



MOTOROLA



TESTING CERT # 2518.01

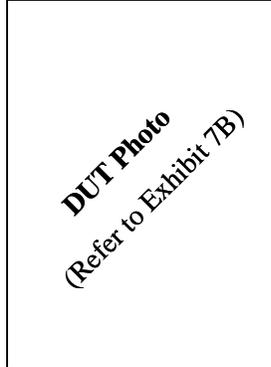
FCC ID: AZ489FT7036

DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 1 of 3

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

Date of Report: 7/30/08
Report Revision: 0
Report ID: Mackinaw Portable_SR6522_080730

Responsible Engineer: Michael Sailsman (Senior Staff EME Eng.)
Date/s Tested: 6/27/08 – 7/17/08
Manufacturer/Location: Motorola, Plantation
Sector/Group/Div.: G&PS
Date submitted for test: 5/22/08
DUT Description: 136-174 1-6W, 764-870MHz 1-3W, Basic, 6.25K/12.5K/25K, Top Display Model W/GPS. Capable of digital and analog FM transmission and TDMA transmission.
Test TX mode(s): CW
Max. Power output: 6.6 Watts (VHF), 2.99 Watts (700 MHz), 3.6 Watts (800 MHz)
Nominal Power: 6.0 Watts (VHF), 2.5 Watts (700 MHz), 3.0 Watts (800 MHz)
Tx Frequency Bands: 136-174 MHz, 764-776 MHz, 794-806 MHz, 806-824 MHz, 851-870MHz
Signaling type: FM
Model(s) Tested: MNUR1000A
Model(s) Certified: MNUR1000A
Serial Number(s): TU098JW07N, TU098JW07M
Classification: Occupational/Controlled
Rule Part(s): 90



Approved Accessories:

Antenna(s):
 NAF5085A (700/800/GPS 764-870/1575.42 MHz 1/2 wave, -8.0 dBd); NAF5037A (806-870 MHz, 1/2 wave, -7.0 dBd);
 NAF5080A (700/800 MHz wideband Whip, 764-870 MHz, 1/2 wave, -7.0 dBd); NAD6563A (VHF Helical 136-174 MHz, 1/4 wave, -6.5 dBd)
 PMAF4002A (700/800 MHz PSM Stubby, -10dBd)

Battery(ies):
 NNTN7038A (Hi Cap Impres Li-Ion 2500mAh), NNTN7037A (Impres NiMH 2100mAh), NNTN7035A (FM Impres NiMH 2000mAh – A81 Rugged)

Body worn accessory(ies):
 PMLN5409A/NTN8040B (3.0" swivel belt loop), PMLN5407A/NTN8039B (2.5" swivel belt loop), PMLN5408A (2.75" swivel belt loop),
 HLN6875A (3" belt clip), NTN8266B (2.5" belt clip), NTN5243A (carry strap), PMLN5331A (carry holder-Basic), PMLN5322A (Nylon case w/
 T strap-short), PMLN5328A (Nylon case w/ T strap-long), PMLN5323A (Leather case 3), PMLN5329A (Leather Case 3), PMLN5324A (Leather
 case hi act. swivel), PMLN5330A (Leather case hi act. swivel)

Audio/Data cable accessory(ies):
 PMLN5275A (Core H/D headset), HMN4104A (Impres display GCAI submersible RSM w/ jack & Ch), PMLN5111A (3-wire blk-1 programmable
 button), PMLN5112A (3-wire Beige-1 programmable button), PMMN4061A (PSM IP54 w/ 3.5mm jack RX 30"), PMMN4060A (PSM IP54 w/
 3.5mm jack RX 24"), PMMN4059A (PSM IP54 w/ 3.5mm jack RX 18"), PMMN4062A (Plus RSM NC IP54 3.5mm jack RX), RLN6242A (Quick
 disconnect acoustic tube), RMN5058A (Core lightweight headset w/ PTT & VOX), RLN5878A (Core 1 wire surveillance-blk), RLN5881A (Smart 2
 wire surveillance-beige), RLN5880A (Smart 2 wire surveillance-blk), RLN5882A (Smart 2 wire surveillance w/ acoustic tube-blk), RLN5883A (Smart 2
 wire surveillance w/ acoustic tube-beige), RLN4941A (Rec only earpiece w/ translucent tube/eartip-OTTO), WADN4190B (over the ear receiver for
 RSM), PMMN4024A (Core RSM), RLN6232A (Low noise kit), RLN6230A (High/Extreme noise kit), RLN5879A (Core 1 wire surveillance-beige),
 AARLN4885B (ear bud w/ coil cord & 3.5mm RT angle plug), PMMN4025A (Smart RSM)

Max. Calc. : 1-g Avg. SAR: 6.92 W/kg (Body); 10-g Avg. SAR: 4.86 W/kg (Body)
Max. Calc. : 1-g Avg. SAR: 2.89 W/kg (Face); 10-g Avg. SAR: 2.10 W/kg (Face)

The test results clearly demonstrate compliance with FCC General Population/Uncontrolled RF Exposure limits of 1.6W/kg per the requirements of 47 CFR 2.1093(d).
 The test results clearly demonstrate compliance with ICNIRP (1998) Guidelines for limiting exposure in time-varying electric, magnetic, and electromagnetic fields (up to
 300GHz), Health Physics 74, 494-522 RF Exposure limits of 2W/kg averaged over 10grams of contiguous tissue.

Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the national
 and international reference standards and guidelines listed in section 2.0 of this report. This report shall not be reproduced without written approval from an officially designated representative of
 the Motorola EME Laboratory.

I attest to the accuracy of the data and assume full responsibility for the completeness of these measurements. This reporting format is consistent with the suggested guidelines of the TIA TSB-150
 December 2004. The results and statements contained in this report pertain only to the device(s) evaluated.

Signature on file
Deanna Zakharia G&PS EME Lab Senior Resource Manager,
Laboratory Director

Approval Date: 7/3108

Certification Date:

Certification No.:

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Report Revision History

Date	Revision	Comments
7/30/2008	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 G&PS EME Test Lab for the model number MNUR1000A FCC ID: AZ489FT7036. 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: AZ489FT7036 model MNUR1000A operates using digital and analog frequency modulation (FM) as well as TDMA signaling incorporating traditional simplex two-way radio transmission protocol.

Time Division Multiple Access (TDMA) is used to allocate portions of the RF signal by dividing time into four slots, one for each unit. Time allocation enables each unit to transmit its voice information without interference from other transmitting units. Transmission from a unit or base station is accommodated in time-slot lengths of 15 milliseconds and frame lengths of 60 milliseconds. The TDMA technique requires sophisticated algorithms and a digital signal processor (DSP) to perform voice compressions/decompressions and RF modulation/demodulation. The duty cycle is 2:1, 2 slot TDMA with the transmit signal taking 1 slot.

The model represented under this filing utilize removable antennas and are capable of transmitting in the 136-174 MHz, 764-776 MHz, 794-806 MHz, 806-824 MHz and 851-870MHz bands. The nominal output power is 6.0 watts at 136-174 MHz, 2.5 watts at 764-776 MHz and 794-806 MHz, 3.0 watts at 806-824 MHz and 851-870MHz with maximum output powers of 6.6 watts at 136-174 MHz, 2.99 watts at 764-776 MHz and 794-806 MHz, 3.6 watts at 806-824 MHz and 851-870MHz as defined by upper limit of the production line final test station. The intended operating positions are “at the face” with the DUT 1 to 2 inches 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 occupational operations, such as public safety agencies, e.g. police, fire and emergency medical. User training is the responsibility of the agencies, which can be expected to employ the usage instructions, safety information and operational cautions set forth in the users manual, instruction sessions or other means. Motorola also makes available to its customers training on the proper use of the two-way.

FCC ID: AZ489FT7036 is being offered with the accessories 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 SAR Dosimetric Assessment System (DASY4™) Version 4.7 build 71 manufactured by Schmid & Partner Engineering AG (SPEAG™), of Zurich Switzerland. The test system consists of a Stäubli RX90L robot, DAE3V1, and ET3DV6 E-Field probe. 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 Rectangular Flat Phantom

Phantom ID	Phantom Material	Phantom Dimensions (cm)	Support structure opening dimensions (cm)	Support structure material	Loss Tangent (wood)
NA	High Density Polyethylene (HDPE)	NA	NA	Wood	< 0.05

4.2.2 SAM Phantom

Phantom ID	Material Parameters	Material Thickness (mm)	Support structure material	Loss Tangent (wood)
NA	200MHz -3GHz; Er = <5, Loss Tangent = <0.05	2mm +/- 0.2mm	Wood	< 0.05

4.2.3 Elliptical Flat Phantom

Phantom ID	Material Parameters	Material Thickness (mm)	Support structure material	Loss Tangent (wood)
1020/1021	300MHz -6GHz; Er = 4+/- 1, Loss Tangent = <0.05	2mm +/- 0.2mm	Wood	< 0.05

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 simulated tissue used is also compliant to that specified in IEC62209-1 (2005) and adopted by CENELEC as EN62209-1 (2006).

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	835MHz	
	Head	Body
Sugar	57.0	44.9
Diacetin	NA	NA
De ionized -Water	40.45	53.06
Salt	1.45	0.94
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)	E4418B	GB40206480	12/10/2008
Power Meter (Agilent)	E4418B	US39251152	3/24/2009
E-Series Avg. Power	E9301B	MY41495593	2/14/2009
E-Series Avg. Power	E9301B	MY41495594	2/14/2009
Power Sensor (Agilent)	8482B	3318A07393	1/26/2009
Power Sensor (Agilent)	8482B	3318A06774	2/26/2009
Bi-Directional Coupler	3020A	40295	6/9/2010
Signal Generator (Agilent)	E4438C	MY42082269	7/8/2010
Signal Generator (HP)	8656B	3334U14050	9/19/2008
AMP (Amplifier Research)	10WD1000	28782	CNR
Agilent PNA-L Network	N5230A	MY45001092	5/22/2010
Dielectric Probe Kit (HP)	85070C	US99360076	CNR
Dickson	TM125	1195889	6/18/2009
Handheld thermometer	HH202A	18800	8/30/2008
Speag Dipole	D835V2	435	9/12/2008
Speag Dipole	D835V2	427	5/19/2010

6.0 SAR Measurement System Verification

The SAR measurements were conducted with probe model/serial number ET3DV6/SN1384. 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 G&PS 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 G&PS 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.

Target versus Actual tissue parameters
(6/27/08-7/17/08, 17 test days)

FCC Body				
Frequency (MHz)	Di-electric Constant Target	Di-electric Constant Meas. (Range)	Conductivity Target S/m	Conductivity Meas. (Range) S/m
835	55.2	52.7-54.1	0.97	0.98-1.01
770	55.5	53.4-54.7	0.96	0.92-0.95
809	55.3	53.0-54.3	0.97	0.95-0.99
860.5	55.1	52.5-53.8	1.00	1.02-1.03

IEEE Head				
Frequency (MHz)	Di-electric Constant Target	Di-electric Constant Meas. (Range)	Conductivity Target S/m	Conductivity Meas. (Range) S/m
835	41.5	40.5-42.6	0.90	0.91-0.93
770	41.8	42.3-43.4	0.89	0.86-0.87
809	41.6	41.8-42.9	0.90	0.89-0.91
860.5	41.5	40.2-42.3	0.93	0.89-0.96

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 SAR @ 1W (mW/g)	Test Date(s)
1384	FCC Body	5/19/08	D835V2/SN435	9.68 +/- 0.32	10.05 +/- 10%	6/27/08-7/15/08 (14 test days)
1384	FCC Body	5/19/08	D835V2/SN427	9.06 +/- 0.00	9.07 +/- 10%	7/17/08
1384	IEEE Head	5/19/08	D835V2/SN435	9.68 +/- 0.46	9.56 +/- 10%	7/1/08 & 7/7/08

Note: See APPENDIX D for an explanation of the reference SAR targets stated above.
(System performance results reflects the median performance +/- 1/2 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 DUT is a portable two-way radio device operational at the body and face using the offered accessories. The device is placed in the test positions presented in Appendix G.

