MOTOROLA

ACCREDITED
TESTING CERT # 2518.01

FCC ID: AZ489FT7032
DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 2 of 3

Government & Public Safety
EME Test Laboratory
8000 West Sunrise Blvd
Fort Lauderdale, FL. 33322

Date of Report: 05/12/2008
Report Revision: B
Report ID: UTAH_semi rugged_Rev B_080512 SR5989

Responsible Engineer:	Stephen C. Whalen (EME Principle Staff Engineer)
Date/s Tested:	03/12/08 – 03/25/08
Manufacturer/Location:	Motorola – Israel
Sector/Group/Div.:	MCIL Israel
Date submitted for test:	12/12/07
DUT Description:	VoWLAN is a VoIP phone based on WLAN 802.11a/b/g & Bluetooth
Test TX mode(s):	100% Duty Cycle (all bands)
Max. Power output:	BT 2.51mW; 802.11a(5.15-5.25GHz) 39.8mW; 802.11a(5.25-5.35GHz) 79.3mW; 802.11a(5.47-5.725GHz) 79.3mW; 802.11a(5.725-5.825 GHz) 79.3mW; 802.11b 79.3mW; 802.11g 70.8mW.
Nominal Power:	BT 1mW; 802.11a(5.15-5.25GHz) 28.2mW; 802.11a(5.25-5.35GHz) 56.2mW; 802.11a(5.47-5.725GHz) 56.2mW; 802.11a(5.725-5.825 GHz) 56.2mW; 802.11b 63mW; 802.11g 17.8mW
Tx Frequency Bands:	BT 2402-2480MHz; 802.11a 5.18-5.24GHz; 802.11a 5.26-5.32GHz ; 802.11a 5.50-5.70GHz; 802.11a 5.745-5.805GHz; 802.11b/g 2412-2462MHz
Signaling type:	Bluetooth - Frequency Hopping Spread Spectrum (FHSS); WLAN -802.11a/b/g Direct Sequence Spread Spectrum (DSSS), Orthogonal Frequency Division Multiplexing (OFDM)
Model(s) Tested:	F2978A
Model(s) Certified:	F2978A
Serial Number(s):	079SJA00HN
Classification:	General Population/Uncontrolled
Rule Part(s):	15

DUT Photo
(Refer to Exhibit 7B)

Antenna(s):
0789971V46 (2.4GHz BT PIFA single Band ¼ wave antenna, -0.2dBi);
0789971V87 (2.4GHz WLAN b/g PIFA Dual Band ¼ wave antenna, 3.0dBi);
0789971V87 (5GHz WLAN a PIFA Dual Band ¼ wave antenna, 1.0dBi)

Battery(ies):
SNN5754A (Li Ion 1480MAH - BK90)

Body worn accessory(ies):
None

Audio/Data cable accessory(ies):
NNTN5004BP (Earpiece W/Boom Mic & PTT), NNTN5005BP (Breeze Headset W/Boom Mic), NNTN5006BP (Earpiece W/Mic & PTT), NNTN5211B (Earbud W/Clip & PTT (Surveillance)), SYN1301B (EMU Stereo Headset), NNTN5774C (Stereo Headset W/Tamper proof), SYN0896B (Headset EMU MONO), NNTN5689A (Earpiece W/Mic), SKN6222A (Data Cable EMU & EMU Y-CABLE), SKN6371C (Data Cable MINI USB TO USB)

Max. Calc. : 1-g Avg. SAR: 1.29 W/kg (Body); 10-g Avg. SAR: 0.47 W/kg (Body)
Max. Calc. : 1-g Avg. SAR: 0.11 W/kg (Face); 10-g Avg. SAR: 0.05 W/kg (Face)
Max. Calc. : 1-g Avg. SAR: 0.80 W/kg (Head); 10-g Avg. SAR: 0.31 W/kg (Head)

Signature on file
Deanna Zakharia G&PS EME Lab Senior Resource Manager, Laboratory Director,
Approval Date: 05/14/2008

Certification Date: 04/09/2008

Certification No.: L1080401P

Appendix C
Dipole Calibration Certificates

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

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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: **D2450V2-704_Nov06**

CALIBRATION CERTIFICATE

Object	D2450V2 - SN: 704
Calibration procedure(s)	QA CAL-05.v6 Calibration procedure for dipole validation kits
Calibration date:	November 10, 2006
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	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Power sensor HP 8481A	US37292783	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference Probe ES3DV2	SN 3025	19-Oct-06 (SPEAG, No. ES3-3025_Oct06)	Oct-07
DAE4	SN 601	15-Dec-05 (SPEAG, No. DAE4-601_Dec05)	Dec-06

