MOTOROLA

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TESTING CERT # 2518.01

FCC ID: AZ489FT5849
DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 1 of 2

Networks & Enterprise
EME Test Laboratory
8000 West Sunrise Blvd
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Date of Report: 4/10/07
Report Revision: O
Report ID: XTS2500_900_Rev O_070410
SR4696

Responsible Engineer:	Kim Uong (EME Engineer)
Date/s Tested:	2/8/07-3/20/07; 4/4/07
Manufacturer/Location:	Penang, Malaysia
Sector/Group/Div.:	CGISS/GTDG
Date submitted for test:	1/12/07
DUT Description:	896-940 MHz 1.0-2.5 Watt, 512 Channels / 3 X 6 Keypad / 6 line Display
Test TX mode(s):	CW
Max. Power output:	2.8 Watts
Nominal Power:	2.5 Watts
Tx Frequency Bands:	896-901MHz; 935-940MHz
Signaling type:	FM
Model(s) Tested:	H46WCH9PW7BN
Model(s) Certified:	H46WCH9PW7BN
Serial Number(s):	408TGL0004, 408TGL0007
Classification:	Controlled/Occupational
Rule Part(s):	90

Approved Accessories:

Antenna(s):
NAF5038AR (1/2 Wave whip 896-941 MHz -0.85dBi); NAF5042AR (1/4 Wave stubby 806-941 MHz -2.3dBi); NAF5040AR (Dipole 896-941 MHz -0.85dBi)

Battery(ies):
NTN9815B (NICD, 1525 MAH); NTN9816B (NICAD FM 1525MAH); NTN9858C (IMPRES HIGH CAPACITY 1800 NIMH); NTN9857C(IMPRES NIMH FM 1700MAH); NNTN6263A (JedRay NiMH FM, , IMPRES)

Body worn accessory(ies):
HLN9844A (2 inch belt clip); HLN6853A (2.25 inch belt clip); NNTN4115A (Bonded case 3 inch loop with swivel); NNTN4116A (Bonded case 2.5 inch loop with swivel); NNTN4117A (Bonded case belt loop 3 inch); TDN9675B (Wrist Strap); NTN5243A (Shoulder Strap); NLN6349A (Shoulder Strap).

Audio/Data cable accessory(ies):
See section 3.0 for list of approved audio accessories.

Max. Calc. : 1-g Avg. SAR: 7.61 W/kg (Body); 10-g Avg. SAR: 5.26 W/kg (Body)
Max. Calc. : 1-g Avg. SAR: 2.49 W/kg (Face); 10-g Avg. SAR: 1.79 W/kg (Face)

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

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

Signature on file – Stephen Whalen for Deanna Zakharia
Deanna Zakharia N&E EME Lab Senior Resource Manager, Laboratory Director,

Approval Date: 4/10/07

Certification Date: 4/10/07

Certification No.: L1070410P

Part 1 of 2

APPENDICES

Part 2 of 2

Report Revision History

Date	Revision	Comments
4/10/07	O	Initial release

1.0 Introduction and Overview

This report details the utilization, test setup, test equipment, and test results of the Specific Absorption Rate (SAR) measurements performed at the N&E EME Test Lab for the model number H46WCH9PW7BN of FCC ID: AZ489FT5849. 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: AZ489FT5849 is a 900MHz portable two-way radio that operates using frequency modulation (FM) incorporating traditional simplex transmission protocol. This radio is intended to be assessed using CW transmission via its' inherent test mode signaling capability. The model represented under this filing utilizes removable antennas and is capable of transmitting in the 896-901MHz, 935-940MHz band. The nominal output power is 2.5W with maximum output power of 2.8W as defined by the 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 these agencies, which can be expected to employ the usage instructions, safety information and operational cautions set forth in the user's manual, instructional sessions or other means. Motorola also makes available to its customers training classes on the proper use of two-way radios and wireless data devices.

FCC ID: AZ489FT5849 is offered with the options and accessories listed on the coversheet of this report as well as the audio accessories listed below:

BDN6635C Heavy-duty VOX headset with noise-cancelling boom mic
BDN6636C Heavy-duty VOX headset with throat mic
BDN6664A Earpiece with std. earphone
BDN6665A Earpiece with extra loud earphone
BDN6666A Earpiece with volume control
BDN6667A Earpiece, Mic and PTT combined
BDN6668A Earpiece, Mic and PTT separate
BDN6669A Earpiece, Mic and PTT with extra loud earphone
BDN6670A Earpiece, Mic and PTT separate with extra loud earphone
BDN6719A Earpad, w/3.5 MM threaded plug
BDN6781A Earbud, Single, Receive Only, Black
NMN6191C Jedi Noise Canceling Remote Speaker Mic

NMN6193C Jedi Remote Speaker Mic
BDN6677A Standard Ear Mic - 95 DB (black)
BDN6678A Standard Ear Mic - 95 DB (beige)
BDN6641A High noise level Ear Mic - up to 105 DB (Black)
BDN6708C Push to Talk Interface Module
BDN6671B Voice-activated Interface Module
BDN6645A Noise Canceling Bom Mic Headset with PTT on ear cup (use with BDN6673B)
BDN6673B Headset Adapter Cable
BDN6780A Earpiece, single with mic and PTT combined (black)
NTN8613C Surveilance Adapter - has the 6 pin Hirose Connector
NNTN4285A RSM Adapter
BDN6726A Earpiece with standard ear phone, black
BDN6727A Earpiece with extra loud ear phone, black
BDN6728A Earpiece with volume control, black
RMN5038A RSM
BDN6729A Earpiece, mic and PTT combined, black
BDN6730A Earpiece, mic and PTT separate, black
BDN6731A Earpiece, mic and PTT combined, with extra loud earphone, black
BDN6732A Earpiece, mic and PTT separate, with extra loud earphone, black
BDN6676D Jedi adapter 3.5mm W/ PTT switch
NMN1020A Safety helmet headset
NMN6245A Light weight headset
NMN6246B Ultralite headset with boom mic
NMN6258A Ultralite headset with boom mic
NMN6259A Medium weight, dual headset with NC mic
RMN4049A Temple Transducer Headset
NTN8819B CommPort II (Integrated Microphone/Receiver System
NTN1625A CommPort Integrated Microphone/Receiver with PTT on Radio Adapter
NTN1624A CommPort Integrated Microphone/Receiver with Palm PTT
NTN1663A CommPort Integrated Microphone/Receiver with Ring PTT
NTN1736A CommPort Integrated Microphone/Receiver with Snap on Side PTT
0180300E83 Body switch PTT
ZMN6031A Spkr Mic 3 Piece
ZMN6032A Spkr Mic 2 Piece
ZMN6038A Speaker Mic, 2-piece, extra loud
ZMN6039A Speaker Mic, 3 piece, extra loud
NTN7660C MAN-DOWN side connector
NMN6193BSP03 Immersible RSM
RMN5074A 18 inch Public Safety Microphone with antenna NAF5042A
RMN5073A 24 inch Public Safety Microphone with antenna NAF5042A
RMN5072A 30 inch Public Safety Microphone with antenna NAF5042A

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

4.2 Description of Phantom(s)

4.2.1 Flat Phantom

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

4.2.2 SAM Phantom

Phantom Type	Material Parameters	Material Thickness (mm)	Support structure material	Loss Tangent (wood)
Not Applicable	200MHz -3GHz; Er = <5, 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 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	900MHz	
	Head	Body
Sugar	56.5	44.9
Diacetin	NA	NA
De ionized -Water	40.95	53.06
Salt	1.45	0.94
HEC	1.0	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	GB40206553	4/21/2007
Power Meter (HP)	E4418B	US39251150	4/20/2007
Power Meter (Agilent)	E4418B	GB40206480	12/13/2007
Power Sensor (Agilent)	8482B	3318A07546	10/17/2007
Power Sensor (Agilent)	8482B	3318A07548	12/27/2007
Power Sensor (Agilent)	8482B	3318A07392	5/17/2007
Bi-Directional Coupler (NARDA)	3020A	40295	6/6/2008
Signal Generator (HP)	E4421B	US39270649	8/16/2008
AMP (Amplifier Research)	10W1000	5924	CNR
Signal Generator (HP)	E4438C	MY42082269	6/23/2008
Agilent PNA-L Network Analyzer	N5230A	MY45001092	5/22/2007
Dielectric Probe Kit (HP)	85070C	US99360076	CNR
Speag Dipole	D900V2	84	4/21/2008

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 N&E EME lab validated the dipole to the applicable IEEE system performance targets. Within the same day system validation was performed using FCC body tissue parameters to generate the system performance target values for body at the applicable frequency. The results of the N&E EME system performance validation are provided herein.

