MOTOROLA

ACCREDITED
TESTING CERT # 2518.01

FCC ID: AZ489FT7038
DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 2 of 3

Enterprise Mobility Solutions
EME Test Laboratory
8000 West Sunrise Blvd
Fort Lauderdale, FL. 33322.

Date of Report: 3/05/10
Report Revision: O
Report ID: SAR rpt_EWP3100_Rev O_100305_SR7854

Responsible Engineer:	Michael Sailsman (Sr. Staff EME Engineer)
Report Author:	Michael Sailsman (Sr. Staff EME Engineer)
Date/s Tested:	1/14/10-1/16/10, 1/21/10-1/27/10, 2/4/10-2/17/10 & 2/24/10
Manufacturer/Location:	Motorola Israel South
Sector/Group/Div.:	EMS
Date submitted for test:	12/7/09
DUT Description:	VoWLAN is a VoIP phone based on WLAN a/b/g. It also includes a Bluetooth - transceiver. (including camera)
Test TX mode(s):	50% (802.11a/b/g); 95% (BT)
Max. Power output:	BT(2.51mW); 802.11b (79.3mW); 802.11g (70.8mW); 802.11a mid and upper band (79.3mW); 802.11a low band (39.8mW)
Nominal Power:	BT(1.0mW); 802.11b (63.0mW); 802.11g (17.8mW); 802.11a mid and upper band (56.2mW); 802.11a low band (28.2mW)
Tx Frequency Bands:	BT: 2402-2480MHz; WLAN: b/g: 2412-2462MHz, a: 5.18-5.24 GHz; 5.26-5.32 GHz; 5.50 -5.70 GHz and 5.745-5.805 GHz
Signaling type:	BT(GFSK/FHSS), 802.11a/b/g (DSSS/OFDM)
Model(s) Tested:	EWP3100
Model(s) Certified:	EWP3100
Serial Number(s):	847SKW002L, 847SKW002N
Classification:	General Population/Uncontrolled Environment
Rule Part(s):	15

DUT Photo
(Refer to Exhibit 7B)

Max. Calc. : 1-g Avg. SAR: 0.31 W/kg (Body); 10-g Avg. SAR: 0.14 W/kg (Body)
Max. Calc. : 1-g Avg. SAR: 0.09 W/kg (Face); 10-g Avg. SAR: 0.05 W/kg (Face)
Max. Calc. : 1-g Avg. SAR: 1.00 W/kg (Head); 10-g Avg. SAR: 0.38 W/kg (Head)

The test results clearly demonstrate compliance with FCC General Population/Uncontrolled RF Exposure limits of 1.6 W/kg averaged over 1 gram per the requirements of 47 CFR 2.1093(d). The 10 grams results are not applicable to FCC filing. The test results clearly demonstrate compliance with ICNIRP (1998) Guidelines for limiting exposure in time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz), Health Physics 74, 494-522 RF Exposure limits of 2 W/kg averaged over 10 grams of contiguous tissue.

Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the national and international reference standards and guidelines listed in section 3.0 of this report. This report shall not be reproduced without written approval from an officially designated representative of the Motorola EME Laboratory.
I attest to the accuracy of the data and assume full responsibility for the completeness of these measurements. This reporting format is consistent with the suggested guidelines of the TIA TSB-150 December 2004. The results and statements contained in this report pertain only to the device(s) evaluated.

Signature on file
Deanna Zakharia
EMS EME Lab Senior Resource Manager, Laboratory Director

Approval Date: 3/8/10

Certification Date: 3/8/10

Certification No.: L1100247P

APPENDIX B
Probe Calibration Certificates

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

Client **Motorola CGISS**

Certificate No: EX3-3638_Jul09

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3638

Calibration procedure(s) QA CAL-01.v6, QA CAL-14.v3, QA CAL-23.v3 and QA CAL-25.v2
Calibration procedure for dosimetric E-field probes

Calibration date: July 16, 2009

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-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41495277	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41498087	1-Apr-09 (No. 217-01030)	Apr-10
Reference 3 dB Attenuator	SN: S5054 (3c)	31-Mar-09 (No. 217-01026)	Mar-10
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-09 (No. 217-01028)	Mar-10
Reference 30 dB Attenuator	SN: S5129 (30b)	31-Mar-09 (No. 217-01027)	Mar-10
Reference Probe ES3DV2	SN: 3013	2-Jan-09 (No. ES3-3013_Jan09)	Jan-10
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: July 16, 2009

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
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 EX3DV4

SN:3638

Manufactured:	November 1, 2007
Last calibrated:	March 18, 2008
Recalibrated:	July 16, 2009

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

EX3DV4 SN:3638 **July 16, 2009**

DASY - Parameters of Probe: EX3DV4 SN:3638

Sensitivity in Free Space[A]

Diode Compression[B]

NormX	**0.48** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**92** mV
NormY	**0.51** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**90** mV
NormZ	**0.51** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**91** mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL **5200 MHz** **Typical SAR gradient: 25 % per mm**

Sensor Center to Phantom Surface Distance		**2.0 mm**	**3.0 mm**
SAR_{be} [%]	Without Correction Algorithm	24.5	18.3
SAR_{be} [%]	With Correction Algorithm	0.8	0.6

TSL **5800 MHz** **Typical SAR gradient: 30 % per mm**

Sensor Center to Phantom Surface Distance		**2.0 mm**	**3.0 mm**
SAR_{be} [%]	Without Correction Algorithm	30.7	23.6
SAR_{be} [%]	With Correction Algorithm	0.9	0.6

Sensor Offset

Probe Tip to Sensor Center	**1.0** 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%.

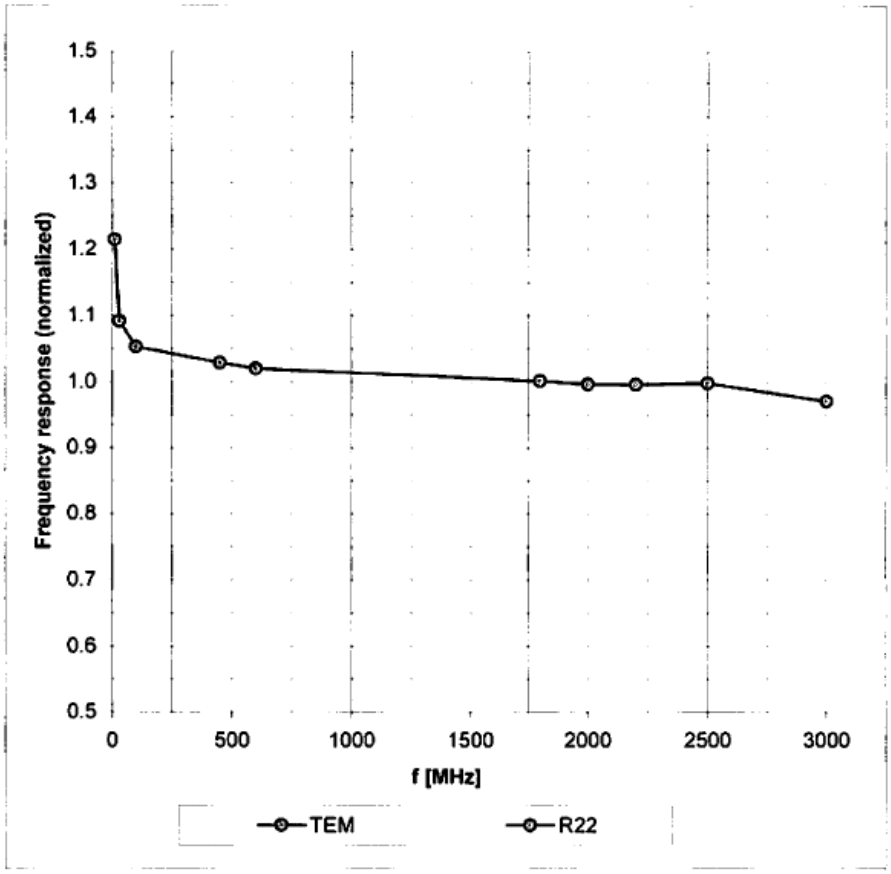
[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).

[B] Numerical linearization parameter: uncertainty not required.

EX3DV4 SN:3638 July 16, 2009

Frequency Response of E-Field

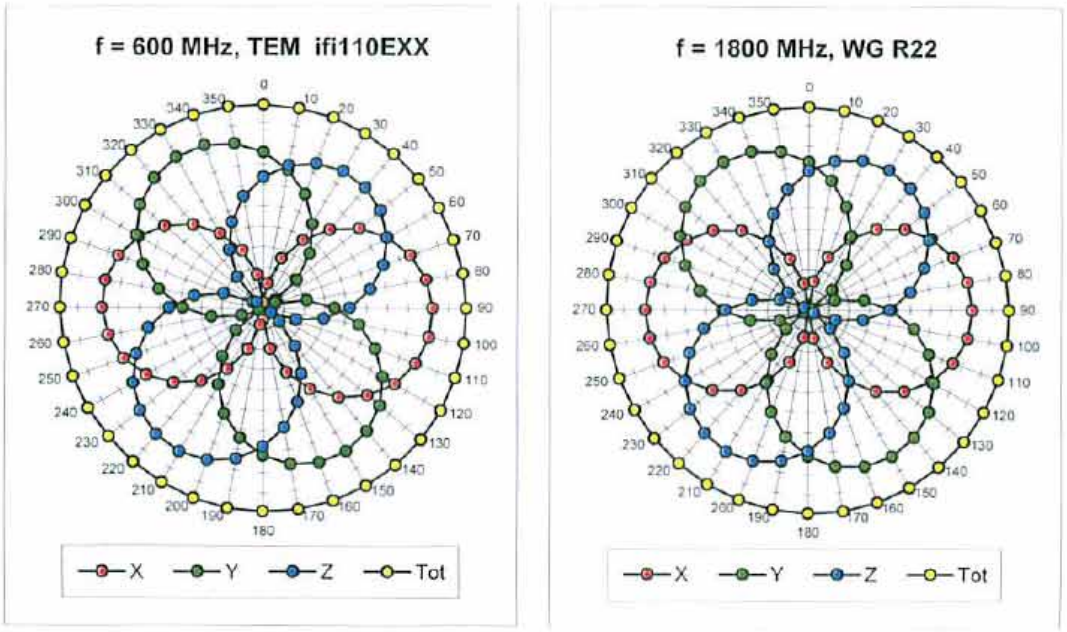
(TEM-Cell:ifi110 EXX, Waveguide: R22)

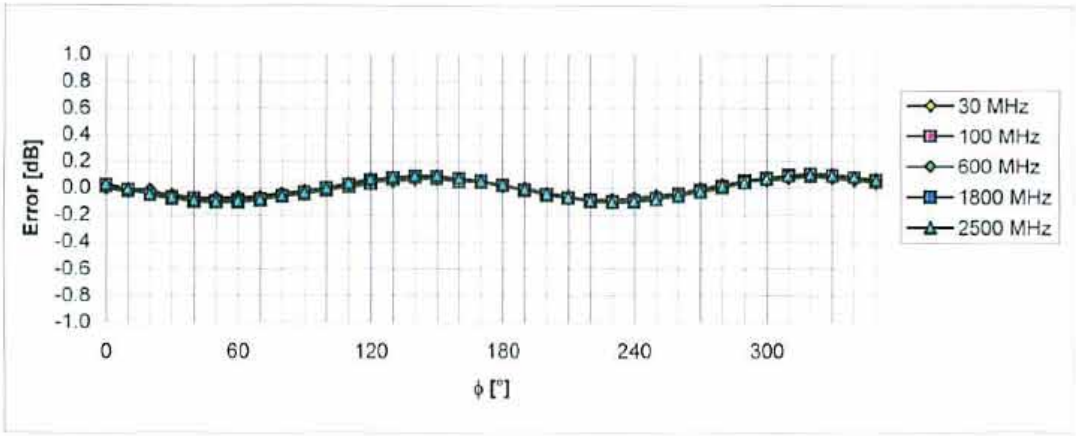


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

EX3DV4 SN:3638 July 16, 2009

Receiving Pattern (ϕ), ϑ = 0°

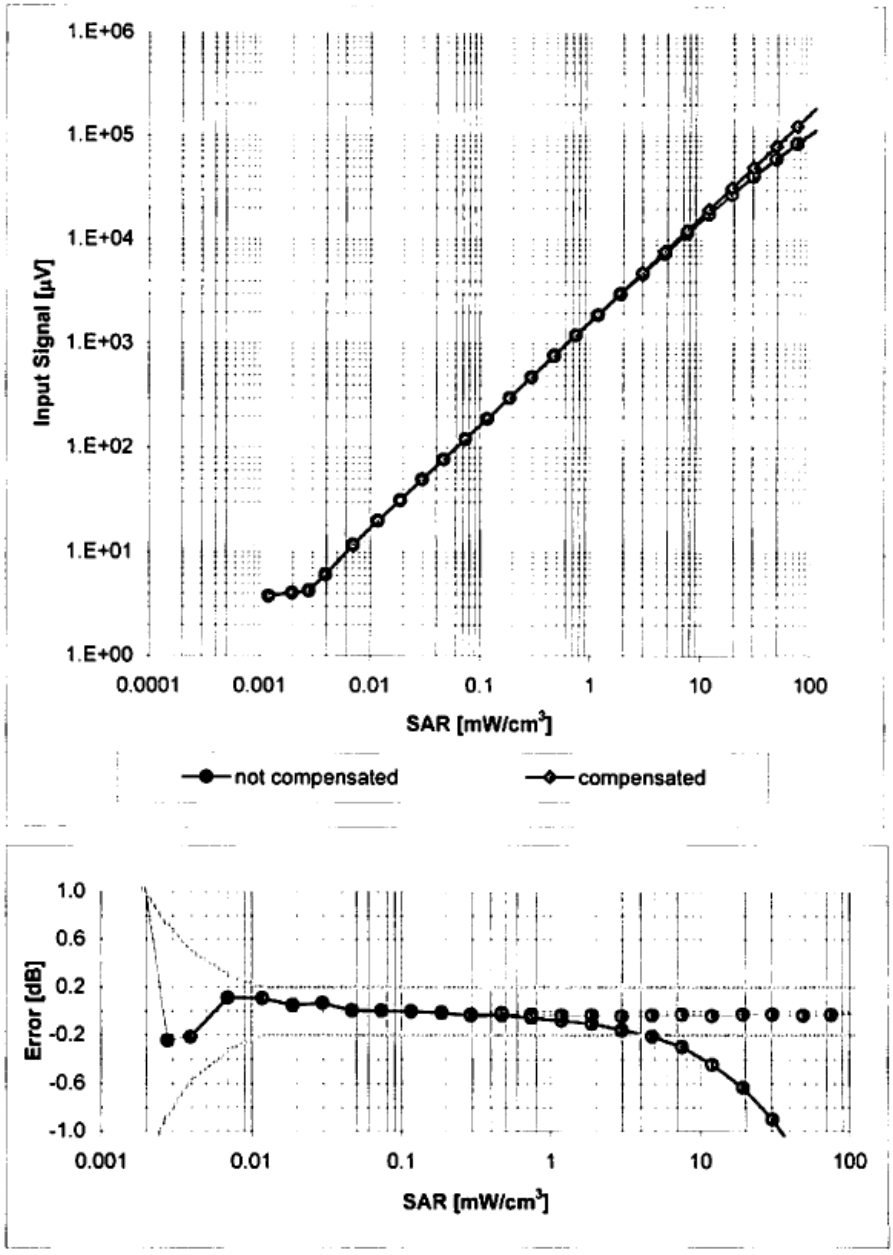




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})

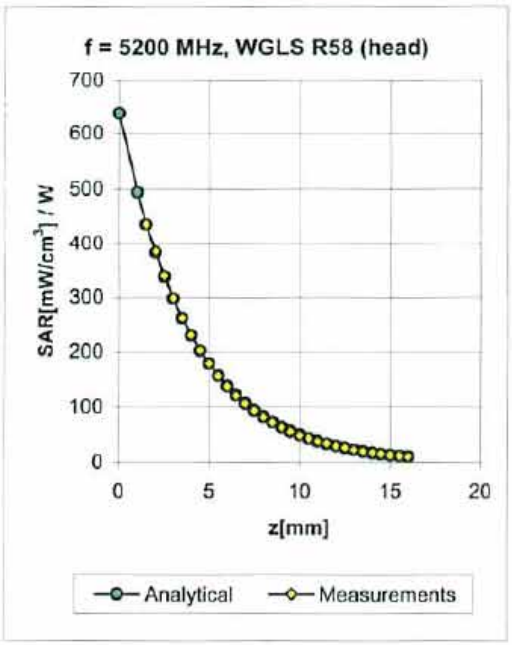
(Waveguide R22, f = 1800 MHz)

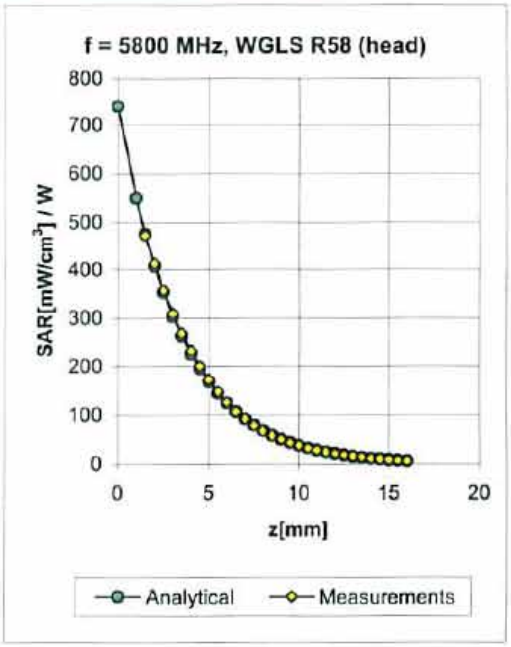


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

EX3DV4 SN:3638 July 16, 2009

Conversion Factor Assessment





f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.71	0.62	6.71 ± 11.0% (k=2)
4950	± 50 / ± 100	Head	36.3 ± 5%	4.40 ± 5%	0.45	1.80	4.56 ± 13.1% (k=2)
5200	± 50 / ± 100	Head	36.0 ± 5%	4.66 ± 5%	0.45	1.80	4.40 ± 13.1% (k=2)
5300	± 50 / ± 100	Head	35.9 ± 5%	4.76 ± 5%	0.50	1.80	4.15 ± 13.1% (k=2)
5500	± 50 / ± 100	Head	35.6 ± 5%	4.96 ± 5%	0.50	1.80	4.13 ± 13.1% (k=2)
5600	± 50 / ± 100	Head	35.5 ± 5%	5.07 ± 5%	0.50	1.80	3.89 ± 13.1% (k=2)
5800	± 50 / ± 100	Head	35.3 ± 5%	5.27 ± 5%	0.55	1.80	4.04 ± 13.1% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.63	0.64	6.97 ± 11.8% (k=2)
4950	± 50 / ± 100	Body	49.4 ± 5%	5.01 ± 5%	0.50	1.95	4.23 ± 13.1% (k=2)
5200	± 50 / ± 100	Body	49.0 ± 5%	5.30 ± 5%	0.55	1.95	4.05 ± 13.1% (k=2)
5300	± 50 / ± 100	Body	48.5 ± 5%	5.42 ± 5%	0.55	1.95	3.83 ± 13.1% (k=2)
5500	± 50 / ± 100	Body	48.6 ± 5%	5.65 ± 5%	0.60	1.95	3.57 ± 13.1% (k=2)
5600	± 50 / ± 100	Body	48.5 ± 5%	5.77 ± 5%	0.60	1.95	3.43 ± 13.1% (k=2)
5800	± 50 / ± 100	Body	48.2 ± 5%	6.00 ± 5%	0.65	1.90	3.60 ± 13.1% (k=2)

