MOTOROLA

ACCREDITED
TESTING CERT # 2518.05

FCC ID: ABZ99FT5011
DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 1 of 3

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Report ID: SAR rpt_PMUF1413A_Rev O 090918_SR7682

Responsible Engineer:	Veeramani Veerapan (EME Engineer) & PeiLoo Tey (Penang EME Lead Engineer)
Report Author:	Pei Loo Tey (Penang EME Lead Engineer)
Date/s Tested:	8/14/09~9/6/09
Manufacturer/Location:	Penang
Sector/Group/Div.:	GTDG
Date submitted for test:	7/29/09
DUT Description:	806-869MHz & 896-941MHz, 12.5k/25k, 1-2.5W, 32CH, PLAIN without GPS (Capable of analog FM transmission and digital TDMA transmission.)
Test TX mode(s):	CW
Max. Power output:	3.0 Watts
Nominal Power:	2.5 Watts
Tx Frequency Bands:	TMO: 806-824, DMO: 851-869 (800 band) & TMO: 896-902, DMO: 935-941 (900 band)
Signaling type:	FM and TDMA 2:1
Model(s) Tested:	PMUF1413A
Model(s) Certified:	PMUF1413A
Serial Number(s):	777TKN0846
Classification:	Occupational/Controlled
Rule Part(s):	90

DUT Photo
(Refer to Exhibit 7B)

Max. Calc. : 1-g Avg. SAR: 4.56 W/kg (Body); 10-g Avg. SAR: 3.15 W/kg (Body)
Max. Calc. : 1-g Avg. SAR: 1.30 W/kg (Face); 10-g Avg. SAR: 0.93 W/kg (Face)

The test results clearly demonstrate compliance with FCC Occupational/Controlled RF Exposure limits of 8 W/kg averaged over 1 gram 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 300 GHz), Health Physics 74, 494-522 RF Exposure limits of 10 W/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 3.0 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
Deanna Zakharia
EMS EME Lab Senior Resource Manager, Laboratory Director

Approval Date: 9/18/09

Certification Date: 9/18/09

Certification No.: L1090942

Part 1 of 3

APPENDICES

Part 2 of 3

Part 3 of 3

Report Revision History

Date	Revision	Comments
09/18/09	O	Initial release

1.0 Introduction

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 Laboratory for model number PMUF1413A and FCC ID: ABZ99FT5011. The results herein reflect pilot test results.

2.0 Abbreviations / Definitions

CNR: Calibration Not Required
4FSK: 4 Level Frequency Shift Keying
CW: Continues Wave
DUT: Device Under Test
FM: Frequency Modulation
NA: Not Applicable
PTT: Push to Talk
RSM: Remote Speaker Microphone
TDMA: Time Division Multiple Access
SAR: Specific Absorption Rate

Audio accessories: These accessories allow communication while the DUT is worn on the body.
Body worn accessories: These accessories allow the DUT to be worn on the body of the user.
Maximum Power: Defined as the upper limit of the production line final test station.
Receive only audio accessory: Audio accessories that do not enable transmission and are for listening only.

3.0 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 Electronics Engineers (IEEE) C95. 1-1992
- Institute of Electrical and Electronics Engineers (IEEE) C95.1-2005
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998
- Ministry of Health (Canada) Safety Code 6 (1999), Limits of Human Exposure to Radio frequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz

- 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.

4.0 SAR Limits

Table 1

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)	**1.6**	**8.0**
Spatial Peak – ICNIRP/ANSI - (hands/wrists/feet/ankles averaged over 10-g)	**4.0**	**20.0**
Spatial Peak - ICNIRP - (Head and Trunk 10-g)	**2.0**	**10.0**

5.0 SAR Result 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 data tables is determined by scaling the measured SAR to account for power leveling variations and power slump. A table and graph of output power versus time is provided in APPENDIX G. For this device the "Max Calc. 1g-SAR" and "Max Calc.10g-SAR" are scaled using the following formula:

$$Max\_Calc = SAR\_meas \cdot 10^{\frac{-(Drift)}{10}} \cdot \frac{P\_\max}{P\_\text{int}} \cdot DC$$

P_max = Maximum Power (W)
P_int = Initial Power (W)
Drift = DASY drift results (dB)
SAR_meas = Measured 1-g or 10-g Avg. SAR (W/kg)
DC = Transmission mode duty cycle in % where applicable
50% duty cycle is applied for PTT operation

Note: for conservative results, the following are applied:
If P_int > P_max, then P_max/P_int = 1.
Drift = 1 for positive drift

Additional SAR scaling was applied using the methodologies outlined in FCC KDB450824 using tissue sensitivity values. 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 scaling was applied for all the test frequencies in 806-869 MHz band and 896-941 MHz band.

