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SAR Test Report

Report Number: M090727

Test Sample: SIMOCO Push To Talk Transmitter

Model Number: SRP9180 TU

Tested For: Comgroup Australia

Date of Issue: 7th August 2009

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SAR EVALUATION

SIMOCO Push To Talk Transmitter, **Model:** SRP9180 TU **Report Number:** M090727

1.0 GENERAL INFORMATION

Test Sample:	SIMOCO Push To Talk Transmitter
Model Number:	SRP9180 TU
Serial Number:	ET9VX09170038
FCC ID:	STZSRP9170TU
IC ID:	7068A-P9170TU
Manufacturer:	TMC Radio
Device Category:	Portable Transmitter
Test Device:	Production Unit / Prototype Sample
RF exposure Category:	Occupational/Aware User
Tested for:	Comgroup Australia
Address:	1270 Ferntree Gully Road Scoresby Victoria 3179
Contact:	Robert Stowell
Phone:	(03) 9730 3800
Fax:	(03) 9730 3968
Email:	bstowell@tmcradio.com
Test Standard/s:	Evaluating Compliance with FCC Guidelines For Human Exposure to Radiofrequency Electromagnetic Fields Supplement C (Edition 01-01) to OET Bulletin 65 (Edition 97-01) Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) RSS-102 Issue 2 November 2005
Statement Of Compliance:	The SIMOCO Push To Talk Transmitter, model SRP9180 TU. Complied with the FCC and Canadian Occupational/Controlled RF exposure limits of 8.0mW/g per requirements of 47CFR2.1093(d).
Test Date:	27th July 2009
Test Officers:	**Peter Jakubiec** **Jason Cameron**
Authorised Signature:	Peter Jakubiec

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2.0 DESCRIPTION OF DEVICE

2.1 Description of Test Sample

The device tested was a SIMOCO Push To Talk Transmitter, Model: SRP9180 TU operating in 450 MHz frequency band. It has two types of external fixed length antennas and was tested in the Face Frontal and Belt Clip configurations of the phantom.

Operating Mode during Testing	: Continuous Wave 100% duty cycle
Operating Mode production sample	: 50% duty cycle
Modulation:	: FM
Device Power Rating for test sample and identical production unit	: 5W
Device Dimensions (HxWxD)	: 147mm x 60mm x 35mm
Antenna types	: Whip : Compressed Helical
Applicable Head Configurations	: Face Frontal
Applicable Body Configurations	: Belt Clip Position
Battery Options	: 7.2V 2200mAh Li-ion Battery Pack

2.2 Test sample Accessories

2.2.1 Battery Types

A 7.2V 2200mAh Li-ion Battery Pack is used to power the DUT. The maximum rated power is 5W. SAR measurements were performed with a standard 7.2V battery.

2.2.2 Belt Clip

One type of belt clip is sold with the device. The belt clip is fixed to the back of the device and provides a spacing of 10mm between the device and flat phantom. This belt-clip was attached to the device during testing in the Belt-Clip position.

2.3 Test Signal, Frequency and Output Power

The DUT is a multi-channel device that operates in the 450 MHz frequency band. The frequency range is 400 MHz to 480 MHz. The transmitter was configured into a test mode that ensured a continuos RF transmission for the duration of each SAR scan. The device transmission characteristics were also monitored during testing to confirm the device was transmitting continuously. The device has a headset output to which a supplied Hands free speaker/microphone was connected during all testing in the belt-clip position. Excluding the speaker/microphone accessory there were no wires or other connections to the Handheld Transceiver during the SAR measurements.

Table: Test Frequencies

Frequency Range	Traffic Channels	Nominal Power (dBm)
400 – 480 MHz	0, 1 and 2	37

2.4 Conducted Power Measurements

The conducted power of the EUT was measured in the 400 MHz to 480 MHz frequency range with a calibrated Power Meter. The results of this measurement are listed in table below.

Table: Frequency and Output Power

Channel	Channel Frequency MHz	Battery Type	Maximum Conducted Output Power dBm
0	400MHz	7.2V Li-ion	37.07
1	440MHz	7.2V Li-ion	37.04
2	480MHz	7.2V Li-ion	37.03

2.4 Battery Status

The device battery was fully charged prior to commencement of measurement. Each SAR test was completed within 30 minutes. The battery condition was monitored by measuring the conducted RF at the antenna port before the commencement of each test and again after the completion of the test.

Table: Battery Details

Battery #1:	7.2V Li-ion Reachargeable	**Battery #2:**	7.2V Li-ion Reachargeable
Model No.:	PAR-9180BATL2x	**Model No.:**	PAR-9180BATL2x

2.5 DETAILS OF TEST LABORATORY

2.5.1 Location

EMC Technologies Pty Ltd
176 Harrick Road
Keilor Park, (Melbourne) Victoria
Australia 3042

Telephone: +61 3 9365 1000
Facsimile: +61 3 9331 7455
email: melb@emctech.com.au
website: www.emctech.com.au

2.5.2 Accreditations

EMC Technologies Pty. Ltd. is accredited by the National Association of Testing Authorities, Australia (NATA). **NATA Accredited Laboratory Number: 5292**

EMC Technologies Pty Ltd is NATA accredited for the following standards:

AS/NZS 2772.1: RF and microwave radiation hazard measurement

ACA: Radio communications (Electromagnetic Radiation - Human Exposure) Standard 2003

FCC: Guidelines for Human Exposure to RF Electromagnetic Field OET65C 01/01

CENELEC: ES59005: 1998

EN 50360: 2001 Product standard to demonstrate the compliance of mobile phones with the basic restrictions related to human exposure to electromagnetic fields (300 MHz – 3 GHz)

EN 50361: 2001 Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300MHz – 3GHz)

IEEE 1528: 2003 Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head Due to Wireless Communications Devices: Measurement Techniques.

Refer to NATA website www.nata.asn.au for the full scope of accreditation.

2.5.3 Environmental Factors

The measurements were performed in a shielded room with no background network signals. The temperature in the laboratory was controlled to within 21 ± 1 °C, the humidity was 33%. The liquid parameters were measured prior to the commencement of the tests. Tests were performed to check that reflections within the environment did not influence the SAR measurements. The noise floor of the DASY4 SAR measurement system using the SN1380 probe is less than 5μV in both air and liquid mediums.

3.0 DESCRIPTION OF SAR MEASUREMENT SYSTEM

3.1 Probe Positioning System

The measurements were performed with the state of the art automated near-field scanning system **DASY4 Version V4.7 Build 53** from Schmid & Partner Engineering AG (SPEAG). The system is based on a high precision 6-axis robot (working range greater that 1.1m), which positions the SAR measurement probes with a positional repeatability of better than ±0.02 mm. The DASY4 fully complies with the OET65 C (01-01), IEEE 1528 and EN50361SAR measurement requirements.

3.2 E-Field Probe Type and Performance

The SAR measurements were conducted with the dosimetric probe ET3DV6 Serial: 1380 (manufactured by SPEAG) designed in the classical triangular configuration and optimised for dosimetric evaluation. The probe has been calibrated and found to be accurate to better than ±0.25 dB. The probe is suitable for measurements close to material discontinuity at the surface of the phantom. The sensors of the probe are directly loaded with Schottky diodes and connected via highly resistive lines (length = 300 mm) to the data acquisition unit.

3.3 Data Acquisition Electronics

The data acquisition electronics (DAE3) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. The input impedance of the DAE3 box is 200 MΩ; the inputs are symmetrical and floating. Common mode rejection is above 80dB.Transmission to the PC-card is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

The mechanical probe-mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

3.4 Calibration and Validation Procedures and Data

Prior to the SAR assessment, the system validation kit was used to verify that the DASY4 was operating within its specifications. The validation was performed at 450 MHz with the SPEAG D450V2 calibrated dipole.

The validation dipoles are highly symmetric and matched at the centre frequency for the specified liquid and distance to the phantom. The accurate distance between the liquid surface and the dipole centre is achieved with a distance holder that snaps onto the dipole.

System validation is performed by feeding a known power level into a reference dipole, set at a know distance from the phantom. The measured SAR is compared to the theoretically derived level.

3.4.1 Validation Results @ 450 MHz

The following table lists the dielectric properties of the tissue simulating liquid measured prior to SAR validation. The results of the validation are listed in columns 4 and 5. The forward power into the reference dipole for each SAR validation was adjusted to 400mW.

Table: Validation Results (Dipole: SPEAG D450V2 SN: 1009)

1. Validation Date	2. ∈r (measured)	3. σ (mho/m) (measured)	4. Measured SAR 1g (mW/g)	5. Measured SAR 10g (mW/g)
27th July 2009	43.7	0.88	2.12	1.39

3.4.2 Deviation from reference validation values

The reference SAR values are derived using a reference dipole and flat phantom suitable for a centre frequency of 450 MHz. These reference SAR values are obtained from the IEEE Std 1528-2003 and are normalized to 1W.

The SPEAG calibration reference SAR value is the SAR validation result obtained in a specific dielectric liquid using the validation dipole (D450V2) during calibration. The measured one-gram SAR should be within 10% of the expected target reference values shown in table below.

Table: Deviation from reference validation values

Frequency and Date	Measured SAR 1g (mW/g)	Measured SAR 1g (Normalized to 1W)	SPEAG Calibration reference SAR Value 1g (mW/g)	Deviation From SPEAG (%)	IEEE Std 1528 reference SAR value 1g (mW/g)	Deviation From IEEE (%)
27th July 2009 450 MHz	2.12	5.30	4.96	6.85	4.9	8.16

NOTE: All reference validation values are referenced to 1W input power.

3.4.3 Liquid Depth 15cm

During the SAR measurement process the liquid level was maintained to a level of 15cm with a tolerance of ±0.5cm. The following photo shows the depth of the liquid maintained during the testing.

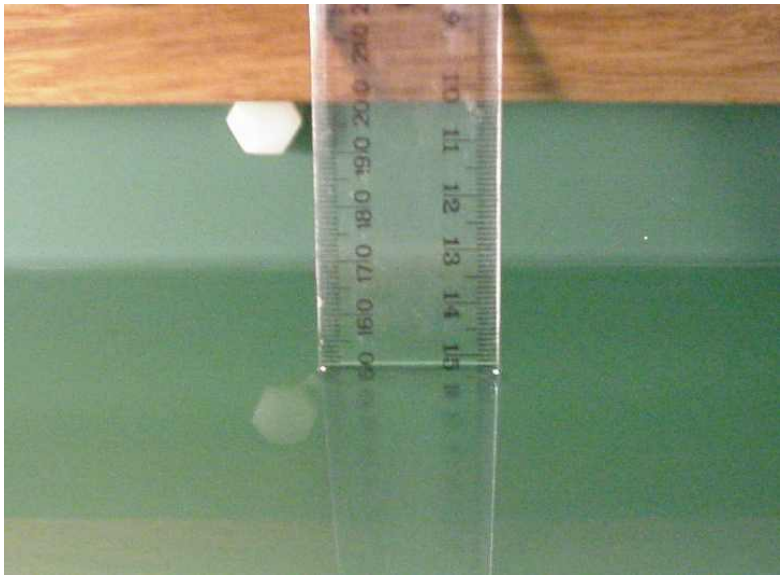


Photo of liquid Depth in Flat Phantom

3.5 Phantom Properties (Size, Shape, Shell Thickness)

The phantom used during the validations was the "Flat Phantom" model: PO1A V4.4e from SPEAG. It is a strictly validation phantom with a single thickness of 6mm and was filled with the required tissue simulating liquid. The flat phantom support structures were all non-metallic and spaced more than one device width away in transverse directions.

For SAR testing in the Face Frontal and Belt Clip positions an AndreT Flat Phantom V9.1 was used. The phantom thickness is 2.0mm +/-0.2 mm and the phantom was filled with the required tissue simulating liquid. Table below provides a summary of the measured phantom properties

Table: Phantom Properties (300MHz-2500MHz)

Phantom Properties	Requirement for specific EUT	Measured
Depth of Phantom	>150mm	200mm
Width of flat section	120mm	340mm
Length of flat section	630mm	900mm
Thickness of flat section	2.0mm +/-0.2mm (flat section)	2.08 – 2.20mm
Dielectric Constant	<5.0	4.603 @ 300MHz (worst-case frequency)
Loss Tangent	<0.05	0.0379 @ 2500MHz (worst-case frequency)

Photo 1: Flat_Phantom V9.1 2mm

3.6 Tissue Material Properties

The dielectric parameters of the simulating liquid were measured prior to SAR assessment using the HP85070A dielectric probe kit and HP8753ES Network Analyser. The actual dielectric parameters are shown in the following table.

Table: Measured Brain Simulating Liquid Dielectric Values

Frequency Band	∈r (measured range)	∈r (target)	σ (mho/m) (measured range)	σ (target)	ρ kg/m^3
400 MHz	44.9	43.5 ±5% (41.3 – 45.7)	0.84	0.87 ±5% (0.82 – 0.91)	1000
440 MHz	43.9	43.5 ±5% (41.3 – 45.7)	0.87	0.87 ±5% (0.82 – 0.91)	1000
480 MHz	43.1	43.5 ±5% (41.3 – 45.7)	0.91	0.87 ±5% (0.82 – 0.91)	1000

Table: Measured Body Simulating Liquid Dielectric Values

Frequency Band	∈r (measured range)	∈r (target)	σ (mho/m) (measured range)	σ (target)	ρ kg/m^3
400 MHz	57.3	56.7 ±5% (53.9 – 59.5)	0.92	0.94 ±5% (0.89 – 0.99)	1000
440 MHz	56.6	56.7 ±5% (53.9 – 59.5)	0.95	0.94 ±5% (0.89 – 0.99)	1000
480 MHz	56.1	56.7 ±5% (53.9 – 59.5)	0.99	0.94 ±5% (0.89 – 0.99)	1000

NOTE: The brain and muscle liquid parameters were within the required tolerances of ±5%.

3.6.1 Liquid Temperature and Humidity

The humidity and dielectric/ambient temperatures are recorded during the assessment of the tissue material dielectric parameters. The difference between the ambient temperature of the liquid during the dielectric measurement and the temperature during tests was less than |2|°C.

Table: Temperature and Humidity recorded for each day

Date	Ambient Temperature (°C)	Liquid Temperature (°C)	Humidity (%)
27th July 2009	21.8	21.4	33

3.7 Simulated Tissue Composition Used for SAR Test

The tissue simulating liquids are created prior to the SAR evaluation and often require slight modification each day to obtain the correct dielectric parameters.

Table: Tissue Type: Brain @ 450MHz
Volume of Liquid: 60 Litres

Approximate Composition	% By Weight
Distilled Water	38.56
Salt	3.95
Sugar	56.32
HEC	0.98
Bactericide	0.19

Table: Tissue Type: Muscle @ 450MHz
Volume of Liquid: 60 Litres

Approximate Composition	% By Weight
Distilled Water	51.16
Salt	1.49
Sugar	46.78
HEC	0.52
Bactericide	0.05

3.8 Device Holder for DASY4

The DASY4 device holder supplied by SPEAG is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The rotation centres for both scales is the ear opening. Thus the device needs no repositioning when changing the angles.

The DASY4 device holder is made of low-loss material having the following dielectric parameters: relative permittivity ε=3 and loss tangent δ=0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, to reduce the influence on the clamp on the test results.

Refer to Appendix A2-A3 for photographs of device positioning

4.0 SAR MEASUREMENT PROCEDURE USING DASY4

The SAR evaluation was performed with the SPEAG DASY4 system. A summary of the procedure follows:

a) A measurement of the conducted power value at the antenna port is used as a reference value for assessing the power drop of the EUT. Also a measurement of the SAR value at a fixed location is used. The power is measured at the start of the test and then again at the end of the test.

b) The SAR distribution at the exposed side of the head *or* the flat section of the flat phantom is measured at a distance of 3.9 mm from the inner surface of the shell. The area covers the entire dimension of the head and the horizontal grid spacing is 15 mm x 15 mm. The actual Area Scan has dimensions of 120 mm x 345 mm surrounding the test device hot spot location. Based on this data, the area of the maximum absorption is determined by Spline interpolation. A pre-scan is performed for each phantom configuration to ensure that entire hot spot is identified.

c) Around this point, a volume of 30 mm x 30 mm x 30 mm is assessed by measuring 7 x 7 x 7 points. On the basis of this data set, the spatial peak SAR value is evaluated with the following procedure:

   (i) The data at the surface are extrapolated, since the centre of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm. The extrapolation is based on a least square algorithm. A polynomial of the fourth order is calculated through the points in z-axes. This polynomial is then used to evaluate the points between the surface and the probe tip.

   (ii) The maximum interpolated value is searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g and 10 g) are computed using the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one-dimensional splines with the “Not a knot”- condition (in x, y and z-direction). The volume is integrated with the trapezoidal – algorithm. One thousand points (10 x 10 x 10) are interpolated to calculate the averages.

   (iii) All neighbouring volumes are evaluated until no neighbouring volume with a higher average value is found.

   (iv) The SAR value at the same location as in Step (a) is again measured

5.0 MEASUREMENT UNCERTAINTY

The uncertainty analysis is based on the template listed in the IEEE Std 1528-2003 for both Handset SAR tests and Validation uncertainty. The measurement uncertainty of a specific device is evaluated independently and the total uncertainty for both evaluations (95% confidence level) must be less than 30%.