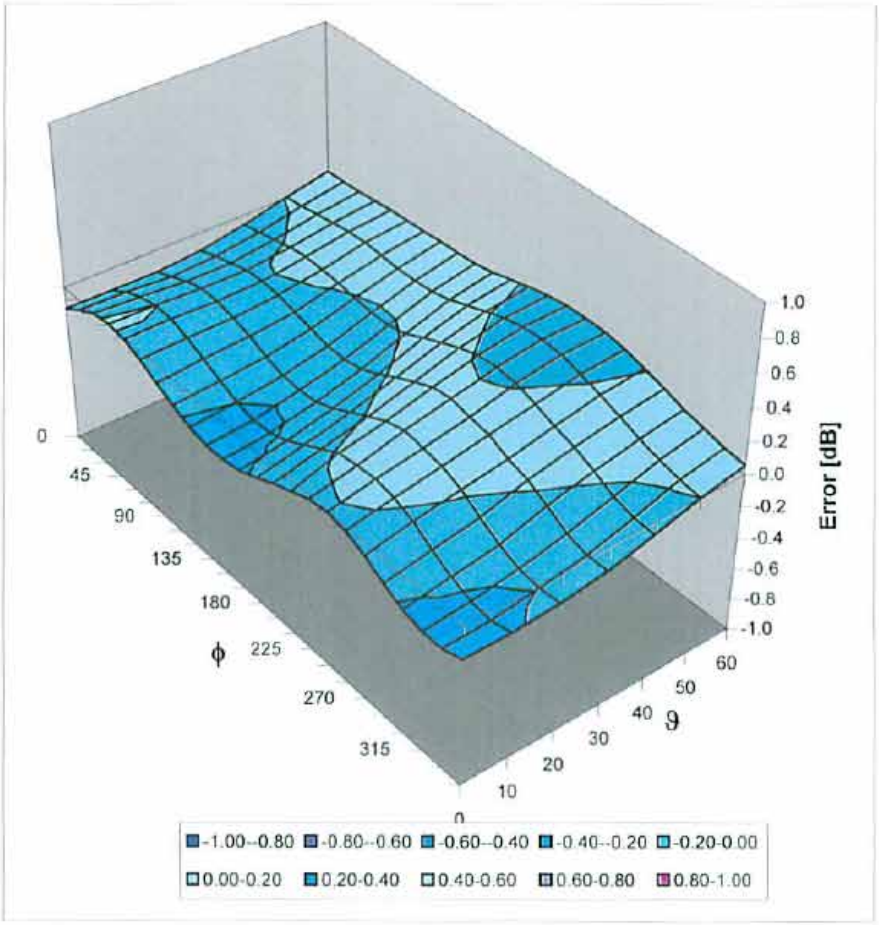
[C] The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

Certificate No: EX3-3638_Jul09 Page 8 of 9

EX3DV4 SN:3638 July 16, 2009

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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S Swiss Calibration Service

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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 Motorola CGISS

Certificate No: ES3-3163_Apr09

CALIBRATION CERTIFICATE

Object	ES3DV3 - SN:3163
Calibration procedure(s)	QA CAL-01.v6, QA CAL-12.v5, QA CAL-14.v3 and QA CAL-23.v3 Calibration procedure for dosimetric E-field probes
Calibration date:	April 24, 2009
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-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41495277	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41498087	1-Apr-09 (No. 217-01030)	Apr-10
Reference 3 dB Attenuator	SN: S5054 (3c)	31-Mar-09 (No. 217-01026)	Mar-10
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-09 (No. 217-01028)	Mar-10
Reference 30 dB Attenuator	SN: S5129 (30b)	31-Mar-09 (No. 217-01027)	Mar-10
Reference Probe ES3DV2	SN: 3013	2-Jan-09 (No. ES3-3013_Jan09)	Jan-10
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: April 24, 2009

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

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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 ES3DV3

SN:3163

Manufactured:	October 8, 2007
Last calibrated:	April 18, 2008
Recalibrated:	April 24, 2009

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ES3DV3 SN:3163 April 24, 2009

DASY - Parameters of Probe: ES3DV3 SN:3163

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

NormX	1.32 ± 10.1%	$\mu V/(V/m)^2$	DCP X	95 mV
NormY	1.16 ± 10.1%	$\mu V/(V/m)^2$	DCP Y	94 mV
NormZ	1.05 ± 10.1%	$\mu V/(V/m)^2$	DCP Z	94 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		3.0 mm	4.0 mm
SAR_{be} [%]	Without Correction Algorithm	10.2	5.8
SAR_{be} [%]	With Correction Algorithm	0.8	0.7

TSL 1810 MHz Typical SAR gradient: 10 % per mm

Sensor Center to Phantom Surface Distance		3.0 mm	4.0 mm
SAR_{be} [%]	Without Correction Algorithm	9.2	5.2
SAR_{be} [%]	With Correction Algorithm	0.5	0.2

Sensor Offset

Probe Tip to Sensor Center	2.0 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%.

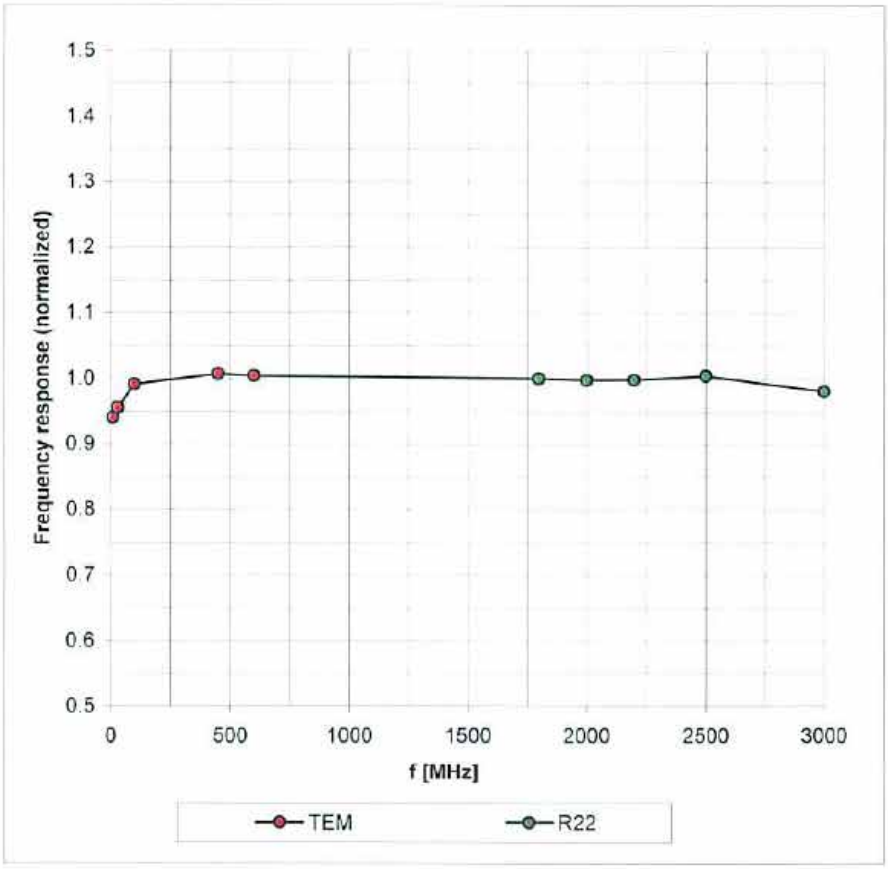
[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).

[B] Numerical linearization parameter: uncertainty not required.

ES3DV3 SN:3163 April 24, 2009

Frequency Response of E-Field

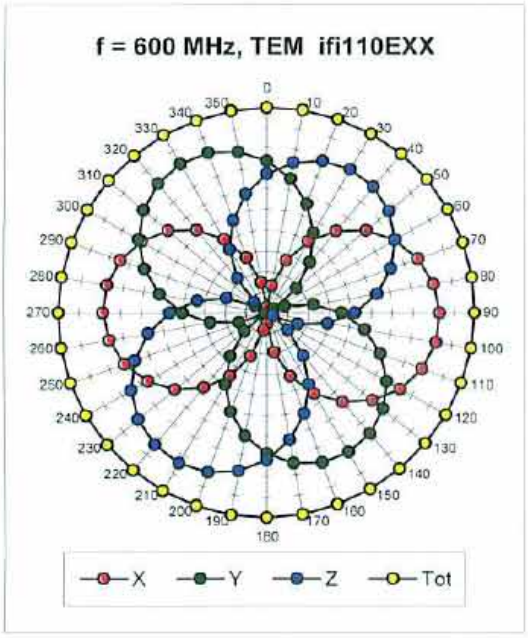
(TEM-Cell:ifi110 EXX, Waveguide: R22)

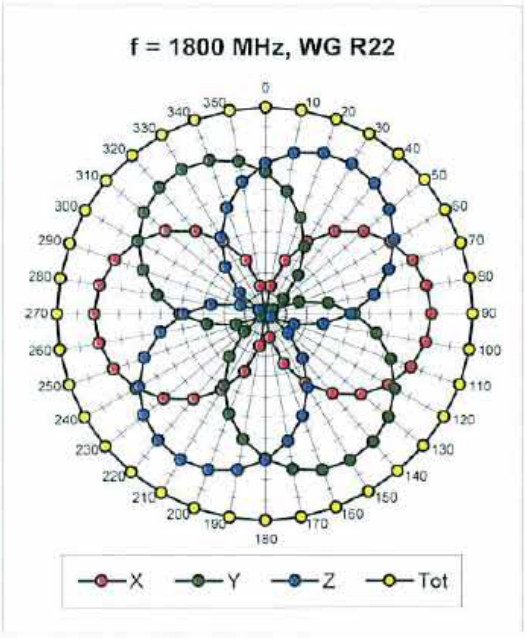


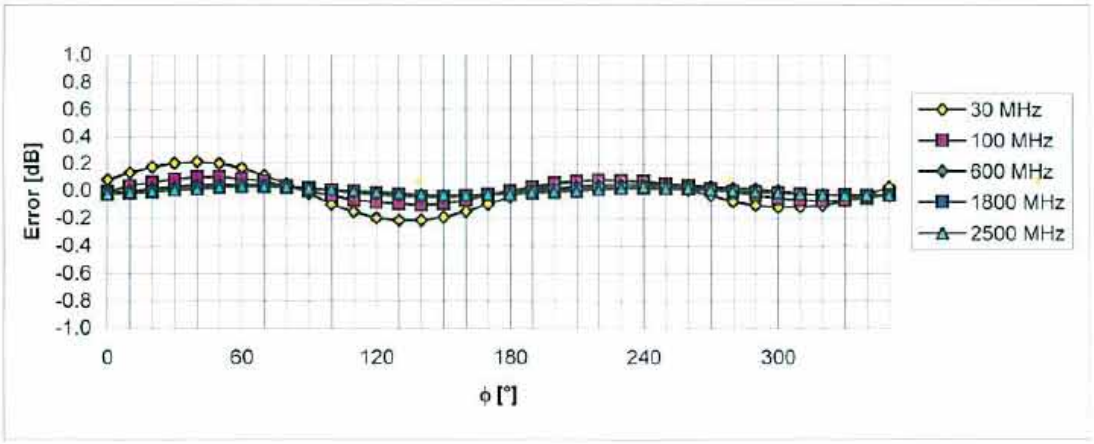
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

ES3DV3 SN:3163 **April 24, 2009**

Receiving Pattern (ϕ), ϑ = 0°



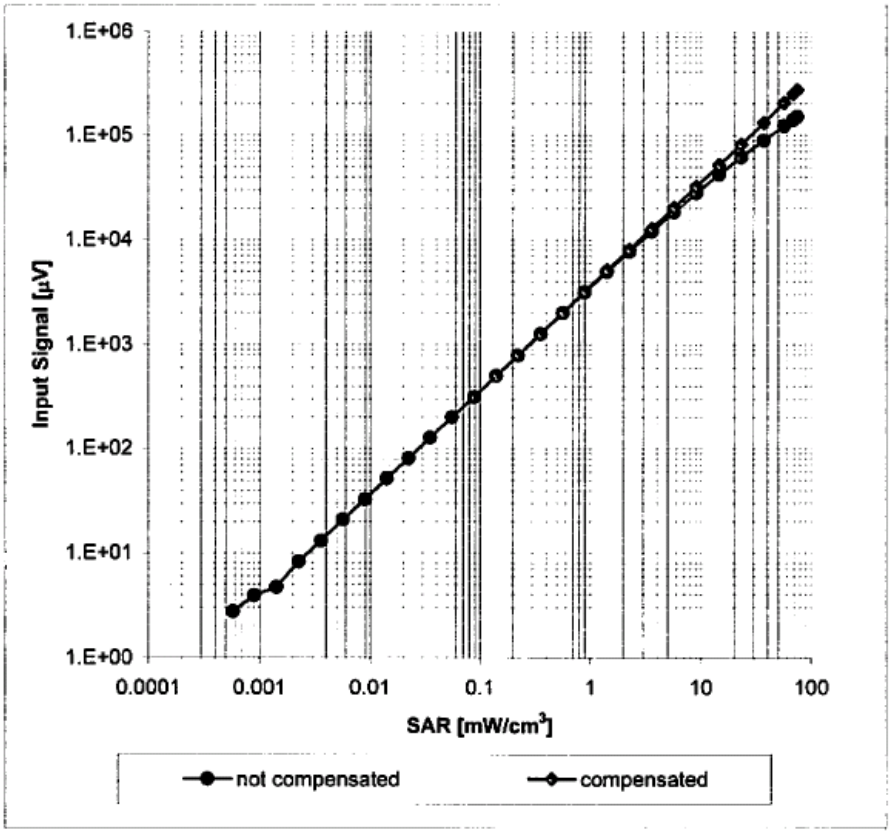


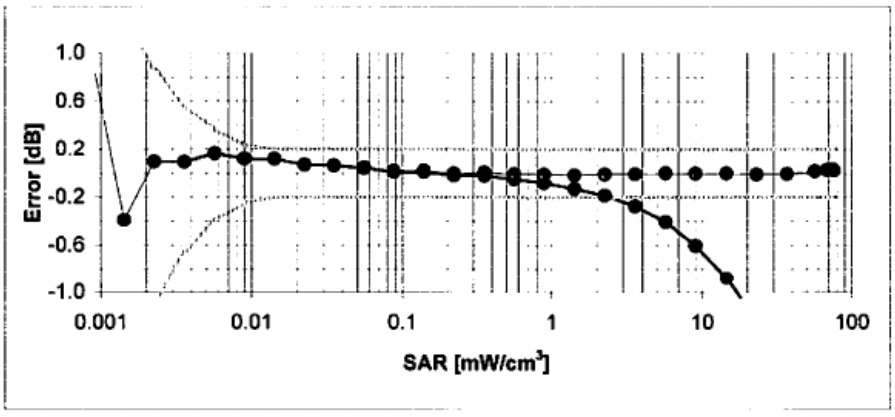


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})

(Waveguide R22, f = 1800 MHz)





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

ES3DV3 SN:3163 April 24, 2009

Conversion Factor Assessment

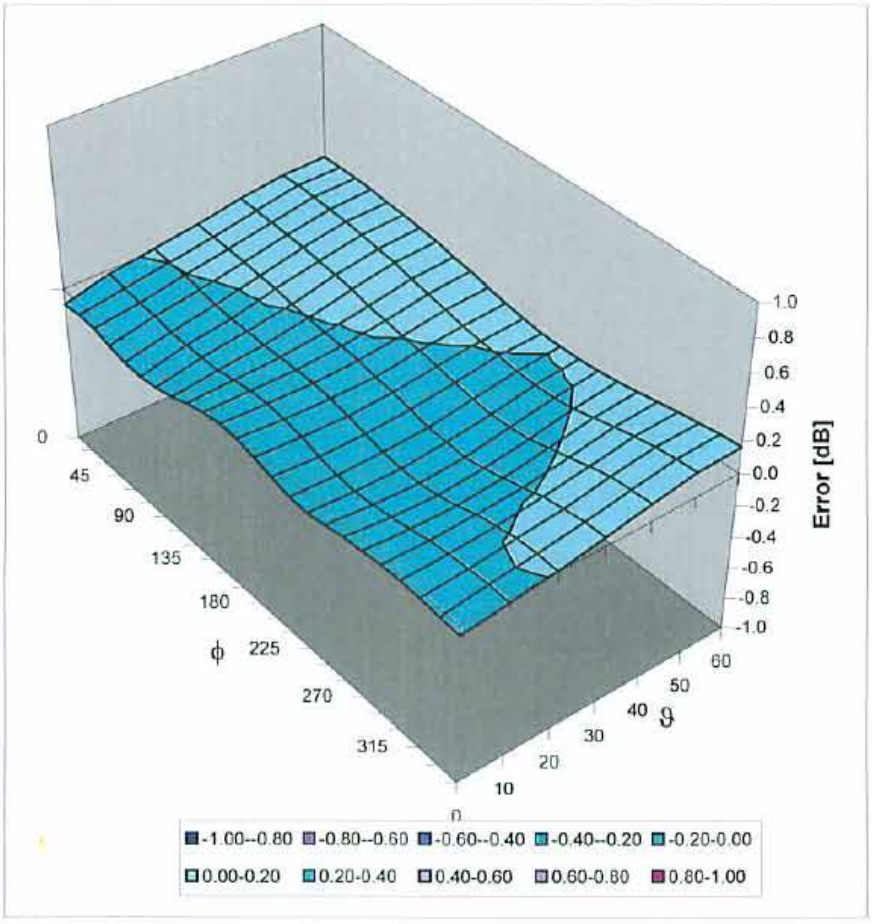
f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
450	± 50 / ± 100	Head	43.5 ± 5%	0.87 ± 5%	0.24	1.57	6.28 ± 13.3% (k=2)
750	± 50 / ± 100	Head	41.9 ± 5%	0.89 ± 5%	0.99	1.05	6.06 ± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.94	1.08	5.81 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.44	1.56	4.98 ± 11.0% (k=2)
1950	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.41	1.67	4.85 ± 11.0% (k=2)
2300	± 50 / ± 100	Head	39.5 ± 5%	1.67 ± 5%	0.33	1.95	4.73 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.43	1.71	4.50 ± 11.0% (k=2)
2600	± 50 / ± 100	Head	39.0 ± 5%	1.96 ± 5%	0.52	1.61	4.41 ± 11.0% (k=2)
3500	± 50 / ± 100	Head	37.9 ± 5%	2.91 ± 5%	0.85	1.30	3.81 ± 13.1% (k=2)
3700	± 50 / ± 100	Head	37.7 ± 5%	3.12 ± 5%	0.80	1.30	3.46 ± 13.1% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.17	1.36	6.79 ± 13.3% (k=2)
750	± 50 / ± 100	Body	55.5 ± 5%	0.96 ± 5%	0.92	1.09	5.90 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.63	1.28	5.74 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.32	2.37	4.79 ± 11.0% (k=2)
1950	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.34	2.33	4.67 ± 11.0% (k=2)
2300	± 50 / ± 100	Body	52.8 ± 5%	1.85 ± 5%	0.51	1.49	4.20 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.40	1.60	4.16 ± 11.0% (k=2)
2600	± 50 / ± 100	Body	52.5 ± 5%	2.16 ± 5%	0.52	1.55	4.05 ± 11.0% (k=2)
3500	± 50 / ± 100	Body	51.3 ± 5%	3.31 ± 5%	0.70	1.70	3.31 ± 13.1% (k=2)
3700	± 50 / ± 100	Body	51.0 ± 5%	3.55 ± 5%	0.71	1.75	3.15 ± 13.1% (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.

