

SAR EVALUATION REPORT

For

Sky Phone LLC

1348 Washington Av. Suite 350, Miami Beach

FCC ID: 2ABOSGC181469

Report Type: Original Report	Product Type: Mobile phone
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Report Number: <u>RSZ140213002-20</u>	
Report Date: <u>2014-02-26</u>	
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Attestation of Test Results		
EUT Information	Company Name	Sky Phone LLC
	EUT Description	Mobile phone
	FCC ID	2ABOSGC181469
	Model Number	SKY4.0
	Test Date	2014-02-18 to 2014-02-19
Frequency	Max. SAR Level(s) Reported	Limit(W/Kg)
GSM 850	0.238 W/kg 1g Head SAR 1.266 W/kg 1g Body SAR	1.6
PCS 1900	0.286 W/kg 1g Head SAR 0.771 W/kg 1g Body SAR	
WCDMA850	0.187 W/kg 1g Head SAR 0.576 W/kg 1g Body SAR	
WCDMA1750	0.506 W/kg 1g Head SAR 0.485 W/kg 1g Body SAR	
WCDMA1900	0.737 W/kg 1g Head SAR 0.963 W/kg 1g Body SAR	
Simultaneous	1.091 W/kg 1g Head SAR 1.443 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 Fields,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 Such Fields,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.	
<p>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.</p> <p>The results and statements contained in this report pertain only to the device(s) evaluated.</p>		

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	RSZ140213002-20	Original Report	2014-02-26

EUT DESCRIPTION

This report has been prepared on behalf of Sky Phone LLC and their product, FCC ID: 2ABOSGC181469, Model: SKY4.0 or the EUT (Equipment under Test) as referred to in the rest of this report. The EUT is a 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:	Class12
Operation Mode :	GSM Voice, GPRS Data, WCDMA, WiFi and Bluetooth
Frequency Band:	GSM 850 : 824-849 MHz(TX) ; 869-894 MHz(RX) PCS 1900: 1850-1910 MHz(TX) ; 1930-1990 MHz(RX) WCDMA850: 824-849 MHz(TX) ; 869-894 MHz(RX) WCDMA1750: 1710-1755MHz(TX); 2110-2155MHz(RX) WCDMA1900: 1850-1910 MHz(TX) ; 1930-1990 MHz(RX) WiFi: 2412MHz-2462MHz Bluetooth : 2402MHz-2480MHz
Conducted RF Power:	GSM 850 : 32.45dBm PCS 1900:29.77dBm WCDMA 850: 22.41dBm WCDMA 1750: 22.12dBm WCDMA 1900: 22.44dBm WiFi: 9.28dBm Bluetooth: 5.74dBm
Dimensions (L*W*H):	124 mm (L) × 62 mm (W) × 10 mm (H)
Power Source:	3.7 V _{DC} 1600 mAh Rechargeable Battery
Normal Operation:	Head and Body-worn

REFERENCE, STANDARDS, AND GUIDELINES

FCC:

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

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

CE:

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

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

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

SAR Limits

FCC Limit (1g Tissue)

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

CE Limit (10g Tissue)

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

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

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

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

FACILITIES

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

DESCRIPTION OF TEST SYSTEM

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

ALSAS-10U System Description

ALSAS-10-U is fully compliant with the technical and scientific requirements of IEEE 1528, IEC 62209, CENELEC, ARIB, ACA, and the Federal Communications Commission. The system comprises of a six axes articulated robot which utilizes a dedicated controller. ALSAS-10U uses the latest methodologies. And FDTD modeling to provide a platform which is repeatable with minimum uncertainty.

Applications

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

Area Scans

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

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

Zoom Scan (Cube Scan Averaging)

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

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

The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications (including FCC) utilize a physical step of 5x5x8 (8mmx8mmx5mm) providing a volume of 32mm³ in the X & Y axis, and 35mm in the Z axis.



ALSAS-10U Interpolation and Extrapolation Uncertainty

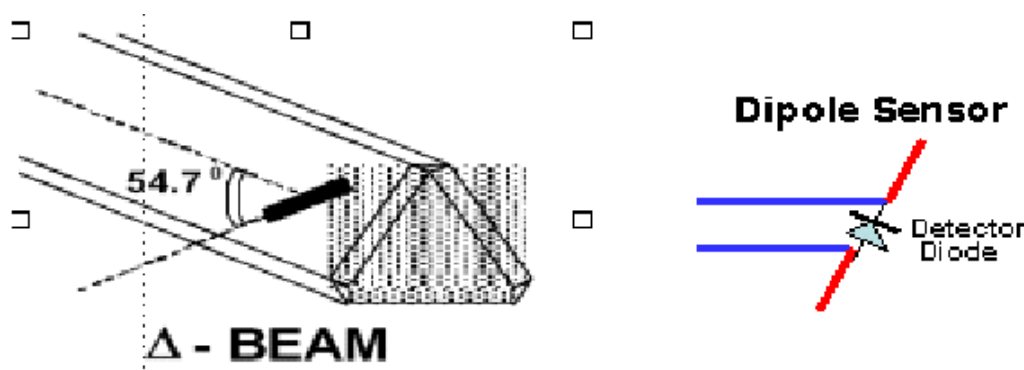
The overall uncertainty for the methodology and algorithms the used during the SAR calculation was evaluated using the data from IEEE 1528 based on the example f3 algorithm:

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

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.

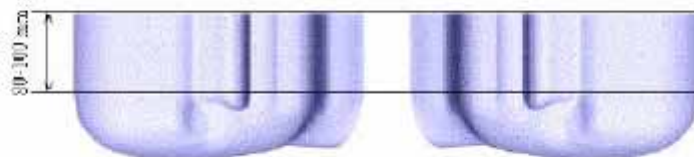


Phantom Types

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.

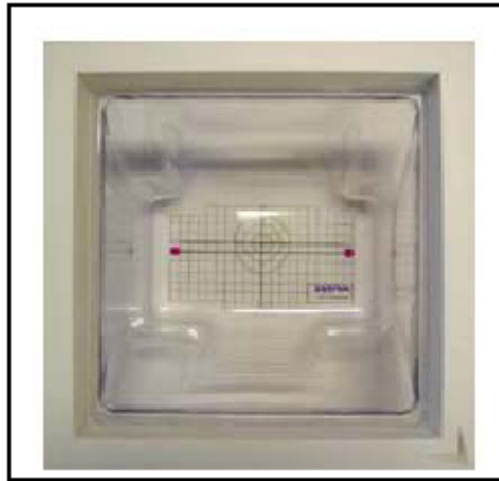


APREL Laboratories Universal Phantom

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

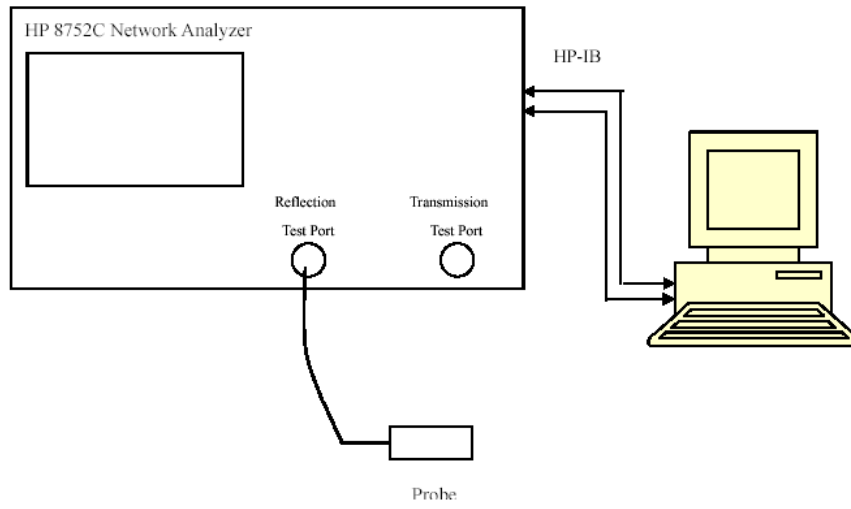
EQUIPMENT LIST AND CALIBRATION

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, 1750MHz	ALS-D-1750-S-2	2011-08-25	198-00304
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 1750 MHz Head	ALS-TS-1750-H	Each Time	285-01086
Simulated Tissue 1750 MHz Body	ALS-TS-1750-B	Each Time	285-01088
Simulated Tissue 1900 MHz Head	ALS-TS-1900-H	Each Time	295-01103
Simulated Tissue 1900 MHz Body	ALS-TS-1900-B	Each Time	295-02102
Power Amplifier	5S1G4	N/A	71377
Synthesized Sweeper	HP 8341B	2013-05-09	2624A00116
UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	2013-11-23	106891
EMI Test Receiver	ESCI	2013-11-12	101120

SAR MEASUREMENT SYSTEM VERIFICATION

Liquid Verification



Liquid Verification Setup Block Diagram

Liquid Verification Results

Frequency	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	O (S/m)	ϵ_r	O (S/m)	$\Delta\epsilon_r$	ΔO (S/m)	
824.2	Head	41.10	0.90	41.50	0.90	-0.955	0.000	±5
	Body	55.16	0.94	55.20	0.97	-0.078	-3.093	±5
826.4	Head	40.98	0.90	41.50	0.90	-1.248	0.000	±5
	Body	55.17	0.95	55.20	0.97	-0.049	-2.062	±5
836.6	Head	41.04	0.91	41.50	0.90	-1.101	1.111	±5
	Body	55.24	0.96	55.20	0.97	0.064	-1.031	±5
846.6	Head	40.90	0.93	41.50	0.90	-1.451	3.333	±5
	Body	55.30	0.98	55.20	0.97	0.178	1.031	±5
848.8	Head	40.82	0.93	41.50	0.90	-1.639	3.333	±5
	Body	55.31	0.98	55.20	0.97	0.207	1.031	±5
1712.4	Head	40.22	1.39	40.10	1.37	0.304	1.460	±5
	Body	53.13	1.45	53.40	1.49	-0.504	-2.685	±5
1732.6	Head	40.16	1.38	40.10	1.37	0.143	0.730	±5
	Body	53.07	1.45	53.40	1.49	-0.625	-2.685	±5
1752.6	Head	40.17	1.38	40.10	1.37	0.180	0.730	±5
	Body	53.08	1.44	53.40	1.49	-0.598	-3.356	±5
1850.2	Head	40.14	1.38	40.00	1.40	0.345	-1.429	±5
	Body	54.13	1.48	53.30	1.52	1.553	-2.632	±5
1852.4	Head	40.14	1.38	40.00	1.40	0.337	-1.429	±5
	Body	54.08	1.48	53.30	1.52	1.460	-2.632	±5
1880.0	Head	40.19	1.40	40.00	1.40	0.470	0.000	±5
	Body	53.88	1.52	53.30	1.52	1.089	0.000	±5
1907.6	Head	40.29	1.42	40.00	1.40	0.715	1.429	±5
	Body	53.85	1.54	53.30	1.52	1.025	1.316	±5
1909.8	Head	40.29	1.42	40.00	1.40	0.734	1.429	±5
	Body	53.96	1.53	53.30	1.52	1.233	0.658	±5

*Liquid Verification was performed on 2014-02-18.

Please refer to the following tables.

835 MHz Head				835 MHz Body		
Frequency (MHz)	e'	e''		Frequency (MHz)	e'	e''
824.0	41.1036	19.6436		824.0	55.1572	20.5614
824.5	41.0635	19.6455		824.5	55.1603	20.4609
825.0	41.0468	19.6460		825.0	55.1635	20.4735
825.5	40.9417	19.6466		825.5	55.1666	20.4859
826.0	40.9600	19.6471		826.0	55.1697	20.6210
826.5	40.9819	19.6477		826.5	55.1729	20.6847
827.0	40.9584	19.6482		827.0	55.1760	20.5992
827.5	41.0057	19.6488		827.5	55.1791	20.4773
828.0	41.0253	19.6493		828.0	55.1823	20.5119
828.5	41.0318	19.6499		828.5	55.1854	20.4693
829.0	41.0827	19.6505		829.0	55.1886	20.5735
829.5	41.0312	19.6510		829.5	55.1917	20.5163
830.0	41.0675	19.6516		830.0	55.1948	20.3942
830.5	41.0276	19.6521		830.5	55.1980	20.4586
831.0	41.0006	19.6527		831.0	55.2011	20.4438
831.5	41.0201	19.6532		831.5	55.2042	20.6512
832.0	40.9819	19.6538		832.0	55.2074	20.6288
832.5	40.9568	19.6543		832.5	55.2105	20.4055
833.0	40.9973	19.6549		833.0	55.2137	20.3389
833.5	41.0287	19.6554		833.5	55.2168	20.4504
834.0	41.0261	19.6560		834.0	55.2199	20.6022
834.5	41.0247	19.6566		834.5	55.2231	20.4952
835.0	41.0496	19.6571		835.0	55.2272	20.4387
835.5	41.0506	19.6580		835.5	55.2294	20.6864
836.0	41.0542	19.6588		836.0	55.2325	20.6933
836.5	41.0432	19.6597		836.5	55.2356	20.5511
837.0	41.0260	19.6605		837.0	55.2388	20.3782
837.5	41.0202	19.6614		837.5	55.2419	20.4144
838.0	41.0434	19.6622		838.0	55.2450	20.6987
838.5	41.0019	19.6631		838.5	55.2482	20.7139
839.0	40.9918	19.6639		839.0	55.2513	20.6359
839.5	40.9943	19.6648		839.5	55.2545	20.5709
840.0	41.0054	19.6657		840.0	55.2576	20.6380
840.5	40.9947	19.6665		840.5	55.2607	20.6834
841.0	40.9780	19.6674		841.0	55.2639	20.6385
841.5	41.0074	19.6682		841.5	55.2670	20.5753
842.0	41.0091	19.6691		842.0	55.2701	20.7511
842.5	41.0128	19.6699		842.5	55.2733	20.7196
843.0	41.0069	19.6608		843.0	55.2764	20.6800
843.5	40.9306	19.6616		843.5	55.2796	20.6355
844.0	41.0069	19.6625		844.0	55.2827	20.6532
844.5	40.9612	19.6633		844.5	55.2858	20.6791
845.0	40.8872	19.6642		845.0	55.2890	20.5885
845.5	40.9025	19.6650		845.5	55.2921	20.5349
846.0	40.8571	19.6860		846.0	55.2953	20.7079
846.5	40.8980	19.6868		846.5	55.2984	20.7693
847.0	40.8783	19.6877		847.0	55.3015	20.7182
847.5	40.8815	19.6885		847.5	55.3047	20.6385
848.0	40.8551	19.6894		848.0	55.3078	20.7286
848.5	40.8597	19.6902		848.5	55.3109	20.8067
849.0	40.8199	19.6911		849.0	55.3141	20.8069

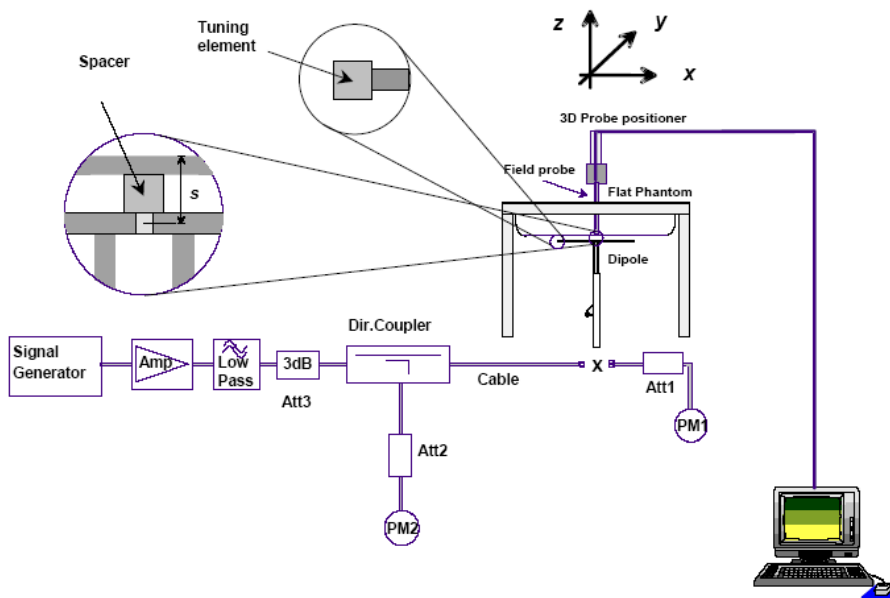
1750 MHz Head				1750 MHz Body		
Frequency (MHz)	e'	e''		Frequency (MHz)	e'	e''
1710.0	40.0758	14.5410		1710.0	52.9846	15.1784
1711.5	40.1094	14.5167		1711.5	53.0182	15.1541
1713.0	40.2219	14.5831		1713.0	53.1307	15.2205
1714.5	40.2291	14.3846		1714.5	53.1379	15.0220
1716.0	40.2613	14.4921		1716.0	53.1701	15.1295
1717.5	40.0977	14.7588		1717.5	53.0065	15.3962
1719.0	40.1585	14.8783		1719.0	53.0673	15.5157
1720.5	40.2263	14.6617		1720.5	53.1351	15.2991
1722.0	40.2939	14.5817		1722.0	53.2027	15.2191
1723.5	40.2166	14.5246		1723.5	53.1254	15.1620
1725.0	40.2026	14.5447		1725.0	53.1114	15.1821
1726.5	40.2520	14.3188		1726.5	53.1608	14.9562
1728.0	40.2480	14.2704		1728.0	53.1568	14.9078
1729.5	40.2201	14.1586		1729.5	53.1289	14.7960
1731.0	40.1969	14.1814		1731.0	53.1057	14.8188
1732.5	40.1574	14.3704		1732.5	53.0662	15.0078
1734.0	40.1504	14.6357		1734.0	53.0592	15.2731
1735.5	40.1723	14.4533		1735.5	53.0811	15.0907
1737.0	40.1816	14.3304		1737.0	53.0904	14.9678
1738.5	40.2189	14.4345		1738.5	53.1277	15.0719
1740.0	40.1882	14.3135		1740.0	53.0970	14.9509
1741.5	40.1139	14.3163		1741.5	53.0227	14.9537
1743.0	40.0807	14.2716		1743.0	52.9895	14.9090
1744.5	40.0949	14.1828		1744.5	53.0037	14.8202
1746.0	40.0640	14.1627		1746.0	52.9728	14.8001
1747.5	40.1675	14.1728		1747.5	53.0763	14.8102
1749.0	40.1652	14.1294		1749.0	53.0740	14.7668
1750.5	40.1872	14.1689		1750.5	53.0960	14.8063
1752.0	40.1721	14.1341		1752.0	53.0809	14.7715
1753.5	40.1602	14.0933		1753.5	53.0690	14.7307
1755.0	40.1361	14.1465		1755.0	53.0449	14.7839
1756.5	40.1642	14.1390		1756.5	53.0730	14.7764
1758.0	40.1467	14.1301		1758.0	53.0555	14.7675
1759.5	40.1043	14.1385		1759.5	53.0131	14.7759
1761.0	40.0964	14.1618		1761.0	53.0052	14.7992
1762.5	40.1423	14.2143		1762.5	53.0511	14.8517
1764.0	40.0387	14.4569		1764.0	52.9475	15.0943
1765.5	40.1970	14.6673		1765.5	53.1058	15.3047
1767.0	40.1297	14.5926		1767.0	53.0385	15.2300
1768.5	40.1377	14.3647		1768.5	53.0465	15.0021
1770.0	40.0925	14.2284		1770.0	53.0013	14.8658
1771.5	40.1085	14.2646		1771.5	53.0173	14.9020
1773.0	40.0750	14.2353		1773.0	52.9838	14.8727
1774.5	40.0797	14.1996		1774.5	52.9885	14.8370
1776.0	40.0682	14.1939		1776.0	52.9770	14.8313
1777.5	40.0608	14.2020		1777.5	52.9696	14.8394
1779.0	40.0766	14.1530		1779.0	52.9854	14.7904
1780.5	40.0122	14.1379		1780.5	52.9210	14.7753
1782.0	40.0046	14.0609		1782.0	52.9134	14.6983
1783.5	39.9699	13.9770		1783.5	52.8787	14.6144
1785.0	39.9870	13.9828		1785.0	52.8958	14.6202

1900 MHz Head				1900 MHz Body		
Frequency (MHz)	e'	e''		Frequency (MHz)	e'	e''
1850.0	40.1380	13.3809		1850.0	54.1277	14.3686
1851.2	40.1370	13.3811		1851.2	54.0596	14.3260
1852.4	40.1350	13.3813		1852.4	54.0784	14.3271
1853.6	40.1330	13.3815		1853.6	54.0550	14.3034
1854.8	40.1340	13.3817		1854.8	53.9578	14.3228
1856.0	40.1350	13.3819		1856.0	54.0609	14.3593
1857.2	40.1360	13.3821		1857.2	54.0540	14.3853
1858.4	40.1370	13.3823		1858.4	54.0360	14.3065
1859.6	40.1380	13.3825		1859.6	54.0177	14.3008
1860.8	40.1420	13.3827		1860.8	53.9135	14.3536
1862.0	40.1460	13.3829		1862.0	53.9412	14.1808
1863.2	40.1500	13.3831		1863.2	53.8872	14.1936
1864.4	40.1540	13.3833		1864.4	53.9219	14.2107
1865.6	40.1580	13.3835		1865.6	53.9284	14.1817
1866.8	40.1620	13.3837		1866.8	54.0034	14.1723
1868.0	40.1660	13.3839		1868.0	54.0718	14.1884
1869.2	40.1750	13.3841		1869.2	54.0809	14.2108
1870.4	40.1740	13.3843		1870.4	53.9944	14.2623
1871.6	40.1779	13.3845		1871.6	53.9368	14.2630
1872.8	40.1819	13.3847		1872.8	53.9752	14.2920
1874.0	40.1829	13.3849		1874.0	53.9017	14.3003
1875.2	40.1839	13.3851		1875.2	53.9648	14.3635
1876.4	40.1849	13.3853		1876.4	53.8680	14.2863
1877.6	40.1859	13.3855		1877.6	53.9702	14.3663
1878.8	40.1869	13.3857		1878.8	53.9980	14.4982
1880.0	40.1879	13.3859		1880.0	53.8804	14.5171
1881.2	40.1909	13.3861		1881.2	53.8386	14.5142
1882.4	40.1939	13.3863		1882.4	53.9341	14.4855
1883.6	40.1969	13.3865		1883.6	53.8996	14.4416
1884.8	40.1999	13.3867		1884.8	53.9245	14.4643
1886.0	40.2029	13.3869		1886.0	53.9597	14.3965
1887.2	40.2059	13.3871		1887.2	53.9405	14.3727
1888.4	40.2109	13.3873		1888.4	54.0303	14.4070
1889.6	40.2159	13.3874		1889.6	53.9608	14.4116
1890.8	40.2209	13.3876		1890.8	54.0065	14.4684
1892.0	40.2259	13.3878		1892.0	53.9944	14.2646
1893.2	40.2309	13.3880		1893.2	53.9669	14.2255
1894.4	40.2359	13.3882		1894.4	53.9395	14.2746
1895.6	40.2409	13.3884		1895.6	53.9324	14.6084
1896.8	40.2459	13.3886		1896.8	53.9223	14.6065
1898.0	40.2509	13.3888		1898.0	53.9226	14.5871
1899.2	40.2559	13.3890		1899.2	53.9996	14.5875
1900.4	40.2609	13.3892		1900.4	53.9645	14.4862
1901.6	40.2659	13.3894		1901.6	53.9680	14.5755
1902.8	40.2699	13.3896		1902.8	53.9371	14.5355
1904.0	40.2739	13.3898		1904.0	54.0188	14.5044
1905.2	40.2778	13.3900		1905.2	53.9306	14.4729
1906.4	40.2818	13.3902		1906.4	53.9205	14.3978
1907.6	40.2858	13.3904		1907.6	53.8461	14.5146
1908.8	40.2898	13.3906		1908.8	53.9304	14.4500
1910.0	40.2938	13.3908		1910.0	53.9570	14.4137

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(1750MHz)	ALS-D-1750-S-2	198-00304	2013-10-08	2013-10-07
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 (%)
2014-02-18	835	Head	1g	9.489	9.590	-1.053	± 10
		Body	1g	9.566	9.684	-1.219	± 10
	1750	Head	1g	36.982	37.020	-0.103	± 10
		Body	1g	36.284	36.650	-0.999	± 10
	1900	Head	1g	40.103	39.648	1.148	± 10
		Body	1g	39.697	39.769	-0.181	± 10

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

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

Product Data

Device Name : Dipole 835 MHz
Serial No. : 180-00558
Type : Dipole
Model : ALS-D-835-S-2
Frequency Band : 835
Max. Transmit Pwr : 1 W
Drift Time : 3 min(s)
Power Drift-Start : 10.286 W/kg
Power Drift-Finish : 10.123 W/kg
Power Drift (%) : -4.134

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 : 18-Feb-2014
Temperature : 20.00 °C
Ambient Temp. : 21.00 °C
Humidity : 56.00 RH%
Epsilon : 41.05 F/m
Sigma : 0.91 S/m
Density : 1000.00 kg/cu. m

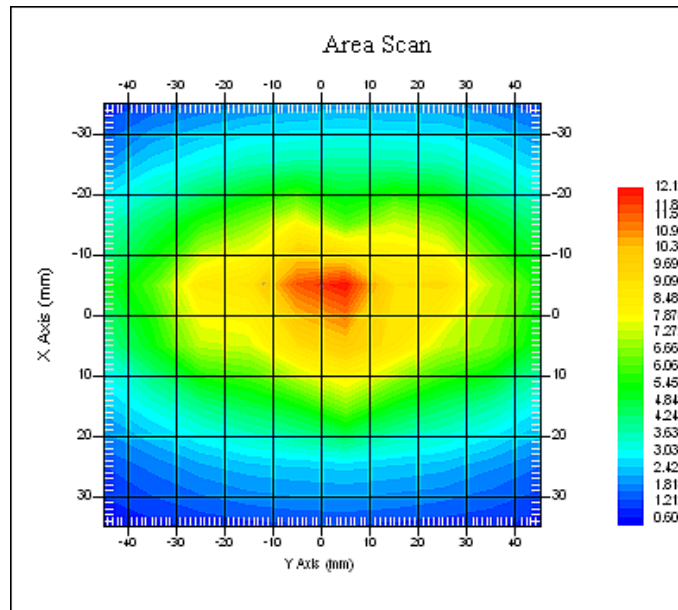
Probe Data

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

Measurement Data

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

1 gram SAR value : 9.489 W/kg
 10 gram SAR value : 6.658 W/kg
 Area Scan Peak SAR : 9.569 W/kg
 Zoom Scan Peak SAR : 15.675 W/kg



835 MHz System Validation with Head Tissue

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

Product Data

Device Name : Dipole 835 MHz
Serial No. : 180-00558
Type : Dipole
Model : ALS-D-835-S-2
Frequency Band : 835
Max. Transmit Pwr : 1 W
Drift Time : 3 min(s)
Power Drift-Start : 9.133 W/kg
Power Drift-Finish : 9.358 W/kg
Power Drift (%) : 2.896

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 : 18-Feb-2014
Temperature : 20.00 °C
Ambient Temp. : 21.00 °C
Humidity : 56.00 RH%
Epsilon : 55.23 F/m
Sigma : 0.96 S/m
Density : 1000.00 kg/cu. m

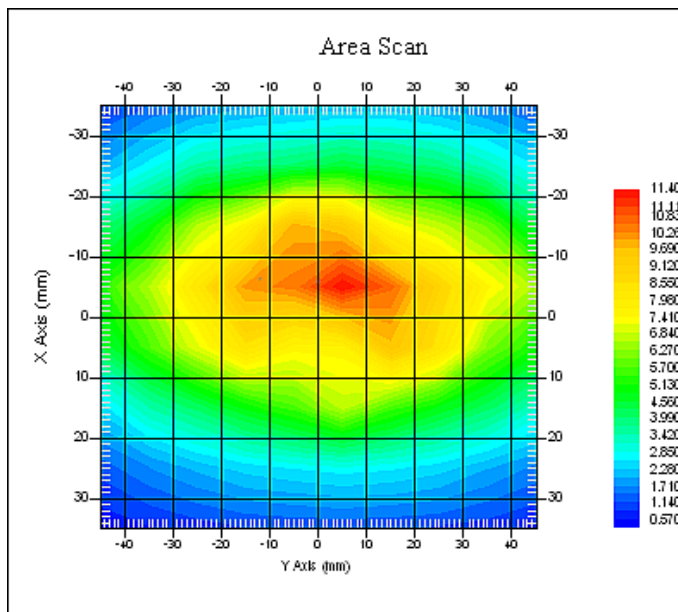
Probe Data

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

Measurement Data

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

1 gram SAR value : 9.566 W/kg
10 gram SAR value : 6.659 W/kg
Area Scan Peak SAR : 10.338 W/kg
Zoom Scan Peak SAR : 16.226 W/kg



835 MHz System Validation with Body Tissue

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**System Performance Check 1750 MHz Head Liquid****Dipole 1750 MHz; Type: ALS-D-1750-S-2; S/N: 198-00304**

Product Data

Device Name : Dipole 1750MHz
Serial No. : 198-00304
Type : Dipole
Model : ALS-D-1750-S-2
Frequency Band : 1750
Max. Transmit Pwr : 1 W
Drift Time : 3 min(s)
Power Drift-Start : 35.346 W/kg
Power Drift-Finish : 34.985 W/kg
Power Drift (%) : -0.798

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. : 285-01086
Frequency : 1750.00 MHz
Last Calib. Date : 18-Feb-2014
Temperature : 20.00 °C
Ambient Temp. : 21.00 °C
Humidity : 56.00 RH%
Epsilon : 40.18 F/m
Sigma : 1.38 S/m
Density : 1000.00 kg/cu. M

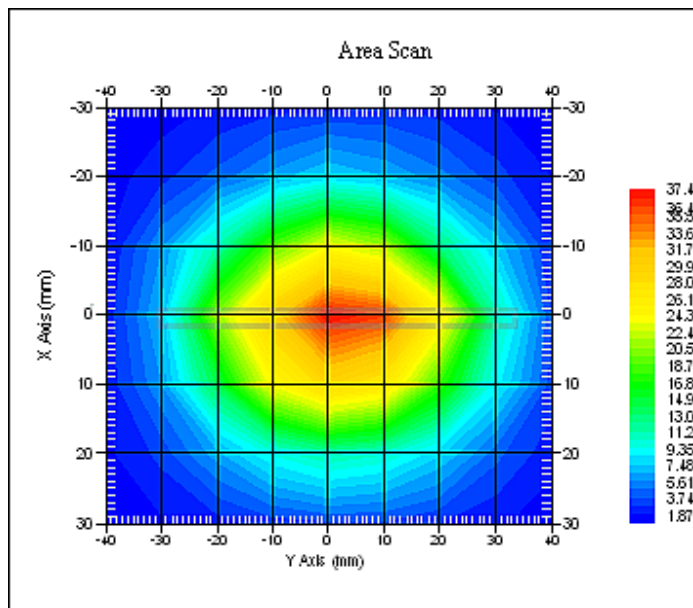
Probe Data

Name : E-Field
Model : E-020
Type : E-Field Triangle
Serial No. : 500-00283
Last Calib. Date : 08-Oct-2013
Frequency Band : 1750
Duty Cycle Factor : 1
Conversion Factor : 5.4
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 : 36.982 W/kg
10 gram SAR value : 18.541 W/kg
Area Scan Peak SAR : 37.315 W/kg
Zoom Scan Peak SAR : 62.988 W/kg



