

 MOTOROLA	 ACCREDITED Certificate Number: 2518.01
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FCC ID: AZ489FT4879
DECLARATION OF COMPLIANCE SAR ASSESSMENT

Networks & Enterprise EME Test Laboratory 8000 West Sunrise Blvd Fort Lauderdale, FL. 33322	Date of Report: 11/28/06 Report Revision: O Report ID: RDU2020_RLN6171A_Rev O_061128 SR4592
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<p>Responsible Engineer: Kim Uong (EME lead Eng.) Date/s Tested: 11/13/06 -11/15/06 Manufacturer/Location: Motorola Sector/Group/Div.: CPD Date submitted for test: 11/10/06 DUT Description: RDU2020 UHF RBR, 2Ch, Fixed Antenna, 2.0Watts, Black, Li-Ion. Test TX mode(s): CW Max. Power output: 2.35 Watts Nominal Power: 2.0 Watts Tx Frequency Bands: 451.18750MHz - 469.56250MHz Signaling type: FM Model(s) Tested: RLN6171A Model(s) Certified: RLN6171A Serial Number(s): 1584GU0016, 1584GU0041 Classification: Occupational/Controlled Rule Part(s): 90</p> <p>Approved Accessories: Antenna(s): Fixed Helical (450MHz- 470MHz 1/4wave 3dBd)</p> <p>Battery(ies): 6080384X63 (7.2V Li-Ion)</p> <p>Body worn accessory(ies): 4280383X62 (Spring Action Belt clip); RLN6301A (Leather Carry Case).</p> <p>Audio/Data cable accessory(ies): HMN9026D (RSM); HMN9025D (Earbud w/PTT Mic); NTN9159F (Lightweight Headset); ENMN4002B (Headset w/Boom Mic); HCSN4000D (Earpiece w/ PTT); HMN9039E (Earpiece w/Boom Mic); HCSN4001C (Earpiece); HMN9038A (Headset W/swivel Boom Mic); RLN5714B (Earpiece w/Inline Mic); PMMN4001A (Earset W/PTT Mic); PMLN4658A (D-Style Mic Earset W/Vox); HMN9036A (Earbud W/PTT Mic); RLN5317A (Earpiece W/PTT Mic Bge); HMN9030A (RSM); HMN9013B (Lt Wt Hdst); PMLN5011A (Temple Transducer Headset); RLN5411A (Lt Wt Hdst W/Boom Mic PTT); RMN4016B (Lt Wt Hdst W/swivel Boom Mic); RLN5318A (Earpiece Surveillance Mic); HMN9754D (Earpiece Surveillance Mic Bge); BDN6720A (Earpiece W/GP300); HMN9727B (Earpiece W/out Vol Control); HLN9132A (Earpiece); HMN9752B (Earpiece Bge); HMN9021A (Mid Tier Headset); RMN5047A (NFL Style Heavyduty); RLN5238B (NFL Style Light Weight Headset); BDN6646C (Ear mic, GP300 PTT Adapter)</p> <p style="text-align: center;">Max. Calc. : 1-g Avg. SAR: 2.28 mW/g (Body); 10-g Avg. SAR: 1.73 mW/g (Body) Max. Calc. : 1-g Avg. SAR: 1.82 mW/g (Face); 10-g Avg. SAR: 1.34 mW/g (Face)</p>	
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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.

Signature on file -Deanna Zakharia Deanna Zakharia N&E EME Lab Senior Resource Manager, Laboratory Director, Approval Date: 11/28/06	Certification Date: 11/28/06 Certification No.: L1061111P
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Report Revision History

Date	Revision	Comments
11/28/06	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 (SAR) measurements performed at the N&E EME Test Lab for the model number RLN6171A of FCC ID: AZ489FT4879. The results herein reflect initial test results.

2.0 Referenced Standards and Guidelines

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

- IEC62209-1(2005) Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)
- 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) C95.1-2005 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/ANSI - (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: AZ489FT4879, model number RLN6171A, is a handheld transceiver, which operates as a traditional simplex 2-way radio. This radio is intended to be assessed using CW transmission via its’ inherent test mode signaling capability. The radio has a fixed, non-removable antenna, and is capable of transmitting in the 451.18750 - 469.56250MHz band.

The nominal output power is 2.0 watts with a maximum output power of 2.35 watts as defined by the upper limit of the production line final test station. The intended operating positions are “at the face” with the DUT at least 1 inch from the mouth, and “at the body” by means of the offered body-worn accessories. Body-worn audio and PTT operation is accomplished by means of optional remote accessories that connect to the radio.

This device will be marketed to and used by employees solely for work - related operations, such as Retail Business, Construction, and Small Business Operation. User training is the responsibility of these agencies, which can be expected to employ the usage instructions, safety information and operational cautions set forth in the user's manual, instructional sessions or other means. Motorola also makes available to its customers training classes on the proper use of two-way radios and wireless data devices.

FCC ID: AZ489FT4879 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™) SAR measurement system Version 4.7 build 44 manufactured by Schmid & Partner Engineering AG (SPEAG™), of Zurich Switzerland. The test system consists of a Staubli RX90L robot, DAE3V1, and ET3DV6 E-Field probes. Please reference the SPEAG user manual and application notes for detailed probe, robot, and SAR 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 SAR 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 (wood)
Flat	High Density Polyethylene (HDPE)	80x30x20x0.2	68.58x20.32	Wood	< 0.05

4.2.2 SAM Phantom

NA

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 similar type simulates, sugar and HEC ingredients are not needed. The solution is mixed thoroughly, covered, and allowed to sit overnight prior to use.

Simulated Tissue Composition

% of listed ingredients	450 MHz	
	Head	Body
Sugar	56	46.5
Diacetin	NA	NA
De ionized -Water	39.1	50.53
Salt	3.8	1.87
HEC	1	1
Bact.	0.1	0.1

Reference section 6.1 for target parameters

5.0 Additional Test Equipment :

Equipment Type	Model Number	Serial Number	Calibration Due Date
Power Meter (Agilent)	E4419B	MY403300364	1/31/2007
Power Sensor (HP)	8482B	3318A06773	4/19/2007
Power Sensor (HP)	8482B	3318A06774	4/22/2007
Bi-Directional Coupler (NARDA)	3020A	40296	2/17/2008
Signal Generator (HP)	E4438C	MY42082269	6/23/2008
AMP (Amplifier Research)	10WD1000	28782	CNR
Tissue Station			
Agilent PNA-L Network Analyzer	N5230A	MY45001092	5/22/2007
Dielectric Probe Kit (HP)	85070C	US99360076	CNR
Dipole			
Speag Dipole	D450V2	1001	5/25/2008

6.0 SAR Measurement System Verification

The SAR measurements were conducted with probe model/serial number ET3DV6/SN1383. The system performance check was conducted daily and within 24 hours prior to testing. DASY output files of the probe/dipole calibration certificates and system performance test results are included in appendices B, C, D 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 N&E 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 N&E EME system performance validation are provided herein.

6.1 Equivalent Tissue Test Results

Simulated tissue prepared for SAR measurements is measured daily and within 24 hours prior to actual SAR 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 applicable equipment indicated in section 5.0.

Actual versus Target tissue parameters (11/13/06 – 11/15/06, 3 test days)

FCC Body				
Frequency (MHz)	Di-electric Constant Target	Di-electric Constant Meas. (Range)	Conductivity Target S/m	Conductivity Meas. (Range) S/m
450	56.7	57.1 – 57.1	0.94	0.92 – 0.92
460	56.7	56.7 – 57.4	0.94	0.93 - 0.93

IEEE Head				
Frequency (MHz)	Di-electric Constant Target	Di-electric Constant Meas. (Range)	Conductivity Target S/m	Conductivity Meas. (Range) S/m
450	43.5	44.0 – 44.0	0.87	0.89 – 0.89
460	43.4	43.7 – 43.8	0.87	0.89 -0.90

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)
1383	FCC Body	2/22/06	SPEAG D450V2 /1001	4.285 +/- 0.045	4.43 +/- 10%	11/13/06 – 11/14/06
1383	IEEE Head	2/22/06	SPEAG D450V2 /1001	4.93 +/- 0.00	5.11 +/- 10%	11/15/06

Note: See APPENDIX D for an explanation of the reference SAR targets stated above.
 (System performance results reflects the median performance +/- ½ of the test date(s) performance ranges)

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 SAR compliance was calibrated according to 17025 A2LA guidelines.

7.0 DUT Test Strategy and Methodology

7.1 DUT Configuration(s)

The Antenna used on the RDU2020 radio is fixed and not removable. This does not facilitate taking conducted power measurements before taking SAR readings. Instead, the power measurements were taken by disassembling the radio and connecting a coax cable directly to the antenna port.

Test Plan

All options and accessories listed on the cover page of this report were considered in order to develop the SAR test plan for this product. SAR measurements were performed using a flat phantom with the applicable simulated tissue to assess performance at the body, and face respectively using the relevant transmission modes.

Note that a coarse-to-cube approximation methodology was utilized to determine the worst-case SAR performance configuration for each applicable body location. The test configurations that produced the highest SAR 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 [Page 11-12; Table 1](#)

- The DUT was assessed at the center frequency, using the offered battery and the audio cable HMN9026D, with each of the offered carry accessories.
- The DUT was assessed at the center frequency, using the offered battery and the carry accessory indicated highest SAR results from above, with the other offered audio accessories.
- The DUT was assessed at the band edges, using the offered battery, the carry accessory and audio cable indicated highest SAR results from above.

Assessments at the Body 2.5cm [Page 12; Table 1](#)

- Assessment using the highest applicable test configuration at the body overall from above with the back and front housing of the DUT separated 2.5cm from the phantom.

Assessments at the Face [Page 12; Table 2](#)

- The DUT was assessed at center frequency, using the offered battery, with and without the applicable audio cable accessories.
- The DUT was assessed at the band edges, using the applicable test configuration indicated highest SAR results from face above.

