV4	3600	CLA-150	4007	Body	66.48	0.79	Pass	Pass	Pass
150	12-Aug-19	EX3DV4	3600	CLA-150	4007	Head	49.46	0.79	Pass	Pass	Pass
450	08-May-17	EX3DV4	3600	D450V3	1068	Body	54.65	0.95	Pass	Pass	Pass
450	13-Aug-19	EX3DV4	3600	D450V3	1068	Head	43.70	0.83	Pass	Pass	Pass
750	20-Jun-19	EX3DV4	3600	D750V3	1061	Head	44.27	0.83	Pass	Pass	Pass
835	03-May-18	EX3DV4	3600	D835V2	4d075	Body	53.31	1.00	Pass	Pass	Pass
835	15-Aug-19	EX3DV4	3600	D835V2	4d075	Head	42.01	0.89	Pass	Pass	Pass
900	08-May-18	EX3DV4	3600	D900V2	045	Body	54.46	1.10	Pass	Pass	Pass
900	02-Aug-17	EX3DV4	3600	D900V2	045	Head	39.10	0.93	Pass	Pass	Pass
1640	06-May-18	EX3DV4	3600	1620-S-2	207-00102	Body	39.87	1.27	Pass	Pass	Pass
1640	07-May-18	EX3DV4	3600	1620-S-2	207-00102	Head	39.87	1.27	Pass	Pass	Pass
1800	21-Jul-17	EX3DV4	3600	D1800V2	247	Body	54.77	1.53	Pass	Pass	Pass
1800	18-Jun-19	EX3DV4	3600	D1800V2	247	Head	41.20	1.39	Pass	Pass	Pass
2450	05-Apr-19	EX3DV4	3600	D2450V2	825	Body	51.55	1.90	Pass	Pass	Pass
2450	02-Apr-19	EX3DV4	3600	D2450V2	825	Head	36.58	1.85	Pass	Pass	Pass
5250	24-Jul-18	EX3DV4	3600	D5GHzV2	1031	Body	46.42	5.69	Pass	Pass	Pass
5250	24-Jul-18	EX3DV4	3600	D5GHzV2	1031	Head	35.96	4.99	Pass	Pass	Pass
5750	25-Jul-18	EX3DV4	3600	D5GHzV2	1031	Body	47.10	5.60	Pass	Pass	Pass

20.0 FLUID COMPOSITION

Table 20.1 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 20.2 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

Table 20.3 Fluid Composition 750MHz HEAD TSL

750			750MHz 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 20.4 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 20.5 Fluid Composition 1800MHz HEAD TSL

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

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

Table 20.6 Fluid Composition 2450MHz HEAD TSL

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

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

Table 20.7 Fluid Composition 5250MHz BODY TSL

This is a proprietary composition by SPEAG.

APPENDIX A – SYSTEM VERIFICATION PLOTS

Date/Time: 7/2/2019 1:00:44 PM

Test Laboratory: Celltech Labs

SPC-835H July 2 2019

DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN: 4d075

Communication System: UID 0, CW (0); Communication System Band: FullSpan (0.0 - 6000.0 MHz); Frequency: 835 MHz;Communication System PAR: 0 dB; PMF: 1

Medium: TSL_835H[02JL19]
Medium parameters used: f = 835 MHz; σ = 0.9 S/m; ε_r = 41.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

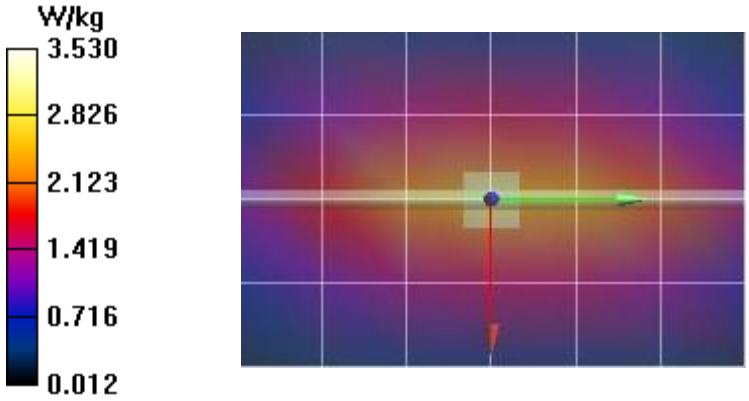
- Probe: EX3DV4 - SN3600; ConvF(7.96, 7.96, 7.96); Calibrated: 3/26/2019, ConvF(7.96, 7.96, 7.96); Calibrated: 3/26/2019, ConvF(7.96, 7.96, 7.96); Calibrated: 3/26/2019;
  - Modulation Compensation:
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

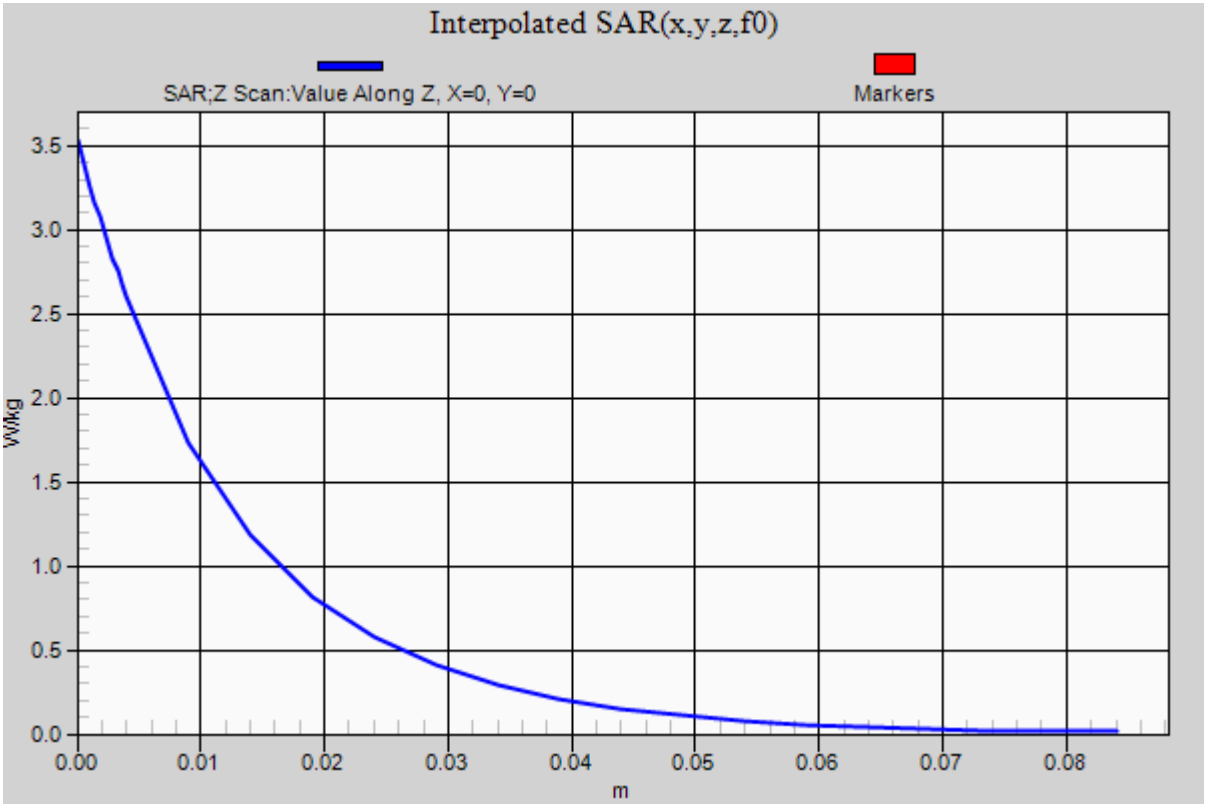
Frequency: 835 MHz

SPC/SPC 835H,Target=[2.41][1.55]W/kg,Input 250mW/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.57 W/kg

SPC/SPC 835H,Target==[2.41][1.55]W/kg,Input 250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 53.05 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 3.65 W/kg
SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.57 W/kg
Maximum value of SAR (measured) = 2.61 W/kg

SPC/SPC 835H,Target==[2.41][1.55]W/kg,Input 250mW/Z Scan (1x1x28): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Penetration depth = 12.94 (12.36, 13.65) [mm]
Maximum value of SAR (interpolated) = 3.53 W/kg





Date/Time: 7/8/2019 10:46:57 AM

Test Laboratory: Celltech Labs

SPC-835H July 8 2019

DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:4d075

Communication System: UID 0, CW (0); Communication System Band: FullSpan (0.0 - 6000.0 MHz); Frequency: 835 MHz;Communication System PAR: 0 dB; PMF: 1

Medium: TSL_835H[08JL19]
Medium parameters used: f = 835 MHz; σ = 0.89 S/m; ε_r = 40.64; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

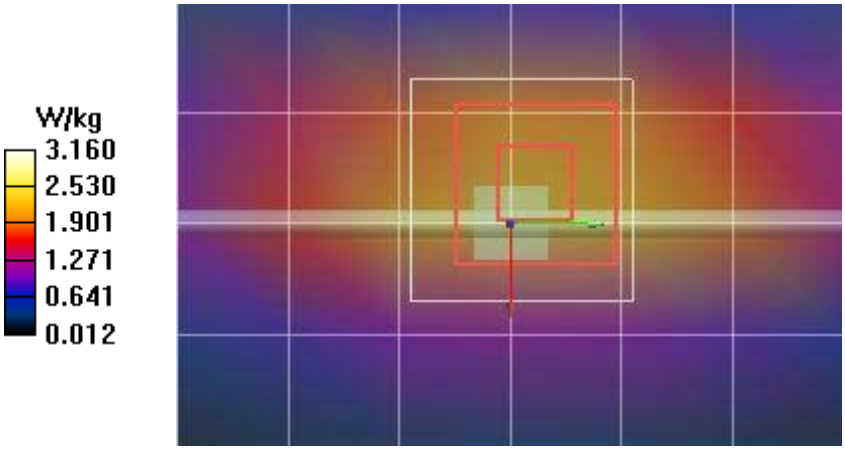
- Probe: EX3DV4 - SN3600; ConvF(7.96, 7.96, 7.96); Calibrated: 3/26/2019, ConvF(7.96, 7.96, 7.96); Calibrated: 3/26/2019, ConvF(7.96, 7.96, 7.96); Calibrated: 3/26/2019;
  - Modulation Compensation:
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

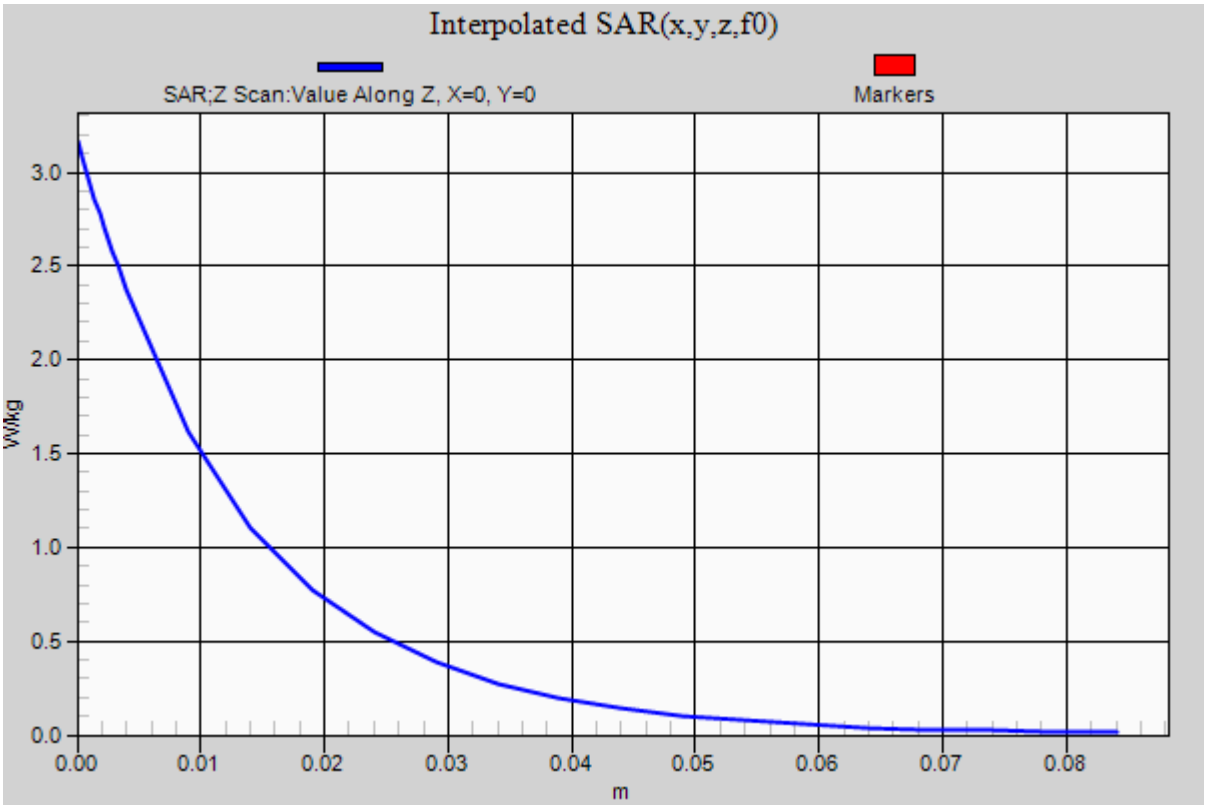
Frequency: 835 MHz

SPC/SPC 835H,Target==[2.41][1.55]W/kg,Input 250mW/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.39 W/kg

SPC/SPC 835H,Target==[2.41][1.55]W/kg,Input 250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 51.31 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 3.58 W/kg
SAR(1 g) = 2.37 W/kg; SAR(10 g) = 1.54 W/kg
Maximum value of SAR (measured) = 2.55 W/kg

SPC/SPC 835H,Target==[2.41][1.55]W/kg,Input 250mW/Z Scan (1x1x28): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Penetration depth = 13.32 (12.93, 13.93) [mm]
Maximum value of SAR (interpolated) = 3.16 W/kg





Date/Time: 7/11/2019 10:57:12 AM

Test Laboratory: Celltech Labs

SPC-835H July 11 2019

DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:4d075

Communication System: UID 0, CW (0); Communication System Band: FullSpan (0.0 - 6000.0 MHz); Frequency: 835 MHz;Communication System PAR: 0 dB; PMF: 1

Medium: TSL_835H[11JL19]
Medium parameters used: f = 835 MHz; σ = 0.86 S/m; ε_r = 39.53; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

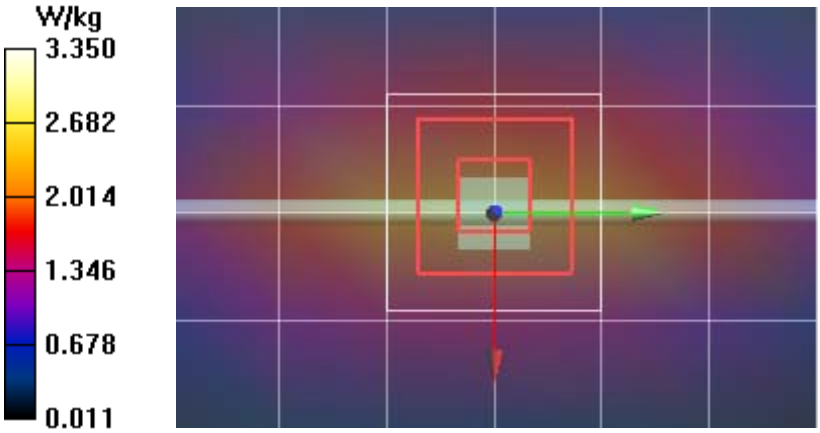
- Probe: EX3DV4 - SN3600; ConvF(7.96, 7.96, 7.96); Calibrated: 3/26/2019, ConvF(7.96, 7.96, 7.96); Calibrated: 3/26/2019, ConvF(7.96, 7.96, 7.96); Calibrated: 3/26/2019;
  - Modulation Compensation:
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

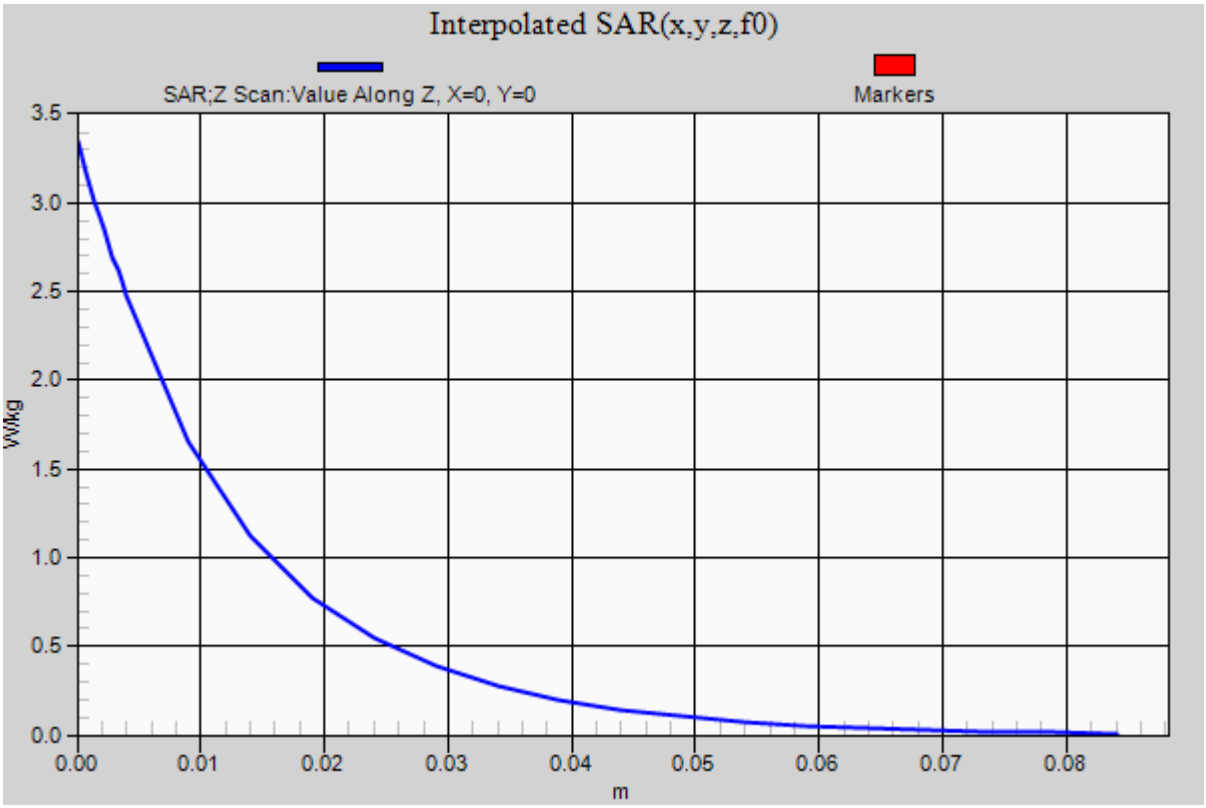
Frequency: 835 MHz

SPC/SPC 835H,Target=[2.41][1.55]W/kg,Input 250mW/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.47 W/kg

SPC/SPC 835H,Target=[2.41][1.55]W/kg,Input 250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 53.77 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 3.52 W/kg
SAR(1 g) = 2.33 W/kg; SAR(10 g) = 1.52 W/kg
Maximum value of SAR (measured) = 2.52 W/kg

