MOTOROLA

ACCREDITED
Certificate Number: 1449-01

FCC ID: AZ489FT7010
DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 1 of 3

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

Date of Report: March 21, 2005
Report Revision: Rev. O
Report ID: FCC rpt_X-Pad F4423A_Rev O_050321 SR2011

Responsible Engineer:	Deanna Zakharia (Elect. Principle Staff Eng.)
Date/s Tested:	2/14/05 – 3/11/05
Manufacturer/Location:	Motorola South – Arad Israel
Sector/Group/Div.:	MCIL Israel
Date submitted for test:	2/07/05
DUT Description:	Handheld data terminal with GPRS, Bluetooth, and WLAN capability
Test TX mode(s):	CW, 1:8
Max. Power output:	GSM850 0.757W, PCS1900 0.971W, BT 2mW, WLAN 100mW
Nominal Power:	GSM850 0.631W, PCS1900 0.809W, BT 1mW, WLAN 16mW
Tx Frequency Bands:	GSM: 824.2-848.8 MHz, PCS1900:1850.2-1909.8MHz, BT: 2.402-2.48GHz, WLAN: 2.412-2.462GHz
Signaling type:	TDMA: GPRS, GSM, WLAN, Bluetooth
Model(s) Tested:	F4423A
Model(s) Certified:	F4423A
Serial Number(s):	PNX5020066
Classification:	General Population/Uncontrolled
Rule Part(s):	15; Class B Digital Device

Approved Accessories:

Antenna(s):
8587526V07 (Quad band GSM 850/900 ½ wave 0.5dBi and PCS 1800/1900 ¼ wave 2.0dBi); 8508851K37 (Monopole BT 2.4-2.48GHz ¼ wave 2.5dBi); 8508851K38 (Dipole couple folded WLAN 2.4-2.48GHz ½ wave 3.2x1.6 2.7dBi)
Battery(ies):
FTN6032B (7.2V 1800mAh rechargeable Li Ion battery)
Body worn accessory:
FHN6498A (Holster)

Max Calc. 1-g/10-g Avg. SAR: 0.02/0.01 W/kg (Face);
Max. Calc. 1-g/10-g Avg. SAR: 0.47/0.27 W/kg (Body);
Max Calc. 10-g Avg. SAR: 2.30 W/kg (Hand)

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 2.0 of this report. This report shall not be reproduced without written approval from an officially designated representative of the Motorola EME Laboratory.

This reporting format is consistent with the test report guidelines of the TIA TSB-150 December 2004
The results and statements contained in this report pertain only to the device(s) evaluated.

Stephen Whalen's signature on file for Ken Enger
Ken Enger, GEMS EME Lab Senior Resource Manager,
Laboratory Director,

3/21/05
Approval Date

Certification Date: 3/21/05

Certification No.: L1050308P

Part 1 of 3

Introduction and Overview 3
2.0 References, Standards, and Guidelines 3
2.1 SAR Limits 4
3.0 Description of Device Under Test (DUT) 4
4.0 Description of Test System 5
4.1 Description of Robotics/Probes/Readout Electronics 5
4.2 Description of Phantom(s) 5
4.3 Description of Equivalent Tissues 6
5.0 Additional Test Equipment 6
6.0 SAR Measurement System Verification 7
6.1 Equivalent Tissue Test results 7
6.2 System Check Test results 8
7.0 DUT Test Strategy and Methodology 8
7.1 Test Plan 8
7.2 Device Positioning Procedures 10
8.0 Environmental Test Conditions 11
9.0 Test Results Summary 11
9.1 Highest S.A.R. results calculation methodology 13
10.0 Conclusion 13

APPENDICES

A Measurement Uncertainty……2
B. Probe Calibration Certificates……..5

Part 2 of 3

C. Dipole Calibration Certificates…….16
D. Test System Verification Scans……30

Part 3 of 3

E. DUT Scans (Shortened scans & highest SAR configurations)……2
F. DUT Supplementary Data (e.g. Power Slump)……13
G. DUT Test Position Photos…….....16
H. DUT & Accessory Photos……19
I. DUT Body-worn Separation Distances……20

REVISION HISTORY

Date	Revision	Comments
3/21/05	O	Initial Release

1.0 Introduction and Overview

This report details the utilization, test setup, test equipment, and test results of the Specific Absorption Rate (S.A.R.) measurements performed at the GEMS EME Test Lab for model number F4423A, FCC ID: AZ489FT7010.

2.0 Reference Standards and Guidelines

This product is designed to comply with the following national and international standards and guidelines.

- United States Federal Communications Commission, Code of Federal Regulations; Rule Part 47CFR § 2.1093 sub-part J:1999
- Federal Communications Commission, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields”, OET Bulletin 65, Supplement C (Edition 01-01), FCC, Washington, D.C.: June 2001.
- IEEE 1528, 2003 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques"
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) C95. 1-1992
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999 Edition
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998
- Ministry of Health (Canada) Safety Code 6. Limits of Human Exposure to Radio frequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz, 1999
- Australian Communications Authority Radiocommunications (Electromagnetic Radiation - Human Exposure) Standard 2003
- ANATEL, Brazil Regulatory Authority, Resolution No. 303 of July 2, 2002 "Regulation of the limitation of exposure to electrical, magnetic, and electromagnetic fields in the radio frequency range between 9KHz and 300 GHz." and “Attachment to resolution # 303 from July 2, 2002”

2.1 SAR Limits

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average -ANSI- (averaged over the whole body)	0.08	0.4
Spatial Peak -ANSI- (averaged over any 1-g of tissue)	1.60	8.0
Spatial Peak -ICNIRP- (hands/wrists/feet/ankles averaged over 10-g)	4.0	20.0
Localized SAR -ICNIRP- (Head and Trunk 10-g)	2.0	10.0

3.0 Description of Device Under Test (DUT)

FCC ID: AZ489FT7010 is a Part 15 Class B digital handheld device. This device incorporates a GSM/GPRS radio modem used for packet data applications, a Bluetooth radio modem used for data exchange with external Bluetooth devices, and a WLAN radio module used to connect the device to a LAN via an Access Point (using CSMA/CA access protocol). The GSM800/PCS modem has a maximum duty cycle of 12.5% TDMA 1:8 (577usec out of 4.165ms). The Bluetooth modem uses Frequency Hopping Spread Spectrum (FHSS) and its duty cycle is imposed by the Bluetooth standard (single slot operation 366usec out of 625usec). The WLAN modem operates in the ISM band using Direct Sequence Spread Spectrum (DSSS) and works in compliance with the IEEE 802.11b standard. The intended operating user positions are body-worn by means of the offered body-worn accessory, 2.5cm in front of the face, and handheld.

FCC ID: AZ489FT7010 is capable of operating in the GSM: 824.2-848.8 MHz, PCS1900:1850.2-1909.8MHz, BT: 2.402-2.48GHz, and WLAN: 2.412-2.462GHz bands. The rated conducted power outputs are GSM850 0.631W, PCS1900 0.809W, BT 1mW, and WLAN 16mW.
The maximum outputs are GSM850 0.757W, PCS1900 0.971W, BT 2mW, and WLAN 100mW as defined by the upper limit of the production line final test station.

FCC ID: AZ489FT7010 is offered with the options and accessories listed on the coversheet of this report.

Test Output Power

A table of the characteristic power slump versus time is provided in Appendix F.