Table: Uncertainty Budget for DASY4 Version V4.7 Build 53 – EUT SAR test

Uncertainty Component	Tol. (6%)	Prob. Dist.	Div.	C_i (1g)	C_i (10g)	1g u_i (6%)	10g u_i (6%)	v_i
Measurement System								
Probe Calibration	6.65	N	1	1	1	6.7	6.7	∞
Axial Isotropy	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Hemispherical Isotropy	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effects	1	R	1.73	1	1	0.6	0.6	∞
Linearity	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	1	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	0.3	N	1	1	1	0.3	0.3	∞
Response Time	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	2.6	R	1.73	1	1	1.5	1.5	∞
RF Ambient Noise	3	R	1.73	1	1	1.7	1.7	∞
RF Ambient Reflections	3	R	1.73	1	1	1.7	1.7	∞
Probe Positioner	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning	2.9	R	1.73	1	1	1.7	1.7	∞
Max. SAR Eval.	1	R	1.73	1	1	0.6	0.6	∞
Test Sample Related								
Test Sample Positioning	1.61	N	1	1	1	1.6	1.6	11
Device Holder Uncertainty	3.6	N	1	1	1	3.6	3.6	7
Output Power Variation – SAR Drift Measurement	9.14	R	1.73	1	1	5.3	5.3	∞
Phantom and Setup								
Phantom Uncertainty	4	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity – Deviation from target values	5	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity – Measurement uncertainty	2.5	N	1.00	0.64	0.43	1.6	1.1	5
Liquid Permittivity – Deviation from target values	5	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity – Measurement uncertainty	2.5	N	1.00	0.6	0.49	1.5	1.2	5
Combined standard Uncertainty		RSS				12.0	11.7	154
Expanded Uncertainty (95% CONFIDENCE LEVEL)		k=2				23.9	23.49	

Estimated total measurement uncertainty for the DASY4 measurement system was ±12.0%. The extended uncertainty (K = 2) was assessed to be ±23.9% based on 95% confidence level. The uncertainty is not added to the measurement result.

Table: Uncertainty Budget for DASY4 Version V4.7 Build 53 - Validation

Uncertainty Component	Tol. (6%)	Prob. Dist.	Div.	C_i (1g)	C_i (10g)	1g u_i (6%)	10g u_i (6%)	v_i
Measurement System								
Probe Calibration	6.65	N	1	1	1	6.7	6.7	∞
Axial Isotropy	4.7	R	1.73	1	1	2.7	2.7	∞
Hemispherical Isotropy	9.6	R	1.73	0	0	0.0	0.0	∞
Boundary Effects	1	R	1.73	1	1	0.6	0.6	∞
Linearity	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	1	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	0.3	N	1	1	1	0.3	0.3	∞
Response Time	0	R	1.73	1	1	0.0	0.0	∞
Integration Time	0	R	1.73	1	1	0.0	0.0	∞
RF Ambient Noise	3	R	1.73	1	1	1.7	1.7	∞
RF Ambient Reflections	3	R	1.73	1	1	1.7	1.7	∞
Probe Positioner	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning	2.9	R	1.73	1	1	1.7	1.7	∞
Max. SAR Eval.	1	R	1.73	1	1	0.6	0.6	∞
Dipole								
Dipole Axis to Liquid Distance	2	N	1.73	1	1	1.2	1.2	11
Input Power and SAR drift meas.	4.7	R	1.73	1	1	2.7	2.7	∞
Phantom and Tissue Param.								
Phantom Uncertainty	4	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity – Deviation from target values	5	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity – Measurement uncertainty	2.5	N	1.00	0.64	0.43	1.6	1.1	5
Liquid Permittivity – Deviation from target values	5	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity – Measurement uncertainty	2.5	N	1.00	0.6	0.49	1.5	1.2	5
Combined standard Uncertainty		RSS				9.7	9.4	154
Expanded Uncertainty (95% CONFIDENCE LEVEL)		k=2				19.4	18.88	

Estimated total measurement uncertainty for the DASY4 measurement system was ±9.7%. The extended uncertainty (K = 2) was assessed to be ±19.4% based on 95% confidence level. The uncertainty is not added to the Validation measurement result.

6.0 EQUIPMENT LIST AND CALIBRATION DETAILS

Table: SPEAG DASY4 Version V4.7 Build 53

Equipment Type	Manufacturer	Model Number	Serial Number	Calibration Due	Used For this Test?
Robot - Six Axes	Staubli	RX90BL	N/A	Not applicable	✓
Robot Remote Control	SPEAG	CS7MB	RX90B	Not applicable	✓
SAM Phantom	SPEAG	N/A	1260	Not applicable	
SAM Phantom	SPEAG	N/A	1060	Not applicable	
Flat Phantom	AndreT	10.1	P 10.1	Not Applicable	
Flat Phantom	AndreT	9.1	P 9.1	Not Applicable	✓
Flat Phantom	SPEAG	PO1A 6mm	1003	Not Applicable	✓
Data Acquisition Electronics	SPEAG	DAE3 V1	359	08-July-2010	
Data Acquisition Electronics	SPEAG	DAE3 V1	442	10-Dec-2009	✓
Probe E-Field - Dummy	SPEAG	DP1	N/A	Not applicable	
Probe E-Field	SPEAG	ET3DV6	1380	18-Dec-2009	✓
Probe E-Field	SPEAG	ET3DV6	1377	14-July-2010	
Probe E-Field	SPEAG	ES3DV6	3029	Not Used	
Probe E-Field	SPEAG	EX3DV4	3563	16-July-2009	
Antenna Dipole 300 MHz	SPEAG	D300V2	1005	14-Dec-2009	
Antenna Dipole 450 MHz	SPEAG	D450V2	1009	17-Dec-2010	✓
Antenna Dipole 900 MHz	SPEAG	D900V2	047	7-July-2010	
Antenna Dipole 1640 MHz	SPEAG	D1640V2	314	16-July-2010	
Antenna Dipole 1800 MHz	SPEAG	D1800V2	242	8-July-2010	
Antenna Dipole 1950 MHz	SPEAG	D1950V3	1113	12-Dec -2010	
Antenna Dipole 3500 MHz	SPEAG	D3500V2	1002	17-July-2010	
Antenna Dipole 2450 MHz	SPEAG	D2450V2	724	10-Dec-2010	
Antenna Dipole 5600 MHz	SPEAG	D5GHzV2	1008	07-Dec-2009	✓
RF Amplifier	EIN	603L	N/A	*In test	✓
RF Amplifier	Mini-Circuits	ZHL-42	N/A	*In test	
RF Amplifier	Mini-Circuits	ZVE-8G	N/A	*In test	
Synthesized signal generator	Hewlett Packard	ESG-D3000A	GB37420238	*In test	✓
RF Power Meter Dual	Hewlett Packard	437B	3125012786	29-June-2010	✓
RF Power Sensor 0.01 - 18 GHz	Hewlett Packard	8481H	1545A01634	01-July-2010	✓
RF Power Meter Dual	Gigatronics	8542B	1830125	26-Mar-2010	
RF Power Sensor	Gigatronics	80301A	1828805	26-Mar-2010	
RF Power Meter Dual	Hewlett Packard	435A	1733A05847	*In test	✓
RF Power Sensor	Hewlett Packard	8482A	2349A10114	*In test	✓
Network Analyser	Hewlett Packard	8714B	GB3510035	18-Sept-2009	
Network Analyser	Hewlett Packard	8753ES	JP39240130	11-Nov-2009	✓
Dual Directional Coupler	Hewlett Packard	778D	1144 04700	*In test	✓
Dual Directional Coupler	NARDA	3022	75453	*In test	

* Calibrated during the test for the relevant parameters.

7.0 SAR TEST METHOD

7.1 Description of the Test Positions (Face Frontal and Belt Clip)

SAR measurements were performed in the "Face Frontal" and "Belt Clip" positions. Both the "Face Frontal" and "Belt Clip" positions were measured in the flat section of the AndreT 10.1 phantom.
See Appendix A for photos of test positions.

7.1.1 "Face Frontal Position"

The SAR evaluation was performed in the flat section of the AndreT phantom. The device was placed 25mm from the phantom, this position is equivalent to the device placed in front of the nose. The supporting hand was not used.

7.1.2 "Belt Clip" Position

The device was tested in the (2.00 mm) flat section of the AndreT phantom for the "Belt Clip" position. A belt clip maintained a distance of approximately 10 mm between the back of the device and the flat phantom. The Transceiver was placed at the flat section of the phantom and suspended until the Belt Clip touched the phantom. The belt clip was made of plastic and contained metal parts, the device was connected with the hands free earpiece/microphone.

7.2 List of All Test Cases (Antenna In/Out, Test Frequencies, User Modes)

The device has a fixed antenna. The SAR was measured at three test channels with the test sample operating at maximum power, as specified in section 2.3.

7.3 FCC RF Exposure Limits for Occupational/ Controlled Exposure

Spatial Peak SAR Limits For:	
Partial-Body:	8.0 mW/g (averaged over any 1g cube of tissue)
Hands, Wrists, Feet and Ankles:	20.0 mW/g (averaged over 10g cube of tissue)

7.4 FCC RF Exposure Limits for Un-controlled/Non–occupational

Spatial Peak SAR Limits For:	
Partial-Body:	1.6 mW/g (averaged over any 1g cube of tissue)
Hands, Wrists, Feet and Ankles:	4.0 mW/g (averaged over 10g cube of tissue)

8.0 SAR MEASUREMENT RESULTS

The SAR values averaged over 1 g tissue mass were determined for the sample device for the Face Frontal and Belt Clip configurations of the phantom.

Table: SAR MEASUREMENT RESULTS– Face Frontal and Belt Clip positions

1. Test Position	2. Plot No.	3. Test Channel	4. Test Freq (MHz)	5. Antenna Size (mm)	6. Measured 1g SAR Results (mW/g)	6.1 Measured 1g SAR Results 50% Duty Cycle (mW/g)	7. Measured Drift (dB)
Face Frontal	1	0	400MHz	70 (Helical)	3.83	1.92	-0.13
	2	1	440MHz	70 (Helical)	6.37	3.19	-0.32
	3	2	480MHz	70 (Helical)	1.68	0.84	-0.10
Face Frontal	4	0	400MHz	168 (Whip)	5.15	2.58	-0.26
	5	1	440MHz	168 (Whip)	3.61	1.81	-0.20
	6	2	480MHz	168 (Whip)	1.89	0.95	-0.31
Face Frontal with Holster	7	1	440MHz	70 (Helical)	6.05	3.03	-0.08
Belt Clip	8	0	400MHz	70 (Helical)	8.67	4.34	-0.07
	9	1	440MHz	70 (Helical)	7.25	3.63	-0.15
	10	2	480MHz	70 (Helical)	2.36	1.18	-0.31
Belt Clip	11	0	400MHz	168 (Whip)	8.17	4.09	-0.38
	12	1	440MHz	168 (Whip)	6.67	3.34	-0.21
	13	2	480MHz	168 (Whip)	3.39	1.70	-0.35
Belt Clip with Holster	14	0	400MHz	70 (Helical)	9.87	4.94	-0.23

Note: The uncertainty of the system (± 23.9%) has not been added to the results.

The FCC SAR limit for occupational exposure is 8.0 mW/g measurement in a 1g cube of tissue.

9.0 COMPLIANCE STATEMENT

The SIMOCO Push To Talk Transmitter model SRP9180 TU was tested on behalf of Comgroup Australia. It complied with the FCC and Canadian SAR requirements.

The highest SAR level recorded was 9.87 mW/g for a 1g cube. After extrapolating to a 50% duty cycle the highest SAR level recorded was 4.94 mW/g for a 1g cube. This value was measured in the "Belt Clip with Holster" position using the 70mm Helical antenna, and was below the controlled limit of 8.0 mW/g, even taking into account the measurement uncertainty of 23.9 %.

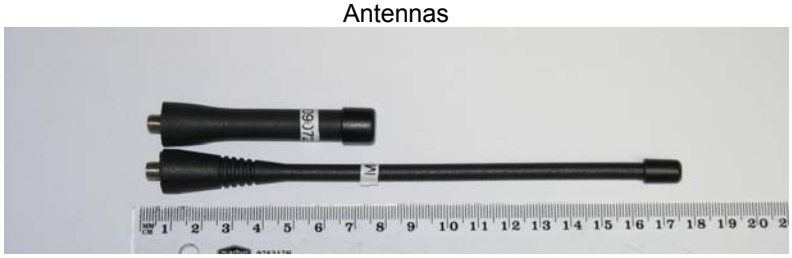
APPENDIX A1 TEST SAMPLE PHOTOGRAPHS

Battery 1

Battery 2

DUT

Antennas



APPENDIX A2 TEST SAMPLE PHOTOGRAPHS

Accessories - Holster

Accessories – Speaker/Microphone

APPENDIX A3 Test Setup Photographs

Face Frontal Position 70mm Antenna

Face Frontal Position 168mm Antenna

APPENDIX A4 Test Setup Photographs

Belt Clip Position 70mm Antenna

Belt Clip Position 168mm Antenna

APPENDIX A5 TEST SETUP PHOTOGRAPHS

Face Frontal Position with Holster 70mm Antenna

Belt Clip Position with Holster 70mm Antenna

APPENDIX B Plots Of The SAR Measurements

Plots of the measured SAR distributions inside the phantom are given in this Appendix for all tested configurations. The spatial peak SAR values were assessed with the procedure described in this report.

Table: SAR Measurement Plot Numbers

Test Position	Plot Number	Antenna Size (mm)	Test Channel
Face Frontal	**1**	70	0
	2	70	1
	3	70	2
Face Frontal	**4**	168	0
	5	168	1
	6	168	2
Face Frontal with Holster	**7**	70	1
Belt Clip	**8**	70	0
	9	70	1
	10	70	2
Belt Clip	**11**	168	0
	12	168	1
	13	168	2
Belt Clip with Holster	**14**	70	0

Table: Validation Plot Numbers

Date	Plot Number	Frequency
27th July 2009	**15**	450 MHz

Test Date: 27 July 2009

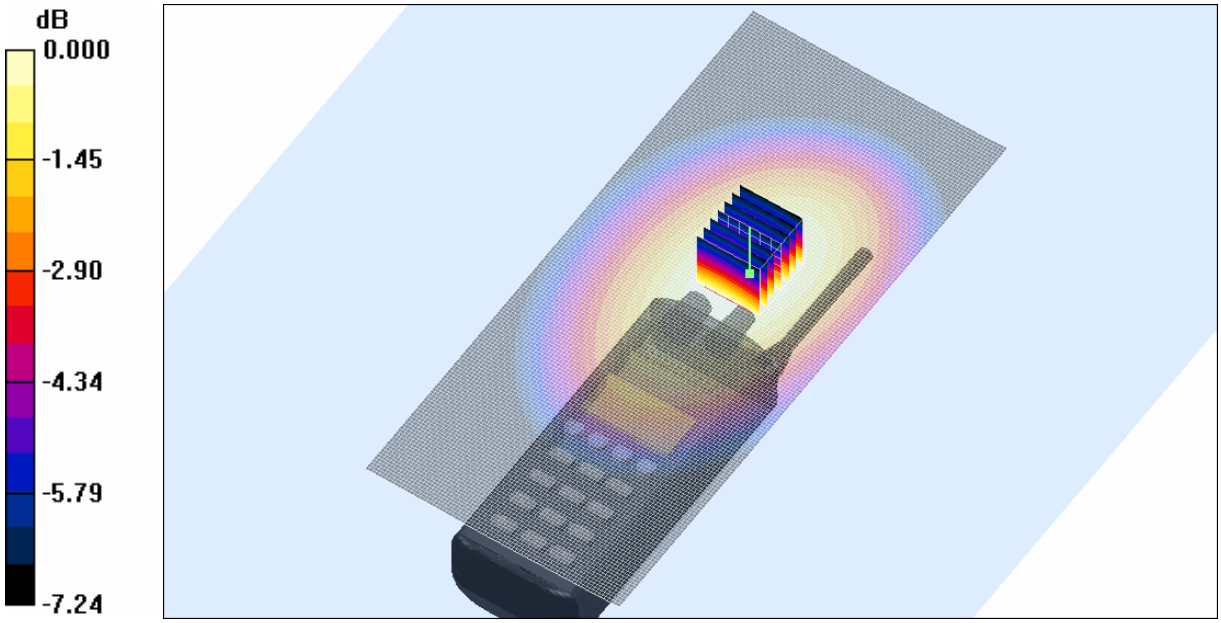
File Name: M090727 Face Frontal 480 MHz 70mm Antenna (DAE442 Probe1380) 28-07-09.da4

DUT: Simoco Push to Talk Transmitter; Type: SRP9180 TU; Serial: ET9VX09170038

* Communication System: CW 450 MHz; Frequency: 400.075 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 400 MHz; σ = 0.839 mho/m; ε_r = 44.9; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(7.12, 7.12, 7.12)
- Phantom: Flat Phantom 9.1; Serial: P 9.1; Phantom section: Flat 2.2 Section

Channel 0 Test/Area Scan (81x181x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 4.09 mW/g