SPC/SPC 835H,Target==[2.41][1.55]W/kg,Input 250mW/Z Scan (1x1x28): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Penetration depth = 12.93 (12.33, 13.62) [mm]
Maximum value of SAR (interpolated) = 3.35 W/kg





Date/Time: 7/15/2019 4:00:48 PM

Test Laboratory: Celltech Labs

SPC-750H July 16 2019

DUT: Dipole 750 MHz D750V3; Type: D750V3; Serial: D750V3 - SN:1061

Communication System: UID 0, CW (0); Communication System Band: FullSpan (0.0 - 6000.0 MHz); Frequency: 750 MHz;Communication System PAR: 0 dB; PMF: 1

Medium: TSL_750H[15JL19]
Medium parameters used: f = 750 MHz; σ = 0.86 S/m; ε_r = 44.91; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

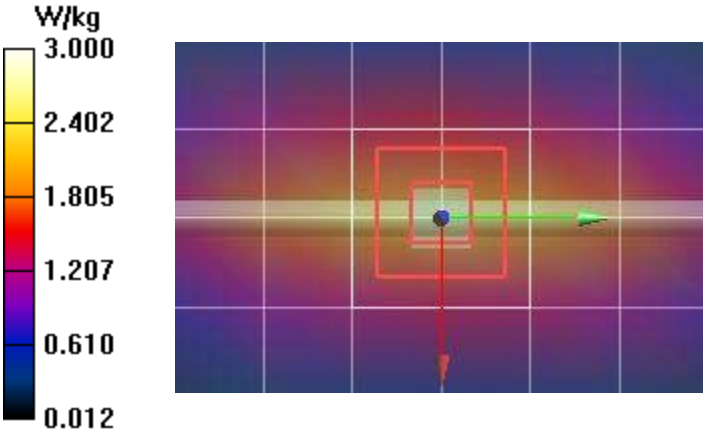
- Probe: EX3DV4 - SN3600; ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019;
  - Modulation Compensation:
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

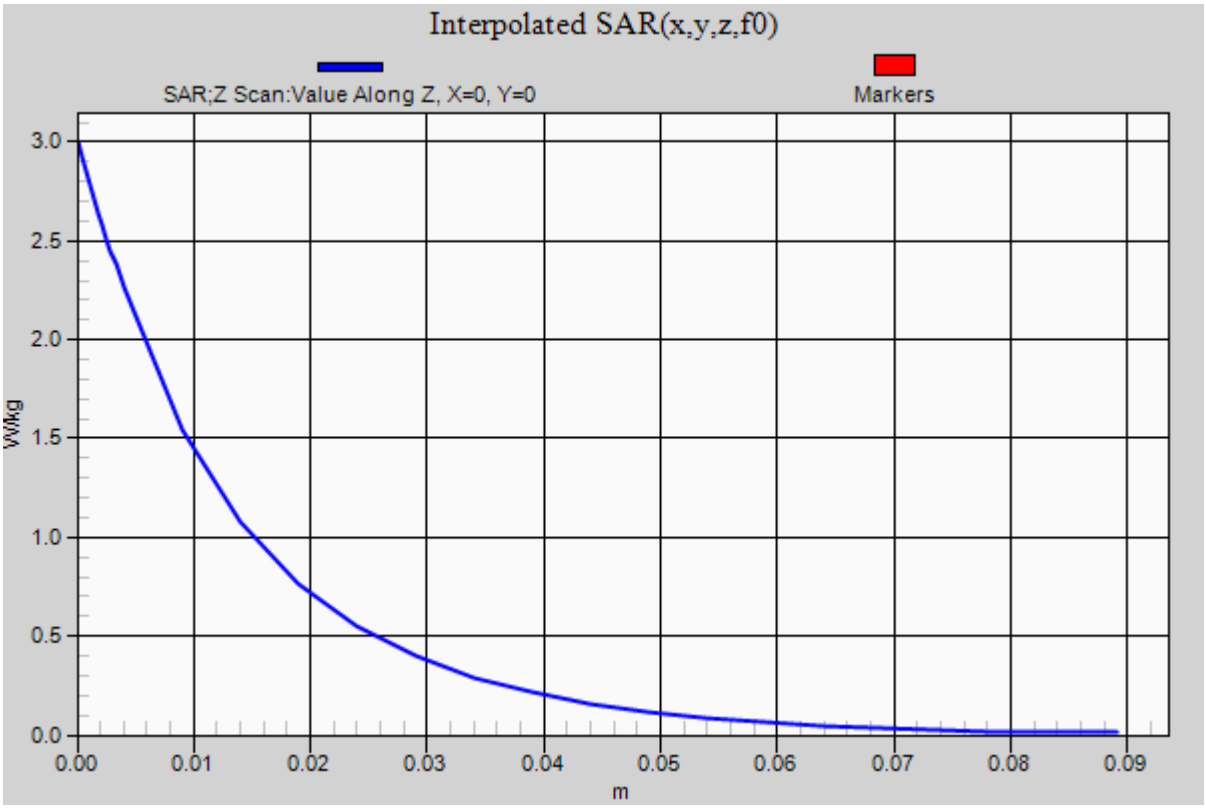
Frequency: 750 MHz

SPC/SPC 750H,Target=[2.08] [1.37] W/kg,Input 250mW 2/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.25 W/kg

SPC/SPC 750H,Target=[2.08] [1.37] W/kg,Input 250mW 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 51.17 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 3.09 W/kg
SAR(1 g) = 2.1 W/kg; SAR(10 g) = 1.39 W/kg
Maximum value of SAR (measured) = 2.26 W/kg

SPC/SPC 750H,Target=[2.08] [1.37] W/kg,Input 250mW 2/Z Scan (1x1x29): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Penetration depth = 13.77 (13.05, 14.60) [mm]
Maximum value of SAR (interpolated) = 3.00 W/kg





Date/Time: 7/17/2019 1:19:42 PM

Test Laboratory: Celltech Labs

SPC-1800H July 17 2019

DUT: Dipole 1800 MHz D1800V2; Type: D1800V2; Serial: D1800V2 - SN:247

Communication System: UID 0, CW (0); Communication System Band: FullSpan (0.0 - 6000.0 MHz); Frequency: 1800 MHz;Communication System PAR: 0 dB; PMF: 1
Medium: TSL_1800H[17JL19]
Medium parameters used: f = 1800 MHz; σ = 1.35 S/m; ε_r = 39.47; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)
DASY Configuration:

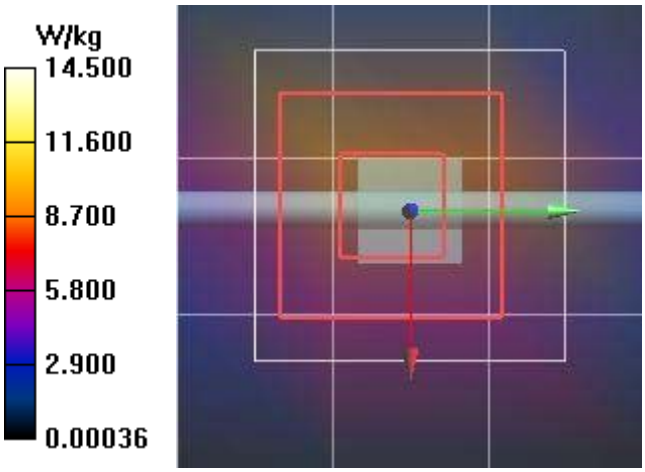
- Probe: EX3DV4 - SN3600; ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019, ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019, ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019;
  - Modulation Compensation:
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 16.0, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

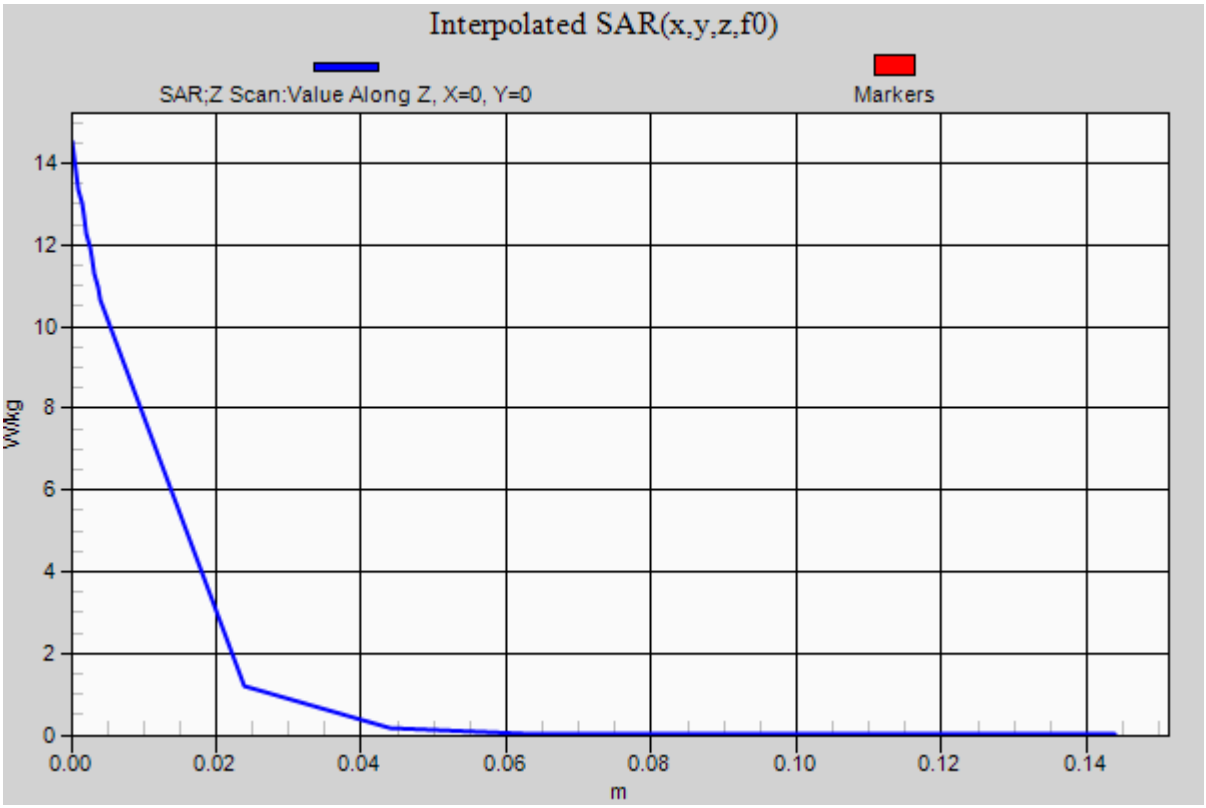
Frequency: 1800 MHz

SPC/SPC 1800H Input=250mW, Target=[9.63][5.03]W/kg/Area Scan (4x4x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 9.17 W/kg

SPC/SPC 1800H Input=250mW, Target=[9.63][5.03]W/kg/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 89.14 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 17.5 W/kg
SAR(1 g) = 9.56 W/kg; SAR(10 g) = 5.03 W/kg
Maximum value of SAR (measured) = 10.7 W/kg

SPC/SPC 1800H Input=250mW, Target=[9.63][5.03]W/kg/Z Scan (1x1x19): Measurement grid: dx=20mm, dy=20mm, dz=20mm
Penetration depth = n/a (n/a, 9.184) [mm]
Maximum value of SAR (interpolated) = 14.5 W/kg





Date/Time: 7/20/2019 1:44:38 PM
Test Laboratory: Celltech Labs

SPC-450H Jul 20 2019

DUT: Dipole 450 MHz D450V3; Type: D450V3; Serial: D450V3 - SN:1068

Communication System: UID 0, CW (0); Communication System Band: FullSpan (0.0 - 6000.0 MHz); Frequency: 450 MHz;Communication System PAR: 0 dB; PMF: 1
Medium: TSL_450H[20JL19]
Medium parameters used: f = 450 MHz; σ = 0.89 S/m; ε_r = 44.48; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)
DASY Configuration:

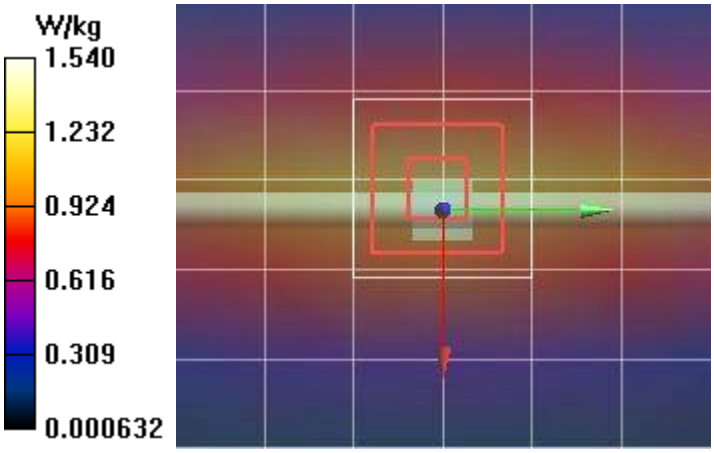
- Probe: EX3DV4 - SN3600; ConvF(8.79, 8.79, 8.79); Calibrated: 3/26/2019, ConvF(8.79, 8.79, 8.79); Calibrated: 3/26/2019, ConvF(8.79, 8.79, 8.79); Calibrated: 3/26/2019;
  - Modulation Compensation:
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

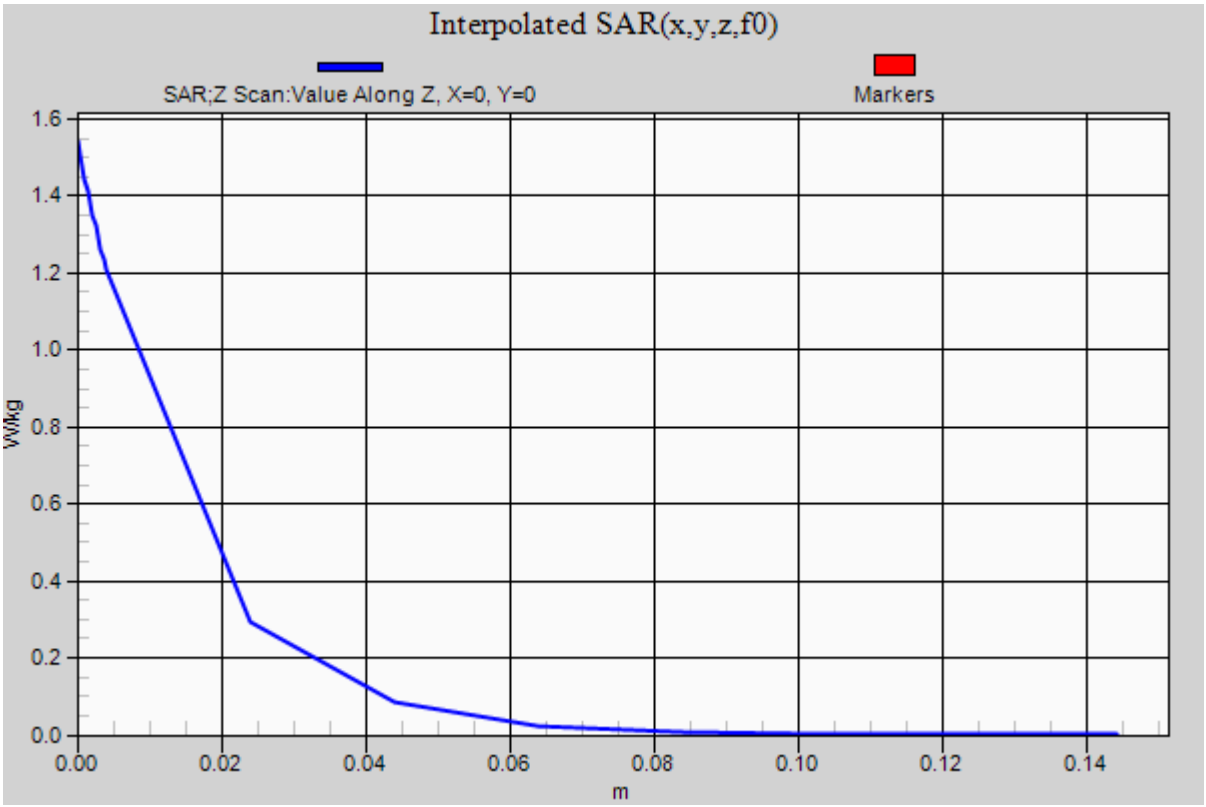
Frequency: 450 MHz

SPC/SPC 450H, Input 250mW, Taget[1.13][0.753] W/kg/Area Scan (6x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.25 W/kg

SPC/SPC 450H, Input 250mW, Taget[1.13][0.753] W/kg/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 36.95 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.74 W/kg
SAR(1 g) = 1.17 W/kg; SAR(10 g) = 0.783 W/kg
Maximum value of SAR (measured) = 1.26 W/kg

SPC/SPC 450H, Input 250mW, Taget[1.13][0.753] W/kg/Z Scan (1x1x19): Measurement grid: dx=20mm, dy=20mm, dz=20mm
Penetration depth = n/a (n/a, 14.13) [mm]
Maximum value of SAR (interpolated) = 1.54 W/kg





Date/Time: 7/21/2019 11:39:59 AM

Test Laboratory: Celltech Labs

SPC-150H Jul 21 2019
DUT: CLA-150; Type: CLA-150; Serial: 4007

Communication System: UID 0, CW (0); Communication System Band: FullSpan (0.0 - 6000.0 MHz); Frequency: 150 MHz;Communication System PAR: 0 dB; PMF: 1
Medium: TSL_150H[21JL19]
Medium parameters used: f = 150 MHz; σ = 0.72 S/m; ε_r = 52.19; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)
DASY Configuration:

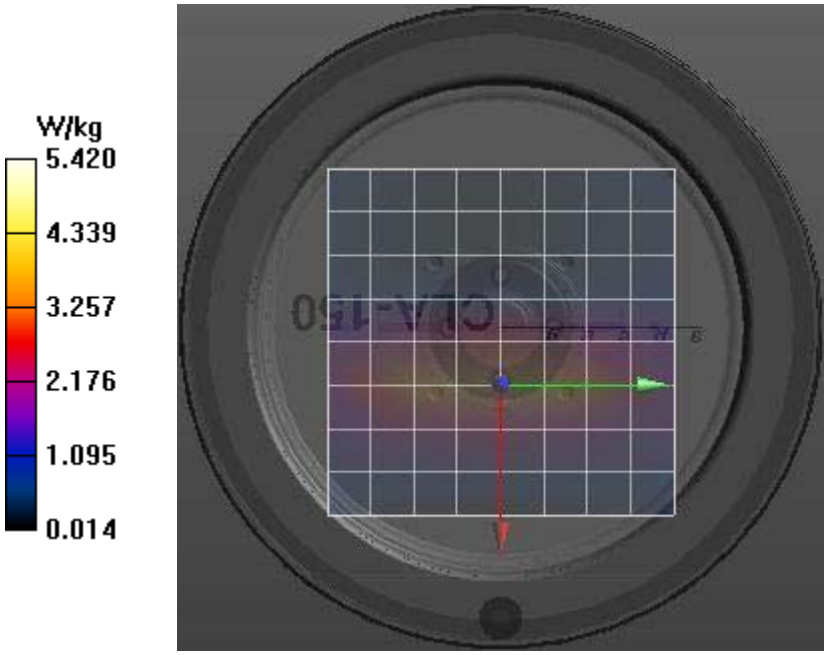
- Probe: EX3DV4 - SN3600; ConvF(9.72, 9.72, 9.72); Calibrated: 3/26/2019, ConvF(9.72, 9.72, 9.72); Calibrated: 3/26/2019, ConvF(9.72, 9.72, 9.72); Calibrated: 3/26/2019;
  - Modulation Compensation:
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 16.0, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