ES3DV3 SN:3163 April 24, 2009

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



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

Schmid & Partner Engineering AG

s p e a g

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Phone +41 44 245 9700, Fax +41 44 245 9779
info@speag.com, http://www.speag.com

Additional Conversion Factors

for Dosimetric E-Field Probe

Type:	**ES3DV3**
Serial Number:	**3163**
Place of Assessment:	**Zurich**
Date of Assessment:	**April 28, 2009**
Probe Calibration Date:	**April 24, 2009**

Schmid & Partner Engineering AG hereby certifies that conversion factor(s) of this probe have been evaluated on the date indicated above. The assessment was performed using the FDTD numerical code SEMCAD of Schmid & Partner Engineering AG. Since the evaluation is coupled with measured conversion factors, it has to be recalculated yearly, i.e., following the re-calibration schedule of the probe. The uncertainty of the numerical assessment is based on the extrapolation from measured value at 900 MHz or at 1810 MHz.

Assessed by:

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Dosimetric E-Field Probe ES3DV3 SN:3163

Conversion factor (± standard deviation)

150 MHz	*ConvF*	**7.9 ± 10%**	ε_r = 52.3 σ = 0.76 mho/m (head tissue)
250 MHz	*ConvF*	**7.4 ± 10%**	ε_r = 47.6 σ = 0.83 mho/m (head tissue)
300 MHz	*ConvF*	**7.1 ± 9%**	ε_r = 45.3 σ = 0.87 mho/m (head tissue)
150 MHz	*ConvF*	**7.6 ± 10%**	ε_r = 61.9 σ = 0.80 mho/m (body tissue)
250 MHz	*ConvF*	**7.2 ± 10%**	ε_r = 59.4 σ = 0.88 mho/m (body tissue)
300 MHz	*ConvF*	**7.1 ± 9%**	ε_r = 58.2 σ = 0.92 mho/m (body tissue)

Important Note:

For numerically assessed probe conversion factors, parameters Alpha and Delta in the DASY software must have the following entries: Alpha = 0 and Delta = 1.

Please see also Section 4.7 of the DASY4 Manual.

APPENDIX C
Dipole Calibration Certificates

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

Client **Motorola CGISS**

Certificate No: D5GHzV2-1010_Apr08

CALIBRATION CERTIFICATE

Object	D5GHzV2 - SN: 1010
Calibration procedure(s)	QA CAL-22.v1 Calibration procedure for dipole validation kits between 3-6 GHz
Calibration date:	April 21, 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 EPM-442A	GB37480704	04-Oct-07 (No. 217-00736)	Oct-08
Power sensor HP 8481A	US37292783	04-Oct-07 (No. 217-00736)	Oct-08
Reference 20 dB Attenuator	SN: S5072.1 (20g)	07-Aug-07 (No 217-00718)	Aug-08
Reference Probe EX3DV4	SN: 3503	8-Mar-08 (No. EX3-3503_Mar08)	Mar-09
DAE4	SN 601	14-Mar-08 (No. DAE4-601_Mar08)	Mar-09

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	4-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-07)	In house check: Oct-08
Power meter E4419B	GB43310788	13-Aug-03 (in house check Oct-07)	In house check: Oct-08
Power sensor HP 8481A	MY41093315	10-Aug-03 (in house check Oct-07)	In house check: Oct-08

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 22, 2008

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

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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
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEC Std 62209 Part 2, "Evaluation of Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices in the Frequency Range of 30 MHz to 6 GHz: Human models, Instrumentation, and Procedures"; Part 2: "Procedure to determine the Specific Absorption Rate (SAR) for including accessories and multiple transmitters", Draft Version 0.9, December 2004

b) 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:

c) 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	DASY4	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Area Scan resolution	dx, dy = 10 mm	
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 2.5 mm	
Frequency	5000 MHz ± 1 MHz 5200 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Head TSL parameters at 5000 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	36.2	4.45 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.5 ± 6 %	4.32 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C	—	—

SAR result with Head TSL at 5000 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	condition	
SAR measured	100 mW input power	7.69 mW / g
SAR normalized	normalized to 1W	76.9 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**76.4 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.18 mW / g
SAR normalized	normalized to 1W	21.8 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**21.6 mW / g ± 19.5 % (k=2)**

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

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.1 ± 6 %	4.51 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C	—	—

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	condition	
SAR measured	100 mW input power	7.80 mW / g
SAR normalized	normalized to 1W	78.0 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**77.4 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.20 mW / g
SAR normalized	normalized to 1W	22.0 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**21.8 mW / g ± 19.5 % (k=2)**

Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.0 ± 6 %	5.02 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C	—	—

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	condition	
SAR measured	100 mW input power	7.93 mW / g
SAR normalized	normalized to 1W	78.3 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**78.3 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.23 mW / g
SAR normalized	normalized to 1W	22.3 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**22.0 mW / g ± 19.5 % (k=2)**

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

Body TSL parameters at 5000 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.3	5.07 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.6 ± 6 %	5.05 mho/m ± 6 %
Body TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Body TSL at 5000 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	condition	
SAR measured	100 mW input power	7.93 mW / g
SAR normalized	normalized to 1W	79.3 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**78.4 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.25 mW / g
SAR normalized	normalized to 1W	22.5 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**22.3 mW / g ± 19.5 % (k=2)**

Body TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.0 ± 6 %	5.34 mho/m ± 6 %
Body TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	condition	
SAR measured	100 mW input power	7.74 mW / g
SAR normalized	normalized to 1W	77.4 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**76.4 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.17 mW / g
SAR normalized	normalized to 1W	21.7 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**21.7 mW / g ± 19.5 % (k=2)**

[2] Correction to nominal TSL parameters according to c), chapter "SAR Sensitivities

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	45.9 ± 6 %	6.09 mho/m ± 6 %
Body TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	condition	
SAR measured	100 mW input power	7.22 mW / g
SAR normalized	normalized to 1W	72.2 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**71.1 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.02 mW / g
SAR normalized	normalized to 1W	20.2 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**20.0 mW / g ± 19.5 % (k=2)**

[2] Correction to nominal TSL parameters according to c), chapter "SAR Sensitivities

Appendix

Antenna Parameters with Head TSL at 5000 MHz

Impedance, transformed to feed point	48.8 Ω - 10.1 jΩ
Return Loss	-19.8 dB

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	53.3 Ω - 7.4 jΩ
Return Loss	-22.1 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	57.9 Ω + 4.3 jΩ
Return Loss	-21.6 dB

Antenna Parameters with Body TSL at 5000 MHz

Impedance, transformed to feed point	48.2 Ω - 7.2 jΩ
Return Loss	-22.5 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	52.5 Ω - 5.7 jΩ
Return Loss	-24.3 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	58.3 Ω + 5.9 jΩ
Return Loss	-20.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.200 ns

After long term use with 40 W 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	August 28, 2003

DASY4 Validation Report for Head TSL

Date/Time: 21.04.2008 14:09:07

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHz; Serial: D5GHzV2 - SN:1010

Communication System: CW-5GHz;

Frequency: 5000 MHzFrequency: 5200 MHzFrequency: 5800 MHz;Duty Cycle: 1:1
Medium: HSL 5800 MHz;
Medium parameters used: f = 5000 MHz; σ = 4.32 mho/m; ε_r = 35.5; ρ = 1000 kg/m^3
Medium parameters used: f = 5200 MHz; σ = 4.51 mho/m; ε_r = 35.1; ρ = 1000 kg/m^3
Medium parameters used: f = 5800 MHz; σ = 5.02 mho/m; ε_r = 34; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.98, 5.98, 5.98)ConvF(5.63, 5.63, 5.63)ConvF(5.04, 5.04, 5.04); Calibrated: 08.03.2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 14.03.2008
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

d=10mm, Pin=100mW, f=5000 MHz/Zoom Scan (8x8x10), dist=2mm (8x8x10)/Cube 0:

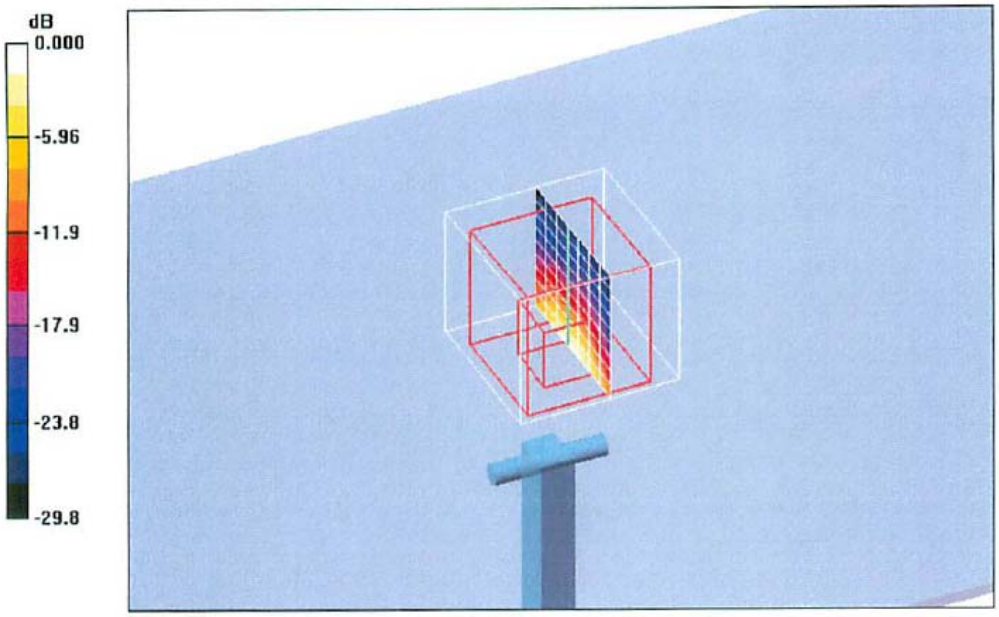
Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 48.4 V/m; Power Drift = 0.054 dB
Peak SAR (extrapolated) = 28.5 W/kg
SAR(1 g) = 7.69 mW/g; SAR(10 g) = 2.18 mW/g
Maximum value of SAR (measured) = 15.1 mW/g

d=10mm, Pin=100mW, f=5200 MHz/Zoom Scan (8x8x10), dist=2mm (8x8x10)/Cube 0:

Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 48.2 V/m; Power Drift = 0.014 dB
Peak SAR (extrapolated) = 29.4 W/kg
SAR(1 g) = 7.8 mW/g; SAR(10 g) = 2.2 mW/g
Maximum value of SAR (measured) = 15.5 mW/g

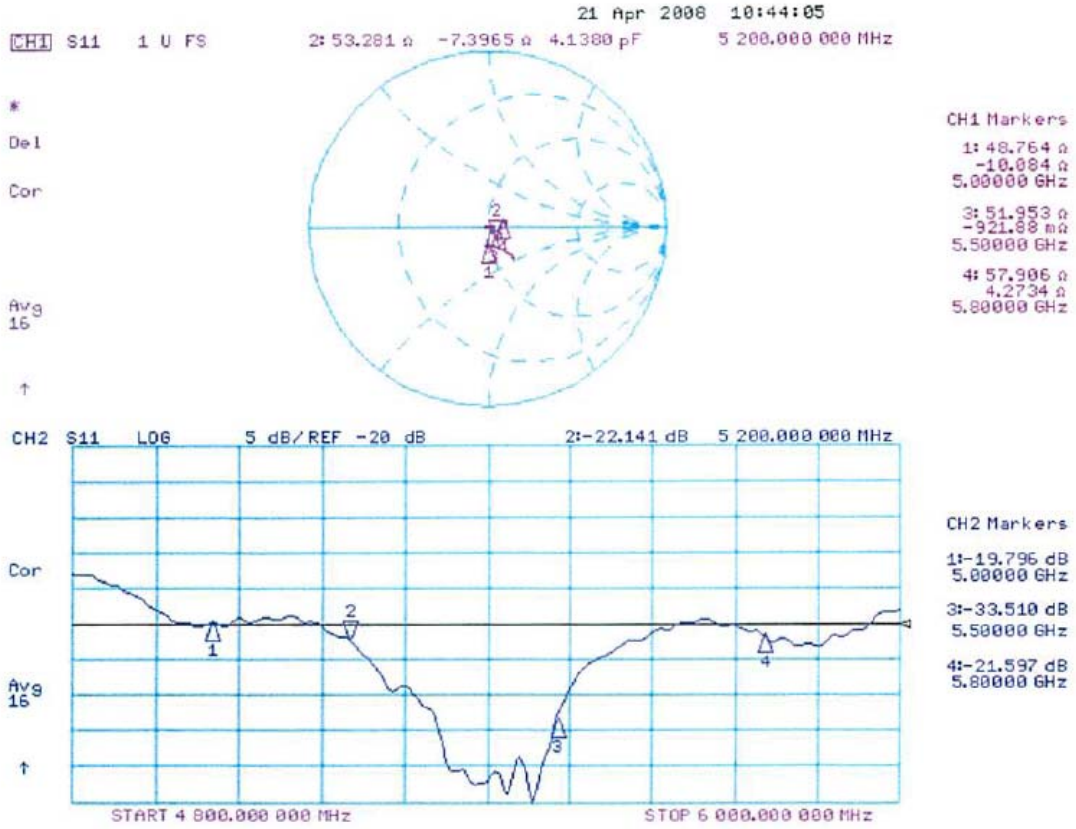
d=10mm, Pin=100mW, f=5800 MHz/Zoom Scan (8x8x10), dist=2mm (8x8x10)/Cube 0:

Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 46.0 V/m; Power Drift = 0.025 dB
Peak SAR (extrapolated) = 32.7 W/kg
SAR(1 g) = 7.93 mW/g; SAR(10 g) = 2.23 mW/g
Maximum value of SAR (measured) = 16.2 mW/g



0 dB = 16.2mW/g

Impedance Measurement Plot for Head TSL



DASY4 Validation Report for Body TSL

Date/Time: 17.04.2008 13:28:03

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHz; Serial: D5GHzV2 - SN:1010

Communication System: CW-5GHz;

Frequency: 5000 MHzFrequency: 5200 MHzFrequency: 5800 MHz;Duty Cycle: 1:1
Medium: MSL 5800 MHz;
Medium parameters used: f = 5000 MHz; σ = 5.1 mho/m; ε_r = 47.5; ρ = 1000 kg/m^3
Medium parameters used: f = 5200 MHz; σ = 5.34 mho/m; ε_r = 47; ρ = 1000 kg/m^3
Medium parameters used: f = 5800 MHz; σ = 6.09 mho/m; ε_r = 45.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.07, 5.07, 5.07)ConvF(4.95, 4.95, 4.95)ConvF(4.74, 4.74, 4.74); Calibrated: 08.03.2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 14.03.2008
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

d=10mm, Pin=100mW, f=5000 MHz/Zoom Scan (8x8x10), dist=2mm (8x8x10)/Cube 0:

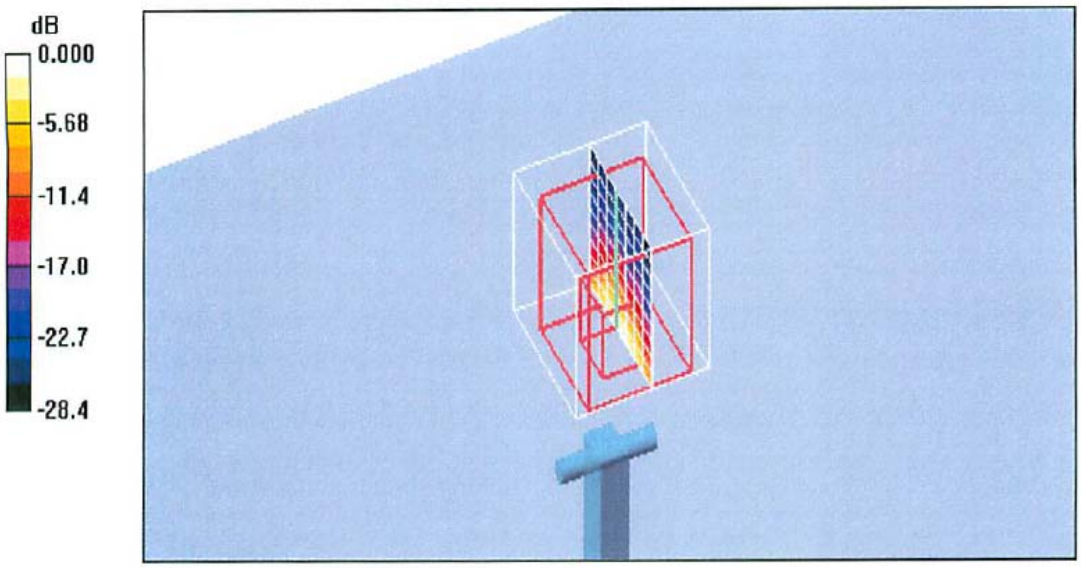
Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 50.5 V/m; Power Drift = -0.066 dB
Peak SAR (extrapolated) = 28.1 W/kg
SAR(1 g) = 7.93 mW/g; SAR(10 g) = 2.25 mW/g
Maximum value of SAR (measured) = 15.3 mW/g

d=10mm, Pin=100mW, f=5200 MHz/Zoom Scan (8x8x10), dist=2mm (8x8x10)/Cube 0:

Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 48.2 V/m; Power Drift = 0.082 dB
Peak SAR (extrapolated) = 28.3 W/kg
SAR(1 g) = 7.74 mW/g; SAR(10 g) = 2.17 mW/g
Maximum value of SAR (measured) = 15.0 mW/g

