

RF Exposure Lab

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CERTIFICATE OF COMPLIANCE SAR EVALUATION

EF Johnson
123 N. State St.
Waseca, MN 56093

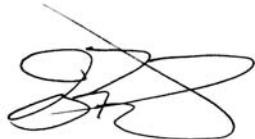
Dates of Test: December 5-6, 2011
Test Report Number: SAR.20111203
Revision B

FCC ID:	ATH2425770
IC Certificate:	933B-2425770
Model(s):	242-5770
Test Sample:	Engineering Unit Same as Production
Serial Number:	7800P20084RFM61
Equipment Type:	Push-To-Talk Handheld Radio for Occupational Use
Classification:	Portable Transmitter Next to Head and Body
TX Frequency Range:	764 – 776 MHz; 794 – 806 MHz; 806 – 824 MHz; 851 – 869 MHz
Frequency Tolerance:	± 2.5 ppm
Maximum RF Output:	770 MHz – 34.78 dB, 800 MHz – 34.77 dB, 815 MHz – 35.26 dB, 860 MHz – 35.24 dB Conducted
Signal Modulation:	FM
Accessories:	Standard Body Worn Microphone; Body Worn Microphone with Antenna
Antenna Type:	Standard – P/N 501-0105-073; Stubby – P/N 501-0105-012
Battery:	Standard
Application Type:	Certification
FCC Rule Parts:	Part 2, 90
KDB Test Methodology:	KDB 447498 v04, KDB 643646 D01 v01r01
Industry Canada:	RSS-102, Safety Code 6
Maximum SAR Value:	6.930 W/kg
Separation Distance:	25 mm for Face; 0 mm for Body

This wireless mobile and/or portable device has been shown to be compliant for localized specific absorption rate (SAR) for uncontrolled environment/general exposure limits specified in ANSI/IEEE Std. C95.1-1992 and had been tested in accordance with the measurement procedures specified in IEEE 1528-2003, and OET Bulletin 65 Supp. C (See test report).

I attest to the accuracy of the data. All measurements were performed by myself or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

RF Exposure Lab, LLC certifies that no party to this application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 853(a).



Jay M. Moulton
Vice President



Certificate # 2387.01

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1. Introduction

This measurement report shows compliance of the EF Johnson Model 242-5770 FCC ID: ATH2425770 with FCC Part 2, 1093, ET Docket 93-62 Rules for mobile and portable devices and IC Certificate: 933B-2425770 with RSS102 & Safety Code 6. The FCC have adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on August 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC regulated portable devices. [1], [6]

The test results recorded herein are based on a single type test of EF Johnson model 242-5770 and therefore apply only to the tested sample.

The test procedures, as described in ANSI C95.1 – 1999 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz [2], ANSI C95.3 – 2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields [3], FCC OET Bulletin 65 Supp. C – 2001 [4], IEEE Std.1528 – 2003 Recommended Practice [5], and Industry Canada Safety Code 6 Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3kHz to 300 GHz were employed.

SAR Definition [5]

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ).

$$SAR = \frac{d}{dt} \left(\frac{dW}{dm} \right) = \frac{d}{dt} \left(\frac{dW}{\rho dV} \right)$$

SAR is expressed in units of watts per kilogram (W/kg). SAR can be related to the electric field at a point by

$$SAR = \frac{\sigma |E|^2}{\rho}$$

where:

σ = conductivity of the tissue (S/m)

ρ = mass density of the tissue (kg/m³)

E = rms electric field strength (V/m)

2. SAR Measurement Setup

Robotic System

The measurements are conducted utilizing the ALSAS-10-U automated dosimetric assessment system. The ALSAS-10-U is designed and manufactured by Aprel Laboratories in Nepean, Ontario, Canada. The system utilizes a Robcomm 3 robot manufactured by ThermoCRS located in Michigan USA.

System Hardware

The system consists of a six axis articulated arm, controller for precise probe positioning (0.05 mm repeatability), a power supply, a teach pendent for teaching area scans, near field probe, an IBM Pentium 4™ 2.66 GHz PC with Windows XP Pro™, and custom software developed to enable communications between the robot controller software and the host operating system.

An amplifier is located on the articulated arm, which is isolated from the custom designed end effector and robot arm. The end effector provides the mechanical touch detection functionality and probe connection interface. The amplifier is functionally validated within the manufacturer's site and calibrated at NCL Calibration Laboratories. A Data Acquisition Card (DAC) is used to collect the signal as detected by the isotropic e-field probe. The DAC manufacturer calibrates the DAC to NIST standards. A formal validation is executed using all mechanical and electronic components to prove conformity of the measurement platform as a whole.

System Description

The ALSAS-10-U has been designed to measure devices within the compliance environment to meet all recognized standards. The system also conforms to standards, which are currently being developed by the scientific and manufacturing community.

The course scan resolution is defined by the operator and reflects the requirements of the standard to which the device is being tested. Precise measurements are made within the predefined course scan area and the values are logged.

The user predefines the sample rate for which the measurements are made so as to ensure that the full duty-cycle of a pulse modulation device is covered during the sample. The following algorithm is an example of the function used by the system for linearization of the output for the probe.

$$V_i = U_i + U_i^2 \bullet \frac{cf}{dcpi}$$



The Aprel E-Field probe is evaluated to establish the diode compression point.

A complex algorithm is then used to calculate the values within the measured points down to a resolution of 1mm. The data from this process is then used to provide the co-ordinates from which the cube scan is created for the determination of the 1 g and 10 g averages.

Cube scan averaging consists of a number of complex algorithms, which are used to calculate the one, and ten gram averages. The basis for the cube scan process is centered on the location where the maximum measured SAR value was found. When a secondary peak value is found which is within 60% of the initial peak value, the system will report this back to the operator who can then assess the need for further analysis of both the peak values prior to the one and ten-gram cube scan averaging process. The algorithm consists of 3D cubic Spline, and Lagrange extrapolation to the surface, which form the matrix for calculating the measurement output for the one and ten gram average values. The resolution for the physical scan integral is user defined with a final calculated resolution down to 1mm.

In-depth analysis for the differential of the physical scanning resolution for the cube scan analysis has been carried out, to identify the optimum setting for the probe positioning steps, and this has been determined at 8mm increments on the X, & Y planes. The reduction of the physical step increment increased the time taken for analysis but did not provide a better uncertainty or return on measured values.

The final output from the system provides data for the area scan measurements, physical and splined (1mm resolution) cube scan with physical and calculated values (1mm resolution).

The overall uncertainty for the methodology and algorithms the ALSAS-10-U used during the SAR calculation was evaluated using the data from IEEE 1528 f3 algorithm:

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

The probe used during the measurement process has been assessed to provide values for diode compression. These values are calculated during the probe calibration exercise and are used in the mathematical calculations for the assessment of SAR.

E-Field Probe

The E-field probe used by RF Exposure Lab, LLC, has been fully calibrated and assessed for isotropic, and boundary effect. The probe utilizes a triangular sensor arrangement as detailed in the diagram below right.



The SAR is assessed with the probe which moves at a default height of 4mm from the center of the diode, which is mounted to the sensor, to the phantom surface (Z height). The diagram above right shows how the center of the sensor is defined with the location of the diode placed at the center of the dipole. The 4mm default in the Z axis is the optimum height for assessing SAR where the boundary effect is at its least, with the probe located closest to the phantom surface (boundary).

The manufacturer specified precision of the robot is ± 0.05 mm and the precision of the APREL bottom detection device is ± 0.1 mm. These precisions are calibrated and tested in the manufacturing process of the bottom detection device. A constant distance is maintained because the surface of the phantom is dynamically detected for each point. The surface detection algorithm corrects the position of the robot so that the probe rests on the surface of the phantom. The probe is then moved to the measurement location 2.44 mm above the phantom surface resulting in the probe center location to be at 4.0 mm above the phantom surface. Therefore, the probe sensor will be at 4.0 mm above the phantom surface ± 0.1 mm for each SAR location for frequencies below 3 GHz. The probe is moved to the measurement location 1.44 mm above the phantom surface resulting in the probe center location to be at 2.0 mm above the phantom surface. Therefore, the probe sensor will be at 2.0 mm above the phantom surface ± 0.1 mm for each SAR location for frequencies above 3 GHz.

The probe boundary effect compensation cannot be disabled in the ALSAS-10U testing system. The probe tip will always be at least half a probe tip diameter from the phantom surface. For frequencies up to 3 GHz, the probe diameter is 5 mm. With the sensor offset set at 1.54 mm (default setting), the sensor to phantom gap will be 4.0 mm which is greater than half the probe tip diameter. For frequencies greater than 3 GHz, the probe diameter is 3 mm. With the sensor offset set at 0.56 mm (default setting), the sensor to phantom gap will be 3.0 mm which is greater than half the probe tip diameter.

The separation of the first 2 measurement points in the zoom scan is specified in the test setup software. For frequencies below 3 GHz, the user must specify a zoom scan resolution of less than 6 mm in the z-axis to have the first two measurements within 1 cm of the surface. The z-axis is set to 4 mm as shown on each of the data sheets in Appendix B. For frequencies above 3 GHz, the user must specify a zoom scan resolution of less than 3 mm in the z-axis to have the first two measurements within 5 mm of the surface. The z-axis is set to 2 mm as shown on each of the data sheets in Appendix B.

The zoom scan volume for devices ≤ 3 GHz with a cube scan of 5x5x8 yields a volume of $32 \times 32 \times 28$ mm³. For devices > 3 GHz and < 4.5 GHz, the cube scan of 9x9x9 yields a volume of $32 \times 32 \times 24$ mm³. For devices ≥ 4.5 GHz, the cube scan of 7x7x12 yields a volume of $24 \times 24 \times 22$ mm³.

3. Robot Specifications

Specifications

Positioner:	ThermoCRS, Robot Model: Robocomm 3
Repeatability:	0.05 mm
No. of axis:	6

Data Acquisition Card (DAC) System

Cell Controller

Processor:	Pentium 4™
Clock Speed:	2.66 GHz
Operating System:	Windows XP Pro™

Data Converter

Features:	Signal Amplifier, End Effector, DAC
Software:	ALSAS 10-U Software

E-Field Probe

Model:	Various See Probe Calibration Sheet
Serial Number:	Various See Probe Calibration Sheet
Construction:	Triangular Core Touch Detection System
Frequency:	10MHz to 6GHz

Phantom

Phantom:	Uniphantom, Right Phantom, Left Phantom
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4. Probe and Dipole Calibration

See Appendix D and E.

5. Phantom & Simulating Tissue Specifications

SAM Phantom



The Aprel system utilizes three separate phantoms. Each phantom for SAR assessment testing is a low loss dielectric shell, with shape and dimensions derived from the anthropomorphic data of the 90th percentile adult male head dimensions as tabulated by the US Army. The SAM phantom shell is bisected along the mid sagittal plane into right and left halves. The perimeter sidewalls of each phantom half is extended to allow filling with liquid to a depth of 15 cm that is sufficient to minimize reflections from the upper surface [5]. The Uni-Phantom is used to conduct body measurements and head to face measurements. The depth of the phantom allows for 15 cm of tissue material to be filled within the phantom. See photos in Appendix C.

Head & Body Simulating Mixture Characterization

The head and body mixtures consist of the material based on the table listed below. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the desired tissue. Body tissue parameters that have not been specified in P1528 are derived from the issue dielectric parameters computed from the 4-Cole-Cole equations.

Table 5.1 Typical Composition of Ingredients for Tissue

Ingredients	Simulating Tissue			
	750 MHz Head	750 MHz Body	850 MHz Head	850 MHz Body
Mixing Percentage				
Water	51.07	52.50	51.07	52.50
Sugar	47.31	45.00	47.31	45.00
Salt	1.15	1.40	1.15	1.40
HEC	0.23	1.00	0.23	1.00
Bactericide	0.24	0.10	0.24	0.10
DGBE	0.00	0.00	0.00	0.00
Dielectric Constant	Target	41.94	55.41	41.50
Conductivity (S/m)	Target	0.89	0.97	0.90
				0.97

Device Holder



In combination with the SAM phantom, the mounting device enables the rotation of the mounted transmitter in spherical coordinates whereby the rotation point is the ear opening. The devices can easily, accurately, and repeatably be positioned according to the FCC specifications. The device holder can be locked at different phantom locations (left head, right head, and uni-phantom).

6. ANSI/IEEE C95.1 – 1992 RF Exposure Limits [2]

Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Table 8.1 Human Exposure Limits

	UNCONTROLLED ENVIRONMENT General Population (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT Professional Population (W/kg) or (mW/g)
SPATIAL PEAK SAR ¹ Head	1.60	8.00
SPATIAL AVERAGE SAR ² Whole Body	0.08	0.40
SPATIAL PEAK SAR ³ Hands, Feet, Ankles, Wrists	4.00	20.00

¹ The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

² The Spatial Average value of the SAR averaged over the whole body.

³ The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

7. Measurement Uncertainty

Exposure Assessment Measurement Uncertainty

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) %	v_i
Measurement System								
Probe Calibration	3.5	normal	1	1	1	3.5	3.5	∞
Axial Isotropy	3.7	rectangular	$\sqrt{3}$	0.7	0.7	1.5	1.5	∞
Hemispherical Isotropy	10.9	rectangular	$\sqrt{3}$	0.7	0.7	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	3.0	rectangular	$\sqrt{3}$	1	1	1.7	1.7	∞
Probe Positioner Mech. Restriction	0.4	rectangular	$\sqrt{3}$	1	1	0.2	0.2	∞
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	4.0	normal	1	1	1	4.0	4.0	7
Device Holder Uncertainty	2.0	normal	1	1	1	2.0	2.0	2
Drift of Output Power	4.2	rectangular	$\sqrt{3}$	1	1	2.4	2.4	∞
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.)	0.5	normal	1	0.7	0.5	0.4	0.3	5
Liquid Permittivity (target)	5.0	rectangular	$\sqrt{3}$	0.6	0.5	1.7	1.4	∞
Liquid Permittivity (meas.)	1.0	normal	1	0.6	0.5	0.6	0.5	5
Combined Uncertainty		RSS				9.6	9.4	>500
Combined Uncertainty (coverage factor=2)		Normal (k=2)				19.1	18.8	>500

8. System Validation

Tissue Verification

Table 8.1 Measured Tissue Parameters

		835 MHz Head		835 MHz Body		750 MHz Head	
Date(s)		Dec. 5, 2011		Dec. 5, 2011		Dec. 6, 2011	
Liquid Temperature (°C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ϵ		41.50	41.23	55.20	54.37	41.94	41.25
Conductivity: σ		0.90	0.92	0.97	0.98	0.89	0.89
		750 MHz Body					
Date(s)		Dec. 6, 2011					
Liquid Temperature (°C)	20.0	Target	Measured				
Dielectric Constant: ϵ		55.53	55.04				
Conductivity: σ		0.96	0.95				

See Appendix A for data printout.

Test System Verification

Prior to assessment, the system is verified to the $\pm 10\%$ of the specifications at the test frequency by using the system kit. Power is normalized to 1 watt. (Graphic Plots Attached)

Table 8.2 System Dipole Validation Target & Measured

	Test Frequency	Targeted SAR _{1g} (W/kg)	Measure SAR _{1g} (W/kg)	Tissue Used for Verification	Deviation (%)
05-Dec-2011	835 MHz	9.49	9.57	Head	+ 0.84
05-Dec-2011	835 MHz	9.81	9.47	Body	- 3.47
06-Dec-2011	750 MHz	8.49	8.81	Head	+ 3.77
06-Dec-2011	750 MHz	8.70	8.97	Body	+ 3.10

See Appendix A for data plots.

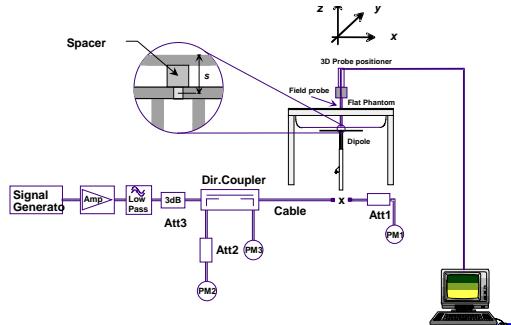


Figure 8.1 Dipole Validation Test Setup

Note: KDB 450824 D02 v01 was applied for probe calibration frequencies greater than or equal to 50 MHz of the DUT frequencies.

9. SAR Test Data Summary

See Measurement Result Data Pages

See Appendix B for SAR Test Data Plots.

See Appendix C for SAR Test Setup Photos.

Procedures Used To Establish Test Signal

The device was either placed into simulated transmit mode using the manufacturer's test codes or the actual transmission is activated through a base station simulator or similar equipment. See data pages for actual procedure used in measurement.

Device Test Condition

In order to verify that the device was tested at full power, conducted output power measurements were performed before and after each SAR measurement to confirm the output power unless otherwise noted. If a conducted power deviation of more than 5% occurred, the test was repeated. The power drift of each test is measured at the start of the test and again at the end of the test. The drift percentage is calculated by the formula $((\text{end/start})-1)*100$ and rounded to three decimal places. The drift percentage is calculated into the resultant SAR value on the data sheet for each test.

The EUT was tested in the face position with the front of the device 25 mm away from the flat phantom. The EUT was then tested in the body position with the belt clip in contact with the flat phantom. The microphone which did not contain an antenna was connected to the device for the body testing. The microphone containing an antenna on the device was tested in the face (25 mm gap) and body position (0 mm gap). For each of the tests conducted, the device was set to continuously transmit at a maximum output power on the channel specified in the test data. The SAR was scaled to 50% duty cycle per KDB 643646 D01 v01r01. All test reductions were reduced based on the reductions in KDB 643646 D01 v01r01.

Body Measurements		
	Lilon High Capacity Battery	
Audio Accessory	Antenna A	Antenna B
Speaker/Microphone A	Tested	Tested
Speaker/Microphone B	Not Tested	Not Tested
Speaker/Microphone C	Not Tested	Not Tested
Speaker/Microphone D	Tested	Tested
Speaker/Microphone E	Not Tested	Not Tested
Speaker/Microphone F	Not Tested	Not Tested

Face Measurements		
		Lilon High Capacity Battery
Audio Accessory	Antenna A	Antenna B
Speaker/Microphone A	Not Tested	Not Tested
Speaker/Microphone B	Not Tested	Not Tested
Speaker/Microphone C	Not Tested	Not Tested
Speaker/Microphone D	Tested	Tested
Speaker/Microphone E	Not Tested	Not Tested
Speaker/Microphone F	Not Tested	Not Tested

ATH2425770 Accessories

Accessory	Description	Part Number
Battery	Lilon High Capacity Battery	587-5700-374
Belt Clip	Belt Clip 2.25"	585-5100-128
Antenna A	1/2 Wave Antenna 700/800 MHz	501-0105-073
Antenna B	1/4 Wave Antenna 700/800 MHz	501-0105-012
Audio Accessory A	Standard Speaker/mic 18" cable	589-3600-052-18
Audio Accessory B	Standard Speaker/mic 25" cable	589-3600-052-25
Audio Accessory C	Standard Speaker/mic 30" cable	589-3600-052-30
Audio Accessory D	Public Safety Speaker/mic (with antenna connector) 18" cable	589-3600-056-18
Audio Accessory E	Public Safety Speaker/mic (with antenna connector) 25" cable	589-3600-056-25
Audio Accessory F	Public Safety Speaker/mic (with antenna connector) 30" cable	589-3600-056-30

Only one battery was supplied for this testing. Speaker/Microphone A-C do not have any radiating source on the accessory. Therefore, one representative accessory was tested for body measurement per the table. For speaker/microphone D-E, the accessory contains an antenna. The only difference between the three accessories is the length of the cable. The length would not have an effect on the overall SAR value. Therefore, the 18" accessory version was tested in both the body and face position.

Low Band			Mid Band		
Freq	Channel	Power (dB)	Freq	Channel	Power (dB)
764	1	34.76	806	7	35.22
770	2	34.78	815	8	35.26
776	3	34.75	824	9	35.23
Mid Band			High Band		
Freq	Channel	Power	Freq	Channel	Power
794	4	34.75	851	10	35.20
800	5	34.77	860	11	35.24
806	6	34.76	869	12	35.21

Per KDB 447498 D01 v04 page 7 section 6) c), the number of channels required to be tested is as follows:

$$F_{\text{high}} = 776 \text{ MHz}$$

$$F_c = 770 \text{ MHz}$$

$$F_{\text{low}} = 764 \text{ MHz}$$

$$N_c = \text{Round} \{ [100(f_{\text{high}} - f_{\text{low}})/f_c]^{0.5} \times (f_c/100)^{0.2} \} = \text{Round} \{ [100(776-764)/770]^{0.5} \times (770/100)^{0.2} \} = 2$$

Therefore, for the frequency band from 764 MHz to 776 MHz, 2 channels are required for testing.

$$F_{\text{high}} = 806 \text{ MHz}$$

$$F_c = 800 \text{ MHz}$$

$$F_{\text{low}} = 794 \text{ MHz}$$

$$N_c = \text{Round} \{ [100(f_{\text{high}} - f_{\text{low}})/f_c]^{0.5} \times (f_c/100)^{0.2} \} = \text{Round} \{ [100(806-794)/800]^{0.5} \times (800/100)^{0.2} \} = 2$$

Therefore, for the frequency band from 794 MHz to 806 MHz, 2 channels are required for testing.

$$F_{\text{high}} = 824 \text{ MHz}$$

$$F_c = 815 \text{ MHz}$$

$$F_{\text{low}} = 806 \text{ MHz}$$

$$N_c = \text{Round} \{ [100(f_{\text{high}} - f_{\text{low}})/f_c]^{0.5} \times (f_c/100)^{0.2} \} = \text{Round} \{ [100(824-806)/815]^{0.5} \times (815/100)^{0.2} \} = 2$$

Therefore, for the frequency band from 806 MHz to 824 MHz, 2 channels are required for testing.

$$F_{\text{high}} = 869 \text{ MHz}$$

$$F_c = 860 \text{ MHz}$$

$$F_{\text{low}} = 851 \text{ MHz}$$

$$N_c = \text{Round} \{ [100(f_{\text{high}} - f_{\text{low}})/f_c]^{0.5} \times (f_c/100)^{0.2} \} = \text{Round} \{ [100(869-851)/860]^{0.5} \times (860/100)^{0.2} \} = 2$$

Therefore, for the frequency band from 851 MHz to 869 MHz, 2 channels are required for testing.

Head SAR – In Front of Face (Handset)			
Antenna (MHz)	Channel Freq. (MHz)	Default Battery ¹	
		Measured Power (W)	Measure SAR (W/kg)
A (764 – 776)	764	34.76	²
	770	34.78	1.057
	776	34.75	²
B (764 – 776)	764	34.76	²
	770	34.78	1.559
	776	34.75	²
A (794 – 806)	794	34.75	²
	800	34.77	1.057
	806	34.76	²
B (794 – 806)	794	34.75	²
	800	34.77	0.866
	806	34.76	²
A (806 – 824)	806	35.22	²
	815	35.26	1.744
	824	35.23	²
B (806 – 824)	806	35.22	²
	815	35.26	1.728
	824	35.23	²
A (851 – 869)	851	35.20	²
	860	35.24	1.722
	869	35.21	²
B (851 – 869)	851	35.20	²
	860	35.24	1.683
	869	35.21	²

¹See Accessory table on page 14 of this report.

²Measurement was reduced per KDB 643646 D01 v01r01 page 2 section 1) A) I) a).

Head SAR – In Front of Face (Audio Accessory D)			
Antenna (MHz)	Channel Freq. (MHz)	Default Battery ¹	
		Measured Power (W)	Measure SAR (W/kg)
A (764 – 776)	764	34.76	²
	770	34.78	1.084
	776	34.75	²
B (764 – 776)	764	34.76	²
	770	34.78	1.105
	776	34.75	²
A (794 – 806)	794	34.75	²
	800	34.77	1.092
	806	34.76	²
B (794 – 806)	794	34.75	²
	800	34.77	1.093
	806	34.76	²
A (806 – 824)	806	35.22	²
	815	35.26	1.597
	824	35.23	²
B (806 – 824)	806	35.22	²
	815	35.26	1.341
	824	35.23	²
A (851 – 869)	851	35.20	²
	860	35.24	1.591
	869	35.21	²
B (851 – 869)	851	35.20	²
	860	35.24	1.380
	869	35.21	²

¹See Accessory table on page 14 of this report.

²Measurement was reduced per KDB 643646 D01 v01r01 page 2 section 1) A) I) a).

Body SAR				
Antenna (MHz)	Channel Freq. (MHz)	Default Battery ¹		
		Body Worn Device (Belt Clip) ¹		
		Measured Power (W)	Measured SAR (W/kg)	Measured SAR (W/kg)
A (764 – 776)	764	34.76	2	6.562
	770	34.78	1.245	4
	776	34.75	2	6.615
B (764 – 776)	764	34.76	2	6.886
	770	34.78	1.293	4
	776	34.75	2	6.768
A (794 – 806)	794	34.75	2	6.576
	800	34.77	1.262	4
	806	34.76	2	6.662
B (794 – 806)	794	34.75	2	6.815
	800	34.77	1.188	4
	806	34.76	2	6.847
A (806 – 824)	806	35.22	2	6.742
	815	35.26	1.591	4
	824	35.23	2	6.930
B (806 – 824)	806	35.22	2	6.825
	815	35.26	1.900	4
	824	35.23	2	6.846
A (851 – 869)	851	35.20	2	6.888
	860	35.24	1.522	4
	869	35.21	2	6.904
B (851 – 869)	851	35.20	2	6.902
	860	35.24	1.900	4
	869	35.21	2	6.891

¹See Accessory table on page 14 of this report.

²Measurement was reduced per KDB 643646 D01 v01r01 page 2 section 1) A) I) a).

³Audio Accessories B & C are the same as A with the exception of the length of the cable. See page 14 for details.

⁴Measurement was reduced per KDB 447498 D01 v04 page 7 section 6) c). See calculations on page 15.

SAR Data Summary – Head SAR in Front of Face Measurements

MEASUREMENT RESULTS

Gap	Configuration	Frequency		Modulation	Antenna	End Power (dBm)	SAR (W/kg)	SAR (W/kg) 50% Duty Cycle
		MHz	Ch.					
25 mm	Handset	815	8	FM	Standard	35.26	3.488	1.744
		860	11	FM	Standard	35.24	3.444	1.722
		815	8	FM	Stubby	35.26	3.456	1.728
		860	11	FM	Stubby	35.24	3.366	1.683
		770	2	FM	Standard	34.78	2.113	1.057
		800	5	FM	Standard	34.77	2.113	1.057
		770	2	FM	Stubby	34.78	3.118	1.559
		800	5	FM	Stubby	34.77	1.732	0.866
	Microphone with Antenna	815	8	FM	Standard	35.26	3.194	1.597
		860	11	FM	Standard	35.24	3.181	1.591
		815	8	FM	Stubby	35.26	2.682	1.341
		860	11	FM	Stubby	35.24	2.760	1.380
		770	2	FM	Standard	34.78	2.167	1.084
		800	5	FM	Standard	34.77	2.184	1.092
		770	2	FM	Stubby	34.78	2.210	1.105
		800	5	FM	Stubby	34.77	2.185	1.093

Body
8.0 W/kg (mW/g)
averaged over 1 gram

1. Battery is fully charged for all tests.
Power Measured Conducted ERP EIRP
2. SAR Measurement
Phantom Configuration Left Head Uniphantom Right Head
SAR Configuration Head Body
3. Test Signal Call Mode Test Code Base Station Simulator
4. Test Configuration With Belt Clip Without Belt Clip N/A
5. Tissue Depth is at least 15.0 cm



Jay M. Moulton
Vice President

Note: SAR Tested on the Highest output power channel. When the measured channel is less than 3.5 W/kg, the remaining channels are not required to be tested per KDB 643646 D01 v01r01 page 2 section 1) A) I) a). The SAR is calculated for the 50% duty cycle for PTT devices. The testing was conducted with the device 25 mm from the flat phantom. All testing was conducted per KDB 447498 v04, 643646 D01 v01r01 and OET Bulletin 65. See the photo in Appendix C a pictorial of the setup and labeling of the test locations.

SAR Data Summary – Body SAR Accessory Measurements

MEASUREMENT RESULTS

Gap	Configuration	Frequency		Modulation	Antenna	End Power (dBm)	SAR (W/kg)	SAR (W/kg) 50% Duty Cycle
		MHz	Ch.					
0 mm	Handset with Microphone without Antenna	815	8	FM	Standard	35.26	3.181	1.591
		860	11	FM	Standard	35.24	3.044	1.522
		815	8	FM	Stubby	35.26	3.799	1.900
		860	11	FM	Stubby	35.24	3.799	1.900
		770	2	FM	Standard	34.78	2.489	1.245
		800	5	FM	Standard	34.77	2.523	1.262
		770	2	FM	Stubby	34.78	2.586	1.293
		800	5	FM	Stubby	34.77	2.376	1.188
	Microphone with Antenna	806	7	FM	Standard	35.22	13.483	6.742
		824	9	FM	Standard	35.23	13.859	6.930
		851	10	FM	Standard	35.20	13.775	6.888
		869	12	FM	Standard	35.21	13.808	6.904
		806	7	FM	Stubby	35.22	13.649	6.825
		824	9	FM	Stubby	35.23	13.691	6.846
		851	10	FM	Stubby	35.20	13.803	6.902
		869	12	FM	Stubby	35.21	13.782	6.891
		764	1	FM	Standard	34.76	13.123	6.562
		776	3	FM	Standard	34.75	13.229	6.615
		794	4	FM	Standard	34.75	13.152	6.576
		806	6	FM	Standard	34.76	13.323	6.662
		764	1	FM	Stubby	34.76	13.772	6.886
		776	3	FM	Stubby	34.75	13.535	6.768
		794	4	FM	Stubby	34.75	13.629	6.815
		806	6	FM	Stubby	34.76	13.694	6.847

Body
8.0 W/kg (mW/g)
averaged over 1 gram

1. Battery is fully charged for all tests.
Power Measured Conducted ERP EIRP
2. SAR Measurement
Phantom Configuration Left Head Uniphantom
SAR Configuration Head Right Head
3. Test Signal Call Mode Test Code Body
4. Test Configuration With Belt Clip Base Station Simulator
 Without Belt Clip N/A
5. Tissue Depth is at least 15.0 cm



Jay M. Moulton
Vice President

Note: SAR Tested on the Highest output power channel. When the measured channel is less than 3.5 W/kg, the remaining channels are not required to be tested per KDB 643646 D01 v01r01 page 5 section 1 A) 1) a) for rows 1-8, and KDB 643646 D01 v01r01 pages 7-9 for rows 9-24. The SAR is calculated for the 50% duty cycle for PTT devices. The testing was conducted with the device 0 mm from the flat phantom. All testing was conducted per KDB 447498, 643646 and OET Bulletin 65. See the photo in Appendix C a pictorial of the setup and labeling of the test locations.

10. Test Equipment List

Table 10.1 Equipment Specifications

Type	Calibration Due Date	Calibration Done Date	Serial Number
ThermoCRS Robot	N/A	N/A	RAF0338198
ThermoCRS Controller	N/A	N/A	RCF0338224
ThermoCRS Teach Pendant (Joystick)	N/A	N/A	STP0334405
IBM Computer, 2.66 MHz P4	N/A	N/A	8189D8U KCPR08N
Aprel E-Field Probe ALS-E020	06/17/2012	06/17/2011	RFE-217
Aprel E-Field Probe ALS-E030	07/15/2012	07/15/2011	E030-001
Aprel Dummy Probe	N/A	N/A	023
Aprel Left Phantom	N/A	N/A	RFE-267
Aprel Right Phantom	N/A	N/A	RFE-268
Aprel UniPhantom	N/A	N/A	RFE-273
Aprel Validation Dipole ALS-D-450-S-2 Head	01/12/2012	01/12/2010	RFE-362
Aprel Validation Dipole ALS-D-450-S-2 Body	01/19/2012	01/19/2011	RFE-362
Aprel Validation Dipole ALS-D-750-S-2 Head	01/14/2012	01/14/2010	177-00501
Aprel Validation Dipole ALS-D-750-S-2 Body	11/15/2012	11/15/2010	177-00501
Aprel Validation Dipole ALS-D-835-S-2 Head	01/14/2012	01/14/2010	180-00561
Aprel Validation Dipole ALS-D-835-S-2 Body	11/16/2012	11/16/2010	180-00561
Aprel Validation Dipole ALS-D-900-S-2 Head	01/12/2012	01/12/2010	RFE-275
Aprel Validation Dipole ALS-D-900-S-2 Body	11/19/2012	11/19/2010	RFE-275
Aprel Validation Dipole ALS-D-1900-S-2 Head	01/15/2012	01/15/2010	210-00713
Aprel Validation Dipole ALS-D-1900-S-2 Body	11/16/2012	11/16/2010	210-00713
Aprel Validation Dipole ALS-D-2450-S-2 Head	01/12/2012	01/12/2010	RFE-278
Aprel Validation Dipole ALS-D-2450-S-2 Body	11/18/2012	11/18/2010	RFE-278
Aprel Validation Dipole RFE-D-2600-S-2 Body	01/18/2012	01/18/2010	RFE-121
Aprel Validation Dipole RFE-D-BB-S-2 Head	01/12/2012	01/12/2010	235-00801
Aprel Validation Dipole RFE-D-BB-S-2 Body	02/09/2012	02/09/2011	235-00801
Agilent (HP) 437B Power Meter	03/30/2012	03/30/2011	3125U08837
Agilent (HP) 8481B Power Sensor	03/30/2012	03/30/2011	3318A05384
Agilent N1911A Power Meter	03/30/2012	03/30/2011	GB45100254
Agilent N1922A Power Sensor	03/30/2012	03/30/2011	MY45240464
Advantest R3261A Spectrum Analyzer	03/30/2012	03/30/2011	31720068
Agilent (HP) 8350B Signal Generator	03/31/2012	03/31/2011	2749A10226
Agilent (HP) 83525A RF Plug-In	03/31/2012	03/31/2011	2647A01172
Agilent (HP) 8753C Vector Network Analyzer	03/30/2012	03/30/2011	3135A01724
Agilent (HP) 85047A S-Parameter Test Set	03/31/2012	03/31/2011	2904A00595
Agilent (HP) 8960 Base Station Sim.	03/25/2012	03/25/2011	MY48360364
Anritsu MT8820C	03/23/2012	03/23/2011	6200837710
Aprel Dielectric Probe Assembly	N/A	N/A	0011
Head Equivalent Matter (450 MHz)	N/A	N/A	N/A
Head Equivalent Matter (835/900 MHz)	N/A	N/A	N/A
Head Equivalent Matter (1900 MHz)	N/A	N/A	N/A
Head Equivalent Matter (2450 MHz)	N/A	N/A	N/A
Body Equivalent Matter (450 MHz)	N/A	N/A	N/A
Body Equivalent Matter (750 MHz)	N/A	N/A	N/A
Body Equivalent Matter (835/900 MHz)	N/A	N/A	N/A
Body Equivalent Matter (1900 MHz)	N/A	N/A	N/A
Body Equivalent Matter (2450 MHz)	N/A	N/A	N/A
Body Equivalent Matter (2600 MHz)	N/A	N/A	N/A
Body Equivalent Matter (5200 MHz)	N/A	N/A	N/A
Body Equivalent Matter (5800 MHz)	N/A	N/A	N/A

11. Conclusion

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the FCC. These measurements are taken to simulate the RF effects exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The tested device complies with the requirements in respect to all parameters subject to the test. The test results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body is a very complex phenomena that depends on the mass, shape, and size of the body; the orientation of the body with respect to the field vectors; and, the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because innumerable factors may interact to determine the specific biological outcome of an exposure to electromagnetic fields, any protection guide shall consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables.