4.0 Description of Test System

4.1 Descriptions of Robotics/probes/Readout Electronics

The laboratory utilizes a Dosimetric Assessment System (DASY4™) S.A.R. measurement system Version 4.3 manufactured by Schmid & Partner Engineering AG (SPEAG™), of Zurich Switzerland. The test system consists of a Stäubli RX90L robot, DAE3V1, and ET3DV6, and optional EX3DV3 E-Field probes. Please reference the SPEAG user manual and application notes for detailed probe, robot, and S.A.R. computational procedures. Section 5.0 presents relevant test equipment information. Appendices B and C present the applicable calibration certificates. The E-field probe first scans a coarse grid over a large area inside the phantom in order to locate the interpolated maximum S.A.R. distribution. After the coarse scan measurement, the probe is automatically moved to a position at the interpolated maximum. The subsequent scan can directly use this position as reference for the cube evaluations.

4.2 Description of Phantom(s)

4.2.1 Flat Phantom

Phantom Type	Phantom Material	Phantom Dimensions (cm)	Support structure opening dimensions (cm)	Support structure material	Loss Tangent
Flat	High Density Polyethylene (HDPE)	80x30x20x0.2	68.58x20.32	Wood	< 0.05
Flat	High Density Polyethylene (HDPE)	40x30x20x0.2	60.96x15.24	Wood	< 0.05

4.2.2 SAM Phantom

N/A

4.3 Description of Equivalent tissues

Type of Simulated Tissue

The simulated tissue used is compliant to that specified in FCC Supplement C (Edition 01-01) to OET Bulletin 65 (Edition 97-01) and IEEE 1528, 2003 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques". The sugar based simulate tissue is produced by placing the correct measured amount of De-ionized water into a large container. Each of the dried ingredients are weighed and added to the water carefully to avoid clumping. If the solution has a high sugar concentration the water is pre-heated to aid in dissolving the ingredients. For Diacetin and Glycol based simulates, sugar and HEC ingredients are not needed. The solution is mixed thoroughly, covered, and allowed to sit overnight prior to use.

4.3.2 Simulated Tissue Composition

% of listed ingredients	900MHz		1900MHz		2450MHz	
	Head	Body	Head	Body	Head	Body
Sugar	NA	44.9	NA	NA	NA	NA
DGBE (Glycol)	NA	NA	NA	NA	NA	NA
Diacetin	NA	NA	NA	34.50	NA	34.50
De ionized -Water	NA	53.06	NA	64.97	NA	65.20
Salt	NA	0.94	NA	0.43	NA	0.20
HEC	NA	1	NA	NA	NA	NA
Bact.	NA	0.1	NA	0.1	NA	0.10

Reference section 6.1 for target parameters

5.0 Additional Test Equipment

Equipment Type	Model Number	Serial Number	Calibration Due Date
Coupler (NARDA)	3020A	40295	7/18/2005
Sensor (HP/Agilent)	8482B	3318A06774 3318A07546	3/1/2005 9/27/05
Sensor (HP/Agilent)	8481H	2703A14631	9/29/2005
Power meter (HP/Agilent)	437B	3125U16028	9/29/05
Power meter (HP/Agilent)	437B	3737U26425	11/1/05
Sig Gen (HP/Agilent)	E4421B	RSHPBT02	11/3/05
AMP (Amplifier Research)	1W1000	16625	CNR (Cal Not Req.)
Network Analyzer (HP/Agilent)	8753D	3410A06417	2/7/06
Dielectric Probe Kit (HP/Agilent)	85070C	US99360076	CNR
SPEAG Probe	ET3DV6	SN1545	9/1/2005
Speag Dipole	D900V2/ D1900V2/ D2450V2	084/ 522/ 704	3/22/06 8/25/06 11/15/06
Spectrum Analyzer (HP)	8561E	SPHPAP18	CNR
Power Amplifier	10WD1000	AMAHG016	CNR

6.0 SAR Measurement System Verification

The S.A.R. measurements were conducted with probe model/serial number ET3DV6/SN1545. The system performance check was conducted daily and within 24 hours prior to testing. DASY output files of the system performance test results and the probe/dipole calibration certificates are included in appendices B and C respectively. The table below summarizes the system performance check results normalized to 1W.
Dipole validation scans at the head from SPEAG are provided in APPENDIX D. The GEMS EME lab validated the dipole to the applicable IEEE system performance targets. Within the same day system validation was performed using FCC body tissue parameters to generate the system performance target values for body at the applicable frequency. The results of the GEMS EME system performance validation are provided herein.

6.1 Equivalent Tissue Test Results

Simulated tissue prepared for S.A.R. measurements is measured daily and within 24 hours prior to actual S.A.R. testing to verify that the tissue is within 5% of target parameters at the center of the transmit band. This measurement is done using the Agilent (HP) probe kit model 85070C and a HP8753D Network Analyzer.

Actual versus Target tissue parameters (2/14/05 – 2/22/05)

FCC Body/Hand				
Frequency (MHz)	**Di-electric Constant Target**	**Di-electric Constant Meas. (Range)**	**Conductivity Target S/m**	**Conductivity Meas. (Range) S/m**
900	55.0	53.0-55.6	1.05	1.05-1.05
836	55.2	53.7-56.2	0.97	0.98-0.98
1900	53.3	51.3-52.3	1.52	1.51-1.58

1880	53.3	51.3-52.3	1.52	1.49-1.57
2450	52.7	50.7-50.8	1.95	1.97-2.02
2437	52.7	50.7-50.9	1.94	1.96-2.00

Actual versus Target tissue parameters (3/10/05 – 3/11/05)

IEEE Head				
Frequency (MHz)	**Di-electric Constant Target**	**Di-electric Constant Meas. (Range)**	**Conductivity Target S/m**	**Conductivity Meas. (Range) S/m**
900	41.5	39.7-39.7	0.97	1.00-1.00
836	41.5	40.4-40.4	0.90	0.94-0.94
1900	40.0	40.7-40.7	1.40	1.38-1.38
1880	40.0	40.8-40.8	1.40	1.36-1.36
2450	39.2	38.0-38.0	1.80	1.87-1.87
2437	39.2	38.0-38.0	1.79	1.85-1.85

6.2 System Check Test Results

Probe Serial #	Tissue Type	Probe Cal Date	Dipole Kit / Serial #	System Perf. Result when normalized to 1W (mW/g)	Reference S.A.R @ 1W (mW/g)	Test Date(s)
1545	FCC Body	9/1/04	SPEAG D900V2 /084	11.350 +/- 0.310	11.75 +/- 10%	2/14/05, 2/15/05, 2/22/05
1545	FCC Body	9/1/04	SPEAG D1900V2 /522	37.160 +/- 1.590	38.21 +/- 10%	2/15/05, 2/16/05, 2/22/05
1545	FCC Body	9/1/04	SPEAG D2450V2 /704	52.935 +/- 1.455	51.74 +/- 10%	2/18/05-2/21/05 3 test days
1545	IEEE Head	9/1/04	SPEAG D900V2 /084	11.77 +/- 0.000	11.15 +/- 10%	3/10/05
1545	IEEE Head	9/1/04	SPEAG D1900V2 /522	34.03 +/- 0.000	37.66 +/- 10%	3/10/05
1545	IEEE Head	9/1/04	SPEAG D2450V2 /704	52.96 +/- 0.000	54.95 +/- 10%	3/11/05

Note: see APPENDIX D for an explanation of the reference S.A.R. targets stated above.