6.1 Equivalent Tissue Test Results

Simulated tissue prepared for SAR measurements is measured daily and within 24 hours prior to actual SAR testing to verify that the tissue is within +/- 5% of target parameters at the center of the transmit band. This measurement is done using the applicable equipment indicated in section 5.0.

Actual versus Target tissue parameters (2/8/07 – 3/20/07, 4/4/07; 13 test days)

FCC Body				
Frequency (MHz)	**Di-electric Constant Target**	**Di-electric Constant Meas. (Range)**	**Conductivity Target S/m**	**Conductivity Meas. (Range) S/m**
937.5	55	52.5-53.6	1.07	1.10-1.12
900	55	52.5-53.9	1.05	1.06-1.08
898.5	55	52.3-54.0	1..05	1.05-1.08

IEEE Head				
Frequency (MHz)	**Di-electric Constant Target**	**Di-electric Constant Meas. (Range)**	**Conductivity Target S/m**	**Conductivity Meas. (Range) S/m**
937.5	41.4	40.3-40.8	0.99	1.02-1.03
900	41.5	40.7-41.2	0.97	0.99-1.00
898.5	41.5	40.7-41.3	0.97	0.99-1.00

6.2 System Check Test Results

Probe Serial #	Tissue Type	Probe Cal Date	Dipole Kit / Serial #	System Perf. Result when normalized to 1W (mW/g)	Reference S.A.R @ 1W (mW/g)	Test Date(s)
1384	FCC Body	5/30/06	SPEAG D900V2 /084	11.01 +/- 0.25	11.52 +/- 10%	2/8/07 - 3/7/07 (8 test days)
1384	FCC Body	5/30/06	SPEAG D900V2 /084	11.31+/- 0.39	11.06 +/- 10%	3/19/07- 4/4/07 (3 test days)
1384	IEEE Head	5/30/06	SPEAG D900V2 /084	10.91 +/- 0.05	11.35+/- 10%	2/14/07 – 2/15/07 (2 test days)

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

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

7.0 DUT Test Strategy and Methodology

7.1 DUT Configuration(s)

The DUT is a portable device with PTT operation using FM transmission signaling operational at the body, and face using the offered applicable audio accessories. The device is placed in the test positions presented in Appendix G.

Test Plan

All options and accessories listed on the cover page and section 3.0 of this report were considered in order to develop the SAR test plan for this product. SAR measurements were performed using a flat phantom with the applicable simulated tissue to assess performance at the body and face respectively using the relevant transmission modes.
Note that a coarse-to-cube approximation methodology was utilized to determine the worst-case SAR performance configuration for each applicable body location. The test configurations that produced the highest SAR results for each body position using the coarse-to-cube approximation methodology were assessed using the full DASY4™ coarse and 7x7x7 cube scans.

Assessments at the Body **[Page 12-15; Table 1]**

- Assessment of the offered antennas at the center of the 896-901MHz, and 935-940MHz bands using NTN9815B battery, HLN9844A Belt clip, and NMN6191C RSM.
- Assessment of the offered batteries using the highest test configuration from the Body above.
- Assessment of the offered body worn accessories using the highest test configuration from the above.
- Assessment of the offered audio accessories using the highest test configuration from the above.
- Assessment across the frequency bands of each offered antenna using the highest test configuration from the above.
- Assessment of the carry strap with applicable carry cases and with the back side, left side and right side of the carry case against the phantom, using the highest test configuration from the above.
- Assessment of the offered Public Safety Microphones, with the NAF5042A antenna, at the center of the 896-901MHz, and 935-940MHz bands using the applicable highest test configuration from the Body assessment above.
- Assessment across the frequency bands of the NAF5042A antenna and the Public Safety Microphone that indicated highest SAR results from the Public Safety Microphone assessment above.

Assessments at the Body 2.5cm **[Page 16; Table 1]**

- Assessment with the DUT's back and the radio/antenna at 2.5cm from the phantom, without the body worn accessory, using the highest test configuration for each antenna from the applicable Body assessment above.
- Assessment with the DUT's front separated 2.5cm from the phantom without a body worn accessory using the highest test configuration from the body assessment above.

Assessments at the Face **[Page 17-18; Table 2]**

- Assessment of the offered antennas of the 896-901MHz, and 935-940MHz bands using the battery NTN9815B.
- Assessment of the offered batteries using the highest test configuration from the above.
- Assessment of the offered audio accessories using the highest test configuration from the above.
- Assessment across the band of each offered antennas using the highest test configuration from the above.

Shortened scan assessment **[Page 16; Table 1]**

- A "shortened" scan was performed using the offered battery that produced the highest SAR results overall. Note that the shortened scan is obtained by first running a coarse scan to find the peak area and then, using a newly charged battery, a cube scan only was performed. The shortened scan represents the cube scan performance results.

7.2 Device Positioning Procedures

Reference Appendix G for photos of the DUT tested positions.

7.2.1 Body

- The DUT was positioned in normal use configuration against the phantom with the offered body worn accessory.
- The DUT was positioned with its' back and the radio/antenna at 2.5cm from the phantom.
- The DUT was positioned with its' front at 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 with and without the offered applicable audio accessories.

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^{o}C of the temperature at which the dielectric properties were determined. The liquid depth within the phantom used for measurements was 15cm +/- 0.5cm. Additional precautions are routinely taken to ensure the stability of the simulated tissue such as covering the phantoms when scans are not actively in process in order to minimize evaporation. The lab environment is continuously monitored. The table below presents the range and average environmental conditions during the SAR tests reported herein:

	Target	Measured
Ambient Temperature	20 - 25 ˚C	Range: 21.5-24.4˚C Avg. 22.0˚C
Relative Humidity	30 - 70 %	Range: 33.4-60.2% Avg. 52.2%
Tissue Temperature	NA	Range: 19.8-21.8˚C Avg. 20.71 ˚C

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

9.0 Test Results Summary

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

Table 1

Assessments at the Body												
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)**
Antennas Assessment												
MeC-AB-070208-02/408TGL0004	NAF5038AR	898.5125	NTN9815B	Body	HLN9844A	NMN6191C	2.77	-0.328	2.91	2.05	1.59	1.12
MeC-AB-070208-03/408TGL0004	NAF5042AR	898.5125	NTN9815B	Body	HLN9844A	NMN6191C	2.77	-0.182	5.47	3.81	2.88	2.01
MeC-AB-070208-04/408TGL0004	NAF5040AR	898.5125	NTN9815B	Body	HLN9844A	NMN6191C	2.78	-0.120	4.15	2.92	2.15	1.51
MeC-AB-070208-05/408TGL0004	NAF5038AR	937.5000	NTN9815B	Body	HLN9844A	NMN6191C	2.78	-0.123	2.280	1.600	1.18	0.83
MeC-AB-070208-06/408TGL0004	NAF5042AR	937.5000	NTN9815B	Body	HLN9844A	NMN6191C	2.79	0.0427	2.730	1.920	1.37	0.96
MeC-AB-070208-07/408TGL0004	NAF5040AR	937.5000	NTN9815B	Body	HLN9844A	NMN6191C	2.77	-0.1020	3.290	2.300	1.70	1.19
Additional Batteries Assessment												
MeC-AB-070208-08/408TGL0004	NAF5042AR	898.5125	NTN9816B	Body	HLN9844A	NMN6191C	2.79	0.0957	4.820	3.360	2.42	1.69
MeC-AB-070208-09/408TGL0004	NAF5042AR	898.5125	NTN9857C	Body	HLN9844A	NMN6191C	2.79	0.0829	6.080	4.240	3.05	2.13
MeC-AB-070208-10/408TGL0004	NAF5042AR	898.5125	NTN9858C	Body	HLN9844A	NMN6191C	2.79	0.168	7.030	4.880	3.53	2.45
MeC-AB-070209-02/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	NMN6191C	2.81	-0.105	7.000	4.890	3.59	2.50
Additional Carry Cases Assessment												
MeC-AB-070209-03/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN6853A	NMN6191C	2.78	0.0479	6.720	4.700	3.38	2.37
MeC-AB-070209-04/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	NNTN4115A	NMN6191C	2.78	-0.0435	1.450	1.010	0.738	0.514
MeC-AB-070209-05/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	NNTN4116A	NMN6191C	2.78	0.0101	1.680	1.180	0.85	0.59
MeC-AB-070209-06/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	NNTN4117A	NMN6191C	2.80	-0.0218	3.450	2.430	1.73	1.22

