

SAR EVALUATION REPORT

For

DDM Brands LLC

1612 NW, 84th Ave., Miami, Florida, USA

FCC ID: A4JP3020SONIC35

Report Type: Original Report	Product Type: 3G Mobile Phone
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Report Number: RSZ131128002-20	
Report Date: 2013-12-17	
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Note: This test report is prepared for the customer shown above and for the equipment described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

Attestation of Test Results		
EUT Information	Company Name	DDM Brands LLC
	EUT Description	3G Mobile Phone
	FCC ID	A4JP3020SONIC35
	Model Number	SONIC3.5 P3020
	Test Date	2013-12-15 to 2013-12-17
Frequency	Max. SAR Level(s) Reported	Limit(W/Kg)
GSM 850	0.435 W/kg 1g Head SAR 1.094 W/kg 1g Body SAR	1.6
PCS 1900	0.248 W/kg 1g Head SAR 0.519 W/kg 1g Body SAR	
WCDMA850	0.534 W/kg 1g Head SAR 0.461 W/kg 1g Body SAR	
WCDMA1900	0.939 W/kg 1g Head SAR 0.268 W/kg 1g Body SAR	
Simultaneous	1.356 W/kg 1g Head SAR 1.303 W/kg 1g Body SAR	
Applicable Standards	ANSI/IEEE C95.1: 2005 IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fileds,3 kHz to 300 GHz.	
	ANSI/IEEE C95.3: 2002 IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to SuchFields,100 kHz—300 GHz.	
	IEEE1528: 2003 IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques	
	KDB procedures KDB 447498 D01 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies. KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets KDB 865664 D01 SAR Measurement Requirements for 100 MHz to 6 GHz KDB 941225 D01 SAR Measurement Procedures for 3G Devices-CDMA 2000/EV-Do WCDMA/HSDPA/HSUPA KDB 941225 D06 SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities.	
Note: This wireless device has been shown to be capable of compliance for localized specific absorption rate (SAR) for General Population/Uncontrolled Exposure limits specified in ANSI/IEEE Standards and has been tested in accordance with the measurement procedures specified in IEEE 1528-2003 and RF exposure KDB procedures. The results and statements contained in this report pertain only to the device(s) evaluated.		

TABLE OF CONTENTS

DOCUMENT REVISION HISTORY	5
EUT DESCRIPTION	6
TECHNICAL SPECIFICATION	6
REFERENCE, STANDARDS, AND GUIDELINES	7
SAR LIMITS	8
FACILITIES.....	9
DESCRIPTION OF TEST SYSTEM	10
EQUIPMENT LIST AND CALIBRATION	17
EQUIPMENTS LIST & CALIBRATION INFORMATION	17
SAR MEASUREMENT SYSTEM VERIFICATION	18
LIQUID VERIFICATION	18
SYSTEM ACCURACY VERIFICATION	21
SAR SYSTEM VALIDATION DATA	22
EUT TEST STRATEGY AND METHODOLOGY	30
TEST POSITIONS FOR DEVICE OPERATING NEXT TO A PERSON'S EAR.....	30
CHEEK/TOUCH POSITION	31
EAR/TILT POSITION	31
TEST POSITIONS FOR BODY-WORN AND OTHER CONFIGURATIONS	32
SAR EVALUATION PROCEDURE.....	33
CONDUCTED OUTPUT POWER MEASUREMENT	34
PROVISION APPLICABLE	34
TEST PROCEDURE	34
MAXIMUM OUTPUT POWER AMONG PRODUCTION UNITS	34
TEST RESULTS:	35
SAR MEASUREMENT RESULTS	42
SAR TEST DATA.....	42
SAR SIMULTANEOUS TRANSMISSION DESCRIPTION	49
EUT SCAN RESULTS	54
APPENDIX A MEASUREMENT UNCERTAINTY	102
APPENDIX B – PROBE CALIBRATION CERTIFICATES	103
APPENDIX C DIPOLE CALIBRATION CERTIFICATES	113
APPENDIX D EUT TEST POSITION PHOTOS	133
LIQUID DEPTH $\geq 15\text{CM}$	133
BODY-WORN FRONT SETUP PHOTO	133
BODY-WORN BACK SETUP PHOTO	134
BODY-WORN LEFT SETUP PHOTO	134
BODY-WORN BOTTOM SETUP PHOTO	135
LEFT HEAD TOUCH SETUP PHOTO	136
LEFT HEAD TILT SETUP PHOTO	136
RIGHT HEAD TOUCH SETUP PHOTO	137
RIGHT HEAD TILT SETUP PHOTO	137
APPENDIX E EUT PHOTOS	138
EUT – FRONT VIEW.....	138
EUT – BACK VIEW	138
EUT – LEFT SIDE VIEW	139

EUT – RIGHT SIDE VIEW 139

EUT – TOP VIEW 140

EUT – BOTTOM VIEW..... 140

EUT – BATTERY OFF VIEW 141

APPENDIX F INFORMATIVE REFERENCES 142

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	RSZ131128002-20	Original Report	2013-12-17

EUT DESCRIPTION

This report has been prepared on behalf of *DDM Brands LLC* and their product, FCC ID: *A4JP3020SONIC35*, Model: *SONIC3.5 P3020* or the EUT (Equipment under Test) as referred to in the rest of this report. The EUT is a *3G mobile phone*.

Technical Specification

Product Type	Portable
Exposure Category:	Population / Uncontrolled
Antenna Type(s):	Internal Antenna
Body-Worn Accessories:	Headset
Face-Head Accessories:	None
Multi-slot Class:	Class 12
Operation Mode :	GSM Voice, GPRS Data, WCDMA, Wi-Fi and Bluetooth
Frequency Band:	GSM850: 824-849 MHz (TX); 869-894 MHz (RX) PCS1900: 1850-1910 MHz (TX); 1930-1990 MHz (RX) WCDMA850: 824-849 MHz (TX); 869-894 MHz (RX) WCDMA1900: 1850-1910 MHz (TX); 1930-1990 MHz (RX) Wi-Fi: 2412-2462 MHz (TX/RX) Bluetooth : 2402-2480 MHz (TX/RX)
Conducted RF Power:	GSM850 : 32.21 dBm (GMSK), 26.52 dBm (8PSK) PCS1900: 28.87 dBm (GMSK), 26.38 dBm (8PSK) WCDMA 850: 22.12 dBm WCDMA 1900: 22.32 dBm WiFi: 9.66 dBm Bluetooth: 5.29 dBm
Dimensions (L*W*H):	116.3mm(L) × 62.1mm(W) × 12.05mm(H)
Power Source:	3.7 V _{DC} 1300 mAh Rechargeable Battery
Normal Operation:	Head and Body-worn

REFERENCE, STANDARDS, AND GUIDELINES

FCC:

The Report and Order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 1.6 mW/g as recommended by the ANSI/IEEE standard C95.1-1992 [6] for an uncontrolled environment (Paragraph 65). According to the Supplement C of OET Bulletin 65 "Evaluating Compliance with FCC Guide-lines for Human Exposure to Radio frequency Electromagnetic Fields", released on Jun 29, 2001 by the FCC, the device should be evaluated at maximum output power (radiated from the antenna) under "worst-case" conditions for normal or intended use, incorporating normal antenna operating positions, device peak performance frequencies and positions for maximum RF energy coupling.

This report describes the methodology and results of experiments performed on wireless data terminal. The objective was to determine if there is RF radiation and if radiation is found, what is the extent of radiation with respect to safety limits. SAR (Specific Absorption Rate) is the measure of RF exposure determined by the amount of RF energy absorbed by human body (or its parts) – to determine how the RF energy couples to the body or head which is a primary health concern for body worn devices. The limit below which the exposure to RF is considered safe by regulatory bodies in North America is 1.6 mW/g average over 1 gram of tissue mass.

CE:

The order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 2 mW/g as recommended by EN62209-1 for an uncontrolled environment. According to the Standard, the device should be evaluated at maximum output power (radiated from the antenna) under "worst-case" conditions for normal or intended use, incorporating normal antenna operating positions, device peak performance frequencies and positions for maximum RF energy coupling.

This report describes the methodology and results of experiments performed on wireless data terminal. The objective was to determine if there is RF radiation and if radiation is found, what is the extent of radiation with respect to safety limits. SAR (Specific Absorption Rate) is the measure of RF exposure determined by the amount of RF energy absorbed by human body (or its parts) – to determine how the RF energy couples to the body or head which is a primary health concern for body worn devices. The limit below which the exposure to RF is considered safe by regulatory bodies in Europe is 2 mW/g average over 10 gram of tissue mass.

The test configurations were laid out on a specially designed test fixture to ensure the reproducibility of measurements. Each configuration was scanned for SAR. Analysis of each scan was carried out to characterize the above effects in the device.

SAR Limits**FCC Limit (1g Tissue)**

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 1 g of tissue)	1.60	8.0
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0	20.0

CE Limit (10g Tissue)

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 10 g of tissue)	2.0	10
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0	20.0

Population/Uncontrolled Environments are defined as locations where there is the exposure of individual who have no knowledge or control of their exposure.

Occupational/Controlled Environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).

General Population/Uncontrolled environments Spatial Peak limit 1.6W/kg (FCC) & 2 W/kg (CE) applied to the EUT.

FACILITIES

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect data is located at 6/F, the 3rd Phase of WanLi Industrial Building, Shi Hua Road, Fu Tian Free Trade Zone, Shenzhen, Guangdong, P.R. of China

DESCRIPTION OF TEST SYSTEM

These measurements were performed with ALSAS 10 Universal Integrated SAR Measurement system from APREL Laboratories.

ALSAS-10U System Description

ALSAS-10-U is fully compliant with the technical and scientific requirements of IEEE 1528, IEC 62209, CENELEC, ARIB, ACA, and the Federal Communications Commission. The system comprises of a six axes articulated robot which utilizes a dedicated controller.

ALSAS-10U uses the latest methodologies. And FDTD modeling to provide a platform which is repeatable with minimum uncertainty.

Applications

Predefined measurement procedures compliant with the guidelines of CENELEC, IEEE, IEC, FCC, etc are utilized during the assessment for the device. Automatic detection for all SAR maxima are embedded within the core architecture for the system, ensuring that peak locations used for centering the zoom scan are within a 1mm resolution and a 0.05mm repeatable position. System operation range currently available up-to 6 GHz in simulated tissue.

Area Scans

Area scans are defined prior to the measurement process being executed with a user defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a 10mm² step integral, with 1mm interpolation used to locate the peak SAR area used for zoom scan assessments.

Where the system identifies multiple SAR peaks (which are within 25% of peak value) the system will provide the user with the option of assessing each peak location individually for zoom scan averaging.

Zoom Scan (Cube Scan Averaging)

The averaging zoom scan volume utilized in the ALSAS-10U software is in the shape of a cube and the side dimension of a 1 g or 10 g mass is dependent on the density of the liquid representing the simulated tissue. A density of 1000 kg/m³ is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1 g cube is 10mm, with the side length of the 10 g cube 21,5mm.

When the cube intersects with the surface of the phantom, it is oriented so that 3 vertices touch the surface of the shell or the center of a face is tangent to the surface. The face of the cube closest to the surface is modified in order to conform to the tangent surface.

The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications (including FCC) utilize a physical step of 5x5x8 (8mmx8mmx5mm) providing a volume of 32mm in the X & Y axis, and 35mm in the Z axis.



ALSAS-10U Interpolation and Extrapolation Uncertainty

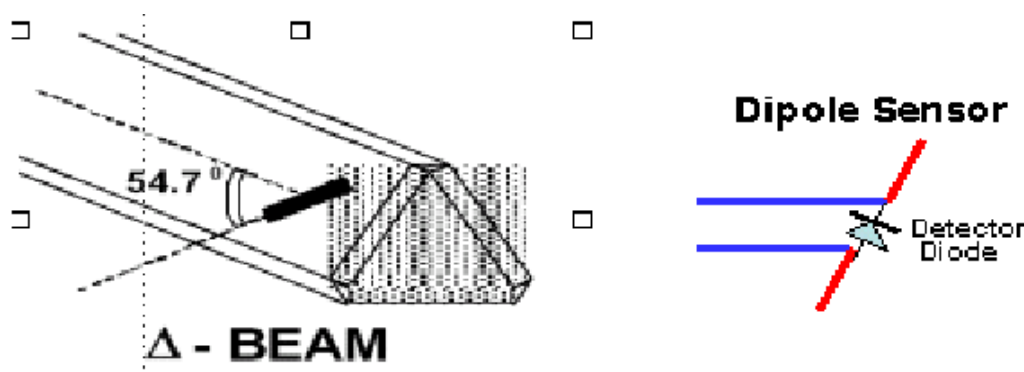
The overall uncertainty for the methodology and algorithms the used during the SAR calculation was evaluated using the data from IEEE 1528 based on the example f3 algorithm:

$$f_3(x, y, z) = A \frac{a^2}{\frac{a^2}{4} + x'^2 + y'^2} \cdot \left(e^{-\frac{2z}{a}} + \frac{a^2}{2(a + 2z)^2} \right)$$

Isotropic E-Field Probe

The isotropic E-Field probe has been fully calibrated and assessed for isotropicity, and boundary effect within a controlled environment. Depending on the frequency for which the probe is calibrated the method utilized for calibration will change.

The E-Field probe utilizes a triangular sensor arrangement as detailed in the diagram below:



SAR is assessed with a calibrated probe which moves at a default height of 5mm from the center of the diode, which is mounted to the sensor, to the phantom surface (in the Z Axis). The 5mm offset height has been selected so as to minimize any resultant boundary effect due to the probe being in close proximity to the phantom surface.

The following algorithm is an example of the function used by the system for linearization of the output from the probe when measuring complex modulation schemes.

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

Isotropic E-Field Probe Specification

Calibration Method	Frequency Dependent Below 1 GHz Calibration in air performed in a TEM Cell Above 1 GHz Calibration in air performed in waveguide
Sensitivity	$0.70 \mu\text{V}/(\text{V}/\text{m})^2$ to $0.85 \mu\text{V}/(\text{V}/\text{m})^2$
Dynamic Range	0.0005 W/kg to 100 W/kg
Isotropic Response	Better than 0.1 dB
Diode Compression Point (DCP)	Calibration for Specific Frequency
Probe Tip Diameter	< 2.9 mm
Sensor Offset	1.56 (+/- 0.02 mm)
Probe Length	289 mm
Video Bandwidth	@ 500 Hz: 1 dB @ 1.02 kHz: 3 dB
Boundary Effect	Less than 2.1% for distance greater than 0.58 mm
Spatial Resolution	The spatial resolution uncertainty is less than 1.5% for 4.9mm diameter probe. The spatial resolution uncertainty is less than 1.0% for 2.5mm diameter probe

Boundary Detection Unit and Probe Mounting Device

ALSAS-10U incorporates a boundary detection unit with a sensitivity of 0.05mm for detecting all types of surfaces. The robust design allows for detection during probe tilt (probe normalize) exercises, and utilizes a second stage emergency stop. The signal electronics are fed directly into the robot controller for high accuracy surface detection in lateral and axial detection modes (X, Y, & Z).

The probe is mounted directly onto the Boundary Detection unit for accurate tooling and displacement calculations controlled by the robot kinematics. The probe is connect to an isolated probe interconnect where the output stage of the probe is fed directly into the amplifier stage of the Daq-Paq.

Daq-Paq (Analog to Digital Electronics)

ALSAS-10U incorporates a fully calibrated Daq-Paq (analog to digital conversion system) which has a 4 channel input stage, sent via a 2 stage auto-set amplifier module. The input signal is amplified accordingly so as to offer a dynamic range from 5 μV to 800mV. Integration of the fields measured is carried out at board level utilizing a Co-Processor which then sends the measured fields down into the main computational module in digitized form via an RS232 communications port. Probe linearity and duty cycle compensation is carried out within the main Daq-Paq module.

ADC	12 Bit
Amplifier Range	20 mV to 200 mV and 150 mV to 800 mV
Field Integration	Local Co-Processor utilizing proprietary integration algorithms
Number of Input Channels	4 in total 3 dedicated and 1 spare
Communication	Packet data via RS232

Axis Articulated Robot

ALSAS-10U utilizes a six axis articulated robot, which is controlled using a Pentium based real-time movement controller. The movement kinematics engine utilizes proprietary (Thermo CRS) interpolation and extrapolation algorithms, which allow full freedom of movement for each of the six joints within the working envelope. Utilization of joint 6 allows for full probe rotation with a tolerance better than 0.05mm around the central axis.



Robot/Controller Manufacturer	Thermo CRS
Number of Axis	Six independently controlled axis
Positioning Repeatability	0.05 mm
Controller Type	Single phase Pentium based C500C
Robot Reach	710 mm
Communication	RS232 and LAN compatible

ALSAS Universal Workstation

ALSAS Universal workstation allows for repeatability and fast adaptability. It allows users to do calibration, testing and measurements using different types of phantoms with one set up, which significantly speeds up the measurement process.

Universal Device Positioner

The universal device positioner allows complete freedom of movement of the EUT. Developed to hold a EUT in a free-space scenario any additional loading attributable to the material used in the construction of the positioner has been eliminated. Repeatability has been enhanced through the linear scales which form the design used to indicate positioning for any given test scenario in all major axes. A 15° tilt indicator is included for the of aid cheek to tilt movements for head SAR analysis. Overall uncertainty for measurements have been reduced due to the design of the Universal device positioner, which allows positioning of a device in as near to a free-space scenario as possible, and by providing the means for complete repeatability.

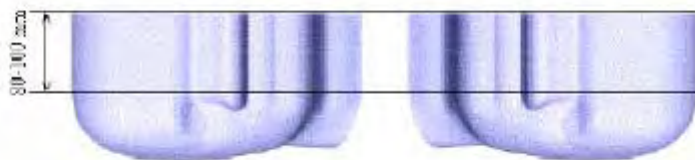


Phantom Types

The ALSAS-10U allows the integration of multiple phantom types. SAM Phantoms fully compliant with IEEE 1528, Universal Phantom, and Universal Flat.

APREL SAM Phantoms

The SAM phantoms developed using the IEEE SAM CAD file. They are fully compliant with the requirements for both IEEE 1528 and FCC Supplement C. Both the left and right SAM phantoms are interchangeable, transparent and include the IEEE 1528 grid with visible NF and MB lines.



APREL Laboratories Universal Phantom

The Universal Phantom is used on the ALSAS-10U as a system validation phantom. The Universal Phantom has been fully validated both experimentally from 800MHz to 6GHz and numerically using XFDTD numerical software.

The shell thickness is 2mm overall, with a 4mm spacer located at the NF/MB intersection providing an overall thickness of 6mm in line with the requirements of IEEE-1528.

The design allows for fast and accurate measurements, of handsets, by allowing the conservative SAR to be evaluated at on frequency for both left and right head experiments in one measurement.



Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

Ingredients (% by weight)	Frequency (MHz)									
	450		835		915		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton x-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (s/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

Recommended Tissue Dielectric Parameters for Head and Body

Frequency (MHz)	Head Tissue		Body Tissue	
	ϵ_r	σ (S/m)	ϵ_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800-2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

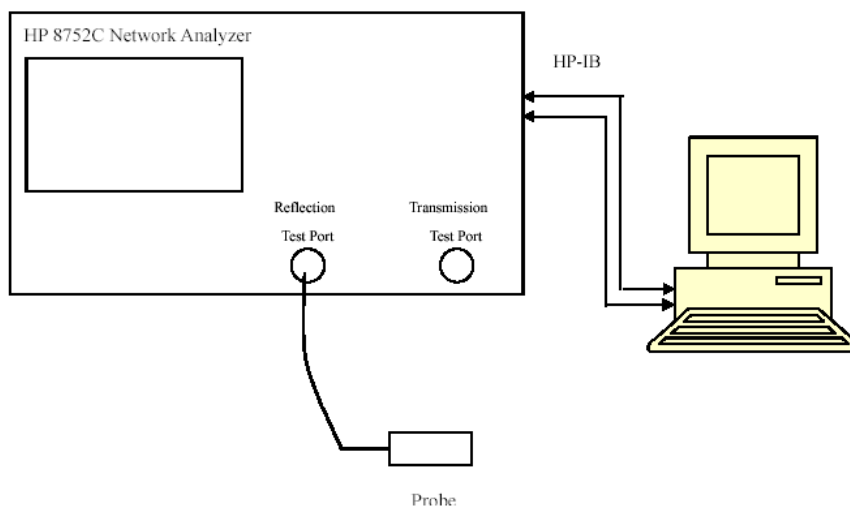
EQUIPMENT LIST AND CALIBRATION

Equipments List & Calibration Information

Equipment	Model	Calibration Date	S/N
CRS F3 robot	ALS-F3	N/A	RAF0805352
CRS F3 Software	ALS-F3-SW	N/A	N/A
CRS C500C controller	ALS-C500	N/A	RCF0805379
Probe mounting device & Boundary Detection Sensor System	ALS-PMDPS-3	N/A	120-00270
Universal Work Station	ALS-UWS	N/A	100-00157
Data Acquisition Package	ALS-DAQ-PAQ-3	2013-10-08	110-00212
Miniature E-Field Probe	ALS-E-020	2013-10-08	500-00283
Dipole, 835MHz	ALS-D-835-S-2	2011-08-25	180-00558
Dipole, 1900MHz	ALS-D-1900-S-2	2011-08-25	210-00710
Dipole Spacer	ALS-DS-U	N/A	250-00907
Device holder/Positioner	ALS-H-E-SET-2	N/A	170-00510
Left ear SAM phantom	ALS-P-SAM-L	N/A	130-00311
Right ear SAM phantom	ALS-P-SAM-R	N/A	140-00359
UniPhantom	ALS-P-UP-1	N/A	150-00413
Simulated Tissue 835 MHz Head	ALS-TS-835-H	Each Time	270-01002
Simulated Tissue 835 MHz Body	ALS-TS-835-B	Each Time	270-02101
Simulated Tissue 1900 MHz Head	ALS-TS-1900-H	Each Time	295-01103
Simulated Tissue 1900 MHz Body	ALS-TS-1900-B	Each Time	295-02102
Power Amplifier	5S1G4	N/A	71377
Synthesized Sweeper	HP 8341B	2013-05-09	2624A00116
UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	2013-11-23	106891
EMI Test Receiver	ESCI	2013-11-12	101120

SAR MEASUREMENT SYSTEM VERIFICATION

Liquid Verification



Liquid Verification Setup Block Diagram

Liquid Verification Results

Frequency	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$ (S/m)	
824.2	Head	40.85	0.89	41.50	0.90	-1.575	-1.111	± 5
	Body	55.08	0.99	55.20	0.97	-0.220	2.062	± 5
826.4	Head	40.90	0.89	41.50	0.90	-1.438	-1.111	± 5
	Body	55.09	1.00	55.20	0.97	-0.191	3.093	± 5
836.6	Head	40.71	0.90	41.50	0.90	-1.914	0.000	± 5
	Body	55.16	0.97	55.20	0.97	-0.077	0.000	± 5
846.6	Head	40.85	0.92	41.50	0.90	-1.558	2.222	± 5
	Body	55.22	0.99	55.20	0.97	0.036	2.062	± 5
848.8	Head	40.41	0.92	41.50	0.90	-2.626	2.222	± 5
	Body	55.24	1.00	55.20	0.97	0.065	3.093	± 5
1850.2	Head	40.23	1.41	40.00	1.40	0.587	0.714	± 5
	Body	53.78	1.50	53.30	1.52	0.892	-1.316	± 5
1852.4	Head	40.24	1.40	40.00	1.40	0.593	0.000	± 5
	Body	53.73	1.50	53.30	1.52	0.799	-1.316	± 5
1880.0	Head	40.24	1.43	40.00	1.40	0.608	2.143	± 5
	Body	53.53	1.54	53.30	1.52	0.428	1.316	± 5
1907.6	Head	40.25	1.44	40.00	1.40	0.622	2.857	± 5
	Body	53.49	1.57	53.30	1.52	0.364	3.289	± 5
1909.8	Head	40.25	1.44	40.00	1.40	0.623	2.857	± 5
	Body	53.60	1.56	53.30	1.52	0.571	2.632	± 5

*Liquid Verification was performed on 2013-12-15.

Please refer to the following tables.

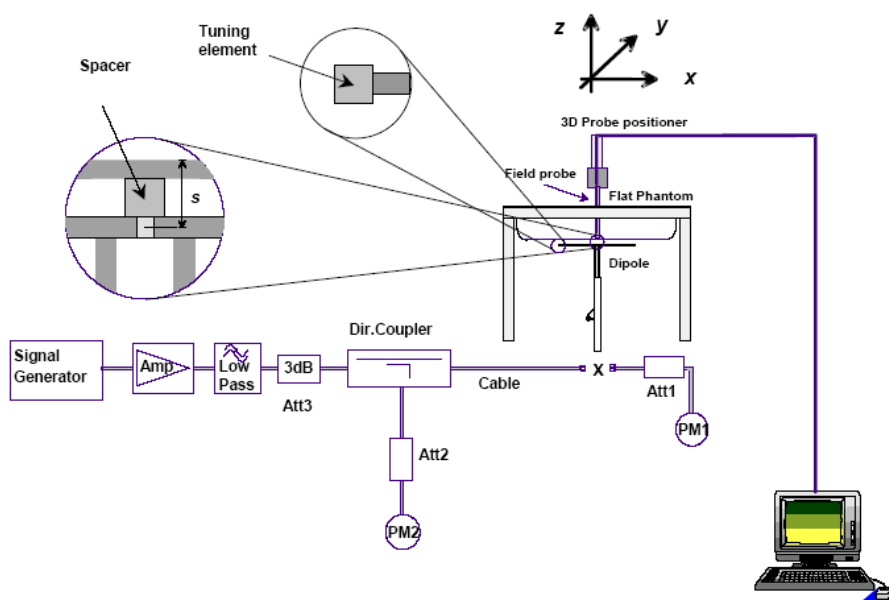
835 MHz Head				835 MHz Body		
Frequency (MHz)	e'	e''		Frequency (MHz)	e'	e''
824.0	40.8462	19.3545		824.0	55.0788	21.5510
824.5	40.9562	19.2540		824.5	55.0820	21.4505
825.0	40.2051	19.2666		825.0	55.0851	21.4630
825.5	40.3330	19.2790		825.5	55.0882	21.4754
826.0	40.4662	19.4140		826.0	55.0914	21.6105
826.5	40.9032	19.4778		826.5	55.0945	21.6742
827.0	40.5900	19.3923		827.0	55.0976	21.5887
827.5	40.2479	19.2704		827.5	55.1008	21.4669
828.0	40.8180	19.3050		828.0	55.1039	21.5014
828.5	40.9317	19.2624		828.5	55.1071	21.0790
829.0	40.2668	19.3666		829.0	55.1102	21.1832
829.5	40.5385	19.3094		829.5	55.1133	21.1260
830.0	40.1068	19.1873		830.0	55.1165	21.0039
830.5	40.6686	19.2517		830.5	55.1196	21.0683
831.0	40.8955	19.2368		831.0	55.1228	21.0535
831.5	40.3460	19.4443		831.5	55.1259	21.2609
832.0	40.6767	19.4219		832.0	55.1290	21.2386
832.5	40.0414	19.1986		832.5	55.1322	21.0153
833.0	40.2522	19.1320		833.0	55.1353	20.9486
833.5	40.0752	19.2435		833.5	55.1384	20.7601
834.0	40.3706	19.3953		834.0	55.1416	20.9120
834.5	40.1450	19.2883		834.5	55.1447	20.8049
835.0	40.6042	19.2317		835.0	55.1479	20.7484
835.5	40.5792	19.4794		835.5	55.1510	20.9961
836.0	40.1408	19.4864		836.0	55.1541	21.0030
836.5	40.7058	19.3442		836.5	55.1573	20.8608
837.0	40.9875	19.1713		837.0	55.1604	20.6879
837.5	40.1845	19.2075		837.5	55.1635	20.7242
838.0	40.4178	19.4918		838.0	55.1667	21.0085
838.5	40.4825	19.5070		838.5	55.1698	21.0237
839.0	40.9559	19.4290		839.0	55.1730	20.9457
839.5	40.6103	19.3640		839.5	55.1761	20.8806
840.0	40.0018	19.4311		840.0	55.1792	20.9478
840.5	40.2859	19.4765		840.5	55.1824	20.9931
841.0	40.5402	19.4316		841.0	55.1855	20.9483
841.5	40.6066	19.3684		841.5	55.1886	20.8850
842.0	40.8147	19.5442		842.0	55.1918	21.0608
842.5	40.1282	19.5127		842.5	55.1949	21.0294
843.0	40.6771	19.4731		843.0	55.1981	20.9898
843.5	40.4240	19.4286		843.5	55.2012	20.9453
844.0	40.5431	19.4463		844.0	55.2043	20.9629
844.5	40.2000	19.4722		844.5	55.2075	20.9888
845.0	40.8477	19.3816		845.0	55.2106	20.8982
845.5	40.3591	19.3280		845.5	55.2138	20.8446
846.0	40.7340	19.5010		846.0	55.2169	21.0176
846.5	40.8536	19.5624		846.5	55.2200	21.0790
847.0	40.6010	19.5112		847.0	55.2232	21.0279
847.5	40.5198	19.4316		847.5	55.2263	20.9482
848.0	40.0487	19.5217		848.0	55.2294	21.0384
848.5	40.8206	19.5998		848.5	55.2326	21.1164
849.0	40.4104	19.6000		849.0	55.2357	21.1166

1900 MHz Head				1900 MHz Body		
Frequency (MHz)	e'	e''		Frequency (MHz)	e'	e''
1850.0	40.2348	13.6721		1850.0	53.7753	14.6223
1851.2	40.2371	13.6421		1851.2	53.7072	14.5797
1852.4	40.2373	13.6094		1852.4	53.7261	14.5808
1853.6	40.2376	13.6328		1853.6	53.7027	14.5571
1854.8	40.2378	13.6267		1854.8	53.6055	14.5766
1856.0	40.2381	13.5508		1856.0	53.7085	14.6130
1857.2	40.2383	13.6907		1857.2	53.7017	14.6390
1858.4	40.2386	13.5869		1858.4	53.6837	14.5602
1859.6	40.2388	13.6408		1859.6	53.6654	14.5545
1860.8	40.2391	13.6422		1860.8	53.5612	14.6073
1862.0	40.2393	13.6587		1862.0	53.5889	14.4345
1863.2	40.2396	13.6811		1863.2	53.5348	14.4473
1864.4	40.2398	13.7161		1864.4	53.5696	14.4644
1865.6	40.2401	13.7107		1865.6	53.5761	14.4354
1866.8	40.2403	13.6995		1866.8	53.6511	14.4260
1868.0	40.2406	13.7180		1868.0	53.7195	14.4421
1869.2	40.2408	13.7788		1869.2	53.7286	14.4645
1870.4	40.2411	13.7715		1870.4	53.6421	14.5160
1871.6	40.2413	13.7454		1871.6	53.5845	14.5167
1872.8	40.2416	13.7755		1872.8	53.6229	14.5457
1874.0	40.2418	13.7182		1874.0	53.5494	14.5540
1875.2	40.2421	13.7522		1875.2	53.6125	14.6172
1876.4	40.2423	13.7502		1876.4	53.5156	14.5400
1877.6	40.2426	13.8147		1877.6	53.6179	14.6201
1878.8	40.2428	13.7103		1878.8	53.6457	14.7519
1880.0	40.2431	13.6555		1880.0	53.5280	14.7708
1881.2	40.2433	13.7043		1881.2	53.4863	14.7679
1882.4	40.2436	13.7269		1882.4	53.5818	14.7393
1883.6	40.2438	13.6956		1883.6	53.5473	14.6953
1884.8	40.2441	13.6962		1884.8	53.5722	14.7180
1886.0	40.2443	13.6955		1886.0	53.6074	14.6502
1887.2	40.2445	13.6907		1887.2	53.5882	14.6264
1888.4	40.2448	13.6858		1888.4	53.6780	14.6607
1889.6	40.2450	13.6810		1889.6	53.6085	14.6653
1890.8	40.2453	13.6761		1890.8	53.6541	14.7221
1892.0	40.2455	13.6713		1892.0	53.6421	14.5183
1893.2	40.2458	13.6664		1893.2	53.6145	14.4792
1894.4	40.2460	13.6616		1894.4	53.5872	14.5283
1895.6	40.2463	13.6567		1895.6	53.5800	14.8621
1896.8	40.2465	13.6519		1896.8	53.5699	14.8602
1898.0	40.2468	13.6470		1898.0	53.5703	14.8408
1899.2	40.2470	13.6422		1899.2	53.6473	14.8412
1900.4	40.2473	13.6374		1900.4	53.6122	14.7399
1901.6	40.2475	13.6325		1901.6	53.6157	14.8292
1902.8	40.2478	13.6277		1902.8	53.5848	14.7892
1904.0	40.2480	13.6228		1904.0	53.6665	14.7581
1905.2	40.2483	13.6180		1905.2	53.5782	14.7266
1906.4	40.2485	13.6131		1906.4	53.5681	14.6515
1907.6	40.2488	13.6083		1907.6	53.4938	14.7683
1908.8	40.2490	13.6034		1908.8	53.5781	14.7037
1910.0	40.2493	13.5986		1910.0	53.6046	14.6674

System Accuracy Verification

Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of $\pm 10\%$. The validation results are tabulated below. And also the corresponding SAR plot is attached as well in the SAR plots files.