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 an elliptical phantom with the applicable simulated tissue to assess performance at the body and face respectively. The worst case transmission duty cycle was used for all assessments.

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 5x5x7 zoom scans.

During the TCB/FCC Training in February '08, the FCC announced that RF Exposure reports for portables are not required when filing for $f < 300\text{MHz}$ and $P < 7\text{Watts}$ through the TCBs. SAR performance in the VHF band for this device will not be provided in this report.

Assessments at the Body (764-776 MHz band CW mode) (Pages 13-16 of 44; Table 1)

- Assessment of the applicable offered antennas in the 764-776 MHz band at the center of the band using battery model NNTN7038A, belt clip model NTN8266B, and audio accessory model HMN4104A.
- Assessment in the 764-776 MHz band of the offered batteries and body worn accessories with the worst case antenna from above.
- Assessment in the 764-776 MHz band of additional carry cases with the worst case long and short batteries.
- Assessment in the 764-776 MHz band of the offered audio accessories, using the worse case configuration from above
- Assessment of the 764-776 MHz across the band of each applicable offered antenna using the worst case configuration from above.
- Assessment of the offered carry strap using the worst case audio accessories from above and applicable body worn for each battery type in 3 relevant positions per body worn accessory.
- Assessment in the 764-776 MHz band at 2.5cm using the worst case configuration from above.

Assessments at the Face (764-776 MHz band CW mode) (Page 16 of 44; Table 2)

- Assessment of the applicable offered antennas in the 764-776 MHz bands at the center of the band using battery model NNTN7038A with the front of DUT separated

- 2.5cm from the phantom.
- Assessment in the 764-776 MHz band of the offered batteries with the worst case antenna from above.
 - Assessment in the 764-776 MHz band of the applicable offered audio accessory, using the worst case configuration from above.
 - Assessment of the 764-776 MHz across the band of each applicable offered antenna using the worst case configuration from above.

Assessments at the Body (794-824 MHz band CW mode) (Pages 17-20 of 44; Tables 3)

- Assessment of the applicable offered antennas in the 794-824 MHz band at the center of the band using battery model NNTN7038A, belt clip model NTN8266B, and audio accessory model HMN4104A.
- Assessment in the 794-824 MHz band of the offered batteries and body worn accessories with the worst case antenna from above.
- Assessment in the 794-824 MHz band of additional carry cases with the worst case long and short batteries.
- Assessment in the 794-824 MHz band of the offered audio accessories, using the worst case configuration from above.
- Assessment of the 794-824 MHz across the band of each applicable offered antenna using the worst case configuration from above.
- Assessment of the offered carry strap using the worst case audio accessories from above and applicable body worn for each battery type in 3 relevant positions per body worn accessory.
- Assessment in the 794-824 MHz band at 2.5cm using the worst case configuration from above.

Assessments at the Face (794-824 MHz band CW mode) (Pages 20-21 of 44; Table 4)

- Assessment of the applicable offered antennas in the 794-824 MHz bands at the center of the band using battery model NNTN7038A with the front of DUT separated 2.5cm from the phantom.
- Assessment in the 794-824 MHz band of the offered batteries with the worst case antenna from above.
- Assessment in the 794-824 MHz band of the applicable offered audio accessory, using the worst case configuration from above.
- Assessment of the 794-824 MHz across the band of each applicable offered antenna using the worst case configuration from above.

Assessments at the Body (851-870 MHz band CW mode) (Pages 22-25 of 44; Tables 5)

- Assessment of the applicable offered antennas in the 851-870 MHz band at the center of the band using battery model NNTN7038A, belt clip model NTN8266B, and audio accessory model HMN4104A.
- Assessment in the 851-870 MHz band of the offered batteries and body worn accessories with the worst case antenna from above.
- Assessment in the 851-870 MHz band of additional carry cases with the worst case long and short batteries.

- Assessment in the 851-870 MHz band of the offered audio accessories, using the worse case configuration from above.
- Assessment of the 851-870 MHz across the band of each applicable offered antenna using the worst case configuration from above.
- Assessment of the offered carry strap using the worst case audio accessories from above and applicable body worn for each battery type in 3 relevant positions per body worn accessory.
- Assessment in the 851-870 MHz band at 2.5cm using the worst case configuration from above.

Assessments at the Face (851-870 MHz band CW mode) (Pages 25-26 of 44; Table 6)

- Assessment of the applicable offered antennas in the 851-870 MHz bands at the center of the band using battery model NNTN7038A with the front of DUT separated 2.5cm from the phantom.
- Assessment in the 851-870 MHz band of the offered batteries with the worst case antenna from above.
- Assessment in the 851-870 MHz band of the applicable offered audio accessory, using the worse case configuration from above.
- Assessment of the 851-870 MHz across the band of each applicable offered antenna using the worst case configuration from above.

PSM assessment (Page 27 of 44; Tables 7)

- Assessment of each offered PSM accessory at the center of the 700 MHz and 800 MHz bands using the offered PSM antenna and the worst case battery overall.
- Assessment across each band using worst case PSM from above.

Shortened scan assessment (Page 28 of 44; Tables 8)

- 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 offered PSMs were positioned against the phantom.

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 at least 15cm. 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: 20.5-22.4°C Avg. 21.8°C
Relative Humidity	30 - 70 %	Range: 49.1-62.7% Avg. 55.1%
Tissue Temperature	NA	Range: 19.3-20.8°C Avg. 20.05°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 SAR 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 per band (in bold with *). The worst case test configurations observed for each body location were assessed using the full DASY4™ coarse and 5x5x7 zoom methodology and they are summarized in the worst case 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.

Table 1

Assessments at the Body - 764-776 MHz Band												
Run Number/SN	Antenna	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)
Antenna search assessments												
MeC-Ab-080627-05/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	NTN8266B	HMN4104A	2.92	-0.194	1.760	1.260	0.942	0.675
MeC-Ab-080627-10/ TU098JW07N	NAF5085A	770.0250	NNTN7038A	Against phantom	NTN8266B	HMN4104A	2.93	-0.261	1.200	0.862	0.65	0.47
Assessment of offered battery and with applicable body worn accessories at center frequency												
HvH-Ab-080628-11/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	HLN6875A	HMN4104A	2.92	-0.108	0.572	0.416	0.30	0.22
HvH-Ab-080628-14/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	PMLN5331A w/ NTN8266B	HMN4104A	2.93	-0.121	0.851	0.615	0.45	0.32
HvH-Ab-080628-12/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	PMLN5322A	HMN4104A	2.92	-0.204	1.040	0.750	0.56	0.40
HvH-Ab-080628-13/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	PMLN5323A	HMN4104A	2.92	-0.169	0.467	0.340	0.25	0.18
HvH-Ab-080628-15/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	PMLN5324A w/ PMLN5407A 2.5" swivel	HMN4104A	2.91	-0.215	0.248	0.178	0.13	0.10
MeC-Ab-080628-16/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	HLN6875A	HMN4104A	2.93	-0.258	0.578	0.420	0.31	0.23
MeC-Ab-080628-17/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	NTN8266B	HMN4104A	2.90	-0.234	1.720	1.230	0.936	0.669
MeC-Ab-080628-18/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5331A w/ NTN8266B	HMN4104A	2.92	-0.150	0.752	0.544	0.40	0.29
MeC-Ab-080628-19/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5328A	HMN4104A	2.91	-0.198	1.310	0.945	0.70	0.51
MeC-Ab-080628-20/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5329A	HMN4104A	2.90	-0.240	0.503	0.367	0.27	0.20
MeC-Ab-080628-21/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5330A w/ PMLN5407A 2.5" swivel	HMN4104A	2.92	-0.152	0.192	0.141	0.10	0.07
MeC-Ab-080628-22/ TU098JW07N	NAF5080A	770.0250	NNTN7035A	Against phantom	HLN6875A	HMN4104A	2.91	-0.148	0.582	0.423	0.31	0.22
MeC-Ab-080628-23/ TU098JW07N	NAF5080A	770.0250	NNTN7035A	Against phantom	NTN8266B	HMN4104A	2.90	-0.211	1.640	1.170	0.89	0.63
MeC-Ab-080628-24/ TU098JW07N	NAF5080A	770.0250	NNTN7035A	Against phantom	PMLN5331A w/ NTN8266B	HMN4104A	2.94	-0.147	0.750	0.543	0.39	0.29
MeC-Ab-080628-25/ TU098JW07N	NAF5080A	770.0250	NNTN7035A	Against phantom	PMLN5328A	HMN4104A	2.92	-0.216	1.210	0.869	0.65	0.47
MeC-Ab-080628-26/ TU098JW07N	NAF5080A	770.0250	NNTN7035A	Against phantom	PMLN5329A	HMN4104A	2.90	-0.238	0.489	0.356	0.27	0.19
MeC-Ab-080628-27/ TU098JW07N	NAF5080A	770.0250	NNTN7035A	Against phantom	PMLN5330A w/ PMLN5407A 2.5" swivel	HMN4104A	2.93	-0.220	0.165	0.121	0.09	0.06

Table 1 Continued

Assessments at the Body - 764-776 MHz Band												
Run Number/SN	Antenna	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)
Assessment of additional carry cases with worst case long and short battery												
MeC-Ab-080628-28/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5330A w/ PMLN5408A 2.75" swivel	HMN4104A	2.91	-0.248	0.219	0.154	0.12	0.08
MeC-Ab-080628-29/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5330A w/ PMLN5409A 3.0" swivel	HMN4104A	2.94	-0.175	0.204	0.144	0.11	0.08
MeC-Ab-080628-30/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5331A w/ HLN6875A	HMN4104A	2.92	-0.171	0.347	0.254	0.19	0.14
HvH-Ab-080629-02/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	PMLN5324A w/ PMLN5408A 2.75" swivel	HMN4104A	2.93	-0.377	0.222	0.160	0.12	0.09
HvH-Ab-080629-03/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	PMLN5324A w/ PMLN5409A 3.0" swivel	HMN4104A	2.93	-0.148	0.266	0.191	0.14	0.10
HvH-Ab-080629-04/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	PMLN5331A w/ HLN6875A	HMN4104A	2.92	-0.179	0.366	0.267	0.20	0.14
Assessment of offered audio accessories with worst case configuration.												
MeC-Ab-080701-18/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	NTN8266B	PMLN5275A	2.91	-0.117	1.750	1.250	0.92	0.66
MeC-Ab-080701-19/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	NTN8266B	PMLN5111A	2.93	-0.128	1.850	1.330	0.97	0.70
MeC-Ab-080701-20/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	NTN8266B	RMN5058A	2.92	-0.116	1.830	1.310	0.96	0.69
MeC-Ab-080701-21/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	NTN8266B	RLN5882A	2.92	-0.130	1.760	1.250	0.93	0.66
MeC-Ab-080701-22/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	NTN8266B	PMMN4024 A	2.93	-0.137	2.070	1.480	1.09	0.78
Assessment of other applicable frequencies with each offered antenna												
ErC-Ab-080702-02/ TU098JW07N	NAF5080A	764.0250	NNTN7038A	Against phantom	NTN8266B	PMMN4024 A	2.97	-0.162	1.580	1.130	0.83	0.59
ErC-Ab-080702-03/ TU098JW07N	NAF5080A	775.9750	NNTN7038A	Against phantom	NTN8266B	PMMN4024 A	2.96	-0.083	1.790	1.280	0.92	0.66
HvH-Ab-080702-04/ TU098JW07N	NAF5085A	764.0250	NNTN7038A	Against phantom	NTN8266B	PMMN4024 A	2.96	-0.448	1.360	0.970	0.76	0.54
HvH-Ab-080707-03/ TU098JW07N	NAF5085A	770.0250	NNTN7038A	Against phantom	NTN8266B	PMMN4024 A	3.01	-0.432	1.320	0.946	0.73	0.52
HvH-Ab-080702-05/ TU098JW07N	NAF5085A	775.9750	NNTN7038A	Against phantom	NTN8266B	PMMN4024 A	2.96	-0.330	1.320	0.945	0.72	0.51