Table 1 (continued)

Assessments at the Body (continued)												
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)**
Additional Attachments Assessment												
MeC-AB-070215-15/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	BDN6645A w/ BDN6673B	2.79	-0.0426	6.290	4.400	3.19	2.23
MeC-AB-070215-16/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	BDN6729A w/ BDN6676D	2.78	0.14500	7.250	5.030	3.65	2.53
MeC-AB-070215-17/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	BDN6730A w/ BDN6676D	2.79	0.0794	7.230	5.030	3.63	2.52
MeC-AB-070215-18/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	NMN6245Aw / BDN6676D	2.79	0.1370	6.720	4.680	3.37	2.35
MeC-AB-070215-19/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	NMN6246Bw / BDN6676D	2.78	0.0417	7.920	5.500	3.99	2.77
MeC-AB-070215-20/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	NMN6258A	2.78	0.0435	7.510	5.260	3.78	2.65
MeC-AB-070215-21/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	RMN4049A	2.79	-0.00969	8.680	6.040	4.37	3.04
HvH-AB-070216-02/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	NMN1020A	2.79	0.0459	7.070	4.920	3.55	2.47
HvH-AB-070216-03/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	NTN1625A	2.80	0.0458	6.900	4.820	3.45	2.41
HvH-AB-070216-04/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	NTN1624A	2.79	0.0667	7.060	4.930	3.54	2.47
HvH-AB-070216-05/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	NTN1663A	2.80	0.0303	6.780	4.780	3.39	2.39
HvH-AB-070216-06/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	NTN1736A	2.80	0.1370	7.390	5.160	3.70	2.58
HvH-AB-070216-07/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	ZMN6032A w/ NTN8613C	2.79	-0.0146	7.840	5.470	3.95	2.75
HvH-AB-070216-08/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	ZMN6031A w/ NTN8613C	2.80	0.0152	7.720	5.400	3.86	2.70
HvH-AB-070216-09/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	RMN5038A	2.79	0.00884	7.600	5.310	3.81	2.66
HvH-AB-070216-10/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	NMN6193BSP03	2.79	0.0492	5.590	3.920	2.81	1.97
HvH-AB-070216-11/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	HLN9844A	BDN6671B w/ BDN6641A	2.79	0.0242	7.130	4.990	3.58	2.50

Table 1 (continued)

Assessments at the Body (continued)												
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)
Band edges Assessment for each band and antenna												
HvH-AB-070216-12/408TGL0004	NAF5038AR	896.0125	NNTN6263A	Body	HLN9844A	RMN4049A	2.81	-0.1610	1.930	1.370	1.00	0.71
MeC-AB-070216-13/408TGL0004	NAF5038AR	898.5125	NNTN6263A	Body	HLN9844A	RMN4049A	2.80	-0.1400	1.750	1.240	0.90	0.64
MeC-AB-070216-14/408TGL0004	NAF5038AR	901.0000	NNTN6263A	Body	HLN9844A	RMN4049A	2.79	-0.1670	1.700	1.200	0.89	0.63
MeC-AB-070216-15/408TGL0004	NAF5038AR	935.0125	NNTN6263A	Body	HLN9844A	RMN4049A	2.81	-0.248	1.450	1.030	0.77	0.55
MeC-AB-070216-16/408TGL0004	NAF5038AR	937.5000	NNTN6263A	Body	HLN9844A	RMN4049A	2.80	-0.249	1.430	1.010	0.76	0.53
MeC-AB-070216-17/408TGL0004	NAF5038AR	940.0000	NNTN6263A	Body	HLN9844A	RMN4049A	2.81	-0.229	1.350	0.954	0.71	0.50
MeC-AB-070216-18/408TGL0004	NAF5042AR	896.0125	NNTN6263A	Body	HLN9844A	RMN4049A	2.79	0.0621	6.290	4.420	3.16	2.22
MeC-AB-070216-19/408TGL0004	NAF5042AR	901.0000	NNTN6263A	Body	HLN9844A	RMN4049A	2.80	0.339	6.300	4.420	3.15	2.21
MeC-AB-070216-20/408TGL0004	NAF5042AR	935.0125	NNTN6263A	Body	HLN9844A	RMN4049A	2.78	-0.00544	5.650	3.970	2.85	2.00
MeC-AB-070216-21/408TGL0004	NAF5042AR	937.5000	NNTN6263A	Body	HLN9844A	RMN4049A	2.78	0.00958	5.290	3.700	2.66	1.86
MeC-AB-070216-22/408TGL0004	NAF5042AR	940.0000	NNTN6263A	Body	HLN9844A	RMN4049A	2.79	-0.0589	5.290	3.720	2.69	1.89
MeC-AB-070216-23/408TGL0004	NAF5040AR	896.0125	NNTN6263A	Body	HLN9844A	RMN4049A	2.79	-0.252	2.420	1.720	1.29	0.91
MeC-AB-070216-24/408TGL0004	NAF5040AR	898.5125	NNTN6263A	Body	HLN9844A	RMN4049A	2.77	-0.0645	2.220	1.570	1.14	0.81
MeC-AB-070216-25/408TGL0004	NAF5040AR	901.0000	NNTN6263A	Body	HLN9844A	RMN4049A	2.78	-0.167	2.570	1.800	1.34	0.94
MeC-AB-070216-26/408TGL0004	NAF5040AR	935.0125	NNTN6263A	Body	HLN9844A	RMN4049A	2.79	-0.176	2.040	1.450	1.07	0.76
MeC-AB-070216-27/408TGL0004	NAF5040AR	937.5000	NNTN6263A	Body	HLN9844A	RMN4049A	2.81	-0.116	1.940	1.370	1.00	0.70
MeC-AB-070216-28/408TGL0004	NAF5040AR	940.0000	NNTN6263A	Body	HLN9844A	RMN4049A	2.80	-0.17	1.900	1.340	0.99	0.70

Table 1 (continued)