12. References

- [1] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radio Frequency Radiation, August 1996
- [2] ANSI/IEEE C95.1 – 1992, American National Standard Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300kHz to 100GHz, New York: IEEE, 1992.
- [3] ANSI/IEEE C95.3 – 1992, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields – RF and Microwave, New York: IEEE, 1992.
- [4] Federal Communications Commission, OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01), Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields, June 2001.
- [5] IEEE Standard 1528 – 2003, IEEE Recommended Practice for Determining the Peak-Spatial Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communication Devices: Measurement Techniques, October 2003.
- [6] Industry Canada, RSS – 102e, Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands), March 2010.
- [7] Health Canada, Safety Code 6, Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3kHz to 300 GHz, 2009.

Appendix A – System Validation Plots and Data

Test Result for UIM Dielectric Parameter
Tue 06/Dec/2011 07:09:49
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.7520	41.93	0.89	41.25	0.89
0.7620	41.88	0.89	41.19	0.90
0.7720	41.83	0.90	41.14	0.91
0.7820	41.78	0.90	41.08	0.91
0.7920	41.72	0.90	41.02	0.92
0.8020	41.67	0.90	40.97	0.93
0.8120	41.62	0.90	40.92	0.93

Test Result for UIM Dielectric Parameter
Tue 06/Dec/2011 09:46:15
Freq Frequency(GHz)
FCC_eH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

Freq	FCC_eB	FCC_sB	Test_e	Test_s
0.7520	55.52	0.96	55.04	0.95
0.7620	55.48	0.96	54.99	0.96
0.7720	55.45	0.97	54.95	0.98
0.7820	55.41	0.97	54.91	0.98
0.7920	55.37	0.97	54.86	1.01
0.8020	55.33	0.97	54.82	1.02
0.8120	55.29	0.97	54.77	1.04

Test Result for UIM Dielectric Parameter
Mon 05/Dec/2011 07:16:22
Freq Frequency(GHz)
FCC_eH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.8050	41.66	0.90	41.41	0.89
0.8150	41.60	0.90	41.34	0.90
0.8250	41.55	0.90	41.29	0.91
0.8350	41.50	0.90	41.23	0.92
0.8450	41.50	0.91	41.21	0.93
0.8550	41.50	0.92	41.19	0.94
0.8650	41.50	0.93	41.18	0.95

Test Result for UIM Dielectric Parameter
Mon 05/Dec/2011 01:55:49
Freq Frequency(GHz)
FCC_eH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

Freq	FCC_eB	FCC_sB	Test_e	Test_s
0.8050	55.32	0.97	54.24	0.94
0.8150	55.28	0.97	54.28	0.95
0.8250	55.24	0.97	54.33	0.96
0.8350	55.20	0.97	54.37	0.98
0.8450	55.17	0.98	54.40	0.99
0.8550	55.14	0.99	54.44	1.02
0.8650	55.11	1.01	54.48	1.04

SAR Test Report

By Operator : Jay
Measurement Date : 06-Dec-2011
Starting Time : 06-Dec-2011 07:14:19 AM
End Time : 06-Dec-2011 07:29:26 AM
Scanning Time : 907 secs

Product Data

Device Name : Validation
Serial No. : 750
Type : Dipole
Model : ALS-D-750-S-2
Frequency : 750.00 MHz
Max. Transmit Pwr : 0.1 W
Drift Time : 0 min(s)
Length : 180.2 mm
Width : 3.6 mm
Depth : 97.0 mm
Antenna Type : Internal
Orientation : Touch
Power Drift-Start : 1.038 W/kg
Power Drift-Finish: 1.045 W/kg
Power Drift (%) : 0.605

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : HEAD
Serial No. : 752
Frequency : 752.00 MHz
Last Calib. Date : 06-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 49.00 RH%
Epsilon : 41.25 F/m
Sigma : 0.89 S/m
Density : 1000.00 kg/cu. m

Probe Data

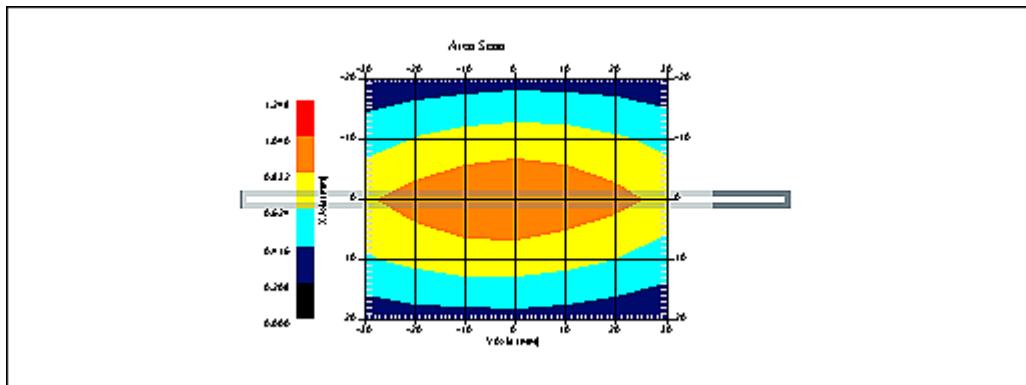
Name : Probe 217 - RFEL
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 750.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.2
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 25.00 °C
Set-up Date : 06-Dec-2011
Set-up Time : 9:21:48 AM
Area Scan : 5x7x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

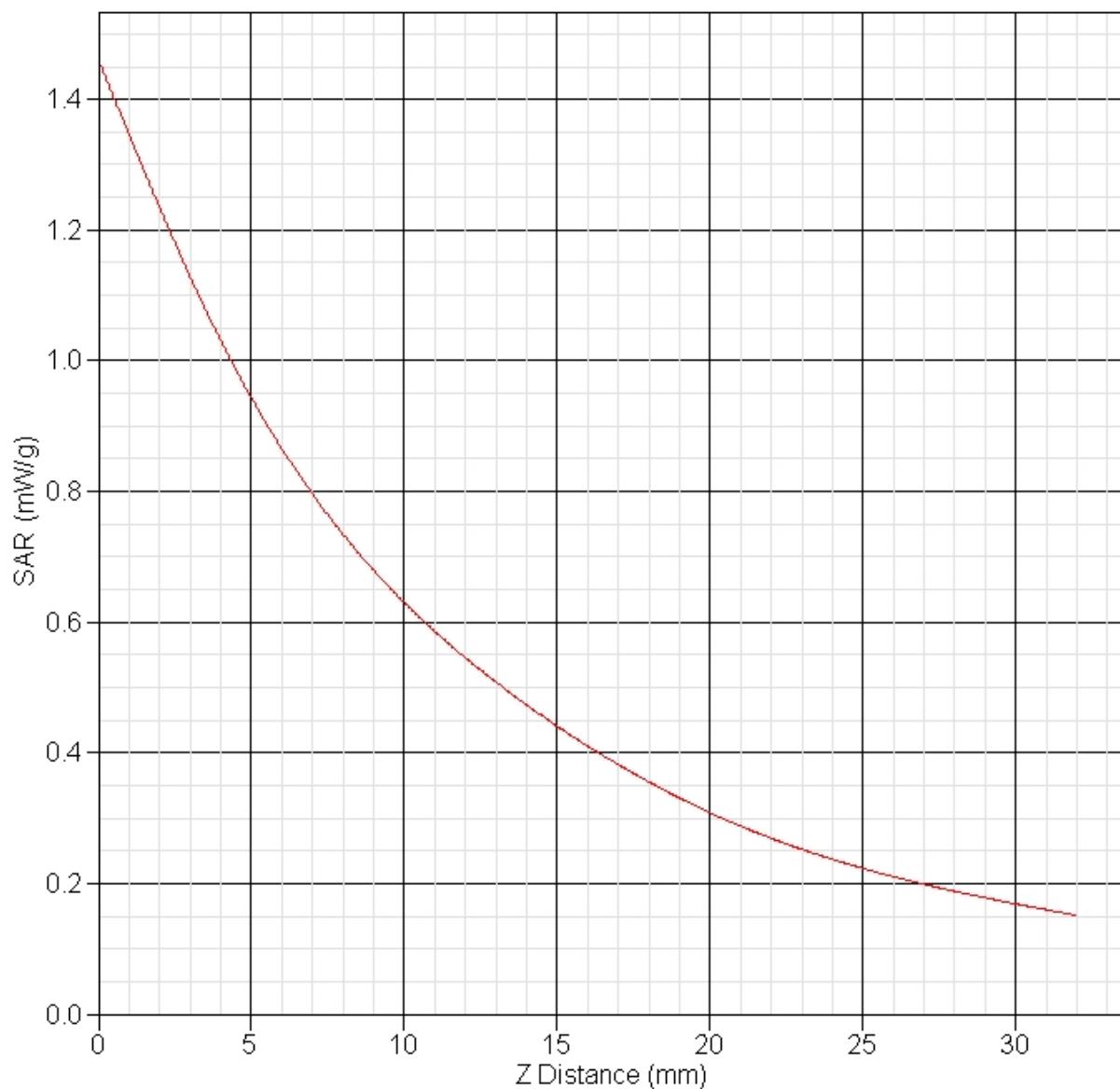
Other Data

DUT Position : Touch
Separation : 15 mm
Channel : Low



1 gram SAR value : 0.881 W/kg
10 gram SAR value : 0.563 W/kg
Area Scan Peak SAR : 1.042 W/kg
Zoom Scan Peak SAR : 1.461 W/kg

SAR-Z Axis
at Hotspot x:0.21 y:-0.14



SAR Test Report

By Operator : Jay
Measurement Date : 06-Dec-2011
Starting Time : 06-Dec-2011 10:07:45 AM
End Time : 06-Dec-2011 10:22:55 AM
Scanning Time : 910 secs

Product Data

Device Name : Validation
Serial No. : 750
Type : Dipole
Model : ALS-D-750-S-2
Frequency : 750.00 MHz
Max. Transmit Pwr : 0.1 W
Drift Time : 0 min(s)
Length : 180.2 mm
Width : 3.6 mm
Depth : 97.0 mm
Antenna Type : Internal
Orientation : Touch
Power Drift-Start : 1.105 W/kg
Power Drift-Finish: 1.086 W/kg
Power Drift (%) : -1.719

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : BODY
Serial No. : 752
Frequency : 752.00 MHz
Last Calib. Date : 06-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 49.00 RH%
Epsilon : 55.04 F/m
Sigma : 0.95 S/m
Density : 1000.00 kg/cu. m

Probe Data

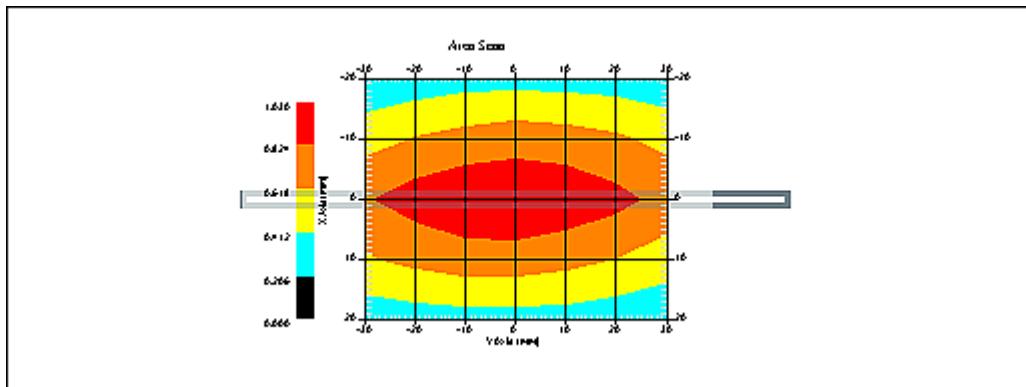
Name : Probe 217 - RFEL
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 750.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.3
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 25.00 °C
Set-up Date : 06-Dec-2011
Set-up Time : 8:36:21 AM
Area Scan : 5x7x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

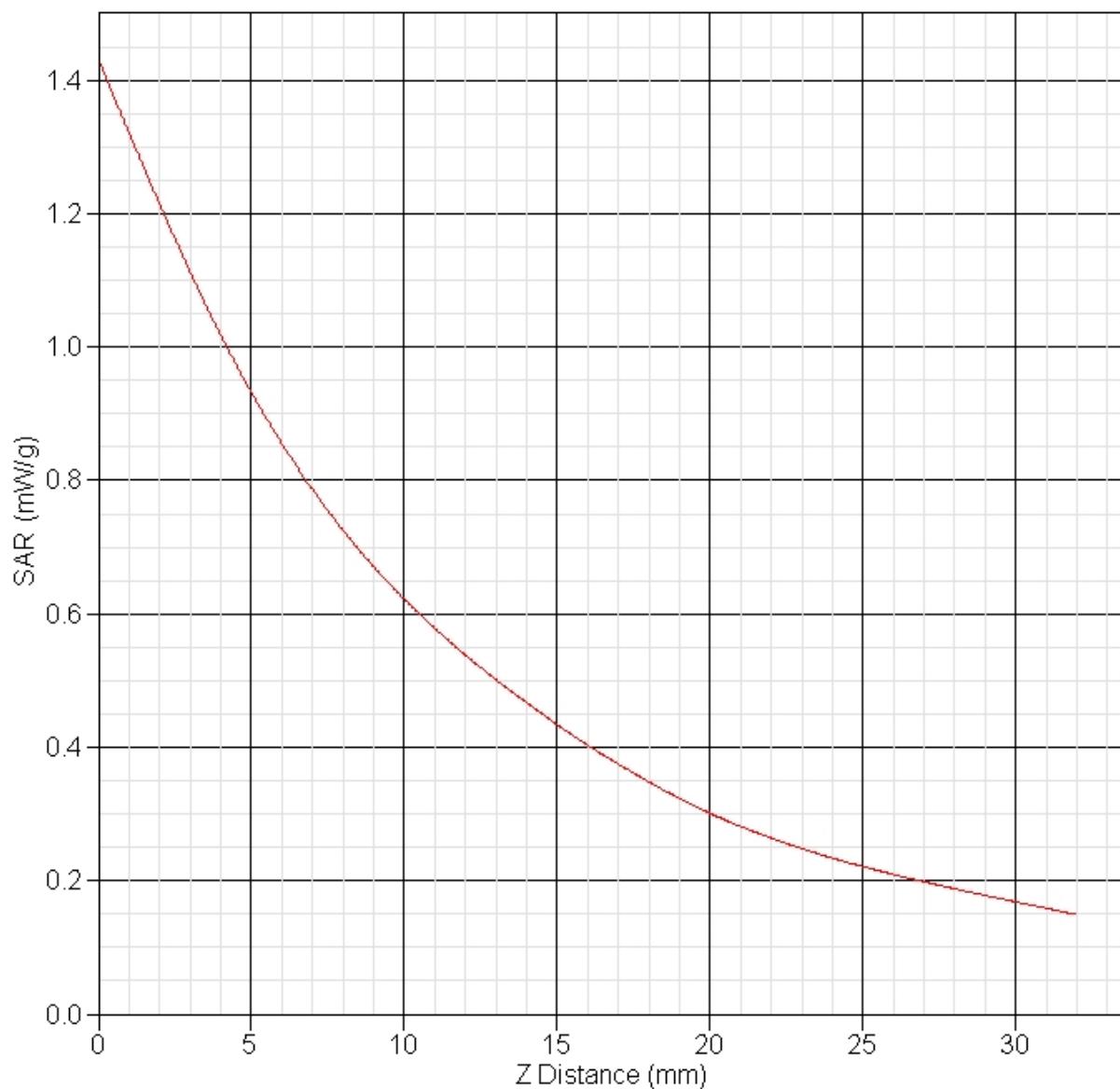
Other Data

DUT Position : Touch
Separation : 15 mm
Channel : Mid



1 gram SAR value : 0.897 W/kg
10 gram SAR value : 0.573 W/kg
Area Scan Peak SAR : 1.097 W/kg
Zoom Scan Peak SAR : 1.436 W/kg

SAR-Z Axis
at Hotspot x:0.26 y:-0.21



SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 07:25:17 AM
End Time : 05-Dec-2011 07:40:22 AM
Scanning Time : 905 secs

Product Data

Device Name : Validation
Serial No. : 835
Type : Dipole
Model : ALS-D-835-S-2
Frequency : 835.00 MHz
Max. Transmit Pwr : 0.1 W
Drift Time : 0 min(s)
Length : 161 mm
Width : 3.6 mm
Depth : 89.8 mm
Antenna Type : Internal
Orientation : Touch
Power Drift-Start : 1.085 W/kg
Power Drift-Finish: 1.067 W/kg
Power Drift (%) : -1.651

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : HEAD
Serial No. : 835
Frequency : 835.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 49.00 RH%
Epsilon : 41.23 F/m
Sigma : 0.92 S/m
Density : 1000.00 kg/cu. m

Probe Data

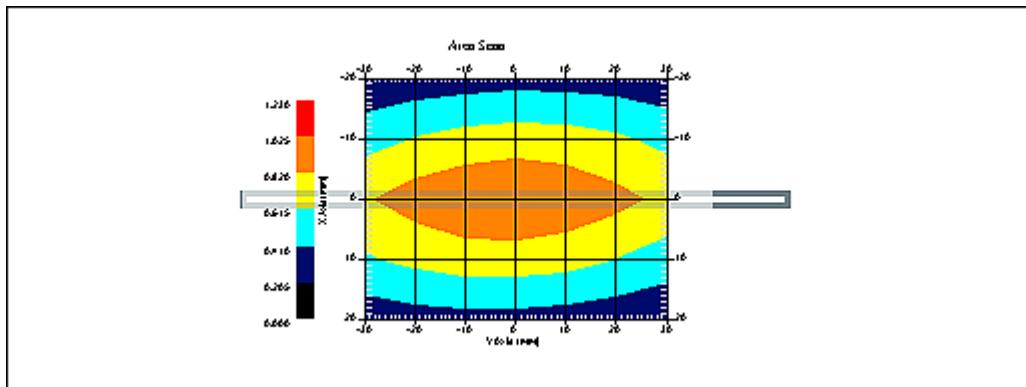
Name : Probe 217 - RFEL
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 25.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 9:21:48 AM
Area Scan : 5x7x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

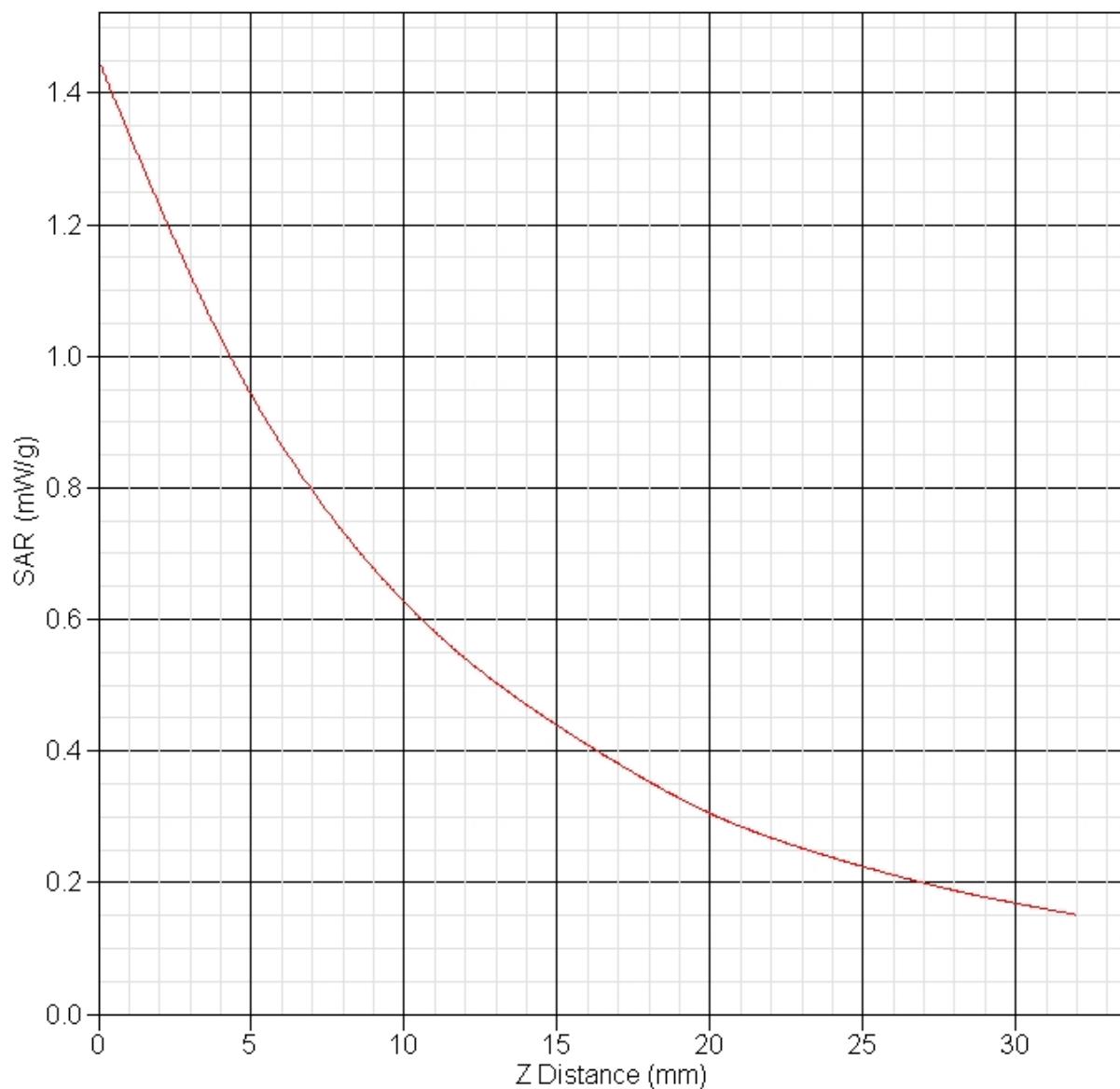
Other Data

DUT Position : Touch
Separation : 15 mm
Channel : Mid



1 gram SAR value : 0.957 W/kg
10 gram SAR value : 0.612 W/kg
Area Scan Peak SAR : 1.048 W/kg
Zoom Scan Peak SAR : 1.472 W/kg

SAR-Z Axis
at Hotspot x:0.25 y:-0.13



SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 02:00:18 PM
End Time : 05-Dec-2011 02:15:26 PM
Scanning Time : 908 secs

Product Data

Device Name : Validation
Serial No. : 835
Type : Dipole
Model : ALS-D-835-S-2
Frequency : 835.00 MHz
Max. Transmit Pwr : 0.1 W
Drift Time : 0 min(s)
Length : 161 mm
Width : 3.6 mm
Depth : 89.8 mm
Antenna Type : Internal
Orientation : Touch
Power Drift-Start : 1.052 W/kg
Power Drift-Finish: 1.016 W/kg
Power Drift (%) : -3.422

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : BODY
Serial No. : 835
Frequency : 835.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 49.00 RH%
Epsilon : 54.37 F/m
Sigma : 0.98 S/m
Density : 1000.00 kg/cu. m

Probe Data

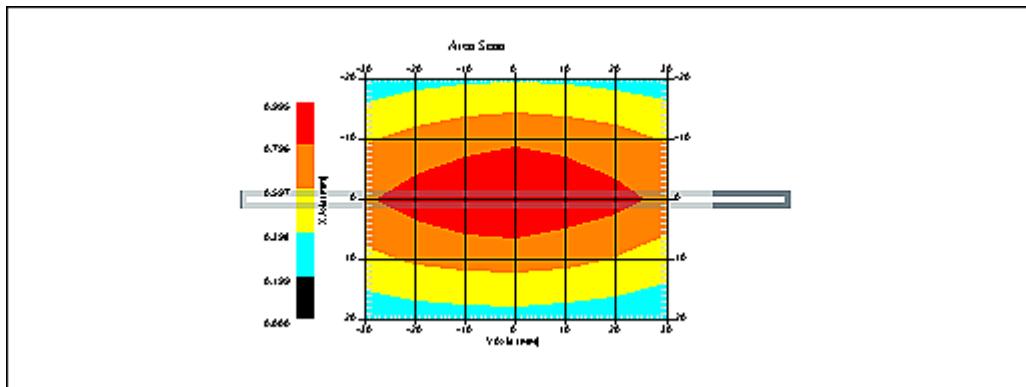
Name : Probe 217 - RFEL
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

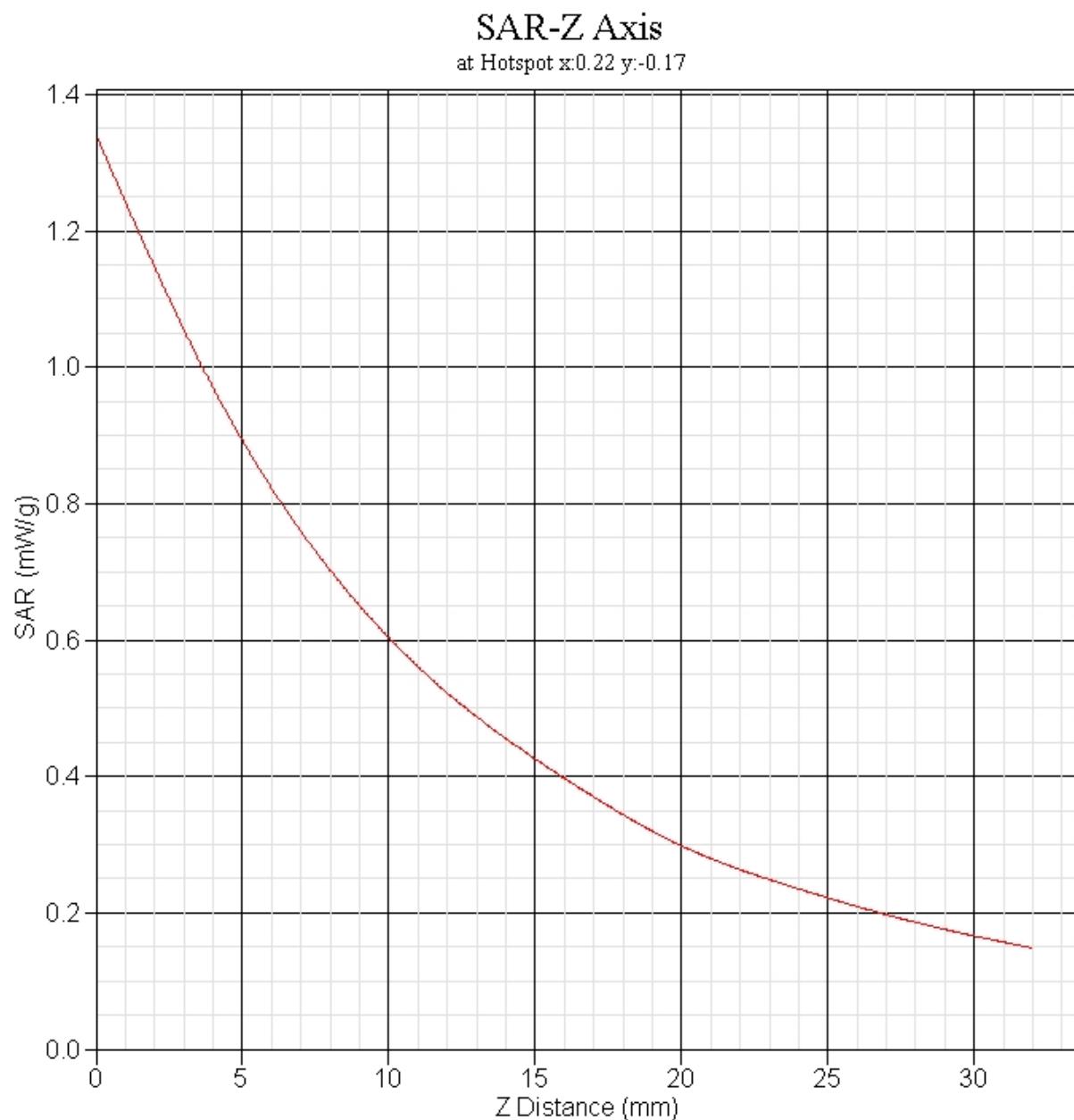
Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 25.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 9:21:48 AM
Area Scan : 5x7x1 : Measurement x=10mm, y=10mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch
Separation : 15 mm
Channel : Mid



1 gram SAR value : 0.947 W/kg
10 gram SAR value : 0.636 W/kg
Area Scan Peak SAR : 0.987 W/kg
Zoom Scan Peak SAR : 1.333 W/kg



Appendix B – SAR Test Data Plots

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 07:48:08 AM
End Time : 05-Dec-2011 08:11:26 AM
Scanning Time : 1398 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 815.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 170 mm
Width : 64 mm
Depth : 42 mm
Antenna Type : Standard
Orientation : Held to Face
Power Drift-Start : 1.618 W/kg
Power Drift-Finish: 1.576 W/kg
Power Drift (%) : -2.590

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : HEAD
Serial No. : 815
Frequency : 815.00 MHz
Last Calib. Date : 05-Dec-0211
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 41.34 F/m
Sigma : 0.90 S/m
Density : 1000.00 kg/cu. m

Probe Data

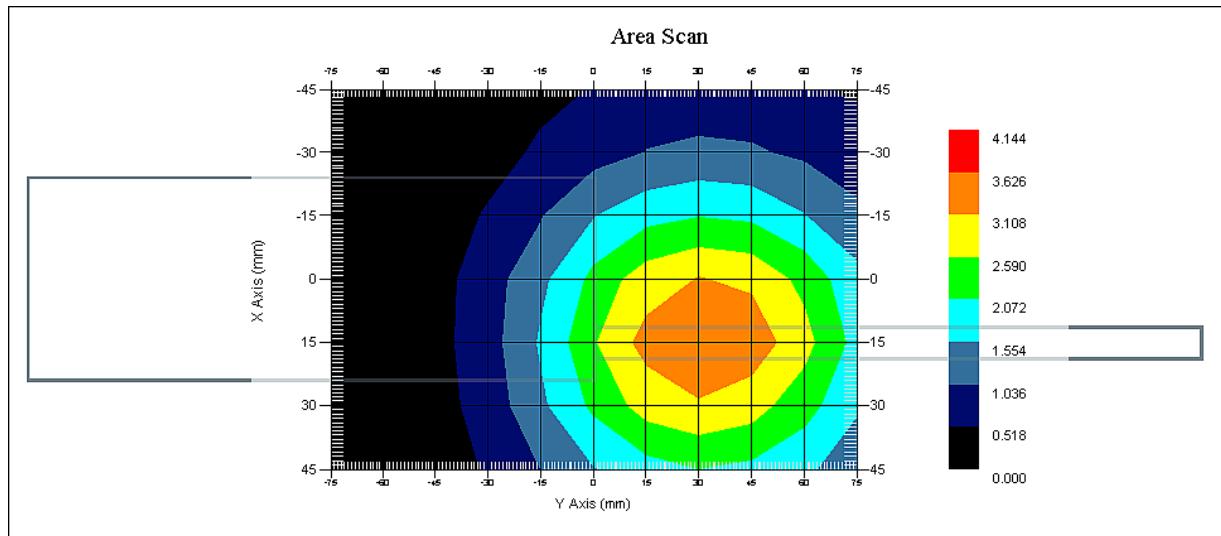
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

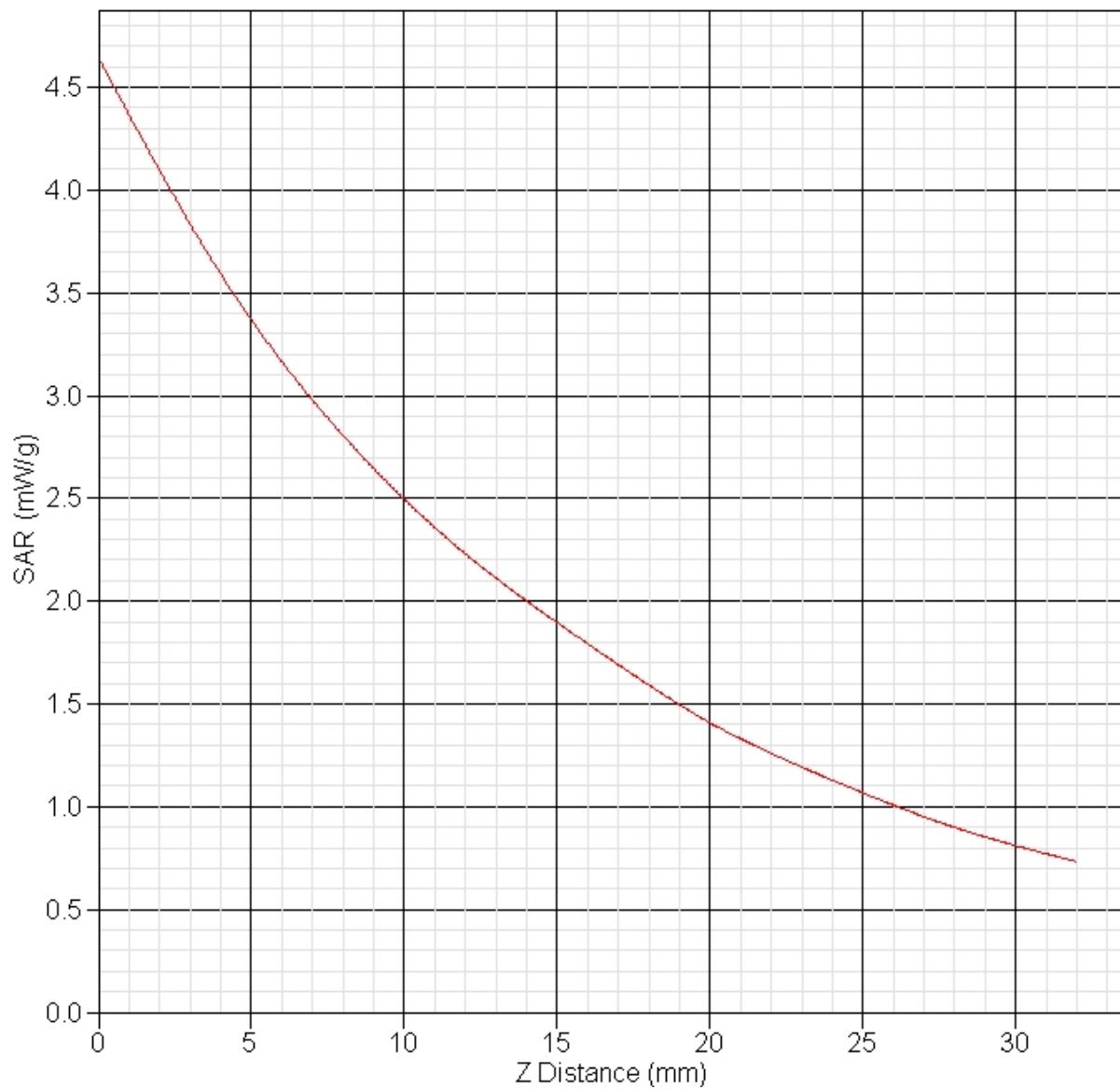
Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 9:43:05 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Held to Face
Separation : 25 mm
Channel : Mid