6.0 Description of Device Under Test (DUT)

FCC ID: ABZ99FT5011 operates using digital and analog frequency modulation (FM) as well as TDMA signaling incorporating traditional simplex two-way radio transmission protocol.

Time Division Multiple Access (TDMA) is used to allocate portions of the RF signal by dividing time into two slots. Time allocation enables each unit to transmit its voice information without interference from other transmitting units. Transmission from a unit or base station is accommodated during two time-slot lengths of 30 milliseconds with frame length of 60 milliseconds. 4FSK TDMA modulation is used and includes the following channel spaces; 12.5 kHz and 25 kHz. The 4FSK TDMA technique requires sophisticated algorithms and a digital signal processor (DSP) to perform voice compressions/decompressions and RF modulation/demodulation. The maximum duty cycle for TDMA is 2:1 and is controlled by software. The TDMA mode was not tested because its duty cycle is inherently 50% and would include an additional 50% duty cycle for PTT.

The model represented under this filing utilizes removable antenna and is capable of transmitting in the 806-824MHz, 851-869MHz, 896-902 MHz and 935-941 MHz bands. The nominal output power is 2.5 watts with maximum output powers of 3.0 watts as defined by upper limit of the production line final test station. The intended operating positions are "at the face" with the DUT at least 1 inch from the mouth, and "at the body" by means of the offered body worn accessories. Body worn audio and PTT operation is accomplished by means of optional remote accessories that are connected to the radio.

7.0 Optional Accessories and Test Criteria

FCC ID: ABZ99FT5011 is offered with optional accessories. All accessories were individually evaluated during the test plan creation. The following sections identify the test criteria and details for each accessory category.

7.1 Antenna

One antenna was tested. The table below lists the antenna, antenna description and separation distances. Refer to Exhibit 7B section 6.1 for antenna photo and sections 1.0 and 2.0 for photos of antenna separation distances.

Table 2

Antenna Models	Description	Tested	* Separation distances between DUT antenna and phantom surface for given test configurations		
			Body Test Configuration		Face Test Configuration DUT @ 2.5cm
			Tested Carry Accessories	2.5cm Assessment DUT @ 2.5cm	
PMAF4003A	GPS Helical 806-941MHz, ½ wave, 1 dBi	Yes	19-24 mm	25-48 mm	35-41 mm

* The 1st number indicated the minimum separation distance measured at the antenna's base while the second number reflects the separation distance measured at the antenna's tip.

7.2 Batteries

All batteries were evaluated during the test plan generation. The table below lists the batteries and batteries descriptions. Refer to Exhibit 7B section 6.2 for photos of batteries.

Table 3

Battery Models	Description	Tested	Comments
PMNN4077C	IMPRES Li-Ion 2200mAh Submersible (IP57) Battery	Yes	
PMNN4069A	IMPRES Li-Ion 1400mAh Battery with box (FM)	Yes	

7.3 Body worn Accessory

The RLN4570A break-a-way chest pack was evaluated during the test plan generation. Refer to Exhibit 7B sections 1.0 for photo of the body worn test configuration and section 6.3 for individual photo of the body worn accessory with the DUT.

Table 4

Body worn Model	Description	Tested	* Separation distances between DUT antenna and phantom surface. (mm)	Comments
RLN4570A	Break A-way Chest pack	Yes	19-24	Tested with batteries PMNN4069A and PMNN4077C.

* The 1st number indicated the minimum separation distance measured at the antenna's base while the second number reflects the separation distance measured at the antenna's tip.

7.4 Audio Accessories

The PMLN5097A Impress 3-wire surveillance, black and RLN5878A Receive only surveillance kit, black (single wire) were evaluated during the test plan generation. Refer to Exhibit 7B section 6.4 for individual photos of the audio accessories.

Table 5

Audio Acc. Models	Description	Tested	Comments
PMLN5097A	IMPRES 3-wire surveillance, black	Yes	Tested in body configuration.
RLN5878A	Receive only surveillance kit, black (single wire)	Yes	Tested in face configuration.

Note: Exhibit 7B illustrates the DUT with audio accessories.

8.0 Description of Test System

8.1 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. 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 ISO/IEC 17025 A2LA guidelines. Section 9.0 presents additional 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.

