

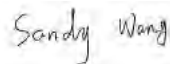
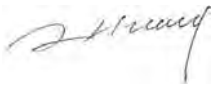
SAR EVALUATION REPORT

For

LifeWatch Technologies Ltd.

2 Pekeris Street, Rehovot, 7670202, Israel

FCC ID: SMTLWV

Report Type: Original Report	Product Type: GSM/WCDMA Mobile Phone
Test Engineer: Sandy Wang 	
Report Number: R1DG130916005-20	
Report Date: 2013-11-19	
Reviewed By: RF Leader  Alvin Huang	
Prepared By: Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn	

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	LifeWatch Technologies Ltd.
	EUT Description	GSM/WCDMA mobile phone
	FCC ID	SMTLWV
	Model Number	LifeWatch V
	Test Date	2013-11-14 to 2013-11-16
Frequency	Max. SAR Level(s) Reported	Limit (W/Kg)
GSM 850	0.469 W/kg 1g Head SAR 0.901 W/kg 1g Body SAR	1.6
PCS 1900	0.282 W/kg 1g Head SAR 0.914 W/kg 1g Body SAR	
WCDMA850	0.391 W/kg 1g Head SAR 0.484 W/kg 1g Body SAR	
WCDMA1900	0.289 W/kg 1g Head SAR 0.584 W/kg 1g Body SAR	
Simultaneous	0.886 W/kg 1g Head SAR 1.123 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.		

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FINAL

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1DG130916005-20	Original Report	2013-11-19

FINAL

EUT DESCRIPTION

This report has been prepared on behalf of LifeWatch Technologies Ltd. and their product, FCC ID: SMTLWV, Model: LifeWatch V or the EUT (Equipment under Test) as referred to in the rest of this report. The EUT is a GSM/WCDMA 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, WiFi and Bluetooth
Frequency Band:	GSM850 : 824-849 MHz (TX) ; 869-894 MHz (RX) PCS1900: 1850-1910 MHz (TX) ; 1930-1990 MHz (RX) WCDMA Band V: 824-849 MHz (TX) ; 869-894 MHz (RX) WCDMA Band II: 1850-1910 MHz (TX) ; 1930-1990 MHz (RX) Wi-Fi: 2412-2462 MHz/2422-2452 MHz Bluetooth : 2402-2480 MHz
Conducted RF Power:	GSM850 : 32.24 dBm PCS1900: 30.21 dBm WCDMA Band V: 22.50 dBm WCDMA Band II: 21.99 dBm Wi-Fi: 9.70 dBm Bluetooth: 7.25 dBm
Dimensions (L*W*H):	132 mm (L) × 70 mm (W) × 14 mm (H)
Power Source:	3.7 V _{DC} 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

FINAL

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

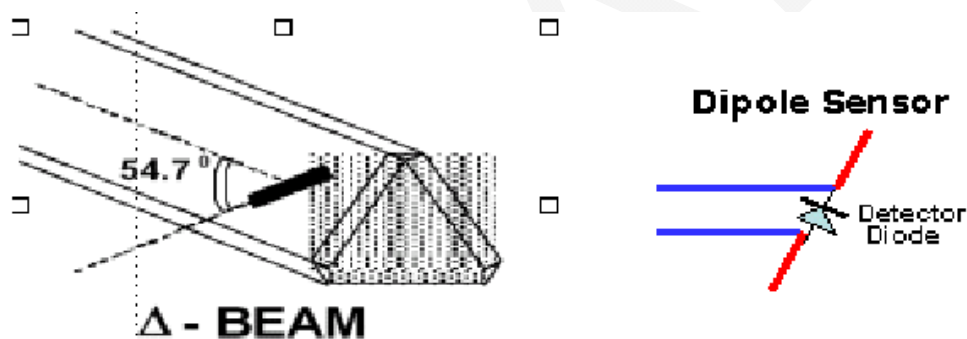
The overall uncertainty for the methodology and algorithms the used during the SAR calculation was evaluated using the data from IEEE 1528 based on the example f3 algorithm:

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

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.

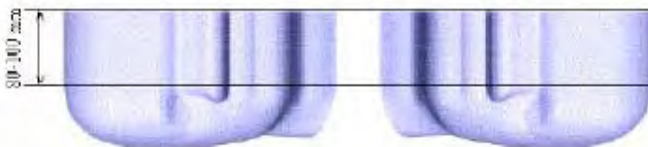


Phantom Types

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

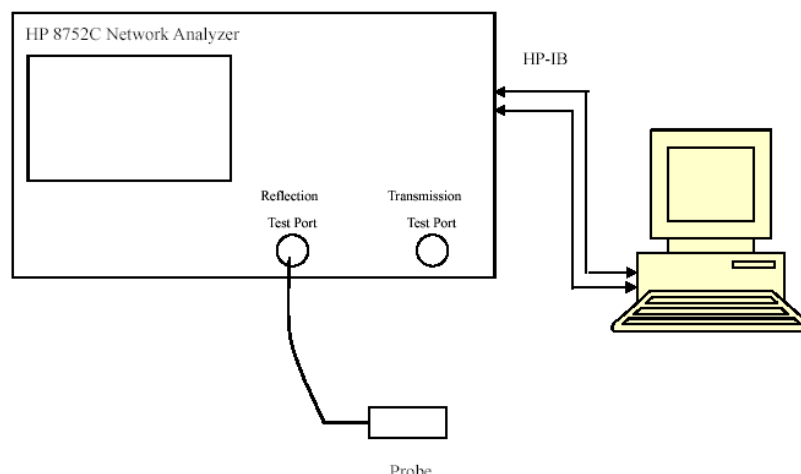
EQUIPMENT LIST AND CALIBRATION

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	2013-05-16	2624A00116
UNIVERSAL RADIO COMMUNICATION TESTER	CMU 200	2012-12-06	1100.0008.02
EMI Test Receiver	ESCI	2012-11-24	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	O' (S/m)	ϵ_r	O' (S/m)	$\Delta\epsilon_r$	$\Delta O'$ (S/m)	
824.2	Head	41.27	0.87	41.50	0.90	-0.548	-3.333	±5
	Body	55.25	0.95	55.20	0.97	0.086	-2.062	±5
826.4	Head	41.24	0.87	41.50	0.90	-0.633	-3.333	±5
	Body	55.26	0.96	55.20	0.97	0.114	-1.031	±5
836.6	Head	40.53	0.89	41.50	0.90	-2.333	-1.111	±5
	Body	55.33	0.97	55.20	0.97	0.228	0.000	±5
846.6	Head	39.96	0.88	41.50	0.90	-3.708	-2.222	±5
	Body	55.39	0.99	55.20	0.97	0.342	2.062	±5
848.8	Head	39.76	0.87	41.50	0.90	-4.196	-3.333	±5
	Body	55.40	0.99	55.20	0.97	0.370	2.062	±5
1850.2	Head	38.47	1.43	40.00	1.40	-3.819	2.353	±5
	Body	51.73	1.49	53.30	1.52	-2.945	-2.057	±5
1852.4	Head	38.50	1.44	40.00	1.40	-3.738	2.904	±5
	Body	51.76	1.49	53.30	1.52	-2.892	-1.960	±5
1880.0	Head	38.42	1.46	40.00	1.40	-3.949	4.240	±5
	Body	51.73	1.53	53.30	1.52	-2.941	0.460	±5
1907.6	Head	38.25	1.44	40.00	1.40	-4.378	2.888	±5
	Body	51.69	1.55	53.30	1.52	-3.013	1.865	±5
1909.8	Head	38.22	1.44	40.00	1.40	-4.453	2.805	±5
	Body	51.66	1.55	53.30	1.52	-3.084	2.185	±5

*Liquid Verification was performed on 2013-11-14.

Please refer to the following tables.

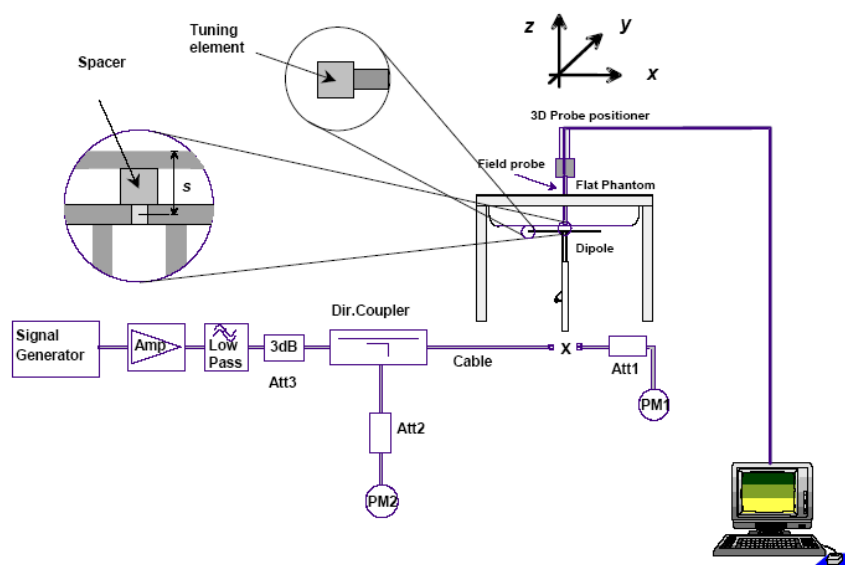
835 MHz Head				835 MHz Body		
Frequency (MHz)	e'	e''		Frequency (MHz)	e'	e''
824.0	41.2727	19.0908		824.0	55.2474	20.7610
824.5	41.2237	19.0076		824.5	55.2505	20.6605
825.0	41.2196	18.9977		825.0	55.2537	20.6730
825.5	41.2894	18.9876		825.5	55.2568	20.6854
826.0	41.2117	18.9777		826.0	55.2600	20.8205
826.5	41.2373	18.9072		826.5	55.2631	20.8842
827.0	41.2529	18.9468		827.0	55.2662	20.7987
827.5	41.2005	18.9477		827.5	55.2694	20.6769
828.0	41.2602	18.9127		828.0	55.2725	20.7114
828.5	41.2425	18.9489		828.5	55.2757	20.6688
829.0	41.1970	18.9554		829.0	55.2788	20.7730
829.5	41.2370	18.9118		829.5	55.2819	20.7158
830.0	41.2121	18.9184		830.0	55.2851	20.5937
830.5	41.2346	18.9221		830.5	55.2882	20.6581
831.0	41.2128	18.9959		831.0	55.2913	20.6433
831.5	41.2313	18.9890		831.5	55.2945	20.8507
832.0	41.1689	18.9905		832.0	55.2976	20.8284
832.5	41.0771	18.9477		832.5	55.3008	20.6051
833.0	40.7895	18.7841		833.0	55.3039	20.5384
833.5	40.7223	18.8999		833.5	55.3070	20.6499
834.0	40.7289	18.9503		834.0	55.3102	20.8018
834.5	40.6574	18.9841		834.5	55.3133	20.6947
835.0	40.6486	18.9848		835.0	55.3164	20.6382
835.5	40.5991	19.0813		835.5	55.3196	20.8859
836.0	40.5763	19.0955		836.0	55.3227	20.8928
836.5	40.5320	19.1738		836.5	55.3259	20.7506
837.0	40.5666	19.1332		837.0	55.3290	20.5777
837.5	40.4399	19.1421		837.5	55.3321	20.6140
838.0	40.4159	19.1608		838.0	55.3353	20.8983
838.5	40.3694	19.0748		838.5	55.3384	20.9135
839.0	40.3079	19.0579		839.0	55.3416	20.8355
839.5	40.3081	19.0671		839.5	55.3447	20.7704
840.0	40.4126	19.0729		840.0	55.3478	20.8376
840.5	40.3696	19.0527		840.5	55.3510	20.8829
841.0	40.3300	19.0118		841.0	55.3541	20.8381
841.5	40.3820	18.9568		841.5	55.3572	20.7748
842.0	40.2599	18.9036		842.0	55.3604	20.9506
842.5	40.2680	18.7895		842.5	55.3635	20.9192
843.0	40.1865	18.7399		843.0	55.3667	20.8796
843.5	40.1518	18.7098		843.5	55.3698	20.8351
844.0	40.1225	18.6738		844.0	55.3729	20.8527
844.5	40.0646	18.6614		844.5	55.3761	20.8786
845.0	40.0335	18.6112		845.0	55.3792	20.7880
845.5	40.0366	18.7079		845.5	55.3823	20.7344
846.0	39.9939	18.6475		846.0	55.3855	20.9074
846.5	39.9613	18.6021		846.5	55.3886	20.9688
847.0	39.9154	18.5702		847.0	55.3918	20.9177
847.5	39.8613	18.5913		847.5	55.3949	20.8380
848.0	39.8128	18.4887		848.0	55.3980	20.9282
848.5	39.7988	18.5502		848.5	55.4012	21.0062
849.0	39.7586	18.4220		849.0	55.4043	21.0064

1900 MHz Head				1900 MHz Body		
Frequency (MHz)	e'	e''		Frequency (MHz)	e'	e''
1850.0	38.4726	13.9310		1850.0	51.7305	14.4734
1851.2	38.4743	13.9584		1851.2	51.7291	14.4655
1852.4	38.5049	13.9879		1852.4	51.7583	14.4689
1853.6	38.4959	14.0030		1853.6	51.7421	14.4889
1854.8	38.4715	14.0313		1854.8	51.7297	14.5337
1856.0	38.4789	14.0213		1856.0	51.7463	14.5389
1857.2	38.4686	14.0159		1857.2	51.7175	14.5384
1858.4	38.5034	14.0688		1858.4	51.7312	14.5855
1859.6	38.4857	14.0860		1859.6	51.7330	14.5356
1860.8	38.5131	14.0803		1860.8	51.7452	14.5925
1862.0	38.5370	14.1265		1862.0	51.7262	14.5936
1863.2	38.5054	14.1341		1863.2	51.7105	14.6357
1864.4	38.4910	14.1050		1864.4	51.7122	14.6463
1865.6	38.4697	14.0930		1865.6	51.6765	14.5798
1866.8	38.4825	14.0890		1866.8	51.7018	14.5963
1868.0	38.4643	14.0743		1868.0	51.6856	14.5938
1869.2	38.4517	14.1034		1869.2	51.6630	14.5699
1870.4	38.4270	14.0564		1870.4	51.6780	14.5625
1871.6	38.4350	14.0405		1871.6	51.6947	14.6058
1872.8	38.4122	14.0299		1872.8	51.7112	14.5582
1874.0	38.3895	13.9760		1874.0	51.7143	14.6052
1875.2	38.4047	13.9808		1875.2	51.6605	14.6358
1876.4	38.4209	13.9685		1876.4	51.6785	14.6468
1877.6	38.3862	13.9874		1877.6	51.7274	14.6116
1878.8	38.4036	13.9579		1878.8	51.6929	14.6121
1880.0	38.4203	13.9614		1880.0	51.7325	14.6084
1881.2	38.4388	13.9362		1881.2	51.7378	14.5992
1882.4	38.4023	13.9622		1882.4	51.7308	14.6223
1883.6	38.4019	13.9186		1883.6	51.7258	14.5892
1884.8	38.4151	13.8630		1884.8	51.7588	14.6024
1886.0	38.4002	13.8673		1886.0	51.7697	14.6273
1887.2	38.3991	13.8109		1887.2	51.7681	14.5667
1888.4	38.4264	13.8508		1888.4	51.7874	14.5836
1889.6	38.4526	13.8376		1889.6	51.7339	14.6414
1890.8	38.4137	13.7905		1890.8	51.6894	14.6291
1892.0	38.3895	13.7842		1892.0	51.6907	14.5568
1893.2	38.3762	13.7630		1893.2	51.6885	14.6345
1894.4	38.3422	13.7063		1894.4	51.6902	14.5845
1895.6	38.3325	13.7465		1895.6	51.7004	14.622
1896.8	38.3167	13.6953		1896.8	51.682	14.5849
1898.0	38.3178	13.6479		1898.0	51.6546	14.6064
1899.2	38.3140	13.6373		1899.2	51.6894	14.6015
1900.4	38.3064	13.6890		1900.4	51.7191	14.6039
1901.6	38.2881	13.6321		1901.6	51.6891	14.5911
1902.8	38.3189	13.6122		1902.8	51.6603	14.6224
1904.0	38.2930	13.5890		1904.0	51.7135	14.6142
1905.2	38.2962	13.6043		1905.2	51.7057	14.6008
1906.4	38.2780	13.5958		1906.4	51.7140	14.6257
1907.6	38.2489	13.5809		1907.6	51.6942	14.5984
1908.8	38.2437	13.5448		1908.8	51.6780	14.6275
1910.0	38.2190	13.5529		1910.0	51.6563	14.6259

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 (%)
2013-11-14	835	Head	1g	9.712	9.590	1.272	± 10
		Body	1g	10.174	9.684	5.060	± 10
	1900	Head	1g	39.844	39.648	0.494	± 10
		Body	1g	40.726	39.769	2.406	± 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 850 MHz; Type: ALS-D-850-S-2; S/N: 180-00558****Product Data**

Device Name : Dipole 850 MHz
Serial No. : 180-00558
Type : Dipole
Model : ALS-D-835-S-2
Frequency Band : 850
Max. Transmit Pwr : 1 W
Drift Time : 3 min(s)
Power Drift-Start : 9.928 W/kg
Power Drift-Finish : 9.831 W/kg
Power Drift (%) : -0.977

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 : 14-Nov-2013
Temperature : 20.00 °C
Ambient Temp. : 21.00 °C
Humidity : 56.00 RH%
Epsilon : 40.53 F/m
Sigma : 0.89 S/m
Density : 1000.00 kg/cu. m

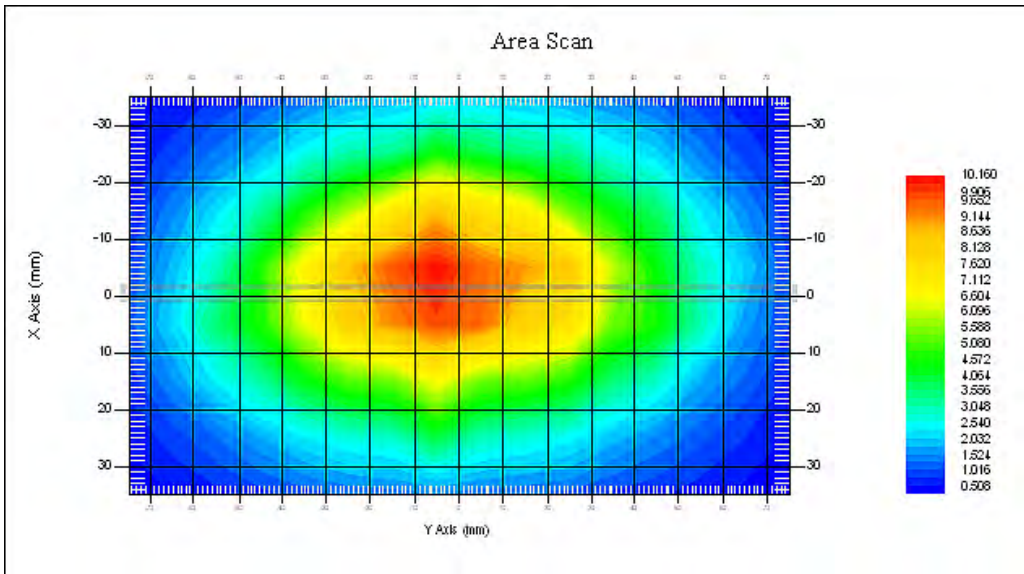
Probe Data

Name : E-Field
Model : E-020
Type : E-Field Triangle
Serial No. : 500-00283
Last Calib. Date : 08-Oct-2013
Frequency Band : 850
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 : 9.712 W/kg
10 gram SAR value : 5.984 W/kg
Area Scan Peak SAR : 10.022 W/kg
Zoom Scan Peak SAR : 14.429 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 850 MHz; Type: ALS-D-850-S-2; S/N: 180-00558****Product Data**

Device Name : Dipole 850 MHz
Serial No. : 180-00558
Type : Dipole
Model : ALS-D-850-S-2
Frequency Band : 850
Max. Transmit Pwr : 1 W
Drift Time : 3 min(s)
Power Drift-Start : 10.034 W/kg
Power Drift-Finish : 10.083W/kg
Power Drift (%) : 0.488

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 : 14-Nov-2013
Temperature : 20.00 °C
Ambient Temp. : 21.00 °C
Humidity : 56.00 RH%
Epsilon : 55.33 F/m
Sigma : 0.97 S/m
Density : 1000.00 kg/cu. m

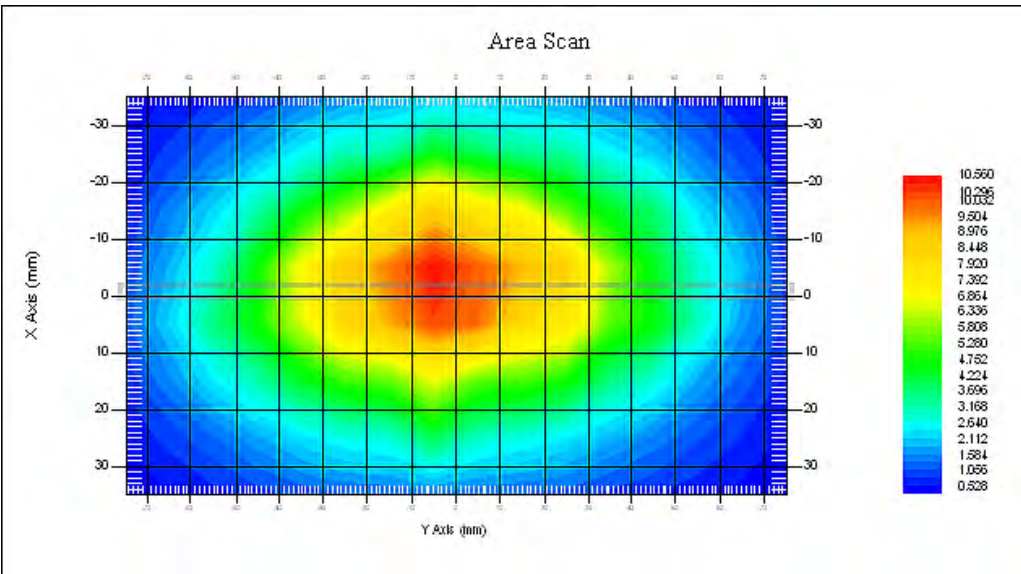
Probe Data

Name : E-Field
Model : E-020
Type : E-Field Triangle
Serial No. : 500-00283
Last Calib. Date : 08-Oct-2013
Frequency Band : 850
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 : 10.174 W/kg
10 gram SAR value : 6.108 W/kg
Area Scan Peak SAR : 10.467 W/kg
Zoom Scan Peak SAR : 14.291 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 : 39.825 W/kg
Power Drift-Finish : 39.411 W/kg
Power Drift (%) : -1.040

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 : 14-Nov-2013
Temperature : 20.00 °C
Ambient Temp. : 21.00 °C
Humidity : 56.00 RH%
Epsilon : 38.31 F/m
Sigma : 1.45 S/m
Density : 1000.00 kg/cu. M

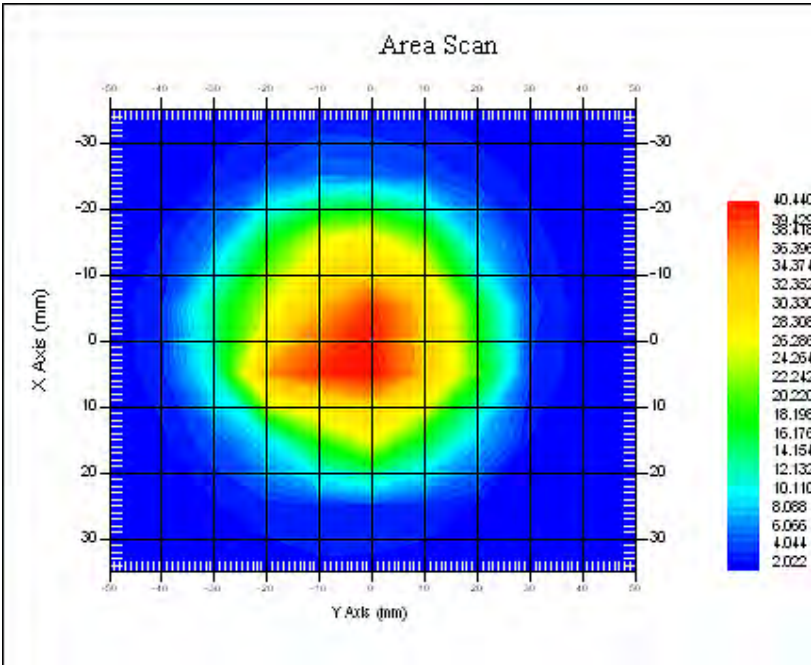
Probe Data

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 : 4.80
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 : 39.844 W/kg
10 gram SAR value : 20.296 W/kg
Area Scan Peak SAR : 40.382 W/kg
Zoom Scan Peak SAR : 75.637 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 : 40.482 W/kg
Power Drift-Finish : 40.351 W/kg
Power Drift (%) : -0.324

