



MOTOROLA



TESTING CERT # 2518.01

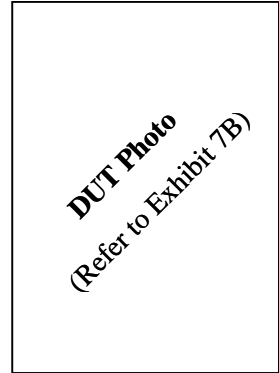
FCC ID: IHDT56KC1

DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 1 of 3

Enterprise Mobility Solutions (EMS)
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Date of Report: 6/11/09
Report Revision: A
Report ID: SAR rpt_i856_090611_SR7285

Responsible Engineer: Michael Sailsman (Senior Staff EME Eng.)
Report Author: Michael Sailsman (Senior Staff EME Eng.)
Date/s Tested: 5/4/09-5/15/09
Manufacturer/Location: Penang
Sector/Group/Div.: iDEN Mobile Devices
Date submitted for test: 4/23/09
DUT Description: TDMA: 81:120, 2:6, 1:12, and 1:6; 64 QAM, 16QAM, and QPSK Modulations; 0.60 W Pulse Avg; MOTotalk: 114:120 8FSK; 0.85 W nominal; (GPS and Bluetooth Capable)
Test TX mode(s): Phone: 1:3 ; Dispatch: 1:6; MOTotalk: 114:120; Data: 81:120
Max. Power output: 0.64 W pulsed average (iDEN); 0.891 W (MOTotalk); 0.010 W (Bluetooth)
Nominal Power: 0.60 W pulsed average Conducted Power (iDEN); 0.85 W (MOTotalk); 0.0063 W (Bluetooth)
Tx Frequency Bands: 806-825, 896-902 MHz (iDEN); 902-928 MHz (MOTotalk); 2.402-2.480 GHz (Bluetooth)
Signaling type: TDMA: QPSK, M16-QAM, M64-QAM; FHSS: 8FSK (PTT); BT
Model(s) Tested: H74XAN6JR7AN
Model(s) Certified: H74XAN6JR7AN
Serial Number(s): 364VKF7VZQ
Classification: General Population/Uncontrolled
Rule Part(s): 15, 90



Approved Accessories:

Antenna(s):
 85009255001 (Internal IFA 806-825MHz: ¼ wave antenna, -1.41dBd; 896-902MHz: ¼ wave antenna, -0.64dBd; 902-928MHz: ¼ wave antenna, -0.64dBd); 85009254001 (Internal IFA 2.4-2.48GHz, ¼ wave antenna, -0.84dBd)

Battery(ies):
 SNN5837A (BN70 High performance); NTN2529XXXXA (High performance (battery door)); SNN5838A (BN10 Maximum capacity); NTN2530XXXXA (Maximum performance battery door)

Body worn accessory(ies):
 NNTN7649A (i856 Holster)

Audio/Data cable accessory(ies):
 SYN1458A (Stereo headset-“Mic” with PTT); SYN1472A (Mono Headset- “Mic” with PTT); SYN2356A (3.5mm Stereo headset-receive only); SKN6238A (USB data cable)

Max. Calc. : 1-g Avg. SAR: 1.16 W/kg (Body); 10-g Avg. SAR: 0.84 W/kg (Body)
Max. Calc. : 1-g Avg. SAR: 0.16 W/kg (Face); 10-g Avg. SAR: 0.11 W/kg (Face)
Max. Calc. : 1-g Avg. SAR: 0.88 W/kg (Head); 10-g Avg. SAR: 0.62 W/kg (Head)

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 EMS EME Lab Senior Resource Manager,
Laboratory Director
Approval Date: 6/11/09

Certification Date: 6/11/09
Certification No.: L1090523P

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Report Revision History

Date	Revision	Comments
6/05/09	O	Initial release
6/11/09	A	Update to reflect revised BT nominal power output

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 EMS EME Test Lab for the model number H74XAN6JR7AN FCC ID: IHDT56KC1. The results herein reflect final initial release 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 Radio communications (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"
- Draft of IEC62209-2 Ed.1: Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices – Human models, Instrumentation, and Procedures Part 2: Procedure to determine the specific absorption rate (SAR) for mobile wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz), revised on Oct 3, 2008.

* The IEC62209-1 and IEEE1528 are applicable for hand-held devices used in close proximity to the ear only.

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: IHDT56KC1 model H74XAN6JR7AN is a digital multi-service data capable devices that employs time division multiplexing with duty cycles of 16.67% for Voice (Dispatch), 16.67% or 33.00% (for Interconnect or Circuit Data), and up to 67.50% for Packet Data operation. Possible modulation formats are QPSK, M16-QAM, or M64-QAM. All voice modes employ M16-QAM modulation, and are interleaved as 1:6 (for Dispatch or Interconnect) or 1:3 (maximum for Interconnect). Split 1:3 Interconnect is operated at a 16.67% duty cycle, but because there will be two pulses in each 90-msec frame, the overall interleave is 2:6. Data transmissions employ QPSK, M16-QAM, and M64-QAM modulations, and have a maximum duty cycle of 67.50% (Packet Data). Packet Data operation is possible with-and-without connection to an external data device (via a data cable or Bluetooth link). All iDEN modes (Interconnect, Dispatch, and Data) are available in both the 800 and 900 MHz SMR bands, and are also supported in the Narrowband PCS band. This device also possesses MOTotalk, which is a Part 15 service, employing Frequency Hopping Spread Spectrum technology in the 900 MHz ISM band. MOTotalk emissions have a duty cycle of 114:120, and uses 8FSK modulation. Only dispatch (i.e. PTT) operation is possible when operating in this mode. The unit may be used at the abdomen in this mode (with applicable audio accessories) or held in front of the face. The low-audio earpiece mode has been locked out in software. This device also incorporates a Class 2 Bluetooth device. Bluetooth is a short range wireless protocol used for communication between users. Users link to each other through an Ad-Hock network of pico-nets. The pico-net is the basic communication cell, which is formed by a "master" and up to 7 "slaves."

This device will be marketed to and used by the general population. This device may be used while held against the head in voice mode, in front of the face in PTT mode, and against the body in phone, dispatch, MOTotalk and Data modes.

FCC ID: IHDT56KC1 is capable of operating in the 806-825 MHz and 896-902MHz bands for iDEN modes, 902-928MHz band for MOTOTalk mode and 2.402-2.480GHz band for BT. The nominal conducted power is 0.60 watts pulsed averaged in 806-825MHz and 896-902MHz bands, 0.850 watts in the MOTOTalk band and 0.0063 watts in the BT band. The maximum conducted output power is 0.640 watts pulsed average, 0.891 watts and 0.010 watts respectively as defined by the upper limit of the production line final test station

FCC ID: IHDT56KC1 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 Dosimetric Assessment System (DASY4™) SAR measurement system Version 4.7 build 80 manufactured by Schmid & Partner Engineering AG (SPEAG™), of Zurich Switzerland. The test system consists of a Stäubli RX90L robot, DAE4, and ES3DV3 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	Material Parameters	Material Thickness (mm)	Support structure material	Loss Tangent (wood)
Dual 1003 (V4.9)	200MHz -6GHz; Er = <5, Loss Tangent = 0.05	2mm +/- 0.2mm	Wood	< 0.05

4.2.2 SAM Phantom

Phantom ID	Material Parameters	Material Thickness (mm)	Support structure material	Loss Tangent (wood)
SAMTP1234	200MHz -3GHz; Er = <5, Loss Tangent = 0.05	2mm +/- 0.2mm	Wood	< 0.05