Shortened scan assessment [Page 13; Table 3](#)

- A “shortened” scan was performed using the offered battery and test configuration that produced the highest SAR results overall. 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, a cube scan only was performed. 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 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 SAR tests reported herein:

	Target	Measured
Ambient Temperature	20 - 25 C	Range: 21.7 – 23.2 C Avg. 22.4 C
Relative Humidity	30 - 70 %	Range: 52.1 – 65.4 % Avg. 58.6 %
Tissue Temperature	NA	Range: 19.4 – 21.0 C Avg. 20.2 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 SAR 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 and band (in bold with *) were then assessed using the full DASY4™ coarse and 7x7x7 cube methodology, and they are presented in the worst case configuration table below. The associated SAR plots are provided in APPENDIX E. Appendix E also presents shortened SAR 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 SAR results presented herein are valid.

Table1

Assessment at the Body												
Run Number/ SN	Antenna Pos.	Freq. (MHz)	Battery	Test position	Carry Case	Additional attachments	Initial Power (W)	SAR Drift (dB)	Meas. 1g-SAR (mW/g)	Meas. 10g- SAR (mW/g)	Max Calc. 1g-SAR (mW/g)	Max Calc. 10g- SAR (mW/g)
Carry accessories assessment at the Body												
JsT-Ab-061113-05/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	HMN9026D	2.413	-0.175	3.75	2.75	1.95	1.43
JsT-Ab-061113-06/ 1584GU0016	Fixed	461.1875	6080384X63	Body	RLN6301A	HMN9026D	2.413	-0.197	3.10	2.22	1.62	1.16
Audio cable accessories assessment at the Body												
JsT-Ab-061113-08/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	HMN9025D	2.413	-0.195	3.93	2.88	2.06	1.51
JsT-Ab-061113-09/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	NTN9159F	2.413	-0.130	3.49	2.55	1.80	1.31
MeC-AB-061113- 10/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	ENMN4002B	2.413	-0.184	4.07	2.98	2.12	1.55
JsT-Ab-061114-09/ 1584GU0041	Fixed	461.1875	6080384X63	Body	4280383X62	ENMN4002B	2.327	-0.137	3.65	2.67	1.90	1.39
MeC-AB-061113- 11/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	HCSN4000D	2.413	-0.168	3.74	2.73	1.94	1.42
MeC-AB-061113- 12/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	HMN9039E	2.413	-0.175	3.63	2.65	1.89	1.38
MeC-AB-061113- 13/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	HCSN4001C	2.413	-0.148	3.69	2.70	1.91	1.40
MeC-AB-061113- 14/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	HMN9038A	2.413	-0.184	3.84	2.81	2.00	1.47
MeC-AB-061113- 15/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	RLN5714B	2.413	-0.202	3.68	2.69	1.93	1.41
MeC-AB-061113- 16/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	PMMN4001A	2.413	-0.161	3.94	2.88	2.04	1.49
MeC-AB-061113- 17/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	PMLN4658A	2.413	-0.187	3.92	2.88	2.05	1.50
MeC-AB-061113- 18/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	HMN9036A	2.413	-0.186	4.02	2.94	2.10	1.53
MeC-AB-061113- 19/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	HMN9030A	2.413	-0.180	3.99	2.91	2.08	1.52
MeC-AB-061113- 20/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	HMN9013B	2.413	-0.146	3.55	2.60	1.84	1.34
MeC-AB-061113- 21/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	PMLN5011A	2.413	-0.133	3.50	2.55	1.80	1.31
JsT-Ab-061114-02/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	RLN5411A	2.413	-0.238	3.65	2.68	1.93	1.42
JsT-Ab-061114-03/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	RMN4016B	2.413	-0.213	3.77	2.75	1.98	1.44
JsT-Ab-061114-04/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	RLN5318A	2.413	-0.192	3.34	2.44	1.75	1.28

Table 1 (con't)

Assessment at the Body												
Run Number/ SN	Antenna Pos.	Freq. (MHz)	Battery	Test position	Carry Case	Additional attachments	Initial Power (W)	SAR Drift (dB)	Meas. 1g-SAR (mW/g)	Meas. 10g- SAR (mW/g)	Max Calc. 1g-SAR (mW/g)	Max Calc. 10g- SAR (mW/g)
Audio cable accessories assessment at the Body												
JsT-Ab-061114-05/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	HMN9021A	2.413	-0.160	3.39	2.48	1.76	1.29
JsT-Ab-061114-06/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	RMN5047A	2.413	-0.198	3.56	2.60	1.86	1.36
JsT-Ab-061114-07/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	RLN5238B	2.413	-0.164	3.58	2.62	1.86	1.36
JsT-Ab-061114-08/ 1584GU0016	Fixed	461.1875	6080384X63	Body	4280383X62	BDN6646C	2.413	-0.204	3.53	2.58	1.85	1.35
Band edges assessment at the Body												
JsT-Ab-061114-10/ 1584GU0016	Fixed	451.1875	6080384X63	Body	4280383X62	ENMN4002B	2.451	-0.200	4.18	3.06	2.19	1.60
*JsT-Ab-061114- 11/ 1584GU0041	Fixed	451.1875	6080384X63	Body	4280383X62	ENMN4002B	2.462	-0.174	4.22	3.09	2.20	1.61
JsT-Ab-061115-04/ 1584GU0016	Fixed	469.5625	6080384X63	Body	4280383X62	ENMN4002B	2.419	-0.290	3.50	2.56	1.87	1.37
Assessment at the Body – 2.5cm												
JsT-Ab-061115-07/ 1584GU0016	Fixed	451.1875	6080384X63	Body	None, Back - Radio @ 2.5cm	ENMN4002B	2.451	-0.196	1.97	1.45	1.03	0.76
JsT-Ab-061115-08/ 1584GU0016	Fixed	451.1875	6080384X63	Body	None, Front - Radio @ 2.5cm	ENMN4002B	2.451	-0.191	2.68	1.96	1.40	1.02

Table 2

Assessment at the Face												
Run Number/ SN	Antenna Pos.	Freq. (MHz)	Battery	Test position	Carry Case	Additional attachments	Initial Power (W)	SAR Drift (dB)	Meas. 1g-SAR (mW/g)	Meas. 10g- SAR (mW/g)	Max Calc. 1g-SAR (mW/g)	Max Calc. 10g- SAR (mW/g)
JsT-Face-061114- 12/ 1584GU0016	Fixed	461.1875	6080384X63	Face	None	None	2.413	-0.144	3.07	2.26	1.59	1.17
MeC-Face-061114- 17/ 1584GU0041	Fixed	461.1875	6080384X63	Face	None	None	2.327	-0.158	2.930	2.150	1.53	1.13
JsT-Face-061114- 13/ 1584GU0016	Fixed	461.1875	6080384X63	Face	None	BDN6720A	2.413	-0.158	2.93	2.15	1.52	1.11
JsT-Face-061114- 14/ 1584GU0016	Fixed	461.1875	6080384X63	Face	None	HMN9727B	2.413	-0.133	2.57	1.88	1.32	0.97
JsT-Face-061114- 15/ 1584GU0016	Fixed	461.1875	6080384X63	Face	None	HLN9132A	2.413	-0.171	2.51	1.84	1.31	0.96
MeC-Face-061114- 16/ 1584GU0016	Fixed	461.1875	6080384X63	Face	None	HMN9752B	2.413	-0.155	2.56	1.88	1.33	0.97
Band edges assessment at the Face												
MeC-Face-061114- 18/ 1584GU0016	Fixed	451.1875	6080384X63	Face	None	None	2.451	-0.219	3.340	2.460	1.76	1.29
*MeC-Face- 061114-19/ 1584GU0041	Fixed	451.1875	6080384X63	Face	None	None	2.462	-0.22	3.470	2.550	1.83	1.34
JsT-Face-061115- 02/ 1584GU0016	Fixed	469.5625	6080384X63	Face	None	None	2.419	-0.165	2.79	2.05	1.45	1.06

Table 3

<i>*Worst case configuration per body location from above –using the DASY 4 full coarse and 7x7x7 cube scan measurements.</i>												
Run Number/ SN	Antenna Pos.	Freq. (MHz)	Battery	Test position	Carry Case	Additional attachments	Initial Power (W)	SAR Drift (dB)	Meas. 1g-SAR (mW/g)	Meas. 10g- SAR (mW/g)	Max Calc. 1g-SAR (mW/g)	Max Calc. 10g- SAR (mW/g)
Body												
JsT-Ab-061115-09/ 1584GU0041	Fixed	451.1875	6080384X63	Body	4280383X62	ENMN4002B	2.462	-0.360	4.19	3.17	2.276	1.722
JsT-Ab-061115-10/ 1584GU0041 (Shorten scan)	Fixed	451.1875	6080384X63	Body	4280383X62	ENMN4002B	2.462	-0.0929	4.46	3.39	2.278	1.732
Face												
JsT-Face-061115-03/ 1584GU0041	Fixed	451.1875	6080384X63	Face	None	None	2.462	-0.416	3.31	2.43	1.82	1.34

9.1 Highest SAR results calculation methodology

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

$$\text{Max. Calc. 1-g/10-g Avg. SAR} = ((\text{SAR meas.} / (10^{(\text{Pdrift}/10)})) * (\text{Pmax}/\text{Pint})) * \text{DC}\%$$

$$P_{\text{max}} = \text{Maximum Power (W)}$$

$$P_{\text{int}} = \text{Initial Power (W)}$$

$$\text{Pdrift} = \text{DASY drift results (dB) - (for conservative results positive drifts are not accounted for)}$$

$$\text{SAR}_{\text{meas.}} = \text{Measured 1-g/10-g Avg. SAR (mW/g)}$$

$$\text{DC \%} = \text{Transmission mode duty cycle in \% where applicable}$$
 50% duty cycle is applied for PTT operation.

10.0 Conclusion

The highest Operational Maximum Calculated 1-gram and 10-gram average SAR values found for FCC ID: AZ489FT4879 model RLN6171A.

Max. Calc. : 1-g Avg. SAR: 2.28 mW/g (Body); 10-g Avg. SAR: 1.73 mW/g (Body)
Max. Calc. : 1-g Avg. SAR: 1.82 mW/g (Face); 10-g Avg. SAR: 1.34 mW/g (Face)

These test results clearly demonstrate compliance with FCC Occupational/ Controlled RF Exposure limits of **8.0 W/kg** per the requirements of 47 CFR 2.1093(d).