The DASY4™ system is operated per the instructions in the DASY4™ Users Manual. The complete manual is available directly from SPEAG™. All measurement equipment used to assess EME S.A.R. compliance was calibrated according to 17025 A2LA guidelines.

7.0 DUT Test Strategy and Methodology

7.1 DUT Configuration(s)

This device is a handheld data terminal device with simultaneous GSM and Bluetooth or WLAN and Bluetooth transmissions. The radio is placed in the reported test positions presented in Appendix G.

7.1 Test Plan

All options and accessories listed on the cover page of this report were considered in order to develop the S.A.R. test plan for this product. S.A.R. measurements were performed using a flat phantom with the applicable simulated tissue to assess performance at the body, hand, and face using the relevant transmission modes.
Note that a coarse-to-cube approximation methodology was utilized to determine the worst-case S.A.R. performance configuration for each applicable body location. The test configurations that produced the highest S.A.R. results for each body position using the coarse-to-cube approximation methodology were assessed using the full DASY4™ coarse and 7x7x7 cube scans.

Assessments at the Body/Hand (GSM) **[Page 12 of 16; Table 1]**

- DUT assessed at the body in the GSM band; 1:8 test mode, at the center frequency of the band, with the offered body worn accessory, using the offered battery.
- DUT assessed at the body in the GSM band; 1:8 test mode, at the center frequency of the band, with the bottom side against the phantom, using the offered battery.
- DUT assessed at the hand in the GSM band; 1:8 test mode, at the center frequency of the band, without the body worn accessory, with the device's back, right, and left sides against the phantom, using the offered battery.
- DUT assessment of bystander exposure with the top of the DUT separated 2.5cm from the phantom, in the GSM band; 1:8 test mode, using the offered battery.
- DUT assessed at the GSM band edges, using the worst case test configuration from the body and hand assessments above.
- DUT assessed with simultaneous GSM and Bluetooth transmission, using the worst case test configuration overall from above.
- DUT assessed at the body with the back and front sides separated 2.5cm from the phantom, using the applicable worst case configuration from above.

Assessments at the Body/Hand (PCS) **[Page 13 of 16; Table 2]**

- DUT assessed in the PCS band utilized the same GSM test plan outlined above. The DUT does not support simultaneous transmission between the PCS and the co-located Bluetooth transmitter.

Assessments at the Body/Hand (WLAN) **[Page 14 of 16; Table 3]**

- DUT assessed in the WLAN band utilized the same GSM test plan outlined above except CW test mode was used. Assessment of simultaneous transmission between the WLAN and the co-located Bluetooth transmitter was performed.

Assessments at the Face (GSM) **[Page 15 of 16; Table 4]**

- DUT assessed across the GSM band, 1:8 test mode; using the offered battery, with the front separated 2.5cm from the phantom.
- DUT assessed at the worst case test configuration from above, with the co-located BT transmitter on.

Assessments at the Face (PCS) **[Page 15 of 16; Table 5]**

- DUT assessed in the PCS band utilized the same GSM test plan at the face outlined above. The DUT does not support simultaneous transmission between the PCS and the co-located Bluetooth transmitter.

Assessments at the Face (WLAN) **[Page 16 of 16; Table 6]**

- DUT assessed in the WLAN band utilized the same GSM test plan at the face outlined above except CW test mode was used.
- Assessment of simultaneous transmission between the WLAN and the co-located Bluetooth transmitter was performed. Note that the performance results using the full coarse and 7x7x7 cube were below the system noise level and thus the DASY 4 system produced unstable values that were not reported herein.

Shortened scan assessment at the Body/Hand **[APPENDIX E Part 2 of 2]**

A "shortened" scan was performed using the battery and test configuration that produced the highest S.A.R. results at the body/hand and face. Note that the shortened scan is obtained by first running a coarse scan to find the peak area and then, using a newly charged battery, perform a cube scan only. The shortened scan represents the cube scan performance results.

7.2 Device Positioning Procedures

Reference Appendix G for photos of the DUT tested positions.

7.2.1 Body

The DUT was positioned in normal use configuration against the phantom with the offered body worn accessory.
The DUT was positioned with the bottom side against the phantom to assess potential use at the body.
The DUT was positioned with its' back, right, and left sides against the phantom to assess performance at the hand.
The DUT was positioned with its' top side separated 2.5cm from the phantom to assess by-stander exposure performance.
The DUT was positioned with its' front and back sides separated 2.5cm from the phantom.

7.2.2 Head

NA

7.2.3 Face

The DUT was positioned with its' front side separated 2.5cm from the phantom.

8.0 Environmental Test Conditions

The EME Laboratory ambient environment is well controlled resulting in very stable simulated tissue temperature and therefore stable dielectric properties. Simulated tissue temperature is measured prior to each scan to insure it is within +/ - 2°C of the temperature at which the dielectric properties were determined. The liquid depth within the phantom used for measurements was 15cm +/- 0.5cm. Additional precautions are routinely taken to ensure the stability of the simulated tissue such as covering the phantoms when scans are not actively in process in order to minimize evaporation. The lab environment is continuously monitored. The table below presents the range and average environmental conditions during the S.A.R. tests reported herein:

	Target	Measured
Ambient Temperature	20 - 25 ˚C	Range: 20.8-23.2˚C Avg. 22.17˚C
Relative Humidity	30 - 70 %	Range: 36.4-55.7% Avg. 45.76%
Tissue Temperature	NA	Range: 19.1-21.9˚C Avg. 21.24 ˚C

The EME Lab RF environment uses a Spectrum Analyzer to monitor for extraneous large signal RF contaminants that could possibly affect the test results. If such unwanted signals are discovered the S.A.R scans are repeated.

9.0 Test Results Summary

All S.A.R. results obtained by the tests described in Section 7.1 are listed below. As noted in section 7.1, a coarse-to-cube approximation methodology, was utilized to ascertain the worst-case test configuration for each body location. The worst case test configurations observed for each body location were then assessed using the full DASY4™ coarse and 7x7x7 cube methodology, and they are presented as bolded results. The associated S.A.R. plots are provided in APPENDIX E. Appendix E also presents shortened S.A.R. cube scans to assess the validity of the calculated results presented herein. Note: The results of the shortened cube scans presented in Appendix E demonstrate that the scaling methodology used to determine the calculated S.A.R. results presented herein are valid.