1750 MHz System Validation with Head Tissue

Test Laboratory: Bay Area Compliance Lab Corp. (Shenzhen)**System Performance Check 1750 MHz Body Liquid****Dipole 1750 MHz; Type: ALS-D-1750-S-2; S/N: 198-00304**

Product Data

Device Name : Dipole 1750MHz
Serial No. : 198-00304
Type : Dipole
Model : ALS-D-1750-S-2
Frequency Band : 1750
Max. Transmit Pwr : 1 W
Drift Time : 3 min(s)
Power Drift-Start : 35.346 W/kg
Power Drift-Finish : 34.985 W/kg
Power Drift (%) : -1.021

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. : 285-01088
Frequency : 1750.00 MHz
Last Calib. Date : 18-Feb-2014
Temperature : 20.00 °C
Ambient Temp. : 21.00 °C
Humidity : 56.00 RH%
Epsilon : 53.09 F/m
Sigma : 1.44 S/m
Density : 1000.00 kg/cu. m

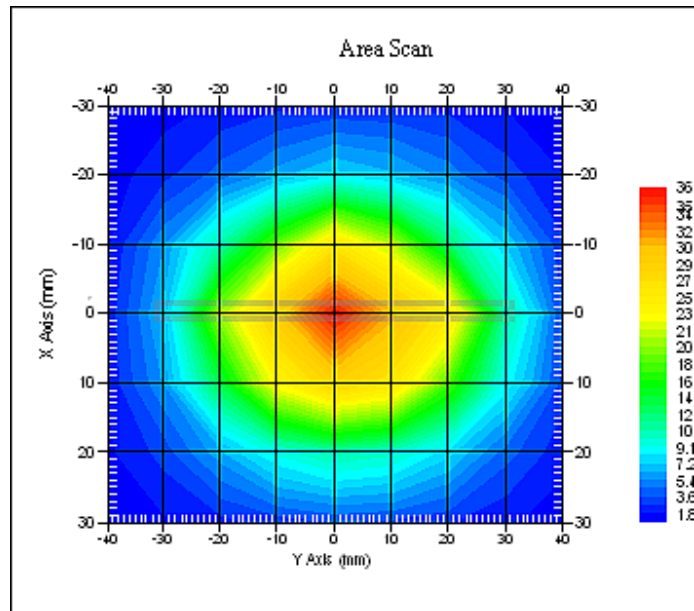
Probe Data

Name : E-Field
Model : E-020
Type : E-Field Triangle
Serial No. : 500-00283
Last Calib. Date : 08-Oct-2013
Frequency Band : 1750
Duty Cycle Factor : 1
Conversion Factor : 5.3
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 : 36.284 W/kg
 10 gram SAR value : 18.895 W/kg
 Area Scan Peak SAR : 36.756 W/kg
 Zoom Scan Peak SAR : 60.487 W/kg



1750 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 : 35.346 W/kg
Power Drift-Finish : 34.985 W/kg
Power Drift (%) : -0.798

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 : 18-Feb-2014
Temperature : 20.00 °C
Ambient Temp. : 21.00 °C
Humidity : 56.00 RH%
Epsilon : 40.26 F/m
Sigma : 1.41 S/m
Density : 1000.00 kg/cu. M

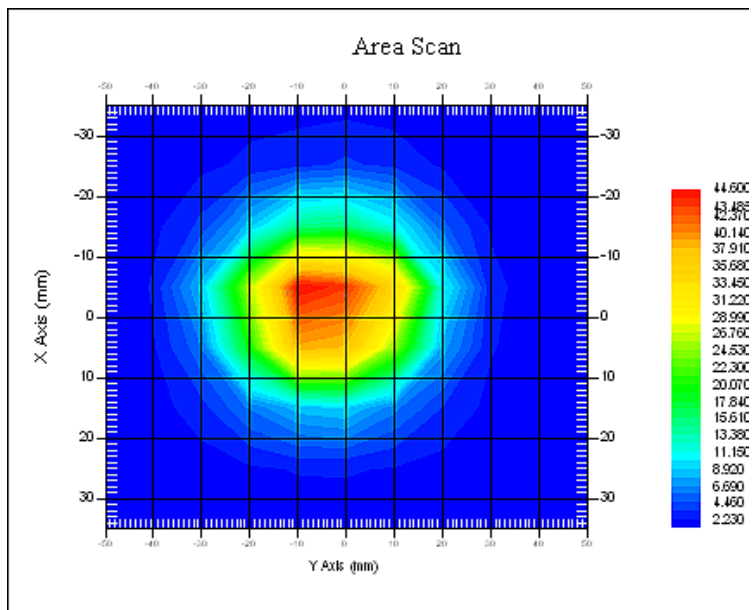
Probe Data

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

Measurement Data

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

1 gram SAR value : 40.103 W/kg
10 gram SAR value : 20.589 W/kg
Area Scan Peak SAR : 41.449 W/kg
Zoom Scan Peak SAR : 92.997 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 : 35.346 W/kg
Power Drift-Finish : 34.985 W/kg
Power Drift (%) : -1.021

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 : 18-Feb-2014
Temperature : 20.00 °C
Ambient Temp. : 21.00 °C
Humidity : 56.00 RH%
Epsilon : 53.96 F/m
Sigma : 1.53 S/m
Density : 1000.00 kg/cu. m

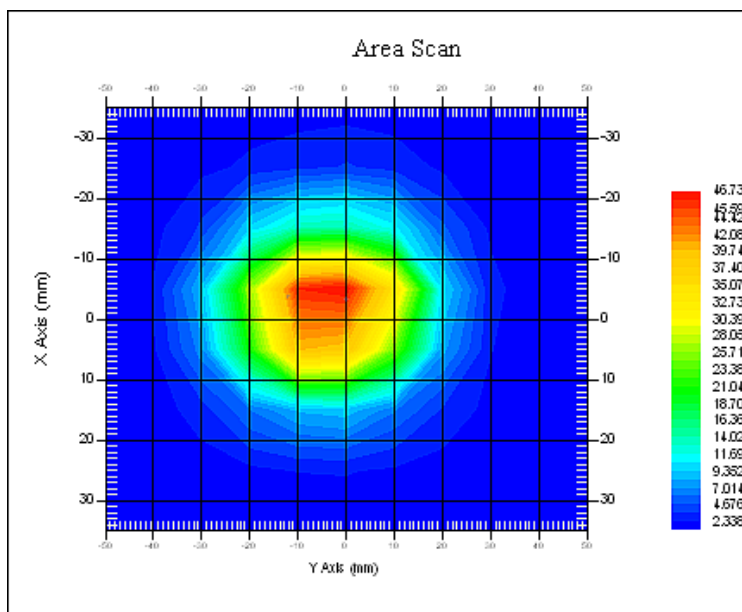
Probe Data

Name : E-Field
Model : E-020
Type : E-Field Triangle
Serial No. : 500-00283
Last Calib. Date : 08-Oct-2012
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 : 39.697 W/kg
10 gram SAR value : 20.588 W/kg
Area Scan Peak SAR : 42.930 W/kg
Zoom Scan Peak SAR : 92.364 W/kg



1900 MHz System Validation with Body Tissue

Cheek/Touch Position

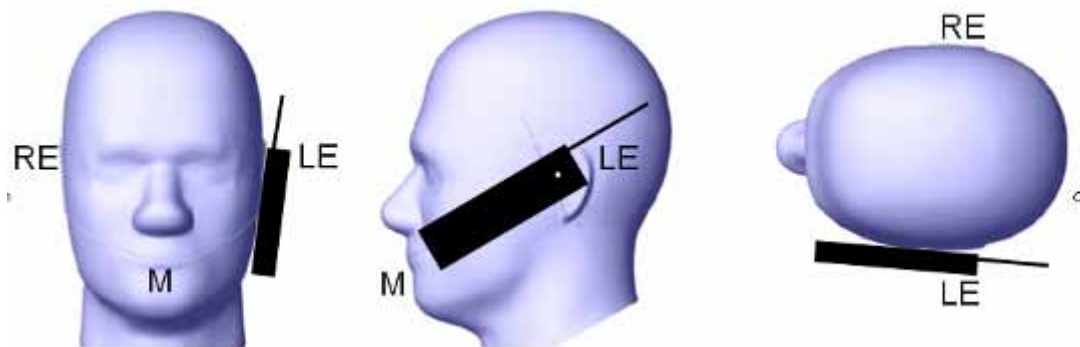
The device is brought toward the mouth of the head phantom by pivoting against the “ear reference point” or along the “N-F” line for the SCC-34/SC-2 head phantom.

This test position is established:

- When any point on the display, keypad or mouthpiece portions of the handset is in contact with the phantom.
- (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

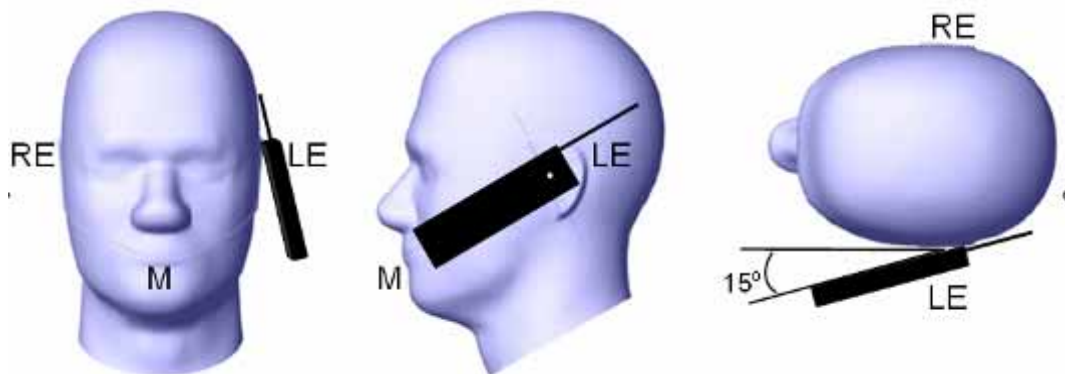
With the handset aligned in the “Cheek/Touch Position”:

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 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.

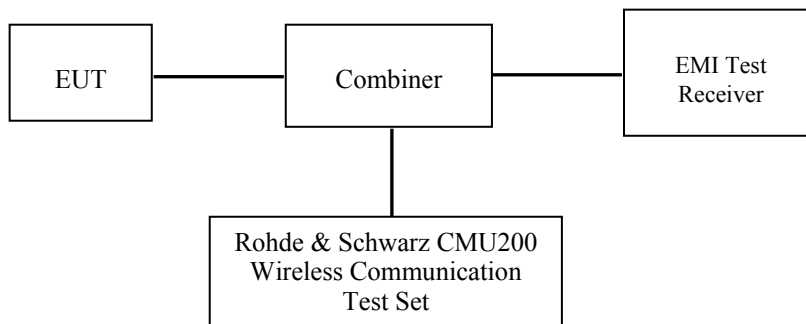
CONDUCTED OUTPUT POWER MEASUREMENT

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	32.00	32.00	32.00
GPRS 3 slot	30.00	30.00	30.00
GPRS 4 slot	29.00	29.00	29.00
PCS 1900	30.00	30.00	30.00
GPRS 1 slot	30.00	30.00	30.00
GPRS 2 slot	30.00	30.00	30.00
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
WCDMA1750	22.50	22.50	22.50
WCDMA1900	22.50	22.50	22.50
WiFi	9.50	9.50	9.50
Bluetooth	6.00	6.00	6.00

Test Results:

GSM

Band	Frequency (MHz)	Conducted Peak Output Power	
		Meas. Power (dBm)	Meas. Power (W)
GSM 850	824.2	32.34	1.714
	836.6	32.44	1.754
	848.8	32.45	1.758
PCS 1900	1850.2	29.57	0.906
	1880.0	29.77	0.948
	1909.8	29.72	0.938

GPRS

Band	Channel No.	Frequency (MHz)	RF Peak Output Power (dBm)			
			1 slot	2 slot	3 slots	4 slots
GSM 850	128	824.2	32.37	31.70	29.90	28.78
	190	836.6	32.40	31.63	29.84	28.73
	251	848.8	32.37	31.52	29.73	28.57
PCS 1900	512	1850.2	29.55	29.84	27.15	26.05
	661	1880.0	29.71	28.99	27.33	26.22
	810	1909.8	29.85	29.12	27.44	26.34

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	23.37	25.70	25.65	25.78
	190	836.6	23.40	25.63	25.59	25.73
	251	848.8	23.37	25.52	25.48	25.57
PCS 1900	512	1850.2	20.55	23.84	22.90	23.05
	661	1880.0	20.71	22.99	23.08	23.22
	810	1909.8	20.85	23.12	23.19	23.34

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).

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	22.41	0.174
	836.6	4183	22.37	0.173
	846.6	4233	22.36	0.172
WCDMA 1750	1712.4	1312	22.12	0.163
	1732.6	1413	21.96	0.157
	1752.6	1513	21.75	0.150
WCDMA 1900	1852.4	9262	22.44	0.175
	1880.0	9400	21.63	0.146
	1907.6	9538	21.41	0.138

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			
	c	2/15	12/15	15/15	15/15
	d	15/15	15/15	8/15	4/15
	d (SF)	64			
	c/ d	2/15	12/15	15/8	15/4
	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} = hs/ 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	21.22	21.12	21.30	21.13
	836.6	4183	21.22	21.14	21.33	21.15
	846.6	4233	21.17	21.12	21.27	21.06
WCDMA 1750	1712.4	1312	20.87	20.80	20.98	20.82
	1732.6	1413	20.76	20.72	20.86	20.70
	1752.6	1513	21.61	21.53	21.72	21.51
WCDMA 1900	1852.4	9262	21.39	21.29	21.51	21.27
	1880.0	9400	20.64	20.53	20.67	20.54
	1907.6	9538	20.38	20.42	20.45	20.54

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				
	c	11/15	6/15	15/15	2/15	15/15
	d	15/15	15/15	9/15	15/15	0
	ec	209/225	12/15	30/15	2/15	5/15
	c/ d	11/15	6/15	15/9	2/15	-
	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} = hs/ 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} s	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	21.30	21.19	21.35	21.21	21.36
	836.6	4183	21.23	21.17	21.31	21.11	21.33
	846.6	4233	21.17	21.05	21.27	21.06	21.22
WCDMA 1750	1712.4	1312	20.95	20.83	21.01	20.90	21.07
	1732.6	1413	20.65	20.56	20.69	20.57	20.71
	1752.6	1513	21.55	21.55	21.66	21.50	21.68
WCDMA 1900	1852.4	9262	21.51	21.47	21.59	21.41	21.60
	1880.0	9400	20.61	20.53	20.68	20.54	20.73
	1907.6	9538	20.38	20.56	20.42	20.39	20.51

Note:

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

Bluetooth

Mode	Channel frequency (MHz)	Reading power (dBm)	Power output (mw)	Limit (mw)
BDR(GFSK)	(Low)2402	5.32	3.404	1000
	(Middle)2441	5.74	3.750	1000
	(High)2480	5.65	3.673	1000
EDR(4-DQPSK)	(Low)2402	5.04	3.192	1000
	(Middle)2441	5.38	3.451	1000
	(High)2480	5.29	3.381	1000
EDR-8DPSK	(Low)2402	5.36	3.436	1000
	(Middle)2441	5.72	3.733	1000
	(High)2480	5.66	3.681	1000

WiFi

Band	Frequency (MHz)	Conducted Output Power	
		(dBm)	(mw)
802.11b	2412	9.09	8.110
	2437	8.84	7.656
	2462	8.93	7.816
802.11g	2412	8.67	7.362
	2437	9.08	8.091
	2462	9.18	8.279
802.11n-HT20	2412	9.01	7.962
	2437	9.07	8.072
	2462	9.16	8.241
802.11n-HT40	2422	9.17	8.260
	2437	9.28	8.472
	2452	8.49	7.063

Note:

1. The output power was tested under data rate 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n-HT20 and 13.5Mbps for 802.11n-HT40.

SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetric evaluation.

SAR Test Data

Environmental Conditions

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

Testing was performed by Wilson Chen from 2014-02-18 to 2014-02-19.

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	-0.641	32.34	32.50	1.038	0.229	0.238
	190(Middle)	836.6	GSM	0.602	32.44	32.50	1.014	0.211	0.214
	251(High)	848.8	GSM	-1.984	32.45	32.50	1.012	0.209	0.211
Left Head Tilt	128(Low)	824.2	GSM	/	/	/	/	/	/
	190(Middle)	836.6	GSM	0.045	32.44	32.50	1.014	0.191	0.194
	251(High)	848.8	GSM	/	/	/	/	/	/
Right Head Cheek	128(Low)	824.2	GSM	/	/	/	/	/	/
	190(Middle)	836.6	GSM	-1.035	32.44	32.50	1.014	0.196	0.199
	251(High)	848.8	GSM	/	/	/	/	/	/
Right Head Tilt	128(Low)	824.2	GSM	/	/	/	/	/	/
	190(Middle)	836.6	GSM	0.249	32.44	32.50	1.014	0.154	0.156
	251(High)	848.8	GSM	/	/	/	/	/	/
Body-Front-Headset (10mm)	128(Low)	824.2	GSM	/	/	/	/	/	/
	190(Middle)	836.6	GSM	3.656	32.44	32.50	1.014	0.205	0.208
	251(High)	848.8	GSM	/	/	/	/	/	/
Body-Back-Headset (10mm)	128(Low)	824.2	GSM	/	/	/	/	/	/
	190(Middle)	836.6	GSM	-3.816	32.44	32.50	1.014	0.318	0.322
	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	-0.155	29.57	30.00	1.104	0.251	0.277
	661(Middle)	1880.0	GSM	-0.390	29.77	30.00	1.054	0.245	0.258
	810(High)	1909.8	GSM	-0.096	29.72	30.00	1.067	0.268	0.286
Left Head Tilt	512(Low)	1850.2	GSM	/	/	/	/	/	/
	661(Middle)	1880.0	GSM	-0.859	29.77	30.00	1.054	0.059	0.062
	810(High)	1909.8	GSM	/	/	/	/	/	/
Right Head Cheek	512(Low)	1850.2	GSM	/	/	/	/	/	/
	661(Middle)	1880.0	GSM	0.581	29.77	30.00	1.054	0.141	0.149
	810(High)	1909.8	GSM	/	/	/	/	/	/
Right Head Tilt	512(Low)	1850.2	GSM	/	/	/	/	/	/
	661(Middle)	1880.0	GSM	-0.058	29.77	30.00	1.054	0.055	0.058
	810(High)	1909.8	GSM	/	/	/	/	/	/
Body-Front-Headset (10mm)	512(Low)	1850.2	GSM	/	/	/	/	/	/
	661(Middle)	1880.0	GSM	0.177	29.77	30.00	1.054	0.334	0.352
	810(High)	1909.8	GSM	/	/	/	/	/	/
Body-Back-Headset (10mm)	512(Low)	1850.2	GSM	/	/	/	/	/	/
	661(Middle)	1880.0	GSM	-0.384	29.77	30.00	1.054	0.403	0.425
	810(High)	1909.8	GSM	/	/	/	/	/	/

Note:

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

WCDMA 850

EUT Position	Frequency (MHz)		Test Mode	Power Drift (%)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	FCC 1g SAR (W/Kg)		
	Channel	MHz					Scaled Factor	Meas. SAR	Scaled SAR
Left Head Cheek	4132	826.4	WCDMA 850	-1.678	22.41	22.50	1.021	0.183	0.187
	4183	836.6	WCDMA 850	/	/	/	/	/	/
	4233	846.6	WCDMA 850	/	/	/	/	/	/
Left Head Tilt	4132	826.4	WCDMA 850	1.336	22.41	22.50	1.021	0.132	0.135
	4183	836.6	WCDMA 850	/	/	/	/	/	/
	4233	846.6	WCDMA 850	/	/	/	/	/	/
Right Head Cheek	4132	826.4	WCDMA 850	1.452	22.41	22.50	1.021	0.116	0.118
	4183	836.6	WCDMA 850	/	/	/	/	/	/
	4233	846.6	WCDMA 850	/	/	/	/	/	/
Right Head Tilt	4132	826.4	WCDMA 850	1.700	22.41	22.50	1.021	0.093	0.095
	4183	836.6	WCDMA 850	/	/	/	/	/	/
	4233	846.6	WCDMA 850	/	/	/	/	/	/

WCDMA 1750

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	1312	1712.4	WCDMA 1750	-1.626	22.12	22.50	1.091	0.464	0.506
	1413	1732.6	WCDMA 1750	/	/	/	/	/	/
	1513	1752.6	WCDMA 1750	/	/	/	/	/	/
Left Head Tilt	1312	1712.4	WCDMA 1750	1.891	22.12	22.50	1.091	0.174	0.190
	1413	1732.6	WCDMA 1750	/	/	/	/	/	/
	1513	1752.6	WCDMA 1750	/	/	/	/	/	/
Right Head Cheek	1312	1712.4	WCDMA 1750	1.153	22.12	22.50	1.091	0.436	0.476
	1413	1732.6	WCDMA 1750	/	/	/	/	/	/
	1513	1752.6	WCDMA 1750	/	/	/	/	/	/
Right Head Tilt	1312	1712.4	WCDMA 1750	1.969	22.12	22.50	1.091	0.102	0.111
	1413	1732.6	WCDMA 1750	/	/	/	/	/	/
	1513	1752.6	WCDMA 1750	/	/	/	/	/	/

WCDMA1900

EUT Position	Frequency (MHz)		Test Mode	Power Drift (%)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	FCC 1g SAR (W/Kg)		
	Channel	MHz					Scaled Factor	Meas. SAR	Scaled SAR
Left Head Cheek	9262	1852.4	WCDMA1900	-0.200	22.44	22.50	1.014	0.727	0.737
	9400	1880.0	WCDMA1900	/	/	/	/	/	/
	9538	1907.6	WCDMA1900	/	/	/	/	/	/
Left Head Tilt	9262	1852.4	WCDMA1900	-1.904	22.44	22.50	1.014	0.078	0.079
	9400	1880.0	WCDMA1900	/	/	/	/	/	/
	9538	1907.6	WCDMA1900	/	/	/	/	/	/
Right Head Cheek	9262	1852.4	WCDMA1900	-1.488	22.44	22.50	1.014	0.291	0.295
	9400	1880.0	WCDMA1900	/	/	/	/	/	/
	9538	1907.6	WCDMA1900	/	/	/	/	/	/
Right Head Tilt	9262	1852.4	WCDMA1900	3.467	22.44	22.50	1.014	0.130	0.132
	9400	1880.0	WCDMA1900	/	/	/	/	/	/
	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 $\frac{1}{4}$ dB higher than measured without HSUPA using 12.2kbps RMC and the maximum SAR for 12.2kbps RMC is $< 75\%$ of SAR limit.
5. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.

Mobile Hot-Spot Test Result

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

Hot spot-GPRS (Frequency Band: 835)

EUT Position	Frequency (MHz)		Test Mode	Power Drift (%)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	FCC 1g SAR (W/Kg)		
	Channel	MHz					Scaled Factor	Meas. SAR	Scaled SAR
Body-Front (10mm)	128(Low)	824.2	GPRS	/	/	/	/	/	/
	190(Middle)	836.6	GPRS	-0.714	28.73	29.00	1.064	0.724	0.770
	251(High)	848.8	GPRS	/	/	/	/	/	/
Body-Back (10mm)	128(Low)	824.2	GPRS	2.423	28.78	29.00	1.052	1.09	1.147
	190(Middle)	836.6	GPRS	0.849	28.73	29.00	1.064	1.19	1.266
	251(High)	848.8	GPRS	4.671	28.57	29.00	1.104	1.091	1.205
Body-Left (10mm)	128(Low)	824.2	GPRS	/	/	/	/	/	/
	190(Middle)	836.6	GPRS	-0.111	28.73	29.00	1.064	0.668	0.711
	251(High)	848.8	GPRS	/	/	/	/	/	/
Body-Right (10mm)	128(Low)	824.2	GPRS	/	/	/	/	/	/
	190(Middle)	836.6	GPRS	-3.272	28.73	29.00	1.064	0.588	0.626
	251(High)	848.8	GPRS	/	/	/	/	/	/
Body-Bottom (10mm)	128(Low)	824.2	GPRS	/	/	/	/	/	/
	190(Middle)	836.6	GPRS	0.375	28.73	29.00	1.064	0.038	0.040
	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)

EUT Position	Frequency (MHz)		Test Mode	Power Drift (%)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	FCC 1g SAR (W/Kg)		
	Channel	MHz					Scaled Factor	Meas. SAR	Scaled SAR
Body-Front (10mm)	512(Low)	1850.2	GPRS	/	/	/	/	/	/
	661(Middle)	1880.0	GPRS	0.236	26.22	26.50	1.067	0.42	0.448
	810(High)	1909.8	GPRS	/	/	/	/	/	/
Body-Back (10mm)	512(Low)	1850.2	GPRS	/	/	/	/	/	/
	661(Middle)	1880.0	GPRS	4.882	26.22	26.50	1.067	0.723	0.771
	810(High)	1909.8	GPRS	/	/	/	/	/	/
Body-Left (10mm)	512(Low)	1850.2	GPRS	/	/	/	/	/	/
	661(Middle)	1880.0	GPRS	0.657	26.22	26.50	1.067	0.053	0.057
	810(High)	1909.8	GPRS	/	/	/	/	/	/
Body-Right (10mm)	512(Low)	1850.2	GPRS	/	/	/	/	/	/
	661(Middle)	1880.0	GPRS	0.772	26.22	26.50	1.067	0.018	0.019
	810(High)	1909.8	GPRS	/	/	/	/	/	/
Body-Bottom (10mm)	512(Low)	1850.2	GPRS	/	/	/	/	/	/
	661(Middle)	1880.0	GPRS	0.613	26.22	26.50	1.067	0.503	0.536
	810(High)	1909.8	GPRS	/	/	/	/	/	/

Note:

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

Hot Spot-WCDMA850

EUT Position	Frequency (MHz)		Test Mode	Power Drift (%)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	FCC 1g SAR (W/Kg)		
	Channel	MHz					Scaled Factor	Meas. SAR	Scaled SAR
Body-Front (10mm)	4132	826.4	WCDMA850	1.816	22.41	22.50	1.021	0.323	0.330
	4183	836.6	WCDMA850	/	/	/	/	/	/
	4233	846.6	WCDMA850	/	/	/	/	/	/
Body-Back (10mm)	4132	826.4	WCDMA850	-1.128	22.41	22.50	1.021	0.564	0.576
	4183	836.6	WCDMA850	/	/	/	/	/	/
	4233	846.6	WCDMA850	/	/	/	/	/	/
Body-Left (10mm)	4132	826.4	WCDMA850	0.648	22.41	22.50	1.021	0.282	0.288
	4183	836.6	WCDMA850	/	/	/	/	/	/
	4233	846.6	WCDMA850	/	/	/	/	/	/
Body-Right (10mm)	4132	826.4	WCDMA850	0.032	22.41	22.50	1.021	0.281	0.287
	4183	836.6	WCDMA850	/	/	/	/	/	/
	4233	846.6	WCDMA850	/	/	/	/	/	/
Body-Bottom (10mm)	9262	826.4	WCDMA850	2.366	22.41	22.50	1.021	0.005	0.005
	9400	836.6	WCDMA850	/	/	/	/	/	/
	9538	846.6	WCDMA850	/	/	/	/	/	/

Hot Spot-WCDMA1750

EUT Position	Frequency (MHz)		Test Mode	Power Drift (%)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	FCC 1g SAR (W/Kg)		
	Channel	MHz					Scaled Factor	Meas. SAR	Scaled SAR
Body-Front (10mm)	1312	1712.4	WCDMA 1750	-3.166	22.12	22.50	1.091	0.309	0.337
	1413	1732.6	WCDMA 1750	/	/	/	/	/	/
	1513	1752.6	WCDMA 1750	/	/	/	/	/	/
Body-Back (10mm)	1312	1712.4	WCDMA1750	4.820	22.12	22.50	1.091	0.444	0.485
	1413	1732.6	WCDMA1750	/	/	/	/	/	/
	1513	1752.6	WCDMA1750	/	/	/	/	/	/
Body-Left (10mm)	1312	1712.4	WCDMA1750	1.351	22.12	22.50	1.091	0.089	0.097
	1413	1732.6	WCDMA1750	/	/	/	/	/	/
	1513	1752.6	WCDMA1750	/	/	/	/	/	/
Body-Right (10mm)	1312	1712.4	WCDMA1750	1.143	22.12	22.50	1.091	0.047	0.051
	1413	1732.6	WCDMA1750	/	/	/	/	/	/
	1513	1752.6	WCDMA1750	/	/	/	/	/	/
Body-Bottom (10mm)	1312	1712.4	WCDMA1750	-4.507	22.12	22.50	1.091	0.409	0.446
	1413	1732.6	WCDMA1750	/	/	/	/	/	/
	1513	1752.6	WCDMA1750	/	/	/	/	/	/

Hot Spot-WCDMA1900

EUT Position	Frequency (MHz)		Test Mode	Power Drift (%)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	FCC 1g SAR (W/Kg)		
	Channel	MHz					Scaled Factor	Meas. SAR	Scaled SAR
Body-Front (10mm)	9262	1852.4	WCDMA1900	-3.276	22.44	22.50	1.014	0.535	0.542
	9400	1880.0	WCDMA1900	/	/	/	/	/	/
	9538	1907.6	WCDMA1900	/	/	/	/	/	/
Body-Back (10mm)	9262	1852.4	WCDMA1900	1.367	22.44	22.50	1.014	0.734	0.744
	9400	1880.0	WCDMA1900	1.581	21.63	22.50	1.222	0.783	0.957
	9538	1907.6	WCDMA1900	1.104	21.41	22.50	1.285	0.749	0.963
Body-Left (10mm)	9262	1852.4	WCDMA1900	-0.702	22.44	22.50	1.014	0.07	0.071
	9400	1880.0	WCDMA1900	/	/	/	/	/	/
	9538	1907.6	WCDMA1900	/	/	/	/	/	/
Body-Right (10mm)	9262	1852.4	WCDMA1900	-0.016	22.44	22.50	1.014	0.034	0.034
	9400	1880.0	WCDMA1900	/	/	/	/	/	/
	9538	1907.6	WCDMA1900	/	/	/	/	/	/
Body-Bottom (10mm)	9262	1852.4	WCDMA1900	-4.039	22.44	22.50	1.014	0.516	0.523
	9400	1880.0	WCDMA1900	/	/	/	/	/	/
	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 based on the antennas distance of each radio.