4.2.3 Elliptical Flat Phantom

Phantom ID	Material Parameters	Phantom Dimensions LxWxD (mm)	Material Thickness (mm)	Support structure material	Loss Tangent (wood)
OVAL1019	300MHz -6GHz; Er = 4+/- 1, Loss Tangent = <0.05	600x400x190	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		900MHz		2450MHz	
	Head	Body	Head	Body	Head	Body
Sugar	57.0	44.9	56.5	44.9	NA	NA
Diacetin	NA	NA	NA	NA	51.0	34.5
De ionized -Water	40.45	53.06	40.95	53.06	48.75	65.20
Salt	1.45	0.94	1.45	0.94	0.15	0.20
HEC	1.0	1.0	1.0	1.0	NA	NA
Bact.	0.1	0.1	0.1	0.1	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	MY40330364	7/16/2009
Power Meter (Agilent)	E4418B	GB40206480	12/4/2009
Power Sensor (Agilent)	8482B	3318A07393	1/23/2010
E-Series Avg. Power	E9301B	MY41495593	2/18/2010
E-Series Avg. Power	E9301B	MY41495594	2/18/2010
Power Sensor (Agilent)	8482B	3318A07392	3/18/2010
Bi-Directional Coupler	3020A	40295	6/9/2010
Bi-Directional Coupler	3022	77115	3/20/2010
Signal Generator (Agilent)	E4438C	MY42082269	7/8/2010
AMP (Amplifier Research)	10WD1000	28782	CNR
Dickson Temperature Recorder	TM125	1195889	2/14/2010
Omega Digital Thermometer with J Type TC Probe	HH202A	18800	10/27/2009
Omega Digital Thermometer with J Type	HH202A	18801	4/1/2010
Agilent PNA-L Network	N5230A	MY45001092	5/22/2010
Dielectric Probe Kit (HP)	85070C	US99360076	CNR
Speag Dipole	D835V2	435	9/22/2010
Speag Dipole	D900V2	085	8/25/2010
Speag Dipole	D2450V2	704	11/18/2010

6.0 SAR Measurement System Verification

The SAR measurements were conducted with probe model/serial number ES3DV3/SN3185. 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 using head tissue equivalent medium are provided in APPENDIX D. The EMS 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 EMS 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.

Tissue Target Tolerances

Frequency (MHz)	Tissue Type	Conductivity Target (S/m)	Di-electric Constant Target	Conductivity Meas. (S/m)	Di-electric Constant Meas.	Tested Date
815.5	FCC Body	55.3	0.95	0.95	55.9	5/8/09
				0.95	55.5	5/9/09
				0.95	55.3	5/11/09
815.5	IEC Head	41.6	0.90	0.86	42.4	5/4/09
				0.86	42.8	5/5/09
				0.87	43.5	5/6/09
				0.90	43.5	5/7/09
				0.87	42.1	5/8/09
835	FCC Body	55.2	0.97	0.97	55.1	5/11/09
835	IEC Head	41.5	0.90	0.88	42.1	5/4/09
				0.88	42.6	5/5/09
				0.89	43.2	5/6/09
				0.92	43.2	5/7/09
				0.89	41.8	5/8/09

Frequency (MHz)	Tissue Type	Conductivity Target (S/m)	Di-electric Constant Target	Conductivity Meas. (S/m)	Di-electric Constant Meas.	Tested Date
899	FCC Body	55.0	1.05	1.04	55.1	5/8/09
				1.04	54.7	5/9/09
				1.04	54.5	5/11/09
899	IEC Head	41.5	0.97	0.94	41.4	5/4/09
				0.94	41.8	5/5/09
				0.96	42.5	5/6/09
				0.98	42.5	5/7/09
				0.95	41.1	5/8/09
915	FCC Body	55.0	1.06	1.06	55.0	5/8/09
				1.06	54.6	5/9/09
				1.05	54.3	5/11/09
915	IEC Head	41.5	0.98	0.96	41.2	5/4/09
				0.96	41.6	5/5/09
				0.97	42.3	5/6/09
				1.00	42.3	5/7/09
				0.97	40.9	5/8/09
2441	FCC Body	52.7	1.94	1.88	50.2	5/9/09
2450	FCC Body	52.7	1.95	1.90	50.1	5/9/09

6.2 System Check Test Results

Probe Serial #	Tissue Type	Probe Cal Date	Dipole Kit / Serial #	Reference SAR @ 1W (mW/g)	System Check Test Results when normalized to 1W (mW/g)	Tested Date
3185	FCC Body	11/18/08	SPEAG D835V2 /435	9.8 +/- 10%	9.2	5/11/09
3185	IEEE Head	11/18/08	SPEAG D835V2 /435	9.53 +/- 10%	9.64	5/7/09
					9.40	5/6/09
					9.64	5/5/09
					9.36	5/4/09
3185	FCC Body	11/18/09	SPEAG D900V2 /085	11.30 +/- 10%	10.72	5/9/09
3185	FCC Body	11/18/09	SPEAG D900V2 /085	11.30 +/- 10%	10.76	5/14/09
3185	IEEE Head	11/18/09	SPEAG D900V2 /085	11.50 +/- 10%	10.40	5/8/09
3185	IEEE Head	11/18/09	SPEAG D900V2 /085	11.50 +/- 10%	10.48	5/15/09
3185	IEEE Head	11/18/09	SPEAG D2450V2 /704	56.93 +/- 10%	55.2	5/9/09

Note: See APPENDIX D for an explanation of the reference SAR targets stated above.

The DASY4™ system is operated per the instructions in the DASY4™ Users Manual. The complete manual is available directly from SPEAG™. All measurement equipment used to assess EME 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 device with iDEN (QPSK, QAM, M64-QAM), MOTOtalk (FHSS 8FSK) and BT transmission signaling operational at the relevant body, head, and face locations using the applicable 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 flat, dual flat and SAM phantoms with the applicable simulated tissue to assess performance at the body, head and face respectively using the relevant transmission modes.

Note that The One Factor at A Time (OFAT) method was applied to develop the SAR test plan for this product. All scans were assessed using the full DASY4™ coarse and 5x5x7 zoom scans. The test sequences outlined below for each of the body test positions were applied. Note that SAR measurements performed at frequencies below 850MHz utilized an E-Field probe that was calibrated for 900MHz. Therefore, in accordance with the guidance given in FCC KDB450824 “Application Note SAR Probe Calibration and System Verification Considerations for Measurements at 150MHz – 3 GHz, January 2007”, the DASY SAR compliance results of the DUT presented herein for frequencies below 850Mhz were corrected for deviations in permittivity and conductivity using the tissue sensitivity values provided in FCC KDB450824 and system manufacturer (SPEAG). SAR results were scaled for those conditions where the tissue permittivity was measured above the nominal target and for tissue conductivity that was measured below the nominal target.

Assessments at the Head (Phone mode 1:3) [Pages 15 &16 of 37; Tables 1 & 2](#)

- The device was tested at the left ear of the SAM at the center frequency of the 806-825 MHz band using the offered maximum capacity battery (SNN5838A) with the display slide in the opened and closed positions and with the device in the cheek touch position.
- The worse case configuration from above was used to assess the other offered battery (SNN5837A)
- The worse case configuration from above was used to assess the device in the tilt position.
- Band edge assessment of the 806-825 MHz band was done with the slide opened and then the highest SAR configuration overall was tested with the slide closed.
- The same test strategy outlined above was used to assess the device at the

right ear except that the worse case battery from the left ear assessment was used.

- The same general test strategy outlined above was used for assessments at the left and right ear in the 896-902 MHz band except that the highest configuration overall was used to test the band edges.