Table1

DUT assessment at the body/Hand; GSM band, 1:8 mode												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Meas. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
Assessment of GSM band body worn accessory and use at the body without accessory												
EC-Ab-R3-050215-02/PNX5020066	8587526V07	836.6	FTN6032B	Bottom side Against phantom	None	None	0.731	0.157	0.013	0.009	0.01	0.01
*EC-Ab-R3-050214-06/ PNX5020066	8587526V07	836.6	FTN6032B	Against phantom	FHN6498A	None	0.731	0.017	0.057	0.040	0.06	0.04
Assessment of GSM band hand exposure performance (4.0mW/g 10-gAvg.)												
EC-Ab-R3-050215-03/ PNX5020066	8587526V07	836.6	FTN6032B	Back side against phantom	None	None	0.731	-0.049	0.162	0.109	0.17	0.11
EC-Ab-R3-050215-04/ PNX5020066	8587526V07	836.6	FTN6032B	Right side against phantom	None	None	0.731	0.027	0.045	0.031	0.05	0.03
*EC-Ab-R3-050215-05/ PNX5020066	8587526V07	836.6	FTN6032B	Left side against phantom	None	None	0.731	-0.008	0.181	0.122	0.19	0.13
Assessment of by-stander performance 2.5cm												
EC-Ab-R3-050215-06/ PNX5020066	8587526V07	836.6	FTN6032B	Top side 2.5 cm	None	None	0.731	-0.016	0.014	0.010	0.01	0.01
Assessment at GSM band edges												
EC-Ab-R3-050215-07/ PNX5020066	8587526V07	824.2	FTN6032B	Left side against phantom	None	None	0.726	-0.003	0.152	0.106	0.16	0.11
EC-Ab-R3-050215-08/ PNX5020066	8587526V07	848.8	FTN6032B	Left side against phantom	None	None	0.736	-0.019	0.137	0.095	0.14	0.10
Assessment of co-located transmitters GSM and BT												
EC-Ab-R3-050215-09/ PNX5020066	8587526V07 GSM/ 8508851K37 BT	836.6	FTN6032B	Left side against phantom	None	None	0.731	-0.025	0.141	0.101	0.15	0.11
Assessment of worst case test configuration at 2.5cm												
EC-Ab-R3-050222-10/ PNX5020066	8587526V07	836.6	FTN6032B	Back side 2.5cm	None	None	0.731	-0.020	0.020	0.014	0.02	0.01
EC-Ab-R3-050222-11/ PNX5020066	8587526V07	836.6	FTN6032B	Front side 2.5cm	None	None	0.731	-0.044	0.015	0.011	0.02	0.01
***Assessment with the worst case test configuration above using the full DASY 4 coarse and 7x7x7 cube scan measurements.**												
EC-Ab-R3-050215-11/ PNX5020066	8587526V07	836.6	FTN6032B	Left side Against phantom	None	None	0.731	-0.020	0.165	0.106	0.17	0.11
EC-Ab-R3-050222-09/ PNX5020066	8587526V07	836.6	FTN6032B	Against phantom	FHN6498A	None	0.731	-0.044	0.059	0.044	0.06	0.05

Table 2

DUT assessment at the body/Hand; PCS band, 1:8 mode												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Meas. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
Assessment of PCS band body worn accessory and use at the body without accessory												
*EC-Ab-R3-050215-13/ PNX5020066	8587526V07	1880	FTN6032B	Against phantom	FHN6498A	None	0.938	-0.088	0.291	0.176	0.31	0.19
EC-Ab-R3-050216-02 / PNX5020066	8587526V07	1880	FTN6032B	Bottom side Against phantom	None	None	0.938	-0.124	0.009	0.005	0.01	0.01
Assessment of PCS band hand exposure performance (4.0mW/g 10-gAvg.)												
EC-Ab-R3-050216-03/ PNX5020066	8587526V07	1880	FTN6032B	Back side against phantom	None	None	0.938	-0.080	0.454	0.243	0.48	0.26
EC-Ab-R3-050216-04/ PNX5020066	8587526V07	1880	FTN6032B	Right side against phantom	None	None	0.938	0.006	0.016	0.010	0.02	0.01
EC-Ab-R3-050216-05/ PNX5020066	8587526V07	1880	FTN6032B	Left side against phantom	None	None	0.938	-0.087	0.833	0.427	0.88	0.45
*EC-Ab-R3-050216-11/ PNX5020050	8587526V07	1880	FTN6032B	Left side against phantom	None	None	0.933	-0.101	0.926	0.491	0.99	0.52
Assessment of by-stander performance 2.5cm												
EC-Ab-R3-050216-08/ PNX5020066	8587526V07	1880	FTN6032B	Top side 2.5 cm	None	None	0.938	-0.002	0.038	0.024	0.04	0.03
Assessment at PCS band edges												
EC-Ab-R3-050216-09/ PNX5020066	8587526V07	1850.2	FTN6032B	Left side against phantom	None	None	0.938	-0.004	0.576	0.310	0.60	0.32
EC-Ab-R3-050216-10/ PNX5020066	8587526V07	1909.8	FTN6032B	Left side against phantom	None	None	0.966	-0.009	0.516	0.274	0.52	0.28
Assessment of worst case test configuration at 2.5cm												
EC-Ab-R3-050222-05/ PNX5020066	8587526V07	1880	FTN6032B	Back side 2.5cm	FHN6498A	None	0.938	-0.027	0.149	0.093	0.16	0.10
EC-Ab-R3-050222-07/ PNX5020066	8587526V07	1880	FTN6032B	Front side 2.5cm	FHN6498A	None	0.938	-1.350	0.007	0.004	0.01	0.01
***Assessment with the worst case test configuration above using the full DASY 4 coarse and 7x7x7 cube scan measurements.**												
EC-Ab-R3-050216-12/PNX5020050	8587526V07	1880	FTN6032B	Left side against phantom	None	None	0.933	-0.124	1.030	0.546	1.10	0.59
EC-Ab-R3-050222-04/ PNX5020066	8587526V07	1880	FTN6032B	Against phantom	FHN6498A	None	0.938	-0.199	0.249	0.165	0.27	0.18

Table 3

DUT assessment at the body/Hand; WLAN band, CW mode												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Meas. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
Assessment of WLAN band body worn accessory and use at the body without accessory												
*EC-Ab-R3-050218-02/ PNX5020066	8508851K38	2437	FTN6032B	Against phantom	FHN6498A	None	0.093	-0.083	0.365	0.196	0.40	0.22
EC-Ab-R3-050218-03/ PNX5020066	8508851K38	2437	FTN6032B	Bottom side against phantom	None	None	0.093	0.042	0.025	0.012	0.03	0.01
Assessment of WLAN band hand exposure performance (4.0mW/g 10-gAvg.)												
*EC-Ab-R3-050218-05/ PNX5020066	8508851K38	2437	FTN6032B	Back against phantom	None	None	0.093	-0.144	4.800	1.850	5.35	2.06
EC-Ab-R3-050219-02/ PNX5020066	8508851K38	2437	FTN6032B	Right side against phantom	None	None	0.093	-0.188	0.052	0.028	0.06	0.03
EC-Ab-R3-050219-03/ PNX5020066	8508851K38	2437	FTN6032B	Left side against phantom	None	None	0.093	-0.070	0.035	0.018	0.04	0.02
Assessment of by-stander performance 2.5cm												
EC-Ab-R3-050219-04/ PNX5020066	8508851K38	2437	FTN6032B	Top side 2.5cm	None	None	0.093	-0.097	0.068	0.038	0.08	0.04
Assessment at WLAN band edges												
EC-Ab-R3-050219-05/ PNX5020066	8508851K38	2412	FTN6032B	Back side against phantom	None	None	0.093	-0.167	3.900	1.570	4.37	1.76
EC-Ab-R3-050219-06/ PNX5020066	8508851K38	2462	FTN6032B	Back side against phantom	None	None	0.093	-0.215	4.170	1.680	4.73	1.90
Assessment of co-located transmitters WLAN and BT												
EC-Ab-R3-050219-07/ PNX5020066	8508851K38 WLAN 8508851K37 BT	2437	FTN6032B	Back side against phantom	None	None	0.093	-0.104	4.050	1.640	4.47	1.81
Assessment of worst case test configuration at 2.5cm												
EC-Ab-R3-050221-05/ PNX5020066	8508851K38	2437	FTN6032B	Back side 2.5cm	None	None	0.093	-0.212	0.254	0.136	0.29	0.15
EC-Ab-R3-050221-07/ PNX5020066	8508851K38	2437	FTN6032B	Front side 2.5cm	None	None	0.093	-1.400	0.005	0.003	0.01	0.00
***Assessment with the worst case test configuration above using the full DASY coarse and 7x7x7 cube scan measurements.**												
EC-Ab-R3-050221-04/ PNX5020066 (Shortened scan)	8508851K38	2437	FTN6032B	Back side against phantom	None	None	0.093	-0.010	5.100	2.130	5.51	2.30
EC-Ab-R3-050221-03/ PNX5020066	8508851K38	2437	FTN6032B	Back side against phantom	None	None	0.093	-0.298	4.650	1.990	5.37	2.30
EC-Ab-R3-050221-02/ PNX5020066	8508851K38	2437	FTN6032B	Against phantom	FHN6498A	None	0.093	-0.323	0.402	0.231	0.47	0.27