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 : 14-Nov-2013
Temperature : 20.00 °C
Ambient Temp. : 21.00 °C
Humidity : 56.00 RH%
Epsilon : 51.72 F/m
Sigma : 1.54 S/m
Density : 1000.00 kg/cu. m

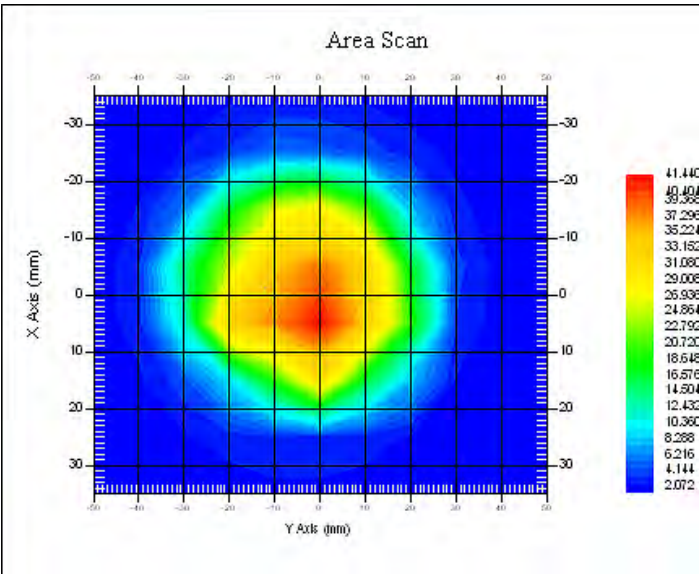
Probe Data

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 : 40.726 W/kg
10 gram SAR value : 20.274 W/kg
Area Scan Peak SAR : 41.290 W/kg
Zoom Scan Peak SAR : 76.913 W/kg



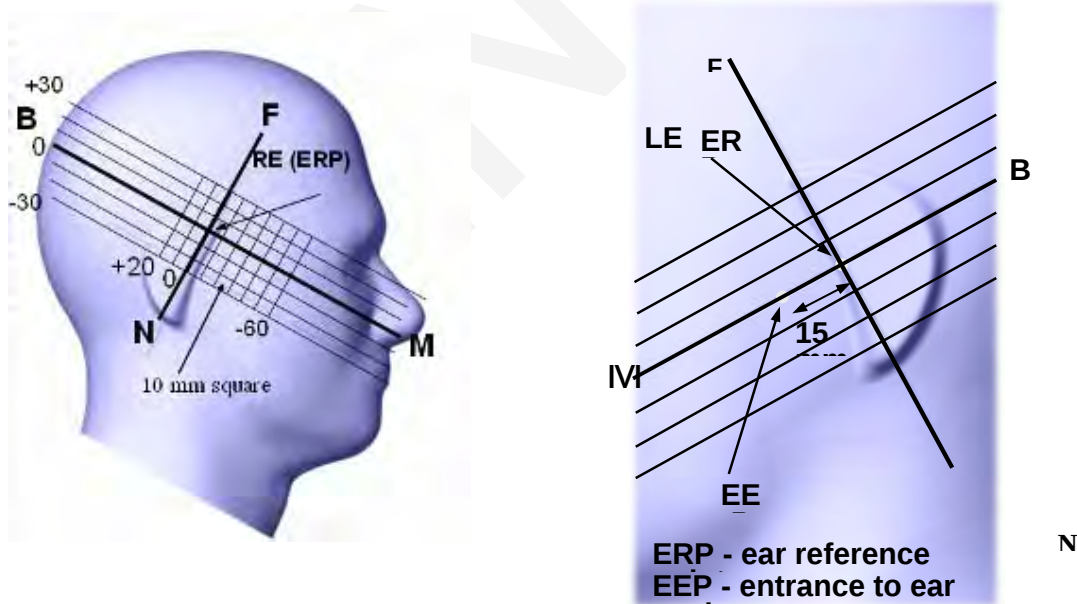
1900 MHz System Validation with Body Tissue

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

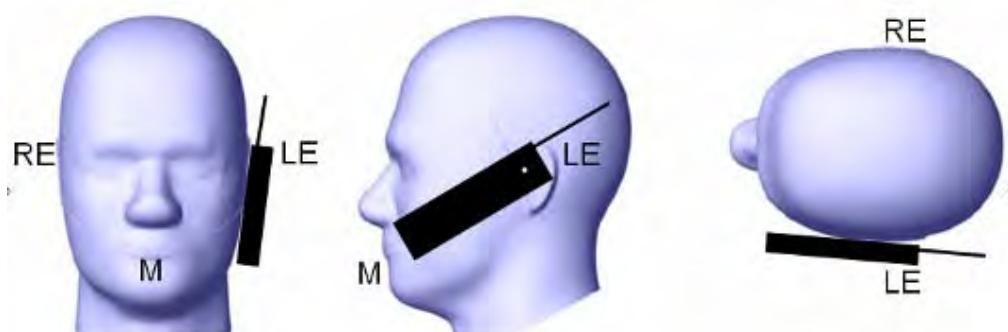
The device is brought toward the mouth of the head phantom by pivoting against the “ear reference point” or along the “N-F” line for the SCC-34/SC-2 head phantom.

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

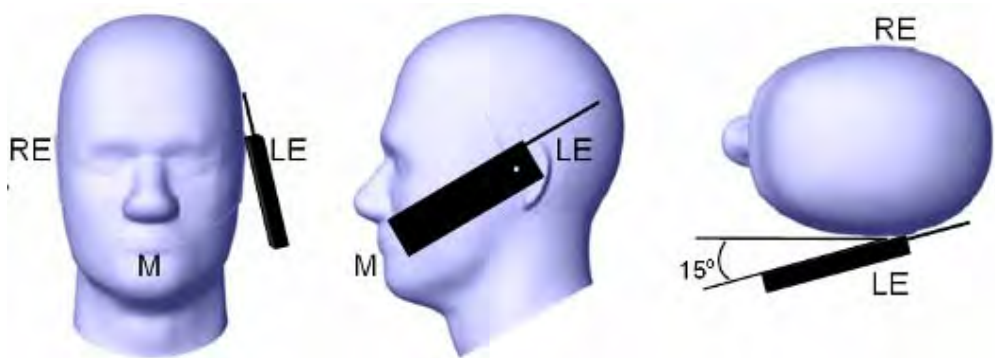
With the handset aligned in the “Cheek/Touch Position”:

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.

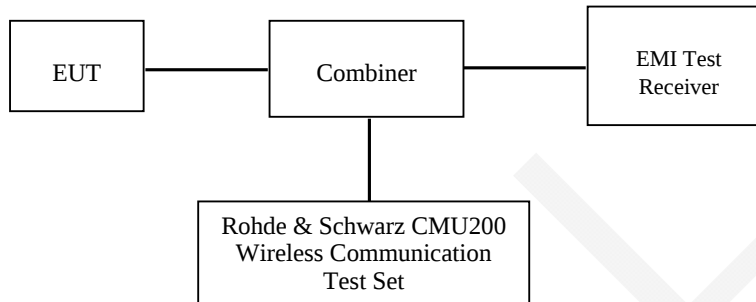
CONDUCTED OUTPUT POWER MEASUREMENT

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	30.50	30.50	30.50
GPRS 3 slot	29.00	29.00	29.00
GPRS 4 slot	28.00	28.00	28.00
PCS 1900	30.50	30.50	30.50
GPRS 1 slot	30.00	30.00	30.00
GPRS 2 slot	29.00	29.00	29.00
GPRS 3 slot	27.50	27.50	27.50
GPRS 4 slot	26.50	26.50	26.50
WCDMA850	22.50	22.50	22.50
WCDMA1900	22.00	22.00	22.00
WiFi 802.11b	10.00	10.00	10.00
WiFi 802.11g	10.00	10.00	10.00
WiFi 802.11n-20	10.00	10.00	10.00
WiFi 802.11n-40	10.00	10.00	10.00
Bluetooth	7.5	7.5	7.5

Test Results:**GSM**

Band	Frequency (MHz)	Conducted Peak Output Power	
		Meas. Power (dBm)	Meas. Power (W)
GSM 850	824.2	32.16	1.644
	836.6	32.19	1.656
	848.8	32.24	1.675
PCS 1900	1850.2	30.21	1.050
	1880.0	29.98	0.995
	1909.8	29.97	0.993

GPRS

Band	Channel No.	Frequency (MHz)	RF Peak Output Power (dBm)			
			1 slot	2 slot	3 slots	4 slots
GSM 850	128	824.2	32.11	30.15	28.43	27.38
	190	836.6	32.15	30.17	28.49	27.55
	251	848.8	32.08	30.26	28.57	27.64
PCS 1900	512	1850.2	29.86	28.98	27.31	26.50
	661	1880.0	29.80	28.90	27.25	26.48
	810	1909.8	29.73	28.90	27.24	26.46

EGPRS

Band	Channel No.	Frequency (MHz)	RF Peak Output Power (dBm)			
			1 slot	2 slot	3 slots	4 slots
GSM 850	128	824.2	26.12	24.78	22.51	21.39
	190	836.6	25.78	24.45	22.43	21.07
	251	848.8	25.47	24.35	22.10	20.85
PCS 1900	512	1850.2	25.19	23.87	21.69	20.61
	661	1880.0	25.15	23.83	21.51	20.47
	810	1909.8	25.21	24.01	21.58	20.36

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	23.11	24.15	24.18	24.38
	190	836.6	23.15	24.17	24.24	24.55
	251	848.8	23.08	24.26	24.32	24.64
PCS 1900	512	1850.2	20.86	22.98	23.06	23.50
	661	1880.0	20.80	22.90	23.00	23.48
	810	1909.8	20.73	22.90	22.99	23.46

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	17.12	18.78	18.26	18.39
	190	836.6	16.78	18.45	18.18	18.07
	251	848.8	16.47	18.35	17.85	17.85
PCS 1900	512	1850.2	16.19	17.87	17.44	17.61
	661	1880.0	16.15	17.83	17.26	17.47
	810	1909.8	16.21	18.01	17.33	17.36

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	22.50	0.178
	836.6	4183	22.50	0.178
	846.6	4233	22.21	0.166
WCDMA 1900	1852.4	9262	21.63	0.146
	1880.0	9400	21.99	0.158
	1907.6	9538	21.55	0.143

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	21.4	21.39	21.42	21.41
	836.6	4183	21.49	21.50	21.51	21.51
	846.6	4233	21.26	21.26	21.27	21.27
WCDMA 1900	1852.4	9262	21.15	21.18	21.16	21.21
	1880.0	9400	21.45	21.47	21.43	21.44
	1907.6	9538	21.25	21.28	21.27	21.3

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	21.47	21.48	21.48	21.45	21.46
	836.6	4183	21.54	21.55	21.55	21.56	21.56
	846.6	4233	21.19	21.2	21.21	21.22	21.23
WCDMA 1900	1852.4	9262	21.19	21.19	21.2	21.23	21.22
	1880.0	9400	21.54	21.53	21.49	21.46	21.48
	1907.6	9538	22.21	22.25	22.23	22.2	22.24

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 $\frac{1}{4}$ dB higher than measured without HSDPA using 12.2kbps RMC or the maximum SAR for 12.2kbps RMC is < 75% of SAR limit.
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 $\frac{1}{4}$ dB higher than measured without HSUPA using 12.2kbps RMC and the maximum SAR for 12.2kbps RMC is < 75% of SAR limit.

Bluetooth

Mode	Channel frequency (MHz)	Reading power (dBm)	Power output (mw)	Limit (mw)
BDR (GFSK)	(Low) 2402	6.19	4.159	1000
	(Middle) 2441	6.72	4.699	1000
	(High) 2480	7.20	5.248	1000
EDR (4-DQPSK)	(Low) 2402	6.18	4.150	1000
	(Middle) 2441	6.67	4.645	1000
	(High) 2480	7.10	5.129	1000
EDR 8DPSK	(Low) 2402	6.21	4.178	1000
	(Middle) 2441	6.73	4.710	1000
	(High) 2480	7.25	5.309	1000

WiFi

Band	Frequency (MHz)	Conducted Output Power	
		(dBm)	(mw)
802.11b	2412	9.55	9.016
	2437	9.70	9.333
	2462	9.38	8.670
802.11g	2412	9.68	9.290
	2437	9.36	8.630
	2462	9.44	8.790
802.11n20	2412	9.23	8.375
	2437	9.63	9.183
	2462	9.47	8.851
802.11n-40	2422	9.53	8.974
	2437	9.70	9.354
	2452	9.65	9.226

Note:

1. The output power was tested under data rate 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n-20, 13.5Mbps for 802.11n-40.
2. KDB248227-SAR is not required for 802.11g/802.11n channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding 802.11b channels.

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 Sandy Wang on 2013-11-14 to 2013-11-16.

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	1.006	32.16	32.50	1.081	0.320	0.346
	190(Middle)	836.6	GSM	-1.904	32.19	32.50	1.074	0.437	0.469
	251(High)	848.8	GSM	0.429	32.24	32.50	1.062	0.294	0.312
Left Head Tilt	128(Low)	824.2	GSM	/	/	/	/	/	/
	190(Middle)	836.6	GSM	1.837	32.19	32.50	1.074	0.224	0.241
	251(High)	848.8	GSM	/	/	/	/	/	/
Right Head Cheek	128(Low)	824.2	GSM	/	/	/	/	/	/
	190(Middle)	836.6	GSM	1.047	32.19	32.50	1.074	0.403	0.433
	251(High)	848.8	GSM	/	/	/	/	/	/
Right Head Tilt	128(Low)	824.2	GSM	/	/	/	/	/	/
	190(Middle)	836.6	GSM	-1.320	32.19	32.50	1.074	0.192	0.206
	251(High)	848.8	GSM	/	/	/	/	/	/
Body-Front With Headset (10 mm)	128(Low)	824.2	GSM	/	/	/	/	/	/
	190(Middle)	836.6	GSM	-2.613	32.19	32.50	1.074	0.581	0.624
	251(High)	848.8	GSM	/	/	/	/	/	/
Body-Back With Headset (10 mm)	128(Low)	824.2	GSM	/	/	/	/	/	/
	190(Middle)	836.6	GSM	-3.497	32.19	32.50	1.074	0.676	0.726
	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	-0.644	30.21	30.50	1.069	0.264	0.282
	661(Middle)	1880.0	GSM	4.196	29.98	30.50	1.127	0.205	0.231
	810(High)	1909.8	GSM	1.949	29.97	30.50	1.130	0.199	0.225
Left Head Tilt	512(Low)	1850.2	GSM	/	/	/	/	/	/
	661(Middle)	1880.0	GSM	-1.859	29.98	30.50	1.127	0.109	0.123
	810(High)	1909.8	GSM	/	/	/	/	/	/
Right Head Cheek	512(Low)	1850.2	GSM	/	/	/	/	/	/
	661(Middle)	1880.0	GSM	-2.152	29.98	30.50	1.127	0.195	0.220
	810(High)	1909.8	GSM	/	/	/	/	/	/
Right Head Tilt	512(Low)	1850.2	GSM	/	/	/	/	/	/
	661(Middle)	1880.0	GSM	0.707	29.98	30.50	1.127	0.16	0.180
	810(High)	1909.8	GSM	/	/	/	/	/	/
Body-Front With Headset (10 mm)	512(Low)	1850.2	GSM	/	/	/	/	/	/
	661(Middle)	1880.0	GSM	-2.134	29.98	30.50	1.127	0.429	0.484
	810(High)	1909.8	GSM	/	/	/	/	/	/
Body-Back With Headset (10 mm)	512(Low)	1850.2	GSM	/	/	/	/	/	/
	661(Middle)	1880.0	GSM	2.671	29.98	30.50	1.127	0.56	0.631
	810(High)	1909.8	GSM	/	/	/	/	/	/

Note:

1. When the 1-g SAR is ≤ 0.8 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	0.478	22.50	22.50	1.000	0.219	0.219
	4233	846.6	WCDMA 850	/	/	/	/	/	/
Left Head Tilt	4132	826.4	WCDMA 850	/	/	/	/	/	/
	4183	836.6	WCDMA 850	1.222	22.50	22.50	1.000	0.174	0.174
	4233	846.6	WCDMA 850	/	/	/	/	/	/
Right Head Cheek	4132	826.4	WCDMA 850	-0.844	22.50	22.50	1.000	0.261	0.261
	4183	836.6	WCDMA 850	0.349	22.50	22.50	1.000	0.308	0.308
	4233	846.6	WCDMA 850	1.902	22.21	22.50	1.069	0.366	0.391
Right Head Tilt	4132	826.4	WCDMA 850	/	/	/	/	/	/
	4183	836.6	WCDMA 850	-1.013	22.50	22.50	1.000	0.178	0.178
	4233	846.6	WCDMA 850	/	/	/	/	/	/

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	/	/	/	/	/	/
	9400	1880.0	WCDMA1900	-2.616	21.99	22.00	1.002	0.288	0.289
	9538	1907.6	WCDMA1900	/	/	/	/	/	/
Left Head Tilt	9262	1852.4	WCDMA1900	/	/	/	/	/	/
	9400	1880.0	WCDMA1900	2.420	21.99	22.00	1.002	0.125	0.125
	9538	1907.6	WCDMA1900	/	/	/	/	/	/
Right Head Cheek	9262	1852.4	WCDMA1900	/	/	/	/	/	/
	9400	1880.0	WCDMA1900	-1.252	21.99	22.00	1.002	0.178	0.178
	9538	1907.6	WCDMA1900	/	/	/	/	/	/
Right Head Tilt	9262	1852.4	WCDMA1900	/	/	/	/	/	/
	9400	1880.0	WCDMA1900	3.925	21.99	22.00	1.002	0.11	0.110
	9538	1907.6	WCDMA1900	/	/	/	/	/	/

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 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: 850 MHz)

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 (10 mm)	128(Low)	824.2	GPRS	/	/	/	/	/	/
	190(Middle)	836.6	GPRS	2.488	27.55	28.00	1.109	0.593	0.658
	251(High)	848.8	GPRS	/	/	/	/	/	/
Body-Back (10mm)	128(Low)	824.2	GPRS	3.320	27.38	28.00	1.153	0.723	0.834
	190(Middle)	836.6	GPRS	-1.953	27.55	28.00	1.109	0.812	0.901
	251(High)	848.8	GPRS	-0.792	27.64	28.00	1.086	0.802	0.871
Body-Left (10 mm)	128(Low)	824.2	GPRS	/	/	/	/	/	/
	190(Middle)	836.6	GPRS	-1.639	27.55	28.00	1.109	0.566	0.628
	251(High)	848.8	GPRS	/	/	/	/	/	/
Body-Right (10 mm)	128(Low)	824.2	GPRS	/	/	/	/	/	/
	190(Middle)	836.6	GPRS	2.295	27.55	28.00	1.109	0.630	0.699
	251(High)	848.8	GPRS	/	/	/	/	/	/
Body-Bottom (10 mm)	128(Low)	824.2	GPRS	/	/	/	/	/	/
	190(Middle)	836.6	GPRS	-0.848	27.55	28.00	1.109	0.081	0.090
	251(High)	848.8	GPRS	/	/	/	/	/	/

Note:

1. When the 1-g SAR is ≤ 0.8 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 MHz)

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 (10 mm)	512(Low)	1850.2	GPRS	/	/	/	/	/	/
	661(Middle)	1880.0	GPRS	1.619	26.48	26.50	1.005	0.67	0.673
	810(High)	1909.8	GPRS	/	/	/	/	/	/
Body-Back (10 mm)	512(Low)	1850.2	GPRS	-3.516	26.50	26.50	1.000	0.914	0.914
	661(Middle)	1880.0	GPRS	-3.394	26.48	26.50	1.005	0.885	0.889
	810(High)	1909.8	GPRS	-2.563	26.46	26.50	1.009	0.828	0.836
Body-Left (10 mm)	512(Low)	1850.2	GPRS	/	/	/	/	/	/
	661(Middle)	1880.0	GPRS	-2.403	26.48	26.50	1.005	0.076	0.076
	810(High)	1909.8	GPRS	/	/	/	/	/	/
Body-Right (10 mm)	512(Low)	1850.2	GPRS	/	/	/	/	/	/
	661(Middle)	1880.0	GPRS	0.446	26.48	26.50	1.005	0.091	0.091
	810(High)	1909.8	GPRS	/	/	/	/	/	/
Body-Bottom (10 mm)	512(Low)	1850.2	GPRS	/	/	/	/	/	/
	661(Middle)	1880.0	GPRS	3.557	26.48	26.50	1.005	0.646	0.649
	810(High)	1909.8	GPRS	/	/	/	/	/	/

Note:

1. When the 1-g SAR is ≤ 0.8 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-WCDMA Band V

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 (10 mm)	4132	826.4	WCDMA850	/	/	/	/	/	/
	4183	836.6	WCDMA850	3.364	22.50	22.50	1.000	0.234	0.234
	4233	846.6	WCDMA850	/	/	/	/	/	/
Body-Back (10 mm)	4132	826.4	WCDMA850	0.784	22.50	22.50	1.000	0.34	0.340
	4183	836.6	WCDMA850	-2.078	22.50	22.50	1.000	0.484	0.484
	4233	846.6	WCDMA850	-3.493	22.21	22.50	1.069	0.347	0.371
Body-Left (10 mm)	4132	826.4	WCDMA850	/	/	/	/	/	/
	4183	836.6	WCDMA850	-1.885	22.50	22.50	1.000	0.25	0.250
	4233	846.6	WCDMA850	/	/	/	/	/	/
Body-Right (10 mm)	4132	826.4	WCDMA850	/	/	/	/	/	/
	4183	836.6	WCDMA850	-1.448	22.50	22.50	1.000	0.29	0.290
	4233	846.6	WCDMA850	/	/	/	/	/	/
Body-Bottom (10 mm)	9262	826.4	WCDMA850	/	/	/	/	/	/
	9400	836.6	WCDMA850	-1.568	22.50	22.50	1.000	0.011	0.011
	9538	846.6	WCDMA850	/	/	/	/	/	/

Hot Spot-WCDMA band II

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 (10 mm)	9262	1852.4	WCDMA1900	/	/	/	/	/	/
	9400	1880.0	WCDMA1900	-2.620	21.99	22.00	1.002	0.339	0.340
	9538	1907.6	WCDMA1900	/	/	/	/	/	/
Body-Back (10 mm)	9262	1852.4	WCDMA1900	/	/	/	/	/	/
	9400	1880.0	WCDMA1900	1.900	21.99	22.00	1.002	0.583	0.584
	9538	1907.6	WCDMA1900	/	/	/	/	/	/
Body-Left (10 mm)	9262	1852.4	WCDMA1900	/	/	/	/	/	/
	9400	1880.0	WCDMA1900	-3.532	21.99	22.00	1.002	0.104	0.104
	9538	1907.6	WCDMA1900	/	/	/	/	/	/
Body-Right (10 mm)	9262	1852.4	WCDMA1900	/	/	/	/	/	/
	9400	1880.0	WCDMA1900	-2.480	21.99	22.00	1.002	0.066	0.066
	9538	1907.6	WCDMA1900	/	/	/	/	/	/
Body-Bottom (10 mm)	9262	1852.4	WCDMA1900	/	/	/	/	/	/
	9400	1880.0	WCDMA1900	-4.233	21.99	22.00	1.002	0.560	0.561
	9538	1907.6	WCDMA1900	/	/	/	/	/	/

Note:

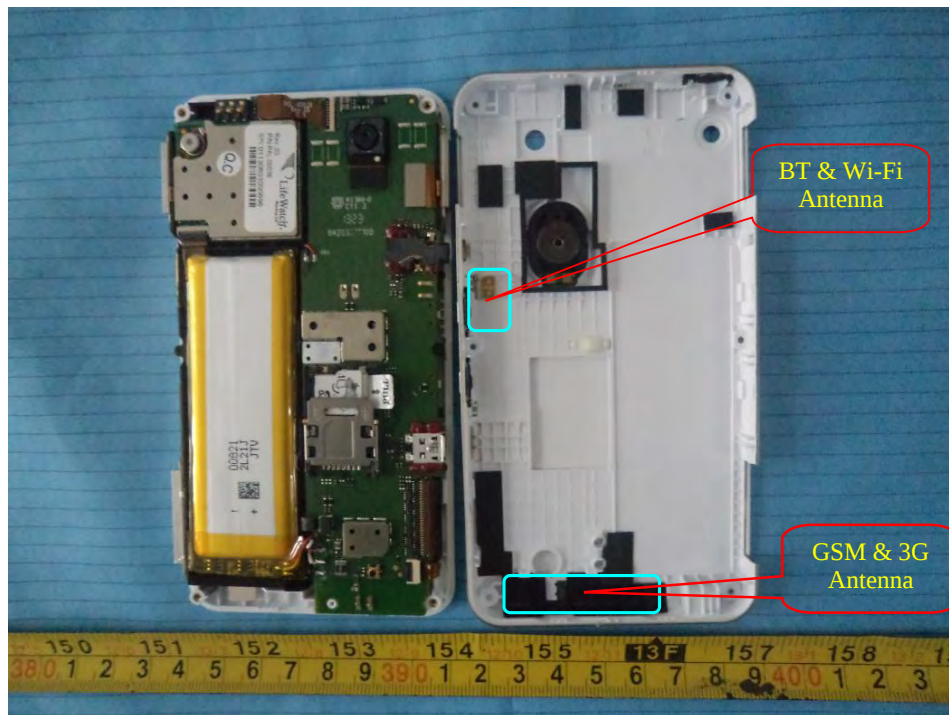
1. When the 1-g SAR is ≤ 0.8 W/Kg, testing for other channels are optional.
2. The default test configuration is to measure SAR with an established radio link between the EUT and a communication test set using a 12.2 kbps RMC (reference measurement Channel) Configured in Test Loop Model.
3. KDB 941225 D01-Body SAR is not required for HSDPA when the maximum average output of each RF channel with HSDPA active is less than $\frac{1}{4}$ 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, Wi-Fi, 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	√	×	72
GSM + Wi-Fi	√	√	72
GPRS + WCDMA	×	×	0
GPRS + Bluetooth	√	×	72
GPRS + Wi-Fi	√	√	72
WCDMA + Bluetooth	√	×	72
WCDMA + Wi-Fi	√	√	72

Standalone SAR test exclusion considerations

Head Position:

Mode	Frequency (MHz)	P _{ave} (dBm)	P _{ave} (mW)	Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Exclusion
GSM850	850	23.24	210.863	0	38.9	3.0	No
PCS1900	1900	21.21	132.130	0	36.4	3.0	No
WCDMSA850	850	22.50	177.828	0	32.8	3.0	No
WCDMSA1900	1900	21.99	158.125	0	43.6	3.0	No
Bluetooth	2450	7.25	5.309	0	1.7	3.0	Yes
Wi-Fi	2450	9.70	9.354	0	2.93	3.0	Yes

Body Position:

Mode	Frequency (MHz)	P _{ave} (dBm)	P _{ave} (mW)	Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Exclusion
GSM850	850	24.64	291.072	10	26.8	3.0	No
PCS1900	1900	23.50	223.872	10	30.9	3.0	No
WCDMSA850	850	22.50	177.828	10	16.4	3.0	No
WCDMSA1900	1900	21.99	158.125	10	21.8	3.0	No
Bluetooth	2450	7.25	5.309	10	0.8	3.0	Yes
Wi-Fi	2450	9.70	9.354	10	1.5	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)		Σ SAR (W/kg)
		GSM	BT	
GSM850	Left Head Cheek	0.469	0.235	0.704
	Left Head Tile	0.241	0.235	0.476
	Right Head Cheek	0.443	0.235	0.678
	Right Head Tilt	0.206	0.235	0.441
	Body-Headset-Front	0.624	0.117	0.741
	Body-Headset-Back	0.726	0.117	0.843
PCS1900	Left Head Cheek	0.282	0.235	0.517
	Left Head Tile	0.123	0.235	0.358
	Right Head Cheek	0.220	0.235	0.455
	Right Head Tilt	0.180	0.235	0.415
	Body-Headset-Front	0.484	0.117	0.601
	Body-Headset-Back	0.631	0.117	0.748

WCDMA with BT:

Mode	Position	Reported SAR (W/kg)		Σ SAR (W/kg)
		WCDMA	BT	
WCDMA 850	Left Head Cheek	0.219	0.235	0.454
	Left Head Tile	0.174	0.235	0.409
	Right Head Cheek	0.391	0.235	0.626
	Right Head Tilt	0.178	0.235	0.413
	Body-Headset-Front	0.234	0.117	0.351
	Body-Headset-Back	0.484	0.117	0.601
WCDMA 1900	Left Head Cheek	0.289	0.235	0.524
	Left Head Tile	0.125	0.235	0.360
	Right Head Cheek	0.178	0.235	0.413
	Right Head Tilt	0.110	0.235	0.345
	Body-Headset-Front	0.340	0.117	0.457
	Body-Headset-Back	0.584	0.117	0.701

GSM with Wi-Fi:

Mode	Position	Reported SAR (W/kg)		Σ SAR (W/kg)
		GSM	WiFi	
GSM850	Left Head Cheek	0.469	0.417	0.886
	Left Head Tile	0.241	0.417	0.658
	Right Head Cheek	0.443	0.417	0.860
	Right Head Tilt	0.206	0.417	0.623
	Body-Headset-Front	0.624	0.209	0.833
	Body-Headset-Back	0.726	0.209	0.935
PCS1900	Left Head Cheek	0.282	0.417	0.699
	Left Head Tile	0.123	0.417	0.540
	Right Head Cheek	0.220	0.417	0.637
	Right Head Tilt	0.180	0.417	0.597
	Body-Headset-Front	0.484	0.209	0.693
	Body-Headset-Back	0.631	0.209	0.840

WCDMA with Wi-Fi:

Mode	Position	Reported SAR (W/kg)		Σ SAR (W/kg)
		WCDMA	WiFi	
WCDMA 850	Left Head Cheek	0.219	0.417	0.636
	Left Head Tile	0.174	0.417	0.591
	Right Head Cheek	0.391	0.417	0.808
	Right Head Tilt	0.178	0.417	0.595
	Body-Headset-Front	0.234	0.209	0.443
	Body-Headset-Back	0.484	0.209	0.693
WCDMA 1900	Left Head Cheek	0.289	0.417	0.706
	Left Head Tile	0.125	0.417	0.542
	Right Head Cheek	0.178	0.417	0.595
	Right Head Tilt	0.110	0.417	0.527
	Body-Headset-Front	0.340	0.209	0.549
	Body-Headset-Back	0.584	0.209	0.793

Mode	Frequency (GHz)	Distance (mm)	P _{avg} (dBm)	P _{avg} (mW)	Estimated I _g (W/kg)
Bluetooth Head	2.45	0	7.5	5.623	0.235
Bluetooth Body	2.45	10	7.5	5.623	0.117
WiFi Head	2.45	0	10	10.000	0.417
WiFi Body	2.45	10	10	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:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}/x] \text{ W/kg}$ for test separation distances $\leq 50 \text{ mm}$;

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

When the minimum test separation distance is $< 5 \text{ mm}$, 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 (10 mm)	Body-Back (10 mm)	Body-Left (10 mm)	Body-Right (10 mm)	Body-Bottom (10 mm)	Body-Top (10 mm)
Mode	Stand Alone 1-g SAR (W/Kg)					
GSM 850	0.658	0.901	0.628	0.699	0.081	/
PCS 1900	0.673	0.914	0.076	0.091	0.649	/
WCDMA850	0.234	0.484	0.250	0.290	0.011	/
WCDMA 1900	0.340	0.584	0.104	0.066	0.561	/
Wi-Fi	0.209	0.209	0.209	/	/	/
	Σ 1-g SAR(W/Kg)					
GSM850 + Wi-Fi	0.867	1.110	0.837	/	/	/
PCS 1900 + Wi-Fi	0.882	1.123	0.285	/	/	/
WCDMA850 + Wi-Fi	0.443	0.693	0.459	/	/	/
WCDMA 1900 + Wi-Fi	0.549	0.793	0.313	/	/	/

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 (824.2 MHz Low Channel)

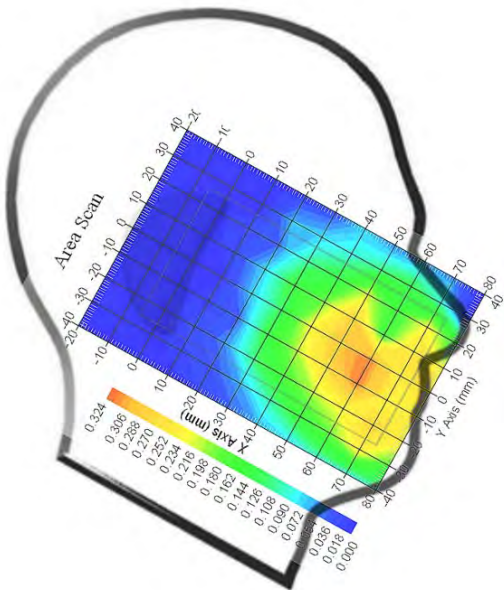
Measurement Data
Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.002 W/kg
Power Drift-Finish : 0.002 W/kg
Power Drift (%) : 1.006

Tissue Data
Type : Head
Frequency : 824.2 MHz
Epsilon : 41.27 F/m
Sigma : 0.87 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 : 0.320 W/kg
10 gram SAR value : 0.211 W/kg
Area Scan Peak SAR : 0.319 W/kg
Zoom Scan Peak SAR : 0.560 W/kg

Plot 1#



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 : 0.002 W/kg
Power Drift-Finish : 0.002 W/kg
Power Drift (%) : -1.904

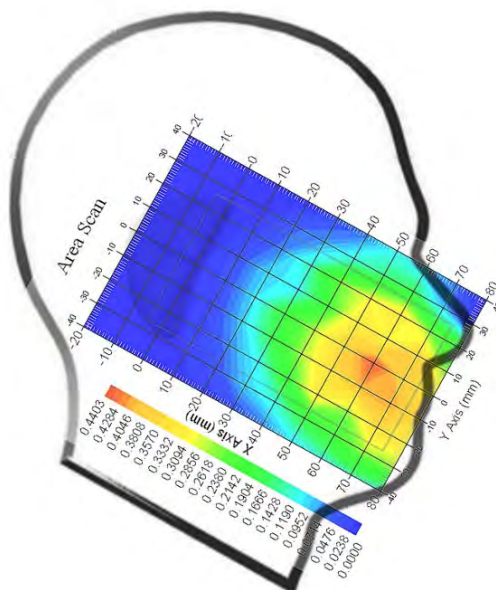
Tissue Data

Type : Head
Frequency : 836.6 MHz
Epsilon : 40.53 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.437 W/kg
10 gram SAR value : 0.240 W/kg
Area Scan Peak SAR : 0.436 W/kg
Zoom Scan Peak SAR : 0.970 W/kg

Plot 2#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Left 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 (%) : 0.429

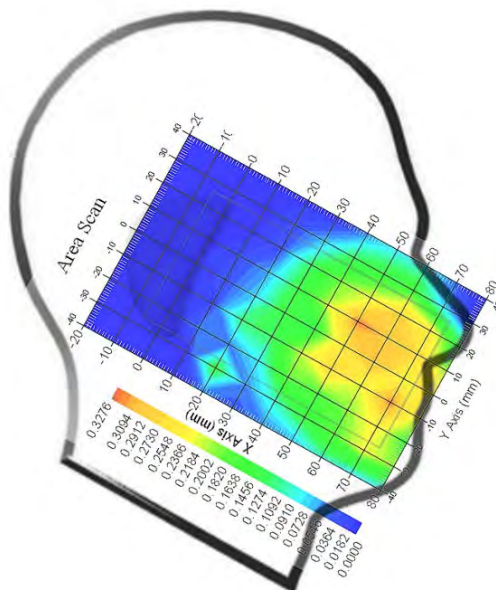
Tissue Data

Type : Head
Frequency : 848.8 MHz
Epsilon : 39.76 F/m
Sigma : 0.87 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.294 W/kg
10 gram SAR value : 0.182 W/kg
Area Scan Peak SAR : 0.322 W/kg
Zoom Scan Peak SAR : 0.640 W/kg

Plot 3#

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 : 0.014 W/kg
 Power Drift-Finish : 0.014 W/kg
 Power Drift (%) : 1.837

Tissue Data

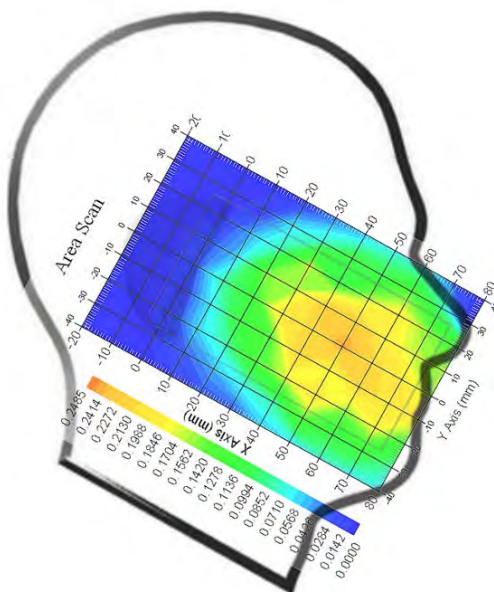
Type : Head
 Frequency : 836.6 MHz
 Epsilon : 40.53 F/m
 Sigma : 0.89 S/m
 Density : 1000.00 kg/cu. m

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 : 0.224 W/kg
 10 gram SAR value : 0.161 W/kg
 Area Scan Peak SAR : 0.244 W/kg
 Zoom Scan Peak SAR : 0.470 W/kg

Plot 4#



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

Right Head Cheek (836.6 MHz Middle Channel)

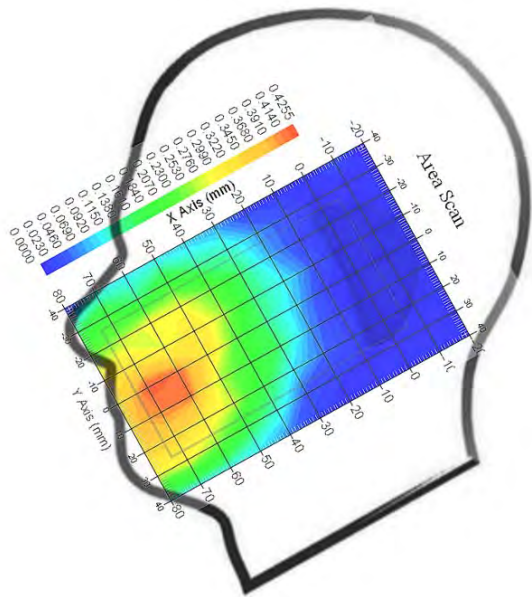
Measurement Data
Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.003 W/kg
Power Drift-Finish : 0.003 W/kg
Power Drift (%) : 1.047

Tissue Data
Type : Head
Frequency : 836.6 MHz
Epsilon : 40.53 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.403 W/kg
10 gram SAR value : 0.206 W/kg
Area Scan Peak SAR : 0.422 W/kg
Zoom Scan Peak SAR : 1.000 W/kg

Plot 5#



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

Right Head Tilt (836.6 MHz Middle Channel)

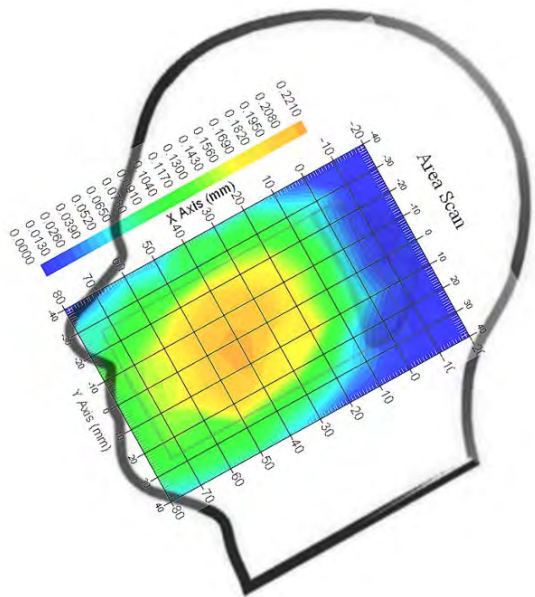
Measurement Data
Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.011 W/kg
Power Drift-Finish : 0.011 W/kg
Power Drift (%) : -1.320

Tissue Data
Type : Head
Frequency : 836.6 MHz
Epsilon : 40.53 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.192 W/kg
10 gram SAR value : 0.106 W/kg
Area Scan Peak SAR : 0.221 W/kg
Zoom Scan Peak SAR : 0.390 W/kg

Plot 6#



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

Body-worn Front-Headset (836.6 MHz Middle Channel)

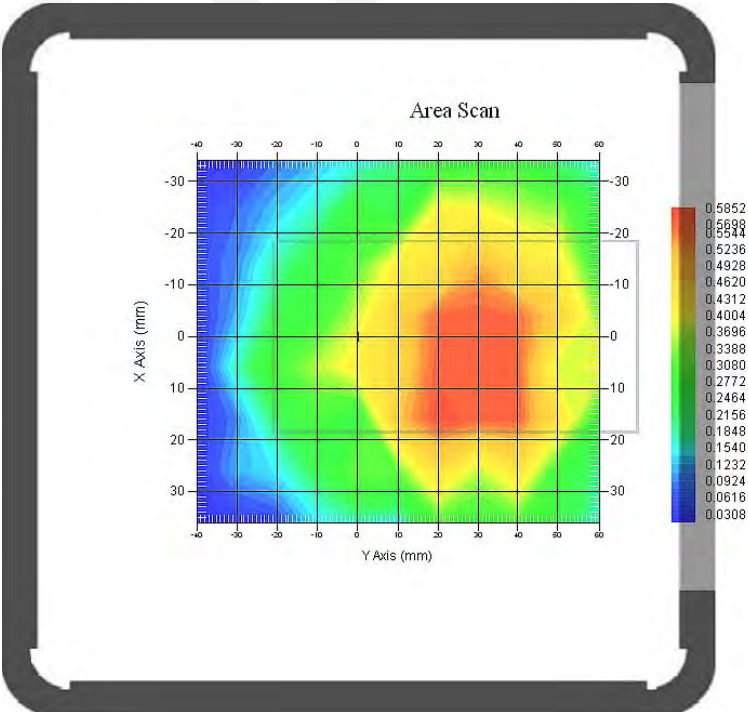
Measurement Data
Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 8x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.389 W/kg
Power Drift-Finish : 0.376 W/kg
Power Drift (%) : -2.613

Tissue Data
Type : Body
Frequency : 836.6 MHz
Epsilon : 55.33 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.581 W/kg
10 gram SAR value : 0.338 W/kg
Area Scan Peak SAR : 0.576 W/kg
Zoom Scan Peak SAR : 0.950 W/kg

Plot 7#



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

Body-worn Back-Headset (836.6 MHz Middle Channel)

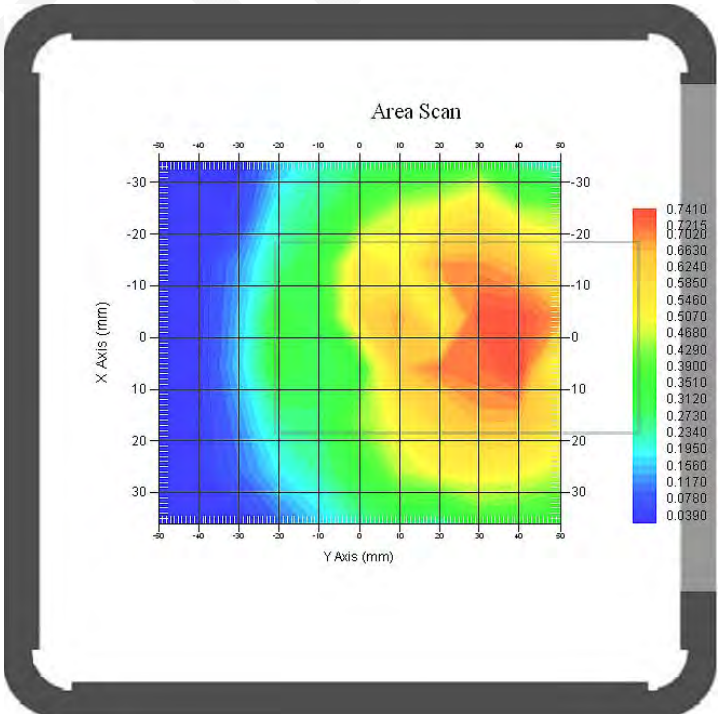
Measurement Data
Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 8x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.508 W/kg
Power Drift-Finish : 0.497 W/kg
Power Drift (%) : -3.497

Tissue Data
Type : Body
Frequency : 836.6 MHz
Epsilon : 55.33 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.676 W/kg
10 gram SAR value : 0.464 W/kg
Area Scan Peak SAR : 0.740 W/kg
Zoom Scan Peak SAR : 1.080 W/kg

Plot 8#



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

Left Head Cheek (1850.2 MHz Low Channel)

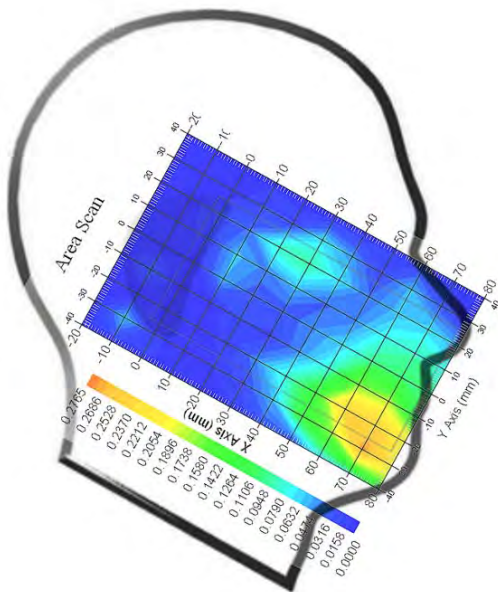
Measurement Data
Test mode : GSM
Crest Factor : 8
Scan Type : Complete
Area Scan : 11x8x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.015 W/kg
Power Drift-Finish : 0.015 W/kg
Power Drift (%) : -0.644

Tissue Data
Type : Head
Frequency : 1850.2 MHz
Epsilon : 38.47 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.264 W/kg
10 gram SAR value : 0.138 W/kg
Area Scan Peak SAR : 0.275 W/kg
Zoom Scan Peak SAR : 0.750 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 : 0.006 W/kg
Power Drift (%) : 4.196

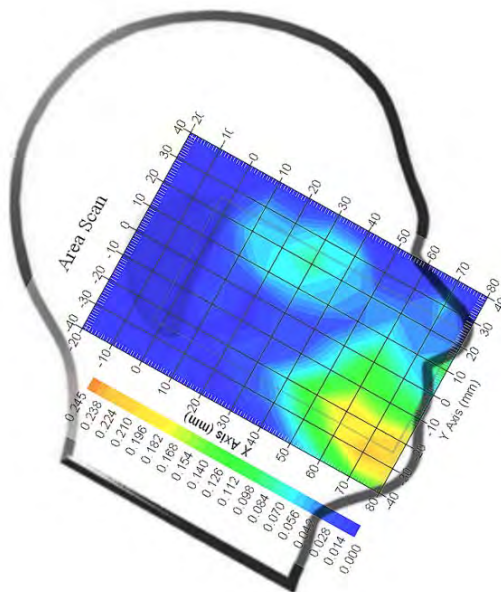
Tissue Data

Type : Head
Frequency : 1880.0 MHz
Epsilon : 38.42 F/m
Sigma : 1.46 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 : 0.205 W/kg
10 gram SAR value : 0.119 W/kg
Area Scan Peak SAR : 0.239 W/kg
Zoom Scan Peak SAR : 0.500 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 : 0.013 W/kg
Power Drift-Finish : 0.013 W/kg
Power Drift (%) : 1.949

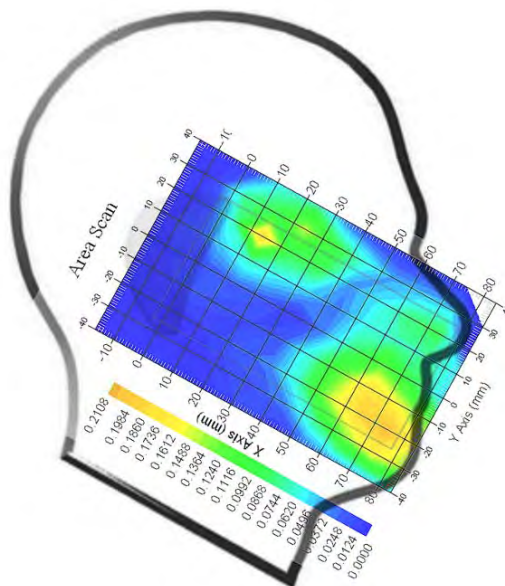
Tissue Data

Type : Head
Frequency : 1909.8 MHz
Epsilon : 38.22 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.199 W/kg
10 gram SAR value : 0.097 W/kg
Area Scan Peak SAR : 0.208 W/kg
Zoom Scan Peak SAR : 0.270 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 : 0.033 W/kg
Power Drift-Finish : 0.033 W/kg
Power Drift (%) : -1.859