System Verification Setup Block Diagram



Probe and dipole antenna List and Detail

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
APREL	Probe	ALS-E-020	500-00283	2013-10-08	2014-10-07
APREL	Dipole antenna(850MHz)	ALS-D-835-S-2	180-00558	2011-08-25	2014-08-24
APREL	Dipole antenna(1900MHz)	ALS-D-1900-S-2	210-00710	2011-08-25	2014-08-24

System Accuracy Check Results

Date	Frequency Band	Liquid Type	Measured SAR (W/Kg)		Target Value (W/Kg)	Delta (%)	Tolerance (%)
2013-12-15	835	Head	1g	9.852	9.590	2.732	± 10
		Body	1g	9.809	9.684	1.291	± 10
	1900	Head	1g	39.859	39.648	0.532	± 10
		Body	1g	40.112	39.769	0.862	± 10

*All SAR values are normalized to 1 Watt forward power.

SAR SYSTEM VALIDATION DATA**Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)****System Performance Check 835 MHz Head Liquid****Dipole 835 MHz; Type: ALS-D-835-S-2; S/N: 180-00558****Product Data**

Device Name : Dipole 835 MHz
Serial No. : 180-00558
Type : Dipole
Model : ALS-D-835-S-2
Frequency Band : 835
Max. Transmit Pwr : 1 W
Drift Time : 3 min(s)
Power Drift-Start : 9.117 W/kg
Power Drift-Finish : 9.195 W/kg
Power Drift (%) : 0.859

Phantom Data

Name : APREL-Uni
Type : Uni-Phantom
Size (mm) : 280 x 280 x 200
Serial No. : System Default
Location : Center
Description : Default
Phantom Data

Tissue Data

Type : Head
Serial No. : 270-01002
Frequency : 835.0 MHz
Last Calib. Date : 15-Dec-2013
Temperature : 20.00 °C
Ambient Temp. : 21.00 °C
Humidity : 56.00 RH%
Epsilon : 40.60 F/m
Sigma : 0.90 S/m
Density : 1000.00 kg/cu. m

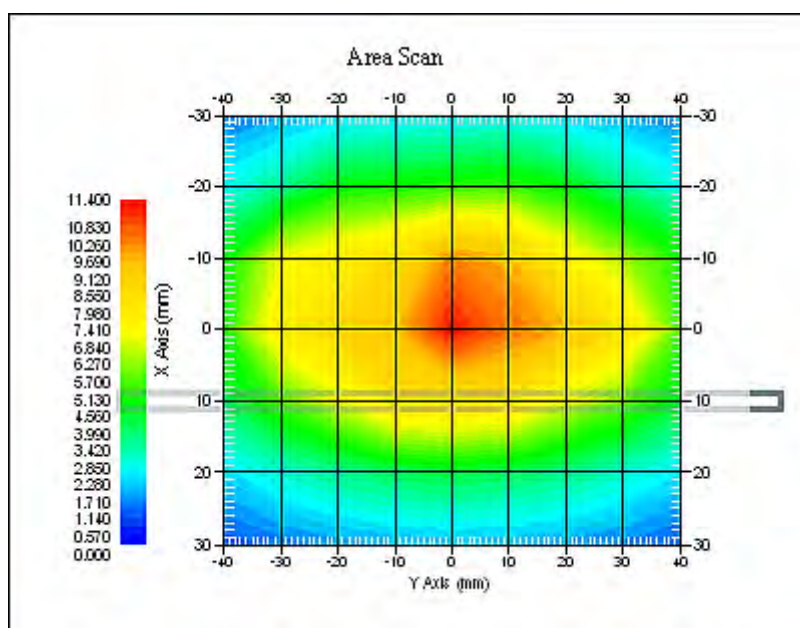
Probe Data

Name : E-Field
Model : E-020
Type : E-Field Triangle
Serial No. : 500-00283
Last Calib. Date : 08-Oct-2013
Frequency Band : 835
Duty Cycle Factor : 1
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 21.00 °C
Ambient Temp. : 21.00 °C
Area Scan : 7x9x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm

1 gram SAR value : 9.852 W/kg
10 gram SAR value : 6.154 W/kg
Area Scan Peak SAR : 11.399 W/kg
Zoom Scan Peak SAR : 15.841 W/kg



835 MHz System Validation with Head Tissue

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**System Performance Check 835 MHz Body Liquid****Dipole 835 MHz; Type: ALS-D-835-S-2; S/N: 180-00558****Product Data**

Device Name : Dipole 835 MHz
Serial No. : 180-00558
Type : Dipole
Model : ALS-D-835-S-2
Frequency Band : 835
Max. Transmit Pwr : 1 W
Drift Time : 3 min(s)
Power Drift-Start : 10.107 W/kg
Power Drift-Finish : 9.998 W/kg
Power Drift (%) : -1.124

Phantom Data

Name : APREL-Uni
Type : Uni-Phantom
Size (mm) : 280 x 280 x 200
Serial No. : System Default
Location : Center
Description : Default
Phantom Data

Tissue Data

Type : Body
Serial No. : 270-02101
Frequency : 835.0 MHz
Last Calib. Date : 15-Dec-2013
Temperature : 20.00 °C
Ambient Temp. : 21.00 °C
Humidity : 56.00 RH%
Epsilon : 55.15 F/m
Sigma : 0.97 S/m
Density : 1000.00 kg/cu. m

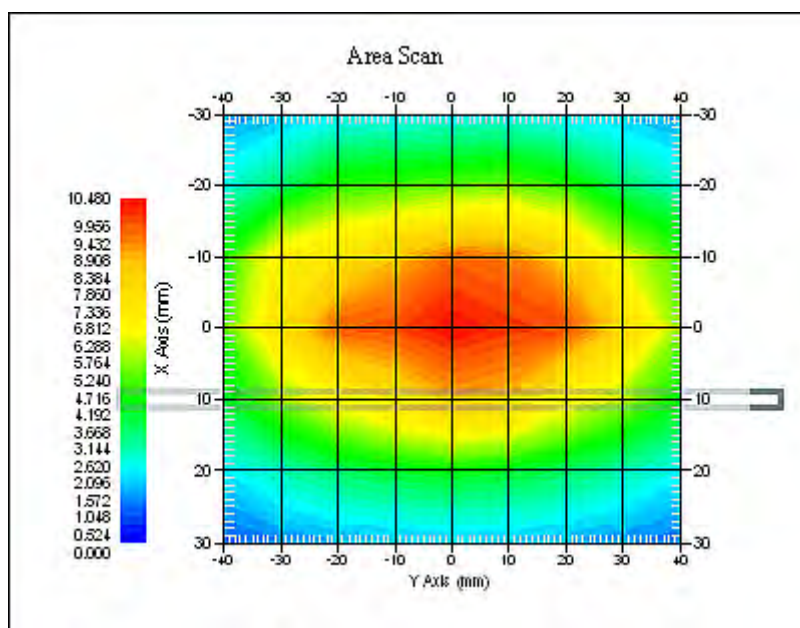
Probe Data

Name : E-Field
Model : E-020
Type : E-Field Triangle
Serial No. : 500-00283
Last Calib. Date : 08-Oct-2013
Frequency Band : 835
Duty Cycle Factor : 1
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 21.00 °C
Ambient Temp. : 21.00 °C
Area Scan : 7x9x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm

1 gram SAR value : 9.809 W/kg
10 gram SAR value : 6.337W/kg
Area Scan Peak SAR : 10.480 W/kg
Zoom Scan Peak SAR : 16.175 W/kg



835 MHz System Validation with Body Tissue

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**System Performance Check 1900 MHz Head Liquid****Dipole 1900 MHz; Type: ALS-D-1900-S-2; S/N: 210-00710****Product Data**

Device Name : Dipole 1900MHz
Serial No. : 210-00710
Type : Dipole
Model : ALS-D-1900-S-2
Frequency Band : 1900
Max. Transmit Pwr : 1 W
Drift Time : 3 min(s)
Power Drift-Start : 39.154 W/kg
Power Drift-Finish : 39.869 W/kg
Power Drift (%) : 1.792

Phantom Data

Name : APREL-Uni
Type : Uni-Phantom
Size (mm) : 280 x 280 x 200
Serial No. : System Default
Location : Center
Description : Default

Tissue Data

Type : Head
Serial No. : 295-01103
Frequency : 1900.00 MHz
Last Calib. Date : 15-Dec-2013
Temperature : 20.00 °C
Ambient Temp. : 21.00 °C
Humidity : 56.00 RH%
Epsilon : 40.25 F/m
Sigma : 1.44 S/m
Density : 1000.00 kg/cu. M

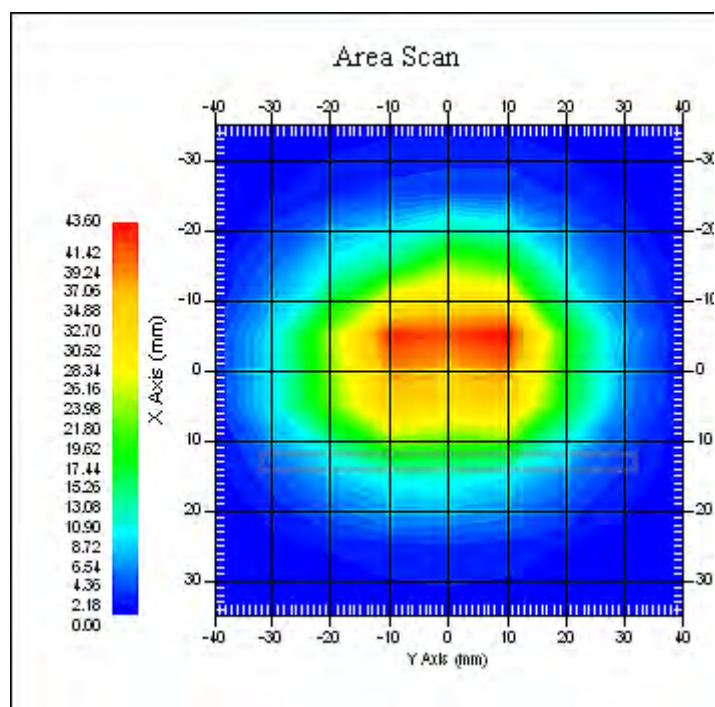
Probe Data

Name : E-Field
Model : E-020
Type : E-Field Triangle
Serial No. : 500-00283
Last Calib. Date : 08-Oct-2013
Frequency Band : 1900
Duty Cycle Factor : 1
Conversion Factor : 4.8
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 20.00 °C
Area Scan : 7x9x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm

1 gram SAR value : 39.859 W/kg
10 gram SAR value : 21.031 W/kg
Area Scan Peak SAR : 43.659 W/kg
Zoom Scan Peak SAR : 70.710 W/kg



1900 MHz System Validation with Head Tissue

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**System Performance Check 1900 MHz Body Liquid****Dipole 1900 MHz; Type: ALS-D-1900-S-2; S/N: 210-00710****Product Data**

Device Name : Dipole 1900MHz
Serial No. : 210-00710
Type : Dipole
Model : ALS-D-1900-S-2
Frequency Band : 1900
Max. Transmit Pwr : 1 W
Drift Time : 3 min(s)
Power Drift-Start : 40.112 W/kg
Power Drift-Finish : 40.637 W/kg
Power Drift (%) : 1.238

Phantom Data

Name : APREL-Uni
Type : Uni-Phantom
Size (mm) : 280 x 280 x 200
Serial No. : System Default
Location : Center
Description : Default

Tissue Data

Type : Body
Serial No. : 295-02102
Frequency : 1900.00 MHz
Last Calib. Date : 15-Dec-2013
Temperature : 20.00 °C
Ambient Temp. : 21.00 °C
Humidity : 56.00 RH%
Epsilon : 53.61 F/m
Sigma : 1.57 S/m
Density : 1000.00 kg/cu. m

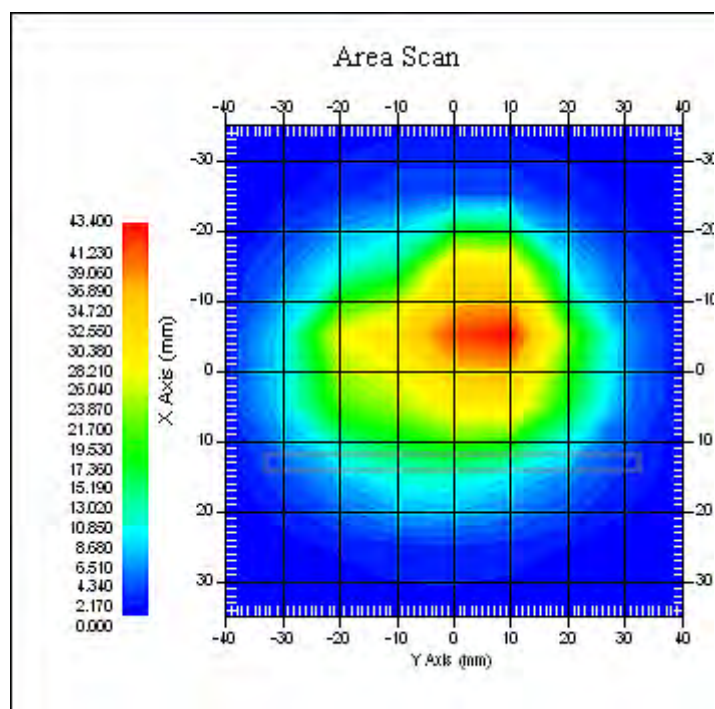
Probe Data

Name : E-Field
Model : E-020
Type : E-Field Triangle
Serial No. : 500-00283
Last Calib. Date : 08-Oct-2013
Frequency Band : 1900
Duty Cycle Factor : 1
Conversion Factor : 4.5
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 21.00 °C
Area Scan : 7x9x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm

1 gram SAR value : 40.112 W/kg
10 gram SAR value : 21.124 W/kg
Area Scan Peak SAR : 43.399 W/kg
Zoom Scan Peak SAR : 71.937 W/kg



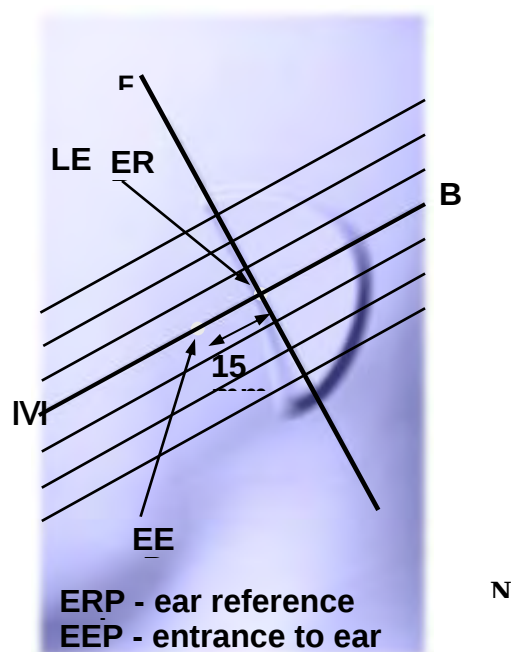
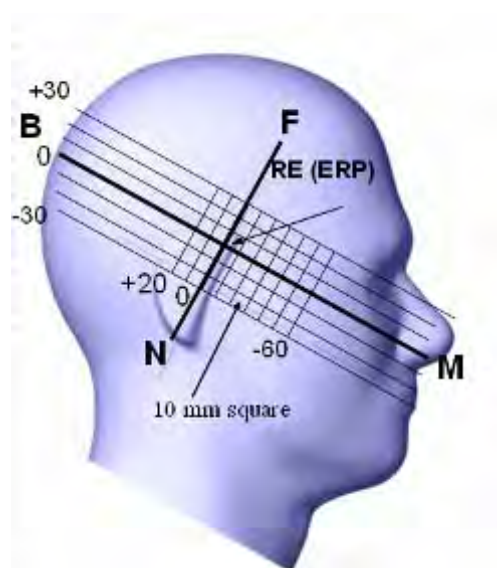
1900 MHz System Validation with Body Tissue

EUT TEST STRATEGY AND METHODOLOGY

Test Positions for Device Operating Next to a Person's Ear

This category includes most wireless handsets with fixed, retractable or internal antennas located toward the top half of the device, with or without a foldout, sliding or similar keypad cover. The handset should have its earpiece located within the upper $\frac{1}{4}$ of the device, either along the centerline or off-centered, as perceived by its users. This type of handset should be positioned in a normal operating position with the "test device reference point" located along the "vertical centerline" on the front of the device aligned to the "ear reference point". The "test device reference point" should be located at the same level as the center of the earpiece region. The "vertical centerline" should bisect the front surface of the handset at its top and bottom edges. A "ear reference point" is located on the outer surface of the head phantom on each ear spacer. It is located 1.5 cm above the center of the ear canal entrance in the "phantom reference plane" defined by the three lines joining the center of each "ear reference point" (left and right) and the tip of the mouth.

A handset should be initially positioned with the earpiece region pressed against the ear spacer of a head phantom. For the SCC-34/SC-2 head phantom, the device should be positioned parallel to the "N-F" line defined along the base of the ear spacer that contains the "ear reference point". For interim head phantoms, the device should be positioned parallel to the cheek for maximum RF energy coupling. The "test device reference point" is aligned to the "ear reference point" on the head phantom and the "vertical centerline" is aligned to the "phantom reference plane". This is called the "initial ear position". While maintaining these three alignments, the body of the handset is gradually adjusted to each of the following positions for evaluating SAR:



Cheek/Touch Position

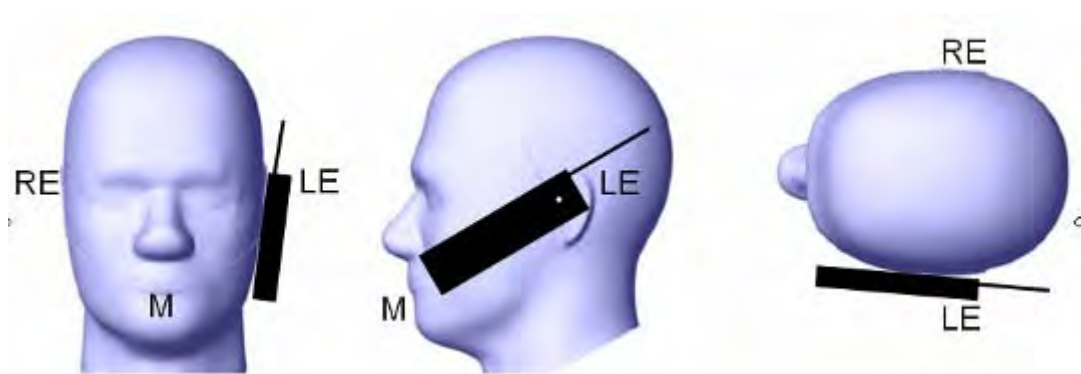
The device is brought toward the mouth of the head phantom by pivoting against the “ear reference point” or along the “N-F” line for the SCC-34/SC-2 head phantom.

This test position is established:

- o When any point on the display, keypad or mouthpiece portions of the handset is in contact with the phantom.
- o (or) When any portion of a foldout, sliding or similar keypad cover opened to its intended self-adjusting normal use position is in contact with the cheek or mouth of the phantom.

For existing head phantoms – when the handset loses contact with the phantom at the pivoting point, rotation should continue until the device touches the cheek of the phantom or breaks its last contact from the ear spacer.

Cheek /Touch Position



Ear/Tilt Position

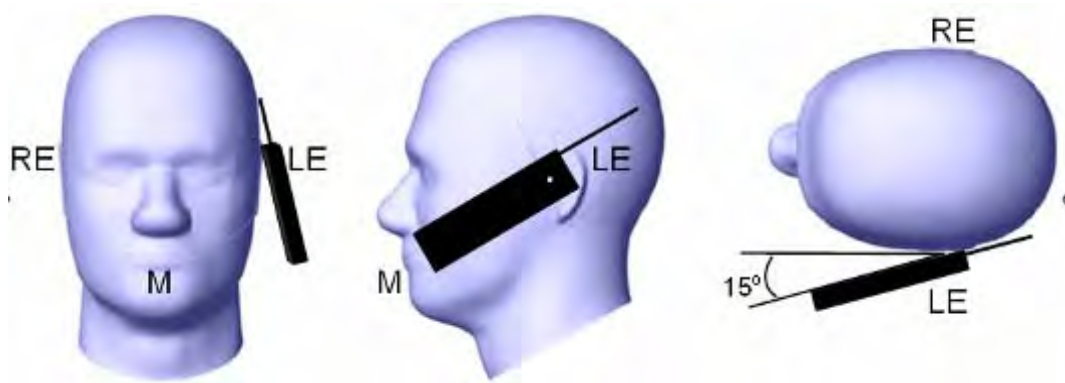
With the handset aligned in the “Cheek/Touch Position”:

1) If the earpiece of the handset is not in full contact with the phantom’s ear spacer (in the “Cheek/Touch position”) and the peak SAR location for the “Cheek/Touch” position is located at the ear spacer region or corresponds to the earpiece region of the handset, the device should be returned to the “initial ear position” by rotating it away from the mouth until the earpiece is in full contact with the ear spacer.

2) (otherwise) The handset should be moved (translated) away from the cheek perpendicular to the line passes through both “ear reference points” (note: one of these ear reference points may not physically exist on a split head model) for approximate 2-3 cm. While it is in this position, the device handset is tilted away from the mouth with respect to the “test device reference point” until the inside angle between the vertical centerline on the front surface of the phone and the horizontal line passing through the ear reference point is by 15° to 80°. After the tilt, it is then moved (translated) back toward the head perpendicular to the line passes through both “ear reference points” until the device touches the phantom or the ear spacer. If the antenna touches the head first, the positioning process should be repeated with a tilt angle less than 15° so that the device and its antenna would touch the phantom simultaneously. This test position may require a device holder or positioner to achieve the translation and tilting with acceptable positioning repeatability.

If a device is also designed to transmit with its keypad cover closed for operating in the head position, such positions should also be considered in the SAR evaluation. The device should be tested on the left and right side of the head phantom in the “Cheek/Touch” and “Ear/Tilt” positions. When applicable, each configuration should be tested with the antenna in its fully extended and fully retracted positions. These test configurations should be tested at the high, middle and low frequency channels of each operating mode; for example, AMPS, CDMA, and TDMA. If the SAR measured at the middle channel for each test configuration (left, right, Cheek/Touch, Tile/Ear, extended and retracted) is at least 2.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s). If the transmission band of the test device is less than 10 MHz, testing at the high and low frequency channels is optional.

Ear /Tilt 15° Position



Test positions for body-worn and other configurations

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. Devices with a headset output should be tested with a headset connected to the device. When multiple accessories that do not contain metallic components are supplied with the device, the device may be tested with only the accessory that dictates the closest spacing to the body. When multiple accessories that contain metallic components are supplied with the device, the device must be tested with each accessory that contains a unique metallic component. If multiple accessories share an identical metallic component (e.g., the same metallic belt-clip used with different holsters with no other metallic components), only the accessory that dictates the closest spacing to the body must be tested.

Body-worn accessories may not always be supplied or available as options for some devices that are intended to be authorized for body-worn use. A separation distance of 1.5 cm between the back of the device and a flat phantom is recommended for testing body-worn SAR compliance under such circumstances. Other separation distances may be used, but they should not exceed 2.5 cm. In these cases, the device may use body-worn accessories that provide a separation distance greater than that tested for the device provided however that the accessory contains no metallic components.

SAR Evaluation Procedure

The evaluation was performed with the following procedure:

Step 1: Measurement of the SAR value at a fixed location above the ear point or central position was used as a reference value for assessing the power drop. The SAR at this point is measured at the start of the test and then again at the end of the testing.

Step 2: The SAR distribution at the exposed side of the head was measured at a distance of 4 mm from the inner surface of the shell. The area covered the entire dimension of the head or EUT and the horizontal grid spacing was 10 mm x 10 mm. Based on these data, the area of the maximum absorption was determined by spline interpolation. The first Area Scan covers the entire dimension of the EUT to ensure that the hotspot was correctly identified.

Step 3: Around this point, a volume of 35 mm x 35 mm x 35 mm was assessed by measuring 7x 7 x 7 points. On the basis of this data set, the spatial peak SAR value was evaluated under the following procedure:

- 1) The data at the surface were extrapolated, since the center of the dipoles is 1.2 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.
- 2) The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed by the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one dimensional splines with the "Not a knot"-condition (in x, y and z-directions). The volume was integrated with the trapezoidal-algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the averages.

All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Re-measurement of the SAR value at the same location as in Step 1. If the value changed by more than 5%, the evaluation was repeated.

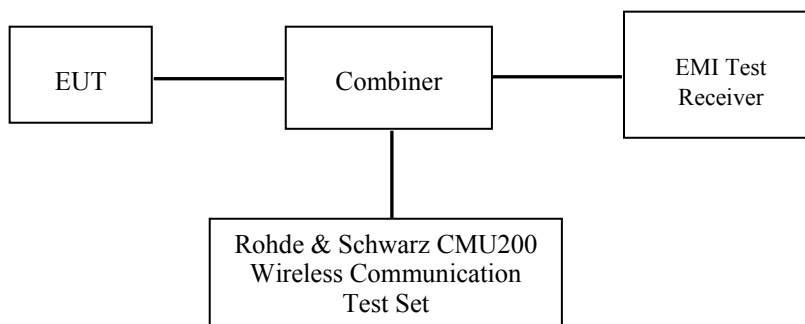
CONDUCTED OUTPUT POWER MEASUREMENT

Provision Applicable

The measured peak output power should be greater and within 5% than EMI measurement.

Test Procedure

The RF output of the transmitter was connected to the input of the EMI Test Receiver through sufficient attenuation.



GSM&3G

Maximum Output Power among production units

Max Target Power for Production Unit (dBm)			
Mode/Band	Channel		
	Low	Middle	High
GSM 850	32.50	32.50	32.50
GPRS 1 slot	32.50	32.50	32.50
GPRS 2 slot	31.00	31.00	31.00
GPRS 3 slot	29.50	29.50	29.50
GPRS 4 slot	28.50	28.50	28.50
PCS 1900	29.00	29.00	29.00
GPRS 1 slot	28.50	28.50	28.50
GPRS 2 slot	28.00	28.00	28.00
GPRS 3 slot	26.50	26.50	26.50
GPRS 4 slot	25.50	25.50	25.50
WCDMA850	22.50	22.50	22.50
WCDMA1900	22.50	22.50	22.50
WiFi 802.11b	10.00	10.00	10.00
WiFi 802.11g	9.00	9.00	9.00
WiFi 802.11n-HT20	9.00	9.00	9.00
Bluetooth	5.50	5.50	5.50

Test Results:**GSM**

Band	Frequency (MHz)	Conducted Peak Output Power	
		Meas. Power (dBm)	Meas. Power (W)
GSM 850	824.2	32.21	1.663
	836.6	32.15	1.641
	848.8	32.09	1.618
PCS 1900	1850.2	28.87	0.771
	1880.0	28.76	0.752
	1909.8	28.58	0.721

GPRS

Band	Channel No.	Frequency (MHz)	RF Peak Output Power (dBm)			
			1 slot	2 slot	3 slots	4 slots
GSM 850	128	824.2	32.01	30.51	29.45	28.39
	190	836.6	32.01	30.43	29.45	28.32
	251	848.8	31.96	30.44	29.42	28.30
PCS 1900	512	1850.2	28.50	27.52	26.48	25.46
	661	1880.0	28.40	27.39	26.35	25.33
	810	1909.8	28.26	27.27	26.25	25.21

EGPRS

Band	Channel No.	Frequency (MHz)	RF Peak Output Power (dBm)			
			1 slot	2 slot	3 slots	4 slots
GSM 850	128	824.2	26.52	25.19	22.86	21.59
	190	836.6	25.86	24.57	22.30	21.76
	251	848.8	25.49	24.23	21.83	21.67
PCS 1900	512	1850.2	26.41	25.11	23.02	21.71
	661	1880.0	26.15	24.79	22.70	21.43
	810	1909.8	26.38	25.21	22.85	21.47

For SAR, the time based average power is relevant, the difference in between depends on the duty cycle of the TDMA signal.

Number of Time slot	1	2	3	4
Duty Cycle	1:8	1:4	1:2.66	1:2
Time based Ave. power compared to slotted Ave. power	-9 dB	-6 dB	-4.25 dB	-3 dB
Crest Factor	8	4	2.66	2

The time based average power for GPRS

Band	Channel No.	Frequency (MHz)	Time based average Power (dBm)			
			1 slot	2 slot	3 slots	4 slots
GSM 850	128	824.2	23.01	24.51	25.20	25.39
	190	836.6	23.01	24.43	25.20	25.32
	251	848.8	22.96	24.44	25.17	25.30
PCS 1900	512	1850.2	19.50	21.52	22.23	22.46
	661	1880.0	19.40	21.39	22.10	22.33
	810	1909.8	19.26	21.27	22.00	22.21

The time based average power for EGPRS

Band	Channel No.	Frequency (MHz)	Time based average Power (dBm)			
			1 slot	2 slot	3 slots	4 slots
GSM 850	128	824.2	17.52	19.19	18.61	18.59
	190	836.6	16.86	18.57	18.05	18.76
	251	848.8	16.49	18.23	17.58	18.67
PCS 1900	512	1850.2	17.41	19.11	18.77	18.71
	661	1880.0	17.15	18.79	18.45	18.43
	810	1909.8	17.38	19.21	18.60	18.47

Note:

1. Rohde & Schwarz Radio Communication Tester (CMU200) was used for the measurement of GSM peak and average output power for active timeslots.
2. For GSM voice, 1 timeslot has been activated with power level 5 (850 MHz band) and 0 (1900 MHz band).
3. For GPRS, 1, 2 timeslots has been activated separately with power level 5(850 MHz band) and 0(1900 MHz band).
4. For E-GRPS, 1, 2, 3 and 4 timeslots has been activated separately with power control level 8(850 MHz band) and 2(1900 MHz band).
5. The max average output power of the GPRS mode is more than 2 dB higher than the EGPRS measured in the same frequency band, according to IEEE1528, the SAR of EGPRS mode is not required.

WCDMA-Release 99:

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification. The EUT has a nominal maximum output power of 24dBm (+1.7/-3.7).

WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	β_c / β_d	8/15

Results (12.2kbps RMC)

Band	Frequency (MHz)	Channel NO.	Conducted Output Power	
			(dBm)	(Watt)
WCDMA 850	826.4	4132	22.05	0.160
	836.6	4183	21.98	0.158
	846.6	4233	22.12	0.163
WCDMA 1900	1852.4	9262	22.21	0.166
	1880.0	9400	22.13	0.163
	1907.6	9538	22.32	0.171

WCDMA HSDPA

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subset	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm2			
	β_c	2/15	12/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	β_d (SF)	64			
	β_c / β_d	2/15	12/15	15/8	15/4
	β_{hs}	4/15	24/15	30/15	30/15
	MPR(dB)	0	0	0.5	0.5
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	D_{CQI}	8			
	Ack-Nack repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	$A_{hs} = \beta_{hs} / \beta_c$	30/15			

Results (HSDPA)

Band	Frequency (MHz)	Channel NO.	Conducted Output Power (dBm)			
			Subset 1	Subset 2	Subset 3	Subset 4
WCDMA 850	826.4	4132	21.33	21.27	21.45	21.28
	836.6	4183	21.17	21.11	21.25	21.13
	846.6	4233	21.52	21.54	21.49	21.33
WCDMA 1900	1852.4	9262	21.62	21.71	21.62	21.67
	1880.0	9400	21.34	21.29	21.33	21.39
	1907.6	9538	21.72	21.69	21.75	21.74

WCDMA HSUPA

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSUPA	HSUPA	HSUPA	HSUPA	HSUPA
	Subset	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	β_c	11/15	6/15	15/15	2/15	15/15
	β_d	15/15	15/15	9/15	15/15	0
	β_{ec}	209/225	12/15	30/15	2/15	5/15
	β_c / β_d	11/15	6/15	15/9	2/15	-
	β_{hs}	22/15	12/15	30/15	4/15	5/15
	CM(dB)	1.0	3.0	2.0	3.0	1.0
	MPR(dB)	0	2	1	2	0
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback	4ms				
	CQI Repetition Factor	2				
	$A_{hs} = \beta_{hs} / \beta_c$	30/15				
HSUPA Specific Settings	DE-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_FCI	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	

Results (HSUPA)

Band	Frequency (MHz)	Channel NO.	Conducted Output Power (dBm)				
			Subset 1	Subset 2	Subset 3	Subset 4	Subset 5
WCDMA 850	826.4	4132	21.31	21.18	21.20	21.23	20.97
	836.6	4183	20.86	20.84	20.85	20.87	20.79
	846.6	4233	21.37	21.24	21.22	21.31	21.19
WCDMA 1900	1852.4	9262	21.51	21.78	21.67	21.79	21.53
	1880.0	9400	21.41	21.36	21.30	21.31	20.40
	1907.6	9538	21.73	21.79	21.80	21.77	20.71

Note:

1. The default test configuration is to measure SAR with an established radio link between the EUT and a communication test set using a 12.2 kbps RMC (reference measurement Channel) Configured in Test Loop Model 1.
2. KDB 941225 D01-Body SAR is not required for HSDPA when the maximum average output of each RF channel with HSDPA active is less than ¼ dB higher than measured without HSDPA using 12.2kbps RMC or the maximum SAR for 12.2kbps RMC is < 75% of SAR limit.
3. KDB 941225 D01-Body SAR is not required for HSUPA when the maximum average output of each RF channel with HSUPA active is less than ¼ dB higher than measured without HSUPA using 12.2kbps RMC and the maximum SAR for 12.2kbps RMC is < 75% of SAR limit.

Bluetooth

Mode	Channel frequency (MHz)	Reading power (dBm)	Power output (mw)	Limit (mw)
BDR(GFSK)	(Low)2402	4.91	3.097	1000
	(Middle)2441	5.29	3.381	1000
	(High)2480	5.18	3.296	1000
EDR(4-DQPSK)	(Low)2402	4.44	2.780	1000
	(Middle)2441	4.93	3.112	1000
	(High)2480	4.87	3.069	1000
EDR-8DPSK	(Low)2402	4.87	3.069	1000
	(Middle)2441	5.29	3.381	1000
	(High)2480	5.22	3.327	1000

WiFi

Band	Frequency (MHz)	Conducted Output Power	
		(dBm)	(mw)
802.11b	2412	9.66	9.247
	2437	8.96	7.870
	2462	9.11	8.147
802.11g	2412	8.71	7.430
	2437	8.45	6.998
	2462	8.73	7.464
802.11n-HT20	2412	8.63	7.295
	2437	8.28	6.730
	2462	8.27	6.714

Note:

1. The output power was tested under data rate 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n-HT20.

SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetric evaluation.

SAR Test Data

Environmental Conditions

Temperature:	21-24 °C
Relative Humidity:	50-53 %
ATM Pressure:	1001-1002 mbar

Testing was performed by Wilson Chen from 2013-12-15 to 2013-12-17.

GSM 850:

EUT Position	Frequency (MHz)		Test Mode	Power Drift (%)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	FCC 1g SAR (W/Kg)		
	Channel	MHz					Scaled Factor	Meas. SAR	Scaled SAR
Left Head Cheek	128(Low)	824.2	GSM	/	/	/	/	/	/
	190(Middle)	836.6	GSM	-1.010	32.15	32.50	1.084	0.215	0.233
	251(High)	848.8	GSM	/	/	/	/	/	/
Left Head Tilt	128(Low)	824.2	GSM	/	/	/	/	/	/
	190(Middle)	836.6	GSM	1.546	32.15	32.50	1.084	0.104	0.113
	251(High)	848.8	GSM	/	/	/	/	/	/
Right Head Cheek	128(Low)	824.2	GSM	-0.777	32.21	32.50	1.069	0.159	0.170
	190(Middle)	836.6	GSM	0.837	32.15	32.50	1.084	0.275	0.298
	251(High)	848.8	GSM	1.724	32.09	32.50	1.099	0.396	0.435
Right Head Tilt	128(Low)	824.2	GSM	/	/	/	/	/	/
	190(Middle)	836.6	GSM	0.741	32.15	32.50	1.084	0.116	0.126
	251(High)	848.8	GSM	/	/	/	/	/	/
Body-Front-Headset (10mm)	128(Low)	824.2	GSM	/	/	/	/	/	/
	190(Middle)	836.6	GSM	1.258	32.15	32.50	1.084	0.284	0.308
	251(High)	848.8	GSM	/	/	/	/	/	/
Body-Back-Headset (10mm)	128(Low)	824.2	GSM	/	/	/	/	/	/
	190(Middle)	836.6	GSM	2.334	32.15	32.50	1.084	0.593	0.643
	251(High)	848.8	GSM	/	/	/	/	/	/

PCS Band:

EUT Position	Frequency (MHz)		Test Mode	Power Drift (%)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	FCC 1g SAR (W/Kg)		
	Channel	MHz					Scaled Factor	Meas. SAR	Scaled SAR
Left Head Cheek	512(Low)	1850.2	GSM	1.400	28.87	29.00	1.030	0.241	0.248
	661(Middle)	1880.0	GSM	-0.500	28.76	29.00	1.057	0.220	0.232
	810(High)	1909.8	GSM	0.612	28.58	29.00	1.102	0.219	0.241
Left Head Tilt	512(Low)	1850.2	GSM	/	/	/	/	/	/
	661(Middle)	1880.0	GSM	-1.185	28.76	29.00	1.057	0.055	0.058
	810(High)	1909.8	GSM	/	/	/	/	/	/
Right Head Cheek	512(Low)	1850.2	GSM	/	/	/	/	/	/
	661(Middle)	1880.0	GSM	0.059	28.76	29.00	1.057	0.120	0.127
	810(High)	1909.8	GSM	/	/	/	/	/	/
Right Head Tilt	512(Low)	1850.2	GSM	/	/	/	/	/	/
	661(Middle)	1880.0	GSM	1.005	28.76	29.00	1.057	0.024	0.025
	810(High)	1909.8	GSM	/	/	/	/	/	/
Body-Front-Headset (10mm)	512(Low)	1850.2	GSM	/	/	/	/	/	/
	661(Middle)	1880.0	GSM	3.643	28.76	29.00	1.057	0.270	0.285
	810(High)	1909.8	GSM	/	/	/	/	/	/
Body-Back-Headset (10mm)	512(Low)	1850.2	GSM	/	/	/	/	/	/
	661(Middle)	1880.0	GSM	2.480	28.76	29.00	1.057	0.309	0.327
	810(High)	1909.8	GSM	/	/	/	/	/	/

Note:

1. When the 1-g SAR is $\leq 0.8\text{W/Kg}$, testing for other channels are optional.
2. The EUT transmit and receive through the same GSM antenna while testing SAR.
3. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.

WCDMA 850

EUT Position	Frequency (MHz)		Test Mode	Power Drift (%)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	FCC 1g SAR (W/Kg)		
	Channel	MHz					Scaled Factor	Meas. SAR	Scaled SAR
Left Head Cheek	4132	826.4	WCDMA 850	/	/	/	/	/	/
	4183	836.6	WCDMA 850	/	/	/	/	/	/
	4233	846.6	WCDMA 850	-1.713	22.12	22.50	1.091	0.207	0.226
Left Head Tilt	4132	826.4	WCDMA 850	/	/	/	/	/	/
	4183	836.6	WCDMA 850	/	/	/	/	/	/
	4233	846.6	WCDMA 850	1.355	22.12	22.50	1.091	0.087	0.095
Right Head Cheek	4132	826.4	WCDMA 850	/	/	/	/	/	/
	4183	836.6	WCDMA 850	/	/	/	/	/	/
	4233	846.6	WCDMA 850	-1.748	22.12	22.50	1.091	0.489	0.534
Right Head Tilt	4132	826.4	WCDMA 850	/	/	/	/	/	/
	4183	836.6	WCDMA 850	/	/	/	/	/	/
	4233	846.6	WCDMA 850	1.334	22.12	22.50	1.091	0.128	0.140

WCDMA1900

EUT Position	Frequency (MHz)		Test Mode	Power Drift (%)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	FCC 1g SAR (W/Kg)		
	Channel	MHz					Scaled Factor	Meas. SAR	Scaled SAR
Left Head Cheek	9262	1852.4	WCDMA1900	-0.757	22.21	22.50	1.069	0.825	0.882
	9400	1880.0	WCDMA1900	0.729	22.13	22.50	1.089	0.862	0.939
	9538	1907.6	WCDMA1900	-3.634	22.32	22.50	1.042	0.843	0.879
Left Head Tilt	9262	1852.4	WCDMA1900	/	/	/	/	/	/
	9400	1880.0	WCDMA1900	/	/	/	/	/	/
	9538	1907.6	WCDMA1900	-1.899	22.32	22.50	1.042	0.109	0.114
Right Head Cheek	9262	1852.4	WCDMA1900	/	/	/	/	/	/
	9400	1880.0	WCDMA1900	/	/	/	/	/	/
	9538	1907.6	WCDMA1900	-1.304	22.32	22.50	1.042	0.524	0.546
Right Head Tilt	9262	1852.4	WCDMA1900	/	/	/	/	/	/
	9400	1880.0	WCDMA1900	/	/	/	/	/	/
	9538	1907.6	WCDMA1900	3.226	22.32	22.50	1.042	0.069	0.072

Note:

1. When the 1-g SAR is ≤ 0.8 W/Kg, testing for other channels are optional.
2. The default test configuration is to measure SAR with an established radio link between the EUT and a communication test set using a 12.2 kbps RMC (reference measurement Channel) Configured in Test Loop Model.
3. KDB 941225 D01-Body SAR is not required for HSDPA when the maximum average output of each RF channel with HSDPA active is less than ¼ dB higher than measured without HSDPA using 12.2kbps RMC or the maximum SAR for 12.2kbps RMC is < 75% of SAR limit.

4. KDB 941225 D01-Body SAR is not required for HSUPA when the maximum average output of each RF channel with HSUPA active is less than ¼ dB higher than measured without HSUPA using 12.2kbps RMC and the maximum SAR for 12.2kbps RMC is < 75% of SAR limit.
5. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.

Mobile Hot-Spot Test Result

The DUT is capable of functioning as a WiFi to Cellular Mobile hotspot. Additional SAR testing was performed according to KDB 941225 D06. Testing was performed with a separation of 1cm between the DUT and the flat phantom. The DUT was positioned for SAR tests with the front and back surfaces facing the phantom, and also with the edges facing the phantom in which the transmitting antenna is <2.5 cm from the edge. Each transmit band was utilized for SAR testing. The tested mode has been selected within each band that exhibits the highest time average output power.

Hot spot-GPRS (Frequency Band: 835)

EUT Position	Frequency (MHz)		Test Mode	Power Drift (%)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	FCC 1g SAR (W/Kg)		
	Channel	MHz					Scaled Factor	Meas. SAR	Scaled SAR
Body-Front (10mm)	128(Low)	824.2	GPRS	/	/	/	/	/	/
	190(Middle)	836.6	GPRS	-2.045	28.32	28.50	1.042	0.358	0.373
	251(High)	848.8	GPRS	/	/	/	/	/	/
Body-Back (10mm)	128(Low)	824.2	GPRS	-3.938	28.39	28.50	1.026	0.722	0.741
	190(Middle)	836.6	GPRS	-2.386	28.32	28.50	1.042	0.913	0.952
	251(High)	848.8	GPRS	-1.728	28.30	28.50	1.047	1.045	1.094
Body-Left (10mm)	128(Low)	824.2	GPRS	/	/	/	/	/	/
	190(Middle)	836.6	GPRS	3.763	28.32	28.50	1.042	0.366	0.381
	251(High)	848.8	GPRS	/	/	/	/	/	/
Body-Right (10mm)	128(Low)	824.2	GPRS	/	/	/	/	/	/
	190(Middle)	836.6	GPRS	1.583	28.32	28.50	1.042	0.298	0.311
	251(High)	848.8	GPRS	/	/	/	/	/	/
Body-Bottom (10mm)	128(Low)	824.2	GPRS	/	/	/	/	/	/
	190(Middle)	836.6	GPRS	1.403	28.32	28.50	1.042	0.033	0.034
	251(High)	848.8	GPRS	/	/	/	/	/	/

Note:

1. When the 1-g SAR is $\leq 0.8\text{W/Kg}$, testing for other channels are optional.
2. The EUT is a Capability Class B mobile phone which can be attached to both GPRS and GSM services.
3. The Multi-slot Classes of EUT is Class 12 which has maximum 4 Downlink slots and 4 Uplink slots, the maximum active slots is 5, when perform the multiple slots scan, 1DL+4UL is the worst case.
4. The EUT transmit and receive through the same GSM antenna while testing SAR.
5. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.

Hot spot-GPRS (Frequency Band: 1900)

EUT Position	Frequency (MHz)		Test Mode	Power Drift (%)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	FCC 1g SAR (W/Kg)		
	Channel	MHz					Scaled Factor	Meas. SAR	Scaled SAR
Body-Front (10mm)	512(Low)	1850.2	GPRS	/	/	/	/	/	/
	661(Middle)	1880.0	GPRS	0.563	25.33	25.50	1.040	0.306	0.318
	810(High)	1909.8	GPRS	/	/	/	/	/	/
Body-Back (10mm)	512(Low)	1850.2	GPRS	/	/	/	/	/	/
	661(Middle)	1880.0	GPRS	2.762	25.33	25.50	1.040	0.499	0.519
	810(High)	1909.8	GPRS	/	/	/	/	/	/
Body-Left (10mm)	512(Low)	1850.2	GPRS	/	/	/	/	/	/
	661(Middle)	1880.0	GPRS	-0.370	25.33	25.50	1.040	0.045	0.047
	810(High)	1909.8	GPRS	/	/	/	/	/	/
Body-Right (10mm)	512(Low)	1850.2	GPRS	/	/	/	/	/	/
	661(Middle)	1880.0	GPRS	-0.891	25.33	25.50	1.040	0.005	0.005
	810(High)	1909.8	GPRS	/	/	/	/	/	/
Body-Bottom (10mm)	512(Low)	1850.2	GPRS	/	/	/	/	/	/
	661(Middle)	1880.0	GPRS	2.966	25.33	25.50	1.040	0.394	0.410
	810(High)	1909.8	GPRS	/	/	/	/	/	/

Note:

1. When the 1-g SAR is $\leq 0.8\text{W/Kg}$, testing for other channels are optional.
2. The EUT is a Capability Class B mobile phone which can be attached to both GPRS and GSM services.
3. The Multi-slot Classes of EUT is Class12 which has maximum 4 Downlink slots and 4 Uplink slots, the maximum active slots is 5, when perform the multiple slots scan, 1DL+4UL is the worst case.
4. The EUT transmit and receive through the same GSM antenna while testing SAR.
5. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.

Hot Spot-WCDMA850

EUT Position	Frequency (MHz)		Test Mode	Power Drift (%)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	FCC 1g SAR (W/Kg)		
	Channel	MHz					Scaled Factor	Meas. SAR	Scaled SAR
Body-Front (10mm)	4132	826.4	WCDMA850	/	/	/	/	/	/
	4183	836.6	WCDMA850	/	/	/	/	/	/
	4233	846.6	WCDMA850	3.831	22.12	22.50	1.091	0.198	0.216
Body-Back (10mm)	4132	826.4	WCDMA850	/	/	/	/	/	/
	4183	836.6	WCDMA850	/	/	/	/	/	/
	4233	846.6	WCDMA850	2.484	22.12	22.50	1.091	0.423	0.461
Body-Left (10mm)	4132	826.4	WCDMA850	/	/	/	/	/	/
	4183	836.6	WCDMA850	/	/	/	/	/	/
	4233	846.6	WCDMA850	0.553	22.12	22.50	1.091	0.178	0.194
Body-Right (10mm)	4132	826.4	WCDMA850	/	/	/	/	/	/
	4183	836.6	WCDMA850	/	/	/	/	/	/
	4233	846.6	WCDMA850	0.696	22.12	22.50	1.091	0.149	0.163
Body-Bottom (10mm)	9262	826.4	WCDMA850	/	/	/	/	/	/
	9400	836.6	WCDMA850	/	/	/	/	/	/
	9538	846.6	WCDMA850	2.663	22.12	22.50	1.091	0.018	0.020

Hot Spot-WCDMA1900

EUT Position	Frequency (MHz)		Test Mode	Power Drift (%)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	FCC 1g SAR (W/Kg)		
	Channel	MHz					Scaled Factor	Meas. SAR	Scaled SAR
Body-Front (10mm)	9262	1852.4	WCDMA1900	/				/	/
	9400	1880.0	WCDMA1900	/				/	/
	9538	1907.6	WCDMA1900	-3.213	22.32	22.50	1.042	0.257	0.268
Body-Back (10mm)	9262	1852.4	WCDMA1900	/				/	/
	9400	1880.0	WCDMA1900	/				/	/
	9538	1907.6	WCDMA1900	1.648	22.32	22.50	1.042	0.191	0.199
Body-Left (10mm)	9262	1852.4	WCDMA1900	/				/	/
	9400	1880.0	WCDMA1900	/				/	/
	9538	1907.6	WCDMA1900	-0.247	22.32	22.50	1.042	0.006	0.006
Body-Right (10mm)	9262	1852.4	WCDMA1900	/				/	/
	9400	1880.0	WCDMA1900	/				/	/
	9538	1907.6	WCDMA1900	-0.759	22.32	22.50	1.042	0.001	0.001
Body-Bottom (10mm)	9262	1852.4	WCDMA1900	/				/	/
	9400	1880.0	WCDMA1900	/				/	/
	9538	1907.6	WCDMA1900	-4.400	22.32	22.50	1.042	0.176	0.183

Note:

1. When the 1-g SAR is $\leq 0.8\text{W/Kg}$, testing for other channels are optional.
2. The default test configuration is to measure SAR with an established radio link between the EUT and a communication test set using a 12.2 kbps RMC (reference measurement Channel) Configured in Test Loop Model.
3. KDB 941225 D01-Body SAR is not required for HSDPA when the maximum average output of each RF channel with HSDPA active is less than $\frac{1}{4}$ dB higher than measured without HSDPA using 12.2kbps RMC or the maximum SAR for 12.2kbps RMC is $< 75\%$ of SAR limit.
4. KDB 941225 D01-Body SAR is not required for HSUPA when the maximum average output of each RF channel with HSUPA active is less than $\frac{1}{4}$ dB higher than measured without HSUPA using 12.2kbps RMC and the maximum SAR for 12.2kbps RMC is $< 75\%$ of SAR limit.

SAR SIMULTANEOUS TRANSMISSION DESCRIPTION

KDB 447498D01 General RF Exposure Guidance v05

Stand-alone and simultaneous SAR evaluation for a cell phone with multiple transmitters is base on the antennas distance of each radio.

BT, WiFi, GSM and 3G Antenna Location:



Antenna Information:

Description of Simultaneous Transmit Capabilities			Antennas Distance (mm)
Transmitter Combination	Simultaneous?	Hotspot?	
GSM + GPRS	×	×	0
GSM + WCDMA	×	×	0
GSM + Bluetooth	√	×	92
GSM + WiFi	√	√	92
GPRS + WCDMA	×	×	0
GPRS + Bluetooth	√	×	92
GPRS + WiFi	√	√	92
WCDMA + Bluetooth	√	×	92
WCDMA + WiFi	√	√	92

Standalone SAR test exclusion considerations

Head Position:

Mode	Frequency (MHz)	P _{avg} (dBm)	P _{avg} (mW)	Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Exclusion
GSM850	850	23.21	209.411	0	38.6	3.0	No
PCS1900	1900	19.87	97.051	0	26.8	3.0	No
WCDMA850	850	22.12	162.930	0	30.0	3.0	No
WCDMA1900	1900	22.32	170.608	0	47.0	3.0	No
Bluetooth	2450	5.29	3.381	0	1.1	3.0	Yes
WiFi	2450	9.66	9.247	0	2.9	3.0	Yes

Body Position:

Mode	Frequency (MHz)	P _{avg} (dBm)	P _{avg} (mW)	Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Exclusion
GSM850	850	25.39	345.939	10	31.9	3.0	No
PCS1900	1900	22.46	176.198	10	24.3	3.0	No
WCDMA850	850	22.12	162.930	10	15.0	3.0	No
WCDMA1900	1900	22.32	170.608	10	23.5	3.0	No
Bluetooth	2450	5.29	3.381	10	0.5	3.0	Yes
WiFi	2450	9.66	9.247	10	1.4	3.0	Yes

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot$

$[\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

1. $f(\text{GHz})$ is the RF channel transmit frequency in GHz.
2. Power and distance are rounded to the nearest mW and mm before calculation.
3. The result is rounded to one decimal place for comparison.
4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.

Simultaneous SAR test exclusion considerations:

GSM with BT:

Mode	Position	Reported SAR (W/kg)		ΣSAR
		GSM	BT	< 1.6W/kg
GSM850	Left Head Cheek	0.233	0.148	0.381
	Left Head Tile	0.113	0.148	0.261
	Right Head Cheek	0.435	0.148	0.583
	Right Head Tilt	0.126	0.148	0.274
	Body–Headset-Front	0.308	0.074	0.382
	Body–Headset-Back	0.643	0.074	0.717
PCS1900	Left Head Cheek	0.248	0.148	0.396
	Left Head Tile	0.058	0.148	0.206
	Right Head Cheek	0.127	0.148	0.275
	Right Head Tilt	0.025	0.148	0.173
	Body–Headset-Front	0.285	0.074	0.359
	Body–Headset-Back	0.327	0.074	0.401

WCDMA with BT:

Mode	Position	Reported SAR (W/kg)		ΣSAR
		WCDMA	BT	< 1.6W/kg
WCDMA 850	Left Head Cheek	0.226	0.148	0.374
	Left Head Tile	0.095	0.148	0.243
	Right Head Cheek	0.534	0.148	0.682
	Right Head Tilt	0.140	0.148	0.288
	Body–Headset-Front	0.216	0.074	0.290
	Body–Headset-Back	0.461	0.074	0.535
WCDMA 1900	Left Head Cheek	0.939	0.148	1.087
	Left Head Tile	0.114	0.148	0.262
	Right Head Cheek	0.546	0.148	0.694
	Right Head Tilt	0.072	0.148	0.220
	Body–Headset-Front	0.268	0.074	0.342
	Body–Headset-Back	0.199	0.074	0.273

GSM with WiFi:

Mode	Position	Reported SAR (W/kg)		ΣSAR
		GSM	WiFi	< 1.6W/kg
GSM850	Left Head Cheek	0.233	0.417	0.650
	Left Head Tile	0.113	0.417	0.530
	Right Head Cheek	0.435	0.417	0.852
	Right Head Tilt	0.126	0.417	0.543
	Body–Headset-Front	0.308	0.209	0.517
	Body–Headset-Back	0.643	0.209	0.852
PCS1900	Left Head Cheek	0.248	0.417	0.665
	Left Head Tile	0.058	0.417	0.475
	Right Head Cheek	0.127	0.417	0.544
	Right Head Tilt	0.025	0.417	0.442
	Body–Headset-Front	0.285	0.209	0.494
	Body–Headset-Back	0.327	0.209	0.536

WCDMA with WiFi:

Mode	Position	Reported SAR (W/kg)		ΣSAR
		WCDMA	WiFi	< 1.6W/kg
WCDMA 850	Left Head Cheek	0.226	0.417	0.643
	Left Head Tile	0.095	0.417	0.512
	Right Head Cheek	0.534	0.417	0.951
	Right Head Tilt	0.140	0.417	0.557
	Body–Headset-Front	0.216	0.209	0.425
	Body–Headset-Back	0.461	0.209	0.670
WCDMA 1900	Left Head Cheek	0.939	0.417	1.356
	Left Head Tile	0.114	0.417	0.531
	Right Head Cheek	0.546	0.417	0.963
	Right Head Tilt	0.072	0.417	0.489
	Body–Headset-Front	0.268	0.209	0.477
	Body–Headset-Back	0.199	0.209	0.408

Mode	Frequency (GHz)	Distance (mm)	P _{avg} (dBm)	P _{avg} (mW)	Estimated _{1-g} (W/kg)
Bluetooth Head	2.45	0	5.50	3.548	0.148
Bluetooth Body	2.45	10	5.50	3.548	0.074
WiFi Head	2.45	0	10.00	10.000	0.417
WiFi Body	2.45	10	10.00	10.000	0.209

Note:

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}/x]$$

W/kg for test separation distances ≤ 50 mm;

where $x = 7.5$ for 1-g SAR.

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion

Conclusion:

$\Sigma \text{SAR} < 1.6 \text{ W/kg}$ therefore simultaneous transmission SAR with Volume Scans is **not** required.

Hotspot:

Evaluations for Simultaneous SAR, Mobile Hot Spot Positions						
Test Position	Body-Front (1.0cm)	Body-Back (1.0cm)	Body-Left (1.0cm)	Body-Right (1.0cm)	Body-Bottom (1.0cm)	Body-Top (1.0cm)
Mode	Stand Alone 1-g SAR (W/Kg)					
GSM 850	0.373	1.094	0.381	0.311	0.034	/
PCS 1900	0.318	0.519	0.047	0.005	0.410	/
WCDMA850	0.216	0.461	0.194	0.163	0.020	/
WCDMA 1900	0.268	0.199	0.006	0.001	0.183	/
WiFi	0.209	0.209	/	0.209	/	0.209
	Σ 1-g SAR(W/Kg)					
GSM850 + WiFi	0.582	1.303	/	0.520	/	/
PCS 1900 + WiFi	0.527	0.728	/	0.214	/	/
WCDMA850 + WiFi	0.425	0.670	/	0.372	/	/
WCDMA 1900 + WiFi	0.477	0.408	/	0.210	/	/

Note:

If the sum of the 1g SAR measured for the simultaneously transmitting antennas is less than the SAR limit, SAR measurement for simultaneous transmission is not required.

EUT SCAN RESULTS

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)

Left Head Cheek (836.6 MHz Middle Channel)

Measurement Data

Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.003 W/kg
Power Drift-Finish : 0.003 W/kg
Power Drift (%) : -1.010

Tissue Data

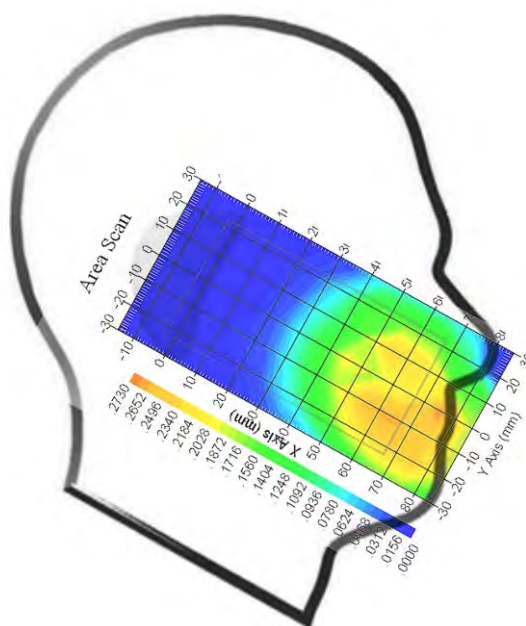
Type : Head
Frequency : 836.6 MHz
Epsilon : 40.71 F/m
Sigma : 0.90 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 8
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.215 W/kg
10 gram SAR value : 0.176 W/kg
Area Scan Peak SAR : 0.272 W/kg
Zoom Scan Peak SAR : 0.380 W/kg

Plot 1#



Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Left Head Tilt (836.6 MHz Middle Channel)**

Measurement Data

Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.006 W/kg
Power Drift-Finish : 0.006 W/kg
Power Drift (%) : 1.546

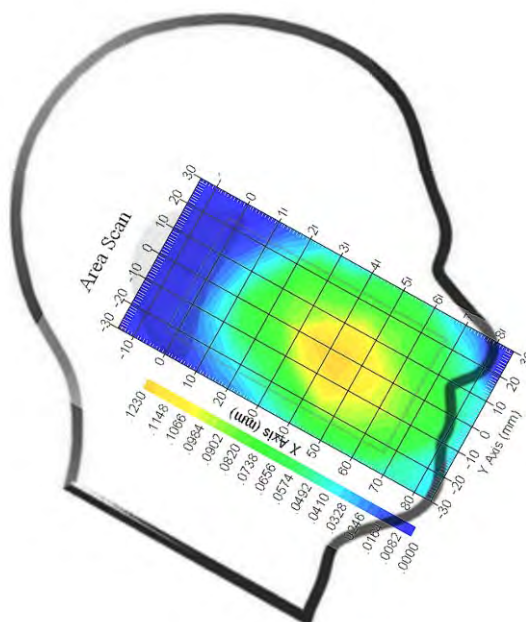
Tissue Data

Type : Head
Frequency : 836.6 MHz
Epsilon : 40.71 F/m
Sigma : 0.90 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 8
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.104 W/kg
10 gram SAR value : 0.076 W/kg
Area Scan Peak SAR : 0.123 W/kg
Zoom Scan Peak SAR : 0.200 W/kg

Plot 2#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Right Head Cheek (824.2 MHz Low Channel)**

Measurement Data

Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.003 W/kg
Power Drift-Finish : 0.003 W/kg
Power Drift (%) : -0.777

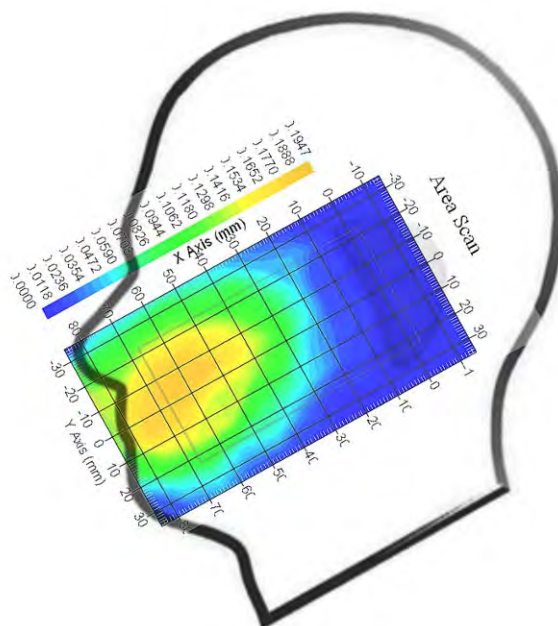
Tissue Data

Type : Head
Frequency : 824.2 MHz
Epsilon : 40.85 F/m
Sigma : 0.89 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 8
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.159 W/kg
10 gram SAR value : 0.126 W/kg
Area Scan Peak SAR : 0.194 W/kg
Zoom Scan Peak SAR : 0.330 W/kg

Plot 3#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Right Head Cheek (836.6 MHz Middle Channel)**

Measurement Data

Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.001 W/kg
Power Drift-Finish : 0.001 W/kg
Power Drift (%) : 0.837