BT, WiFi, GSM and 3G Antenna Location:



Antenna Information:

Description of Simultaneous Transmit Capabilities			Antennas Distance (mm)
Transmitter Combination	Simultaneous?	Hotspot?	
GSM + GPRS	×	×	0
GSM + WCDMA	×	×	0
GSM + Bluetooth	√	×	91
GSM + WiFi	√	√	91
GPRS + WCDMA	×	×	0
GPRS + Bluetooth	√	×	91
GPRS + WiFi	√	√	91
WCDMA + Bluetooth	√	×	91
WCDMA + WiFi	√	√	91

Standalone SAR test exclusion considerations

Head Position:

Mode	Frequency (MHz)	P _{avg} (dBm)	P _{avg} (mW)	Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Exclusion
GSM850	850	23.45	221.309	0	40.8	3.0	No
PCS1900	1900	20.77	119.399	0	32.9	3.0	No
WCDMSA850	850	22.41	174.181	0	32.1	3.0	No
WCDMSA1750	1750	22.12	162.930	0	43.1	3.0	No
WCDMSA1900	1900	22.44	175.388	0	48.4	3.0	No
Bluetooth	2450	5.74	3.750	0	1.2	3.0	Yes
WiFi	2450	9.28	8.472	0	2.7	3.0	Yes

Body Position:

Mode	Frequency (MHz)	P _{avg} (dBm)	P _{avg} (mW)	Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Exclusion
GSM850	850	25.78	378.443	10	34.9	3.0	No
PCS1900	1900	23.34	215.774	10	29.7	3.0	No
WCDMSA850	850	22.41	174.181	10	16.1	3.0	No
WCDMSA1750	1750	22.12	162.930	10	21.6	3.0	No
WCDMSA1900	1900	22.44	175.388	10	24.2	3.0	No
Bluetooth	2450	5.74	3.750	10	0.6	3.0	Yes
WiFi	2450	9.28	8.472	10	1.3	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:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

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

Simultaneous SAR test exclusion considerations:

GSM with BT:

Mode	Position	Reported SAR (W/kg)		ΣSAR
		GSM	BT	< 1.6W/kg
GSM850	Left Head Cheek	0.238	0.157	0.395
	Left Head Tile	0.194	0.157	0.351
	Right Head Cheek	0.199	0.157	0.356
	Right Head Tilt	0.156	0.157	0.313
	Body-Headset-Front	0.208	0.078	0.286
	Body-Headset-Back	0.322	0.078	0.400
PCS1900	Left Head Cheek	0.286	0.157	0.443
	Left Head Tile	0.062	0.157	0.219
	Right Head Cheek	0.149	0.157	0.306
	Right Head Tilt	0.058	0.157	0.215
	Body-Headset-Front	0.352	0.078	0.430
	Body-Headset-Back	0.425	0.078	0.503

WCDMA with BT:

Mode	Position	Reported SAR (W/kg)		ΣSAR
		WCDMA	BT	< 1.6W/kg
WCDMA 850	Left Head Cheek	0.187	0.157	0.344
	Left Head Tile	0.135	0.157	0.292
	Right Head Cheek	0.118	0.157	0.275
	Right Head Tilt	0.095	0.157	0.252
	Body-Headset-Front	0.330	0.078	0.408
	Body-Headset-Back	0.576	0.078	0.654
WCDMA 1750	Left Head Cheek	0.506	0.157	0.663
	Left Head Tile	0.190	0.157	0.347
	Right Head Cheek	0.476	0.157	0.633
	Right Head Tilt	0.111	0.157	0.268
	Body-Headset-Front	0.337	0.078	0.415
	Body-Headset-Back	0.485	0.078	0.563
WCDMA 1900	Left Head Cheek	0.737	0.157	0.894
	Left Head Tile	0.079	0.157	0.236
	Right Head Cheek	0.295	0.157	0.452
	Right Head Tilt	0.132	0.157	0.289
	Body-Headset-Front	0.542	0.078	0.620
	Body-Headset-Back	0.963	0.078	1.041

GSM with WiFi:

Mode	Position	Reported SAR (W/kg)		ΣSAR
		GSM	WiFi	< 1.6W/kg
GSM850	Left Head Cheek	0.238	0.354	0.592
	Left Head Tile	0.194	0.354	0.548
	Right Head Cheek	0.199	0.354	0.553
	Right Head Tilt	0.156	0.354	0.510
	Body-Headset-Front	0.208	0.177	0.385
	Body-Headset-Back	0.322	0.177	0.499
PCS1900	Left Head Cheek	0.286	0.354	0.640
	Left Head Tile	0.062	0.354	0.416
	Right Head Cheek	0.149	0.354	0.503
	Right Head Tilt	0.058	0.354	0.412
	Body-Headset-Front	0.352	0.177	0.529
	Body-Headset-Back	0.425	0.177	0.602

WCDMA with WiFi:

Mode	Position	Reported SAR (W/kg)		ΣSAR
		WCDMA	WiFi	< 1.6W/kg
WCDMA 850	Left Head Cheek	0.187	0.354	0.541
	Left Head Tile	0.135	0.354	0.489
	Right Head Cheek	0.118	0.354	0.472
	Right Head Tilt	0.095	0.354	0.449
	Body-Headset-Front	0.330	0.177	0.507
	Body-Headset-Back	0.576	0.177	0.753
WCDMA1750	Left Head Cheek	0.506	0.354	0.860
	Left Head Tile	0.190	0.354	0.544
	Right Head Cheek	0.476	0.354	0.830
	Right Head Tilt	0.111	0.354	0.465
	Body-Headset-Front	0.337	0.177	0.514
	Body-Headset-Back	0.485	0.177	0.662
WCDMA 1900	Left Head Cheek	0.737	0.354	1.091
	Left Head Tile	0.079	0.354	0.433
	Right Head Cheek	0.295	0.354	0.649
	Right Head Tilt	0.132	0.354	0.486
	Body-Headset-Front	0.542	0.177	0.719
	Body-Headset-Back	0.963	0.177	1.140

Mode	Frequency (GHz)	Distance (mm)	P _{avg} (dBm)	P _{avg} (mW)	Estimated 1-g (W/kg)
Bluetooth Head	2.45	0	6.00	3.981	0.157
Bluetooth Body	2.45	10	6.00	3.981	0.078
WiFi Head	2.45	0	9.50	8.913	0.354
WiFi Body	2.45	10	9.50	8.913	0.177

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:

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

W/kg for test separation distances ≤ 50 mm;

where x = 7.5 for 1-g SAR.

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

Conclusion:

ΣSAR < 1.6 W/kg therefore simultaneous transmission SAR with Volume Scans is **not** required.

Hotspot:

Evaluations for Simultaneous SAR, Mobile Hot Spot Positions						
Test Position	Body-Front (1.0cm)	Body-Back (1.0cm)	Body-Left (1.0cm)	Body-Right (1.0cm)	Body-Bottom (1.0cm)	Body-Top (1.0cm)
Mode	Stand Alone 1-g SAR (W/Kg)					
GSM 850	0.720	1.266	0.711	0.626	0.040	/
PCS 1900	0.448	0.771	0.057	0.019	0.536	/
WCDMA850	0.330	0.576	0.288	0.287	0.005	/
WCDMA1750	0.337	0.485	0.097	0.051	0.446	/
WCDMA 1900	0.542	0.963	0.071	0.034	0.523	/
WiFi	0.177	0.177	/	0.177	/	/
	Σ 1-g SAR(W/Kg)					
GSM850 + WiFi	0.897	1.443	/	0.888	/	/
PCS 1900 + WiFi	0.625	0.948	/	0.234	/	/
WCDMA850 + WiFi	0.507	0.753	/	0.465	/	/
WCDMA1750 + WiFi	0.514	0.662	/	0.274	/	/
WCDMA 1900 + WiFi	0.719	1.140	/	0.248	/	/

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 : 0.012 W/kg
 Power Drift-Finish : 0.012 W/kg
 Power Drift (%) : -0.641

Tissue Data

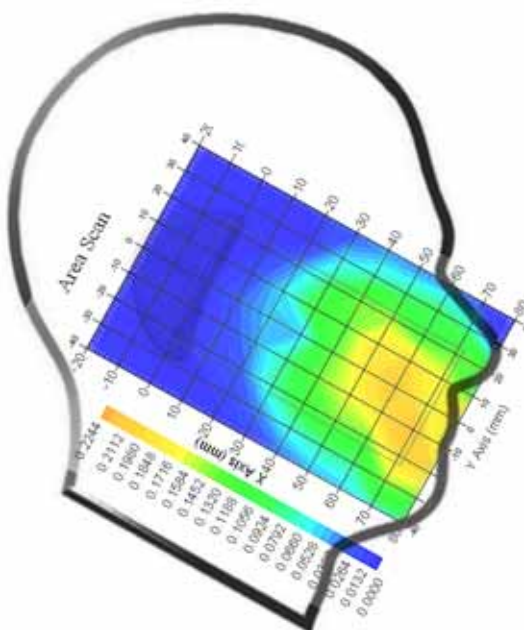
Type : Head
 Frequency : 824.2 MHz
 Epsilon : 41.10 F/m
 Sigma : 0.90 S/m
 Density : 1000.00 kg/cu. m

Probe Data

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

1 gram SAR value : 0.229 W/kg
 10 gram SAR value : 0.152 W/kg
 Area Scan Peak SAR : 0.223 W/kg
 Zoom Scan Peak SAR : 0.250 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 : 0.001 W/kg
 Power Drift-Finish : 0.001 W/kg
 Power Drift (%) : 0.602

Tissue Data

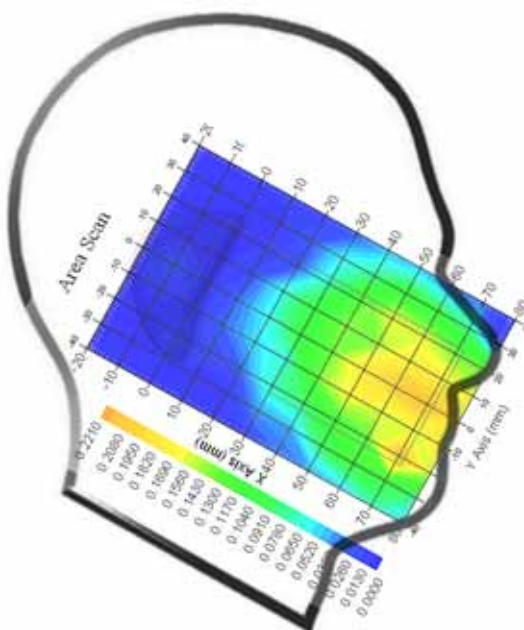
Type : Head
 Frequency : 836.6 MHz
 Epsilon : 41.04 F/m
 Sigma : 0.91 S/m
 Density : 1000.00 kg/cu. m

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 : 0.211 W/kg
 10 gram SAR value : 0.158 W/kg
 Area Scan Peak SAR : 0.220 W/kg
 Zoom Scan Peak SAR : 0.270 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 : 0.005 W/kg
 Power Drift-Finish : 0.005 W/kg
 Power Drift (%) : -1.984

Tissue Data

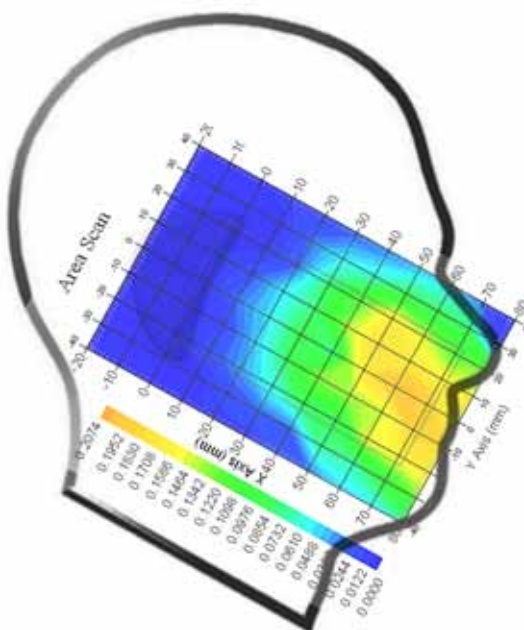
Type : Head
 Frequency : 848.8 MHz
 Epsilon : 40.82 F/m
 Sigma : 0.93 S/m
 Density : 1000.00 kg/cu. m

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 : 0.209 W/kg
 10 gram SAR value : 0.144 W/kg
 Area Scan Peak SAR : 0.203 W/kg
 Zoom Scan Peak SAR : 0.290 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 : 0.046 W/kg
 Power Drift-Finish : 0.046 W/kg
 Power Drift (%) : 0.045

Tissue Data

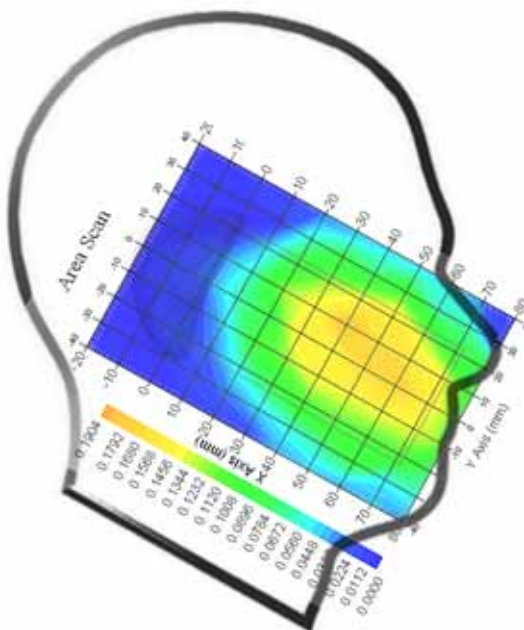
Type : Head
 Frequency : 836.6 MHz
 Epsilon : 41.04 F/m
 Sigma : 0.91 S/m
 Density : 1000.00 kg/cu. m

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 : 0.191 W/kg
 10 gram SAR value : 0.129 W/kg
 Area Scan Peak SAR : 0.185 W/kg
 Zoom Scan Peak SAR : 0.170 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 : 0.005 W/kg
 Power Drift-Finish : 0.004 W/kg
 Power Drift (%) : -1.035

Tissue Data

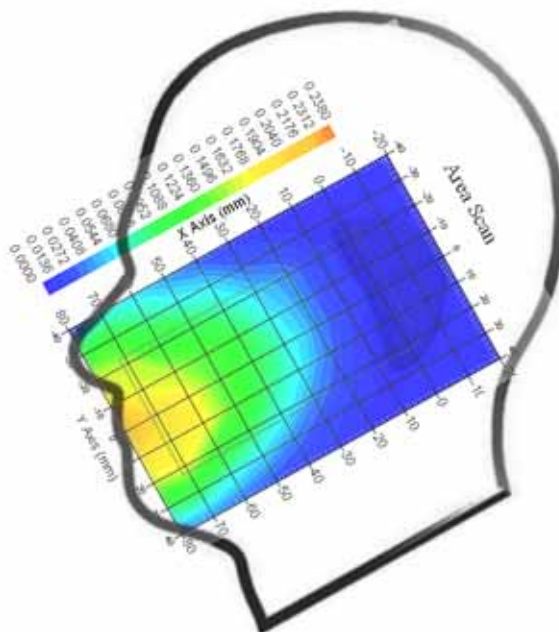
Type : Head
 Frequency : 836.6 MHz
 Epsilon : 41.04 F/m
 Sigma : 0.91 S/m
 Density : 1000.00 kg/cu. m

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 : 0.196 W/kg
 10 gram SAR value : 0.116 W/kg
 Area Scan Peak SAR : 0.234 W/kg
 Zoom Scan Peak SAR : 0.350 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 : 0.049 W/kg
 Power Drift-Finish : 0.049 W/kg
 Power Drift (%) : 0.249

Tissue Data

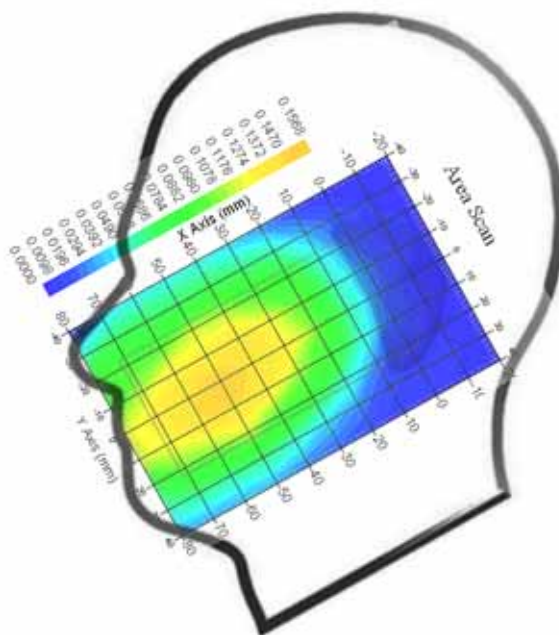
Type : Head
 Frequency : 836.6 MHz
 Epsilon : 41.04 F/m
 Sigma : 0.91 S/m
 Density : 1000.00 kg/cu. m

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 : 0.154 W/kg
 10 gram SAR value : 0.113 W/kg
 Area Scan Peak SAR : 0.155 W/kg
 Zoom Scan Peak SAR : 0.180 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 : 0.194 W/kg
 Power Drift-Finish : 0.201 W/kg
 Power Drift (%) : 3.656

Tissue Data

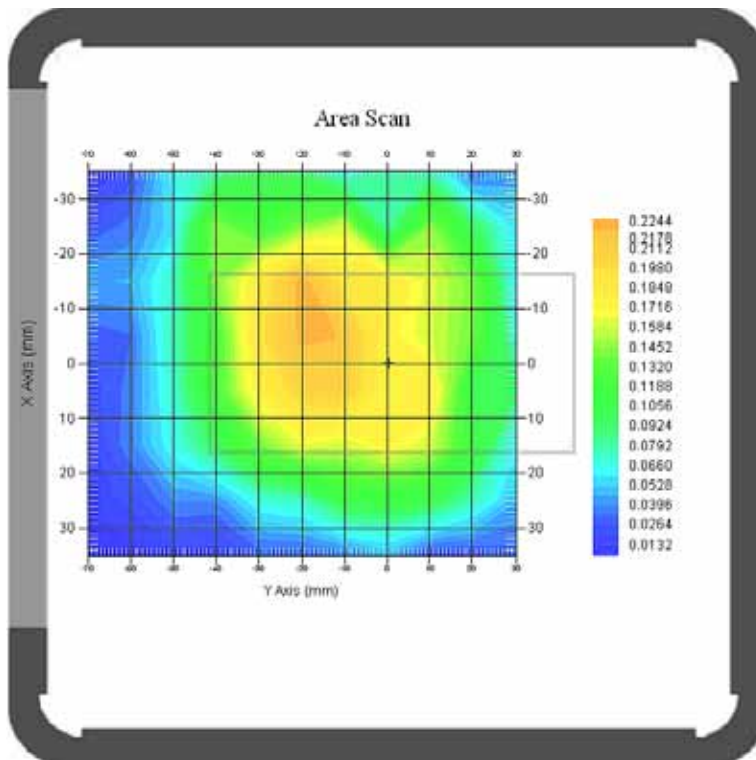
Type : Body
 Frequency : 836.6 MHz
 Epsilon : 55.24 F/m
 Sigma : 0.96 S/m
 Density : 1000.00 kg/cu. m

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 : 0.205 W/kg
 10 gram SAR value : 0.123 W/kg
 Area Scan Peak SAR : 0.224 W/kg
 Zoom Scan Peak SAR : 0.360 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 : 0.280 W/kg
 Power Drift-Finish : 0.270 W/kg
 Power Drift (%) : -3.816

Tissue Data

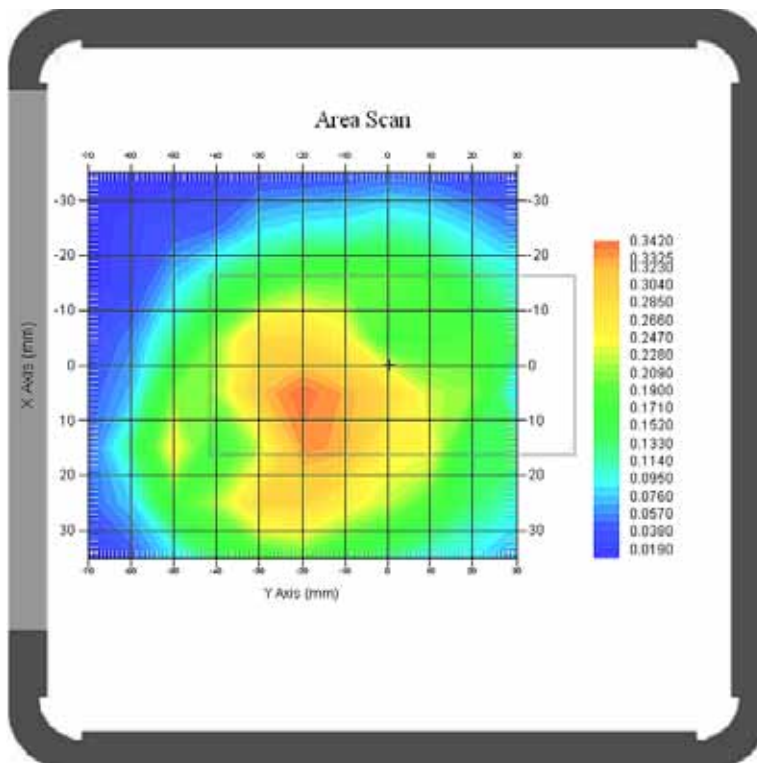
Type : Body
 Frequency : 836.6 MHz
 Epsilon : 55.24 F/m
 Sigma : 0.96 S/m
 Density : 1000.00 kg/cu. m

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 : 0.318 W/kg
 10 gram SAR value : 0.246 W/kg
 Area Scan Peak SAR : 0.341 W/kg
 Zoom Scan Peak SAR : 0.500 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 : 0.031 W/kg
 Power Drift-Finish : 0.031 W/kg
 Power Drift (%) : -0.155

Tissue Data

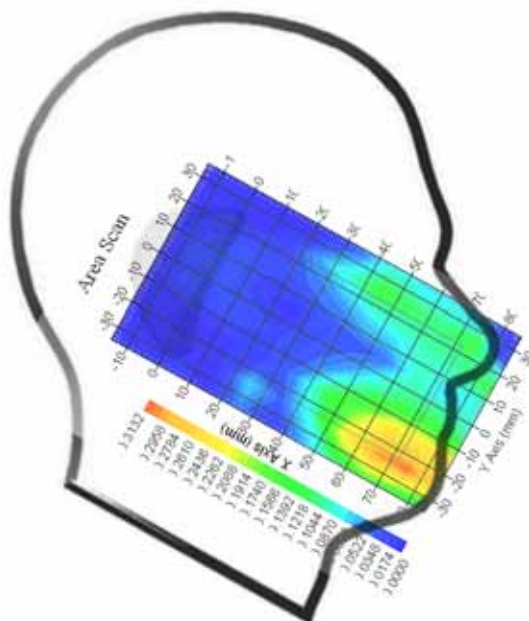
Type : Head
 Frequency : 1850.2 MHz
 Epsilon : 40.14 F/m
 Sigma : 1.38 S/m
 Density : 1000.00 kg/cu. m

Probe Data

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

1 gram SAR value : 0.251 W/kg
 10 gram SAR value : 0.132 W/kg
 Area Scan Peak SAR : 0.310 W/kg
 Zoom Scan Peak SAR : 0.400 W/kg

Plot 9#



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

Left Head Cheek (1880 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 : 0.032 W/kg
 Power Drift-Finish : 0.032 W/kg
 Power Drift (%) : -0.390

Tissue Data

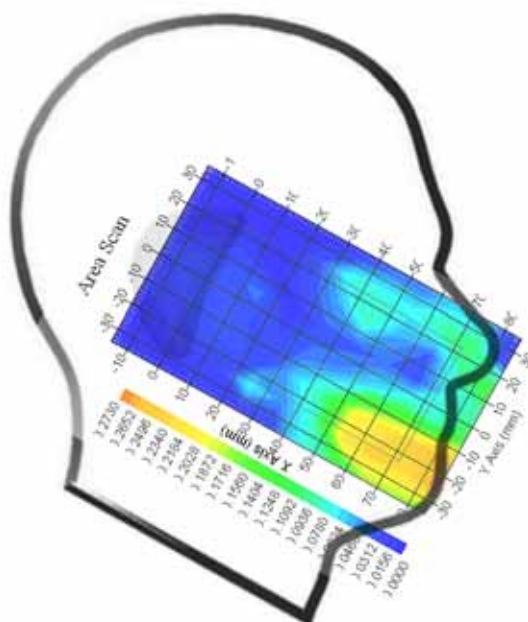
Type : Head
 Frequency : 1880 MHz
 Epsilon : 40.19 F/m
 Sigma : 1.40 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency Band : 1900
 Duty Cycle Factor : 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 : 0.245 W/kg
 10 gram SAR value : 0.121 W/kg
 Area Scan Peak SAR : 0.270 W/kg
 Zoom Scan Peak SAR : 0.450 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 : 0.039 W/kg
 Power Drift-Finish : 0.039 W/kg
 Power Drift (%) : -0.096

Tissue Data

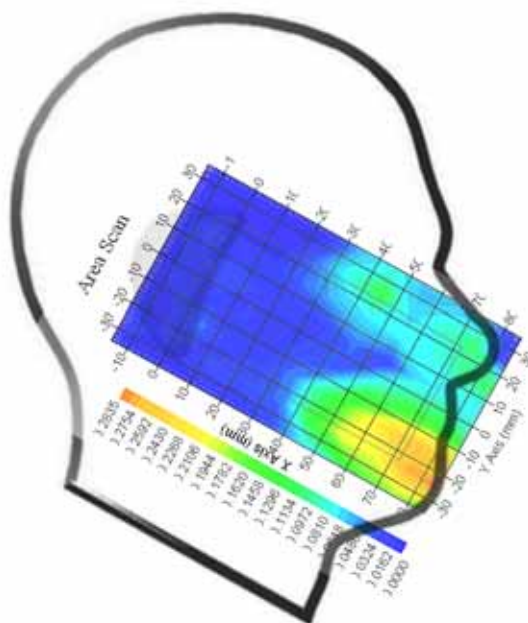
Type : Head
 Frequency : 1909.8 MHz
 Epsilon : 40.29 F/m
 Sigma : 1.42 S/m
 Density : 1000.00 kg/cu. m

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 : 0.268 W/kg
 10 gram SAR value : 0.099 W/kg
 Area Scan Peak SAR : 0.282 W/kg
 Zoom Scan Peak SAR : 0.440 W/kg

Plot 11#



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

Left Head Tilt (1880 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 : 0.100 W/kg
 Power Drift-Finish : 0.100 W/kg
 Power Drift (%) : -0.859

Tissue Data

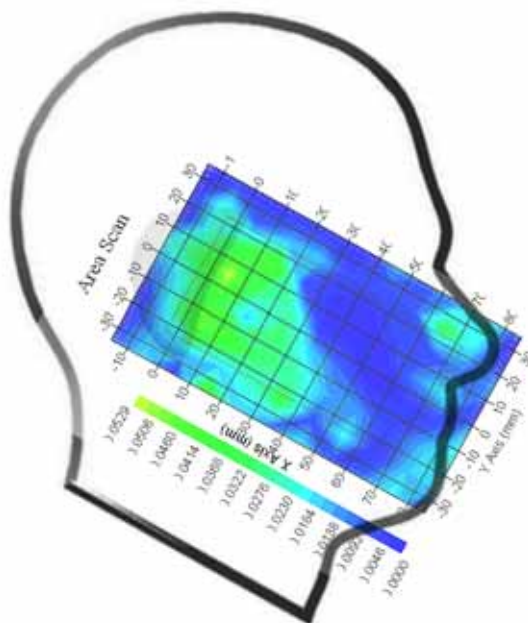
Type : Head
 Frequency : 1880 MHz
 Epsilon : 40.19 F/m
 Sigma : 1.40 S/m
 Density : 1000.00 kg/cu. M

Probe Data

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

1 gram SAR value : 0.059 W/kg
 10 gram SAR value : 0.034 W/kg
 Area Scan Peak SAR : 0.052 W/kg
 Zoom Scan Peak SAR : 0.010 W/kg

Plot 12#



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

Right Head Cheek (1880 MHz Middle Channel)

Measurement Data

Test mode : GSM
 Crest Factor : 8
 Scan Type : Complete
 Area Scan : 11x8x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.001 W/kg
 Power Drift-Finish : 0.001 W/kg
 Power Drift (%) : 0.581

Tissue Data

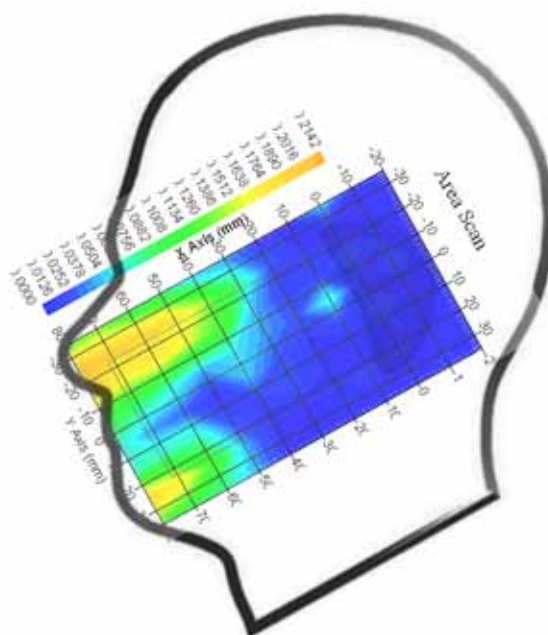
Type : Head
 Frequency : 1880 MHz
 Epsilon : 40.19 F/m
 Sigma : 1.40 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency Band : 1900
 Duty Cycle Factor : 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 : 0.141 W/kg
 10 gram SAR value : 0.078 W/kg
 Area Scan Peak SAR : 0.211 W/kg
 Zoom Scan Peak SAR : 0.290 W/kg

Plot 13#



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

Right Head Tilt (1880 MHz Middle Channel)

Measurement Data

Test mode : GSM
 Crest Factor : 8
 Scan Type : Complete
 Area Scan : 11x8x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.021 W/kg
 Power Drift-Finish : 0.021 W/kg
 Power Drift (%) : -0.058