Assessments at the Body (continued)												
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)**
Carry Straps Assessment												
HvH-AB-070223-02/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	Back side w/ swivel attached - NTN5243A w/ NNTN4116A	RMN4049A	2.78	-0.0870	2.030	1.420	1.04	0.73
HvH-AB-070223-03/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	Back side w/o swivel attached - NTN5243A w/ NNTN4116A	RMN4049A	2.77	-0.0251	3.810	2.670	1.94	1.36
HvH-AB-070226-02/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	Right side w/ swivel attached - NTN5243A w/ NNTN4116A	RMN4049A	2.78	0.0652	2.280	1.550	1.15	0.78
HvH-AB-070226-03/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	Left side w/ swivel atteached - NTN5243A w/ NNTN4116A	RMN4049A	2.77	-0.0806	6.000	4.150	3.09	2.14
HvH-AB-070226-04/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	Back side - NTN5243A w/ NNTN4117A	RMN4049A	2.78	-0.0636	3.200	2.240	1.64	1.14
HvH-AB-070226-05/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	Left side - NTN5243A w/ NNTN4117A	RMN4049A	2.78	0.03660	7.170	4.680	3.61	2.36
HvH-AB-070226-06/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	Right side - NTN5243A w/ NNTN4117A	RMN4049A	2.78	0.05710	1.270	0.824	0.64	0.41
Public Safety Microphones Assessment												
MeC-AB-070319-09/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	PSM's beltclip	RMN5074A w/RLN5918A	2.72	-0.0425	7.210	4.970	3.75	2.58
MeC-AB-070319-11/408TGL0004	NAF5042AR	937.5000	NNTN6263A	Body	PSM's beltclip	RMN5074A w/RLN5918A	2.73	-1.120	5.43	3.74	3.60	2.48
HvH-Ab-070320-02/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	PSM's beltclip	RMN5073A w/RLN5918A	2.80	-0.0299	6.77	4.69	3.41	2.36
HvH-Ab-070320-03/408TGL0004	NAF5042AR	937.5000	NNTN6263A	Body	PSM's beltclip	RMN5073A w/RLN5918A	2.79	-0.918	6.03	4.17	3.74	2.58
HvH-Ab-070320-04/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	PSM's beltclip	RMN5072A w/RLN5918A	2.80	-0.0288	8.39	5.78	4.22	2.91
HvH-Ab-070320-05/408TGL0004	NAF5042AR	937.5000	NNTN6263A	Body	PSM's beltclip	RMN5072A w/RLN5918A	2.79	-0.000694	5.63	3.89	2.83	1.95
Band edges Assessment for Public Safety Microphones												
HvH-Ab-070320-06/408TGL0004	NAF5042AR	896.0125	NNTN6263A	Body	PSM's beltclip	RMN5072A w/RLN5918A	2.81	-0.0293	8.48	5.84	4.27	2.94
HvH-Ab-070320-07/408TGL0004	NAF5042AR	901.0000	NNTN6263A	Body	PSM's beltclip	RMN5072A w/RLN5918A	2.79	0.0183	8.48	5.84	4.26	2.93
MeC-Ab-070404-02/408TGL0004	NAF5042AR	935.0125	NNTN6263A	Body	PSM's beltclip	RMN5073A w/RLN5918A	2.75	-1.00	5.53	3.82	3.54	2.45
MeC-Ab-070404-03/408TGL0004	NAF5042AR	940.0000	NNTN6263A	Body	PSM's beltclip	RMN5073A w/RLN5918A	2.74	-0.975	5.7	3.95	3.65	2.53

Table 1 (continued)

Assessments at the Body (continued)												
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 at 2.5cm for each antenna												
MeC-AB-070217-02/408TGL0004	NAF5040AR	898.5125	NNTN6263A	Body	None, Back - antenna at 2.5cm	RMN4049A	2.79	-0.234	12.400	8.510	6.57	4.51
***MeC-AB-070217-07/408TGL0007**	NAF5040AR	898.5125	NNTN6263A	Body	None, Back - antenna at 2.5cm	RMN4049A	2.80	-.0331	12.7	8.76	6.85	4.73
***HvH-AB-070226-07/408TGL0004**	NAF5040AR	901.0000	NNTN6263A	Body	None, Back - antenna at 2.5cm	RMN4049A	2.76	-0.126	12.800	8.870	6.68	4.63
HvH-AB-070226-08/408TGL0004	NAF5038AR	896.0125	NNTN6263A	Body	None, Back - antenna at 2.5cm	RMN4049A	2.79	-0.195	11.300	7.720	5.93	4.05
HvH-AB-070226-09/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Body	None, Back - radio at 2.5cm	RMN4049A	2.78	0.0173	3.260	2.320	1.64	1.17
HvH-AB-070226-10/408TGL0004	NAF5040AR	901.0000	NNTN6263A	Body	None, Front - radio at 2.5cm	RMN4049A	2.76	0.00528	2.060	1.460	1.04	0.74
***Worst case configuration per body location from above –using the DASY 4 full coarse and 7x7x7 cube scan measurements.**												
HvH-Ab-070307-05/408TGL0004	NAF5040AR	901.0000	NTN9815B	Body	None, Back - antenna at 2.5cm	NMN6191C	2.77	-0.409	13.700	9.470	7.61	5.26
MeC-AB-070217-10/408TGL0007	NAF5040AR	898.5125	NNTN6263A	Body	None, Back - antenna at 2.5cm	RMN4049A	2.79	-0.175	13.3	9.25	6.95	4.83
Shorten scan												
MeC-AB-070217-11/ 408TGL0007	NAF5040AR (896-941)	898.5125	NNTN6263A	Body	None, Back - antenna at 2.5cm	RMN4049A	2.80	-0.036	13.900	9.600	7.01	4.84

Table 2

Assessments at the Face												
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)
Antennas Assessment												
MeC-Face-070213-02/408TGL0004	NAF5038AR	898.5125	NTN9815B	Face	None	None	2.79	-0.188	1.99	1.41	1.04	0.74
MeC-Face-070213-03/408TGL0004	NAF5042AR	898.5125	NTN9815B	Face	None	None	2.79	-0.0722	4.51	3.21	2.30	1.64
MeC-Face-070213-04/408TGL0004	NAF5040AR	898.5125	NTN9815B	Face	None	None	2.80	-0.1230	2.47	1.75	1.27	0.90
MeC-Face-070213-05/408TGL0004	NAF5038AR	937.5000	NTN9815B	Face	None	None	2.77	-0.1320	1.62	1.15	0.84	0.60
MeC-Face-070213-06/408TGL0004	NAF5042AR	937.5000	NTN9815B	Face	None	None	2.79	-0.1280	3.43	2.43	1.77	1.26
MeC-Face-070213-07/408TGL0004	NAF5040AR	937.5000	NTN9815B	Face	None	None	2.78	-0.0372	2.15	1.52	1.09	0.77
Additional Batteries Assessment												
MeC-Face-070213-08/408TGL0004	NAF5042AR	898.5125	NTN9816B	Face	None	None	2.78	-0.0829	4.09	2.91	2.10	1.49
MeC-Face-070213-09/408TGL0004	NAF5042AR	898.5125	NTN9857C	Face	None	None	2.78	-0.1070	4.50	3.21	2.32	1.66
MeC-Face-070213-10/408TGL0004	NAF5042AR	898.5125	NTN9858C	Face	None	None	2.79	-0.0979	4.29	3.06	2.20	1.57
MeC-Face-070213-11/408TGL0004	NAF5042AR	898.5125	NNTN6263A	Face	None	None	2.80	-0.1100	4.30	3.06	2.21	1.57
Additional Attachments Assessment												
HvH-Face-070214-02/408TGL0004	NAF5042AR	898.5125	NTN9857C	Face	None	BDN6665A w/ BDN6676D	2.78	0.00112	2.970	2.120	1.50	1.07
HvH-Face-070214-03/408TGL0004	NAF5042AR	898.5125	NTN9857C	Face	None	BDN6666A w/ BDN6676D	2.77	0.00518	3.570	2.540	1.80	1.28
MeC-Face-070214-04/408TGL0004	NAF5042AR	898.5125	NTN9857C	Face	None	BDN6781A w/ BDN6676D	2.77	-0.157	3.330	2.370	1.74	1.24
MeC-Face-070214-05/408TGL0004	NAF5042AR	898.5125	NTN9857C	Face	None	NTN7660C	2.79	-0.0731	4.160	2.970	2.12	1.52
MeC-Face-070214-06/408TGL0004	NAF5042AR	898.5125	NTN9857C	Face	None	BDN6719A w / BDN6676D	2.78	-0.05	3.500	2.500	1.78	1.27
MeC-Face-070214-07/408TGL0004	NAF5042AR	898.5125	NTN9857C	Face	None	BDN6726A w/ BDN6676D	2.78	-0.0709	3.590	2.560	1.84	1.31
MeC-Face-070214-08/408TGL0004	NAF5042AR	898.5125	NTN9857C	Face	None	BDN6727A w/ BDN6676D	2.78	-0.0876	3.280	2.340	1.69	1.20