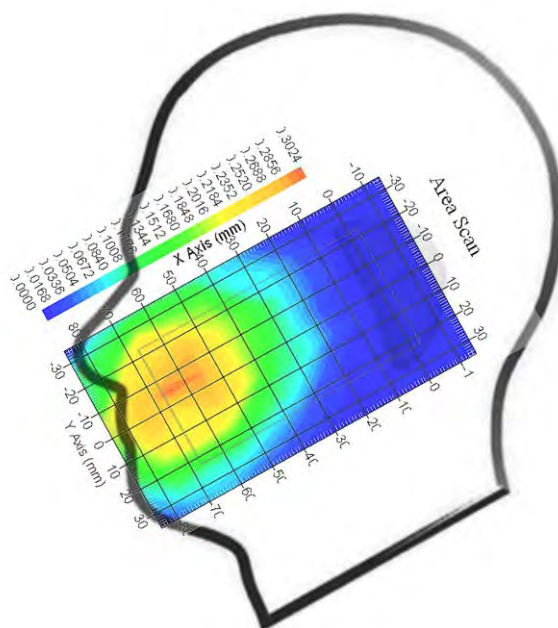
Tissue Data

Type : Head
Frequency : 836.6 MHz
Epsilon : 40.71 F/m
Sigma : 0.90 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 8
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.275 W/kg
10 gram SAR value : 0.229 W/kg
Area Scan Peak SAR : 0.297 W/kg
Zoom Scan Peak SAR : 0.350 W/kg

Plot 4#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Right Head Cheek (848.8 MHz High Channel)**

Measurement Data

Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.001 W/kg
Power Drift-Finish : 0.001 W/kg
Power Drift (%) : 1.724

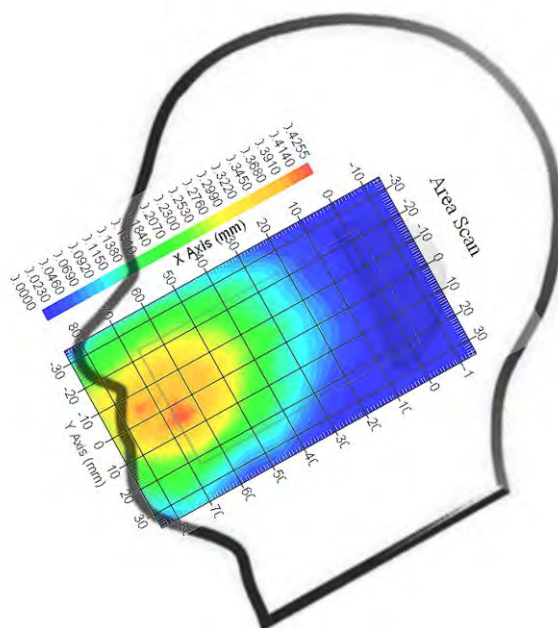
Tissue Data

Type : Head
Frequency : 848.8 MHz
Epsilon : 40.41 F/m
Sigma : 0.92 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 8
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.396 W/kg
10 gram SAR value : 0.289 W/kg
Area Scan Peak SAR : 0.420 W/kg
Zoom Scan Peak SAR : 0.860 W/kg

Plot 5#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Right Head Tilt (836.6 MHz Middle Channel)**

Measurement Data

Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.008 W/kg
Power Drift-Finish : 0.008 W/kg
Power Drift (%) : 0.741

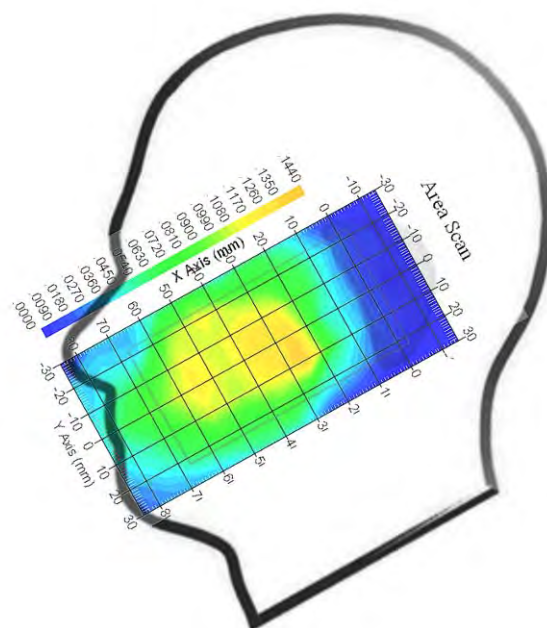
Tissue Data

Type : Head
Frequency : 836.6 MHz
Epsilon : 40.71 F/m
Sigma : 0.90 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 8
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.116 W/kg
10 gram SAR value : 0.080 W/kg
Area Scan Peak SAR : 0.140 W/kg
Zoom Scan Peak SAR : 0.230 W/kg

Plot 6#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Body-worn Front-Headset (836.6 MHz Middle Channel)**

Measurement Data

Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 8x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.286 W/kg
Power Drift-Finish : 0.290 W/kg
Power Drift (%) : 1.258

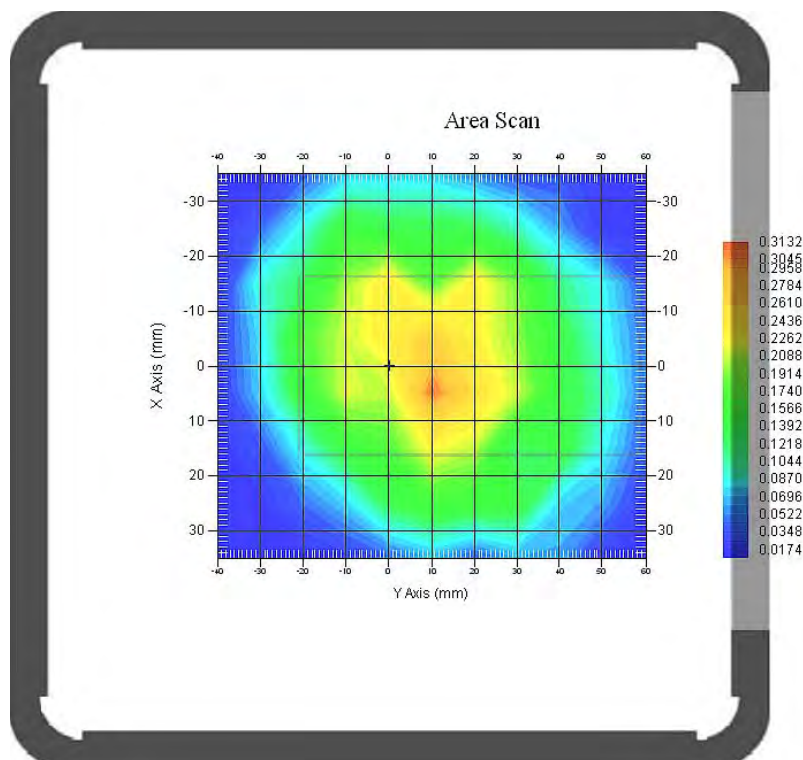
Tissue Data

Type : Body
Frequency : 836.6 MHz
Epsilon : 55.16 F/m
Sigma : 0.97 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 8
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.284 W/kg
10 gram SAR value : 0.177 W/kg
Area Scan Peak SAR : 0.310 W/kg
Zoom Scan Peak SAR : 0.590 W/kg

Plot 7#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Body-worn Back-Headset (836.6 MHz Middle Channel)**

Measurement Data

Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 8x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.611 W/kg
Power Drift-Finish : 0.629 W/kg
Power Drift (%) : 2.334

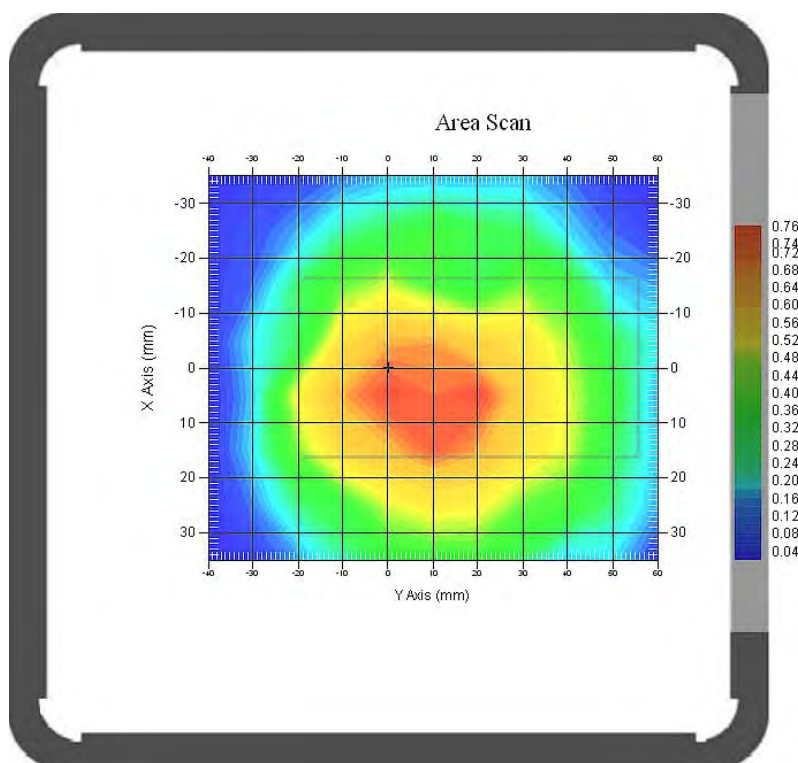
Tissue Data

Type : Body
Frequency : 836.6 MHz
Epsilon : 55.16 F/m
Sigma : 0.97 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 8
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.593 W/kg
10 gram SAR value : 0.406 W/kg
Area Scan Peak SAR : 0.758 W/kg
Zoom Scan Peak SAR : 1.000 W/kg

Plot 8#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Left Head Cheek (1850.2 MHz Low Channel)**

Measurement Data

Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 11x8x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.001 W/kg
Power Drift-Finish : 0.002 W/kg
Power Drift (%) : 1.400

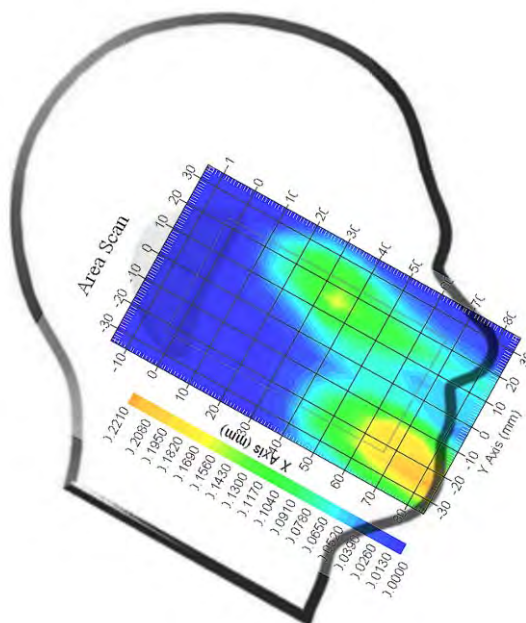
Tissue Data

Type : Head
Frequency : 1850.2 MHz
Epsilon : 40.23F/m
Sigma : 1.41 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 8
Conversion Factor : 4.8
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.241 W/kg
10 gram SAR value : 0.189 W/kg
Area Scan Peak SAR : 0.221 W/kg
Zoom Scan Peak SAR : 0.450 W/kg

Plot 9#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Left Head Cheek (1880.0 MHz Middle Channel)**

Measurement Data

Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 11x8x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.005 W/kg
Power Drift-Finish : 0.005 W/kg
Power Drift (%) : -0.500

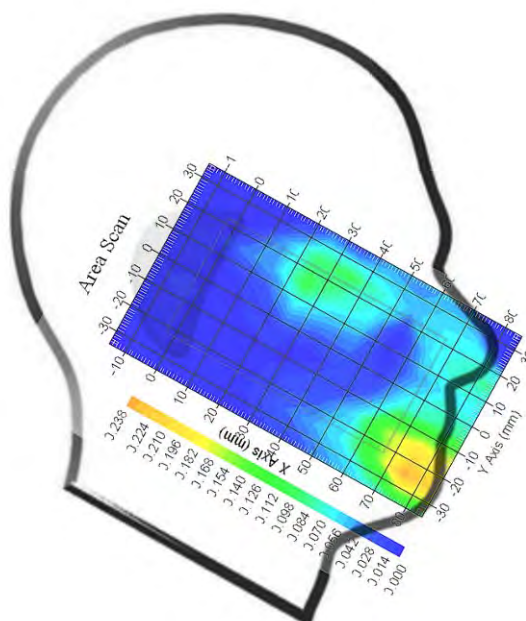
Tissue Data

Type : Head
Frequency : 1880.0 MHz
Epsilon : 40.24 F/m
Sigma : 1.43 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 8
Conversion Factor : 4.8
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.220 W/kg
10 gram SAR value : 0.181 W/kg
Area Scan Peak SAR : 0.238 W/kg
Zoom Scan Peak SAR : 0.520 W/kg

Plot 10#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Left Head Cheek (1909.8 MHz High Channel)**

Measurement Data

Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 11x8x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.003 W/kg
Power Drift-Finish : 0.003 W/kg
Power Drift (%) : 0.612

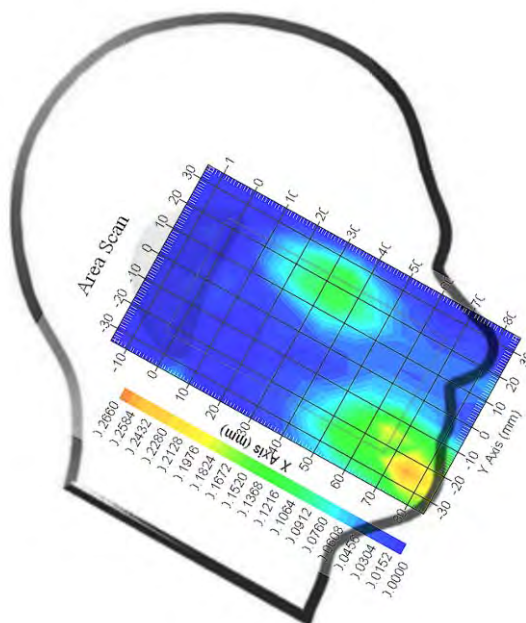
Tissue Data

Type : Head
Frequency : 1909.8 MHz
Epsilon : 40.25 F/m
Sigma : 1.44 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 8
Conversion Factor : 4.8
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.219 W/kg
10 gram SAR value : 0.152 W/kg
Area Scan Peak SAR : 0.263 W/kg
Zoom Scan Peak SAR : 0.530 W/kg

Plot 11#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Left Head Tilt (1880.0 MHz Middle Channel)**

Measurement Data

Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 11x8x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.021 W/kg
Power Drift-Finish : 0.020 W/kg
Power Drift (%) : -1.185

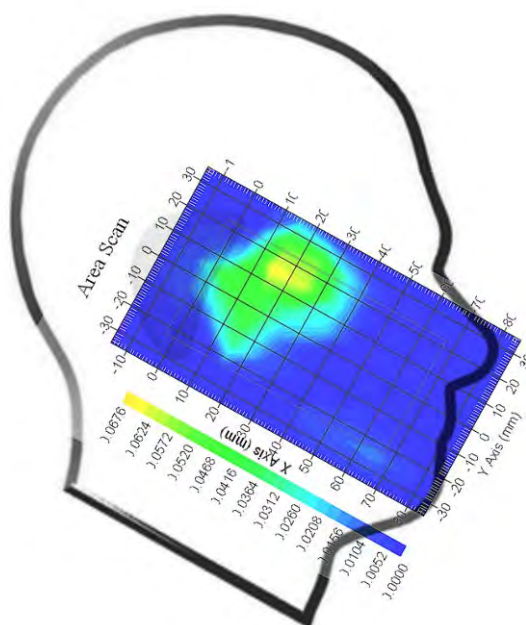
Tissue Data

Type : Head
Frequency : 1880.0 MHz
Epsilon : 40.24 F/m
Sigma : 1.43 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 8
Conversion Factor : 4.8
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.055 W/kg
10 gram SAR value : 0.030 W/kg
Area Scan Peak SAR : 0.066 W/kg
Zoom Scan Peak SAR : 0.120 W/kg

Plot 12#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Right Head Cheek (1880.0 MHz Middle Channel)**

Measurement Data

Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 11x8x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.001 W/kg
Power Drift-Finish : 0.001 W/kg
Power Drift (%) : 0.059

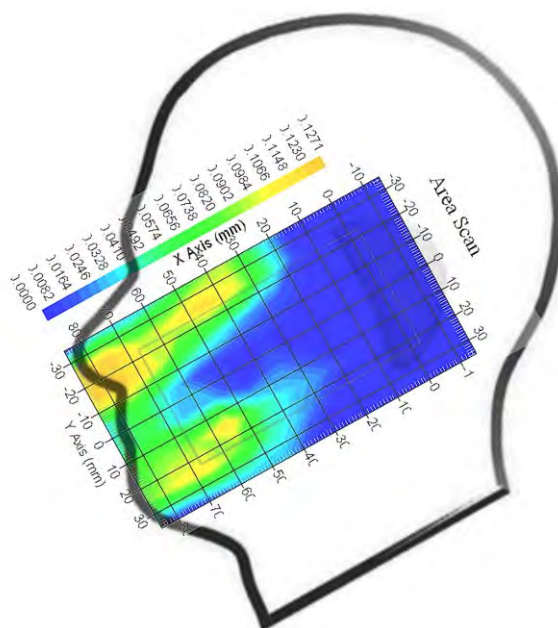
Tissue Data

Type : Head
Frequency : 1880.0 MHz
Epsilon : 40.24 F/m
Sigma : 1.43 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 8
Conversion Factor : 4.8
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.120 W/kg
10 gram SAR value : 0.064 W/kg
Area Scan Peak SAR : 0.125 W/kg
Zoom Scan Peak SAR : 0.180 W/kg

Plot 13#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Right Head Tilt (1880.0 MHz Middle Channel)**

Measurement Data

Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 11x8x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.012 W/kg
Power Drift-Finish : 0.012 W/kg
Power Drift (%) : 1.005

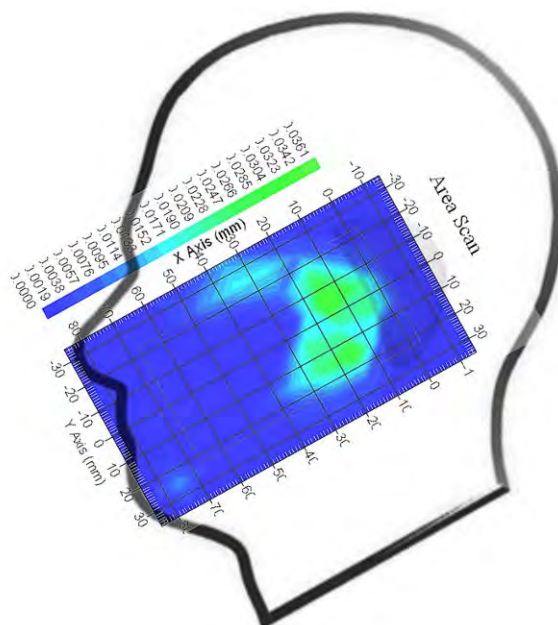
Tissue Data

Type : Head
Frequency : 1880.0 MHz
Epsilon : 40.24 F/m
Sigma : 1.43 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 8
Conversion Factor : 4.8
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.024 W/kg
10 gram SAR value : 0.010 W/kg
Area Scan Peak SAR : 0.035 W/kg
Zoom Scan Peak SAR : 0.070 W/kg

Plot 14#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Body-worn Front-Headset (1880.0 MHz Middle Channel)**

Measurement Data

Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 8x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.133 W/kg
Power Drift-Finish : 0.138 W/kg
Power Drift (%) : 3.643

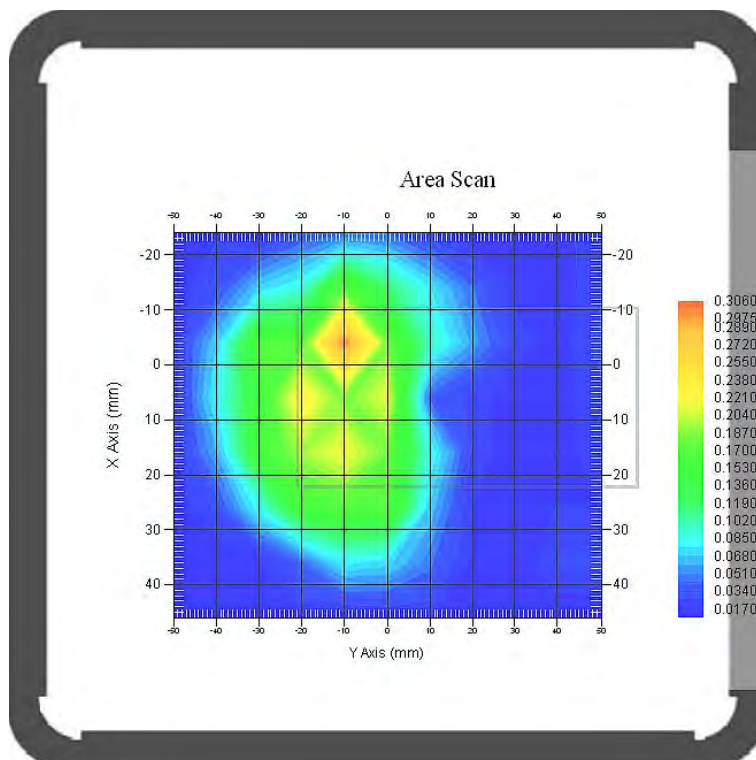
Tissue Data

Type : Body
Frequency : 1880.0 MHz
Epsilon : 53.53 F/m
Sigma : 1.54 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 8
Conversion Factor : 4.5
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.270 W/kg
10 gram SAR value : 0.125 W/kg
Area Scan Peak SAR : 0.300 W/kg
Zoom Scan Peak SAR : 0.594 W/kg

Plot 15#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Body-worn Back- Headset (1880.0 MHz Middle Channel)**

Measurement Data

Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 8x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.148 W/kg
Power Drift-Finish : 0.151 W/kg
Power Drift (%) : 2.480

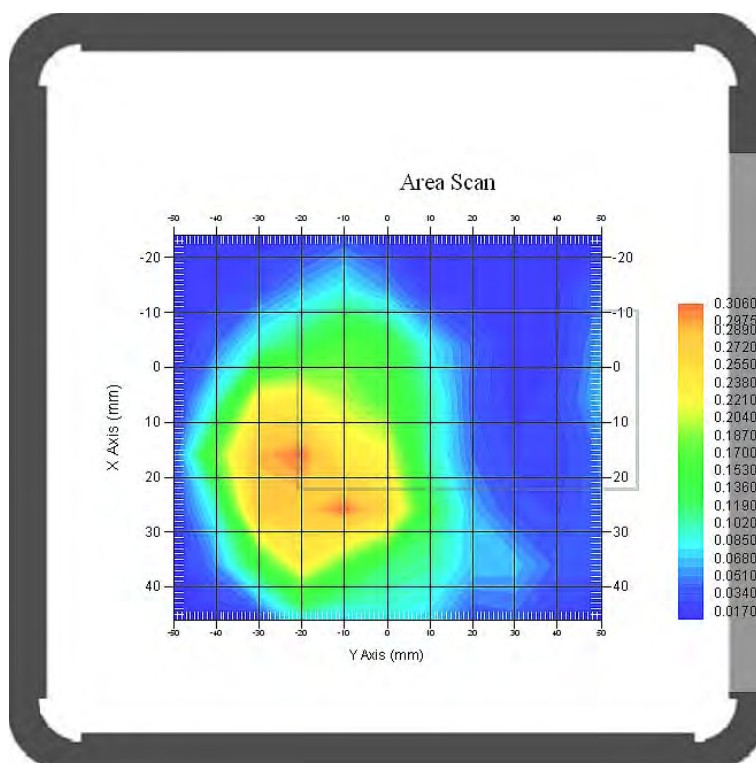
Tissue Data

Type : Body
Frequency : 1880.0 MHz
Epsilon : 53.53 F/m
Sigma : 1.54 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 8
Conversion Factor : 4.5
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.309 W/kg
10 gram SAR value : 0.153 W/kg
Area Scan Peak SAR : 0.302 W/kg
Zoom Scan Peak SAR : 0.620 W/kg

Plot 16#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**WCDMA850; Left Head Cheek (846.6 MHz High Channel)**

Measurement Data

Test mode : WCDMA850
Crest Factor : 1
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.001 W/kg
Power Drift-Finish : 0.001 W/kg
Power Drift (%) : -1.713

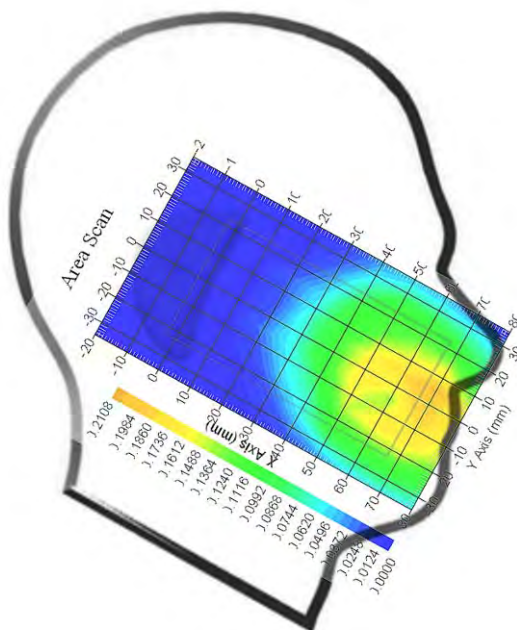
Tissue Data

Type : Head
Frequency : 846.6 MHz
Epsilon : 40.85 F/m
Sigma : 0.92 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 1
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.207 W/kg
10 gram SAR value : 0.127 W/kg
Area Scan Peak SAR : 0.207 W/kg
Zoom Scan Peak SAR : 0.250 W/kg

Plot 17#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**WCDMA850; Left Head Tilt (846.6 MHz High Channel)****Measurement Data**

Test mode : WCDMA850
Crest Factor : 1
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.006 W/kg
Power Drift-Finish : 0.007 W/kg
Power Drift (%) : 1.355

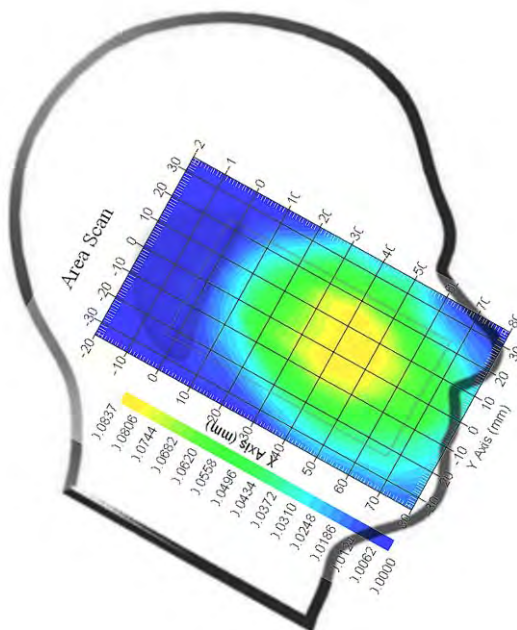
Tissue Data

Type : Head
Frequency : 846.6 MHz
Epsilon : 40.85 F/m
Sigma : 0.92 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 1
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.087 W/kg
10 gram SAR value : 0.054 W/kg
Area Scan Peak SAR : 0.082 W/kg
Zoom Scan Peak SAR : 0.200 W/kg

Plot 18#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**WCDMA850; Right Head Cheek (846.6 MHz High Channel)**

Measurement Data

Test mode : WCDMA850
Crest Factor : 1
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.001 W/kg
Power Drift-Finish : 0.000 W/kg
Power Drift (%) : -1.748

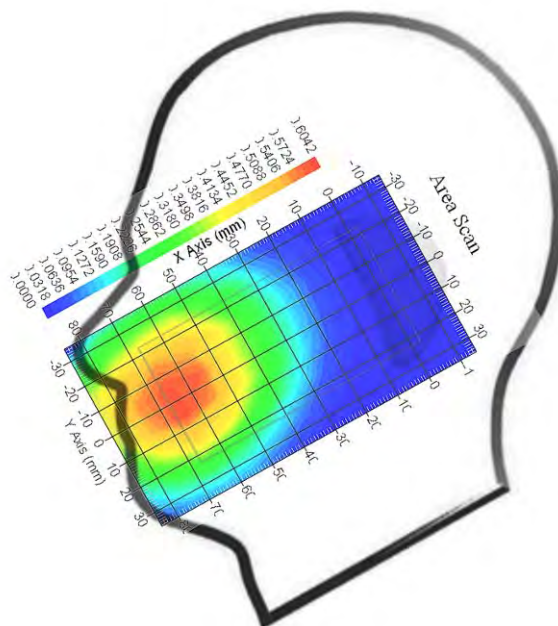
Tissue Data

Type : Head
Frequency : 846.6 MHz
Epsilon : 40.85 F/m
Sigma : 0.92 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 1
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.489 W/kg
10 gram SAR value : 0.369 W/kg
Area Scan Peak SAR : 0.597 W/kg
Zoom Scan Peak SAR : 0.720 W/kg

Plot 19#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**WCDMA850; Right Head Tilt (846.6 MHz High Channel)****Measurement Data**

Test mode : WCDMA850
Crest Factor : 1
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.007 W/kg
Power Drift-Finish : 0.008 W/kg
Power Drift (%) : 1.334

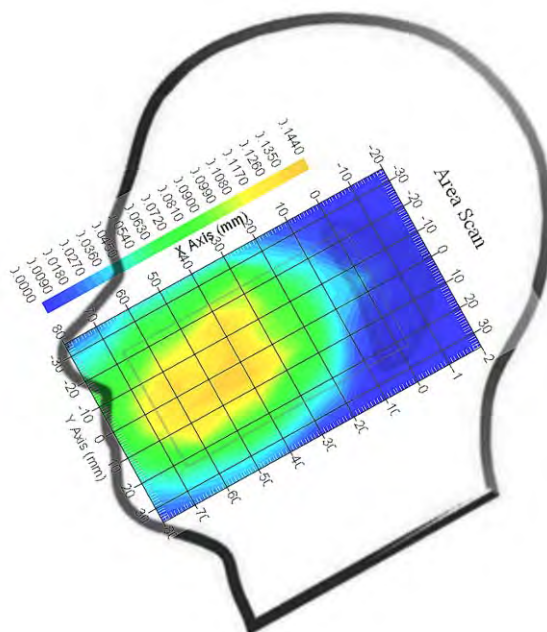
Tissue Data

Type : Head
Frequency : 846.6 MHz
Epsilon : 40.85 F/m
Sigma : 0.92 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 1
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.128 W/kg
10 gram SAR value : 0.085 W/kg
Area Scan Peak SAR : 0.140 W/kg
Zoom Scan Peak SAR : 0.240 W/kg

Plot 20#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**WCDMA1900; Left Head Cheek (1852.4 MHz Low Channel)****Measurement Data**

Test mode : WCDMA1900
Crest Factor : 1
Scan Type : Complete
Area Scan : 11x9x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.022 W/kg
Power Drift-Finish : 0.022 W/kg
Power Drift (%) : -0.757

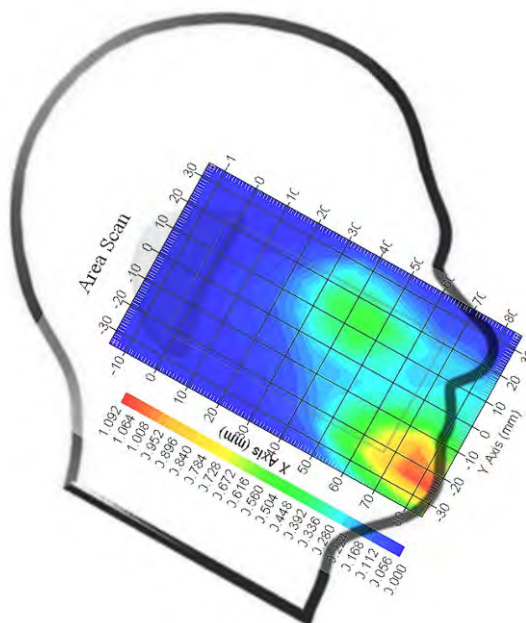
Tissue Data

Type : Head
Frequency : 1852.4 MHz
Epsilon : 40.24 F/m
Sigma : 1.40 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 1
Conversion Factor : 4.8
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.825 W/kg
10 gram SAR value : 0.326 W/kg
Area Scan Peak SAR : 1.071 W/kg
Zoom Scan Peak SAR : 1.660 W/kg