APPENDIX A
Measurement Uncertainty

Uncertainty Budget for Device Under Test, for 30 MHz to 3 GHz

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	$e = f(d,k)$	<i>f</i>	<i>g</i>	$h = c \times f / e$	$i = c \times g / e$	<i>k</i>
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	5.9	N	1.00	1	1	5.9	5.9	∞
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	0.3	N	1.00	1	1	0.3	0.3	∞
Response Time	E.2.7	1.1	R	1.73	1	1	0.6	0.6	∞
Integration Time	E.2.8	1.1	R	1.73	1	1	0.6	0.6	∞
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	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	∞
Test sample Related									
Test Sample Positioning	E.4.2	3.2	N	1.00	1	1	3.2	3.2	29
Device Holder Uncertainty	E.4.1	4.0	N	1.00	1	1	4.0	4.0	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	3.3	N	1.00	0.64	0.43	2.1	1.4	∞
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	1.9	N	1.00	0.6	0.49	1.1	0.9	∞
Combined Standard Uncertainty			RSS				11	11	411
Expanded Uncertainty (95% CONFIDENCE LEVEL)			$k=2$				22	22	

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Uncertainty Budget for System Validation (dipole & flat phantom) for 30 MHz to 3 GHz

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	$e = f(d,k)$	<i>f</i>	<i>g</i>	$h = c \times f / e$	$i = c \times g / e$	<i>k</i>
Uncertainty Component	IEEE 1528 section	Tol. (\pm %)	Prob. Dist.	Div.	c_i (1 g)	c_i (10 g)	1 g u_i (\pm %)	10 g u_i (\pm %)	v_i
Measurement System									
Probe Calibration	E.2.1	5.9	N	1.00	1	1	5.9	5.9	∞
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	0.3	N	1.00	1	1	0.3	0.3	∞
Response Time	E.2.7	1.1	R	1.73	1	1	0.6	0.6	∞
Integration Time	E.2.8	0.0	R	1.73	1	1	0.0	0.0	∞
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	3.3	R	1.73	0.64	0.43	1.2	0.8	∞
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	1.9	R	1.73	0.6	0.49	0.6	0.5	∞
Combined Standard Uncertainty			RSS				9	9	99999
Expanded Uncertainty (95% CONFIDENCE LEVEL)			$k=2$				18	17	

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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) c_i - sensitivity coefficient that should be applied to convert the variability of the uncertainty component into a variability of SAR.
- g) u_i – SAR uncertainty
- h) v_i - degrees of freedom for standard uncertainty and effective degrees of freedom for the expanded uncertainty.

Appendix B
Probe Calibration Certificates

**Calibration Laboratory of
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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: **ET3-1383_Feb06**

CALIBRATION CERTIFICATE

Object **ET3DV6 - SN:1383**

Calibration procedure(s) **QA CAL-01.v5 and QA CAL-12.v4
Calibration procedure for dosimetric E-field probes**

Calibration date: **February 22, 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	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41495277	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41498087	3-May-05 (METAS, No. 251-00466)	May-06
Reference 3 dB Attenuator	SN: S5054 (3c)	11-Aug-05 (METAS, No. 251-00499)	Aug-06
Reference 20 dB Attenuator	SN: S5086 (20b)	3-May-05 (METAS, No. 251-00467)	May-06
Reference 30 dB Attenuator	SN: S5129 (30b)	11-Aug-05 (METAS, No. 251-00500)	Aug-06
Reference Probe ES3DV2	SN: 3013	2-Jan-06 (SPEAG, No. ES3-3013_Jan06)	Jan-07
DAE4	SN: 654	2-Feb-06 (SPEAG, No. DAE4-654_Feb06)	Feb-07
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov 06

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

Issued: February 22, 2006

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConF	sensitivity in TSL / NORM _{x,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., $\vartheta = 0$ 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) 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

Methods Applied and Interpretation of Parameters:

- *NORM_{x,y,z}*: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). *NORM_{x,y,z}* are only intermediate values, i.e., the uncertainties of *NORM_{x,y,z}* does not effect the E^2 -field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)_{x,y,z} = NORM_{x,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*.
- *DCP_{x,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 $f \leq 800$ 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 *NORM_{x,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.

ET3DV6 SN:1383

February 22, 2006

Probe ET3DV6

SN:1383

Manufactured:	August 16, 1999
Last calibrated:	February 24, 2005
Recalibrated:	February 22, 2006

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ET3DV6 SN:1383

February 22, 2006

DASY - Parameters of Probe: ET3DV6 SN:1383

Sensitivity in Free Space ^A			Diode Compression ^B	
NormX	1.87 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP X	90 mV
NormY	1.63 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Y	90 mV
NormZ	1.70 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Z	90 mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL	900 MHz	Typical SAR gradient: 5 % per mm	
	Sensor Center to Phantom Surface Distance	3.7 mm	4.7 mm
	SAR _{be} [%] Without Correction Algorithm	9.4	5.0
	SAR _{be} [%] With Correction Algorithm	0.0	0.0
TSL	1810 MHz	Typical SAR gradient: 10 % per mm	
	Sensor Center to Phantom Surface Distance	3.7 mm	4.7 mm
	SAR _{be} [%] Without Correction Algorithm	8.3	4.5
	SAR _{be} [%] With Correction Algorithm	0.1	0.3

Sensor Offset

Probe Tip to Sensor Center	2.7 mm
Optical Surface Detection	NOT 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 The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Page 8).

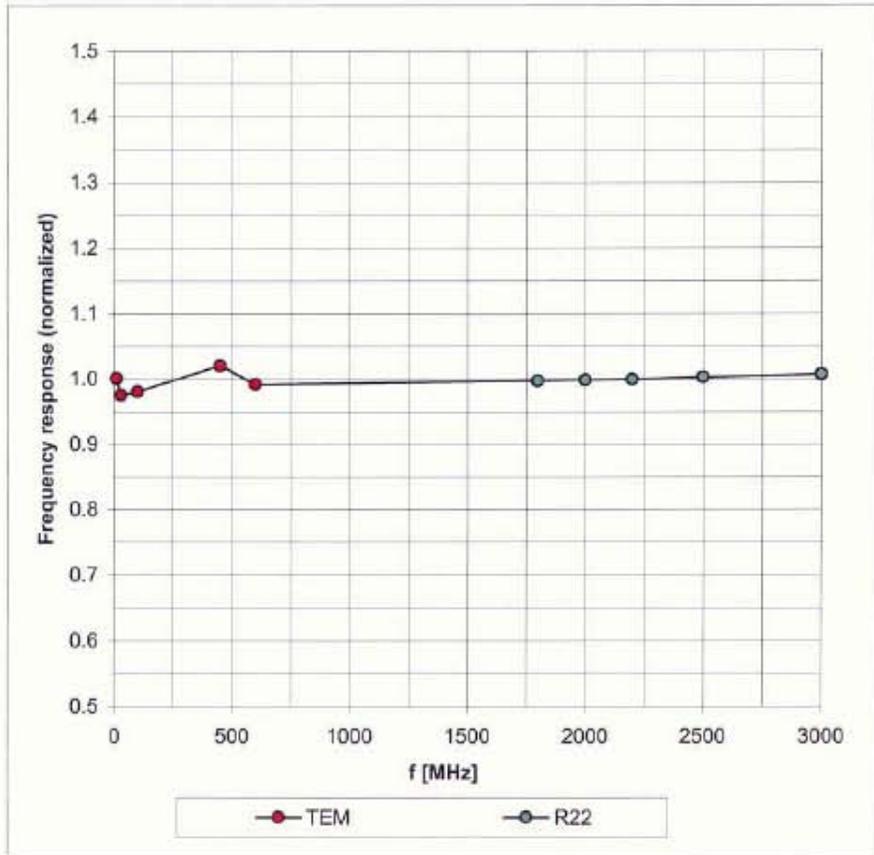
^B Numerical linearization parameter: uncertainty not required.

ET3DV6 SN:1383

February 22, 2006

Frequency Response of E-Field

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

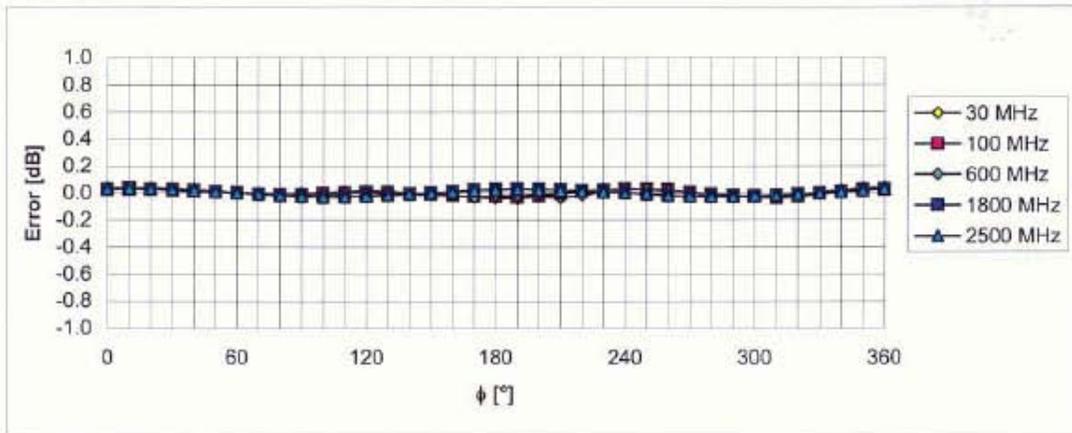
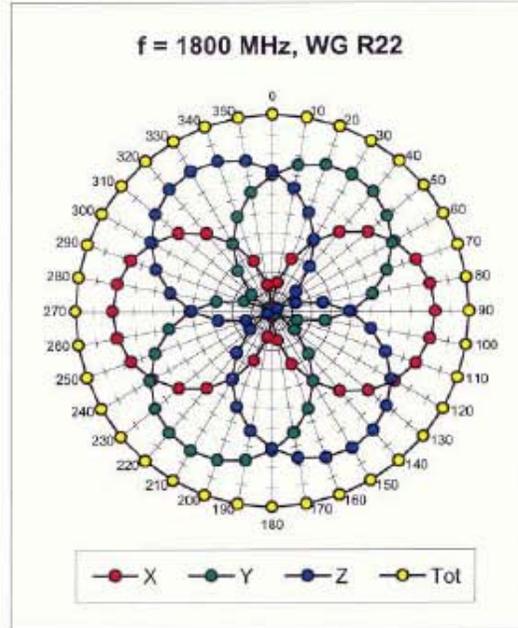
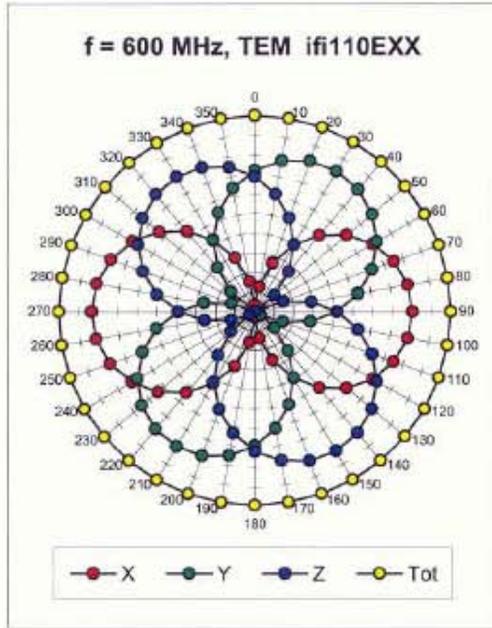