Table 4

DUT assessment at the Face; GSM band, 1:8 mode												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Meas. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
Assessment across the band												
EC-Face-R3-050310-07/ PNX5020066	8587526V07	824.2	FTN6032B	DUT front side 2.5cm	None	None	0.726	0.394	0.018	0.013	0.019	0.014
EC-Face-R3-050310-08/ PNX5020066	8587526V07	836.6	FTN6032B	DUT front side 2.5cm	None	None	0.731	-0.016	0.016	0.012	0.017	0.012
EC-Face-R3-050310-09/ PNX5020066	8587526V07	848.8	FTN6032B	DUT front side 2.5cm	None	None	0.736	-0.049	0.014	0.010	0.015	0.011
Assessment of co-located transmitters GSM and BT												
*EC-Face-R3-050310-10/ PNX5020066	8587526V07 GSM/ 8508851K37 BT	824.2	FTN6032B	DUT front side 2.5cm	None	None	0.726	-0.119	0.018	0.013	0.020	0.014
***Assessment with the worst case test configuration above using the full DASY coarse and 7x7x7 cube scan measurements.**												
EC-Face-R3-050310-11/ PNX5020066	8587526V07 GSM/ 8508851K37 BT	824.2	FTN6032B	DUT front side 2.5cm	None	None	0.726	-0.004	0.018	0.014	0.019	0.014

Table 5

DUT assessment at the Face; PCS band, 1:8 mode												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Meas. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
Assessment across the band												
EC-Face-R3-050310-02/ PNX5020066	8587526V07	1850.2	FTN6032B	DUT front side 2.5cm	None	None	0.9380	0.124	0.005	0.003	0.005	0.003
*EC-Face-R3-050310-03/ PNX5020066	8587526V07	1880	FTN6032B	DUT front side 2.5cm	None	None	0.9380	-0.247	0.006	0.004	0.006	0.004
EC-Face-R3-050310-04/ PNX5020066	8587526V07	1909.8	FTN6032B	DUT front side 2.5cm	None	None	0.966	-1.580	0.003	0.002	0.005	0.003
***Assessment with the worst case test configuration above using the full DASY coarse and 7x7x7 cube scan measurements.**												
EC-Face-R3-050310-05/ PNX5020066	8587526V07	1880	FTN6032B	DUT front side 2.5cm	None	None	0.9380	-0.050	0.005	0.003	0.006	0.003

Table 6

DUT assessment at the Face; WLAN band, CW mode												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Meas. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
Assessment across the band												
EC-Face-R3-050311-02/ PNX5020066	8508851K38	2412	FTN6032B	DUT front side 2.5cm	None	None	0.0927	0.086	0.006	0.004	0.007	0.004
EC-Face-R3-050311-03/ PNX5020066	8508851K38	2437	FTN6032B	DUT front side 2.5cm	None	None	0.0927	0.623	0.006	0.003	0.006	0.004
EC-Face-R3-050311-04/ PNX5020066	8508851K38	2462	FTN6032B	DUT front side 2.5cm	None	None	0.0927	1.340	0.005	0.003	0.006	0.003
Assessment of co-located transmitters WLAN and BT												
EC-Face-R3-050311-05/ PNX5020066	8508851K38 WLAN 8508851K37 BT	2412	FTN6032B	DUT front side 2.5cm	None	None	0.0927	0.407	0.006	0.003	0.006	0.004
***Assessment with the worst case test configuration above using the full DASY coarse and 7x7x7 cube scan measurements produced erroneous results due to the performance levels below the DASY 4 system noise.**												

9.1 Highest S.A.R. results calculation methodology

The calculated maximum 1-gram and 10-gram averaged S.A.R. results reported herein for the full DASY ™ coarse and 7x7x7 cube measurements are determined by scaling the measured S.A.R. to account for power leveling variations and power slump. For this device the Maximum Calculated 1-gram and 10-gram averaged peak S.A.R. is calculated using the following formula:

Max. Calc. 1-g/10-g Avg. SAR = ((S.A.R. meas. / (10^(Pdrift/10)))*(Pmax/Pint))* DC%
P_{max} = Maximum Power (W)
P_{int} = Initial Power (W)
Pdrift = DASY drift results (dB) - (for conservative results positive drifts are not accounted for)
SAR_{meas}. = Measured 1 gram averaged peak S.A.R. (mW/g)
DC % = Transmission mode duty cycle in % where applicable
50% duty cycle is applied for PTT operation.

10.0 Conclusion

The highest Operational Maximum Calculated 1-gram and 10-gram average S.A.R. values found for FCC ID: AZ489FT7010 model F4423A.

At the Face: **1-g Avg. = 0.02mW/g; 10-g Avg. = 0.014mW/g**
At the Body: **1-g Avg. = 0.47mW/g; 10-g Avg. = 0.27mW/g**
At the Hand: **10-g Avg. = 2.30mW/g**

These test results clearly demonstrate compliance with FCC General Population/Uncontrolled RF Exposure limits of **1.6mW/g** per the requirements of 47 CFR 2.1093(d) and also demonstrate compliance with the localized 10g average FCC General Population/Uncontrolled Environment RF Exposure hand Limit of **4.0mW/g** per the requirements of 47 CFR 2.1093(d)(2).

APPENDIX A
Measurement Uncertainty

Table 1: Uncertainty Budget for Device Under Test: 75 – 3000 MHz

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g*	*h = c x f / e*	*i = c x g / e*	*k*
Uncertainty Component	IEEE 1528 section	**Tol. (± %)**	**Prob Dist**	**Div.**	c_i **(1 g)**	c_i **(10 g)**	**1 g** u_i **(±%)**	**10 g** u_i **(±%)**	v_i
Measurement System									
Probe Calibration	E.2.1	4.8	N	1.00	1	1	4.8	4.8	∞
Axial Isotropy	E.2.2	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Hemispherical Isotropy	E.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effect	E.2.3	1.0	R	1.73	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	1.0	N	1.00	1	1	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	1.3	R	1.73	1	1	0.8	0.8	∞
RF Ambient Conditions - Noise	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	0.0	R	1.73	1	1	0.0	0.0	∞
Probe Positioner Mech. Tolerance	E.6.2	1.0	R	1.73	1	1	0.6	0.6	∞
Probe Positioning w.r.t Phantom	E.6.3	4.0	R	1.73	1	1	2.3	2.3	∞
Max. SAR Evaluation (ext., int., avg.)	E.5	3.4	R	1.73	1	1	2.0	2.0	∞
Test sample Related									
Test Sample Positioning	E.4.2	3.4	N	1.00	1	1	3.4	3.4	29
Device Holder Uncertainty	E.4.1	3.8	N	1.00	1	1	3.8	3.8	8
SAR drift	6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (measurement)	E.3.3	6.5	N	1.00	0.64	0.43	4.2	2.8	∞
Liquid Permittivity (target)	E.3.2	5.0	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measurement)	E.3.3	4.0	N	1.00	0.6	0.49	2.4	2.0	∞
Combined Standard Uncertainty			RSS				12	11	601
Expanded Uncertainty (95% CONFIDENCE LEVEL)			*k*=2				23	22	