Table 1 Continued

Assessments at the Body – 764-776 MHz Band												
Run Number/SN	Antenna	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)
Assessment of the offered carry strap at 3 sides of each applicable carry case using the worst case audio accessories per battery type												
HvH-Ab-080709-14/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5330A /NTN5243A w/o loop Back side	PMMN4024 A	2.99	-0.180	3.020	2.05	1.57	1.07
HvH-Ab-080702-06/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5330A /NTN5243A w/o loop Back side	HMN4104A	2.98	-0.201	2.750	1.890	1.44	0.99
HvH-Ab-080702-07/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5330A /NTN5243A w/o loop Acc'y side	HMN4104A	2.98	-0.243	1.290	0.922	0.68	0.49
HvH-Ab-080702-08/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5330A /NTN5243A w/o loop PTT side	HMN4104A	2.97	-0.240	0.458	0.334	0.24	0.18
HvH-Ab-080703-08/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5329A /NTN5243A fixed loop side	HMN4104A	2.97	-0.155	0.577	0.419	0.30	0.22
HvH-Ab-080702-09/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5329A /NTN5243A fixed loop PTT side	HMN4104A	2.98	-0.162	0.451	0.328	0.23	0.17
HvH-Ab-080702-10/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5329A /NTN5243A fixed loop Acc'y side	HMN4104A	2.98	-0.214	1.050	0.756	0.55	0.40
MeC-Ab-080702-20/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5328A /NTN5243A fixed loop side	HMN4104A	2.94	-0.239	1.040	0.751	0.56	0.40
HvH-Ab-080702-11/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5328A /NTN5243A fixed loop PTT side	HMN4104A	2.98	-0.190	0.478	0.348	0.25	0.18
HvH-Ab-080702-12/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	Against phantom	PMLN5328A /NTN5243A fixed loop Acc'y side	HMN4104A	2.98	-0.302	1.040	0.733	0.56	0.39
HvH-Ab-080702-13/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	PMLN5324A /NTN5243A w/o loop Back side	PMMN4024 A	2.95	0.151	2.620	1.800	1.33	0.91
HvH-Ab-080702-14/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	PMLN5324A /NTN5243A w/o loop PTT side	PMMN4024 A	2.97	-0.146	0.707	0.438	0.37	0.23
MeC-Ab-080702-15/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	PMLN5324A /NTN5243A w/o loop Acc'y side	PMMN4024 A	2.95	-0.026	0.637	0.455	0.32	0.23
HvH-Ab-080703-09/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	PMLN5323A /NTN5243A fixed loop side	PMMN4024 A	2.98	-0.139	0.974	0.704	0.50	0.36
MeC-Ab-080702-18/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	PMLN5323A /NTN5243A fixed loop PTT side	PMMN4024 A	2.95	-0.129	0.458	0.334	0.24	0.17

Table 1 Continued

Assessments at the Body – 764-776 MHz Band												
Run Number/SN	Antenna	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)
Assessment of the offered carry strap at 3 sides of each applicable carry case using the worst case audio accessory per battery type - Continued												
MeC-Ab-080702-16/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	PMLN5323A /NTN5243A fixed loop Acc'y side	PMMN4024 A	2.96	-0.235	0.444	0.313	0.24	0.17
MeC-Ab-080702-21/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	PMLN5322A /NTN5243A fixed loop side	PMMN4024 A	2.92	-0.127	0.978	0.706	0.52	0.37
MeC-Ab-080702-19/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	PMLN5322A /NTN5243A fixed loop PTT side	PMMN4024 A	2.94	-0.150	0.494	0.346	0.26	0.18
MeC-Ab-080702-17/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	Against phantom	PMLN5322A /NTN5243A fixed loop Acc'y side	PMMN4024 A	2.92	-0.150	0.548	0.395	0.29	0.21
Assessments at 2.5cm with worst case configuration excluding PTT and accessory sides from carry strap assessment												
*HvH-Ab-080710-06/TU098JW07M	NAF5080A	770.0250	NNTN7037A	DUT Back w/ ant. 2.5cm	None	PMMN4024 A	2.89	-0.204	3.870	2.730	2.10	1.48
MeC-Ab-080709-17/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	DUT Front 2.5cm	None	PMMN4024 A	2.95	-0.010	1.350	0.970	0.69	0.49

Table 2

Assessments at the Face – 764-776 MHz Band												
Run Number/SN	Antenna	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)
Assessment of applicable offered antennas												
MeC-Face-080630-10/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	DUT Front 2.5cm	None	None	2.91	-0.245	1.600	1.150	0.87	0.63
HvH-Face-080630-06/ TU098JW07N	NAF5085A	770.0250	NNTN7038A	DUT Front 2.5cm	None	None	2.92	-0.265	0.884	0.636	0.48	0.35
Assessment of other offered batteries with worst case antenna												
MeC-Face-080630-13/ TU098JW07N	NAF5080A	770.0250	NNTN7037A	DUT Front 2.5cm	None	None	2.93	-0.251	1.460	1.050	0.79	0.57
MeC-Face-080630-14/ TU098JW07N	NAF5080A	770.0250	NNTN7035A	DUT Front 2.5cm	None	None	2.91	-0.229	1.400	1.010	0.76	0.55
Assessment of applicable audio accessories												
MeC-Face-080630-15/ TU098JW07N	NAF5080A	770.0250	NNTN7038A	DUT Front 2.5cm	None	RLN5879A	2.92	-0.17	1.260	0.907	0.67	0.48
Assessment of other applicable frequencies for each offered antenna												
MeC-Face-080630-16/ TU098JW07N	NAF5080A	764.0250	NNTN7038A	DUT Front 2.5cm	None	None	2.94	-0.243	1.480	1.070	0.80	0.58
*MeC-Face-080706-10/TU098JW07M	NAF5080A	775.9750	NNTN7038A	DUT Front 2.5cm	None	None	2.94	-0.105	1.810	1.300	0.94	0.68
HvH-Face-080701-04/ TU098JW07N	NAF5085A	764.0250	NNTN7038A	DUT Front 2.5cm	None	None	2.93	-0.310	0.919	0.663	0.50	0.36
HvH-Face-080701-05/ TU098JW07N	NAF5085A	775.9750	NNTN7038A	DUT Front 2.5cm	None	None	2.92	-0.325	0.898	0.647	0.50	0.36

Table 3

Assessments at the Body - 794-824 MHz Band												
Run Number/SN	Antenna	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)
Antenna search assessments												
MeC-Ab-080703-16/ TU098JW07N	NAF5080A	808.5000	NNTN7038A	Against phantom	NTN8266B	HMN4104A	3.70	-0.109	3.450	2.450	1.77	1.26
MeC-Ab-080627-02/ TU098JW07N	NAF5037A	808.5000	NNTN7038A	Against phantom	NTN8266B	HMN4104A	3.63	-0.154	2.990	2.130	1.55	1.10
MeC-Ab-080627-11/ TU098JW07N	NAF5085A	808.5000	NNTN7038A	Against phantom	NTN8266B	HMN4104A	3.65	-0.409	1.240	0.887	0.68	0.49
Assessment of offered battery and with applicable body worn accessories at center frequency												
HvH-Ab-080701-07/ TU098JW07N	NAF5080A	808.5000	NNTN7038A	Against phantom	HLN6875A	HMN4104A	3.60	-0.167	1.020	0.738	0.53	0.38
HvH-Ab-080701-08/ TU098JW07N	NAF5080A	808.5000	NNTN7038A	Against phantom	PMLN5331A w/ NTN8266B	HMN4104A	3.66	-0.132	1.520	1.090	0.78	0.56
HvH-Ab-080701-09/ TU098JW07N	NAF5080A	808.5000	NNTN7038A	Against phantom	PMLN5322A	HMN4104A	3.67	-0.110	1.840	1.320	0.94	0.68
HvH-Ab-080701-10/ TU098JW07N	NAF5080A	808.5000	NNTN7038A	Against phantom	PMLN5323A	HMN4104A	3.67	-0.149	0.874	0.634	0.45	0.33
MeC-Ab-080701-11/ TU098JW07N	NAF5080A	808.5000	NNTN7038A	Against phantom	PMLN5324A w/ PMLN5407A 2.5" swivel	HMN4104A	3.67	-0.208	0.360	0.270	0.19	0.14
MeC-Ab-080701-12/ TU098JW07N	NAF5080A	808.5000	NNTN7037A	Against phantom	HLN6875A	HMN4104A	3.62	-0.186	1.010	0.730	0.53	0.38
MeC-Ab-080701-14/ TU098JW07N	NAF5080A	808.5000	NNTN7037A	Against phantom	NTN8266B	HMN4104A	3.63	-0.109	3.040	2.170	1.56	1.11
MeC-Ab-080701-16/ TU098JW07N	NAF5080A	808.5000	NNTN7037A	Against phantom	PMLN5331A w/ NTN8266B	HMN4104A	3.66	-0.148	1.330	0.960	0.69	0.50
HvH-Ab-080703-02/ TU098JW07N	NAF5080A	808.5000	NNTN7037A	Against phantom	PMLN5328A	HMN4104A	3.70	-0.134	2.360	1.690	1.22	0.87
HvH-Ab-080703-04/ TU098JW07N	NAF5080A	808.5000	NNTN7037A	Against phantom	PMLN5329A	HMN4104A	3.73	-0.177	0.943	0.684	0.49	0.36
HvH-Ab-080703-06/ TU098JW07N	NAF5080A	808.5000	NNTN7037A	Against phantom	PMLN5330A w/ PMLN5407A 2.5" swivel	HMN4104A	3.68	-0.304	0.340	0.249	0.18	0.13
MeC-Ab-080701-13/ TU098JW07N	NAF5080A	808.5000	NNTN7035A	Against phantom	HLN6875A	HMN4104A	3.65	-0.242	1.050	0.760	0.56	0.40
MeC-Ab-080701-15/ TU098JW07N	NAF5080A	808.5000	NNTN7035A	Against phantom	NTN8266B	HMN4104A	3.68	-0.085	2.840	2.030	1.45	1.04
MeC-Ab-080701-17/ TU098JW07N	NAF5080A	808.5000	NNTN7035A	Against phantom	PMLN5331A w/ NTN8266B	HMN4104A	3.64	-0.120	1.360	0.980	0.70	0.50
HvH-Ab-080703-03/ TU098JW07N	NAF5080A	808.5000	NNTN7035A	Against phantom	PMLN5328A	HMN4104A	3.63	-0.122	2.380	1.700	1.22	0.87
HvH-Ab-080703-05/ TU098JW07N	NAF5080A	808.5000	NNTN7035A	Against phantom	PMLN5329A	HMN4104A	3.64	-0.225	0.963	0.698	0.51	0.37
HvH-Ab-080703-07/ TU098JW07N	NAF5080A	808.5000	NNTN7035A	Against phantom	PMLN5330A w/ PMLN5407A 2.5" swivel	HMN4104A	3.63	-0.320	0.339	0.248	0.18	0.13