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

ET3DV6 SN:1383

February 22, 2006

Receiving Pattern (ϕ), $\vartheta = 0^\circ$

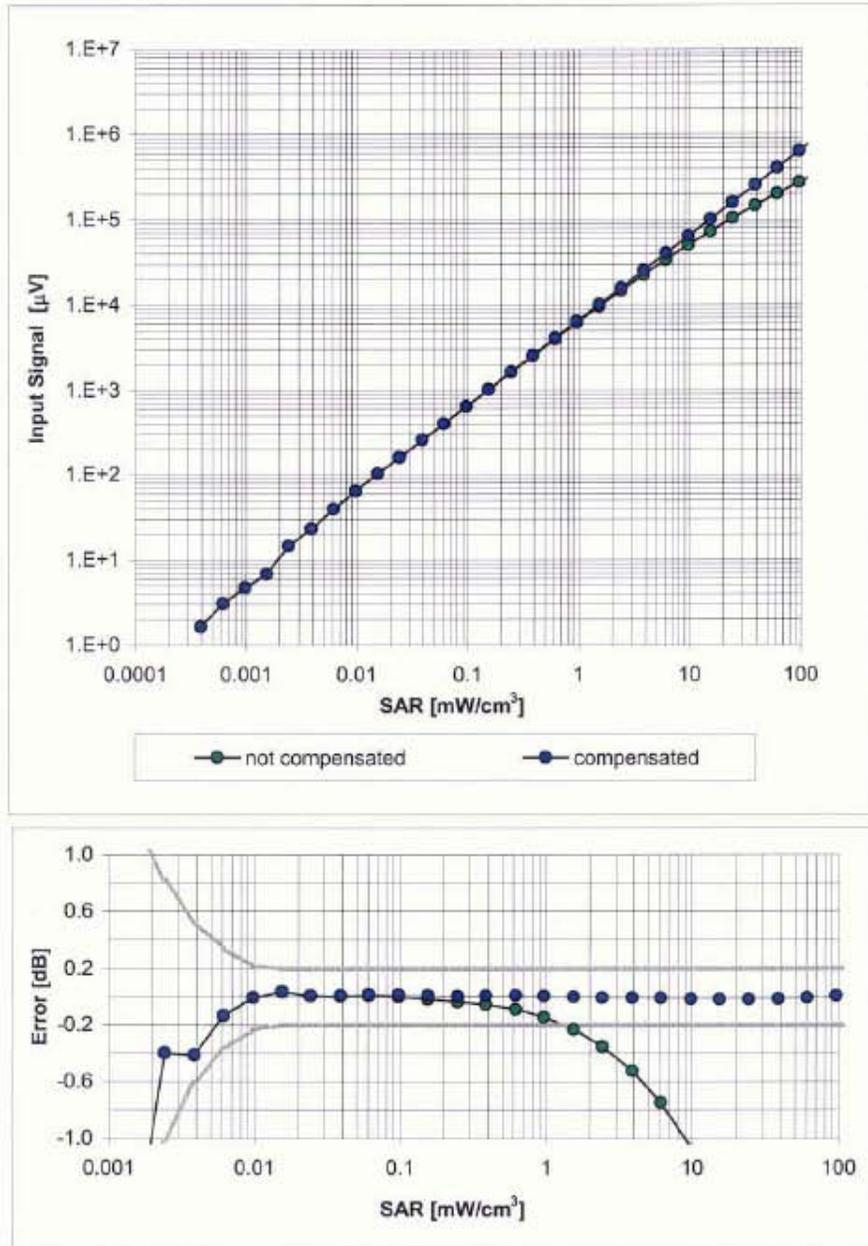


Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

ET3DV6 SN:1383

February 22, 2006

Dynamic Range $f(\text{SAR}_{\text{head}})$ (Waveguide R22, $f = 1800$ MHz)

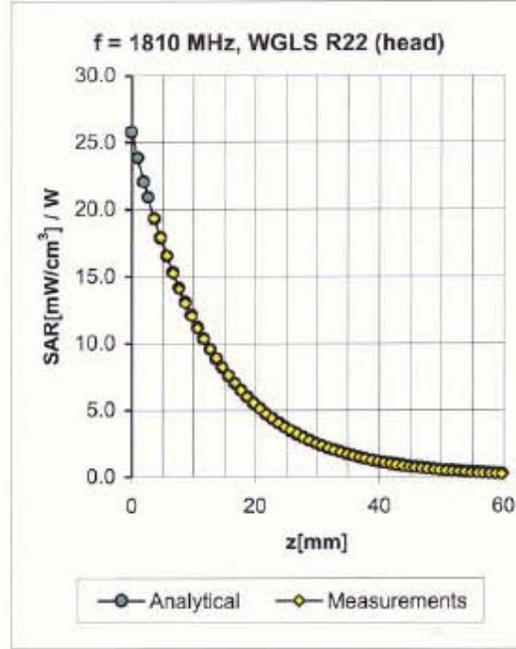
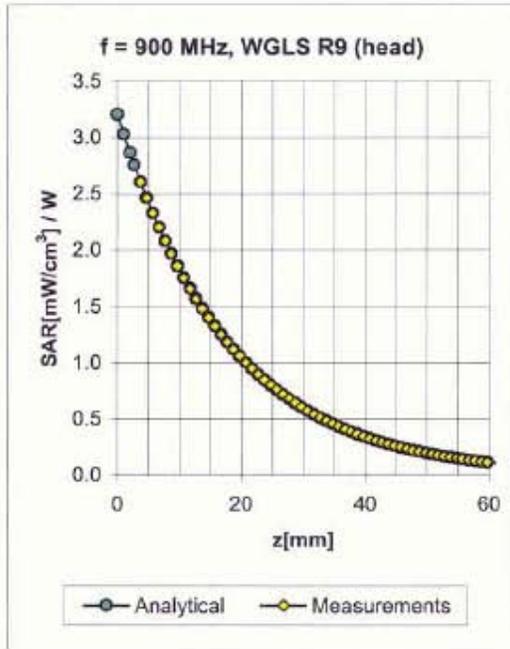


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

ET3DV6 SN:1383

February 22, 2006

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%	0.30	2.95	6.74 ± 13.3% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.74	1.72	6.21 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.77	1.59	5.13 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	1.12	1.16	4.56 ± 11.8% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.27	3.94	7.12 ± 13.3% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.62	1.94	5.89 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.88	1.77	4.66 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	1.29	1.16	4.29 ± 11.8% (k=2)

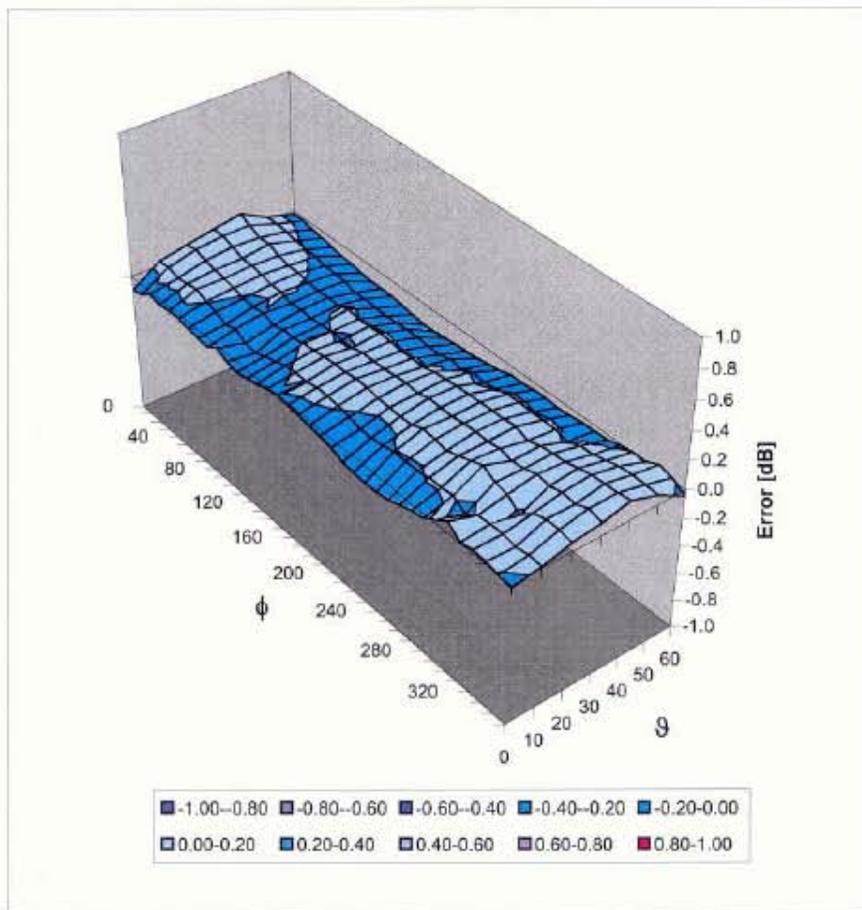
^c The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