Plot 21#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**WCDMA1900; Left Head Cheek (1880.0 MHz Middle Channel)****Measurement Data**

Test mode : WCDMA1900
Crest Factor : 1
Scan Type : Complete
Area Scan : 11x9x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.010 W/kg
Power Drift-Finish : 0.011 W/kg
Power Drift (%) : 0.729

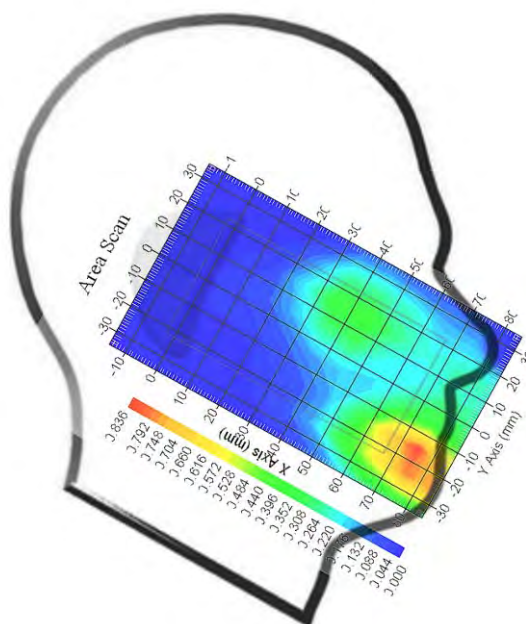
Tissue Data

Type : Head
Frequency : 1880.0 MHz
Epsilon : 40.24 F/m
Sigma : 1.43 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 1
Conversion Factor : 4.8
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.862 W/kg
10 gram SAR value : 0.391 W/kg
Area Scan Peak SAR : 0.823 W/kg
Zoom Scan Peak SAR : 1.581 W/kg

Plot 22#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**WCDMA1900; Left Head Cheek (1907.6 MHz High Channel)****Measurement Data**

Test mode : WCDMA1900
Crest Factor : 1
Scan Type : Complete
Area Scan : 11x9x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.005 W/kg
Power Drift-Finish : 0.005 W/kg
Power Drift (%) : -3.634

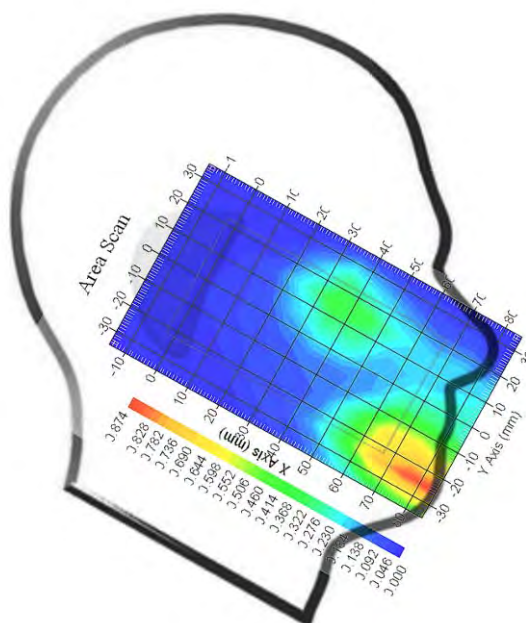
Tissue Data

Type : Head
Frequency : 1907.6 MHz
Epsilon : 40.25 F/m
Sigma : 1.44 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 1
Conversion Factor : 4.8
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.843 W/kg
10 gram SAR value : 0.305 W/kg
Area Scan Peak SAR : 0.863 W/kg
Zoom Scan Peak SAR : 1.300 W/kg

Plot 23#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**WCDMA1900; Left Head Tilt (1907.6 MHz High Channel)****Measurement Data**

Test mode : WCDMA1900
Crest Factor : 1
Scan Type : Complete
Area Scan : 11x9x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.013 W/kg
Power Drift-Finish : 0.012 W/kg
Power Drift (%) : -1.899

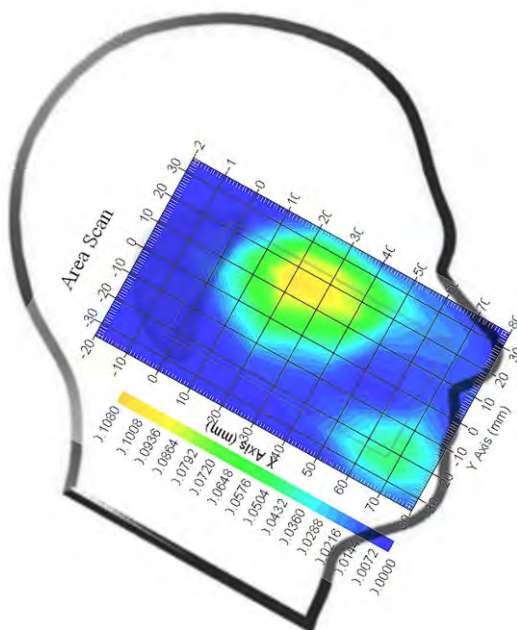
Tissue Data

Type : Head
Frequency : 1907.6 MHz
Epsilon : 40.25 F/m
Sigma : 1.44 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 1
Conversion Factor : 4.8
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.109 W/kg
10 gram SAR value : 0.059 W/kg
Area Scan Peak SAR : 0.105 W/kg
Zoom Scan Peak SAR : 0.180 W/kg

Plot 24#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**WCDMA1900; Right Head Cheek (1907.6 MHz High Channel)****Measurement Data**

Test mode : WCDMA1900
Crest Factor : 1
Scan Type : Complete
Area Scan : 11x9x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.026 W/kg
Power Drift-Finish : 0.026 W/kg
Power Drift (%) : -1.304

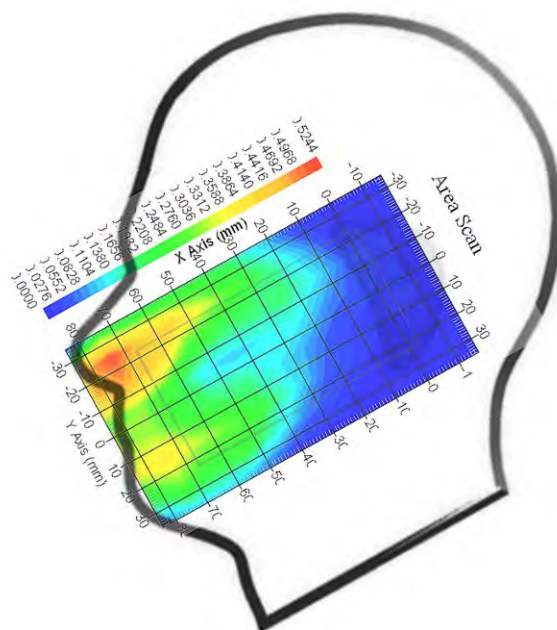
Tissue Data

Type : Head
Frequency : 1907.6 MHz
Epsilon : 40.25 F/m
Sigma : 1.44 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 1
Conversion Factor : 4.8
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.524 W/kg
10 gram SAR value : 0.264 W/kg
Area Scan Peak SAR : 0.512 W/kg
Zoom Scan Peak SAR : 0.950 W/kg

Plot 25#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**WCDMA1900; Right Head Tilt (1907.6 MHz High Channel)**

Measurement Data

Test mode : WCDMA1900
Crest Factor : 1
Scan Type : Complete
Area Scan : 11x9x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.031 W/kg
Power Drift-Finish : 0.032 W/kg
Power Drift (%) : 3.226

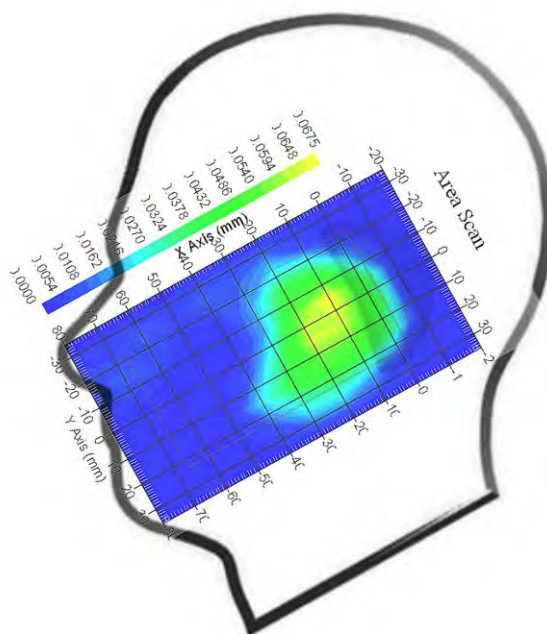
Tissue Data

Type : Head
Frequency : 1907.6 MHz
Epsilon : 40.25 F/m
Sigma : 1.44 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 1
Conversion Factor : 4.8
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.069 W/kg
10 gram SAR value : 0.030 W/kg
Area Scan Peak SAR : 0.067 W/kg
Zoom Scan Peak SAR : 0.150 W/kg

Plot 26#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: Body-Front (836.6 MHz Middle Channel)**

Measurement Data

Test mode : GPRS
Crest Factor : 2
Scan Type : Complete
Area Scan : 9x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.346 W/kg
Power Drift-Finish : 0.339 W/kg
Power Drift (%) : -2.045

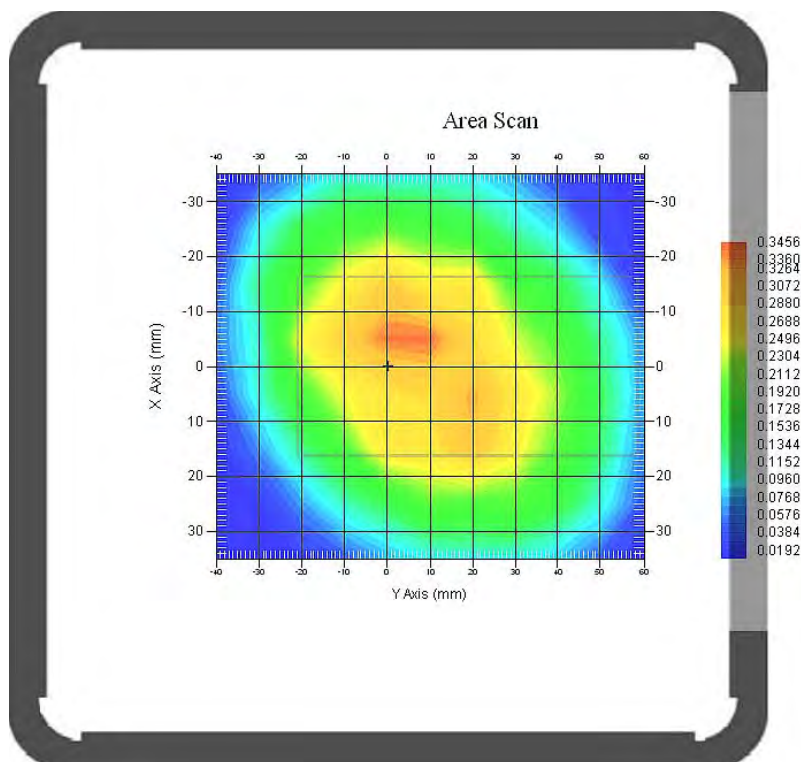
Tissue Data

Type : Body
Frequency : 836.6 MHz
Epsilon : 55.16 F/m
Sigma : 0.97 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 2
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.358 W/kg
10 gram SAR value : 0.261 W/kg
Area Scan Peak SAR : 0.343 W/kg
Zoom Scan Peak SAR : 0.600 W/kg

Plot 27#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: Body-Back (824.2 MHz Low Channel)**

Measurement Data

Test mode : GPRS
Crest Factor : 2
Scan Type : Complete
Area Scan : 9x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.674 W/kg
Power Drift-Finish : 0.648 W/kg
Power Drift (%) : -3.938

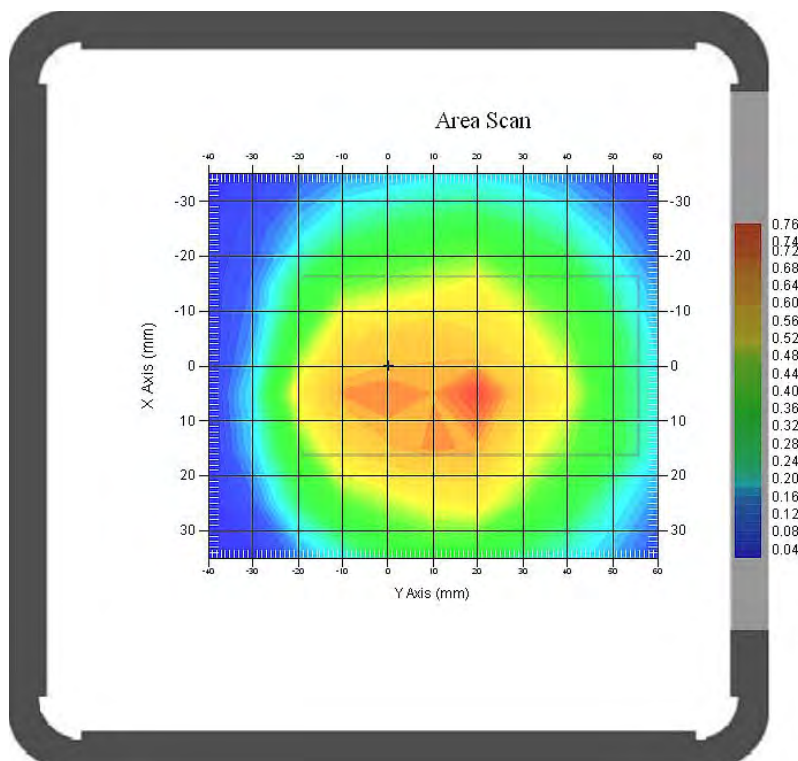
Tissue Data

Type : Body
Frequency : 824.2 MHz
Epsilon : 55.08 F/m
Sigma : 0.99 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 2
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.722 W/kg
10 gram SAR value : 0.508 W/kg
Area Scan Peak SAR : 0.760 W/kg
Zoom Scan Peak SAR : 1.161 W/kg

Plot 28#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: Body-Back (836.6 MHz Middle Channel)**

Measurement Data

Test mode : GPRS
Crest Factor : 2
Scan Type : Complete
Area Scan : 9x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.850 W/kg
Power Drift-Finish : 0.836 W/kg
Power Drift (%) : -2.386

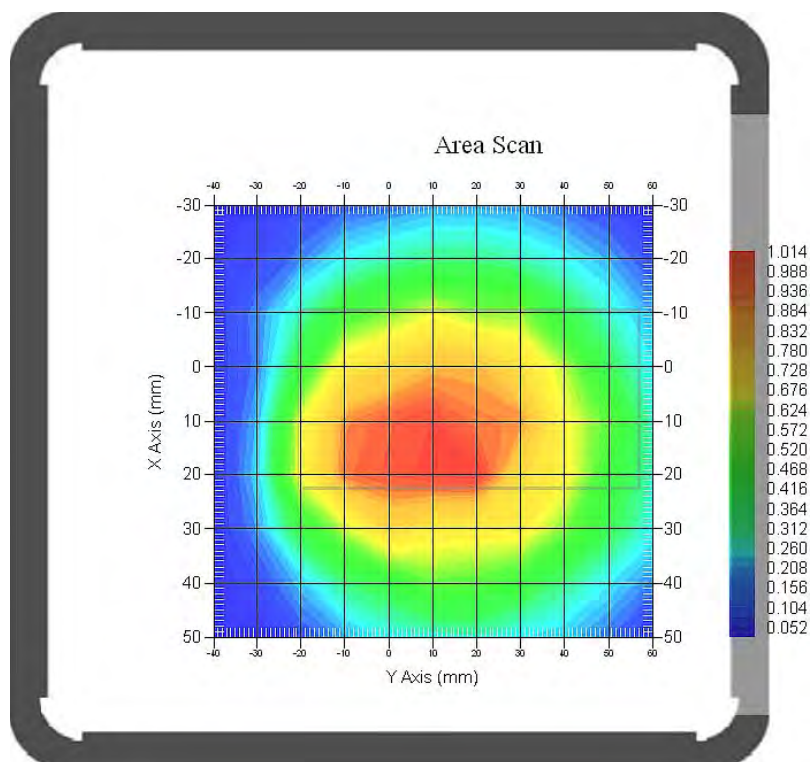
Tissue Data

Type : Body
Frequency : 836.6 MHz
Epsilon : 55.16 F/m
Sigma : 0.97 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 2
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.913 W/kg
10 gram SAR value : 0.630 W/kg
Area Scan Peak SAR : 1.011 W/kg
Zoom Scan Peak SAR : 1.371 W/kg

Plot 29#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: Body-Back (848.8 MHz High Channel)**

Measurement Data

Test mode : GPRS
Crest Factor : 2
Scan Type : Complete
Area Scan : 9x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 1.036 W/kg
Power Drift-Finish : 0.996 W/kg
Power Drift (%) : -1.728

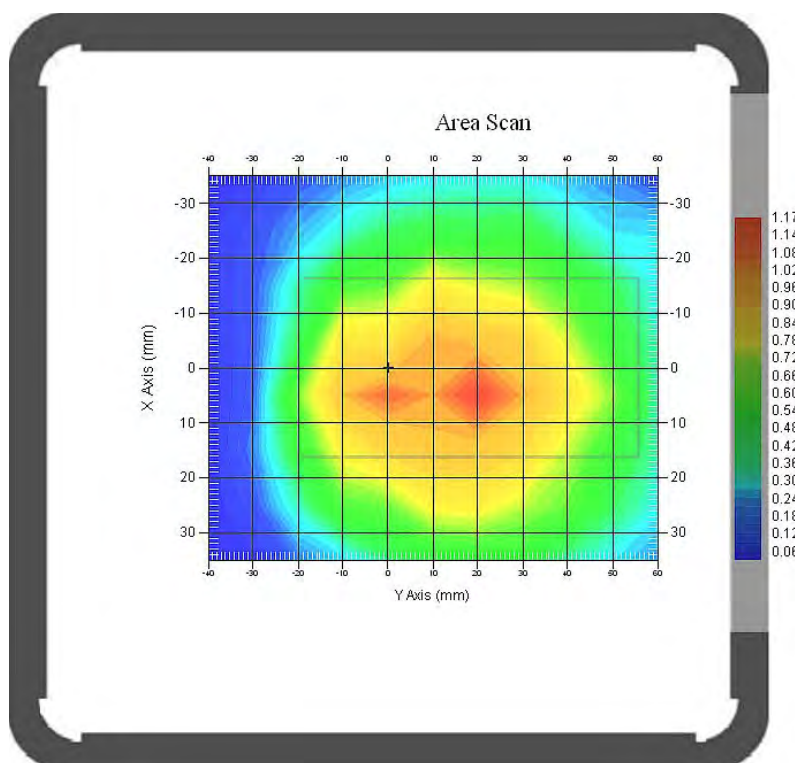
Tissue Data

Type : Body
Frequency : 848.8 MHz
Epsilon : 55.24 F/m
Sigma : 1.00 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 2
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 1.045 W/kg
10 gram SAR value : 0.715 W/kg
Area Scan Peak SAR : 1.145 W/kg
Zoom Scan Peak SAR : 1.451 W/kg

Plot 30#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: Body-Left (836.6 MHz Middle Channel)**

Measurement Data

Test mode : GPRS
Crest Factor : 2
Scan Type : Complete
Area Scan : 7x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.292 W/kg
Power Drift-Finish : 0.302 W/kg
Power Drift (%) : 3.763

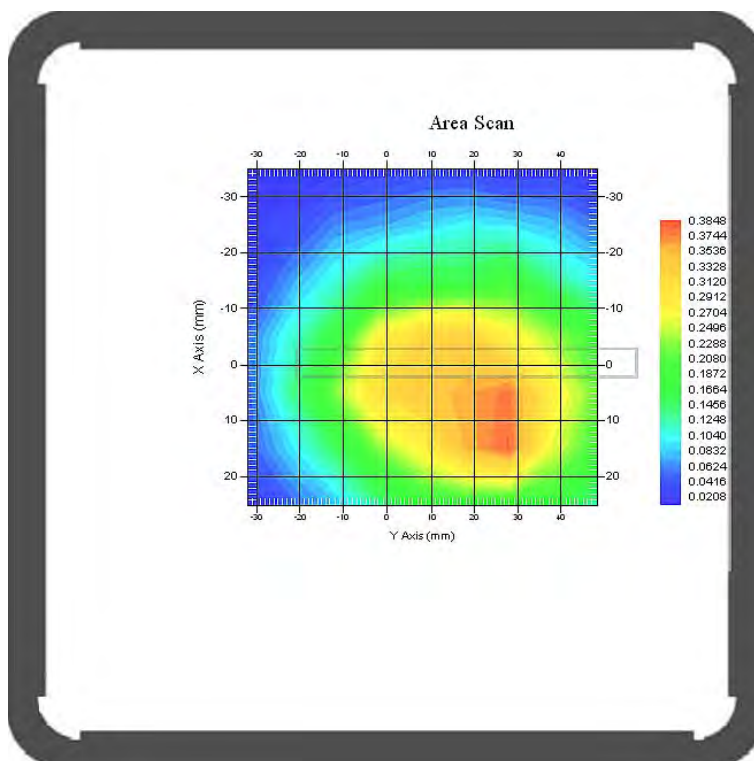
Tissue Data

Type : Body
Frequency : 836.6 MHz
Epsilon : 55.16 F/m
Sigma : 0.97 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 2
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.366 W/kg
10 gram SAR value : 0.241 W/kg
Area Scan Peak SAR : 0.376 W/kg
Zoom Scan Peak SAR : 0.540 W/kg

Plot 31#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: Body-Right (836.6 MHz Middle Channel)**

Measurement Data

Test mode : GPRS
Crest Factor : 2
Scan Type : Complete
Area Scan : 7x9x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.285 W/kg
Power Drift-Finish : 0.290 W/kg
Power Drift (%) : 1.583

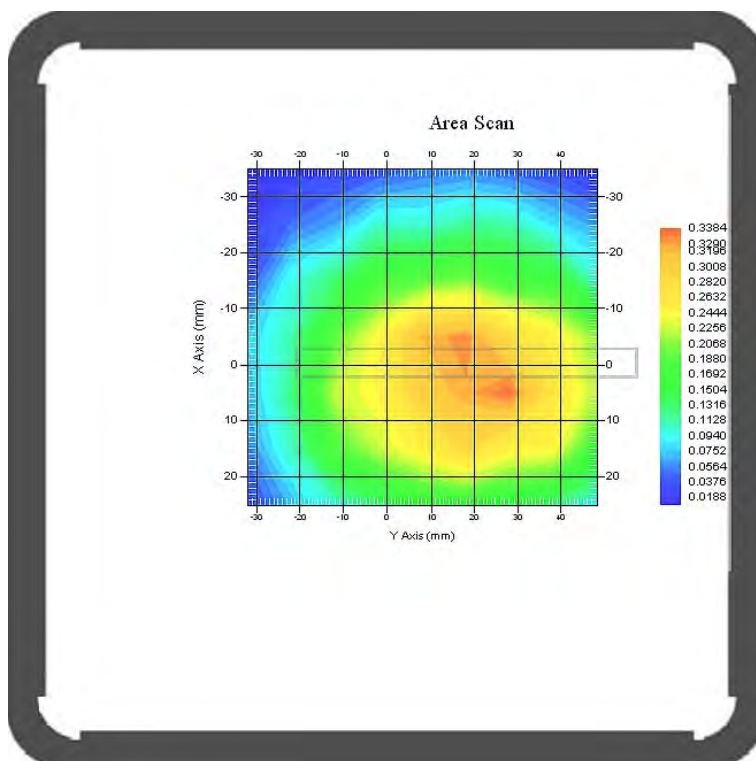
Tissue Data

Type : Body
Frequency : 836.6 MHz
Epsilon : 55.16 F/m
Sigma : 0.97 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 2
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.298 W/kg
10 gram SAR value : 0.205 W/kg
Area Scan Peak SAR : 0.336 W/kg
Zoom Scan Peak SAR : 0.460 W/kg

Plot 32#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: Body-Bottom (836.6 MHz Middle Channel)**

Measurement Data

Test mode : GPRS
Crest Factor : 2
Scan Type : Complete
Area Scan : 7x9x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.009 W/kg
Power Drift-Finish : 0.009 W/kg
Power Drift (%) : 1.403

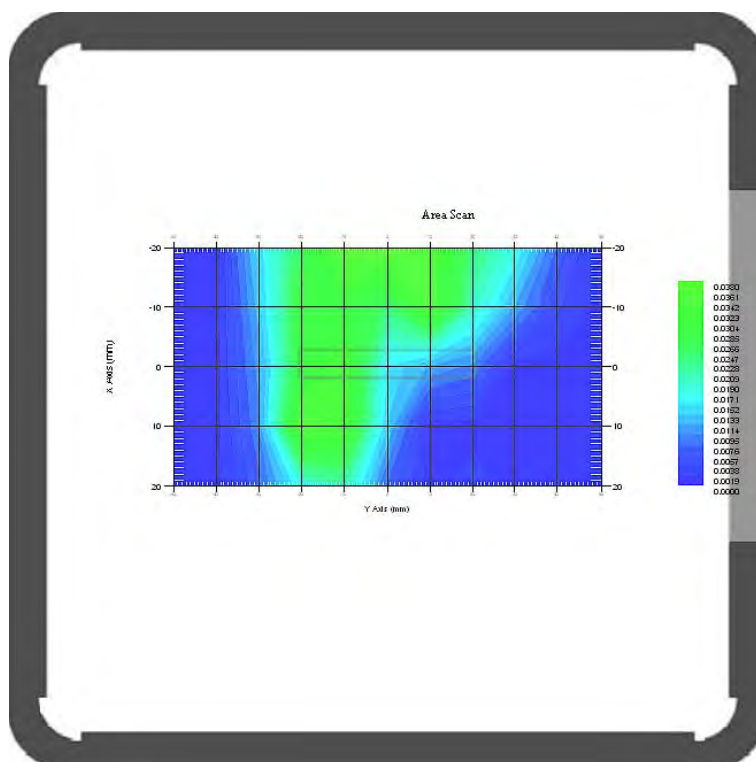
Tissue Data

Type : Body
Frequency : 836.6 MHz
Epsilon : 55.16 F/m
Sigma : 0.97 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 835
Duty Cycle Factor : 2
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.033 W/kg
10 gram SAR value : 0.018 W/kg
Area Scan Peak SAR : 0.038 W/kg
Zoom Scan Peak SAR : 0.070 W/kg

Plot 33#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: Body-Front (1880.0 MHz Middle Channel)**

Measurement Data

Test mode : GPRS
Crest Factor : 2
Scan Type : Complete
Area Scan : 9x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.187 W/kg
Power Drift-Finish : 0.189 W/kg
Power Drift (%) : 0.563

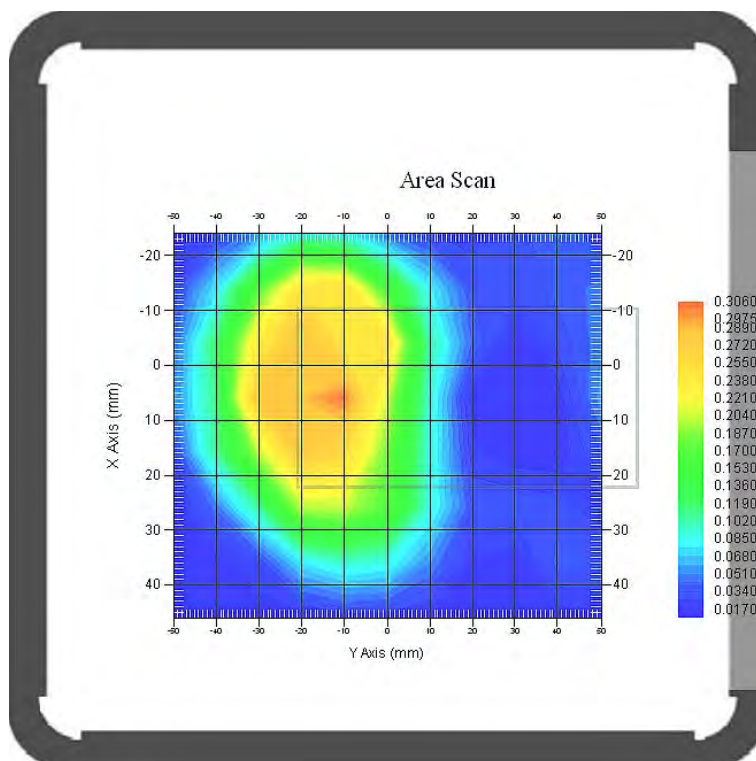
Tissue Data

Type : Body
Frequency : 1880.00 MHz
Epsilon : 53.53 F/m
Sigma : 1.54 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 2
Conversion Factor : 4.5
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.306 W/kg
10 gram SAR value : 0.170 W/kg
Area Scan Peak SAR : 0.301 W/kg
Zoom Scan Peak SAR : 0.580 W/kg

Plot 34

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: Body-Back (1880.0 MHz Middle Channel)**

Measurement Data

Test mode : GPRS
Crest Factor : 2
Scan Type : Complete
Area Scan : 9x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.297 W/kg
Power Drift-Finish : 0.304 W/kg
Power Drift (%) : 2.762

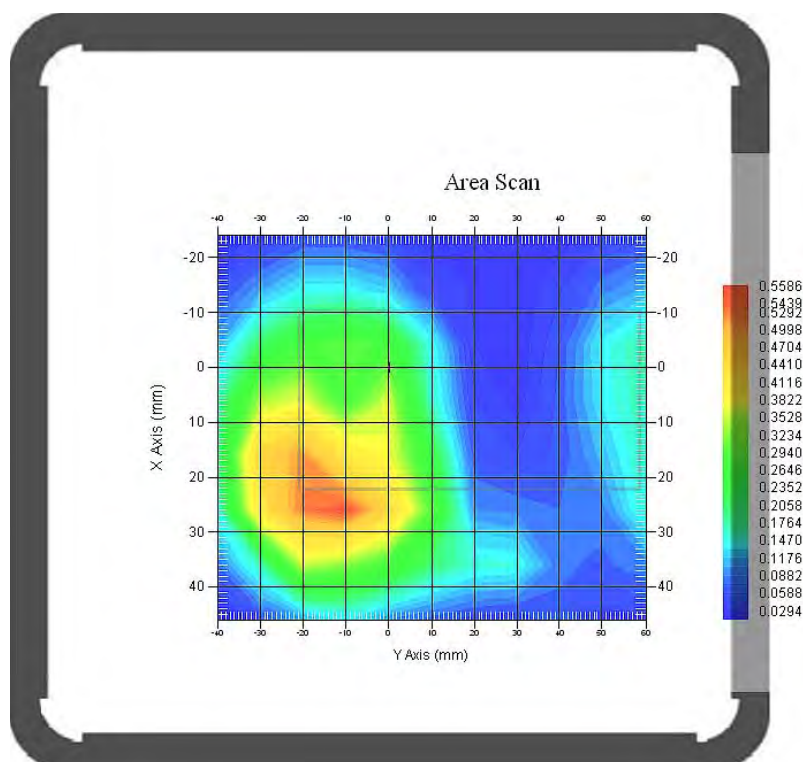
Tissue Data

Type : Body
Frequency : 1880.00 MHz
Epsilon : 53.53 F/m
Sigma : 1.54 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 2
Conversion Factor : 4.5
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.499 W/kg
10 gram SAR value : 0.357 W/kg
Area Scan Peak SAR : 0.549 W/kg
Zoom Scan Peak SAR : 0.920 W/kg

Plot 35#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: Body-Left (1880.0 MHz Middle Channel)**

Measurement Data

Test mode : GPRS
Crest Factor : 2
Scan Type : Complete
Area Scan : 8x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.027 W/kg
Power Drift-Finish : 0.026 W/kg
Power Drift (%) : -0.370