1 gram SAR value : 3.488 W/kg
10 gram SAR value : 2.497 W/kg
Area Scan Peak SAR : 3.628 W/kg
Zoom Scan Peak SAR : 4.644 W/kg

SAR-Z Axis
at Hotspot x:30.15 y:30.05

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 08:15:57 AM
End Time : 05-Dec-2011 08:39:22 AM
Scanning Time : 1405 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 860.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 170 mm
Width : 64 mm
Depth : 42 mm
Antenna Type : Standard
Orientation : Held to Face
Power Drift-Start : 1.067 W/kg
Power Drift-Finish: 1.096 W/kg
Power Drift (%) : 2.770

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : HEAD
Serial No. : 869
Frequency : 869.00 MHz
Last Calib. Date : 05-Dec-0211
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 41.18 F/m
Sigma : 0.95 S/m
Density : 1000.00 kg/cu. m

Probe Data

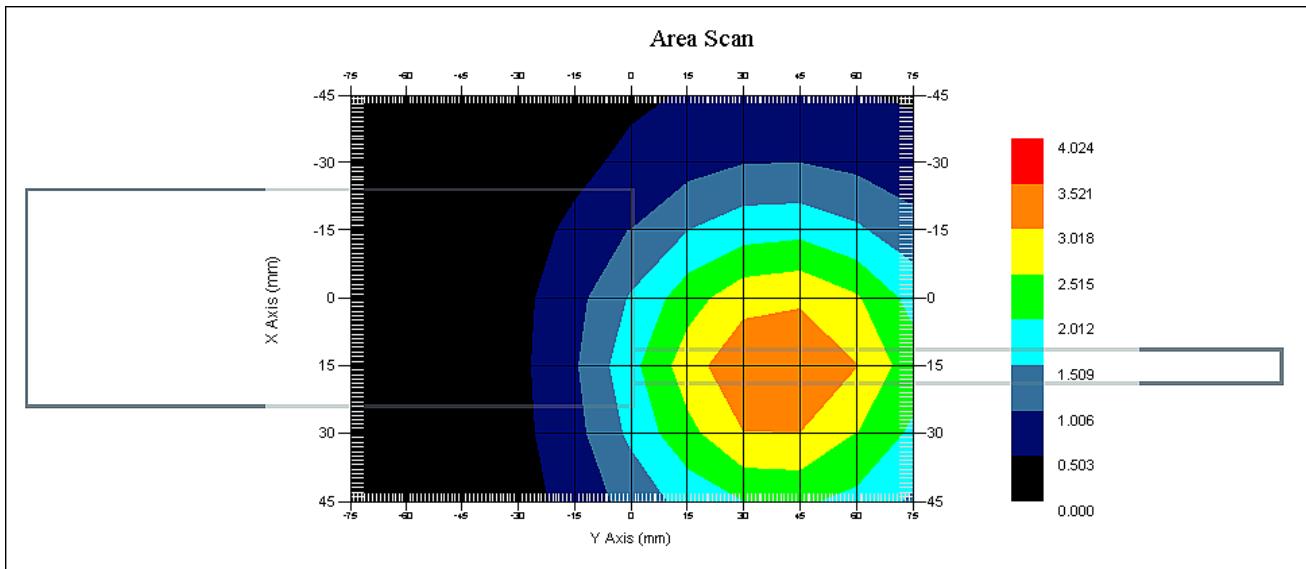
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 9:43:05 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Held to Face
Separation : 25 mm
Channel : Mid



1 gram SAR value : 3.444 W/kg
10 gram SAR value : 2.419 W/kg
Area Scan Peak SAR : 3.524 W/kg
Zoom Scan Peak SAR : 4.654 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 09:54:11 AM
End Time : 05-Dec-2011 10:17:37 AM
Scanning Time : 1406 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 815.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 170 mm
Width : 64 mm
Depth : 42 mm
Antenna Type : Stub
Orientation : Held to Face
Power Drift-Start : 2.728 W/kg
Power Drift-Finish: 2.611 W/kg
Power Drift (%) : -4.277

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : HEAD
Serial No. : 815
Frequency : 815.00 MHz
Last Calib. Date : 05-Dec-0211
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 41.34 F/m
Sigma : 0.90 S/m
Density : 1000.00 kg/cu. m

Probe Data

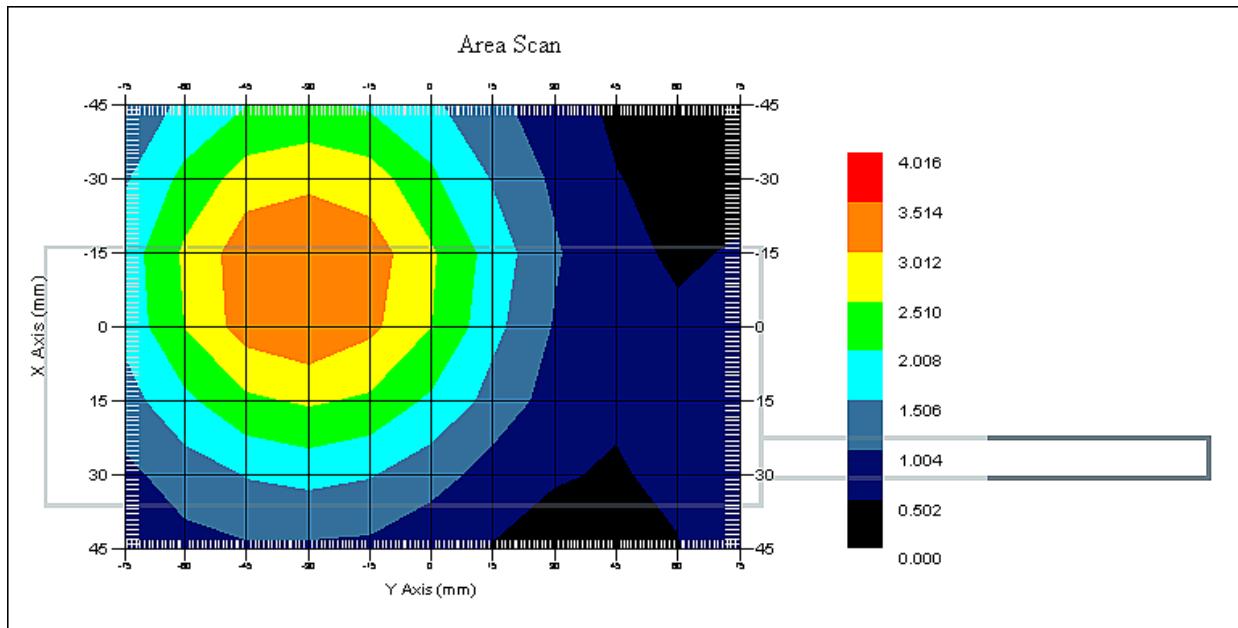
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 9:43:05 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Held to Face
Separation : 25 mm
Channel : Mid



1 gram SAR value : 3.456 W/kg
10 gram SAR value : 2.491 W/kg
Area Scan Peak SAR : 3.517 W/kg
Zoom Scan Peak SAR : 4.654 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 10:23:21 AM
End Time : 05-Dec-2011 10:46:37 AM
Scanning Time : 1396 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 860.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 170 mm
Width : 64 mm
Depth : 42 mm
Antenna Type : Stub
Orientation : Held to Face
Power Drift-Start : 2.599 W/kg
Power Drift-Finish: 2.535 W/kg
Power Drift (%) : -2.475

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : HEAD
Serial No. : 869
Frequency : 869.00 MHz
Last Calib. Date : 05-Dec-0211
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 41.18 F/m
Sigma : 0.95 S/m
Density : 1000.00 kg/cu. m

Probe Data

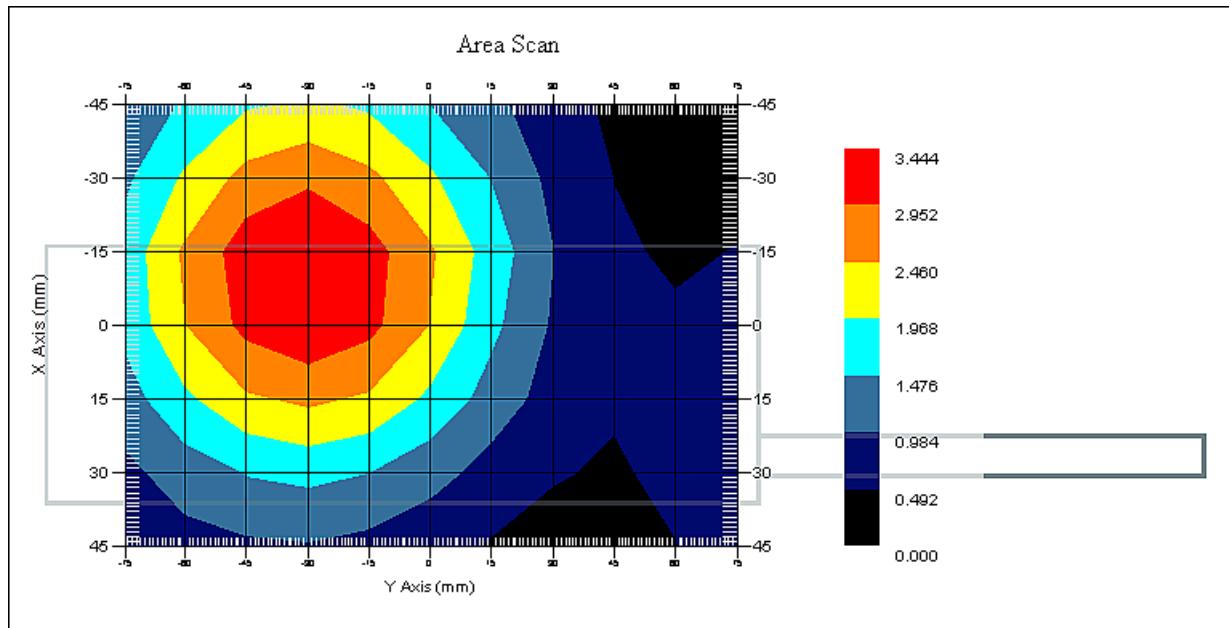
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 9:43:05 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Held to Face
Separation : 25 mm
Channel : Mid



1 gram SAR value : 3.366 W/kg
10 gram SAR value : 2.448 W/kg
Area Scan Peak SAR : 3.442 W/kg
Zoom Scan Peak SAR : 4.504 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 06-Dec-2011
Starting Time : 06-Dec-2011 07:36:22 AM
End Time : 06-Dec-2011 07:59:23 AM
Scanning Time : 1381 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 770.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 170 mm
Width : 64 mm
Depth : 42 mm
Antenna Type : Standard
Orientation : Held to Face
Power Drift-Start : 0.719 W/kg
Power Drift-Finish: 0.738 W/kg
Power Drift (%) : 2.600

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : HEAD
Serial No. : 772
Frequency : 772.00 MHz
Last Calib. Date : 06-Dec-0211
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 41.14 F/m
Sigma : 0.91 S/m
Density : 1000.00 kg/cu. m

Probe Data

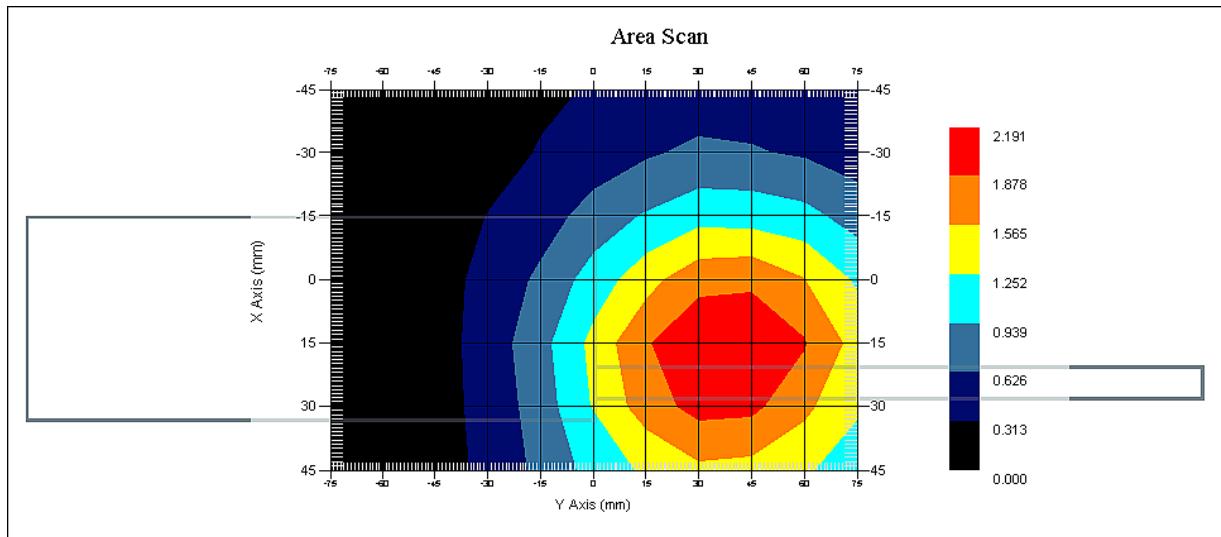
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 750.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.2
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 06-Dec-2011
Set-up Time : 6:39:31 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Held to Face
Separation : 25 mm
Channel : Mid



1 gram SAR value : 2.113 W/kg
10 gram SAR value : 1.510 W/kg
Area Scan Peak SAR : 2.191 W/kg
Zoom Scan Peak SAR : 2.842 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 08:51:03 AM
End Time : 05-Dec-2011 09:14:14 AM
Scanning Time : 1391 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 800.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 170 mm
Width : 64 mm
Depth : 42 mm
Antenna Type : Standard
Orientation : Held to Face
Power Drift-Start : 0.670 W/kg
Power Drift-Finish: 0.671 W/kg
Power Drift (%) : 0.198

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : HEAD
Serial No. : 805
Frequency : 805.00 MHz
Last Calib. Date : 05-Dec-0211
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 41.41 F/m
Sigma : 0.89 S/m
Density : 1000.00 kg/cu. m

Probe Data

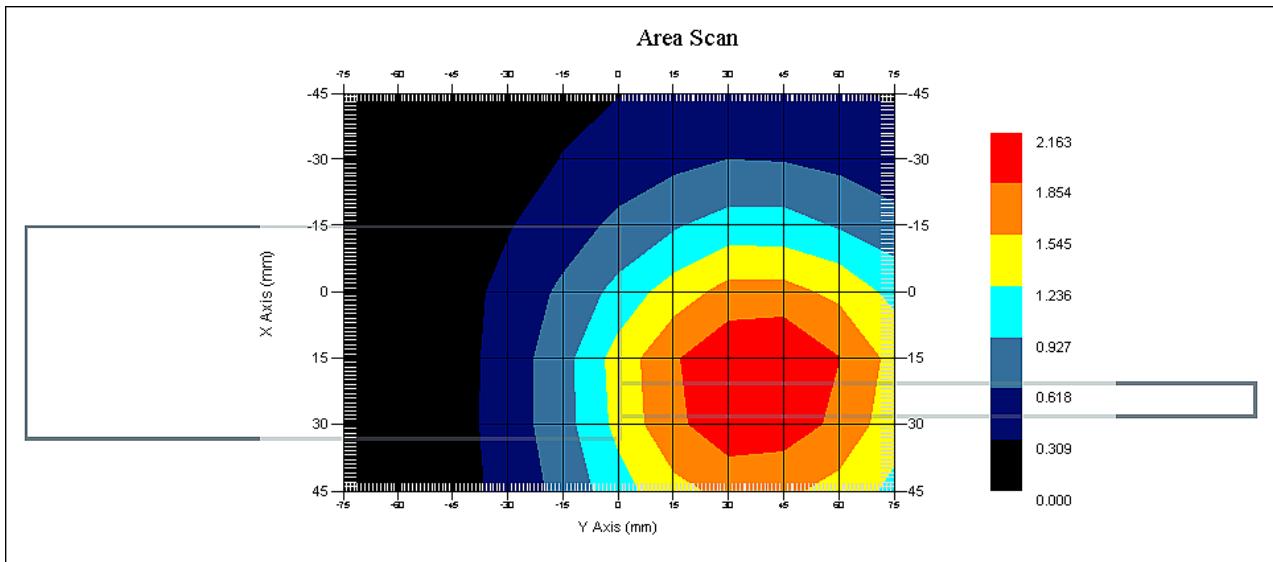
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:39:31 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Held to Face
Separation : 25 mm
Channel : Mid



1 gram SAR value : 2.113 W/kg
10 gram SAR value : 1.506 W/kg
Area Scan Peak SAR : 2.160 W/kg
Zoom Scan Peak SAR : 2.932 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 06-Dec-2011
Starting Time : 06-Dec-2011 08:05:03 AM
End Time : 06-Dec-2011 08:28:05 AM
Scanning Time : 1382 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 770.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 170 mm
Width : 64 mm
Depth : 42 mm
Antenna Type : Stub
Orientation : Held to Face
Power Drift-Start : 0.756 W/kg
Power Drift-Finish: 0.735 W/kg
Power Drift (%) : -2.777

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : HEAD
Serial No. : 772
Frequency : 772.00 MHz
Last Calib. Date : 06-Dec-0211
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 41.14 F/m
Sigma : 0.91 S/m
Density : 1000.00 kg/cu. m

Probe Data

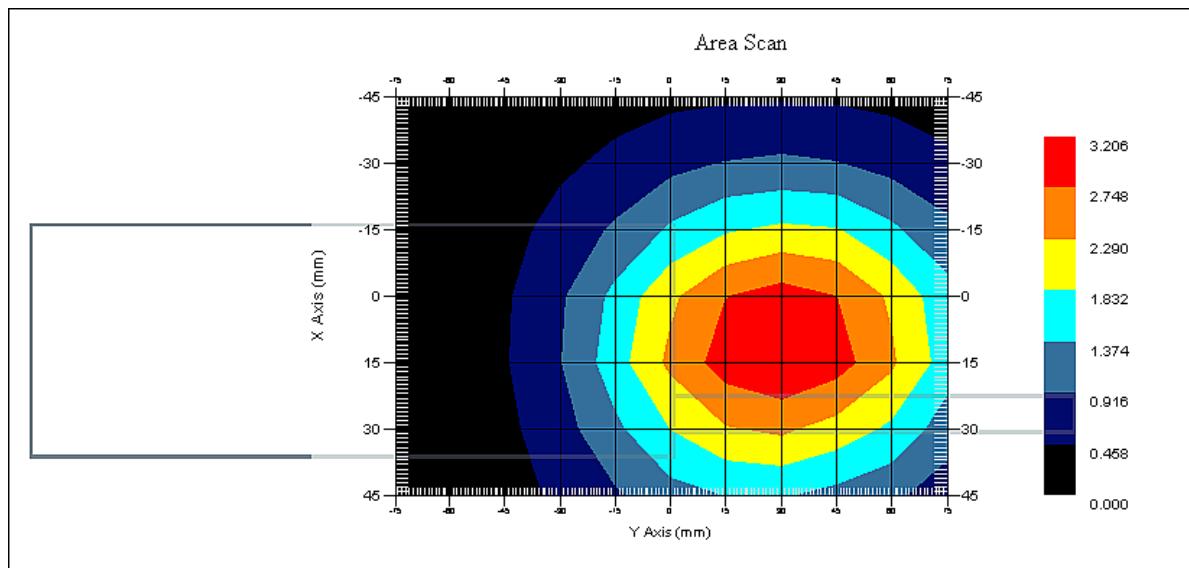
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 750.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.2
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 06-Dec-2011
Set-up Time : 6:39:31 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Held to Face
Separation : 25 mm
Channel : Mid



1 gram SAR value : 3.118 W/kg
10 gram SAR value : 2.185 W/kg
Area Scan Peak SAR : 3.206 W/kg
Zoom Scan Peak SAR : 4.354 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 09:23:38 AM
End Time : 05-Dec-2011 09:46:41 AM
Scanning Time : 1383 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 800.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 170 mm
Width : 64 mm
Depth : 42 mm
Antenna Type : Stub
Orientation : Held to Face
Power Drift-Start : 0.639 W/kg
Power Drift-Finish: 0.622 W/kg
Power Drift (%) : -2.661

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : HEAD
Serial No. : 805
Frequency : 805.00 MHz
Last Calib. Date : 05-Dec-0211
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 41.41 F/m
Sigma : 0.89 S/m
Density : 1000.00 kg/cu. m

Probe Data

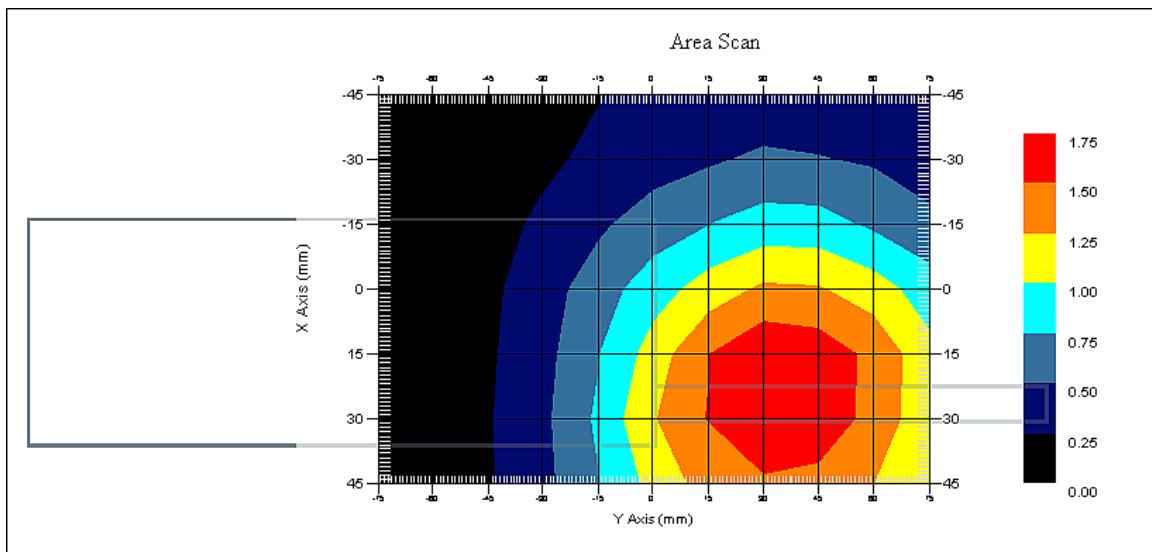
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:39:31 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Held to Face
Separation : 25 mm
Channel : Mid



1 gram SAR value : 1.732 W/kg
10 gram SAR value : 1.238 W/kg
Area Scan Peak SAR : 1.749 W/kg
Zoom Scan Peak SAR : 2.412 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 10:54:15 AM
End Time : 05-Dec-2011 11:17:40 AM
Scanning Time : 1405 secs

Product Data
Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 815.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Standard
Orientation : Accessory Held to Face
Power Drift-Start : 2.321 W/kg
Power Drift-Finish: 2.266 W/kg
Power Drift (%) : -2.341

Phantom Data
Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data
Type : HEAD
Serial No. : 815
Frequency : 815.00 MHz
Last Calib. Date : 05-Dec-0211
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 41.34 F/m
Sigma : 0.90 S/m
Density : 1000.00 kg/cu. m

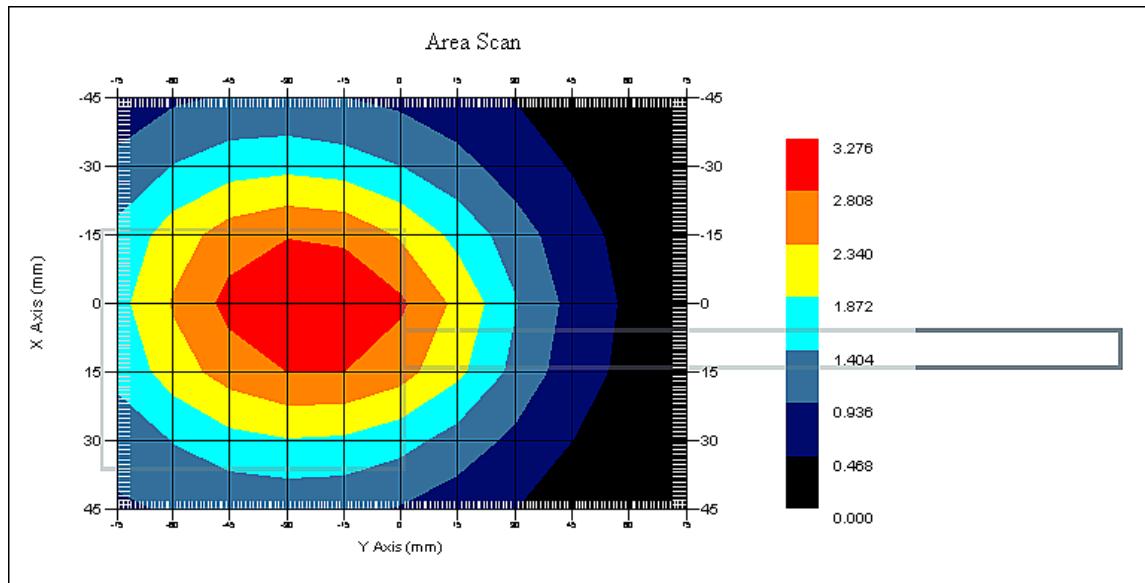
Probe Data
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:39:31 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Accessory Held to Face
Separation : 25 mm
Channel : Mid



1 gram SAR value : 3.194 W/kg
10 gram SAR value : 2.257 W/kg
Area Scan Peak SAR : 3.273 W/kg
Zoom Scan Peak SAR : 4.314 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 11:24:42 AM
End Time : 05-Dec-2011 11:47:54 AM
Scanning Time : 1392 secs

Product Data
Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 860.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Standard
Orientation : Accessory Held to Face
Power Drift-Start : 2.318 W/kg
Power Drift-Finish: 2.284 W/kg
Power Drift (%) : -1.474

Phantom Data
Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data
Type : HEAD
Serial No. : 865
Frequency : 865.00 MHz
Last Calib. Date : 05-Dec-0211
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 41.18 F/m
Sigma : 0.95 S/m
Density : 1000.00 kg/cu. m

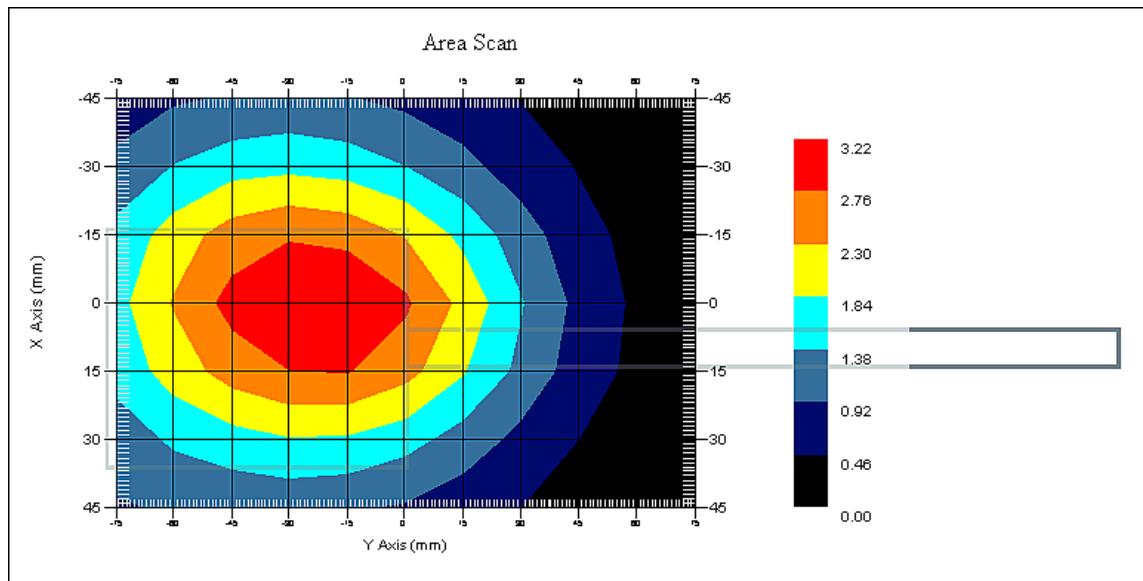
Probe Data
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:39:31 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Accessory Held to Face
Separation : 25 mm
Channel : Mid



1 gram SAR value : 3.181 W/kg
10 gram SAR value : 2.258 W/kg
Area Scan Peak SAR : 3.220 W/kg
Zoom Scan Peak SAR : 4.294 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 12:49:50 PM
End Time : 05-Dec-2011 01:13:00 PM
Scanning Time : 1390 secs

Product Data
Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 800.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Stub
Orientation : Accessory Held to Face
Power Drift-Start : 1.761 W/kg
Power Drift-Finish: 1.744 W/kg
Power Drift (%) : -0.992

Phantom Data
Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data
Type : HEAD
Serial No. : 815
Frequency : 815.00 MHz
Last Calib. Date : 05-Dec-0211
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 41.34 F/m
Sigma : 0.90 S/m
Density : 1000.00 kg/cu. m

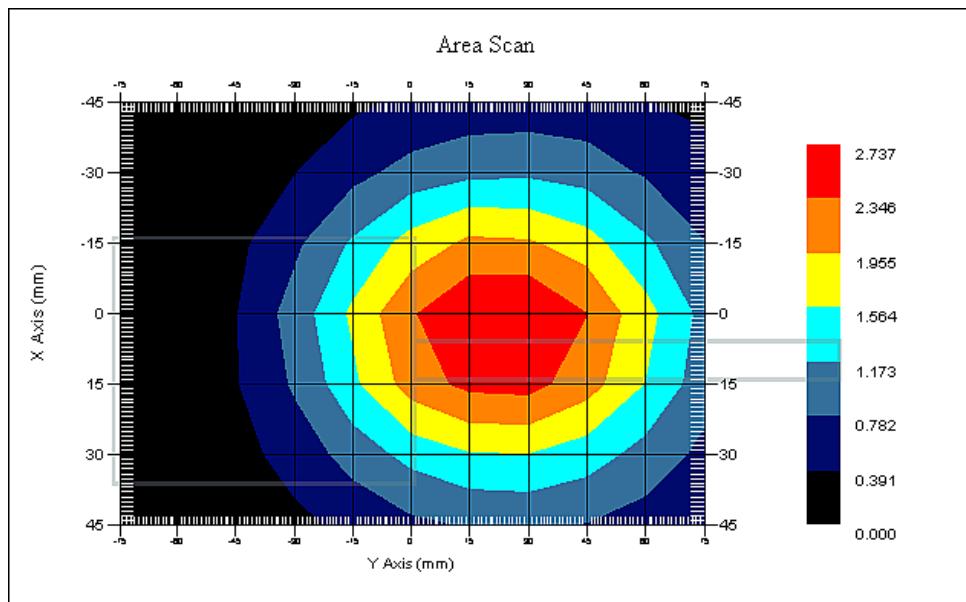
Probe Data
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:39:31 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Accessory Held to Face
Separation : 25 mm
Channel : Mid



1 gram SAR value : 2.682 W/kg
10 gram SAR value : 1.877 W/kg
Area Scan Peak SAR : 2.734 W/kg
Zoom Scan Peak SAR : 3.593 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 01:19:34 PM
End Time : 05-Dec-2011 01:42:34 PM
Scanning Time : 1380 secs

Product Data
Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 860.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Stub
Orientation : Accessory Held to Face
Power Drift-Start : 1.834 W/kg
Power Drift-Finish: 1.783 W/kg
Power Drift (%) : -2.747

Phantom Data
Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data
Type : HEAD
Serial No. : 865
Frequency : 865.00 MHz
Last Calib. Date : 05-Dec-0211
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 41.18 F/m
Sigma : 0.95 S/m
Density : 1000.00 kg/cu. m

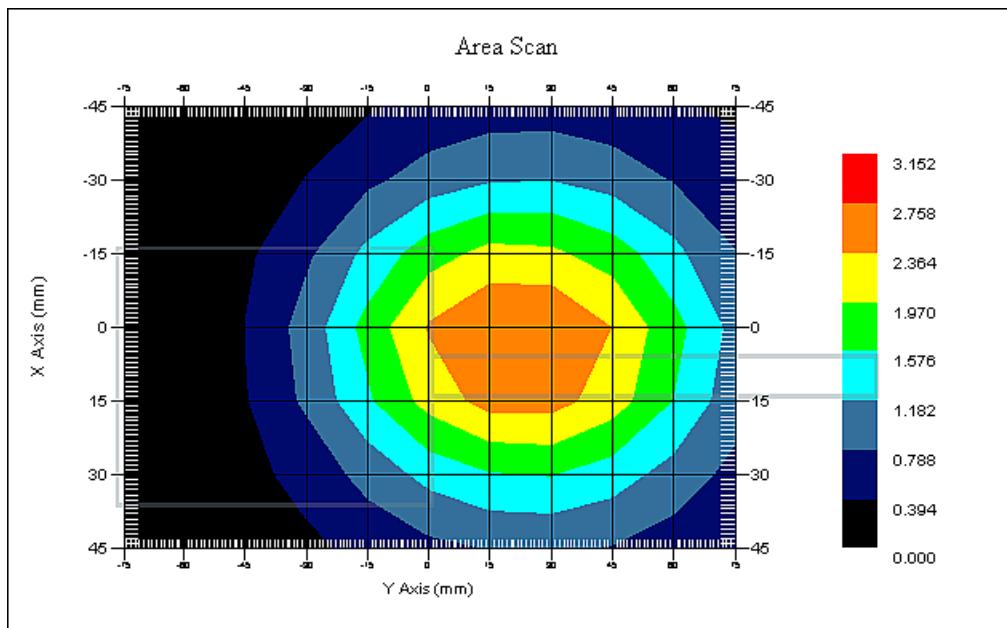
Probe Data
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:39:31 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Accessory Held to Face
Separation : 25 mm
Channel : Mid



1 gram SAR value : 2.760 W/kg
10 gram SAR value : 1.952 W/kg
Area Scan Peak SAR : 2.760 W/kg
Zoom Scan Peak SAR : 3.733 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 06-Dec-2011
Starting Time : 06-Dec-2011 08:32:13 AM
End Time : 06-Dec-2011 08:55:24 AM
Scanning Time : 1391 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 770.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Standard
Orientation : Held to Face
Power Drift-Start : 1.433 W/kg
Power Drift-Finish: 1.381 W/kg
Power Drift (%) : -3.574

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : HEAD
Serial No. : 772
Frequency : 772.00 MHz
Last Calib. Date : 06-Dec-0211
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 41.14 F/m
Sigma : 0.91 S/m
Density : 1000.00 kg/cu. m