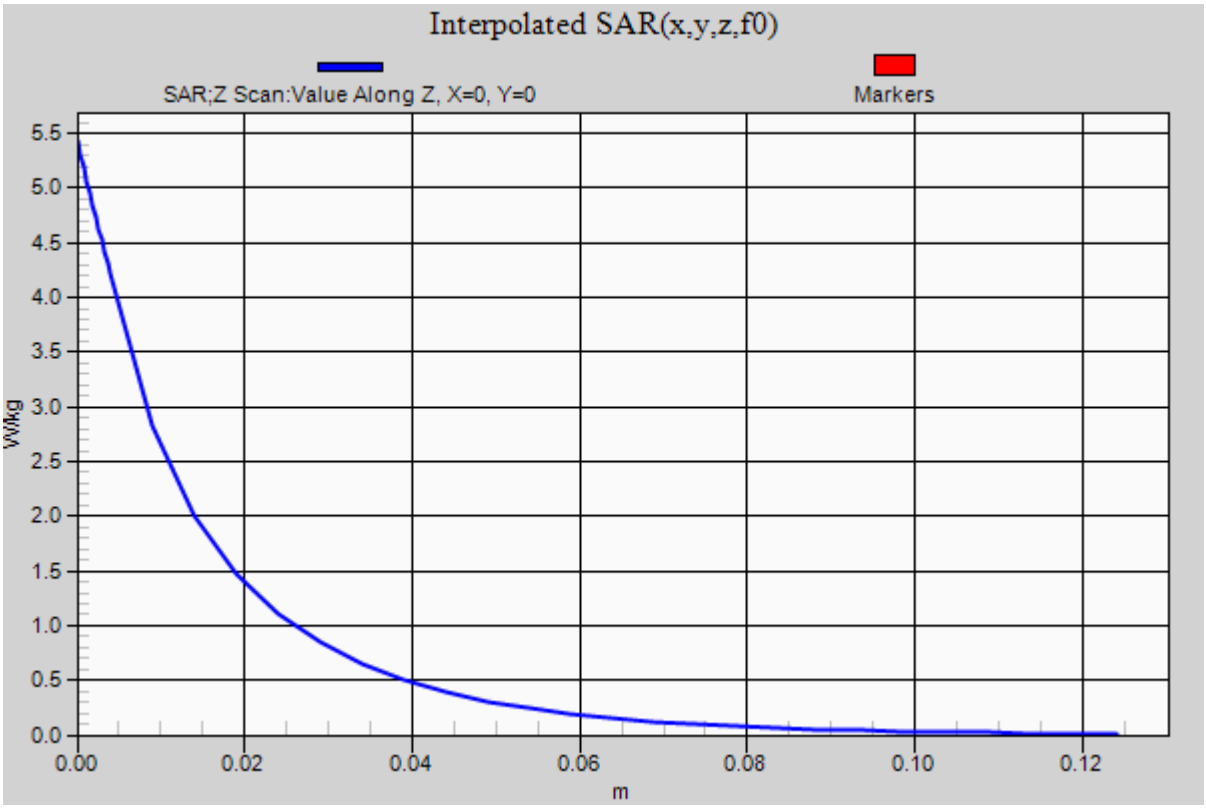
Frequency: 150 MHz

SPC/SPC 150H Input=1.0W, Target=3.90W/kg/Area Scan (9x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 4.25 W/kg

SPC/SPC 150H Input=1.0W, Target=3.90W/kg/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 77.63 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 6.09 W/kg
SAR(1 g) = 3.94 W/kg; SAR(10 g) = 2.6 W/kg
Maximum value of SAR (measured) = 4.22 W/kg

SPC/SPC 150H Input=1.0W, Target=3.90W/kg/Z Scan (1x1x36): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Penetration depth = 14.60 (12.54, 16.17) [mm]
Maximum value of SAR (interpolated) = 5.42 W/kg





Date/Time: 7/23/2019 9:51:00 AM

Test Laboratory: Celltech Labs

SPC-1800H July 23 2019

DUT: Dipole 1800 MHz D1800V2; Type: D1800V2; Serial: D1800V2 - SN:247

Communication System: UID 0, CW (0); Communication System Band: FullSpan (0.0 - 6000.0 MHz); Frequency: 1800 MHz;Communication System PAR: 0 dB; PMF: 1
Medium: TSL_1800H[23JL19]
Medium parameters used: f = 1800 MHz; σ = 1.34 S/m; ε_r = 37.73; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)
DASY Configuration:

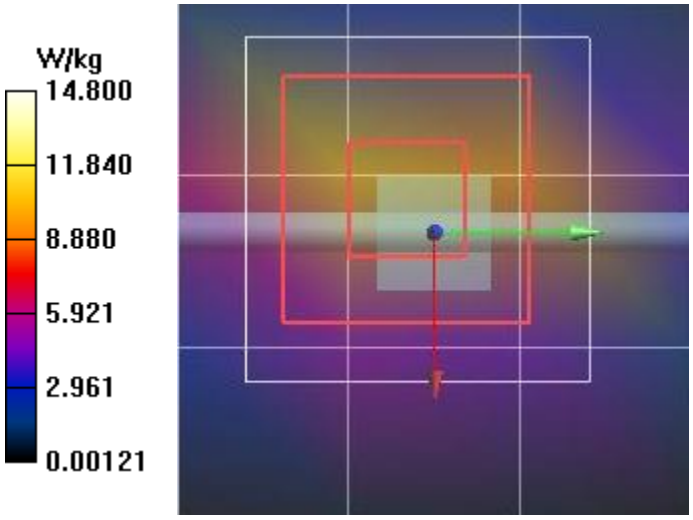
- Probe: EX3DV4 - SN3600; ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019, ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019, ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019;
  - Modulation Compensation:
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 16.0, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

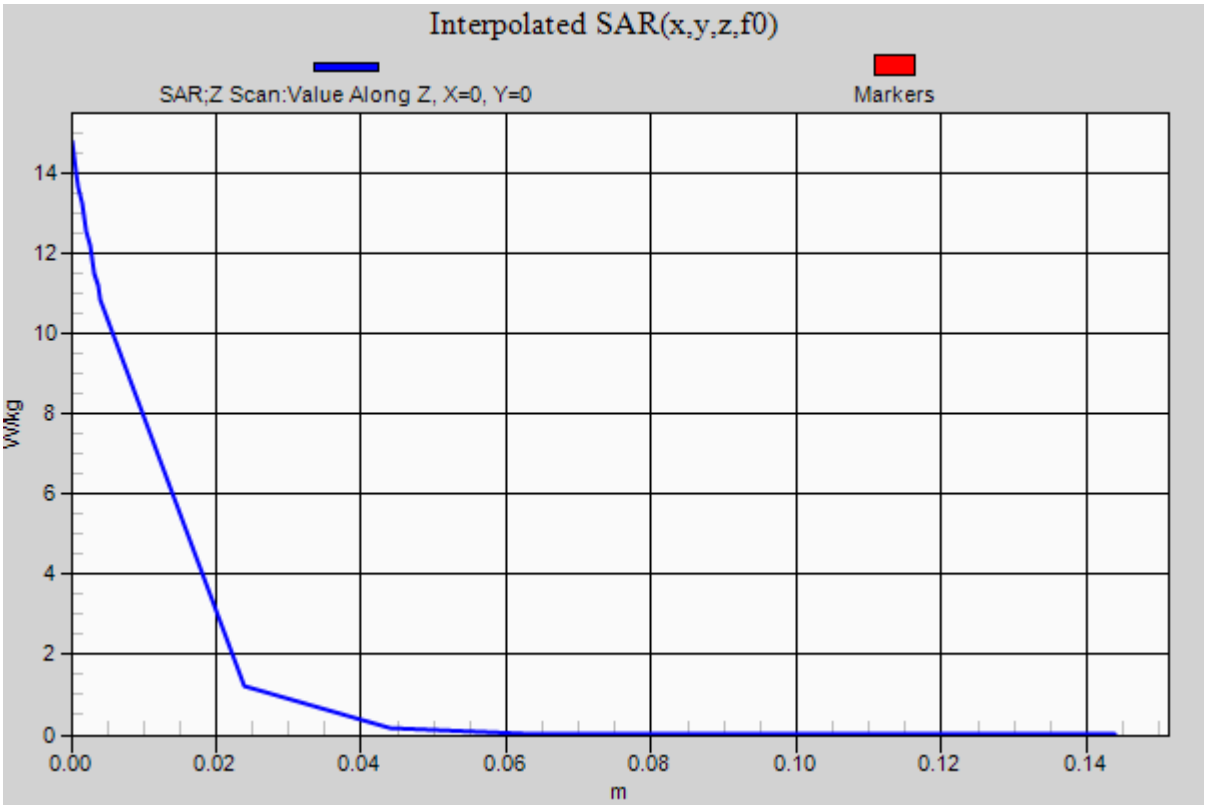
Frequency: 1800 MHz

SPC/SPC 1800H Input=250mW, Target=[9.63][5.03]W/kg/Area Scan (4x4x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 10.7 W/kg

SPC/SPC 1800H Input=250mW, Target=[9.63][5.03]W/kg/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 90.03 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 18.7 W/kg
SAR(1 g) = 10.2 W/kg; SAR(10 g) = 5.36 W/kg
Maximum value of SAR (measured) = 11.4 W/kg

SPC/SPC 1800H Input=250mW, Target=[9.63][5.03]W/kg/Z Scan (1x1x19): Measurement grid: dx=20mm, dy=20mm, dz=20mm
Penetration depth = n/a (n/a, 9.209) [mm]
Maximum value of SAR (interpolated) = 14.8 W/kg





APPENDIX B – MEASUREMENT PLOTS OF MAXIMUM MEASURED SAR

Plot B11

Date/Time: 7/14/2019 3:04:53 PM

Test Laboratory: Celltech Labs

Harris EVM3- Compliance Band 13&14 LTE EVAL- July 14 2019 -1

DUT: EVM3-U17; Type: PTT;

Communication System: UID 0, CW (0); Communication System Band: D835 (835.0 MHz); Frequency: 806 MHz;Communication System PAR: 0 dB; PMF: 1

Medium: TSL_835H[11JL19]
Medium parameters used (interpolated): f = 806 MHz; σ = 0.823 S/m; ε_r = 40.013; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019;
  - Modulation Compensation:
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

Frequency: 806 MHz

835H/B11-BODY, Harris EVM3 U17, P9, T9, B1-02, LMR, CW, 806MHz/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm

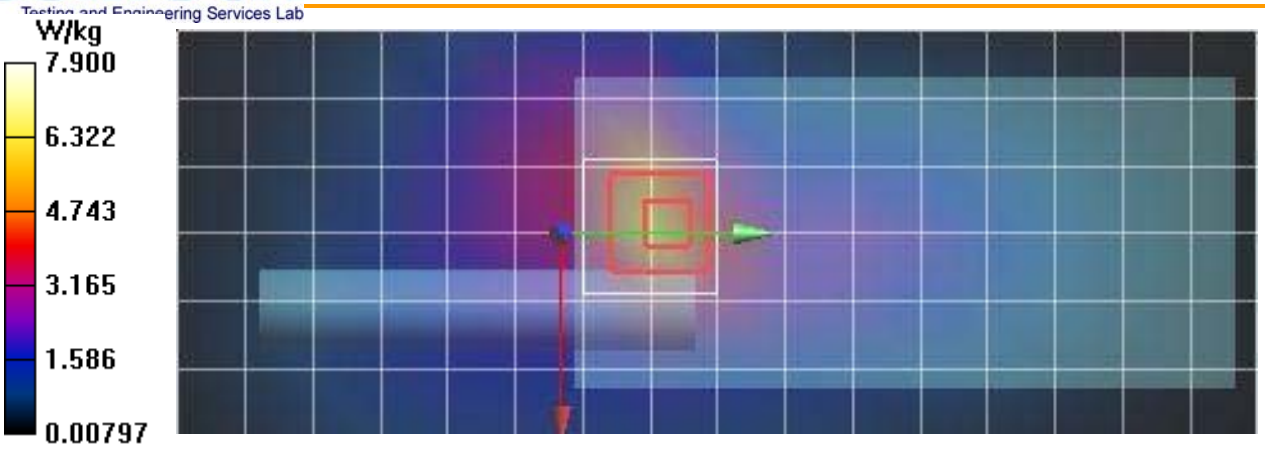
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 5.85 W/kg

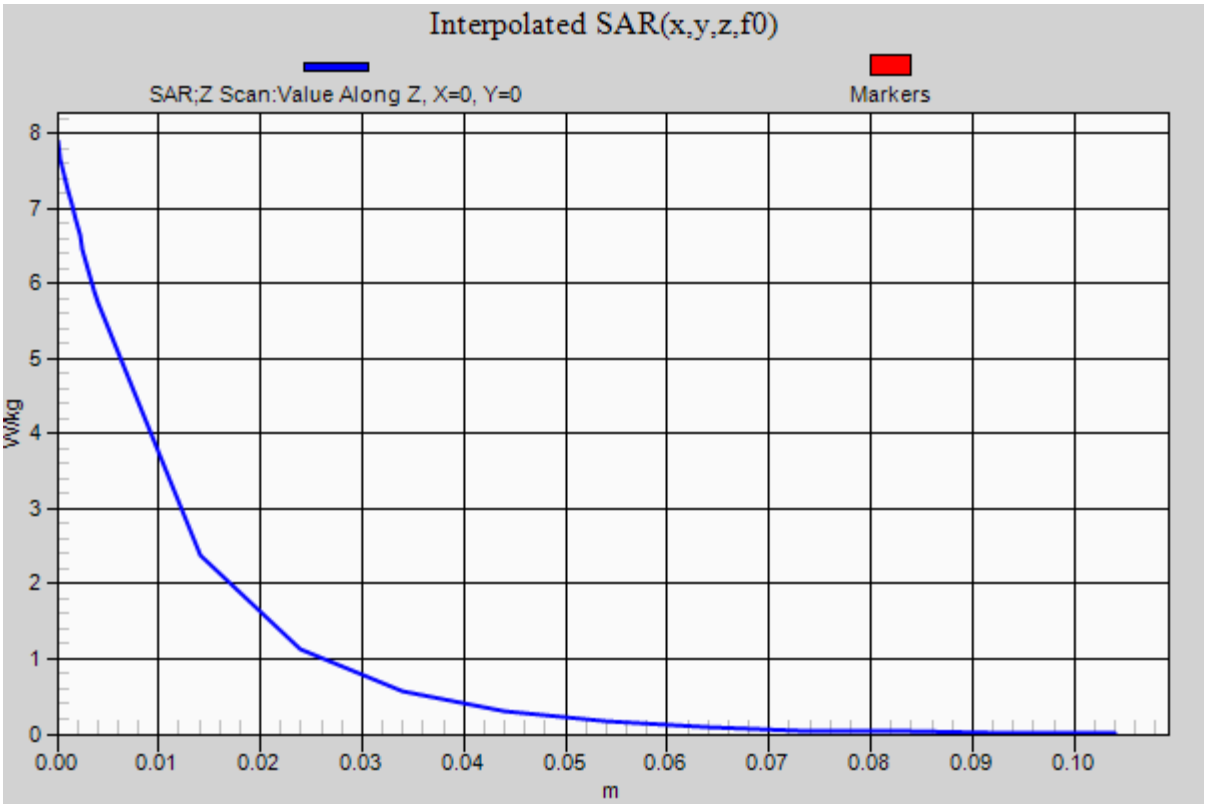
835H/B11-BODY, Harris EVM3 U17, P9, T9, B1-02, LMR, CW, 806MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 60.89 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 10.5 W/kg
SAR(1 g) = 5.79 W/kg; SAR(10 g) = 3.43 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 6.07 W/kg

835H/B11-BODY, Harris EVM3 U17, P9, T9, B1-02, LMR, CW, 806MHz/Z Scan (1x1x22): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 11.42 (n/a, 13.39) [mm]
Maximum value of SAR (interpolated) = 7.90 W/kg





Plot B48

Date/Time: 7/11/2019 4:46:01 PM,

Test Laboratory: Celltech Labs

Harris EVM3- Compliance Band 13&14 LTE EVAL- July 11 2019 -1

DUT: EVM3-U17; Type: PTT; Communication System: UID 10175 - CAG, LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK); Communication System Band: Band 5, E-UTRA/FDD (824.0 - 849.0 MHz); Frequency: 836.5 MHz;Communication System PAR: 5.72 dB; PMF: 1.13894

Medium: TSL_835H[11JL19]
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.862 S/m; ε_r = 39.538; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: EX3DV4 - SN3600; ConvF(7.96, 7.96, 7.96); Calibrated: 3/26/2019, ConvF(7.96, 7.96, 7.96); Calibrated: 3/26/2019, ConvF(7.96, 7.96, 7.96); Calibrated: 3/26/2019;
  - Modulation Compensation: PMR for UID 10175 - CAG, Calibrated: 3/26/2019
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

Frequency: 836.5 MHz

835H/B48-BODY, Harris EVM3 U17, P2, T9, B26/STRAP, LTE B5, BW-10, CH-M, RB1-L, 836.5 MHz/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.467 W/kg

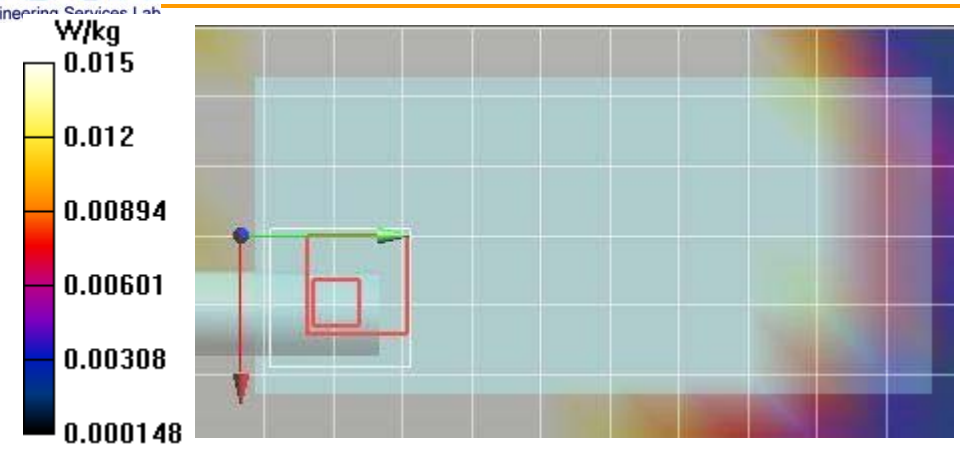
835H/B48-BODY, Harris EVM3 U17, P2, T9, B26/STRAP, LTE B5, BW-10, CH-M, RB1-L, 836.5 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 3.551 V/m; Power Drift = 0.26 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.320 W/kg; SAR(10 g) = 0.133 W/kg

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.416 W/kg

835H/B48-BODY, Harris EVM3 U17, P2, T9, B26/STRAP, LTE B5, BW-10, CH-M, RB1-L, 836.5 MHz/Z Scan (1x1x28): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 45.14 (20.27, 107.0) [mm]
Maximum value of SAR (interpolated) = 0.0148 W/kg