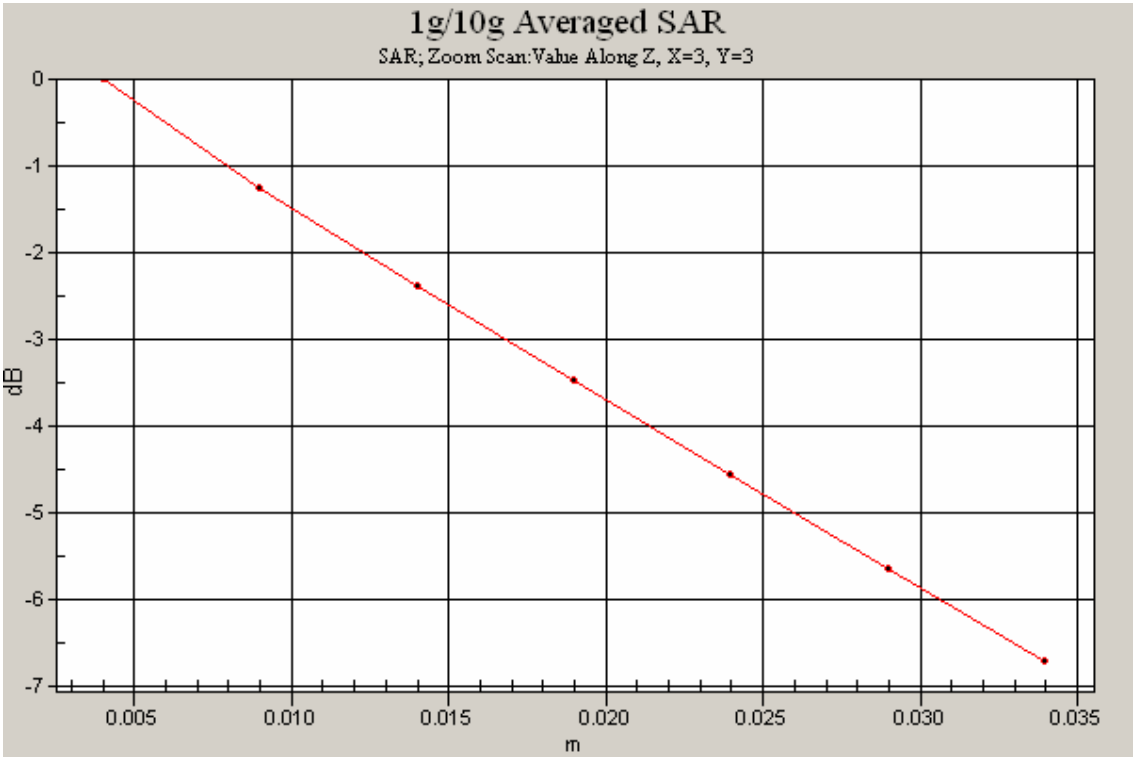
Channel 0 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 70.2 V/m; Power Drift = -0.106 dB
Peak SAR (extrapolated) = 5.20 W/kg
SAR(1 g) = 3.83 mW/g; SAR(10 g) = 2.89 mW/g
Maximum value of SAR (measured) = 4.01 mW/g



0 dB = 4.01mW/g

SAR MEASUREMENT PLOT 1

Ambient Temperature	**21.8 Degrees Celsius**
Liquid Temperature	**21.4 Degrees Celsius**
Humidity	**33.0 %**



Test Date: 27 July 2009

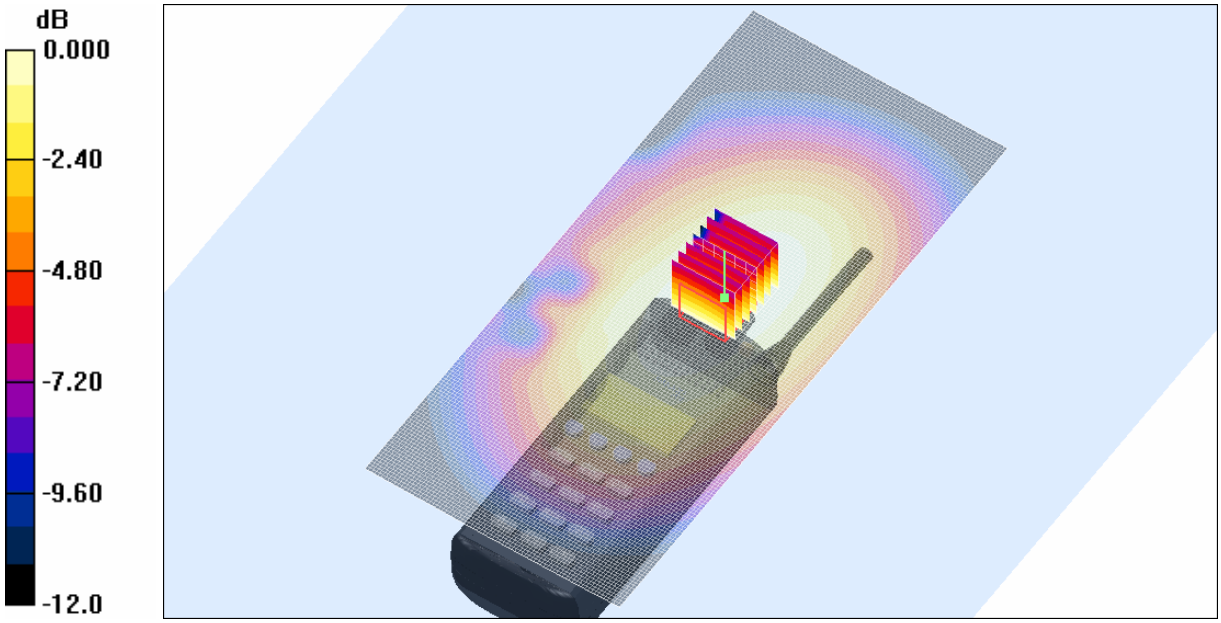
File Name: M090727 Face Frontal 480 MHz 70mm Antenna (DAE442 Probe1380) 28-07-09.da4

DUT: Simoco Push to Talk Transmitter; Type: SRP9180 TU; Serial: ET9VX09170038

* Communication System: CW 450 MHz; Frequency: 440.075 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 440.8 MHz; σ = 0.874 mho/m; ε_r = 43.9; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(7.12, 7.12, 7.12)
- Phantom: Flat Phantom 9.1; Serial: P 9.1; Phantom section: Flat 2.2 Section

Channel 1 Test/Area Scan (81x181x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 6.72 mW/g

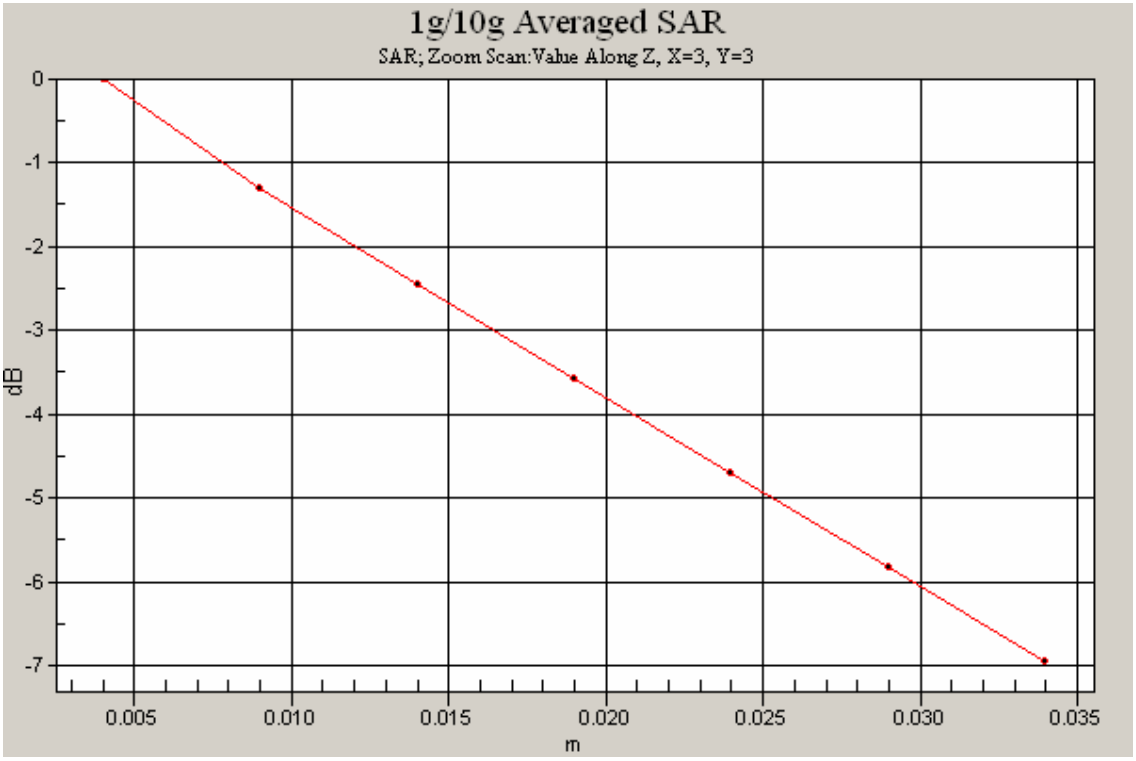
Channel 1 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.4 V/m; Power Drift = -0.366 dB
Peak SAR (extrapolated) = 10.5 W/kg
SAR(1 g) = 6.37 mW/g; SAR(10 g) = 4.53 mW/g
Maximum value of SAR (measured) = 6.48 mW/g



0 dB = 6.48mW/g

SAR MEASUREMENT PLOT 2

Ambient Temperature	**21.8 Degrees Celsius**
Liquid Temperature	**21.4 Degrees Celsius**
Humidity	**33.0 %**



Test Date: 27 July 2009

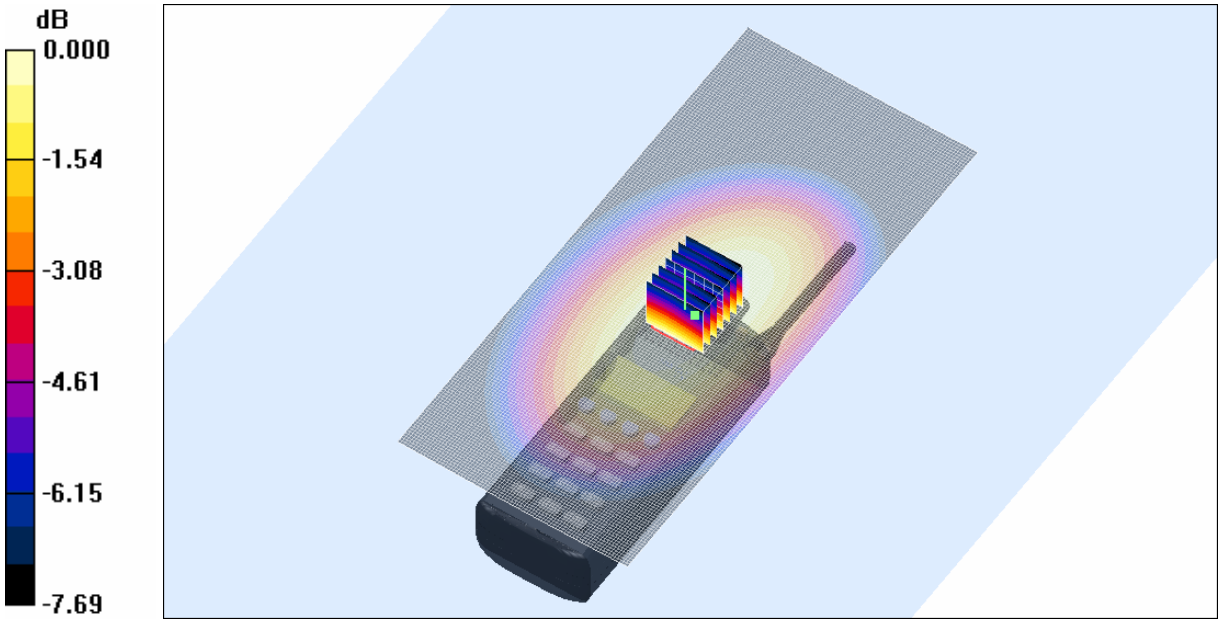
File Name: M090727 Face Frontal 480 MHz 70mm Antenna (DAE442 Probe1380) 28-07-09.da4

DUT: Simoco Push to Talk Transmitter; Type: SRP9180 TU; Serial: ET9VX09170038

* Communication System: CW 450 MHz; Frequency: 479.975 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 479.2 MHz; σ = 0.907 mho/m; ε_r = 43.1; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(7.12, 7.12, 7.12)
- Phantom: Flat Phantom 9.1; Serial: P 9.1; Phantom section: Flat 2.2 Section

Channel 2 Test/Area Scan (81x181x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.77 mW/g

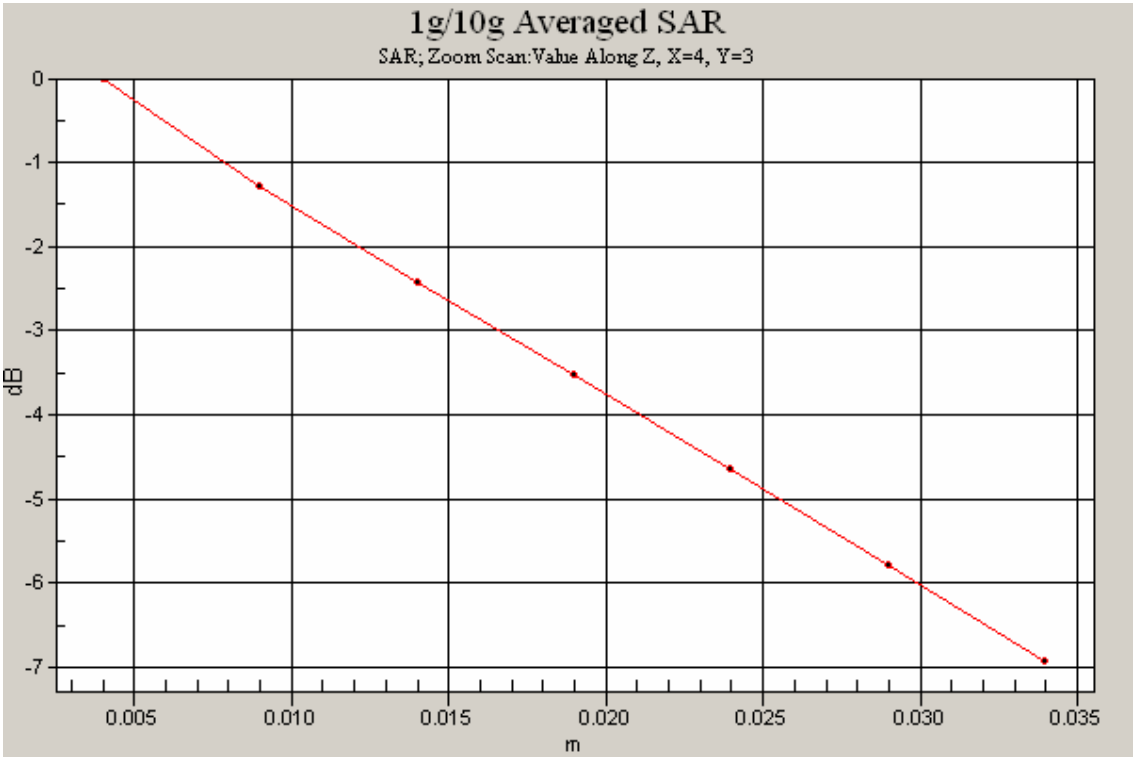
Channel 2 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 42.1 V/m; Power Drift = -0.108 dB
Peak SAR (extrapolated) = 2.30 W/kg
SAR(1 g) = 1.68 mW/g; SAR(10 g) = 1.26 mW/g
Maximum value of SAR (measured) = 1.77 mW/g



0 dB = 1.77mW/g

SAR MEASUREMENT PLOT 3

Ambient Temperature	**21.8 Degrees Celsius**
Liquid Temperature	**21.4 Degrees Celsius**
Humidity	**33.0 %**



Test Date: 27 July 2009

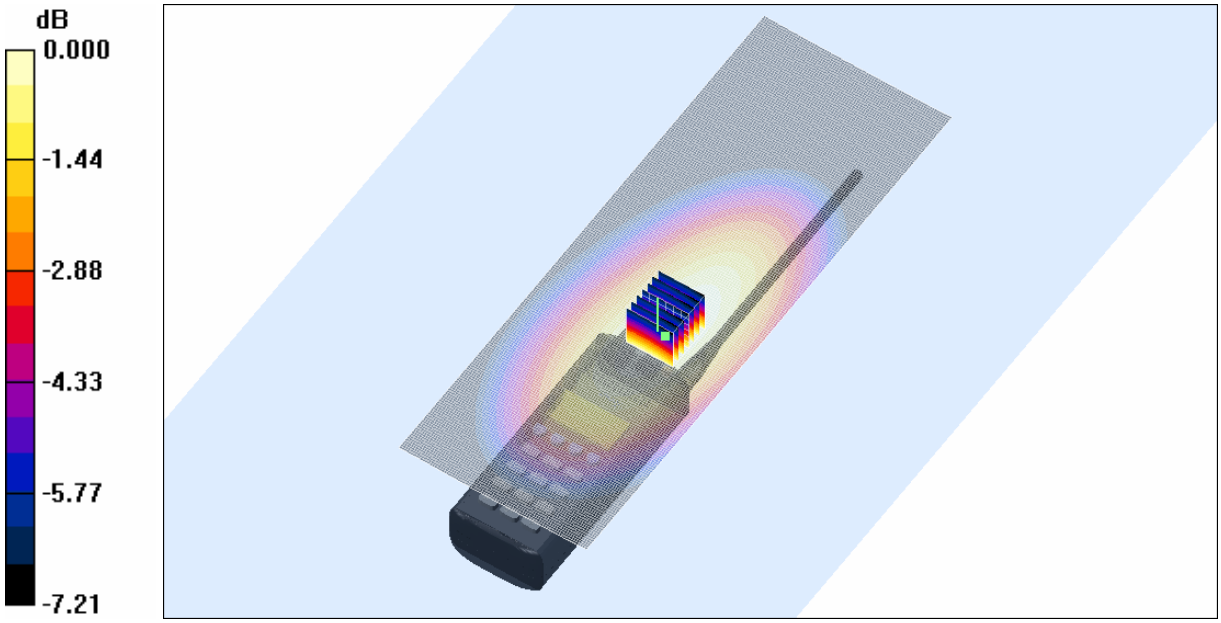
File Name: M090727 Face Frontal 480 MHz 168mm Antenna (DAE442 Probe1380) 28-07-09.da4

DUT: Simoco Push to Talk Transmitter; Type: SRP9180 TU; Serial: ET9VX09170038

* Communication System: CW 450 MHz; Frequency: 400.075 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 400 MHz; σ = 0.839 mho/m; ε_r = 44.9; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(7.12, 7.12, 7.12)
- Phantom: Flat Phantom 9.1; Serial: P 9.1; Phantom section: Flat 2.2 Section

Channel 0 Test/Area Scan (81x231x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 5.44 mW/g