ET3DV6 SN:1383

February 22, 2006

Deviation from Isotropy in HSL

Error (ϕ, θ), $f = 900$ MHz



Uncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ ($k=2$)

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s p e a g

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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:

ET3DV6

Serial Number:

1383

Place of Assessment:

Zurich

Date of Assessment:

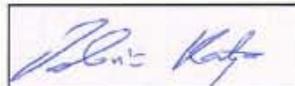
February 23, 2006

Probe Calibration Date:

February 22, 2006

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:



Schmid & Partner Engineering AG

s p e a g

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 info@speag.com, http://www.speag.com

Dosimetric E-Field Probe ET3DV6 SN:1383

Conversion factor (\pm standard deviation)

150 MHz	<i>ConvF</i>	8.4 \pm 10%	$\epsilon_r = 52.3$ $\sigma = 0.76$ mho/m (head tissue)
250 MHz	<i>ConvF</i>	7.7 \pm 10%	$\epsilon_r = 47.6$ $\sigma = 0.83$ mho/m (head tissue)
300 MHz	<i>ConvF</i>	7.6 \pm 9%	$\epsilon_r = 45.3$ $\sigma = 0.87$ mho/m (head tissue)
750 MHz	<i>ConvF</i>	6.5 \pm 7%	$\epsilon_r = 41.9$ $\sigma = 0.89$ mho/m (head tissue)
150 MHz	<i>ConvF</i>	8.2 \pm 10%	$\epsilon_r = 61.9$ $\sigma = 0.80$ mho/m (body tissue)
250 MHz	<i>ConvF</i>	7.7 \pm 10%	$\epsilon_r = 59.4$ $\sigma = 0.88$ mho/m (body tissue)
300 MHz	<i>ConvF</i>	7.6 \pm 9%	$\epsilon_r = 58.2$ $\sigma = 0.92$ mho/m (body tissue)
750 MHz	<i>ConvF</i>	6.3 \pm 7%	$\epsilon_r = 55.5$ $\sigma = 0.96$ 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
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Zeughausstrasse 43, 8004 Zurich, Switzerland



S Schweizerischer Kalibrierdienst
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S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Federal Office of Metrology and Accreditation
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: **D450V2-1001_May06**

CALIBRATION CERTIFICATE

Object: **D450V2 - SN: 1001**

Calibration procedure(s): **QA CAL-15.v4
Calibration Procedure for dipole validation kits below 800 MHz**

Calibration date: **May 25, 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	MY41498277	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41498087	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Reference 3 dB Attenuator	SN: S5054 (3c)	11-Aug-05 (METAS, No. 251-00499)	Aug-06
Reference 20 dB Attenuator	SN: S5086 (20b)	4-Apr-06 (METAS, No. 251-00558)	Apr-07
Reference Probe ET3DV6	SN 1507	11-Jul-05 (SPEAG, No. ET3-1507_Jul05)	Jul-06
DAE4	SN 601	15-Dec-05 (SPEAG, No. DAE4-601_Dec05)	Dec-06

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov 06

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Fin Bomholt	R&D Director	

Issued: May 25, 2006

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

**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 Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- b) 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	V4.6
Extrapolation	Advanced Extrapolation	
Phantom	Flat Phantom V4.4	Shell thickness: 6 ± 0.2 mm
Distance Dipole Center - TSL	15 mm	with Spacer
Area Scan resolution	dx, dy = 15 mm	
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	43.5	0.87 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	43.6 ± 6 %	0.86 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	condition	
SAR measured	398 mW input power	2.00 mW / g
SAR normalized	normalized to 1W	5.03 mW / g
SAR for nominal Head TSL parameters ¹	normalized to 1W	5.06 mW / g ± 18.1 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	398 mW input power	1.35 mW / g
SAR normalized	normalized to 1W	3.39 mW / g
SAR for nominal Head TSL parameters ¹	normalized to 1W	3.40 mW / g ± 17.6 % (k=2)

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

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.0 Ω - 9.6 j Ω
Return Loss	- 20.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.343 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, 2002

DASY4 Validation Report for Head TSL

Date/Time: 25.05.2006 13:20:31

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 450 MHz; Type: D450V2; Serial: D450V2 - SN:1001

Communication System: CW; Frequency: 450 MHz; Duty Cycle: 1:1

Medium: HSL450;

Medium parameters used: $f = 450 \text{ MHz}$; $\sigma = 0.86 \text{ mho/m}$; $\epsilon_r = 43.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (LF); ConvF (6.59, 6.59, 6.59); Calibrated: 11.07.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 4.4; Type: Flat Phantom 4.4
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

d=15mm, Pin=398mW/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.14 mW/g

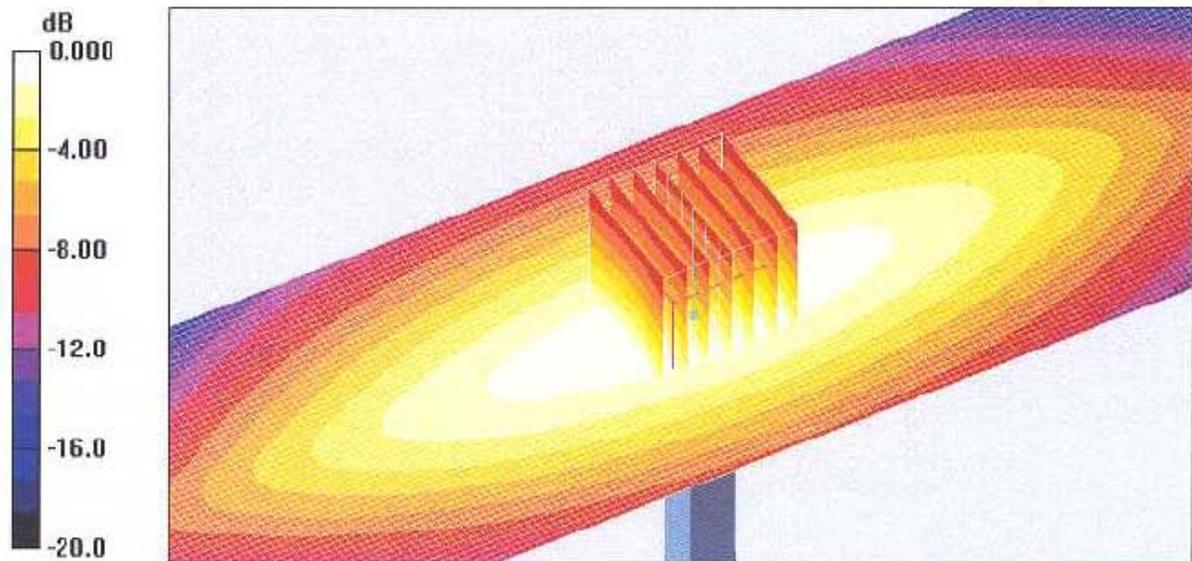
d=15mm, Pin=398mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 52.1 V/m; Power Drift = -0.014 dB

Peak SAR (extrapolated) = 2.85 W/kg

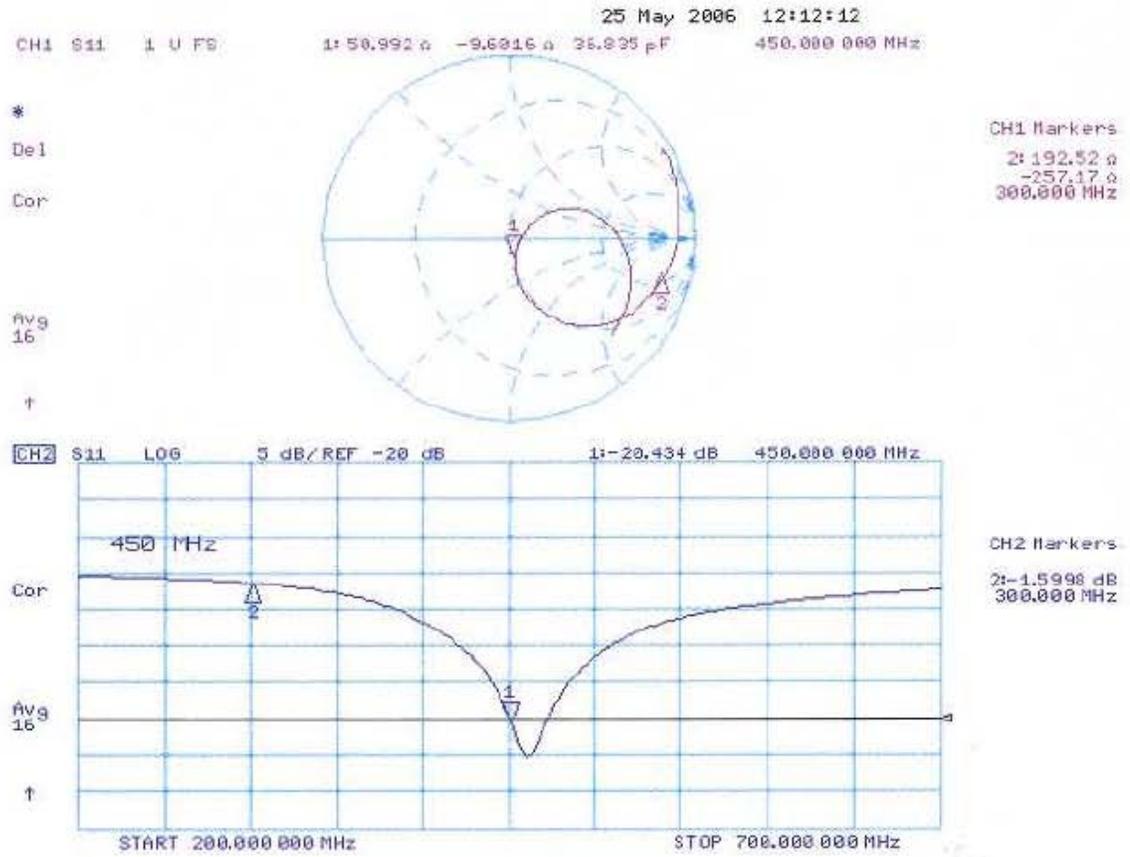
SAR(1 g) = 2 mW/g; SAR(10 g) = 1.35 mW/g

Maximum value of SAR (measured) = 2.14 mW/g



0 dB = 2.14mW/g

Impedance Measurement Plot for Head TSL



Appendix D

Test System Verification Scans

Dipole validation scans at the head from SPEAG are provided in APPENDIX C. NE's EME lab validates its' dipole(s) to the applicable IEEE system performance targets. A system validation was performed using FCC body tissue parameters to generate the system performance target values for body at the applicable frequency. Dipoles are assessed using multiple probes and measurements were performed using the isotropic assessment procedure mentioned below.