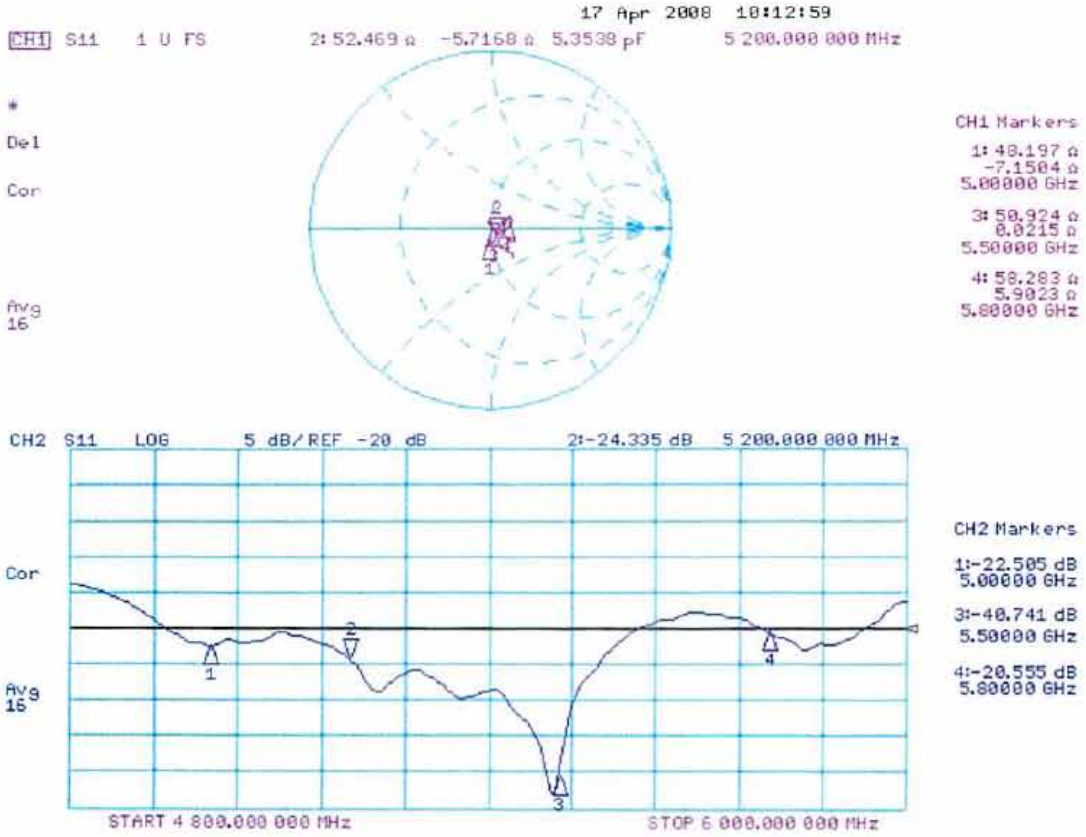
d=10mm, Pin=100mW, f=5800 MHz/Zoom Scan (8x8x10), dist=2mm (8x8x10)/Cube 0:

Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 43.4 V/m; Power Drift = 0.011 dB
Peak SAR (extrapolated) = 29.8 W/kg
SAR(1 g) = 7.22 mW/g; SAR(10 g) = 2.02 mW/g
Maximum value of SAR (measured) = 14.9 mW/g



0 dB = 14.9mW/g

Impedance Measurement Plot for Body TSL



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

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Accreditation No.: **SCS 108**

Client **Motorola CGISS**

Certificate No: **D5GHzV2-1017_Nov09**

CALIBRATION CERTIFICATE

Object D5GHzV2 - SN: 1017

Calibration procedure(s) QA CAL-22.v1
Calibration procedure for dipole validation kits between 3-6 GHz

Calibration date: November 13, 2009

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 EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10
Type-N mismatch combination	SN: 5047.2 / 06327	31-Mar-09 (No. 217-01029)	Mar-10
Reference Probe EX3DV4	SN: 3503	11-Mar-09 (No. EX3-3503_Mar09)	Mar-10
DAE4	SN: 601	07-Mar-09 (No. DAE4-601_Mar09)	Mar-10

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

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

Issued: November 13, 2009

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

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Accreditation No.: SCS 108

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEC Std 62209 Part 2, "Evaluation of Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices in the Frequency Range of 30 MHz to 6 GHz: Human models, Instrumentation, and Procedures"; Part 2: "Procedure to determine the Specific Absorption Rate (SAR) for including accessories and multiple transmitters", Draft Version 0.9, December 2004
b) 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:

c) 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	V5.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Area Scan resolution	dx, dy = 10 mm	
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 2.5 mm	
Frequency	5200 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.4 ± 6 %	4.54 mho/m ± 6 %
Head TSL temperature during test	(22.5 ± 0.2) °C	---	---

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	condition	
SAR measured	100 mW input power	7.73 mW / g
SAR normalized	normalized to 1W	77.3 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**77.0 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.18 mW / g
SAR normalized	normalized to 1W	21.8 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**21.7 mW / g ± 19.5 % (k=2)**

Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.2 ± 6 %	5.10 mho/m ± 6 %
Head TSL temperature during test	(22.5 ± 0.2) °C	----	----

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	condition	
SAR measured	100 mW input power	7.64 mW / g
SAR normalized	normalized to 1W	76.4 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**75.8 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.16 mW / g
SAR normalized	normalized to 1W	21.6 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**21.4 mW / g ± 19.5 % (k=2)**

Body TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	48.9 ± 6 %	5.52 mho/m ± 6 %
Body TSL temperature during test	(22.5 ± 0.2) °C	----	----

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	condition	
SAR measured	100 mW input power	7.73 mW / g
SAR normalized	normalized to 1W	77.3 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**77.3 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.16 mW / g
SAR normalized	normalized to 1W	21.6 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**21.6 mW / g ± 19.5 % (k=2)**

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.1 ± 6 %	6.19 mho/m ± 6 %
Body TSL temperature during test	(22.5 ± 0.2) °C	----	----

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	condition	
SAR measured	100 mW input power	7.15 mW / g
SAR normalized	normalized to 1W	71.5 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**71.2 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	1.98 mW / g
SAR normalized	normalized to 1W	19.8 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**19.7 mW / g ± 19.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	50.1 Ω - 10.0 jΩ
Return Loss	-20.0 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	60.0 Ω - 3.9 jΩ
Return Loss	-20.2 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	50.6 Ω - 7.7 jΩ
Return Loss	-22.4 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	59.4 Ω - 2.1 jΩ
Return Loss	-21.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.180 ns

After long term use with 40 W 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	February 05, 2004

DASY5 Validation Report for Head TSL

Date/Time: 12.11.2009 11:45:29

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1017

Communication System: CW; Frequency: 5200 MHz, Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: HSL 3-6 GHz
Medium parameters used: f = 5200 MHz; σ = 4.53 mho/m; ε_r = 35.4; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 5.08 mho/m; ε_r = 34.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

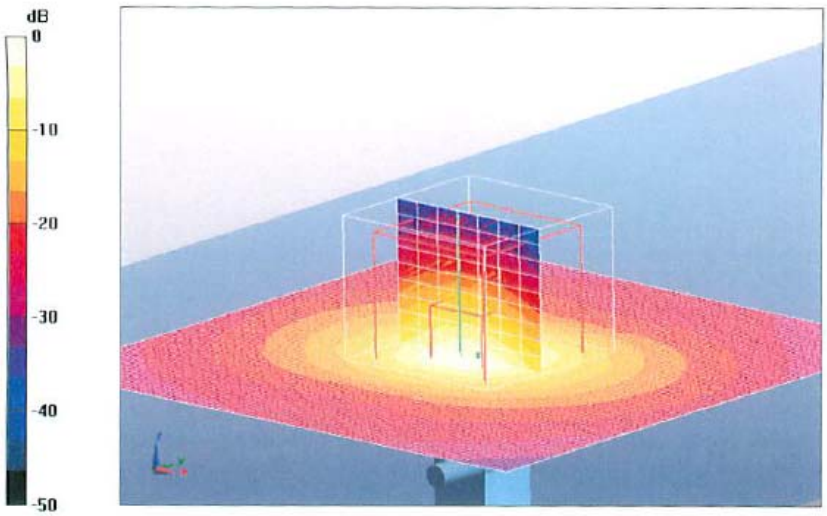
DASY5 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.36, 5.36, 5.36), ConvF(4.74, 4.74, 4.74); Calibrated: 11.03.2009
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

Configuration D5GHzV2 Dipole/d=10mm, Pin=250mW, f=5200 MHz/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 15.4 mW/g

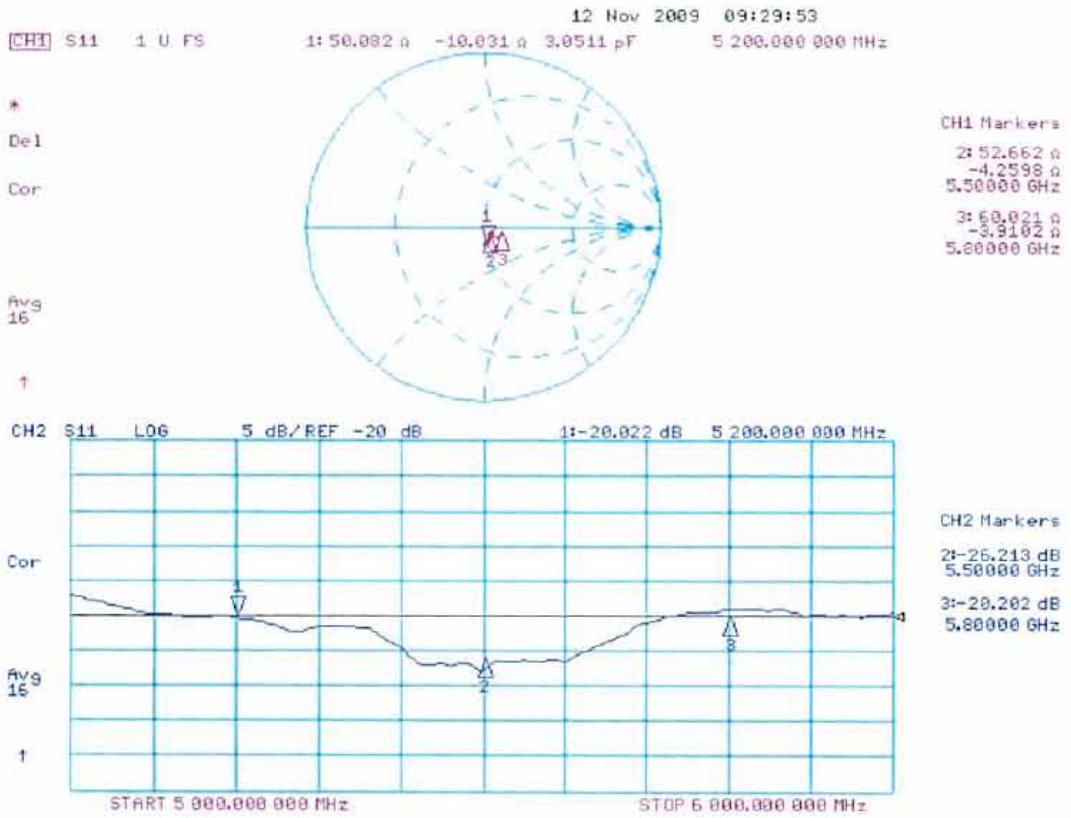
Configuration D5GHzV2 Dipole/d=10mm, Pin=250mW, f=5200 MHz/Zoom Scan (4x4x2.5mm), dist=2mm (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 64.4 V/m; Power Drift = 0.016 dB
Peak SAR (extrapolated) = 29.8 W/kg
SAR(1 g) = 7.73 mW/g; SAR(10 g) = 2.18 mW/g
Maximum value of SAR (measured) = 15.2 mW/g

Configuration D5GHzV2 Dipole/d=10mm, Pin=250mW, f=5800 MHz/Zoom Scan (4x4x2.5mm), dist=2mm (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 61.7 V/m; Power Drift = 0.049 dB
Peak SAR (extrapolated) = 32.4 W/kg
SAR(1 g) = 7.64 mW/g; SAR(10 g) = 2.16 mW/g
Maximum value of SAR (measured) = 15.4 mW/g



0 dB = 15.4mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date/Time: 13.11.2009 11:20:26

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1017

Communication System: CW, Communication System: CW-5GHz; Frequency: 5200 MHz, Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: MSL 3-6 GHz
Medium parameters used: f = 5200 MHz; σ = 5.49 mho/m; ε_r = 48.9; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 6.15 mho/m; ε_r = 47.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

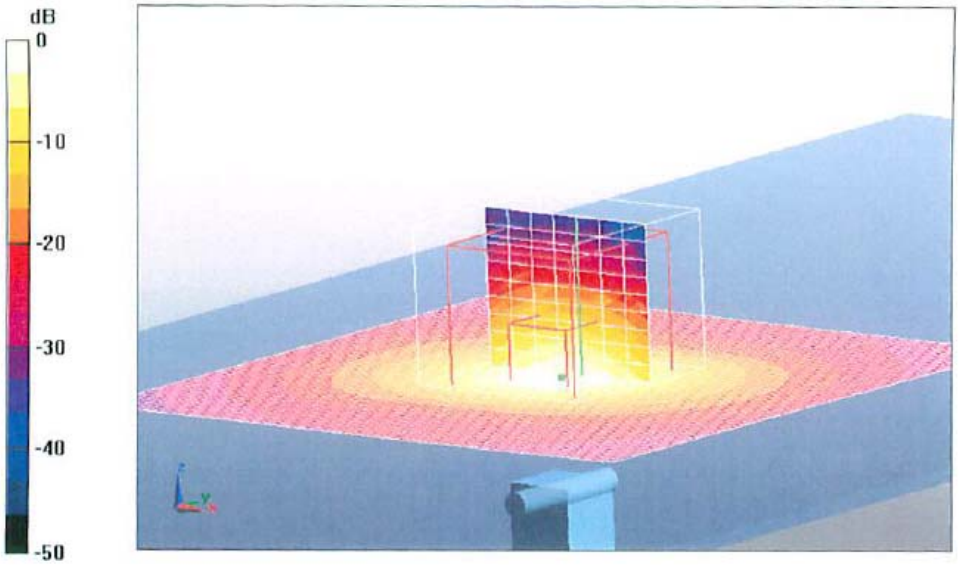
DASY5 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.88, 4.88, 4.88), ConvF(4.57, 4.57, 4.57); Calibrated: 11.03.2009
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

Configuration D5GHzV2 Dipole/d=10mm, Pin=250mW, f=5200 MHz/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 15.3 mW/g

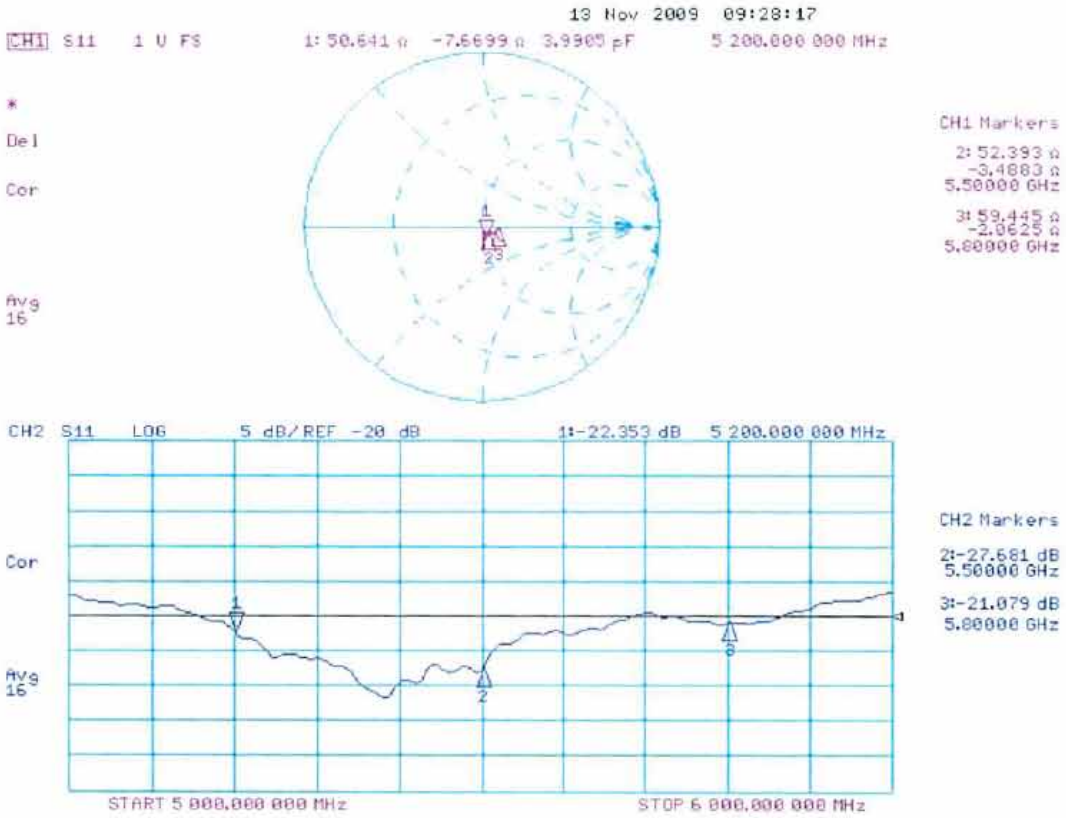
Configuration D5GHzV2 Dipole/d=10mm, Pin=250mW, f=5200 MHz/Zoom Scan (4x4x2.5mm), dist=2mm (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 59.1 V/m; Power Drift = -0.076 dB
Peak SAR (extrapolated) = 29.2 W/kg
SAR(1 g) = 7.73 mW/g; SAR(10 g) = 2.16 mW/g
Maximum value of SAR (measured) = 14.9 mW/g

Configuration D5GHzV2 Dipole /d=10mm, Pin=250mW, f=5800 MHz/Zoom Scan (4x4x2.5mm), dist=2mm (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 54.7 V/m; Power Drift = 0.012 dB
Peak SAR (extrapolated) = 30.6 W/kg
SAR(1 g) = 7.15 mW/g; SAR(10 g) = 1.98 mW/g
Maximum value of SAR (measured) = 14.1 mW/g



0 dB = 14.1mW/g

Impedance Measurement Plot for Body TSL



Calibration Laboratory of
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Accreditation No.: SCS 108

Client Motorola CGISS

Certificate No: D2450V2-704_Nov08

CALIBRATION CERTIFICATE

Object	D2450V2 - SN: 704
Calibration procedure(s)	QA CAL-05.v7 Calibration procedure for dipole validation kits
Calibration date:	November 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 EPM-442A	GB37480704	04-Oct-07 (No. 217-00736)	Oct-08
Power sensor HP 8481A	US37292783	04-Oct-07 (No. 217-00736)	Oct-08
Reference 20 dB Attenuator	SN: S5086 (20g)	01-Jul-08 (No. 217-00864)	Jul-09
Type-N mismatch combination	SN: 5047.2 / 06327	01-Jul-08 (No. 217-00867)	Jul-09
Reference Probe ES3DV2	SN: 3025	28-Apr-08 (No. ES3-3025_Apr08)	Apr-09
DAE4	SN: 601	14-Mar-08 (No. DAE4-601_Mar08)	Mar-09