Probe Data

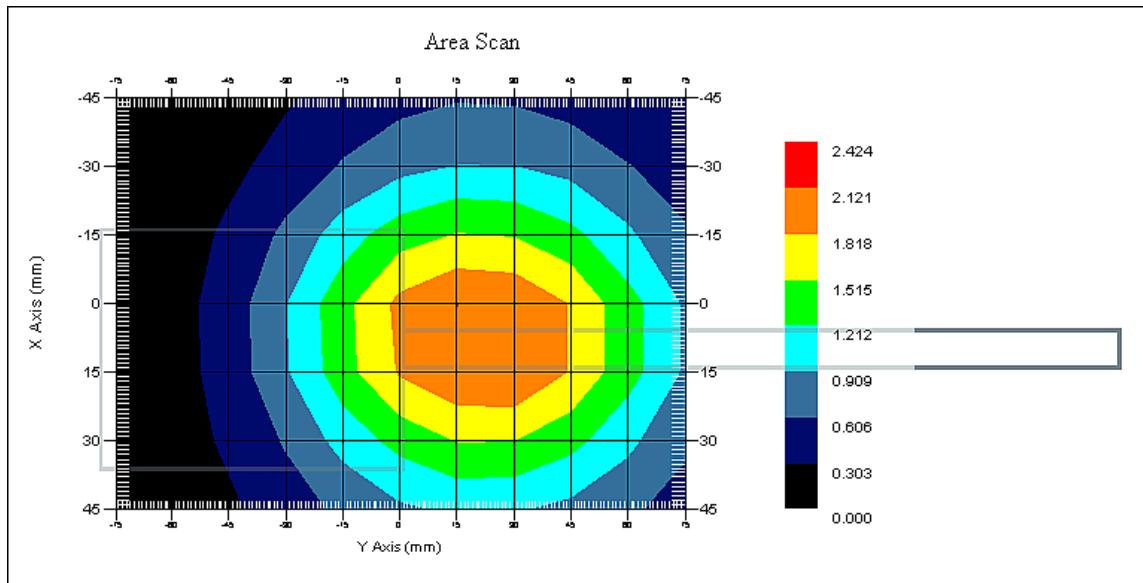
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 750.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.2
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 06-Dec-2011
Set-up Time : 6:39:31 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Held to Face
Separation : 25 mm
Channel : Mid



1 gram SAR value : 2.167 W/kg
10 gram SAR value : 1.552 W/kg
Area Scan Peak SAR : 2.123 W/kg
Zoom Scan Peak SAR : 2.862 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 11:51:53 AM
End Time : 05-Dec-2011 12:14:52 PM
Scanning Time : 1379 secs

Product Data
Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 800.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Standard
Orientation : Accessory Held to Face
Power Drift-Start : 1.460 W/kg
Power Drift-Finish: 1.409 W/kg
Power Drift (%) : -3.484

Phantom Data
Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data
Type : HEAD
Serial No. : 805
Frequency : 805.00 MHz
Last Calib. Date : 05-Dec-0211
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 41.41 F/m
Sigma : 0.89 S/m
Density : 1000.00 kg/cu. m

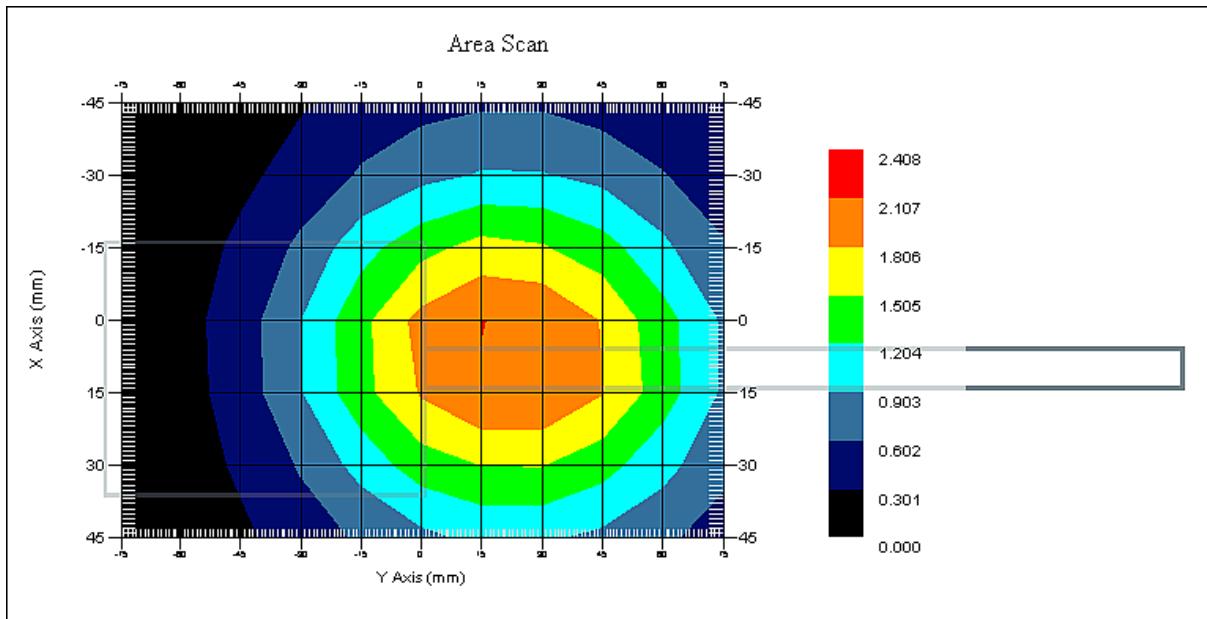
Probe Data
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:39:31 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Accessory Held to Face
Separation : 25 mm
Channel : Mid



1 gram SAR value : 2.184 W/kg
10 gram SAR value : 1.560 W/kg
Area Scan Peak SAR : 2.109 W/kg
Zoom Scan Peak SAR : 2.962 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 06-Dec-2011
Starting Time : 06-Dec-2011 08:58:09 AM
End Time : 06-Dec-2011 09:21:25 AM
Scanning Time : 1396 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 770.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Stub
Orientation : Held to Face
Power Drift-Start : 1.542 W/kg
Power Drift-Finish: 1.487 W/kg
Power Drift (%) : -3.561

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : HEAD
Serial No. : 772
Frequency : 772.00 MHz
Last Calib. Date : 06-Dec-0211
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 41.14 F/m
Sigma : 0.91 S/m
Density : 1000.00 kg/cu. m

Probe Data

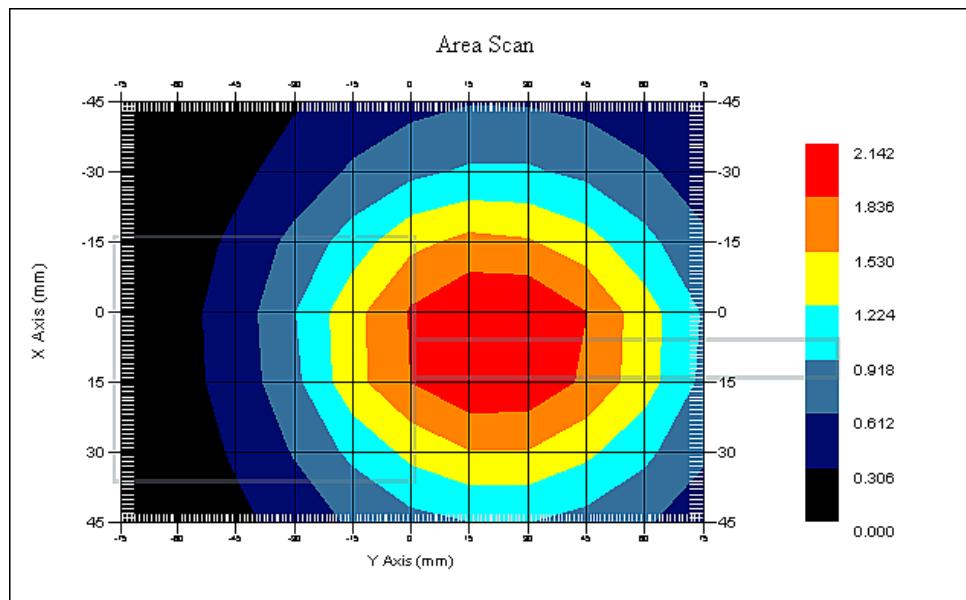
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 750.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.2
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 06-Dec-2011
Set-up Time : 6:39:31 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Held to Face
Separation : 25 mm
Channel : Mid



1 gram SAR value : 2.210 W/kg
10 gram SAR value : 1.568 W/kg
Area Scan Peak SAR : 2.142 W/kg
Zoom Scan Peak SAR : 3.052 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 12:18:18 PM
End Time : 05-Dec-2011 12:41:16 PM
Scanning Time : 1378 secs

Product Data
Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 800.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Stub
Orientation : Accessory Held to Face
Power Drift-Start : 1.534 W/kg
Power Drift-Finish: 1.484 W/kg
Power Drift (%) : -3.254

Phantom Data
Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data
Type : HEAD
Serial No. : 805
Frequency : 805.00 MHz
Last Calib. Date : 05-Dec-0211
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 41.41 F/m
Sigma : 0.89 S/m
Density : 1000.00 kg/cu. m

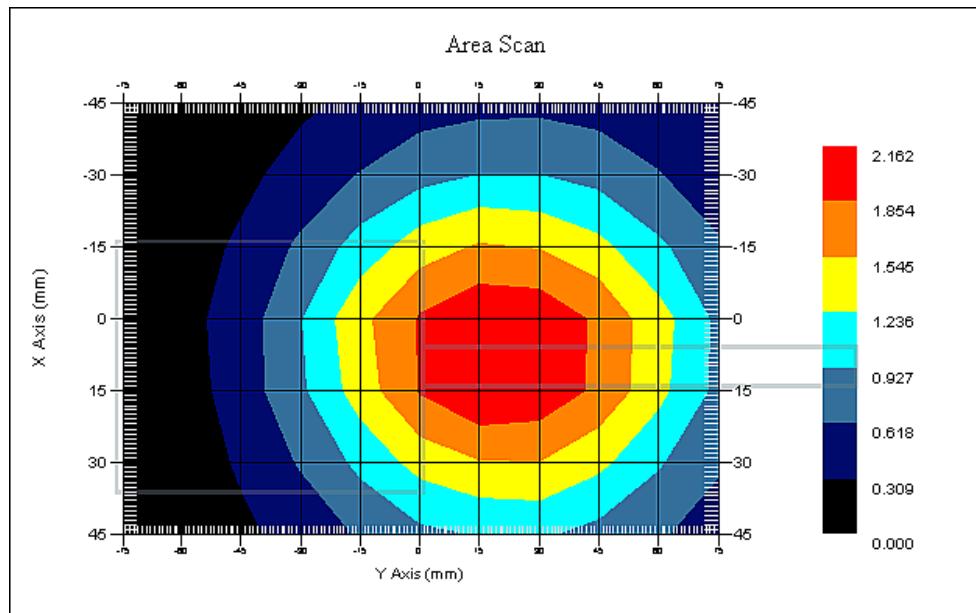
Probe Data
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:39:31 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Accessory Held to Face
Separation : 25 mm
Channel : Mid



1 gram SAR value : 2.185 W/kg
10 gram SAR value : 1.565 W/kg
Area Scan Peak SAR : 2.162 W/kg
Zoom Scan Peak SAR : 3.012 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 02:18:51 PM
End Time : 05-Dec-2011 02:40:01 PM
Scanning Time : 1270 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 815.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 170 mm
Width : 64 mm
Depth : 42 mm
Antenna Type : Standard
Orientation : Next to Body
Power Drift-Start : 1.117 W/kg
Power Drift-Finish: 1.071 W/kg
Power Drift (%) : -4.173

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : BODY
Serial No. : 815
Frequency : 815.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.28 F/m
Sigma : 0.95 S/m
Density : 1000.00 kg/cu. m

Probe Data

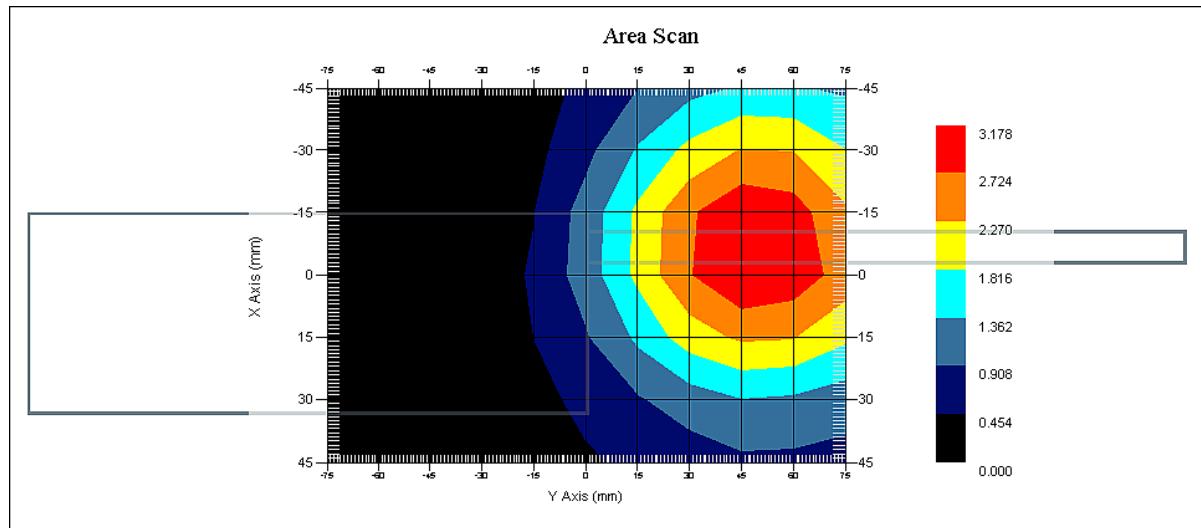
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 3:18:04 PM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Next to Body
Separation : 0 mm
Channel : Mid



1 gram SAR value : 3.181 W/kg
10 gram SAR value : 2.302 W/kg
Area Scan Peak SAR : 3.176 W/kg
Zoom Scan Peak SAR : 4.294 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 02:42:07 PM
End Time : 05-Dec-2011 03:03:15 PM
Scanning Time : 1268 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 860.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 170 mm
Width : 64 mm
Depth : 42 mm
Antenna Type : Standard
Orientation : Next to Body
Power Drift-Start : 1.088 W/kg
Power Drift-Finish: 1.062 W/kg
Power Drift (%) : -2.385

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : BODY
Serial No. : 865
Frequency : 865.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.48 F/m
Sigma : 1.04 S/m
Density : 1000.00 kg/cu. m

Probe Data

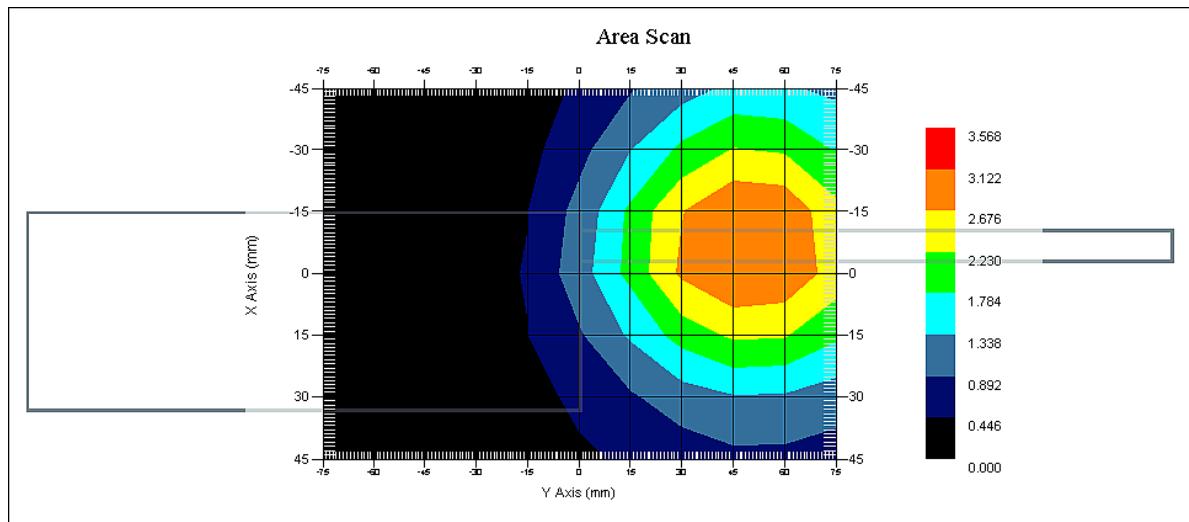
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 3:18:04 PM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Next to Body
Separation : 0 mm
Channel : Mid



1 gram SAR value : 3.044 W/kg
10 gram SAR value : 2.168 W/kg
Area Scan Peak SAR : 3.124 W/kg
Zoom Scan Peak SAR : 4.063 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 04:00:43 PM
End Time : 05-Dec-2011 04:22:10 PM
Scanning Time : 1287 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 815.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 170 mm
Width : 64 mm
Depth : 42 mm
Antenna Type : Stub
Orientation : Next to Body
Power Drift-Start : 2.692 W/kg
Power Drift-Finish: 2.616 W/kg
Power Drift (%) : -2.824

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : BODY
Serial No. : 815
Frequency : 815.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.28 F/m
Sigma : 0.95 S/m
Density : 1000.00 kg/cu. m

Probe Data

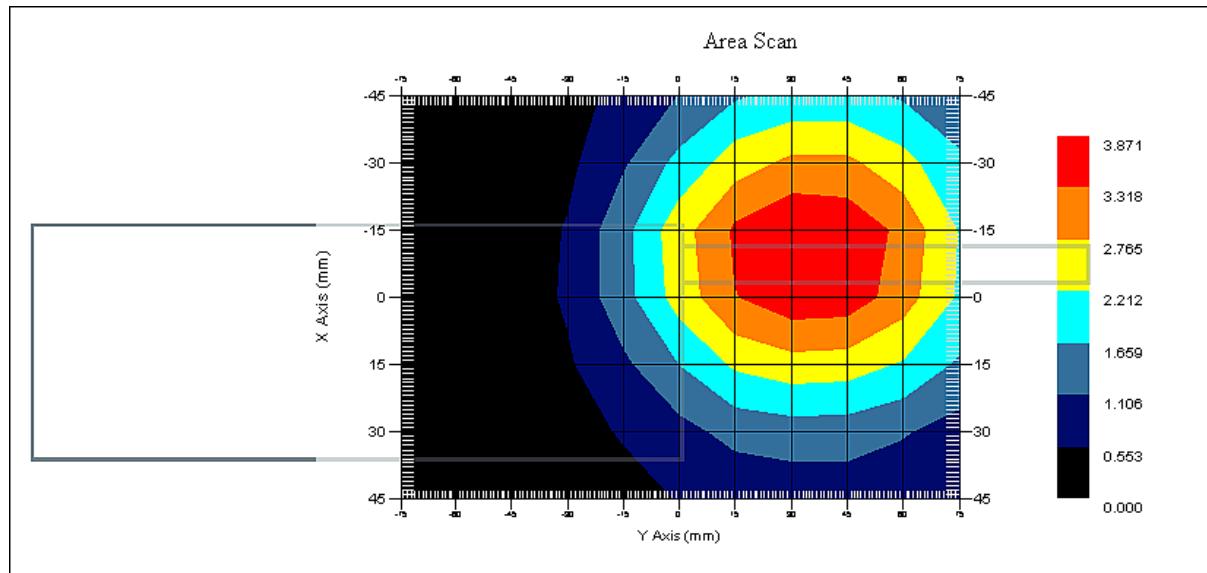
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 3:18:04 PM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Next to Body
Separation : 0 mm
Channel : Mid



1 gram SAR value : 3.799 W/kg
10 gram SAR value : 2.757 W/kg
Area Scan Peak SAR : 3.871 W/kg
Zoom Scan Peak SAR : 4.894 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 04:25:37 PM
End Time : 05-Dec-2011 04:46:51 PM
Scanning Time : 1274 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 860.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 170 mm
Width : 64 mm
Depth : 42 mm
Antenna Type : Stub
Orientation : Rotated Left 90°
Power Drift-Start : 2.569 W/kg
Power Drift-Finish: 2.602 W/kg
Power Drift (%) : 1.292

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : BODY
Serial No. : 865
Frequency : 865.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.48 F/m
Sigma : 1.04 S/m
Density : 1000.00 kg/cu. m

Probe Data

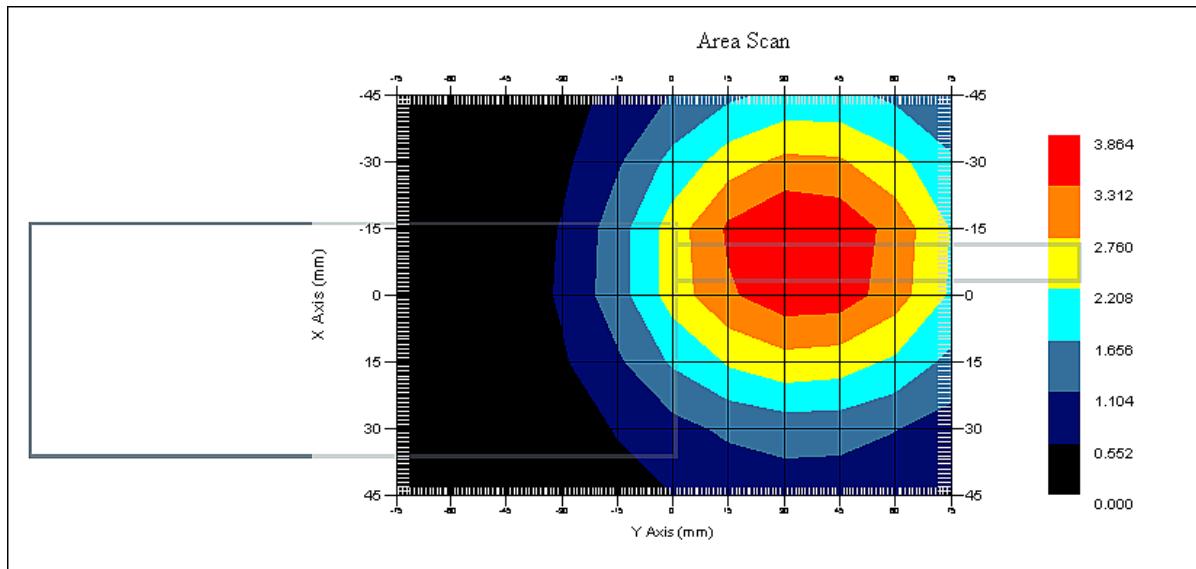
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 3:18:04 PM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Next to Body
Separation : 0 mm
Channel : Mid



1 gram SAR value : 3.799 W/kg
10 gram SAR value : 2.762 W/kg
Area Scan Peak SAR : 3.862 W/kg
Zoom Scan Peak SAR : 4.994 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 06-Dec-2011
Starting Time : 06-Dec-2011 10:35:43 AM
End Time : 06-Dec-2011 10:56:46 AM
Scanning Time : 1263 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 770.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 170 mm
Width : 64 mm
Depth : 42 mm
Antenna Type : Standard
Orientation : Next to Body
Power Drift-Start : 0.959 W/kg
Power Drift-Finish: 0.934 W/kg
Power Drift (%) : -2.605

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : BODY
Serial No. : 772
Frequency : 772.00 MHz
Last Calib. Date : 06-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.95 F/m
Sigma : 0.98 S/m
Density : 1000.00 kg/cu. m

Probe Data

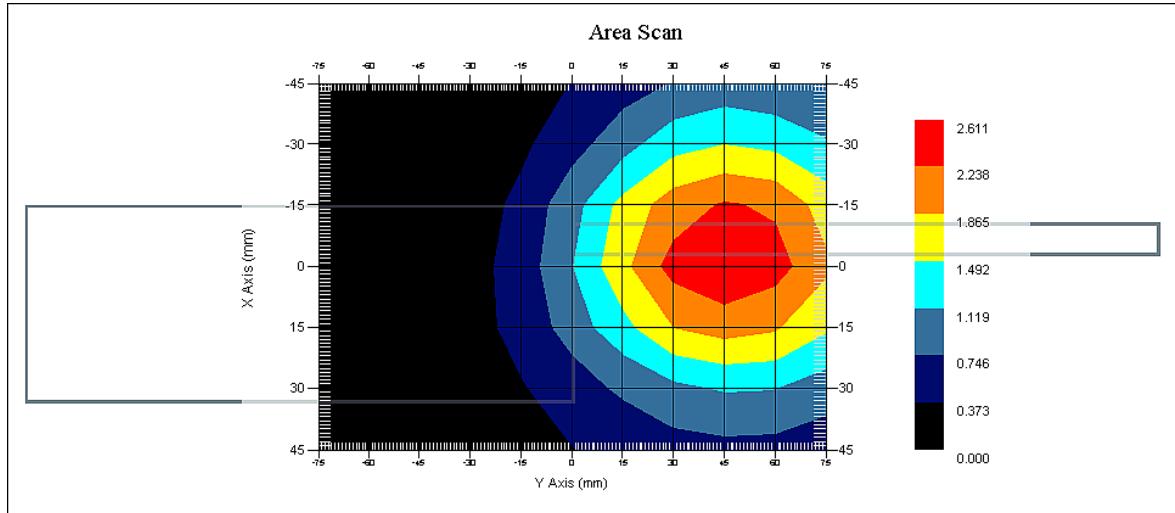
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 750.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.3
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 06-Dec-2011
Set-up Time : 3:18:04 PM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Next to Body
Separation : 0 mm
Channel : Mid



1 gram SAR value : 2.489 W/kg
10 gram SAR value : 1.826 W/kg
Area Scan Peak SAR : 2.609 W/kg
Zoom Scan Peak SAR : 3.293 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 03:08:54 PM
End Time : 05-Dec-2011 03:30:00 PM
Scanning Time : 1266 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 800.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 170 mm
Width : 64 mm
Depth : 42 mm
Antenna Type : Standard
Orientation : Next to Body
Power Drift-Start : 0.948 W/kg
Power Drift-Finish: 0.972 W/kg
Power Drift (%) : 2.592

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : BODY
Serial No. : 805
Frequency : 805.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.24 F/m
Sigma : 0.94 S/m
Density : 1000.00 kg/cu. m

Probe Data

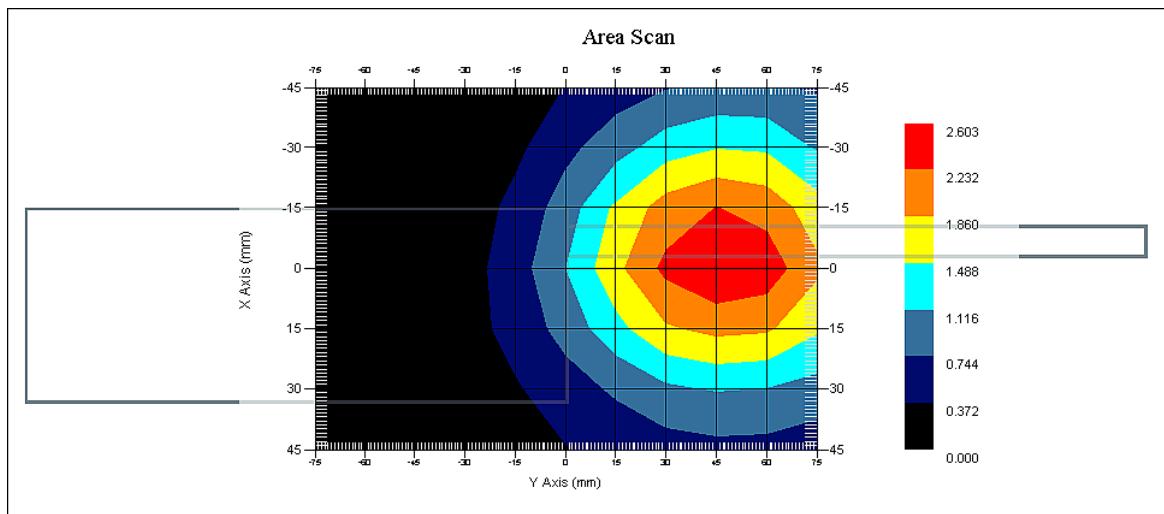
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 3:18:04 PM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Next to Body
Separation : 0 mm
Channel : Mid



1 gram SAR value : 2.523 W/kg
10 gram SAR value : 1.834 W/kg
Area Scan Peak SAR : 2.603 W/kg
Zoom Scan Peak SAR : 3.373 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 06-Dec-2011
Starting Time : 06-Dec-2011 10:59:27 AM
End Time : 06-Dec-2011 11:22:27 AM
Scanning Time : 1380 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 770.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 170 mm
Width : 64 mm
Depth : 42 mm
Antenna Type : Stub
Orientation : Next to Body
Power Drift-Start : 2.322 W/kg
Power Drift-Finish: 2.267 W/kg
Power Drift (%) : -2.356

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : BODY
Serial No. : 772
Frequency : 772.00 MHz
Last Calib. Date : 06-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.95 F/m
Sigma : 0.98 S/m
Density : 1000.00 kg/cu. m

Probe Data

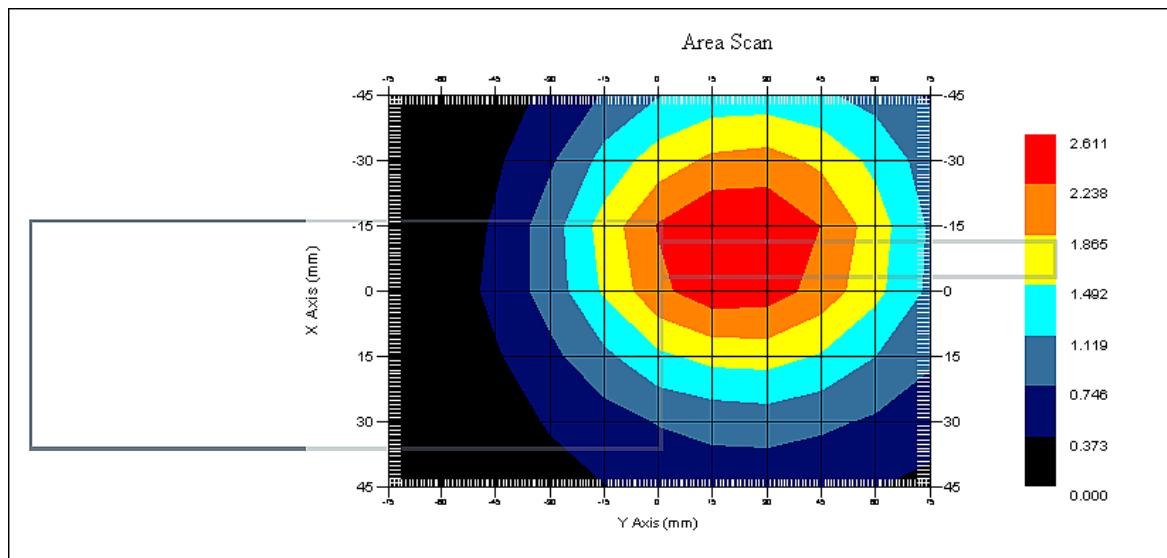
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 750.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.3
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 06-Dec-2011
Set-up Time : 6:39:31 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Next to Body
Separation : 0 mm
Channel : Mid



1 gram SAR value : 2.586 W/kg
10 gram SAR value : 1.849 W/kg
Area Scan Peak SAR : 2.608 W/kg
Zoom Scan Peak SAR : 3.543 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 03:36:06 PM
End Time : 05-Dec-2011 03:57:31 PM
Scanning Time : 1285 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 800.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 170 mm
Width : 64 mm
Depth : 42 mm
Antenna Type : Stub
Orientation : Next to Body
Power Drift-Start : 1.864 W/kg
Power Drift-Finish: 1.847 W/kg
Power Drift (%) : -0.917

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : BODY
Serial No. : 805
Frequency : 805.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.24 F/m
Sigma : 0.94 S/m
Density : 1000.00 kg/cu. m

Probe Data

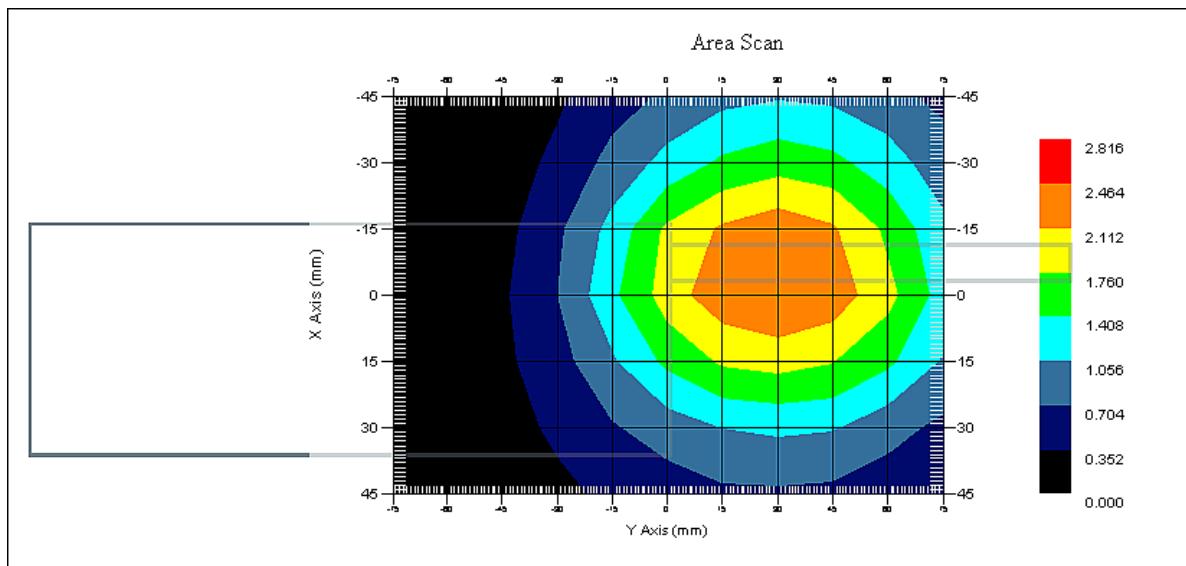
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 3:18:04 PM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Next to Body
Separation : 0 mm
Channel : Mid



1 gram SAR value : 2.376 W/kg
10 gram SAR value : 1.749 W/kg
Area Scan Peak SAR : 2.466 W/kg
Zoom Scan Peak SAR : 3.182 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 04:48:07 PM
End Time : 05-Dec-2011 05:11:24 PM
Scanning Time : 1397 secs

Product Data
Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 806.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Standard
Orientation : Accessory Next to Body
Power Drift-Start : 4.422 W/kg
Power Drift-Finish: 4.393 W/kg
Power Drift (%) : -0.665

Phantom Data
Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data
Type : BODY
Serial No. : 805
Frequency : 805.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.24 F/m
Sigma : 0.94 S/m
Density : 1000.00 kg/cu. m

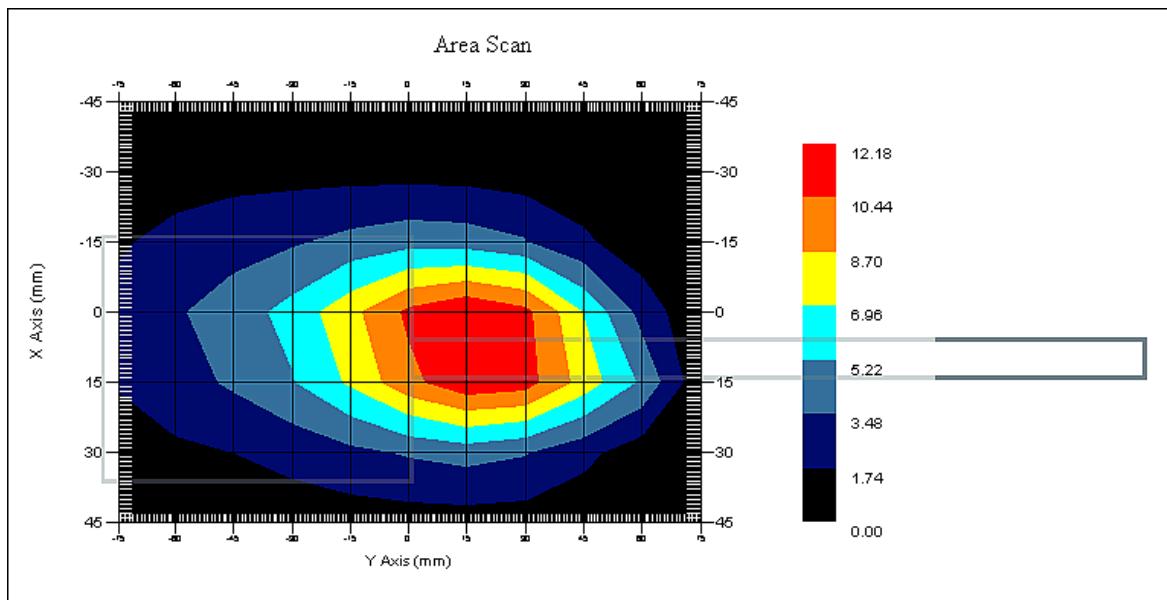
Probe Data
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:51:19 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Accessory Next to Body
Separation : 0 mm
Channel : Low