To assess the isotropic characteristics of the measurement probe, two system performance zoom scans (0 and 90 degrees) were measured. The results were averaged together and adjusted to account for the power drift in order to obtain the final calculated 1 and 10 gram results. The results obtained from each probe were then averaged together to determine the new measured SAR target.

Motorola N&E EME Lab

SPEAG 450 MHz Dipole; Model D450V2, SN1001; Test Date: 11/13/06

Run #: JsT-SYSP-450B-061113-01

Sim. Tissue Temp: 21.5 (C)

TX Freq: 450 (MHz) Start power: 250 (mW)

Target: 4.43 mW/g for 1g SAR 2.96 mW/g for 10g SAR
 4.24 mW/g calculated 1g-SAR; -4.37% from target (including drift)
 2.88 mW/g calculated 10g-SAR; -2.60% from target (including drift)

Probe: ET3DV6 - SN1383, Calibrated: 2/22/2006, ConvF(7.12, 7.12, 7.12)

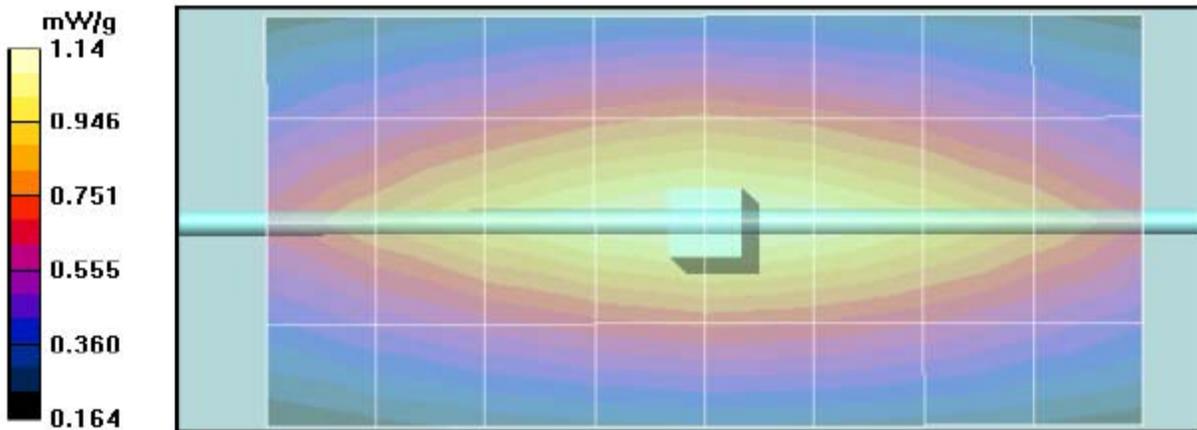
Duty Cycle: 1:1, Medium: 450 MHz FCC Body, Medium parameters used: f = 450 MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 57.1$; $\rho = 1000$ kg/m³; Electronics: DAE3 Sn374, Calibrated: 8/28/2006

System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm,dy=7.5mm, dz=5mm
 Reference Value = 37.1 V/m; Power Drift = -0.0167 dB
 Peak SAR (extrapolated) = 1.51 W/kg
SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.720 mW/g
 Maximum value of SAR (measured) = 1.15 mW/g

System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm,dy=7.5mm, dz=5mm
 Reference Value = 37.1 V/m; Power Drift = -0.0167 dB
 Peak SAR (extrapolated) = 1.49 W/kg
SAR(1 g) = 1.05 mW/g; SAR(10 g) = 0.716 mW/g
 Maximum value of SAR (measured) = 1.13 mW/g

System Performance/Dipole Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

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



Motorola N&E EME Lab

SPEAG 450 MHz Dipole; Model D450V2, SN1001; Test Date: 11/14/06

Run #: JsT-SYSP-450B-061114-01

Sim.Tissue Temp: 20.8 (C)

TX Freq: 450 (MHz)

Start power: 250 (mW)

Target:4.43 mW/g for 1g SAR 2.96 mW/g for 10g SAR
4.33 mW/g calculated 1g-SAR; -2.27% from target (including drift)
2.95 mW/g calculated 10g-SAR; -0.40% from target (including drift)

Probe: ET3DV6 - SN1383, Calibrated: 2/22/2006, ConvF(7.12, 7.12, 7.12)

Duty Cycle: 1:1, Medium: 450 MHz FCC Body, Medium parameters used: f = 450 MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 57.1$; $\rho = 1000$ kg/m³; Electronics: DAE3 Sn374, Calibrated: 8/28/2006

System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm,dy=7.5mm, dz=5mm

Reference Value = 37.2 V/m; Power Drift = -0.0296 dB

Peak SAR (extrapolated) = 1.52 W/kg

SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.727 mW/g

Maximum value of SAR (measured) = 1.16 mW/g

System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm,dy=7.5mm, dz=5mm

Reference Value = 37.2 V/m; Power Drift = -0.0296 dB

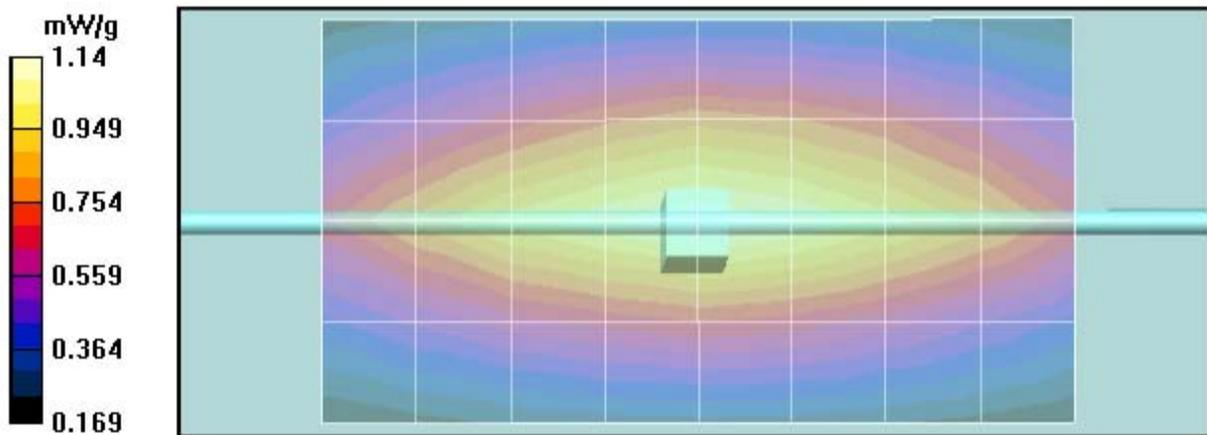
Peak SAR (extrapolated) = 1.53 W/kg

SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.736 mW/g

Maximum value of SAR (measured) = 1.17 mW/g

System Performance/Dipole Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

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



Motorola N&E EME Lab

SPEAG 450 MHz Dipole; Model D450V2, SN1001; Test Date: 11/15/06

Run #: JsT-SYSP-450H-061115-01

Sim.Tissue Temp: 20.7 (C)

TX Freq: 450 (MHz) Start power: 250 (mW)

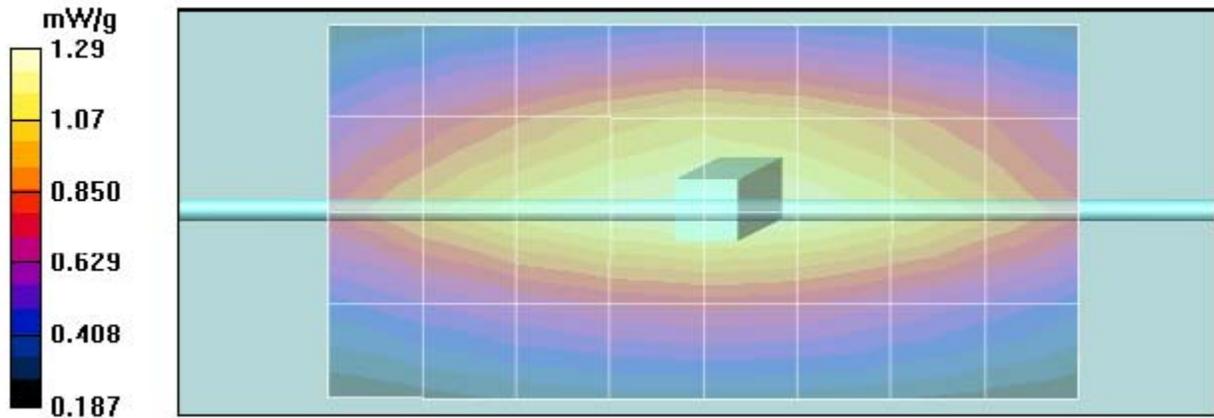
Target: 5.11 mW/g for 1g SAR 3.34 mW/g for 10g SAR
 4.93 mW/g calculated 1g-SAR; -3.55% from target (including drift)
 3.28 mW/g calculated 10g-SAR; -1.82% from target (including drift)

Probe: ET3DV6 - SN1383, Calibrated: 2/22/2006, ConvF(6.74, 6.74, 6.74)
 Duty Cycle: 1:1, Medium: 450 IEEE Head, Medium parameters used: f = 450 MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 44$; $\rho = 1000$ kg/m³; Electronics: DAE3 Sn374, Calibrated: 8/28/2006