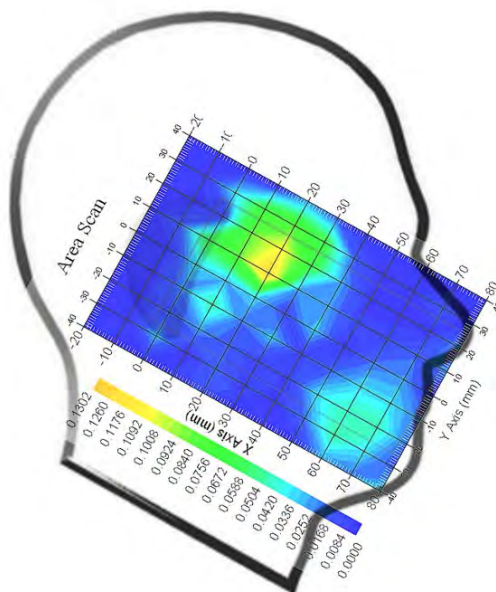
Tissue Data

Type : Head
Frequency : 1880.0 MHz
Epsilon : 38.42 F/m
Sigma : 1.46 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 : 0.109 W/kg
10 gram SAR value : 0.088 W/kg
Area Scan Peak SAR : 0.130 W/kg
Zoom Scan Peak SAR : 0.190 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 : 0.008 W/kg
Power Drift-Finish : 0.008 W/kg
Power Drift (%) : -2.152

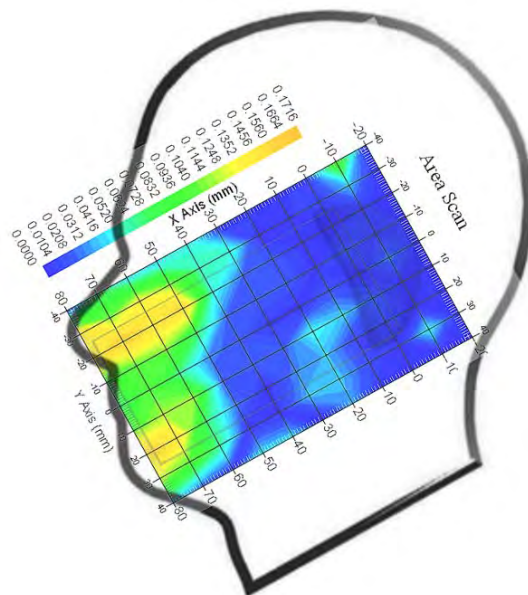
Tissue Data

Type : Head
Frequency : 1880.0 MHz
Epsilon : 38.42 F/m
Sigma : 1.46 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 : 0.195 W/kg
10 gram SAR value : 0.120 W/kg
Area Scan Peak SAR : 0.168 W/kg
Zoom Scan Peak SAR : 0.360 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 : 0.035 W/kg
 Power Drift-Finish : 0.036 W/kg
 Power Drift (%) : 0.707

Tissue Data

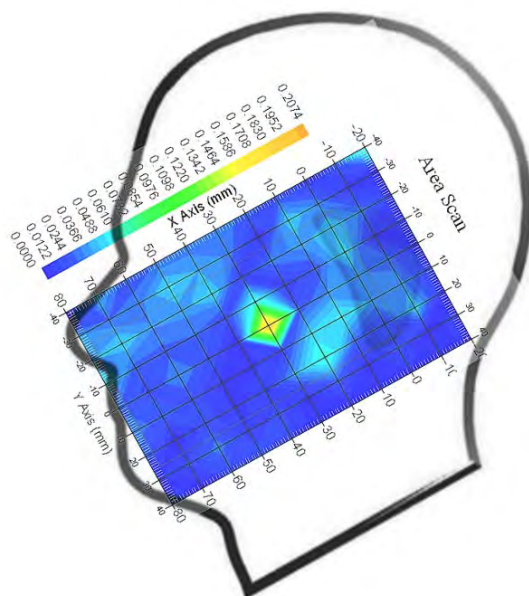
Type : Head
 Frequency : 1880.0 MHz
 Epsilon : 38.42 F/m
 Sigma : 1.46 S/m
 Density : 1000.00 kg/cu. m

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 : 0.160 W/kg
 10 gram SAR value : 0.091 W/kg
 Area Scan Peak SAR : 0.193 W/kg
 Zoom Scan Peak SAR : 0.300 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 : 0.290 W/kg
 Power Drift-Finish : 0.281 W/kg
 Power Drift (%) : -2.134

Tissue Data

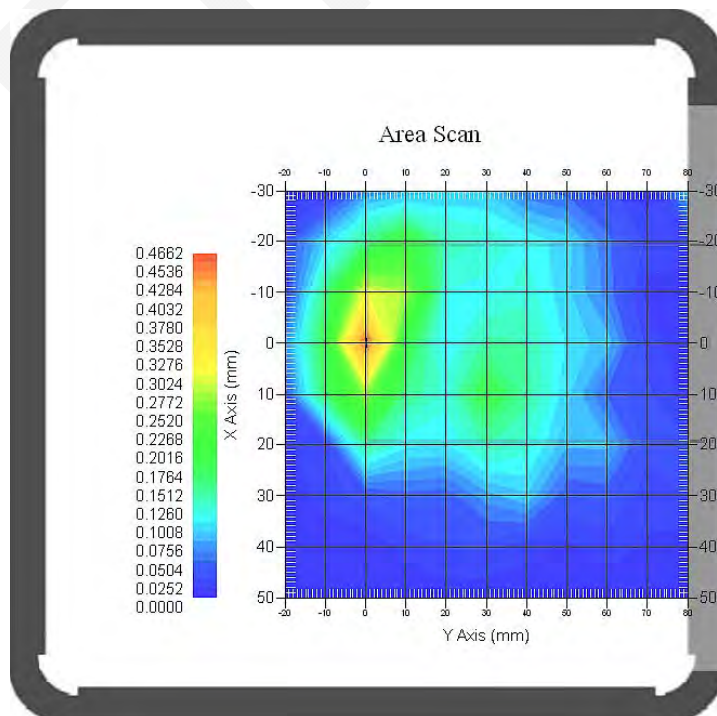
Type : Body
 Frequency : 1880.0 MHz
 Epsilon : 51.73 F/m
 Sigma : 1.53 S/m
 Density : 1000.00 kg/cu. m

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 : 0.429 W/kg
 10 gram SAR value : 0.266 W/kg
 Area Scan Peak SAR : 0.465 W/kg
 Zoom Scan Peak SAR : 0.660 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 : 0.438 W/kg
 Power Drift-Finish : 0.443 W/kg
 Power Drift (%) : 2.671

Tissue Data

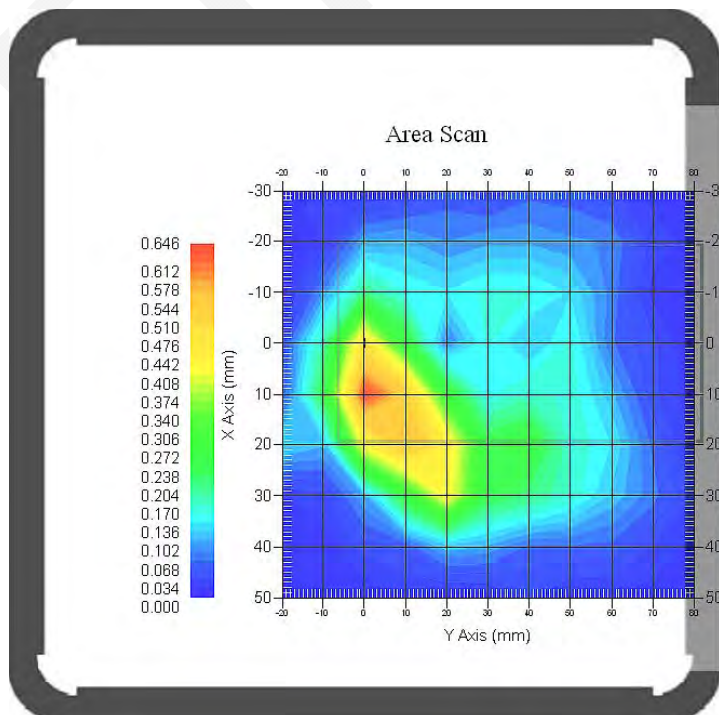
Type : Body
 Frequency : 1880.0 MHz
 Epsilon : 51.73 F/m
 Sigma : 1.53 S/m
 Density : 1000.00 kg/cu. m

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 $\mu\text{V}/(\text{V}/\text{m})^2$
 Compression Point : 95.00 mV
 Offset : 1.56 mm

1 gram SAR value : 0.560 W/kg
 10 gram SAR value : 0.300 W/kg
 Area Scan Peak SAR : 0.642 W/kg
 Zoom Scan Peak SAR : 1.181 W/kg

Plot 16#



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

WCDMA850; Left Head Cheek (836.6 MHz Middle 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 : 0.002 W/kg
 Power Drift-Finish : 0.002 W/kg
 Power Drift (%) : 0.478

Tissue Data

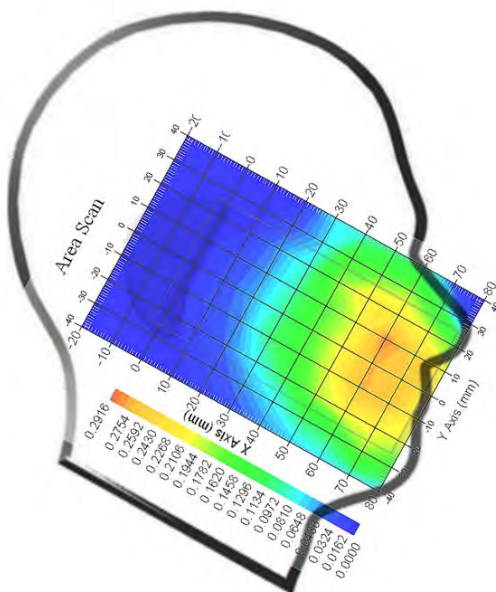
Type : Head
 Frequency : 836.6 MHz
 Epsilon : 40.53 F/m
 Sigma : 0.89 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency Band : 835
 Duty Cycle Factor : 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 : 0.219 W/kg
 10 gram SAR value : 0.150 W/kg
 Area Scan Peak SAR : 0.285 W/kg
 Zoom Scan Peak SAR : 0.350 W/kg

Plot 17#



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

WCDMA850; Left Head Tilt (836.6 MHz Middle 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 : 0.036 W/kg
 Power Drift-Finish : 0.036 W/kg
 Power Drift (%) : 1.222

Tissue Data

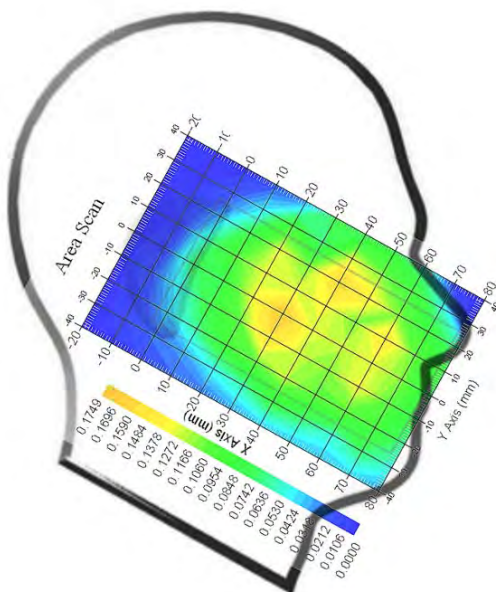
Type : Head
 Frequency : 826.4 MHz
 Epsilon : 40.53 F/m
 Sigma : 0.89 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency Band : 835
 Duty Cycle Factor : 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 : 0.174 W/kg
 10 gram SAR value : 0.091 W/kg
 Area Scan Peak SAR : 0.171 W/kg
 Zoom Scan Peak SAR : 0.240 W/kg

Plot 18#



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

WCDMA850; Right Head Cheek (826.4 MHz Low Channel)

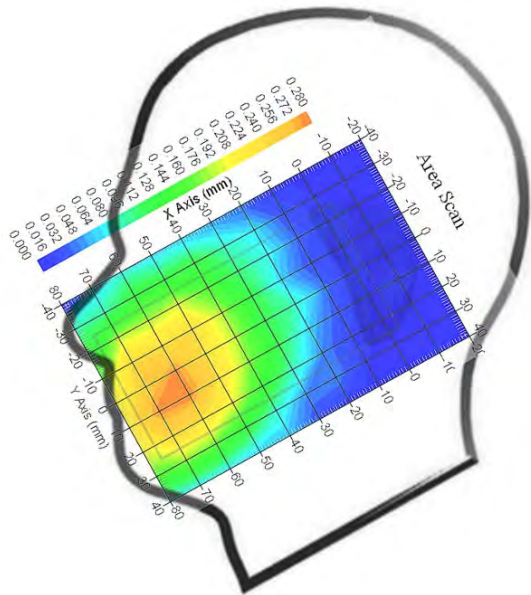
Measurement Data
Test mode : WCDMA850
Crest Factor : 1
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.008 W/kg
Power Drift-Finish : 0.008 W/kg
Power Drift (%) : -0.844

Tissue Data
Type : Head
Frequency : 826.4 MHz
Epsilon : 41.24 F/m
Sigma : 0.87 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 : 0.261 W/kg
10 gram SAR value : 0.199 W/kg
Area Scan Peak SAR : 0.279 W/kg
Zoom Scan Peak SAR : 0.350 W/kg

Plot 19#



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

WCDMA850; Right Head Cheek (836.6 MHz Middle Channel)

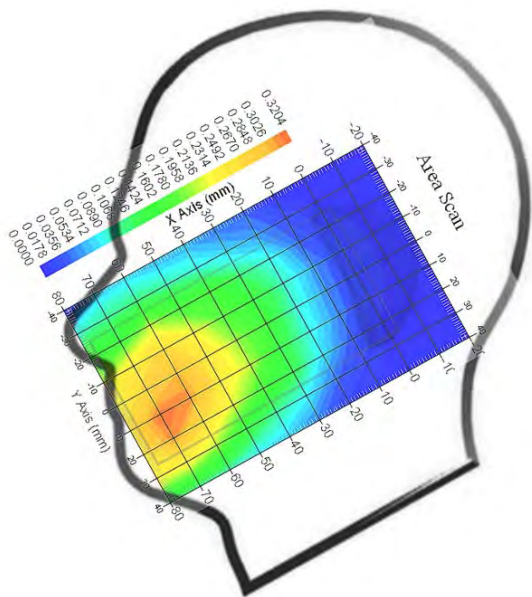
Measurement Data
Test mode : WCDMA850
Crest Factor : 1
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.020 W/kg
Power Drift-Finish : 0.020 W/kg
Power Drift (%) : 0.349

Tissue Data
Type : Head
Frequency : 836.6 MHz
Epsilon : 40.53 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 : 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 : 0.308 W/kg
10 gram SAR value : 0.216 W/kg
Area Scan Peak SAR : 0.317 W/kg
Zoom Scan Peak SAR : 0.380 W/kg

Plot 20#



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

WCDMA850; Right Head Cheek (848.8 MHz High Channel)

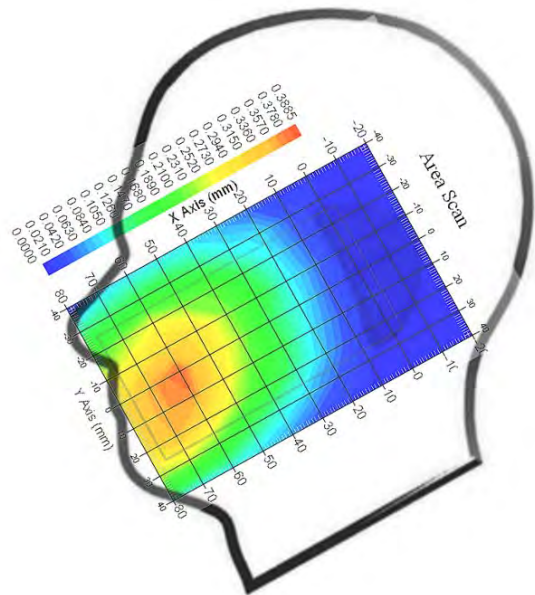
Measurement Data
Test mode : WCDMA850
Crest Factor : 1
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.016 W/kg
Power Drift-Finish : 0.016 W/kg
Power Drift (%) : 1.902

Tissue Data
Type : Head
Frequency : 848.8 MHz
Epsilon : 39.76 F/m
Sigma : 0.87 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 : 0.366 W/kg
10 gram SAR value : 0.284 W/kg
Area Scan Peak SAR : 0.379 W/kg
Zoom Scan Peak SAR : 0.460 W/kg

Plot 21#



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

WCDMA850; Right Head Tilt (836.6 MHz Middle Channel)

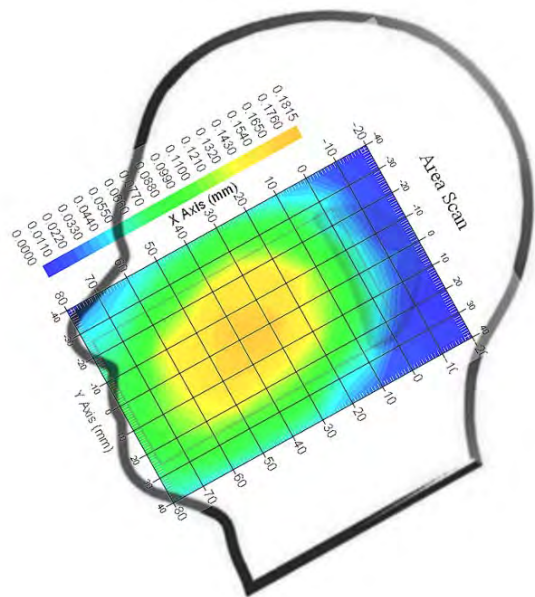
Measurement Data
Test mode : WCDMA850
Crest Factor : 1
Scan Type : Complete
Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.052 W/kg
Power Drift-Finish : 0.051 W/kg
Power Drift (%) : -1.013

Tissue Data
Type : Head
Frequency : 836.6 MHz
Epsilon : 40.53 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 : 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 : 0.178 W/kg
10 gram SAR value : 0.130 W/kg
Area Scan Peak SAR : 0.181 W/kg
Zoom Scan Peak SAR : 0.250 W/kg

Plot 22#



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 : 0.036 W/kg
Power Drift-Finish : 0.035 W/kg
Power Drift (%) : -2.616

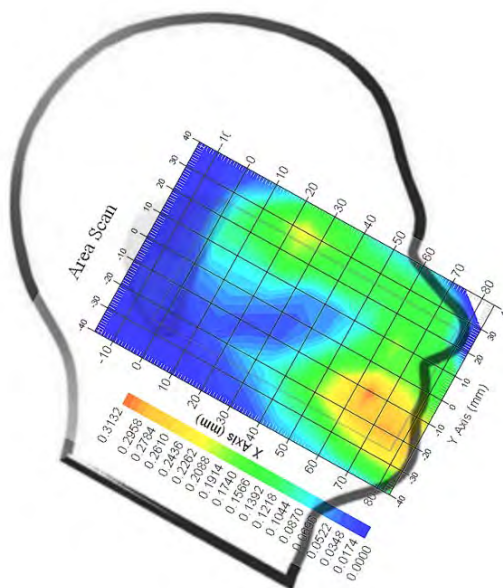
Tissue Data

Type : Head
Frequency : 1880.0 MHz
Epsilon : 38.42 F/m
Sigma : 1.46 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 : 0.288 W/kg
10 gram SAR value : 0.153 W/kg
Area Scan Peak SAR : 0.307 W/kg
Zoom Scan Peak SAR : 0.530 W/kg

Plot 23#

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

WCDMA1900; Left Head Tilt (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 : 0.051 W/kg
 Power Drift-Finish : 0.053 W/kg
 Power Drift (%) : 2.420

Tissue Data

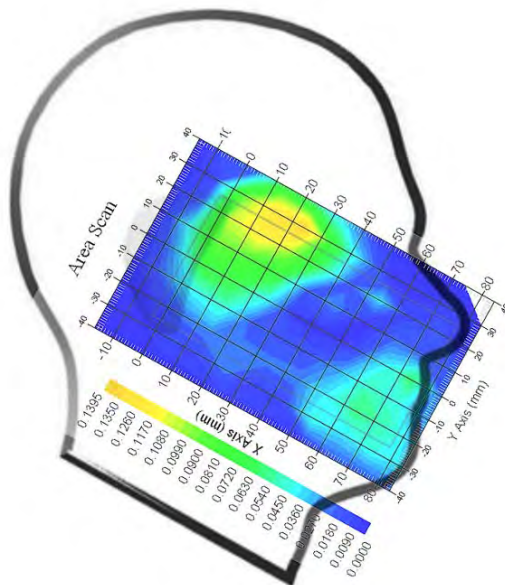
Type : Head
 Frequency : 1880.0 MHz
 Epsilon : 38.42 F/m
 Sigma : 1.46 S/m
 Density : 1000.00 kg/cu. m

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 : 0.125 W/kg
 10 gram SAR value : 0.078 W/kg
 Area Scan Peak SAR : 0.139 W/kg
 Zoom Scan Peak SAR : 0.250 W/kg

Plot 24#



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

WCDMA1900; Right Head Cheek (1880.0 MHz Middle Channel)

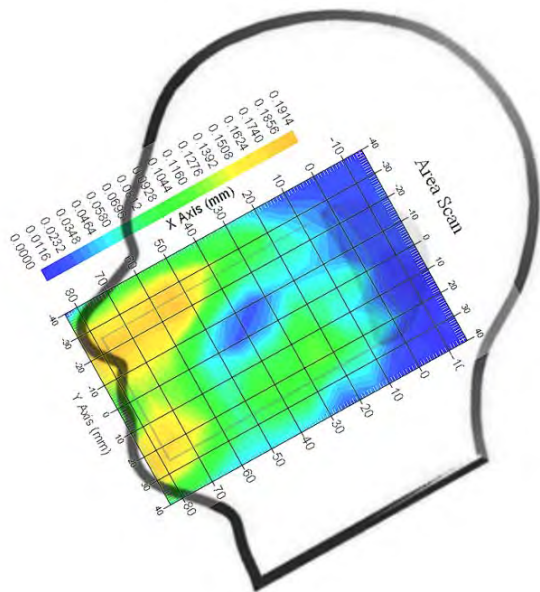
Measurement Data
Test mode : WCDMA1900
Crest Factor : 1
Scan Type : Complete
Area Scan : 11x9x1: Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.047 W/kg
Power Drift-Finish : 0.045 W/kg
Power Drift (%) : -1.252

Tissue Data
Type : Head
Frequency : 1880.0 MHz
Epsilon : 38.42 F/m
Sigma : 1.46 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 : 0.178 W/kg
10 gram SAR value : 0.098 W/kg
Area Scan Peak SAR : 0.191 W/kg
Zoom Scan Peak SAR : 0.320 W/kg

Plot 25#



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

WCDMA1900; Right Head Tilt (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 : 0.094 W/kg
 Power Drift-Finish : 0.098 W/kg
 Power Drift (%) : 3.935

Tissue Data

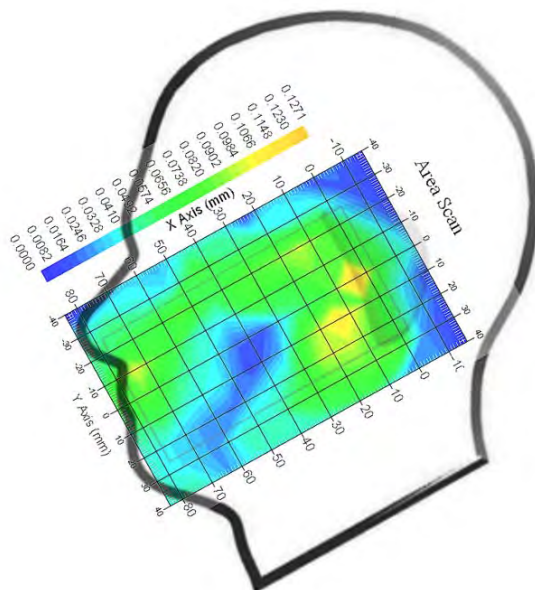
Type : Head
 Frequency : 1880.0 MHz
 Epsilon : 38.42 F/m
 Sigma : 1.46 S/m
 Density : 1000.00 kg/cu. m

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 : 0.110 W/kg
 10 gram SAR value : 0.094 W/kg
 Area Scan Peak SAR : 0.125 W/kg
 Zoom Scan Peak SAR : 0.270 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 : 0.437 W/kg
 Power Drift-Finish : 0.448 W/kg
 Power Drift (%) : 2.488