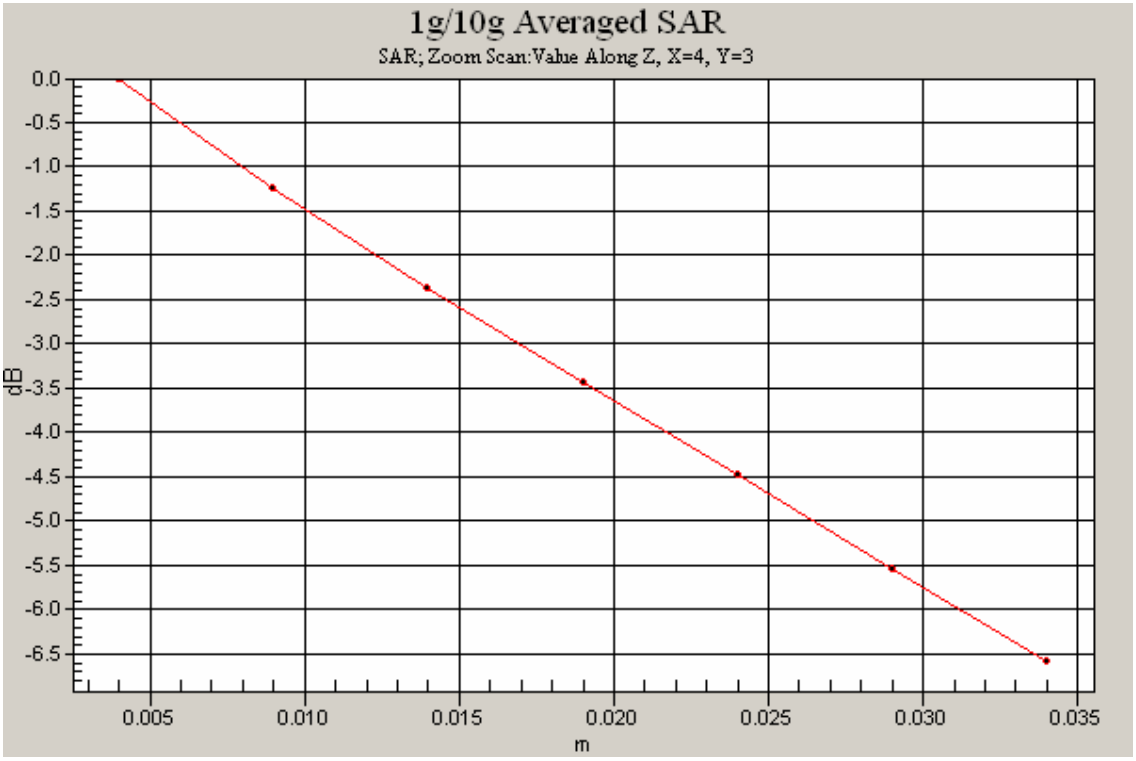
Channel 0 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 73.5 V/m; Power Drift = -0.247 dB
Peak SAR (extrapolated) = 6.97 W/kg
SAR(1 g) = 5.15 mW/g; SAR(10 g) = 3.87 mW/g
Maximum value of SAR (measured) = 5.39 mW/g



0 dB = 5.39mW/g

SAR MEASUREMENT PLOT 4

Ambient Temperature	**21.8 Degrees Celsius**
Liquid Temperature	**21.4 Degrees Celsius**
Humidity	**33.0 %**



Test Date: 27 July 2009

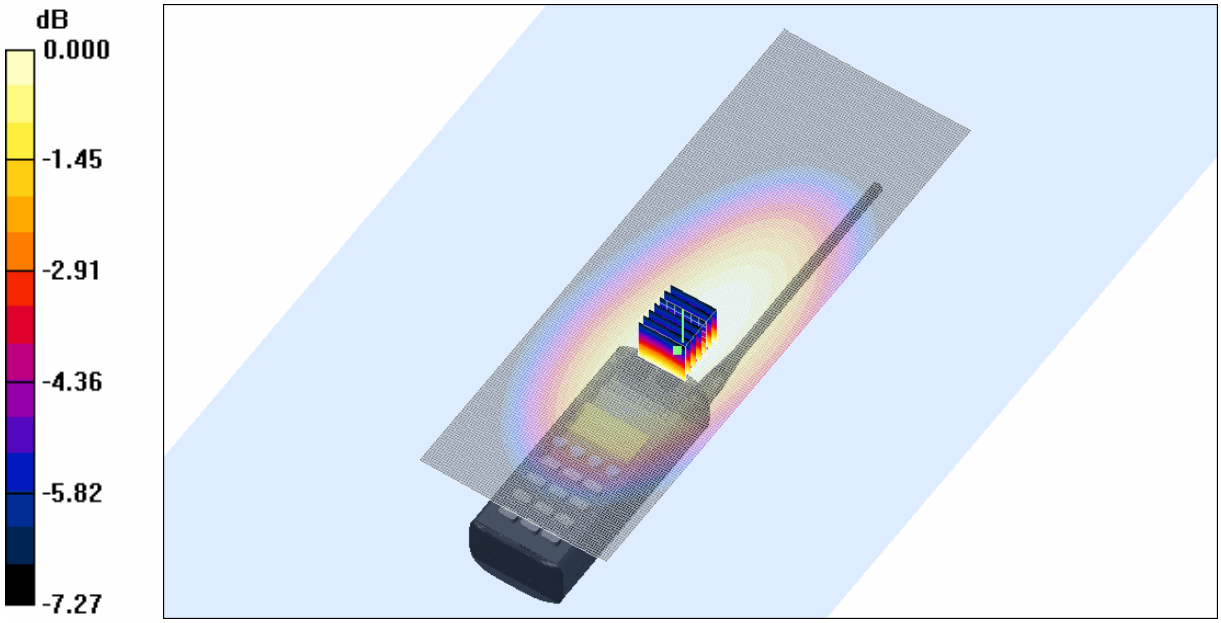
File Name: M090727 Face Frontal 480 MHz 168mm Antenna (DAE442 Probe1380) 28-07-09.da4

DUT: Simoco Push to Talk Transmitter; Type: SRP9180 TU; Serial: ET9VX09170038

* Communication System: CW 450 MHz; Frequency: 440.075 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 440.8 MHz; σ = 0.874 mho/m; ε_r = 43.9; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(7.12, 7.12, 7.12)
- Phantom: Flat Phantom 9.1; Serial: P 9.1; Phantom section: Flat 2.2 Section

Channel 1 Test/Area Scan (81x231x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.95 mW/g

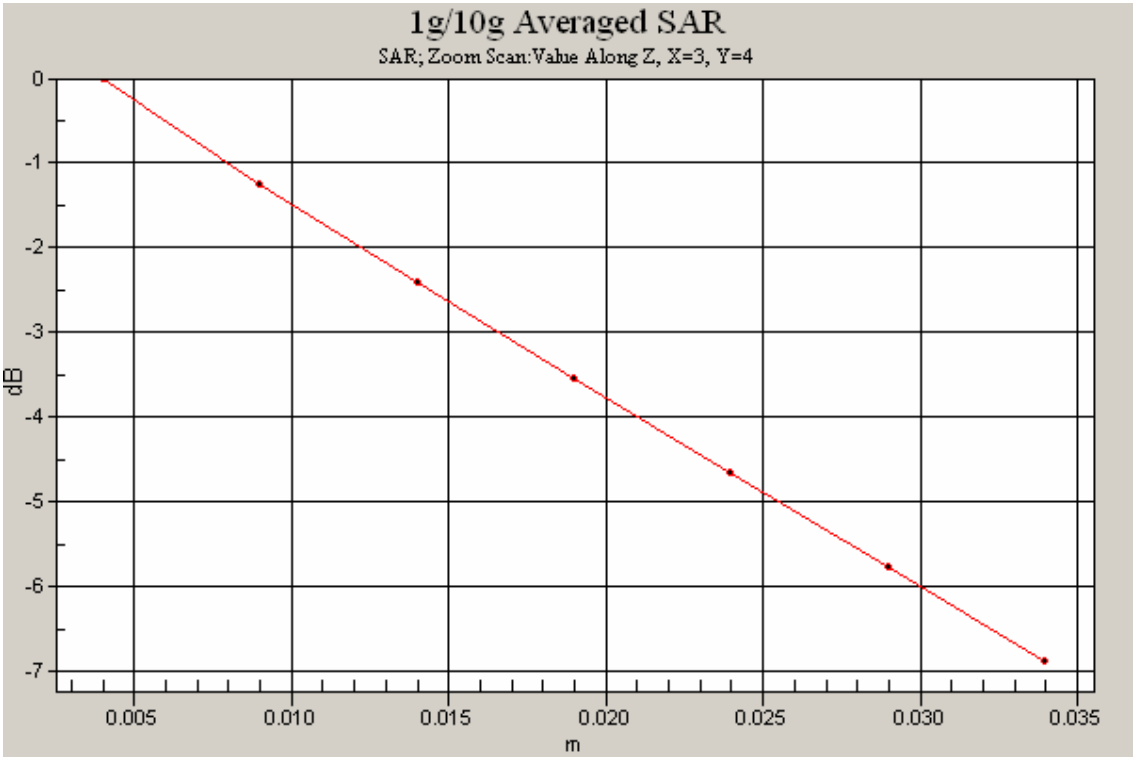
Channel 1 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 63.0 V/m; Power Drift = -0.431 dB
Peak SAR (extrapolated) = 4.85 W/kg
SAR(1 g) = 3.61 mW/g; SAR(10 g) = 2.72 mW/g
Maximum value of SAR (measured) = 3.78 mW/g



0 dB = 3.78mW/g

SAR MEASUREMENT PLOT 5

Ambient Temperature	**21.8 Degrees Celsius**
Liquid Temperature	**21.4 Degrees Celsius**
Humidity	**33.0 %**



Test Date: 27 July 2009

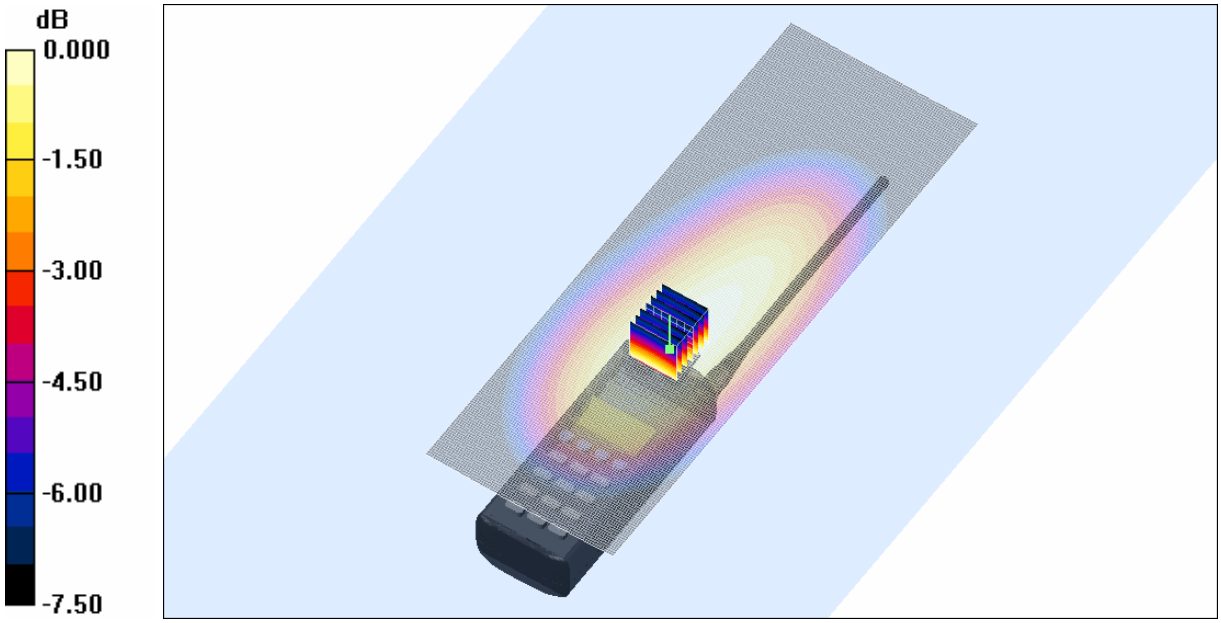
File Name: M090727 Face Frontal 480 MHz 168mm Antenna (DAE442 Probe1380) 28-07-09.da4

DUT: Simoco Push to Talk Transmitter; Type: SRP9180 TU; Serial: ET9VX09170038

* Communication System: CW 450 MHz; Frequency: 479.975 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 479.2 MHz; σ = 0.907 mho/m; ε_r = 43.1; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(7.12, 7.12, 7.12)
- Phantom: Flat Phantom 9.1; Serial: P 9.1; Phantom section: Flat 2.2 Section

Channel 2 Test/Area Scan (81x231x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.98 mW/g

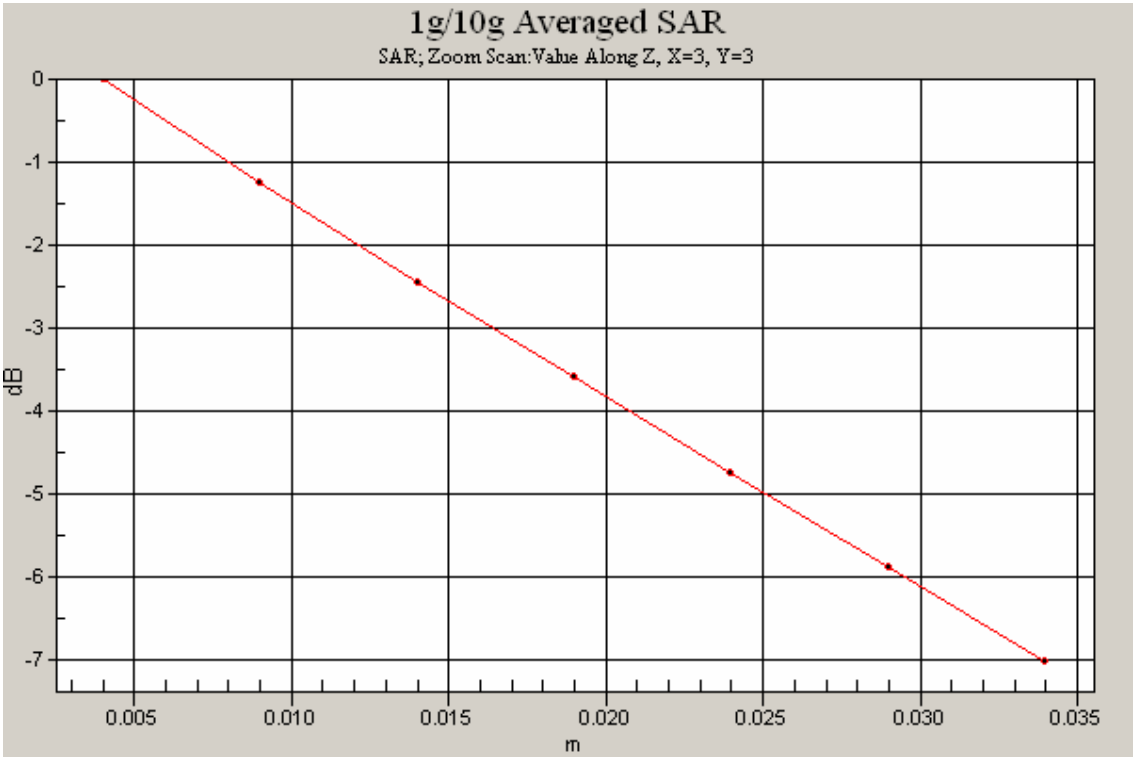
Channel 2 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 43.9 V/m; Power Drift = -0.126 dB
Peak SAR (extrapolated) = 2.53 W/kg
SAR(1 g) = 1.89 mW/g; SAR(10 g) = 1.41 mW/g
Maximum value of SAR (measured) = 1.98 mW/g



0 dB = 1.98mW/g

SAR MEASUREMENT PLOT 6

Ambient Temperature	**21.8 Degrees Celsius**
Liquid Temperature	**21.4 Degrees Celsius**
Humidity	**33.0 %**



Test Date: 27 July 2009

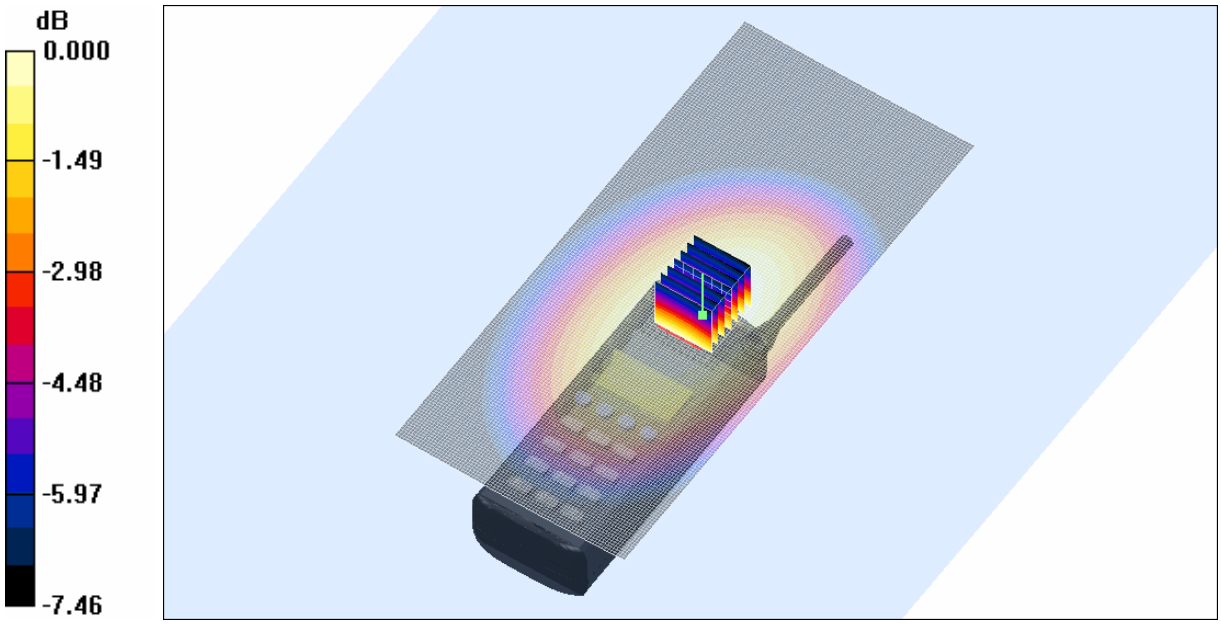
File Name: M090727 Face Frontal with Holster 480 MHz 70mm Antenna (DAE442 Probe1380) 28-07-09.da4