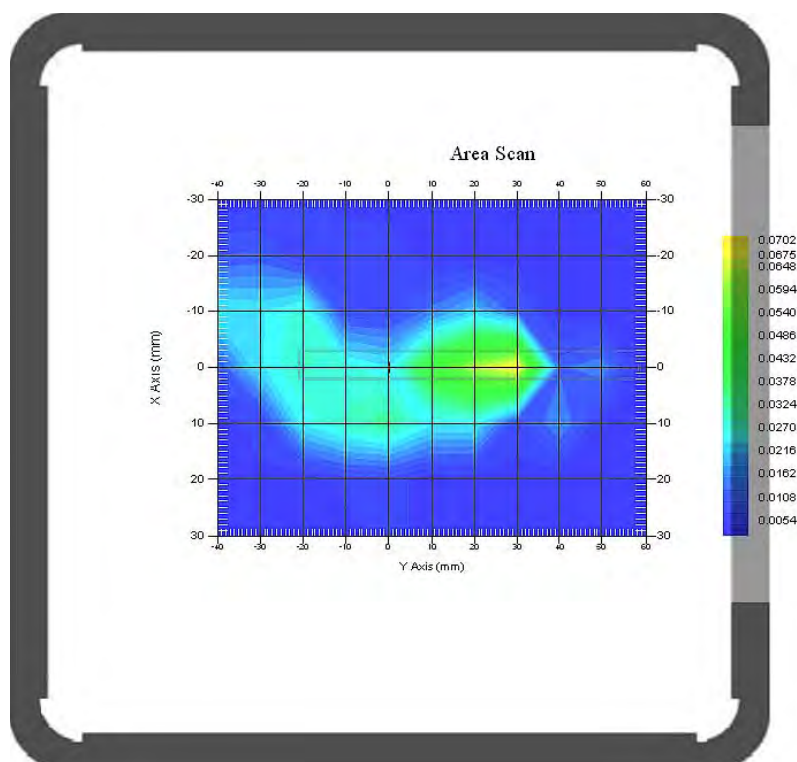
Tissue Data

Type : Body
Frequency : 1880.00 MHz
Epsilon : 53.53 F/m
Sigma : 1.54 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 2
Conversion Factor : 4.5
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.045 W/kg
10 gram SAR value : 0.015 W/kg
Area Scan Peak SAR : 0.068 W/kg
Zoom Scan Peak SAR : 0.140 W/kg

Plot 36#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: Body-Right (1880.0 MHz Middle Channel)**

Measurement Data

Test mode : GPRS
Crest Factor : 2
Scan Type : Complete
Area Scan : 8x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.005 W/kg
Power Drift-Finish : 0.004 W/kg
Power Drift (%) : -0.891

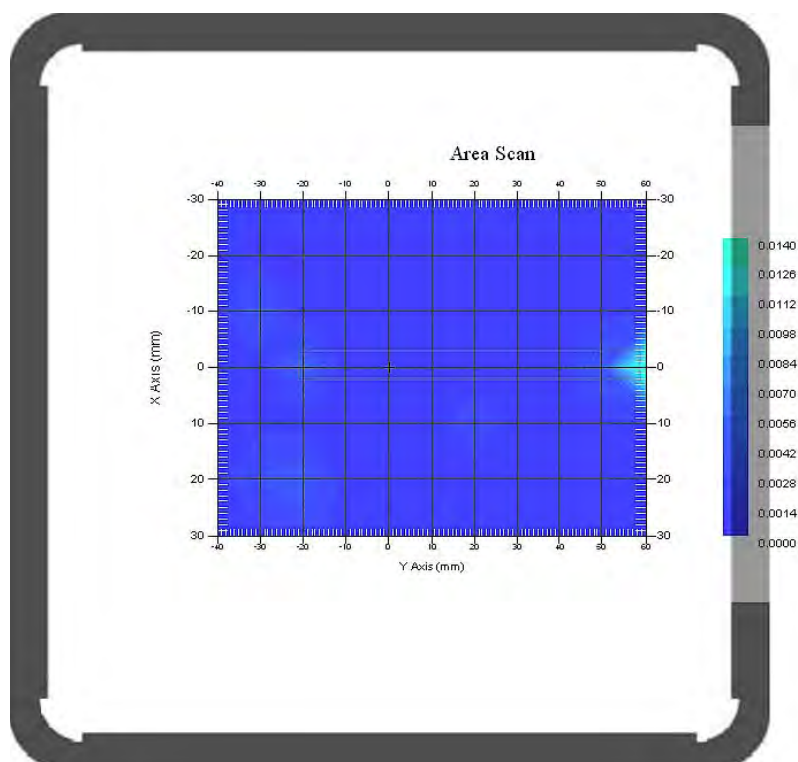
Tissue Data

Type : Body
Frequency : 1880.00 MHz
Epsilon : 53.53 F/m
Sigma : 1.54 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 2
Conversion Factor : 4.5
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.005 W/kg
10 gram SAR value : 0.004 W/kg
Area Scan Peak SAR : 0.014 W/kg
Zoom Scan Peak SAR : 0.030 W/kg

Plot 37#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: Body-Bottom (1880.0 MHz Middle Channel)**

Measurement Data

Test mode : GPRS
Crest Factor : 2
Scan Type : Complete
Area Scan : 8x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.362 W/kg
Power Drift-Finish : 0.372 W/kg
Power Drift (%) : 2.966

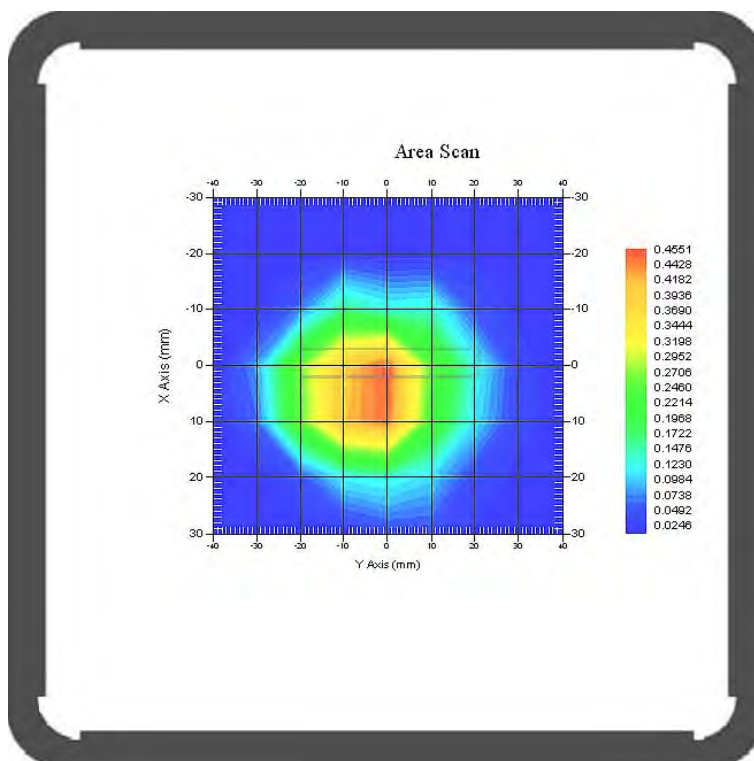
Tissue Data

Type : Body
Frequency : 1880.00 MHz
Epsilon : 53.53 F/m
Sigma : 1.54 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency Band : 1900
Duty Cycle Factor : 2
Conversion Factor : 4.5
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.394 W/kg
10 gram SAR value : 0.163 W/kg
Area Scan Peak SAR : 0.451 W/kg
Zoom Scan Peak SAR : 0.880 W/kg

Plot 38#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: WCDMA850; Body-Front (846.6 MHz High Channel)**

Measurement Data

Test mode : WCDMA850
Crest Factor : 1
Scan Type : Complete
Area Scan : 9x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.187 W/kg
Power Drift-Finish : 0.192 W/kg
Power Drift (%) : 3.831

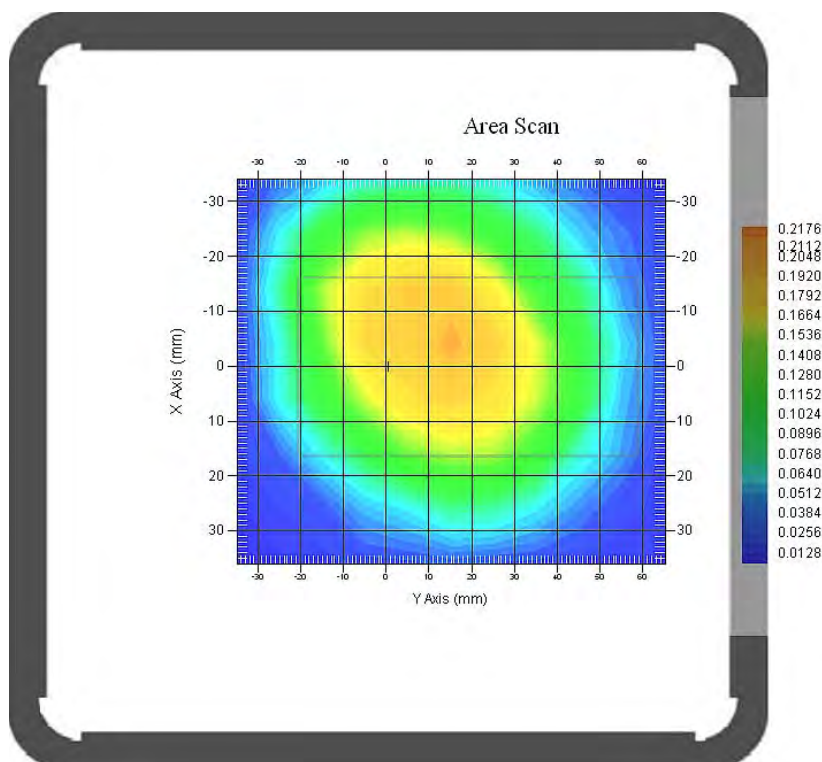
Tissue Data

Type : Body
Frequency : 846.6 MHz
Epsilon : 55.22 F/m
Sigma : 0.99 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency : 835
Duty Cycle Factor : 1
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.198 W/kg
10 gram SAR value : 0.124 W/kg
Area Scan Peak SAR : 0.217 W/kg
Zoom Scan Peak SAR : 0.300 W/kg

Plot 39#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: WCDMA850; Body-Back (846.6 MHz High Channel)**

Measurement Data

Test mode : WCDMA850
Crest Factor : 1
Scan Type : Complete
Area Scan : 9x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.355 W/kg
Power Drift-Finish : 0.368 W/kg
Power Drift (%) : 2.484

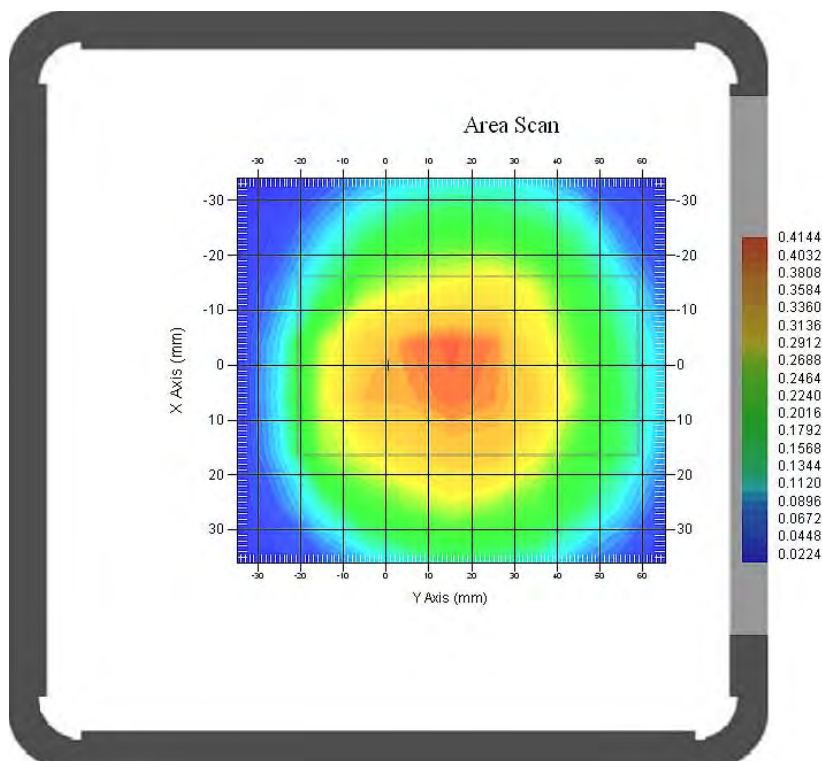
Tissue Data

Type : Body
Frequency : 846.6 MHz
Epsilon : 55.22 F/m
Sigma : 0.99 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency : 835
Duty Cycle Factor : 1
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.423 W/kg
10 gram SAR value : 0.302 W/kg
Area Scan Peak SAR : 0.407 W/kg
Zoom Scan Peak SAR : 0.630 W/kg

Plot 40#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: WCDMA850; Body-Left (846.6 MHz High Channel)****Measurement Data**

Test mode : WCDMA850
Crest Factor : 1
Scan Type : Complete
Area Scan : 7x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.164 W/kg
Power Drift-Finish : 0.165 W/kg
Power Drift (%) : 0.553

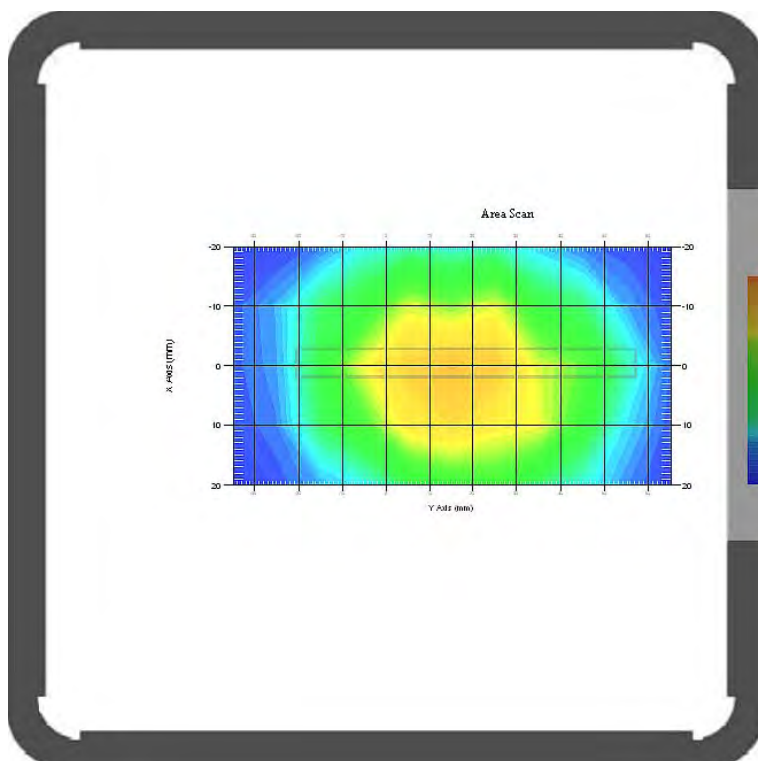
Tissue Data

Type : Body
Frequency : 846.6 MHz
Epsilon : 55.22 F/m
Sigma : 0.99 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency : 835
Duty Cycle Factor : 1
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.178 W/kg
10 gram SAR value : 0.102 W/kg
Area Scan Peak SAR : 0.200 W/kg
Zoom Scan Peak SAR : 0.280 W/kg

Plot 41#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: WCDMA850; Body-Right (846.6 MHz High Channel)**

Measurement Data

Test mode : WCDMA850
Crest Factor : 1
Scan Type : Complete
Area Scan : 7x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.134 W/kg
Power Drift-Finish : 0.135 W/kg
Power Drift (%) : 0.696

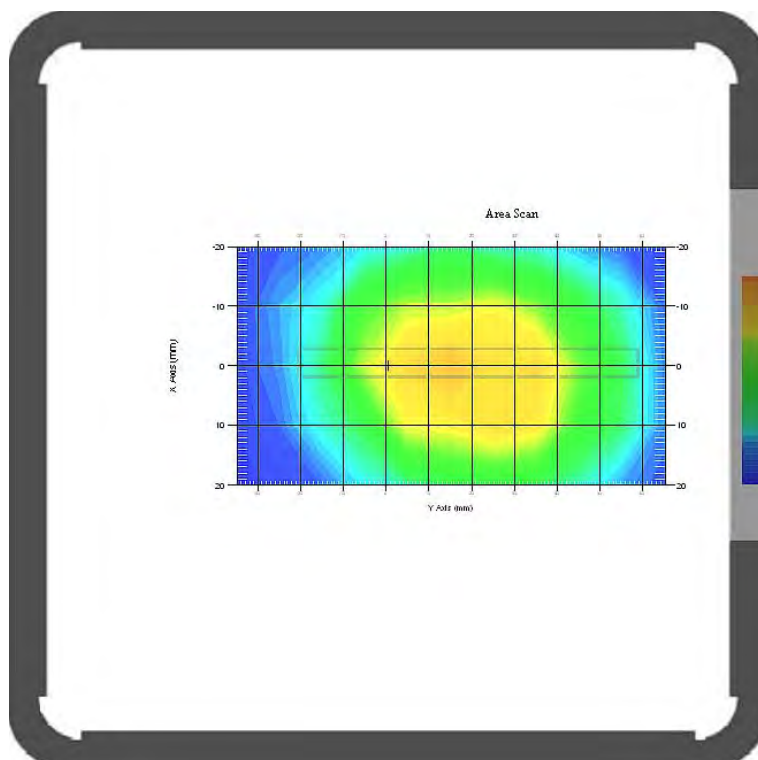
Tissue Data

Type : Body
Frequency : 846.6 MHz
Epsilon : 55.22 F/m
Sigma : 0.99 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency : 835
Duty Cycle Factor : 1
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.149 W/kg
10 gram SAR value : 0.084 W/kg
Area Scan Peak SAR : 0.190 W/kg
Zoom Scan Peak SAR : 0.270 W/kg

Plot 42#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: WCDMA850; Body-Bottom (846.6 MHz High Channel)**

Measurement Data

Test mode : WCDMA850
Crest Factor : 1
Scan Type : Complete
Area Scan : 7x9x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.003 W/kg
Power Drift-Finish : 0.003 W/kg
Power Drift (%) : 2.663

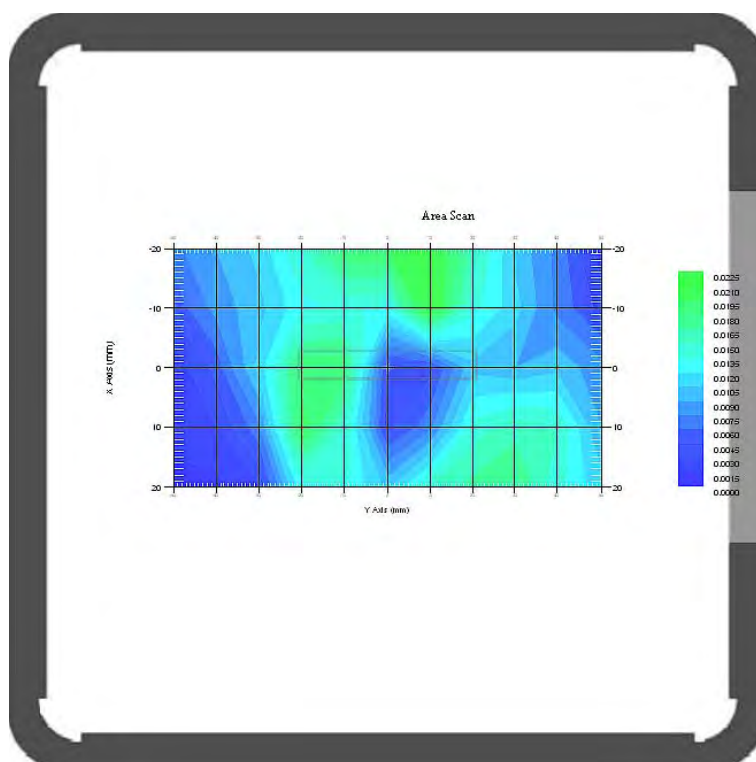
Tissue Data

Type : Body
Frequency : 846.6 MHz
Epsilon : 55.22 F/m
Sigma : 0.99 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency : 835
Duty Cycle Factor : 1
Conversion Factor : 5.9
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.018 W/kg
10 gram SAR value : 0.012 W/kg
Area Scan Peak SAR : 0.022 W/kg
Zoom Scan Peak SAR : 0.020 W/kg

Plot 43#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: WCDMA1900; Body-Front (1909.8 MHz High Channel)****Measurement Data**

Test mode : WCDMA1900
Crest Factor : 1
Scan Type : Complete
Area Scan : 9x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.166 W/kg
Power Drift-Finish : 0.161 W/kg
Power Drift (%) : -3.213

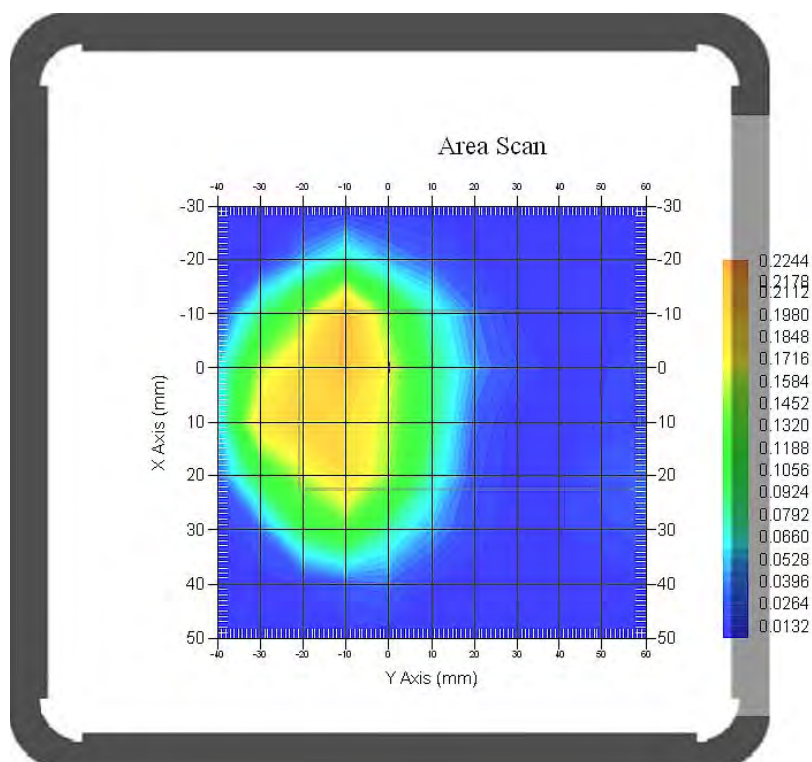
Tissue Data

Type : Body
Frequency : 1909.8 MHz
Epsilon : 53.60 F/m
Sigma : 1.56 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency : 1900
Duty Cycle Factor : 1
Conversion Factor : 4.5
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.257 W/kg
10 gram SAR value : 0.185 W/kg
Area Scan Peak SAR : 0.224 W/kg
Zoom Scan Peak SAR : 0.390 W/kg

Plot 44#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: WCDMA1900; Body-Back (1909.8 MHz High Channel)****Measurement Data**

Test mode : WCDMA1900
Crest Factor : 1
Scan Type : Complete
Area Scan : 9x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.066 W/kg
Power Drift-Finish : 0.067 W/kg
Power Drift (%) : 1.648

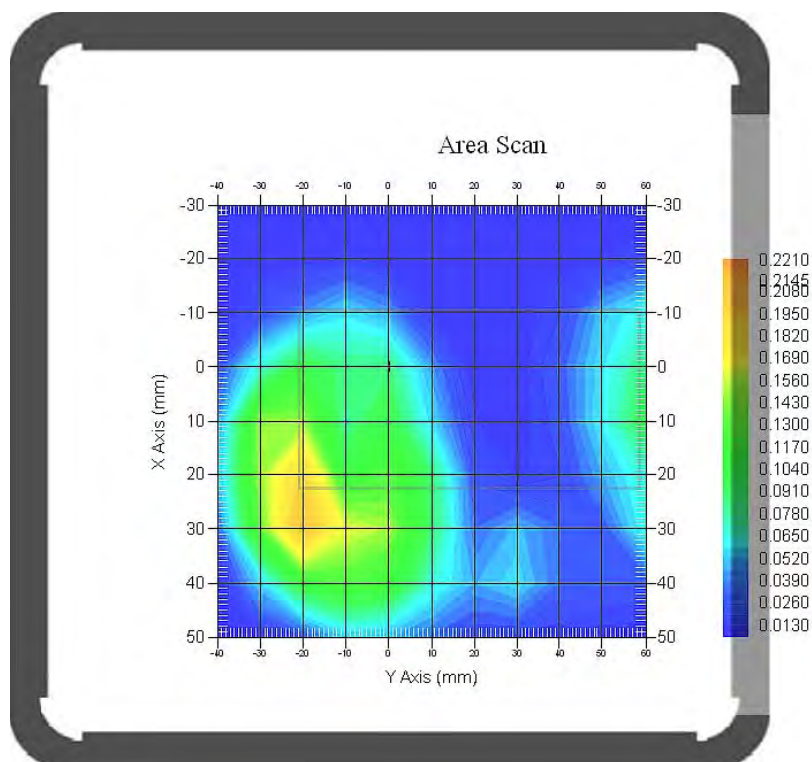
Tissue Data

Type : Body
Frequency : 1909.8 MHz
Epsilon : 53.60 F/m
Sigma : 1.56 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency : 1900
Duty Cycle Factor : 1
Conversion Factor : 4.5
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.191 W/kg
10 gram SAR value : 0.089 W/kg
Area Scan Peak SAR : 0.220 W/kg
Zoom Scan Peak SAR : 0.370 W/kg

Plot 45#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: WCDMA1900; Body-Left (1909.8 MHz High Channel)**

Measurement Data

Test mode : WCDMA1900
Crest Factor : 1
Scan Type : Complete
Area Scan : 7x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.001 W/kg
Power Drift-Finish : 0.000 W/kg
Power Drift (%) : -0.247

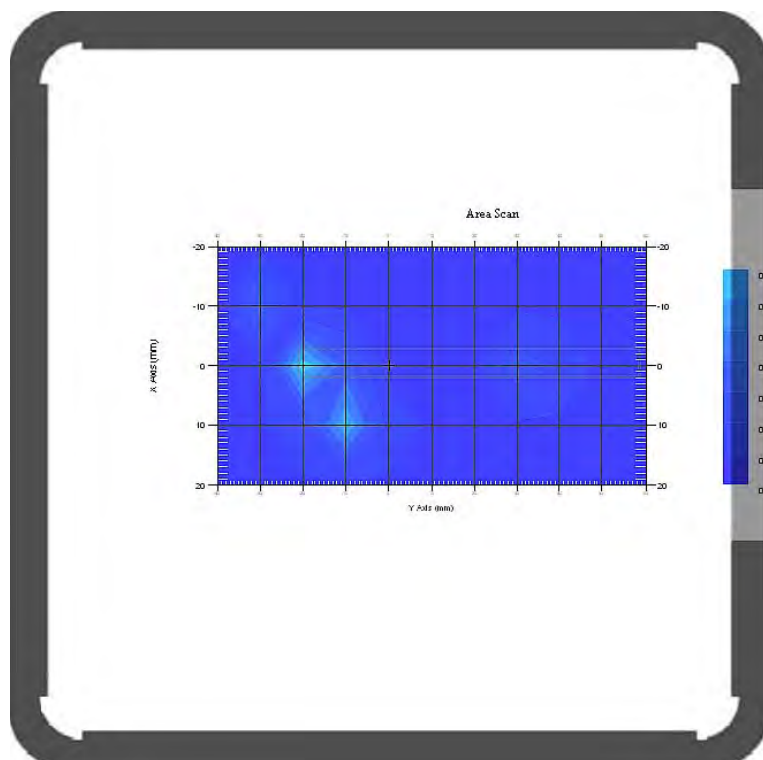
Tissue Data

Type : Body
Frequency : 1909.8 MHz
Epsilon : 53.60 F/m
Sigma : 1.56 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency : 1900
Duty Cycle Factor : 1
Conversion Factor : 4.5
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.006 W/kg
10 gram SAR value : 0.004 W/kg
Area Scan Peak SAR : 0.008 W/kg
Zoom Scan Peak SAR : 0.020 W/kg

Plot 46#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: WCDMA1900; Body-Right (1909.8 MHz High Channel)**

Measurement Data

Test mode : WCDMA1900
Crest Factor : 1
Scan Type : Complete
Area Scan : 7x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.001 W/kg
Power Drift-Finish : 0.000 W/kg
Power Drift (%) : -0.759

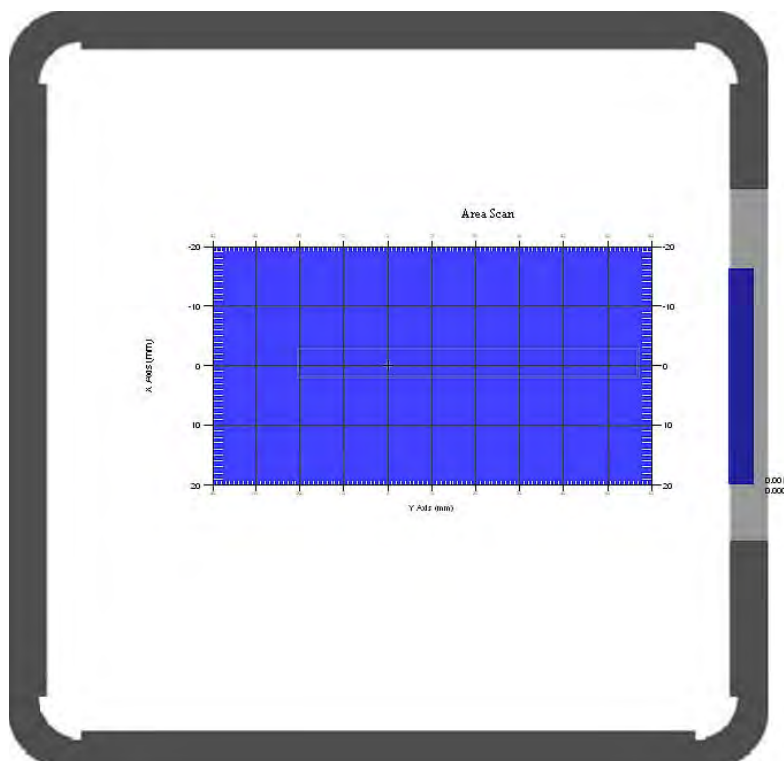
Tissue Data

Type : Body
Frequency : 1909.8 MHz
Epsilon : 53.60 F/m
Sigma : 1.56 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency : 1900
Duty Cycle Factor : 1
Conversion Factor : 4.5
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.001 W/kg
10 gram SAR value : 0.001 W/kg
Area Scan Peak SAR : 0.001 W/kg
Zoom Scan Peak SAR : 0.000 W/kg

Plot 47#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: WCDMA1900; Body-Bottom (1909.8 MHz High Channel)****Measurement Data**

Test mode : WCDMA1900
Crest Factor : 1
Scan Type : Complete
Area Scan : 7x9x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.133 W/kg
Power Drift-Finish : 0.127 W/kg
Power Drift (%) : -4.400

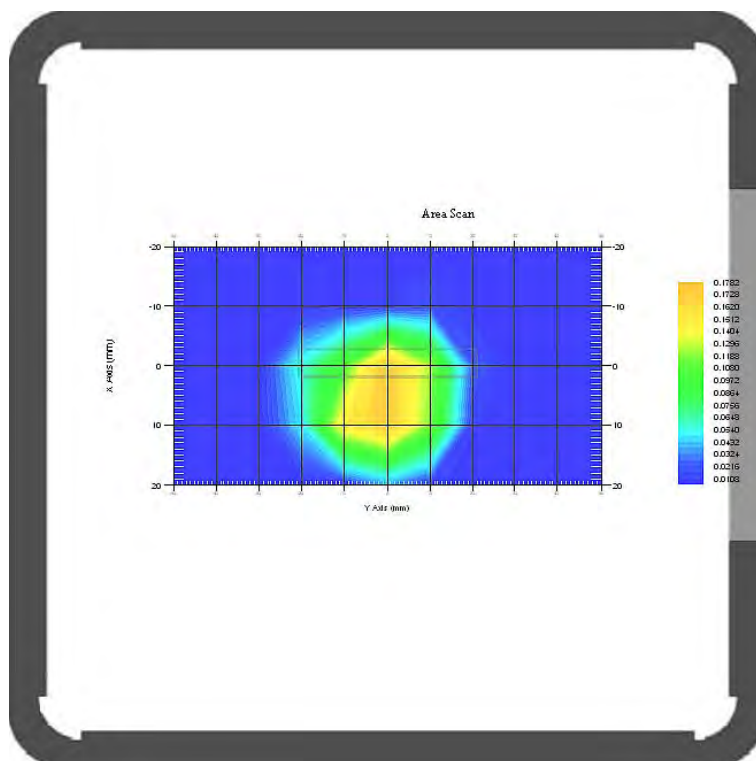
Tissue Data

Type : Body
Frequency : 1909.8 MHz
Epsilon : 53.60 F/m
Sigma : 1.56 S/m
Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
Frequency : 1900
Duty Cycle Factor : 1
Conversion Factor : 4.5
Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.176 W/kg
10 gram SAR value : 0.065 W/kg
Area Scan Peak SAR : 0.174 W/kg
Zoom Scan Peak SAR : 0.390 W/kg

Plot 48#

APPENDIX A MEASUREMENT UNCERTAINTY

The uncertainty budget has been determined for the measurement system and is given in the following Table.