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

	Name	Function	Signature
Calibrated by:	Marcel Fehr	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: November 14, 2006

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) 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) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
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 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
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	39.3 ± 6 %	1.78 mho/m ± 6 %
Head TSL temperature during test	(21.0 ± 0.2) °C	-------	------

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	condition	
SAR measured	250 mW input power	13.4 mW / g
SAR normalized	normalized to 1W	53.6 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**53.9 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.23 mW / g
SAR normalized	normalized to 1W	24.9 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**25.0 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	52.5 Ω + 2.4 jΩ
Return Loss	– 29.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.152 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

DASY4 Validation Report for Head TSL

Date/Time: 10.11.2006 13:41:01

Test Laboratory: SPEAG, Zurich, Switzerland

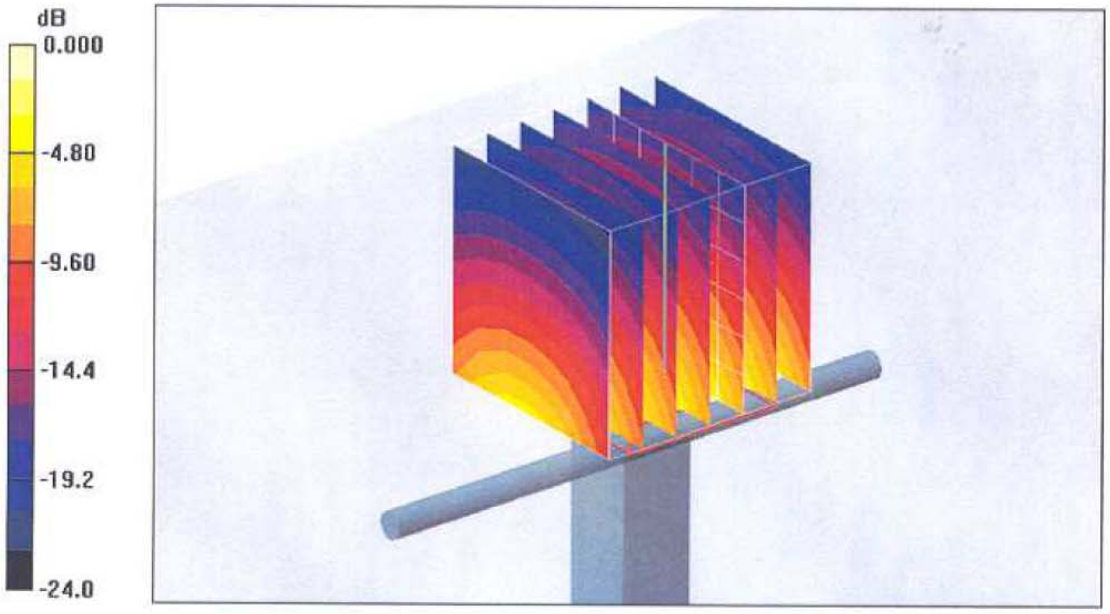
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN704

Communication System: CW-2450; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL U10 BB_060425;
Medium parameters used: f = 2450 MHz; σ = 1.77 mho/m; ε_r = 39.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