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-07)	In house check: Oct-09
RF generator R&S SMT-06	100005	4-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:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: November 18, 2008

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Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
ConvF	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	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.4 ± 6 %	1.84 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.5 mW / g
SAR normalized	normalized to 1W	54.0 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**52.9 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.30 mW / g
SAR normalized	normalized to 1W	25.2 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**24.9 mW /g ± 16.5 % (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	53.7 Ω + 0.8 jΩ
Return Loss	- 28.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.153 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	March 22, 2001

DASY5 Validation Report for Head TSL

Date/Time: 18.11.2008 12:27:36

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN704

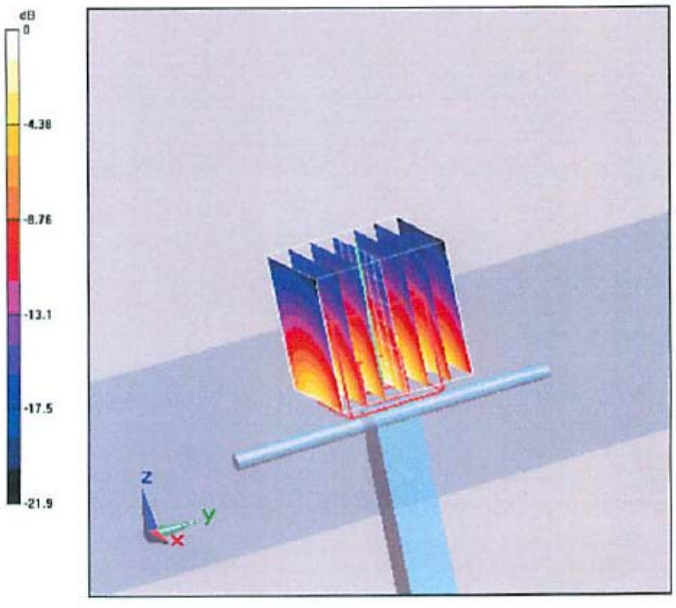
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: HSL U10 BB
Medium parameters used: f = 2450 MHz; σ = 1.84 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV2 - SN3025; ConvF(4.4, 4.4, 4.4); Calibrated: 28.04.2008
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 14.03.2008
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

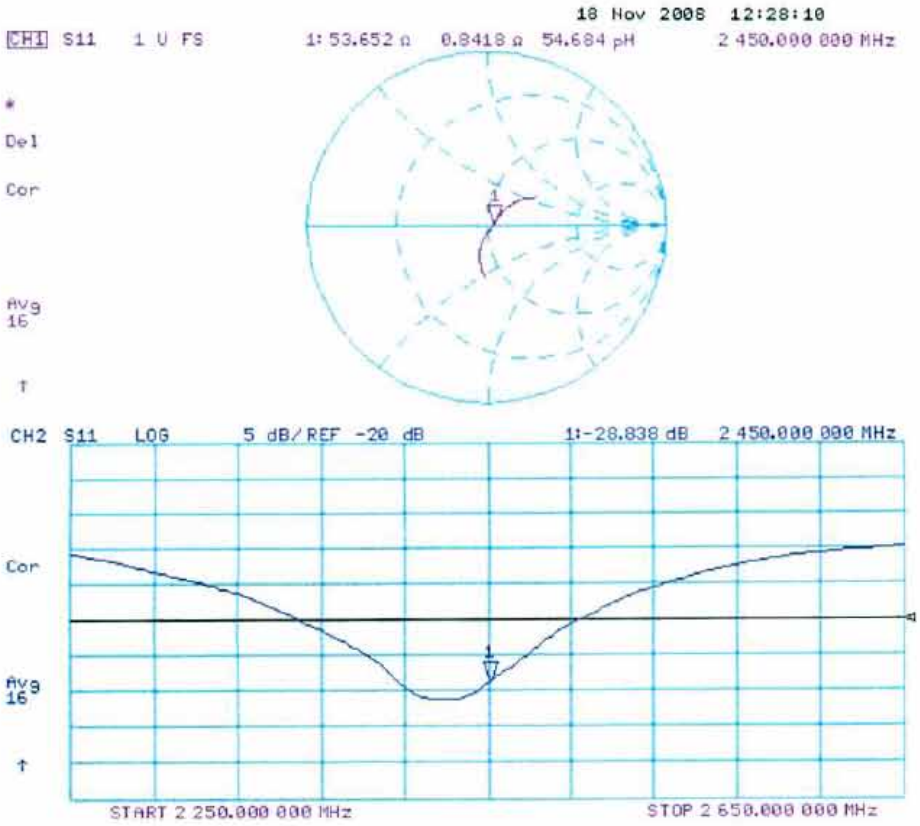
Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.3 V/m; Power Drift = 0.028 dB
Peak SAR (extrapolated) = 28.4 W/kg
SAR(1 g) = 13.5 mW/g; SAR(10 g) = 6.3 mW/g
Maximum value of SAR (measured) = 16.3 mW/g



0 dB = 16.3mW/g

Impedance Measurement Plot for Head TSL



Appendix D
Test System Verification Scans

The SAR result indicated on the Manufacture's Calibrated certificate for dipole D5GHzV2 S/N 1010 & 1017 and D2450V2 S/N 704 were not used due to the following:

-- The IEEE1528-2003 and the FCC OET-65 Supplement C, System Verification section indicated that "The measured 1-g SAR should be within 10% of the expected target values specified for the specific phantom and RF source used in the system verification measurement."

-- SPEAG calibration certificates indicate that the allowed tolerance for this dipole is higher than +/- 10% (e.g. 77.4 +/- 19.9% at k=2 and 77.0 +/- 19.9% for the D5GHzV2 S/N 1017 & 1010 respectively and 52.9 +/-17.0% at k=2 for the D2450V2 S/N 704).

-- The allowed tolerance for the probes is also higher than +/- 10% (e.g. 13.1% at k=2 at 5200MHz and 11.0% at k=2 at 2450MHz for the probe being used to assess this product).

Due to probe, dipole and system tolerances noted above, the lab averages dipole results across multiple probes to establish a set of averaged targets for each dipole using the following procedure:
• The System Validation was conducted per IEEE1528-2003 and the latest draft of IEC62209-2 (10/3/08) standards using the simulated head tissue and multiple probes that are available and applicable for the dipole under test to verify the System Validation. Results for this dipole are within the measurement system uncertainty of the reference SAR values indicated within the latest draft of IEC62209-2 (10/3/08) when using flat phantom with 2mm thickness is used. These results then are averaged and used as the target for the daily system performance check when the simulated head tissue is used.
• The dipole targets for the body are set immediately following the same process noted above. Since there is no standard referencing the SAR values for the System Validation using the simulated body tissue, the compliant System Validation results using the simulated head tissue are used to justify the use of the System Validation results using the simulated body tissue due to the same setup except for the simulated tissue type.

The targets set in this report were conducted following the above process.

Note that the targets set for the tested dipoles, when using the simulated head tissue, meets the requirement for the system validation per IEEE1528-2003, the latest draft of IEC62209-2 (10/3/08) standards, and the difference between these results and the results from the manufacture's dipole calibration certificates are -13.57% and 17.10% for D5GHzV2 S/N 1010 and S/N1017 dipoles respectively and 8.13% for D2450V2 S/N 704 dipole which are well within the measurement uncertainty of the measurement system at k=2.

To assess the isotropic characteristics of the measurement probe, a probe rotation was performed using the "Rotation (1D)" function in the DASY software with a measured isotropy tolerance of +/- 0.5dB.

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Date/Time: 1/14/2010 6:32:58 PM

Robot# / Run#: DASY4-FL-3 / MeC-SYSP-5200B-100114-10
Phantom# / Tissue Temp.: OVAL1020 / 20.5 (C)
Dipole Model# / Serial#: D5GHzV2 / 1010
TX Freq. / Start power: 5200 (MHz) / 15 (mW)

Target: 70.30 mW/g (1g)
Calculated: 67.33 mW/g (1g)
Percent from Target (+/-): 4.2 % (1g)
Rotation (1D): 0.19 dB

Note:
Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1749 for tissue frequencies from 3-6 GHz.

Calculated: 1.01 mW/g (1g); 0.284 mW/g (10g)

Comments:

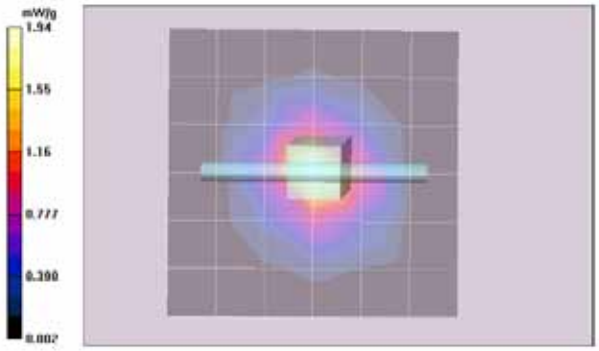
Probe: EX3DV4 - SN3638, Calibrated: 7/16/2009, ConvF(4.05, 4.05, 4.05)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009

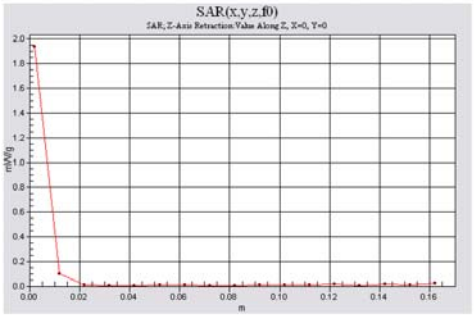
Duty Cycle: 1:1, Medium parameters used: f = 5200 MHz; σ = 5.34 mho/m; ε_r = 45.7; ρ = 1000 kg/m^3

System Performance Check/0-Degree 8x8x12 Cube (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 20.1 V/m; Power Drift = -0.136 dB
Peak SAR (extrapolated) = 4.04 W/kg
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.290 mW/g
Maximum value of SAR (measured) = 2.03 mW/g

System Performance Check/Dipole Area Scan 2 (61x61x1): Measurement grid: dx=9mm, dy=9mm
Reference Value = 20.1 V/m; Power Drift = -0.136 dB
Motorola Fast SAR: SAR(1 g) = 2.72 mW/g; SAR(10 g) = 4.21 mW/g
Maximum value of SAR (interpolated) = 2.15 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 1.94 mW/g





Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 1/15/2010 2:38:33 PM

Robot# / Run#: DASY4-FL-3 / MeC-SYSP-5200B-100115-02
Phantom# / Tissue Temp.: OVAL1020 / 20 5 (C)
Dipole Model# / Serial#: D5GHzV2 / 1010
TX Freq. / Start power: 5200 (MHz) / 15 (mW)

Target:	70.30 mW/g	(1g)
Calculated:	71.33 mW/g	(1g)
Percent from Target (+/-):	1.5 %	(1g)
Rotation (1D):	0.19 dB	

Note: Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1749 for tissue frequencies from 3-6 GHz.

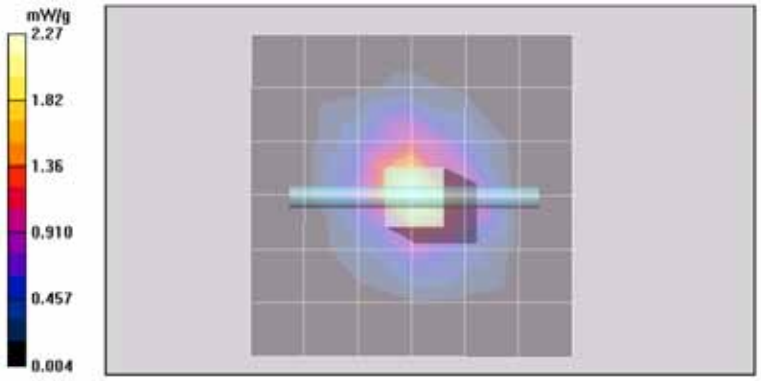
Calculated: 1.07 mW/g (1g); 0.309 mW/g (10g)

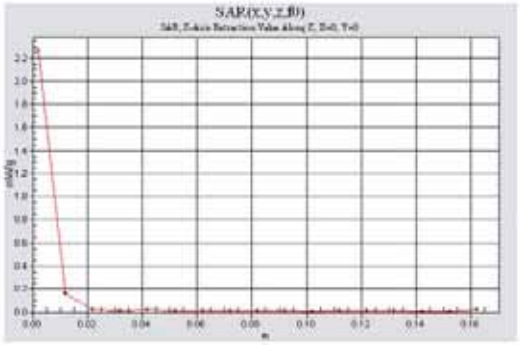
Comments:
Probe: EX3DV4 - SN3638, Calibrated: 7/16/2009, ConvF(4.05, 4.05, 4.05)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009
Duty Cycle: 1:1, Medium parameters used: f = 5200 MHz; σ = 5.29 mho/m; ε_r = 45.5; ρ = 1000 kg/m^3

System Performance Check/0-Degree 8x8x12 Cube (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 22.9 V/m; Power Drift = -0.121 dB
Peak SAR (extrapolated) = 3.97 W/kg
SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.316 mW/g
Maximum value of SAR (measured) = 2.03 mW/g

System Performance Check/Dipole Area Scan 2 (61x61x1): Measurement grid: dx=9mm, dy=9mm
Reference Value = 22.9 V/m; Power Drift = -0.121 dB
Motorola Fast SAR: SAR(1 g) = 2.99 mW/g; SAR(10 g) = 4.57 mW/g
Maximum value of SAR (interpolated) = 2.40 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 2.27 mW/g





Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 1/16/2010 12:14:45 AM

Robot# / Run#: DASY4-FL-3 / MeC-SYSP-5200B-100116-01
Phantom# / Tissue Temp.: OVAL1020 / 20.2 (C)
Dipole Model# / Serial#: D5GHzV2 / 1010
TX Freq / Start power: 5200 (MHz) / 15 (mW)

Target:	70.30 mW/g	(1g)
Calculated:	72.67 mW/g	(1g)
Percent from Target (+/-):	3.4 %	(1g)
Rotation (1D):	0.14 dB	

Note: Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1749 for tissue frequencies from 3-6 GHz.

Calculated: 1.09 mW/g (1g); 0.273 mW/g (10g)

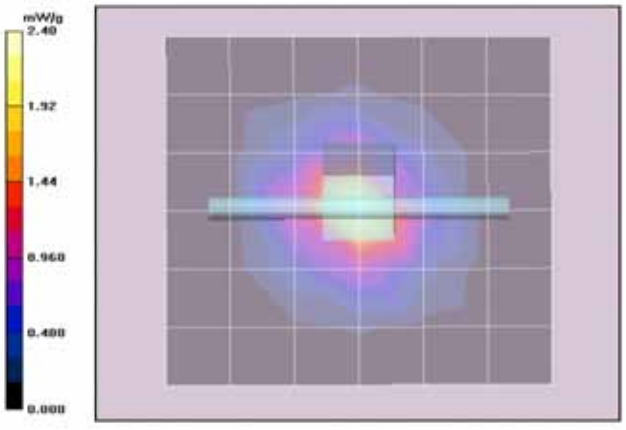
Comments:

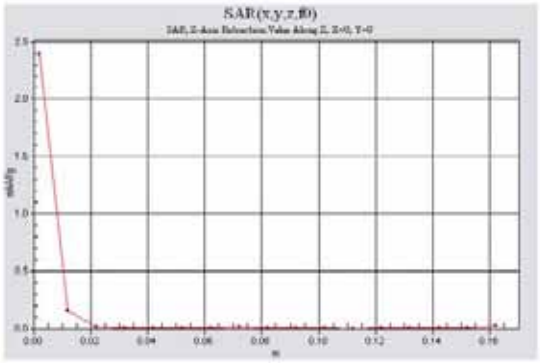
Probe: EX3DV4 - SN3638, Calibrated: 7/16/2009, ConvF(4.05, 4.05, 4.05)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009
Duty Cycle: 1:1, Medium parameters used: f = 5200 MHz, σ = 5.33 mho/m, ε_r = 45.6, ρ = 1000 kg/m^3

System Performance Check/0-Degree 8x8x12 Cube (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 23.2 V/m; Power Drift = -0.0239 dB
Peak SAR (extrapolated) = 3.77 W/kg
SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.279 mW/g
Maximum value of SAR (measured) = 2.36 mW/g

System Performance Check/Dipole Area Scan 2 (61x61x1): Measurement grid: dx=9mm, dy=9mm
Reference Value = 23.2 V/m; Power Drift = -0.0239 dB
Motorola Fast SAR: SAR(1 g) = 3 mW/g; SAR(10 g) = 4.62 mW/g
Maximum value of SAR (interpolated) = 2.42 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 2.40 mW/g





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Date/Time: 1/21/2010 11:39:03 AM

Robot# / Run#: DASY4-FL-3 / JsT-SYSP-5200H-100121-04
Phantom# / Tissue Temp.: SAMTP1234 / 20.2 (C)
Dipole Model# / Serial#: D5GHzV2 / 1017
TX Freq. / Start power: 5200 (MHz) / 15 (mW)

Target:	90.16 mW/g	(1g)
Calculated:	92.00 mW/g	(1g)
Percent from Target (+/-):	2.0 %	(1g)
Rotation (1D):	0.15 dB	

Note:
Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1749 for tissue frequencies from 3-6 GHz.

Calculated: 1.38 mW/g (1g); 0.408 mW/g (10g)

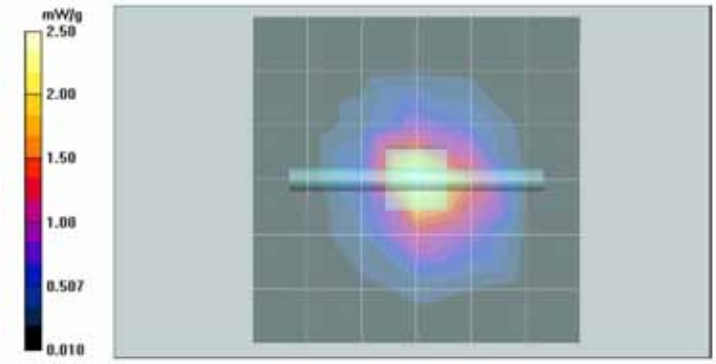
Comments: Tested with 1 Short Orange Megaphase "RF" Cable and Sig Gen SN:2269; Coupler#61136; Wideband Power Meter N1912A set for 802.11a and Avg Pwr. (13.48 dBm on Gen)

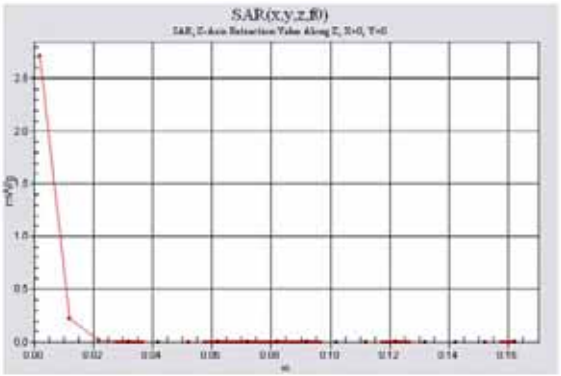
Probe: EX3DV4 - SN3638, Calibrated: 7/16/2009, ConvF(4.4, 4.4, 4.4)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009
Duty Cycle: 1:1, Medium parameters used: f = 5200 MHz; σ = 4.28 mho/m; ε_r = 37.9; ρ = 1000 kg/m^3

System Performance Check/0-Degree 8x8x12 Cube (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 27.0 V/m; Power Drift = -0.0538 dB
Peak SAR (extrapolated) = 4.54 W/kg
SAR(1 g) = 1.37 mW/g; SAR(10 g) = 0.404 mW/g
Maximum value of SAR (measured) = 2.62 mW/g

System Performance Check/Dipole Area Scan 2 (7x7x1): Measurement grid: dx=9mm, dy=9mm
Maximum value of SAR (measured) = 2.50 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 2.71 mW/g





Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 1/22/2010 7:08:51 AM

Robot# / Run#: DASY4-FL-3 / JsT-SYSP-5200H-100122-01
Phantom# / Tissue Temp.: SAMTP1234 / 19.7 (C)
Dipole Model# / Serial#: D5GHzV2 / 1017
TX Freq. / Start power: 5200 (MHz) / 15 (mW)

Target:	90.16 mW/g	(1g)
Calculated:	92.67 mW/g	(1g)
Percent from Target (+/-):	2.8 %	(1g)
Rotation (1D):	0.16 dB	

Note:
Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1749 for tissue frequencies from 3-6 GHz.