Table 3 Continued

Assessments at the Body - 794-824 MHz Band												
Run Number/SN	Antenna	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)
Assessment of additional carry cases with worst case long and short battery												
HvH-Ab-080703-10/ TU098JW07N	NAF5080A	808.5000	NNTN7037A	Against phantom	PMLN5330A w/ PMLN5408A 2.75" swivel	HMN4104A	3.73	-0.330	0.297	0.218	0.16	0.12
HvH-Ab-080703-11/ TU098JW07N	NAF5080A	808.5000	NNTN7037A	Against phantom	PMLN5330A w/ PMLN5409A 3.0" swivel	HMN4104A	3.75	-0.340	0.275	0.201	0.15	0.11
HvH-Ab-080703-12/ TU098JW07N	NAF5080A	808.5000	NNTN7037A	Against phantom	PMLN5331A w/ HLN6875A	HMN4104A	3.75	-0.153	0.661	0.480	0.34	0.25
MeC-Ab-080703-13/ TU098JW07N	NAF5080A	808.5000	NNTN7038A	Against phantom	PMLN5324A w/ PMLN5408A 2.75" swivel	HMN4104A	3.74	-0.197	0.231	0.165	0.12	0.09
MeC-Ab-080703-14/ TU098JW07N	NAF5080A	808.5000	NNTN7038A	Against phantom	PMLN5324A w/ PMLN5409A 3.0" swivel	HMN4104A	3.75	-0.160	0.223	0.163	0.12	0.08
MeC-Ab-080703-15/ TU098JW07N	NAF5080A	808.5000	NNTN7038A	Against phantom	PMLN5331A w/ HLN6875A	HMN4104A	3.75	-0.150	0.624	0.455	0.32	0.24
Assessment of offered audio accessories with worst case configuration.												
MeC-Ab-080703-17/ TU098JW07N	NAF5080A	808.5000	NNTN7038A	Against phantom	NTN8266B	PMLN5275A	3.74	-0.116	3.280	2.340	1.68	1.20
MeC-Ab-080703-18/ TU098JW07N	NAF5080A	808.5000	NNTN7038A	Against phantom	NTN8266B	PMLN5111A	3.72	-0.114	3.020	2.150	1.55	1.10
MeC-Ab-080703-19/ TU098JW07N	NAF5080A	808.5000	NNTN7038A	Against phantom	NTN8266B	RMN5058A	3.73	-0.106	3.540	2.520	1.81	1.29
MeC-Ab-080703-20/ TU098JW07N	NAF5080A	808.5000	NNTN7038A	Against phantom	NTN8266B	RLN5882A	3.70	-0.099	3.000	2.140	1.53	1.09
MeC-Ab-080703-21/ TU098JW07N	NAF5080A	808.5000	NNTN7038A	Against phantom	NTN8266B	PMMN4024 A	3.72	-0.095	3.030	2.160	1.55	1.10
Assessment of other applicable frequencies with each offered antenna												
MeC-Ab-080705-02/ TU098JW07N	NAF5037A	808.5000	NNTN7038A	Against phantom	NTN8266B	RMN5058A	3.73	-0.188	2.970	2.120	1.55	1.11
MeC-Ab-080705-03/ TU098JW07N	NAF5037A	823.9750	NNTN7038A	Against phantom	NTN8266B	RMN5058A	3.70	-0.259	3.610	2.570	1.92	1.36
MeC-Ab-080705-04/ TU098JW07N	NAF5085A	794.0250	NNTN7038A	Against phantom	NTN8266B	RMN5058A	3.09	-0.301	1.160	0.826	0.62	0.44
HvH-Ab-080707-04/ TU098JW07N	NAF5085A	808.5000	NNTN7038A	Against phantom	NTN8266B	RMN5058A	3.80	-0.456	1.19	0.85	0.66	0.47
MeC-Ab-080705-05/ TU098JW07N	NAF5085A	823.9750	NNTN7038A	Against phantom	NTN8266B	RMN5058A	3.71	-0.547	1.230	0.879	0.70	0.50
MeC-Ab-080705-06/ TU098JW07N	NAF5080A	794.0250	NNTN7038A	Against phantom	NTN8266B	RMN5058A	3.07	-0.108	2.260	1.620	1.16	0.83
MeC-Ab-080703-19/ TU098JW07N	NAF5080A	808.5000	NNTN7038A	Against phantom	NTN8266B	RMN5058A	3.73	-0.106	3.54	2.52	1.81	1.29
MeC-Ab-080705-07/ TU098JW07N	NAF5080A	823.9750	NNTN7038A	Against phantom	NTN8266B	RMN5058A	3.73	-0.131	4.190	2.990	2.16	1.54

Table 3 Continued

Assessments at the Body – 794-824 MHz Band												
Run Number/SN	Antenna	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)
Assessment of the offered carry strap at 3 sides of each applicable carry case using the worst case audio accessory per battery type												
HvH-Ab-080711-02/ TU098JW07N	NAF5080A	823.9750	NNTN7037A	Against phantom	PMLN5330A /NTN5243A w/o loop Back side	RMN5058A	3.77	-1.030	7.380	5.030	4.68	3.19
MeC-Ab-080705-08/ TU098JW07N	NAF5080A	823.9750	NNTN7037A	Against phantom	PMLN5330A /NTN5243A w/o loop Back side	HMN4104A	3.72	-0.840	5.640	3.830	3.42	2.33
HvH-Ab-080705-16/ TU098JW07N	NAF5080A	823.9750	NNTN7037A	Against phantom	PMLN5330A /NTN5243A w/o loop PTT side	HMN4104A	3.69	-0.918	2.910	1.980	1.80	1.22
HvH-Ab-080705-22/ TU098JW07N	NAF5080A	823.9750	NNTN7037A	Against phantom	PMLN5330A /NTN5243A w/o loop Acc'y side	HMN4104A	3.70	-0.975	2.730	1.950	1.71	1.22
MeC-Ab-080705-09/ TU098JW07N	NAF5080A	823.9750	NNTN7037A	Against phantom	PMLN5329A /NTN5243A fixed loop side	HMN4104A	3.70	-1.040	1.080	0.782	0.69	0.50
HvH-Ab-080705-17/ TU098JW07N	NAF5080A	823.9750	NNTN7037A	Against phantom	PMLN5329A /NTN5243A fixed loop PTT side	HMN4104A	3.72	-1.070	0.935	0.679	0.60	0.43
HvH-Ab-080705-23/ TU098JW07N	NAF5080A	823.9750	NNTN7037A	Against phantom	PMLN5329A /NTN5243A fixed loop Acc'y side	HMN4104A	3.73	-0.720	2.690	1.890	1.59	1.12
MeC-Ab-080705-10/ TU098JW07N	NAF5080A	823.9750	NNTN7037A	Against phantom	PMLN5328A /NTN5243A fixed loop	HMN4104A	3.72	-0.418	2.150	1.550	1.18	0.85
HvH-Ab-080705-18/ TU098JW07N	NAF5080A	823.9750	NNTN7037A	Against phantom	PMLN5328A /NTN5243A fixed loop PTT side	HMN4104A	3.73	-0.851	0.958	0.694	0.58	0.42
HvH-Ab-080707-05/ TU098JW07N	NAF5080A	823.975	NNTN7037A	Against phantom	PMLN5328A /NTN5243A fixed loop Acc'y side	HMN4104A	3.76	-1.170	2.640	1.880	1.73	1.23
HvH-Ab-080705-11/ TU098JW07N	NAF5080A	823.9750	NNTN7038A	Against phantom	PMLN5324A /NTN5243A w/o loop back	RMN5058A	3.73	-0.736	5.060	3.480	3.00	2.06
CM-Ab-080705-25/ TU098JW07N	NAF5080A	823.9750	NNTN7038A	Against phantom	PMLN5324A /NTN5243A w/o loop Acc'y side	RMN5058A	3.77	-1.310	2.490	1.710	1.68	1.16
HvH-Ab-080705-19/ TU098JW07N	NAF5080A	823.9750	NNTN7038A	Against phantom	PMLN5324A /NTN5243A w/o loop PTT side	RMN5058A	3.72	-0.399	1.900	1.300	1.04	0.71
HvH-Ab-080705-12/ TU098JW07N	NAF5080A	823.9750	NNTN7038A	Against phantom	PMLN5323A /NTN5243A fixed loop side	RMN5058A	3.69	-0.706	1.040	0.756	0.61	0.44
HvH-Ab-080705-20/ TU098JW07N	NAF5080A	823.9750	NNTN7038A	Against phantom	PMLN5323A /NTN5243A fixed loop PTT side	RMN5058A	3.72	-0.478	0.967	0.703	0.54	0.39

Table 3 Continued

Assessments at the Body – 794-824 MHz Band												
Run Number/SN	Antenna	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)
Assessment of the offered carry strap at 3 sides of each applicable carry case using the worst case audio accessory per battery type - Continued												
CM-Ab-080705-26/ TU098JW07N	NAF5080A	823.9750	NNTN7038A	Against phantom	PMLN5323A /NTN5243A fixed loop Acc'y side	RMN5058A	3.79	-0.764	2.070	1.230	1.23	0.73
HvH-Ab-080705-13/ TU098JW07N	NAF5080A	823.9750	NNTN7038A	Against phantom	PMLN5322A /NTN5243A fixed loop side	RMN5058A	3.70	-0.442	2.160	1.560	1.20	0.86
HvH-Ab-080705-21/ TU098JW07N	NAF5080A	823.9750	NNTN7038A	Against phantom	PMLN5322A /NTN5243A fixed loop PTT side	RMN5058A	3.72	-0.485	0.944	0.685	0.53	0.38
CM-Ab-080705-27/ TU098JW07N	NAF5080A	823.9750	NNTN7038A	Against phantom	PMLN5322A /NTN5243A fixed loop Acc'y side	RMN5058A	3.77	-0.893	1.590	1.140	0.98	0.70
Assessments at 2.5cm with worst case configuration excluding PTT and accessory side positions from carry strap assessment												
HvH-Ab-080711-07/ TU098JW07N	NAF5080A	823.9750	NNTN7037A	DUT Back w/ ant. 2.5cm	None	RMN5058A	3.77	-0.227	8.380	5.860	4.41	3.09
CM-Ab-080705-30/ TU098JW07N	NAF5080A	823.9750	NNTN7037A	DUT Front 2.5cm	None	RMN5058A	3.75	-0.198	2.340	1.680	1.22	0.88

Table 4

Assessments at the Face – 794-824 MHz Band												
Run Number/SN	Antenna	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)
Assessment of offered antennas												
MeC-Face-080706-05/ TU098JW07N	NAF5037A	808.5000	NNTN7038A	DUT front 2.5cm	None	None	3.73	-0.308	2.280	1.640	1.22	0.88
MeC-Face-080630-07/ TU098JW07N	NAF5085A	808.5000	NNTN7038A	DUT front 2.5cm	None	None	3.73	-0.451	0.999	0.717	0.55	0.40
MeC-Face-080630-11/ TU098JW07N	NAF5080A	808.5000	NNTN7038A	DUT front 2.5cm	None	None	3.72	-0.13	2.340	1.680	1.21	0.87
Assessment of offered batteries with worst case antenna												
MeC-Face-080706-07/ TU098JW07N	NAF5037A	808.5000	NNTN7037A	DUT front 2.5cm	None	None	3.74	-0.099	2.420	1.730	1.24	0.89
MeC-Face-080706-08/ TU098JW07N	NAF5037A	808.5000	NNTN7035A	DUT front 2.5cm	None	None	3.73	-0.132	2.220	1.590	1.14	0.82
Assessment of applicable audio accessories												
MeC-Face-080706-09/ TU098JW07N	NAF5037A	808.5000	NNTN7037A	DUT front 2.5cm	None	RLN5879A	3.73	-0.21	1.920	1.370	1.01	0.72