Assessments at the Face (PTT mode 1:6) [Page 17 of 37; Table 3](#)

- The device was tested with 2.5cm separation distance from the flat area of the SAM phantom at the center frequency of the 806-825 MHz band using the worse case battery (SNN5837A) from the 800MHz band head assessment with the display slide opened and closed.
- The device was then assessed with the applicable offered audio accessory (SYN2356A receive only) using the worse case configuration from above.
- The device was then assessed at the band edges of 806-825 MHz band using the overall worse case configuration from the face assessment above.
- The same test strategy outlined above was used to assess the device at the face in the 896-902 MHz band using the worse case battery (SNN5837A) from the 900MHz band head assessment.

Assessments at the Face (MOTOtalk mode 114:120) [Page 18 of 37; Table 4](#)

- The device was tested with 2.5cm separation distance from the flat area of the SAM phantom at the center frequency of the 902-928 MHz band using offered batteries (SNN5837A and SNN5838A) with the display slide opened.
- The device was then assessed with the display slide closed using the worse case configuration from above.
- The device was then assessed with the applicable offered audio accessory (SYN2356A receive only) using the worse case configuration from above.
- The device was then assessed at the band edges of 902-928 MHz band using the overall worse case configuration from the face assessment above.

Assessments at the Body (iDEN 81:120 & 1:3) [Pages 19 & 20 of 37; Tables 5 & 6](#)

- The device was tested at the center frequency of the 806-825 MHz band using each of the offered batteries (SNN5837A and SNN5838A) and carry case (NNTN7649A) with and without the offered data cable.
- The device was then tested with the applicable offered audio accessories (SYN1472A and SYN1458A) using the worse case configuration from above.
- The device was then tested at the band edges of the 806-825 MHz band with the worse case configuration from above.
- The device was then tested with 2.5cm separation distance from the elliptical phantom in the 806-825 MHz band using the overall worse case configuration from above.
- The same test strategy outlined above was used to assess the device in the 896-902 MHz band.

Assessments at the Body (iDEN MOTOtalk mode 114:120) Page 21 of 37; Table 7

- The device was tested at the center frequency of the 902-928 MHz band using each of the offered batteries (SNN5837A and SNN5838A) and carry case (NNTN7649A) without any attached cables.
- The device was then tested with the applicable offered audio accessories (SYN1472A and SYN1458A) using the worse case configuration from above.
- The device was then tested at the band edges of the 902-928 MHz band using the applicable worse case configurations from above.
- The device was then tested with 2.5cm separation distance from the elliptical phantom in the 902-928 MHz band using the overall worse case configuration from above.

Assessments at the Body (BT mode CW) Page 22 of 37; Table 8

- The device was tested at the center frequency of the 2.402-2.480 GHz band using each of the offered batteries (SNN5837A and SNN5838A) and carry case (NNTN7649A) without any attached cables.
- The device was then tested at the band edges of the 2.402-2.480 GHz band with using the worse case configuration from above.
- The device was then tested with 2.5cm separation distance from the elliptical phantom in the 2.402-2.480 GHz band with the overall worse case configuration from above.

Shortened scan assessment at the Body Page 20 of 37; Table 6

- 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 and without the offered body worn and cable accessories. The DUT was positioned with its' front and back sides separated 2.5cm from the phantom.

7.2.2 Head

The DUT was placed against the right and left heads of the SAM phantom in the cheek touch and tilt positions.

7.2.3 Face

The DUT was positioned with its' front side separated 2.5cm from the phantom with and without applicable audio accessory.

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	18 - 25 °C	Range: 18.9-22.6°C Avg. 21.0°C
Relative Humidity	30 - 70 %	Range: 48.4-62.7% Avg. 54.3%
Tissue Temperature	NA	Range: 18.3-20.6°C Avg. 19.41 °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, tests presented herein were assessed using the full DASY4™ coarse and 5x5x7 zoom methodology. The SAR plots of the overall worse case configurations per band and body location are bolded and tagged with an “*” and are presented 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.

9.1 SAR results scaling methodology

The calculated 1-gram and 10-gram averaged SAR results indicated as “Max Calc. 1g-SAR” and “Max Calc.10g-SAR” in the following data tables are determined by scaling the measured SAR to account for power leveling variations and power slump. For this device the “Max Calc. 1g-SAR” and “Max Calc.10g-SAR” are scaled 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 = DASY drift results (dB);

$\text{SAR}_{\text{meas.}}$ = 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.

Note: for conservative results, the followings are applied:

If $P_{\text{int}} > P_{\text{max}}$, then $P_{\text{max}}/P_{\text{int}} = 1$.

If Pdrift is positive, then $10^{(\text{Pdrift}/10)} = 1$.

As noted in section 7.1, additional SAR scaling was applied for those applicable conditions outlined in FCC KDB450824 using the tissue sensitivity values provided therein as well from the system manufacturer (SPEAG) . SAR was scaled for conditions where the tissue permittivity was measured above the nominal target and for tissue conductivity that was measured below the nominal target. This applies to all test frequencies below 850MHz presented herein.

Table 1

Assessments at Head (1:3 mode) – Left and Right Ear (806-825 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)
Left Ear – Touch position with slide opened/closed												
MeC-Lear-090504-02/364VKF7VZQ	Internal	815.5125	SNN5838A w/ NTN2530XX XA cover	Cheek Touch w/ slide opened	None	None	0.656	0.052	0.490	0.359	0.49	0.36
HvH-Lear-090505-02/364VKF7VZQ	Internal	815.5125	SNN5838A w/ NTN2530XX XA cover	Cheek Touch w/ slide closed	None	None	0.641	0.051	0.493	0.347	0.49	0.35
Battery search												
MeC-Lear-090504-05/364VKF7VZQ	Internal	815.5125	SNN5837A w/ NTN2529XX XA cover	Cheek Touch w/ slide opened	None	None	0.653	-0.0385	0.509	0.364	0.514	0.37
Tilt position assessment												
MeC-Lear-090504-06/364VKF7VZQ	Internal	815.5125	SNN5837A w/ NTN2529XX XA cover	Tilt w/ slide opened	None	None	0.658	-0.0454	0.275	0.201	0.28	0.20
Band edge assessment with slide opened – Highest SAR configuration tested with slide closed												
MeC-Lear-090504-07/364VKF7VZQ	Internal	806.0125	SNN5837A w/ NTN2529XX XA	Touch Slide opened	None	None	0.640	-0.3770	0.394	0.291	0.43	0.32
HvH-Lear-090505-03/364VKF7VZQ	Internal	824.9875	SNN5837A w/ NTN2529XX XA	Touch Slide open	None	None	0.635	0.0189	0.522	0.382	0.53	0.39
*MeC-Lear-090515-02/364VKF7VZQ	Internal	824.9875	SNN5837A w/ NTN2529XX XA	Touch Slide closed	None	None	0.637	0.2620	0.548	0.384	0.55	0.39
Right Ear – Display slide position search												
HvH-Rear-090505-10/364VKF7VZQ	Internal	815.5125	SNN5837A w/ NTN2529XX XA	Touch Slide Open	None	None	0.642	0.0235	0.47	0.340	0.47	0.34
MeC-Rear-090505-11/364VKF7VZQ	Internal	815.5125	SNN5837A w/ NTN2529XX XA	Touch, slide closed	None	None	0.641	-0.0943	0.46	0.329	0.47	0.34
Tilt position												
MeC-Rear-090505-12/364VKF7VZQ	Internal	815.5125	SNN5837A w/ NTN2529XX XA	Tilt, Slide open	None	None	0.646	-0.0639	0.262	0.190	0.27	0.19
Band edge assessment with slide opened – Highest SAR configuration tested with slide closed												
MeC-Rear-090505-13/364VKF7VZQ	Internal	806.0125	SNN5837A w/ NTN2529XX XA	Touch Slide Open	None	None	0.639	-0.0139	0.399	0.293	0.40	0.29
MeC-Rear-090505-14/364VKF7VZQ	Internal	824.9875	SNN5837A w/ NTN2529XX XA	Touch Slide Open	None	None	0.642	0.0031	0.479	0.347	0.48	0.35
MeC-Rear-090515-03/364VKF7VZQ	Internal	824.9875	SNN5837A w/ NTN2529XX XA	Touch Slide closed	None	None	0.639	-0.0024	0.537	0.380	0.54	0.38