Tissue Data

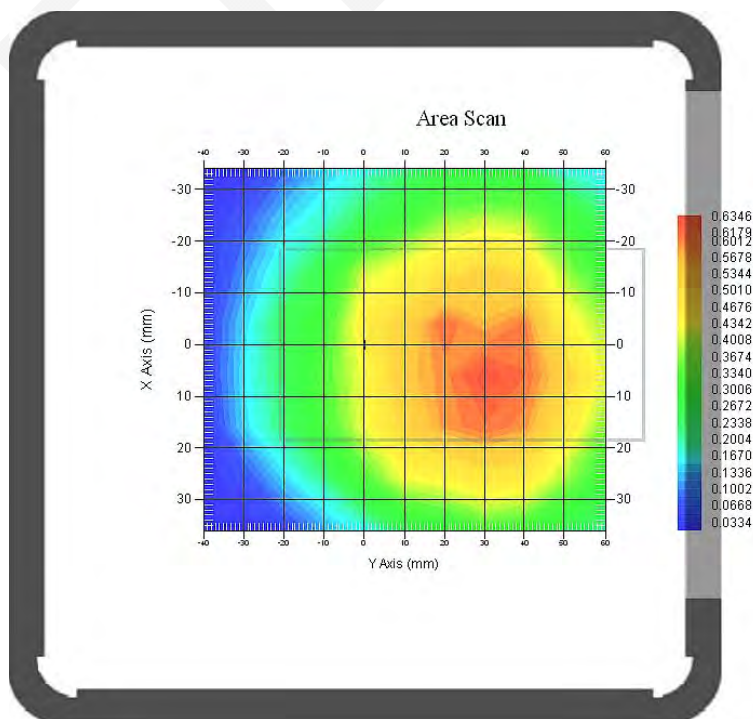
Type : Body
 Frequency : 836.6 MHz
 Epsilon : 55.33 F/m
 Sigma : 0.97 S/m
 Density : 1000.00 kg/cu. m

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 $\mu\text{V}/(\text{V}/\text{m})^2$
 Compression Point : 95.00 mV
 Offset : 1.56 mm

1 gram SAR value : 0.593 W/kg
 10 gram SAR value : 0.335 W/kg
 Area Scan Peak SAR : 0.628 W/kg
 Zoom Scan Peak SAR : 0.760 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 : 0.482 W/kg
 Power Drift-Finish : 0.498 W/kg
 Power Drift (%) : 3.320

Tissue Data

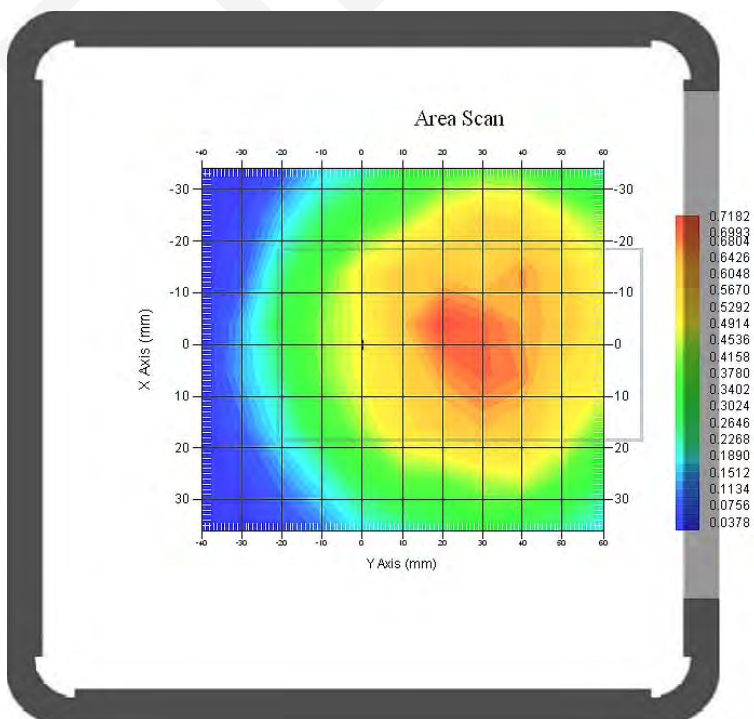
Type : Body
 Frequency : 824.20 MHz
 Epsilon : 55.25 F/m
 Sigma : 0.95 S/m
 Density : 1000.00 kg/cu. m

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 $\mu\text{V}/(\text{V}/\text{m})^2$
 Compression Point : 95.00 mV
 Offset : 1.56 mm

1 gram SAR value : 0.723 W/kg
 10 gram SAR value : 0.555 W/kg
 Area Scan Peak SAR : 0.715 W/kg
 Zoom Scan Peak SAR : 1.020 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 : 0.541 W/kg
Power Drift-Finish : 0.531 W/kg
Power Drift (%) : -1.953

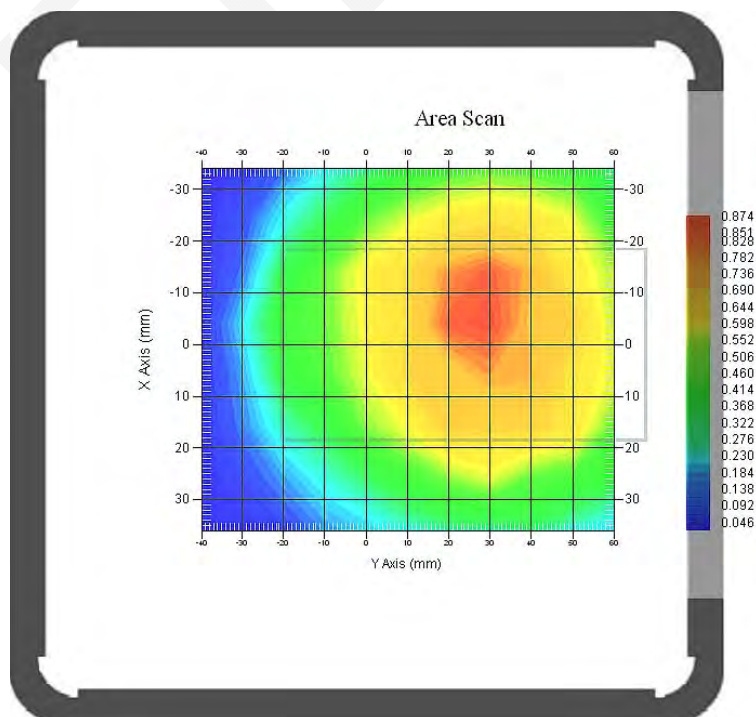
Tissue Data

Type : Body
Frequency : 836.6 MHz
Epsilon : 55.33 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.812 W/kg
10 gram SAR value : 0.574 W/kg
Area Scan Peak SAR : 0.863 W/kg
Zoom Scan Peak SAR : 1.161 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 : 0.482 W/kg
 Power Drift-Finish : 0.481 W/kg
 Power Drift (%) : -0.792

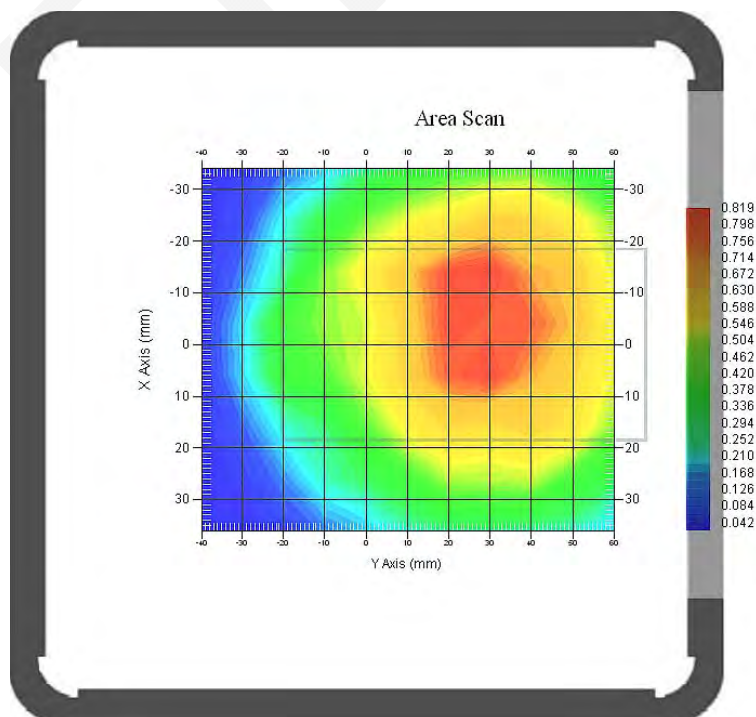
Tissue Data

Type : Body
 Frequency : 848.80 MHz
 Epsilon : 55.40 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 $\mu\text{V}/(\text{V}/\text{m})^2$
 Compression Point : 95.00 mV
 Offset : 1.56 mm

1 gram SAR value : 0.802 W/kg
 10 gram SAR value : 0.509 W/kg
 Area Scan Peak SAR : 0.803 W/kg
 Zoom Scan Peak SAR : 1.020 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 : 0.377 W/kg
Power Drift-Finish : 0.374 W/kg
Power Drift (%) : -1.639

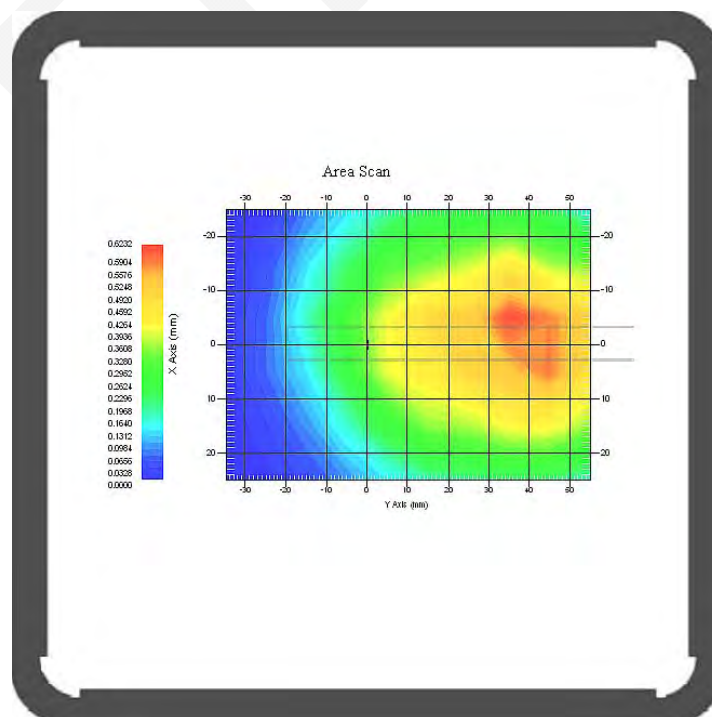
Tissue Data

Type : Body
Frequency : 836.6 MHz
Epsilon : 55.33 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.566 W/kg
10 gram SAR value : 0.371 W/kg
Area Scan Peak SAR : 0.617 W/kg
Zoom Scan Peak SAR : 0.930 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 : 7x11x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.345 W/kg
Power Drift-Finish : 0.353 W/kg
Power Drift (%) : 2.295

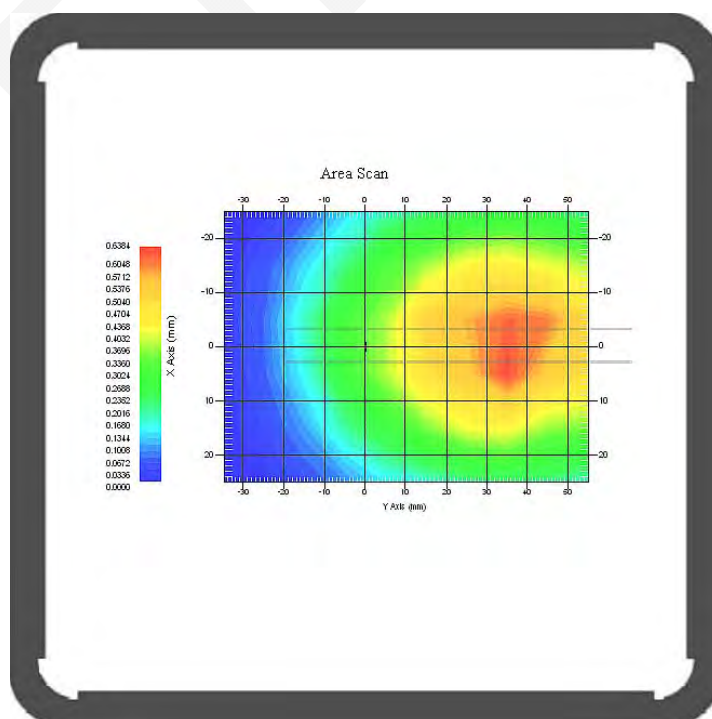
Tissue Data

Type : Body
Frequency : 836.6 MHz
Epsilon : 55.33 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 : 0.630 W/kg
10 gram SAR value : 0.457 W/kg
Area Scan Peak SAR : 0.633 W/kg
Zoom Scan Peak SAR : 0.870 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 : 0.047 W/kg
Power Drift-Finish : 0.047 W/kg
Power Drift (%) : -0.848

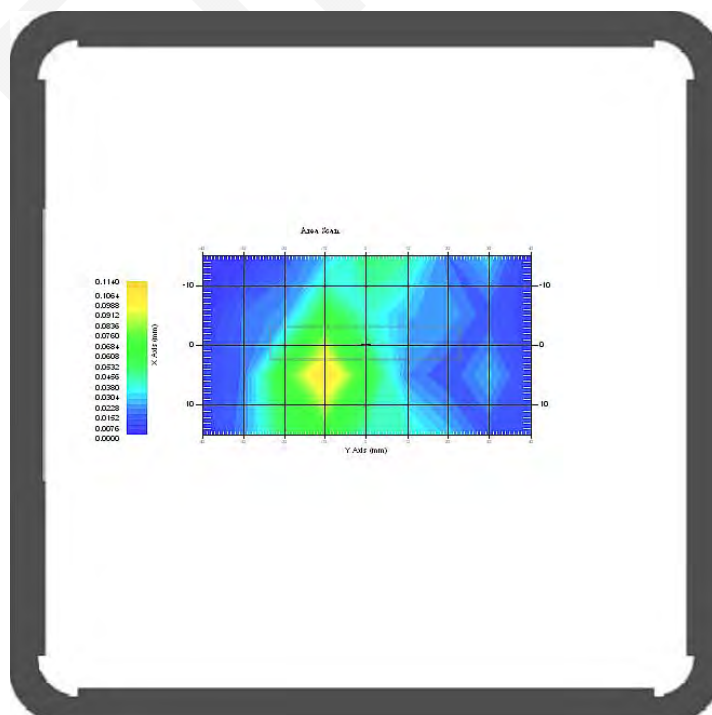
Tissue Data

Type : Body
Frequency : 836.6 MHz
Epsilon : 55.33 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 : 0.081 W/kg
10 gram SAR value : 0.038 W/kg
Area Scan Peak SAR : 0.111 W/kg
Zoom Scan Peak SAR : 0.180 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 : 0.539 W/kg
Power Drift-Finish : 0.545 W/kg
Power Drift (%) : 1.619

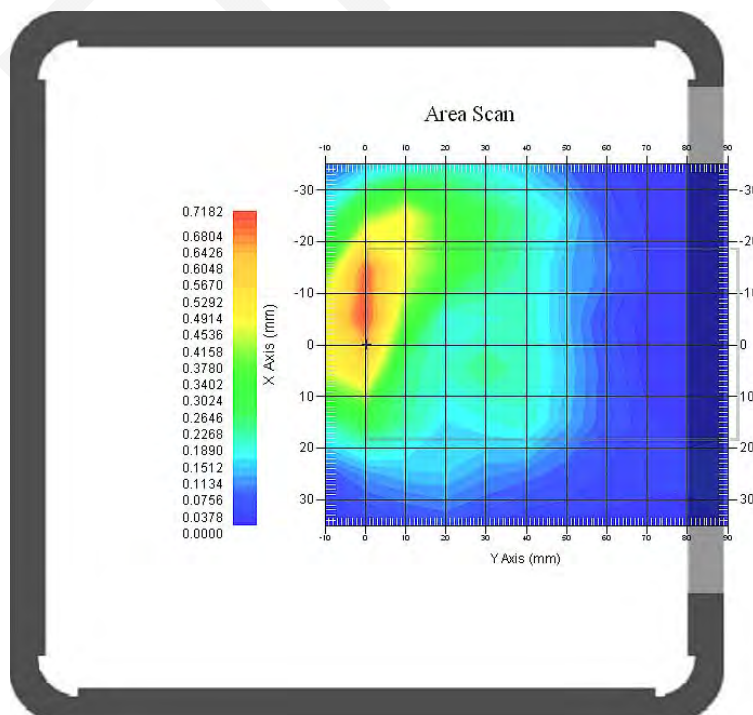
Tissue Data

Type : Body
Frequency : 1880.00 MHz
Epsilon : 51.73 F/m
Sigma : 1.53 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.670 W/kg
10 gram SAR value : 0.331 W/kg
Area Scan Peak SAR : 0.714 W/kg
Zoom Scan Peak SAR : 1.411 W/kg

Plot 34#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: Body-Back (1850.2 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 : 0.774 W/kg
Power Drift-Finish : 0.753 W/kg
Power Drift (%) : -3.516

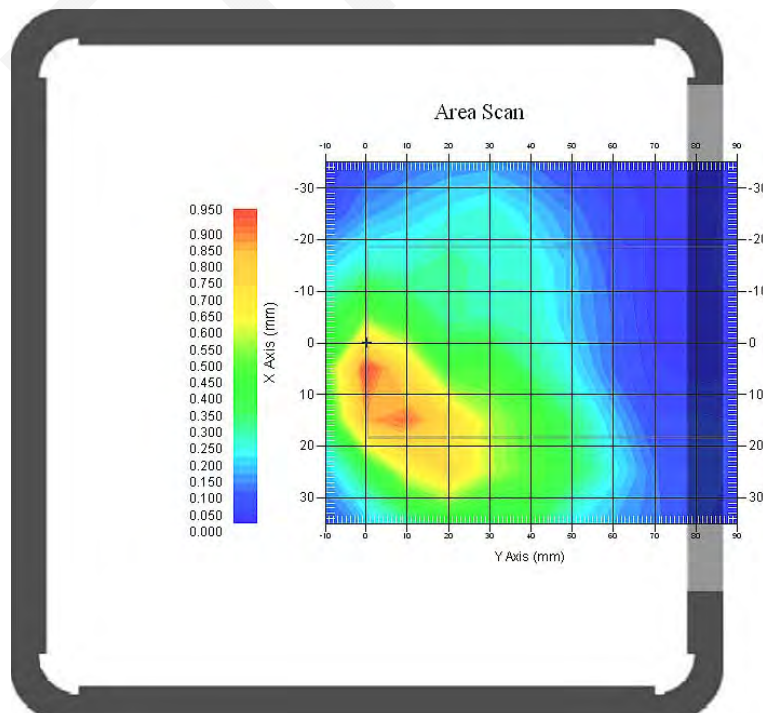
Tissue Data

Type : Body
Frequency : 1850.2 MHz
Epsilon : 51.73 F/m
Sigma : 1.49 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.914 W/kg
10 gram SAR value : 0.462 W/kg
Area Scan Peak SAR : 0.943 W/kg
Zoom Scan Peak SAR : 1.671 W/kg

Plot 35#

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 : 0.756 W/kg
Power Drift-Finish : 0.730 W/kg
Power Drift (%) : -3.394

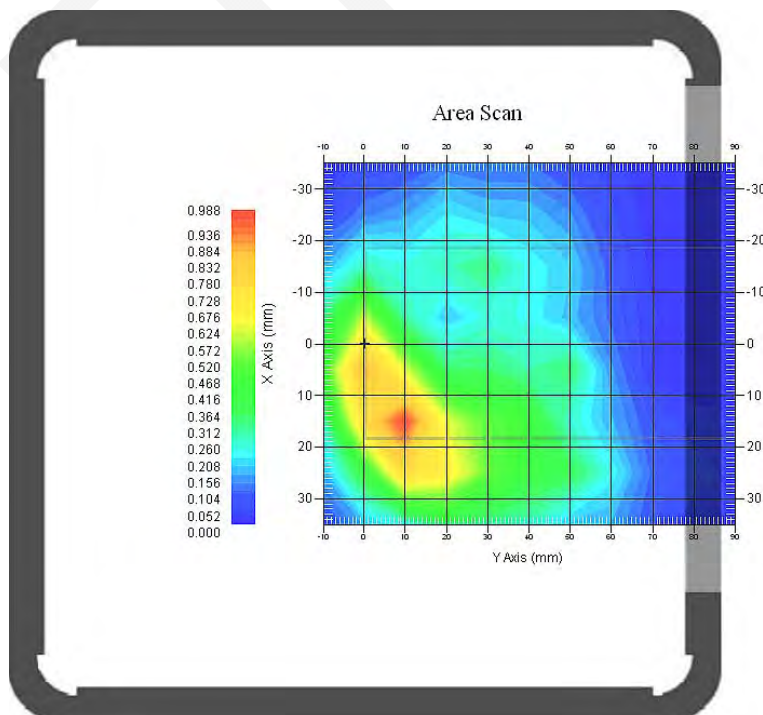
Tissue Data

Type : Body
Frequency : 1880.00 MHz
Epsilon : 51.73 F/m
Sigma : 1.53 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.885 W/kg
10 gram SAR value : 0.668 W/kg
Area Scan Peak SAR : 0.987 W/kg
Zoom Scan Peak SAR : 1.751 W/kg

Plot 36#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: Body-Back (1909.8 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 : 0.727 W/kg
Power Drift-Finish : 0.708 W/kg
Power Drift (%) : -2.563

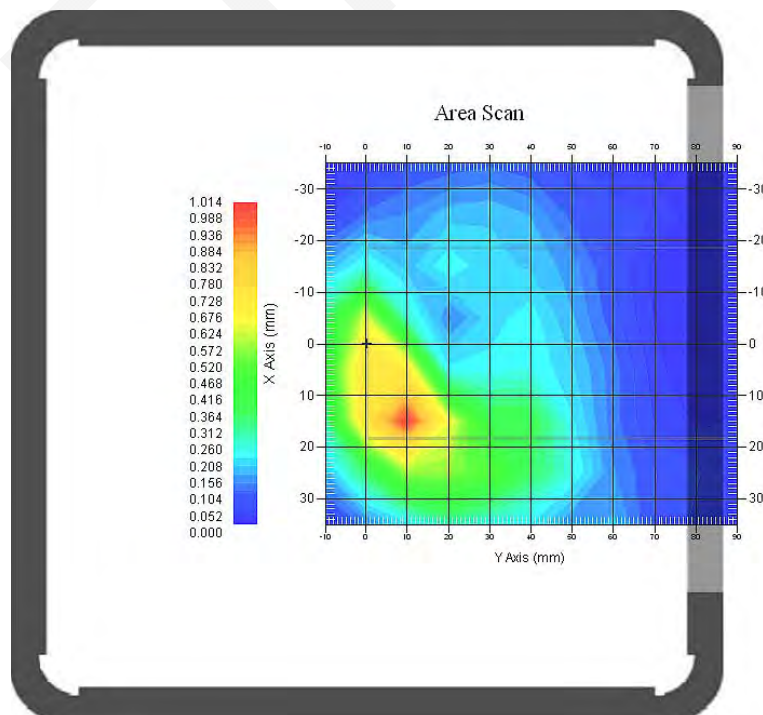
Tissue Data

Type : Body
Frequency : 1909.8 MHz
Epsilon : 51.66 F/m
Sigma : 1.55 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.828 W/kg
10 gram SAR value : 0.423 W/kg
Area Scan Peak SAR : 0.999 W/kg
Zoom Scan Peak SAR : 1.591 W/kg

Plot 37#

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 : 0.062 W/kg
 Power Drift-Finish : 0.059 W/kg
 Power Drift (%) : -2.403

Tissue Data

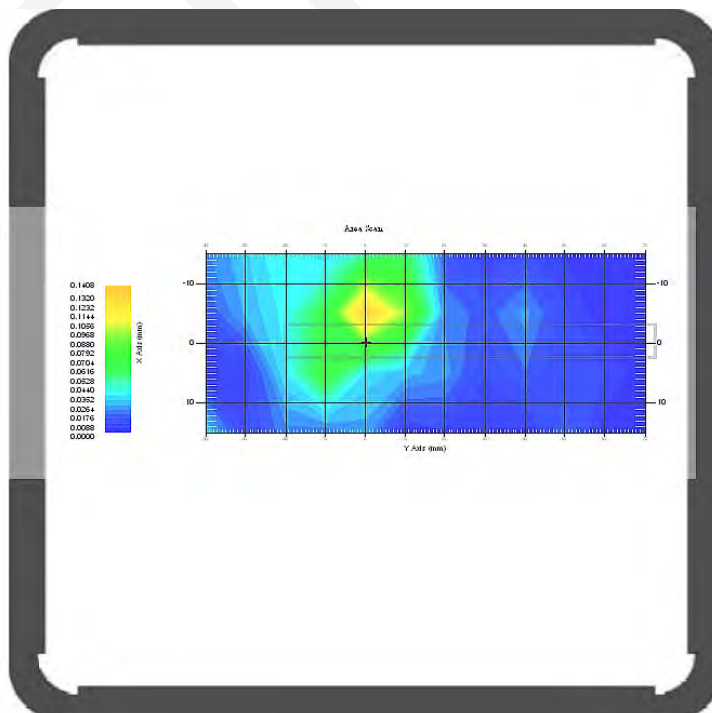
Type : Body
 Frequency : 1880.00 MHz
 Epsilon : 51.73 F/m
 Sigma : 1.53 S/m
 Density : 1000.00 kg/cu. m