1 gram SAR value : 13.483 W/kg
10 gram SAR value : 7.988 W/kg
Area Scan Peak SAR : 12.177 W/kg
Zoom Scan Peak SAR : 21.419 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 05:13:57 PM
End Time : 05-Dec-2011 05:37:13 PM
Scanning Time : 1396 secs

Product Data
Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 824.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Standard
Orientation : Accessory Next to Body
Power Drift-Start : 4.356 W/kg
Power Drift-Finish: 4.395 W/kg
Power Drift (%) : 0.900

Phantom Data
Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data
Type : BODY
Serial No. : 825
Frequency : 825.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.33 F/m
Sigma : 0.96 S/m
Density : 1000.00 kg/cu. m

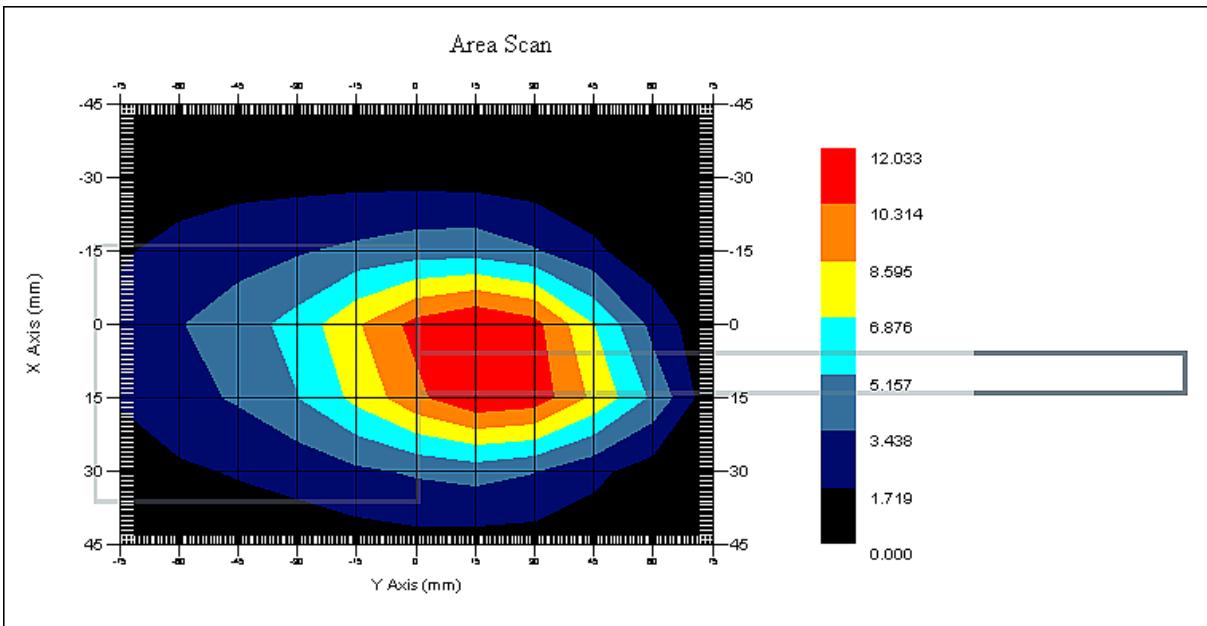
Probe Data
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

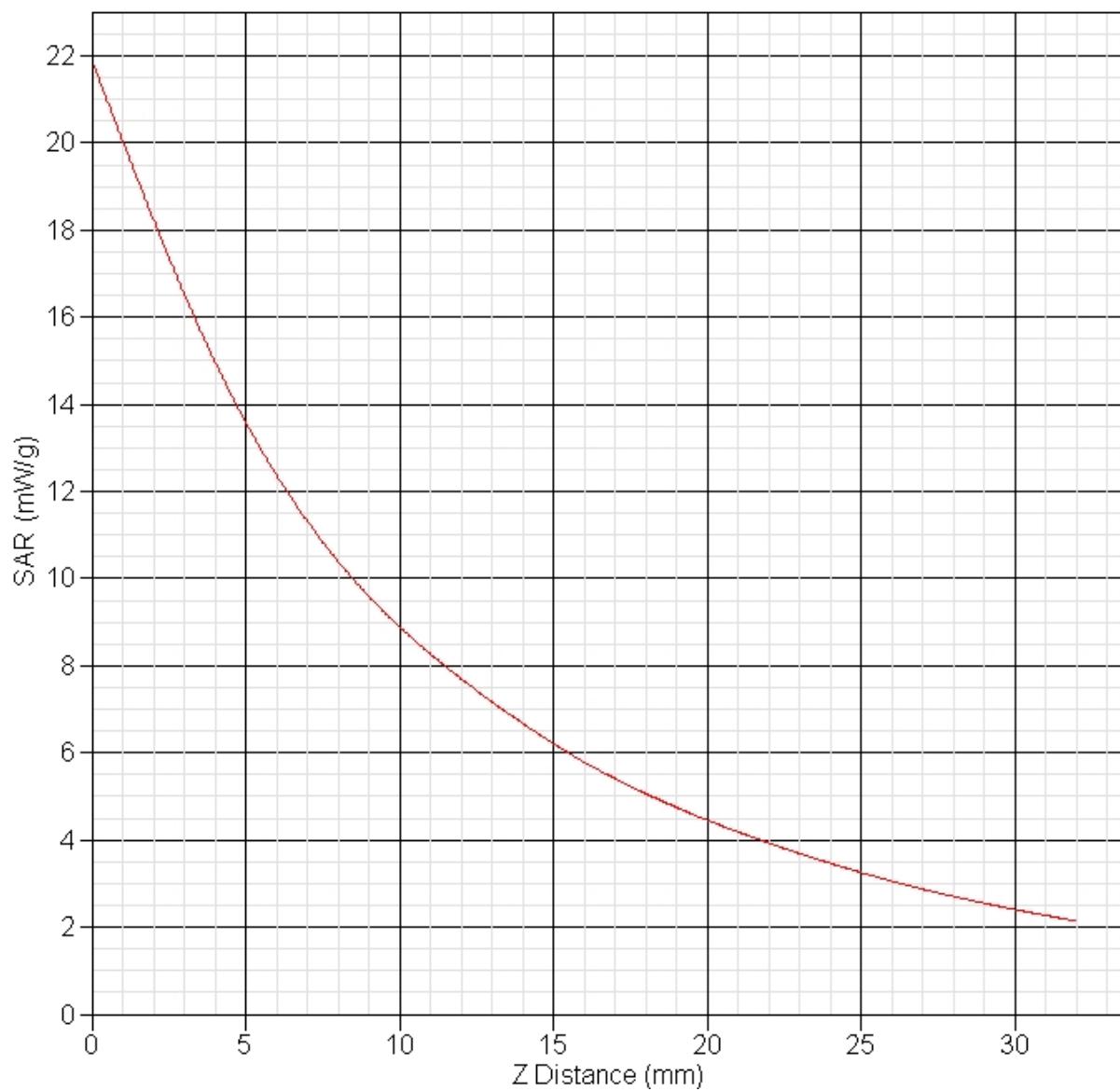
Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:51:19 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Accessory Next to Body
Separation : 0 mm
Channel : High



1 gram SAR value : 13.859 W/kg
10 gram SAR value : 8.276 W/kg
Area Scan Peak SAR : 12.033 W/kg
Zoom Scan Peak SAR : 21.919 W/kg

SAR-Z Axis
at Hotspot x:23.09 y:23.05

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 05:39:52 PM
End Time : 05-Dec-2011 06:03:06 PM
Scanning Time : 1394 secs

Product Data
Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 851.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Standard
Orientation : Accessory Next to Body
Power Drift-Start : 4.602 W/kg
Power Drift-Finish: 4.634 W/kg
Power Drift (%) : 0.696

Phantom Data
Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data
Type : BODY
Serial No. : 855
Frequency : 855.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.44 F/m
Sigma : 1.02 S/m
Density : 1000.00 kg/cu. m

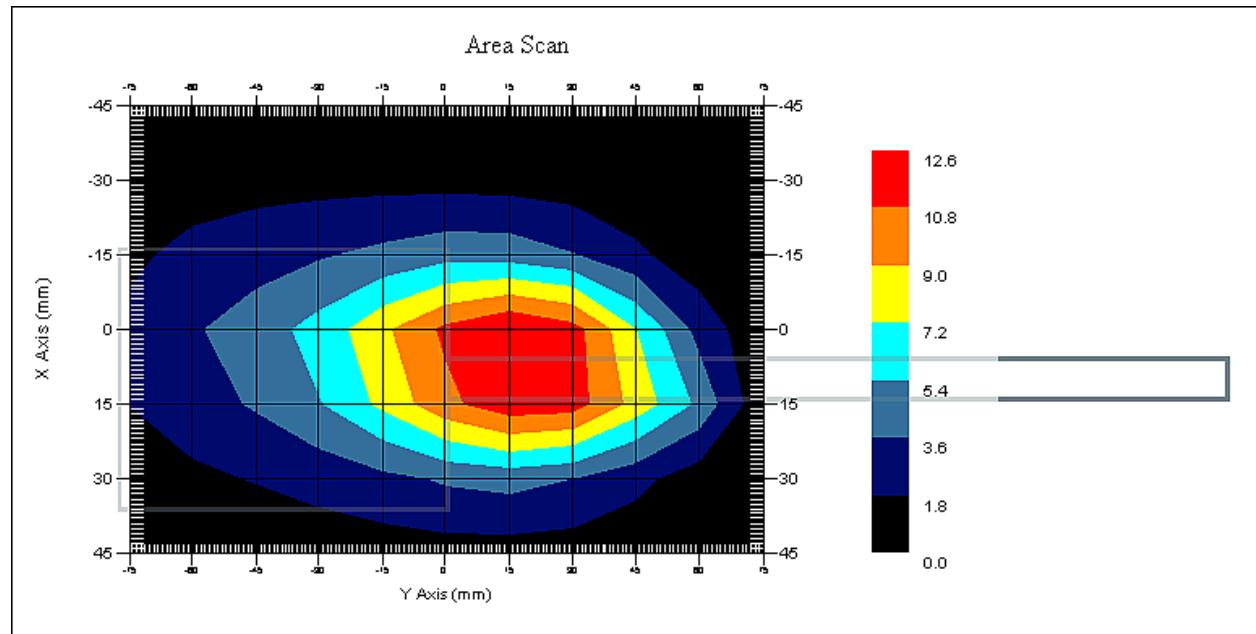
Probe Data
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:51:19 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Accessory Next to Body
Separation : 0 mm
Channel : Low



1 gram SAR value : 13.775 W/kg
10 gram SAR value : 8.266 W/kg
Area Scan Peak SAR : 12.599 W/kg
Zoom Scan Peak SAR : 21.519 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 06:05:42 PM
End Time : 05-Dec-2011 06:29:13 PM
Scanning Time : 1411 secs

Product Data
Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 869.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Standard
Orientation : Accessory Next to Body
Power Drift-Start : 4.565 W/kg
Power Drift-Finish: 4.556 W/kg
Power Drift (%) : -0.196

Phantom Data
Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data
Type : BODY
Serial No. : 865
Frequency : 865.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.48 F/m
Sigma : 1.04 S/m
Density : 1000.00 kg/cu. m

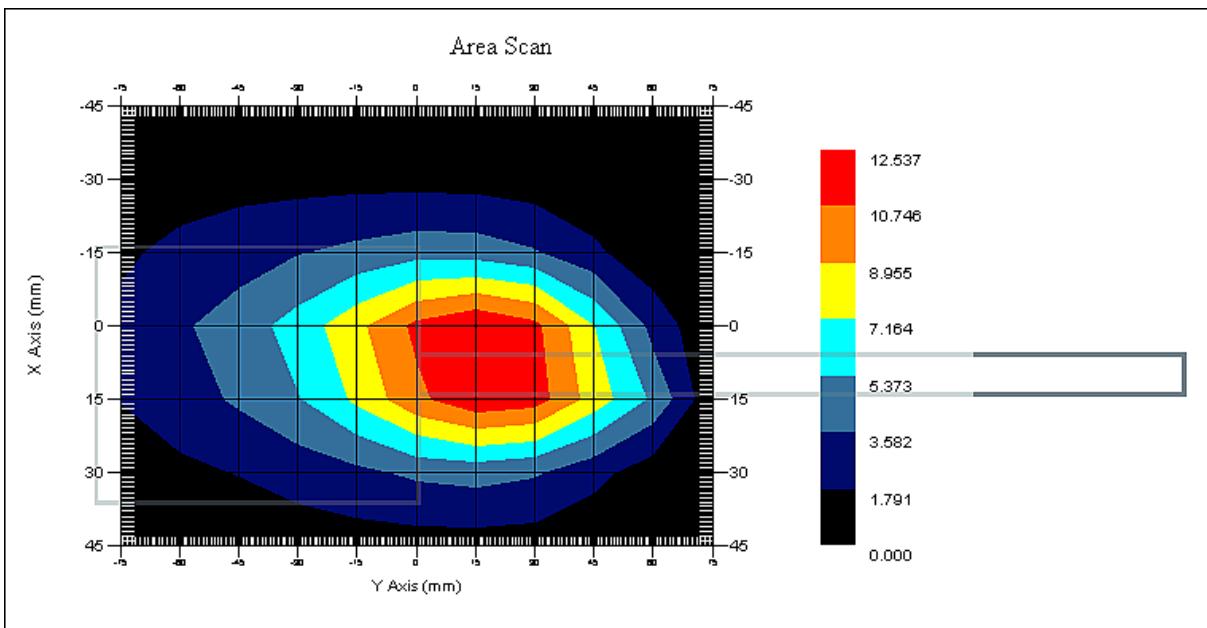
Probe Data
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:51:19 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Accessory Next to Body
Separation : 0 mm
Channel : High



1 gram SAR value : 13.808 W/kg
10 gram SAR value : 8.240 W/kg
Area Scan Peak SAR : 12.537 W/kg
Zoom Scan Peak SAR : 21.519 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 07:24:38 PM
End Time : 05-Dec-2011 07:48:08 PM
Scanning Time : 1410 secs

Product Data
Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 806.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Stub
Orientation : Accessory Next to Body
Power Drift-Start : 4.471 W/kg
Power Drift-Finish: 4.530 W/kg
Power Drift (%) : 1.323

Phantom Data
Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data
Type : BODY
Serial No. : 805
Frequency : 805.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.24 F/m
Sigma : 0.94 S/m
Density : 1000.00 kg/cu. m

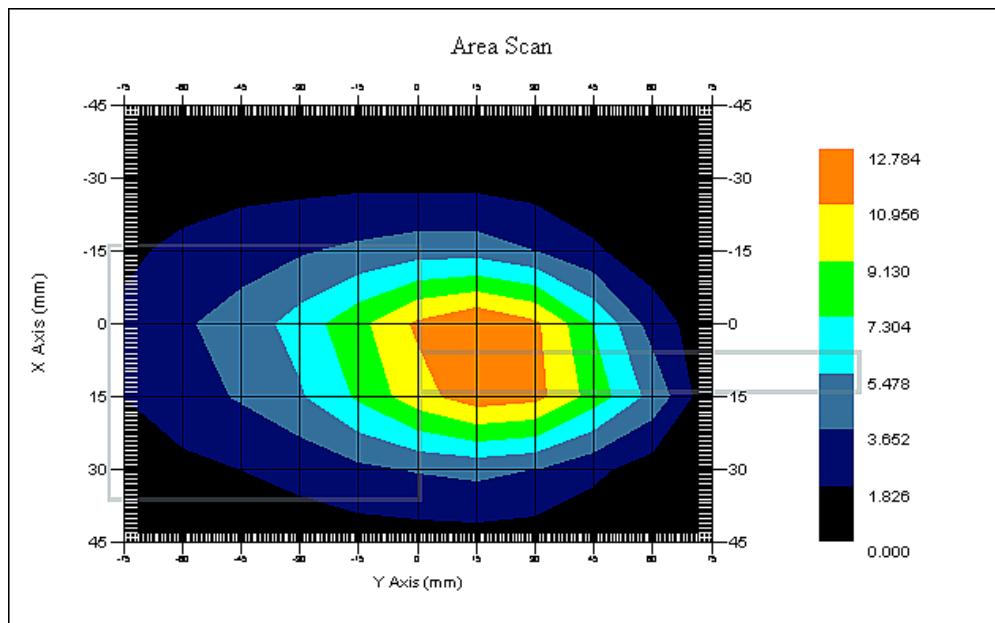
Probe Data
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:51:19 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Accessory Next to Body
Separation : 0 mm
Channel : Low



1 gram SAR value : 13.649 W/kg
10 gram SAR value : 8.193 W/kg
Area Scan Peak SAR : 12.784 W/kg
Zoom Scan Peak SAR : 21.219 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 07:49:55 PM
End Time : 05-Dec-2011 08:13:19 PM
Scanning Time : 1404 secs

Product Data
Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 824.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Stub
Orientation : Accessory Next to Body
Power Drift-Start : 4.536 W/kg
Power Drift-Finish: 4.504 W/kg
Power Drift (%) : -0.708

Phantom Data
Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data
Type : BODY
Serial No. : 825
Frequency : 825.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.33 F/m
Sigma : 0.96 S/m
Density : 1000.00 kg/cu. m

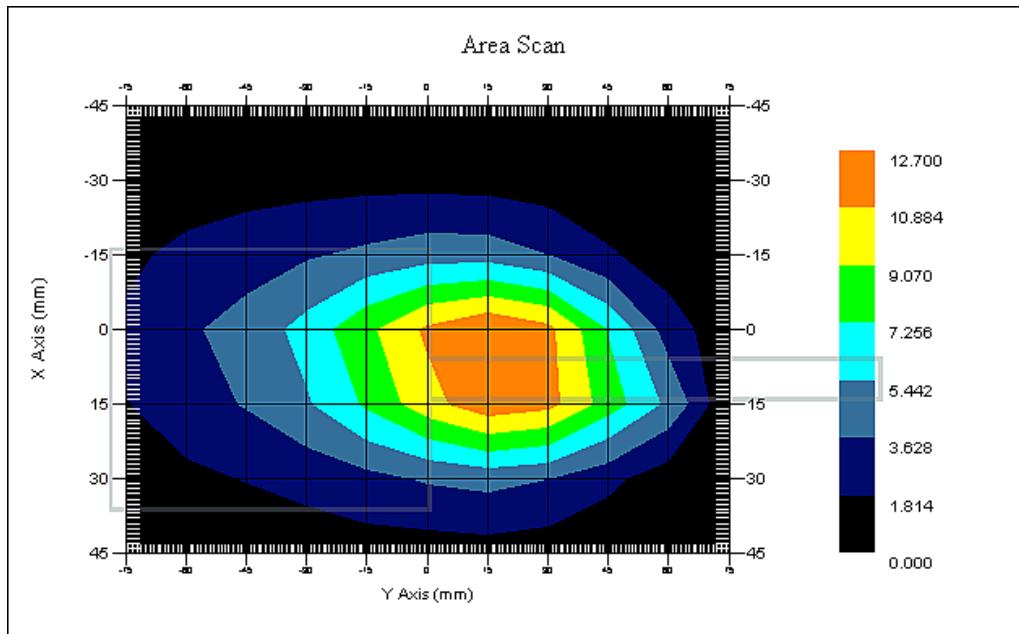
Probe Data
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:51:19 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Accessory Next to Body
Separation : 0 mm
Channel : High



1 gram SAR value : 13.691 W/kg

10 gram SAR value : 8.192 W/kg

Area Scan Peak SAR : 12.700 W/kg

Zoom Scan Peak SAR : 21.319 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 08:14:57 PM
End Time : 05-Dec-2011 08:38:20 PM
Scanning Time : 1403 secs

Product Data
Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 851.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Stub
Orientation : Accessory Next to Body
Power Drift-Start : 4.520 W/kg
Power Drift-Finish: 4.459 W/kg
Power Drift (%) : -1.349

Phantom Data
Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data
Type : BODY
Serial No. : 855
Frequency : 855.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.44 F/m
Sigma : 1.02 S/m
Density : 1000.00 kg/cu. m

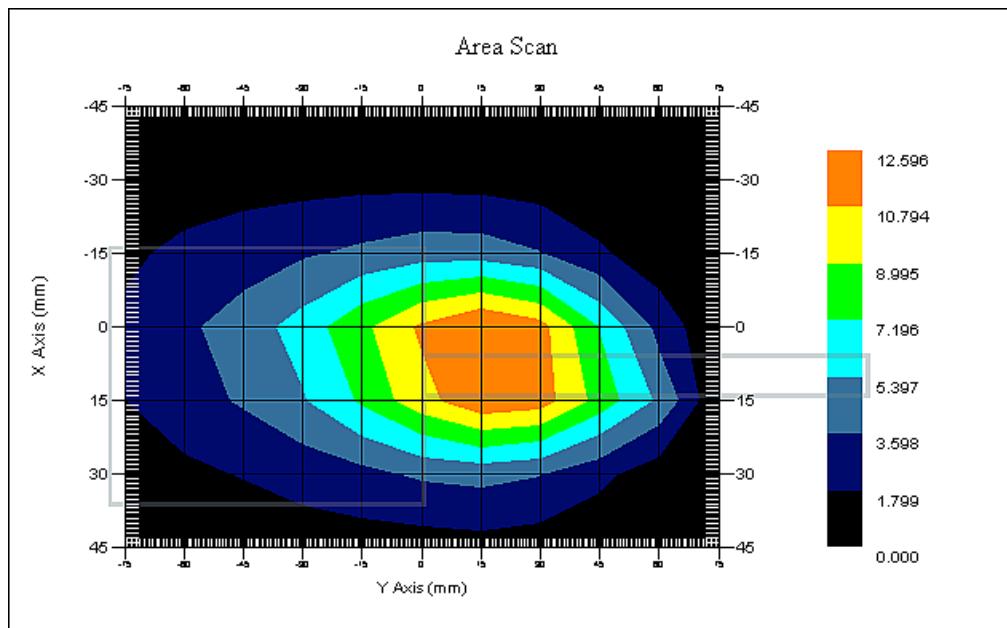
Probe Data
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:51:19 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Accessory Next to Body
Separation : 0 mm
Channel : Low



1 gram SAR value : 13.803 W/kg
10 gram SAR value : 8.243 W/kg
Area Scan Peak SAR : 12.596 W/kg
Zoom Scan Peak SAR : 21.919 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 08:39:50 PM
End Time : 05-Dec-2011 09:03:15 PM
Scanning Time : 1405 secs

Product Data
Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 869.00 MHz
Max. Transmit Pwr : 3.3 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Stub
Orientation : Accessory Next to Body
Power Drift-Start : 4.557 W/kg
Power Drift-Finish: 4.614 W/kg
Power Drift (%) : 1.248

Phantom Data
Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data
Type : BODY
Serial No. : 865
Frequency : 865.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.48 F/m
Sigma : 1.04 S/m
Density : 1000.00 kg/cu. m

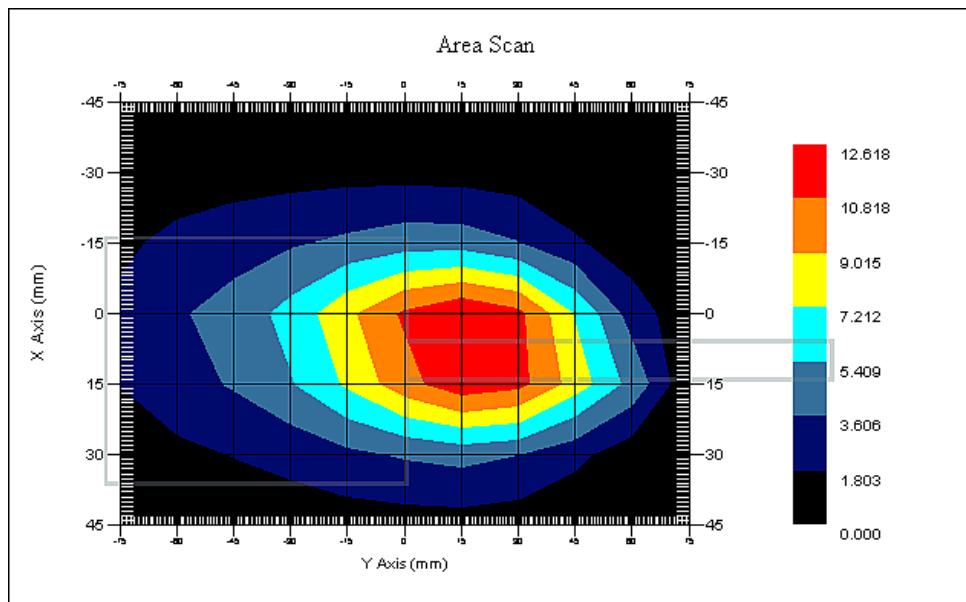
Probe Data
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:51:19 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Accessory Next to Body
Separation : 0 mm
Channel : High



1 gram SAR value : 13.782 W/kg
10 gram SAR value : 8.227 W/kg
Area Scan Peak SAR : 12.618 W/kg
Zoom Scan Peak SAR : 21.719 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 06-Dec-2011
Starting Time : 06-Dec-2011 11:25:58 AM
End Time : 06-Dec-2011 11:49:22 AM
Scanning Time : 1404 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 764.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Standard
Orientation : Next to Body
Power Drift-Start : 4.581 W/kg
Power Drift-Finish: 4.605 W/kg
Power Drift (%) : 0.539

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : BODY
Serial No. : 762
Frequency : 762.00 MHz
Last Calib. Date : 06-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.99 F/m
Sigma : 0.96 S/m
Density : 1000.00 kg/cu. m

Probe Data

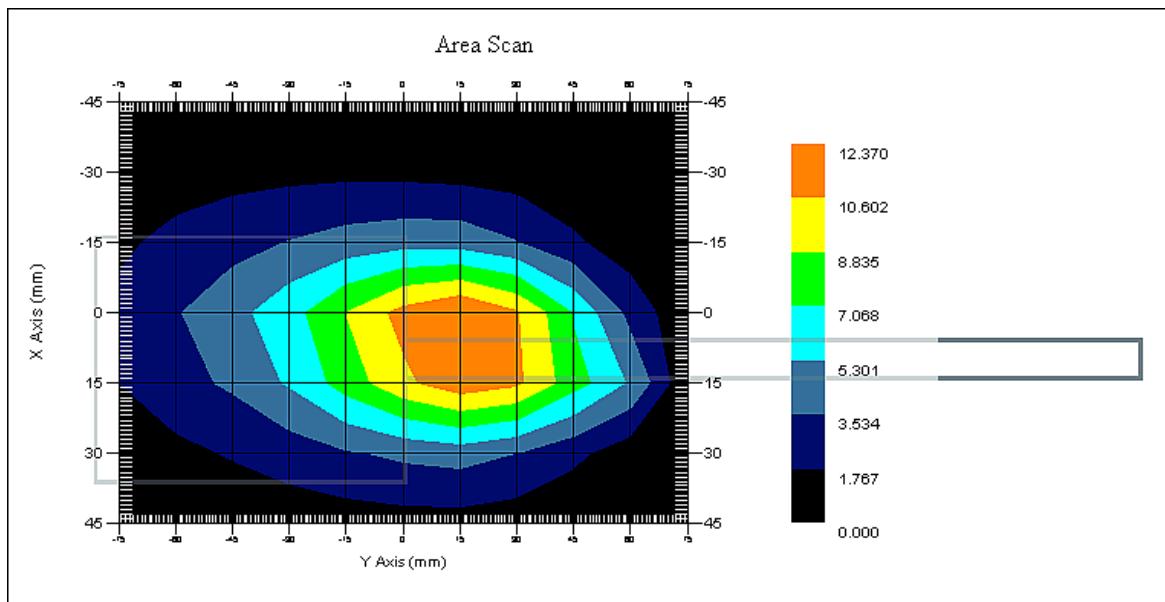
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 750.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.3
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 06-Dec-2011
Set-up Time : 6:51:19 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Next to Body
Separation : 0 mm
Channel : Low



1 gram SAR value : 13.123 W/kg
10 gram SAR value : 7.937 W/kg
Area Scan Peak SAR : 12.370 W/kg
Zoom Scan Peak SAR : 19.918 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 06-Dec-2011
Starting Time : 06-Dec-2011 11:56:02 AM
End Time : 06-Dec-2011 12:19:33 PM
Scanning Time : 1411 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 776.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Standard
Orientation : Next to Body
Power Drift-Start : 4.745 W/kg
Power Drift-Finish: 4.618 W/kg
Power Drift (%) : -2.679

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : BODY
Serial No. : 772
Frequency : 772.00 MHz
Last Calib. Date : 06-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.95 F/m
Sigma : 0.98 S/m
Density : 1000.00 kg/cu. m

Probe Data

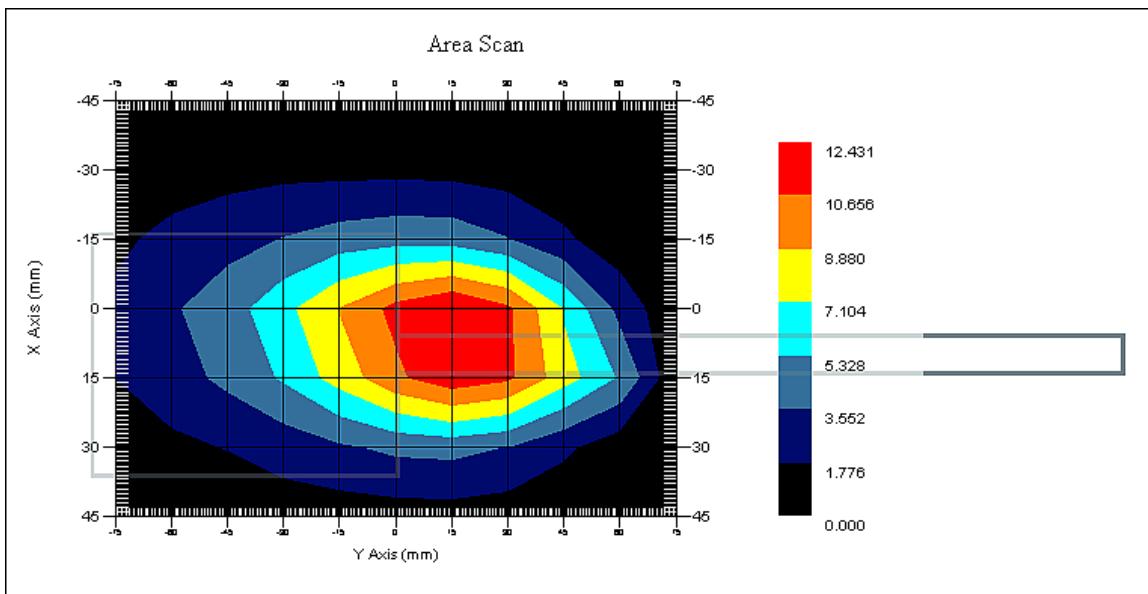
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 750.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.3
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 06-Dec-2011
Set-up Time : 6:51:19 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Next to Body
Separation : 0 mm
Channel : High



1 gram SAR value : 13.229 W/kg
10 gram SAR value : 7.952 W/kg
Area Scan Peak SAR : 12.431 W/kg
Zoom Scan Peak SAR : 20.318 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 06-Dec-2011
Starting Time : 06-Dec-2011 12:36:07 PM
End Time : 06-Dec-2011 12:59:36 PM
Scanning Time : 1409 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 794.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Standard
Orientation : Next to Body
Power Drift-Start : 4.596 W/kg
Power Drift-Finish: 4.737 W/kg
Power Drift (%) : 3.058

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : BODY
Serial No. : 792
Frequency : 792.00 MHz
Last Calib. Date : 06-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.86 F/m
Sigma : 1.01 S/m
Density : 1000.00 kg/cu. m

Probe Data

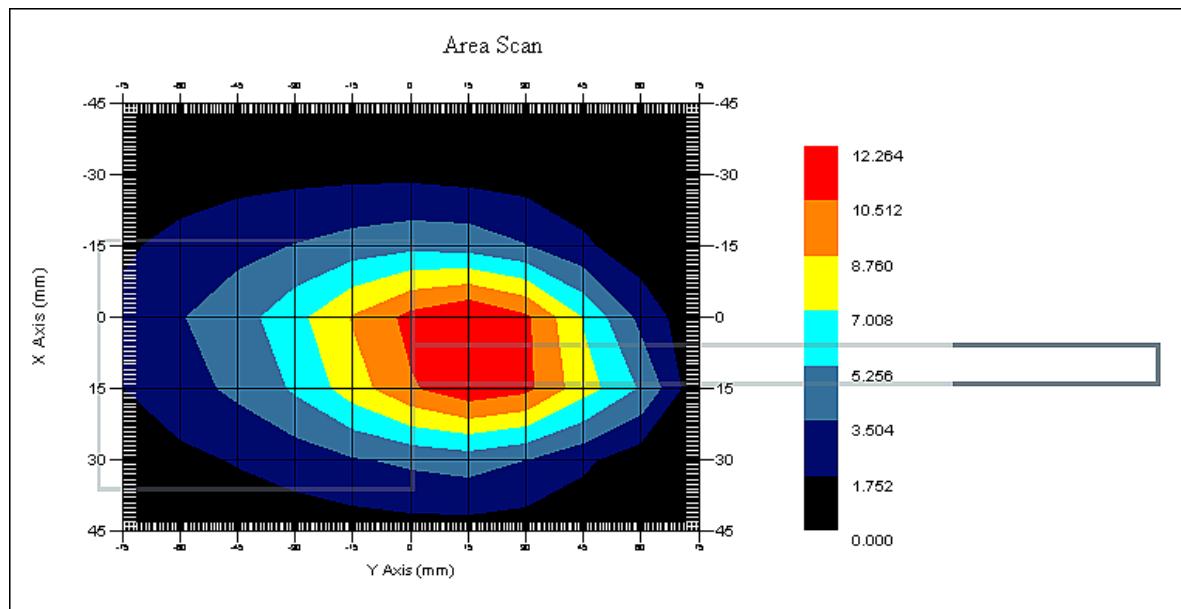
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 750.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.3
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 06-Dec-2011
Set-up Time : 6:51:19 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Next to Body
Separation : 0 mm
Channel : Low



1 gram SAR value : 13.152 W/kg
10 gram SAR value : 7.984 W/kg
Area Scan Peak SAR : 12.264 W/kg
Zoom Scan Peak SAR : 20.218 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 06:31:46 PM
End Time : 05-Dec-2011 06:56:11 PM
Scanning Time : 1465 secs