Table 2

Assessments at Head (1:3 mode) – Left and Right Ear (896-902 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)
Left Ear – Touch position with slide opened/closed												
HvH-Lear-090505-04/364VKF7VZQ	Internal	898.993 75	SNN5838A w/ NTN2530XX XA cover	Touch Slide Open	None	None	0.636	-0.0339	0.830	0.604	0.842	0.61
HvH-Lear-090505-05/364VKF7VZQ	Internal	898.993 75	SNN5837A w/ NTN2529XX XA	Touch Slide Open	None	None	0.646	0.00617	0.845	0.612	0.845	0.61
Battery search												
HvH-Lear-090505-06/364VKF7VZQ	Internal	898.993 75	SNN5837A w/ NTN2529XX XA	Touch, slide closed	None	None	0.636	-0.0121	0.860	0.596	0.87	0.60
Tilt position assessment												
HvH-Lear-090505-07/364VKF7VZQ	Internal	898.993 75	SNN5837A w/ NTN2529XX XA	Tilt Slide closed	None	None	0.644	0.0222	0.510	0.369	0.51	0.37
Band edge assessment												
*HvH-Lear-090505-08/364VKF7VZQ	Internal	896.018 75	SNN5837A w/ NTN2529XX XA	Touch, slide closed	None	None	0.647	-0.101	0.856	0.601	0.88	0.62
HvH-Lear-090505-09/364VKF7VZQ	Internal	901.981 25	SNN5837A w/ NTN2529XX XA	Touch, slide closed	None	None	0.640	0.0244	0.804	0.572	0.80	0.57
Right Ear - Display slide position search												
MeC-Rear-090505-15/364VKF7VZQ	Internal	898.993 75	SNN5837A w/ NTN2529XX XA	Touch Slide Open	None	None	0.644	0.00876	0.736	0.537	0.736	0.54
MeC-Rear-090505-16/364VKF7VZQ	Internal	898.993 75	SNN5837A w/ NTN2529XX XA	Touch, slide closed	None	None	0.643	-0.0395	0.738	0.527	0.745	0.53
Tilt position												
MeC-Rear-090505-17/364VKF7VZQ	Internal	898.993 75	SNN5837A w/ NTN2529XX XA	Tilt, Slide Closed	None	None	0.640	-0.012	0.448	0.327	0.45	0.33
Band edge assessment – overall worse case configuration with slide closed												
MeC-Rear-090505-18/364VKF7VZQ	Internal	896.018 75	SNN5837A w/ NTN2529XX XA	Touch, slide closed	None	None	0.653	0.00486	0.752	0.560	0.75	0.56
MeC-Rear-090505-19/364VKF7VZQ	Internal	901.981 25	SNN5837A w/ NTN2529XX XA	Touch, slide closed	None	None	0.655	-0.0409	0.718	0.518	0.72	0.52

Table 3

Assessments at Face (1:6 mode)- (806-825 MHz and 896-902 MHz bands)												
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)
Display slide position search. 806-825 MHz band w/ worse case battery from 800 band head assessment												
HvH-Face-090506-02/364VKF7VZQ	Internal	815.512 5	SNN5837A w/ NTN2529XX XA	DUT front 2.5cm, Slide open	None	None	0.656	-0.109	0.168	0.124	0.09	0.06
HvH-Face-090506-03/364VKF7VZQ	Internal	815.512 5	SNN5837A w/ NTN2529XX XA	DUT front 2.5cm, Slide closed	None	None	0.657	0.0517	0.0830	0.0610	0.04	0.03
Applicable audio accessory												
HvH-Face-090506-04/364VKF7VZQ	Internal	815.512 5	SNN5837A w/ NTN2529XX XA	DUT front 2.5cm, Slide open	None	SYN2356A	0.652	-0.0261	0.1020	0.0750	0.05	0.04
Band edges												
*HvH-Face-090506-07/364VKF7VZQ	Internal	806.012 5	SNN5837A w/ NTN2529XX XA	DUT front 2.5cm, Slide open	None	None	0.646	-0.0462	0.178	0.130	0.09	0.07
HvH-Face-090506-08/364VKF7VZQ	Internal	824.987 5	SNN5837A w/ NTN2529XX XA	DUT front 2.5cm, Slide open	None	None	0.647	0.0782	0.167	0.123	0.08	0.06
Display slide position search. 896-902 MHz band w/ worse case battery from 900 band head assessment												
*HvH-Face-090506-09/364VKF7VZQ	Internal	898.993 75	SNN5837A w/ NTN2529XX XA	DUT front 2.5cm, Slide open	None	None	0.649	0.0522	0.175	0.127	0.09	0.06
HvH-Face-090506-10/364VKF7VZQ	Internal	898.993 75	SNN5837A w/ NTN2529XX XA	DUT front 2.5cm, Slide closed	None	None	0.648	-0.0129	0.153	0.111	0.08	0.06
Applicable audio accessory												
HvH-Face-090506-11/364VKF7VZQ	Internal	898.993 75	SNN5837A w/ NTN2529XX XA	DUT front 2.5cm, Slide open	None	SYN2356A	0.649	-0.00528	0.147	0.106	0.07	0.05
Band edges												
HvH-Face-090506-14/364VKF7VZQ	Internal	896.018 75	SNN5837A w/ NTN2529XX XA	DUT front 2.5cm, Slide open	None	None	0.652	0.00523	0.171	0.125	0.09	0.06
HvH-Face-090506-15/364VKF7VZQ	Internal	901.981 25	SNN5837A w/ NTN2529XX XA	DUT front 2.5cm, Slide open	None	None	0.645	0.0945	0.168	0.122	0.08	0.06

Table 4

Assessments at Face (MOTotalk 114:120 mode) – (902-928 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)
Battery search												
HvH-Face-090506-16/364VKF7VZQ	Internal	915.525 0	SNN5838A w/ NTN2530XX XA cover	DUT front 2.5cm, Slide open	None	None	0.881	-0.532	0.272	0.193	0.16	0.11
MeC-Face-090514-02/364VKF7VZQ	Internal	915.525 0	SNN5837A w/ NTN2529XX XA	DUT front 2.5cm, slide opened	None	None	0.877	0.011	0.310	0.221	0.16	0.11
Display slide position search												
*HvH-Face-090507-02/364VKF7VZQ	Internal	915.525 0	SNN5837A w/ NTN2529XX XA	DUT front 2.5cm, slide closed	None	None	0.878	-0.321	0.297	0.209	0.16	0.11
Applicable audio accessory												
MeC-Face-090507-03/364VKF7VZQ	Internal	915.525 0	SNN5837A w/ NTN2529XX XA	DUT front 2.5cm, slide closed	None	SYN2356A	0.875	-0.3200	0.180	0.130	0.10	0.07
Band edges												
MeC-Face-090507-08/364VKF7VZQ	Internal	902.525 0	SNN5837A w/ NTN2529XX XA	DUT front 2.5cm, slide closed	None	None	0.885	0.0053	0.32	0.22	0.16	0.11
MeC-Face-090507-10/364VKF7VZQ	Internal	927.475 0	SNN5837A w/ NTN2529XX XA	DUT front 2.5cm, slide closed	None	None	0.853	0.0284	0.17	0.122	0.09	0.06