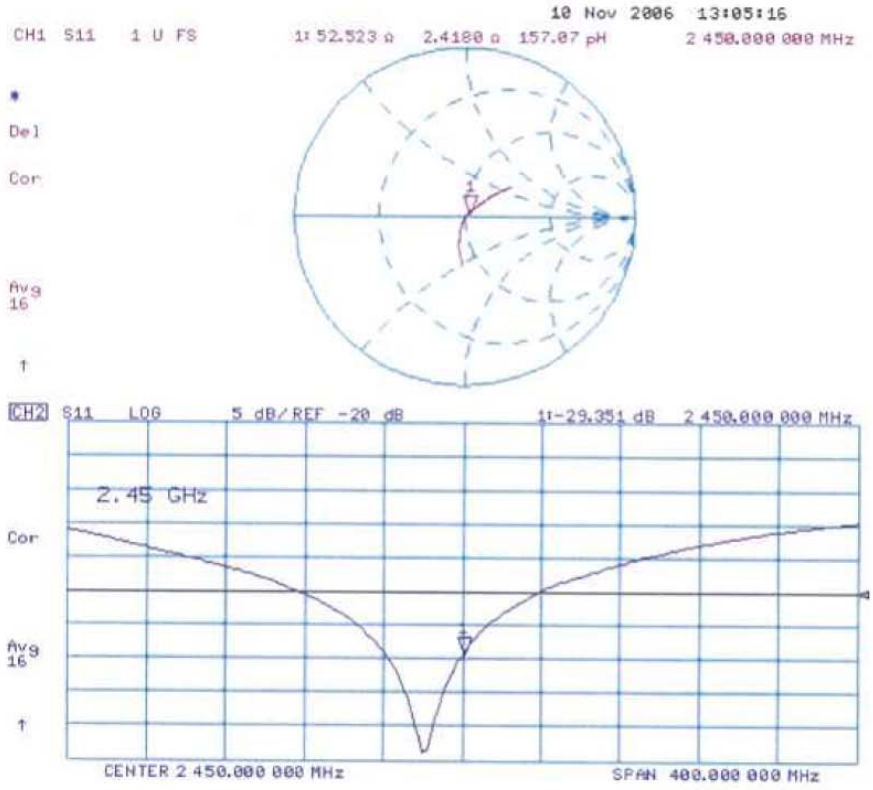
- Probe: ES3DV2 - SN3025 (HF); ConvF(4.5, 4.5, 4.5); Calibrated: 19.10.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.4 V/m; Power Drift = -0.041 dB
Peak SAR (extrapolated) = 27.9 W/kg
SAR(1 g) = 13.4 mW/g; SAR(10 g) = 6.23 mW/g
Maximum value of SAR (measured) = 14.9 mW/g



0 dB = 14.9mW/g

Impedance Measurement Plot for Head TSL



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Accreditation No.: SCS 108

Client **Motorola CGISS**

Certificate No: **D5GHzV2-1010_May06**

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:	May 3, 2006
Condition of the calibrated item	In Tolerance

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41495277	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41498087	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Reference 20 dB Attenuator	SN: S5086 (20b)	4-Apr-06 (METAS, No. 251-00558)	Apr-07
Reference 10 dB Attenuator	SN: 5047.2 (10r)	11-Aug-05 (METAS, No 251-00498)	Aug-06
Reference Probe EX3DV4	SN: 3503	19-Mar-05 (SPEAG, No. EX3-3503_Mar06)	Mar-07
DAE4	SN: 601	15-Dec-05 (SPEAG, No. DAE4-601_Dec05)	Dec-06

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	4-Aug-99 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov 06

	Name	Function	Signature
Calibrated by:	Marcel Fehr	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 4, 2006

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 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 = 4.3 mm, dz = 3 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	35.9 ± 6 %	4.33 mho/m ± 6 %
Head TSL temperature during test	(21.5 ± 0.2) °C	----	----

SAR result with Head TSL at 5000 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	condition	
SAR measured	250 mW input power	20.8 mW / g
SAR normalized	normalized to 1W	83.2 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**83.0 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.92 mW / g
SAR normalized	normalized to 1W	23.7 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**23.6 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	35.6 ± 6 %	4.53 mho/m ± 6 %
Head TSL temperature during test	(21.5 ± 0.2) °C	----	----

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	condition	
SAR measured	250 mW input power	21.3 mW / g
SAR normalized	normalized to 1W	82.9 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**82.6 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.96 mW / g
SAR normalized	normalized to 1W	23.2 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**23.1 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	34.6 ± 6 %	5.09 mho/m ± 6 %
Head TSL temperature during test	(21.5 ± 0.2) °C	----	----

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	condition	
SAR measured	250 mW input power	20.7 mW / g
SAR normalized	normalized to 1W	82.8 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**82.2 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.82 mW / g
SAR normalized	normalized to 1W	23.3 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**23.1 mW / g ± 19.5 % (k=2)**

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	49.6 ± 6 %	4.85 mho/m ± 6 %
Body TSL temperature during test	(21.6 ± 0.2) °C	----	----

SAR result with Body TSL at 5000 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	condition	
SAR measured	250 mW input power	20.3 mW / g
SAR normalized	normalized to 1W	79.0 mW / g
SAR for nominal Body TSL parameters [1]	normalized to 1W	**79.2 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.84 mW / g
SAR normalized	normalized to 1W	22.7 mW / g
SAR for nominal Body TSL parameters [1]	normalized to 1W	**22.7 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	49.1 ± 6 %	5.11 mho/m ± 6 %
Body TSL temperature during test	(21.6 ± 0.2) °C	----	----