DUT: Simoco Push to Talk Transmitter; Type: SRP9180 TU; Serial: ET9VX09170038

* Communication System: CW 450 MHz; Frequency: 440.075 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 440.8 MHz; σ = 0.874 mho/m; ε_r = 43.9; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(7.12, 7.12, 7.12)
- Phantom: Flat Phantom 9.1; Serial: P 9.1; Phantom section: Flat 2.2 Section

Channel 1 Test/Area Scan (81x181x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 6.69 mW/g

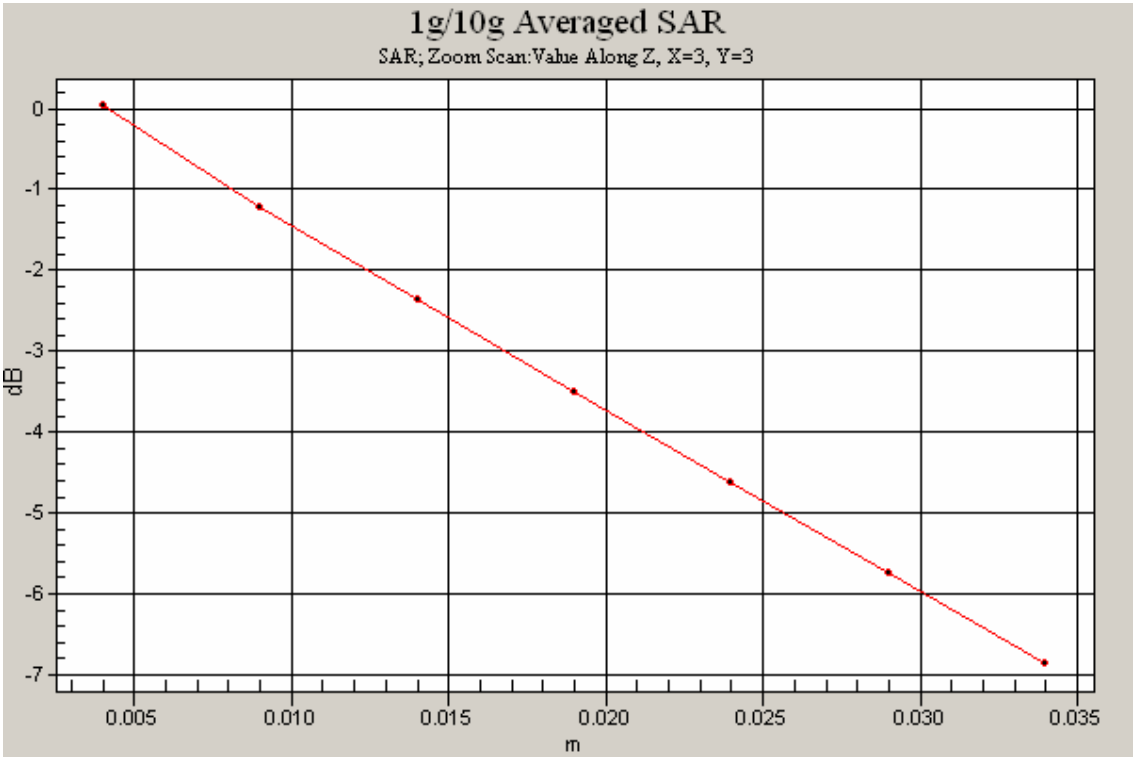
Channel 1 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 84.8 V/m; Power Drift = -0.090 dB
Peak SAR (extrapolated) = 8.07 W/kg
SAR(1 g) = 6.05 mW/g; SAR(10 g) = 4.55 mW/g
Maximum value of SAR (measured) = 6.33 mW/g



0 dB = 6.33mW/g

SAR MEASUREMENT PLOT 7

Ambient Temperature	**21.8 Degrees Celsius**
Liquid Temperature	**21.4 Degrees Celsius**
Humidity	**33.0 %**



Test Date: 27 July 2009

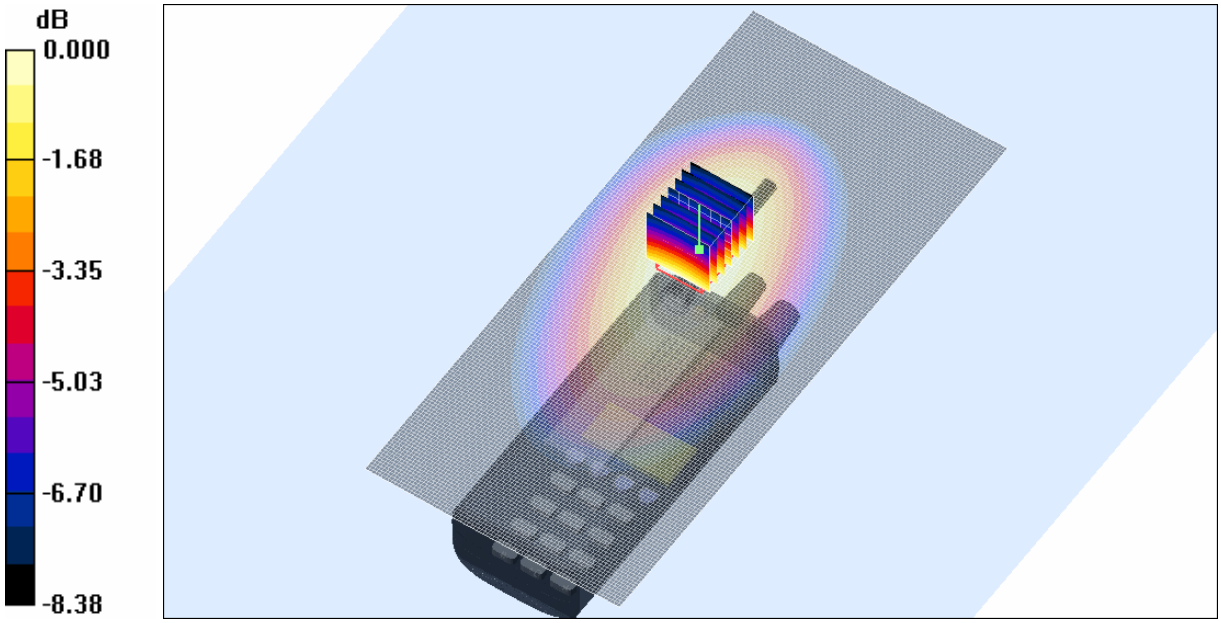
File Name: M090727 Belt Clip 480 MHz 70mm Antenna (DAE442 Probe1380) 28-07-09.da4

DUT: Simoco Push to Talk Transmitter; Type: SRP9180 TU; Serial: ET9VX09170038

* Communication System: CW 450 MHz; Frequency: 400.075 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 400 MHz; σ = 0.919 mho/m; ε_r = 57.3; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(7.57, 7.57, 7.57)
- Phantom: Flat Phantom 9.1; Serial: P 9.1; Phantom section: Flat 2.2 Section

Channel 0 Test/Area Scan (81x181x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 9.03 mW/g

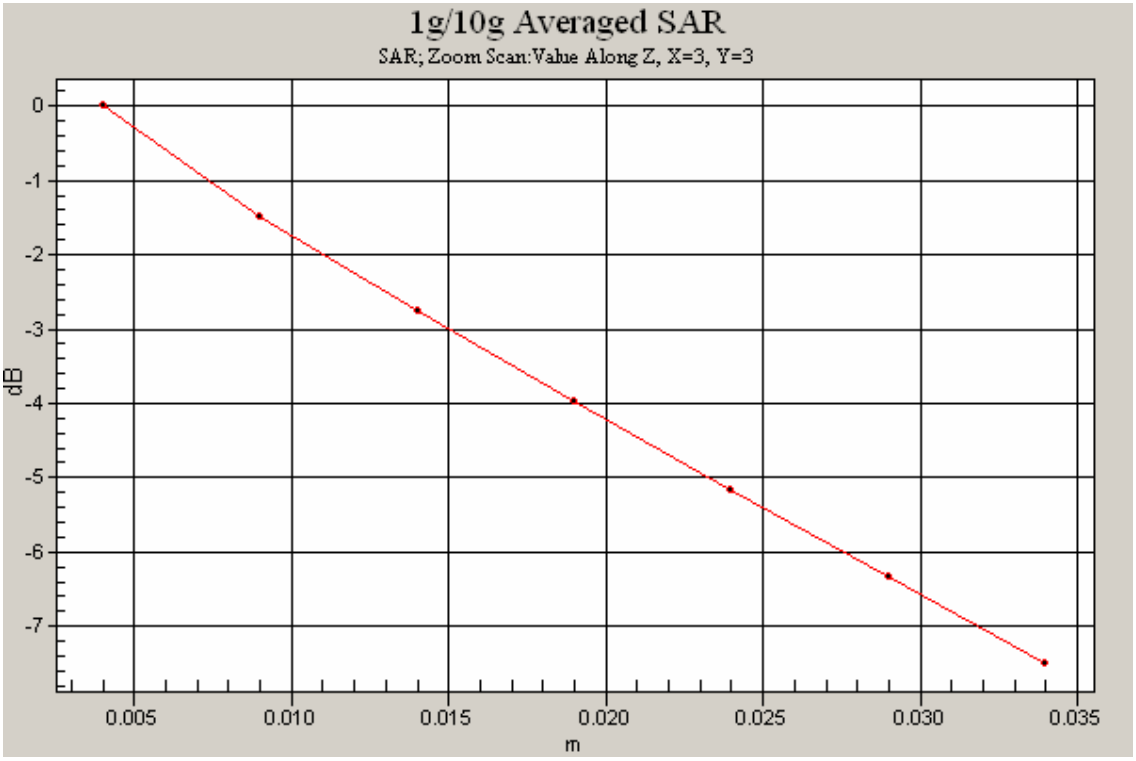
Channel 0 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.1 V/m; Power Drift = -0.104 dB
Peak SAR (extrapolated) = 12.8 W/kg
SAR(1 g) = 8.67 mW/g; SAR(10 g) = 6.19 mW/g
Maximum value of SAR (measured) = 9.09 mW/g



0 dB = 9.09mW/g

SAR MEASUREMENT PLOT 8

Ambient Temperature	**21.8 Degrees Celsius**
Liquid Temperature	**21.4 Degrees Celsius**
Humidity	**33.0 %**



Test Date: 27 July 2009

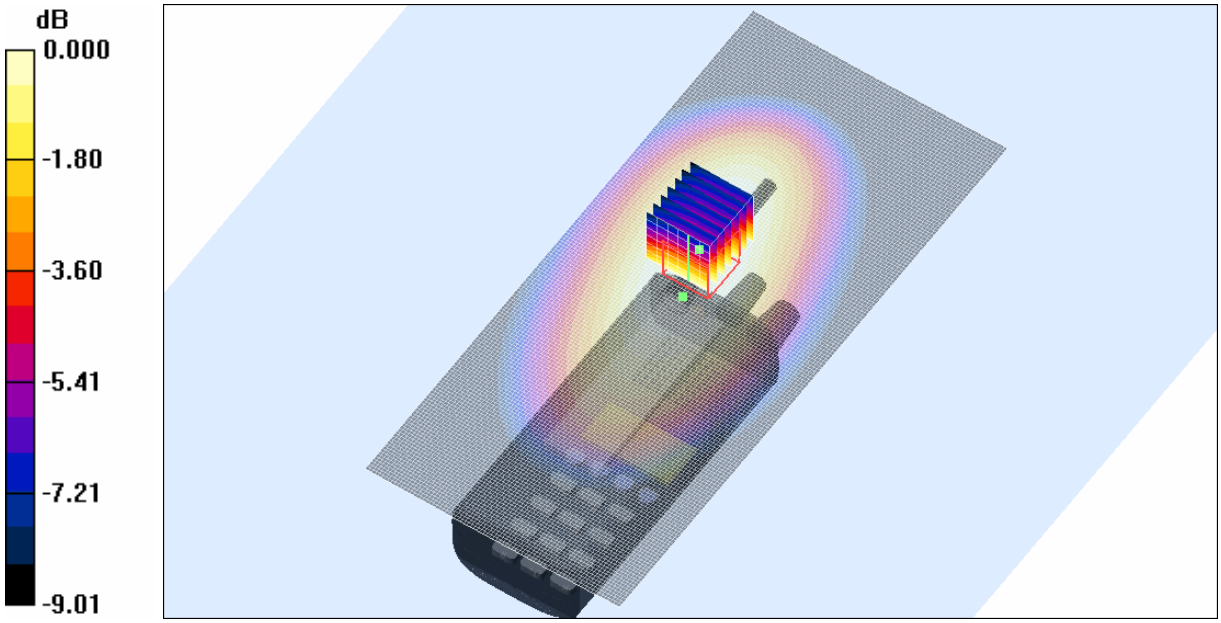
File Name: M090727 Belt Clip 480 MHz 70mm Antenna (DAE442 Probe1380) 28-07-09.da4

DUT: Simoco Push to Talk Transmitter; Type: SRP9180 TU; Serial: ET9VX09170038

* Communication System: CW 450 MHz; Frequency: 440.075 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 440.8 MHz; σ = 0.953 mho/m; ε_r = 56.6; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(7.57, 7.57, 7.57)
- Phantom: Flat Phantom 9.1; Serial: P 9.1; Phantom section: Flat 2.2 Section

Channel 1 Test/Area Scan (81x181x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 8.76 mW/g

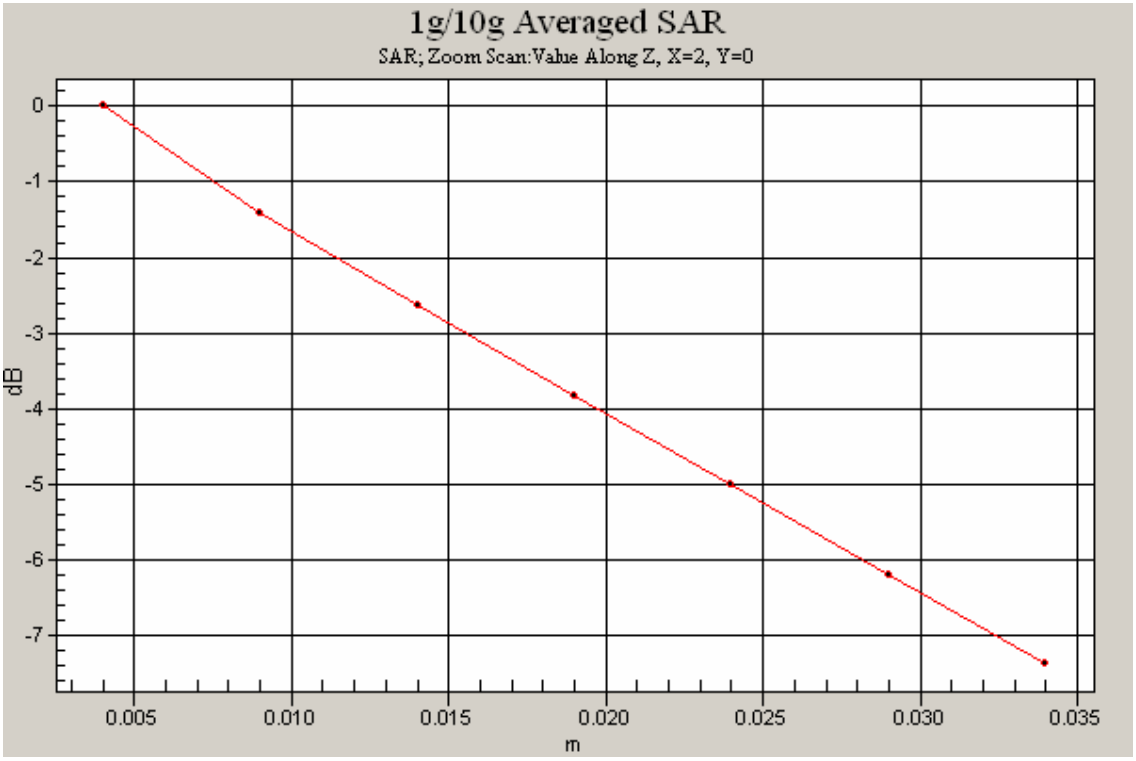
Channel 1 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.8 V/m; Power Drift = -0.335 dB
Peak SAR (extrapolated) = 10.5 W/kg
SAR(1 g) = 7.25 mW/g; SAR(10 g) = 5.28 mW/g
Maximum value of SAR (measured) = 7.60 mW/g



0 dB = 7.60mW/g

SAR MEASUREMENT PLOT 9

Ambient Temperature	**21.8 Degrees Celsius**
Liquid Temperature	**21.4 Degrees Celsius**
Humidity	**33.0 %**