Tissue Data

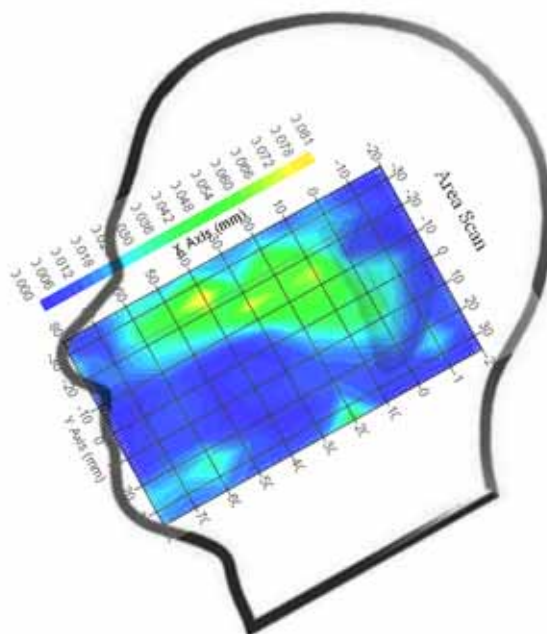
Type : Head
 Frequency : 1880 MHz
 Epsilon : 40.19 F/m
 Sigma : 1.40 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency Band : 1900
 Duty Cycle Factor : 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 : 0.055 W/kg
 10 gram SAR value : 0.033 W/kg
 Area Scan Peak SAR : 0.081 W/kg
 Zoom Scan Peak SAR : 0.120 W/kg

Plot 14#



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

Body-worn Front-Headset (1880 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 : 0.070 W/kg
 Power Drift-Finish : 0.071 W/kg
 Power Drift (%) : 0.177

Tissue Data

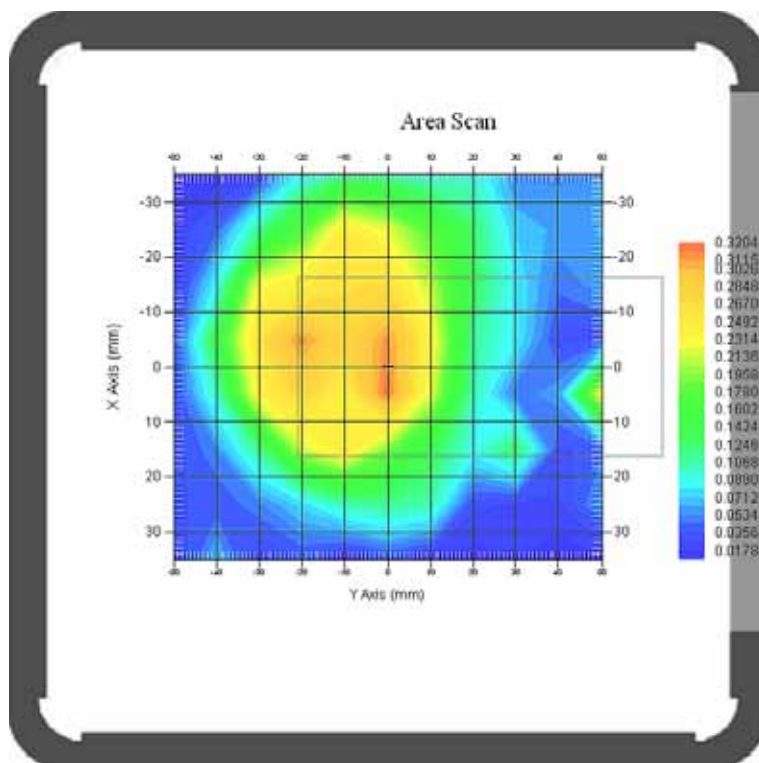
Type : Body
 Frequency : 1880 MHz
 Epsilon : 53.88 F/m
 Sigma : 1.52 S/m
 Density : 1000.00 kg/cu. m

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 : 0.334 W/kg
 10 gram SAR value : 0.230 W/kg
 Area Scan Peak SAR : 0.318 W/kg
 Zoom Scan Peak SAR : 0.520 W/kg

Plot 15#



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

Body- worn Back- Headset (1880 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 : 0.209 W/kg
 Power Drift-Finish : 0.208W/kg
 Power Drift (%) : -0.384

Tissue Data

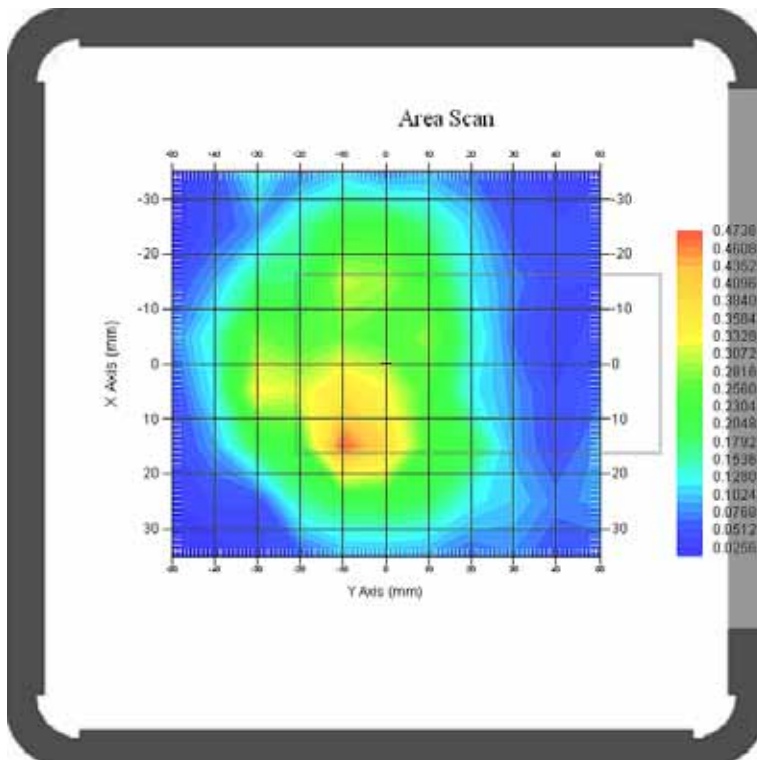
Type : Body
 Frequency : 1880 MHz
 Epsilon : 53.88 F/m
 Sigma : 1.52 S/m
 Density : 1000.00 kg/cu. m

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 : 0.403 W/kg
 10 gram SAR value : 0.206 W/kg
 Area Scan Peak SAR : 0.472 W/kg
 Zoom Scan Peak SAR : 0.830 W/kg

Plot 16#



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

WCDMA850; Left 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 : 0.001 W/kg
 Power Drift-Finish : 0.001 W/kg
 Power Drift (%) : -1.678

Tissue Data

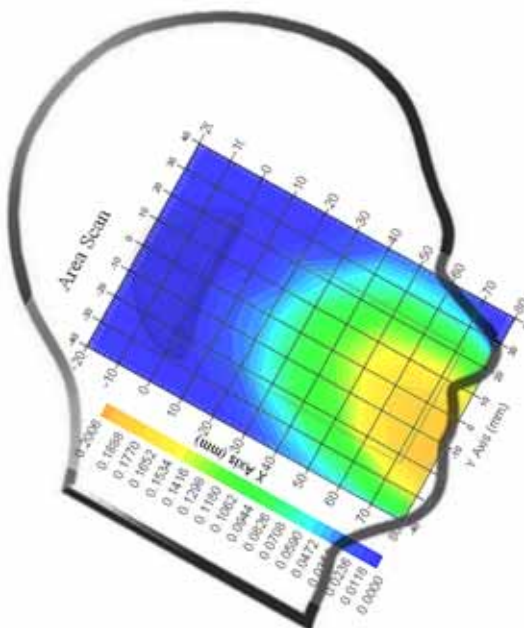
Type : Head
 Frequency : 826.4 MHz
 Epsilon : 40.98 F/m
 Sigma : 0.90 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency Band : 835
 Duty Cycle Factor : 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 : 0.183 W/kg
 10 gram SAR value : 0.072 W/kg
 Area Scan Peak SAR : 0.198 W/kg
 Zoom Scan Peak SAR : 0.210 W/kg

Plot 17#



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

WCDMA850; Left Head Tilt (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 : 0.028 W/kg
 Power Drift-Finish : 0.029 W/kg
 Power Drift (%) : 1.336

Tissue Data

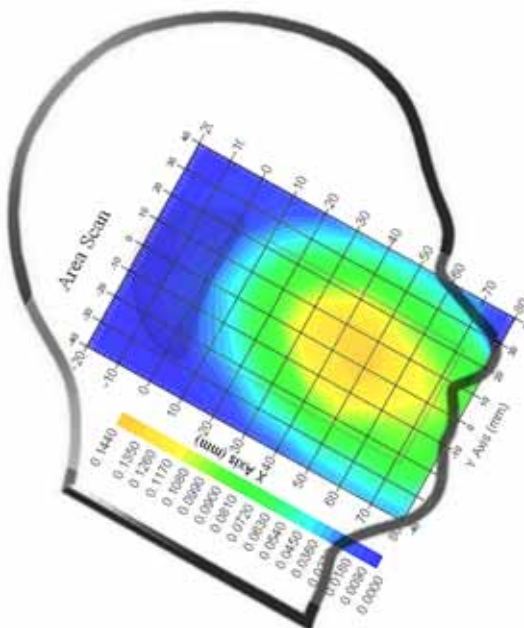
Type : Head
 Frequency : 826.4 MHz
 Epsilon : 40.98 F/m
 Sigma : 0.90 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency Band : 835
 Duty Cycle Factor : 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 : 0.132 W/kg
 10 gram SAR value : 0.097 W/kg
 Area Scan Peak SAR : 0.141 W/kg
 Zoom Scan Peak SAR : 0.170 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 : 0.001 W/kg
 Power Drift-Finish : 0.001 W/kg
 Power Drift (%) : 1.452

Tissue Data

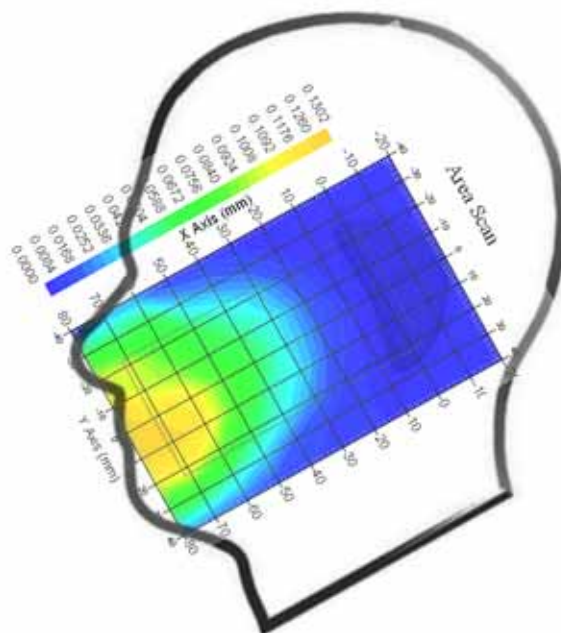
Type : Head
 Frequency : 826.4 MHz
 Epsilon : 40.98 F/m
 Sigma : 0.90 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency Band : 835
 Duty Cycle Factor : 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 : 0.116 W/kg
 10 gram SAR value : 0.081 W/kg
 Area Scan Peak SAR : 0.128 W/kg
 Zoom Scan Peak SAR : 0.150 W/kg

Plot 19#



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

WCDMA850; Right Head Tilt (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 : 0.042 W/kg
 Power Drift-Finish : 0.043 W/kg
 Power Drift (%) : 1.700

Tissue Data

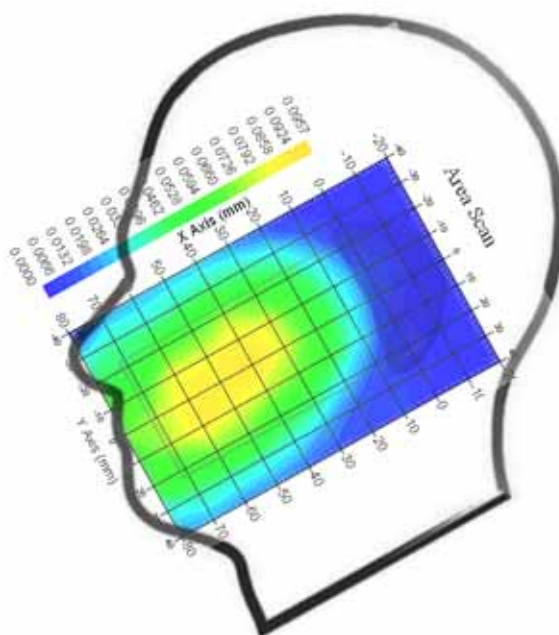
Type : Head
 Frequency : 826.4 MHz
 Epsilon : 40.98 F/m
 Sigma : 0.90 S/m
 Density : 1000.00 kg/cu. m

Probe Data

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

1 gram SAR value : 0.093 W/kg
 10 gram SAR value : 0.067 W/kg
 Area Scan Peak SAR : 0.093 W/kg
 Zoom Scan Peak SAR : 0.140 W/kg

Plot 20#



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

WCDMA1750; Left Head Cheek (1712.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1750
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.001 W/kg
 Power Drift-Finish : 0.001 W/kg
 Power Drift (%) : -1.626

Tissue Data

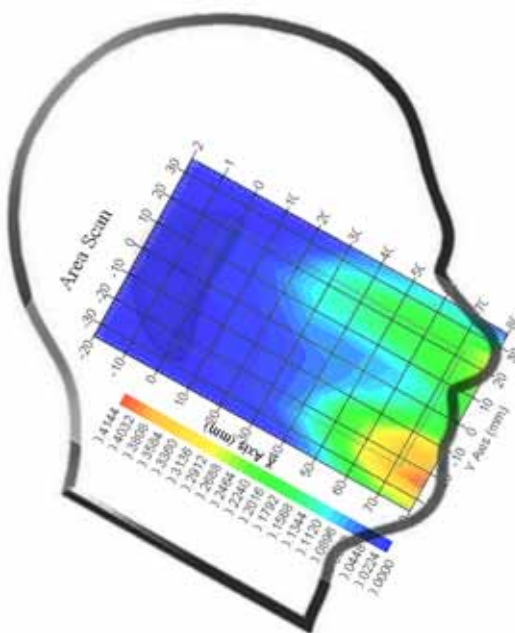
Type : Head
 Frequency : 1712.4 MHz
 Epsilon : 40.22 F/m
 Sigma : 1.39 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency Band : 1750
 Duty Cycle Factor : 1
 Conversion Factor : 5.4
 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 : 0.464 W/kg
 10 gram SAR value : 0.203 W/kg
 Area Scan Peak SAR : 0.409 W/kg
 Zoom Scan Peak SAR : 0.580 W/kg

Plot 21#



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

WCDMA1750; Left Head Tilt (1712.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1750
 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 : 0.028 W/kg
 Power Drift-Finish : 0.029 W/kg
 Power Drift (%) : 1.891

Tissue Data

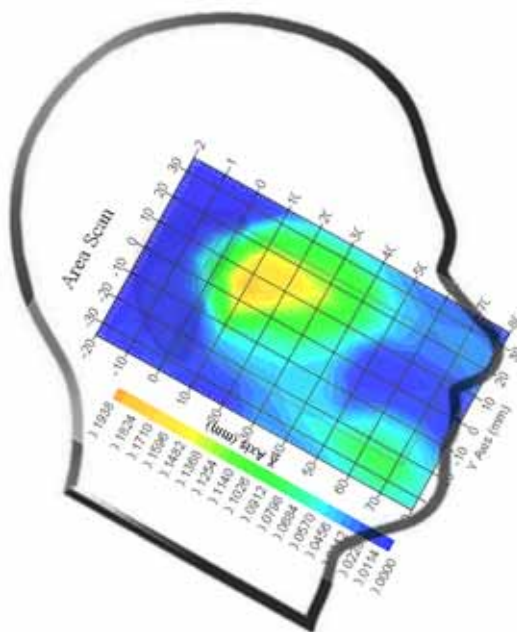
Type : Head
 Frequency : 1712.4 MHz
 Epsilon : 40.22 F/m
 Sigma : 1.39 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency Band : 1750
 Duty Cycle Factor : 1
 Conversion Factor : 5.4
 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 : 0.083 W/kg
 Area Scan Peak SAR : 0.190 W/kg
 Zoom Scan Peak SAR : 0.320 W/kg

Plot 22#



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

WCDMA1750; Right Head Cheek (1712.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1750
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 11x8x1: Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.001 W/kg
 Power Drift-Finish : 0.001 W/kg
 Power Drift (%) : 1.153

Tissue Data

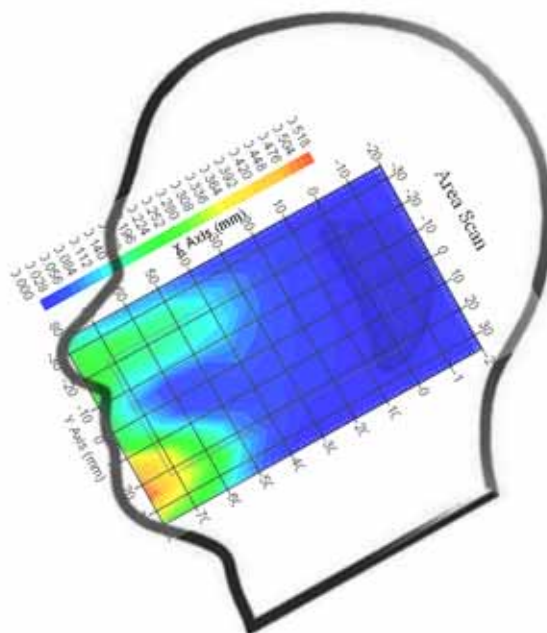
Type : Head
 Frequency : 1712.4 MHz
 Epsilon : 40.22 F/m
 Sigma : 1.39 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency Band : 1750
 Duty Cycle Factor : 1
 Conversion Factor : 5.4
 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 : 0.436 W/kg
 10 gram SAR value : 0.323 W/kg
 Area Scan Peak SAR : 0.518 W/kg
 Zoom Scan Peak SAR : 0.720 W/kg

Plot 23#



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

WCDMA1750; Right Head Tilt (1712.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1750
 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 : 0.042 W/kg
 Power Drift-Finish : 0.043 W/kg
 Power Drift (%) : 1.969

Tissue Data

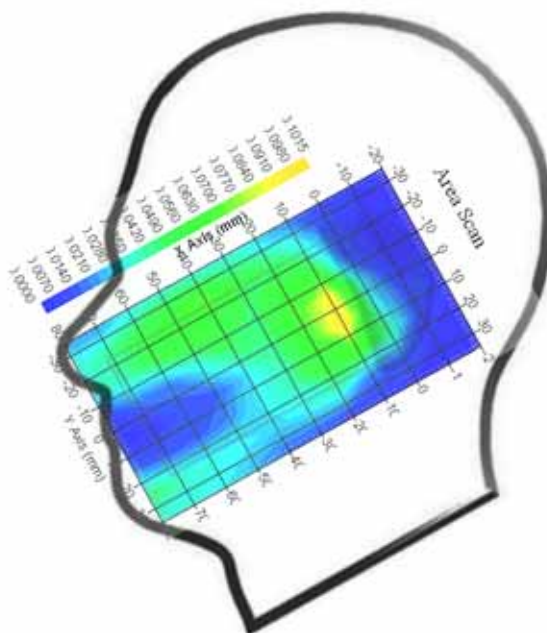
Type : Head
 Frequency : 1712.4 MHz
 Epsilon : 40.22 F/m
 Sigma : 1.39 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency Band : 1750
 Duty Cycle Factor : 1
 Conversion Factor : 5.4
 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 : 0.102 W/kg
 10 gram SAR value : 0.049 W/kg
 Area Scan Peak SAR : 0.099 W/kg
 Zoom Scan Peak SAR : 0.230 W/kg

Plot 24#



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

WCDMA1900; Left Head Cheek (1852.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1900
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 11x9x1: Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.088 W/kg
 Power Drift-Finish : 0.087 W/kg
 Power Drift (%) : -0.200

Tissue Data

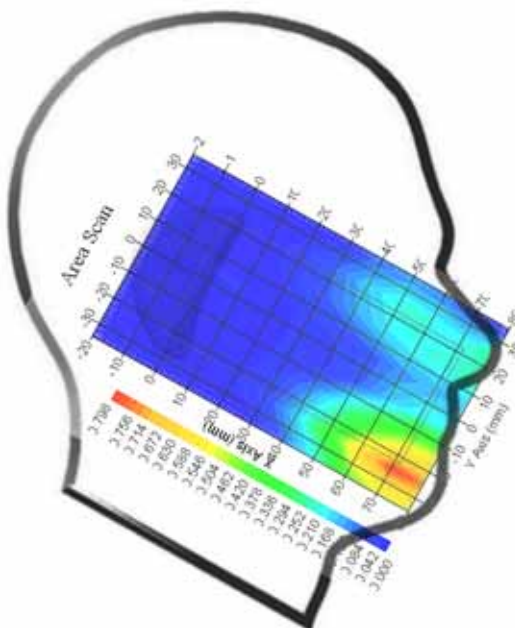
Type : Head
 Frequency : 1852.4 MHz
 Epsilon : 40.14 F/m
 Sigma : 1.38 S/m
 Density : 1000.00 kg/cu. m

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 : 0.727 W/kg
 10 gram SAR value : 0.373 W/kg
 Area Scan Peak SAR : 0.783 W/kg
 Zoom Scan Peak SAR : 1.341 W/kg

Plot 25#



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

WCDMA1900; Left Head Tilt (1852.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1900
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 11x9x1: Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.164 W/kg
 Power Drift-Finish : 0.161 W/kg
 Power Drift (%) : -1.904

Tissue Data

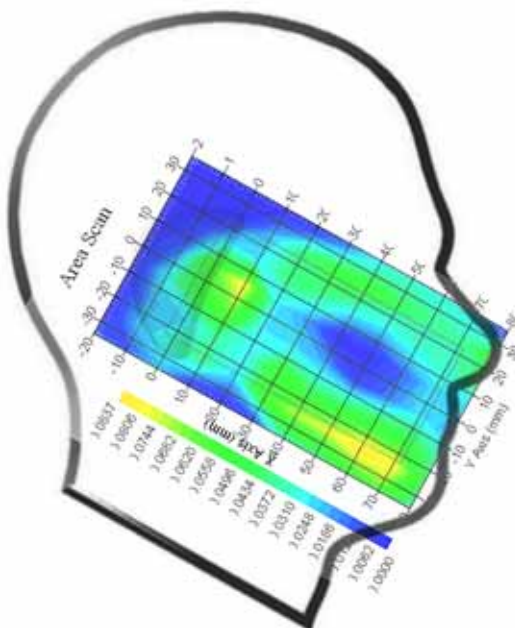
Type : Head
 Frequency : 1852.4 MHz
 Epsilon : 40.14 F/m
 Sigma : 1.38 S/m
 Density : 1000.00 kg/cu. m

Probe Data

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

1 gram SAR value : 0.078 W/kg
 10 gram SAR value : 0.037 W/kg
 Area Scan Peak SAR : 0.083 W/kg
 Zoom Scan Peak SAR : 0.120 W/kg

Plot 26#



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

WCDMA1900; Right Head Cheek (1852.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1900
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 11x9x1: Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.026 W/kg
 Power Drift-Finish : 0.026 W/kg
 Power Drift (%) : -1.488

Tissue Data

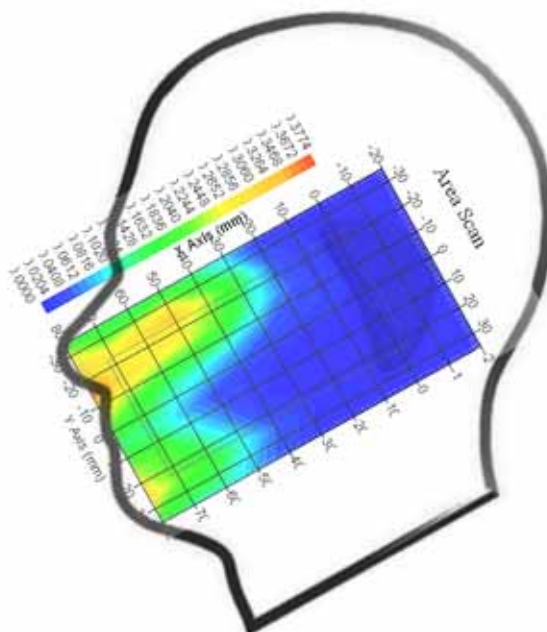
Type : Head
 Frequency : 1852.4 MHz
 Epsilon : 40.14 F/m
 Sigma : 1.38 S/m
 Density : 1000.00 kg/cu. m

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 : 0.291 W/kg
 10 gram SAR value : 0.156 W/kg
 Area Scan Peak SAR : 0.368 W/kg
 Zoom Scan Peak SAR : 0.550 W/kg

Plot 27#



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

WCDMA1900; Right Head Tilt (1852.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1900
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 11x9x1: Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7: Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.199 W/kg
 Power Drift-Finish : 0.201 W/kg
 Power Drift (%) : 3.467

Tissue Data

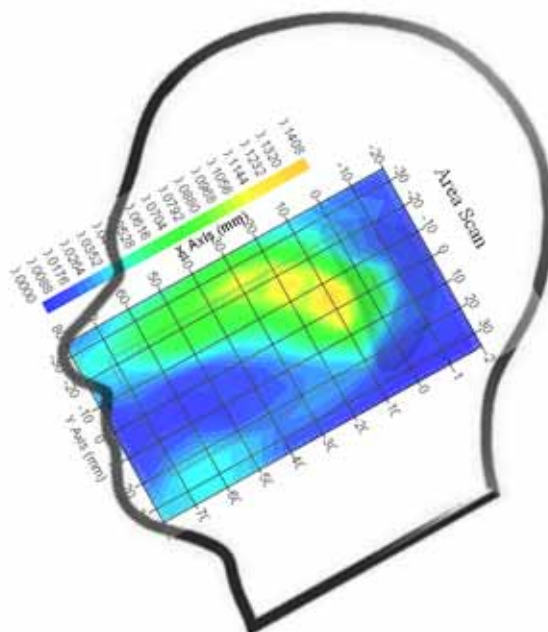
Type : Head
 Frequency : 1852.4 MHz
 Epsilon : 40.14 F/m
 Sigma : 1.38 S/m
 Density : 1000.00 kg/cu. m

Probe Data

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

1 gram SAR value : 0.130 W/kg
 10 gram SAR value : 0.064 W/kg
 Area Scan Peak SAR : 0.137 W/kg
 Zoom Scan Peak SAR : 0.290 W/kg

Plot 28#



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 : 0.588 W/kg
 Power Drift-Finish : 0.586 W/kg
 Power Drift (%) : -0.714

Tissue Data

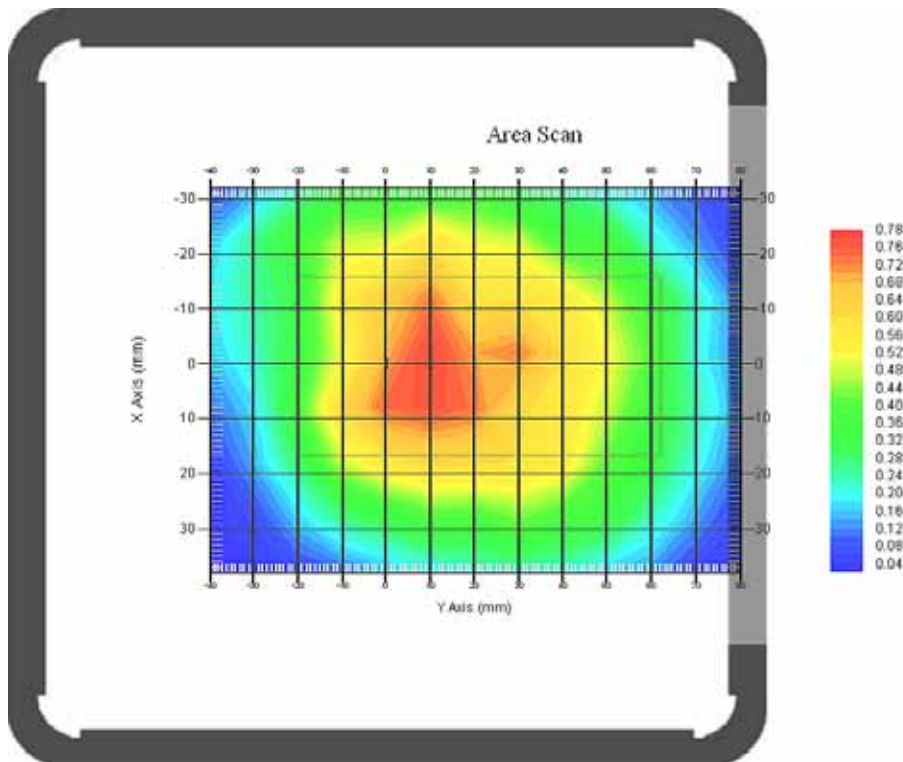
Type : Body
 Frequency : 836.6 MHz
 Epsilon : 55.24 F/m
 Sigma : 0.96 S/m
 Density : 1000.00 kg/cu. m

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 : 0.724 W/kg
 10 gram SAR value : 0.491 W/kg
 Area Scan Peak SAR : 0.769 W/kg
 Zoom Scan Peak SAR : 0.940 W/kg

Plot 29#



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 : 8x11x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.501 W/kg
 Power Drift-Finish : 0.511 W/kg
 Power Drift (%) : 2.423

Tissue Data

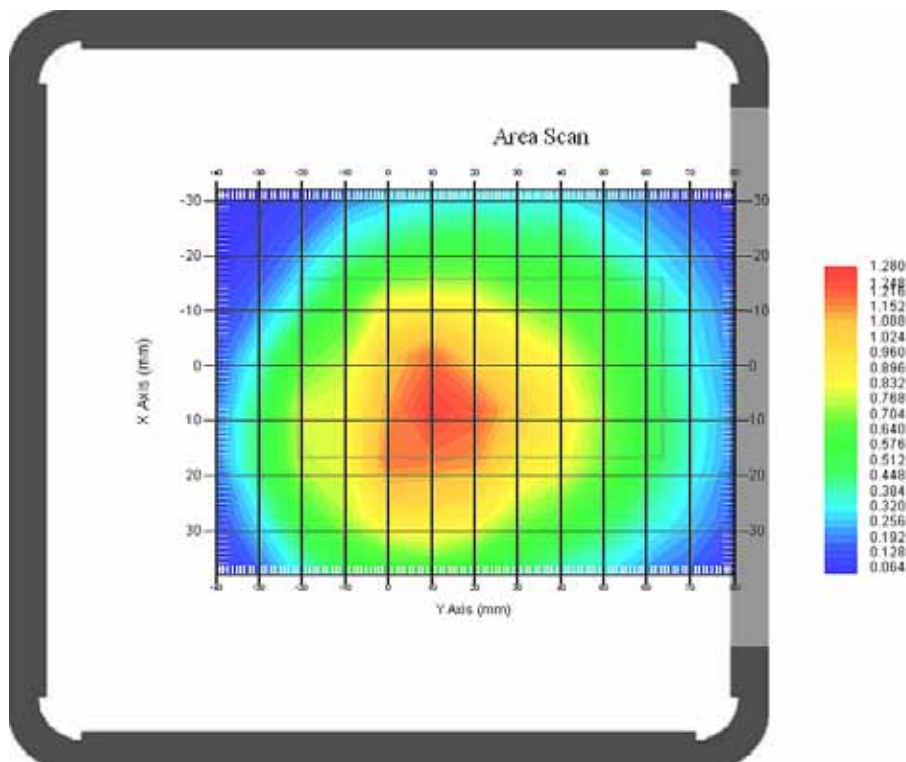
Type : Body
 Frequency : 824.2 MHz
 Epsilon : 55.16 F/m
 Sigma : 0.94 S/m
 Density : 1000.00 kg/cu. m