Table 2: Uncertainty Budget for System Check: 75 – 3000 MHz

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g*	*h = c x f / e*	*i = c x g / e*	*k*
Uncertainty Component	IEEE 1528 section	**Tol. (± %)**	**Prob. Dist.**	**Div.**	c_i **(1 g)**	c_i **(10 g)**	**1 g** u_i **(±%)**	**10 g** u_i **(±%)**	v_i
Measurement System									
Probe Calibration	E.2.1	4.8	N	1.00	1	1	4.8	4.8	∞
Axial Isotropy	E.2.2	4.7	R	1.73	1	1	2.7	2.7	∞
Spherical Isotropy	E.2.2	9.6	R	1.73	0	0	0.0	0.0	∞
Boundary Effect	E.2.3	1.0	R	1.73	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	1.0	N	1.00	1	1	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	1.3	R	1.73	1	1	0.8	0.8	∞
RF Ambient Conditions - Noise	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	0.0	R	1.73	1	1	0.0	0.0	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning w.r.t. Phantom	E.6.3	1.4	R	1.73	1	1	0.8	0.8	∞
Max. SAR Evaluation (ext., int., avg.)	E.5	3.4	R	1.73	1	1	2.0	2.0	∞
Dipole									
Dipole Axis to Liquid Distance	8, E.4.2	2.0	R	1.73	1	1	1.2	1.2	∞
Input Power and SAR Drift Measurement	8, 6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (measurement)	E.3.3	6.0	R	1.73	0.64	0.43	2.2	1.5	∞
Liquid Permittivity (target)	E.3.2	5.0	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measurement)	E.3.3	6.0	R	1.73	0.6	0.49	2.1	1.7	∞
Combined Standard Uncertainty			RSS				9	8	99999
Expanded Uncertainty (95% CONFIDENCE LEVEL)			*k*=2				17	17	

Notes for Tables 1 and 2
a) Column headings *a-k* are given for reference.
b) Tol. - tolerance in influence quantity.
c) Prob. Dist. – Probability distribution
d) N, R - normal, rectangular probability distributions
e) Div. - divisor used to translate tolerance into normally distributed standard uncertainty
f) *ci* - sensitivity coefficient that should be applied to convert the variability of the uncertainty component into a variability of SAR.
g) *ui* – SAR uncertainty
h) *vi* - degrees of freedom for standard uncertainty and effective degrees of freedom for the expanded uncertainty.

Appendix B
Probe Calibration Certification

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

Client **Motorola CGISS**

CALIBRATION CERTIFICATE

Object(s)	ET3DV6 - SN:1545
Calibration procedure(s)	QA CAL-01.v2 Calibration procedure for dosimetric E-field probes
Calibration date:	September1, 2004
Condition of the calibrated item	In Tolerance (according to the specific calibration document)

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 +/- 2 degrees Celsius and humidity < 75%.

Calibration Equipment used (M&TE critical for calibration)

Model Type	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM E4419B	GB41293874	5-May-04 (METAS, No 251-00388)	May-05
Power sensor E4412A	MY41495277	5-May-04 (METAS, No 251-00389)	May-05
Reference 20 dB Attenuator	SN: 5086 (20b)	3-May-04 (METAS, No 251-00389)	May-05
Fluke Process Calibrator Type 702	SN: 6295803	8-Sep-03 (Sintrel SCS No. E030020)	Sep-04
Power sensor HP 8481A	MY41092180	18-Sep-02 (SPEAG, in house check Oct03)	In house check: Oct 05
RF generator HP 8684C	US3642U01700	4-Aug-99 (SPEAG, in house check Aug02)	In house check: Aug05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct03)	In house check: Oct 05

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Technician	D. Vetter
Approved by:	Katja Pokovic	Laboratory Director	

Date issued:September2, 2004

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

ET3DV6R SN:1545 **September 1, 2004**

DASY - Parameters of Probe: ET3DV6R SN:1545

Sensitivity in Free Space

NormX	**2.12** $\mu V/(V/m)^2$	DCP X	**95**	mV
NormY	**2.19** $\mu V/(V/m)^2$	DCP Y	**95**	mV
NormZ	**1.84** $\mu V/(V/m)^2$	DCP Z	**95**	mV

Diode Compression[A]

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 7.

Boundary Effect

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

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	9.8	5.2
SAR_{be} [%]	With Correction Algorithm	0.1	0.2

Head **1750 MHz** **Typical SAR gradient: 10 % per mm**

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	13.1	8.4
SAR_{be} [%]	With Correction Algorithm	0.1	0.0

Sensor Offset

Probe Tip to Sensor Center	**2.7** mm
Optical Surface Detection	**in tolerance**

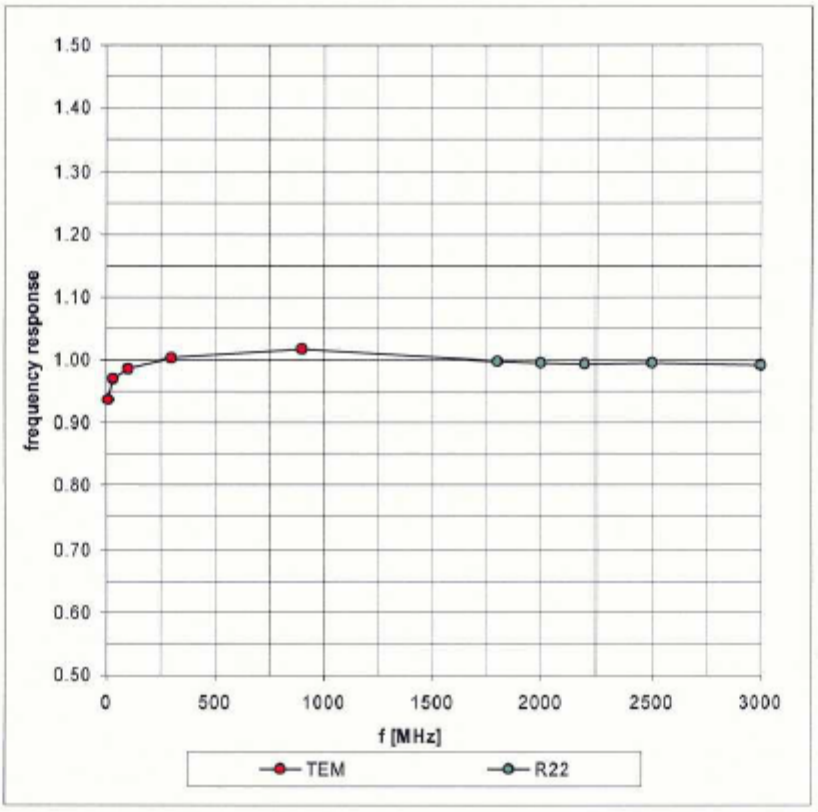
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] numerical linearization parameter: uncertainty not required