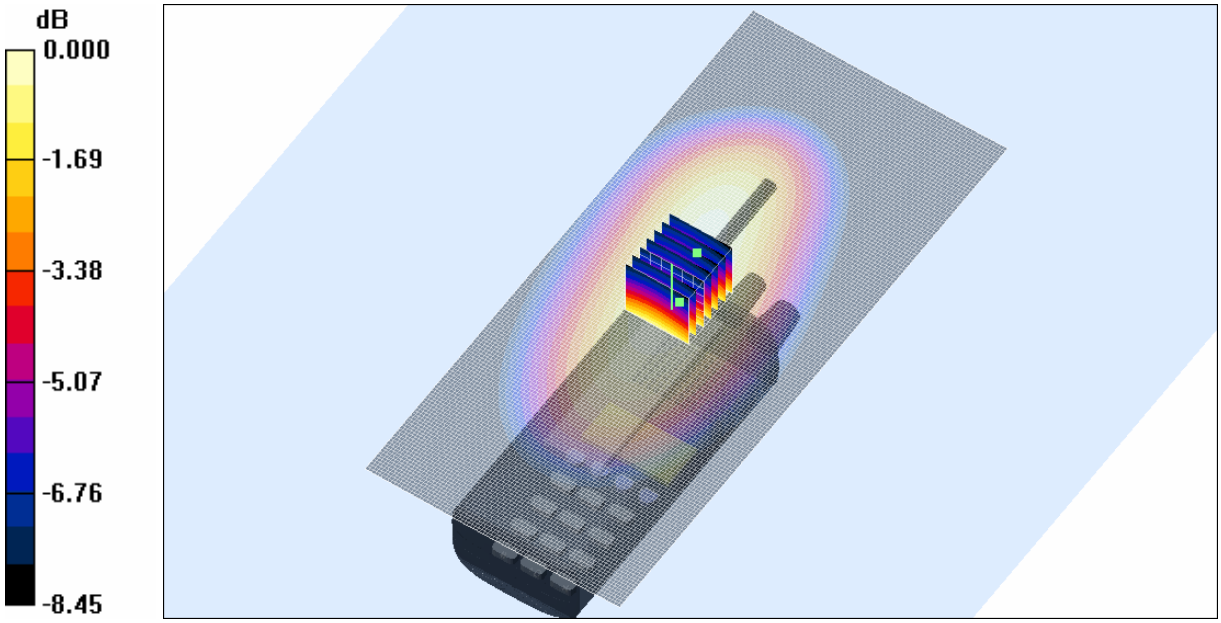


Test Date: 27 July 2009
File Name: M090727 Belt Clip 480 MHz 70mm Antenna (DAE442 Probe1380) 28-07-09.da4
DUT: Simoco Push to Talk Transmitter; Type: SRP9180 TU; Serial: ET9VX09170038

* Communication System: CW 450 MHz; Frequency: 479.975 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 479.2 MHz; σ = 0.986 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(7.57, 7.57, 7.57)
- Phantom: Flat Phantom 9.1; Serial: P 9.1; Phantom section: Flat 2.2 Section

Channel 2 Test/Area Scan (81x181x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.48 mW/g

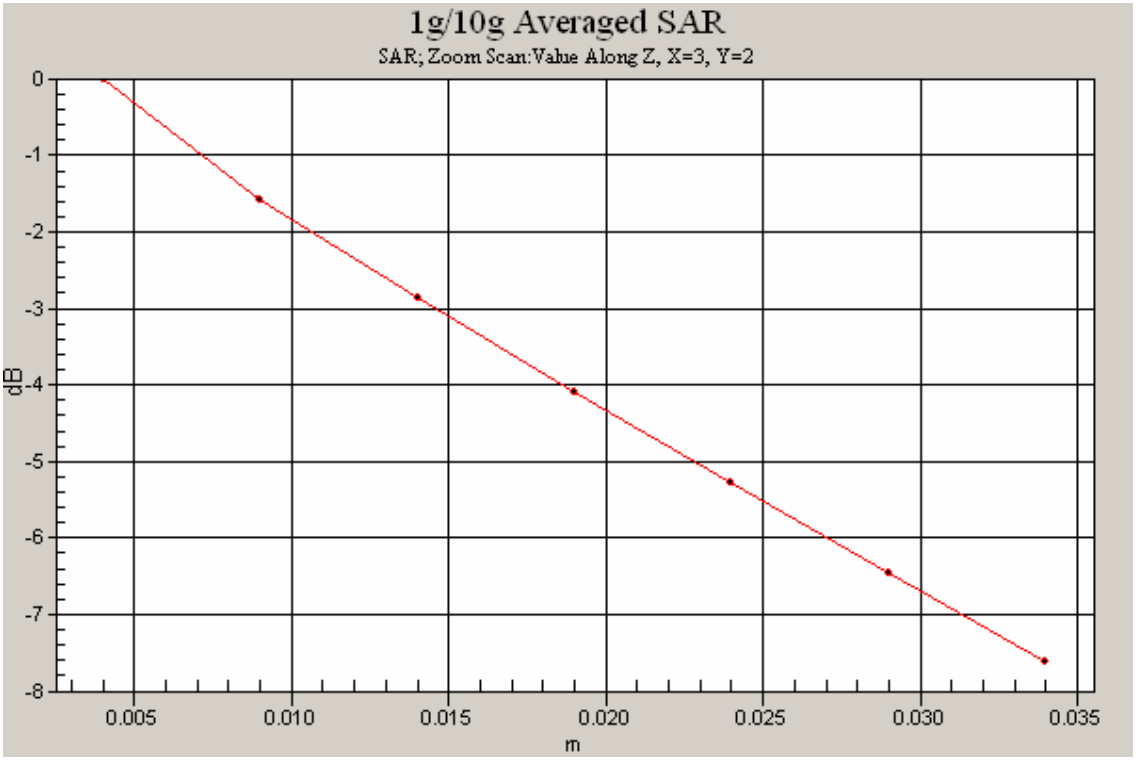
Channel 2 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 49.2 V/m; Power Drift = -0.046 dB
Peak SAR (extrapolated) = 3.56 W/kg
SAR(1 g) = 2.36 mW/g; SAR(10 g) = 1.67 mW/g
Maximum value of SAR (measured) = 2.52 mW/g



0 dB = 2.52mW/g

SAR MEASUREMENT PLOT 10

Ambient Temperature	**21.8 Degrees Celsius**
Liquid Temperature	**21.4 Degrees Celsius**
Humidity	**33.0 %**



Test Date: 27 July 2009

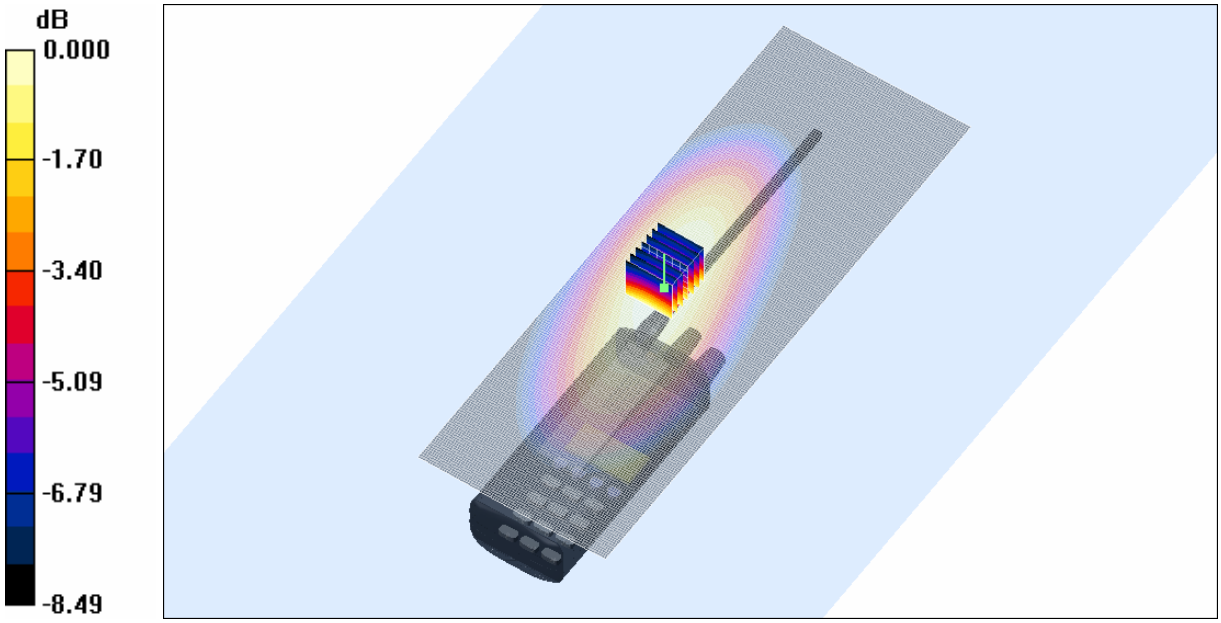
File Name: M090727 Belt Clip 480 MHz 168mm Antenna (DAE442 Probe1380) 28-07-09.da4

DUT: Simoco Push to Talk Transmitter; Type: SRP9180 TU; Serial: ET9VX09170038

* Communication System: CW 450 MHz; Frequency: 400.075 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 400 MHz; σ = 0.919 mho/m; ε_r = 57.3; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(7.57, 7.57, 7.57)
- Phantom: Flat Phantom 9.1; Serial: P 9.1; Phantom section: Flat 2.2 Section

Channel 0 Test/Area Scan (81x231x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 8.65 mW/g

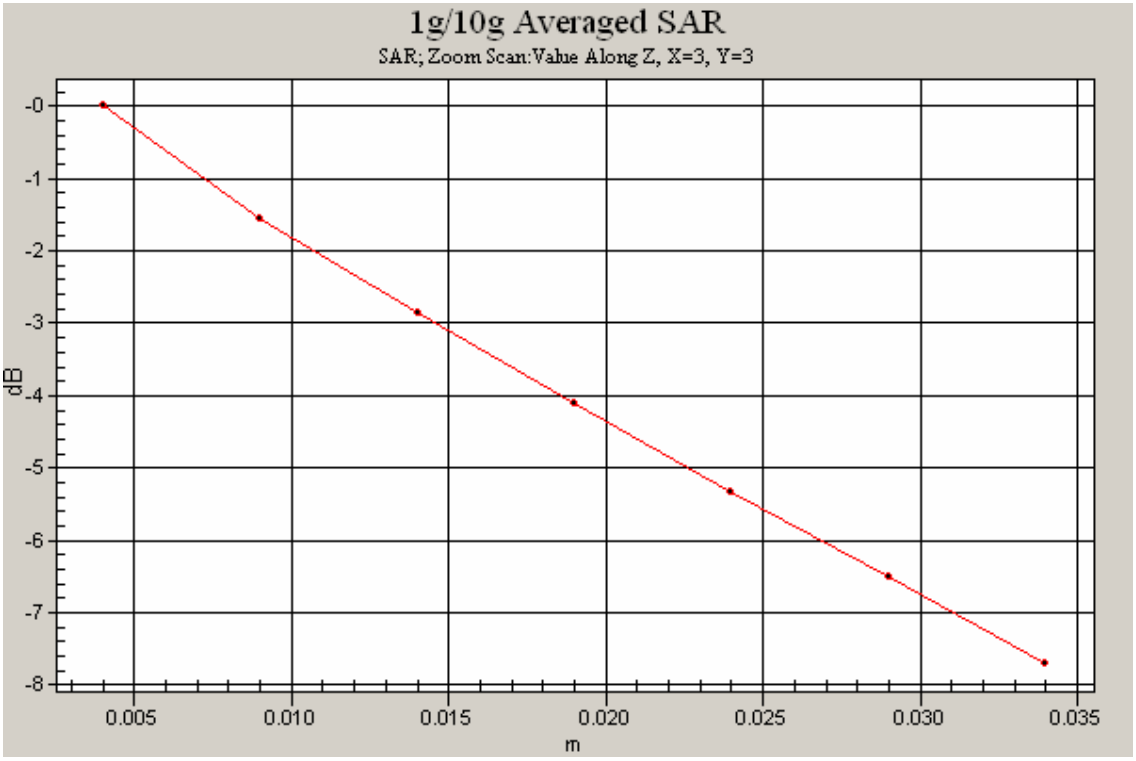
Channel 0 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.5 V/m; Power Drift = -0.469 dB
Peak SAR (extrapolated) = 12.1 W/kg
SAR(1 g) = 8.17 mW/g; SAR(10 g) = 5.77 mW/g
Maximum value of SAR (measured) = 8.61 mW/g



0 dB = 8.61mW/g

SAR MEASUREMENT PLOT 11

Ambient Temperature	**21.8 Degrees Celsius**
Liquid Temperature	**21.4 Degrees Celsius**
Humidity	**33.0 %**



Test Date: 27 July 2009

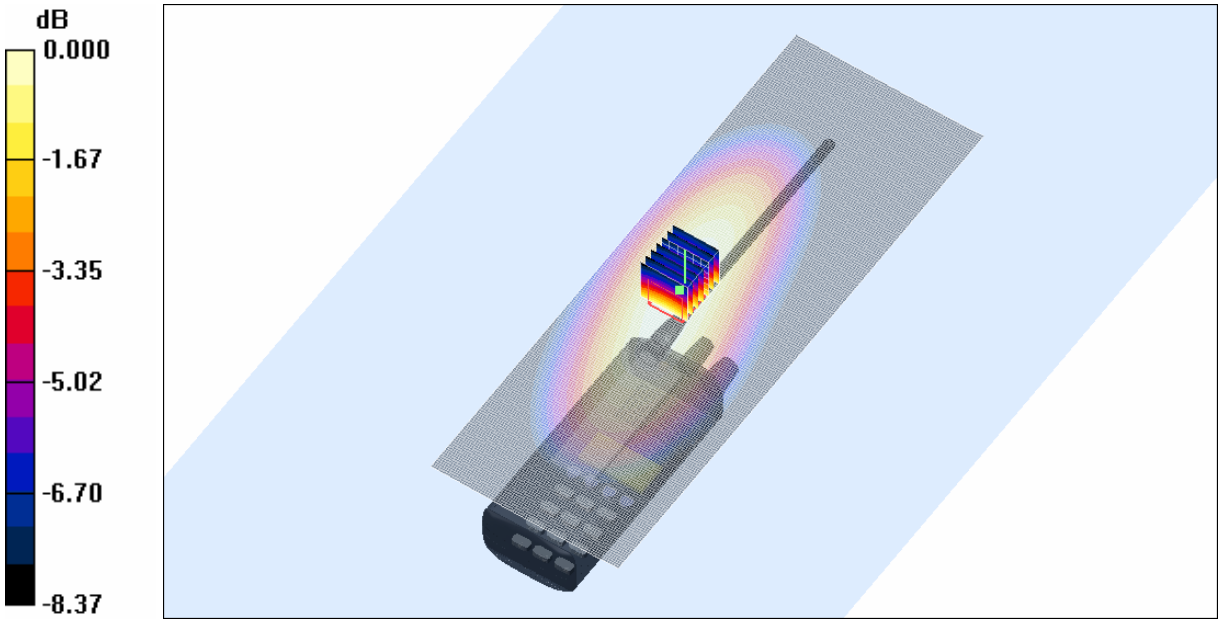
File Name: M090727 Belt Clip 480 MHz 168mm Antenna (DAE442 Probe1380) 28-07-09.da4

DUT: Simoco Push to Talk Transmitter; Type: SRP9180 TU; Serial: ET9VX09170038

* Communication System: CW 450 MHz; Frequency: 440.075 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 440.8 MHz; σ = 0.953 mho/m; ε_r = 56.6; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(7.57, 7.57, 7.57)
- Phantom: Flat Phantom 9.1; Serial: P 9.1; Phantom section: Flat 2.2 Section

Channel 1 Test/Area Scan (81x231x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 7.17 mW/g

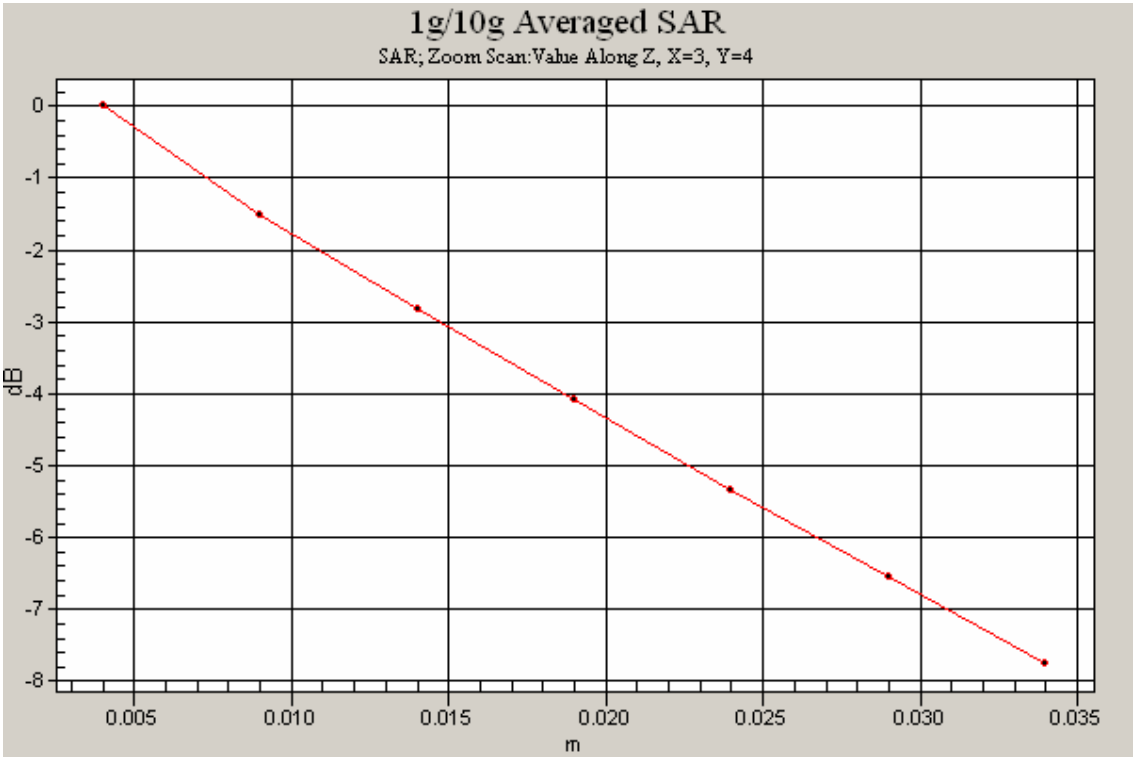
Channel 1 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 86.3 V/m; Power Drift = -0.335 dB
Peak SAR (extrapolated) = 9.77 W/kg
SAR(1 g) = 6.67 mW/g; SAR(10 g) = 4.76 mW/g
Maximum value of SAR (measured) = 7.05 mW/g