8.2 Description of Phantom(s)

8.2.1 Dual Flat Phantom

Not Applicable

8.2.2 SAM Phantom

Not Applicable

8.2.3 Elliptical Flat Phantom

Table 6

Phantom ID (s)	Material Parameters	Phantom Dimensions LxWxD (mm)	Material Thickness (mm)	Support Structure Material	Loss Tangent (wood)
ELI4 1050 ELI4 1037	300MHz -6GHz; Er = 4+/- 1, Loss Tangent = ≤0.05	600x400x190	2mm +/- 0.2mm	Wood	< 0.05

8.3 Description 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 Std 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 (by mass)

Table 7

% of listed ingredients	900MHz	
	Head	Body
Sugar	56.5	44.9
Diacetin	0	0
De ionized -Water	40.95	50.06
Salt	1.45	0.94
HEC	1.0	1.0
Bact.	0.1	0.1

Reference section 10.1 for target parameters

9.0 Additional Test Equipment

The table below lists additional test equipment used during the SAR assessment.

Table 8

Equipment Type	Model Number	Serial Number	Calibration Due Date
Power Meter	E4418B	MY45100532	10/15/2009
Power Sensor	8481B	SG41090248	9/2/2009
Power Meter	E4418B	MY45100739	6/15/2010
Power Sensor	8481B	MY41091243	6/1/2010
Power Meter	E4418B	MY45100911	5/29/2010
Power Sensor	8481B	SG41090258	6/1/2010
Signal Generator	E4438C	MY45091014	8/26/2010
Amplifier	10W1000C	312858	CNR
NARDA Bi-Directional Coupler	3020A	41935	9/23/2009
Thermometer	HH202A	35882	6/11/2010
Temperature probe	80PK-22	9135	6/11/2010
Dickson Temp & RH Data Logger	TM320	06153216	5/27/2010
Network Analyzer (HP)	E5071B	MY42403147	8/26/2010
Dielectric Probe Kit (HP)	85070E	MY44300183	CNR
Speag Dipole	D900V2	1d025	4/14/2011

10.0 SAR Measurement System Verification

The SAR measurements were conducted with probe model/serial number ES3DV3/SN3122. 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.

Dipole validation scans using head tissue equivalent medium are provided in APPENDIX D. The EMS EME lab validated the dipole to the applicable IEEE 1528-2003 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.

10.1 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 9.0. The table below summarizes the measured tissue parameters used for the SAR assessment.

Table 9

Frequency (MHz)	Tissue Type	Conductivity Target & Range (S/m)	Dielectric Constant Target & Range	Conductivity Meas. (S/m)	Dielectric Constant Meas.	Tested Date
				1.07	52.9	8/14/09
				1.08	53.2	8/17/09
				1.07	52.7	8/18/09
				1.07	52.9	8/19/09
				1.06	53.0	8/20/09
				1.06	53.6	8/21/09
				1.06	53.4	8/28/09
				1.06	53.4	9/4/09
		1.05	55.0	1.06	53.4	9/5/09
900	FCC Body	(1.00 – 1.10)	(52.25–57.75)	1.06	53.2	9/6/09
				0.99	41.3	8/22/09
	IEEE/ IEC	0.97	41.5	0.99	41.3	8/23/09
900	Head	(0.92-1.02)	(39.43-43.58)	0.98	40.7	9/3/09
		0.97	55.3	0.97	54.3	9/3/09
815.5	FCC Body	(0.92-1.02)	(52.54-54.07)	0.97	54.2	9/4/09
	IEEE/ IEC	0.90	41.6	0.91	42.1	8/21/09
815.5	Head	(0.86-0.95)	(39.52-43.68)	0.91	41.7	9/3/09
				1.03	53.2	8/14/09
		1.00	55.1	1.02	53.8	9/4/09
860.5	FCC Body	(0.95-1.05)	(41.6-45.9)	1.02	53.8	9/5/09
	IEEE/ IEC	0.93	41.5	0.95	41.6	8/21/09
860.5	Head	(0.88-0.98)	(39.43-43.58)	0.95	41.2	9/3/09
				1.08	53.2	8/17/09
				1.07	52.7	8/18/09
		1.05	55.0	1.06	53.6	8/21/09
899	FCC Body	(0.99-1.10)	(41.6-45.9)	1.06	53.4	9/5/09
	IEEE/ IEC	0.97	41.5	0.99	41.3	8/22/09
899	Head	(0.92-1.02)	(39.43-43.58)	0.98	40.7	9/3/09
				1.11	52.5	8/19/09
				1.10	52.6	8/20/09
		1.07	54.94	1.10	53.1	8/28/09
938	FCC Body	(1.02-1.12)	(52.2-57.7)	1.10	52.9	9/6/09
				1.03	40.8	8/22/09
	IEEE/ IEC	0.99	41.4	1.03	40.9	8/23/09
938	Head	(0.94-1.04)	(39.03-43.17)	1.02	40.3	9/3/09