Plot B77

Date/Time: 7/16/2019 3:24:13 PM

Test Laboratory: Celltech Labs

Harris EVM3- Compliance Band 12&17 LTE EVAL- July 16 2019

DUT: EVM3-U17; Type: PTT

Communication System: UID 10175 - CAG, LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK); Communication System Band: Band 12, E-UTRA/FDD (699.0 - 716.0 MHz); Frequency: 707.5 MHz;Communication System PAR: 5.72 dB; PMF: 1.13894

Medium: TSL_750H[15JL19]
Medium parameters used (interpolated): f = 707.5 MHz; σ = 0.82 S/m; ε_r = 45.763; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019;
  - Modulation Compensation: PMR for UID 10175 - CAG, Calibrated: 3/26/2019
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

Frequency: 707.5 MHz

750H/B77-BODY, Harris EVM3 U17, P7, T9, B26/Strap, LTE B12, BW-10, CH-M, RB1-H, 707.5 MHz/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

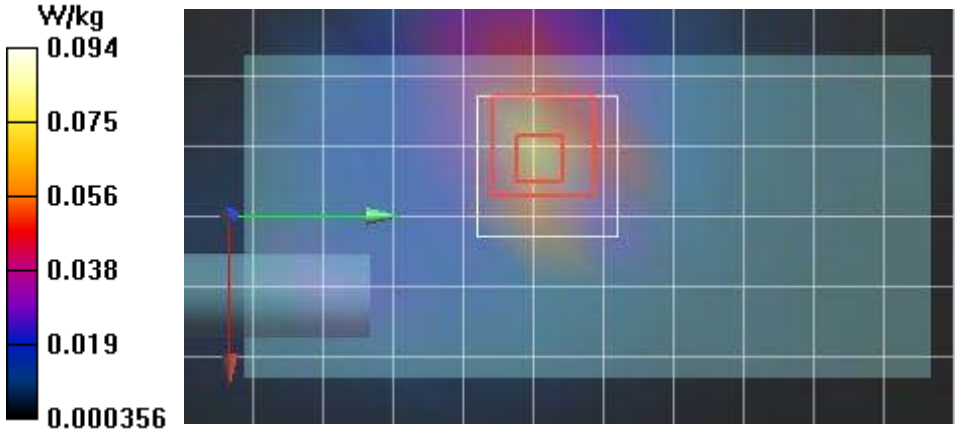
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.0711 W/kg

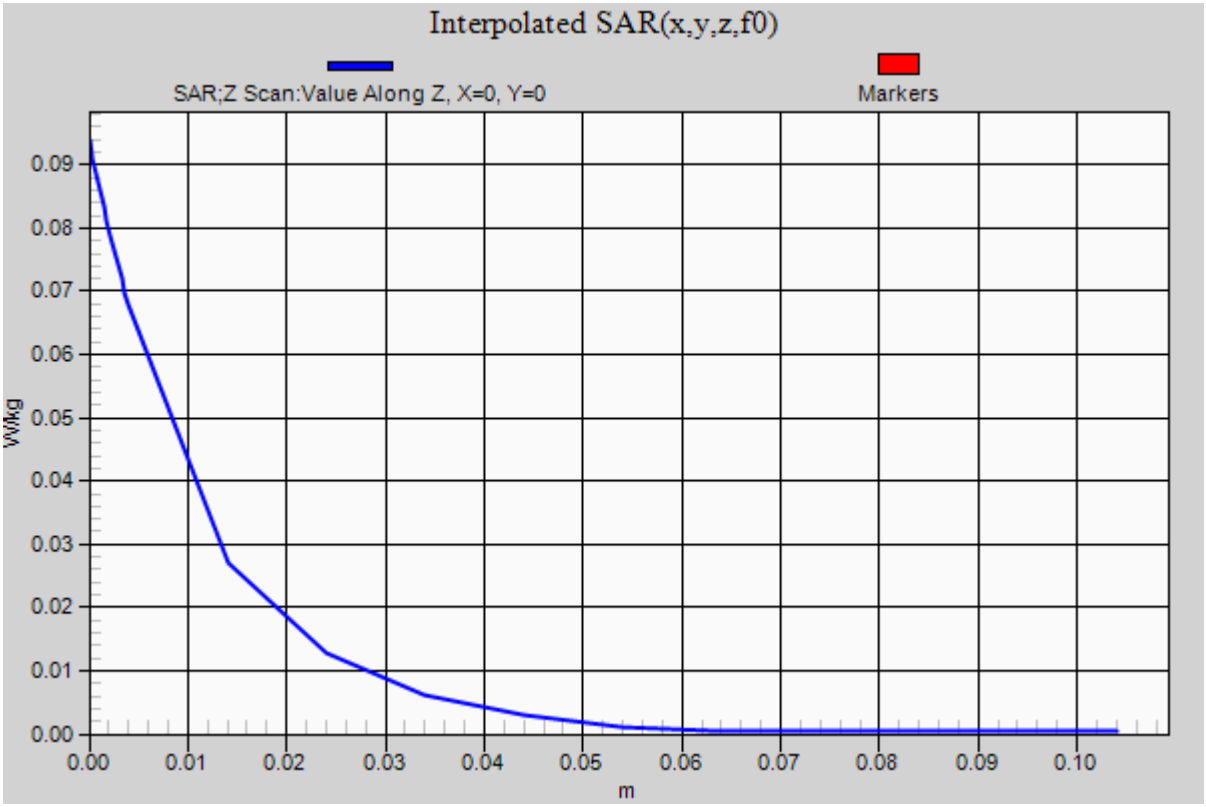
750H/B77-BODY, Harris EVM3 U17, P7, T9, B26/Strap, LTE B12, BW-10, CH-M, RB1-H, 707.5 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 3.343 V/m; Power Drift = -2.37 dB
Peak SAR (extrapolated) = 0.156 W/kg
SAR(1 g) = 0.081 W/kg; SAR(10 g) = 0.047 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.0892 W/kg

750H/B77-BODY, Harris EVM3 U17, P7, T9, B26/Strap, LTE B12, BW-10, CH-M, RB1-H, 707.5 MHz/Z Scan (1x1x22): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 10.82 (n/a, 13.34) [mm]
Maximum value of SAR (interpolated) = 0.0938 W/kg





Plot B61

Date/Time: 7/16/2019 9:00:32 PM

Test Laboratory: Celltech Labs

Harris EVM3- Compliance Band 13&14 LTE EVAL- July 16 2019 -1

DUT: EVM3-U17; Type: PTT; Communication System: UID 10154 - CAG, LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK); Communication System Band: Band 13, E-UTRA/FDD (777.0 - 787.0 MHz); Frequency: 782 MHz;Communication System PAR: 5.75 dB; PMF: 1.01391

Medium: TSL_750H[15JL19]
Medium parameters used (interpolated): f = 782 MHz; σ = 0.892 S/m; ε_r = 44.65; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019;
  - Modulation Compensation: PMR for UID 10154 - CAG, Calibrated: 3/26/2019
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

Frequency: 782 MHz

750H/B61-BODY, Harris EVM3 U17, P7, T9, B26/STRAP, LTE B13, BW-10, CH-M, RB25-L, 782 MHz 2/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

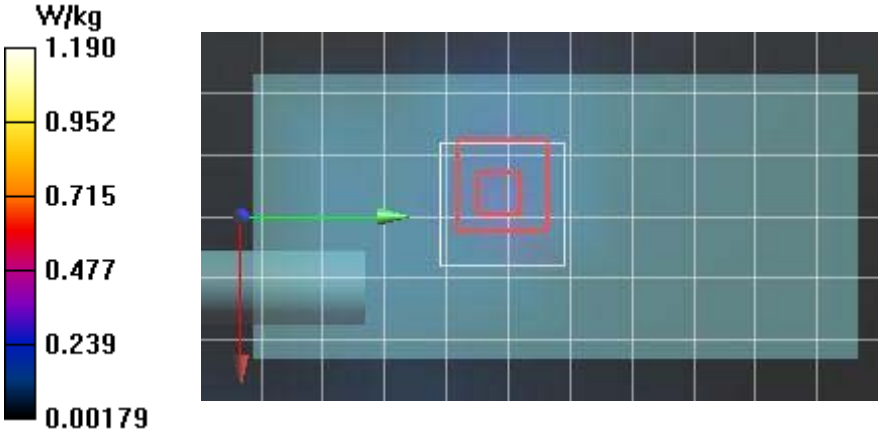
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.337 W/kg

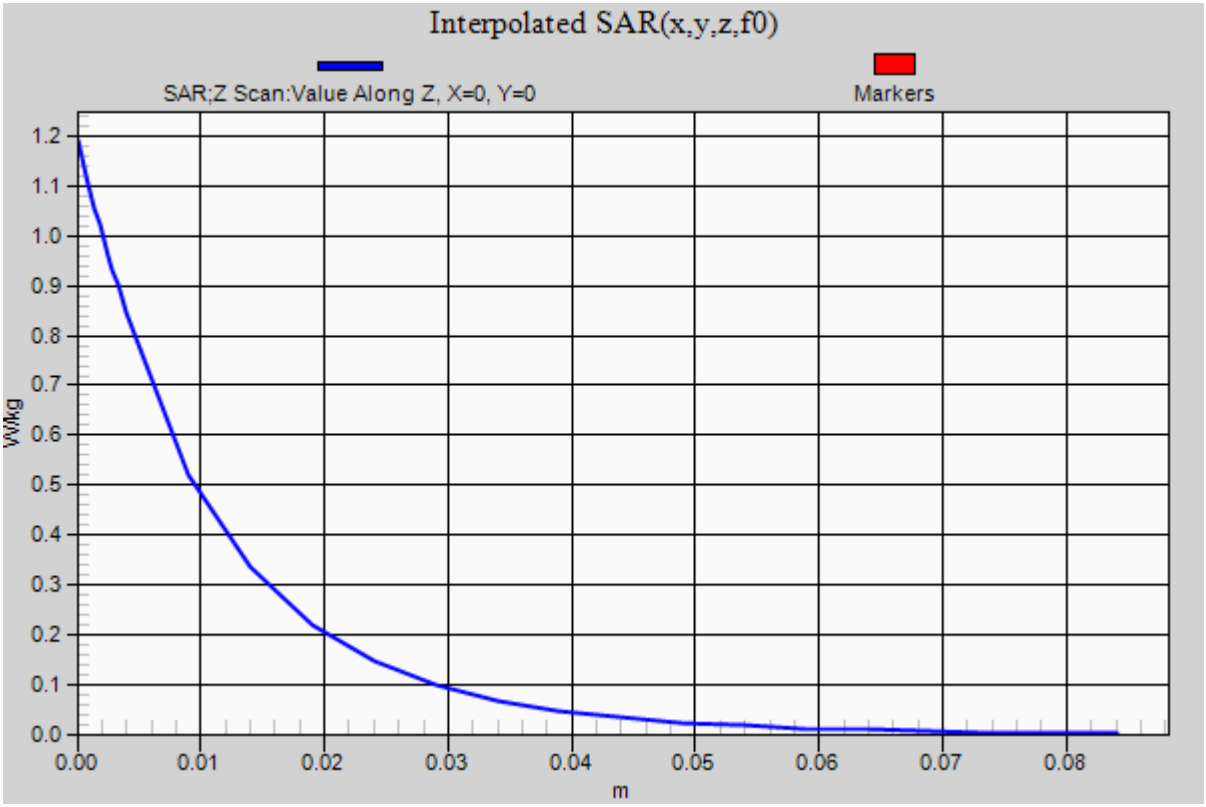
750H/B61-BODY, Harris EVM3 U17, P7, T9, B26/STRAP, LTE B13, BW-10, CH-M, RB25-L, 782 MHz 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 7.769 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.33 W/kg
SAR(1 g) = 0.773 W/kg; SAR(10 g) = 0.454 W/kg

Info: Interpolated medium parameters used for SAR evaluation.

750H/B61-BODY, Harris EVM3 U17, P7, T9, B26/STRAP, LTE B13, BW-10, CH-M, RB25-L, 782 MHz 2/Z Scan (1x1x28): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 11.40 (10.28, 11.68) [mm]
Maximum value of SAR (interpolated) = 1.19 W/kg





Plot B67

Date/Time: 7/13/2019 12:14:52 PM,

Test Laboratory: Celltech Labs

Harris EVM3- Compliance Band 13&14 LTE EVAL- July 13 2019 -1

DUT: EVM3-U17; Type: PTT;

Communication System: UID 10175 - CAG, LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK); Communication System Band: Band 14, E-UTRA/FDD (788.0 - 798.0 MHz); Frequency: 793 MHz;Communication System PAR: 5.72 dB; PMF: 1.13894

Medium: TSL_835H[11JL19]
Medium parameters used (interpolated): f = 793 MHz; σ = 0.818 S/m; ε_r = 39.816; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019;
  - Modulation Compensation: PMR for UID 10175 - CAG, Calibrated: 3/26/2019
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

Frequency: 793 MHz

835H/B67-BODY, Harris EVM3 U17, P2, T9, B1-02, LTE B14, BW-10, CH-M, RB1-H, 793 MHz/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.289 W/kg

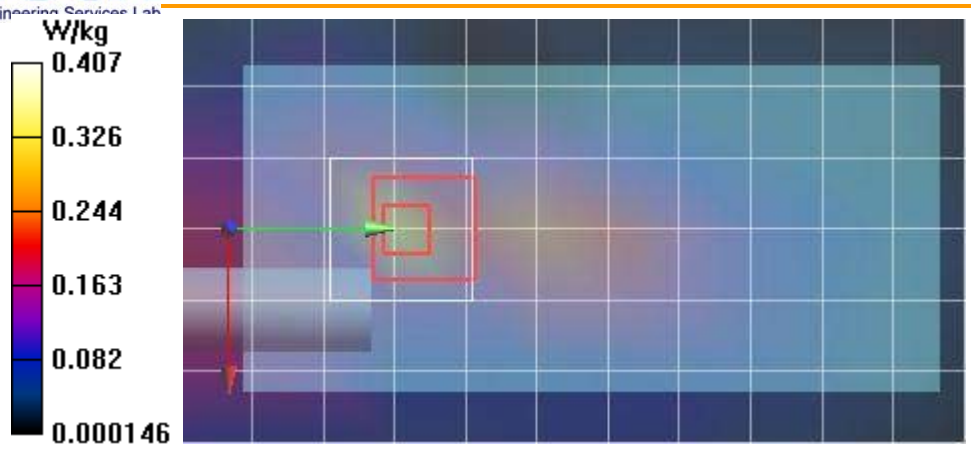
835H/B67-BODY, Harris EVM3 U17, P2, T9, B1-02, LTE B14, BW-10, CH-M, RB1-H, 793 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 13.78 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.492 W/kg
SAR(1 g) = 0.255 W/kg; SAR(10 g) = 0.146 W/kg

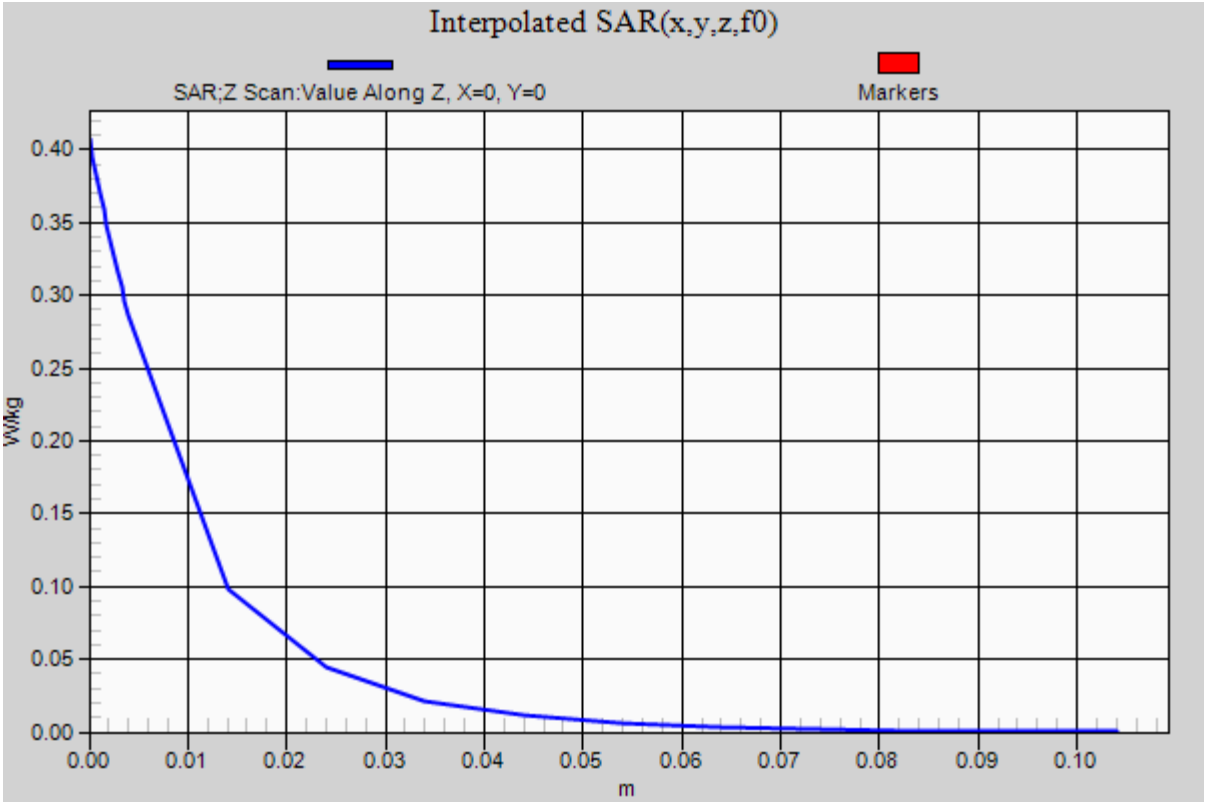
Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.289 W/kg

835H/B67-BODY, Harris EVM3 U17, P2, T9, B1-02, LTE B14, BW-10, CH-M, RB1-H, 793 MHz/Z Scan (1x1x22): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 9.405 (n/a, 12.43) [mm]
Maximum value of SAR (interpolated) = 0.407 W/kg





Plot B103

Date/Time: 7/19/2019 1:49:23 PM

Test Laboratory: Celltech Labs

Harris EVM3- Compliance Band 4&66&2 LTE EVAL- July 19 2019

DUT: EVM3-U17; Type: PTT;

Communication System: UID 10169 - CAE, LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK); Communication System Band: Band 2, E-UTRA/FDD (1850.0 - 1910.0 MHz); Frequency: 1900 MHz;Communication System PAR: 5.73 dB; PMF: 1.13894

Medium: TSL_1800H[17JL19]
Medium parameters used: f = 1900 MHz; σ = 1.42 S/m; ε_r = 38.97; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