0 dB = 7.05mW/g

SAR MEASUREMENT PLOT 12

Ambient Temperature	**21.8 Degrees Celsius**
Liquid Temperature	**21.4 Degrees Celsius**
Humidity	**33.0 %**



Test Date: 27 July 2009

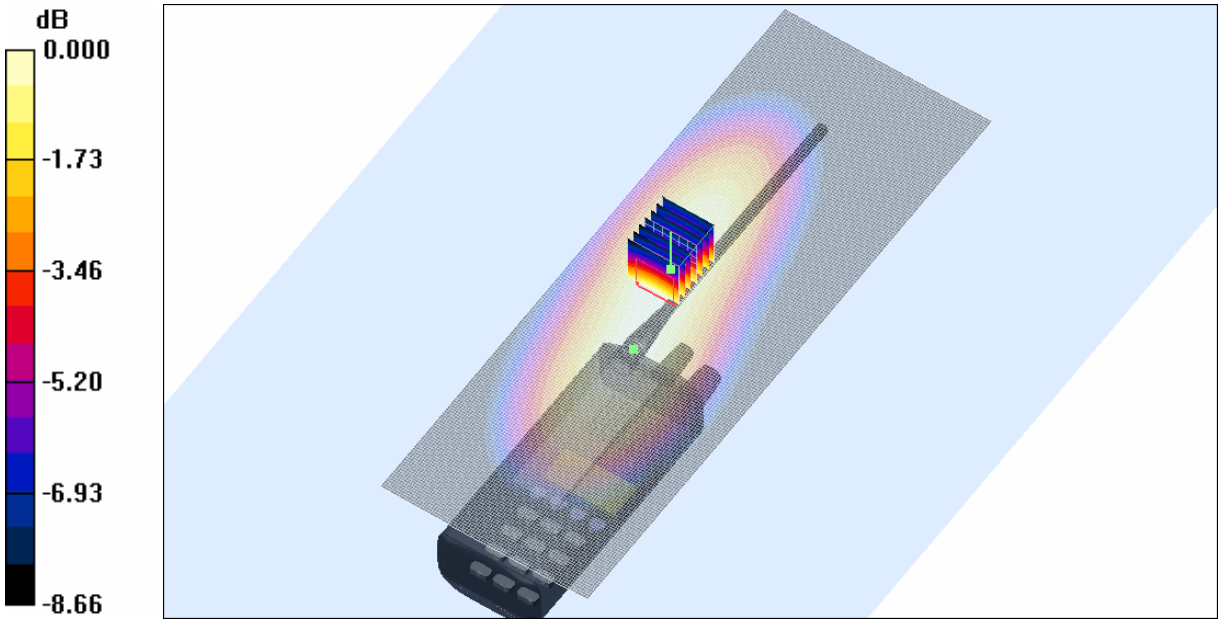
File Name: M090727 Belt Clip 480 MHz 168mm Antenna (DAE442 Probe1380) 28-07-09.da4

DUT: Simoco Push to Talk Transmitter; Type: SRP9180 TU; Serial: ET9VX09170038

* Communication System: CW 450 MHz; Frequency: 479.975 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 479.2 MHz; σ = 0.986 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(7.57, 7.57, 7.57)
- Phantom: Flat Phantom 9.1; Serial: P 9.1; Phantom section: Flat 2.2 Section

Channel 2 Test/Area Scan (81x231x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.56 mW/g

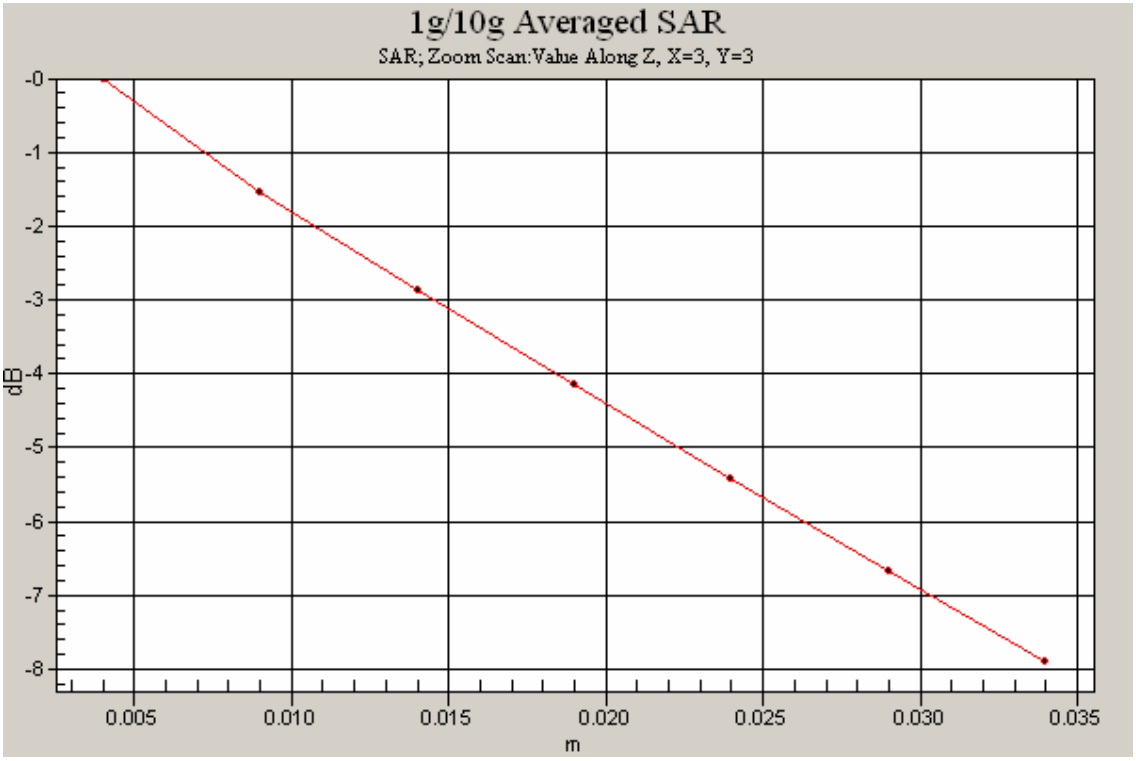
Channel 2 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 61.7 V/m; Power Drift = -0.119 dB
Peak SAR (extrapolated) = 4.98 W/kg
SAR(1 g) = 3.39 mW/g; SAR(10 g) = 2.4 mW/g
Maximum value of SAR (measured) = 3.58 mW/g



0 dB = 3.58mW/g

SAR MEASUREMENT PLOT 13

Ambient Temperature	**21.8 Degrees Celsius**
Liquid Temperature	**21.4 Degrees Celsius**
Humidity	**33.0 %**



Test Date: 27 July 2009

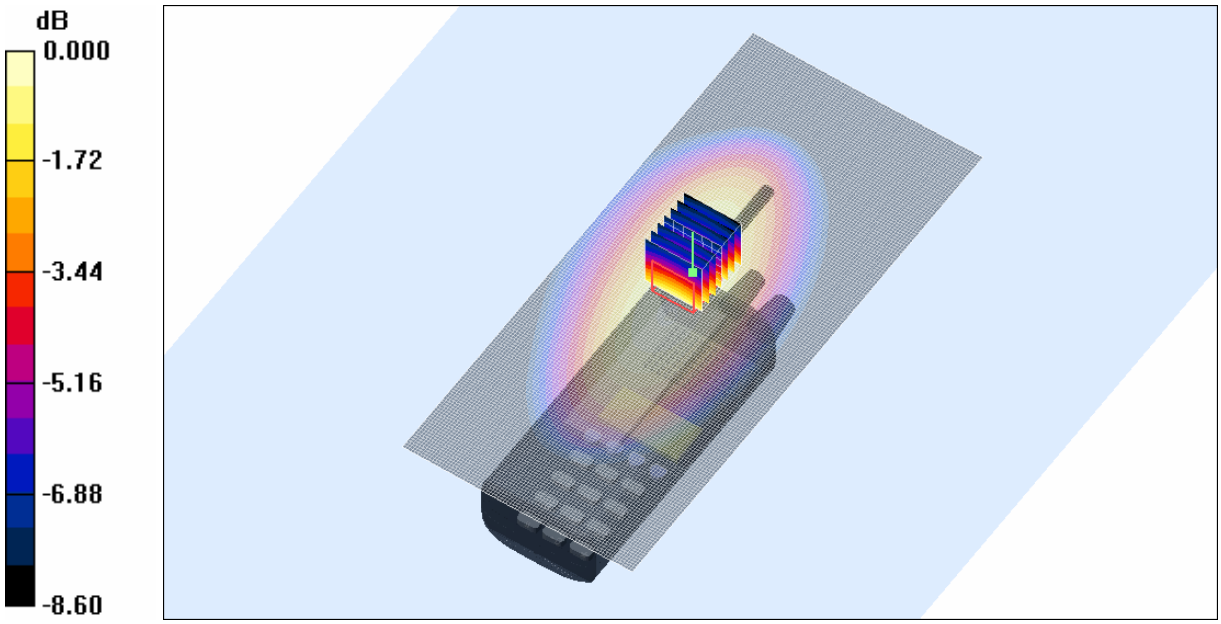
File Name: M090727 Belt Clip with Holster 480 MHz 70mm Antenna (DAE442 Probe1380) 28-07-09.da4

DUT: Simoco Push to Talk Transmitter; Type: SRP9180 TU; Serial: ET9VX09170038

* Communication System: CW 450 MHz; Frequency: 400.075 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 400 MHz; σ = 0.919 mho/m; ε_r = 57.3; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(7.57, 7.57, 7.57)
- Phantom: Flat Phantom 9.1; Serial: P 9.1; Phantom section: Flat 2.2 Section

Channel 0 Test/Area Scan (81x181x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 9.73 mW/g

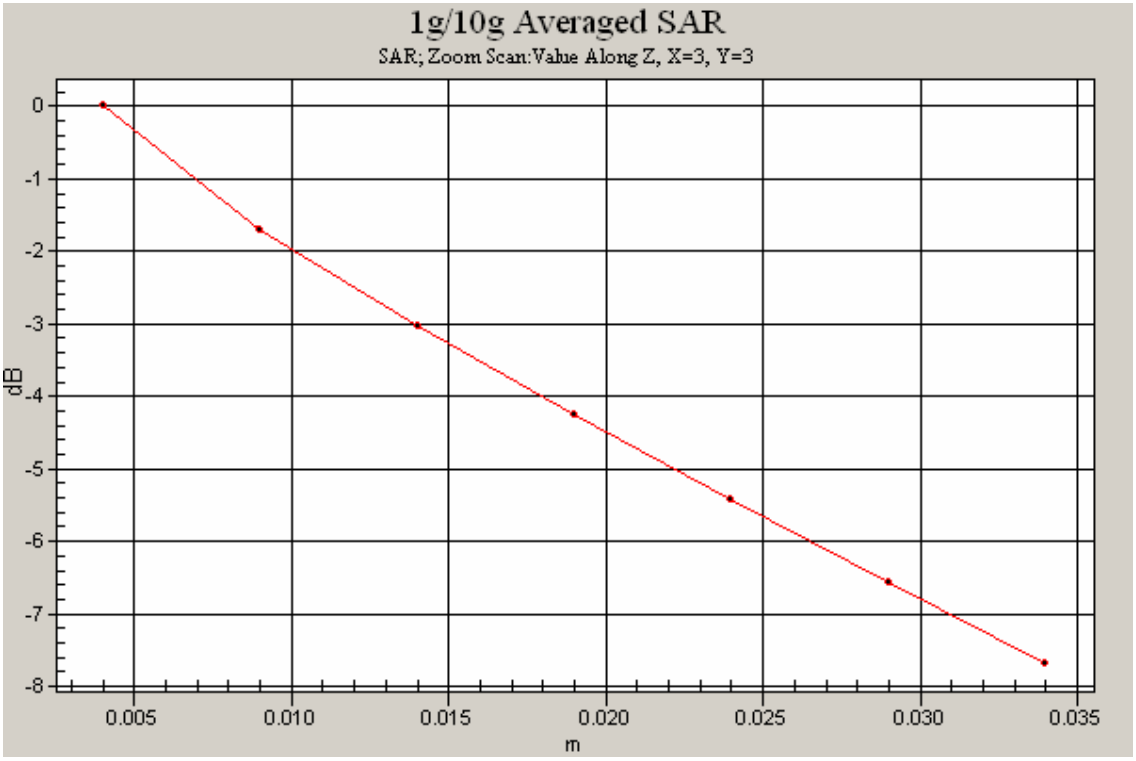
Channel 0 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 101.3 V/m; Power Drift = -0.047 dB
Peak SAR (extrapolated) = 16.0 W/kg
SAR(1 g) = 9.87 mW/g; SAR(10 g) = 6.79 mW/g
Maximum value of SAR (measured) = 10.5 mW/g



0 dB = 10.5mW/g

SAR MEASUREMENT PLOT 14

Ambient Temperature	**21.8 Degrees Celsius**
Liquid Temperature	**21.4 Degrees Celsius**
Humidity	**33.0 %**

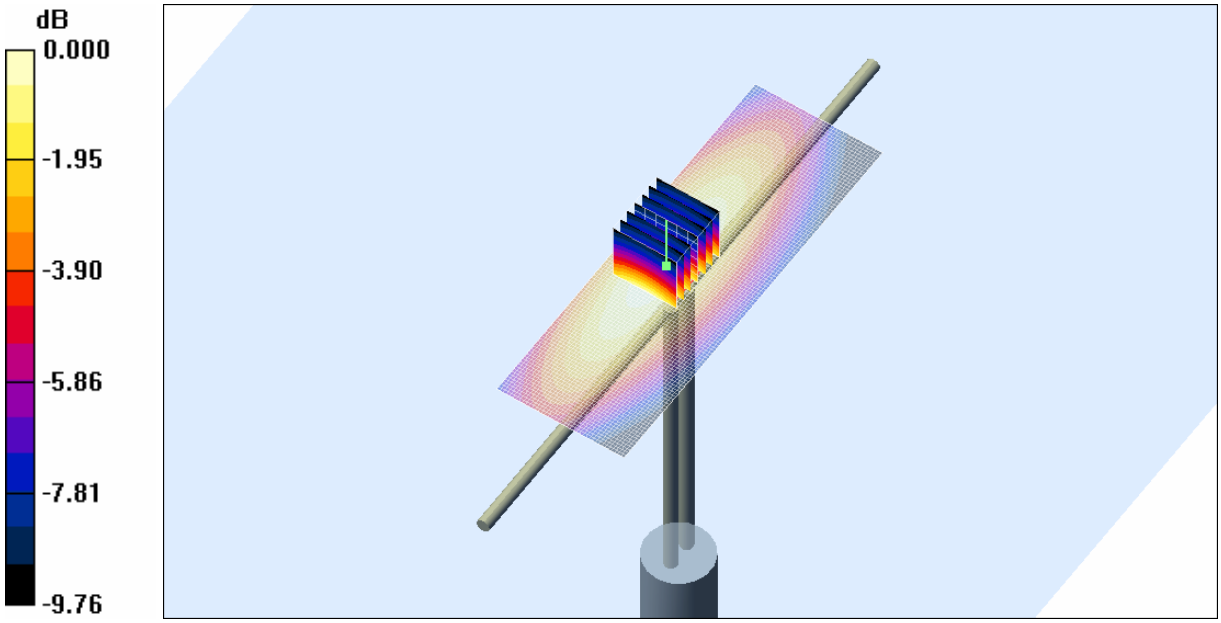


Test Date: 27 July 2009
File Name: Validation 450 MHz Head (DAE442 Probe1380) 27-07-09.da4
DUT: Dipole 450 MHz; Type: D450V2; Serial: 1009

* Communication System: CW 450 MHz; Frequency: 450 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 450.4 MHz; σ = 0.883 mho/m; ε_r = 43.7; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(7.12, 7.12, 7.12)
- Phantom: Flat Phantom 4.4; Serial: P 4.4; Phantom section: Flat Section

Channel 1Test/Area Scan (41x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.21 mW/g