Calculated: 1.39 mW/g (1g); 0.414 mW/g (10g)

Comments: Tested with 1 Short Orange Megaphase "RF" Cable and Sig Gen SN:2269; Coupler#61136; Wideband Power Meter N1912A set for 802.11a and Avg Pwr. (13.48 dBm on Gen)

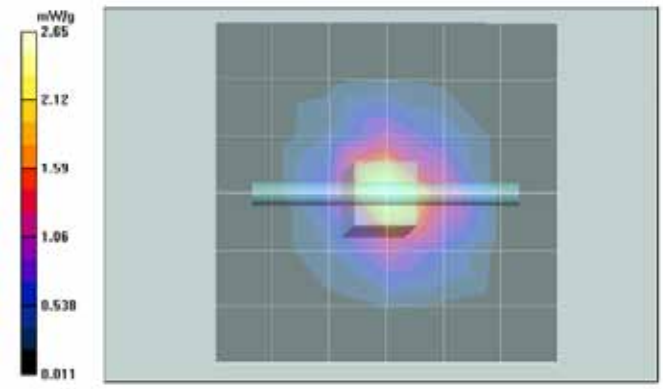
Probe: EX3DV4 - SN3638, Calibrated: 7/16/2009, ConvF(4.4, 4.4, 4.4)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009

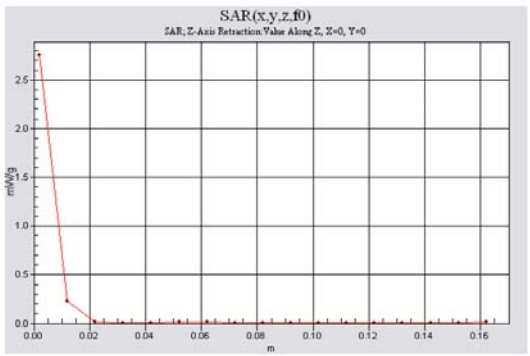
Duty Cycle: 1:1, Medium parameters used: f = 5200 MHz; σ = 4.25 mho/m; ε_r = 37.6; ρ = 1000 kg/m^3

System Performance Check/0-Degree 8x8x12 Cube (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 27.3 V/m; Power Drift = -0.0116 dB
Peak SAR (extrapolated) = 4.58 W/kg
SAR(1 g) = 1.38 mW/g; SAR(10 g) = 0.411 mW/g
Maximum value of SAR (measured) = 2.58 mW/g

System Performance Check/Dipole Area Scan 2 (7x7x1): Measurement grid: dx=9mm, dy=9mm
Maximum value of SAR (measured) = 2.65 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 2.76 mW/g





Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 1/23/2010 9:05:04 AM

Robot# / Run#: DASY4-FL-3 / JsT-SYSP-5200B-100123-01
Phantom# / Tissue Temp.: OVAL1020 / 18.8 (C)
Dipole Model# / Serial#: D5GHzV2 / 1017
TX Freq. / Start power: 5200 (MHz) / 15 (mW)

Target:	80.20 mW/g	(1g)
Calculated:	84.67 mW/g	(1g)
Percent from Target (+/-):	5.6 %	(1g)
Rotation (1D):	0.13 dB	

Note:
Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1749 for tissue frequencies from 3-6 GHz.

Calculated: 1.27 mW/g (1g); 0.364 mW/g (10g)

Comments: Tested with 1 Short Orange Megaphase "RF" Cable and Sig Gen SN:2269; Coupler#61136; Wideband Power Meter N1912A set for 802.11a and Avg Pwr. (13.48 dBm on Gen)

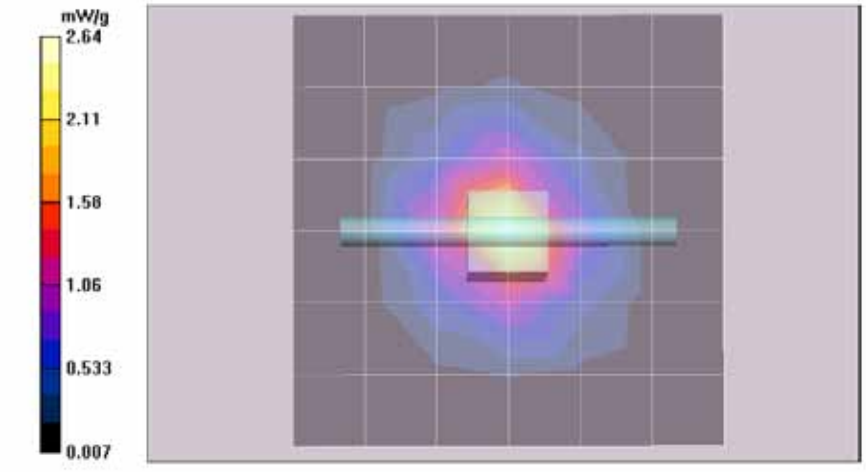
Probe: EX3DV4 - SN3638, Calibrated: 7/16/2009, ConvF(4.05, 4.05, 4.05)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009

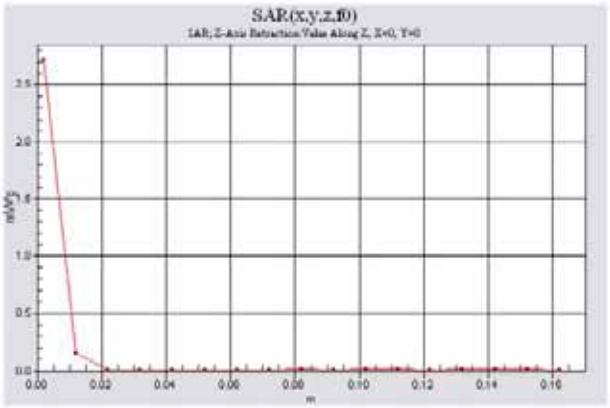
Duty Cycle: 1:1, Medium parameters used: f = 5200 MHz; σ = 5.41 mho/m; ε_r = 45.7; ρ = 1000 kg/m^3

System Performance Check/0-Degree 8x8x12 Cube (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 24.7 V/m; Power Drift = -0.076 dB
Peak SAR (extrapolated) = 4.70 W/kg
SAR(1 g) = 1.3 mW/g; SAR(10 g) = 0.371 mW/g
Maximum value of SAR (measured) = 2.66 mW/g

System Performance Check/Dipole Area Scan 2 (7x7x1): Measurement grid: dx=9mm, dy=9mm
Maximum value of SAR (measured) = 2.64 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 2.71 mW/g





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Date/Time: 1/24/2010 12:11:02 AM

Robot# / Run#: DASY4-FL-3 / MeC-SYSP-5200H-100124-01
Phantom# / Tissue Temp.: SAMTP1234 / 19.7 (C)
Dipole Model# / Serial#: D5GHzV2 / 1017
TX Freq. / Start power: 5200 (MHz) / 15 (mW)

Target:	90.16 mW/g	(1g)
Calculated:	88.67 mW/g	(1g)
Percent from Target (+/-):	1.7 %	(1g)
Rotation (1D):	0.17 dB	

Note: Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1749 for tissue frequencies from 3-6 GHz.

Calculated: 1.33 mW/g (1g); 0.395 mW/g (10g)

Comments: Tested with 1 Short Orange Megaphase "RF" Cable and Sig Gen SN:2269; Coupler#61136; Wideband Power Meter N1912A set for 802.11a and Avg Pwr. (13.48 dBm on Gen)

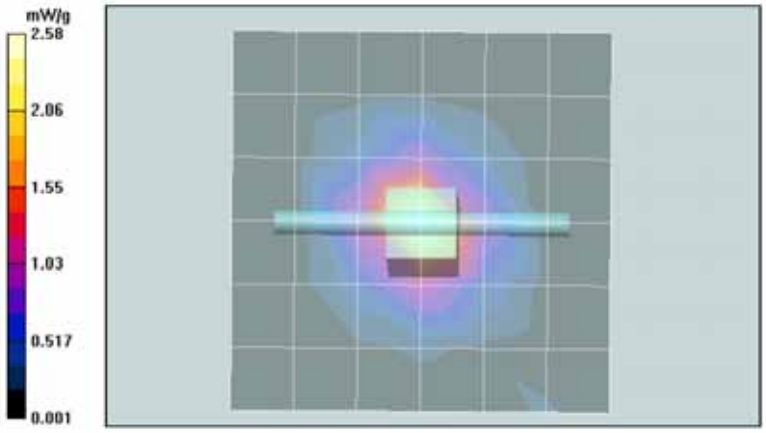
Probe: EX3DV4 - SN3638, Calibrated: 7/16/2009, ConvF(4.4, 4.4, 4.4)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009

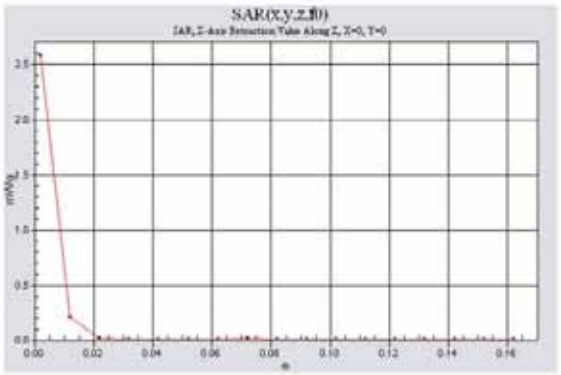
Duty Cycle: 1:1, Medium parameters used: f = 5200 MHz; σ = 4.36 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3

System Performance Check/0-Degree 8x8x12 Cube (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 26.5 V/m; Power Drift = -0.0305 dB
Peak SAR (extrapolated) = 4.34 W/kg
SAR(1 g) = 1.31 mW/g; SAR(10 g) = 0.389 mW/g
Maximum value of SAR (measured) = 2.59 mW/g

System Performance Check/Dipole Area Scan 2 (61x61x1): Measurement grid: dx=9mm, dy=9mm
Reference Value = 26.5 V/m; Power Drift = -0.0305 dB
Motorola Fast SAR: SAR(1 g) = 3.35 mW/g; SAR(10 g) = 5.09 mW/g
Maximum value of SAR (interpolated) = 2.69 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 2.58 mW/g





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Date/Time: 1/25/2010 4:32:41 PM

Robot# / Run#: DASY4-FL-3 / MeC-SYSP-5200B-100125-06
Phantom# / Tissue Temp.: SAMTP1234 / 19.5 (C)
Dipole Model# / Serial#: D5GHzV2 / 1017
TX Freq. / Start power: 5200 (MHz) / 15 (mW)

Target:	80.20 mW/g	(1g)
Calculated:	87.33 mW/g	(1g)
Percent from Target (+/-):	8.9 %	(1g)
Rotation (1D):	0.084 dB	

Note: Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1749 for tissue frequencies from 3-6 GHz.

Calculated: 1.31 mW/g (1g); 0.377 mW/g (10g)

Comments: Tested with 1 Short Orange Megaphase "RF" Cable and Sig Gen SN:2269; Coupler#61136; Wideband Power Meter N1912A set for 802.11a and Avg Pwr. (13.48 dBm on Gen)

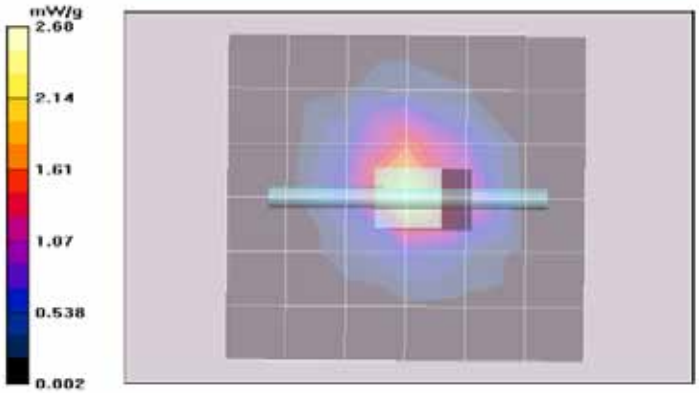
Probe: EX3DV4 - SN3638, Calibrated: 7/16/2009, ConvF(4.05, 4.05, 4.05)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009

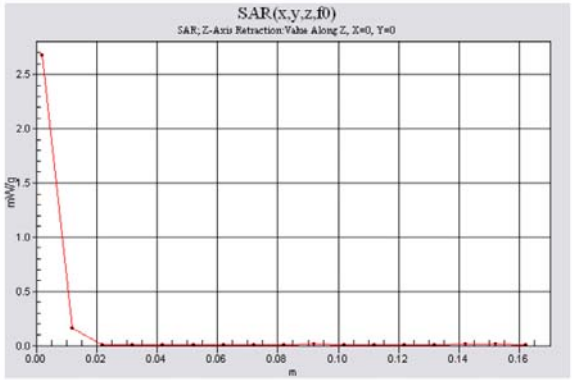
Duty Cycle: 1:1, Medium parameters used: f = 5200 MHz; σ = 5.32 mho/m; ε_r = 45.7; ρ = 1000 kg/m^3

System Performance Check/0-Degree 8x8x12 Cube (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 24.7 V/m; Power Drift = -0.023 dB
Peak SAR (extrapolated) = 4.87 W/kg
SAR(1 g) = 1.34 mW/g; SAR(10 g) = 0.385 mW/g
Maximum value of SAR (measured) = 2.61 mW/g

System Performance Check/Dipole Area Scan 2 (61x61x1): Measurement grid: dx=9mm, dy=9mm
Reference Value = 24.7 V/m; Power Drift = -0.023 dB
Motorola Fast SAR: SAR(1 g) = 3.41 mW/g; SAR(10 g) = 5.28 mW/g
Maximum value of SAR (interpolated) = 2.81 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 2.68 mW/g





Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 1/26/2010 8:37:36 AM

Robot# / Run#: DASY4-FL-3 / JsT-SYSP-2450B-100126-01
Phantom# / Tissue Temp.: DUAL1002 Side A / 19.7 (C)
Dipole Model# / Serial#: D2450V2 / 704
TX Freq. / Start power: 2450 (MHz) / 30 (mW)

Target:	55.27 mW/g	(1g)
Calculated:	57.67 mW/g	(1g)
Percent from Target (+/-):	4.3 %	(1g)
Rotation (1D):	0.049 dB	

Note: When Applicable
Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1868 for tissue frequencies from 150 MHz to 3 GHz.

Calculated: 1.73 mW/g (1g); 0.800 mW/g (10g)

Comments:

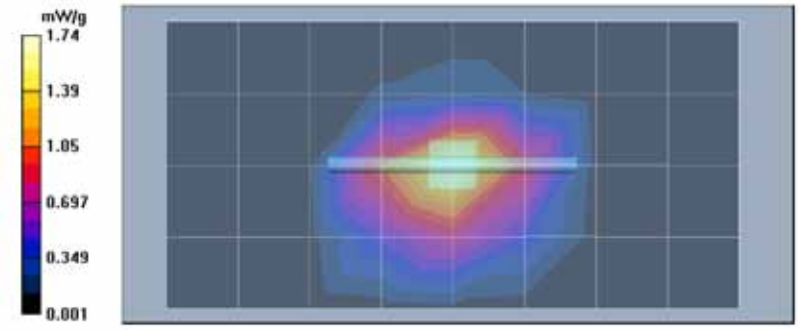
Probe: ES3DV3 - SN3163, Calibrated: 4/24/2009, ConvF(4.16, 4.16, 4.16)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009

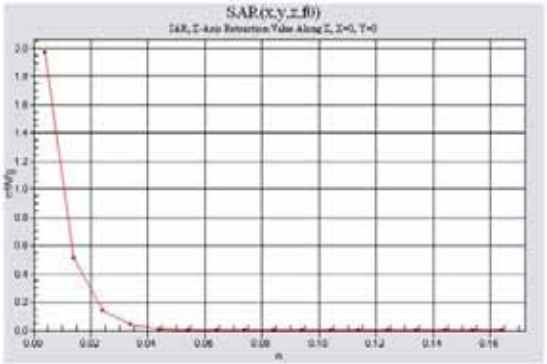
Duty Cycle: 1:1, Medium parameters used: f = 2450 MHz; σ = 2.02 mho/m; ε_r = 47.9; ρ = 1000 kg/m^3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 31.8 V/m; Power Drift = 0.0203 dB
Peak SAR (extrapolated) = 3.64 W/kg
SAR(1 g) = 1.73 mW/g; SAR(10 g) = 0.800 mW/g
Maximum value of SAR (measured) = 1.95 mW/g

System Performance Check/Dipole Area Scan 2 (9x5x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.74 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 1.97 mW/g





Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 1/27/2010 6:50:40 AM

Robot# / Run#: DASY4-FL-3 / JsT-SYSP-2450B-100127-01
Phantom# / Tissue Temp.: DUAL1002 Side A / 20.1 (C)
Dipole Model# / Serial#: D2450V2 / 704
TX Freq. / Start power: 2450 (MHz) / 30 (mW)

Target:	55.27 mW/g	(1g)
Calculated:	58.33 mW/g	(1g)
Percent from Target (+/-):	5.5 %	(1g)
Rotation (1D):	0.055 dB	

Note: When Applicable
Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1868 for tissue frequencies from 150 MHz to 3 GHz.