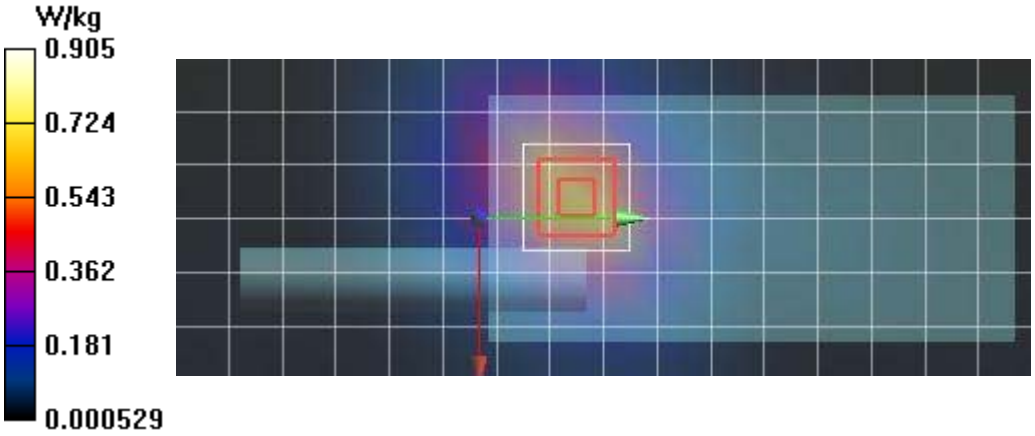
- Probe: EX3DV4 - SN3600; ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019, ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019, ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019;
  - Modulation Compensation: PMR for UID 10169 - CAE, Calibrated: 3/26/2019
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

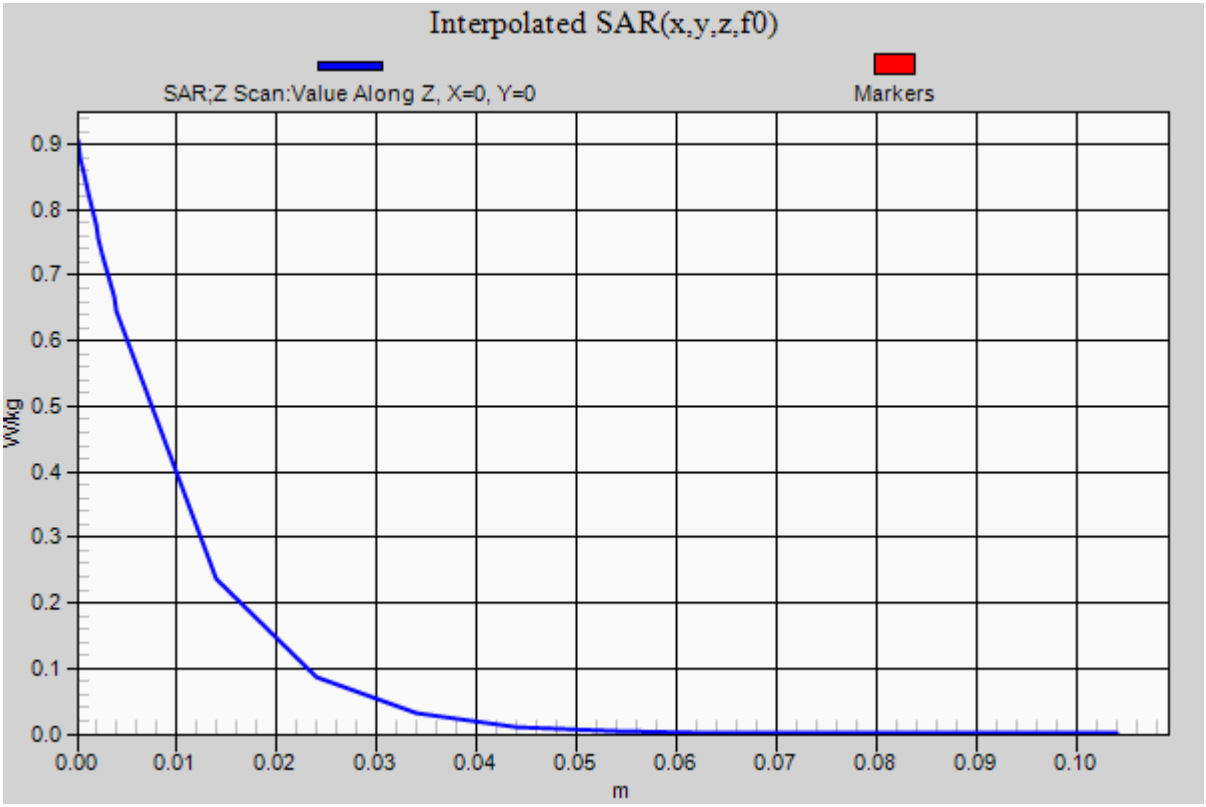
Frequency: 1900 MHz

1800H/B103-BODY, Harris EVM3 U17, P2, T9,B1-03-5mm, LTE B2, BW-20, CH-H, RB1-M, 1900 MHz/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.605 W/kg

1800H/B103-BODY, Harris EVM3 U17, P2, T9,B1-03-5mm, LTE B2, BW-20, CH-H, RB1-M, 1900 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 13.30 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.979 W/kg
SAR(1 g) = 0.596 W/kg; SAR(10 g) = 0.350 W/kg
Maximum value of SAR (measured) = 0.654 W/kg

1800H/B103-BODY, Harris EVM3 U17, P2, T9,B1-03-5mm, LTE B2, BW-20, CH-H, RB1-M, 1900 MHz/Z Scan (1x1x22): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Penetration depth = 9.978 (n/a, 10.05) [mm]
Maximum value of SAR (interpolated) = 0.905 W/kg





Plot B105

Date/Time: 7/19/2019 3:06:44 PM

Test Laboratory: Celltech Labs

Harris EVM3- Compliance Band 4&66&2 LTE EVAL- July 19 2019

DUT: EVM3-U17; Type: PTT;

Communication System: UID 10169 - CAE, LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK); Communication System Band: Band 2, E-UTRA/FDD (1850.0 - 1910.0 MHz); Frequency: 1880 MHz;Communication System PAR: 5.73 dB; PMF: 1.13894

Medium: TSL_1800H[17JL19]
Medium parameters used: f = 1880 MHz; σ = 1.4 S/m; ε_r = 39.28; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

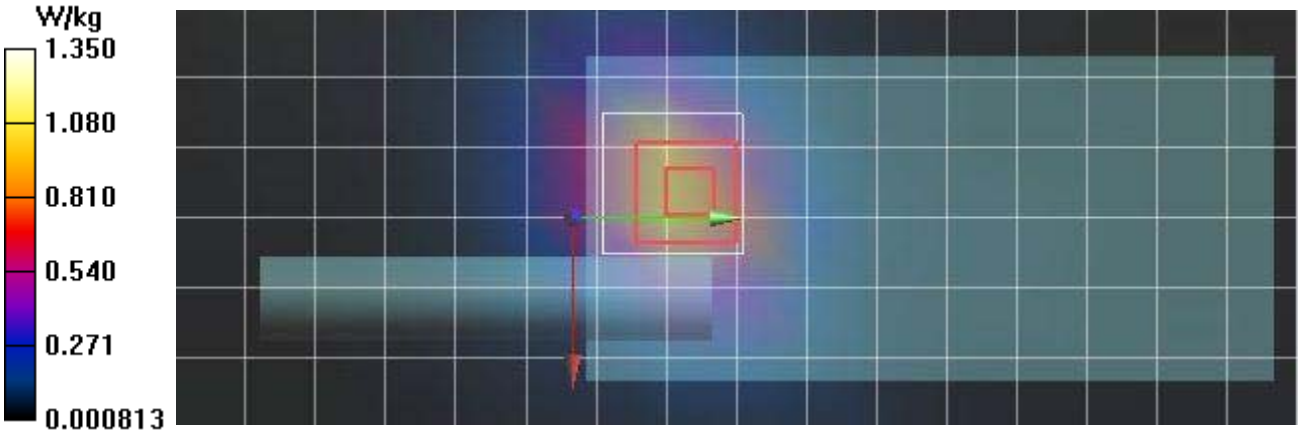
- Probe: EX3DV4 - SN3600; ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019, ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019, ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019;
  - Modulation Compensation: PMR for UID 10169 - CAE, Calibrated: 3/26/2019
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

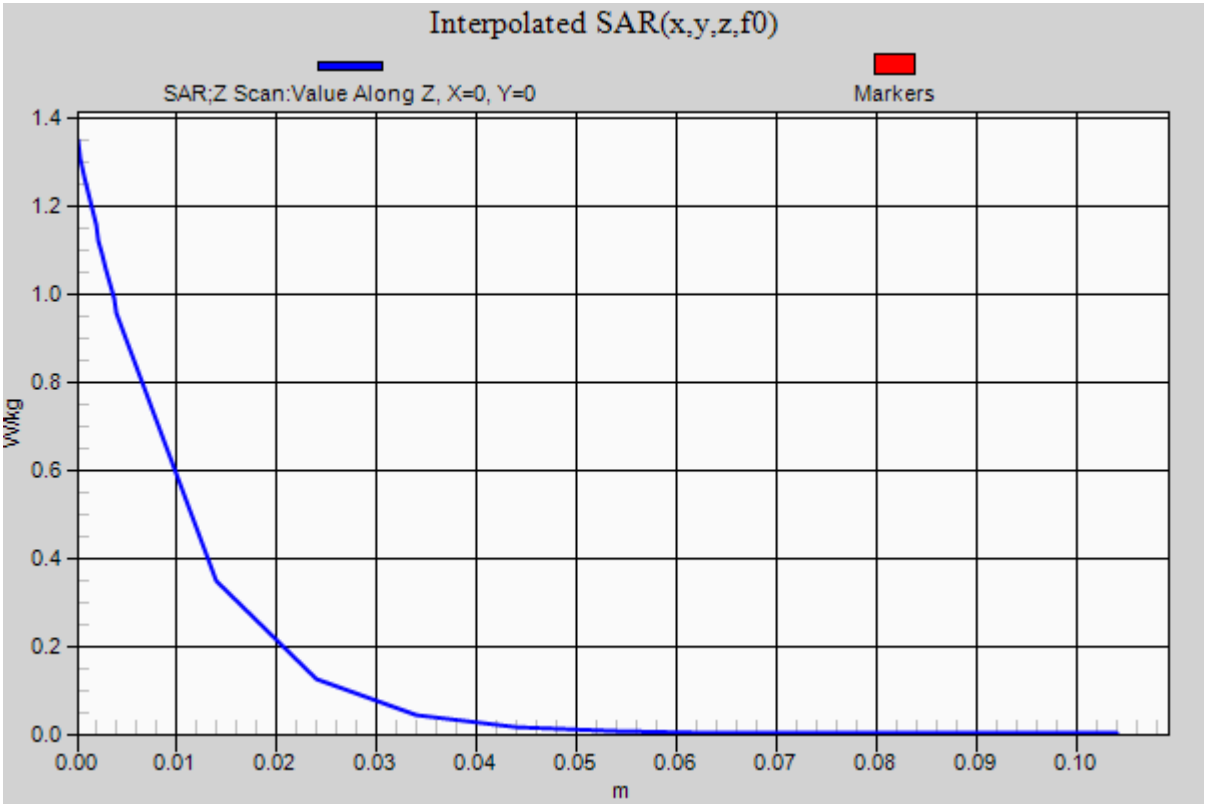
Frequency: 1880 MHz

1800H/B105-BODY, Harris EVM3 U17, P2, T9,B1-04-5mm, LTE B2, BW-20, CH-M, RB1-L, 18900 MHz/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.953 W/kg

1800H/B105-BODY, Harris EVM3 U17, P2, T9,B1-04-5mm, LTE B2, BW-20, CH-M, RB1-L, 18900 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 17.83 V/m; Power Drift = -0.86 dB
Peak SAR (extrapolated) = 1.57 W/kg
SAR(1 g) = 0.944 W/kg; SAR(10 g) = 0.526 W/kg
Maximum value of SAR (measured) = 0.998 W/kg

1800H/B105-BODY, Harris EVM3 U17, P2, T9,B1-04-5mm, LTE B2, BW-20, CH-M, RB1-L, 18900 MHz/Z Scan (1x1x22): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Penetration depth = 9.837 (n/a, 9.700) [mm]
Maximum value of SAR (interpolated) = 1.35 W/kg





Plot B112

Date/Time: 7/19/2019 6:18:02 PM

Test Laboratory: Celltech Labs

Harris EVM3- Compliance Band 4&66&2 LTE EVAL- July 19 2019

DUT: EVM3-U17; Type: PTT;

Communication System: UID 10169 - CAE, LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK); Communication System Band: Band 66, E-UTRA/FDD (1710.0 - 1780.0 MHz); Frequency: 1770 MHz;Communication System PAR: 5.73 dB; PMF: 1.13894

Medium: TSL_1800H[17JL19]
Medium parameters used: f = 1770 MHz; σ = 1.32 S/m; ε_r = 39.62; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

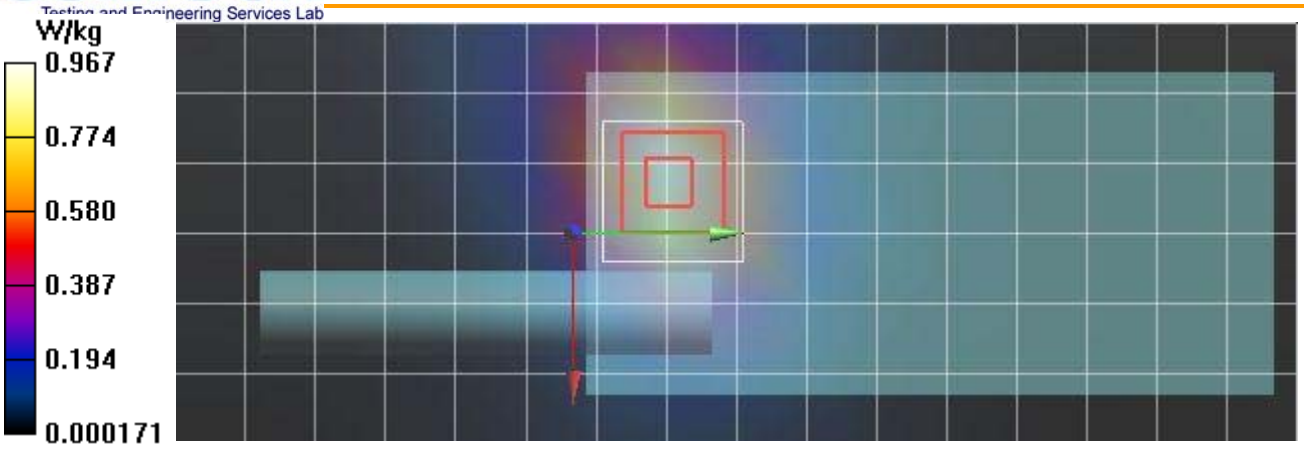
- Probe: EX3DV4 - SN3600; ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019, ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019, ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019;
  - Modulation Compensation: PMR for UID 10169 - CAE, Calibrated: 3/26/2019
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

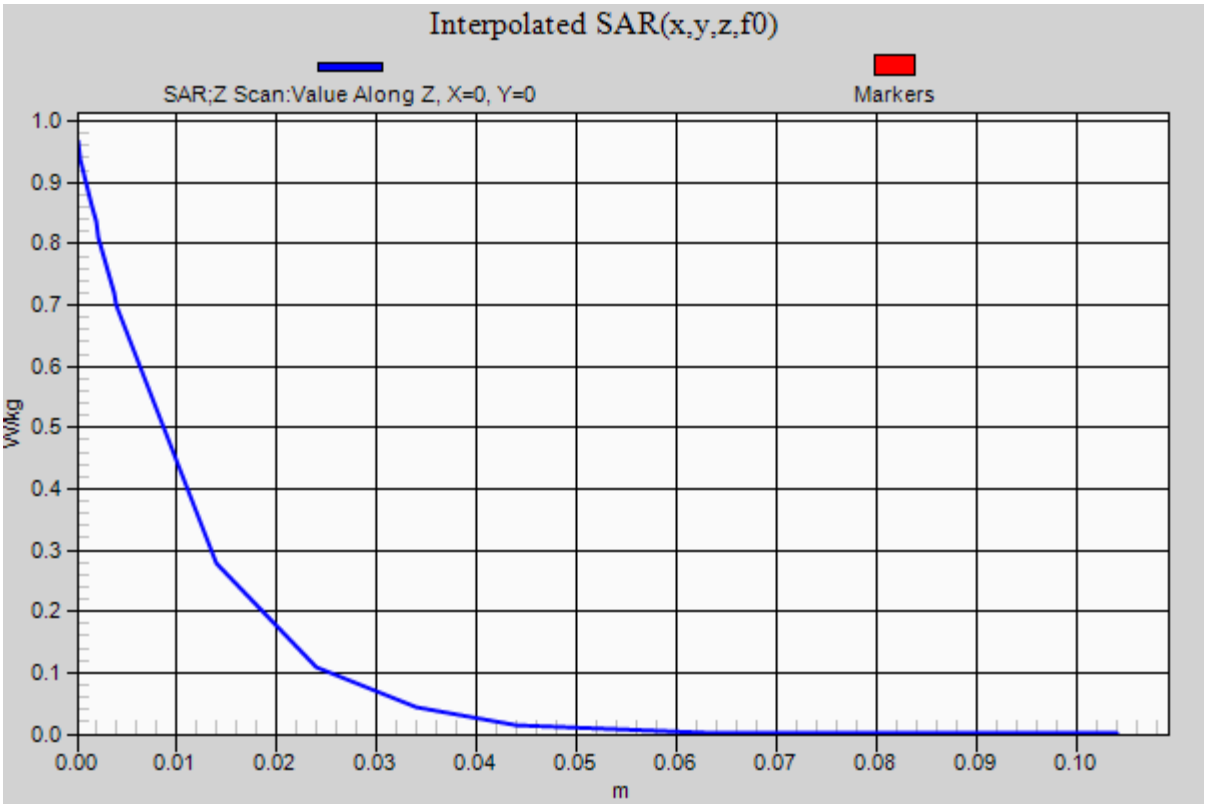
Frequency: 1770 MHz

1800H/B112-BODY, Harris EVM3 U17, P2, T9,B1-02 - 5mm, LTE B66, BW-20, CH-H, RB1-L, 1770 MHz/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.650 W/kg

1800H/B112-BODY, Harris EVM3 U17, P2, T9,B1-02 - 5mm, LTE B66, BW-20, CH-H, RB1-L, 1770 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 11.62 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.00 W/kg
SAR(1 g) = 0.632 W/kg; SAR(10 g) = 0.373 W/kg
Maximum value of SAR (measured) = 0.690 W/kg

1800H/B112-BODY, Harris EVM3 U17, P2, T9,B1-02 - 5mm, LTE B66, BW-20, CH-H, RB1-L, 1770 MHz/Z Scan (1x1x22): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Penetration depth = 10.90 (n/a, 10.77) [mm]
Maximum value of SAR (interpolated) = 0.967 W/kg





Plot B118

Date/Time: 7/20/2019 3:24:49 PM

Test Laboratory: Celltech Labs

Harris EVM3- Compliance LMR UHF EVAL- July 20 2019

DUT: EVM3-U17; Type: PTT

Communication System: UID 0, CW (0); Communication System Band: D400 (400.0 MHz); Frequency: 418 MHz;Communication System PAR: 0 dB; PMF: 1

Medium: TSL_450H[20JL19]
Medium parameters used (interpolated): f = 418 MHz; σ = 0.866 S/m; ε_r = 45.664; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.79, 8.79, 8.79); Calibrated: 3/26/2019, ConvF(8.79, 8.79, 8.79); Calibrated: 3/26/2019, ConvF(8.79, 8.79, 8.79); Calibrated: 3/26/2019;
  - Modulation Compensation:
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

Frequency: 418 MHz

450H/B118-BODY, Harris EVM3 U17, P7, T5, B1-02, LMR, CW, 418MHz/Area Scan (7x21x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 8.70 W/kg