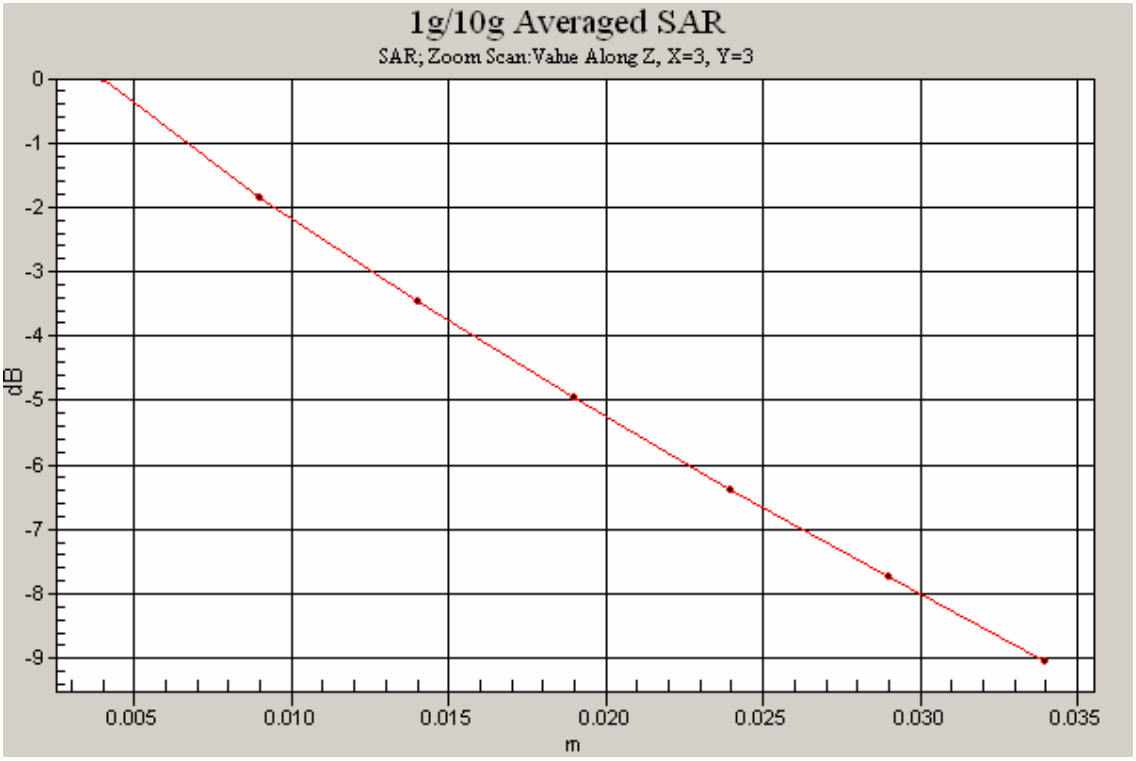
Channel 1Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51.1 V/m; Power Drift = 0.026 dB
Peak SAR (extrapolated) = 3.36 W/kg
SAR(1 g) = 2.12 mW/g; SAR(10 g) = 1.39 mW/g
Maximum value of SAR (measured) = 2.28 mW/g



0 dB = 2.28mW/g

SAR MEASUREMENT PLOT 15

Ambient Temperature	**21.8 Degrees Celsius**
Liquid Temperature	**21.4 Degrees Celsius**
Humidity	**33.0 %**



APPENDIX C CALIBRATION DOCUMENTS

1. Probe E-Field SPEAG ET3DV6 S/N: 1380
2. Antenna Dipole 450 MHz SPEAG D450V2 S/N: 1009

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
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Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client EMC Technologies

Certificate No: ET3-1380_Dec08

CALIBRATION CERTIFICATE

Object	ET3DV6 - SN:1380
Calibration procedure(s)	QA CAL-01.v6, QA CAL-12.v5 and QA CAL-23.v3 Calibration procedure for dosimetric E-field probes
Calibration date:	December 18, 2008
Condition of the calibrated item	In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41495277	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41498087	1-Apr-08 (No. 217-00788)	Apr-09
Reference 3 dB Attenuator	SN: S5054 (3c)	1-Jul-08 (No. 217-00865)	Jul-09
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-08 (No. 217-00787)	Apr-09
Reference 30 dB Attenuator	SN: S5129 (30b)	1-Jul-08 (No. 217-00866)	Jul-09
Reference Probe ES3DV2	SN: 3013	2-Jan-08 (No. ES3-3013_Jan08)	Jan-09
DAE4	SN: 660	9-Sep-08 (No. DAE4-660_Sep08)	Sep-09

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-08)	In house check: Oct-09

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	

Issued: December 18, 2008

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
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Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe ET3DV6

SN:1380

Manufactured:	August 16, 1999
Last calibrated:	December 18, 2007
Repaired:	December 12, 2008
Recalibrated:	December 18, 2008

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ET3DV6 SN:1380 **December 18, 2008**

DASY - Parameters of Probe: ET3DV6 SN:1380

Sensitivity in Free Space[A] Diode Compression[B]

NormX	**1.63** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**88** mV
NormY	**1.58** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**88** mV
NormZ	**1.69** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**89** mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL **900 MHz** **Typical SAR gradient: 5 % per mm**

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	10.4	6.3
SAR_{be} [%]	With Correction Algorithm	0.9	0.5

TSL **1810 MHz** **Typical SAR gradient: 10 % per mm**

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	10.9	6.3
SAR_{be} [%]	With Correction Algorithm	0.9	0.6

Sensor Offset

Probe Tip to Sensor Center	**2.7** mm

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

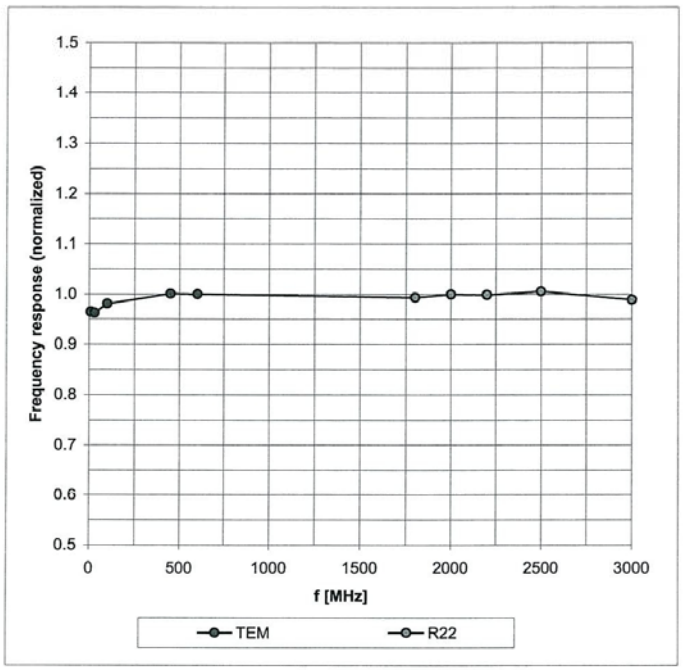
[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).

[B] Numerical linearization parameter: uncertainty not required.

ET3DV6 SN:1380 **December 18, 2008**

Frequency Response of E-Field

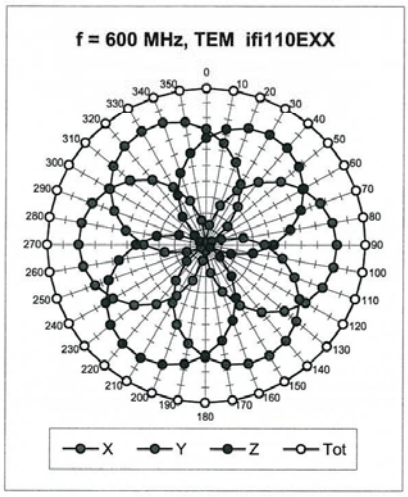
(TEM-Cell:ifi110 EXX, Waveguide: R22)

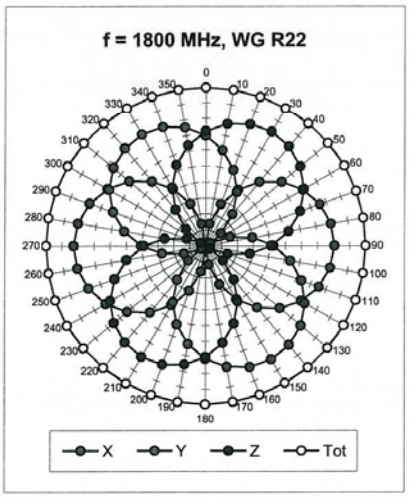


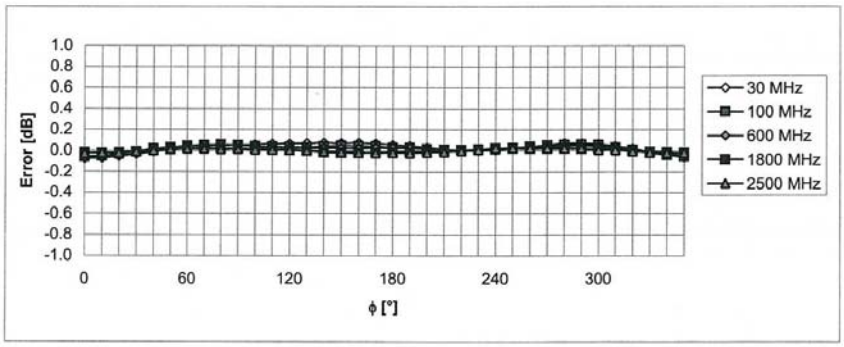
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

ET3DV6 SN:1380 **December 18, 2008**

Receiving Pattern (ϕ), ϑ = 0°





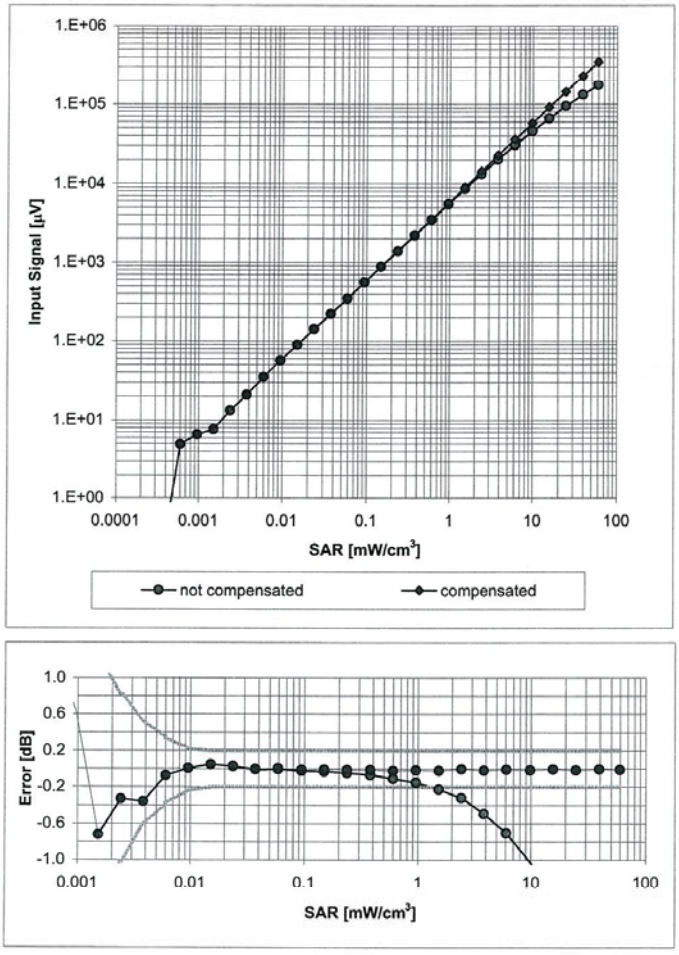


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

ET3DV6 SN:1380 **December 18, 2008**

Dynamic Range f(SAR_{head})

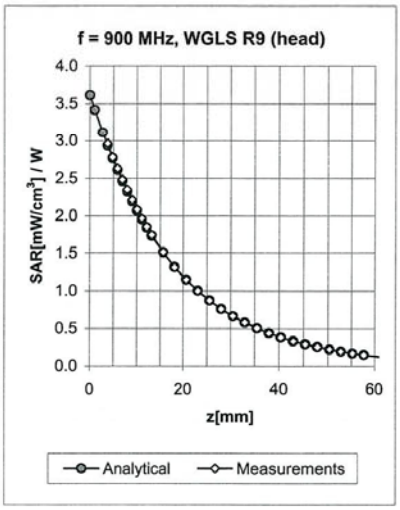
(Waveguide R22, f = 1800 MHz)

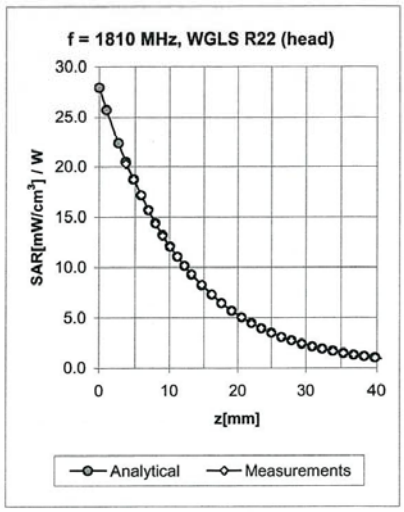


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

ET3DV6 SN:1380 **December 18, 2008**

Conversion Factor Assessment





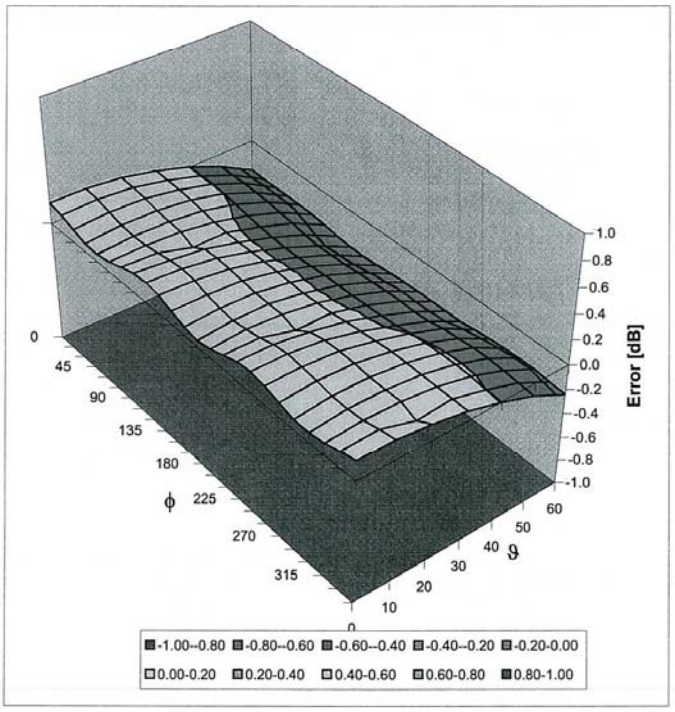
f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
450	± 50 / ± 100	Head	43.5 ± 5%	0.87 ± 5%	0.40	1.97	7.12 ± 13.3% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.45	2.27	5.95 ± 11.0% (k=2)
1640	± 50 / ± 100	Head	40.3 ± 5%	1.29 ± 5%	0.53	2.62	5.36 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.65	2.31	5.07 ± 11.0% (k=2)
1950	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.84	2.01	4.81 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.99	1.66	4.52 ± 11.0% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.31	1.97	7.57 ± 13.3% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.38	2.77	5.90 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.97	2.12	4.66 ± 11.0% (k=2)
1950	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.99	1.96	4.58 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.99	1.60	3.96 ± 11.0% (k=2)

[C] The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

ET3DV6 SN:1380 **December 18, 2008**

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 108

Client **EMC Technologies** Certificate No: **D450V2-1009_Dec08**

CALIBRATION CERTIFICATE

Object	D450V2 - SN: 1009
Calibration procedure(s)	QA CAL-15.v5 Calibration Procedure for dipole validation kits below 800 MHz
Calibration date:	December 17, 2008
Condition of the calibrated item	In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	01-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41495277	01-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41498087	01-Apr-08 (No. 217-00788)	Apr-09
Reference 3 dB Attenuator	SN: S5054 (3c)	01-Jul-08 (No. 217-00865)	Jul-09
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-08 (No. 217-00787)	Mar-09
Type-N mismatch combination	SN: 5047.2 / 06327	01-Jul-08 (No. 217-00867)	Jul-09
Reference Probe ET3DV6 (LF)	SN: 1507	27-Jun-08 (No. ET3-1507_Jun08)	Jun-09
DAE4	SN: 601	14-Mar-08 (No. DAE4-601_Mar08)	Mar-09

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	04-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-08)	In house check: Oct-09

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: December 17, 2008

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
ConF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V5.0
Extrapolation	Advanced Extrapolation	
Phantom	Flat Phantom V4.4	Shell thickness: 6 ± 0.2 mm
Distance Dipole Center - TSL	15 mm	with Spacer
Area Scan Resolution	dx, dy = 15 mm	
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	43.5	0.87 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	43.3 ± 6 %	0.83 mho/m ± 6 %
Head TSL temperature during test	(21.5 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	condition	
SAR measured	398 mW input power	1.94 mW / g
SAR normalized	normalized to 1W	4.87 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**4.96 mW / g ± 18.1 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	398 mW input power	1.30 mW / g
SAR normalized	normalized to 1W	3.27 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**3.30 mW / g ± 17.6 % (k=2)**

[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.0 Ω - 11.0 jΩ
Return Loss	- 19 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.358 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	November 18, 2002

DASY5 Validation Report for Head TSL

Date/Time: 17.12.2008 09:57:59

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 450 MHz; Type: D450V2; Serial: D450V2 - SN:1009

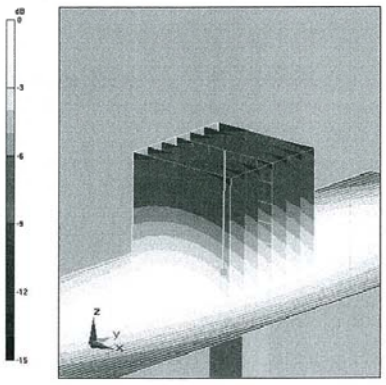
Communication System: CW; Frequency: 450 MHz; Duty Cycle: 1:1
Medium: HSL450
Medium parameters used: f = 450 MHz; σ = 0.83 mho/m; ε_r = 43.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ET3DV6 - SN1507 (LF); ConvF(6.66, 6.66, 6.66); Calibrated: 27.06.2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 14.03.2008
- Phantom: Flat Phantom 4.4; Type: Flat Phantom 4.4; Serial:1002
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

d=15mm, Pin=398mW/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.04 mW/g

d=15mm, Pin=398mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51 V/m; Power Drift = 0.00189 dB
Peak SAR (extrapolated) = 2.88 W/kg
SAR(1 g) = 1.94 mW/g; SAR(10 g) = 1.3 mW/g
Maximum value of SAR (measured) = 2.08 mW/g



0 dB = 2.08mW/g

Impedance Measurement Plot for Head TSL