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 : 1.090 W/kg
 10 gram SAR value : 0.717 W/kg
 Area Scan Peak SAR : 1.253 W/kg
 Zoom Scan Peak SAR : 1.461 W/kg

Plot 30#



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 : 8x11x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.677 W/kg
 Power Drift-Finish : 0.678 W/kg
 Power Drift (%) : 0.849

Tissue Data

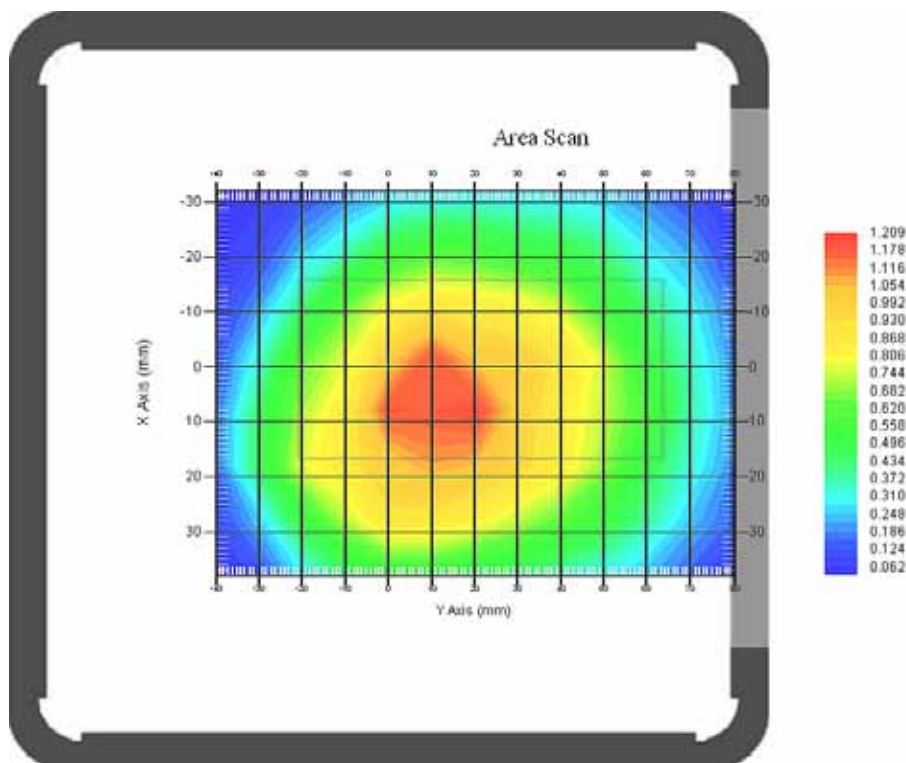
Type : Body
 Frequency : 836.6 MHz
 Epsilon : 55.24 F/m
 Sigma : 0.96 S/m
 Density : 1000.00 kg/cu. m

Probe Data

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

1 gram SAR value : 1.190 W/kg
 10 gram SAR value : 0.828 W/kg
 Area Scan Peak SAR : 1.186 W/kg
 Zoom Scan Peak SAR : 1.651 W/kg

Plot 31#



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 : 8x11x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.547 W/kg
 Power Drift-Finish : 0.569 W/kg
 Power Drift (%) : 4.671

Tissue Data

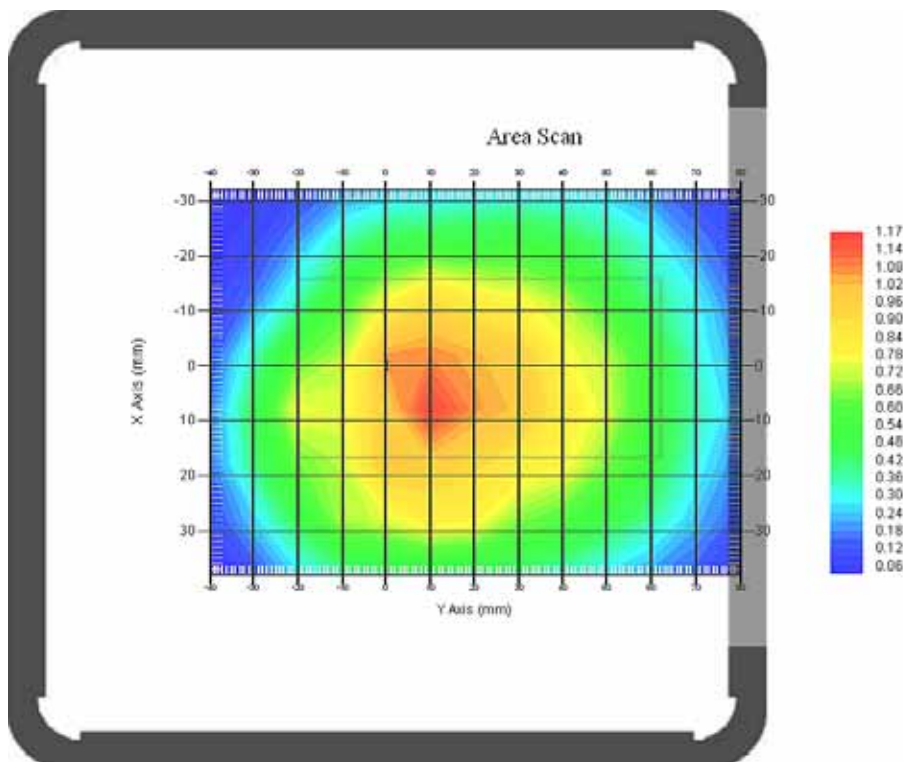
Type : Body
 Frequency : 848.8MHz
 Epsilon : 55.31 F/m
 Sigma : 0.98 S/m
 Density : 1000.00 kg/cu. m

Probe Data

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

1 gram SAR value : 1.091 W/kg
 10 gram SAR value : 0.729 W/kg
 Area Scan Peak SAR : 1.154 W/kg
 Zoom Scan Peak SAR : 1.561 W/kg

Plot 32#



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 : 8x11x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.400 W/kg
 Power Drift-Finish : 0.399 W/kg
 Power Drift (%) : -0.111

Tissue Data

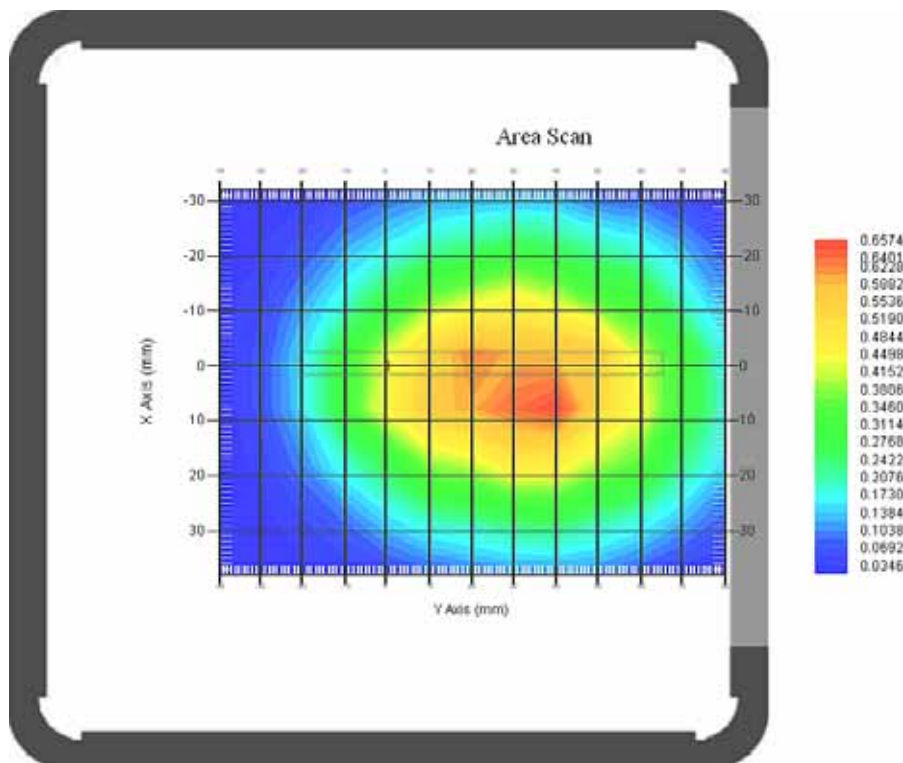
Type : Body
 Frequency : 836.6 MHz
 Epsilon : 55.24 F/m
 Sigma : 0.96 S/m
 Density : 1000.00 kg/cu. m

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 : 0.668 W/kg
 10 gram SAR value : 0.435 W/kg
 Area Scan Peak SAR : 0.654 W/kg
 Zoom Scan Peak SAR : 0.970 W/kg

Plot 33#



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 : 8x11x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.398 W/kg
 Power Drift-Finish : 0.386 W/kg
 Power Drift (%) : -3.272

Tissue Data

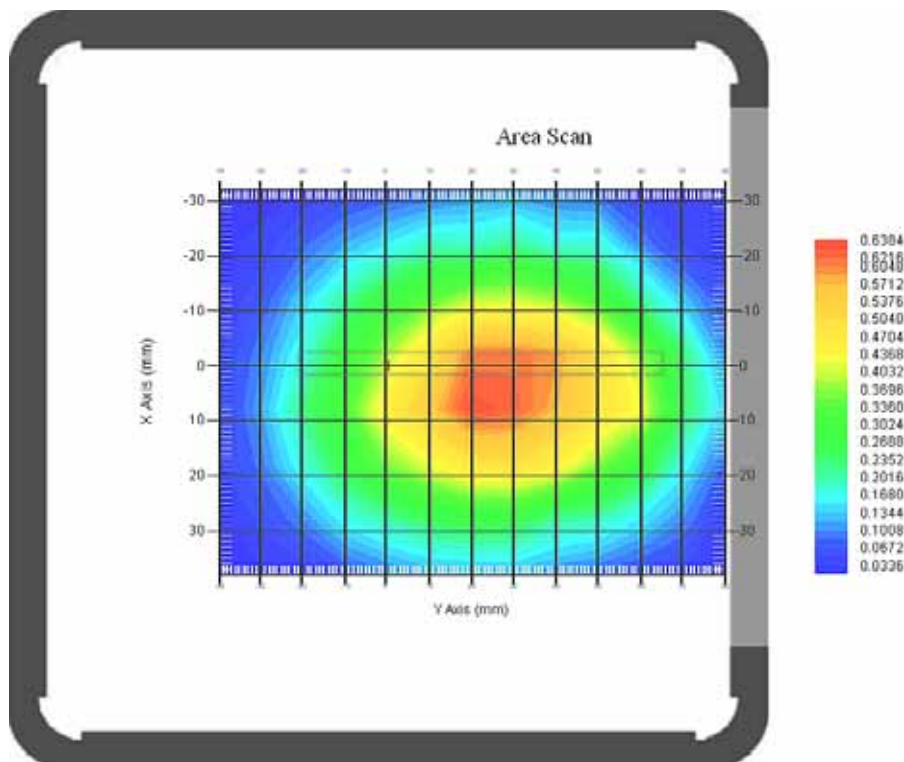
Type : Body
 Frequency : 836.6 MHz
 Epsilon : 55.24 F/m
 Sigma : 0.96 S/m
 Density : 1000.00 kg/cu. m

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 : 0.588 W/kg
 10 gram SAR value : 0.372 W/kg
 Area Scan Peak SAR : 0.631 W/kg
 Zoom Scan Peak SAR : 0.880 W/kg

Plot 34#



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 : 8x11x1 : 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 (%) : 0.375

Tissue Data

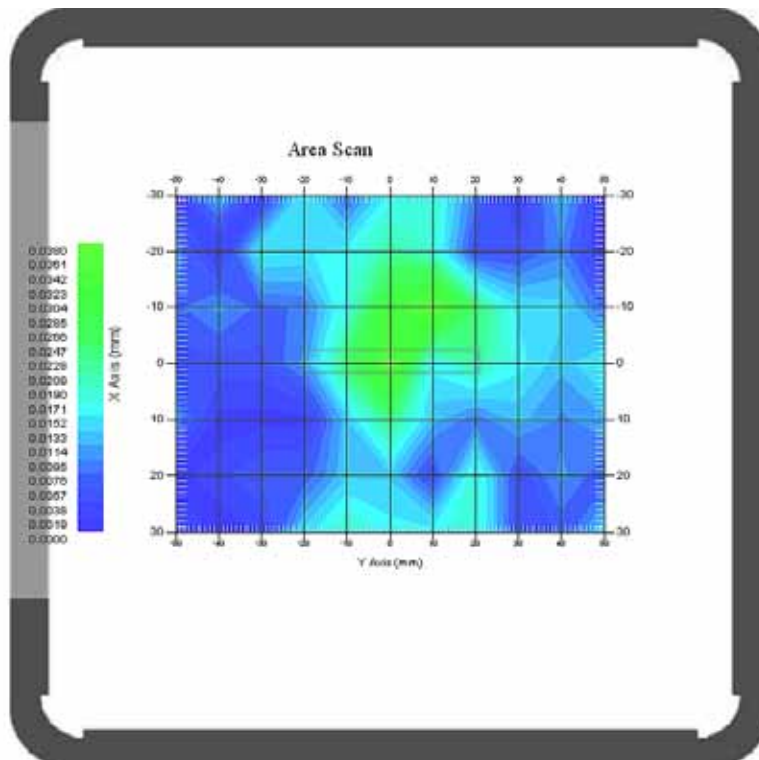
Type : Body
 Frequency : 836.6 MHz
 Epsilon : 55.24 F/m
 Sigma : 0.96 S/m
 Density : 1000.00 kg/cu. m

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 : 0.038 W/kg
 10 gram SAR value : 0.021 W/kg
 Area Scan Peak SAR : 0.038 W/kg
 Zoom Scan Peak SAR : 0.090 W/kg

Plot 35#



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

Hot Spot: Body-Front (1880 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 : 0.287 W/kg
 Power Drift-Finish : 0.289 W/kg
 Power Drift (%) : 0.236

Tissue Data

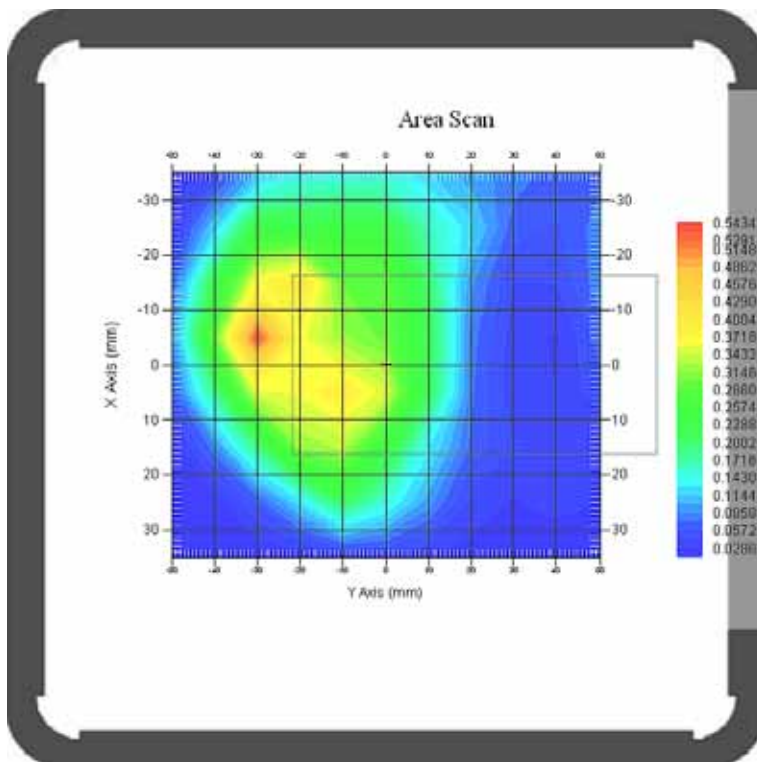
Type : Body
 Frequency : 1880 MHz
 Epsilon : 53.88 F/m
 Sigma : 1.52 S/m
 Density : 1000.00 kg/cu. m

Probe Data

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

1 gram SAR value : 0.420 W/kg
 10 gram SAR value : 0.214 W/kg
 Area Scan Peak SAR : 0.532 W/kg
 Zoom Scan Peak SAR : 0.800 W/kg

Plot 36#



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

Hot Spot: Body-Back (1880 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 : 0.611 W/kg
 Power Drift-Finish : 0.637 W/kg
 Power Drift (%) : 4.882

Tissue Data

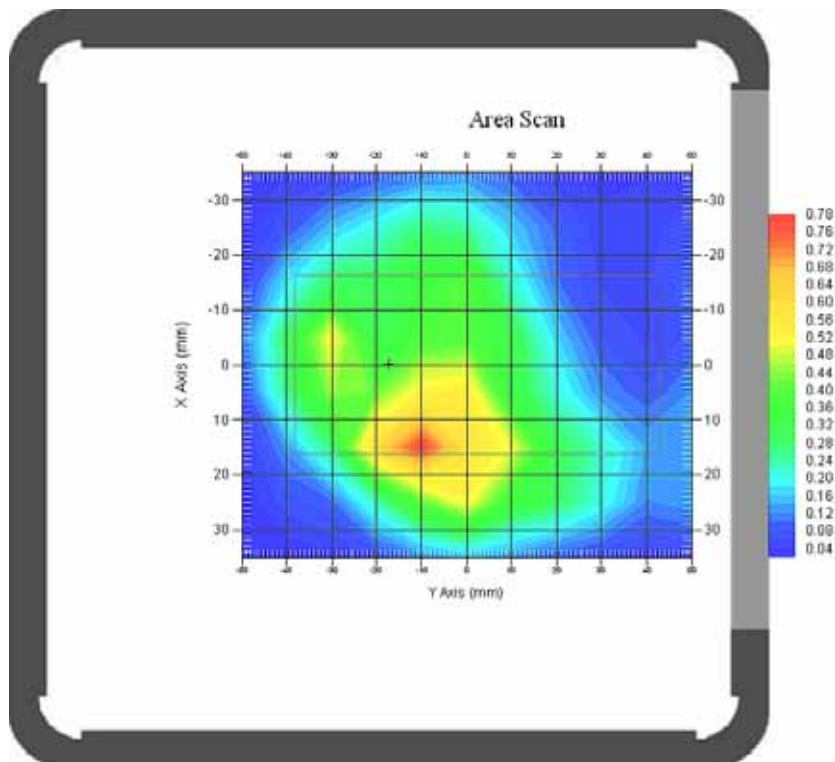
Type : Body
 Frequency : 1880 MHz
 Epsilon : 53.88 F/m
 Sigma : 1.52 S/m
 Density : 1000.00 kg/cu. m

Probe Data

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

1 gram SAR value : 0.753 W/kg
 10 gram SAR value : 0.295 W/kg
 Area Scan Peak SAR : 0.773 W/kg
 Zoom Scan Peak SAR : 1.301 W/kg

Plot 37#



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

Hot Spot: Body-Left (1880 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 : 0.040 W/kg
 Power Drift-Finish : 0.041 W/kg
 Power Drift (%) : 0.657

Tissue Data

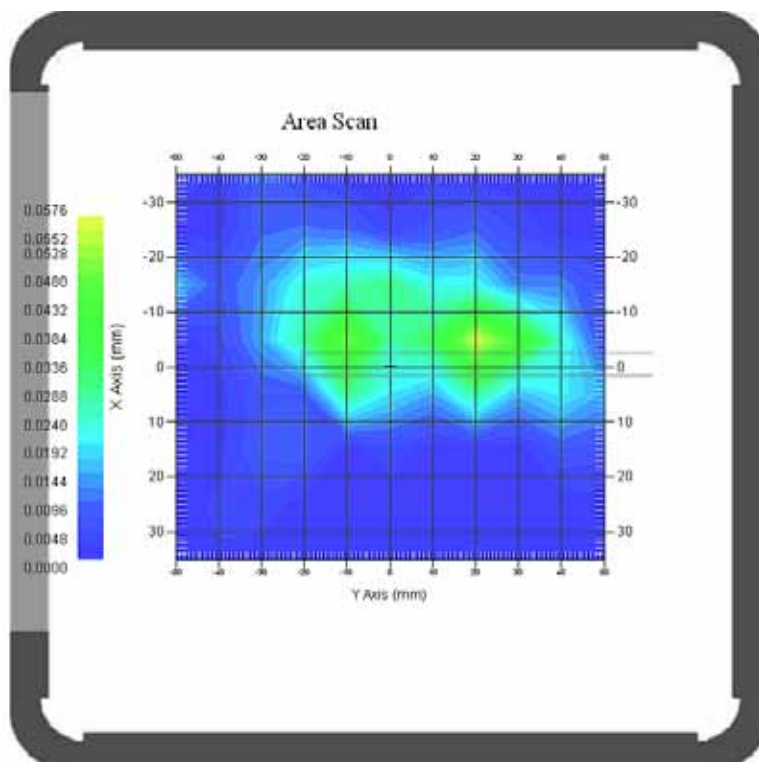
Type : Body
 Frequency : 1880 MHz
 Epsilon : 53.88 F/m
 Sigma : 1.52 S/m
 Density : 1000.00 kg/cu. m

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 : 0.053 W/kg
 10 gram SAR value : 0.044 W/kg
 Area Scan Peak SAR : 0.056 W/kg
 Zoom Scan Peak SAR : 0.170 W/kg

Plot 38#



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

Hot Spot: Body-Right (1880 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 : 0.010 W/kg
 Power Drift-Finish : 0.011 W/kg
 Power Drift (%) : 0.772

Tissue Data

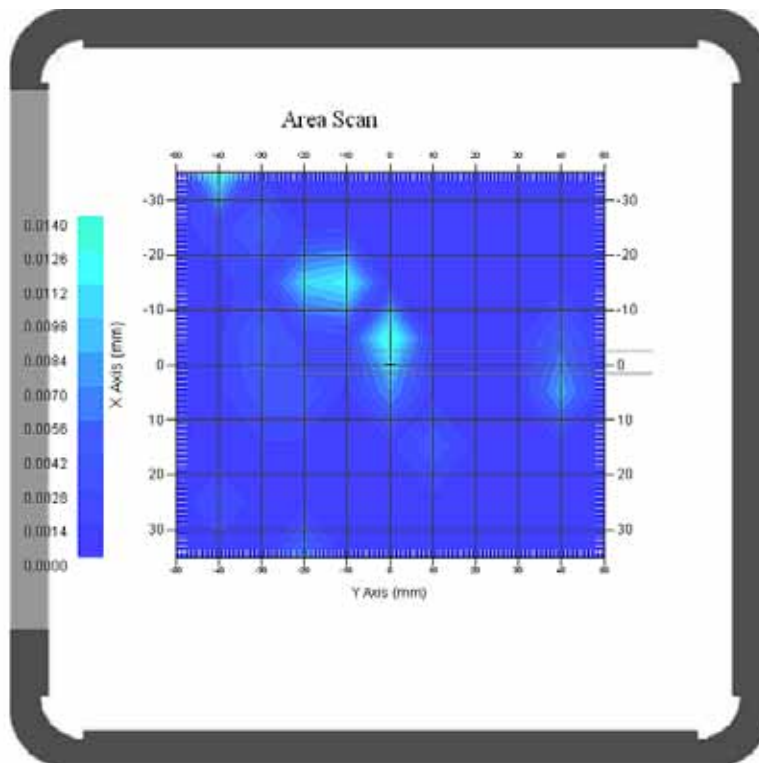
Type : Body
 Frequency : 1880 MHz
 Epsilon : 53.88 F/m
 Sigma : 1.52 S/m
 Density : 1000.00 kg/cu. m

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 : 0.018 W/kg
 10 gram SAR value : 0.007 W/kg
 Area Scan Peak SAR : 0.014 W/kg
 Zoom Scan Peak SAR : 0.070 W/kg

Plot 39#



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

Hot Spot: Body-Bottom (1880 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 : 0.095 W/kg
 Power Drift-Finish : 0.095 W/kg
 Power Drift (%) : 0.613

Tissue Data

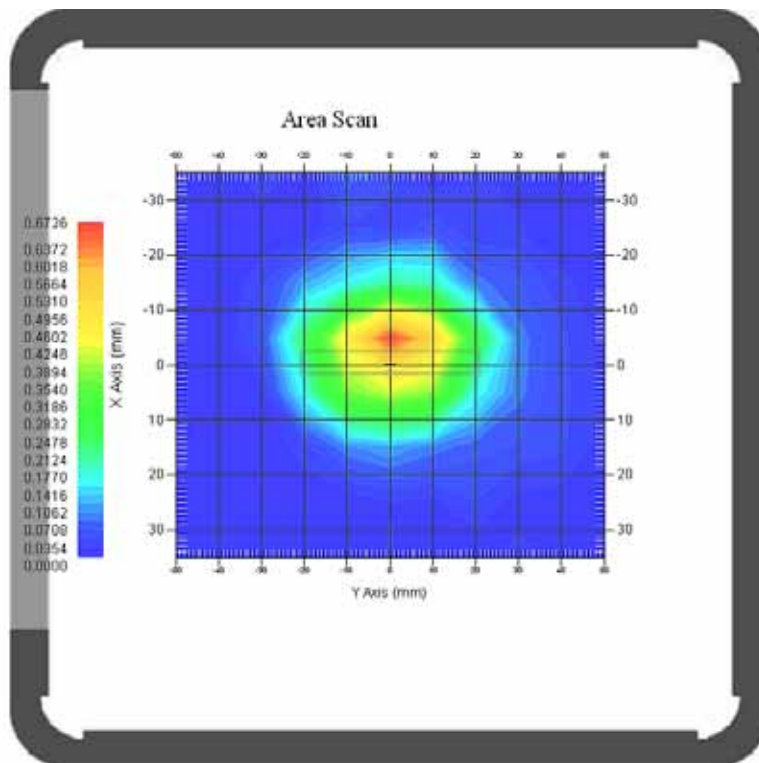
Type : Body
 Frequency : 1880 MHz
 Epsilon : 53.88 F/m
 Sigma : 1.52 S/m
 Density : 1000.00 kg/cu. m

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 : 0.503 W/kg
 10 gram SAR value : 0.232 W/kg
 Area Scan Peak SAR : 0.669 W/kg
 Zoom Scan Peak SAR : 0.900 W/kg

Plot 40#



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

Hot Spot: WCDMA850; Body-Front (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 : 0.256 W/kg
 Power Drift-Finish : 0.259 W/kg
 Power Drift (%) : 1.816

Tissue Data

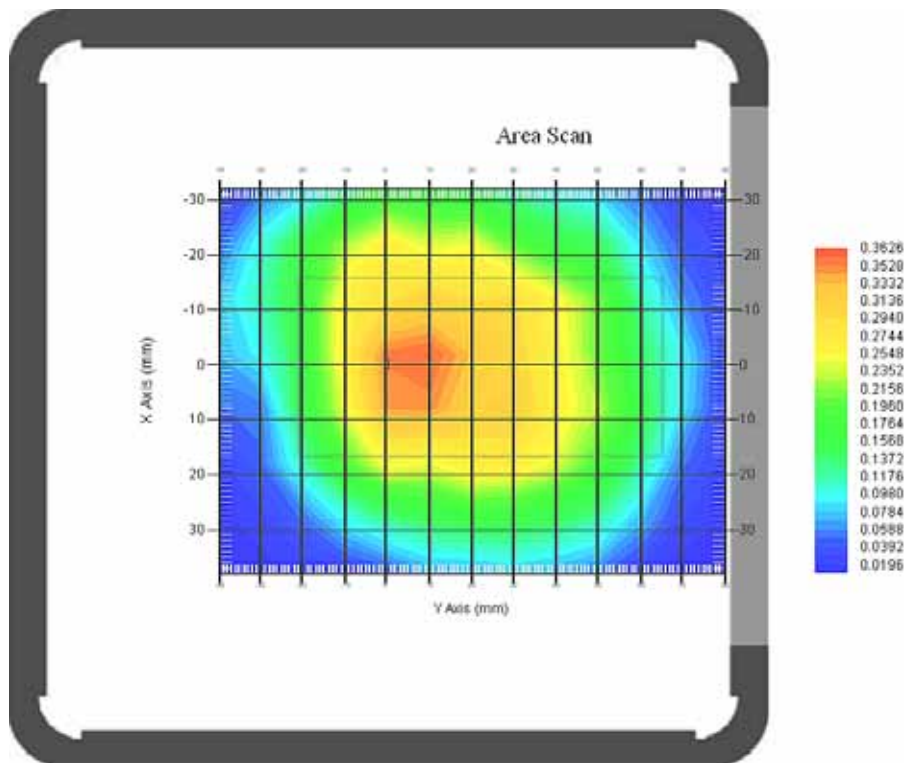
Type : Body
 Frequency : 826.4 MHz
 Epsilon : 55.17 F/m
 Sigma : 0.95 S/m
 Density : 1000.00 kg/cu. m

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 : 0.323 W/kg
 10 gram SAR value : 0.208 W/kg
 Area Scan Peak SAR : 0.354 W/kg
 Zoom Scan Peak SAR : 0.480 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 : 0.355 W/kg
 Power Drift-Finish : 0.353 W/kg
 Power Drift (%) : -1.128