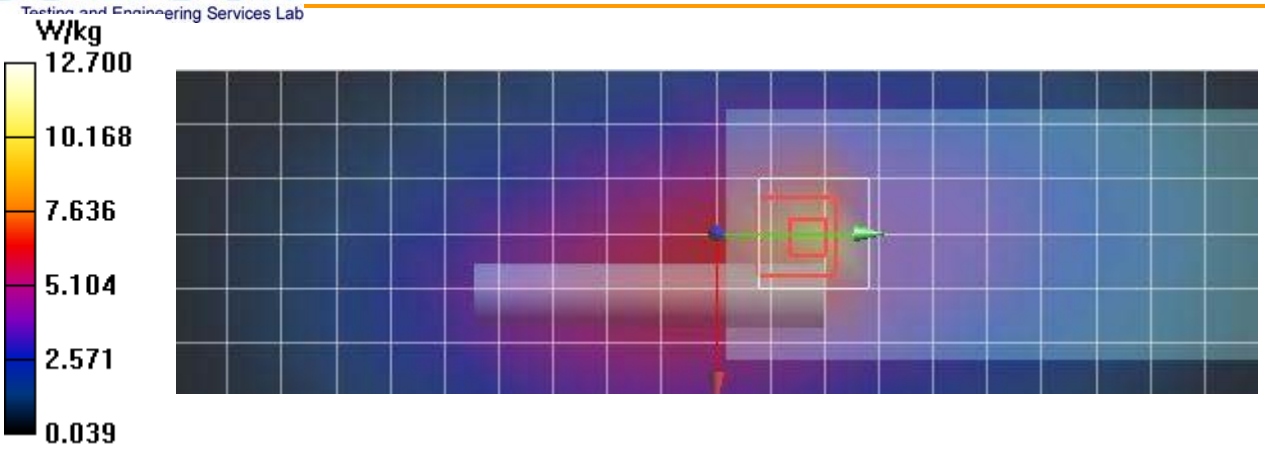
450H/B118-BODY, Harris EVM3 U17, P7, T5, B1-02, LMR, CW, 418MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 86.61 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 14.6 W/kg
SAR(1 g) = 8.55 W/kg; SAR(10 g) = 5.47 W/kg

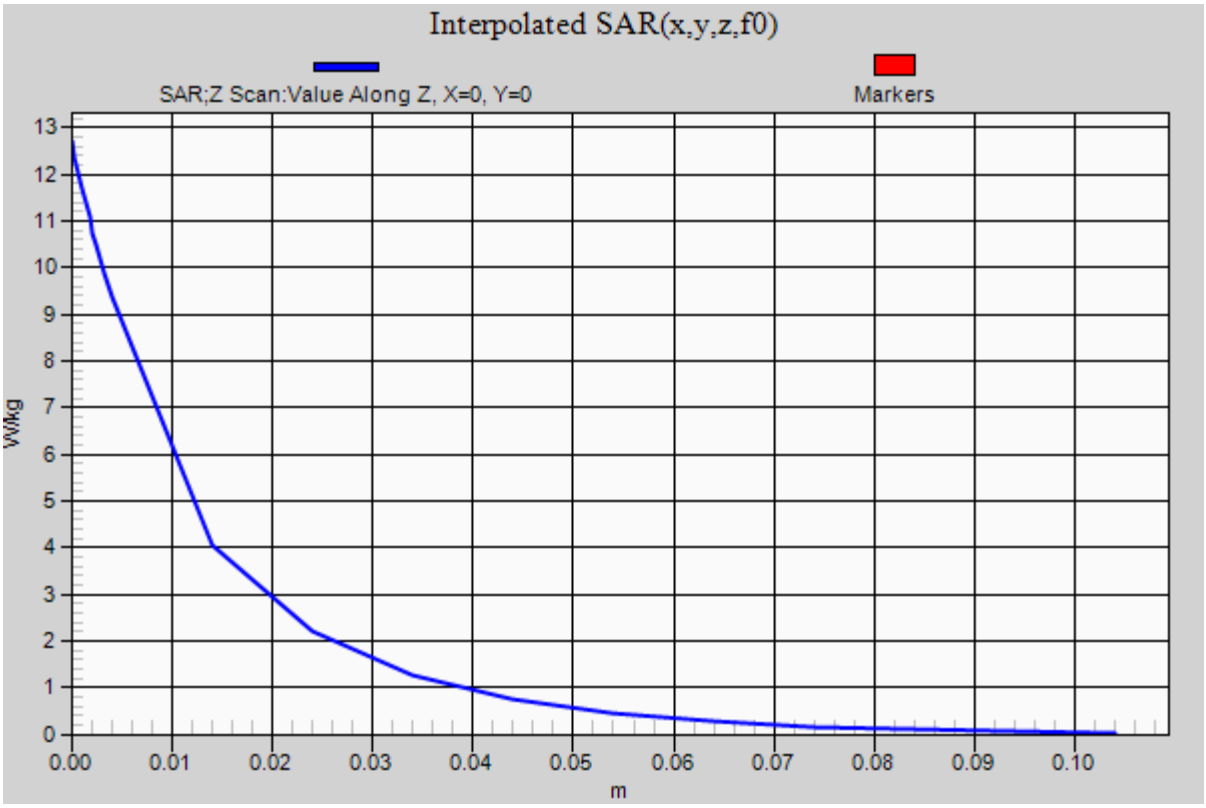
Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 9.46 W/kg

450H/B118-BODY, Harris EVM3 U17, P7, T5, B1-02, LMR, CW, 418MHz/Z Scan (1x1x22): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 12.00 (n/a, 16.48) [mm]
Maximum value of SAR (interpolated) = 12.7 W/kg





Plot B127

Date/Time: 7/21/2019 2:55:17 PM,

Test Laboratory: Celltech Labs

Harris EVM3- Compliance LMR VHF EVAL- July 21 2019

DUT: EVM3-U17; Type: PTT;

Communication System: UID 0, CW (0); Communication System Band: VHF; Frequency: 156.8 MHz;Communication System PAR: 0 dB; PMF: 1

Medium: TSL_150H[21JL19]
Medium parameters used (interpolated): f = 156.8 MHz; σ = 0.72 S/m; ε_r = 50.17; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: EX3DV4 - SN3600; ConvF(9.72, 9.72, 9.72); Calibrated: 3/26/2019, ConvF(9.72, 9.72, 9.72); Calibrated: 3/26/2019, ConvF(9.72, 9.72, 9.72); Calibrated: 3/26/2019;
  - Modulation Compensation:
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

Frequency: 156.8 MHz

150H/B127-BODY, Harris EVM3 U17, P2, T4, B1-03, LMR, CW, 156.8MHz/Area Scan (8x24x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 7.66 W/kg

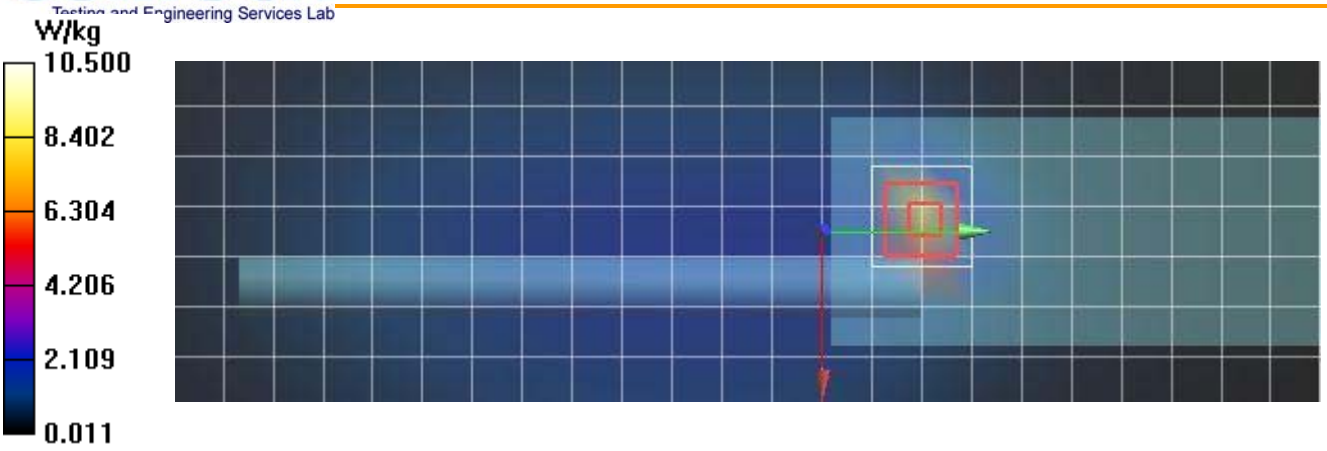
150H/B127-BODY, Harris EVM3 U17, P2, T4, B1-03, LMR, CW, 156.8MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 50.94 V/m; Power Drift = -0.28 dB
Peak SAR (extrapolated) = 19.8 W/kg
SAR(1 g) = 6.46 W/kg; SAR(10 g) = 2.87 W/kg

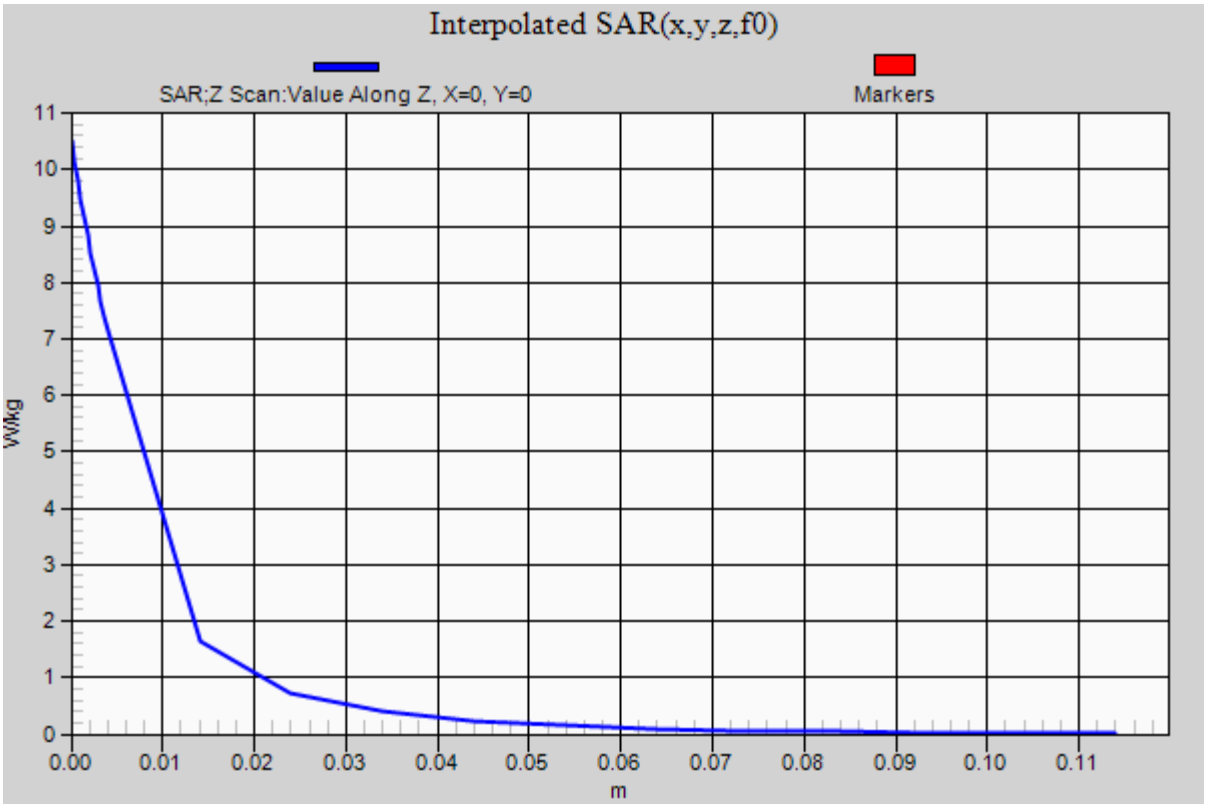
Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 7.27 W/kg

150H/B127-BODY, Harris EVM3 U17, P2, T4, B1-03, LMR, CW, 156.8MHz/Z Scan (1x1x23): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 6.808 (n/a, 12.28) [mm]
Maximum value of SAR (interpolated) = 10.5 W/kg





Plot F9

Date/Time: 7/12/2019 10:52:33 AM

Test Laboratory: Celltech Labs

Harris EVM3- Compliance Band 13&14 LTE EVAL- July 12 2019 -1

DUT: EVM3-U17; Type: PTT

Communication System: UID 10175 - CAG, LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK); Communication System Band: Band 5, E-UTRA/FDD (824.0 - 849.0 MHz); Frequency: 836.5 MHz;Communication System PAR: 5.72 dB; PMF: 1.13894

Medium: TSL_835H[11JL19]
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.862 S/m; ε_r = 39.538; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: EX3DV4 - SN3600; ConvF(7.96, 7.96, 7.96); Calibrated: 3/26/2019, ConvF(7.96, 7.96, 7.96); Calibrated: 3/26/2019, ConvF(7.96, 7.96, 7.96); Calibrated: 3/26/2019;
  - Modulation Compensation: PMR for UID 10175 - CAG, Calibrated: 3/26/2019
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

Frequency: 836.5 MHz

835H/F9-FACE, Harris EVM3 U17, P2, T9, LTE B5, BW-10, CH-M, RB1-L, 836.5 MHz/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.0136 W/kg

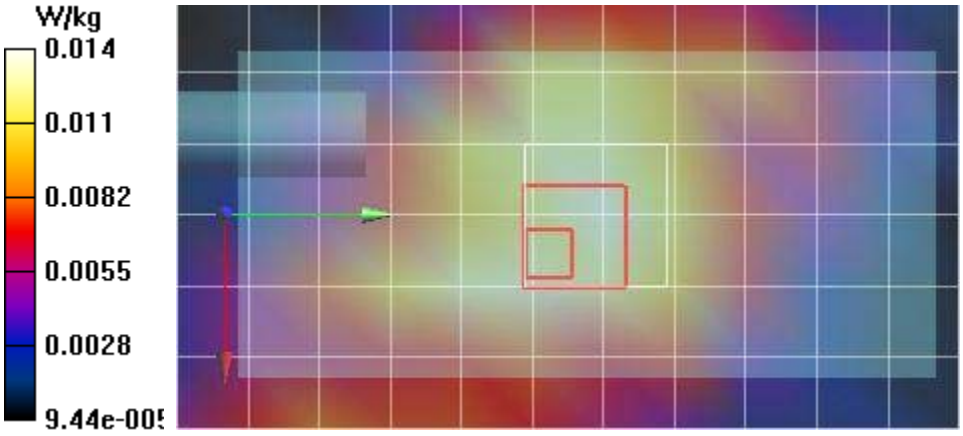
835H/F9-FACE, Harris EVM3 U17, P2, T9, LTE B5, BW-10, CH-M, RB1-L, 836.5 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 1.795 V/m; Power Drift = 0.53 dB
Peak SAR (extrapolated) = 0.185 W/kg
SAR(1 g) = 0.043 W/kg; SAR(10 g) = 0.013 W/kg

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.0666 W/kg

835H/F9-FACE, Harris EVM3 U17, P2, T9, LTE B5, BW-10, CH-M, RB1-L, 836.5 MHz/Z Scan (1x1x28): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 22.39 (1400, 6.396) [mm]
Maximum value of SAR (interpolated) = 0.00243 W/kg



Plot F4

Date/Time: 7/4/2019 12:21:47 PM

Test Laboratory: Celltech Labs

Harris EVM3- Compliance Band 5 LTE EVAL- July 04 2019

DUT: EVM3-U17; Type: PTT

Communication System: UID 0, CW (0); Communication System Band: D835 (835.0 MHz); Frequency: 806 MHz;Communication System PAR: 0 dB; PMF: 1

Medium: TSL_835H[02JL19]
Medium parameters used (interpolated): f = 806 MHz; σ = 0.87 S/m; ε_r = 41.685; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019;
  - Modulation Compensation:
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

Frequency: 806 MHz

835H/F4-Harris EVM3 U17 7/800, 806 MHz BODY Config,CW,Ant 4450-02,bat 5050-01/Area Scan (9x19x1): Measurement grid: dx=15mm, dy=15mm

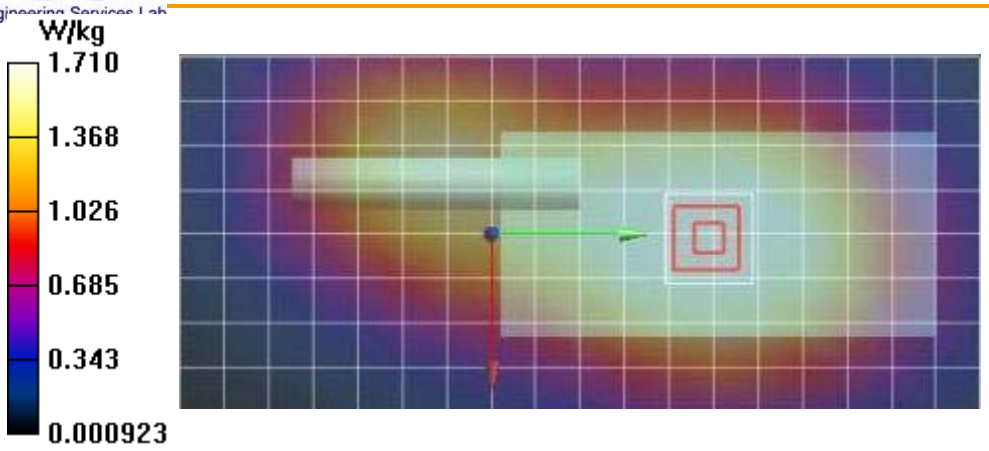
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.13 W/kg

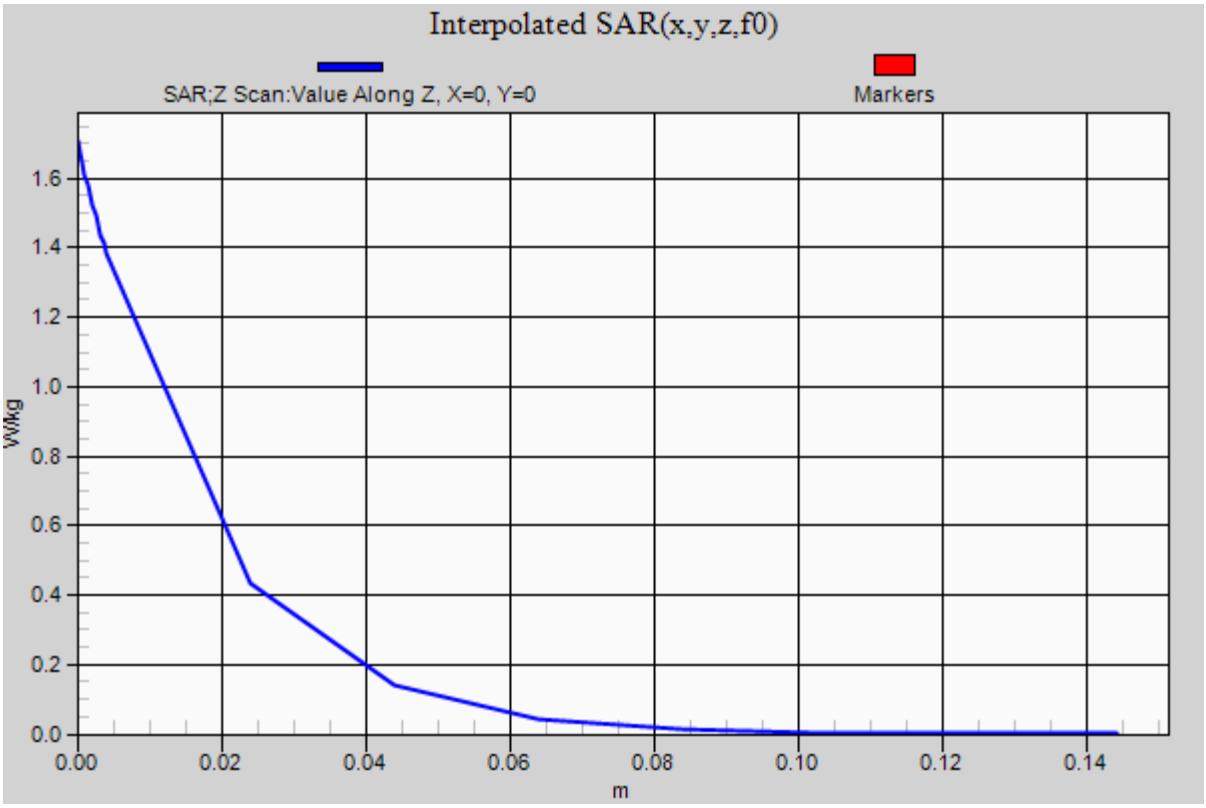
835H/F4-Harris EVM3 U17 7/800, 806 MHz BODY Config,CW,Ant 4450-02,bat 5050-01/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 40.66 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 2.57 W/kg
SAR(1 g) = 2 W/kg; SAR(10 g) = 1.5 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.10 W/kg