Table 4 Continued

Assessments at the Face – 794-824 MHz Band												
Run Number/SN	Antenna	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)
Assessment of other applicable frequencies for each offered antenna												
MeC-Face-080706-07/ TU098JW07N	NAF5037A	808.5000	NNTN7037A	DUT front 2.5cm	None	None	3.74	-0.0993	2.420	1.730	1.24	0.89
HvH-Face-080706-13/ TU098JW07N	NAF5037A	823.9750	NNTN7037A	DUT front 2.5cm	None	None	3.73	0.00493	3.180	2.280	1.59	1.14
HvH-Face-080706-14/ TU098JW07N	NAF5080A	794.0250	NNTN7037A	DUT front 2.5cm	None	None	3.08	-0.0372	1.690	1.210	1.00	0.71
CM-Face-080706-24/ TU098JW07N	NAF5080A	808.5000	NNTN7037A	DUT front 2.5cm	None	None	3.77	-0.196	2.490	1.780	1.30	0.93
*HvH-Face-080706-18/ TU098JW07M	NAF5080A	823.9750	NNTN7037A	DUT front 2.5cm	None	None	3.75	-0.102	3.410	2.430	1.75	1.24
HvH-Face-080706-19/ TU098JW07N	NAF5085A	794.0250	NNTN7037A	DUT front 2.5cm	None	None	3.10	-0.289	0.981	0.705	0.61	0.44
CM-Face-080706-25/ TU098JW07N	NAF5085A	808.5000	NNTN7037A	DUT front 2.5cm	None	None	3.76	-0.480	1.040	0.746	0.58	0.42
HvH-Face-080706-20/ TU098JW07N	NAF5085A	823.9750	NNTN7037A	DUT front 2.5cm	None	None	3.72	-0.606	1.050	0.753	0.60	0.43

Table 5

Assessments at the Body - 851-870 MHz Band												
Run Number/SN	Antenna	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)
Antenna search assessments												
MeC-Ab-080627-09/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	NTN8266B	HMN4104A	3.64	-1.20	4.980	3.540	3.28	2.33
MeC-Ab-080627-07/ TU098JW07N	NAF5080A	860.0250	NNTN7038A	Against phantom	NTN8266B	HMN4104A	3.65	-1.15	3.650	2.590	2.38	1.69
MeC-Ab-080627-12/ TU098JW07N	NAF5085A	860.0250	NNTN7038A	Against phantom	NTN8266B	HMN4104A	3.63	-1.22	0.816	0.581	0.54	0.38
Assessment of offered battery and with applicable body worn accessories at center frequency												
HvH-Ab-080707-06/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	HLN6875A	HMN4104A	3.78	-1.22	1.210	0.873	0.80	0.58
HvH-Ab-080707-07/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	PMLN5331A w/ NTN8266B	HMN4104A	3.79	-1.13	1.910	1.360	1.24	0.88
HvH-Ab-080707-08/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	PMLN5322A	HMN4104A	3.78	-1.16	2.290	1.640	1.50	1.07
HvH-Ab-080707-09/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	PMLN5323A	HMN4104A	3.77	-1.46	0.915	0.662	0.64	0.46
HvH-Ab-080707-10/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	PMLN5324A w/ PMLN5407A 2.5" swivel	HMN4104A	3.77	-1.03	0.399	0.290	0.25	0.18
CM-Ab-080707-11/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	HLN6875A	HMN4104A	3.76	-1.04	1.270	0.913	0.81	0.58
CM-Ab-080707-12/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	NTN8266B	HMN4104A	3.77	-1.14	4.000	2.830	2.60	1.84
CM-Ab-080707-13/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	PMLN5331A w/ NTN8266B	HMN4104A	3.77	-0.917	1.47	1.060	0.91	0.65
CM-Ab-080707-14/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	PMLN5328A	HMN4104A	3.78	-1.19	2.310	1.650	1.52	1.09
CM-Ab-080707-15/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	PMLN5329A	HMN4104A	3.78	-1.28	0.967	0.696	0.65	0.47
CM-Ab-080707-16/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	PMLN5330A w/ PMLN5407A 2.5" swivel	HMN4104A	3.77	-1.20	0.295	0.215	0.19	0.14
CM-Ab-080707-17/ TU098JW07N	NAF5037A	860.0250	NNTN7035A	Against phantom	HLN6875A	HMN4104A	3.76	-0.936	1.100	0.789	0.68	0.49
CM-Ab-080707-18/ TU098JW07N	NAF5037A	860.0250	NNTN7035A	Against phantom	NTN8266B	HMN4104A	3.75	-1.00	3.610	2.560	2.27	1.61
CM-Ab-080707-19/ TU098JW07N	NAF5037A	860.0250	NNTN7035A	Against phantom	PMLN5331A w/ NTN8266B	HMN4104A	3.78	-0.920	1.410	1.020	0.87	0.63
CM-Ab-080707-20/ TU098JW07N	NAF5037A	860.0250	NNTN7035A	Against phantom	PMLN5328A	HMN4104A	3.77	-1.15	2.220	1.590	1.45	1.04
CM-Ab-080707-21/ TU098JW07N	NAF5037A	860.0250	NNTN7035A	Against phantom	PMLN5329A	HMN4104A	3.76	-0.879	1.110	0.798	0.68	0.49
CM-Ab-080707-22/ TU098JW07N	NAF5037A	860.0250	NNTN7035A	Against phantom	PMLN5330A w/ PMLN5407A 2.5" swivel	HMN4104A	3.76	-0.946	0.314	0.228	0.20	0.14

Table 5 Continued

Assessments at the Body - 851-870 MHz Band												
Run Number/SN	Antenna	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)
Assessment of additional carry cases with worst case long and short battery												
CM-Ab-080707-23/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	PMLN5330A w/ PMLN5408A 2.75" swivel	HMN4104A	3.75	-0.903	0.315	0.229	0.19	0.14
HvH-Ab-080708-02/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	PMLN5330A w/ PMLN5409A 3.0" swivel	HMN4104A	3.75	-1.19	0.281	0.204	0.18	0.13
HvH-Ab-080708-03/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	PMLN5331A w/ HLN6875	HMN4104A	3.78	-1.23	0.673	0.486	0.45	0.32
HvH-Ab-080708-04/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	PMLN5324A w/ PMLN5408A 2.75" swivel	HMN4104A	3.73	-1.05	0.280	0.205	0.18	0.13
HvH-Ab-080708-05/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	PMLN5324A w/ PMLN5409A 3.0" swivel	HMN4104A	3.73	-1.03	0.263	0.191	0.17	0.12
HvH-Ab-080708-06/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	PMLN5331A w/ HLN6875A	HMN4104A	3.73	-1.06	0.731	0.528	0.47	0.34
Assessment of offered audio accessories with worst case configuration.												
HvH-Ab-080708-07/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	NTN8266B	PMLN5275A	3.74	-1.06	4.790	3.380	3.06	2.16
HvH-Ab-080708-08/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	NTN8266B	PMLN5111A	3.75	-1.080	4.910	3.470	3.15	2.22
HvH-Ab-080708-09/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	NTN8266B	RMN5058A	3.74	-1.15	4.770	3.370	3.11	2.20
HvH-Ab-080708-10/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	NTN8266B	RLN5882A	3.75	-1.03	4.820	3.410	3.06	2.16
HvH-Ab-080708-11/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	NTN8266B	PMMN4024 A	3.75	-0.974	4.880	3.450	3.05	2.16
Assessment of other applicable frequencies with each offered antenna												
HvH-Ab-080708-12/ TU098JW07N	NAF5037A	851.0250	NNTN7038A	Against phantom	NTN8266B	HMN4104A	3.77	-1.09	4.870	3.450	3.13	2.22
MeC-Ab-080627-09/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	NTN8266B	HMN4104A	3.64	-1.20	4.980	3.540	3.28	2.33
HvH-Ab-080708-13/ TU098JW07N	NAF5037A	869.9750	NNTN7038A	Against phantom	NTN8266B	HMN4104A	3.78	-1.14	4.750	3.350	3.09	2.18
HvH-Ab-080708-14/ TU098JW07N	NAF5085A	851.0250	NNTN7038A	Against phantom	NTN8266B	HMN4104A	3.73	-1.03	1.020	0.726	0.65	0.46
MeC-Ab-080627-12/ TU098JW07N	NAF5085A	860.0250	NNTN7038A	Against phantom	NTN8266B	HMN4104A	3.63	-1.22	0.816	0.581	0.54	0.38
MeC-Ab-080708-15/ TU098JW07N	NAF5085A	869.9750	NNTN7038A	Against phantom	NTN8266B	HMN4104A	3.82	-1.37	0.623	0.442	0.43	0.30
MeC-Ab-080708-16/ TU098JW07N	NAF5080A	851.0250	NNTN7038A	Against phantom	NTN8266B	HMN4104A	3.74	-1.10	3.970	2.820	2.56	1.82
MeC-Ab-080627-07/ TU098JW07N	NAF5080A	860.0250	NNTN7038A	Against phantom	NTN8266B	HMN4104A	3.65	-1.15	3.650	2.590	2.38	1.69
MeC-Ab-080708-17/ TU098JW07N	NAF5080A	869.9750	NNTN7038A	Against phantom	NTN8266B	HMN4104A	3.79	-1.29	3.570	2.530	2.40	1.70

Table 5 Continued

Assessments at the Body – 851-870 MHz Band												
Run Number/SN	Antenna	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)
Assessment of the offered carry strap at 3 sides of each applicable carry case using the worst case audio accessories per battery type												
MeC-Ab-080708-18/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	PMLN5330A /NTN5243A w/o loop Back side	HMN4104A	3.72	-1.27	8.330	5.650	5.58	3.78
HvH-Ab-080709-02/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	PMLN5330A /NTN5243A w/o loop PTT side	HMN4104A	3.76	-0.823	2.910	1.840	1.76	1.11
HvH-Ab-080709-08/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	PMLN5330A /NTN5243A w/o loop Acc'y side	HMN4104A	3.71	-0.794	1.950	1.370	1.17	0.82
MeC-Ab-080708-19/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	PMLN5329A /NTN5243A fixed loop side	HMN4104A	3.75	-1.43	0.990	0.715	0.69	0.50
HvH-Ab-080709-03/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	PMLN5329A /NTN5243A fixed loop PTT side	HMN4104A	3.72	-1.18	0.896	0.649	0.59	0.43
HvH-Ab-080709-09/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	PMLN5329A /NTN5243A fixed loop Acc'y side	HMN4104A	3.72	-1.31	2.590	1.850	1.75	1.25
MeC-Ab-080708-20/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	PMLN5328A /NTN5243A fixed loop side	HMN4104A	3.74	-1.55	1.850	1.320	1.32	0.94
HvH-Ab-080709-04/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	PMLN5328A /NTN5243A fixed loop PTT side	HMN4104A	3.76	-1.13	0.873	0.632	0.57	0.41
HvH-Ab-080709-10/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	Against phantom	PMLN5328A /NTN5243A fixed loop Acc'y side	HMN4104A	3.76	-1.45	2.420	1.720	1.69	1.20
MeC-Ab-080708-21/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	PMLN5324A /NTN5243A w/o loop back	HMN4104A	3.73	-1.48	5.180	3.510	3.64	2.47
HvH-Ab-080709-05/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	PMLN5324A /NTN5243A w/o loop PTT side	HMN4104A	3.73	-0.934	2.040	1.350	1.26	0.84
HvH-Ab-080709-11/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	PMLN5324A /NTN5243A w/o loop Acc'y side	HMN4104A	3.77	-1.05	2.120	1.510	1.35	0.96
MeC-Ab-080708-22/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	PMLN5323A /NTN5243A fixed loop side	HMN4104A	3.76	-1.15	0.895	0.648	0.58	0.42
HvH-Ab-080709-06/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	PMLN5323A /NTN5243A fixed loop PTT side	HMN4104A	3.74	-1.15	0.975	0.706	0.64	0.46