10.2 System Check Test Results

System performance checks were conducted each day during the SAR assessment. The results are normalized to 1W. APPENDIX D explains how the targets were set and includes DASY plots for each day during the SAR assessment. The table below summarizes the daily system check results used for the SAR assessment.

Table 10

Probe Serial #	Tissue Type	Probe Cal Date	Dipole Kit / Serial #	Reference SAR @ 1W (W/kg)	System Check Test Results when normalized to 1W (W/kg)	Tested Date
3122	FCC Body	4/24/2009	SPEAG D900V2 /1d025	10.88 +/- 10%	11.04	8/14/09
					11.32	8/17/09
					11.16	8/18/09
					11.16	8/19/09
					11.04	8/20/09
					11.08	8/21/09
					10.88	8/28/09
					11.04	9/4/09
					11.00	9/5/09
					10.88	9/6/09
3122	IEEE/ IEC Head	4/24/2009	SPEAG D900V2 /1d025	10.92 +/- 10%	11.04	8/22/09
					11.00	8/23/09
					10.84	9/3/09

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

11.0 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 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:

Table 11

	Target	Measured
Ambient Temperature	18 - 25 ˚C	Range: 21.70-22.40˚C Avg. 22.01˚C
Relative Humidity	30 - 70 %	Range: 48.20-63.10% Avg. 55.03%
Tissue Temperature	NA	Range: 20.4-21.7˚C Avg. 21.2˚C

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

12.0 DUT Test Methodology

12.1 Measurements

SAR measurements were performed using the DASY system described in section 8.0 using coarse and 5x5x7 or 7x7x7 zoom scan. Elliptical flat phantoms filled with applicable simulated tissue were used for body and face testing.

12.2 DUT Configuration(s)

The DUT is a portable device operational at the body and face as described in section 6.0 while using the applicable accessories listed in section 7.0.

12.3 Device Positioning Procedures

The positioning of the device for each body location is described below and illustrated in APPENDIX H.

12.3.1 Body

The DUT was positioned in normal use configuration against the phantom with the offered body worn accessory.

The DUT was positioned with its' front side separated 2.5cm, back side separated 2.5cm and the back side with antenna separated 2.5cm from the phantom. Testing at 2.5cm is done to satisfy the conditions noted in the safety section of the manual.

12.3.2 Head

Not applicable.

12.3.3 Face

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

12.4 Test Plan

All modes of operation identified in section 6.0 were considered during the development of the test plan. The mode which presented the highest duty cycle was chosen for SAR assessment. All accessories listed in section 7.0 of this report were identified for testing and was used to develop the SAR test plan for this product.

13.0 DUT Test Data

13.1 806 - 824MHz Test Data (CW mode)

Assessment at the Body with offered body-worn accessory: All possible combinations of the offered antenna PMAF4003A, batteries, body worn RLN4570A, with and without the audio accessory PMLN5097A were evaluated at the mid channel of the 806-824MHz band. Depending on the SAR result for each of the test configurations at the mid channel, the high and low channels are assessed only for the configuration that indicated highest SAR result or for each of the configurations that indicated SAR results within 3.0dB of the SAR limit.

All SAR plots from the table below are included in APPENDIX F Section 1.0 – 806-824MHz Body Assessment.