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 $\mu\text{V}/(\text{V}/\text{m})^2$
 Compression Point : 95.00 mV
 Offset : 1.56 mm

1 gram SAR value : 0.076 W/kg
 10 gram SAR value : 0.030 W/kg
 Area Scan Peak SAR : 0.138 W/kg
 Zoom Scan Peak SAR : 0.300 W/kg

Plot 38#



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 : 0.065 W/kg
Power Drift-Finish : 0.065 W/kg
Power Drift (%) : 0.446

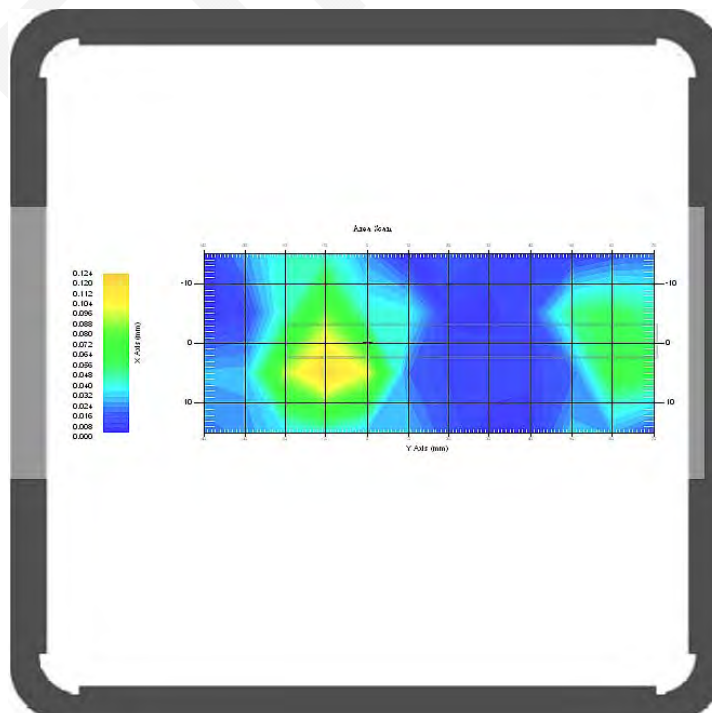
Tissue Data

Type : Body
Frequency : 1880.00 MHz
Epsilon : 51.73 F/m
Sigma : 1.53 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.091 W/kg
10 gram SAR value : 0.038 W/kg
Area Scan Peak SAR : 0.121 W/kg
Zoom Scan Peak SAR : 0.230 W/kg

Plot 39#

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 : 0.812 W/kg
 Power Drift-Finish : 0.841 W/kg
 Power Drift (%) : 3.557

Tissue Data

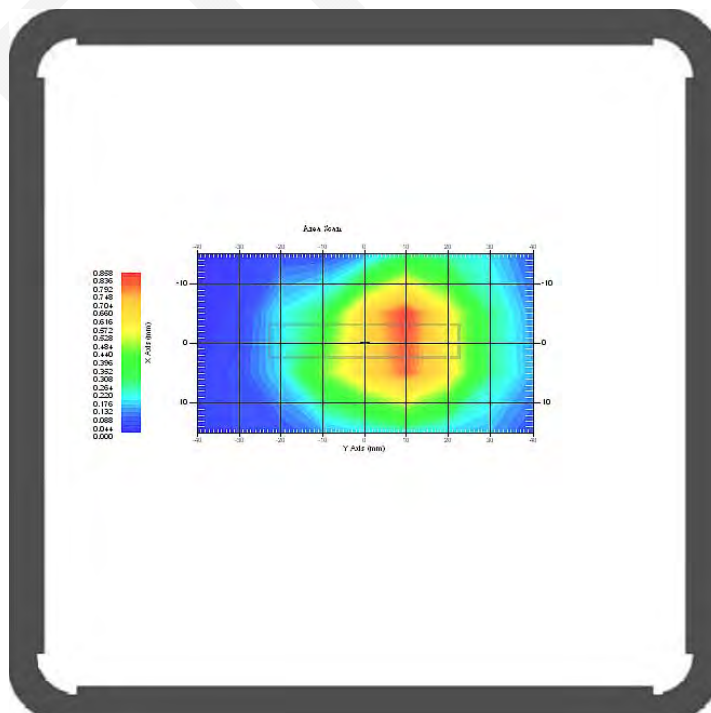
Type : Body
 Frequency : 1880.00 MHz
 Epsilon : 51.73 F/m
 Sigma : 1.53 S/m
 Density : 1000.00 kg/cu. m

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 $\mu\text{V}/(\text{V}/\text{m})^2$
 Compression Point : 95.00 mV
 Offset : 1.56 mm

1 gram SAR value : 0.646 W/kg
 10 gram SAR value : 0.327 W/kg
 Area Scan Peak SAR : 0.844 W/kg
 Zoom Scan Peak SAR : 1.411 W/kg

Plot 40#



Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: WCDMA850; Body-Front (836.6 MHz Middle 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 : 0.162 W/kg
Power Drift-Finish : 0.167 W/kg
Power Drift (%) : 3.364

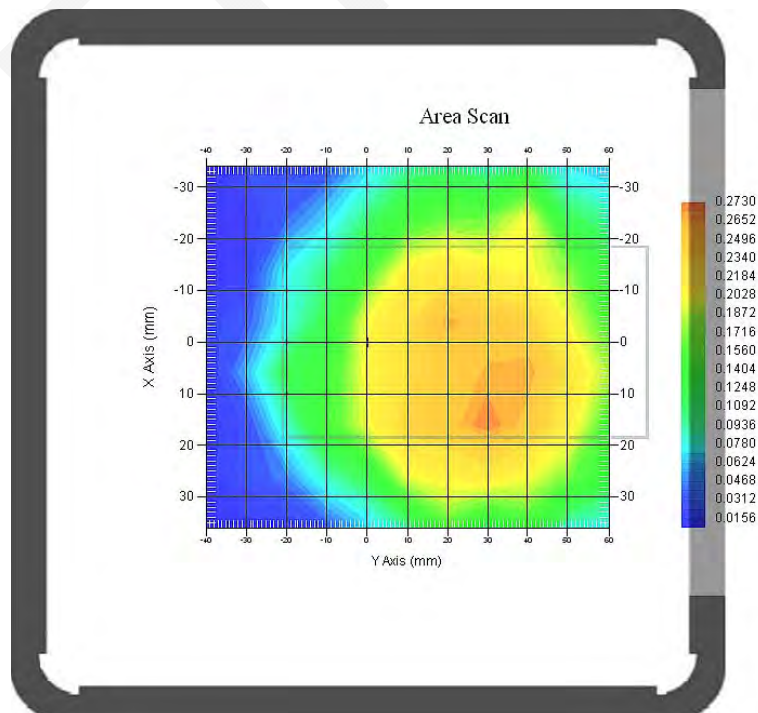
Tissue Data

Type : Body
Frequency : 836.6 MHz
Epsilon : 55.33 F/m
Sigma : 0.97 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 : 0.234 W/kg
10 gram SAR value : 0.197 W/kg
Area Scan Peak SAR : 0.273 W/kg
Zoom Scan Peak SAR : 0.380 W/kg

Plot 41#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: WCDMA850; Body-Back (826.4 MHz Low 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 : 0.056 W/kg
Power Drift-Finish : 0.057 W/kg
Power Drift (%) : 0.784

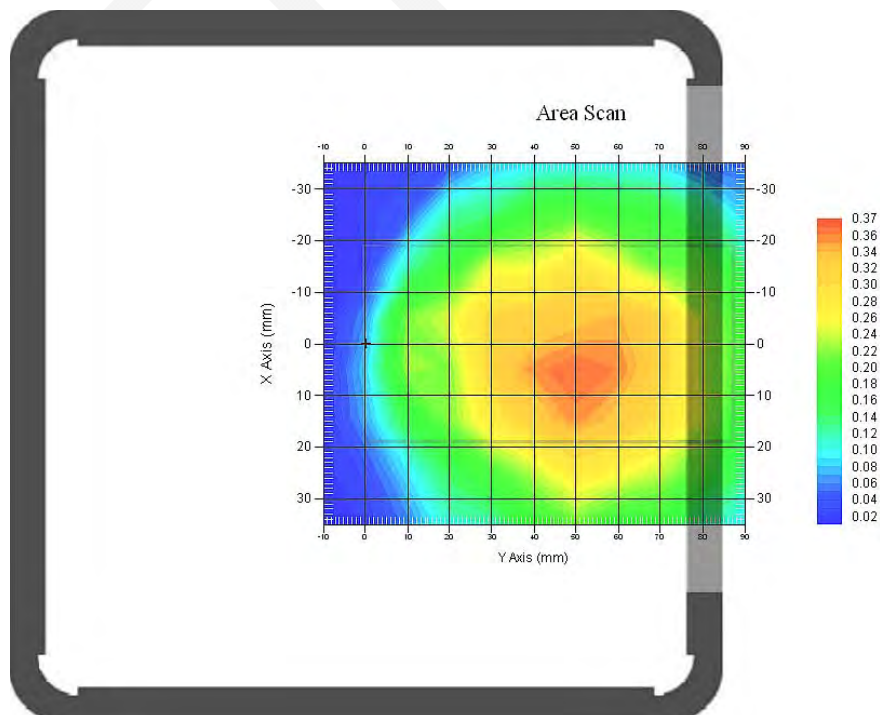
Tissue Data

Type : Body
Frequency : 826.4 MHz
Epsilon : 55.26 F/m
Sigma : 0.96 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 : 0.340 W/kg
10 gram SAR value : 0.235 W/kg
Area Scan Peak SAR : 0.361 W/kg
Zoom Scan Peak SAR : 0.480 W/kg

Plot 42#

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

Hot Spot: WCDMA850; Body-Back (836.6 MHz Middle 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 : 0.375 W/kg
 Power Drift-Finish : 0.372 W/kg
 Power Drift (%) : -2.078

Tissue Data

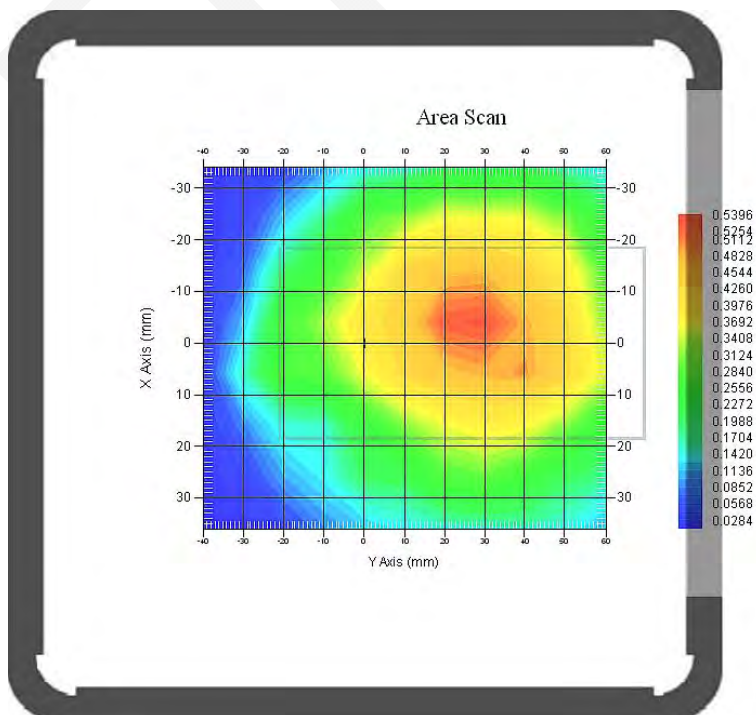
Type : Body
 Frequency : 836.6 MHz
 Epsilon : 55.33 F/m
 Sigma : 0.97 S/m
 Density : 1000.00 kg/cu. m

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 : 0.484 W/kg
 10 gram SAR value : 0.260 W/kg
 Area Scan Peak SAR : 0.530 W/kg
 Zoom Scan Peak SAR : 0.830 W/kg

Plot 43#



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 : 0.082 W/kg
Power Drift-Finish : 0.079 W/kg
Power Drift (%) : -3.493

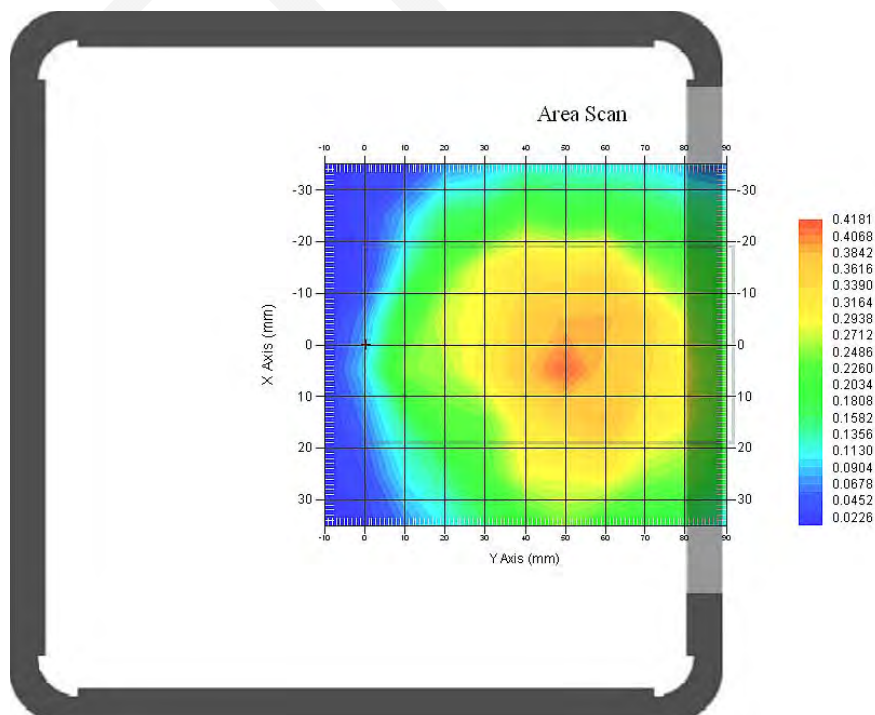
Tissue Data

Type : Body
Frequency : 846.6 MHz
Epsilon : 55.39 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 : 0.347 W/kg
10 gram SAR value : 0.248 W/kg
Area Scan Peak SAR : 0.411 W/kg
Zoom Scan Peak SAR : 0.540 W/kg

Plot 44#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: WCDMA850; Body-Left (836.6 MHz Middle 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 : 0.006 W/kg
Power Drift-Finish : 0.006 W/kg
Power Drift (%) : -1.885

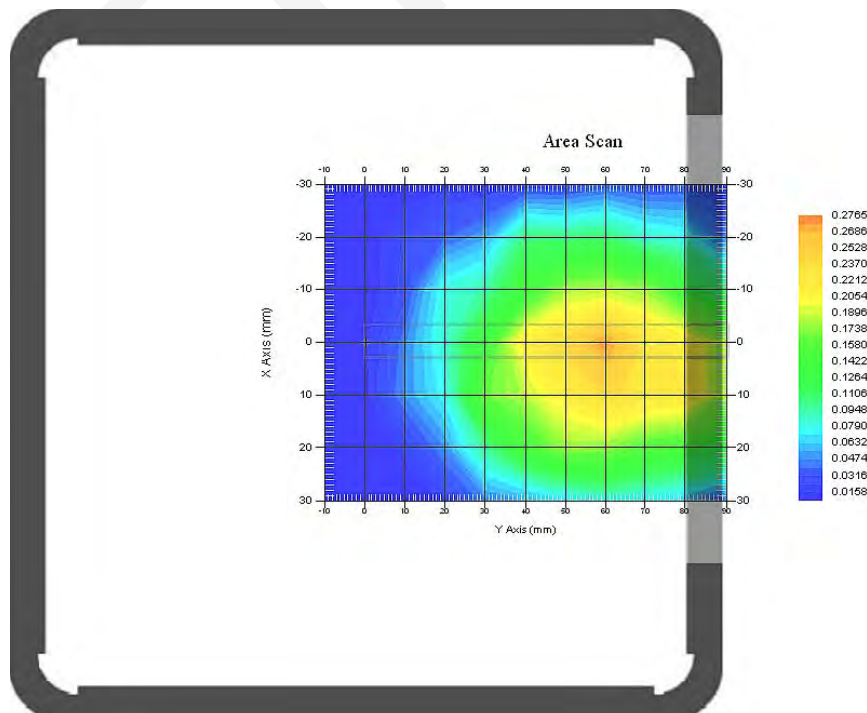
Tissue Data

Type : Body
Frequency : 836.6 MHz
Epsilon : 55.33 F/m
Sigma : 0.97 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 : 0.250 W/kg
10 gram SAR value : 0.144 W/kg
Area Scan Peak SAR : 0.275 W/kg
Zoom Scan Peak SAR : 0.370 W/kg

Plot 45#

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

Hot Spot: WCDMA850; Body-Right (836.6 MHz Middle 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 : 0.026 W/kg
 Power Drift-Finish : 0.025 W/kg
 Power Drift (%) : -1.448

Tissue Data

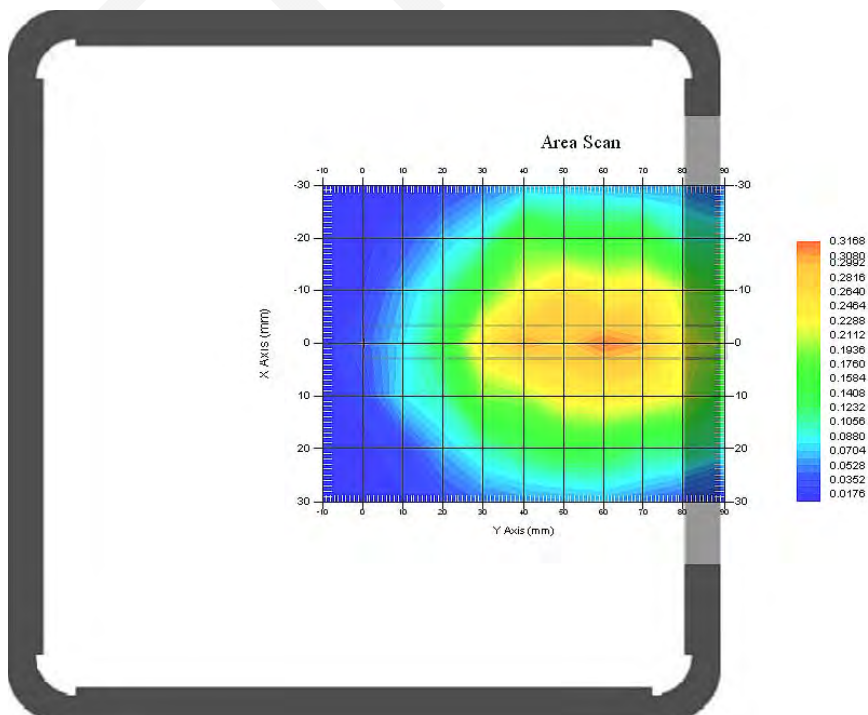
Type : Body
 Frequency : 836.6 MHz
 Epsilon : 55.33 F/m
 Sigma : 0.97 S/m
 Density : 1000.00 kg/cu. m

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 : 0.290 W/kg
 10 gram SAR value : 0.175 W/kg
 Area Scan Peak SAR : 0.312 W/kg
 Zoom Scan Peak SAR : 0.480 W/kg

Plot 46#



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

Hot Spot: WCDMA850; Body-Bottom (836.6 MHz Middle 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 (%) : -1.568

Tissue Data

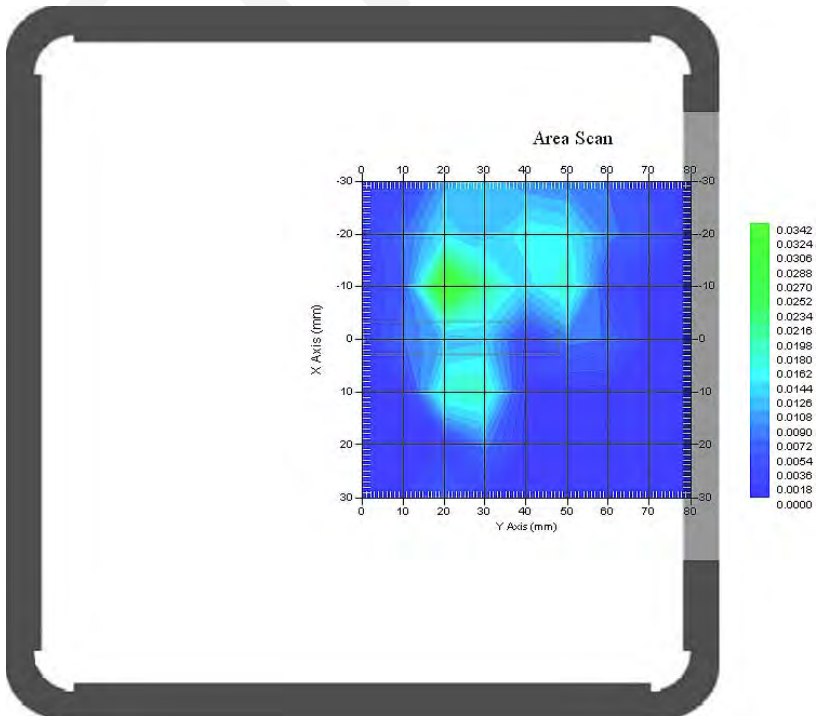
Type : Body
 Frequency : 836.6 MHz
 Epsilon : 55.33 F/m
 Sigma : 0.97 S/m
 Density : 1000.00 kg/cu. m

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 : 0.011 W/kg
 10 gram SAR value : 0.007 W/kg
 Area Scan Peak SAR : 0.033 W/kg
 Zoom Scan Peak SAR : 0.030 W/kg

Plot 47#



Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: WCDMA1900; Body-Front (1880.0 MHz Middle 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 : 0.147 W/kg
 Power Drift-Finish : 0.142 W/kg
 Power Drift (%) : -2.620

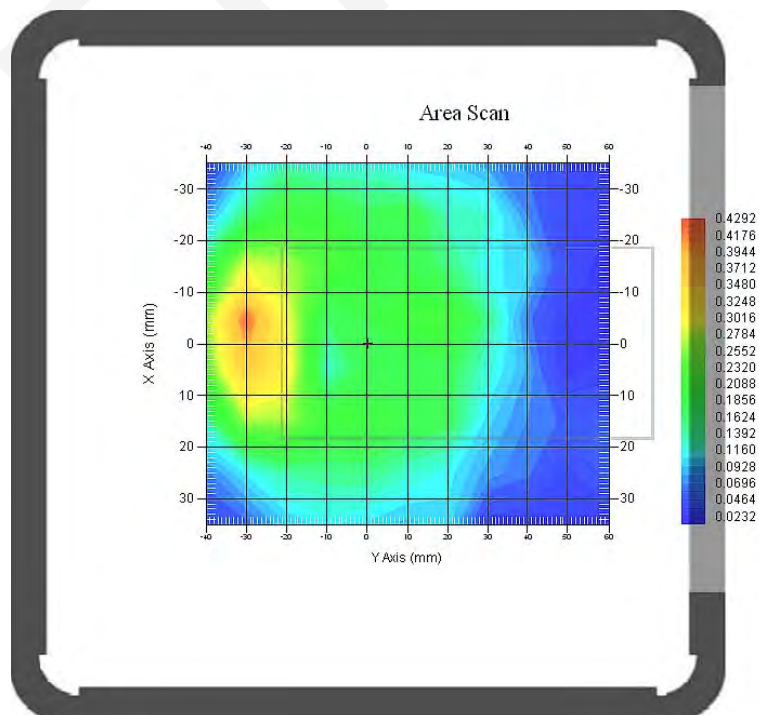
Tissue Data

Type : Body
 Frequency : 1880.0 MHz
 Epsilon : 51.73 F/m
 Sigma : 1.53 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 $\mu\text{V}/(\text{V}/\text{m})^2$
 Compression Point : 95.00 mV
 Offset : 1.56 mm

1 gram SAR value : 0.339 W/kg
 10 gram SAR value : 0.216 W/kg
 Area Scan Peak SAR : 0.423 W/kg
 Zoom Scan Peak SAR : 0.660 W/kg