Calculated: 1.75 mW/g (1g); 0.808 mW/g (10g)

Comments:

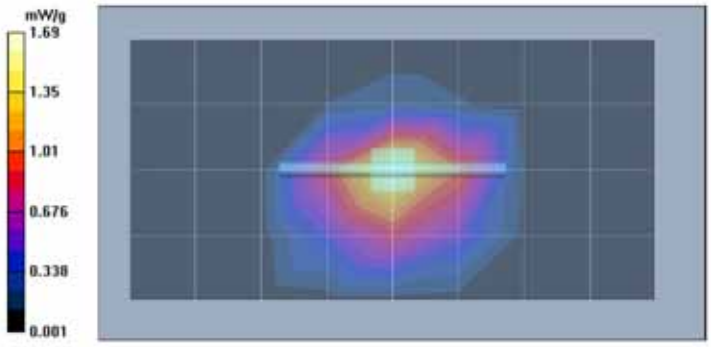
Probe: ES3DV3 - SN3163, Calibrated: 4/24/2009, ConvF(4.16, 4.16, 4.16)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009

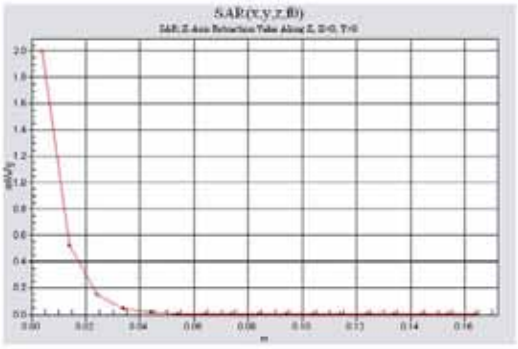
Duty Cycle: 1:1, Medium parameters used: f = 2450 MHz; σ = 2.01 mho/m; ε_r = 47.8; ρ = 1000 kg/m^3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 32.1 V/m; Power Drift = 0.00239 dB
Peak SAR (extrapolated) = 3.67 W/kg
SAR(1 g) = 1.75 mW/g; SAR(10 g) = 0.808 mW/g
Maximum value of SAR (measured) = 1.98 mW/g

System Performance Check/Dipole Area Scan 2 (9x5x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.69 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 2.00 mW/g





Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 2/4/2010 6:57:59 AM

Robot# / Run#: DASY4-FL-3 / JsT-SYSP-2450B-100204-01
Phantom# / Tissue Temp.: DUAL1002 Side A / 20.4 (C)
Dipole Model# / Serial#: D2450V2 / 704
TX Freq. / Start power: 2450 (MHz) / 30 (mW)

Target:	55.27 mW/g	(1g)
Calculated:	54.67 mW/g	(1g)
Percent from Target (+/-):	1.1 %	(1g)
Rotation (1D):	0.08 dB	

Note: When Applicable
Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1868 for tissue frequencies from 150 MHz to 3 GHz.

Calculated: 1.64 mW/g (1g); 0.761 mW/g (10g)

Comments:

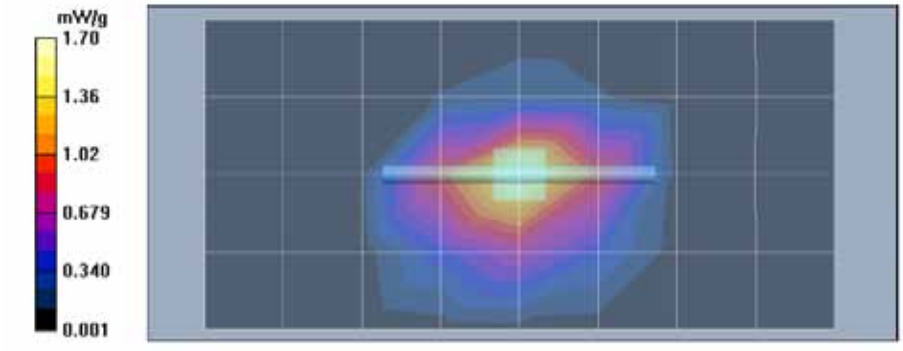
Probe: ES3DV3 - SN3163, Calibrated: 4/24/2009, ConvF(4.16, 4.16, 4.16)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009

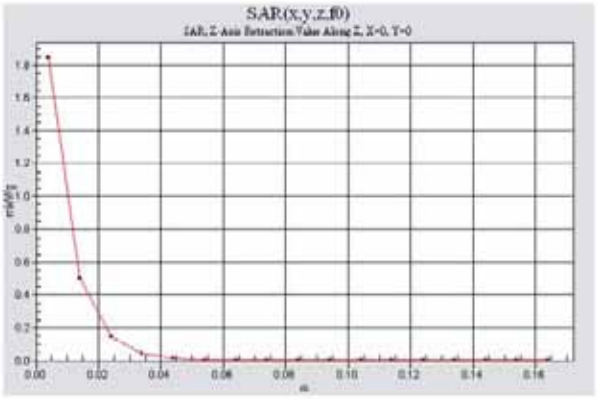
Duty Cycle: 1:1, Medium parameters used: f = 2450 MHz; σ = 2.01 mho/m; ε_r = 50.4; ρ = 1000 kg/m^3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 31.2 V/m; Power Drift = 0.0169 dB
Peak SAR (extrapolated) = 3.37 W/kg
SAR(1 g) = 1.64 mW/g; SAR(10 g) = 0.761 mW/g
Maximum value of SAR (measured) = 1.84 mW/g

System Performance Check/Dipole Area Scan 2 (9x5x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.70 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 1.85 mW/g





Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 2/5/2010 2:33:16 PM

Robot# / Run#: DASY4-FL-3 / JsT-SYSP-5200B-100205-10
Phantom# / Tissue Temp.: OVAL1020 / 20.7 (C)
Dipole Model# / Serial#: D5GHzV2 / 1017
TX Freq. / Start power: 5200 (MHz) / 15 (mW)

Target:	80.20 mW/g	(1g)
Calculated:	83.33 mW/g	(1g)
Percent from Target (+/-):	3.9 %	(1g)
Rotation (1D):	0.16 dB	

Note:
Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1749 for tissue frequencies from 3-6 GHz.

Calculated: 1.25 mW/g (1g); 0.354 mW/g (10g)

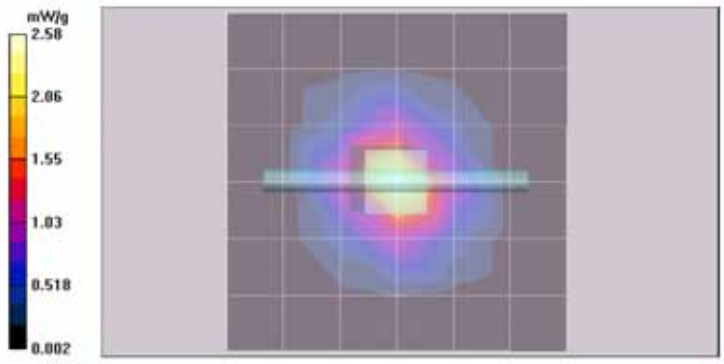
Comments: Tested with Megaphase Blue Low Loss "RF" Cable and Sig Gen SN:2269; Coupler#61136; Wideband Power Meter N1912A set for 802.11a and Avg Pwr. (13.04 dBm on Gen)

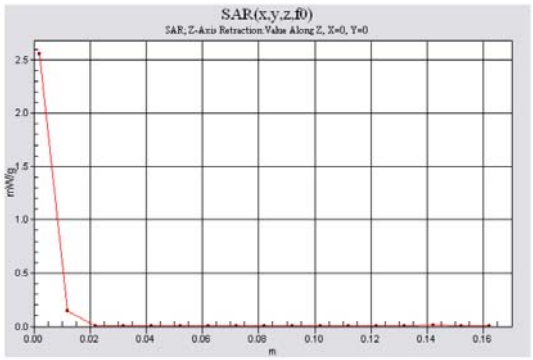
Probe: EX3DV4 - SN3638, Calibrated: 7/16/2009, ConvF(4.05, 4.05, 4.05)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009
Duty Cycle: 1:1, Medium parameters used: f = 5200 MHz; σ = 5.23 mho/m; ε_r = 46.1; ρ = 1000 kg/m^3

System Performance Check/0-Degree 8x8x12 Cube (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 25.0 V/m; Power Drift = 0.0307 dB
Peak SAR (extrapolated) = 4.67 W/kg
SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.360 mW/g
Maximum value of SAR (measured) = 2.56 mW/g

System Performance Check/Dipole Area Scan 2 (7x7x1): Measurement grid: dx=9mm, dy=9mm
Maximum value of SAR (measured) = 2.58 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm





Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 2/6/2010 8:38:13 AM

Robot# / Run#: DASY4-FL-3 / JsT-SYSP-5200B-100206-01
Phantom# / Tissue Temp.: OVAL1020 / 20.7 (C)
Dipole Model# / Serial#: D5GHzV2 / 1017
TX Freq. / Start power: 5200 (MHz) / 15 (mW)

Target:	80.20 mW/g	(1g)
Calculated:	83.33 mW/g	(1g)
Percent from Target (+/-):	3.9 %	(1g)
Rotation (1D):	0.16 dB	

Note:
Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1749 for tissue frequencies from 3-6 GHz.

Calculated: 1.25 mW/g (1g); 0.354 mW/g (10g)

Comments: Tested with Megaphase Blue Low Loss "RF" Cable and Sig Gen SN:2269; Coupler#61136; Wideband Power Meter N1912A set for 802.11a and Avg Pwr. (13.02 dBm on Gen)

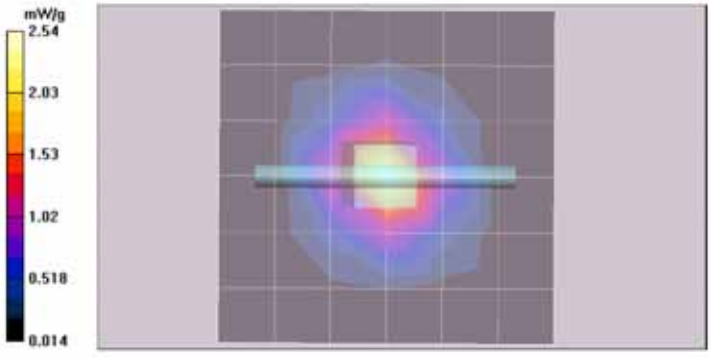
Probe: EX3DV4 - SN3638, Calibrated: 7/16/2009, ConvF(4.05, 4.05, 4.05)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009

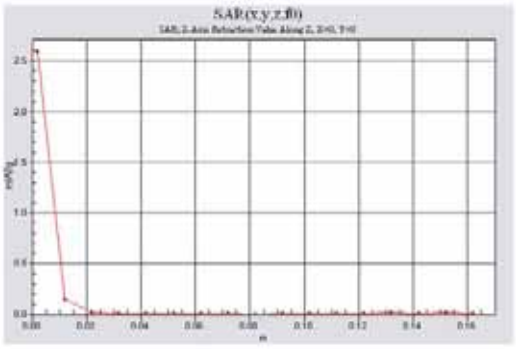
Duty Cycle: 1:1, Medium parameters used: f = 5200 MHz; σ = 5.17 mho/m; ε_r = 45.7; ρ = 1000 kg/m^3

System Performance Check/0-Degree 8x8x12 Cube (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 23.2 V/m; Power Drift = -0.134 dB
Peak SAR (extrapolated) = 4.64 W/kg
SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.361 mW/g
Maximum value of SAR (measured) = 2.59 mW/g

System Performance Check/Dipole Area Scan 2 (7x7x1): Measurement grid: dx=9mm, dy=9mm
Maximum value of SAR (measured) = 2.54 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 2.58 mW/g





Motorola Enterprise Mobility Solutions EME Laboratory
Date/Time: 2/11/2010 1:06:30 PM

Robot# / Run#: DASY4-FL-3 / JyT-SYSP-5200B-100211-02
Phantom# / Tissue Temp : OVAL1020 / 18.9 (C)
Dipole Model# / Serial#: D5GHzV2 / 1017
TX Freq. / Start power: 5200 (MHz) / 15 (mW)

Target:	80.20 mW/g	(1g)
Calculated:	84.67 mW/g	(1g)
Percent from Target (+/-):	5.6 %	(1g)
Rotation (1D):	0.29 dB	

Note:
Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1749 for tissue frequencies from 3-6 GHz.

Calculated: 1.27 mW/g (1g); 0.353 mW/g (10g)

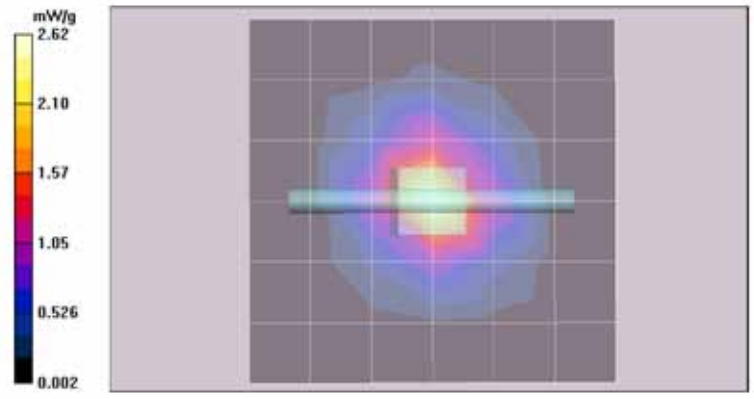
Comments: Tested with Megaphase Blue Low Loss "RF" Cable w/o "ZMA" and Sig Gen SN:1119; Coupler#61136; (12.54 dBm on Gen)

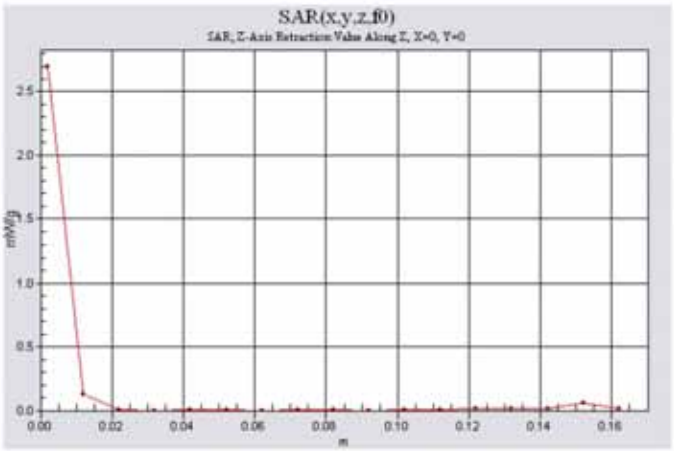
Probe: EX3DV4 - SN3638, Calibrated: 7/16/2009, ConvF(4.05, 4.05, 4.05)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009
Duty Cycle: 1:1, Medium parameters used: f = 5200 MHz; σ = 5.51 mho/m; ε_r = 46; ρ = 1000 kg/m^3

System Performance Check/0-Degree 8x8x12 Cube (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 24.3 V/m; Power Drift = -0.0316 dB
Peak SAR (extrapolated) = 5.00 W/kg
SAR(1 g) = 1.3 mW/g; SAR(10 g) = 0.359 mW/g
Maximum value of SAR (measured) = 2.63 mW/g

System Performance Check/Dipole Area Scan 2 (7x7x1): Measurement grid: dx=9mm, dy=9mm
Maximum value of SAR (measured) = 2.62 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 2.70 mW/g





Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 2/12/2010 5:09:57 AM

Robot# / Run#: DASY4-FL-3 /ErC-SYSP-5200B-100212-01
Phantom# / Tissue Temp.: OVAL1020 / 20.0 (C)
Dipole Model# / Serial#: D5GHzV2 / 1017
TX Freq. / Start power: 5200 (MHz) / 15 (mW)

Target: 80.20 mW/g (1g)
Calculated: 82.60 mW/g (1g)
Percent from Target (+/-): 3.0 % (1g)
Rotation (1D): 0.3 dB

Note:
Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1749 for tissue frequencies from 3-6 GHz.

Calculated: 1.239 mW/g (1g); 0.359 mW/g (10g)

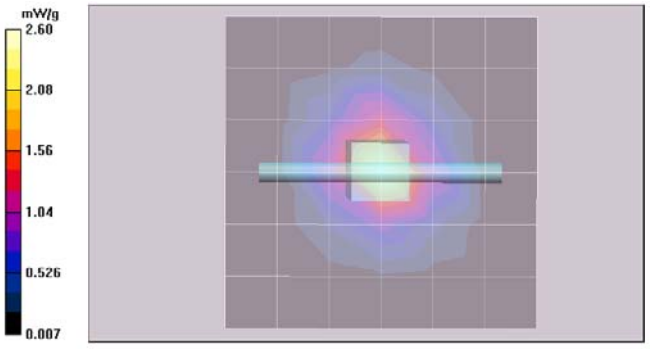
Comments: Tested with Megaphase Blue Low Loss "RF" Cable w/o "ZMA" and Sig Gen SN:1119; Coupler#61136; (12.54 dBm on Gen)

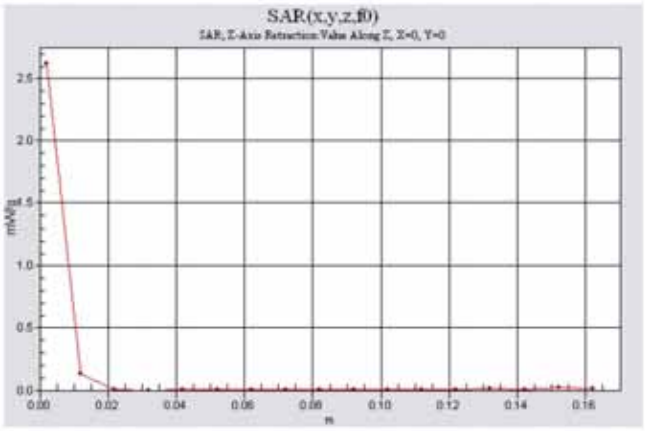
Probe: EX3DV4 - SN3638, Calibrated: 7/16/2009, ConvF(4.05, 4.05, 4.05)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009
Duty Cycle: 1:1, Medium parameters used: f = 5200 MHz; σ = 5.52 mho/m; ε_r = 46.3; ρ = 1000 kg/m^3

System Performance Check/0-Degree 8x8x12 Cube (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 24.4 V/m; Power Drift = -0.0137 dB
Peak SAR (extrapolated) = 4.72 W/kg
SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.365 mW/g
Maximum value of SAR (measured) = 2.49 mW/g

System Performance Check/Dipole Area Scan 2 (7x7x1): Measurement grid: dx=9mm, dy=9mm
Maximum value of SAR (measured) = 2.60 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 2.62 mW/g





Motorola Enterprise Mobility Solutions EME Laboratory
Date/Time: 2/14/2010 1:03:58 PM

Robot# / Run#: DASY4-FL-3 / CM-SYSP-2450B-100214-01
Phantom# / Tissue Temp.: DUAL1002 Side A / 20.3 (C)
Dipole Model# / Serial#: D2450V2 / 704
TX Freq. / Start power: 2450 (MHz) / 30 (mW)

Target: 55.27 mW/g (1g)
Calculated: 56.33 mW/g (1g)
Percent from Target (+/-): 1.9 % (1g)
Rotation (1D): 0.052 dB

Note: When Applicable
Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1868 for tissue frequencies from 150 MHz to 3 GHz.