Table 2 (continued)

Assessments at the Face (continued)												
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)**
Band edges Assessment for each band and antenna												
MeC-Face-070214-09/408TGL0004	NAF5038AR	896.0125	NTN9857C	Face	None	None	2.80	-0.16	2.310	1.640	1.20	0.85
MeC-Face-070214-10/408TGL0004	NAF5038AR	898.5125	NTN9857C	Face	None	None	2.79	-0.0999	2.240	1.590	1.15	0.82
MeC-Face-070214-11/408TGL0004	NAF5038AR	901.0000	NTN9857C	Face	None	None	2.77	-0.102	2.250	1.600	1.16	0.83
MeC-Face-070214-12/408TGL0004	NAF5038AR	935.0125	NTN9857C	Face	None	None	2.79	-0.0797	1.850	1.310	0.95	0.67
MeC-Face-070214-13/408TGL0004	NAF5038AR	937.5000	NTN9857C	Face	None	None	2.79	-0.0874	1.700	1.200	0.87	0.61
MeC-Face-070214-14/408TGL0004	NAF5038AR	940.0000	NTN9857C	Face	None	None	2.77	-0.0927	1.720	1.220	0.89	0.63
HvH-Face-070215-02/408TGL0004	NAF5042AR	896.0125	NTN9857C	Face	None	None	2.81	-0.1640	4.600	3.280	2.39	1.70
***MeC-Face-070215-13/408TGL0007**	NAF5042AR	896.0125	NTN9857C	Face	None	None	2.78	-0.1720	4.730	3.370	2.48	1.77
HvH-Face-070215-03/408TGL0004	NAF5042AR	901.0000	NTN9857C	Face	None	None	2.77	0.1880	4.100	2.920	2.07	1.48
HvH-Face-070215-04/408TGL0004	NAF5042AR	935.0125	NTN9857C	Face	None	None	2.82	-0.1970	3.080	2.190	1.61	1.15
HvH-Face-070215-05/408TGL0004	NAF5042AR	937.5000	NTN9857C	Face	None	None	2.81	-0.0826	3.060	2.170	1.56	1.11
HvH-Face-070215-06/408TGL0004	NAF5042AR	940.0000	NTN9857C	Face	None	None	2.80	-0.0929	3.000	2.130	1.53	1.09
HvH-Face-070215-07/408TGL0004	NAF5040AR	896.0125	NTN9857C	Face	None	None	2.81	0.0193	2.650	1.880	1.33	0.94
HvH-Face-070215-08/408TGL0004	NAF5040AR	898.5125	NTN9857C	Face	None	None	2.80	-0.0640	2.710	1.920	1.38	0.97
HvH-Face-070215-09/408TGL0004	NAF5040AR	901.0000	NTN9857C	Face	None	None	2.78	-0.0382	2.790	1.970	1.42	1.00
HvH-Face-070215-10/408TGL0004	NAF5040AR	935.0125	NTN9857C	Face	None	None	2.81	-0.0126	2.370	1.670	1.19	0.84
HvH-Face-070215-11/408TGL0004	NAF5040AR	937.5000	NTN9857C	Face	None	None	2.81	0.0331	2.280	1.610	1.14	0.81
HvH-Face-070215-12/408TGL0004	NAF5040AR	940.0000	NTN9857C	Face	None	None	2.79	-0.00787	2.100	1.490	1.06	0.75
***Worst case configuration per body location from above –using the DASY 4 full coarse and 7x7x7 cube scan measurements.**												
MeC-Face-070215-14/408TGL0007	NAF5042AR	896.0125	NTN9857C	Face	None	None	2.78	-0.1200	4.810	3.450	2.49	1.79

9.1 Highest SAR results calculation methodology

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

Max. Calc. 1-g/10-g Avg. SAR = ((SAR meas. / (10^(Pdrift/10)))*(Pmax/Pint))* DC%
P_{max} = Maximum Power (W)
P_{int} = Initial Power (W)
Pdrift = DASY drift results (dB) - (for conservative results positive drifts are not accounted for)
SAR_{meas}. = Measured 1-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: AZ489FT5849 models H46WCH9PW7BN.

Max. Calc. : 1-g Avg. SAR: 7.61W/kg (Body); 10-g Avg. SAR: 5.26W/kg (Body)
Max. Calc. : 1-g Avg. SAR: 2.49W/kg (Face); 10-g Avg. SAR: 1.79W/kg (Face)

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

APPENDIX A
Measurement Uncertainty

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

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g*	*h = c x f / e*	*i = c x g / e*	*k*
Uncertainty Component	IEEE 1528 section	**Tol. (± %)**	**Prob Dist**	**Div.**	c_i **(1 g)**	c_i **(10 g)**	**1 g** u_i **(±%)**	**10 g** u_i **(±%)**	v_i
Measurement System									
Probe Calibration	E.2.1	5.9	N	1.00	1	1	5.9	5.9	∞
Axial Isotropy	E.2.2	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Hemispherical Isotropy	E.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effect	E.2.3	1.0	R	1.73	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	0.3	N	1.00	1	1	0.3	0.3	∞
Response Time	E.2.7	1.1	R	1.73	1	1	0.6	0.6	∞
Integration Time	E.2.8	1.1	R	1.73	1	1	0.6	0.6	∞
RF Ambient Conditions - Noise	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	0.0	R	1.73	1	1	0.0	0.0	∞
Probe Positioner Mech. Tolerance	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning w.r.t Phantom	E.6.3	1.4	R	1.73	1	1	0.8	0.8	∞
Max. SAR Evaluation (ext., int., avg.)	E.5	3.4	R	1.73	1	1	2.0	2.0	∞
Test sample Related									
Test Sample Positioning	E.4.2	3.2	N	1.00	1	1	3.2	3.2	29
Device Holder Uncertainty	E.4.1	4.0	N	1.00	1	1	4.0	4.0	8
SAR drift	6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (measurement)	E.3.3	3.3	N	1.00	0.64	0.43	2.1	1.4	∞
Liquid Permittivity (target)	E.3.2	5.0	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measurement)	E.3.3	1.9	N	1.00	0.6	0.49	1.1	0.9	∞
Combined Standard Uncertainty			RSS				11	11	411
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				22	22	

FCD-0558 Rev 5

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

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g*	*h = c x f / e*	*i = c x g / e*	*k*
Uncertainty Component	**IEEE 1528 section**	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i (1 g)**	**c_i (10 g)**	**1 g u_i (±%)**	**10 g u_i (±%)**	**v_i**
Measurement System									
Probe Calibration	E.2.1	5.9	N	1.00	1	1	5.9	5.9	∞
Axial Isotropy	E.2.2	4.7	R	1.73	1	1	2.7	2.7	∞
Spherical Isotropy	E.2.2	9.6	R	1.73	0	0	0.0	0.0	∞
Boundary Effect	E.2.3	1.0	R	1.73	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	0.3	N	1.00	1	1	0.3	0.3	∞
Response Time	E.2.7	1.1	R	1.73	1	1	0.6	0.6	∞
Integration Time	E.2.8	0.0	R	1.73	1	1	0.0	0.0	∞
RF Ambient Conditions - Noise	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	0.0	R	1.73	1	1	0.0	0.0	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning w.r.t. Phantom	E.6.3	1.4	R	1.73	1	1	0.8	0.8	∞
Max. SAR Evaluation (ext., int., avg.)	E.5	3.4	R	1.73	1	1	2.0	2.0	∞
Dipole									
Dipole Axis to Liquid Distance	8, E.4.2	2.0	R	1.73	1	1	1.2	1.2	∞
Input Power and SAR Drift Measurement	8, 6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (measurement)	E.3.3	3.3	R	1.73	0.64	0.43	1.2	0.8	∞
Liquid Permittivity (target)	E.3.2	5.0	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measurement)	E.3.3	1.9	R	1.73	0.6	0.49	0.6	0.5	∞
Combined Standard Uncertainty			RSS				9	9	99999
Expanded Uncertainty (95% CONFIDENCE LEVEL)			*k*=2				18	17	