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	condition	
SAR measured	250 mW input power	19.6 mW / g
SAR normalized	normalized to 1W	78.4 mW / g
SAR for nominal Body TSL parameters [1]	normalized to 1W	**78.5 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.56 mW / g
SAR normalized	normalized to 1W	22.2 mW / g
SAR for nominal Body TSL parameters [1]	normalized to 1W	**22.2 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	47.8 ± 6 %	5.88 mho/m ± 6 %
Body TSL temperature during test	(21.6 ± 0.2) °C	----	----

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	condition	
SAR measured	250 mW input power	18.4 mW / g
SAR normalized	normalized to 1W	73.6 mW / g
SAR for nominal Body TSL parameters [1]	normalized to 1W	**73.3 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.16 mW / g
SAR normalized	normalized to 1W	20.6 mW / g
SAR for nominal Body TSL parameters [1]	normalized to 1W	**20.5 mW / g ± 19.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL at 5000 MHz

Impedance, transformed to feed point	49.8 Ω - 13.6 jΩ
Return Loss	-17.4 dB

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	52.5 Ω - 10.5 jΩ
Return Loss	-19.6 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	58.5 Ω + 1.1 jΩ
Return Loss	-22.1 dB

Antenna Parameters with Body TSL at 5000 MHz

Impedance, transformed to feed point	48.9 Ω - 12.4 jΩ
Return Loss	-18.1 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	52.2 Ω - 8.4 jΩ
Return Loss	-21.5 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	59.3 Ω + 2.7 jΩ
Return Loss	-21.1 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 22, 2003

DASY4 Validation Report for Head TSL

Date/Time: 02.05.2006 15:56:10

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: CW-5GHz; Frequency: 5000 MHz Frequency: 5200 MHz Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: HSL 5800 MHz;
Medium parameters used: f = 5000 MHz; σ = 4.33 mho/m; ε_r = 35.9; ρ = 1000 kg/m^3 Medium parameters used: f = 5200 MHz; σ = 4.53 mho/m; ε_r = 35.6; ρ = 1000 kg/m^3 Medium parameters used: f = 5800 MHz; σ = 5.11 mho/m; ε_r = 34.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.96, 5.96, 5.96)ConvF(5.52, 5.52, 5.52)ConvF(5.02, 5.02, 5.02); Calibrated: 18.03.2006
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 21; Postprocessing SW: SEMCAD, V1.8 Build 165

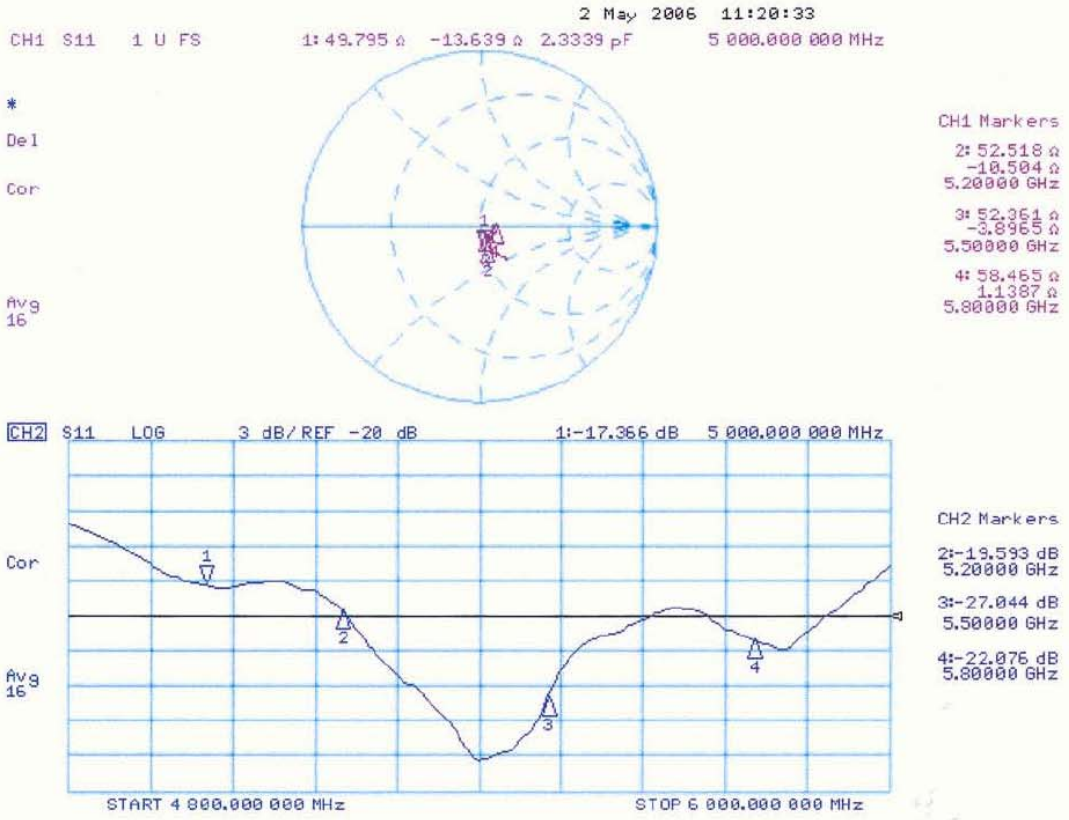
d=10mm, Pin=250mW, f=5000 MHz/Area Scan (91x91x1): Measurement grid: dx=dy=10mm
Maximum value of SAR (interpolated) = 42.8 mW/g