Table 5 Continued

Assessments at the Body – 764-776 MHz Band												
Run Number/SN	Antenna	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)
Assessment of the offered carry strap at 3 sides of each applicable carry case using the worst case audio accessory per battery type - Continued												
HvH-Ab-080709-12/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	PMLN5323A /NTN5243A fixed loop Acc'y side	HMN4104A	3.76	-1.31	2.180	1.560	1.47	1.05
MeC-Ab-080708-23/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	PMLN5322A /NTN5243A fixed loop side	HMN4104A	3.74	-1.25	1.640	1.190	1.09	0.79
HvH-Ab-080709-07/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	PMLN5322A /NTN5243A fixed loop PTT side	HMN4104A	3.74	-1.15	1.000	0.726	0.65	0.47
HvH-Ab-080709-13/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	Against phantom	PMLN5322A /NTN5243A fixed loop Acc'y side	HMN4104A	3.76	-1.38	2.030	1.450	1.39	1.00
Assessments at 2.5cm with worst case configuration excluding PTT and accessory sides from carry strap assessment												
*HvH-Ab-080711-03/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	DUT back w/ ant. 2.5cm	None	HMN4104A	3.75	-1.26	9.920	6.880	6.63	4.60
HvH-Ab-080711-05/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	DUT Front 2.5cm	None	HMN4104A	3.73	-1.23	3.580	2.550	2.38	1.69

Table 6

Assessments at the Face – 851-870 MHz Band												
Run Number/SN	Antenna	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)
Assessment of offered antennas												
MeC-Face-080706-06/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	DUT front 2.5cm	None	None	3.70	-1.19	3.870	2.770	2.54	1.82
MeC-Face-080630-08/ TU098JW07N	NAF5085A	860.0250	NNTN7038A	DUT front 2.5cm	None	None	3.71	-1.690	0.634	0.453	0.47	0.33
MeC-Face-080630-12/ TU098JW07N	NAF5080A	860.0250	NNTN7038A	DUT front 2.5cm	None	None	3.70	-1.15	3.120	2.230	2.03	1.45
Assessment of offered batteries with worst case antenna												
HvH-Face-080706-22/ TU098JW07N	NAF5037A	860.0250	NNTN7037A	DUT front 2.5cm	None	None	3.74	-1.11	3.310	2.380	2.14	1.54
CM-Face-080706-23/ TU098JW07N	NAF5037A	860.0250	NNTN7035A	DUT front 2.5cm	None	None	3.72	-1.17	3.300	2.360	2.16	1.54
Assessment of applicable audio accessories												
CM-Face-080706-26/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	DUT front 2.5cm	None	RLN5879A	3.78	-1.35	3.610	2.580	2.46	1.76

Table 6 Continued

Assessments at the Face – 851-870 MHz Band												
Run Number/SN	Antenna	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)
Assessment of other applicable frequencies for each offered antenna												
*MeC-Face-080714-06/ TU098JW07M	NAF5037A	851.0250	NNTN7038A	DUT front 2.5cm	None	None	3.66	-1.35	4.550	3.250	3.10	2.22
MeC-Face-080706-06/ TU098JW07N	NAF5037A	860.0250	NNTN7038A	DUT front 2.5cm	None	None	3.70	-1.19	3.870	2.770	2.54	1.82
CM-Face-080711-17/ TU098JW07N	NAF5037A	869.9750	NNTN7038A	DUT front 2.5cm	None	None	3.78	-0.986	3.380	2.420	2.12	1.52
CM-Face-080706-29/ TU098JW07N	NAF5085A	851.0250	NNTN7038A	DUT front 2.5cm	None	None	3.76	-0.949	0.801	0.571	0.50	0.36
MeC-Face-080630-08/ TU098JW07N	NAF5085A	860.0250	NNTN7038A	DUT front 2.5cm	None	None	3.70	-1.690	0.634	0.453	0.47	0.33
CM-Face-080706-30/ TU098JW07N	NAF5085A	869.9750	NNTN7038A	DUT front 2.5cm	None	None	3.78	-1.61	0.565	0.403	0.41	0.29
CM-Face-080706-31/ TU098JW07N	NAF5080A	851.0250	NNTN7038A	DUT front 2.5cm	None	None	3.75	-1.10	3.180	2.270	2.05	1.46
MeC-Face-080630-12/ TU098JW07N	NAF5080A	860.0250	NNTN7038A	DUT front 2.5cm	None	None	3.70	-1.15	3.120	2.230	2.03	1.45
CM-Face-080706-32/ TU098JW07N	NAF5080A	869.9750	NNTN7038A	DUT front 2.5cm	None	None	3.78	-1.39	3.030	2.160	2.09	1.49

Table 7

Assessment at the Body – 700/800 MHz bands - PSM accessory												
Run Number/SN	Antenna	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)
Assessment of offered PSMs with worst case configuration overall												
HvH-Ab-080717-07/ TU098JW07N	PMAF4002A	770.0250	NNTN7037A	Against phantom	PSM clip	PMMN4061 A	2.35	-0.144	3.370	2.200	2.22	1.45
HvH-Ab-080710-04/ TU098JW07N	PMAF4002A	808.5000	NNTN7037A	Against phantom	PSM clip	PMMN4061 A	3.00	-0.808	2.770	1.880	2.00	1.36
HvH-Ab-080710-05/ TU098JW07N	PMAF4002A	860.0250	NNTN7037A	Against phantom	PSM clip	PMMN4061 A	3.02	-0.248	1.240	0.869	0.78	0.55
HvH-Ab-080714-02/ TU098JW07N	PMAF4002A	770.0250	NNTN7037A	Against phantom	PSM clip	PMMN4060 A	2.34	-0.0884	3.120	2.020	2.45	1.59
HvH-Ab-080717-08/ TU098JW07N	PMAF4002A	808.5000	NNTN7037A	Against phantom	PSM clip	PMMN4060 A	2.82	-0.822	3.740	2.370	2.88	1.83
MeC-Ab-080714-09/ TU098JW07N	PMAF4002A	860.0250	NNTN7037A	Against phantom	PSM clip	PMMN4060 A	2.44	-0.110	1.560	0.949	1.18	0.72
HvH-Ab-080714-03/ TU098JW07N	PMAF4002A	770.0250	NNTN7037A	Against phantom	PSM clip	PMMN4059 A	2.58	-0.0775	2.690	1.760	1.91	1.25
HvH-Ab-080717-09/ TU098JW07N	PMAF4002A	808.5000	NNTN7037A	Against phantom	PSM clip	PMMN4059 A	2.82	-0.790	3.710	2.370	2.84	1.81
MeC-Ab-080714-11/ TU098JW07N	PMAF4002A	860.0250	NNTN7037A	Against phantom	PSM clip	PMMN4059 A	2.52	-0.565	2.290	1.530	1.86	1.24
Assessment of other frequencies with worst case PSM configuration												
MeC-Ab-080714-12/ TU098JW07N	PMAF4002A	764.0250	NNTN7037A	Against phantom	PSM clip	PMMN4060 A	2.38	-0.112	3.270	2.120	2.54	1.65
MeC-Ab-080714-13/ TU098JW07N	PMAF4002A	775.9750	NNTN7037A	Against phantom	PSM clip	PMMN4060 A	2.47	-0.071	3.100	1.990	2.30	1.47
HvH-Ab-080715-02/ TU098JW07N	PMAF4002A	794.0250	NNTN7037A	Against phantom	PSM clip	PMMN4060 A	2.25	-0.298	5.010	3.210	4.29	2.75
HvH-Ab-080715-03/ TU098JW07N	PMAF4002A	823.9750	NNTN7037A	Against phantom	PSM clip	PMMN4060 A	2.70	-0.643	3.060	1.950	2.37	1.51
HvH-Ab-080715-04/ TU098JW07N	PMAF4002A	851.0250	NNTN7037A	Against phantom	PSM clip	PMMN4060 A	2.60	-0.144	2.400	1.520	1.72	1.09
HvH-Ab-080715-05/ TU098JW07N	PMAF4002A	869.9750	NNTN7037A	Against phantom	PSM clip	PMMN4060 A	2.85	-0.092	1.160	0.723	0.75	0.47

Table 8

*Worst case configuration per body location and band from above (including shortened scan) –using the DASY 4 full coarse and 5x5x7 cube scan measurements.												
Run Number/SN	Antenna	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)
HvH-Ab-080710-07/TU098JW07M	NAF5080A	770.0250	NNTN7037A	DUT back w/ ant. 2.5cm	None	PMMN4024 A	2.90	-0.213	3.850	2.670	2.09	1.45
HvH-Face-080706-11/TU098JW07M	NAF5080A	775.9750	NNTN7038A	DUT front 2.5cm	None	None	2.93	-0.0519	1.870	1.320	0.97	0.68
CM-Ab-080711-11/TU098JW07N	NAF5080A	823.9750	NNTN7037A	Against phantom		PMLN5330A /NTN5243A w/o loop Back side RMN5058A	3.75	-1.18	6.340	4.300	4.16	2.82
HvH-Face-080706-21/TU098JW07M	NAF5080A	823.9750	NNTN7037A	DUT front 2.5cm	None	None	3.75	-0.25	3.180	2.320	1.68	1.23
HvH-Ab-080711-09/TU098JW07N	NAF5037A	860.0250	NNTN7037A	DUT back w/ ant. 2.5cm	None	HMN4104A	3.76	-1.27	9.140	6.450	6.12	4.32
CM-Ab-080717-10/TU098JW07N (Shortened scan)	NAF5037A	860.0250	NNTN7037A	DUT back w/ ant. 2.5cm	None	HMN4104A	3.80	-0.652	9.950	7.020	5.78	4.08
MeC-Ab-080709-22/TU098JW07M	NAF5037A	860.0250	NNTN7038A	DUT back w/ ant. 2.5cm	None	HMN4104A	3.73	-1.11	10.300	7.190	6.65	4.64
HvH-Ab-080715-09/TU098JW07M (Shortened scan)	NAF5037A	860.0250	NNTN7038A	DUT back w/ ant. 2.5cm	None	HMN4104A	3.81	-0.653	11.90	8.37	6.92	4.86
MeC-Face-080714-07/TU098JW07M	NAF5037A	851.0250	NNTN7038A	DUT front 2.5cm	None	None	3.69	-1.57	4.020	2.920	2.89	2.10

9.1 Highest SAR results calculation methodology

The calculated maximum 1-gram and 10-gram averaged SAR results reported herein for the full DASYS™ coarse and 5x5x7 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_{max} = Maximum Power (W)

P_{int} = Initial Power (W)

Pdrift = DASYS drift results (dB) - (for conservative results positive drifts are not accounted for)

SAR_{meas.} = Measured 1-g/10-g Avg. SAR (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 SAR values found for FCC ID: AZ489FT7036 model MNUR1000A.

Max. Calc. : 1-g Avg. SAR: 6.92 W/kg (Body); 10-g Avg. SAR: 4.86 W/kg (Body)

Max. Calc. : 1-g Avg. SAR: 2.89 W/kg (Face); 10-g Avg. SAR: 2.10 W/kg (Face)

The EME measurements were performed in accordance with the applicable testing guidelines set forth in the latest Draft IEC62209-2.