Table 5

Assessments at Body (iDEN 81:120 and 1:3 modes) – 806-825 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)
Data cable and battery search assessment (81:120 mode)												
*HvH-Ab-090508-06/364VKF7VZQ	Internal	815.512 5	SNN5838A w/ NTN2530XX XA cover	Against phantom	NNTN7649A	None	0.647	-0.421	0.482	0.342	0.54	0.38
HvH-Ab-090508-09/364VKF7VZQ	Internal	815.512 5	SNN5838A w/ NTN2530XX XA cover	Against phantom	NNTN7649A	SKN6238A	0.650	-0.126	0.410	0.291	0.43	0.30
HvH-Ab-090508-08/364VKF7VZQ	Internal	815.512 5	SNN5837A w/ NTN2529XX XA	Against phantom	NNTN7649A	None	0.648	-0.668	0.395	0.275	0.47	0.33
HvH-Ab-090508-10/364VKF7VZQ	Internal	815.512 5	SNN5837A w/ NTN2529XX XA	Against phantom	NNTN7649A	SKN6238A	0.648	-0.512	0.435	0.316	0.50	0.36
Audio search (1:3 mode)												
HvH-Ab-090508-11/364VKF7VZQ	Internal	815.512 5	SNN5838A w/ NTN2530XX XA cover	Against phantom	NNTN7649A	SYN1458A	0.657	-0.011	0.283	0.204	0.28	0.20
HvH-Ab-090508-12/364VKF7VZQ	Internal	815.512 5	SNN5838A w/ NTN2530XX XA cover	Against phantom	NNTN7649A	SYN1472A	0.655	0.0181	0.337	0.247	0.34	0.25
Band edges (81:120 mode)												
MeC-Ab-090508-15/364VKF7VZQ	Internal	806.012 5	SNN5838A w/ NTN2530XX XA cover	Against phantom	NNTN7649A	None	0.636	-0.662	0.440	0.322	0.52	0.38
MeC-Ab-090508-16/364VKF7VZQ	Internal	824.987 5	SNN5838A w/ NTN2530XX XA cover	Against phantom	NNTN7649A	None	0.645	-0.1970	0.446	0.321	0.47	0.34
2.5cm separation with overall worse case configuration from above (81:120 mode)												
MeC-Ab-090515-06/364VKF7VZQ	Internal	815.512 5	SNN5838A w/ NTN2530XX XA cover	Back - Radio @ 2.5cm. Slide closed	None	None	0.639	-0.0419	0.448	0.326	0.45	0.33
MeC-Ab-090515-07/364VKF7VZQ	Internal	815.512 5	SNN5838A w/ NTN2530XX XA cover	Front - Radio @ 2.5cm. Slide closed	None,	None	0.639	-0.7410	0.230	0.171	0.27	0.20

Table 6

Assessments at Body (iDEN 81:120 and 1:3 modes) – 896-902 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)
Data cable and battery search assessment (81:120 mode)												
MeC-Ab-090508-21/364VKF7VZQ	Internal	898.993 75	SNN5838A w/ NTN2530XX XA cover	Against phantom	NNTN7649A	None	0.648	-0.677	0.671	0.495	0.78	0.58
HvH-Ab-090509-03/364VKF7VZQ	Internal	898.993 75	SNN5838A w/ NTN2530XX XA cover	Against phantom	NNTN7649A	SKN6238A	0.652	-0.504	0.689	0.496	0.77	0.56
HvH-Ab-090509-02/364VKF7VZQ	Internal	898.993 75	SNN5837A w/ NTN2529XX XA	Against phantom	NNTN7649A	None	0.650	-0.132	0.677	0.488	0.70	0.50
MeC-Ab-090508-22/364VKF7VZQ	Internal	898.993 75	SNN5837A w/ NTN2529XX XA	Against phantom	NNTN7649A	SKN6238A	0.645	-0.643	0.718	0.523	0.83	0.61
Audio search 1:3 mode												
HvH-Ab-090509-04/364VKF7VZQ	Internal	898.993 75	SNN5837A w/ NTN2529XX XA	Against phantom	NNTN7649A	SYN1458A	0.660	-0.0373	0.431	0.318	0.43	0.32
HvH-Ab-090509-05/364VKF7VZQ	Internal	898.993 75	SNN5837A w/ NTN2529XX XA	Against phantom	NNTN7649A	SYN1472A	0.659	-0.0431	0.355	0.260	0.36	0.26
Band edges with and without data cable (81:120 mode)												
HvH-Ab-090509-08/364VKF7VZQ	Internal	896.018 75	SNN5837A w/ NTN2529XX XA	Against phantom	NNTN7649A	None	0.653	-0.966	0.890	0.627	1.11	0.78
*MeC-Ab-090511-05/364VKF7VZQ (Shortened scan)	Internal	896.018 75	SNN5837A w/ NTN2529XX XA	Against phantom	NNTN7649A	None	0.654	-0.64200	0.994	0.726	1.15	0.84
HvH-Ab-090509-09/364VKF7VZQ	Internal	901.981 25	SNN5837A w/ NTN2529XX XA	Against phantom	NNTN7649A	None	0.648	-0.572	0.739	0.546	0.84	0.62
MeC-Ab-090515-08/364VKF7VZQ	Internal	896.018 75	SNN5837A w/ NTN2529XX XA	Against phantom	NNTN7649A	SKN6238A	0.651	-0.378	0.747	0.547	0.81	0.60
MeC-Ab-090515-09/364VKF7VZQ	Internal	901.981 25	SNN5837A w/ NTN2529XX XA	Against phantom	NNTN7649A	SKN6238A	0.649	-0.252	0.595	0.437	0.63	0.46
2.5cm separation with overall worse case configuration from above (81:120 mode)												
HvH-Ab-090509-10/364VKF7VZQ	Internal	896.018 75	SNN5837A w/ NTN2529XX XA	Back - Radio @ 2.5cm. Slide closed	None	None	0.654	-0.050	0.747	0.547	0.76	0.55
HvH-Ab-090509-11/364VKF7VZQ	Internal	896.018 75	SNN5837A w/ NTN2529XX XA	Front - Radio @ 2.5cm. Slide closed	None	None	0.655	-0.691	0.384	0.283	0.45	0.33

Table 7

Assessments at Body (MOTOtalk 114:120 mode - PTT) – 902-928 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)
Battery search assessment												
HvH-Ab-090509-12/364VKF7VZQ	Internal	915.525 0	SNN5838A w/ NTN2530XX XA cover	Against phantom	NNTN7649A	None	0.877	-0.487	0.419	0.297	0.24	0.17
HvH-Ab-090509-14/364VKF7VZQ	Internal	915.525 0	SNN5837A w/ NTN2529XX XA	Against phantom	NNTN7649A	None	0.875	-0.039	0.340	0.246	0.17	0.13
Audio search												
HvH-Ab-090509-15/364VKF7VZQ	Internal	915.525 0	SNN5838A w/ NTN2530XX XA cover	Against phantom	NNTN7649A	SYN1458A	0.878	-0.0853	0.384	0.280	0.20	0.14
HvH-Ab-090509-16/364VKF7VZQ	Internal	915.525 0	SNN5838A w/ NTN2530XX XA cover	Against phantom	NNTN7649A	SYN1472A	0.876	-0.00824	0.461	0.334	0.24	0.17
Band edges												
*MeC-Ab-090509-18/364VKF7VZQ	Internal	902.525 0	SNN5838A w/ NTN2530XX XA cover	Against phantom	NNTN7649A	None	0.870	0.5690	0.501	0.356	0.26	0.18
MeC-Ab-090509-19/364VKF7VZQ	Internal	927.475 0	SNN5838A w/ NTN2530XX XA cover	Against phantom	NNTN7649A	None	0.859	-0.0701	0.268	0.195	0.14	0.10
2.5cm separation with overall worse case configuration from above												
MeC-Ab-090509-20/364VKF7VZQ	Internal	902.525 0	SNN5838A w/ NTN2530XX XA cover	Back - Radio @ 2.5cm. Slide closed	None,	None	0.872	-0.367	0.40	0.292	0.22	0.16
MeC-Ab-090509-21/364VKF7VZQ	Internal	902.525 0	SNN5838A w/ NTN2530XX XA cover	Front - Radio @ 2.5cm. Slide closed	None,	None	0.873	-0.3620	0.31	0.229	0.17	0.13