Tissue Data

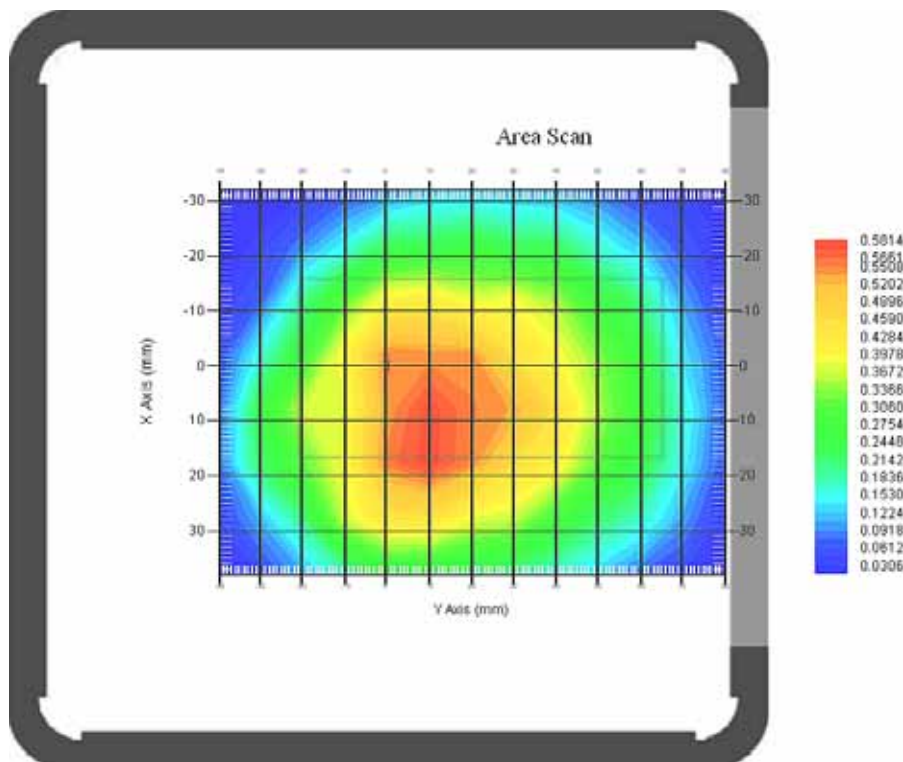
Type : Body
 Frequency : 826.4 MHz
 Epsilon : 55.17 F/m
 Sigma : 0.95 S/m
 Density : 1000.00 kg/cu. m

Probe Data

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

1 gram SAR value : 0.564 W/kg
 10 gram SAR value : 0.369 W/kg
 Area Scan Peak SAR : 0.574 W/kg
 Zoom Scan Peak SAR : 0.820 W/kg

Plot 42#



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

Hot Spot: WCDMA850; Body-Left (826.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA850
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 7x11x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.164 W/kg
 Power Drift-Finish : 0.165 W/kg
 Power Drift (%) : 0.648

Tissue Data

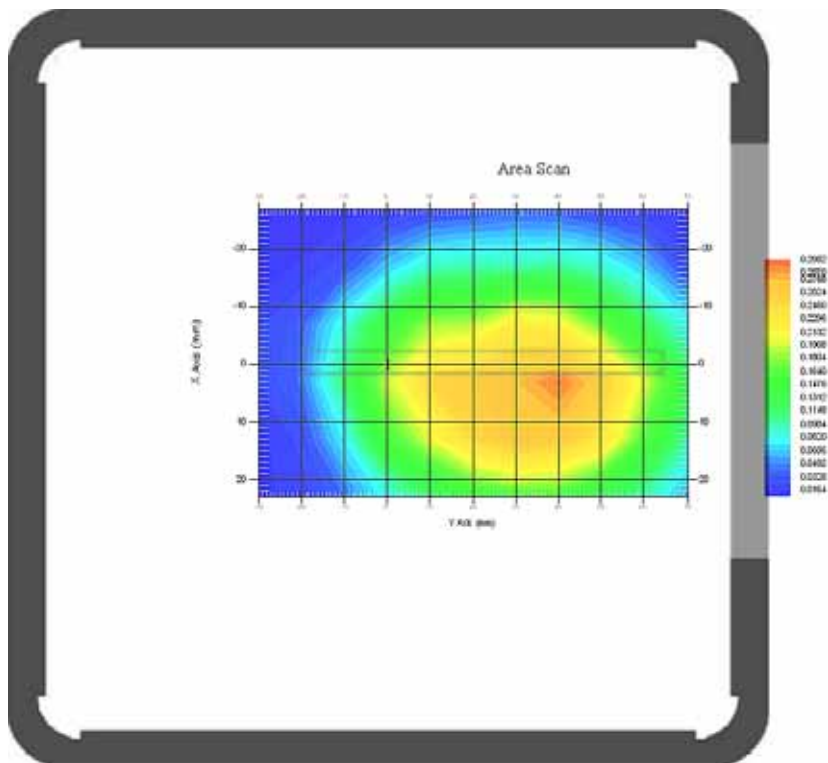
Type : Body
 Frequency : 826.4 MHz
 Epsilon : 55.17 F/m
 Sigma : 0.95 S/m
 Density : 1000.00 kg/cu. m

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 : 0.282 W/kg
 10 gram SAR value : 0.173 W/kg
 Area Scan Peak SAR : 0.289 W/kg
 Zoom Scan Peak SAR : 0.420 W/kg

Plot 43#



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

Hot Spot: WCDMA850; Body-Right (826.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA850
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 7x11x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.134 W/kg
 Power Drift-Finish : 0.135 W/kg
 Power Drift (%) : 0.032

Tissue Data

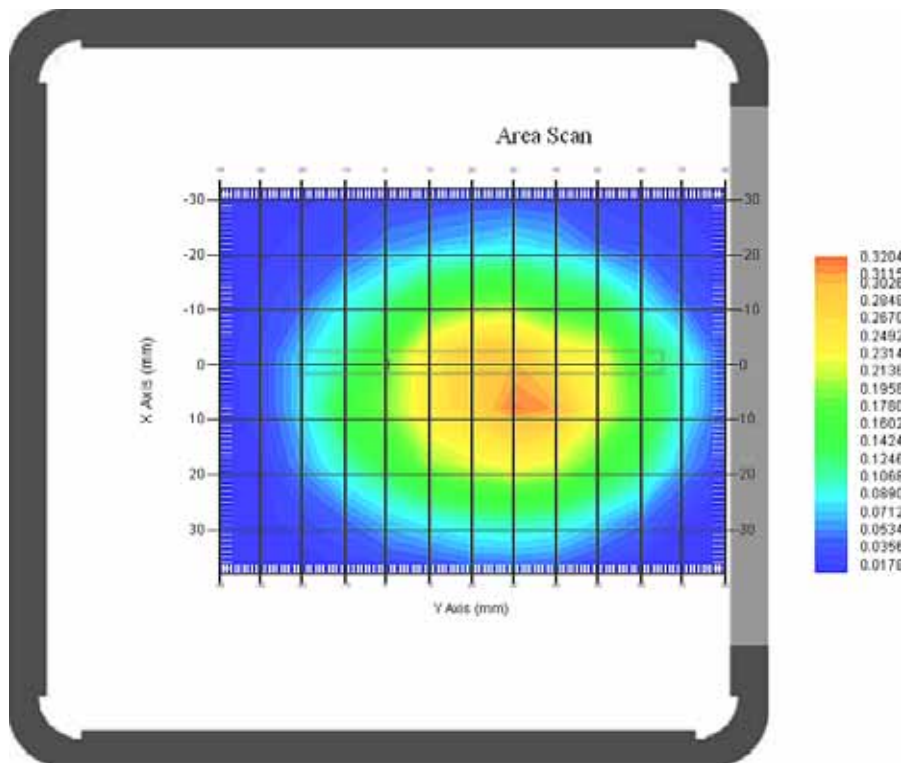
Type : Body
 Frequency : 826.4 MHz
 Epsilon : 55.17 F/m
 Sigma : 0.95 S/m
 Density : 1000.00 kg/cu. m

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 : 0.281 W/kg
 10 gram SAR value : 0.171 W/kg
 Area Scan Peak SAR : 0.314 W/kg
 Zoom Scan Peak SAR : 0.420 W/kg

Plot 44#



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

Hot Spot: WCDMA850; Body-Bottom (826.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA850
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 7x9x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.003 W/kg
 Power Drift-Finish : 0.003 W/kg
 Power Drift (%) : 2.366

Tissue Data

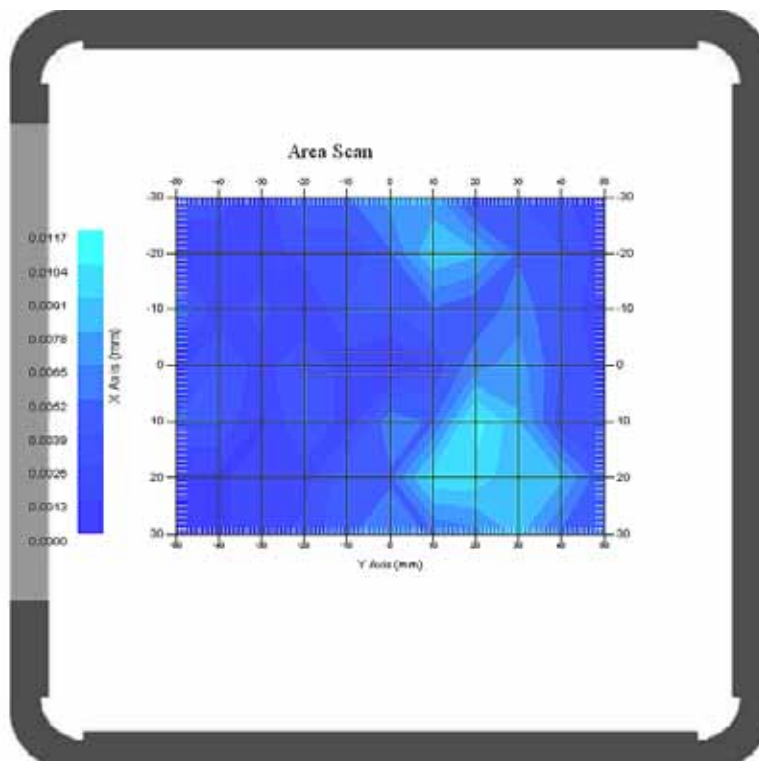
Type : Body
 Frequency : 826.4 MHz
 Epsilon : 55.17 F/m
 Sigma : 0.95 S/m
 Density : 1000.00 kg/cu. m

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 : 0.005 W/kg
 10 gram SAR value : 0.003 W/kg
 Area Scan Peak SAR : 0.011 W/kg
 Zoom Scan Peak SAR : 0.020 W/kg

Plot 45#



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

Hot Spot: WCDMA1750; Body-Front (1712.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1750
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 9x11x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.166 W/kg
 Power Drift-Finish : 0.161 W/kg
 Power Drift (%) : -3.166

Tissue Data

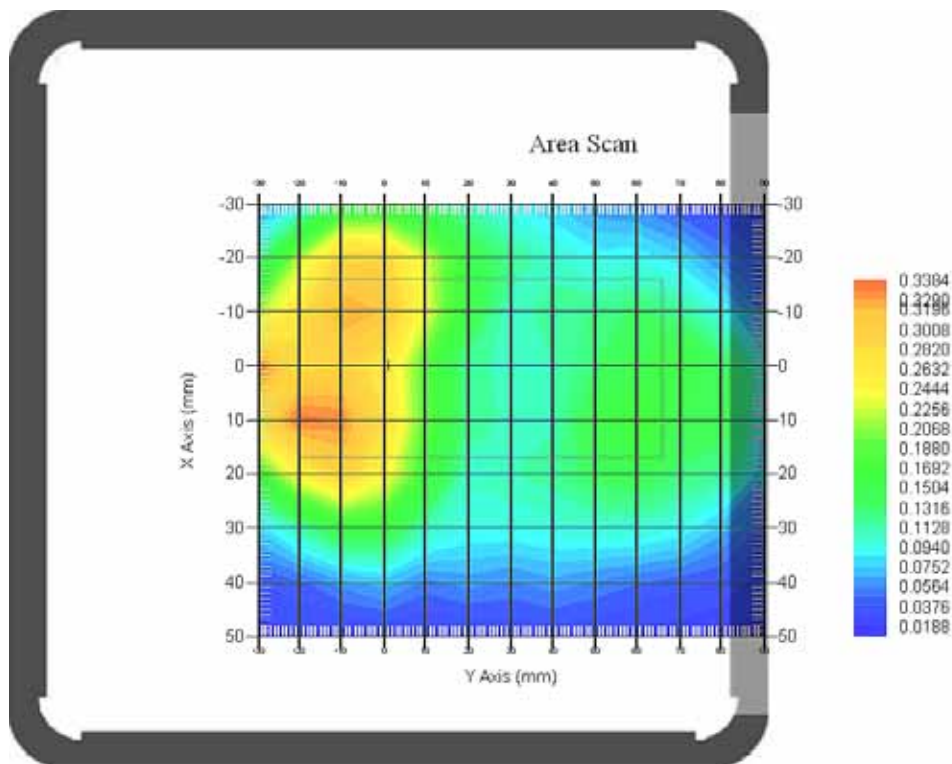
Type : Body
 Frequency : 1712.4 MHz
 Epsilon : 55.13 F/m
 Sigma : 1.45 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency : 1750
 Duty Cycle Factor : 1
 Conversion Factor : 5.3
 Probe Sensitivity : 1.20 1.20 1.20 $\mu\text{V}/(\text{V/m})^2$
 Compression Point : 95.00 mV
 Offset : 1.56 mm

1 gram SAR value : 0.309 W/kg
 10 gram SAR value : 0.184 W/kg
 Area Scan Peak SAR : 0.335 W/kg
 Zoom Scan Peak SAR : 0.500 W/kg

Plot 46#



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

Hot Spot: WCDMA1750; Body-Back (1712.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1750
 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 : 0.319 W/kg
 Power Drift-Finish : 0.335 W/kg
 Power Drift (%) : 4.820

Tissue Data

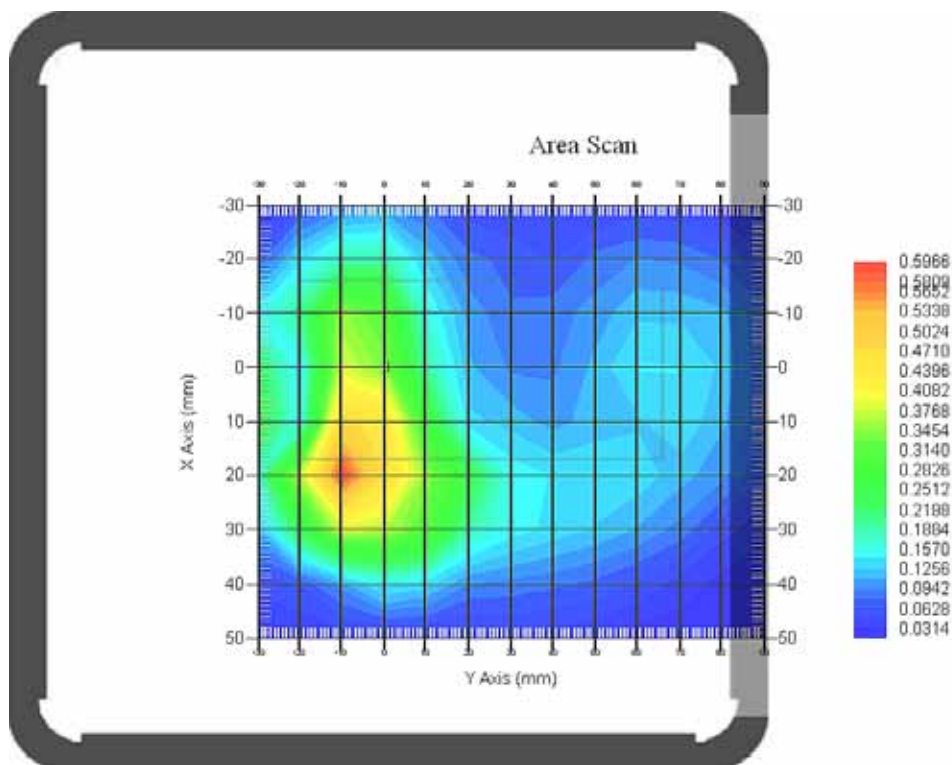
Type : Body
 Frequency : 1712.4 MHz
 Epsilon : 55.13 F/m
 Sigma : 1.45 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency : 1750
 Duty Cycle Factor : 1
 Conversion Factor : 5.3
 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 : 0.444 W/kg
 10 gram SAR value : 0.213 W/kg
 Area Scan Peak SAR : 0.589 W/kg
 Zoom Scan Peak SAR : 0.770 W/kg

Plot 47#



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

Hot Spot: WCDMA1750; Body-Left (1712.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1750
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 9x11x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.066 W/kg
 Power Drift-Finish : 0.067 W/kg
 Power Drift (%) : 1.351

Tissue Data

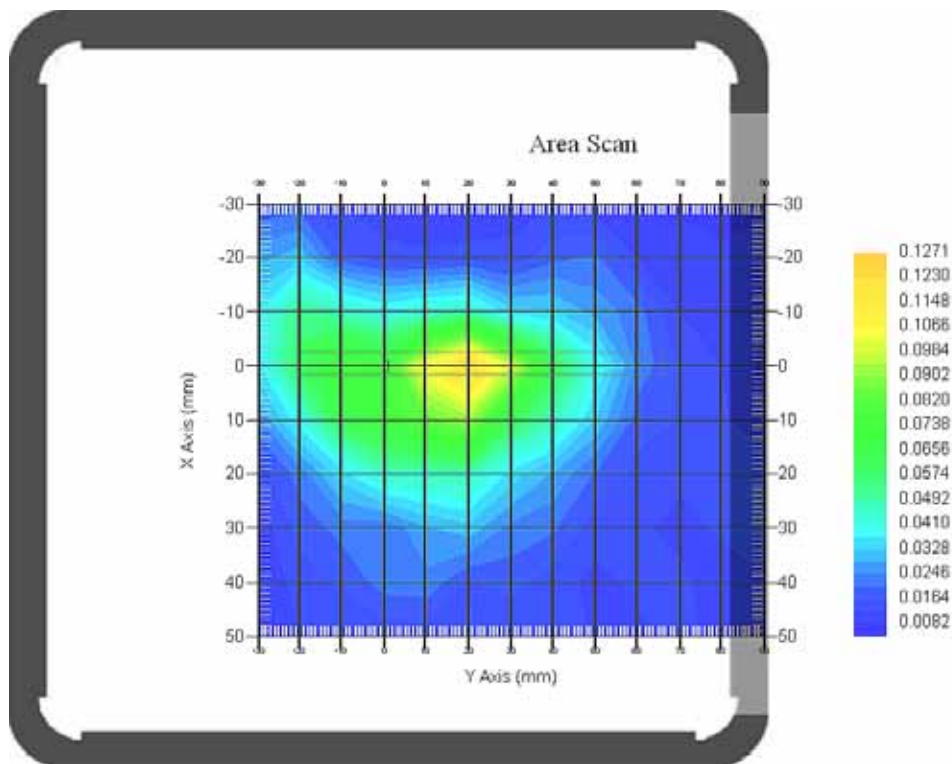
Type : Body
 Frequency : 1712.4 MHz
 Epsilon : 55.13 F/m
 Sigma : 1.45 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency : 1750
 Duty Cycle Factor : 1
 Conversion Factor : 5.3
 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 : 0.089 W/kg
 10 gram SAR value : 0.046 W/kg
 Area Scan Peak SAR : 0.125 W/kg
 Zoom Scan Peak SAR : 0.220 W/kg

Plot 48#



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

Hot Spot: WCDMA1750; Body-Right (1712.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1750
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 9x11x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.066 W/kg
 Power Drift-Finish : 0.067 W/kg
 Power Drift (%) : 1.143

Tissue Data

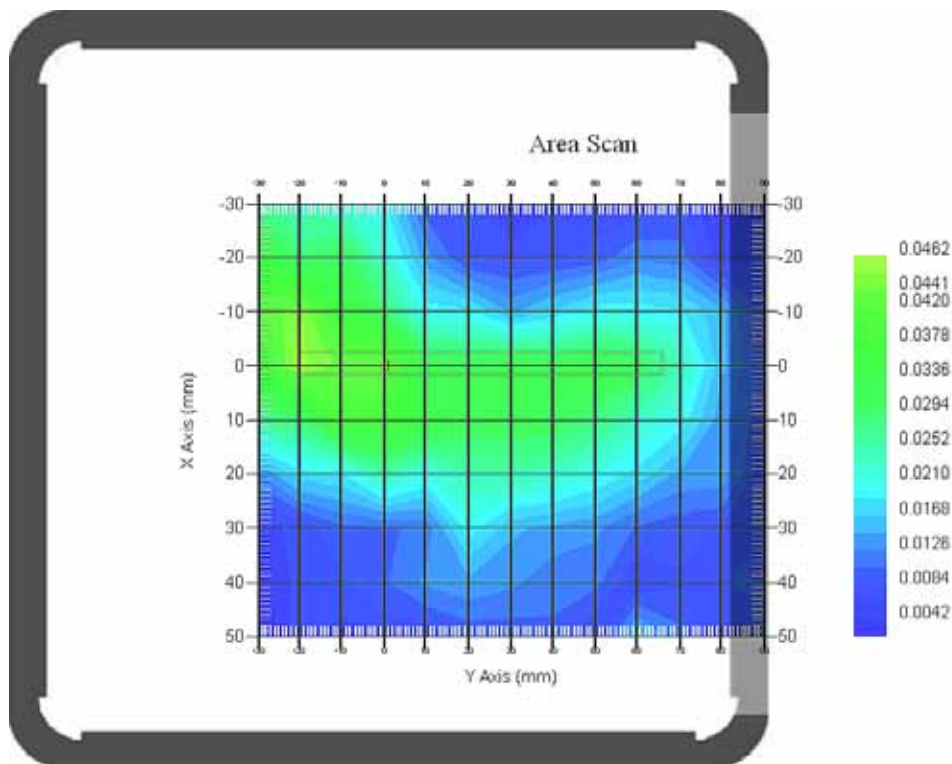
Type : Body
 Frequency : 1712.4 MHz
 Epsilon : 55.13 F/m
 Sigma : 1.45 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency : 1750
 Duty Cycle Factor : 1
 Conversion Factor : 5.3
 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 : 0.047 W/kg
 10 gram SAR value : 0.039 W/kg
 Area Scan Peak SAR : 0.045 W/kg
 Zoom Scan Peak SAR : 0.050 W/kg

Plot 49#



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

Hot Spot: WCDMA1750; Body-Bottom (1712.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1750
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 7x9x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.133 W/kg
 Power Drift-Finish : 0.127 W/kg
 Power Drift (%) : -4.507

Tissue Data

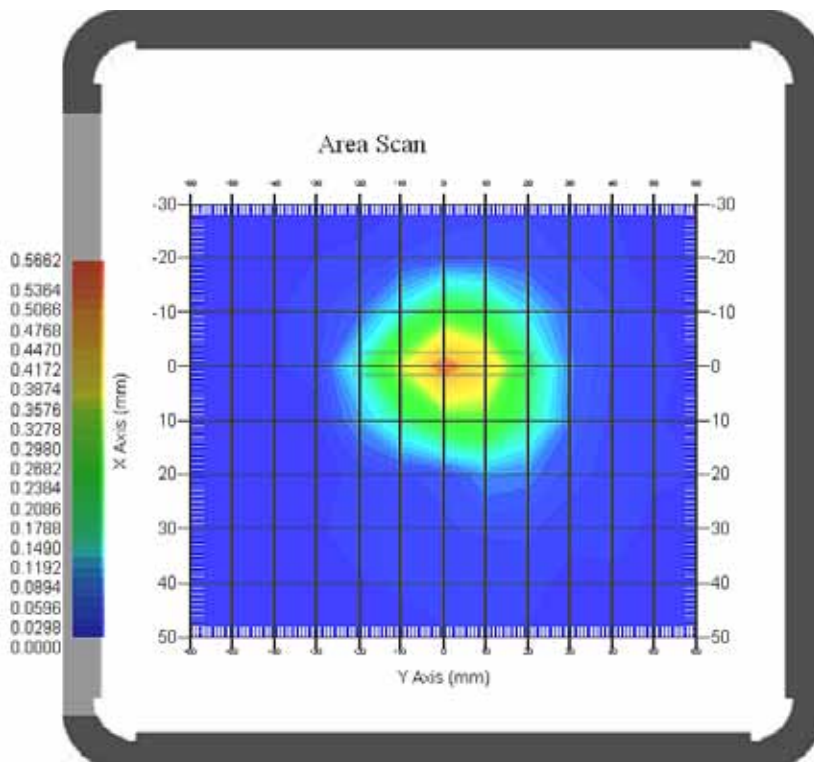
Type : Body
 Frequency : 1712.4 MHz
 Epsilon : 55.13 F/m
 Sigma : 1.45 S/m
 Density : 1000.00 kg/cu. m

Probe Data

Serial No. : 500-00283
 Frequency : 1750
 Duty Cycle Factor : 1
 Conversion Factor : 5.3
 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 : 0.409 W/kg
 10 gram SAR value : 0.199 W/kg
 Area Scan Peak SAR : 0.557 W/kg
 Zoom Scan Peak SAR : 0.780 W/kg

Plot 50#



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

Hot Spot: WCDMA1900; Body-Front (1852.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1900
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 9x11x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.166 W/kg
 Power Drift-Finish : 0.161 W/kg
 Power Drift (%) : -3.276

Tissue Data

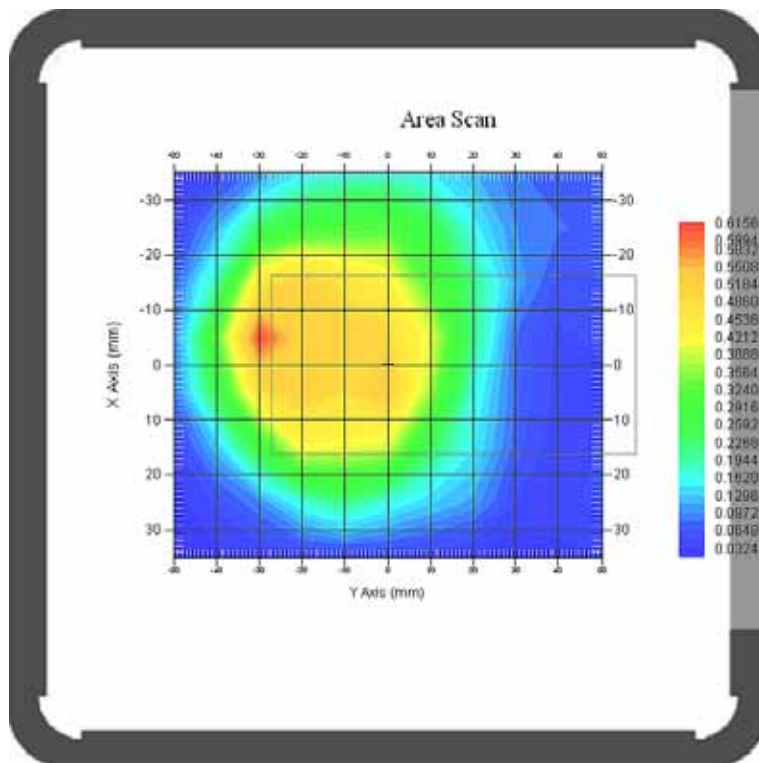
Type : Body
 Frequency : 1852.4 MHz
 Epsilon : 54.08 F/m
 Sigma : 1.48 S/m
 Density : 1000.00 kg/cu. m

Probe Data

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

1 gram SAR value : 0.535 W/kg
 10 gram SAR value : 0.288 W/kg
 Area Scan Peak SAR : 0.608 W/kg
 Zoom Scan Peak SAR : 0.910 W/kg

Plot 51#



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

Hot Spot: WCDMA1900; Body-Back (1852.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1900
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 9x11x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.066 W/kg
 Power Drift-Finish : 0.067 W/kg
 Power Drift (%) : 1.367

Tissue Data

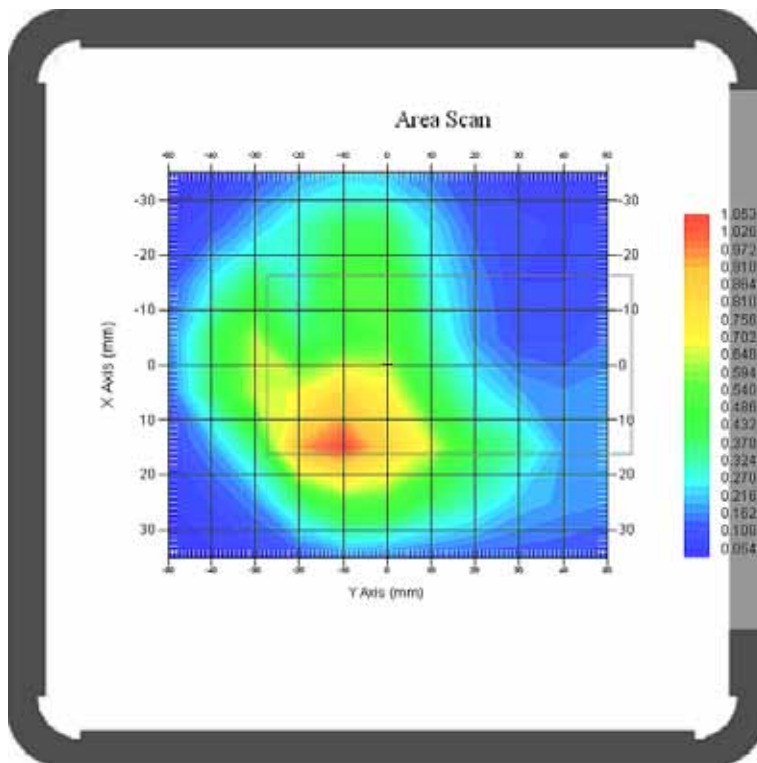
Type : Body
 Frequency : 1852.4 MHz
 Epsilon : 54.08 F/m
 Sigma : 1.48 S/m
 Density : 1000.00 kg/cu. m

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 : 0.734 W/kg
 10 gram SAR value : 0.373 W/kg
 Area Scan Peak SAR : 1.029 W/kg
 Zoom Scan Peak SAR : 1.431 W/kg

Plot 52#



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 : 0.066 W/kg
 Power Drift-Finish : 0.067 W/kg
 Power Drift (%) : 1.581