The test results clearly demonstrate compliance with FCC General Population/Uncontrolled RF Exposure limits of 1.6W/kg per the requirements of 47 CFR 2.1093(d).

The highest SAR levels also clearly demonstrate compliance to ICNIRP (1998) Guidelines for limiting exposure in time-varying electric, magnetic, and electromagnetic fields (up to 300GHz) RF Exposure limits of 2.0 W/kg averaged over 10grams of contiguous tissue.

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>	<i>e = f(d,k)</i>	<i>f</i>	<i>g</i>	<i>h = c x f / e</i>	<i>i = c x g / e</i>	<i>k</i>
Uncertainty Component	IEEE 1528 section	Tol. (± %)	Prob Dist	Div.	<i>c_i</i> (1 g)	<i>c_i</i> (10 g)	1 g <i>u_i</i> (±%)	10 g <i>u_i</i> (±%)	<i>v_i</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)			<i>k</i> =2				22	22	

FCD-0558, Rev.6

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>	<i>e = f(d,k)</i>	<i>f</i>	<i>g</i>	<i>h = c x f / e</i>	<i>i = c x g / e</i>	<i>k</i>
Uncertainty Component	IEEE 1528 section	Tol. (± %)	Prob. Dist.	Div.	<i>c_i</i> (1 g)	<i>c_i</i> (10 g)	1 g <i>u_i</i> (±%)	10 g <i>u_i</i> (±%)	<i>v_i</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)			<i>k</i> =2				18	17	

FCD-0558, Rev.6

Notes:

- 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
Schmid & Partner
Engineering AG**
Zeughausstrasse 43, 8004 Zurich, Switzerland



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

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

Accreditation No.: **SCS 108**

Client **Motorola CGISS**

Certificate No: **ET3-1384_May08**

CALIBRATION CERTIFICATE

Object **ET3DV6 - SN:1384**

Calibration procedure(s) **QA CAL-01.v6, QA CAL-12.v5 and QA CAL-23.v3
Calibration procedure for dosimetric E-field probes**

Calibration date: **May 19, 2008**

Condition of the calibrated item **In Tolerance**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41495277	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41498087	1-Apr-08 (No. 217-00788)	Apr-09
Reference 3 dB Attenuator	SN: S5054 (3c)	8-Aug-07 (No. 217-00719)	Aug-08
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-08 (No. 217-00787)	Apr-09
Reference 30 dB Attenuator	SN: S5129 (30b)	8-Aug-07 (No. 217-00720)	Aug-08
Reference Probe ES3DV2	SN: 3013	2-Jan-08 (No. ES3-3013_Jan08)	Jan-09
DAE4	SN: 660	3-Sep-07 (No. DAE4-660_Sep07)	Sep-08

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

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

Issued: May 20, 2008

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



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

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

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	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:

- 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
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- 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 E²-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.

Probe ET3DV6

SN:1384

Manufactured:	August 16, 1999
Last calibrated:	May 29, 2007
Recalibrated:	May 19, 2008

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ET3DV6 SN:1384

May 19, 2008

DASY - Parameters of Probe: ET3DV6 SN:1384

Sensitivity in Free Space ^A			Diode Compression ^B	
NormX	1.79 ± 10.1%	$\mu V/(V/m)^2$	DCP X	90 mV
NormY	1.84 ± 10.1%	$\mu V/(V/m)^2$	DCP Y	90 mV
NormZ	2.02 ± 10.1%	$\mu V/(V/m)^2$	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	12.3	7.4	
	SAR _{be} [%] With Correction Algorithm	0.6	0.2	
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	11.7	7.0	
	SAR _{be} [%] With Correction Algorithm	0.7	0.4	

Sensor Offset

Probe Tip to Sensor Center	2.7 mm
Optical Surface Detection	non-functional

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).

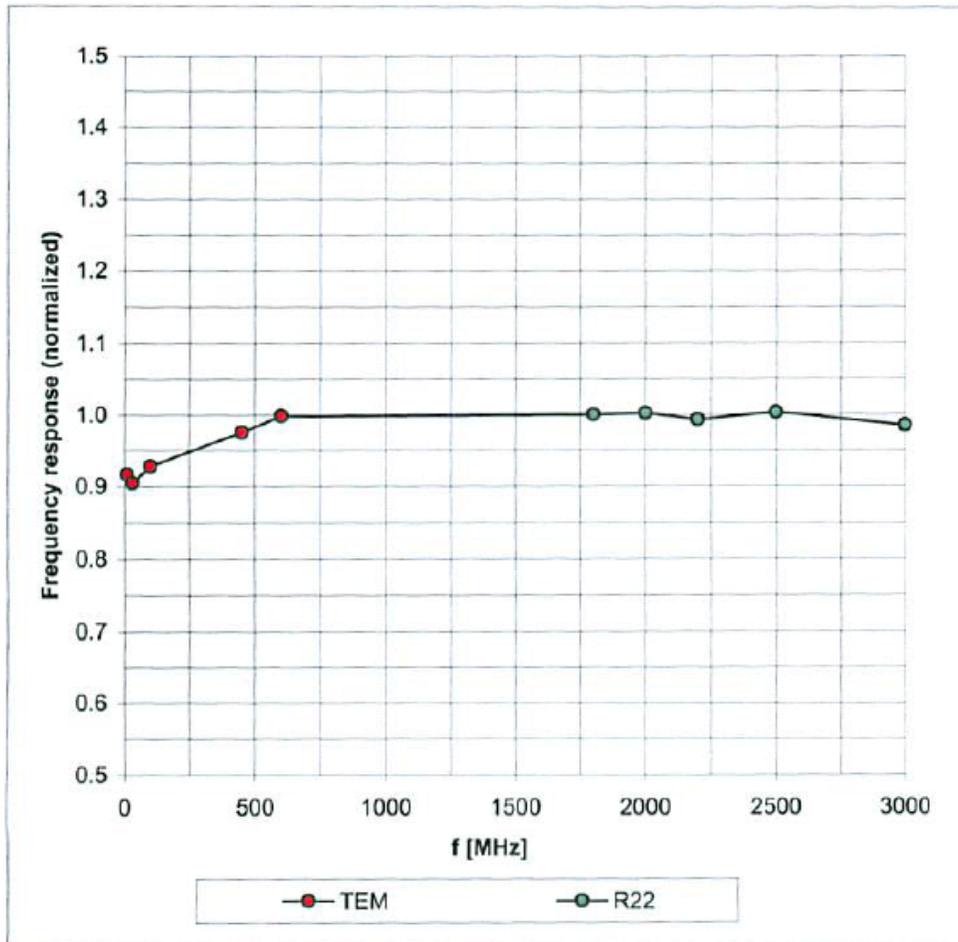
^B Numerical linearization parameter: uncertainty not required.

ET3DV6 SN:1384

May 19, 2008

Frequency Response of E-Field

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

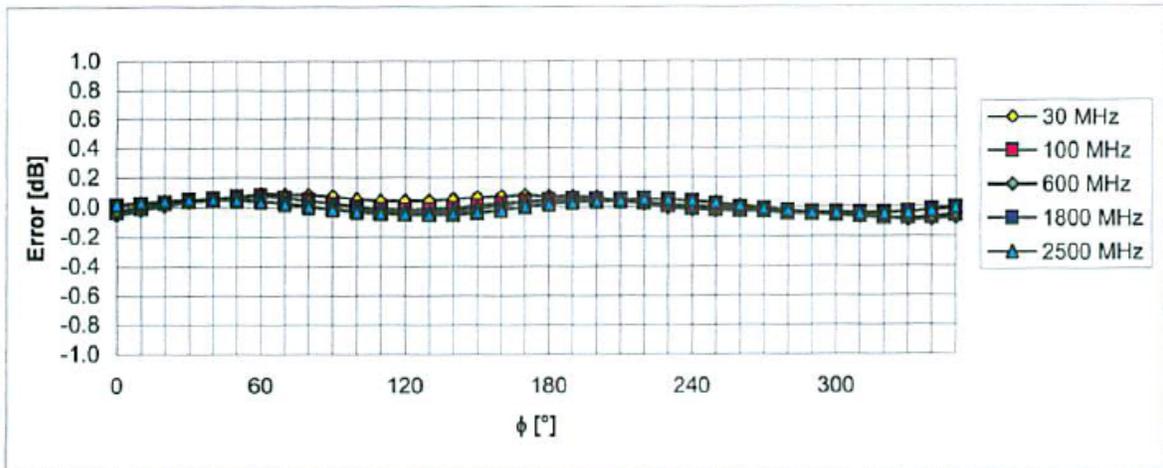
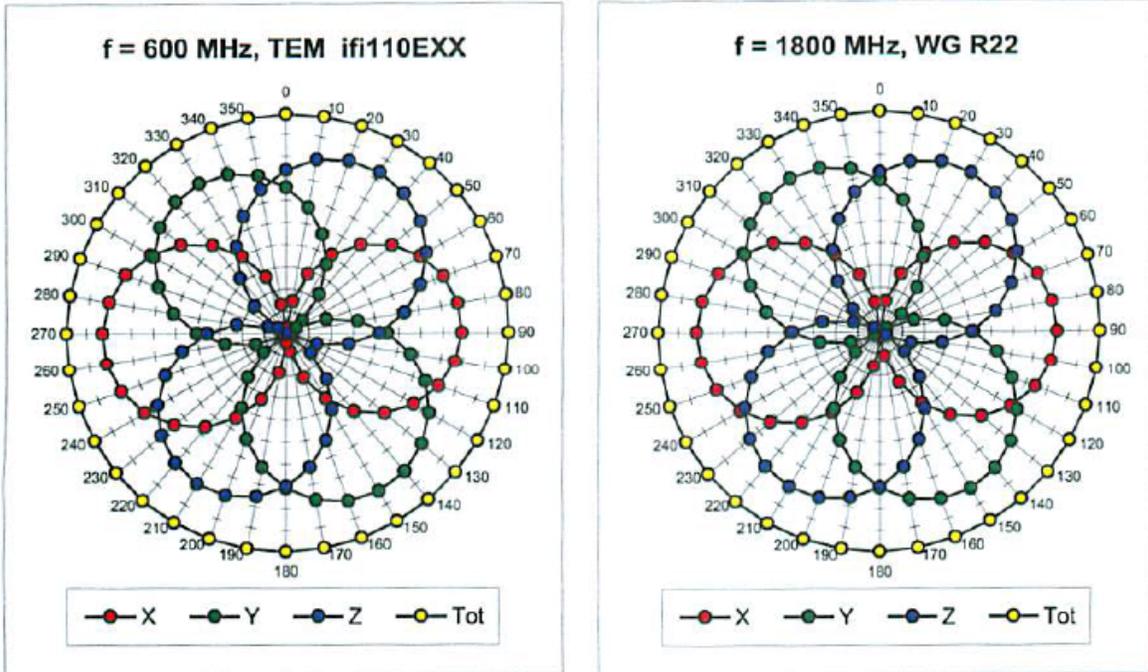