Table 8

Assessments at Body (BT CW mode) – 2.403-2.480 GHz 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)
Battery search assessment												
MeC-Ab-090509-26/364VKF7VZQ	Internal	2441.0000	SNN5837A w/NTN2529XX XA	Against phantom	NNTN7649A	None	0.010	0.2080	0.01000	0.00529	0.010	0.01
MeC-Ab-090509-27/364VKF7VZQ	Internal	2441.0000	SNN5838A w/NTN2530XX XA cover	Against phantom	NNTN7649A	None	0.010	0.1380	0.00936	0.0050	0.009	0.01
Band edges												
MeC-Ab-090509-28/364VKF7VZQ	Internal	2402.0000	SNN5837A w/NTN2529XX XA	Against phantom	NNTN7649A	None	0.010	0.0490	0.00677	0.0034	0.007	0.00
*MeC-Ab-090509-29/364VKF7VZQ	Internal	2480.0000	SNN5837A w/NTN2529XX XA	Against phantom	NNTN7649A	None	0.010	0.0241	0.01070	0.00548	0.011	0.01
2.5cm separation with overall worse case configuration from above												
MeC-Ab-090509-31/364VKF7VZQ	Internal	2480.0000	SNN5837A w/NTN2529XX XA	Back - Radio @ 2.5cm. Slide closed	None,	None	0.010	0.1030	0.00361	0.0017	0.004	0.002
MeC-Ab-090509-32/364VKF7VZQ	Internal	2480.0000	SNN5837A w/NTN2529XX XA	Front - Radio @ 2.5cm. Slide closed	None,	None	0.010	0.0200	0.00634	0.00296	0.006	0.003

10.0 Conclusion

The highest Operational Maximum Calculated 1-gram and 10-gram average SAR values found for FCC ID: IHDT56KC1 model H74XAN6JR7AN.

Max. Calc. : 1-g Avg. SAR: 1.16 W/kg (Body); 10-g Avg. SAR: 0.84 W/kg (Body)
Max. Calc. : 1-g Avg. SAR: 0.16 W/kg (Face); 10-g Avg. SAR: 0.11 W/kg (Face)
Max. Calc. : 1-g Avg. SAR: 0.88 W/kg (Head); 10-g Avg. SAR: 0.62 W/kg (Head)

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).

Appendix A

Measurement Uncertainty

The Measurement Uncertainty tables indicated in this Appendix are applicable to the DUT and Dipole test frequency ranging from 800 MHz to 3 GHz. Therefore, the highest tolerance for the probe calibration uncertainty is indicated.

Table 1: Uncertainty Budget for Device Under Test: 800 – 3000 MHz

<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	0.70 7	0.707	1.9	1.9	∞
Hemispherical Isotropy	E.2.2	9.6	R	1.73	0.70 7	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	

Table 2: Uncertainty Budget for System Validation: 800 – 3000 MHz

<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	9999 9
Expanded Uncertainty (95% CONFIDENCE LEVEL)			<i>k</i> =2				18	17	

Notes for Tables 1 and 2

- a) Column headings *a-k* are given for reference.
- b) Tol. - tolerance in influence quantity.
- c) Prob. Dist. – Probability distribution
- d) N, R - normal, rectangular probability distributions
- e) Div. - divisor used to translate tolerance into normally distributed standard uncertainty
- f) *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: **ES3-3185_Nov08**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3185**

Calibration procedure(s) **QA CAL-01.v6, QA CAL-12.v5, QA CAL-14.v3 and QA CAL-23.v3
Calibration procedure for dosimetric E-field probes**

Calibration date: **November 18, 2008**

Condition of the calibrated item **In Tolerance**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter 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)	1-Jul-08 (No. 217-00865)	Jul-09
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-08 (No. 217-00787)	Apr-09
Reference 30 dB Attenuator	SN: S5129 (30b)	1-Jul-08 (No. 217-00866)	Jul-09
Reference Probe ES3DV2	SN: 3013	2-Jan-08 (No. ES3-3013_Jan08)	Jan-09
D4E4	SN: 660	9-Sep-08 (No. D4E4-660_Sep08)	Sep-09

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642J01700	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-08)	In house check: Oct-09

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

Issued: November 18, 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



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

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

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
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.

ES3DV3 SN:3185

November 18, 2008

Probe ES3DV3

SN:3185

Manufactured:	March 25, 2008
Last calibrated:	August 18, 2008
Recalibrated:	November 18, 2008

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ES3DV3 SN:3185

November 18, 2008

DASY - Parameters of Probe: ES3DV3 SN:3185

Sensitivity in Free Space^A

Diode Compression^B

NormX	1.36 ± 10.1%	$\mu V/(V/m)^2$	DCP X	90 mV
NormY	1.24 ± 10.1%	$\mu V/(V/m)^2$	DCP Y	92 mV
NormZ	1.12 ± 10.1%	$\mu V/(V/m)^2$	DCP Z	91 mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL 900 MHz Typical SAR gradient: 5 % per mm

Sensor Center to Phantom Surface Distance		3.0 mm	4.0 mm
SAR _{be} [%]	Without Correction Algorithm	10.6	6.6
SAR _{be} [%]	With Correction Algorithm	0.8	0.5

TSL 1810 MHz Typical SAR gradient: 10 % per mm

Sensor Center to Phantom Surface Distance		3.0 mm	4.0 mm
SAR _{be} [%]	Without Correction Algorithm	9.2	5.6
SAR _{be} [%]	With Correction Algorithm	0.9	0.4

Sensor Offset

Probe Tip to Sensor Center **2.0 mm**

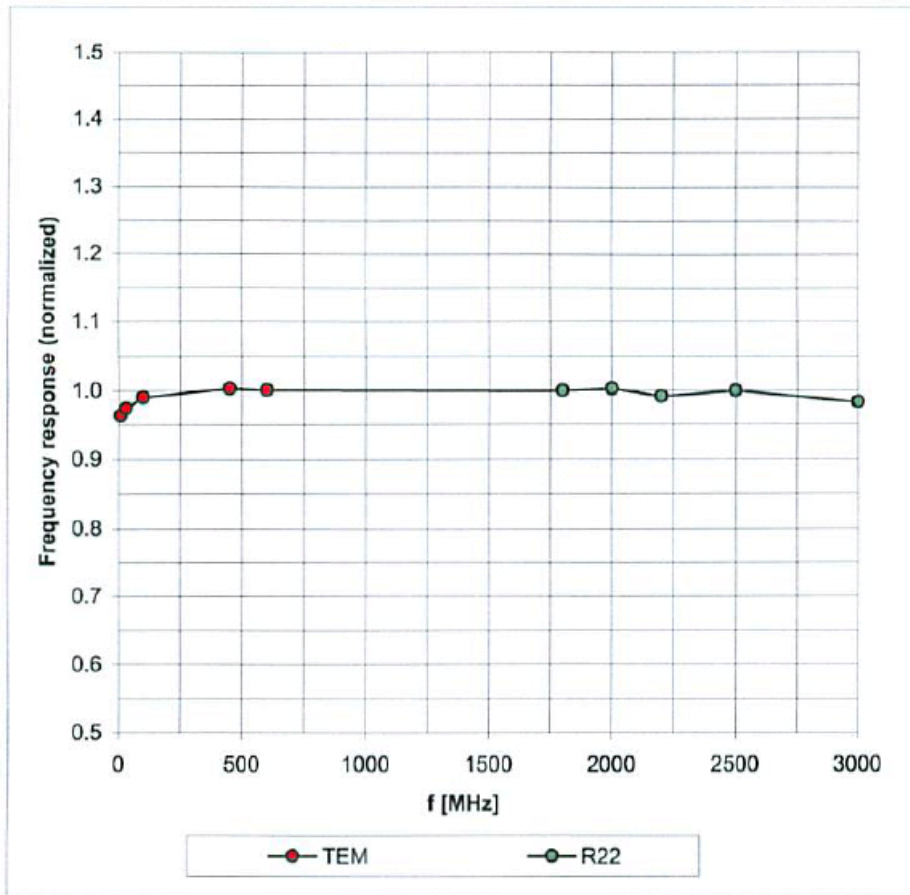
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Page 8).