Plot 48#

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: WCDMA1900; Body-Back (1880.0 MHz Middle 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 : 0.099 W/kg
Power Drift-Finish : 0.100 W/kg
Power Drift (%) : 1.900

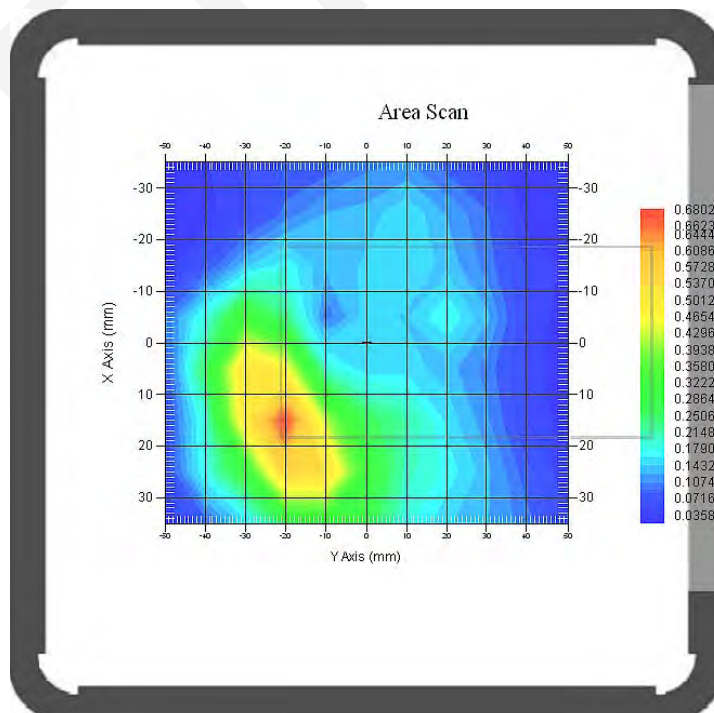
Tissue Data

Type : Body
Frequency : 1880.0 MHz
Epsilon : 51.73 F/m
Sigma : 1.53 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.583 W/kg
10 gram SAR value : 0.340 W/kg
Area Scan Peak SAR : 0.674 W/kg
Zoom Scan Peak SAR : 1.100 W/kg

Plot 49#

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

Hot Spot: WCDMA1900; Body-Left (1880.0 MHz Middle 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 : 0.068 W/kg
 Power Drift-Finish : 0.065 W/kg
 Power Drift (%) : -3.532

Tissue Data

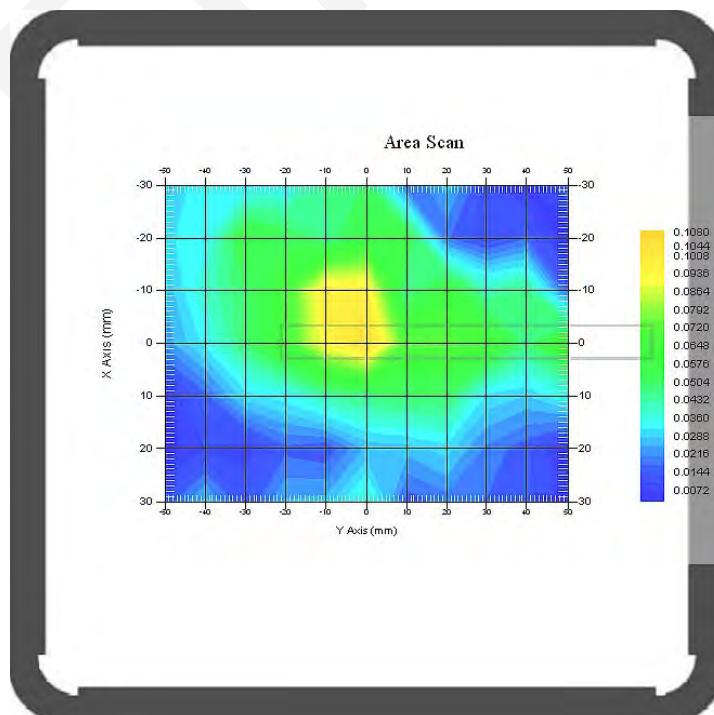
Type : Body
 Frequency : 1880.0 MHz
 Epsilon : 51.73 F/m
 Sigma : 1.53 S/m
 Density : 1000.00 kg/cu. m

Probe Data

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

1 gram SAR value : 0.104 W/kg
 10 gram SAR value : 0.061 W/kg
 Area Scan Peak SAR : 0.105 W/kg
 Zoom Scan Peak SAR : 0.160 W/kg

Plot 50#



Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**Hot Spot: WCDMA1900; Body-Right (1880.0 MHz Middle 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 : 0.061 W/kg
Power Drift-Finish : 0.059 W/kg
Power Drift (%) : -2.480

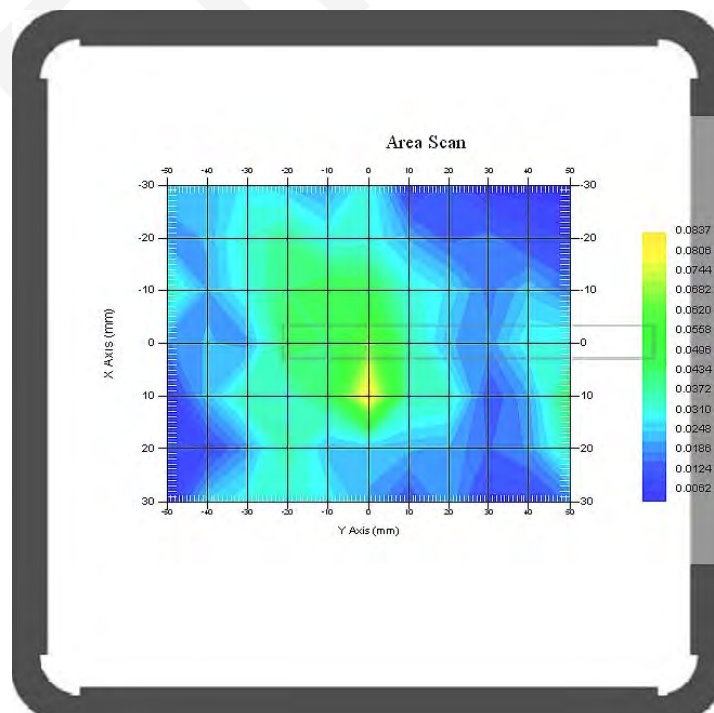
Tissue Data

Type : Body
Frequency : 1880.0 MHz
Epsilon : 51.73 F/m
Sigma : 1.53 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 $\mu\text{V}/(\text{V}/\text{m})^2$
Compression Point : 95.00 mV
Offset : 1.56 mm

1 gram SAR value : 0.066 W/kg
10 gram SAR value : 0.038 W/kg
Area Scan Peak SAR : 0.083 W/kg
Zoom Scan Peak SAR : 0.190 W/kg

Plot 51#

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

Hot Spot: WCDMA1900; Body-Bottom (1880.0 MHz Middle 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 : 0.375 W/kg
 Power Drift-Finish : 0.359 W/kg
 Power Drift (%) : -4.223

Tissue Data

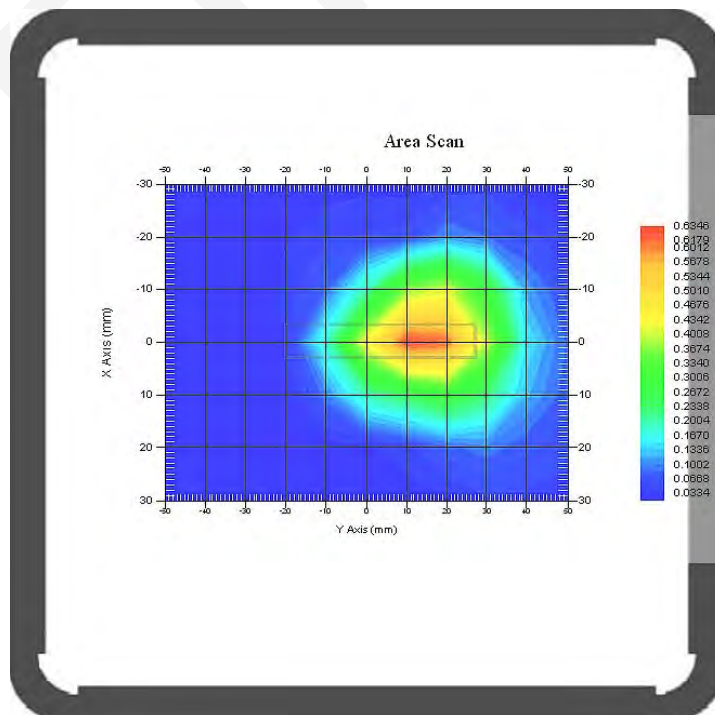
Type : Body
 Frequency : 1880.0 MHz
 Epsilon : 51.73 F/m
 Sigma : 1.53 S/m
 Density : 1000.00 kg/cu. m

Probe Data

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

1 gram SAR value : 0.560 W/kg
 10 gram SAR value : 0.251 W/kg
 Area Scan Peak SAR : 0.629 W/kg
 Zoom Scan Peak SAR : 1.070 W/kg

Plot 52#



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_i^1 (1-g)	c_i^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

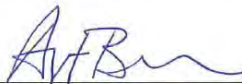
Serial No.: 500-00283

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 metrological 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

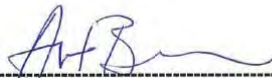
Secondary Measurement Standards

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

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

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 .

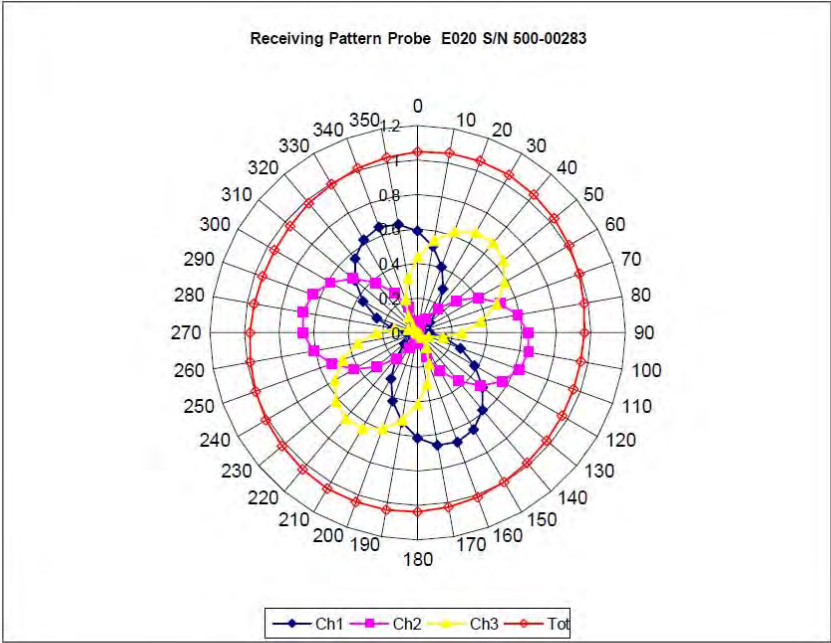
Page 6 of 10

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

NCL Calibration Laboratories

Division of APREL Inc.

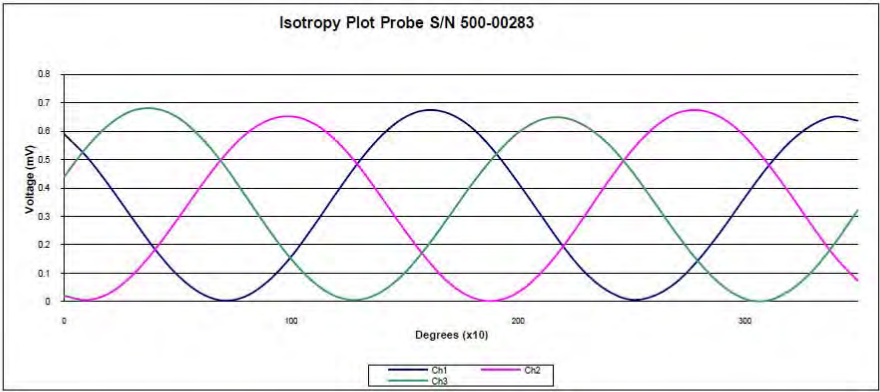
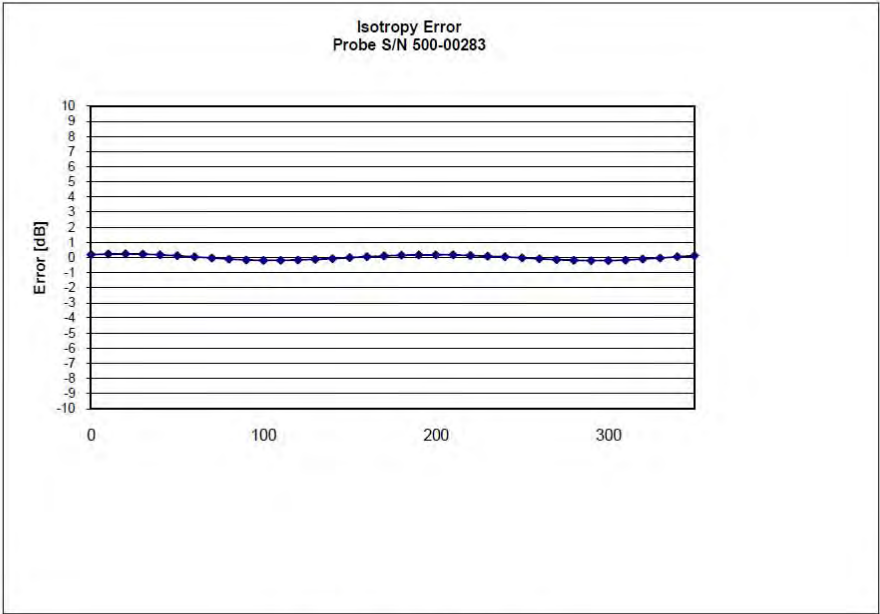
Receiving Pattern Air



NCL Calibration Laboratories

Division of APREL Inc.

Isotropy Error Air



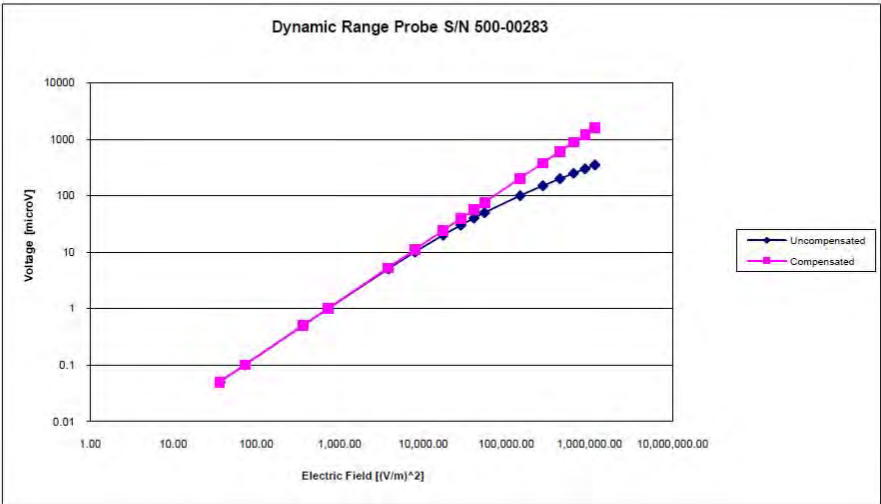
Isotropicity Tissue:

0.10 dB

NCL Calibration Laboratories

Division of APREL Inc.

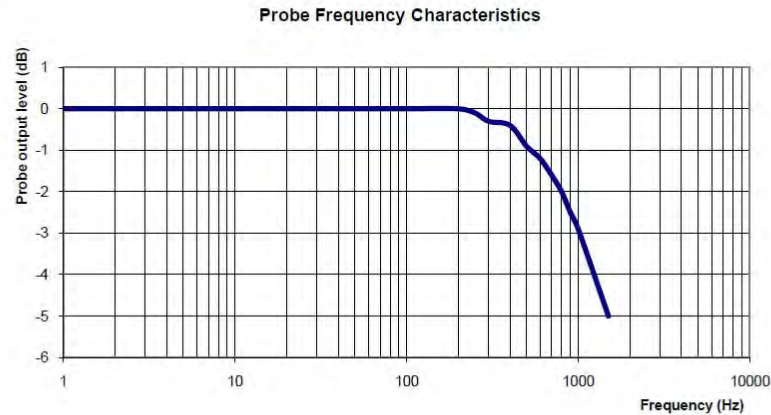
Dynamic Range



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.

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

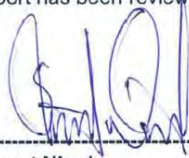
Division of APREL Laboratories.

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
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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

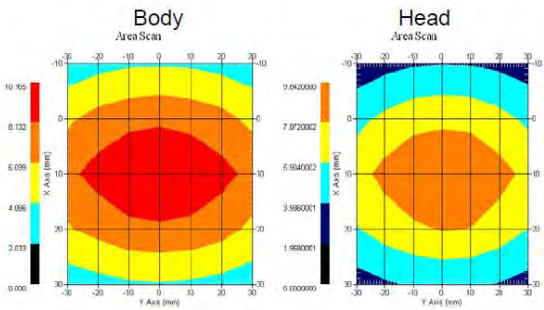
Length: 162.2 mm
Height: 89.4 mm

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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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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NCL Calibration Laboratories

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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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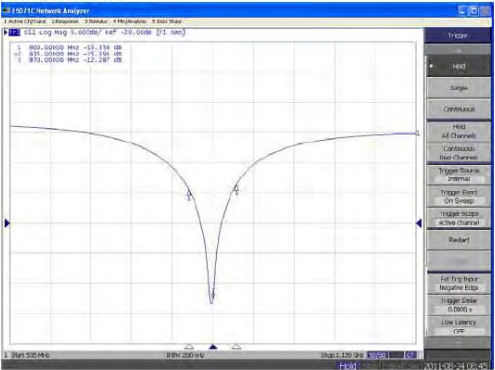
NCL Calibration Laboratories

Division of APREL Laboratories.

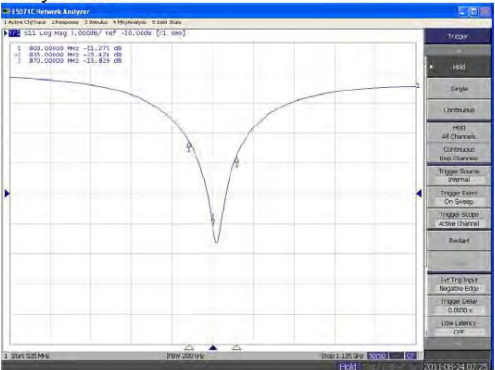
The Following Graphs are the results as displayed on the Vector Network Analyzer.

S11 Parameter Return Loss

Head Tissue



Body Tissue

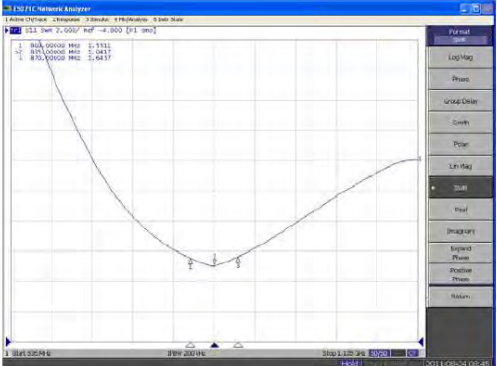


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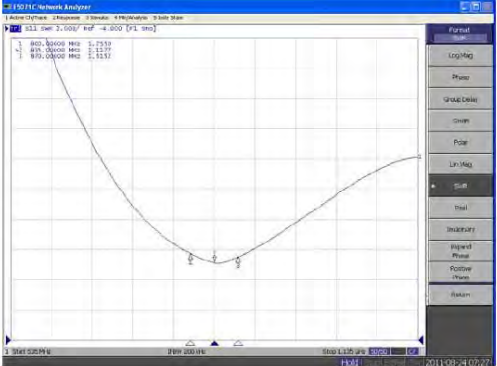
NCL Calibration Laboratories

Division of APREL Laboratories.

**SWR
Head**



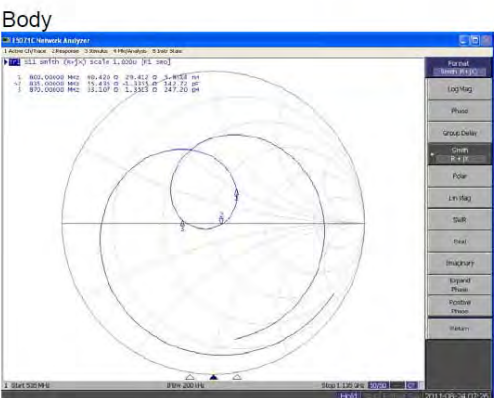
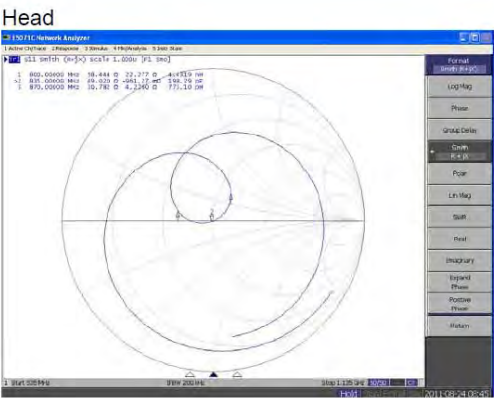
Body



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NCL Calibration Laboratories
Division of APREL Laboratories.

Smith Chart Dipole Impedance



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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

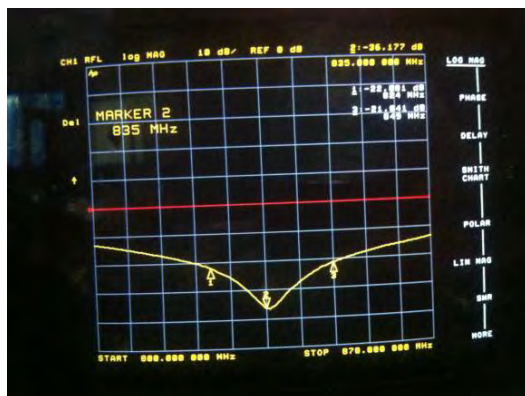
APREL Length	APREL Height	Measured Length	Measured Height
161.0 mm	89.8 mm	161.2 mm	89.5 mm

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 :

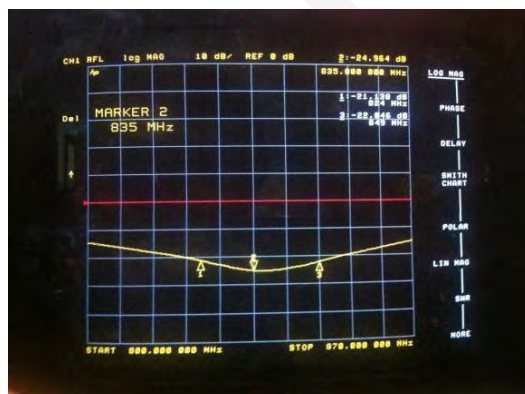


Impedance :



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

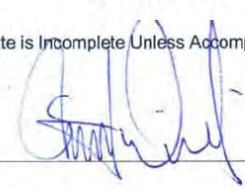
Frequency: 1900 MHz

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
FAX: (613) 435-8306

NCL Calibration Laboratories

Division of APREL Laboratories.

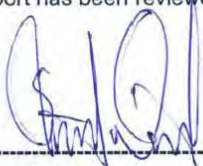
Conditions

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**

Power meter Anritsu MA2408A

Power Sensor Anritsu MA2481D

Attenuator HP 8495A (70dB) 1

Network Analyzer Agilent E5071C

Secondary Measurement Standards

Signal Generator Agilent E4438C

Serial Number

245025437

103555

944A10711

1334746J

-506 MY55182336

Cal due date

Nov.4, 2011

Nov 4, 2011

Aug.8, 2012

Feb. 8, 2012

June 7, 2012

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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

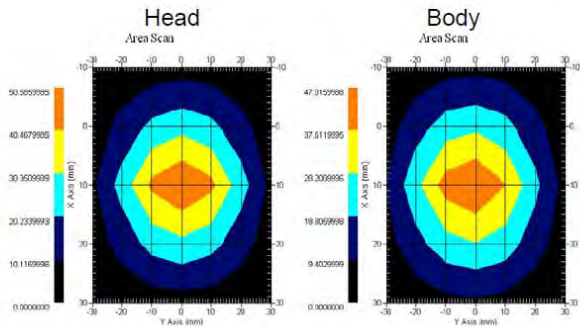
Length: 67.1 mm
Height: 38.9 mm

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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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 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)

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

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NCL Calibration Laboratories

Division of APREL Laboratories.