ET3DV6R SN:1545 **September 1, 2004**

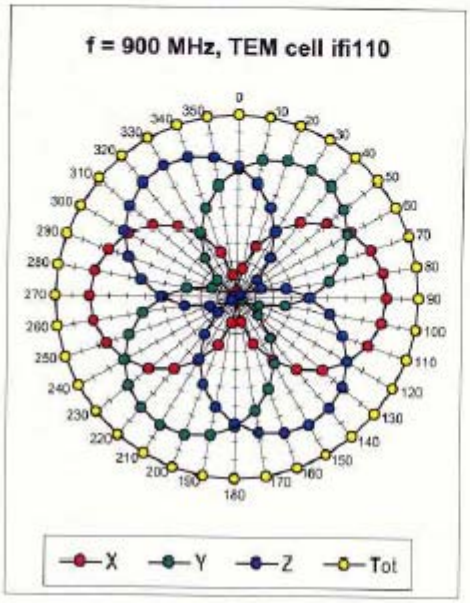
Frequency Response of E-Field

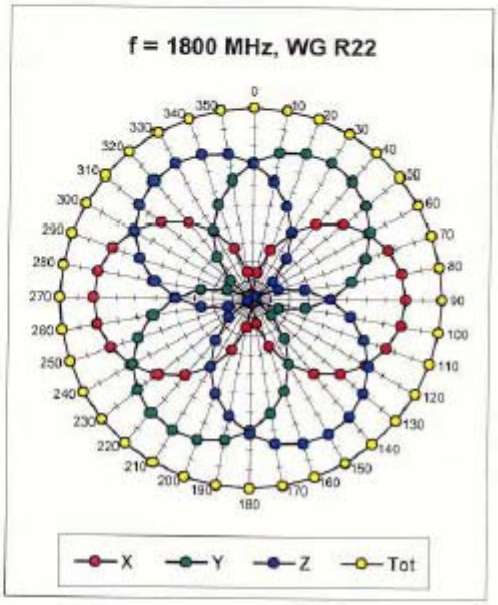
(TEM-Cell:ifi110, Waveguide R22)

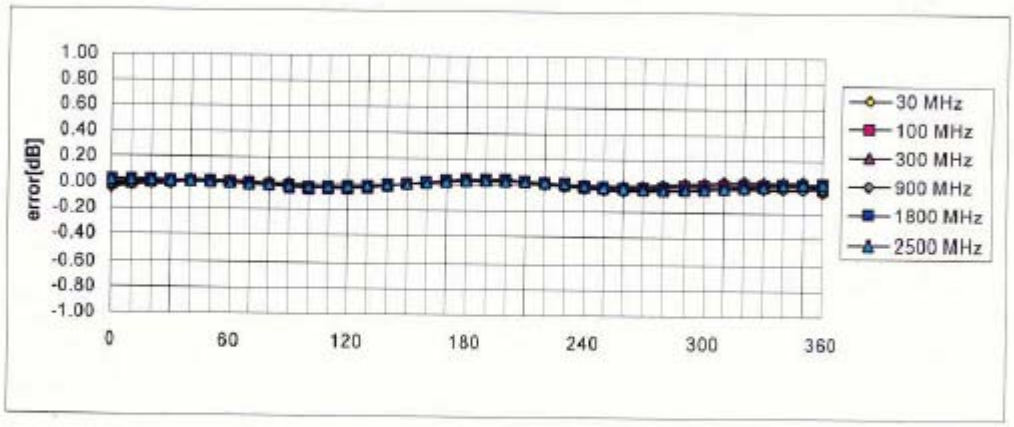


ET3DV6R SN:1545 **September 1, 2004**

Receiving Pattern (ϕ), θ = 0°





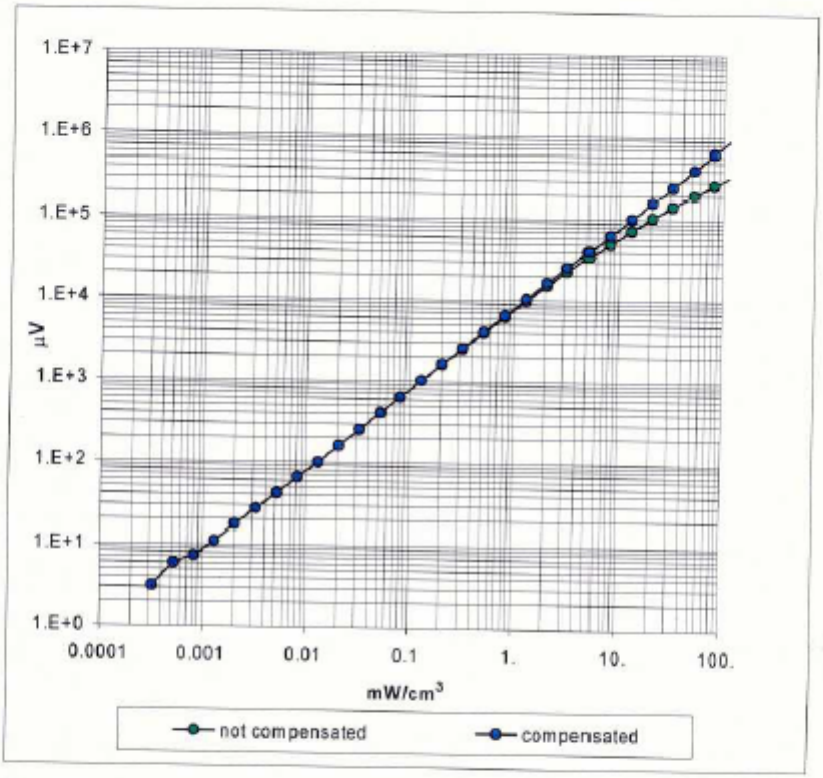


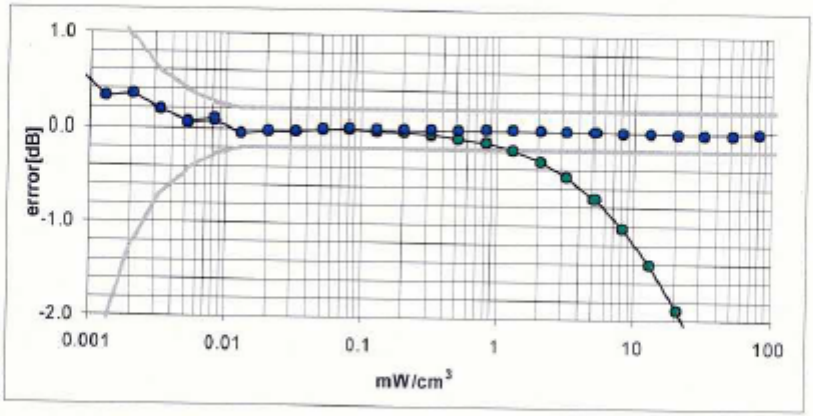
Axial Isotropy Error < ± 0.2 dB

ET3DV6R SN:1545 **September 1, 2004**

Dynamic Range f(SAR_{head})

(Waveguide R22)