d=10mm, Pin=250mW, f=5000 MHz/Zoom Scan (8x8x8), dist=2mm (8x8x8)/Cube 0:
Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 81.6 V/m; Power Drift = 0.012 dB
Peak SAR (extrapolated) = 77.5 W/kg
SAR(1 g) = 20.8 mW/g; SAR(10 g) = 5.92 mW/g
Maximum value of SAR (measured) = 40.3 mW/g

d=10mm, Pin=250mW, f=5200 MHz/Zoom Scan (8x8x8), dist=2mm (8x8x8)/Cube 0:
Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 80.9 V/m; Power Drift = 0.043 dB
Peak SAR (extrapolated) = 81.6 W/kg
SAR(1 g) = 21.3 mW/g; SAR(10 g) = 5.96 mW/g
Maximum value of SAR (measured) = 40.8 mW/g

d=10mm, Pin=250mW, f=5800 MHz/Zoom Scan (8x8x8), dist=2mm (8x8x8)/Cube 0:
Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 75.7 V/m; Power Drift = 0.007 dB
Peak SAR (extrapolated) = 87.4 W/kg
SAR(1 g) = 20.7 mW/g; SAR(10 g) = 5.82 mW/g
Maximum value of SAR (measured) = 44.4 mW/g

Impedance Measurement Plot for Head TSL



DASY4 Validation Report for Body TSL

Date/Time: 03.05.2006 14:12:10

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: CW-5GHz; Frequency: 5000 MHz Frequency: 5200 MHz Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: MSL U10 BB;
Medium parameters used: f = 5000 MHz; σ = 4.85 mho/m; ε_r = 49.6; ρ = 1000 kg/m^3 Medium parameters used: f = 5200 MHz; σ = 5.14 mho/m; ε_r = 49.1; ρ = 1000 kg/m^3 Medium parameters used: f = 5800 MHz; σ = 5.91 mho/m; ε_r = 47.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.14, 5.14, 5.14)ConvF(4.98, 4.98, 4.98)ConvF(4.72, 4.72, 4.72); Calibrated: 18.03.2006
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 21; Postprocessing SW: SEMCAD, V1.8 Build 165

d=10mm, Pin=250mW, f=5000 MHz/Area Scan (91x91x1): Measurement grid: dx=dy=10mm
Maximum value of SAR (interpolated) = 43.7 mW/g

d=10mm, Pin=250mW, f=5000 MHz/Zoom Scan (8x8x8), dist=2mm (8x8x8)/Cube 0:
Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 85.0 V/m; Power Drift = 0.044 dB
Peak SAR (extrapolated) = 67.1 W/kg
SAR(1 g) = 20.3 mW/g; SAR(10 g) = 5.84 mW/g
Maximum value of SAR (measured) = 37.9 mW/g

d=10mm, Pin=250mW, f=5200 MHz/Zoom Scan (8x8x8), dist=2mm (8x8x8)/Cube 0:
Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 81.5 V/m; Power Drift = 0.008 dB
Peak SAR (extrapolated) = 67.5 W/kg
SAR(1 g) = 19.6 mW/g; SAR(10 g) = 5.56 mW/g
Maximum value of SAR (measured) = 36.6 mW/g

d=10mm, Pin=250mW, f=5800 MHz/Zoom Scan (8x8x8), dist=2mm (8x8x8)/Cube 0:
Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 72.6 V/m; Power Drift = 0.000 dB
Peak SAR (extrapolated) = 72.3 W/kg
SAR(1 g) = 18.4 mW/g; SAR(10 g) = 5.16 mW/g
Maximum value of SAR (measured) = 36.4 mW/g

Impedance Measurement Plot for Body TSL