Measurement Uncertainty for 300MHz to 3GHz

Source of Uncertainty	Tolerance Value	Probability Distribution	Divisor	c_1^1 (1-g)	c_1^1 (10-g)	Standard Uncertainty (1-g) %	Standard Uncertainty (10-g) %
Measurement System							
Probe Calibration	3.5	normal	1	1	1	3.5	3.5
Axial Isotropy	3.7	rectangular	$\sqrt{3}$	$(1-cp)^{1/2}$	$(1-cp)^{1/2}$	1.5	1.5
Hemispherical Isotropy	10.9	rectangular	$\sqrt{3}$	$\sqrt{cp}$	$\sqrt{cp}$	4.4	4.4
Boundary Effect	1.0	rectangular	$\sqrt{3}$	1	1	0.6	0.6
Linearity	4.7	rectangular	$\sqrt{3}$	1	1	2.7	2.7
Detection Limit	1.0	rectangular	$\sqrt{3}$	1	1	0.6	0.6
Readout Electronics	1.0	normal	1	1	1	1.0	1.0
Response Time	0.8	rectangular	$\sqrt{3}$	1	1	0.5	0.5
Integration Time	1.7	rectangular	$\sqrt{3}$	1	1	1.0	1.0
RF Ambient Condition -Noise	0.006	rectangular	$\sqrt{3}$	1	1	0.003	0.003
RF Ambient Condition - Reflections	3.0	rectangular	$\sqrt{3}$	1	1	1.7	1.7
Probe Positioner Mech. Restrictions	0.4	rectangular	$\sqrt{3}$	1	1	0.2	0.2
Restriction							
Probe Positioning with respect to Phantom Shell	2.9	rectangular	$\sqrt{3}$	1	1	1.7	1.7
Extrapolation and Integration	3.7	rectangular	$\sqrt{3}$	1	1	2.1	2.1
Test Sample Positioning	0.023	normal	1	1	1	0.023	0.023
Device Holder Uncertainty	6.215	normal	1	1	1	6.215	6.215
Drift of Output Power	4.627	rectangular	$\sqrt{3}$	1	1	2.67	2.67
Phantom and Setup							
Phantom Uncertainty(shape & thickness tolerance)	3.4	rectangular	$\sqrt{3}$	1	1	2.0	2.0
Liquid Conductivity(target)	5.0	rectangular	$\sqrt{3}$	0.7	0.5	2.0	1.4
Liquid Conductivity(meas.)	1.938	normal	1	0.7	0.5	1.36	0.97
Liquid Permittivity(target)	5.0	rectangular	$\sqrt{3}$	0.6	0.5	1.7	1.4
Liquid Permittivity(meas.)	3.093	normal	1	0.6	0.5	1.86	1.55
Combined Uncertainty		RSS				10.78	10.55
Expanded uncertainty (coverage factor=2)		Normal(k=2)				21.56	21.10

APPENDIX B – PROBE CALIBRATION CERTIFICATES

NCL CALIBRATION LABORATORIES

Calibration File No.: PC-1537

Task No: BACL-5745

CERTIFICATE OF CALIBRATION

It is certified that the equipment identified below has been calibrated in the
NCL CALIBRATION LABORATORIES by qualified personnel following recognized
procedures and using transfer standards traceable to NRC/NIST.

Equipment: Miniature Isotropic RF Probe

Record of Calibration

Head and Body

Manufacturer: APREL Laboratories

Model No.: E-020

Serial No.: 500-00283

Calibration Procedure: D01-032-E020-V2, D22-012-Tissue, D28-002-Dipole
Project No: BACL-5745

Calibrated: 8th October 2013

Released on: 8th October 2013

This Calibration Certificate is Incomplete Unless Accompanied with the Calibration Results Summary

Released By:



Art Brennan, Quality Manager

NCL CALIBRATION LABORATORIES

Suite 102, 303 Terry Fox Dr,
OTTAWA, ONTARIO
CANADA K2K 3J1

Division of APREL Lab.
TEL: (613) 435-8300
FAX: (613) 435-8306

NCL Calibration Laboratories

Division of APREL Inc.

Introduction

This Calibration Report reproduces the results of the calibration performed in line with the references listed below. Calibration is performed using accepted methodologies as per the references listed below. Probes are calibrated for air, and tissue and the values reported are the results from the physical quantification of the probe through meteorological practices.

Calibration Method

Probes are calibrated using the following methods.

<1000MHz

TEM Cell for sensitivity in air

Standard phantom using temperature transfer method for sensitivity in tissue

>1000MHz

Waveguide* method to determine sensitivity in air and tissue

*Waveguide is numerically (simulation) assessed to determine the field distribution and power

The boundary effect for the probe is assessed using a standard flat phantom where the probe output is compared against a numerically simulated series of data points

References

- IEEE Standard 1528
IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
- EN 62209-1
Human Exposure to RF Fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures-Part 1: Procedure to measure the Specific Absorption Rate (SAR) for hand-held mobile wireless devices
- IEC 62209-2
Human exposure to RF fields from hand-held and body-mounted wireless devices - Human models, instrumentation, and procedures - Part 2: specific absorption rate (SAR) for wireless communication devices (30 MHz - 6 GHz)
- TP-D01-032-E020-V2 E-Field probe calibration procedure
- D22-012-Tissue dielectric tissue calibration procedure
- D28-002-Dipole procedure for validation of SAR system using a dipole
- IEEE 1309 Standard for Calibration of Electromagnetic Field Sensors and Probes, Excluding Antennas, from 9kHz to 40GHz

Page 2 of 10

This page has been reviewed for content and attested to on Page 2 of this document.

NCL Calibration Laboratories

Division of APREL Inc.

Conditions

Probe 500-00283 was a recalibration.

Ambient Temperature of the Laboratory: 22 °C +/- 1.5°C**Temperature of the Tissue:** 21 °C +/- 1.5°C**Relative Humidity:** < 60%**Primary Measurement Standards**

Instrument	Serial Number	Cal due date
Tektronix USB Power Meter	11C940	May 14, 2015
Signal Generator HP 83640B	3844A00689	Feb 12, 2015

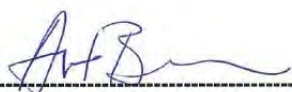
Secondary Measurement Standards

Network Analyzer Anritsu 37347C	002106	Feb. 20, 2015
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Attestation

The below named signatories have conducted the calibration and review of the data which is presented in this calibration report.

We the undersigned attest that to the best of our knowledge the calibration of this subject has been accurately conducted and that all information contained within the results pages have been reviewed for accuracy.



Art Brennan, Quality Manager



Dan Brooks, Test Engineer

Page 3 of 10

This page has been reviewed for content and attested to on Page 2 of this document.

NCL Calibration Laboratories

Division of APREL Inc.

Probe Summary

Probe Type:	E-Field Probe E020
Serial Number:	500-00283
Frequency:	As presented on page 5
Sensor Offset:	1.56
Sensor Length:	2.5
Tip Enclosure:	Composite*
Tip Diameter:	< 2.9 mm
Tip Length:	55 mm
Total Length:	289 mm

*Resistive to recommended tissue recipes per IEEE-1528

Sensitivity in Air

Channel X:	$1.2 \mu\text{V}/(\text{V}/\text{m})^2$
Channel Y:	$1.2 \mu\text{V}/(\text{V}/\text{m})^2$
Channel Z:	$1.2 \mu\text{V}/(\text{V}/\text{m})^2$
Diode Compression Point:	95 mV

Page 4 of 10

This page has been reviewed for content and attested to on Page 2 of this document.

NCL Calibration Laboratories

Division of APREL Inc.

Calibration for Tissue (Head H, Body B)

Frequency	Tissue Type	Measured Epsilon	Measured Sigma	Standard Uncertainty (%)	Calibration Frequency Range (MHz)	Conversion Factor
450 H	Head	44.29	0.86	3.5	±50	5.7
450 B	Body	56.6	0.94	3.5	±50	5.8
750 H	Head	42.7	0.85	3.5	±50	5.6
750 B	Body	56.6	0.94	3.5	±50	5.5
835 H	Head	42.35	0.938	3.5	±50	5.9
835 B	Body	56.65	1.018	3.5	±50	5.9
900 H	Head	X	X	X	X	X
900 B	Body	X	X	X	X	X
1450 H	Head	X	X	X	X	X
1450 B	Body	X	X	X	X	X
1500 H	Head	X	X	X	X	X
1500 B	Body	X	X	X	X	X
1640 H	Head	X	X	X	X	X
1640 B	Body	X	X	X	X	X
1750 H	Head	38.51	1.36	3.5	±75	5.4
1750 B	Body	51.79	1.53	3.5	±75	5.3
1800 H	Head	38.26	1.41	3.5	±75	5.0
1800 B	Body	51.61	1.58	3.5	±75	5.0
1900 H	Head	38.03	1.36	3.5	±75	4.8
1900 B	Body	53.13	1.58	3.5	±75	4.5
2000 H	Head	X	X	X	X	X
2000 B	Body	X	X	X	X	X
2100 H	Head	X	X	X	X	X
2100 B	Body	X	X	X	X	X
2300 H	Head	X	X	X	X	X
2300 B	Body	X	X	X	X	X
2450 H	Head	37.64	1.88	3.5	±75	4.9
2450 B	Body	50.7	2.03	3.5	±75	4.3
2600 H	Head	X	X	X	X	X
2600 B	Body	X	X	X	X	X
3000 H	Head	X	X	X	X	X
3000 B	Body	X	X	X	X	X
3600 H	Head	X	X	X	X	X
3600 B	Body	X	X	X	X	X
5250 H	Head	34.65	4.8	3.5	±100	2.7
5250 B	Body	47.6	5.3	3.5	±100	2.6
5600 H	Head	33.2	5.15	3.5	±100	2.5
5600 B	Body	45.21	5.57	3.5	±100	2.2
5800 H	Head	32.72	5.38	3.5	±100	3.2
5800 B	Body	44.28	6.04	3.5	±100	2.5

Page 5 of 10

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NCL Calibration Laboratories

Division of APREL Inc.

Boundary Effect:

Uncertainty resulting from the boundary effect is less than 2.1% for the distance between the tip of the probe and the tissue boundary, when less than 0.58mm.

Spatial Resolution:

The spatial resolution uncertainty is less than 1.5% for 4.9mm diameter probe.
The spatial resolution uncertainty is less than 1.0% for 2.5mm diameter probe.

DAQ-PAQ Contribution

To minimize the uncertainty calculation all tissue sensitivity values were calculated using a load impedance of 5 M Ω .

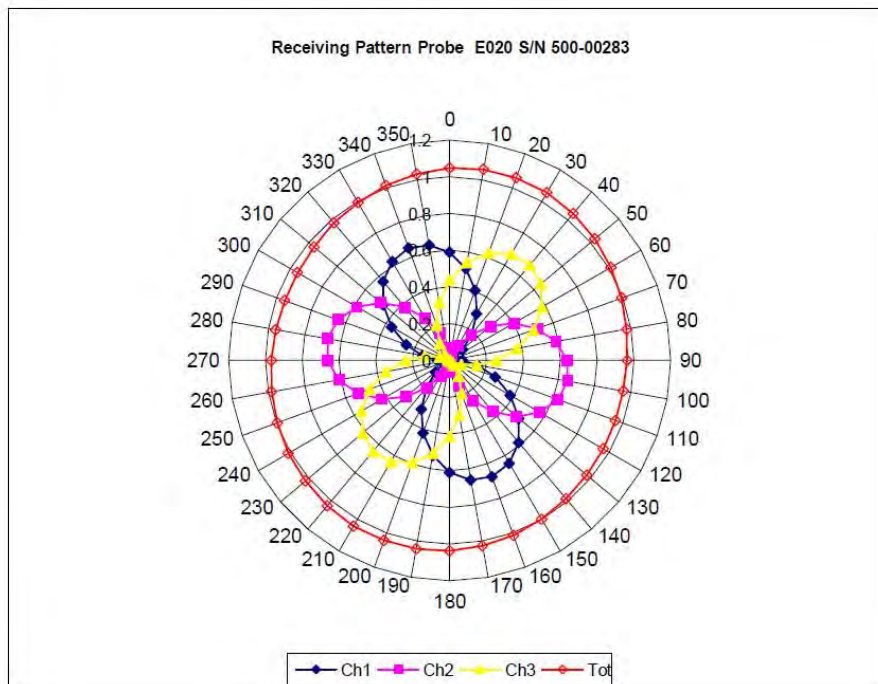
Page 6 of 10

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NCL Calibration Laboratories

Division of APREL Inc.

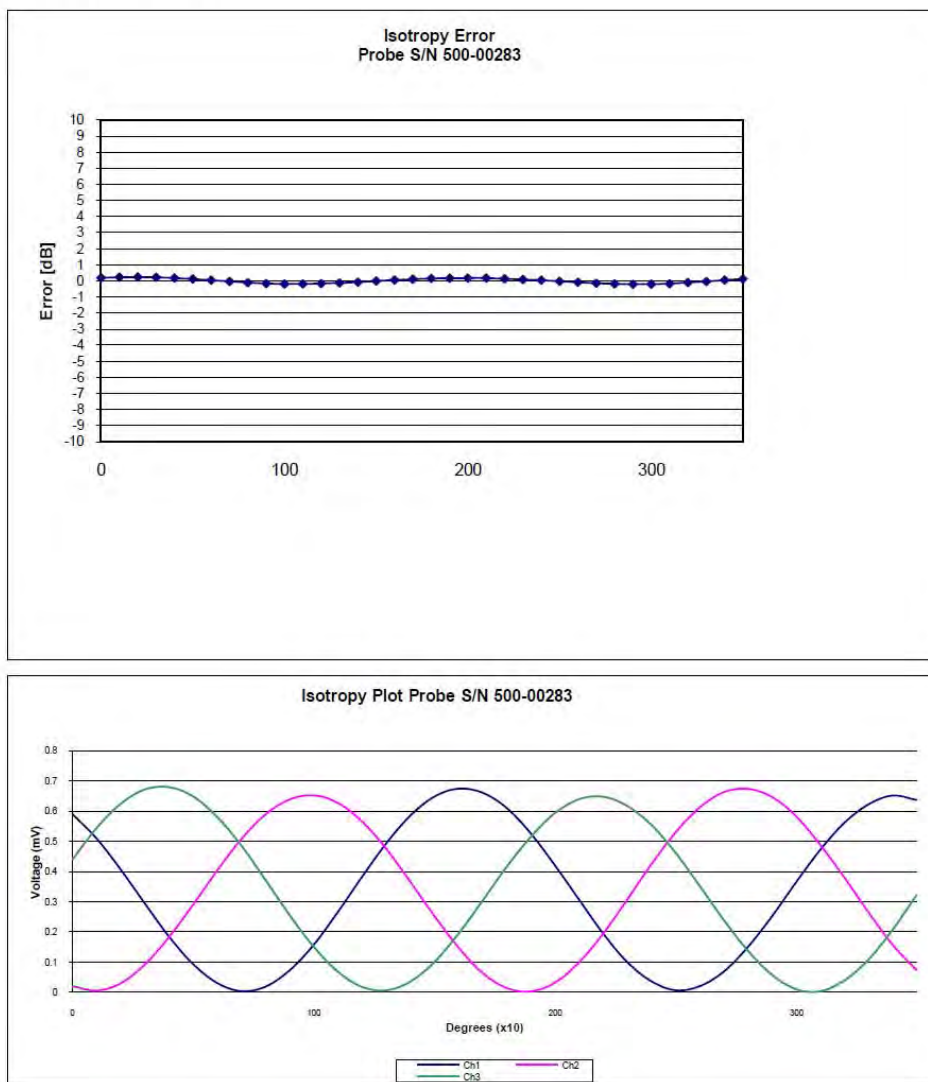
Receiving Pattern Air



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Division of APREL Inc.

Isotropy Error Air



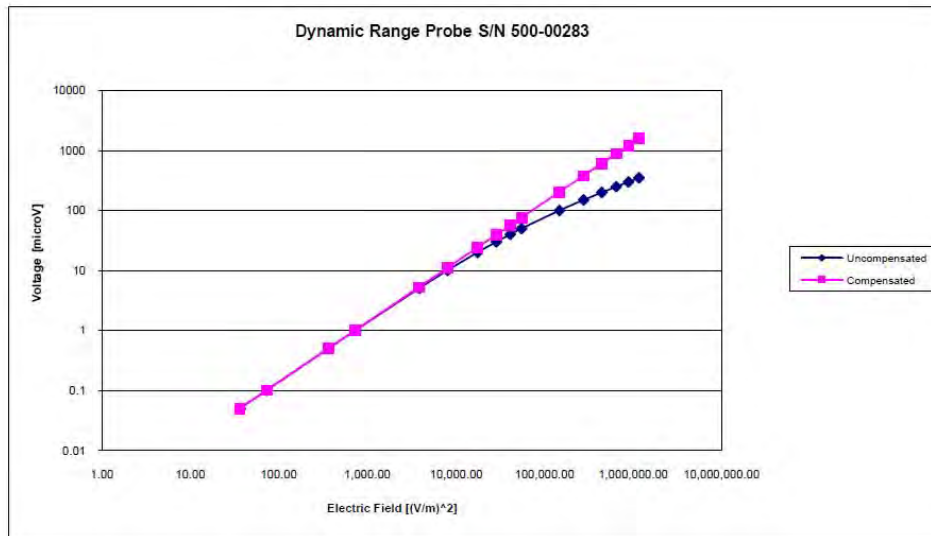
Isotropy Tissue:

0.10 dB

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Dynamic Range

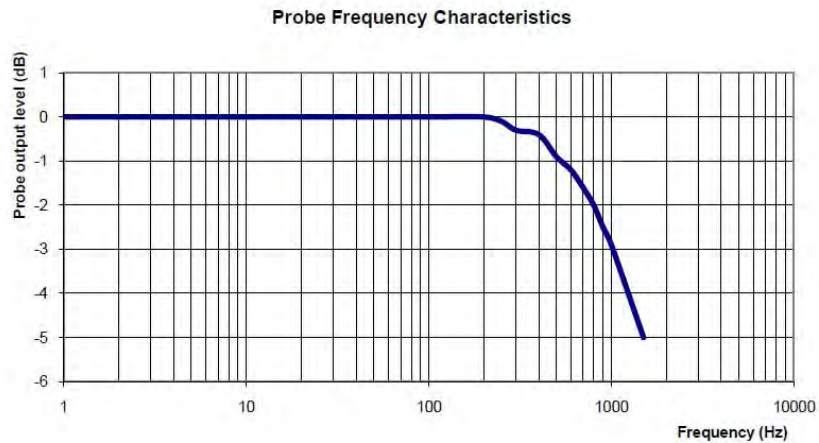


Page 9 of 10

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NCL Calibration Laboratories

Division of APREL Inc.

Video Bandwidth

Video Bandwidth at 500 Hz 1 dB
Video Bandwidth at 1.02 KHz: 3 dB

Test Equipment

The test equipment used during Probe Calibration, manufacturer, model number and, current calibration status are listed and located on the main APREL server R:\NCL\Calibration Equipment\Instrument List May 2013.

Page 10 of 10

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APPENDIX C DIPOLE CALIBRATION CERTIFICATES

NCL CALIBRATION LABORATORIES

Calibration File No: DC-1327
Project Number: BAC-dipole-cal-5618

CERTIFICATE OF CALIBRATION

It is certified that the equipment identified below has been calibrated in the
NCL CALIBRATION LABORATORIES by qualified personnel following recognized
procedures and using transfer standards traceable to NRC/NIST.

Validation Dipole(Head and Body)

Manufacturer: APREL Laboratories

Part number: ALS-D-835-S-2

Frequency: 835 MHz

Serial No: 180-00558

Customer: Bay Area Compliance Laboratory

Calibrated: 25th August 2011

Released on: 25th August 2011

This Calibration Certificate is Incomplete Unless Accompanied with the Calibration Results Summary

Released By: _____

NCL CALIBRATION LABORATORIES

Suite 102, 303 Terry Fox Dr.
Kanata, ONTARIO
CANADA K2K 3J1

Division of APREL Lab.
TEL: (613) 435-8300
FAX: (613)435-8306

NCL Calibration Laboratories

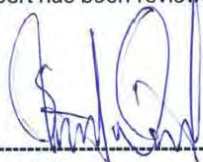
Division of APREL Laboratories.

Conditions

Dipole 180-00558 was received in good condition and a re-calibration.

Ambient Temperature of the Laboratory: 22 °C +/- 0.5°C**Temperature of the Tissue:** 21 °C +/- 0.5°C

We the undersigned attest that to the best of our knowledge the calibration of this device has been accurately conducted and that all information contained within this report has been reviewed for accuracy.



Stuart Nicol



C. Teodorian

Primary Measurement Standards

Instrument	Serial Number	Cal due date
Power meter Anritsu MA2408A	245025437	Nov.4, 2011
Power Sensor Anritsu MA2481D	103555	Nov 4, 2011
Attenuator HP 8495A (70dB) 1	944A10711	Aug.8, 2012
Network Analyzer Agilent E5071C	1334746J	Feb. 8, 2012
Secondary Measurement Standards		
Signal Generator Agilent E4438C	-506 MY55182336	June 7, 2012

This page has been reviewed for content and attested to by signature within this document.

NCL Calibration Laboratories

Division of APREL Laboratories.

Calibration Results Summary

The following results relate the Calibrated Dipole and should be used as a quick reference for the user.

Mechanical Dimensions

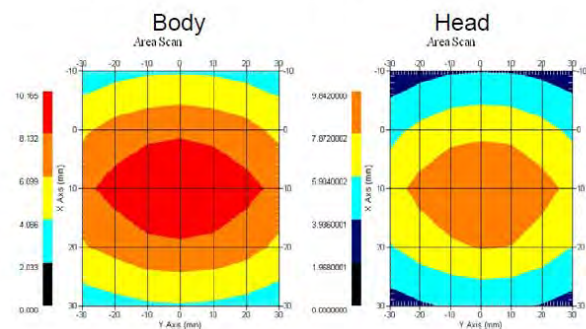
Length: 162.2 mm
Height: 89.4 mm

Electrical Specification

Tissue	Frequency	SWR:	Return Loss	Impedance
Head	835 MHz	1.0417 U	-35.395dB	49.020 Ω
Body	835 MHz	1.1177 U	-25.424dB	55.435 Ω

System Validation Results

Tissue	Frequency	1 Gram	10 Gram	Peak
Head	835 MHz	9.590	6.003	15.013
Body	835 MHz	9.684	6.263	14.23



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3

NCL Calibration Laboratories

Division of APREL Laboratories.

Introduction

This Calibration Report has been produced in line with the SSI Dipole Calibration Procedure SSI-TP-018-ALSAS. The results contained within this report are for Validation Dipole 180-00558. The calibration routine consisted of a three-step process. Step 1 was a mechanical verification of the dipole to ensure that it meets the mechanical specifications. Step 2 was an Electrical Calibration for the Validation Dipole, where the SWR, Impedance, and the Return loss were assessed. Step 3 involved a System Validation using the ALSAS-10U, along with APREL E-020 130 MHz to 26 GHz E-Field Probe Serial Number 212.

References

SSI-TP-018-ALSAS Dipole Calibration Procedure
SSI-TP-016 Tissue Calibration Procedure
IEEE 1528 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques"

Conditions

Dipole 180-00558 was new taken from stock.

Ambient Temperature of the Laboratory: 22 °C +/- 0.5°C

Temperature of the Tissue: 20 °C +/- 0.5°C

Dipole Calibration uncertainty

The calibration uncertainty for the dipole is made up of various parameters presented below.

Mechanical	1%
Positioning Error	1.22%
Electrical	1.7%
Tissue	2.2%
Dipole Validation	2.2%
TOTAL	8.32% (16.64% K=2)

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4

NCL Calibration Laboratories

Division of APREL Laboratories.

Dipole Calibration Results**Mechanical Verification**

APREL Length	APREL Height	Measured Length	Measured Height
161.0 mm	89.8 mm	162.2 mm	89.4 mm

Tissue Type	Return Loss:	SWR:	Impedance:
Head	-35.395 dB	1.0417 U	49.020 Ω
Body	-25.454 dB	1.1177 U	55.435 Ω

Tissue Validation

	Dielectric constant, ϵ_r	Conductivity, σ [S/m]
Head Tissue 835MHz	41.78	0.92
Body Tissue 835MHz	56.37	0.95

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5

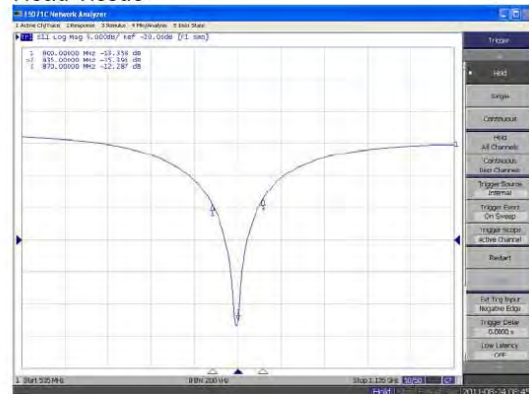
NCL Calibration Laboratories

Division of APREL Laboratories.

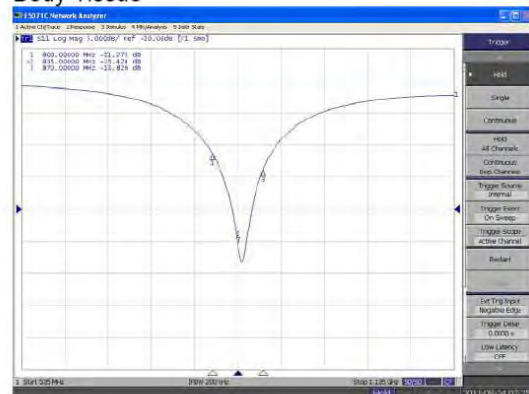
The Following Graphs are the results as displayed on the Vector Network Analyzer.

S11 Parameter Return Loss

Head Tissue



Body Tissue

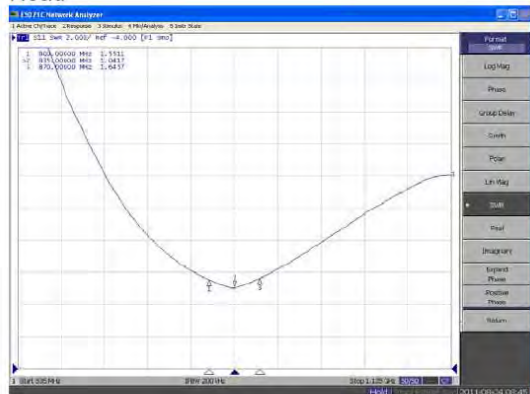


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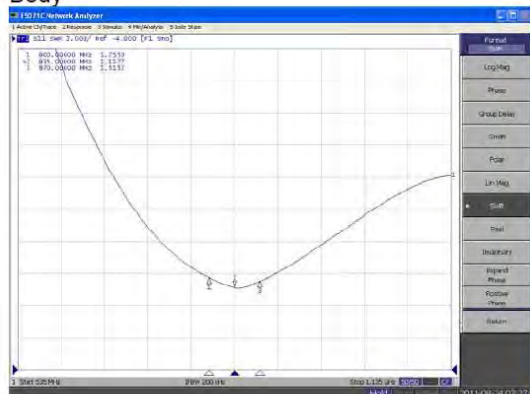
NCL Calibration Laboratories

Division of APREL Laboratories.

SWR Head



Body

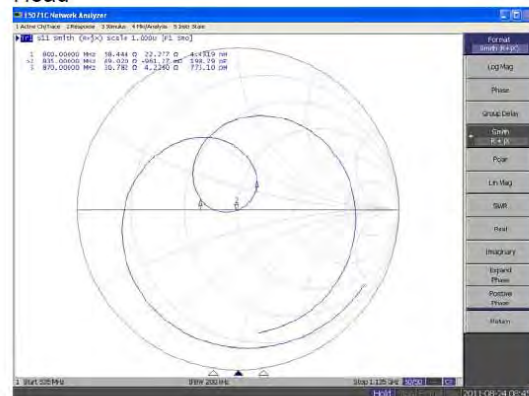
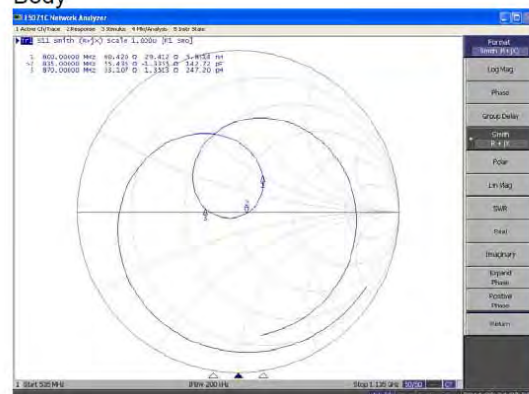


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7

NCL Calibration Laboratories

Division of APREL Laboratories.

Smith Chart Dipole Impedance**Head****Body**

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NCL Calibration Laboratories

Division of APREL Laboratories.

Test Equipment

The test equipment used during Probe Calibration, manufacturer, model number and, current calibration status are listed and located on the main APREL server R:\NCL\Calibration Equipment\Instrument List 2011.

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9

835MHz Dipole Calibration By BACL at 2012-12-12

Mechanical Verification

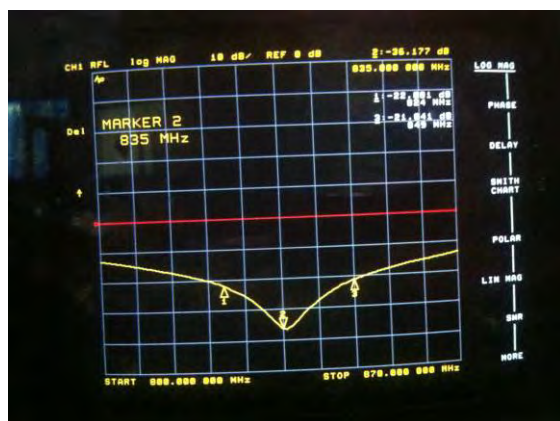
APREL Length	APREL Height	Measured Length	Measured Height
161.0 mm	89.8 mm	161.2 mm	89.5 mm

Tissue Type	Measured Return Loss	Measured Impedance
Head	-36.177 dB	50.207 Ω
Body	-24.964 dB	49.594 Ω

Test Graphs:

Head Tissue

Return Loss :

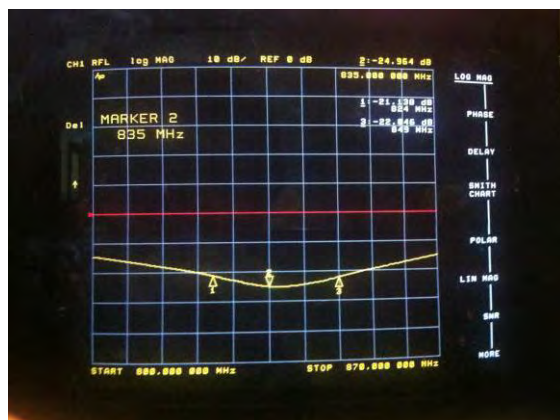


Impedance :



Body Tissue

Return Loss :



Impedance :



NCL CALIBRATION LABORATORIES

Calibration File No: DC-1331
Project Number: BAC-dipole –cal-5615

CERTIFICATE OF CALIBRATION

It is certified that the equipment identified below has been calibrated in the
NCL CALIBRATION LABORATORIES by qualified personnel following recognized
procedures and using transfer standards traceable to NRC/NIST.