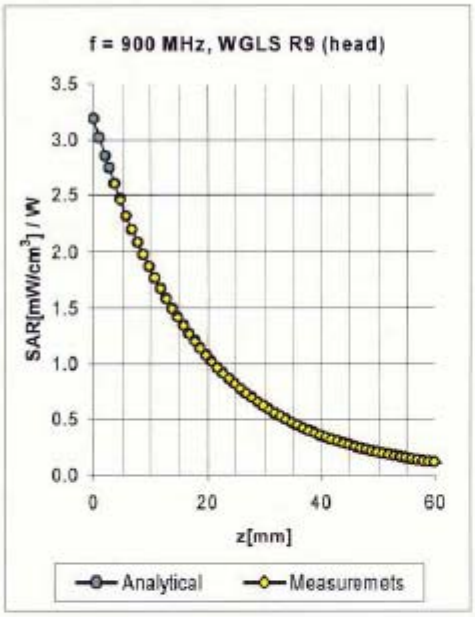


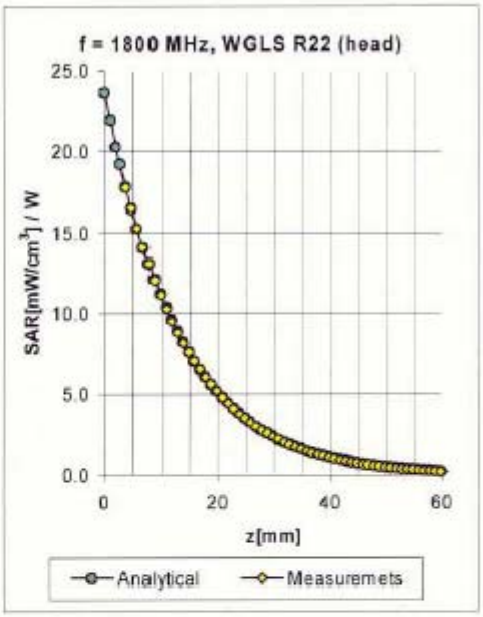


Probe Linearity Error < ± 0.2 dB

ET3DV6R SN:1545 **September 1, 2004**

Conversion Factor Assessment





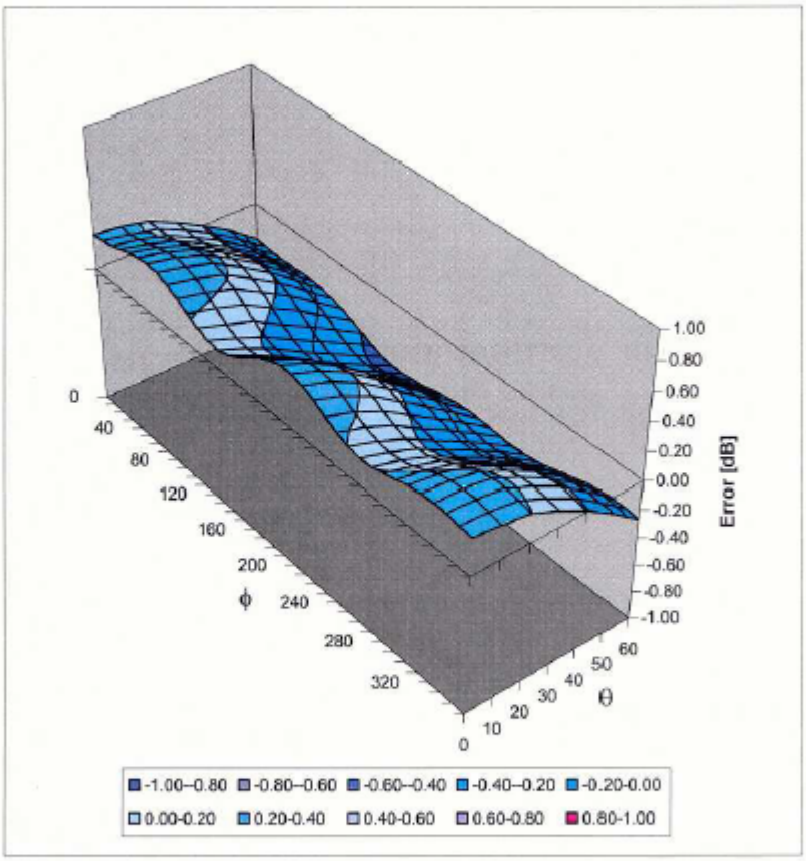
f [MHz]	Validity [MHz][B]	Tissue	Permittivity	Conductivity	Alpha	Depth	ConvF	Uncertainty
900	800-1000	Head	41.5 ± 5%	0.97 ± 5%	0.65	1.85	5.83	± 9.5% (k=2)
1750	1700-1800	Head	40.0 ± 5%	1.40 ± 5%	0.53	2.44	4.83	± 9.5% (k=2)
1900	1850-1950	Head	40.0 ± 5%	1.40 ± 5%	0.54	2.70	4.69	± 9.5% (k=2)
2450	2400-2500	Head	39.2 ± 5%	1.80 ± 5%	1.12	1.74	4.12	± 9.5% (k=2)
900	800-1000	Body	55.0 ± 5%	1.05 ± 5%	0.54	2.14	5.56	± 9.5% (k=2)
1750	1700-1800	Body	53.3 ± 5%	1.52 ± 5%	0.56	2.73	4.29	± 9.5% (k=2)
1900	1850-1950	Body	53.3 ± 5%	1.52 ± 5%	0.60	2.76	4.20	± 9.5% (k=2)
2450	2400-2500	Body	52.7 ± 5%	1.95 ± 5%	1.31	1.54	3.95	± 9.5% (k=2)

[B] The stated uncertainty of calibration in according to P1528.

ET3DV6R SN:1545 **September 1, 2004**

Deviation from Isotropy in HSL

Error (θ, ϕ), f = 900 MHz



Spherical Isotropy Error < ± 0.4 dB

Schmid & Partner Engineering AG

s p e a g

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

Additional Conversion Factors

for Dosimetric E-Field Probe

Type:	**ET3DV6R**
Serial Number:	**1545**
Place of Assessment:	**Zurich**
Date of Assessment:	**September 6, 2004**
Probe Calibration Date:	**September 1, 2004**

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 1800 MHz.

Assessed by:

Schmid & Partner Engineering AG

s p e a g

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

Dosimetric E-Field Probe ET3DV6R SN:1545

Conversion factor (± standard deviation)

150 MHz	ConvF	**7.6 ± 8%**	ε_r = **61.9** σ = **0.80 mho/m** (body tissue)
250 MHz	ConvF	**7.1 ± 8%**	ε_r = **59.4** σ = **0.88 mho/m** (body tissue)
300 MHz	ConvF	**7.0 ± 8%**	ε_r = **58.2** σ = **0.92 mho/m** (body tissue)
380 MHz	ConvF	**6.8 ± 8%**	ε_r = **58.2** σ = **0.92 mho/m** (body tissue)
480 MHz	ConvF	**6.6 ± 8%**	ε_r = **56.6** σ = **0.94 mho/m** (body tissue)
800 MHz	ConvF	**5.8 ± 8%**	ε_r = **55.3** σ = **0.97 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.

Schmid & Partner Engineering AG

s p e a g

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

Dosimetric E-Field Probe ET3DV6R SN:1545

Conversion factor (± standard deviation)

150 MHz	ConvF	**8.1 ± 8%**	ε_r = **52.3** σ = **0.76 mho/m** (head tissue)
250 MHz	ConvF	**7.3 ± 8%**	ε_r = **47.6** σ = **0.83 mho/m** (head tissue)
300 MHz	ConvF	**7.2 ± 8%**	ε_r = **45.3** σ = **0.87 mho/m** (head tissue)
380 MHz	ConvF	**7.1 ± 8%**	ε_r = **44.3** σ = **0.87 mho/m** (head tissue)
480 MHz	ConvF	**6.6 ± 8%**	ε_r = **43.3** σ = **0.87 mho/m** (head tissue)
800 MHz	ConvF	**6.0 ± 8%**	ε_r = **41.7** σ = **0.90 mho/m** (head 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.