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

ET3DV6 SN:1384

May 19, 2008

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

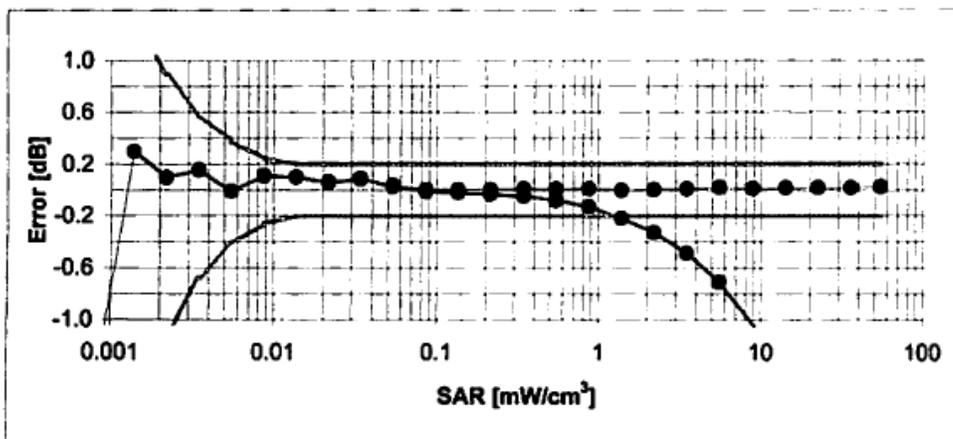
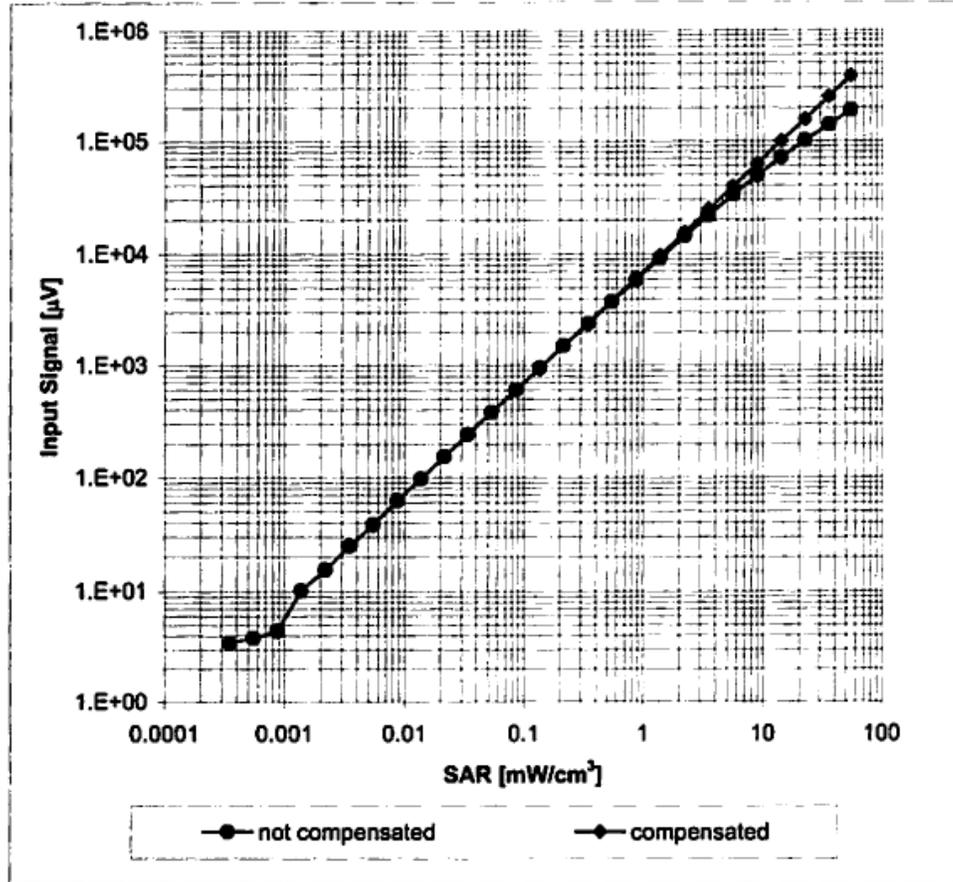


Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

ET3DV6 SN:1384

May 19, 2008

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

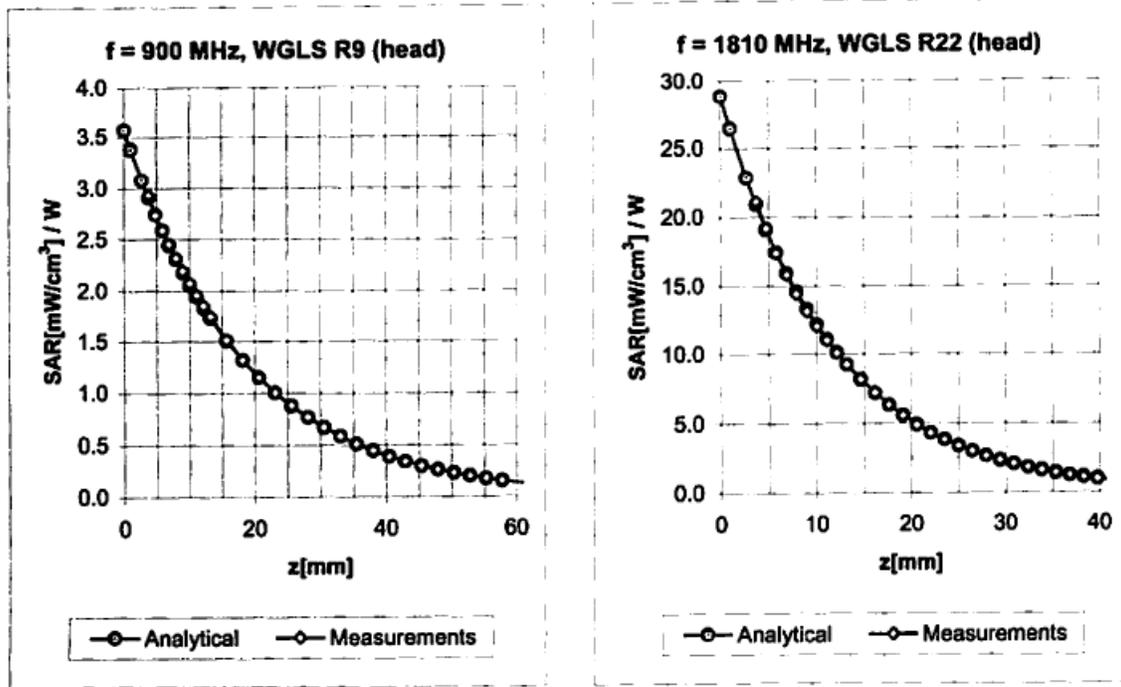


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

ET3DV6 SN:1384

May 19, 2008

Conversion Factor Assessment



f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
450	± 50 / ± 100	Head	43.5 ± 5%	0.87 ± 5%	0.39	1.95	7.08 ± 13.3% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.35	3.01	6.00 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.55	2.50	5.15 ± 11.0% (k=2)
1950	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.60	2.40	4.95 ± 11.0% (k=2)
2300	± 50 / ± 100	Head	39.4 ± 5%	1.71 ± 5%	0.53	2.30	4.79 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.47	2.30	4.55 ± 11.0% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.32	2.00	7.46 ± 13.3% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.31	3.17	5.86 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.55	2.50	4.70 ± 11.0% (k=2)
1950	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.60	2.40	4.63 ± 11.0% (k=2)
2300	± 50 / ± 100	Body	52.8 ± 5%	1.85 ± 5%	0.60	2.30	4.21 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.50	2.30	4.04 ± 11.0% (k=2)

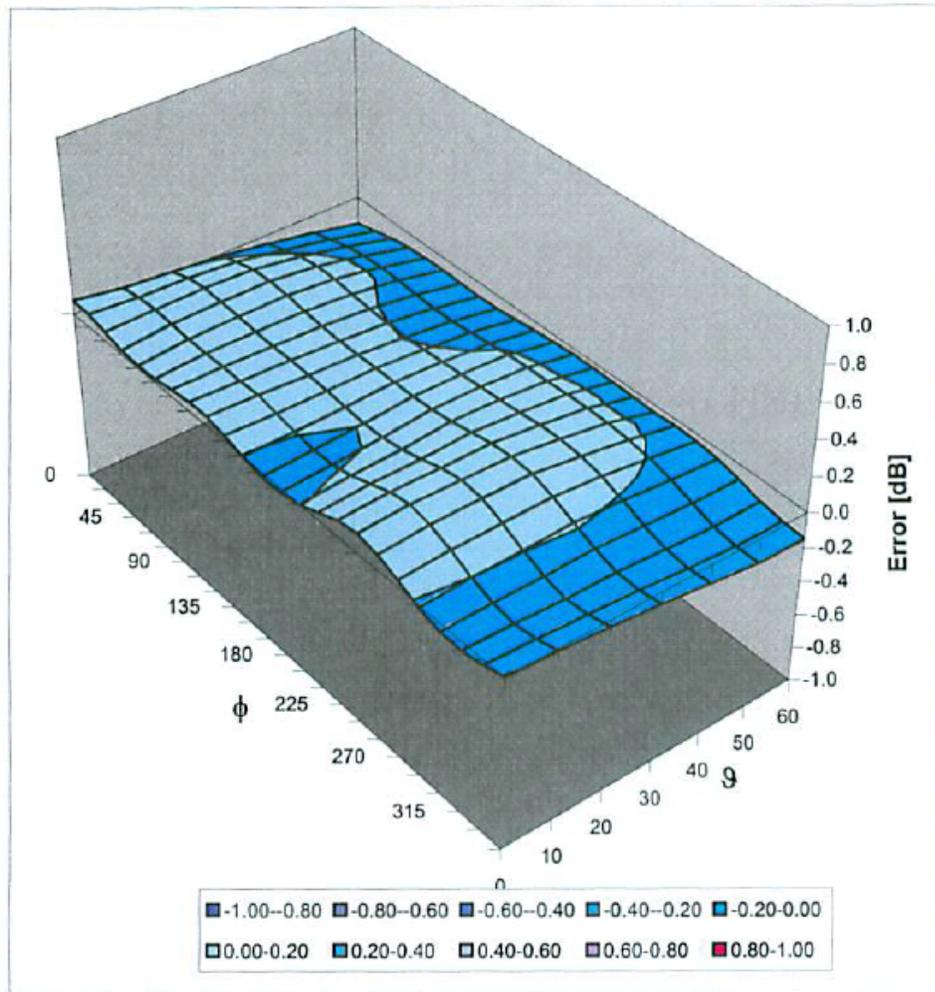
^c The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

ET3DV6 SN:1384

May 19, 2008

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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Additional Conversion Factors for Dosimetric E-Field Probe

Type:	ET3DV6
Serial Number:	1384
Place of Assessment:	Zurich
Date of Assessment:	May 23, 2008
Probe Calibration Date:	May 19, 2008

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

Assessed by:



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Dosimetric E-Field Probe ET3DV6 SN:1384

Conversion factor (\pm standard deviation)

150 MHz	<i>ConvF</i>	8.2 \pm 10%	$\epsilon_r = 52.3$ $\sigma = 0.76$ mho/m (head tissue)
250 MHz	<i>ConvF</i>	7.4 \pm 10%	$\epsilon_r = 47.6$ $\sigma = 0.83$ mho/m (head tissue)
300 MHz	<i>ConvF</i>	7.3 \pm 9%	$\epsilon_r = 45.3$ $\sigma = 0.87$ mho/m (head tissue)
750 MHz	<i>ConvF</i>	6.3 \pm 7%	$\epsilon_r = 41.9$ $\sigma = 0.89$ mho/m (head tissue)
150 MHz	<i>ConvF</i>	7.9 \pm 10%	$\epsilon_r = 61.9$ $\sigma = 0.80$ mho/m (body tissue)
250 MHz	<i>ConvF</i>	7.5 \pm 10%	$\epsilon_r = 59.4$ $\sigma = 0.88$ mho/m (body tissue)
300 MHz	<i>ConvF</i>	7.3 \pm 9%	$\epsilon_r = 58.2$ $\sigma = 0.92$ mho/m (body tissue)
750 MHz	<i>ConvF</i>	6.1 \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.