Tissue Data

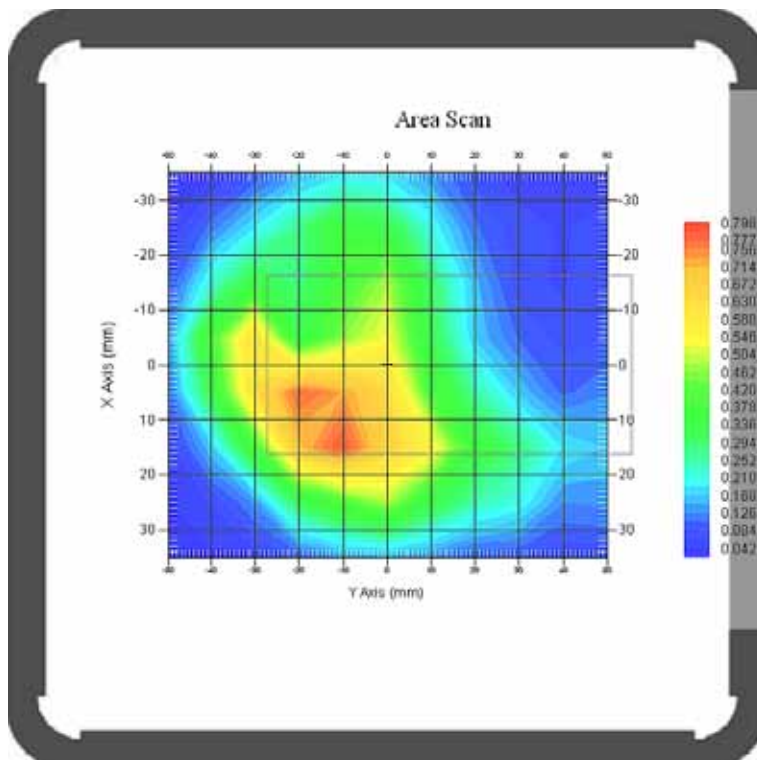
Type : Body
 Frequency : 1880.0 MHz
 Epsilon : 53.88 F/m
 Sigma : 1.52 S/m
 Density : 1000.00 kg/cu. m

Probe Data

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

1 gram SAR value : 0.783 W/kg
 10 gram SAR value : 0.393 W/kg
 Area Scan Peak SAR : 0.782 W/kg
 Zoom Scan Peak SAR : 1.501 W/kg

Plot 53#



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

Hot Spot: WCDMA1900; Body-Back (1907.6 MHz High Channel)

Measurement Data

Test mode : WCDMA1900
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 9x11x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.066 W/kg
 Power Drift-Finish : 0.067 W/kg
 Power Drift (%) : 1.104

Tissue Data

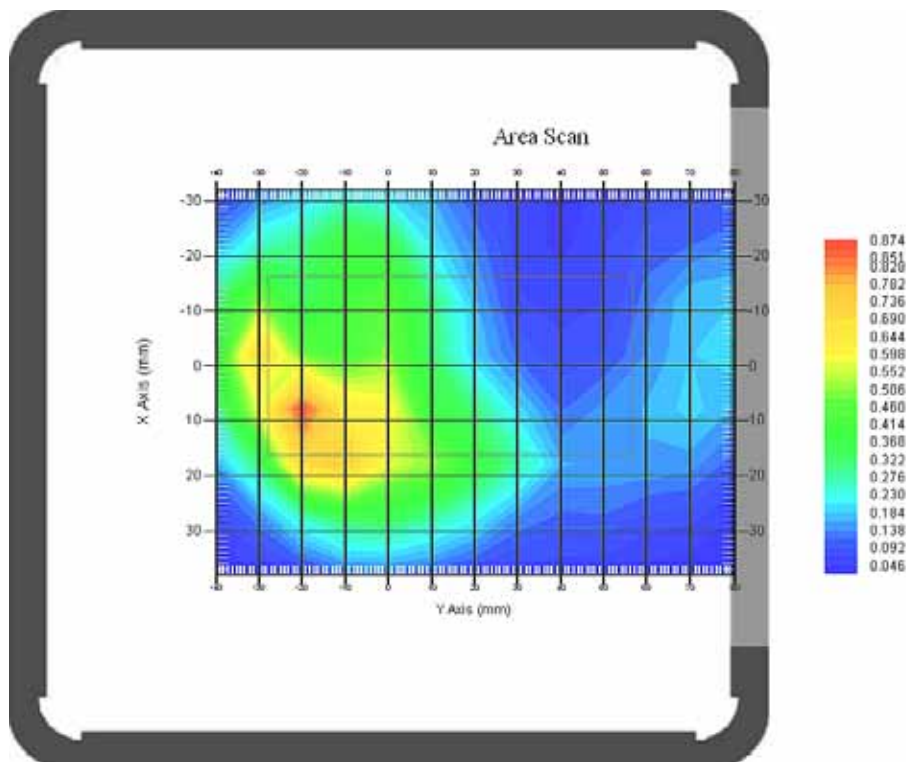
Type : Body
 Frequency : 1907.6 MHz
 Epsilon : 53.85 F/m
 Sigma : 1.54 S/m
 Density : 1000.00 kg/cu. m

Probe Data

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

1 gram SAR value : 0.749 W/kg
 10 gram SAR value : 0.361 W/kg
 Area Scan Peak SAR : 0.862 W/kg
 Zoom Scan Peak SAR : 1.581 W/kg

Plot 54#



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

Hot Spot: WCDMA1900; Body-Left (1852.4 MHz Low 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 : 0.064 W/kg
 Power Drift-Finish : 0.063 W/kg
 Power Drift (%) : -0.702

Tissue Data

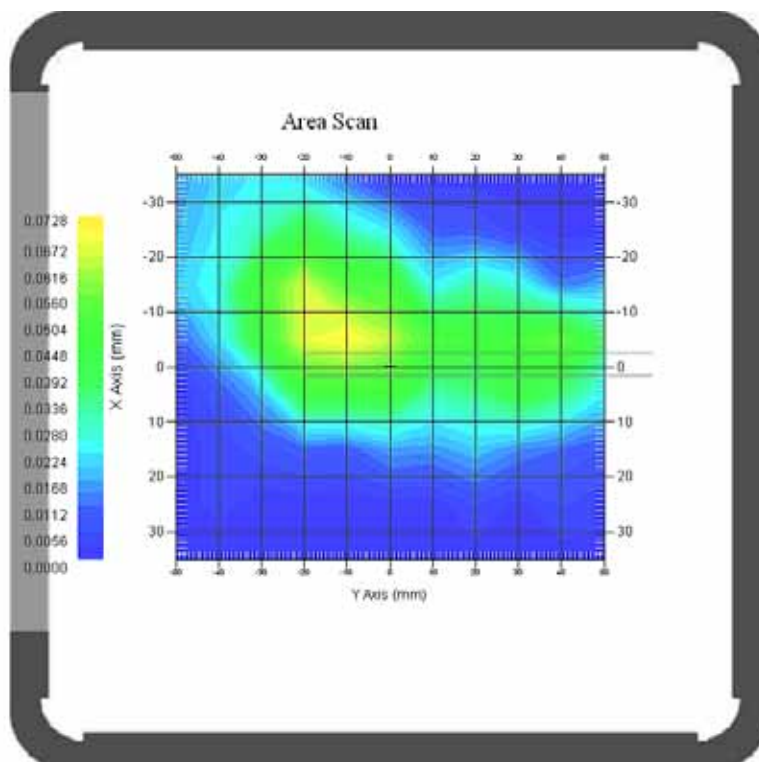
Type : Body
 Frequency : 1852.4 MHz
 Epsilon : 54.08 F/m
 Sigma : 1.48 S/m
 Density : 1000.00 kg/cu. m

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 : 0.070 W/kg
 10 gram SAR value : 0.039 W/kg
 Area Scan Peak SAR : 0.071 W/kg
 Zoom Scan Peak SAR : 0.120 W/kg

Plot 55#



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

Hot Spot: WCDMA1900; Body-Right (1852.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1900
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 7x11x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.001 W/kg
 Power Drift-Finish : 0.001 W/kg
 Power Drift (%) : -0.016

Tissue Data

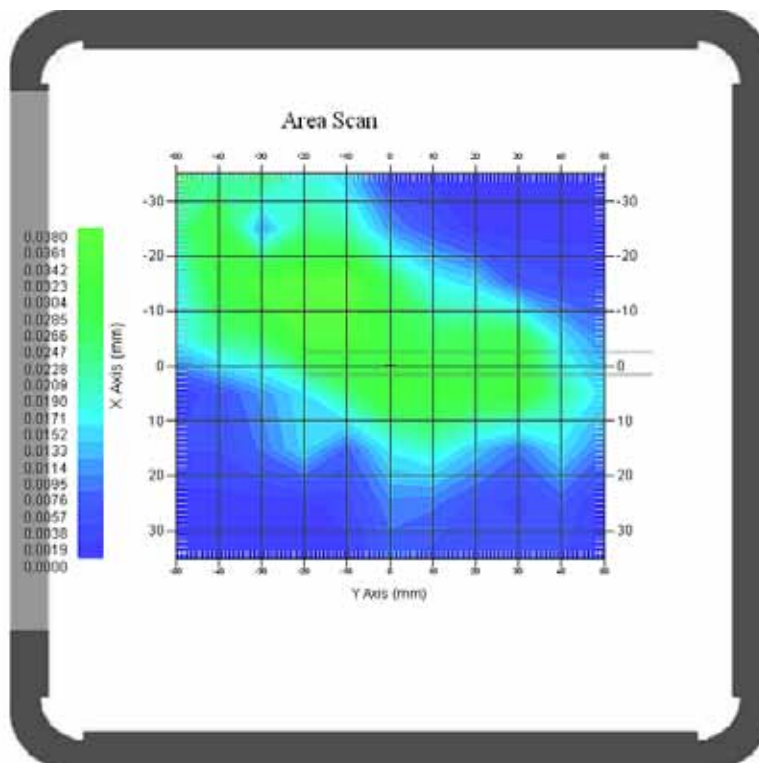
Type : Body
 Frequency : 1852.4 MHz
 Epsilon : 54.08 F/m
 Sigma : 1.48 S/m
 Density : 1000.00 kg/cu. m

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 : 0.034 W/kg
 10 gram SAR value : 0.019 W/kg
 Area Scan Peak SAR : 0.038 W/kg
 Zoom Scan Peak SAR : 0.060 W/kg

Plot 56#



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

Hot Spot: WCDMA1900; Body-Bottom (1852.4 MHz Low Channel)

Measurement Data

Test mode : WCDMA1900
 Crest Factor : 1
 Scan Type : Complete
 Area Scan : 7x9x1 : Measurement x=10mm, y=10mm, z=4mm
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
 Power Drift-Start : 0.133 W/kg
 Power Drift-Finish : 0.127 W/kg
 Power Drift (%) : -4.039

Tissue Data

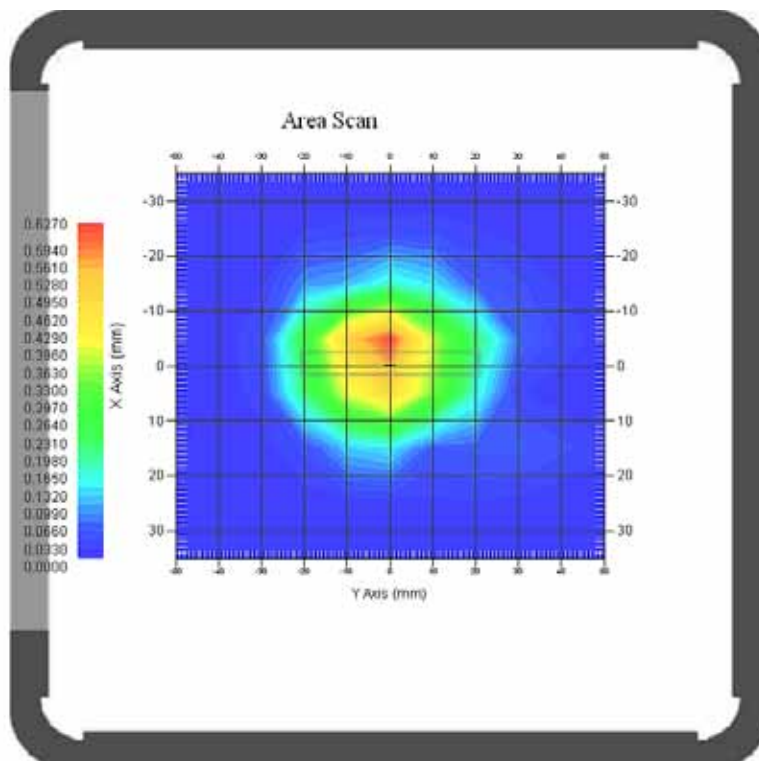
Type : Body
 Frequency : 1852.4 MHz
 Epsilon : 54.08 F/m
 Sigma : 1.48 S/m
 Density : 1000.00 kg/cu. m

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 : 0.516 W/kg
 10 gram SAR value : 0.226 W/kg
 Area Scan Peak SAR : 0.621 W/kg
 Zoom Scan Peak SAR : 1.070 W/kg

Plot 57#



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	$\sqrt{3}$	$(1-cp)^{1/2}$	$(\frac{1-cp}{2})^1$	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: (813) 435-8300
FAX: (813) 435-8308

NCL Calibration Laboratories

Division of APREL Inc.

Introduction

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

Calibration Method

Probes are calibrated using the following methods.

<1000MHz

TEM Cell for sensitivity in air

Standard phantom using temperature transfer method for sensitivity in tissue

>1000MHz

Waveguide* method to determine sensitivity in air and tissue

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

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

References

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

Page 2 of 10

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

NCL Calibration Laboratories

Division of APREL Inc.

Conditions

Probe 500-00283 was a recalibration.

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

Primary Measurement Standards

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

Secondary Measurement Standards

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

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

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



Art Brennan, Quality Manager



Dan Brooks, Test Engineer

Page 3 of 10
 This page has been reviewed for content and attested to on Page 2 of this document.

NCL Calibration LaboratoriesDivision 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

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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.

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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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 MΩ.

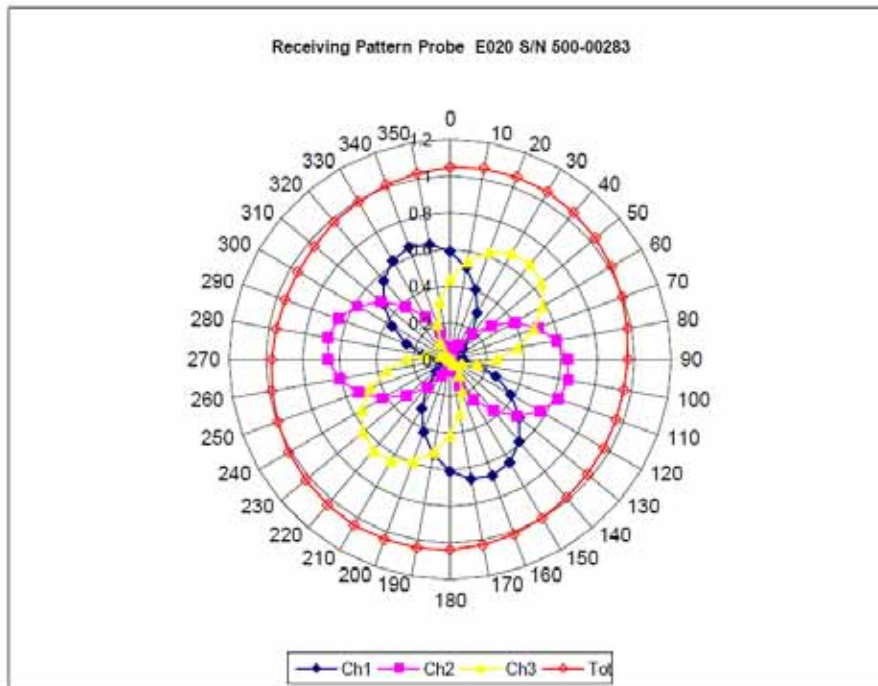
Page 6 of 10

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NCL Calibration Laboratories

Division of APREL Inc.

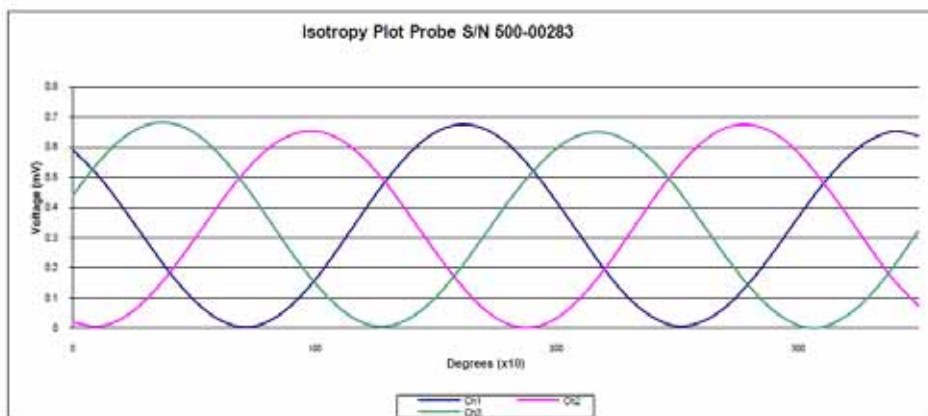
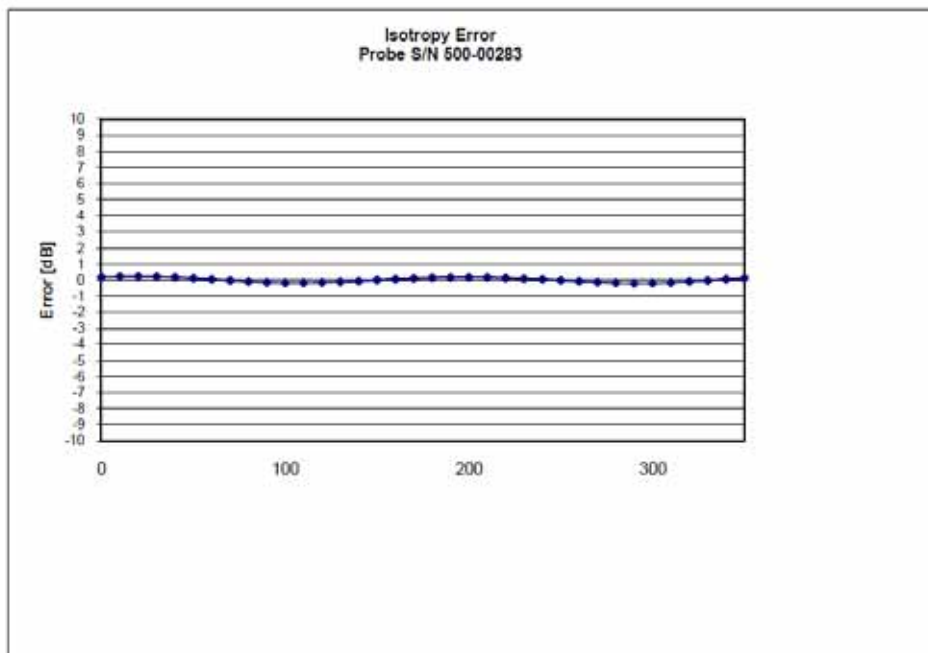
Receiving Pattern Air



NCL Calibration Laboratories

Division of APREL Inc.

Isotropy Error Air

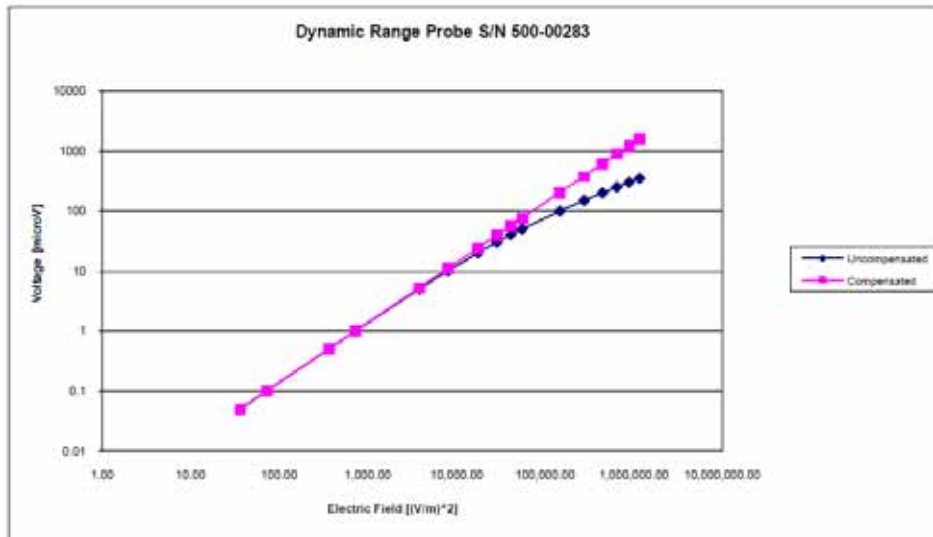


Isotropicity Tissue: 0.10 dB

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Dynamic Range

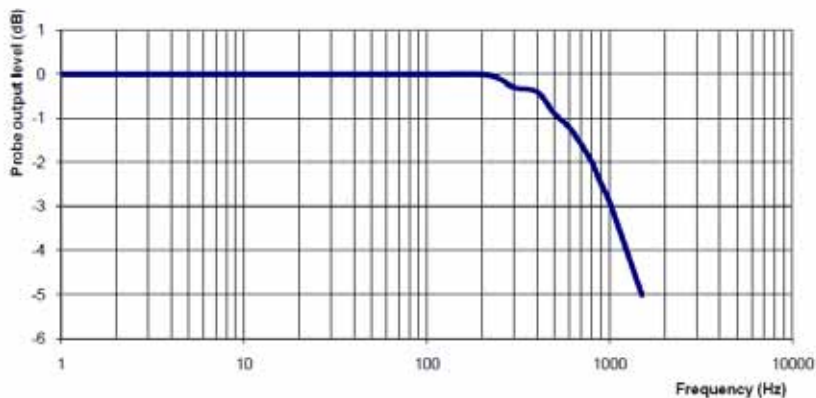


NCL Calibration Laboratories

Division of APREL Inc.

Video Bandwidth

Probe Frequency Characteristics



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

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

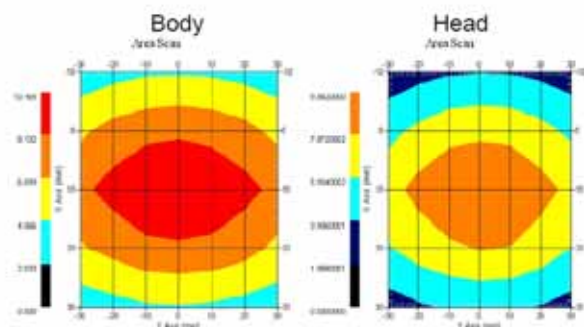
Length: 162.2 mm
Height: 89.4 mm

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



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

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

Division of APREL Laboratories.

Dipole Calibration Results

Mechanical Verification

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

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

Tissue Validation

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

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

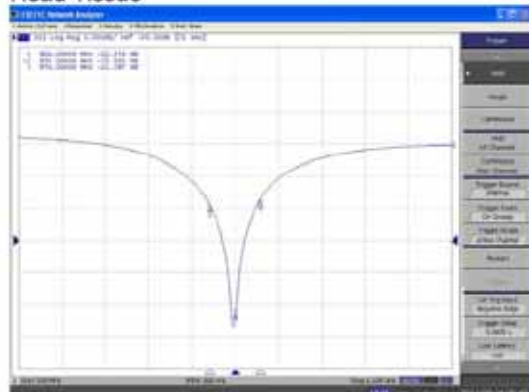
NCL Calibration Laboratories

Division of APREL Laboratories.

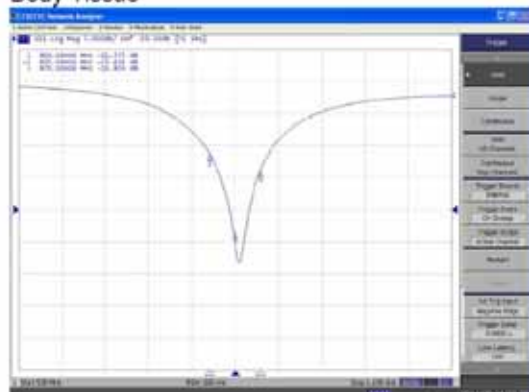
The Following Graphs are the results as displayed on the Vector Network Analyzer.

S11 Parameter Return Loss

Head Tissue



Body Tissue

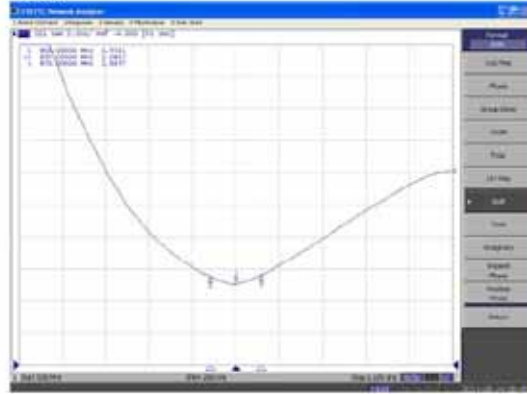


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NCL Calibration Laboratories

Division of APREL Laboratories.

**SWR
Head**



Body



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NCL Calibration Laboratories

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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.

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

9

835MHz Dipole Calibration By BACL at 2013-12-20

Mechanical Verification

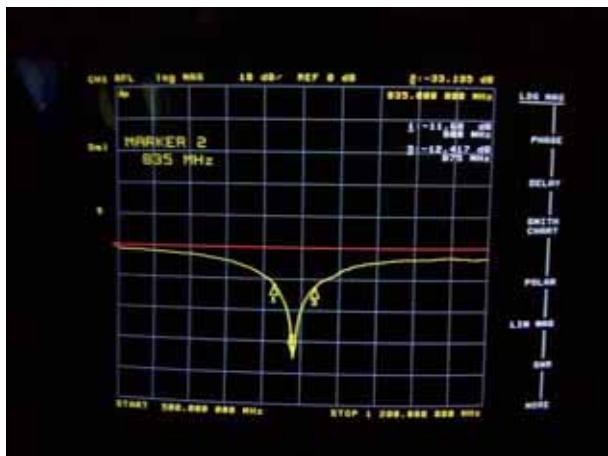
APREL Length	APREL Height	Measured Length	Measured Height
161.0 mm	89.8 mm	161.1 mm	89.7 mm

Tissue Type	Measured Return Loss	Measured Impedance
Head	-33.135 dB	51.898 Ω
Body	-25.362 dB	50.604 Ω

Test Graphs :

Head Tissue

Return Loss :

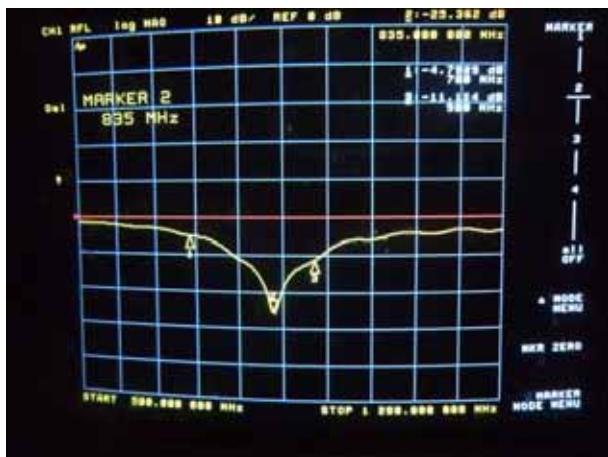


Impedance :

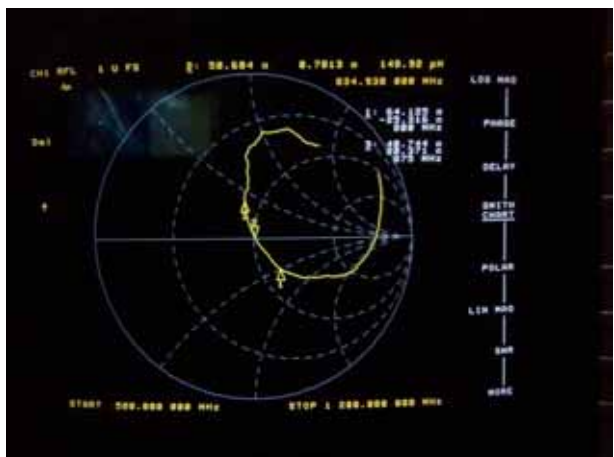


Body Tissue

Return Loss :



Impedance :



NCL CALIBRATION LABORATORIES

Calibration File No: DC-1531
Project Number: 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.

BACL Head & Body Validation Dipole

Manufacturer: APREL Laboratories
Part number: ALS-D-1750-S-2
Frequency: 1750 MHz
Serial No: 198-00304

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 Laboratories.

Conditions

Dipole 198-00304 was an original 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 subject has been accurately conducted and that all information contained within the results pages have been reviewed for accuracy.



Art Brennan, Quality Manager



Constantin Teodorian, Test Engineer

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

2

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: 75 mm
Height: 42 mm

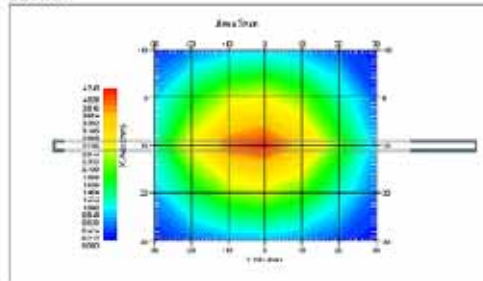
Electrical Calibration

Test	Result Head	Result Body
S11 R/L	-25.567	-20.548 dB
SWR	1.111U	1.207 U
Impedance	53.637Ω	55.929 Ω

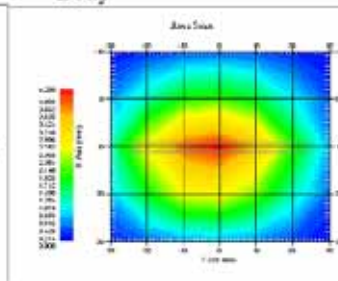
System Validation Results, 1750 MHz

Frequency 1750 MHz	1 Gram	10 Gram
Head	37.02	18.99
Body	36.65	18.85

Head



Body



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

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. 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-030 130 MHz to 26 GHz E-Field Probe Serial Number 215.

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"
- IEC-62209 "Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures"
- Part 1: "Procedure to determine the Specific Absorption Rate (SAR) for hand-held devices used in close proximity of the ear (frequency range of 300 MHz to 3 GHz)"
- IEC-62209 "Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures"
- Part 2: "Procedure to determine the Specific Absorption Rate (SAR) for hand-held devices used in close proximity of the ear (frequency range of 30 MHz to 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 Draft Standard for Calibration of Electromagnetic Field Sensors and Probes, Excluding Antennas, from 9kHz to 40GHz

Conditions

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

This was an original calibration taken from stock.

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NCL Calibration Laboratories

Division of APREL Laboratories.