Calculated: 1.69 mW/g (1g), 0.794 mW/g (10g)

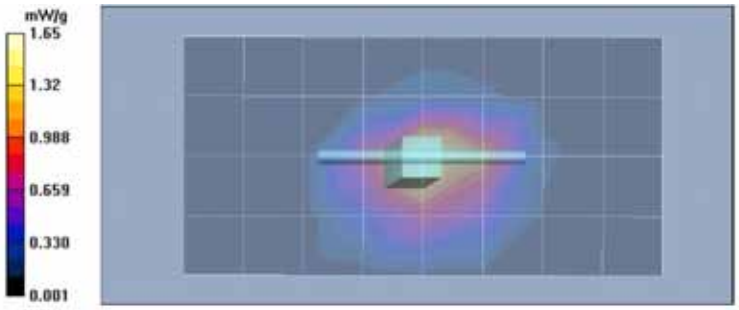
Comments:

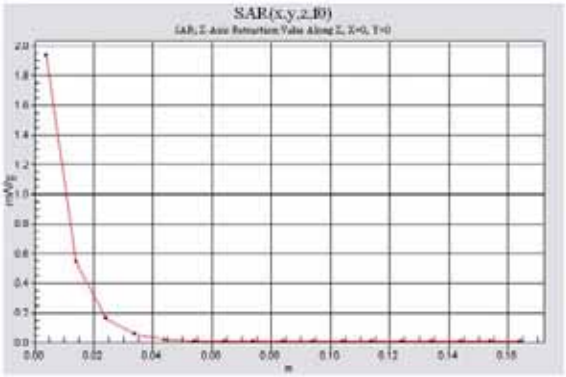
Probe: ES3DV3 - SN3163, Calibrated: 4/24/2009, ConvF(4.16, 4.16, 4.16)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009
Duty Cycle: 1:1, Medium parameters used: f = 2450 MHz; σ = 2.04 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 31.3 V/m; Power Drift = 0.0124 dB
Peak SAR (extrapolated) = 3.42 W/kg
SAR(1 g) = 1.69 mW/g; SAR(10 g) = 0.794 mW/g
Maximum value of SAR (measured) = 1.90 mW/g

System Performance Check/Dipole Area Scan 2 (81x41x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 31.3 V/m; Power Drift = 0.0124 dB
Motorola Fast SAR: SAR(1 g) = 1.65 mW/g; SAR(10 g) = 0.724 mW/g
Maximum value of SAR (interpolated) = 2.02 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 1.94 mW/g





Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 2/16/2010 6:38:22 AM

Robot# / Run#: DASY4-FL-3 / JsT-SYSP-5200B-100216-01
Phantom# / Tissue Temp.: OVAL1020 / 20.7 (C)
Dipole Model# / Serial#: D5GHzV2 / 1017
TX Freq. / Start power: 5200 (MHz) / 15 (mW)

Target:	80.20 mW/g	(1g)
Calculated:	82.67 mW/g	(1g)
Percent from Target (+/-):	3.1 %	(1g)
Rotation (1D):	0.16 dB	

Note:
Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1749 for tissue frequencies from 3-6 GHz.

Calculated: 1.24 mW/g (1g); 0.353 mW/g (10g)

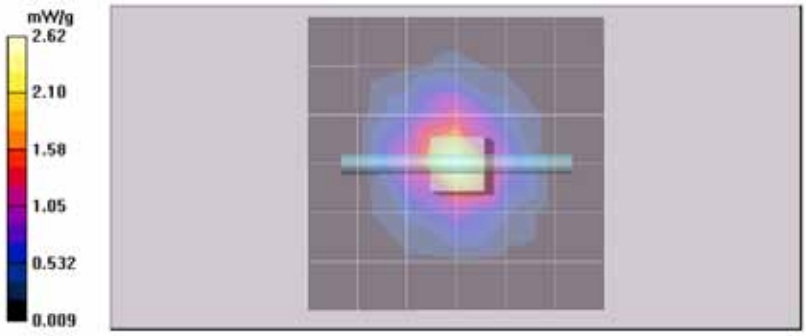
Comments: Tested with Megaphase Blue Low Loss "RF" Cable w/o "ZMA" and Sig Gen SN:1119; Coupler#61136; (12.52 dBm on Gen)

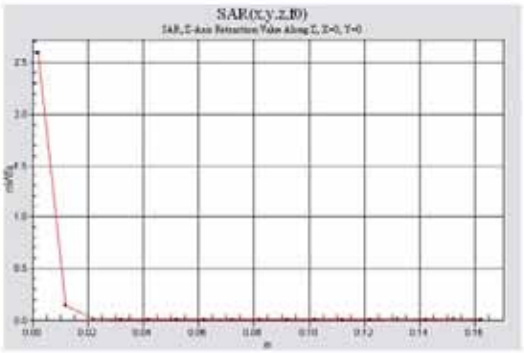
Probe: EX3DV4 - SN3638, Calibrated: 7/16/2009, ConvF(4.05, 4.05, 4.05)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009
Duty Cycle: 1:1, Medium parameters used: f = 5200 MHz; σ = 5.55 mho/m; ε_r = 46.6; ρ = 1000 kg/m^3

System Performance Check/0-Degree 8x8x12 Cube (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 22.3 V/m; Power Drift = -0.0372 dB
Peak SAR (extrapolated) = 4.77 W/kg
SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.358 mW/g
Maximum value of SAR (measured) = 2.49 mW/g

System Performance Check/Dipole Area Scan 2 (7x7x1): Measurement grid: dx=9mm, dy=9mm
Maximum value of SAR (measured) = 2.62 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 2.59 mW/g





Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 2/17/2010 8:34:16 PM

Robot# / Run#: DASY4-FL-3 / CM-SYSP-5200H-100217-22
Phantom# / Tissue Temp.: SAMTP1234 / 19.5 (C)
Dipole Model# / Serial#: D5GHzV2 / 1017
TX Freq. / Start power: 5200 (MHz) / 15 (mW)

Target:	90.16 mW/g	(1g)
Calculated:	88.00 mW/g	(1g)
Percent from Target (+/-):	2.4 %	(1g)
Rotation (1D):	0.1 dB	

Note:
Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1749 for tissue frequencies from 3-6 GHz.

Calculated: 1.32 mW/g (1g); 0.390 mW/g (10g)

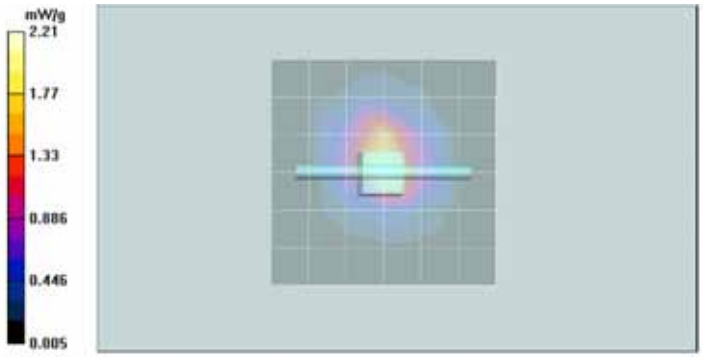
Comments:

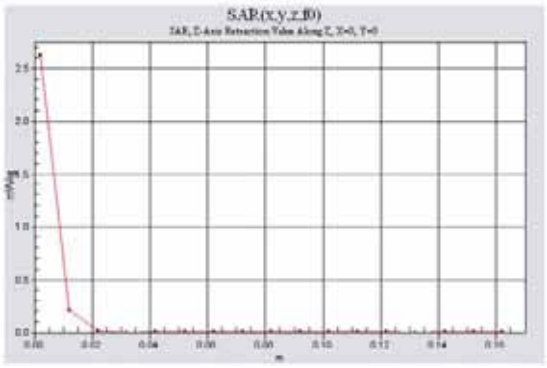
Probe: EX3DV4 - SN3638, Calibrated: 7/16/2009, ConvF(4.4, 4.4, 4.4)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009
Duty Cycle: 1:1, Medium parameters used: f = 5200 MHz; σ = 4.21 mho/m; ϵ_r = 38.1; ρ = 1000 kg/m^3

System Performance Check/0-Degree 8x8x12 Cube (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 24.4 V/m; Power Drift = -0.0462 dB
Peak SAR (extrapolated) = 4.43 W/kg
SAR(1 g) = 1.31 mW/g; SAR(10 g) = 0.386 mW/g
Maximum value of SAR (measured) = 2.55 mW/g

System Performance Check/Dipole Area Scan 2 (61x61x1): Measurement grid: dx=9mm, dy=9mm
Reference Value = 24.4 V/m; Power Drift = -0.0462 dB
Motorola Fast SAR: SAR(1 g) = 3.23 mW/g; SAR(10 g) = 5.02 mW/g
Maximum value of SAR (interpolated) = 2.66 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 2.63 mW/g





Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 2/24/2010 6:37:57 AM

Robot# / Run#: DASY4-FL-3 / JsT-SYSP-2450H-100224-01
Phantom# / Tissue Temp.: SAMTP1208 / 21.0 (C)
Dipole Model# / Serial#: D2450V2 / 704
TX Freq. / Start power: 2450 (MHz) / 30 (mW)

Target:	57.20 mW/g	(1g)
Calculated:	59.33 mW/g	(1g)
Percent from Target (+/-):	3.7 %	(1g)
Rotation (1D):	0.053 dB	

Note: When Applicable
Prior to recording the calculated SAR values, the measured SAR values need to be adjusted/ corrected in accordance with FCD-1868 for tissue frequencies from 150 MHz to 3 GHz.

Calculated: 1.78 mW/g (1g); 0.824 mW/g (10g)

Comments:

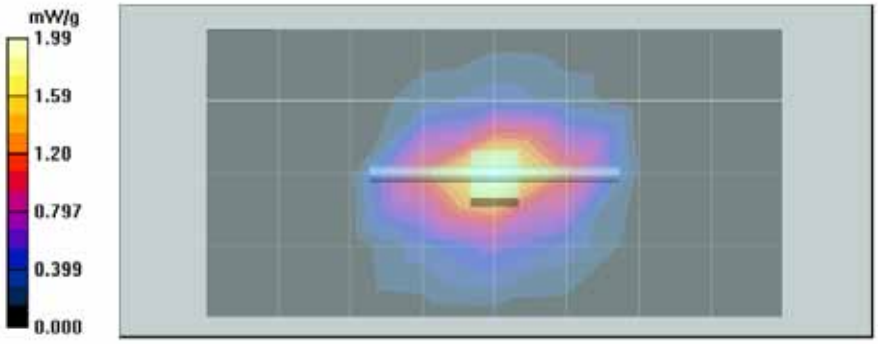
Probe: ES3DV3 - SN3163, Calibrated: 4/24/2009, ConvF(4.5, 4.5, 4.5)
Electronics: DAE3 Sn401, Calibrated: 7/9/2009

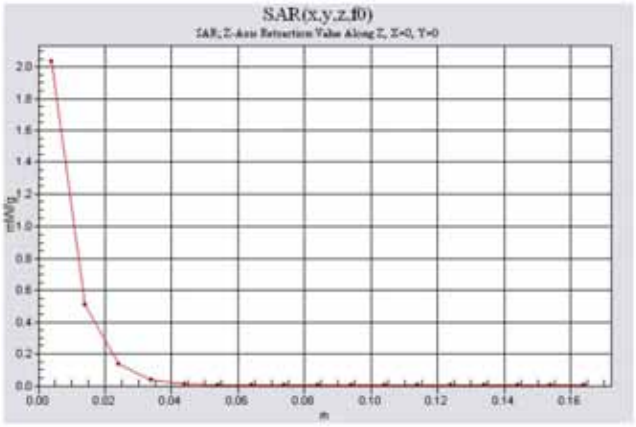
Duty Cycle: 1:1, Medium parameters used: f = 2450 MHz, σ = 1.87 mho/m, ε_r = 37.9, ρ = 1000 kg/m^3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 33.8 V/m; Power Drift = 0.00453 dB
Peak SAR (extrapolated) = 3.72 W/kg
SAR(1 g) = 1.78 mW/g; SAR(10 g) = 0.824 mW/g
Maximum value of SAR (measured) = 2.02 mW/g

System Performance Check/Dipole Area Scan 2 (9x5x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.99 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 2.03 mW/g





DIPOLE SAR TARGET - HEAD

Date:	**03/10/09**	Frequency (MHz):	**5200**
Lab Location:	(FL08)-G&PS	Mixture Type:	**IEEE Head**
DAE Serial #:	850	Ambient Temp.(°C):	22.1

Tissue Characteristics			
Permitivity:	38.1	Phantom Type/SN:	DUAL1003 SIDE A
Conductivity:	4.40	Distance (mm):	10
Tissue Temp.(°C):	21.3		

Reference Source:	Dipole	Power to Dipole:	15 mW
Reference SN:	**1010**		

Target 1g-SAR Value (mW/g, normalized to 1.0 W):	**Difference from Target**
77.4	**-13.57%** **(1g-SAR)**

New Target:

Average 1g-SAR Value (mW/g):	**66.90**

Passes K=2

Percent Difference From Target (MUST be within k=2 Uncertainty):

Probe SN #s	1g-SAR (Cube)	Diff from Ave	Robot
3638	64.40	-3.9%	R1
3637	69.40	3.6%	R1
		#DIV/0!	
		#DIV/0!	
		#DIV/0!	
Average	**66.9000**	New Measured SAR Value	

(normalized to 1.0 W)

Test performed by: **Michael E. Cieslar** Initial: MEC

Motorola Internal Use Only FCD-0733 Rev. 5

DIPOLE SAR TARGET - BODY

Date:	**03/10/09**	Frequency (MHz):	**5200**
Lab Location:	(FL08)-G&PS	Mixture Type:	**FCC Body**
DAE Serial #:	850	Ambient Temp.(°C):	21.9

Tissue Characteristics			
Permitivity:	50.5	Phantom Type/SN:	Dual 1003 Side B
Conductivity:	5.18	Distance (mm):	10
Tissue Temp.(°C):	21.1		

Reference Source:	Dipole	Power to Dipole:	15 mW
Reference SN:	**1010**		

New Target:
Average Measured SAR Value: **70.30** mW/g(1g avg.),

Probe SN #s	1-G Cube	Diff from Ave	Robot
3637	68.27	-2.9%	R1
3638	72.33	2.9%	R1
		-100.0%	Rx
		-100.0%	Rx
		-100.0%	Rx
Average	**70.3000**	New Measured SAR Value	

(normalized to 1.0 W)

Test performed by: **Michael E. Cieslar** Initial: MEC

Motorola Internal Use Only FCD-0733 Rev. 5

DIPOLE SAR TARGET - HEAD

Date:	**12/07/09**	Frequency (MHz):	**5200**
Lab Location:	FL08-EMS	Mixture Type:	**IEEE Head**
DAE Serial #:	850	Ambient Temp.(°C):	21.1
Tissue Characteristics			
Permitivity:	39.3	Phantom Type/SN:	DUAL1003 SIDE A
Conductivity:	4.29	Distance (mm):	10
Tissue Temp.(°C):	20		
Reference Source:	Dipole	Power to Dipole:	15 mW
Reference SN:	**1017**		

Target 1g-SAR Value (mW/g, normalized to 1.0 W):

76.5

Difference from Target

17.85% **(1g-SAR)**

New Target:

Average 1g-SAR Value (mW/g):	**90.16**

Passes K=2

Percent Difference From Target (MUST be within k=2 Uncertainty):

Probe SN #s	1g-SAR (Cube)	Diff from Ave	Robot
3637	90.13	*0.0%*	R1
3638	92.87	*3.0%*	R1
3644	87.47	*-3.0%*	R1
Average	**90.1567**	New Measured SAR Value	

(normalized to 1.0 W)

Test performed by: **Ed Church** Initial: E. C

Motorola Internal Use Only FCD-0733 Rev. 6

DIPOLE SAR TARGET - BODY

Date:	**12/07/09**	Frequency (MHz):	**5200**
Lab Location:	FL08-EMS	Mixture Type:	**Body**
DAE Serial #:	850	Ambient Temp.(°C):	20.9

Tissue Characteristics

Permitivity:	52.9	Phantom Type/SN:	DUAL1003 SIDE B
Conductivity:	5.08	Distance (mm):	10
Tissue Temp.(°C):	20		

Reference Source:	Dipole	Power to Dipole:	15 mW
Reference SN:	**1017**		

New Target:

Average Measured SAR Value: **80.20** mW/g(1g avg.),

Probe SN #s	1-G Cube	Diff from Ave	Robot
3644	77.93	*-2.8%*	R1
3638	81.33	*1.4%*	R1
3637	81.33	*1.4%*	R1
Average		New Measured SAR Value	

(normalized to 1.0 W)

Test performed by: **Ed Church** Initial: EC

Motorola Internal Use Only FCD-0733 Rev.6

DIPOLE SAR TARGET - HEAD

Date:	12/28/09	Frequency (MHz):	**2450**
Lab Location:	FL08-G&PS	Mixture Type:	**IEEE Head**
DAE Serial #:	363	Ambient Temp.(°C):	21.8
Tissue Characteristics			
Permitivity:	36.6	Phantom Type/SN:	DUAL1003 SIDE B
Conductivity:	1.87	Distance (mm):	10
Tissue Temp.(°C):	21.3		
Reference Source:	Dipole	Power to Dipole:	50 mW
Reference SN:	**704**		

Target 1g-SAR Value (mW/g, normalized to 1.0 W):	**Difference from Target**
52.4	**9.16% (1g-SAR)**

New Target:

Average 1g-SAR Value (mW/g):	**57.20**

Passes K=2

Percent Difference From Target (MUST be within k=2 Uncertainty):

Probe SN #s	1g-SAR (Cube)	Diff from Ave	Robot
3147	58.20	*1.7%*	R2
3163	56.80	*-0.7%*	R2
3185	56.60	*-1.0%*	R2
Average	**57.2000**	New Measured SAR Value	

(normalized to 1.0 W)

Test performed by: **C. Miller** Initial:

Motorola Internal Use Only FCD-0733 Rev. 6

DIPOLE SAR TARGET - BODY

Date:	**12/28/09**	Frequency (MHz):	**2450**
Lab Location:	FL08-G&PS	Mixture Type:	**Body**
DAE Serial #:	363	Ambient Temp.(°C):	21.9

Tissue Characteristics

Permitivity:	51.2	Phantom Type/SN:	DUAL1003 SIDE A
Conductivity:	2.02	Distance (mm):	10
Tissue Temp.(°C):	20.9		

Reference Source:	Dipole	Power to Dipole:	50 mW
Reference SN:	**704**		

New Target:

Average Measured SAR Value: **55.27** mW/g(1g avg.),

Probe SN #s	1-G Cube	Diff from Ave	Robot
3147	58.20	*5.3%*	R2
3163	54.80	*-0.8%*	R2
3185	52.80	*-4.5%*	R2
Average		New Measured SAR Value	

(normalized to 1.0 W)

Test performed by: **C. Miller** Initial:

Motorola Internal Use Only FCD-0733 Rev.6