^B Numerical linearization parameter: uncertainty not required.

Frequency Response of E-Field

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

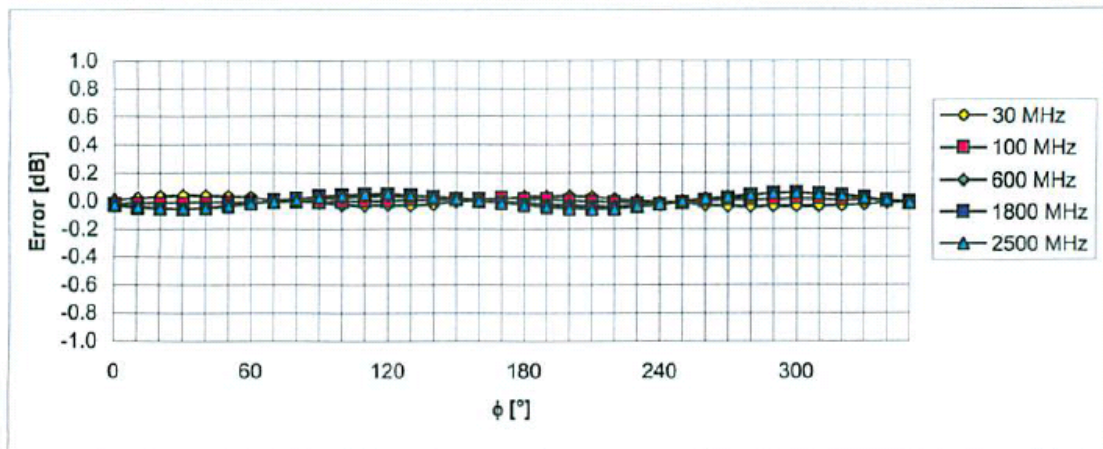
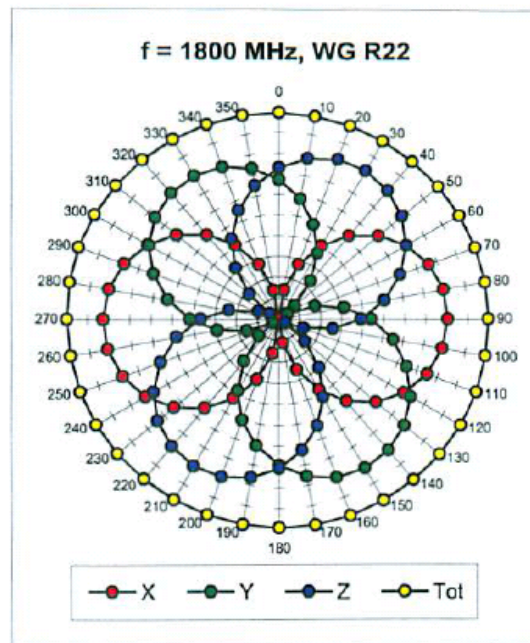
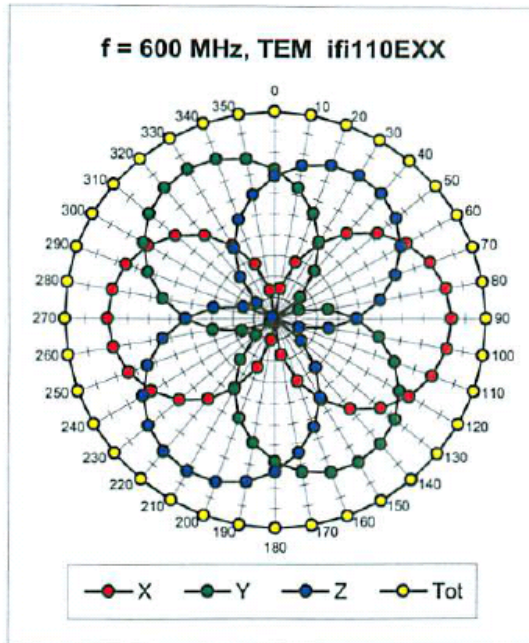