Dipole Calibration Results

Mechanical Verification

APREL Dimensions Length	APREL Dimensions Height	Measured Length	Measured Height
75 mm	42.86	75 mm	42 mm

Tissue Validation

Tissue 1750 MHz	Measured Head	Measured Body
Dielectric constant, ϵ_r	38.51	51.79
Conductivity, σ [S/m]	1.36	1.53

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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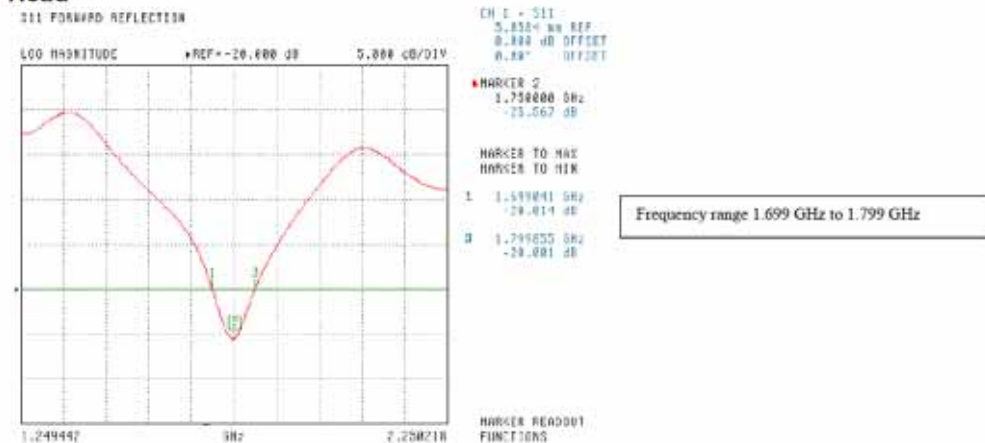
Electrical Calibration

Test	Result Head	Result Body
S11 R/L	-25.567	-20.548 dB
SWR	1.111U	1.207 U
Impedance	53.637Ω	55.929 Ω

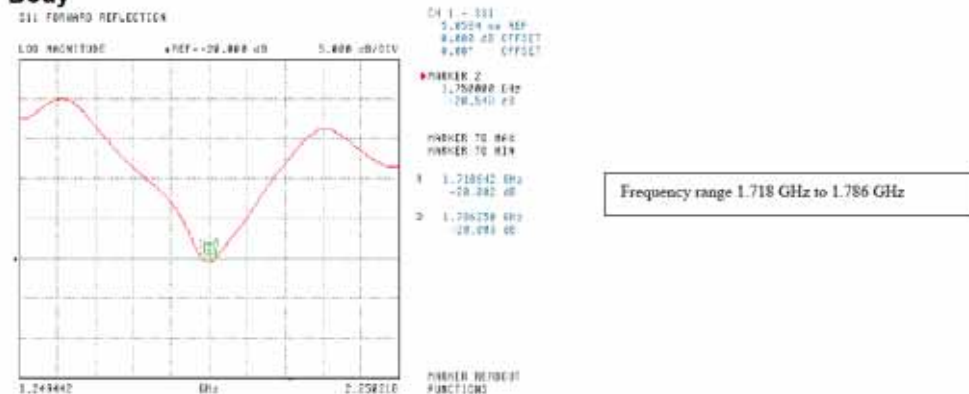
The Following Graphs are the results as displayed on the Vector Network Analyzer.

S11 Parameter Return Loss

Head



Body



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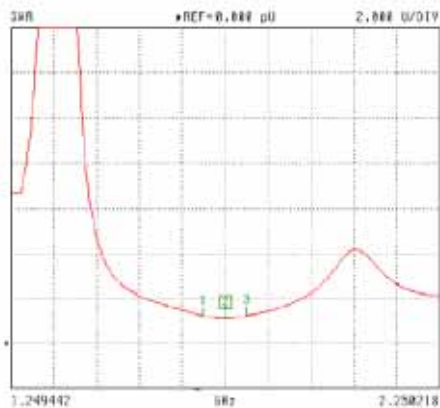
NCL Calibration Laboratories

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SWR

Head

311 FORWARD REFLECTION



CH 1 - 311
5.85E+04 dB REF
0.000 dB OFFSET
0.00" OFFSET

MARKER 2
1.756688 GHz
1.111

MARKER TO MAX

MARKER TO MIN

1 1.695841 GHz

1.205

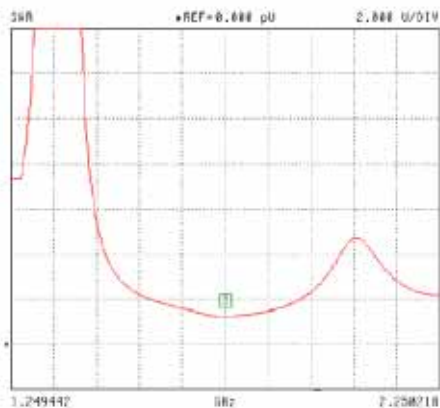
2 1.795855 GHz

1.205

MARKER READOUT
FUNCTIONS

Body

311 FORWARD REFLECTION



CH 1 - 311
5.85E+04 dB REF
0.000 dB OFFSET
0.00" OFFSET

MARKER 2
1.756688 GHz
1.207

MARKER TO MAX

MARKER TO MIN

MARKER READOUT
FUNCTIONS

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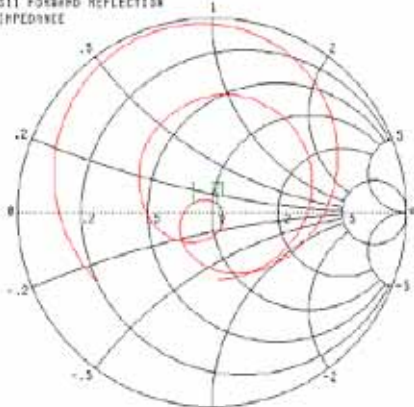
NCL Calibration Laboratories

Division of APREL Laboratories.

Smith Chart Dipole Impedance

Head

S11 FORWARD REFLECTION IMPEDANCE



CH 1 - S11
 5.000% SW REF
 0.000 dB OFFSET
 0.00° OFFSET

MARKER 2
 1.759000 GHz
 51.637 Ω
 3.792 jΩ

MARKER TO MAX

MARKER TO MIN

1 1.595041 GHz

11.539 Ω

3.495 jΩ

2 1.799500 GHz

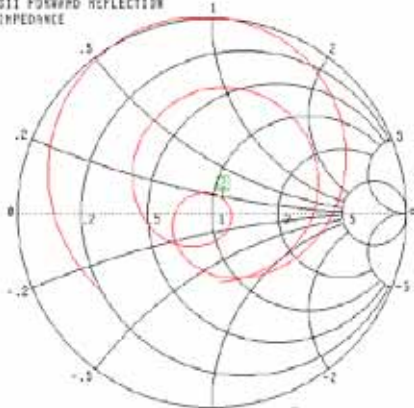
54.266 Ω

-1.001 jΩ

MARKER READOUT FUNCTIONS

Body

S11 FORWARD REFLECTION IMPEDANCE



CH 1 - S11
 5.000% SW REF
 0.000 dB OFFSET
 0.00° OFFSET

MARKER 2
 1.759000 GHz
 55.000 Ω
 7.016 jΩ

MARKER TO MAX

MARKER TO MIN

MARKER READOUT FUNCTIONS

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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 May 2013

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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

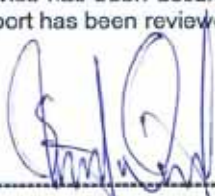
Division of APREL Laboratories.

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	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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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

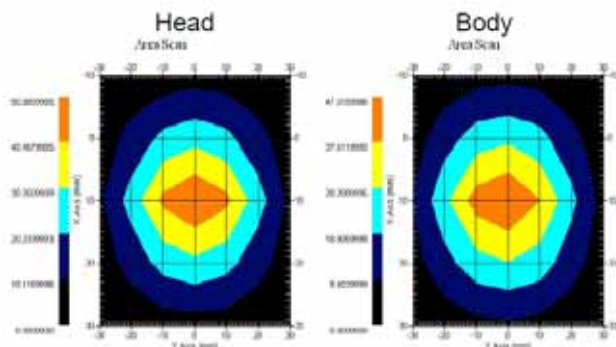
Length: 67.1 mm
Height: 38.9 mm

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)

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NCL Calibration Laboratories

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Dipole Calibration Results

Mechanical Verification

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

Electrical Validation

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

Tissue Validation

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

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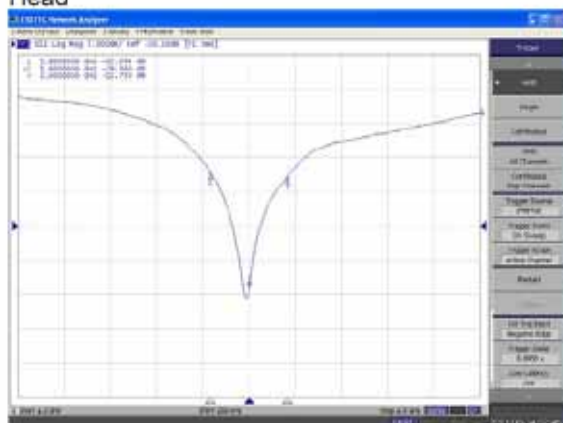
NCL Calibration Laboratories

Division of APREL Laboratories.

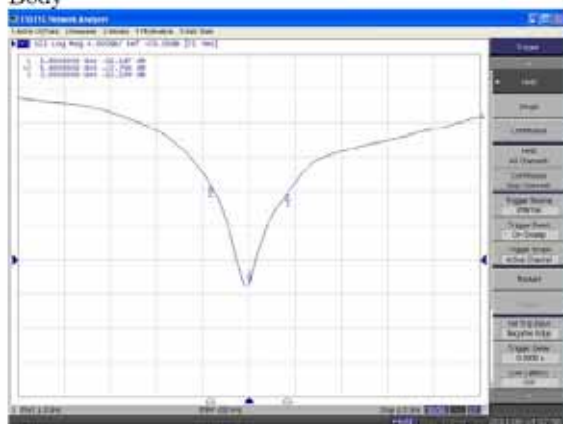
The Following Graphs are the results as displayed on the Vector Network Analyzer.

S11 Parameter Return Loss

Head



Body



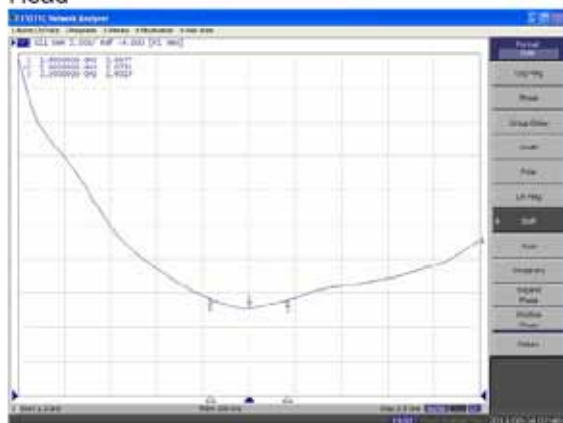
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NCL Calibration Laboratories

Division of APREL Laboratories.

SWR

Head



Body



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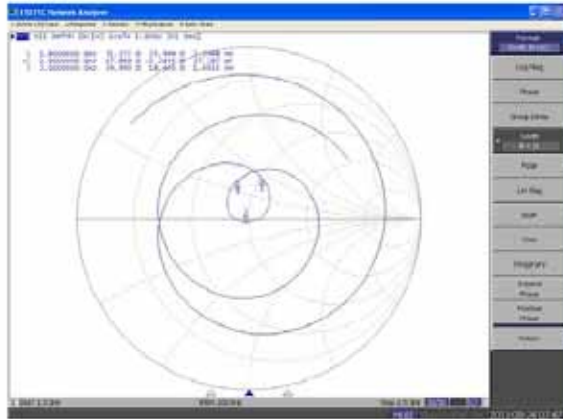
7

NCL Calibration Laboratories

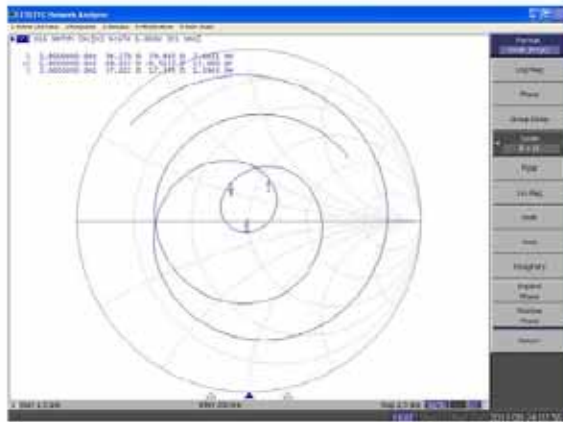
Division of APREL Laboratories.

Smith Chart Dipole Impedance

Head



Body



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NCL Calibration Laboratories

Division of APREL Laboratories.

Test Equipment

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

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1900MHz Dipole Calibration By BACL at 2013-12-20

Mechanical Verification

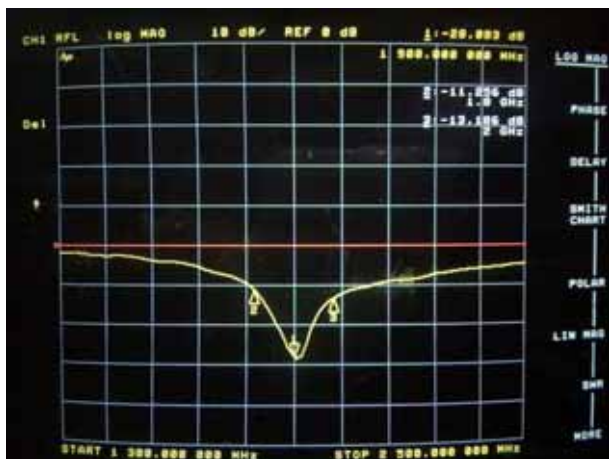
APREL Length	APREL Height	Measured Length	Measured Height
68.0 mm	39.4 mm	68.3 mm	39.2 mm

Tissue Type	Measured Return Loss	Measured Impedance
Head	-28.083 dB	47.477 Ω
Body	-22.022 dB	48.076 Ω

Test Graphs :

Head Tissue

Return Loss :

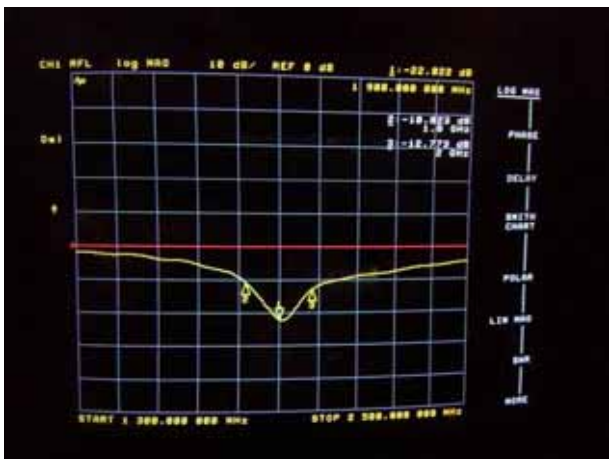


Impedance :

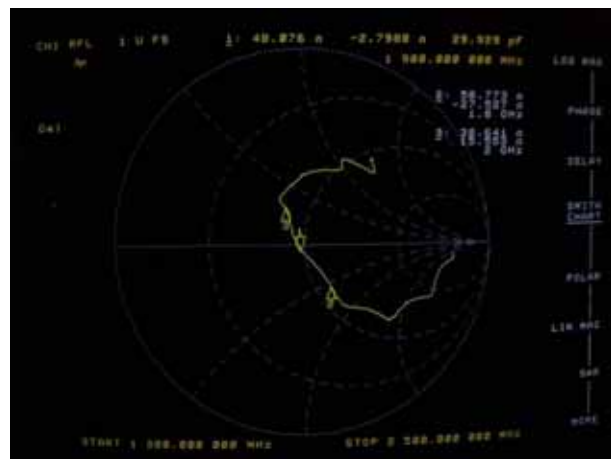


Body Tissue

Return Loss :

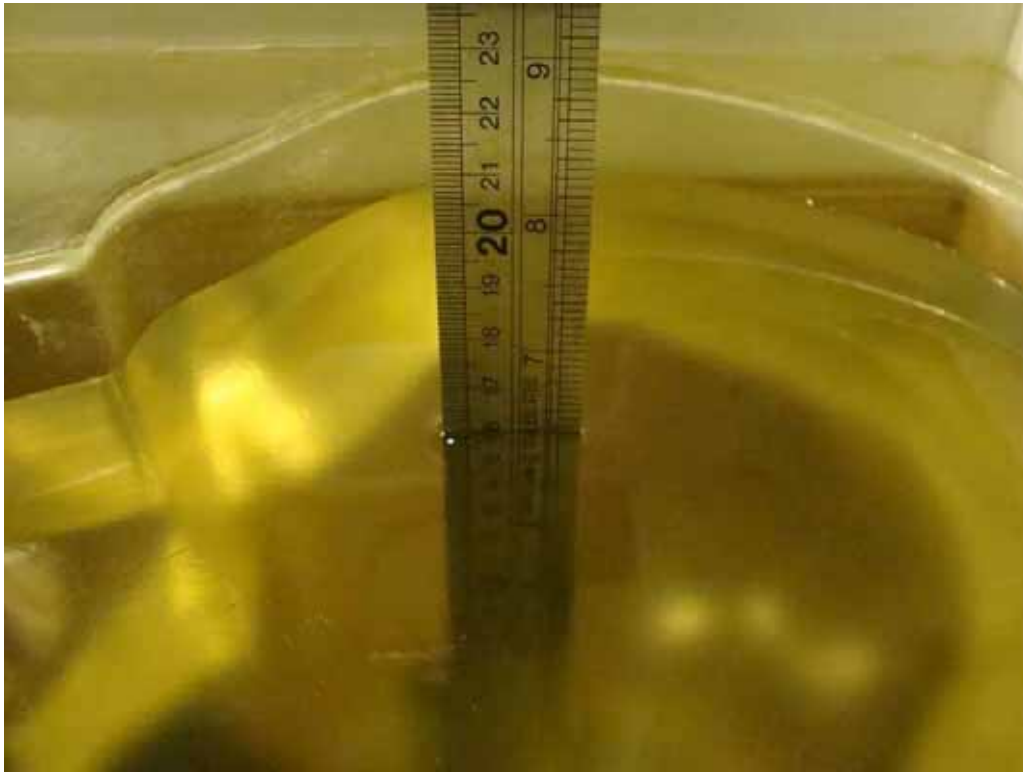


Impedance :

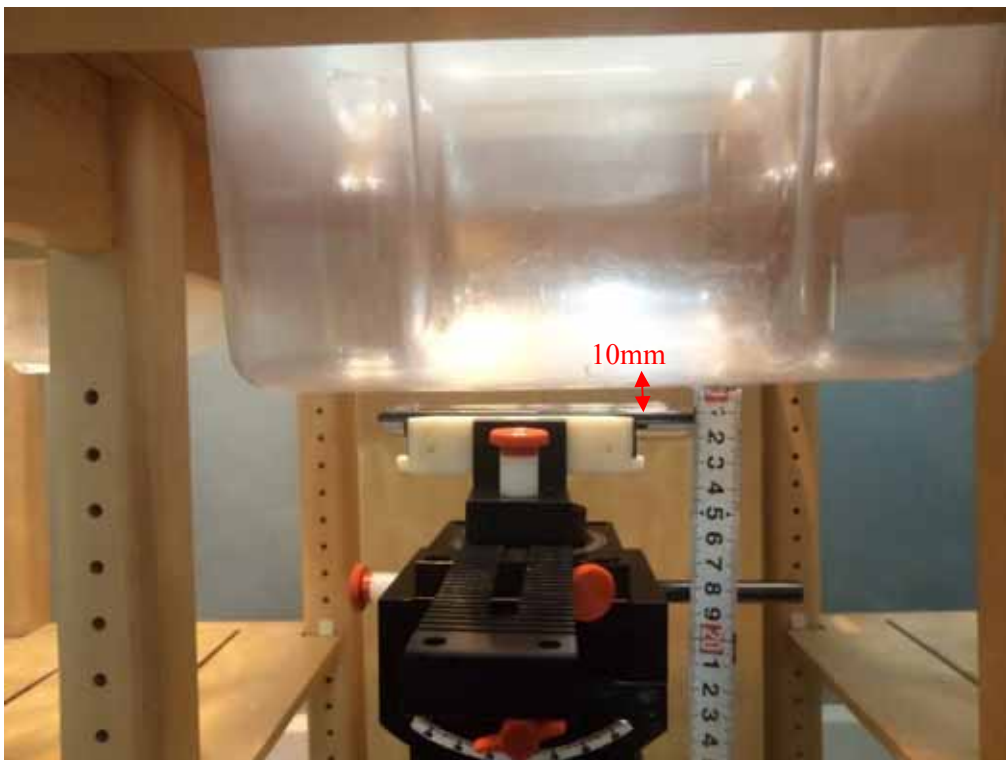


APPENDIX D EUT TEST POSITION PHOTOS

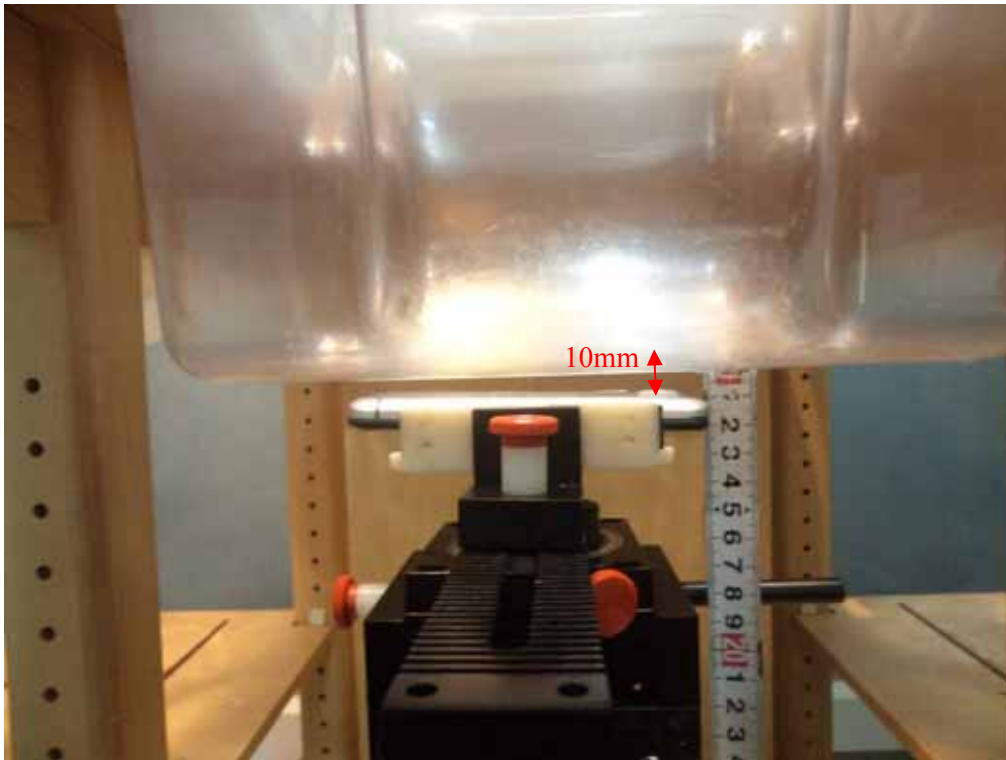
Liquid depth $\geq 15\text{cm}$



Body-worn Front Setup Photo



Body-worn Back Setup Photo



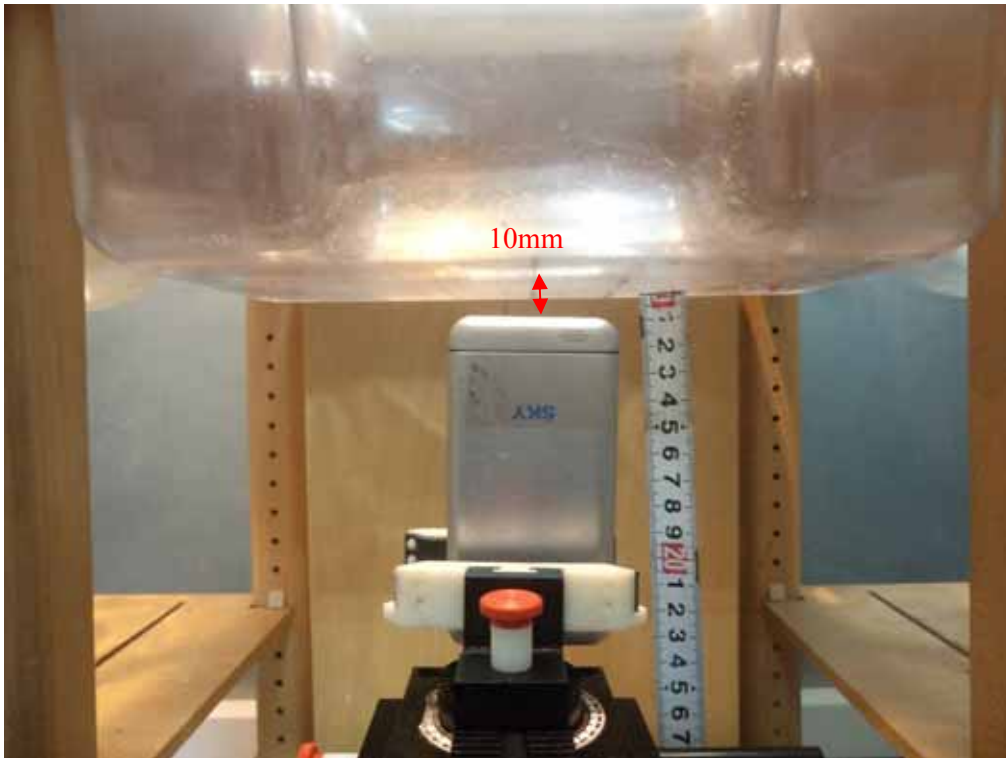
Body-worn Left Setup Photo



Body-worn Right Setup Photo



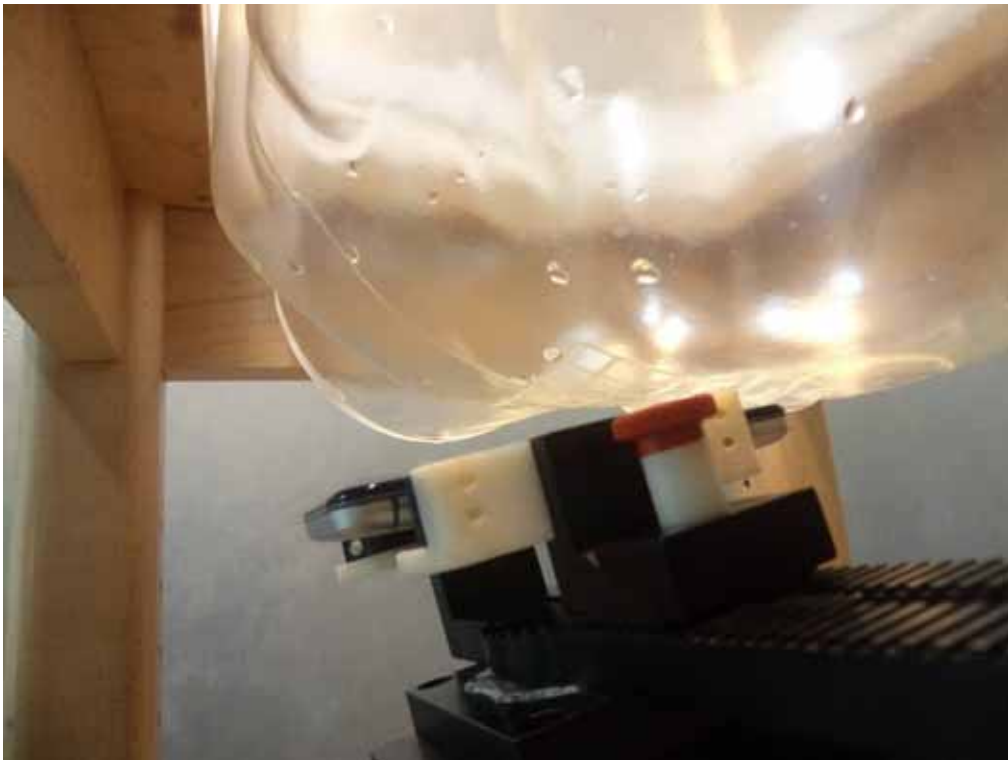
Body-worn Bottom Setup Photo



Left Head Touch Setup Photo



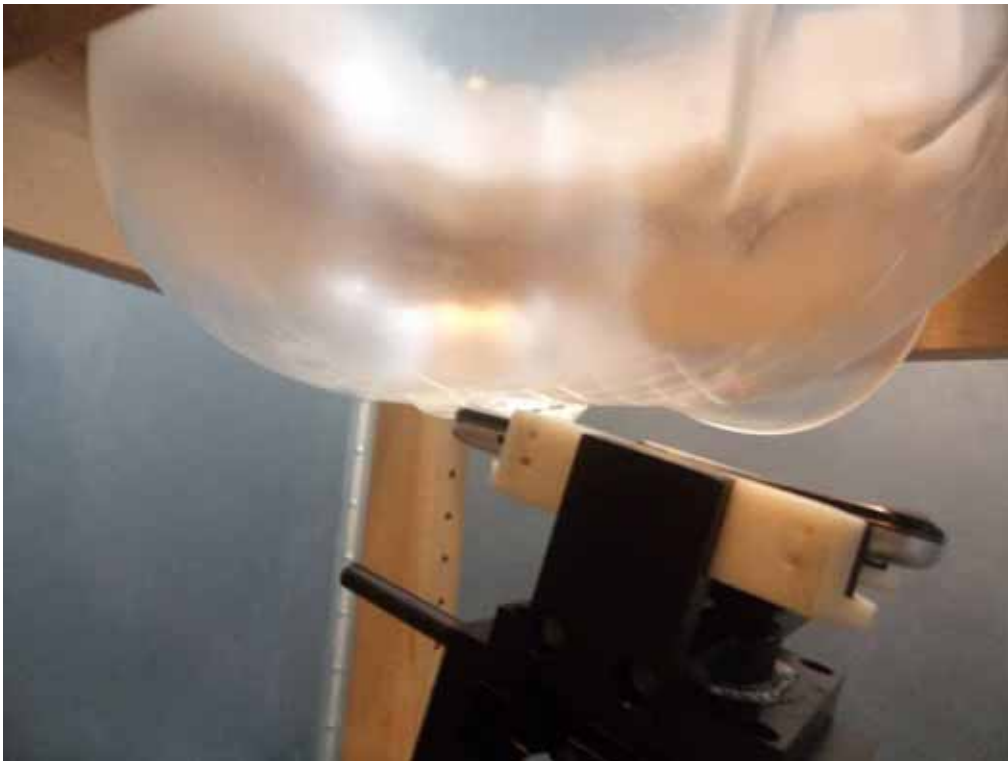
Left Head Tilt Setup Photo



Right Head Touch Setup Photo



Right Head Tilt Setup Photo



APPENDIX E EUT PHOTOS

EUT – Front View



EUT – Back View



EUT – Left Side View



EUT – Right Side View



EUT – Top View



EUT – Bottom View



EUT – Battery off View



APPENDIX F INFORMATIVE REFERENCES

- [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 *****