Product Data
Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 806.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Standard
Orientation : Accessory Next to Body
Power Drift-Start : 4.730 W/kg
Power Drift-Finish: 4.682 W/kg
Power Drift (%) : -1.019

Phantom Data
Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data
Type : BODY
Serial No. : 805
Frequency : 805.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.24 F/m
Sigma : 0.94 S/m
Density : 1000.00 kg/cu. m

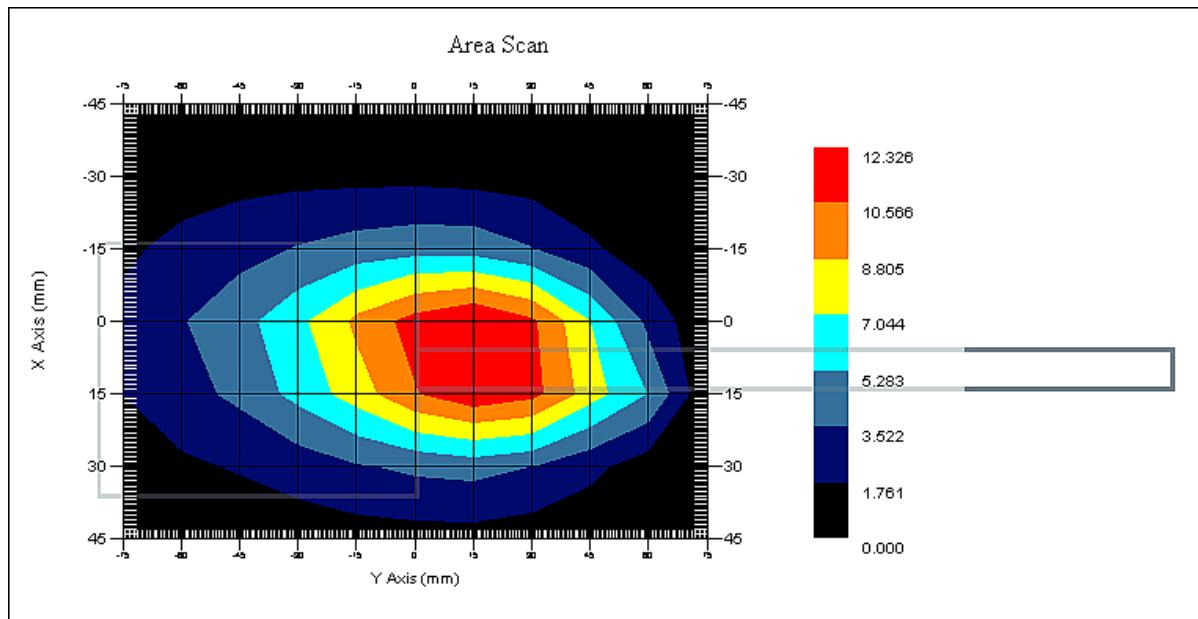
Probe Data
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:51:19 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Accessory Next to Body
Separation : 0 mm
Channel : High



SAR Test Report

By Operator : Jay
Measurement Date : 06-Dec-2011
Starting Time : 06-Dec-2011 02:00:41 PM
End Time : 06-Dec-2011 02:23:59 PM
Scanning Time : 1398 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 764.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Stub
Orientation : Next to Body
Power Drift-Start : 4.813 W/kg
Power Drift-Finish: 4.831 W/kg
Power Drift (%) : 0.370

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : BODY
Serial No. : 762
Frequency : 762.00 MHz
Last Calib. Date : 06-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.99 F/m
Sigma : 0.96 S/m
Density : 1000.00 kg/cu. m

Probe Data

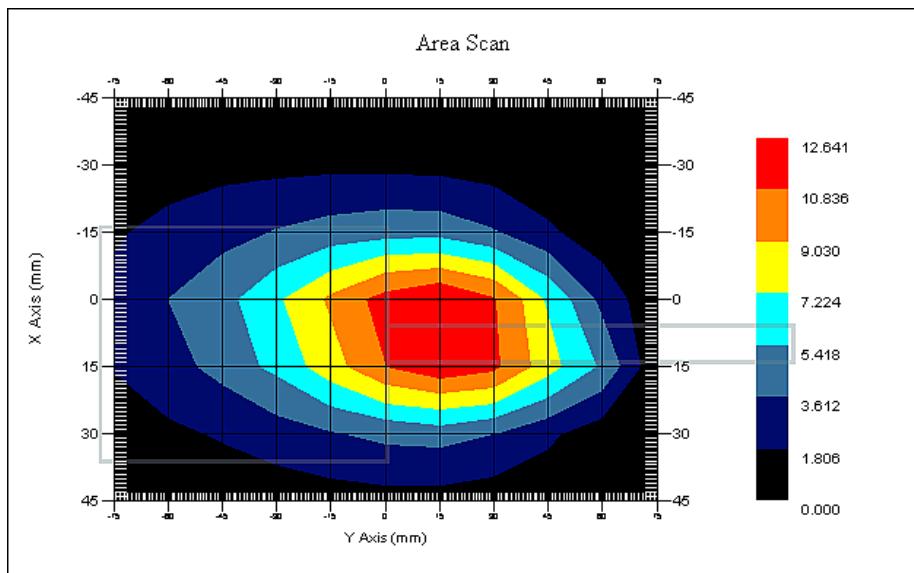
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 750.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.3
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 06-Dec-2011
Set-up Time : 6:51:19 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Next to Body
Separation : 0 mm
Channel : Low



1 gram SAR value : 13.772 W/kg
10 gram SAR value : 8.260 W/kg
Area Scan Peak SAR : 12.641 W/kg
Zoom Scan Peak SAR : 21.619 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 06-Dec-2011
Starting Time : 06-Dec-2011 01:32:22 PM
End Time : 06-Dec-2011 01:55:54 PM
Scanning Time : 1412 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 776.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Stub
Orientation : Next to Body
Power Drift-Start : 4.797 W/kg
Power Drift-Finish: 4.862 W/kg
Power Drift (%) : 1.370

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : BODY
Serial No. : 772
Frequency : 772.00 MHz
Last Calib. Date : 06-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.95 F/m
Sigma : 0.98 S/m
Density : 1000.00 kg/cu. m

Probe Data

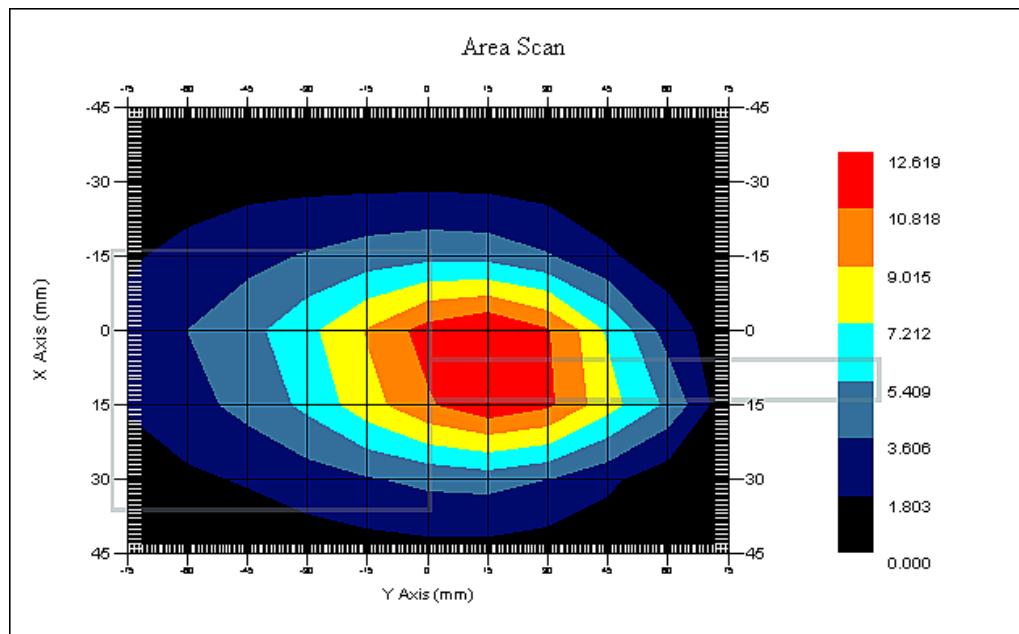
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 750.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.3
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 06-Dec-2011
Set-up Time : 6:51:19 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Next to Body
Separation : 0 mm
Channel : High



1 gram SAR value : 13.535 W/kg
10 gram SAR value : 8.189 W/kg
Area Scan Peak SAR : 12.619 W/kg
Zoom Scan Peak SAR : 20.618 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 06-Dec-2011
Starting Time : 06-Dec-2011 01:05:32 PM
End Time : 06-Dec-2011 01:29:00 PM
Scanning Time : 1408 secs

Product Data

Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 794.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Stub
Orientation : Next to Body
Power Drift-Start : 4.765 W/kg
Power Drift-Finish: 4.884 W/kg
Power Drift (%) : 2.492

Phantom Data

Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data

Type : BODY
Serial No. : 792
Frequency : 792.00 MHz
Last Calib. Date : 06-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.86 F/m
Sigma : 1.02 S/m
Density : 1000.00 kg/cu. m

Probe Data

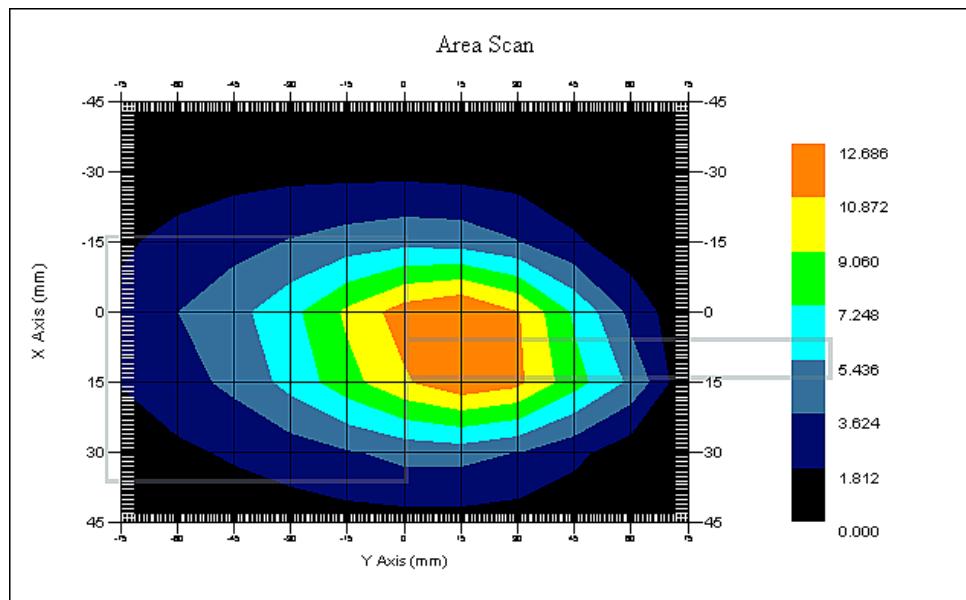
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 750.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.3
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 06-Dec-2011
Set-up Time : 6:51:19 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Next to Body
Separation : 0 mm
Channel : Low



1 gram SAR value : 13.629 W/kg
10 gram SAR value : 8.173 W/kg
Area Scan Peak SAR : 12.686 W/kg
Zoom Scan Peak SAR : 21.219 W/kg

SAR Test Report

By Operator : Jay
Measurement Date : 05-Dec-2011
Starting Time : 05-Dec-2011 06:58:29 PM
End Time : 05-Dec-2011 07:21:52 PM
Scanning Time : 1403 secs

Product Data
Device Name : EF Johnson
Serial No. : 7800P20084RFM61
Mode : FM
Model : 242-5770
Frequency : 806.00 MHz
Max. Transmit Pwr : 3.0 W
Drift Time : 0 min(s)
Length : 75 mm
Width : 64 mm
Depth : 26 mm
Antenna Type : Stub
Orientation : Accessory Next to Body
Power Drift-Start : 4.831 W/kg
Power Drift-Finish: 4.879 W/kg
Power Drift (%) : 0.994

Phantom Data
Name : RF Exposure Lab, LLC
Type : Large Phantom
Size (mm) : 600 x 450 x 200
Serial No. : System Default
Location : Center
Description : Large Phantom

Tissue Data
Type : BODY
Serial No. : 805
Frequency : 805.00 MHz
Last Calib. Date : 05-Dec-2011
Temperature : 20.00 °C
Ambient Temp. : 23.00 °C
Humidity : 35.00 RH%
Epsilon : 54.24 F/m
Sigma : 0.94 S/m
Density : 1000.00 kg/cu. m

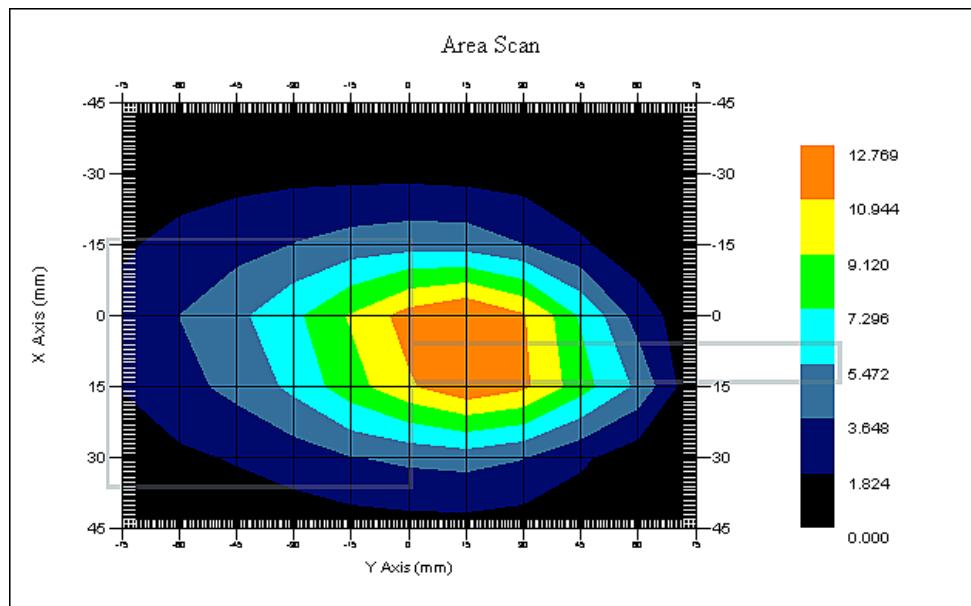
Probe Data
Name : RFEL 217
Model : E020
Type : E-Field Triangle
Serial No. : 217
Last Calib. Date : 07-Sep-2011
Frequency : 835.00 MHz
Duty Cycle Factor: 1
Conversion Factor: 6.4
Probe Sensitivity: 1.20 1.20 1.20 μ V/ (V/m)²
Compression Point: 95.00 mV
Offset : 1.56 mm

Measurement Data

Crest Factor : 1
Scan Type : Complete
Tissue Temp. : 20.00 °C
Ambient Temp. : 23.00 °C
Set-up Date : 05-Dec-2011
Set-up Time : 6:51:19 AM
Area Scan : 7x11x1 : Measurement x=15mm, y=15mm, z=4mm
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Accessory Next to Body
Separation : 0 mm
Channel : High

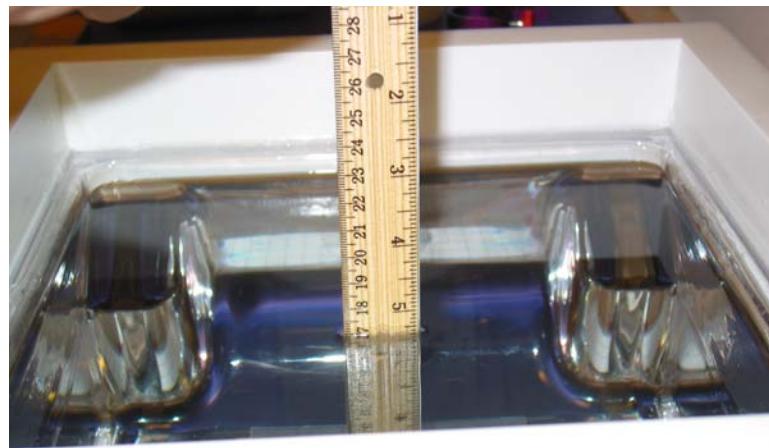


1 gram SAR value : 13.694 W/kg
10 gram SAR value : 8.238 W/kg
Area Scan Peak SAR : 12.769 W/kg
Zoom Scan Peak SAR : 21.119 W/kg

Appendix C – SAR Test Setup Photos



System Body Configuration



Body Tissue Depth

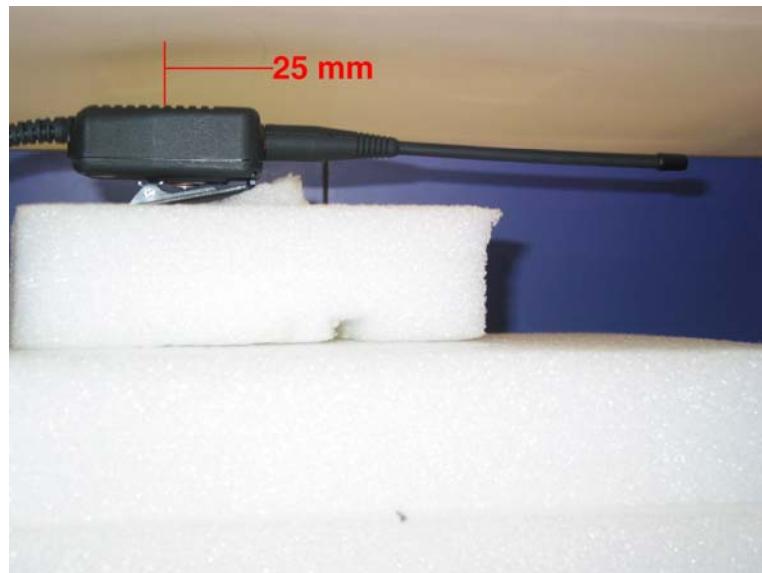
**Handset with Standard Antenna Face Configuration****Handset with Stubby Antenna Face Configuration**



Handset with Standard Antenna Body Configuration



Handset with Stubby Antenna Body Configuration

**Microphone with Standard Antenna Face Configuration****Microphone with Stubby Antenna Face Configuration**



Microphone with Standard Antenna Body Configuration



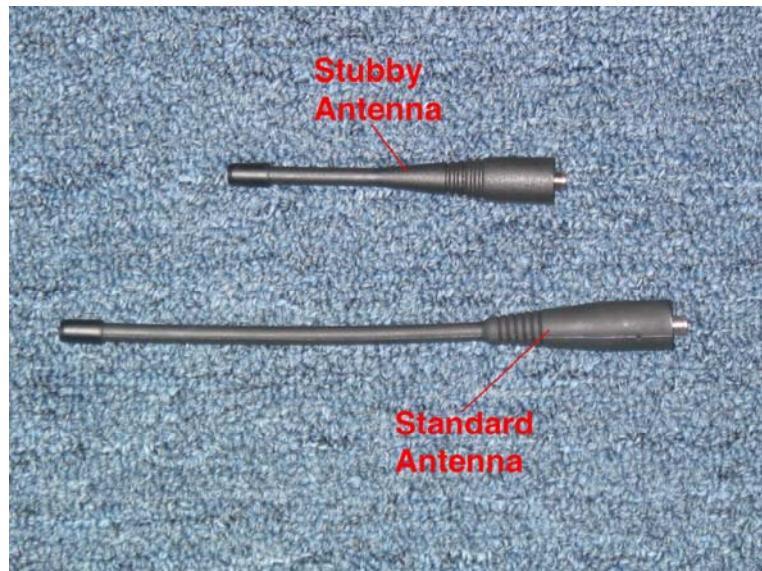
Microphone with Stubby Antenna Body Configuration



Front of Device



Back of Device



Antennas



Battery

**Standard Microphone****Microphone with Antenna**

**Mic with Antenna Attached to Handset****System Configuration**



Close Up of Back of Microphone with Belt Clip



Close Up of Right Side of Microphone with Belt Clip

**Close Up of Left Side of Microphone with Belt Clip****Measurement of Belt Clip Length from Side**

**Measurement of Belt Clip Width from Back****Typical Body Worn Position for Microphone with Antenna**



Close Up of Typical Body Worn Position for Microphone with Antenna

Appendix D – Probe Calibration Data Sheets

NCL CALIBRATION LABORATORIES

Calibration File No.: PC1333-1350

Client.: RFEL

C E R T I F I C A T E O F C A L I B R A T I O N

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.: 217

Calibration Procedure: D01-032-E020-V2, D22-012-Tissue, D28-002-Dipole
Project No: RFEL-PC-5620

Calibrated: 7th September 2011
Released on: 7th September 2011

Approved By: Stuart Nicol

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

Released By: _____

NCL CALIBRATION LABORATORIES

303 Terry Fox Drive, Suite 102
Kanata, Ontario
CANADA K2K 3J1

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

NCL Calibration Laboratories

Division of APREL Inc.

Introduction

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

Calibration Method

Probes are calibrated using the following methods.

<1000MHz

TEM Cell for sensitivity in air

Standard phantom using temperature transfer method for sensitivity in tissue

>1000MHz

Waveguide* method to determine sensitivity in air and tissue

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

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

References

- IEEE Standard 1528 (2003) including Amendment 1
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 (2006)
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 Ed. 1.0 (2010-03)
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 Draft Standard for Calibration of Electromagnetic Field Sensors and Probes, Excluding Antennas, from 9kHz to 40GHz

NCL Calibration Laboratories

Division of APREL Inc.

Conditions

Probe 217 was a re-calibration.

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 date
Power meter Anritsu MA2408A	90025437	Nov.4, 2010
Power Sensor Anritsu MA2481D	103555	Nov 4, 2010
Attenuator HP 8495A (70dB)	1944A10711	Sept. 14, 2010
Network Analyzer Anritsu MT8801C	MB11855	Feb. 8, 2011

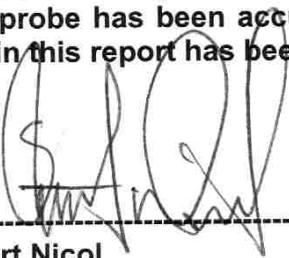
Secondary Measurement Standards

Signal Generator Agilent E4438C -506 MY55182336 June 7, 2011

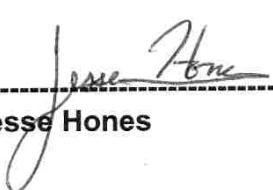
Attestation

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 probe has been accurately conducted and that all information contained within this report has been reviewed for accuracy.



Stuart Nicol



Jesse Hones

NCL Calibration Laboratories

Division of APREL Inc.

Probe Summary

Probe Type: E-Field Probe E020
Serial Number: 217
Frequency: 750MHz
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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Division of APREL Inc.

Calibration for Tissue (Head H, Body B)

Frequency	Tissue Type	Measured Epsilon	Measured Sigma	Calibration Uncertainty	Tolerance Uncertainty for 5%*	Conversion Factor
450 H	Head	45.31	0.91	4.1	3.6	5.8
450 B	Body	56.77	0.99	4.1	3.6	6.0
650 B	Body	57.42	0.91	3.96	3.5	6.2
750 H	Head	42.16	0.87	3.94	3.5	6.2
750 B	Body	55.54	0.94	3.94	3.4	6.3
835 H	Head	42.5	0.93	3.5	3.4	6.4
835 B	Body	56.37	0.954	3.5	3.4	6.4
900 H	Head	41.89	1.0	3.5	3.4	6.1
900 B	Body	53.68	1.05	3.5	3.4	6.1
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	39.0	1.25	3.5	2.7	5.2
1640 B	Body	52.03	1.39	3.5	2.7	5.0
1735 H	Head	X	X	X	X	X
1735 B	Body	51.68	1.5	3.5	2.7	5.2
1800 H	Head	38.38	1.39	3.5	2.7	4.9
1800 B	Body	51.54	1.56	3.5	2.7	5.1
1900 H	Head	38.4	1.43	3.5	2.7	4.9
1900 B	Body	52.08	1.59	3.5	2.7	4.8
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	38.2	1.82	3.5	3.5	3.91
2450 B	Body	51.74	1.96	3.5	3.5	3.94
2600 H	Head	X	X	X	X	X
2600 B	Body	51.18	2.16	3.5	3.5	4.0
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
5200 H	Head	X	X	X	X	X
5200 B	Body	X	X	X	X	X
5600 H	Head	X	X	X	X	X
5600 B	Body	X	X	X	X	X
5800 H	Head	X	X	X	X	X
5800 B	Body	X	X	X	X	X

NCL Calibration Laboratories

Division of APREL Inc.

Boundary Effect:

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

Spatial Resolution:

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

DAQ-PAQ Contribution

To minimize the uncertainty calculation all tissue sensitivity values were calculated using a load impedance of $5\text{ M}\Omega$.

Boundary Effect:

For a distance of 0.58mm the worst case evaluated uncertainty (increase in the probe sensitivity) is less than 2.1%.

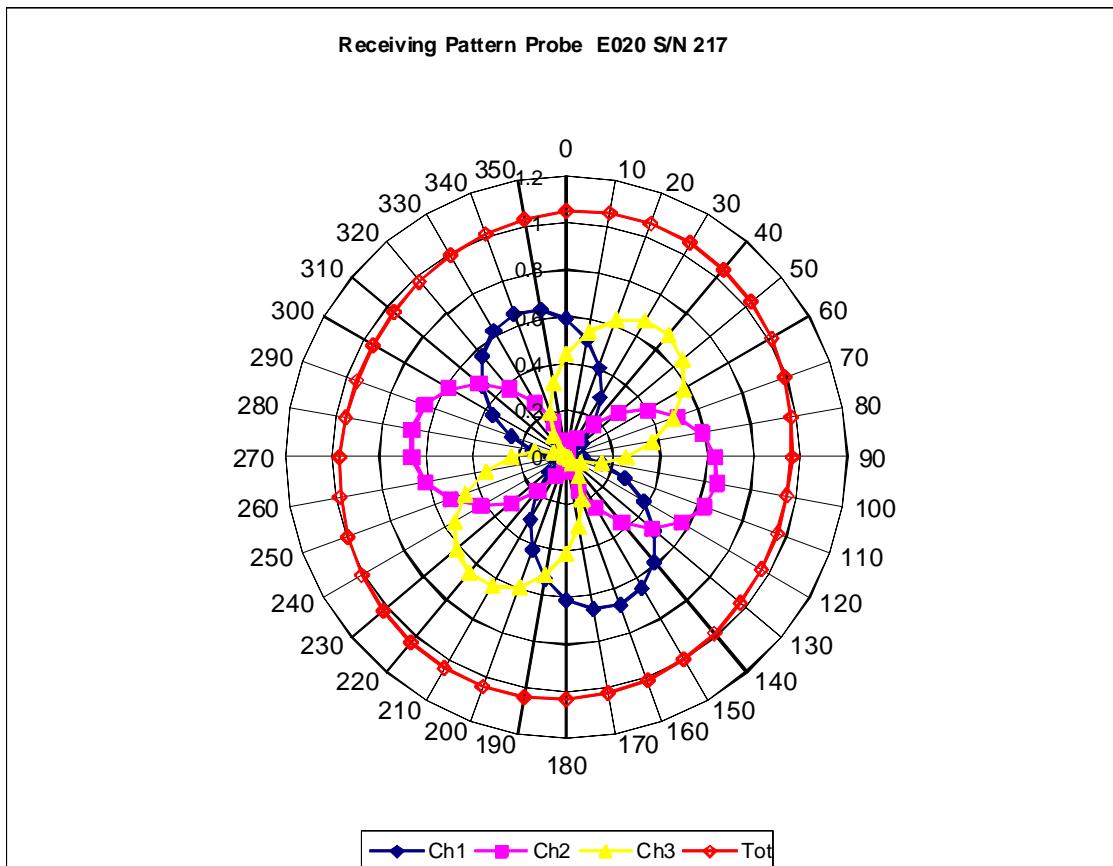
NOTES:

*The maximum deviation from the centre frequency when comparing the lower to upper range is listed.

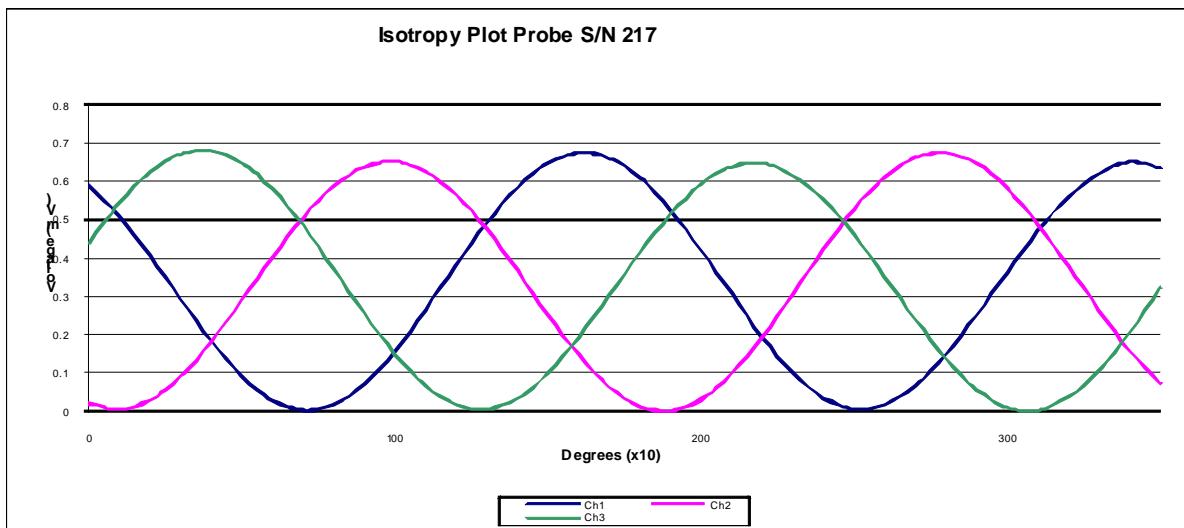
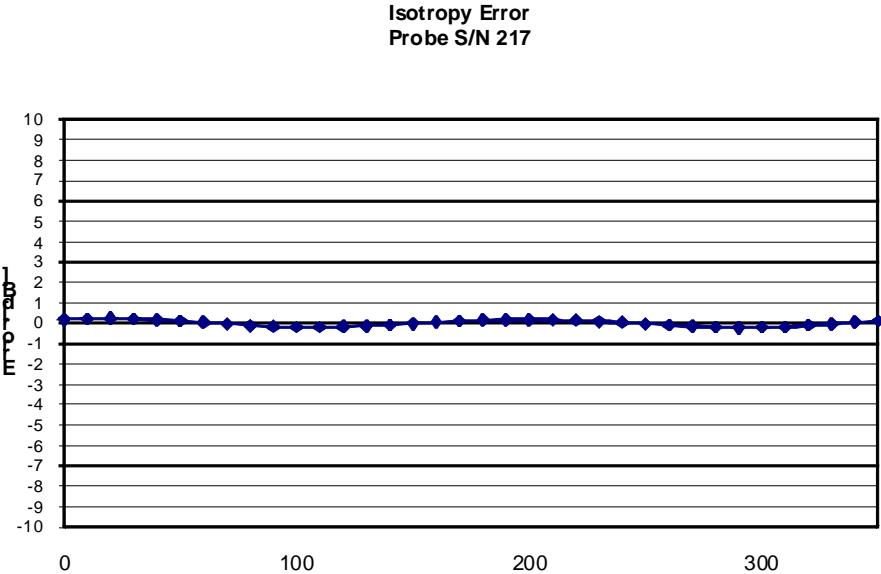
The probe was received in good condition.

Probe was calibrated on new DAC-PAQ.

Receiving Pattern Air



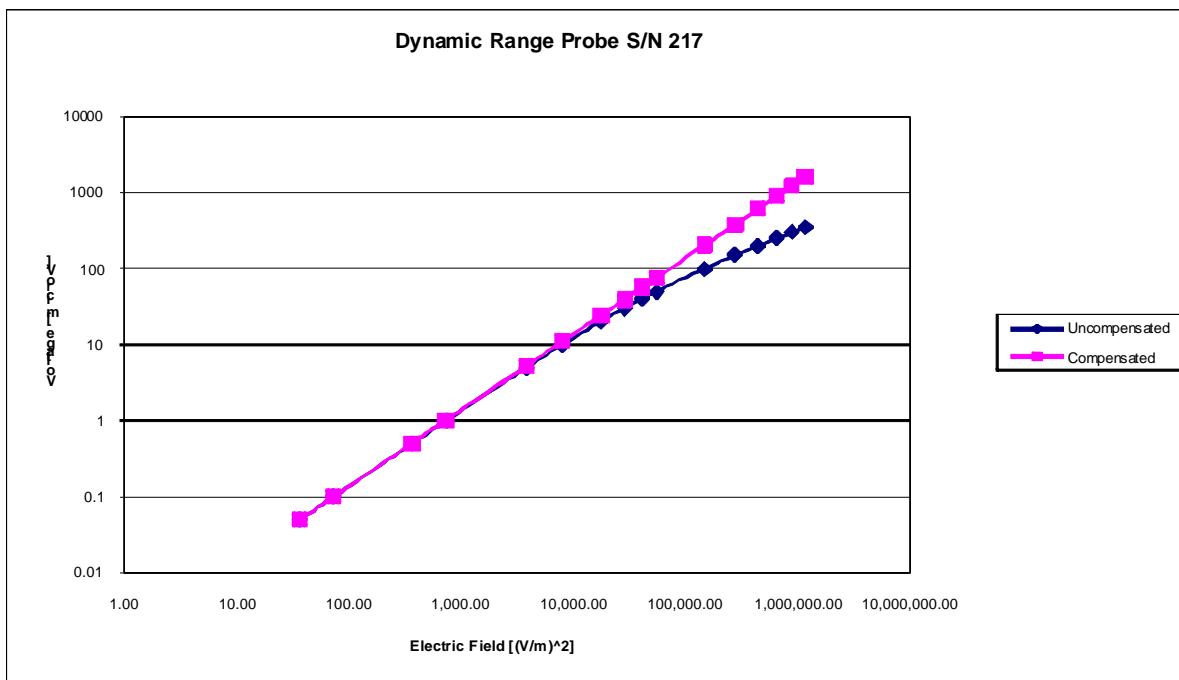
Isotropy Error



Isotropicity Tissue:

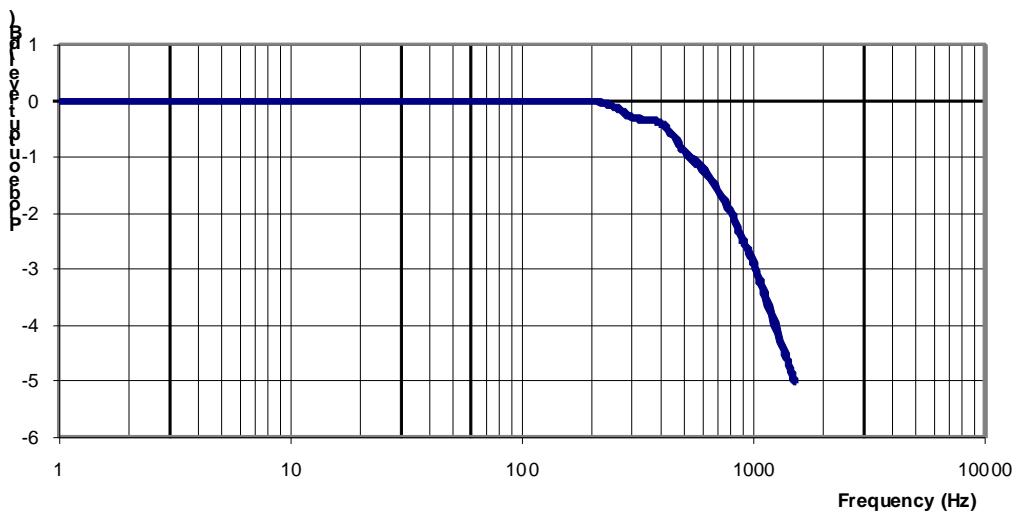
0.12 dB

Dynamic Range



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 2011.