Table 12

806-824MHz Band Assessments at Body with body worn accessory												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**SAR Drift (dB)**	**Meas. 1g-SAR (W/kg)**	**Meas. 10g-SAR (W/kg)**	**Max Calc. 1g-SAR (W/kg)**	**Max Calc. 10g-SAR (W/kg)**
Assessment at the Body with the offered batteries, body-worn RLN4570A and without audio accessory												
CcC-AB-090903-10 / 777TKN0846	PMAF4003A	815.500	PMNN4069A	Against phantom	RLN4570A Chest Pack	None	2.900	-0.370	2.340	1.670	1.32	0.94
CcC-AB-090903-11 / 777TKN0846	PMAF4003A	815.500	PMNN4077C	Against phantom	RLN4570A Chest Pack	None	3.120	-0.474	2.540	1.810	1.42	1.01
Assessment at the Body with the offered batteries, body-worn RLN4570A and audio accessory PMLN5097A												
PS-AB-090904-03 / 777TKN0846	PMAF4003A	815.500	PMNN4069A	Against phantom	RLN4570A Chest Pack	PMLN5097A 3-Wire	2.890	-0.397	2.310	1.650	1.31	0.94
PS-AB-090904-04 / 777TKN0846	PMAF4003A	815.500	PMNN4077C	Against phantom	RLN4570A Chest Pack	PMLN5097A 3-Wire	3.150	-0.583	2.490	1.780	1.42	1.02
Assessment across frequency band at the highest SAR test configuration from above												
PS-AB-090904-05 / 777TKN0846	PMAF4003A	806.0125	PMNN4077C	Against phantom	RLN4570A Chest Pack	PMLN5097A 3-Wire	3.100	-0.572	1.760	1.270	1.00	0.72
PS-AB-090904-06 / 777TKN0846	PMAF4003A	824.000	PMNN4077C	Against phantom	RLN4570A Chest Pack	PMLN5097A 3-Wire	3.140	-0.498	3.280	2.340	1.84	1.31

Assessment without body worn accessory at 2.5cm: the test configuration that indicated the highest SAR result was selected to assess at 2.5cm, with the front and back of the device facing the phantom.

Note: The 2.5cm assessments included the following configurations:

- Back of the device facing the phantom, positioned at 2.5cm from the phantom surface. Results for this test configuration may or may not be included depending on the location of the hot spot. If the peak SAR is located on the antenna then SAR result for this configuration would be lower due to increased separation distance.
- Back of the device facing the phantom, the antenna at 2.5cm from the phantom surface. Results for this test configuration may or may not be included depending on the location of the hot spot. This test position would not be applicable for cases where the peak is located on the DUT body and not the antenna.
- Front of the device facing the phantom, at 2.5cm from the phantom surface.

All SAR plots from the table below are included in APPENDIX F Section 2.0 – 806-824MHz Body Assessment at 2.5cm.

Table 13

806-824MHz Band Assessments at 2.5cm												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**SAR Drift (dB)**	**Meas. 1g-SAR (W/kg)**	**Meas. 10g-SAR (W/kg)**	**Max Calc. 1g-SAR (W/kg)**	**Max Calc. 10g-SAR (W/kg)**
PS-AB-090904-07 / 777TKN0846	PMAF4003A	824.000	PMNN4077C	Back - Antenna at 2.5cm	None	PMLN5097A 3-Wire	3.090	-0.424	2.650	1.890	1.46	1.04
PS-AB-090904-09 / 777TKN0846	PMAF4003A	824.000	PMNN4077C	Front of DUT at 2.5cm	None	PMLN5097A 3-Wire	3.130	-0.641	0.968	0.712	0.56	0.41

Assessment at the Face: All possible combinations of the offered antenna PMAF4003A, batteries, with and without the audio accessory RLN5878A were evaluated at the mid channel of the 806-824MHz band with the front of the radio positioned at 2.5cm from the phantom. Depending on the SAR result for each of the test configurations at the mid channel, the high and low channels are assessed only for the configuration that indicated highest SAR result or for each of the configurations that indicated SAR results within 3.0dB of the SAR limit.

All SAR plots from the table below are included in APPENDIX F Section 3.0 – 806-824MHz Face Assessment.

Table 14

806-824MHz Band Assessments at Face												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**SAR Drift (dB)**	**Meas. 1g-SAR (W/kg)**	**Meas. 10g-SAR (W/kg)**	**Max Calc. 1g-SAR (W/kg)**	**Max Calc. 10g-SAR (W/kg)**
Assessment at the Face with the offered batteries and without audio accessory												
PS-FACE-090821-12 / 777TKN0846	PMAF4003A	815.500	PMNN4069A	Front of DUT at 2.5cm	None	None	2.920	-0.526	0.882	0.642	0.51	0.37
PS-FACE-090821-11 / 777TKN0846	PMAF4003A	815.500	PMNN4077C	Front of DUT at 2.5cm	None	None	3.140	-0.621	0.943	0.688	0.54	0.40
Assessment at the Face with the offered batteries and audio accessory RLN5878A												
CcC-FACE-090903-03 / 777TKN0846	PMAF4003A	815.500	PMNN4069A	Front of DUT at 2.5cm	None	RLN5878A	2.920	-0.736	0.799	0.583	0.49	0.35
PS-FACE-090821-13 / 777TKN0846	PMAF4003A	815.500	PMNN4077C	Front of DUT at 2.5cm	None	RLN5878A	3.140	-0.578	0.954	0.694	0.55	0.40
Assessment across frequency band at the highest SAR test configuration from above												
PS-FACE-090821-14 / 777TKN0846	PMAF4003A	806.0125	PMNN4077C	Front of DUT at 2.5cm	None	RLN5878A	3.140	-0.679	0.711	0.518	0.42	0.30
CcC-FACE-090903-06 / 777TKN0846	PMAF4003A	824.0000	PMNN4077C	Front of DUT at 2.5cm	None	RLN5878A	3.130	-0.751	1.081	0.783	0.64	0.47