FCD-0558 Rev 5

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

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

Accreditation No.: SCS 108

Client Motorola CGISS

Certificate No: ET3-1384_May06

CALIBRATION CERTIFICATE

Object	ET3DV6 - SN: 1384
Calibration procedure(s)	QA CAL-01.v5 and QA CAL-12.v4 Calibration procedure for dosimetric E-field probes
Calibration date:	May 30, 2006
Condition of the calibrated item	In Tolerance

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41495277	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41498087	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Reference 3 dB Attenuator	SN: S5054 (3c)	11-Aug-05 (METAS, No. 251-00499)	Aug-06
Reference 20 dB Attenuator	SN: S5086 (20b)	4-Apr-06 (METAS, No. 251-00558)	Apr-07
Reference 30 dB Attenuator	SN: S5129 (30b)	11-Aug-05 (METAS, No. 251-00500)	Aug-06
Reference Probe ES3DV2	SN: 3013	2-Jan-06 (SPEAG, No. ES3-3013_Jan06)	Jan-07
DAE4	SN: 654	2-Feb-06 (SPEAG, No. DAE4-654_Feb06)	Feb-07

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

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

Issued: May 31, 2006

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

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,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*.
- *DCPx,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 *NORMx,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 26, 2005
Recalibrated:	May 30, 2006

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ET3DV6 SN:1384 May 30, 2006

DASY - Parameters of Probe: ET3DV6 SN:1384

Sensitivity in Free Space[A] Diode Compression[B]

NormX	**1.80** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**92** mV
NormY	**1.82** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**92** mV
NormZ	**2.06** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**92** mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

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

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	9.4	4.9
SAR_{be} [%]	With Correction Algorithm	0.0	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	7.4	4.1
SAR_{be} [%]	With Correction Algorithm	0.1	0.2

Sensor Offset

Probe Tip to Sensor Center	**2.7** 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%.

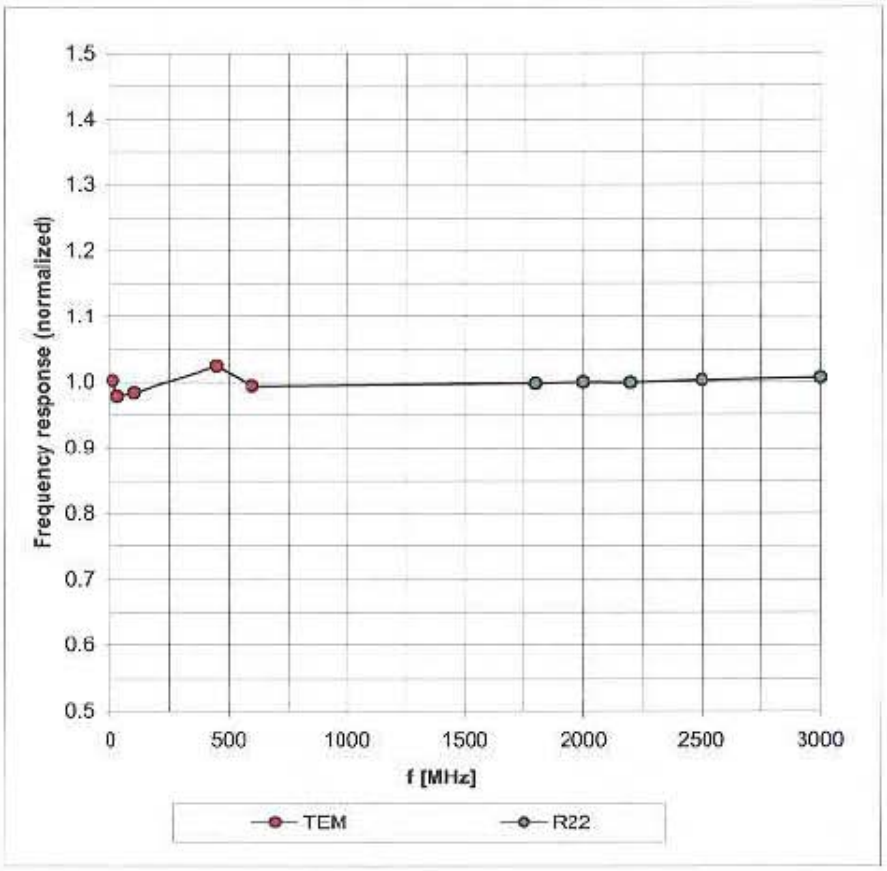
[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).

[B] Numerical linearization parameter: uncertainty not required.

ET3DV6 SN:1384 May 30, 2006

Frequency Response of E-Field

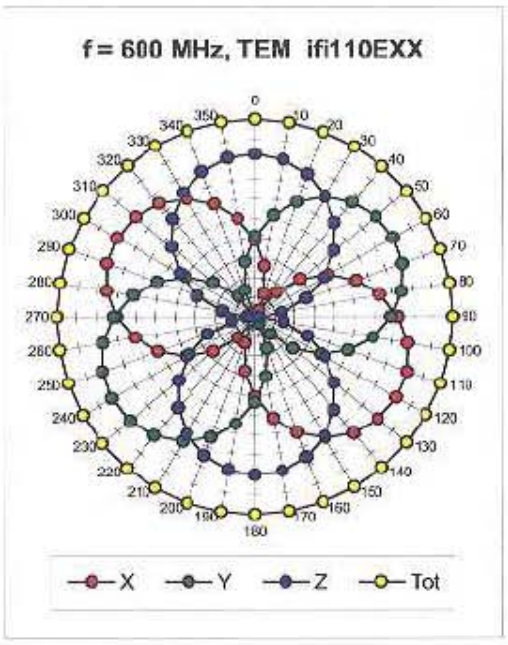
(TEM-Cell:ifi110 EXX, Waveguide: R22)

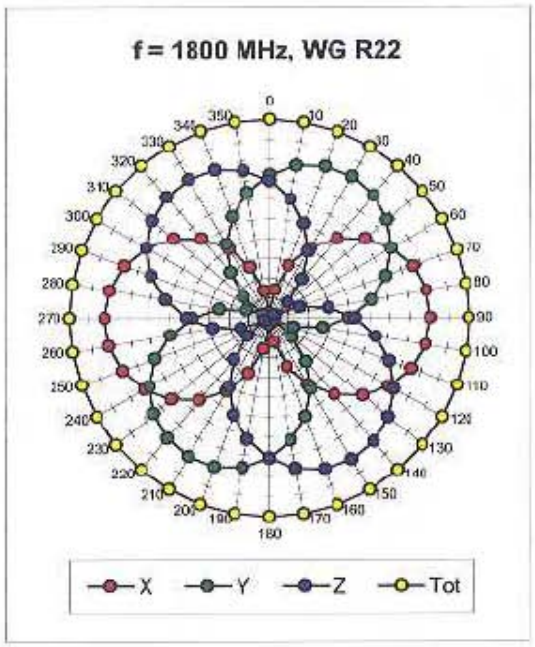


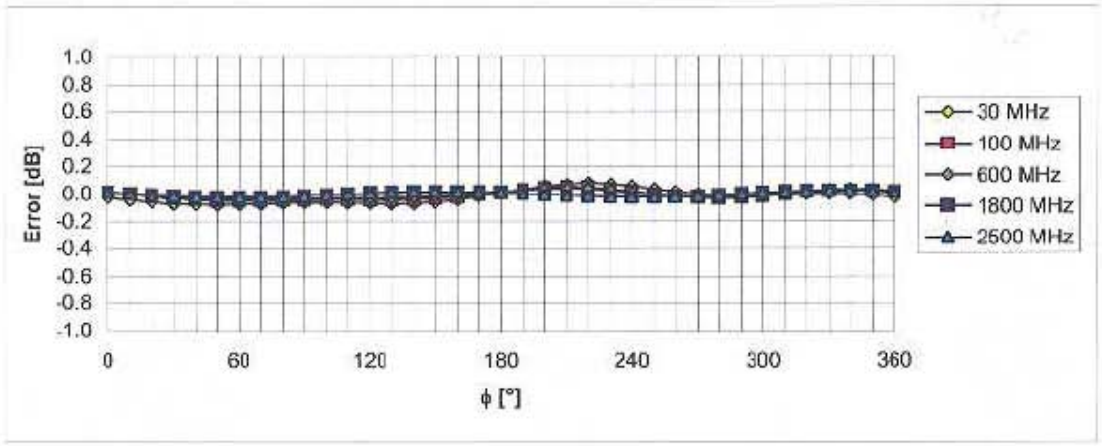
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