835H/F4-Harris EVM3 U17 7/800, 806 MHz BODY Config,CW,Ant 4450-02,bat 5050-01/Z Scan (1x1x19): Measurement grid: dx=20mm, dy=20mm, dz=20mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = n/a (n/a, 17.36) [mm]
Maximum value of SAR (interpolated) = 1.71 W/kg





Plot F16

Date/Time: 7/14/2019 12:22:50 PM

Test Laboratory: Celltech Labs

Harris EVM3- Compliance Band 13&14 LTE EVAL- July 14 2019 -1

DUT: EVM3-U17; Type: PTT;

Communication System: UID 10175 - CAG, LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK); Communication System Band: Band 13, E-UTRA/FDD (777.0 - 787.0 MHz); Frequency: 782 MHz;Communication System PAR: 5.72 dB; PMF: 1.13894

Medium: TSL_835H[11JL19]
Medium parameters used (interpolated): f = 782 MHz; σ = 0.813 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019;
  - Modulation Compensation: PMR for UID 10175 - CAG, Calibrated: 3/26/2019
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

Frequency: 782 MHz

835H/F16-FACE, Harris EVM3 U17, P2, T9, LTE B13, CH-M, RB1-M, 782 MHz/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

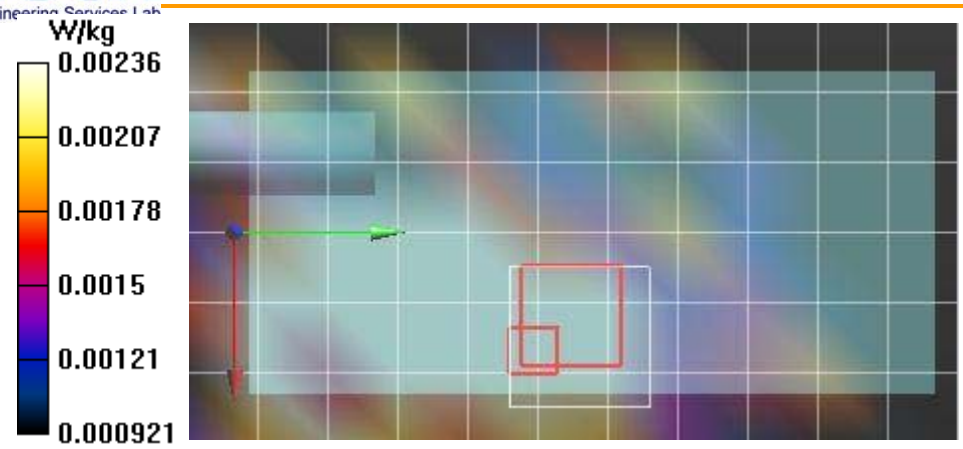
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.00393 W/kg

835H/F16-FACE, Harris EVM3 U17, P2, T9, LTE B13, CH-M, RB1-M, 782 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 1.189 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.0110 W/kg
SAR(1 g) = 0.00418 W/kg; SAR(10 g) = 0.00264 W/kg

Info: Interpolated medium parameters used for SAR evaluation.

835H/F16-FACE, Harris EVM3 U17, P2, T9, LTE B13, CH-M, RB1-M, 782 MHz/Z Scan (1x1x22): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 417.1 (n/a, 95.62) [mm]
Maximum value of SAR (interpolated) = 0.00236 W/kg



Plot F12

Date/Time: 7/13/2019 1:36:44 PM

Test Laboratory: Celltech Labs

Harris EVM3- Compliance Band 13&14 LTE EVAL- July 13 2019 -1

DUT: EVM3-U17; Type: PT Communication System: UID 10175 - CAG, LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK); Communication System Band: Band 14, E-UTRA/FDD (788.0 - 798.0 MHz); Frequency: 793 MHz;Communication System PAR: 5.72 dB; PMF: 1.13894

Medium: TSL_835H[11JL19]
Medium parameters used (interpolated): f = 793 MHz; σ = 0.818 S/m; ε_r = 39.816; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019;
  - Modulation Compensation: PMR for UID 10175 - CAG, Calibrated: 3/26/2019
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

Frequency: 793 MHz

835H/F12-FACE, Harris EVM3 U17, P7, T9, LTE B5, BW-10, CH-M, RB1-H, 793 MHz/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.00901 W/kg

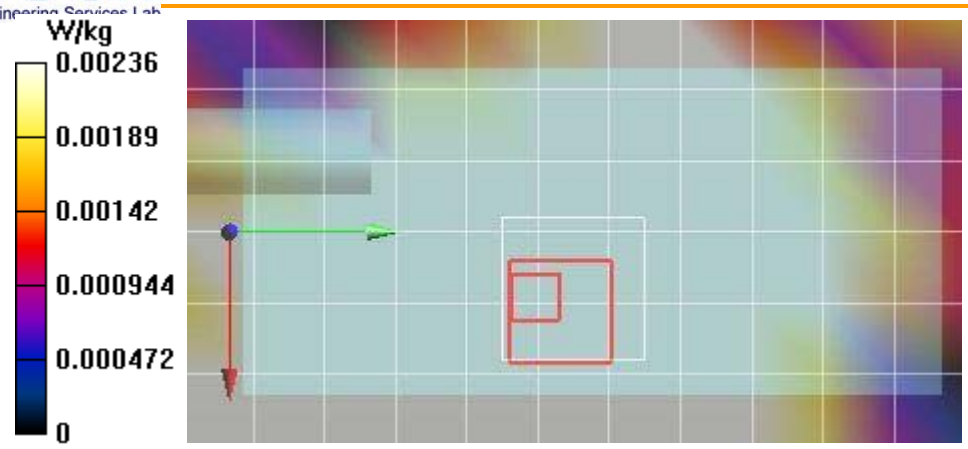
835H/F12-FACE, Harris EVM3 U17, P7, T9, LTE B5, BW-10, CH-M, RB1-H, 793 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 2.049 V/m; Power Drift = -1.25 dB
Peak SAR (extrapolated) = 0.0110 W/kg
SAR(1 g) = 0.00683 W/kg; SAR(10 g) = 0.00488 W/kg

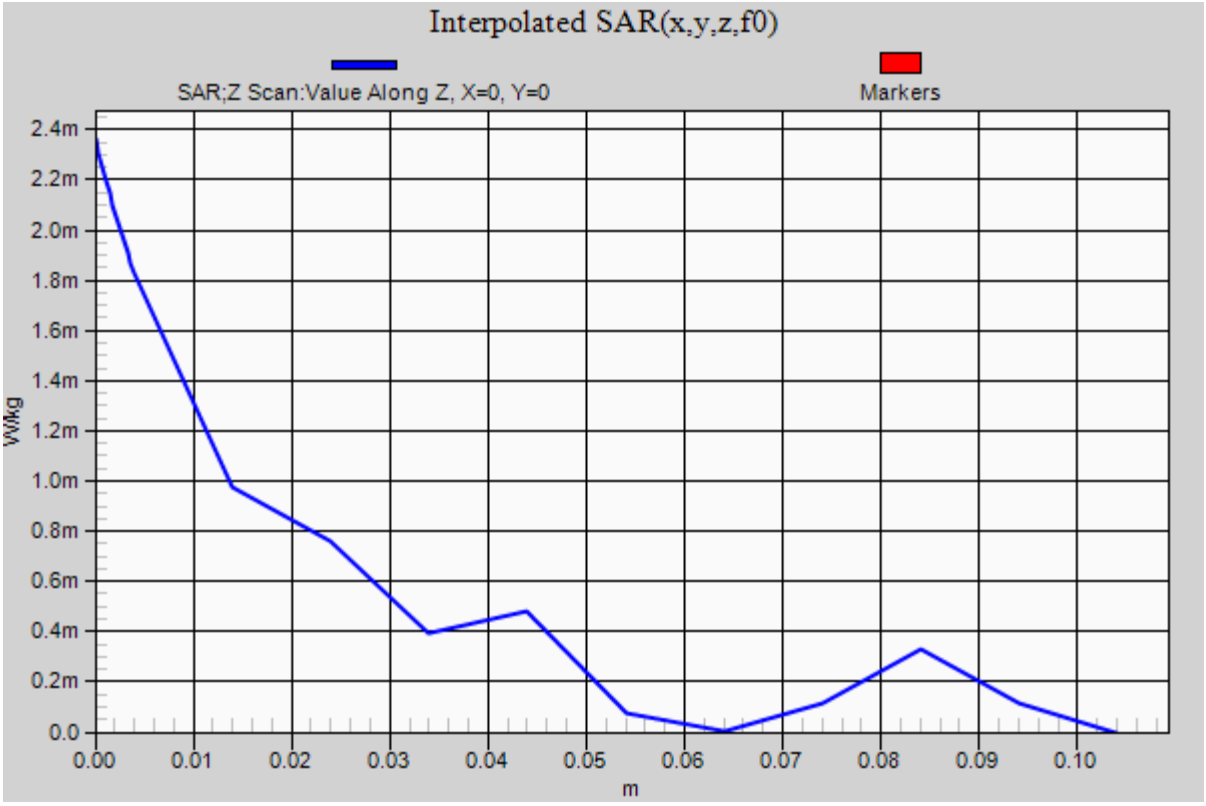
Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.00777 W/kg

835H/F12-FACE, Harris EVM3 U17, P7, T9, LTE B5, BW-10, CH-M, RB1-H, 793 MHz/Z Scan (1x1x22): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 16.03 (n/a, 39.39) [mm]
Maximum value of SAR (interpolated) = 0.00236 W/kg





Plot F19

Date/Time: 7/16/2019 7:06:09 PM

Test Laboratory: Celltech Labs

Harris EVM3- Compliance Band 12&17 LTE EVAL- July 16 2019

DUT: EVM3-U17; Type: PTT

Communication System: UID 10175 - CAG, LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK); Communication System Band: Band 12, E-UTRA/FDD (699.0 - 716.0 MHz); Frequency: 707.5 MHz;Communication System PAR: 5.72 dB; PMF: 1.13894

Medium: TSL_750H[15JL19]
Medium parameters used (interpolated): f = 707.5 MHz; σ = 0.82 S/m; ε_r = 45.763; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019, ConvF(8.13, 8.13, 8.13); Calibrated: 3/26/2019;
  - Modulation Compensation: PMR for UID 10175 - CAG, Calibrated: 3/26/2019
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

Frequency: 707.5 MHz

750H/F19-FACE, Harris EVM3 U17, P2, T9, LTE B12, CH-M, RB1-H, 707.5 MHz/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.0189 W/kg

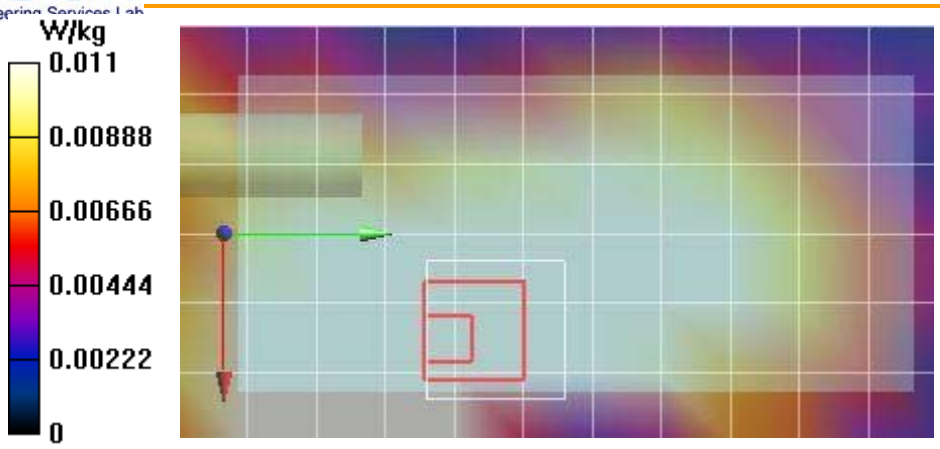
750H/F19-FACE, Harris EVM3 U17, P2, T9, LTE B12, CH-M, RB1-H, 707.5 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 3.165 V/m; Power Drift = 0.76 dB
Peak SAR (extrapolated) = 0.0230 W/kg
SAR(1 g) = 0.018 W/kg; SAR(10 g) = 0.013 W/kg

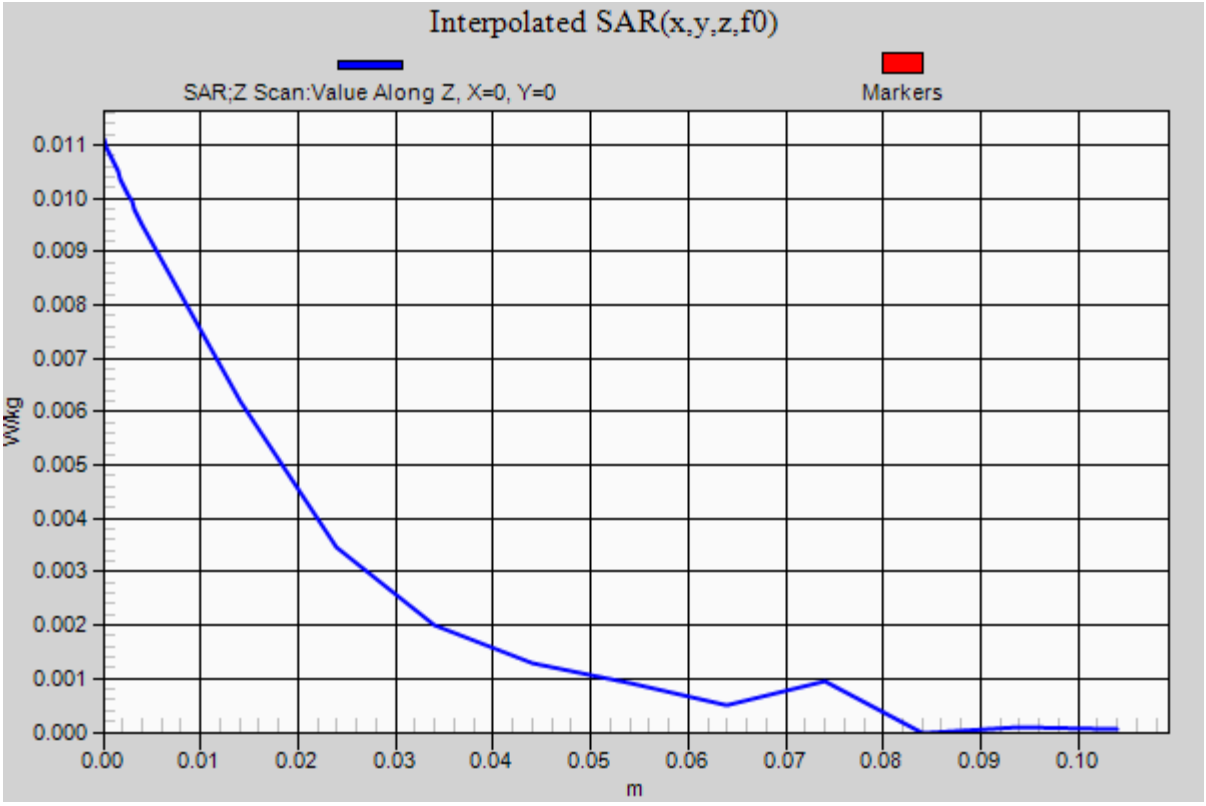
Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.0188 W/kg

750H/F19-FACE, Harris EVM3 U17, P2, T9, LTE B12, CH-M, RB1-H, 707.5 MHz/Z Scan (1x1x22): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 23.33 (n/a, 17.23) [mm]
Maximum value of SAR (interpolated) = 0.0111 W/kg





Plot F24

Date/Time: 7/20/2019 11:09:04 AM

Test Laboratory: Celltech Labs

Harris EVM3- Compliance Band 4&66&2 LTE EVAL- July 20 2019

DUT: EVM3-U17; Type: PTT

Communication System: UID 10169 - CAE, LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK); Communication System Band: Band 2, E-UTRA/FDD (1850.0 - 1910.0 MHz); Frequency: 1900 MHz;Communication System PAR: 5.73 dB; PMF: 1.13894

Medium: TSL_1800H[17JL19]
Medium parameters used: f = 1900 MHz; σ = 1.42 S/m; ε_r = 38.97; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

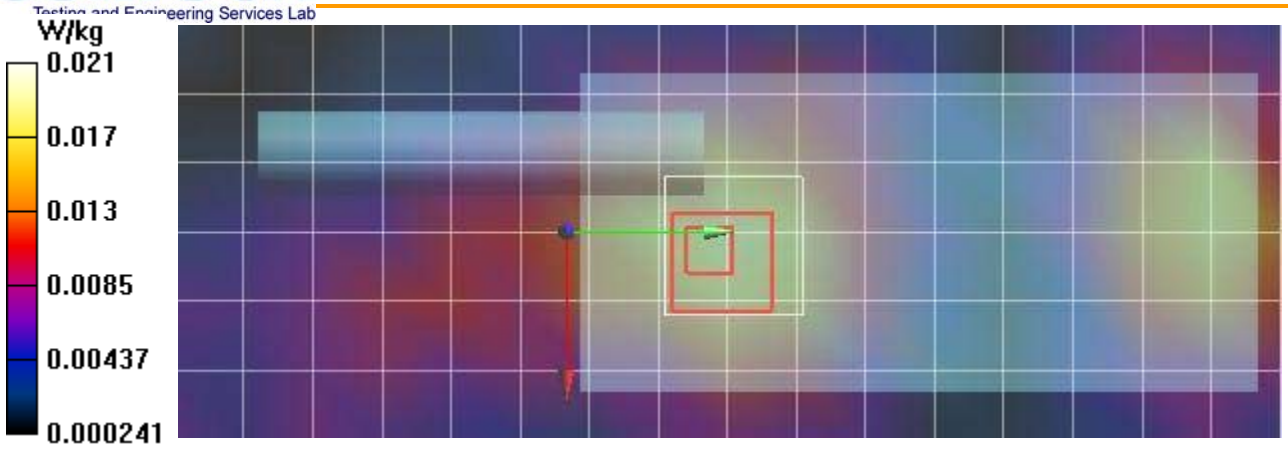
- Probe: EX3DV4 - SN3600; ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019, ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019, ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019;
  - Modulation Compensation: PMR for UID 10169 - CAE, Calibrated: 3/26/2019
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