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

ES3DV3 SN:3185

November 18, 2008

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

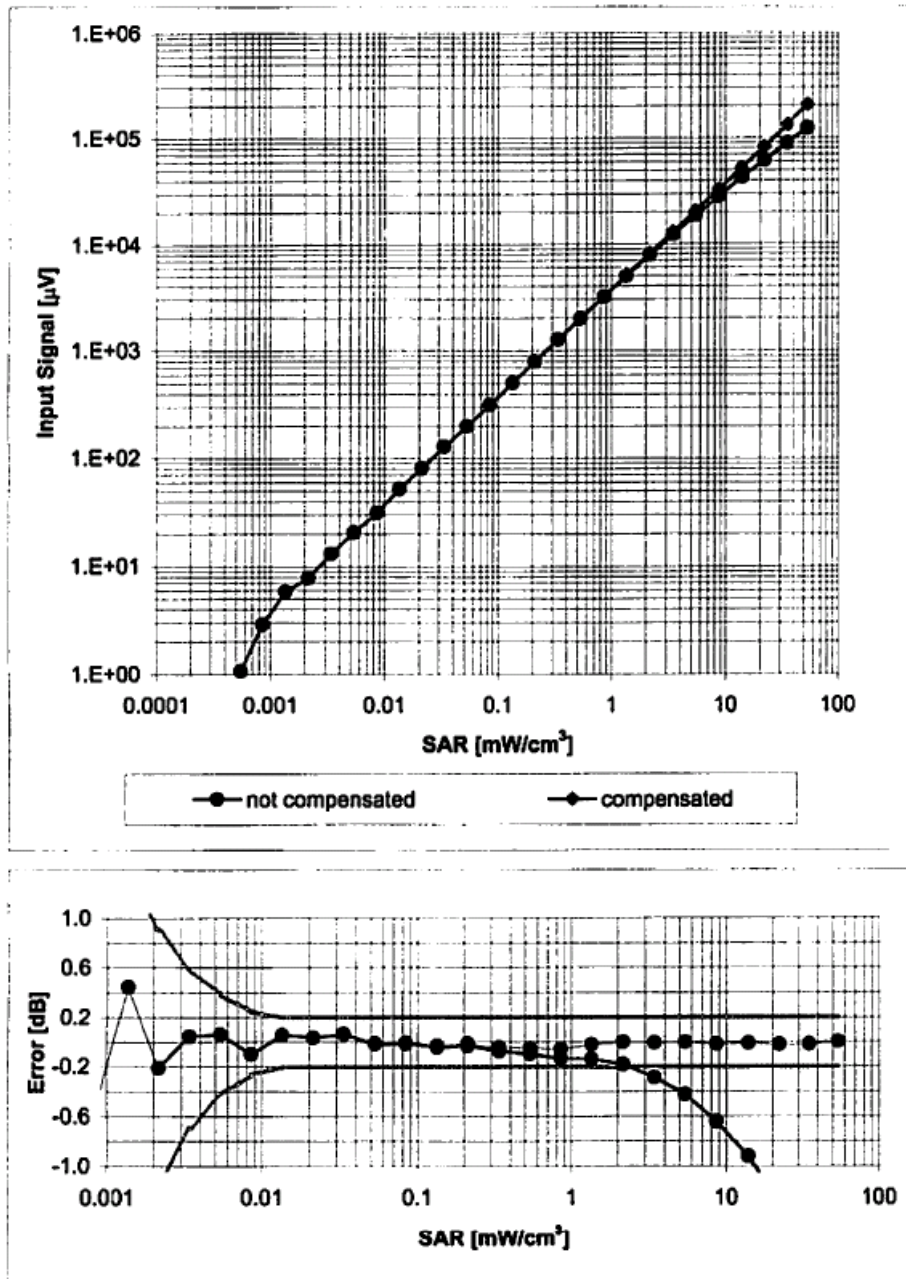


Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

ES3DV3 SN:3185

November 18, 2008

Dynamic Range $f(SAR_{head})$ (Waveguide R22, $f = 1800$ MHz)



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

ES3DV3 SN:3185

November 18, 2008

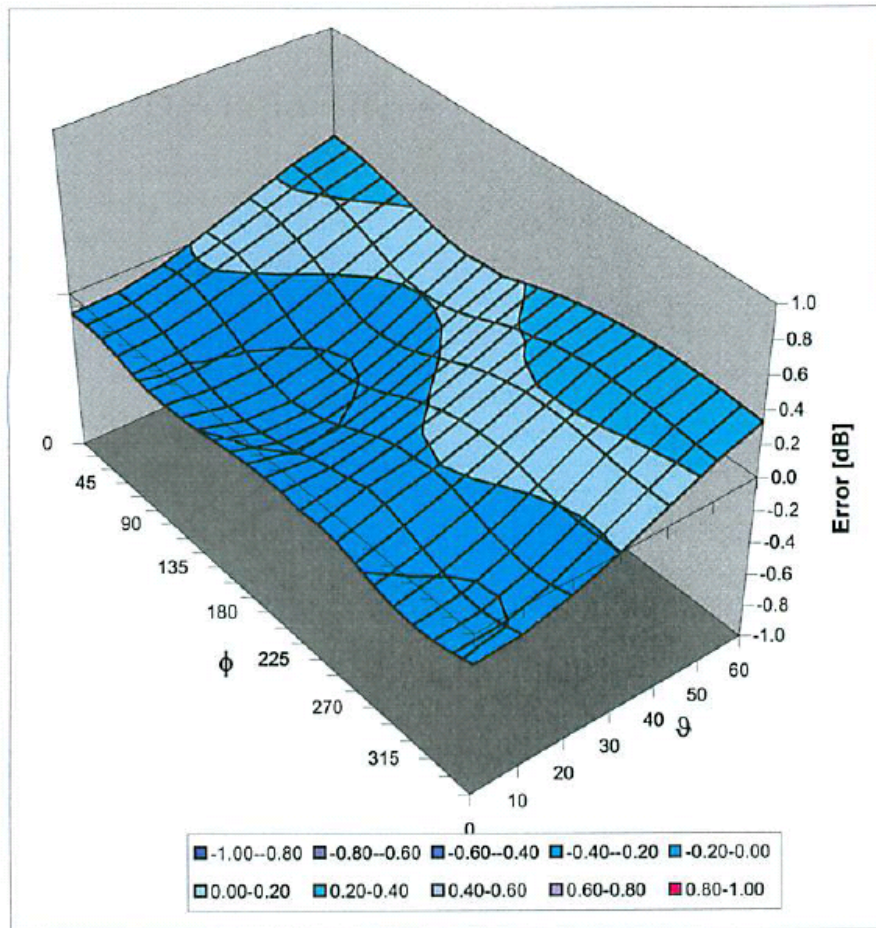
Conversion Factor Assessment

f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
450	± 50 / ± 100	Head	43.5 ± 5%	0.87 ± 5%	0.31	1.38	6.28 ± 13.3% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.55	1.48	5.56 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.59	1.51	4.70 ± 11.0% (k=2)
1950	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.64	1.41	4.55 ± 11.0% (k=2)
2300	± 50 / ± 100	Head	39.4 ± 5%	1.71 ± 5%	0.77	1.34	4.52 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.97	1.19	4.27 ± 11.0% (k=2)
2600	± 50 / ± 100	Head	39.0 ± 5%	1.96 ± 5%	0.85	1.21	4.25 ± 11.0% (k=2)
3500	± 50 / ± 100	Head	37.9 ± 5%	2.91 ± 5%	0.95	1.10	3.93 ± 13.1% (k=2)
3700	± 50 / ± 100	Head	37.7 ± 5%	3.12 ± 5%	0.95	1.10	3.69 ± 13.1% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.24	1.16	6.56 ± 13.3% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.55	1.42	5.48 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.41	1.87	4.57 ± 11.0% (k=2)
1950	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.46	1.81	4.46 ± 11.0% (k=2)
2300	± 50 / ± 100	Body	52.8 ± 5%	1.85 ± 5%	0.80	1.31	4.05 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.99	1.13	3.86 ± 11.0% (k=2)
2600	± 50 / ± 100	Body	52.5 ± 5%	2.16 ± 5%	0.99	1.07	3.74 ± 11.0% (k=2)
3500	± 50 / ± 100	Body	51.3 ± 5%	3.31 ± 5%	0.90	1.20	3.52 ± 13.1% (k=2)
3700	± 50 / ± 100	Body	51.0 ± 5%	3.55 ± 5%	0.90	1.25	3.28 ± 13.1% (k=2)

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

Deviation from Isotropy in HSL

Error (ϕ, ϑ), $f = 900$ MHz



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

Schmid & Partner Engineering AG

s p e a g

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

Additional Conversion Factors for Dosimetric E-Field Probe

Type:

ES3DV3

Serial Number:

3185

Place of Assessment:

Zurich

Date of Assessment:

November 20, 2008

Probe Calibration Date:

November 18, 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:



Schmid & Partner Engineering AG

s p e a g

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

Dosimetric E-Field Probe ES3DV3 SN:3185

Conversion factor (\pm standard deviation)

150 MHz	<i>ConvF</i>	7.6 \pm 10%	$\epsilon_r = 52.3$ $\sigma = 0.76$ mho/m (head tissue)
250 MHz	<i>ConvF</i>	6.9 \pm 10%	$\epsilon_r = 47.6$ $\sigma = 0.83$ mho/m (head tissue)
300 MHz	<i>ConvF</i>	6.8 \pm 9%	$\epsilon_r = 45.3$ $\sigma = 0.87$ mho/m (head tissue)
750 MHz	<i>ConvF</i>	5.8 \pm 7%	$\epsilon_r = 41.9$ $\sigma = 0.89$ mho/m (head tissue)
150 MHz	<i>ConvF</i>	7.3 \pm 10%	$\epsilon_r = 61.9$ $\sigma = 0.80$ mho/m (body tissue)
250 MHz	<i>ConvF</i>	6.9 \pm 10%	$\epsilon_r = 59.4$ $\sigma = 0.88$ mho/m (body tissue)
300 MHz	<i>ConvF</i>	6.8 \pm 9%	$\epsilon_r = 58.2$ $\sigma = 0.92$ mho/m (body tissue)
750 MHz	<i>ConvF</i>	5.6 \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.

Note: The standard deviation for each Conversion factor stated in above numerical assessments were taken at $k = 1$.