Appendix E – Dipole Calibration Data Sheets

NCL CALIBRATION LABORATORIES

Calibration File No: DC-1113
Project Number: RFEL-750-Dipole-5479

C E R T I F I C A T E O F C A L I B R A T I O N

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

Manufacturer: APREL Laboratories

Part number: ALS-D-750-S-2

Frequency: 750 MHz Head

Serial No: 177-00501

Customer: RFEL

Calibrated: 14th January 2010
Released on: 19th January 2010

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

Released By: _____

NCL CALIBRATION LABORATORIES

51 SPECTRUM WAY
NEPEAN, ONTARIO
CANADA K2R 1E6

Division of APREL Lab.
TEL: (613) 820-4988
FAX: (613) 820-4162

NCL Calibration Laboratories

Division of APREL Laboratories.

Conditions

Dipole 177-00501 was a new 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.

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

Calibration Results Summary

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

Mechanical Dimensions

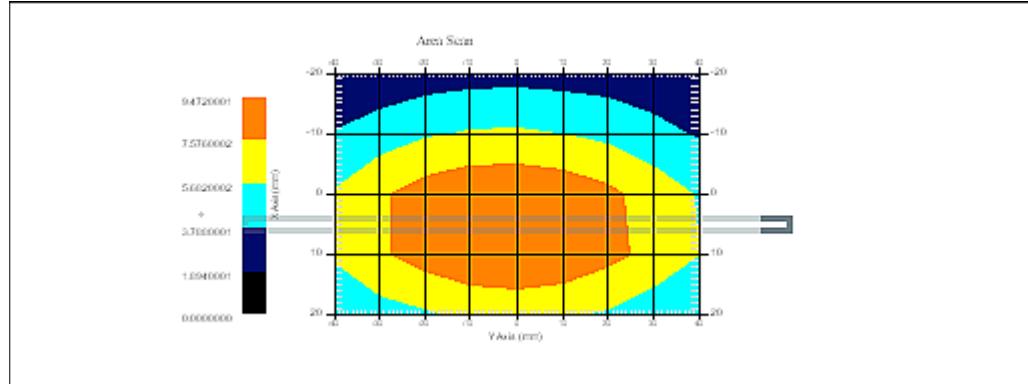
Length: 180.2 mm
Height: 97.0 mm

Electrical Specification

SWR: 1.035U
Return Loss: -35.339 dB
Impedance: 48.372 Ω

System Validation Results

Frequency	1 Gram	10 Gram	Peak
750 MHz	8.49	5.54	12.5



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 177-00501. 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 2225.

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 177-00501 was a new calibration.

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)

NCL Calibration Laboratories

Division of APREL Laboratories.

Dipole Calibration Results

Mechanical Verification

APREL Length	APREL Height	Measured Length	Measured Height
180.0 mm	97.8 mm	180.2 mm	97.0 mm

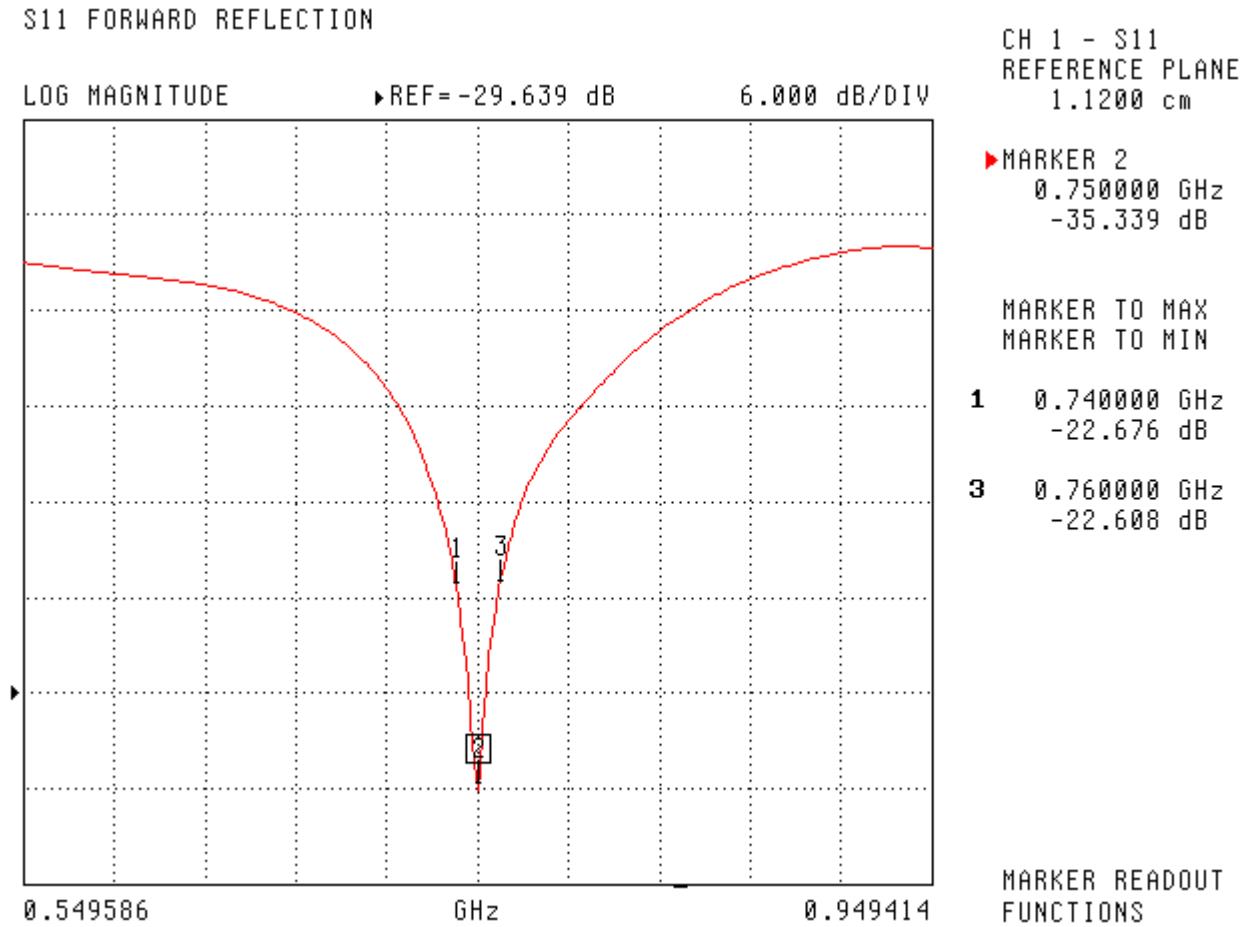
Tissue Validation

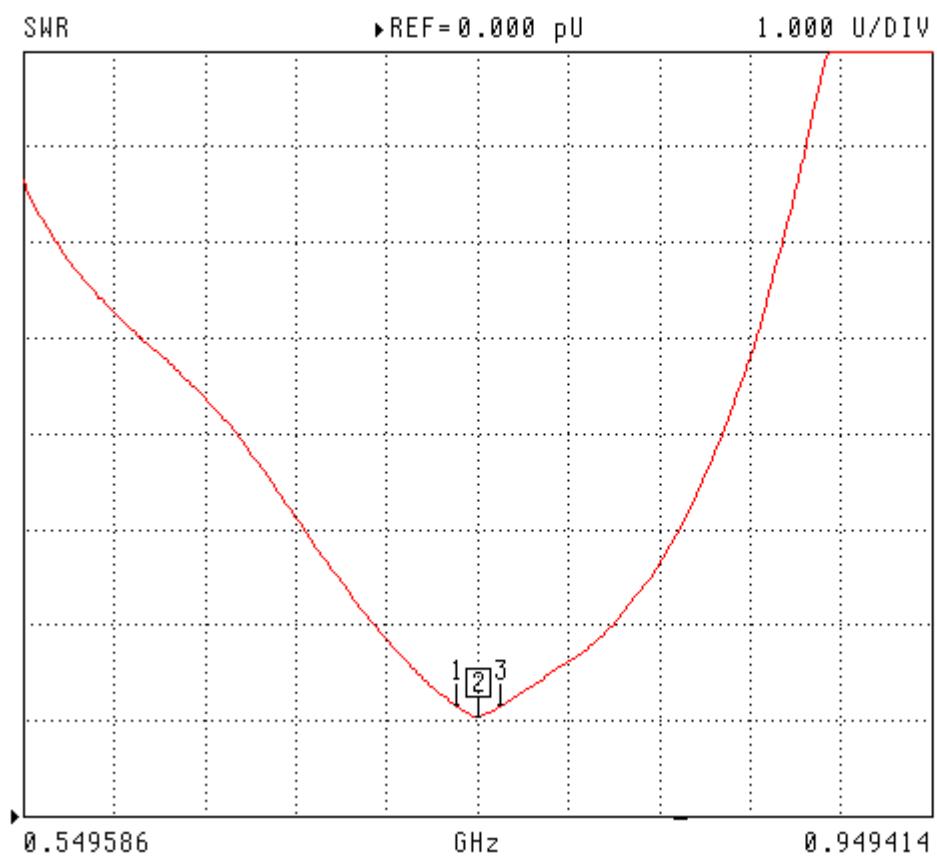
Head Tissue 750MHz	Measured
Dielectric constant, ϵ_r	41.1
Conductivity, σ [S/m]	0.86

Electrical Calibration

Test	Result
S11 RL	-35.339dB
SWR	1.035U
Impedance	48.372 Ω

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

S11 Parameter Return Loss

SWR**S11 FORWARD REFLECTION**

CH 1 - S11
REFERENCE PLANE
1.1200 cm

► MARKER 2
0.750000 GHz
1.035 U

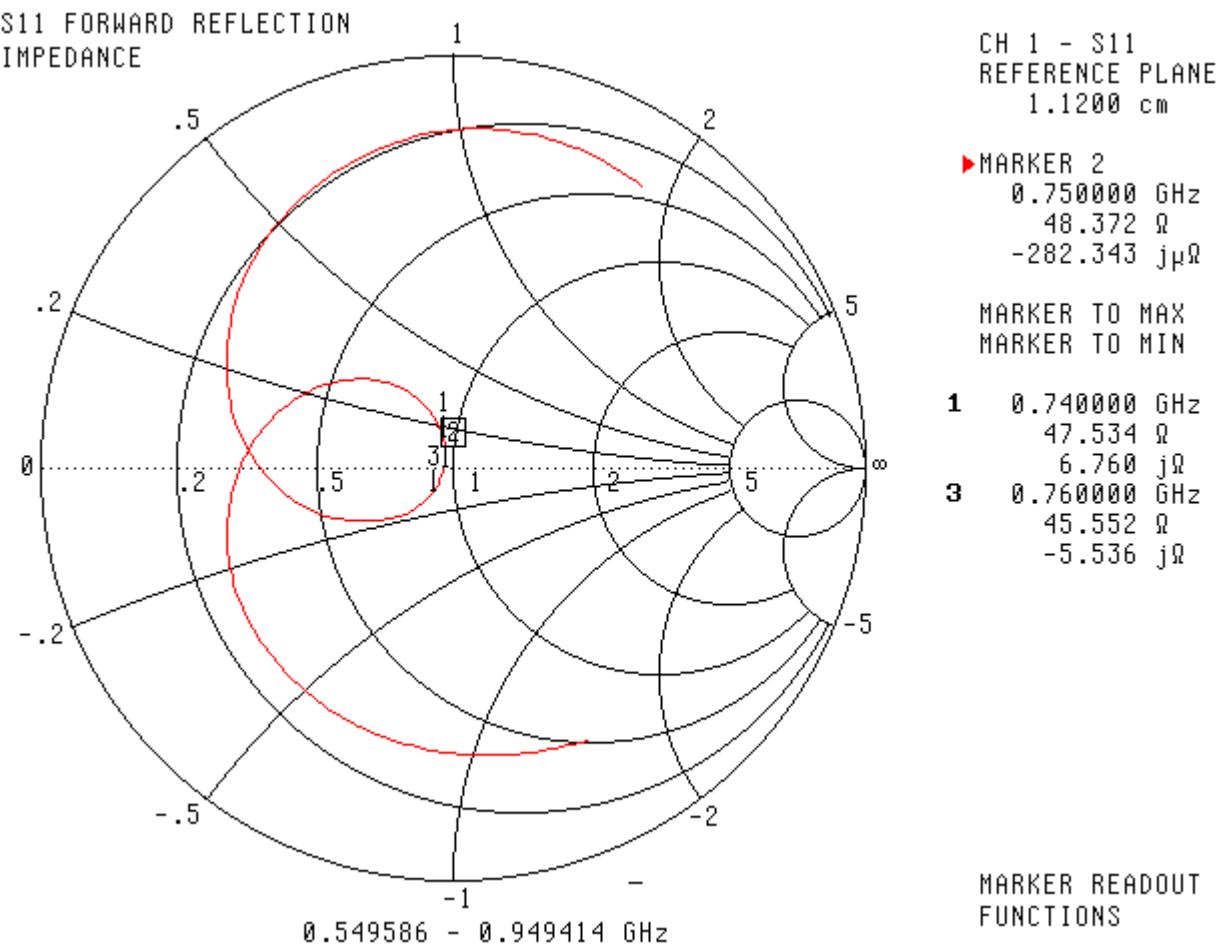
MARKER TO MAX
MARKER TO MIN

1 0.740000 GHz
1.159 U

3 0.760000 GHz
1.160 U

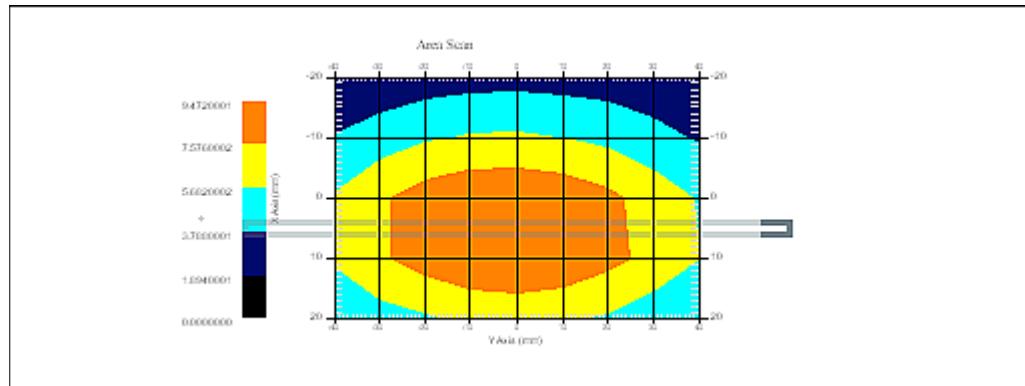
► MARKER READOUT
FUNCTIONS

Smith Chart Dipole Impedance



System Validation Results Using the Electrically Calibrated Dipole

Head Tissue Frequency	1 Gram	10 Gram	Peak Above Feed Point
750 MHz	8.49	5.54	12.5



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 2009.

Extended Calibration

Usage of SAR dipoles calibrated less than 2 years ago but more than 1 year ago were confirmed in maintaining return loss (< -20 dB, within 20% of prior calibration) and impedance (within 5 ohm from prior calibration) requirements per extended calibrations in KDB Publication 450824:

ALS-D-750-S-2 SN: 177-00501				
Date of Measurement	Return Loss (dB)	Δ%	Impedance (Ω)	Δ%
1/14/2010	-35.339		48.372	
1/12/2011	-32.247	-8.7	49.851	3.1

NCL CALIBRATION LABORATORIES

Calibration File No: DC-1178
Project Number: RFEL-DC-750B-5548

C E R T I F I C A T E O F C A L I B R A T I O N

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

Manufacturer: APREL Laboratories

Part number: ALS-D-750-S-2

Frequency: 750 MHz Body

Serial No: 177-00501

Customer: RFEL

Body Calibration

Calibrated: 15th November 2010
Released on: 16th November 2010

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

Released By: _____

NCL CALIBRATION LABORATORIES

51 SPECTRUM WAY
NEPEAN, ONTARIO
CANADA K2R 1E6

Division of APREL Lab.
TEL: (613) 820-4988
FAX: (613) 820-4162

NCL Calibration Laboratories

Division of APREL Laboratories.

Conditions

Dipole 177-00501 was a new 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.

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

Calibration Results Summary

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

Mechanical Dimensions

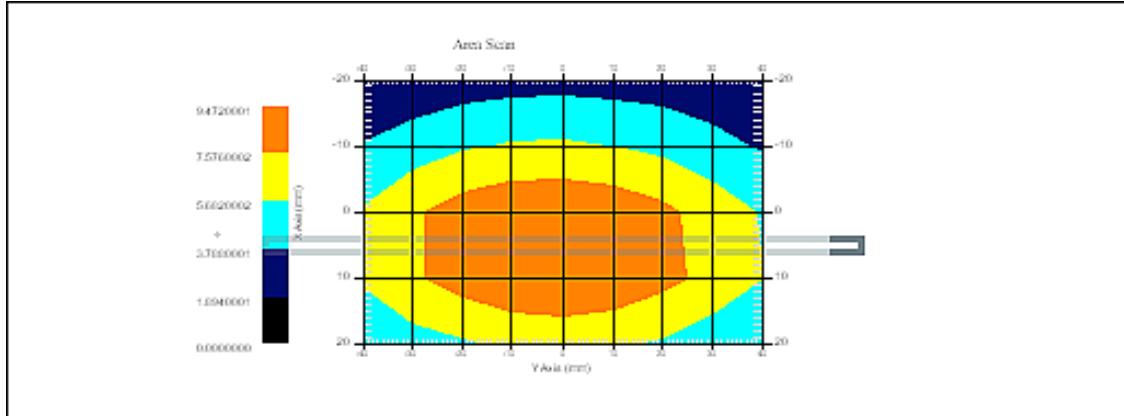
Length: 180.2 mm
Height: 97.0 mm

Electrical Specification

SWR: 1.098U
Return Loss: -27.875 dB
Impedance: 52.754 Ω

System Validation Results

Frequency	1 Gram	10 Gram	Peak
750 MHz	8.7	5.64	12.9



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 177-00501. 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 2225.

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 177-00501 was a new calibration.

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)

NCL Calibration Laboratories

Division of APREL Laboratories.

Dipole Calibration Results

Mechanical Verification

APREL Length	APREL Height	Measured Length	Measured Height
180.0 mm	97.8 mm	180.2 mm	97.0 mm

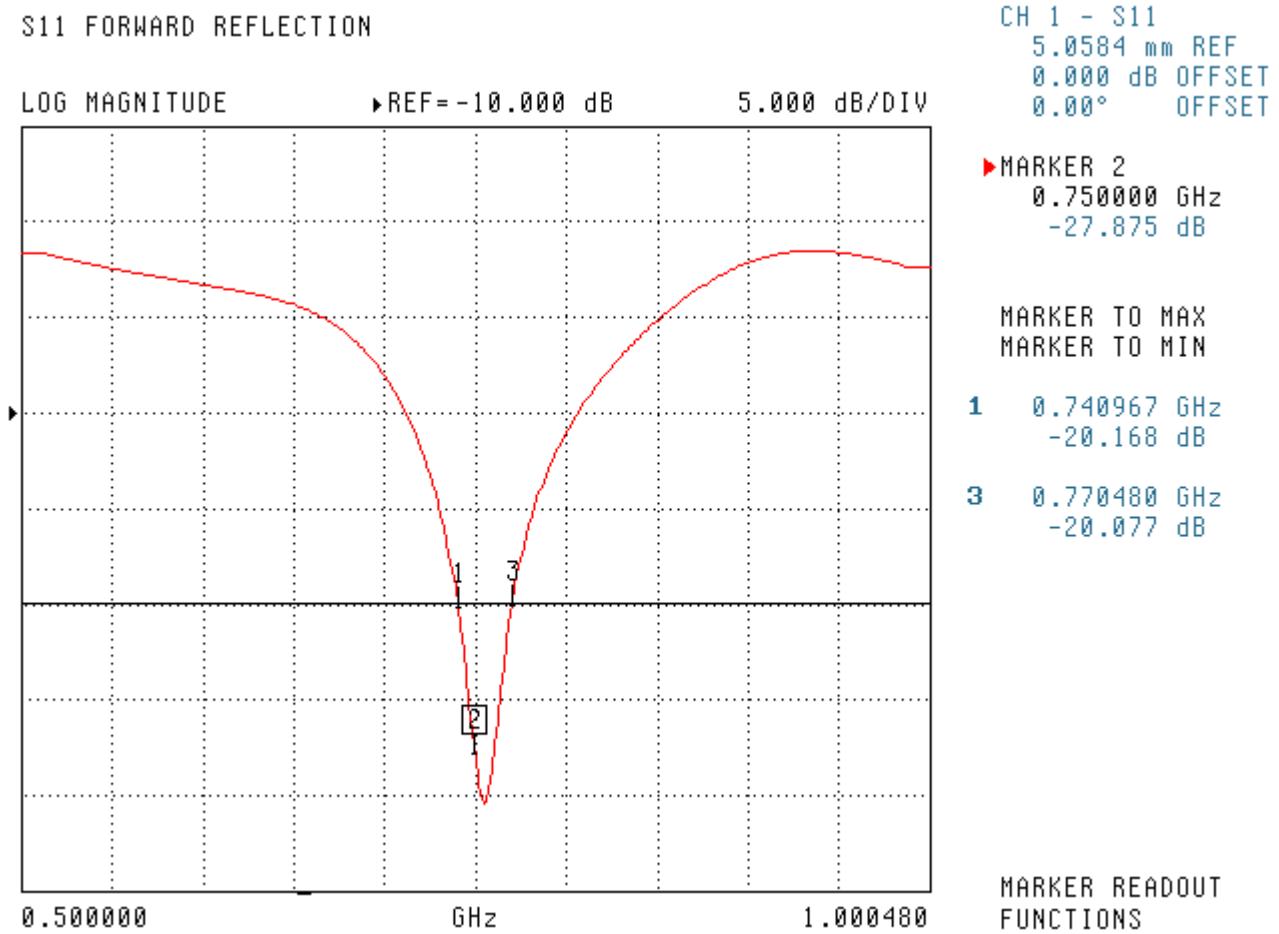
Tissue Validation

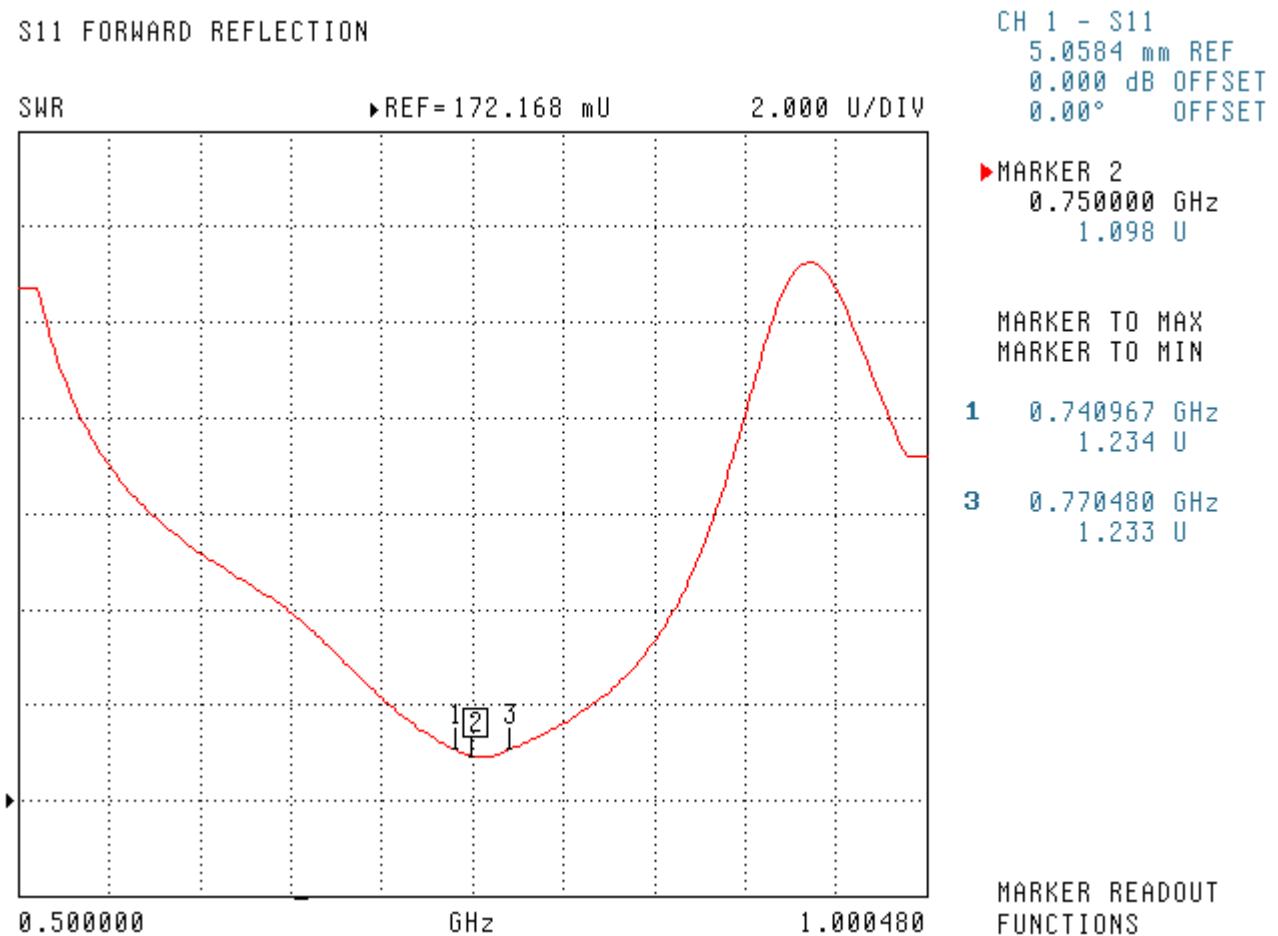
Body Tissue 750MHz	Measured
Dielectric constant, ϵ_r	57.07
Conductivity, σ [S/m]	1.02

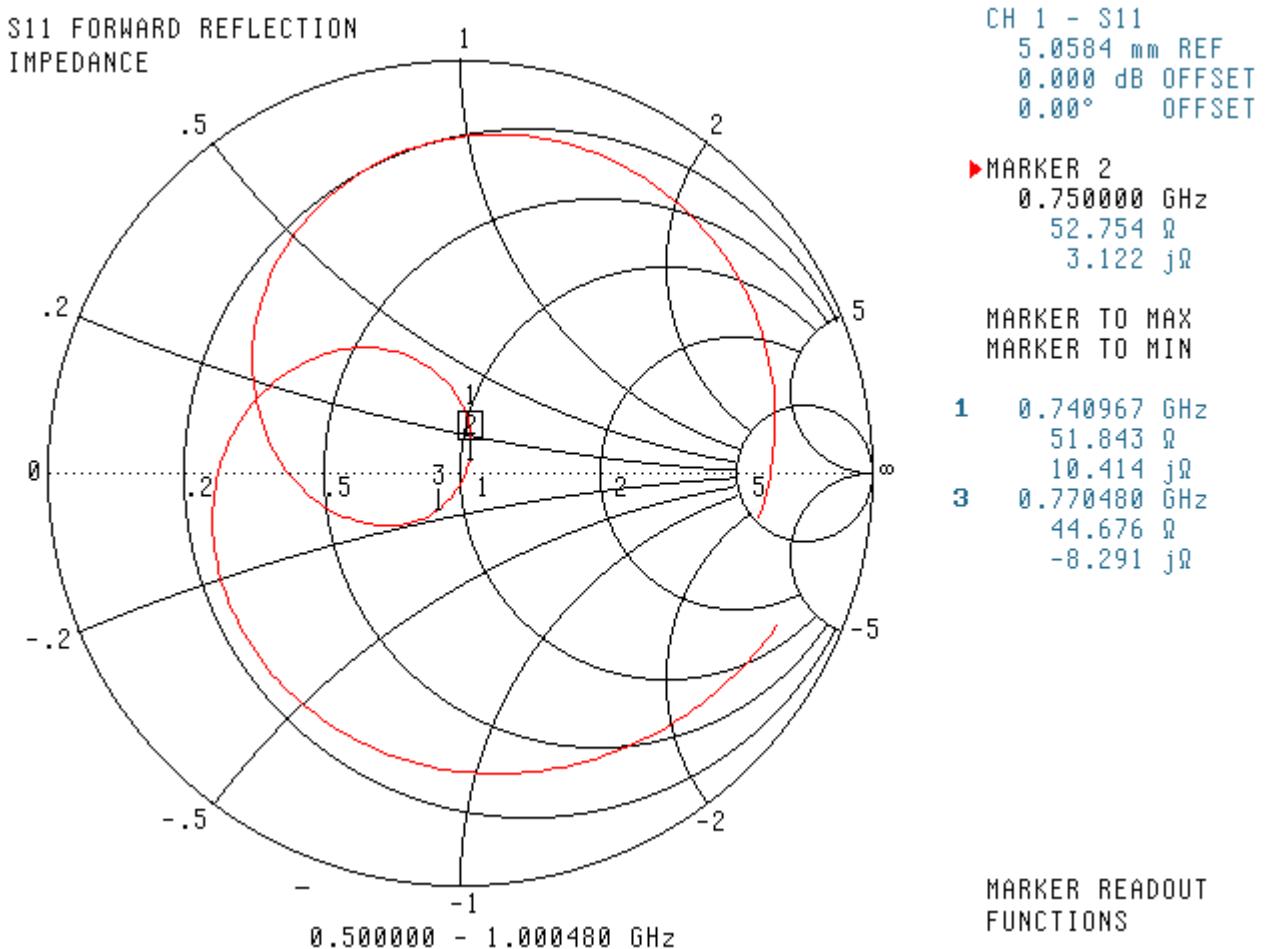
Electrical Calibration

Test	Result
S11 RL	-27.875dB
SWR	1.098U
Impedance	52.754 Ω

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

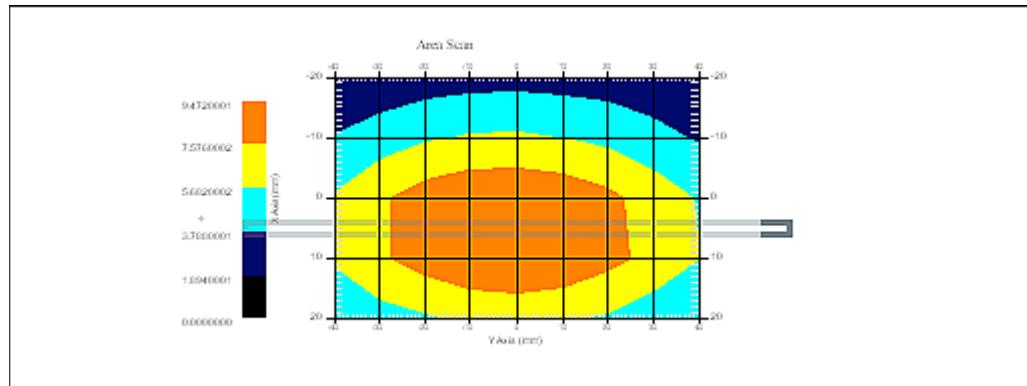
S11 Parameter Return Loss

SWR

Smith Chart Dipole Impedance

System Validation Results Using the Electrically Calibrated Dipole

Body Tissue Frequency	1 Gram	10 Gram	Peak Above Feed Point
750 MHz	8.7	5.64	12.9



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 2010.

Usage of SAR dipoles calibrated less than 2 years ago but more than 1 year ago were confirmed in maintaining return loss (< -20 dB, within 20% of prior calibration) and impedance (within 5 ohm from prior calibration) requirements per extended calibrations in KDB Publication 450824:

ALS-D-750-S-2 SN: 177-00501				
Date of Measurement	Return Loss (dB)	Δ%	Impedance (Ω)	Δ%
11/15/2010	-27.875		52.754	
11/17/2011	-26.342	-5.5	50.978	-3.4

NCL CALIBRATION LABORATORIES

Calibration File No: DC-1114
Project Number: RFEL-835-Dipole-5480

C E R T I F I C A T E O F C A L I B R A T I O N

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

Manufacturer: APREL Laboratories

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

Frequency: 835 MHz Head

Serial No: 180-00561

Customer: RFEL

Calibrated: 14th January 2010
Released on: 19th January 2010

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

Released By: _____

NCL CALIBRATION LABORATORIES

51 SPECTRUM WAY
NEPEAN, ONTARIO
CANADA K2R 1E6

Division of APREL Lab.
TEL: (613) 820-4988
FAX: (613) 820-4162

NCL Calibration Laboratories

Division of APREL Laboratories.

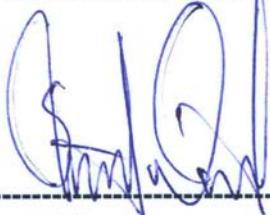
Conditions

Dipole 180-00561 was a new 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.

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

Calibration Results Summary

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

Mechanical Dimensions

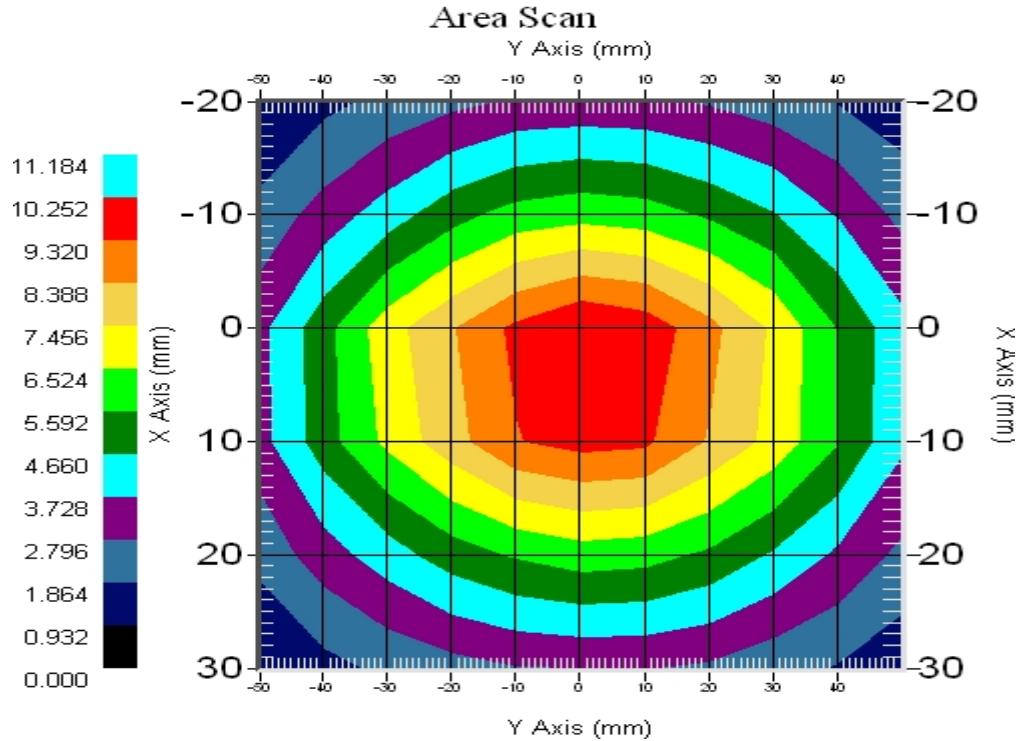
Length: 161.0 mm
Height: 89.8 mm

Electrical Specification

SWR: 1.009U
Return Loss: -47.751 dB
Impedance: 50.065 Ω

System Validation Results

Frequency	1 Gram	10 Gram	Peak
835 MHz	9.49	6.1	14.21



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 180-00561. 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 2225.