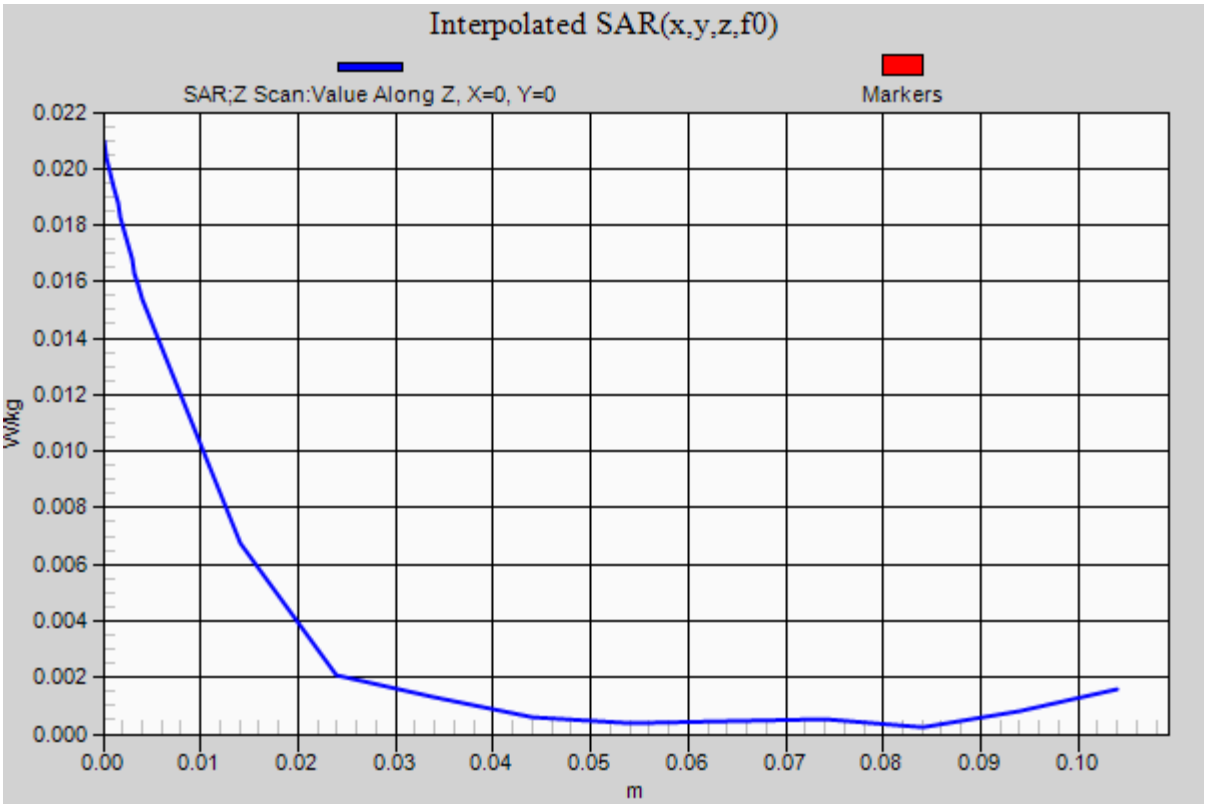
Frequency: 1900 MHz

1800H/F24-FACE, Harris EVM3 U17, P7, T9, LTE B2, BW-20, CH-H, RB1-M, 1900 MHz/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0178 W/kg

1800H/F24-FACE, Harris EVM3 U17, P7, T9, LTE B2, BW-20, CH-H, RB1-M, 1900 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 2.841 V/m; Power Drift = 0.20 dB
Peak SAR (extrapolated) = 0.0250 W/kg
SAR(1 g) = 0.016 W/kg; SAR(10 g) = 0.00948 W/kg
Maximum value of SAR (measured) = 0.0172 W/kg

1800H/F24-FACE, Harris EVM3 U17, P7, T9, LTE B2, BW-20, CH-H, RB1-M, 1900 MHz/Z Scan (1x1x22): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Penetration depth = 12.09 (n/a, 8.628) [mm]
Maximum value of SAR (interpolated) = 0.0209 W/kg





Plot F26

Date/Time: 7/20/2019 9:18:02 AM

Test Laboratory: Celltech Labs

Harris EVM3- Compliance Band 4&66&2 LTE EVAL- July 20 2019

DUT: EVM3-U17; Type: PTT

Communication System: UID 10169 - CAE, LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK); Communication System Band: Band 66, E-UTRA/FDD (1710.0 - 1780.0 MHz); Frequency: 1770 MHz;Communication System PAR: 5.73 dB; PMF: 1.13894

Medium: TSL_1800H[17JL19]
Medium parameters used: f = 1770 MHz; σ = 1.32 S/m; ε_r = 39.62; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: EX3DV4 - SN3600; ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019, ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019, ConvF(7.22, 7.22, 7.22); Calibrated: 3/26/2019;
  - Modulation Compensation: PMR for UID 10169 - CAE, Calibrated: 3/26/2019
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

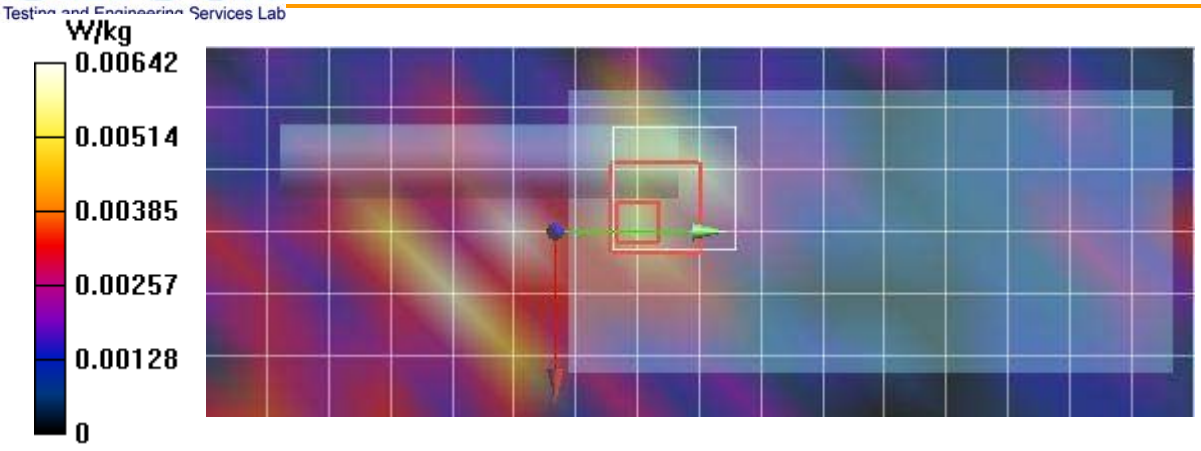
Frequency: 1770 MHz

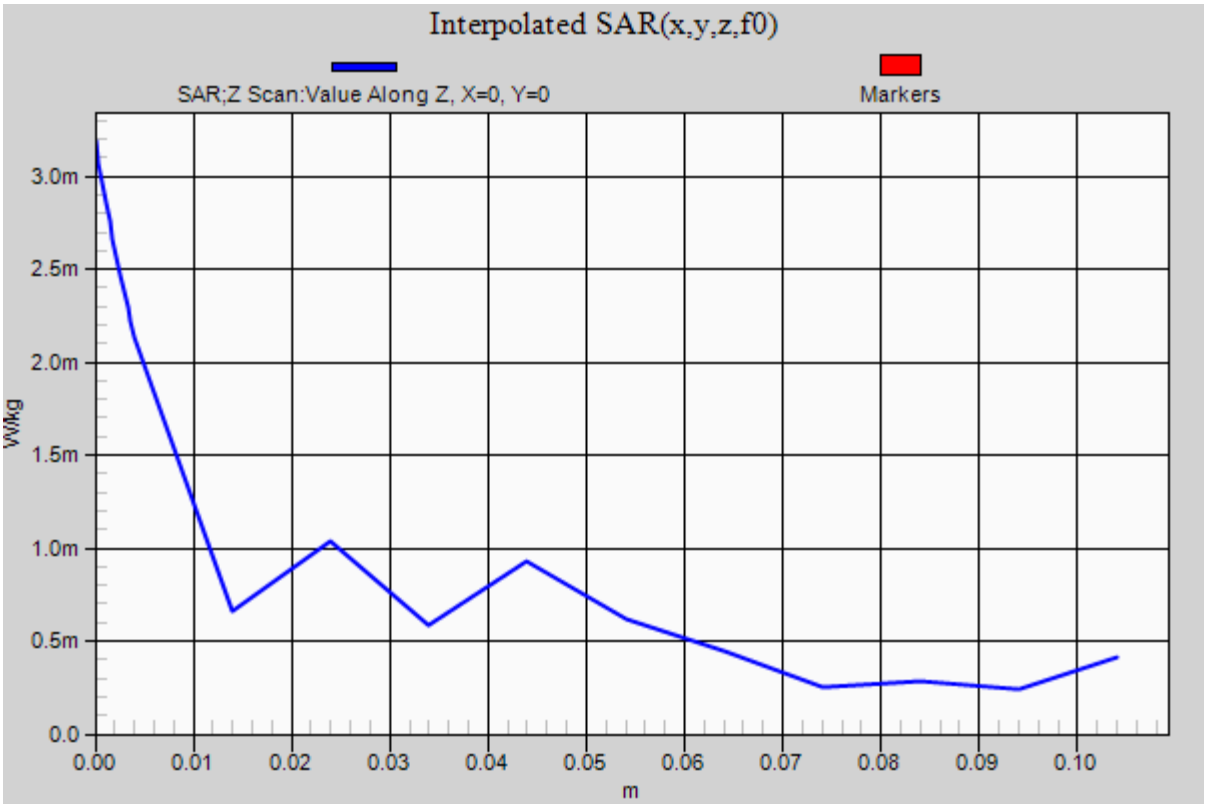
1800H/F26-FACE, Harris EVM3 U17, P2, T9, LTE B66, BW-20, CH-H, RB1-L, 1770 MHz/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.00642 W/kg

1800H/F26-FACE, Harris EVM3 U17, P2, T9, LTE B66, BW-20, CH-H, RB1-L, 1770 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 2.149 V/m; Power Drift = -3.52 dB
Peak SAR (extrapolated) = 0.0210 W/kg
SAR(1 g) = 0.00686 W/kg; SAR(10 g) = 0.00282 W/kg

Maximum value of SAR (measured) = 0.0102 W/kg

1800H/F26-FACE, Harris EVM3 U17, P2, T9, LTE B66, BW-20, CH-H, RB1-L, 1770 MHz/Z Scan (1x1x22): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Penetration depth = 8.520 (n/a, 22.16) [mm]
Maximum value of SAR (interpolated) = 0.00319 W/kg





Plot F32

Date/Time: 7/20/2019 7:09:19 PM

Test Laboratory: Celltech Labs

Harris EVM3- Compliance LMR UHF EVAL- July 20 2019

DUT: EVM3-U17; Type: PTT

Communication System: UID 0, CW (0); Communication System Band: D400 (400.0 MHz); Frequency: 418 MHz;Communication System PAR: 0 dB; PMF: 1

Medium: TSL_450H[20JL19]
Medium parameters used (interpolated): f = 418 MHz; σ = 0.866 S/m; ε_r = 45.664; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: EX3DV4 - SN3600; ConvF(8.79, 8.79, 8.79); Calibrated: 3/26/2019, ConvF(8.79, 8.79, 8.79); Calibrated: 3/26/2019, ConvF(8.79, 8.79, 8.79); Calibrated: 3/26/2019;
  - Modulation Compensation:
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

Frequency: 418 MHz

450H/F32-FACE, EVM3 U43[LUE+], P7, T5, LMR, CW, 418MHz/Area Scan (7x21x1): Measurement grid: dx=15mm, dy=15mm

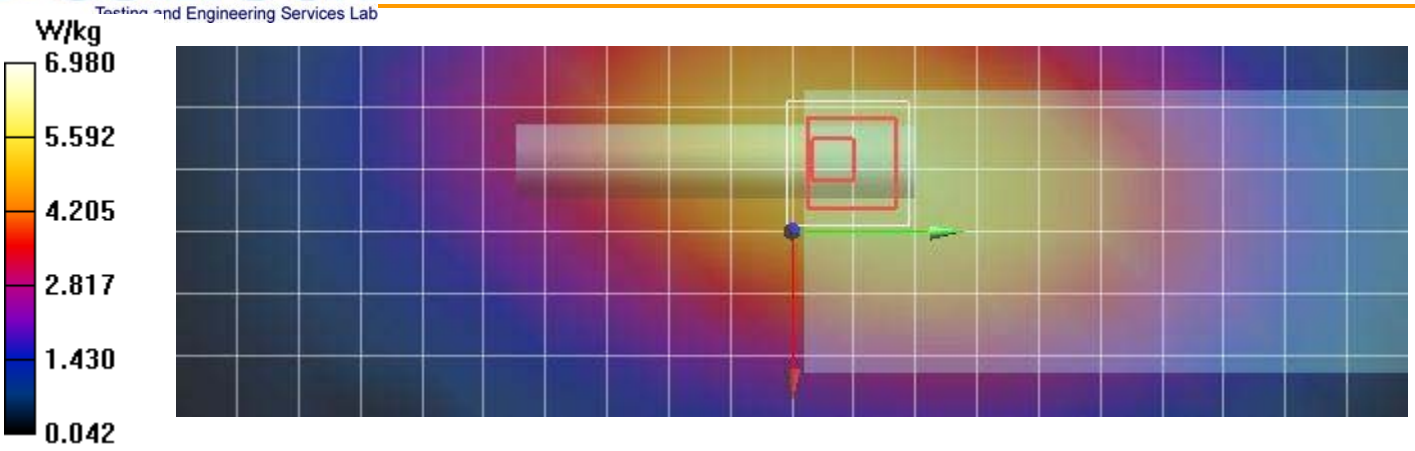
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 5.76 W/kg

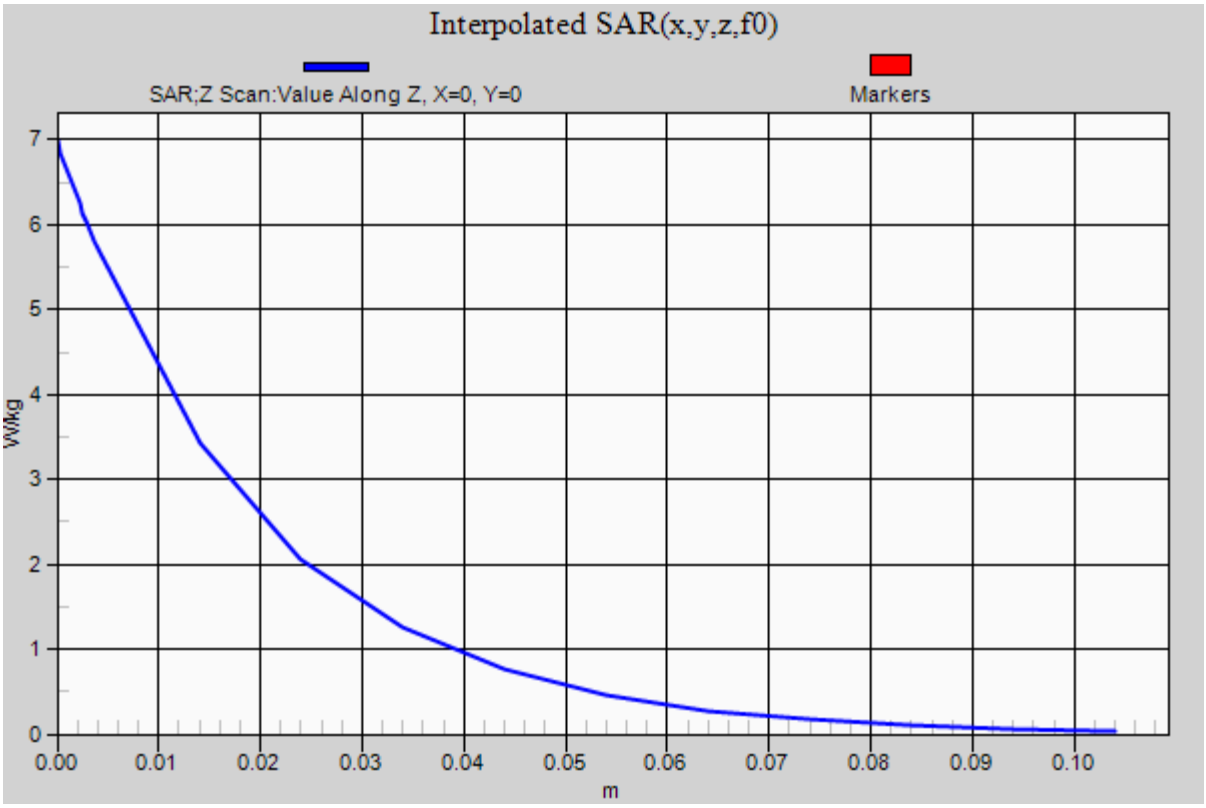
450H/F32-FACE, EVM3 U43[LUE+], P7, T5, LMR, CW, 418MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 73.40 V/m; Power Drift = 0.26 dB
Peak SAR (extrapolated) = 7.06 W/kg
SAR(1 g) = 5.55 W/kg; SAR(10 g) = 4.24 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 5.83 W/kg

450H/F32-FACE, EVM3 U43[LUE+], P7, T5, LMR, CW, 418MHz/Z Scan (1x1x22): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 19.59 (n/a, 19.81) [mm]
Maximum value of SAR (interpolated) = 6.98 W/kg





Plot F36

Date/Time: 7/21/2019 7:19:52 PM

Test Laboratory: Celltech Labs

Harris EVM3- Compliance LMR VHF EVAL- July 21 2019

DUT: EVM3-U17; Type: PTT System Band: VHF; Frequency: 156.8 MHz;Communication System PAR: 0 dB; PMF: 1

Medium: TSL_150H[21JL19]
Medium parameters used (interpolated): f = 156.8 MHz; σ = 0.72 S/m; ε_r = 50.17; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: EX3DV4 - SN3600; ConvF(9.72, 9.72, 9.72); Calibrated: 3/26/2019, ConvF(9.72, 9.72, 9.72); Calibrated: 3/26/2019, ConvF(9.72, 9.72, 9.72); Calibrated: 3/26/2019;
  - Modulation Compensation:
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -1.5, 31.0, 151.0
- Electronics: DAE4 Sn353; Calibrated: 3/19/2019
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 Ax;
- DASY52 52.10.1(1476);

Frequency: 156.8 MHz

150H/F36-FACE, EVM3 U43[LUE+], P7, T4, LMR, CW, 156.8MHz/Area Scan (8x24x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.15 W/kg

150H/F36-FACE, EVM3 U43[LUE+], P7, T4, LMR, CW, 156.8MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 36.41 V/m; Power Drift = -0.30 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 1.11 W/kg; SAR(10 g) = 0.880 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.15 W/kg

150H/F36-FACE, EVM3 U43[LUE+], P7, T4, LMR, CW, 156.8MHz/Z Scan (1x1x23): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Penetration depth = 22.78 (n/a, 24.49) [mm]
Maximum value of SAR (interpolated) = 1.36 W/kg