ET3DV6 SN:1384 May 30, 2006

Receiving Pattern (ϕ), ϑ = 0°





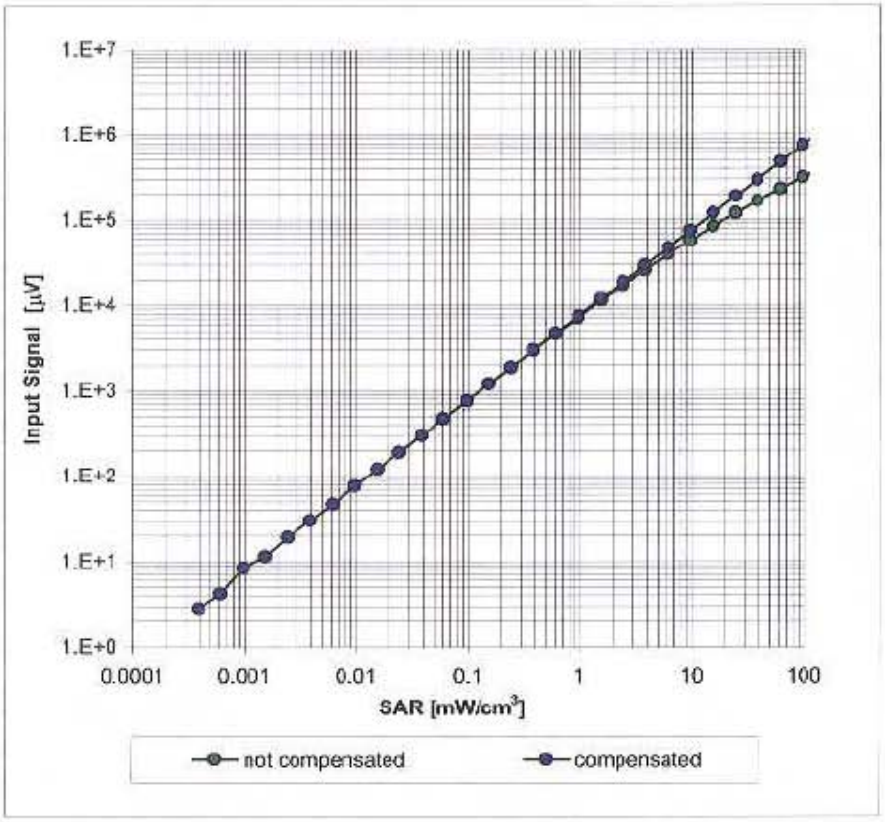


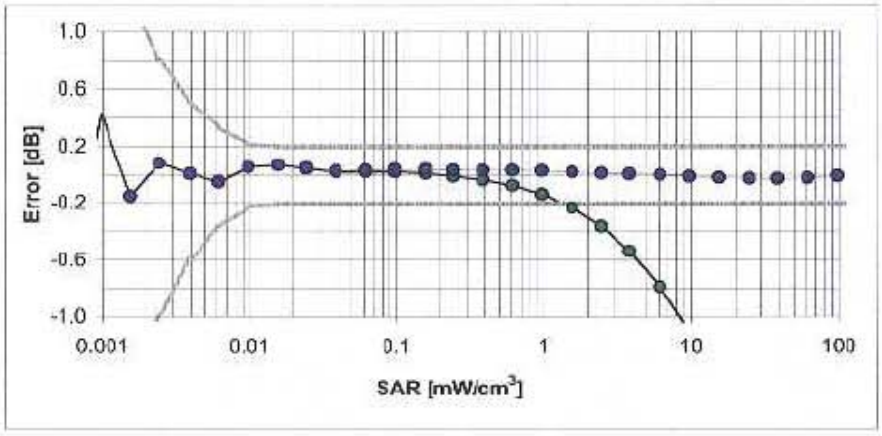
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

ET3DV6 SN:1384 May 30, 2006

Dynamic Range f(SAR_{head})

(Waveguide R22, f = 1800 MHz)