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 180-00561 was a new calibration.

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)

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	162.1 mm	89.8 mm

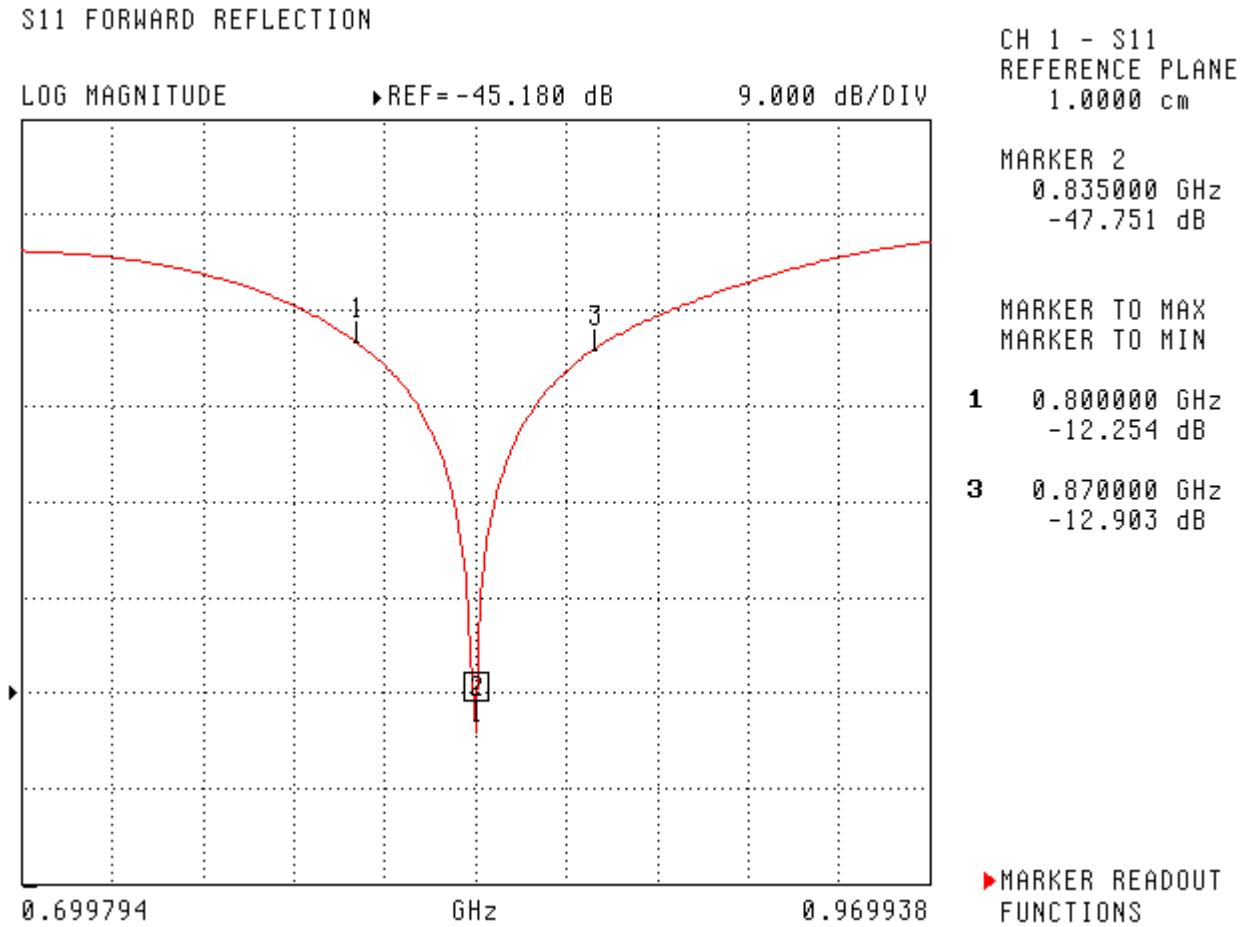
Tissue Validation

Head Tissue 835MHz	Measured
Dielectric constant, ϵ_r	41.54
Conductivity, σ [S/m]	0.91

Electrical Calibration

Test	Result
S11 RL	-47.751dB
SWR	1.009U
Impedance	50.065 Ω

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

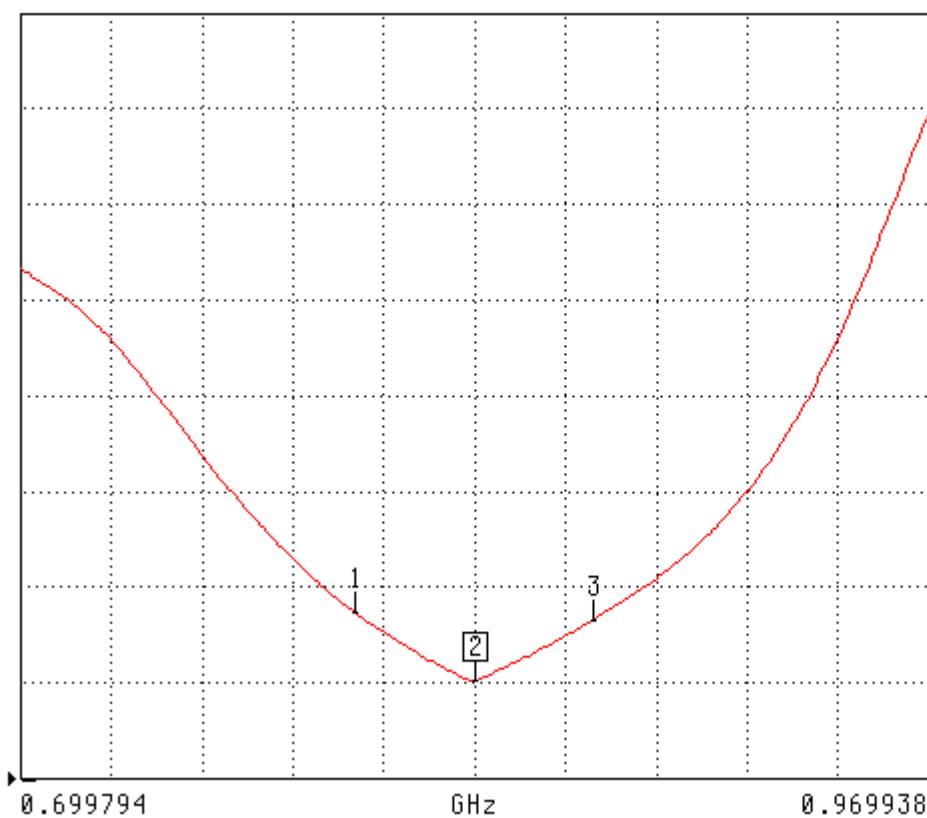
S11 Parameter Return Loss

SWR**S11 FORWARD REFLECTION**

SWR

►REF = 97.512 mU

900.000 mU/DIV



CH 1 - S11
REFERENCE PLANE
1.0000 cm

MARKER 2
0.835000 GHz
1.009 U

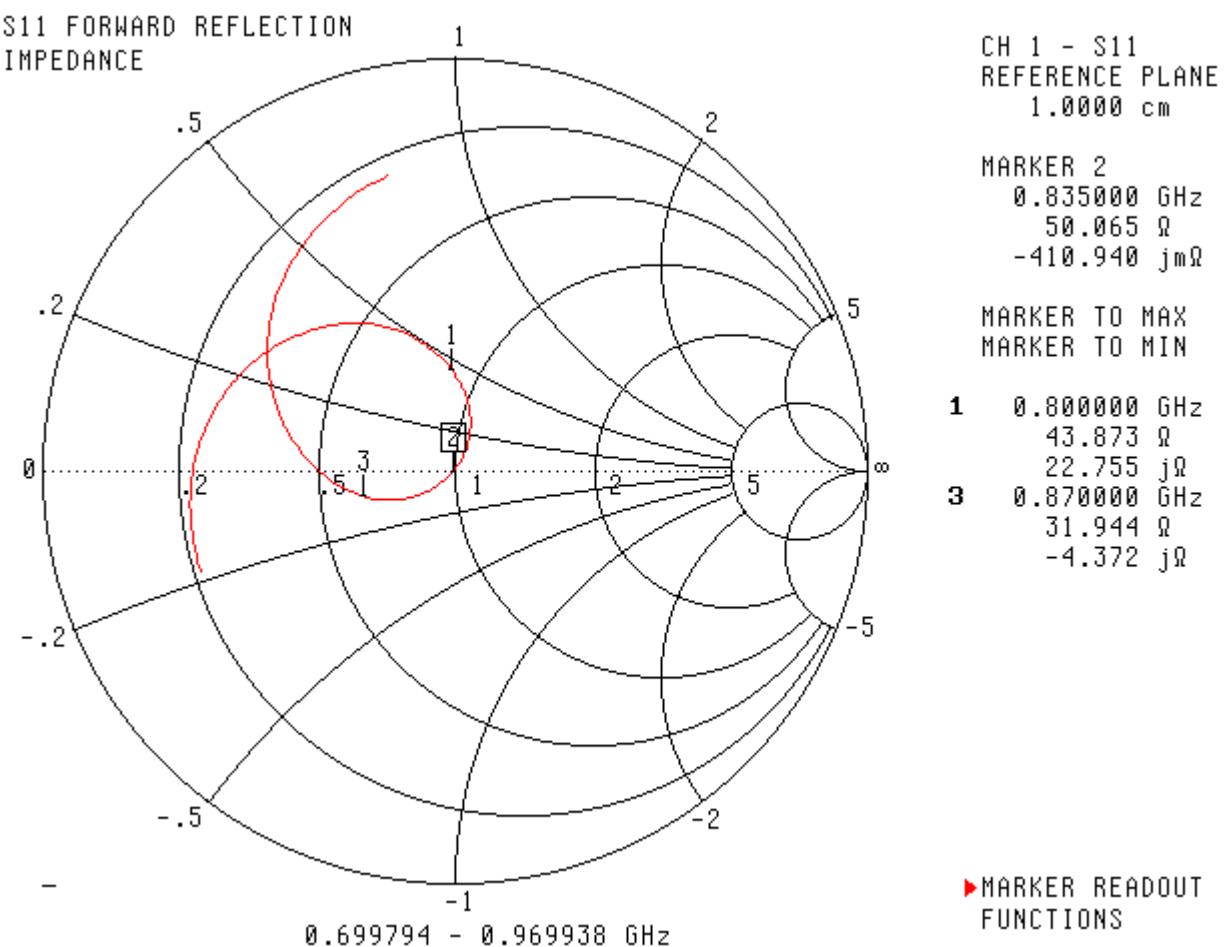
MARKER TO MAX
MARKER TO MIN

1 0.800000 GHz
1.645 U

3 0.870000 GHz
1.585 U

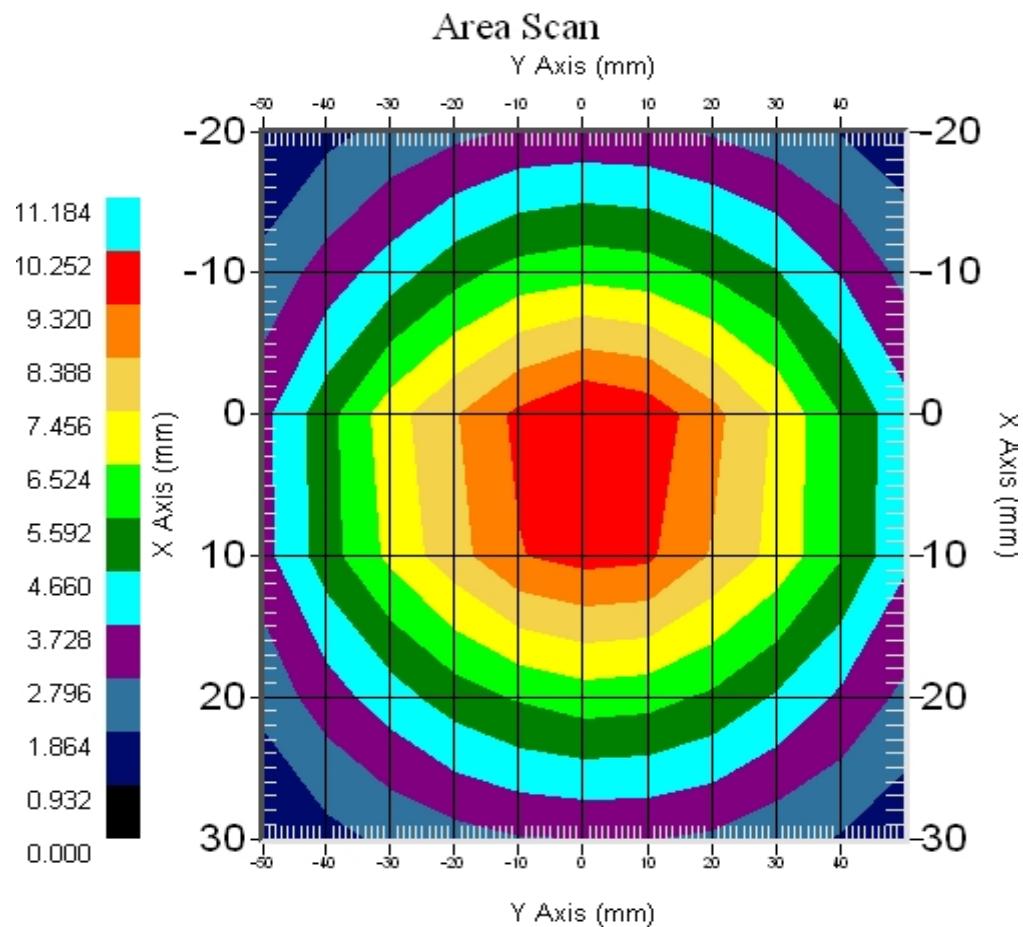
►MARKER READOUT
FUNCTIONS

Smith Chart Dipole Impedance



System Validation Results Using the Electrically Calibrated Dipole

Head Tissue Frequency	1 Gram	10 Gram	Peak Above Feed Point
835 MHz	9.49	6.1	14.21



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 2009.

Extended Calibration

Usage of SAR dipoles calibrated less than 2 years ago but more than 1 year ago were confirmed in maintaining return loss (< -20 dB, within 20% of prior calibration) and impedance (within 5 ohm from prior calibration) requirements per extended calibrations in KDB Publication 450824:

ALS-D-835-S-2 SN: 180-00561				
Date of Measurement	Return Loss (dB)	Δ%	Impedance (Ω)	Δ%
1/14/2010	-47.751		50.065	
1/12/2011	-45.973	-3.7	48.679	-2.8

NCL CALIBRATION LABORATORIES

Calibration File No: DC-1179
Project Number: RFEL-DC-835B-5549

C E R T I F I C A T E O F C A L I B R A T I O N

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

Manufacturer: APREL Laboratories

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

Frequency: 835 MHz Body

Serial No: 180-00561

Customer: RFEL

Body Calibration

Calibrated: 16th November 2010
Released on: 16th November 2010

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

Released By: _____

NCL CALIBRATION LABORATORIES

51 SPECTRUM WAY
NEPEAN, ONTARIO
CANADA K2R 1E6

Division of APREL Lab.
TEL: (613) 820-4988
FAX: (613) 820-4162

NCL Calibration Laboratories

Division of APREL Laboratories.

Conditions

Dipole 180-00561 was a new 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.

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

Calibration Results Summary

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

Mechanical Dimensions

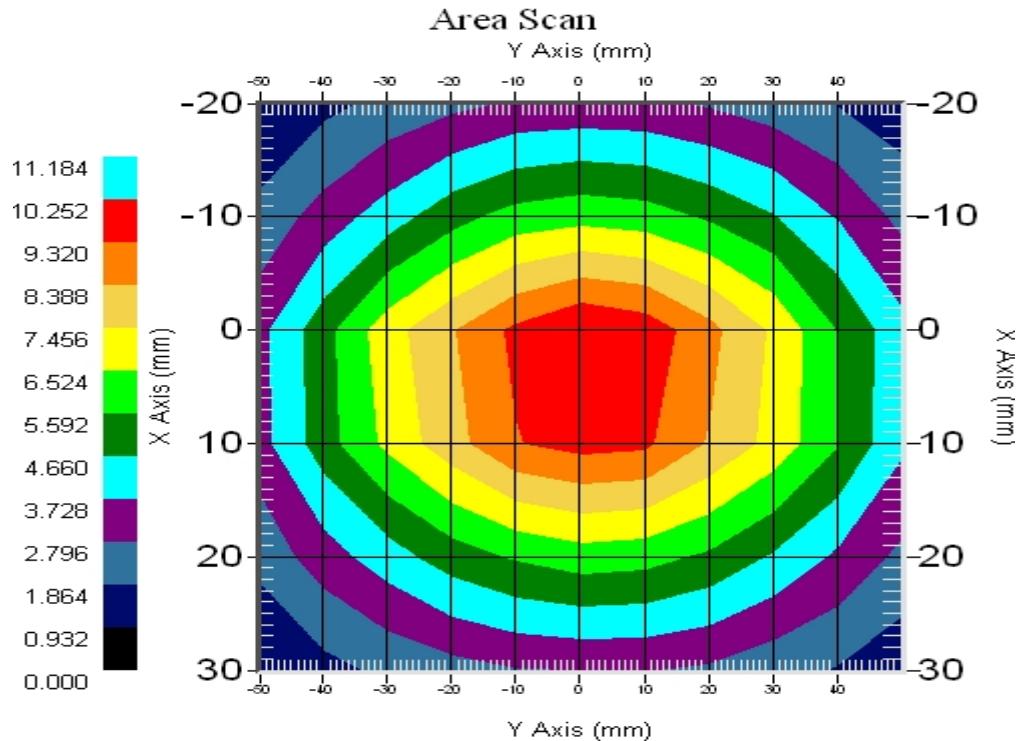
Length: 161.0 mm
Height: 89.8 mm

Electrical Specification

SWR: 1.143U
Return Loss: -24.058 dB
Impedance: 55.519 Ω

System Validation Results

Frequency	1 Gram	10 Gram	Peak
835 MHz	9.81	6.3	14.87



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 180-00561. 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 2225.

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 180-00561 was a new calibration.

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)

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	162.1 mm	89.8 mm

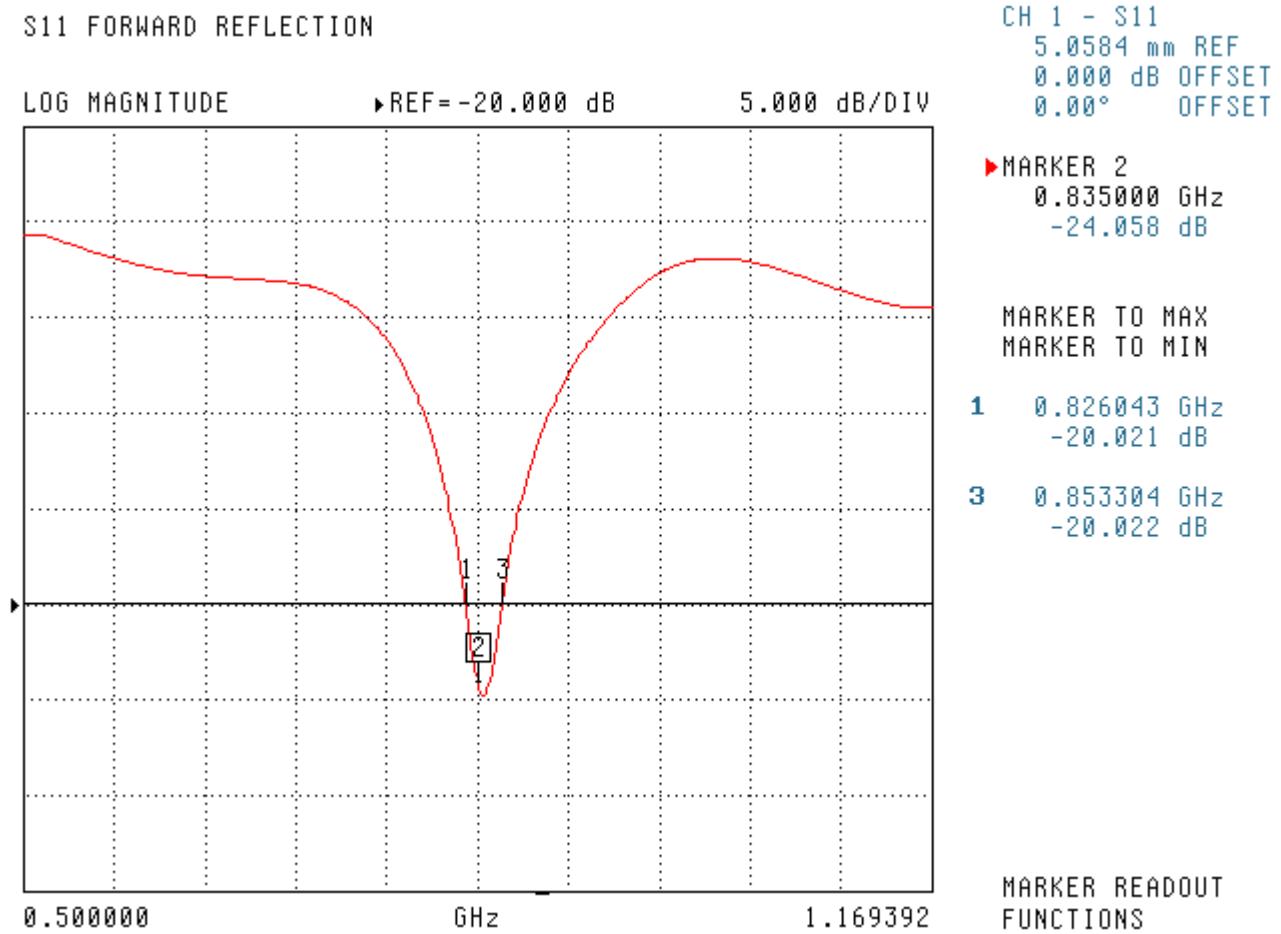
Tissue Validation

Body Tissue 835MHz	Measured
Dielectric constant, ϵ_r	57.19
Conductivity, σ [S/m]	0.97

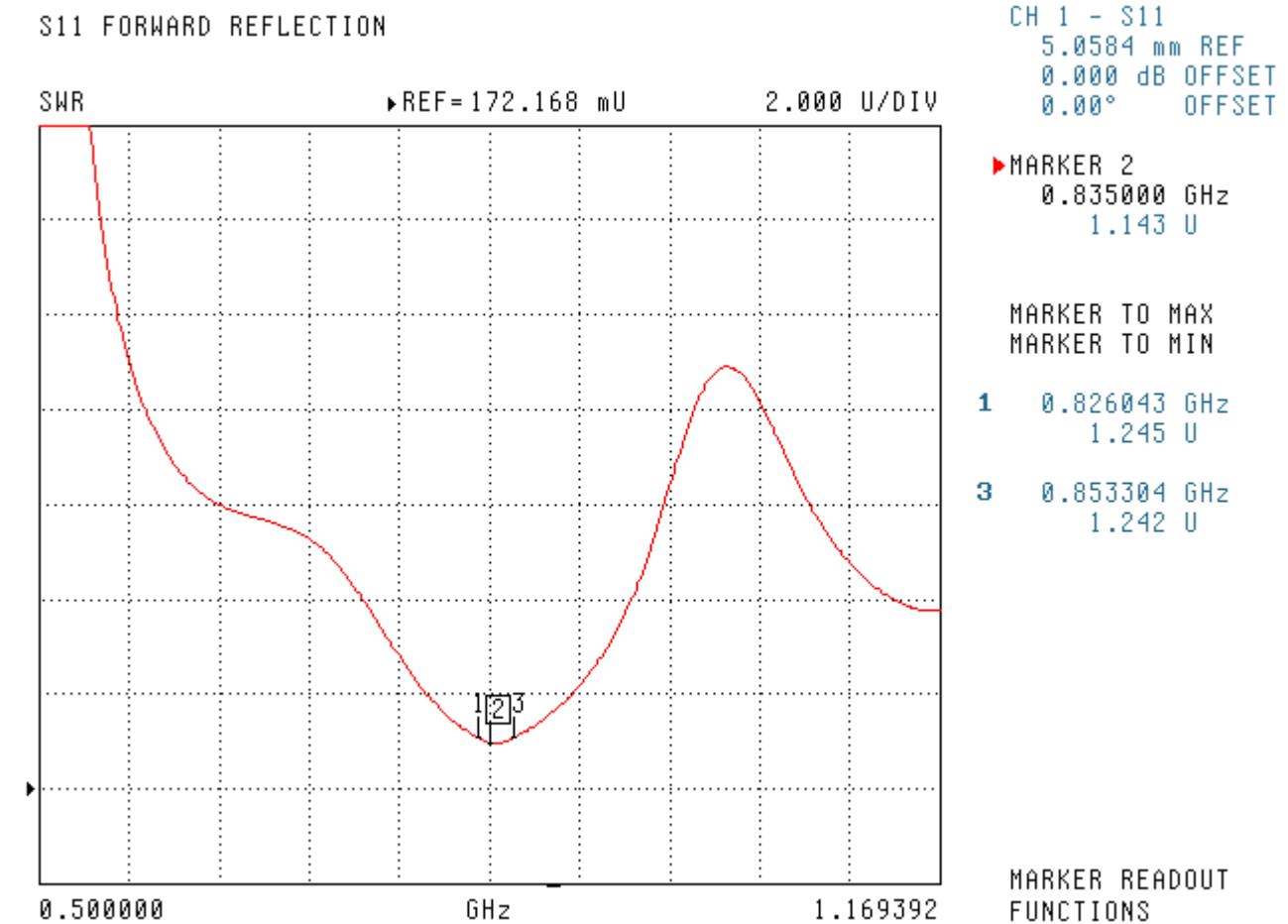
Electrical Calibration

Test	Result
S11 RL	-24.058dB
SWR	1.143U
Impedance	55.519 Ω

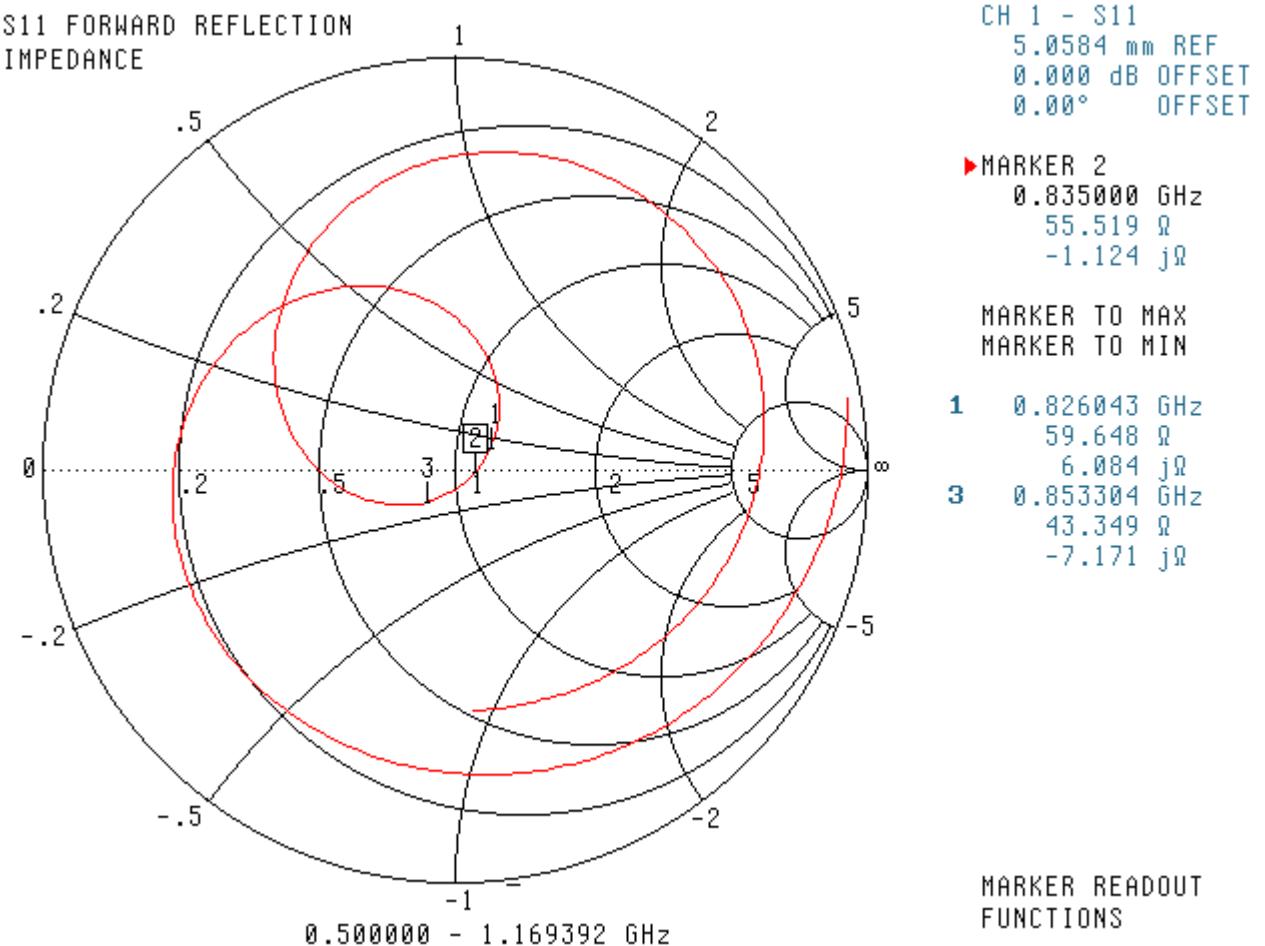
The Following Graphs are the results as displayed on the Vector Network Analyzer.

S11 Parameter Return Loss

SWR

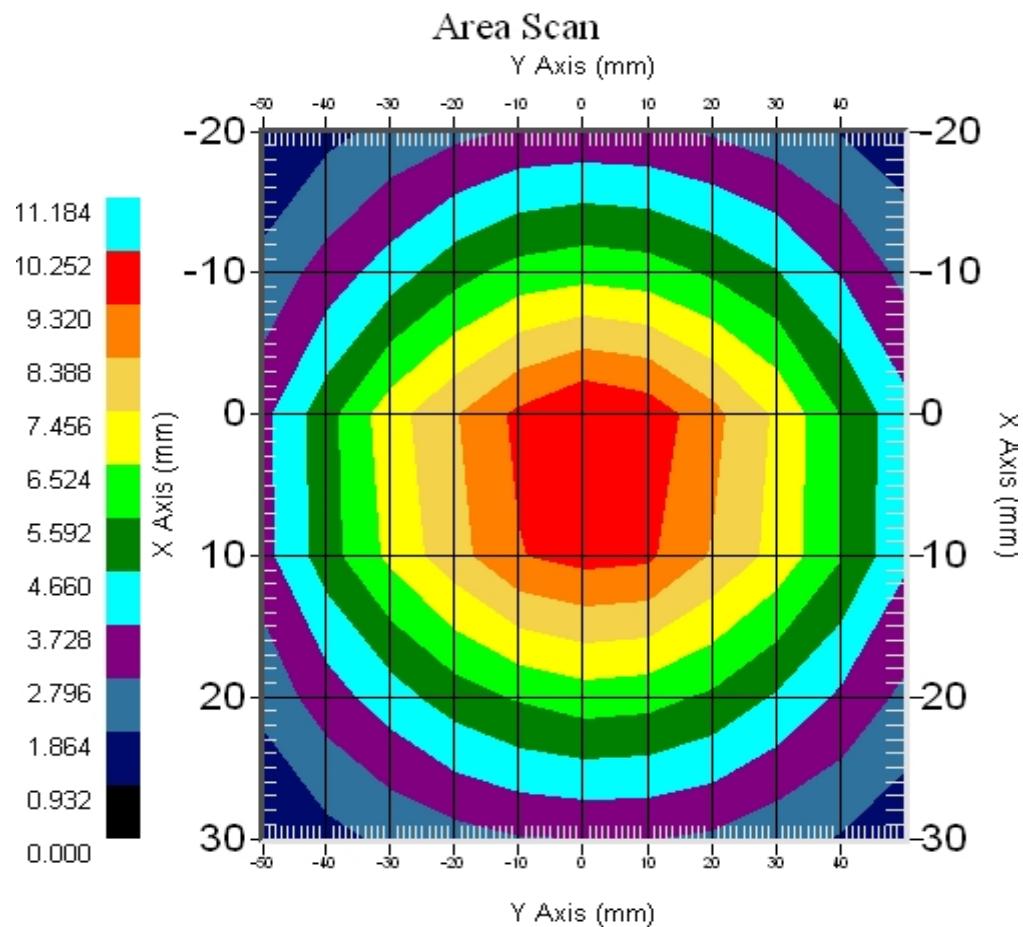


Smith Chart Dipole Impedance



System Validation Results Using the Electrically Calibrated Dipole

Body Tissue Frequency	1 Gram	10 Gram	Peak Above Feed Point
835 MHz	9.81	6.3	14.87



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 2010.

Usage of SAR dipoles calibrated less than 2 years ago but more than 1 year ago were confirmed in maintaining return loss (< -20 dB, within 20% of prior calibration) and impedance (within 5 ohm from prior calibration) requirements per extended calibrations in KDB Publication 450824:

ALS-D-835-S-2 SN: 180-00561				
Date of Measurement	Return Loss (dB)	Δ%	Impedance (Ω)	Δ%
11/16/2010	-24.058		55.519	
11/17/2011	-25.391	5.5	54.652	-1.6

Appendix F – Phantom Calibration Data Sheets

RF EXPOSURE LAB, LLC

Calibration File No.: CAL.20080601

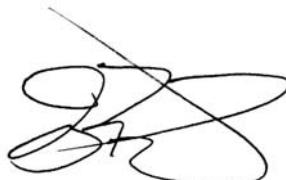
C E R T I F I C A T E O F C A L I B R A T I O N

It is certified that the equipment identified below has been calibrated in the
RF Exposure Lab, LLC facility by qualified personnel following recognized
Procedures and using transfer standards traceable to National Standards.

Thickness of the Phantom is 6 mm \pm 10%
Size : 600 mm x 450 mm x 200 mm
Ellipse of 2mm Thickness: 350 mm x 200 mm
Material : High Density Polyethylene

Resolution: 0.01 mm
Stability: OK

Calibrated to: 0.0 mm
Accuracy: < 0.1 mm



Calibrated by: _____

Date: June 10, 2008

 **RF Exposure Lab**

802 N. Twin Oaks Valley Rd., Suite 105

San Marcos, CA 92069

Phone: (760) 471-2100

Fax: (760) 471-2121