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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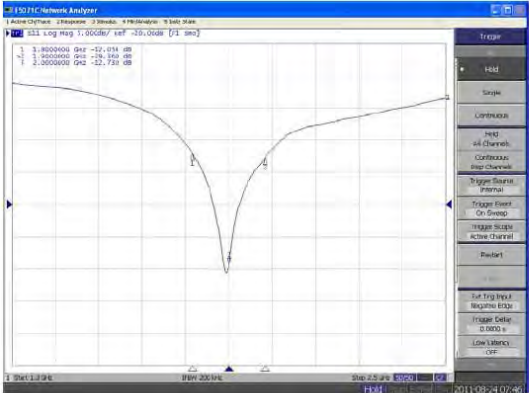
NCL Calibration Laboratories

Division of APREL Laboratories.

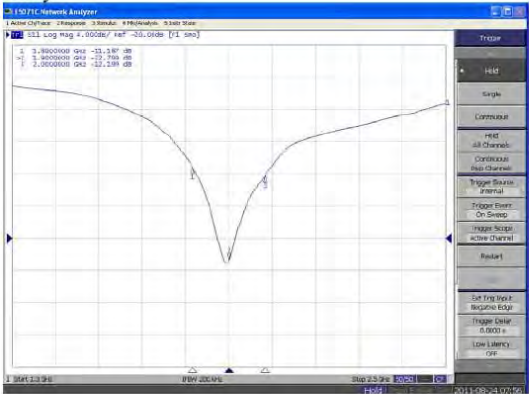
The Following Graphs are the results as displayed on the Vector Network Analyzer.

S11 Parameter Return Loss

Head



Body



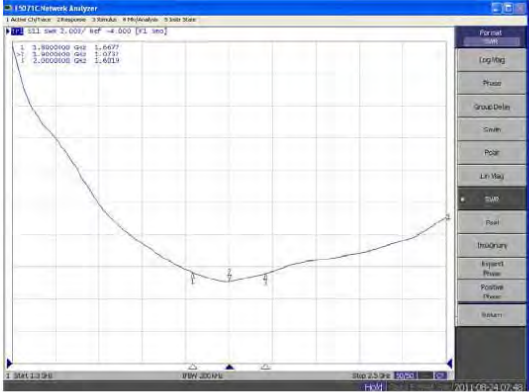
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NCL Calibration Laboratories

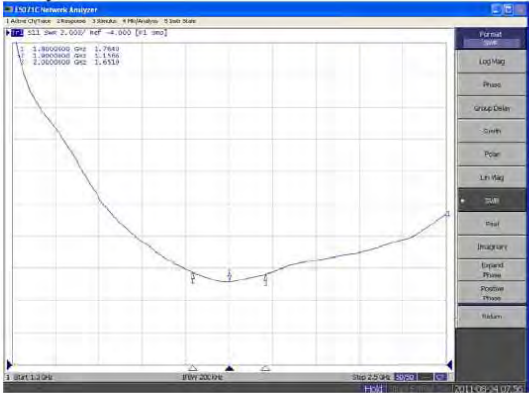
Division of APREL Laboratories.

SWR

Head



Body



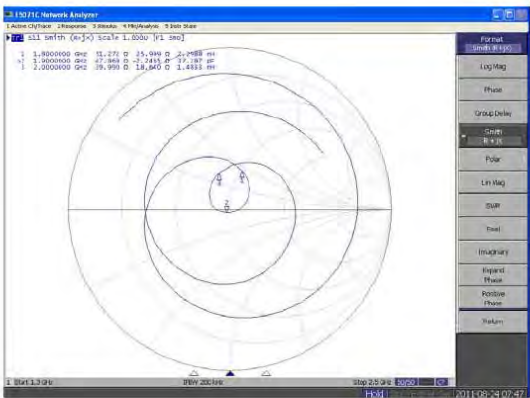
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NCL Calibration Laboratories

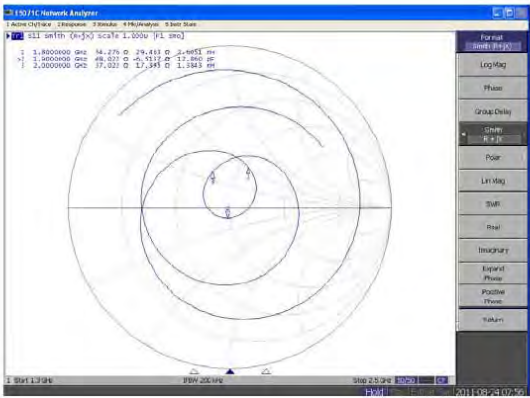
Division of APREL Laboratories.

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

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

Mechanical Verification

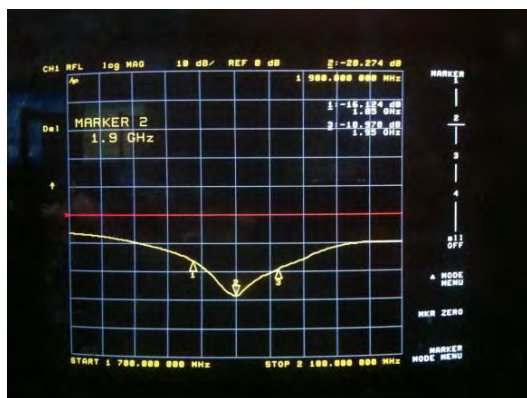
APREL Length	APREL Height	Measured Length	Measured Height
68.0 mm	39.5 mm	68.2 mm	39.2 mm

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 :

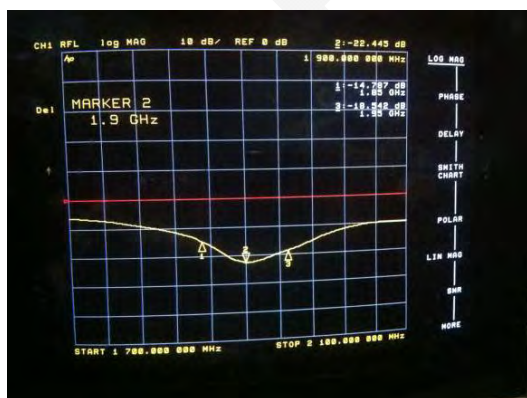


Impedance :



Body Tissue

Return Loss :

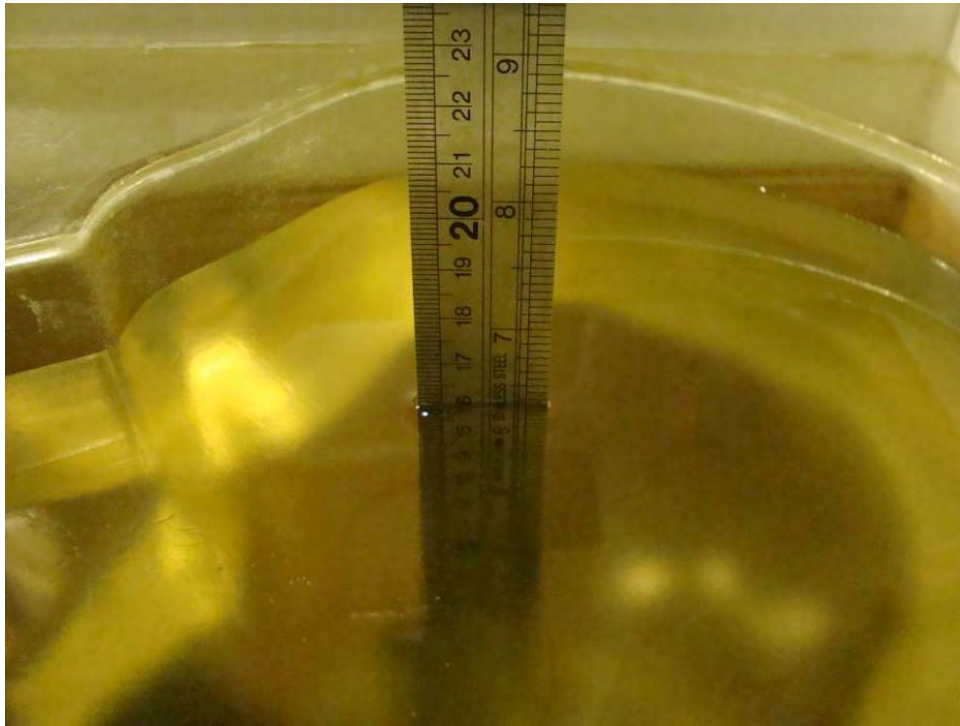


Impedance :

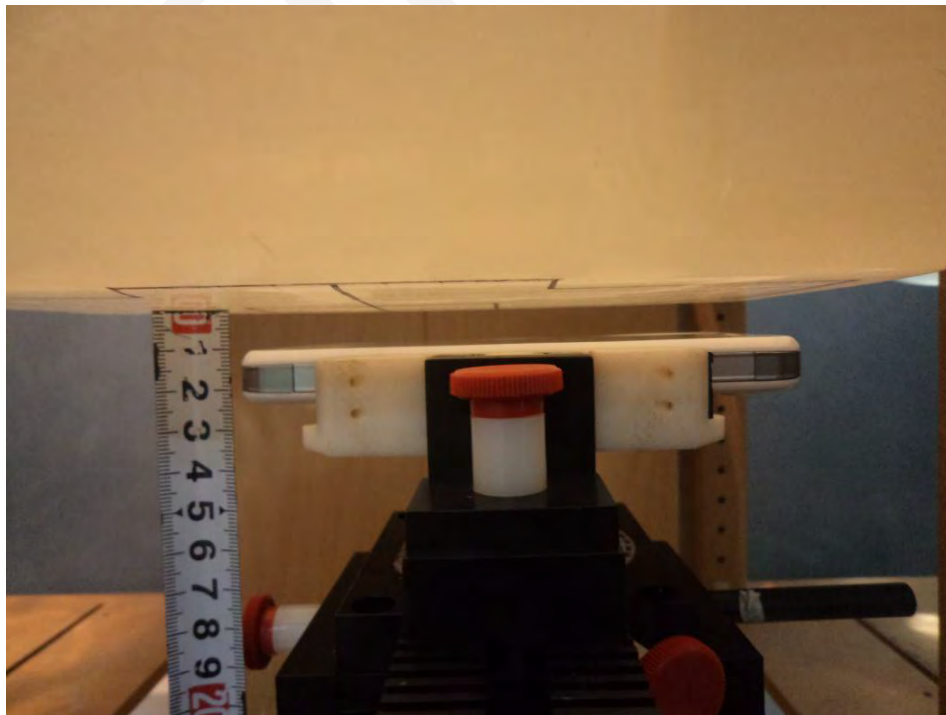


APPENDIX D EUT TEST POSITION PHOTOS

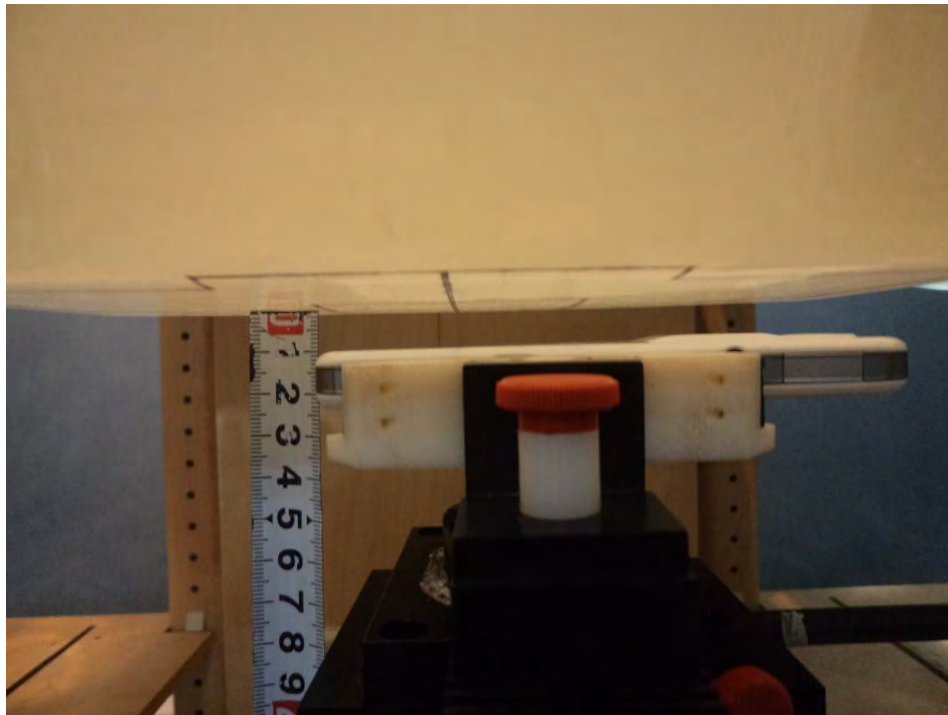
Liquid depth $\geq 15\text{cm}$



Body-worn Front Setup Photo



Body-worn Back Setup Photo



Body-worn Left Setup Photo



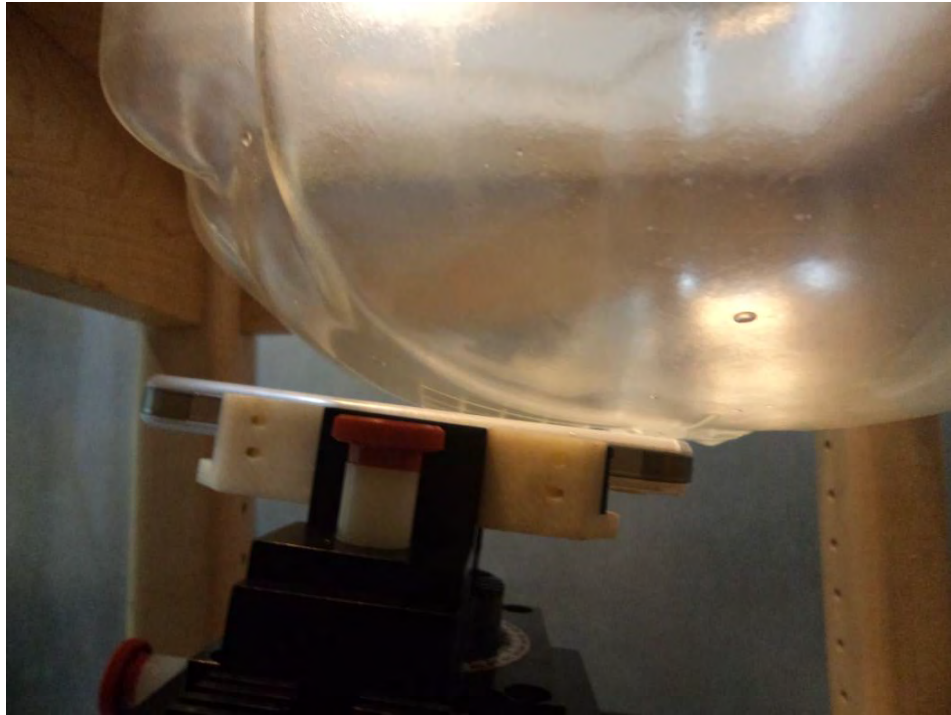
Body-worn Right Setup Photo



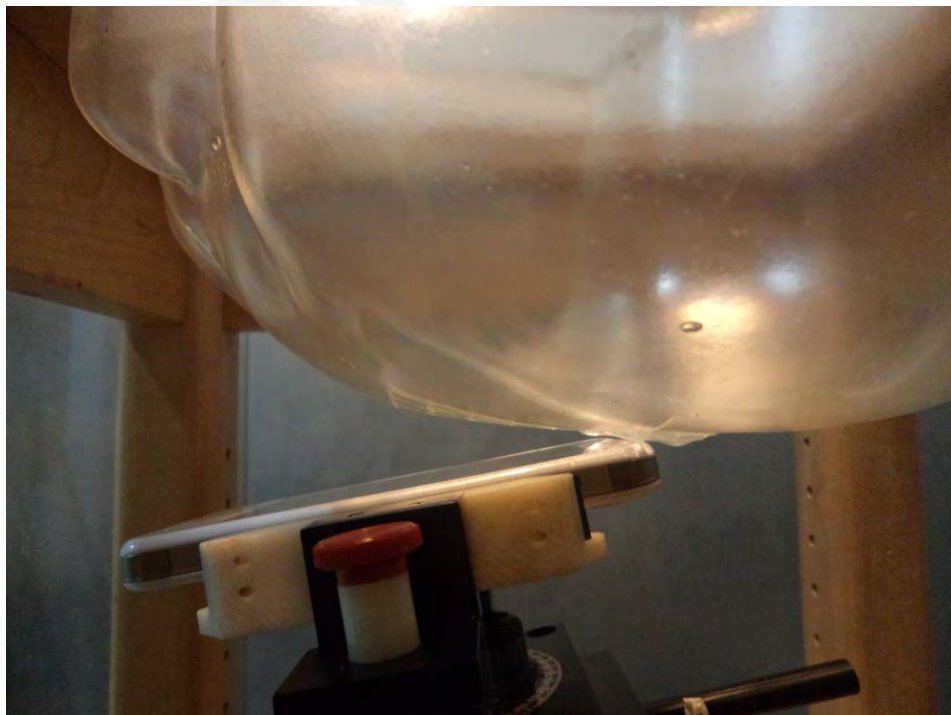
Body-worn Bottom Setup Photo



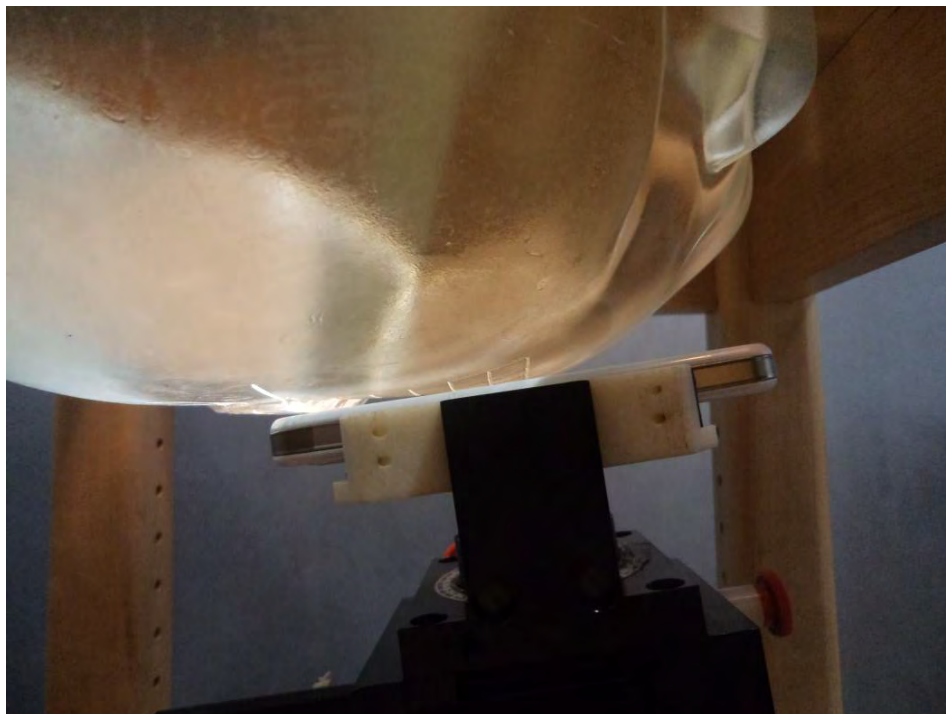
Left Head Touch Setup Photo



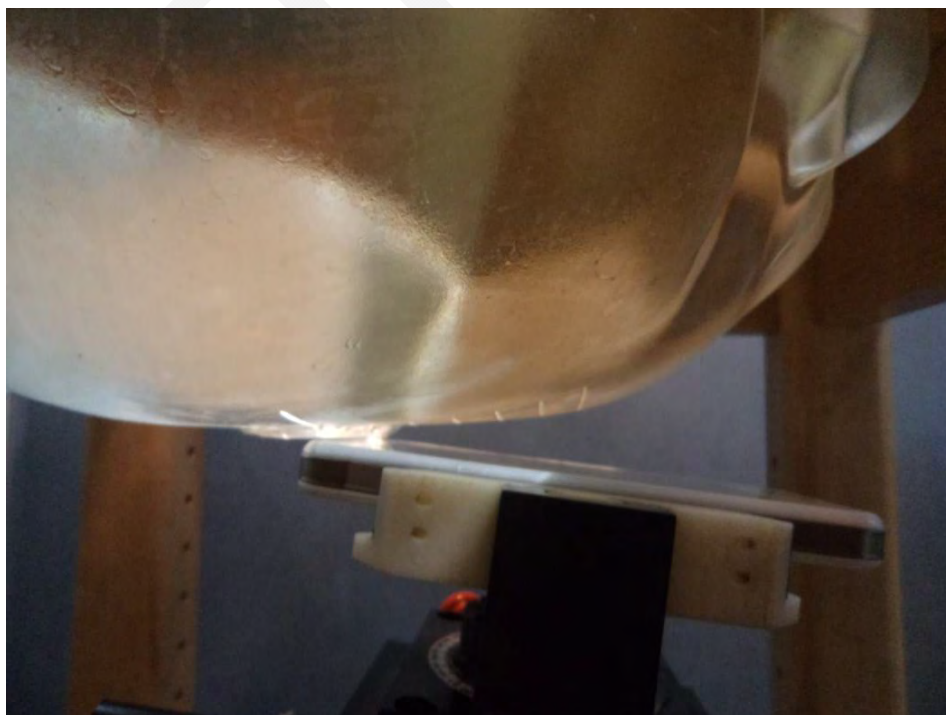
Left Head Tilt Setup Photo



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 – Cover off View



APPENDIX F INFORMATIVE REFERENCES

- [1] Federal Communications Commission, "Report and order: Guidelines for evaluating the environmental effects of radiofrequency radiation", Tech. Rep. FCC 96-326, FCC, Washington, D.C. 20554, 1996.
- [2] David L. Means Kwok Chan, Robert F. Cleveland, "Evaluating compliance with FCC guidelines for human exposure to radiofrequency electromagnetic fields", Tech. Rep., Federal Communication Commission, Office of Engineering & Technology, Washington, DC, 1997.
- [3] Thomas Schmid, Oliver Egger, and Niels Kuster, "Automated E-field scanning system for dosimetric assessments", IEEE Transactions on Microwave Theory and Techniques, vol. 44, pp. 105-113, Jan. 1996.
- [4] Niels Kuster, Ralph Kastle, and Thomas Schmid, "Dosimetric evaluation of mobile communications equipment with known precision", IEEE Transactions on Communications, vol. E80-B, no. 5, pp. 645-652, May 1997.
- [5] CENELEC, "Considerations for evaluating of human exposure to electromagnetic fields (EMFs) from mobile telecommunication equipment (MTE) in the frequency range 30MHz - 6GHz", Tech. Rep., CENELEC, European Committee for Electrotechnical Standardization, Brussels, 1997.
- [6] ANSI, ANSI/IEEE C95.1-1992: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz, The Institute of Electrical and Electronics Engineers, Inc., New York, NY 10017, 1992.
- [7] Katja Pokovic, Thomas Schmid, and Niels Kuster, "Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequencies", in ICECOM '97, Dubrovnik, October 15-17, 1997, pp. 120-24.
- [8] Katja Pokovic, Thomas Schmid, and Niels Kuster, "E-field probe with improved isotropy in brain simulating liquids", in Proceedings of the ELMAR, Zadar, Croatia, 23-25 June, 1996, pp. 172-175.
- [9] Volker Hombach, Klaus Meier, Michael Burkhardt, Eberhard Kuhn, and Niels Kuster, "The dependence of EM energy absorption upon human head modeling at 900 MHz", IEEE Transactions on Microwave Theory and Techniques, vol. 44, no. 10, pp. 1865-1873, Oct. 1996.
- [10] Klaus Meier, Ralf Kastle, Volker Hombach, Roger Tay, and Niels Kuster, "The dependence of EM energy absorption upon human head modeling at 1800 MHz", IEEE Transactions on Microwave Theory and Techniques, Oct. 1997, in press.
- [11] W. Gander, Computermathematik, Birkhaeuser, Basel, 1992.
- [12] W. H. Press, S. A. Teukolsky, W. T. Vetterling, and B. P. Flannery, Numerical Recipes in C, The Art of Scientific Computing, Second Edition, Cambridge University Press, 1992. Dosimetric Evaluation of Sample device, month 1998 9
- [13] NIS81 NAMAS, "The treatment of uncertainty in EMC measurement", Tech. Rep., NAMAS Executive, National Physical Laboratory, Teddington, Middlesex, England, 1994.
- [14] Barry N. Taylor and Christ E. Kuyatt, "Guidelines for evaluating and expressing the uncertainty of NIST measurement results", Tech. Rep., National Institute of Standards and Technology, 1994. Dosimetric Evaluation of Sample device, month 1998 10.

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