Validation Dipole (Head & Body)

Manufacturer: APREL Laboratories

Part number: ALS-D-1900-S-2

Frequency: 1900 MHz

Serial No: 210-00710

Customer: Bay Area Compliance Laboratory

Calibrated: 25th August, 2011
Released on: 25th August, 2011

This Calibration Certificate is Incomplete Unless Accompanied with the Calibration Results Summary

Released By: _____

NCL CALIBRATION LABORATORIES

Suite 102, 303 Terry Fox Dr.
Kanata, ONTARIO
CANADA K2K 3J1

Division of APREL Lab.
TEL: (613) 435-8300
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NCL Calibration Laboratories

Division of APREL Laboratories.

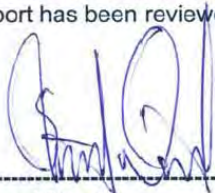
Conditions

Dipole 210-00710 was received in good condition and was a re-calibration.

Ambient Temperature of the Laboratory: 22 °C +/- 0.5°C

Temperature of the Tissue: 21 °C +/- 0.5°C

We the undersigned attest that to the best of our knowledge the calibration of this device has been accurately conducted and that all information contained within this report has been reviewed for accuracy.



Stuart Nicol



C. Teodorian

Primary Measurement Standards

Instrument	Serial Number	Cal due date
Power meter Anritsu MA2408A	245025437	Nov.4, 2011
Power Sensor Anritsu MA2481D	103555	Nov 4, 2011
Attenuator HP 8495A (70dB) 1	944A10711	Aug.8, 2012
Network Analyzer Agilent E5071C	1334746J	Feb. 8, 2012
Secondary Measurement Standards		
Signal Generator Agilent E4438C	-506 MY55182336	June 7, 2012

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Calibration Results Summary

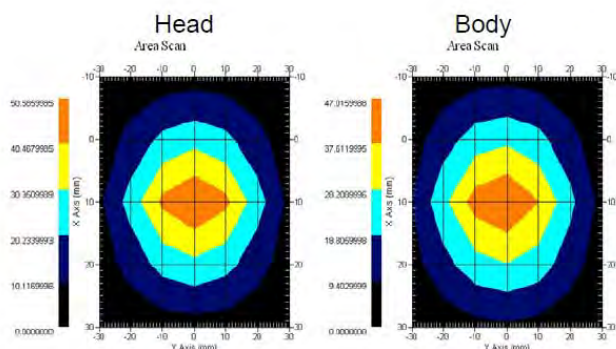
The following results relate the Calibrated Dipole and should be used as a quick reference for the user.

Mechanical Dimensions**Length:** 67.1 mm**Height:** 38.9 mm**Electrical Specification**

Tissue	Frequency	SWR:	Return Loss	Impedance
Head	1900MHz	1.0417 U	-35.395dB	49.020 Ω
Body	1900MHz	1.1177 U	-25.424dB	55.435 Ω

System Validation Results

Tissue	Frequency	1 Gram	10 Gram	Peak
Head	1900 MHz	39.648	20.311	73.365
Body	1900 MHz	39.769	20.176	75.866



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Introduction

This Calibration Report has been produced in line with the SSI Dipole Calibration Procedure SSI-TP-018-ALSAS. The results contained within this report are for Validation Dipole 210-00710. The calibration routine consisted of a three-step process. Step 1 was a mechanical verification of the dipole to ensure that it meets the mechanical specifications. Step 2 was an Electrical Calibration for the Validation Dipole, where the SWR, Impedance, and the Return loss were assessed. Step 3 involved a System Validation using the ALSAS-10U, along with APREL E-020 130 MHz to 26 GHz E-Field Probe Serial Number 212.

References

SSI-TP-018-ALSAS Dipole Calibration Procedure
SSI-TP-016 Tissue Calibration Procedure
IEEE 1528 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques"

Conditions

Dipole 210-00710 was new taken from stock.

Ambient Temperature of the Laboratory: 22 °C +/- 0.5°C
Temperature of the Tissue: 20 °C +/- 0.5°C

Dipole Calibration uncertainty

The calibration uncertainty for the dipole is made up of various parameters presented below.

Mechanical	1%
Positioning Error	1.22%
Electrical	1.7%
Tissue	2.2%
Dipole Validation	2.2%
TOTAL	8.32% (16.64% K=2)

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4

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Dipole Calibration Results**Mechanical Verification**

APREL Length	APREL Height	Measured Length	Measured Height
68.0 mm	39.5 mm	67.1mm	38.9 mm

Electrical Validation

Tissue Type	Return Loss:	SWR:	Impedance:
Head	-29.360 dB	1.0732 U	47.869 Ω
Body	-22.799 dB	1.1566 U	48.022 Ω

Tissue Validation

	Dielectric constant, ϵ_r	Conductivity, σ [S/m]
Head Tissue 1900MHz	38.4	1.43
Body Tissue 1900MHz	51.87	1.59

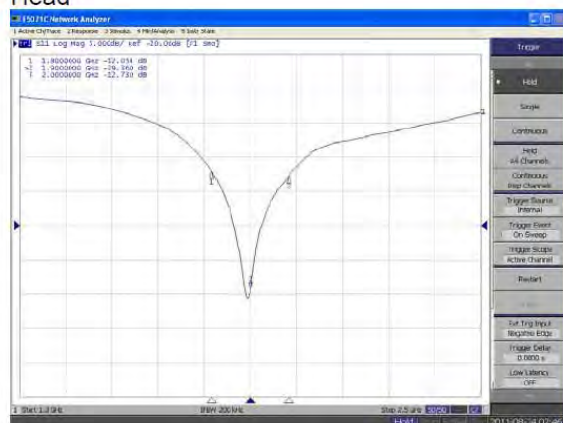
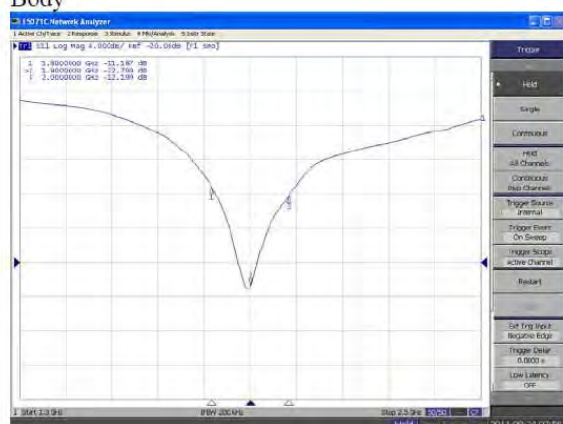
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5

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The Following Graphs are the results as displayed on the Vector Network Analyzer.

S11 Parameter Return Loss**Head****Body**

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6

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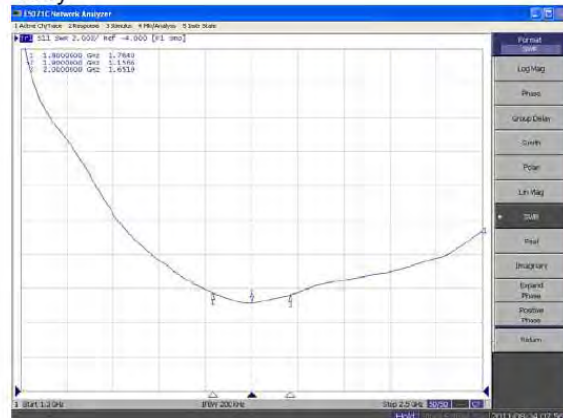
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SWR

Head



Body



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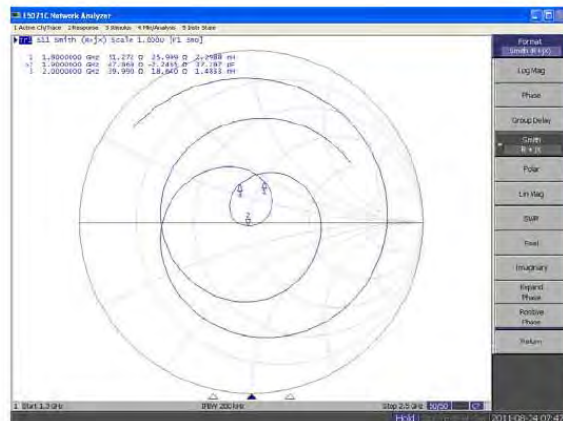
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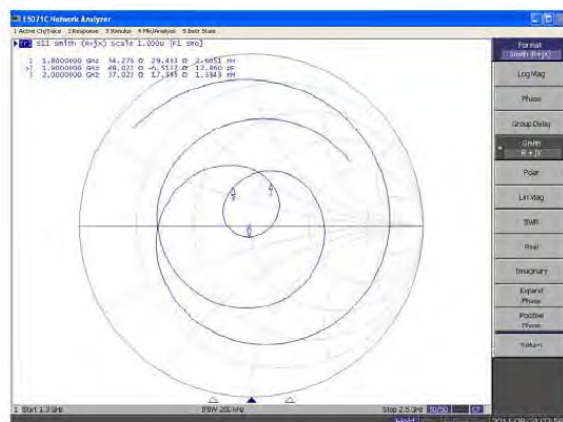
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Smith Chart Dipole Impedance

Head



Body



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8

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Test Equipment

The test equipment used during Probe Calibration, manufacturer, model number and, current calibration status are listed and located on the main APREL server R:\NCL\Calibration Equipment\Instrument List 2011

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9

1900MHz Dipole Calibration By BACL at 2012-12-12

Mechanical Verification

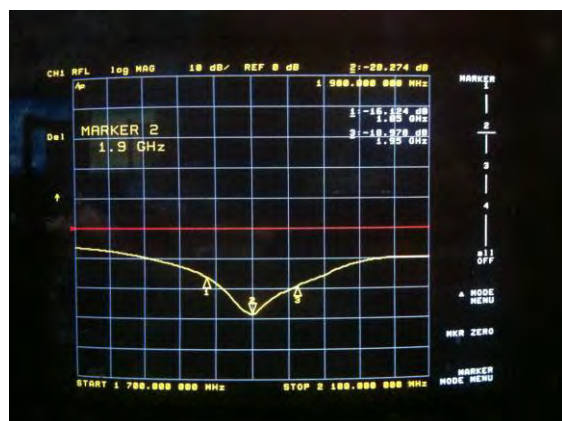
APREL Length	APREL Height	Measured Length	Measured Height
68.0 mm	39.5 mm	68.2 mm	39.2 mm

Tissue Type	Measured Return Loss	Measured Impedance
Head	-28.284 dB	49.471 Ω
Body	-22.445 dB	51.588 Ω

Test Graphs:

Head Tissue

Return Loss :

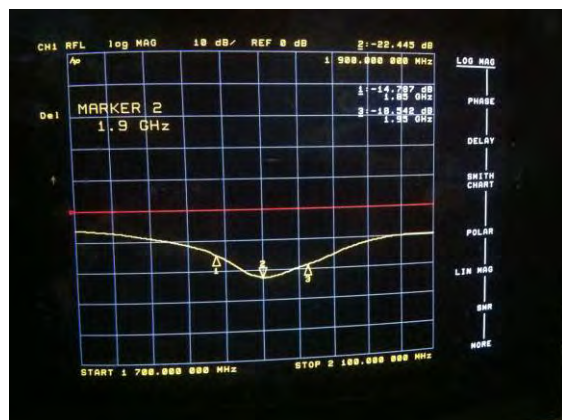


Impedance :



Body Tissue

Return Loss :

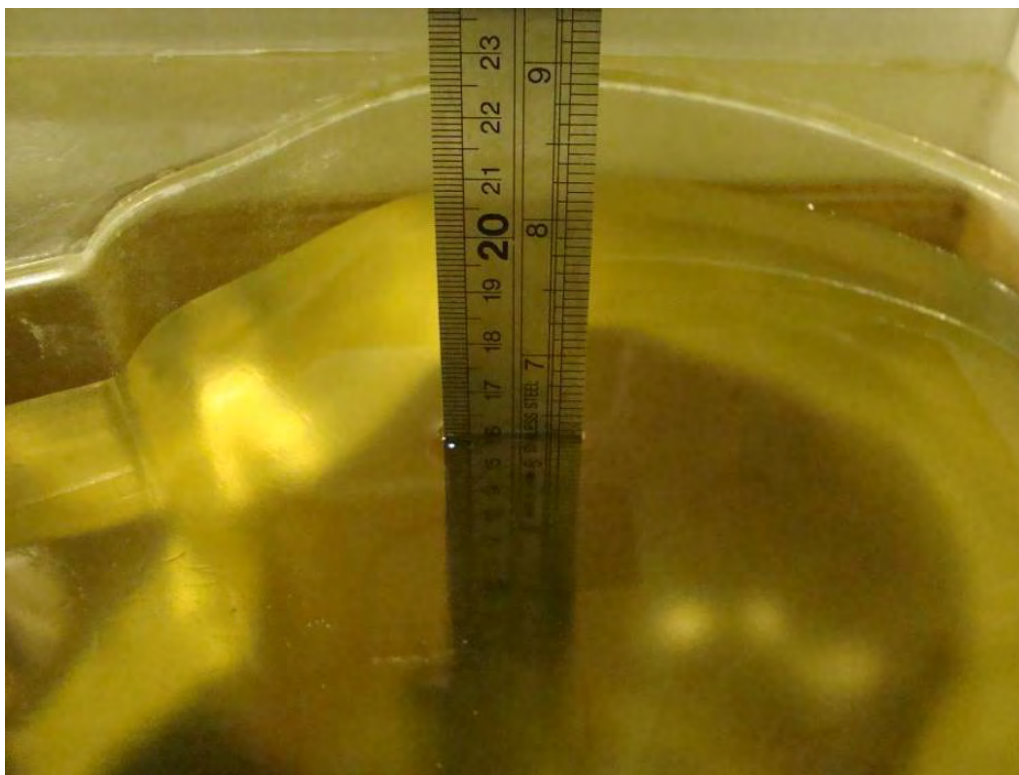


Impedance :

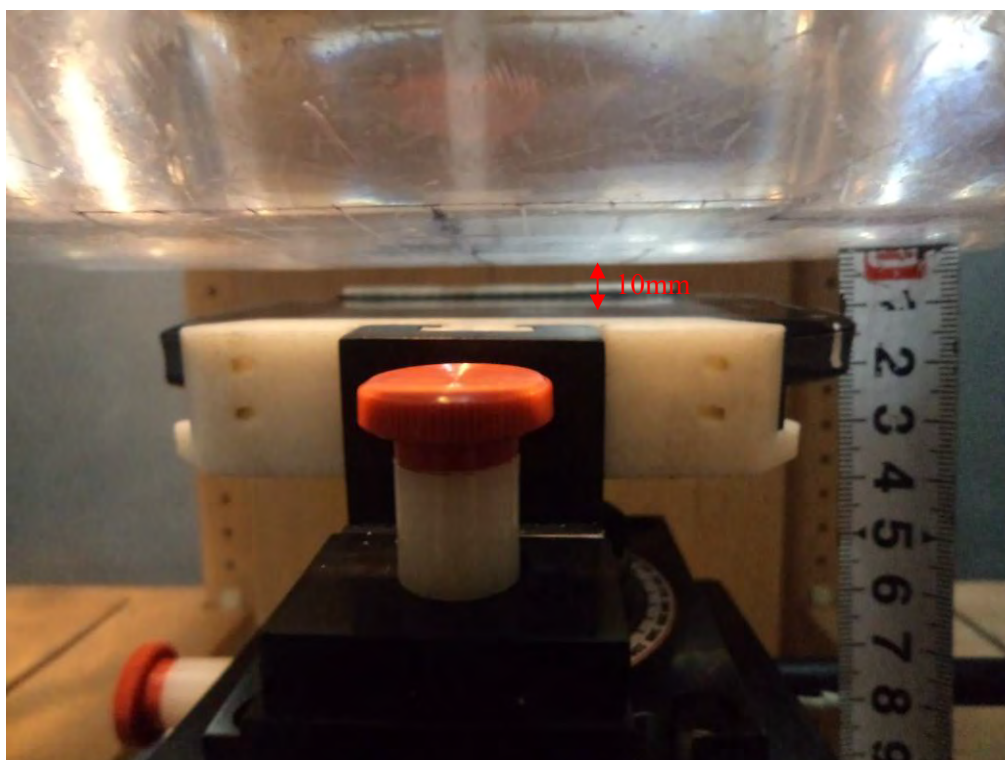


APPENDIX D EUT TEST POSITION PHOTOS

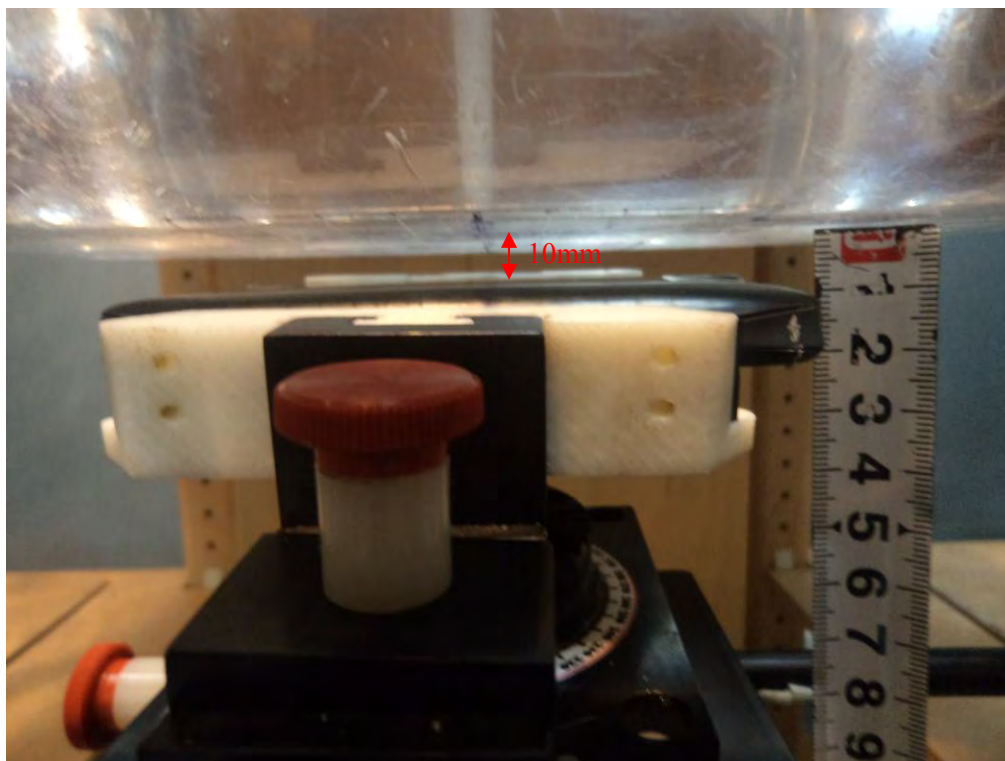
Liquid depth $\geq 15\text{cm}$



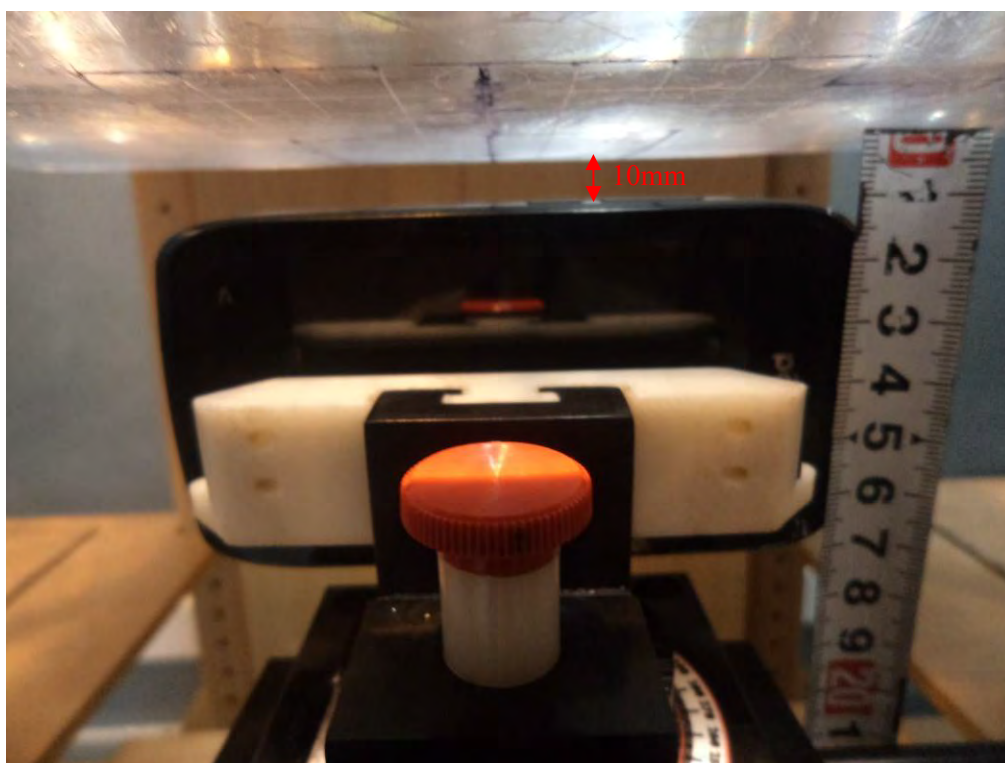
Body-worn Front Setup Photo



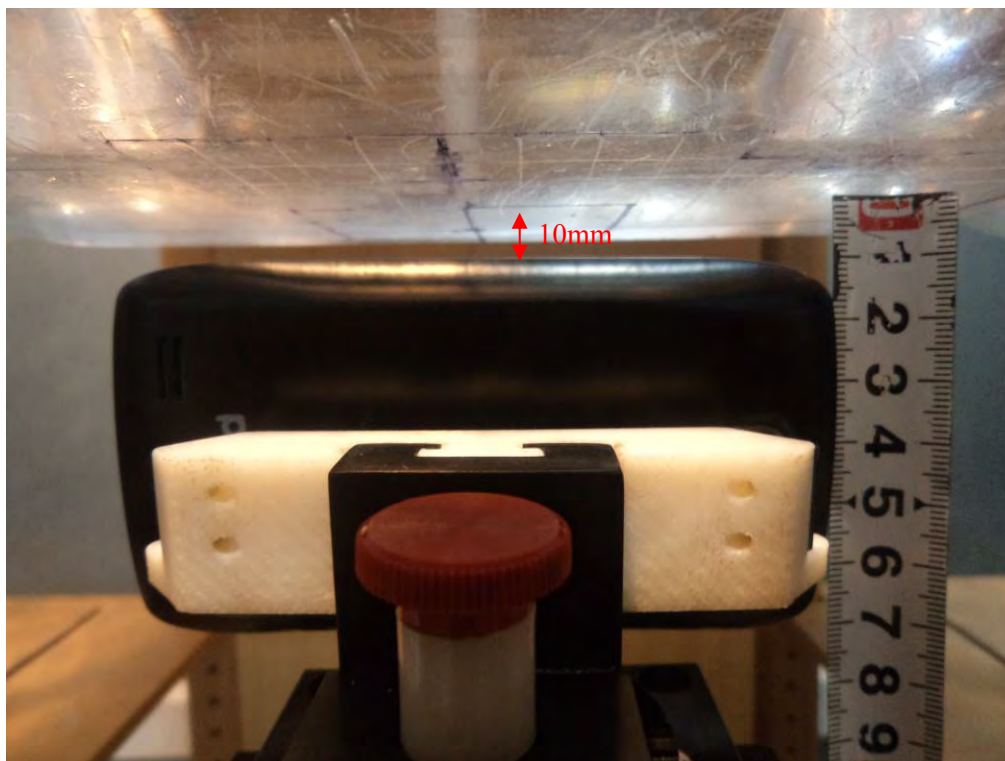
Body-worn Back Setup Photo



Body-worn Left Setup Photo



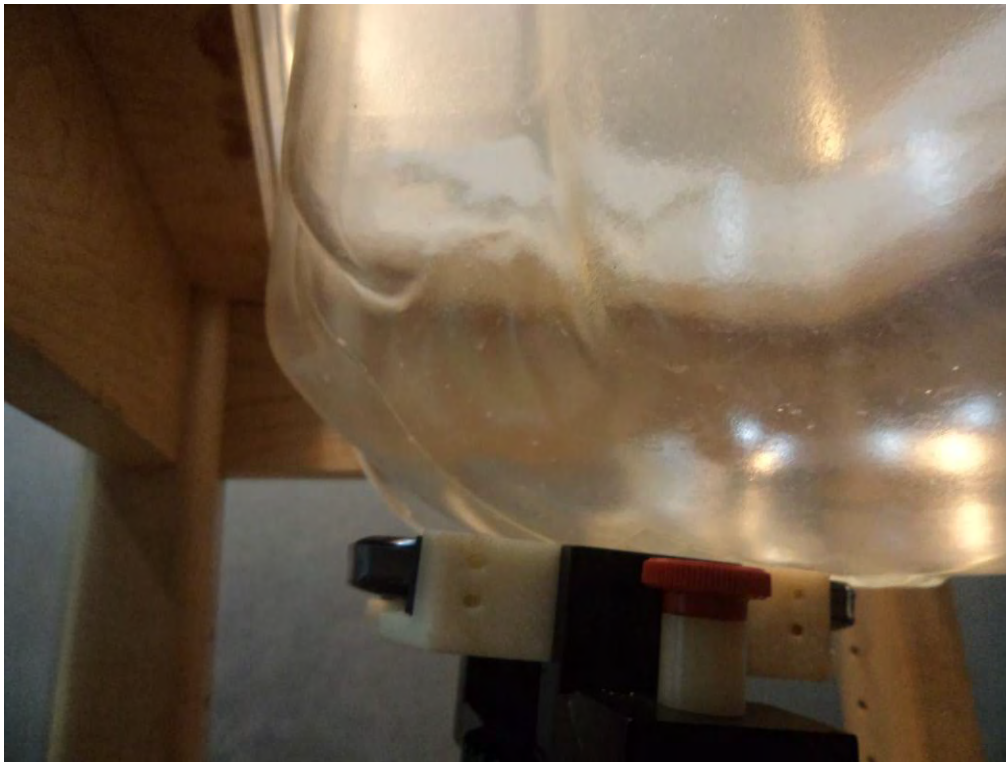
Body-worn Right Setup Photo



Body-worn Bottom Setup Photo



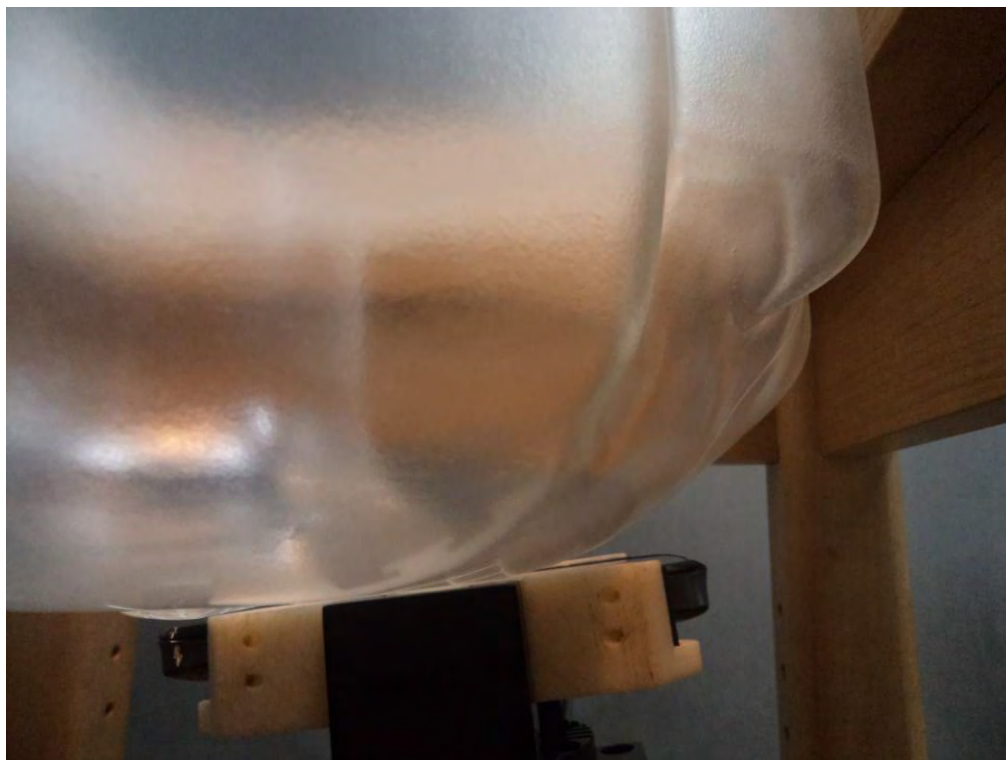
Left Head Touch Setup Photo



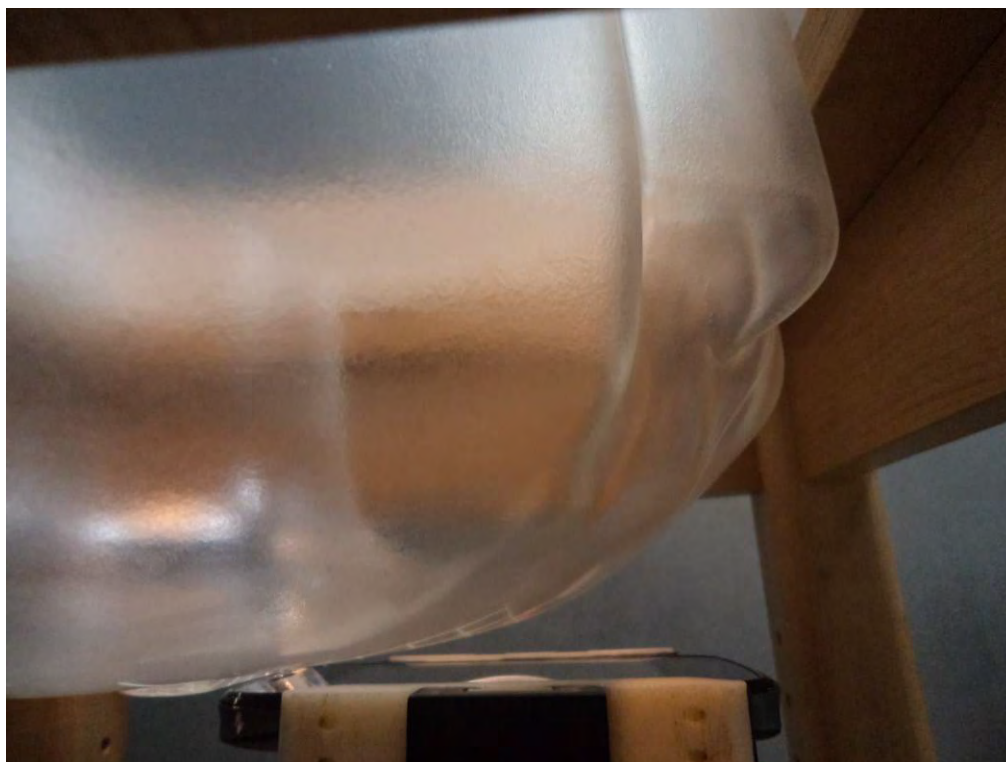
Left Head Tilt Setup Photo



Right Head Touch Setup Photo



Right Head Tilt Setup Photo



APPENDIX E EUT PHOTOS

EUT – Front View



EUT – Back View



EUT – Left Side View



EUT – Right Side View



EUT – Top View



EUT – Bottom View



EUT – Battery off View



APPENDIX F INFORMATIVE REFERENCES

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******* END OF REPORT *******