System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm,dy=7.5mm, dz=5mm
 Reference Value = 39.9 V/m; Power Drift = 0.0276 dB
 Peak SAR (extrapolated) = 1.87 W/kg
SAR(1 g) = 1.24 mW/g; SAR(10 g) = 0.824 mW/g
 Maximum value of SAR (measured) = 1.34 mW/g

System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm,dy=7.5mm, dz=5mm
 Reference Value = 39.9 V/m; Power Drift = 0.0276 dB
 Peak SAR (extrapolated) = 1.87 W/kg
SAR(1 g) = 1.24 mW/g; SAR(10 g) = 0.826 mW/g

System Performance/Dipole Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm
System Performance/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm



DIPOLE SAR TARGET - HEAD

Date: 06/17/06 Frequency (MHz): 450
 Lab Location: NE Mixture Type: IEEE Head
 DAE Serial #: 363 Ambient Temp.(°C): 22.6

Tissue Characteristics
 Permittivity: 45.2 Phantom Type/SN: 80302002B-S8
 Conductivity: 0.91 Distance (mm): 15
 Tissue Temp.(°C): 21.9

Reference Source: Dipole Power to Dipole: 250 mW
 Reference SN: 1001

Target SAR Value: 4.9 mW/g (1g avg.), 3.3 mW/g (10g avg.)
 (normalized to 1.0 W)

New Target:

Average Measured SAR Value: 5.11 mW/g (1g avg.), 3.34 mW/g (10g avg.)

Percent Difference From Target (MUST be within k=2 Uncertainty): 4.33% (1g ave)
1.33% (10g ave)

Test performed by: Ed Church Initial: E.C

Probe SN #s	1-G Cube	Diff from Ave	10-G Cube	Diff from Ave	Robot
1383	5.02	-1.80%	3.33	-0.42%	R3
1384	4.89	-4.34%	3.20	-4.31%	R3
1393	4.77	-6.69%	3.18	-4.90%	R3
1545	5.37	5.05%	3.46	3.47%	R3
1547	5.51	7.79%	3.55	6.16%	R3
Average	5.1120		3.3440		New Measured SAR Value
(normalized to 1.0 W, including drift)					

DIPOLE SAR TARGET - BODY

Date: 06/17/06 Frequency (MHz): 450
 Lab Location: NE Mixture Type: FCC Body
 DAE Serial #: 363 Ambient Temp.(°C): 22.7

Tissue Characteristics

Permittivity: 56.5 Phantom Type/SN: 80302002C-S9
 Conductivity: 0.92 Distance (mm): 15
 Tissue Temp.(°C): 21.4

Reference Source: Dipole Power to Dipole: 250 mW
 Reference SN: 1001

New Target:

Average Measured SAR Value: 4.43 mW/g(1g avg.), 2.96 mW/g (10g avg.)

Test performed by: Ed Church Initial: EC

Probe SN #s	1-G Cube	Diff from Ave	10-G Cube	Diff from Ave	Robot
1383	4.22	-4.7%	2.87	-3.1%	R3
1384	4.23	-4.5%	2.89	-2.4%	R3
193	4.09	-7.7%	2.81	-5.1%	R3
1545	4.79	8.1%	3.11	5.0%	R3
1547	4.82	8.8%	3.13	5.7%	R3
Average	4.4300		2.9620	New Measured SAR Value	
(normalized to 1.0 W, including drift)					

Appendix E
DUT Scans (Shortened Scans and Highest SAR configurations)

Shortened Scan Results

Motorola N&E EME Laboratory

Test Date: 11/15/2006

Run #: JsT-Ab-061115-10	Sim. Tissue Temp: 19.9 (C)
Robot #: GEMS-1	Phantom #: 80302002D-S15
Model #: RLN6171A	SN: 1584GU0041
Antenna: Fixed	TX Freq: 451.1875 MHz
Battery: 6080384X63	Start power: 2.462 W
Carry acc.: 4280383X62	Audio/Data acc.: ENMN4002B

Comments: Shorten scan at the Body.

Shortened scan reflect highest S.A.R. producing configuration; Run time 7 minutes.

Representative “normal” scan run time was 24 minutes

“Shortened” scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 2.28mW/g; 10-g Avg. = 1.73mW/g

“Normal” scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 2.28mW/g; 10-g Avg. = 1.72mW/g

(see section 9.0 run # JsT-Ab-061115-09)

Probe: ET3DV6 - SN1383, Calibrated: 2/22/2006, ConvF(7.12, 7.12, 7.12)

Duty Cycle: 1:1, Medium: 460 MHz FCC Body, Medium parameters used: f = 460 MHz; $\sigma = 0.93$ mho/m; $\epsilon_r = 57.4$; $\rho = 1000$ kg/m³; Electronics: DAE3 Sn374, Calibrated: 8/28/2006

Ab Scan/5x5x7 Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 72.9 V/m; Power Drift = -0.0929 dB

Peak SAR (extrapolated) = 5.47 W/kg

SAR(1 g) = 4.46 mW/g; SAR(10 g) = 3.39 mW/g

Maximum value of SAR (measured) = 4.68 mW/g

Ab Scan/Area Scan (61x141x1): Measurement grid: dx=15mm, dy=15mm

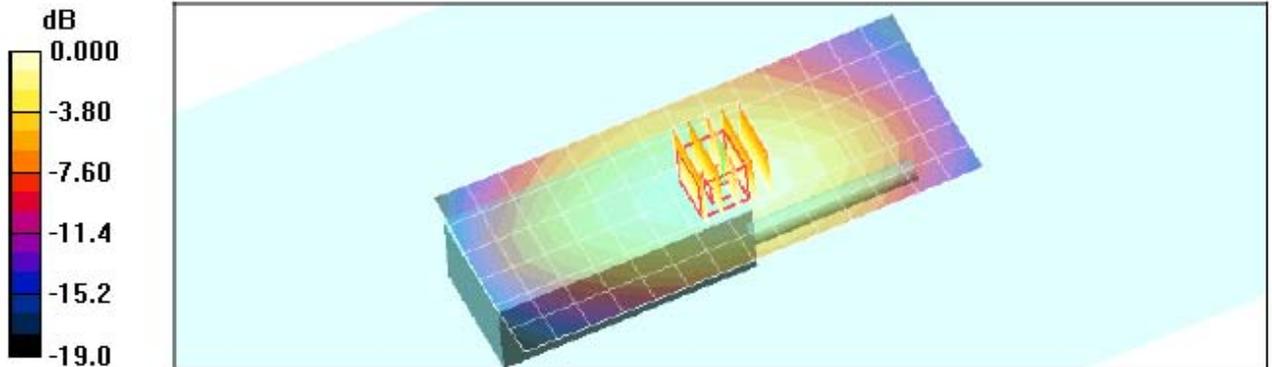
Reference Value = 69.8 V/m; Power Drift = -0.0929 dB

Motorola Fast SAR: SAR(1 g) = 4.05 mW/g; SAR(10 g) = 2.96 mW/g

Maximum value of SAR (interpolated) = 4.27 mW/g

Ab Scan/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Maximum value of SAR (measured) = 4.64 mW/g



Highest SAR Configurations Results

Motorola N&E EME Laboratory

Test Date: 11/15/2006

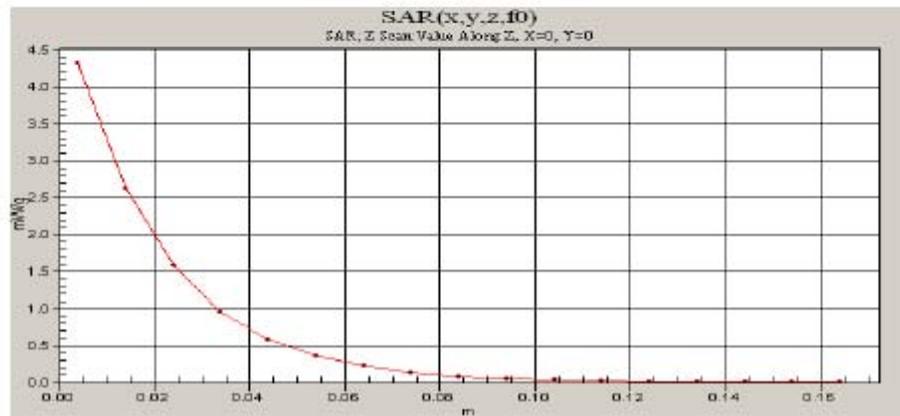
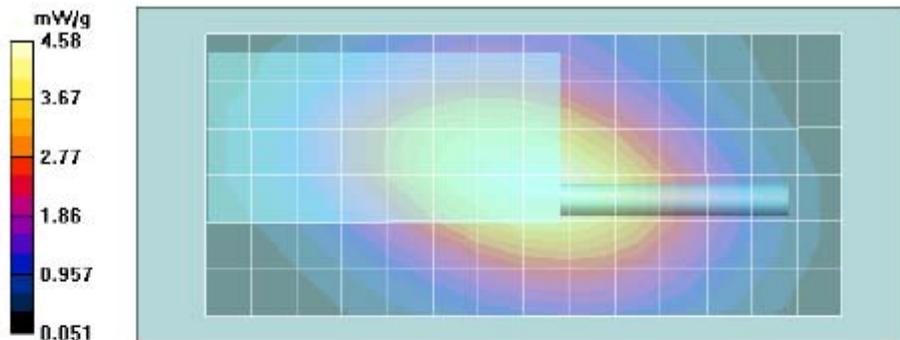
Run #: JsT-Ab-061115-09 Sim. Tissue Temp: 19.9 (C)
 Robot #: GEMS-1 Phantom #: 80302002D-S15
 Model #: RLN6171A SN: 1584GU0041
 Antenna: Fixed TX Freq: 451.1875 MHz
 Battery: 6080384X63 Start power: 2.462 W
 Carry acc.: 4280383X62 Audio/Data acc.: ENMN4002B
 Comments: Full Scan