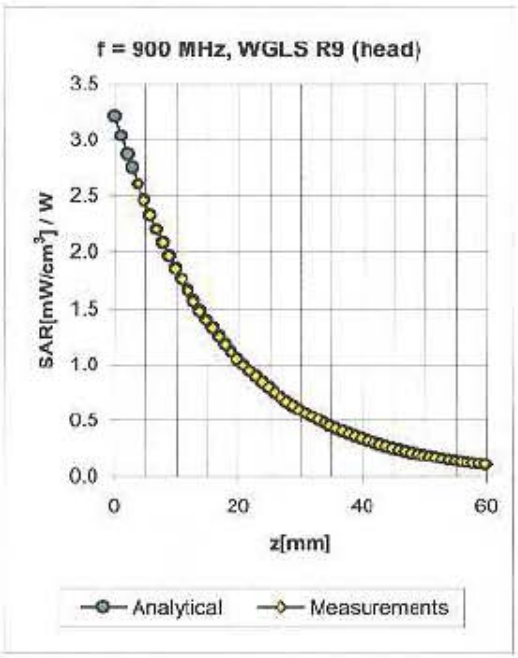


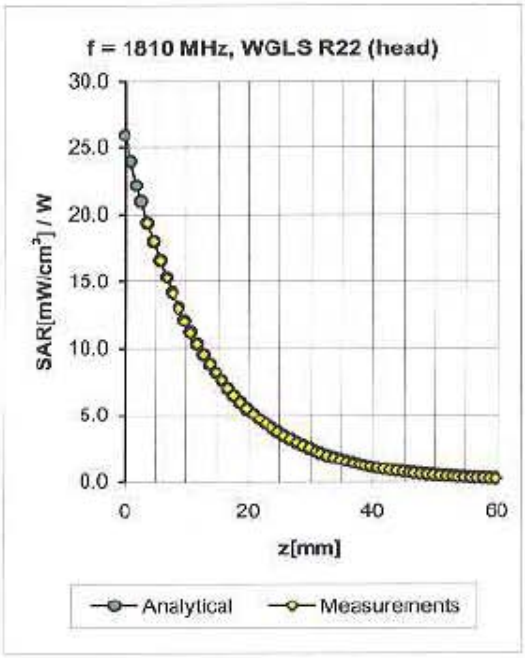


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

ET3DV6 SN:1384 May 30, 2006

Conversion Factor Assessment





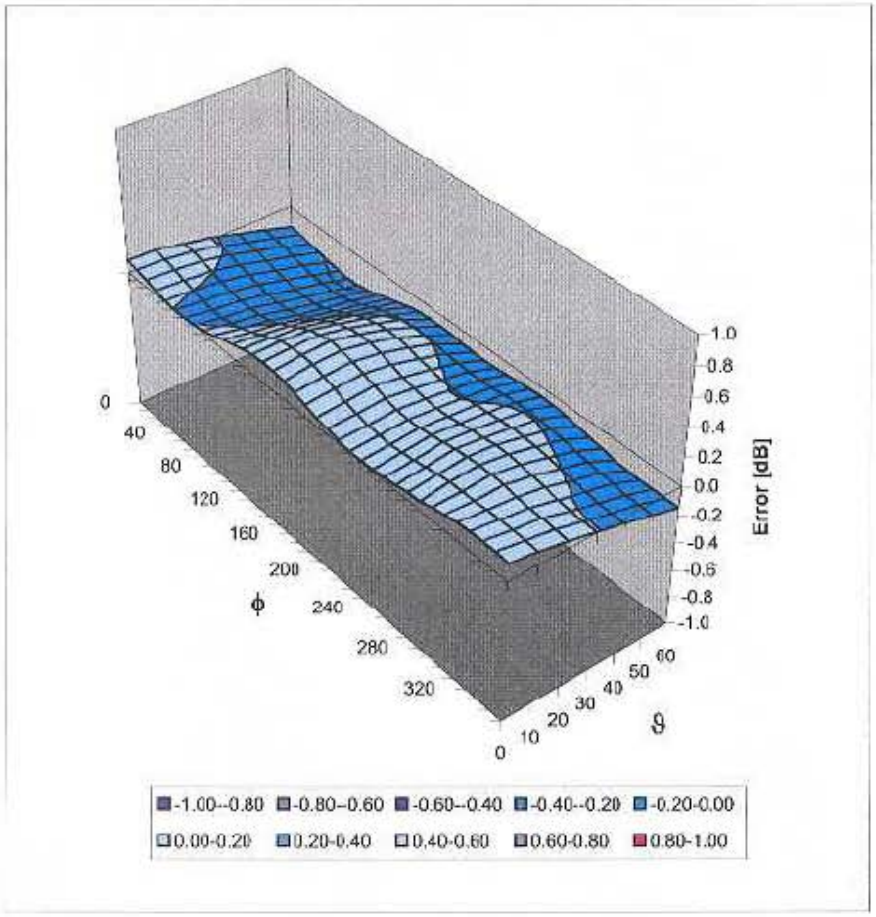
f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
450	± 50 / ± 100	Head	43.5 ± 5%	0.87 ± 5%	0.38	1.96	6.94 ± 13.3% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.68	1.79	6.12 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.55	2.64	5.11 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.79	1.77	4.52 ± 11.8% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.33	2.01	7.53 ± 13.3% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.53	2.10	5.95 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.66	2.50	4.58 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.74	1.91	4.18 ± 11.8% (k=2)

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

ET3DV6 SN:1384 May 30, 2006

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 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:	**ET3DV6**
Serial Number:	**1384**
Place of Assessment:	**Zurich**
Date of Assessment:	**June 1, 2006**
Probe Calibration Date:	**May 30, 2006**

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

Assessed by:

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

Dosimetric E-Field Probe ET3DV6 SN:1384

Conversion factor (± standard deviation)

150 MHz	*ConvF*	8.3 ± 10%	ε_r = 52.3 σ = 0.76 mho/m (head tissue)
250 MHz	*ConvF*	7.6 ± 10%	ε_r = 47.6 σ = 0.83 mho/m (head tissue)
300 MHz	*ConvF*	7.5 ± 9%	ε_r = 45.3 σ = 0.87 mho/m (head tissue)
750 MHz	*ConvF*	6.4 ± 7%	ε_r = 41.9 σ = 0.89 mho/m (head tissue)
150 MHz	*ConvF*	7.9 ± 10%	ε_r = 61.9 σ = 0.80 mho/m (body tissue)
250 MHz	*ConvF*	7.6 ± 10%	ε_r = 59.4 σ = 0.88 mho/m (body tissue)
300 MHz	*ConvF*	7.5 ± 9%	ε_r = 58.2 σ = 0.92 mho/m (body tissue)
750 MHz	*ConvF*	6.2 ± 7%	ε_r = 55.5 σ = 0.96 mho/m (body tissue)

Important Note:

For numerically assessed probe conversion factors, parameters Alpha and Delta in the DASY software must have the following entries: Alpha = 0 and Delta = 1.

Please see also Section 4.7 of the DASY4 Manual.

Appendix C
Dipole Calibration Certificates

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

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S Swiss Calibration Service

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The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **Motorola CGISS**

Certificate No: **D900V2-084_Apr06**

CALIBRATION CERTIFICATE

Object	D900V2 - SN: 084
Calibration procedure(s)	QA CAL-05.v6 Calibration procedure for dipole validation kits
Calibration date:	April 21, 2006
Condition of the calibrated item	In Tolerance

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Power sensor HP 8481A	US37292783	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Reference 20 dB Attenuator	SN: 5086 (20g)	11-Aug-05 (METAS, No 251-00498)	Aug-06
Reference 10 dB Attenuator	SN: 5047.2 (10r)	11-Aug-05 (METAS, No 251-00498)	Aug-06
Reference Probe ET3DV6	SN 1507	28-Oct-05 (SPEAG, No. ET3-1507_Oct05)	Oct-06
DAE4	SN 601	15-Dec-05 (SPEAG, No. DAE4-601_Jan05)	Dec-06

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

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

Issued: April 21, 2006

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

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Swiss Calibration Service

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The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY4	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Area Scan resolution	dx, dy = 15 mm	
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.97 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.8 ± 6 %	0.96 mho/m ± 6 %
Head TSL temperature during test	(21.5 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	condition	
SAR measured	250 mW input power	2.71 mW / g
SAR normalized	normalized to 1W	10.8 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**11.0 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.73 mW / g
SAR normalized	normalized to 1W	6.92 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**6.97 mW /g ± 16.5 % (k=2)**

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

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.1 Ω - 5.6 jΩ
Return Loss	- 25.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.388 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	September 20, 2000

DASY4 Validation Report for Head TSL

Date/Time: 21.04.2006 14:29:27

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:084

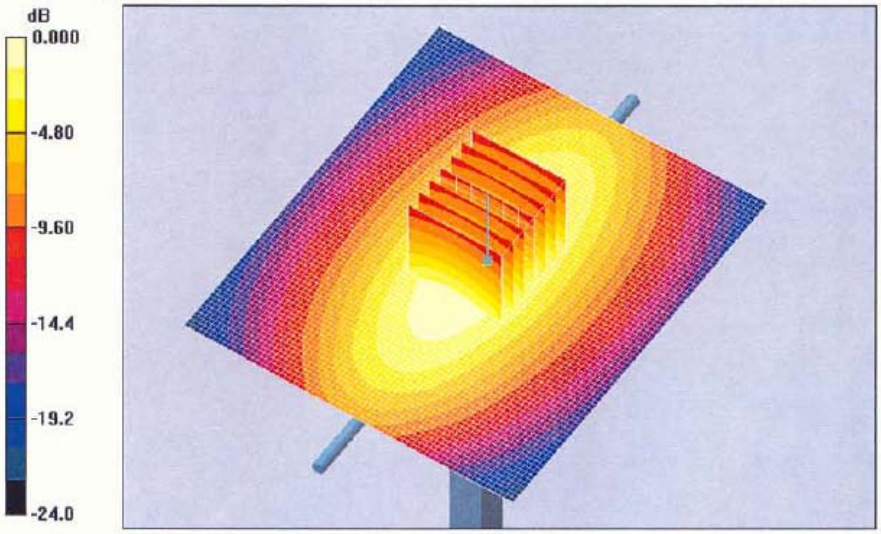
Communication System: CW; Frequency: 900 MHz;Duty Cycle: 1:1
Medium: HSL U10 BB;
Medium parameters used: f = 900 MHz; σ = 0.954 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(5.8, 5.8, 5.8); Calibrated: 28.10.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; ;
- Measurement SW: DASY4, V4.7 Build 16; Postprocessing SW: SEMCAD, V1.8 Build 161

Pin = 250 mW; d = 10 mm/Area Scan (71x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.94 mW/g

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.9 V/m; Power Drift = -0.037 dB
Peak SAR (extrapolated) = 4.09 W/kg
SAR(1 g) = 2.71 mW/g; SAR(10 g) = 1.73 mW/g
Maximum value of SAR (measured) = 2.92 mW/g



0 dB = 2.92mW/g

Impedance Measurement Plot for Head TSL