Probe: ET3DV6 - SN1383, Calibrated: 2/22/2006, ConvF(7.12, 7.12, 7.12)
 Duty Cycle: 1:1, Medium: 460 MHz FCC Body, Medium parameters used: f = 460 MHz; $\sigma = 0.93$ mho/m; $\epsilon_r = 57.4$; $\rho = 1000$ kg/m³; Electronics: DAE3 Sn374, Calibrated: 8/28/2006

Ab Scan/7x7x7 Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 72.9 V/m; Power Drift = -0.360 dB
 Peak SAR (extrapolated) = 5.14 W/kg
SAR(1 g) = 4.19 mW/g; SAR(10 g) = 3.17 mW/g
 Maximum value of SAR (measured) = 4.41 mW/g

Ab Scan/Area Scan (61x141x1): Measurement grid: dx=15mm, dy=15mm
 Reference Value = 72.9 V/m; Power Drift = -0.360 dB
Motorola Fast SAR: SAR(1 g) = 4.39 mW/g; SAR(10 g) = 3.21 mW/g
 Maximum value of SAR (interpolated) = 4.63 mW/g

Ab Scan/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
 Maximum value of SAR (measured) = 4.32 mW/g



Motorola N&E EME Laboratory

Test Date: 11/15/2006

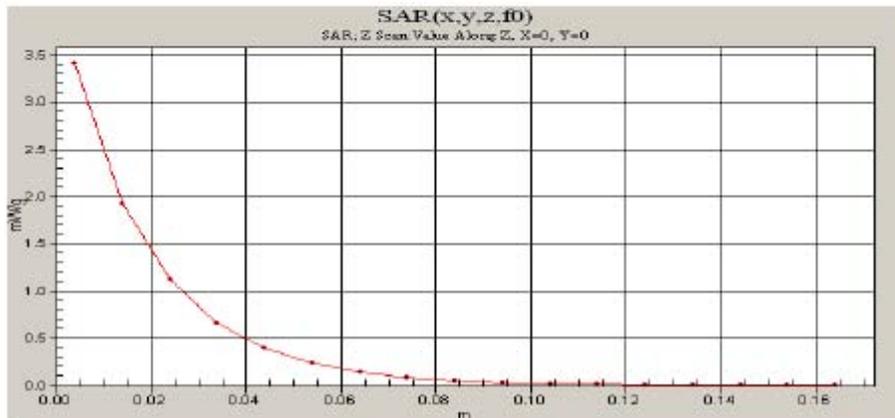
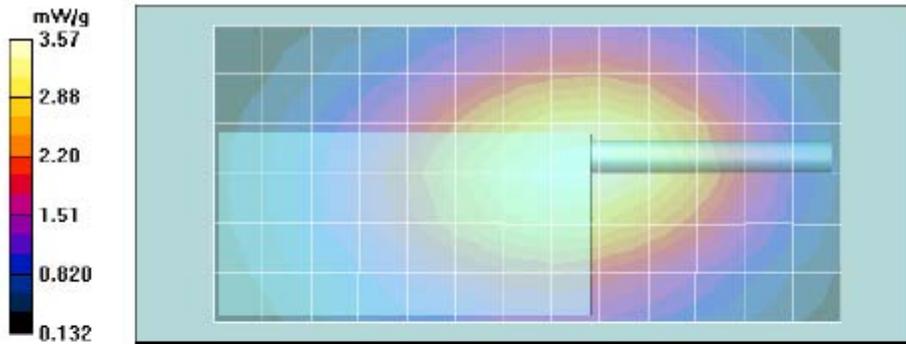
Run #: JsT-Face-061115-03 Sim. Tissue Temp: 20.0 (C)
 Robot #: GEMS-1 Phantom #: 80302002B-S8
 Model #: RLN6171A SN: 1584GU0041
 Antenna: Fixed TX Freq: 451.1875 MHz
 Battery: 6080384X63 Start power: 2.462 W
 Carry acc.: None Audio/Data acc.: None
 Comments: Full Scan; Front of unit @ 2.5cm.

Probe: ET3DV6 - SN1383, Calibrated: 2/22/2006, ConvF(6.74, 6.74, 6.74)
 Duty Cycle: 1:1, Medium: 460 MHz IEEE Head, Medium parameters used: f = 460 MHz; $\sigma = 0.9$ mho/m; $\epsilon_r = 43.8$; $\rho = 1000$ kg/m³; Electronics: DAE3 Sn374, Calibrated: 8/28/2006

Face Template/7x7x7 Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 65.7 V/m; Power Drift = -0.416 dB
 Peak SAR (extrapolated) = 4.42 W/kg
SAR(1 g) = 3.31 mW/g; SAR(10 g) = 2.43 mW/g
 Maximum value of SAR (measured) = 3.48 mW/g

Face Template/Area Scan (61x131x1): Measurement grid: dx=15mm, dy=15mm
 Reference Value = 65.7 V/m; Power Drift = -0.416 dB
Motorola Fast SAR: SAR(1 g) = 3.43 mW/g; SAR(10 g) = 2.53 mW/g
 Maximum value of SAR (interpolated) = 3.61 mW/g

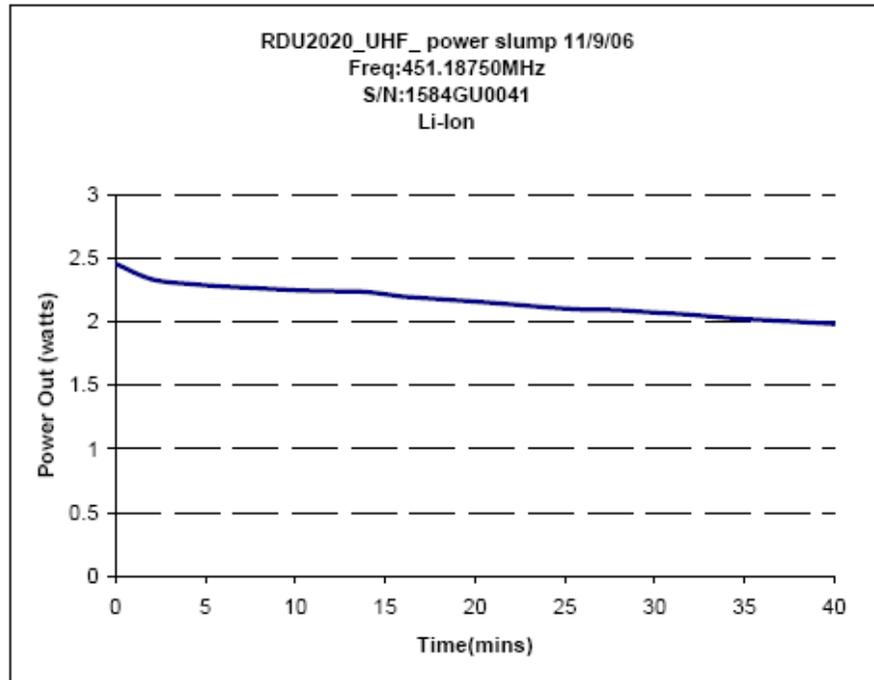
Face Template/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm
 Maximum value of SAR (measured) = 3.41 mW/g



APPENDIX F
DUT Supplementary Data (Power slump)

RDU2020
 TNP: RLN6171A
 S/N:1584GU0041
 Battery Type: Li-Ion
 Freq 451.18750

Time (min)	Power (w)
0	2.462 initial pwr
2	2.337
4	2.301
6	2.281
8	2.266
10	2.251
12	2.243
14	2.237
16	2.201
18	2.182
20	2.161
22	2.139
24	2.117
26	2.1
28	2.094
30	2.075
32	2.058
34	2.033
36	2.017
38	2.003
40	1.985



Appendix G DUT Test Position Photos

Figure 1: Highest S.A.R. Test Position (Body)
DUT w/ carry acc model # 4280383X62 against the phantom;
worst case audio accessory attached
(same position used for all other applicable audio accessories)



Figure 2: Highest S.A.R. Test Position (Face)
(same position used for all other applicable audio accessories)



Figure 3: Body Assessment
DUT w/ carry acc. model RLN6301A against the phantom;
HMN9026D audio accessory attached



Figure 4: Body Assessment
DUT w/ front side separated 2.5cm from the phantom;
worst case audio accessory attached



Figure 5: Body Assessment
DUT w/ back side separated 2.5cm from the phantom;
worst case audio accessory attached



Appendix H

DUT and Body worn Accessory Photos

The purpose of this appendix is to illustrate the offered body-worn carry accessory(ies). The sample that was used in the following photos represents the product used to obtain the results presented herein.



Photo 1.
Model 4280383X62
Back View



Photo 2.
Model 4280383X62
Side View



Photo 3.
Model RLN6301A
Front View



Photo 4.
Model RLN6301A
Back View



Photo 5.
Model RLN6301A
Side View

Appendix I

DUT Antenna Separation Distances and Offered Accessory Test Status

The following table(s) summarizes the separation distances and test status provided by each of the applicable body-worn accessory(ies):

Carry Case Models	Tested ?	Min. Separation distances between DUT antenna and phantom surface. (mm)	Comments
4280383X62	Yes	29-37	
RLN6301A	Yes	41-50	

Audio Acc. Models	Tested?	Separation distances between DUT antenna and phantom surface. (mm)	Comments
HMN9026D	Yes	--	
HMN9025D	Yes	--	
NTN9159F	Yes	--	
ENMN4002B	Yes	--	
HCSN4000D	Yes	--	
HMN9039E	Yes	--	
HCSN4001C	Yes	--	
HMN9038A	Yes	--	
RLN5714B	Yes	--	
PMMN4001A	Yes	--	
PMLN4658A	Yes	--	
HMN9036A	Yes	--	
RLN5317A	No	--	BS to RLN5318A
HMN9030A	Yes	--	
HMN9013B	Yes	--	
PMLN5011A	Yes	--	
RLN5411A	Yes	--	
RMN4016B	Yes	--	
RLN5318A	Yes	--	
HMN9754D	No	--	BS to RLN5318A
BDN6720A	Yes	--	
HMN9727B	Yes	--	
HLN9132A	Yes	--	
HMN9752B	Yes	--	
HMN9021A	Yes	--	
RMN5047A	Yes	--	
RLN5238B	Yes	--	
BDN6646C	Yes	--	