13.2 851 - 869MHz Test Data (CW mode)

Assessment at the Body with offered body-worn accessory: All possible combinations of the offered antenna PMAF4003A, batteries, body worn RLN4570A, with and without the audio accessory PMLN5097A were evaluated at the mid channel of the 851-869MHz band. Depending on the SAR result for each of the test configurations at the mid channel, the high and low channels are assessed only for the configuration that indicated highest SAR result or for each of the configurations that indicated SAR results within 3.0dB of the SAR limit.

All SAR plots from the table below are included in APPENDIX F Section 4.0 – 851-869MHz Body Assessment.

Table 15

851-869MHz Band Assessments at Body with body worn accessory												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**SAR Drift (dB)**	**Meas. 1g-SAR (W/kg)**	**Meas. 10g-SAR (W/kg)**	**Max Calc. 1g-SAR (W/kg)**	**Max Calc. 10g-SAR (W/kg)**
Assessment at the Body with the offered batteries, body-worn RLN4570A and without audio accessory												
PS-AB-090814-06 / 777TKN0846	PMAF4003A	860.500	PMNN4069A	Against phantom	RLN4570A Chest Pack	None	2.910	-0.698	5.050	3.580	3.06	2.17
PS-AB-090904-02 / 777TKN0846	PMAF4003A	860.500	PMNN4077C	Against phantom	RLN4570A Chest Pack	None	3.090	-0.828	4.620	3.260	2.80	1.97
Assessment at the Body with the offered batteries, body-worn RLN4570A and audio accessory PMLN5097A												
CcC-AB-090814-13 / 777TKN0846	PMAF4003A	860.500	PMNN4069A	Against phantom	RLN4570A Chest Pack	PMLN5097A 3-Wire	2.940	-0.740	4.760	3.380	2.88	2.04
PS-AB-090905-02 / 777TKN0846	PMAF4003A	860.500	PMNN4077C	Against phantom	RLN4570A Chest Pack	PMLN5097A 3-Wire	3.110	-0.916	4.100	2.910	2.53	1.80
Assessment across frequency band at the highest SAR test configuration from above												
PS-AB-090905-03 / 777TKN0846	PMAF4003A	851.0125	PMNN4069A	Against phantom	RLN4570A Chest Pack	None	2.840	-0.687	4.620	3.290	2.86	2.04
PS-AB-090905-04 / 777TKN0846	PMAF4003A	869.000	PMNN4069A	Against phantom	RLN4570A Chest Pack	None	2.800	-0.687	5.610	3.980	3.52	2.50

Assessment without body worn accessory at 2.5cm: the test configuration that indicated the highest SAR result was selected to assess at 2.5cm, with the front and back of the device facing the phantom.

Note: The 2.5cm assessments included the following configurations:

- Back of the device facing the phantom, positioned at 2.5cm from the phantom surface. Results for this test configuration may or may not be included depending on the location of the hot spot. If the peak SAR is located on the antenna then SAR result for this configuration would be lower due to increased separation distance.
- Back of the device facing the phantom, the antenna at 2.5cm from the phantom surface. Results for this test configuration may or may not be included depending on the location of the hot spot. This test position would not be applicable for cases where the peak is located on the DUT body and not the antenna.
- Front of the device facing the phantom, at 2.5cm from the phantom surface.

All SAR plots from the table below are included in APPENDIX F Section 5.0 – 851-869MHz Body Assessment at 2.5cm.

Table 16

851-869MHz Band Assessments at 2.5cm												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**SAR Drift (dB)**	**Meas. 1g-SAR (W/kg)**	**Meas. 10g-SAR (W/kg)**	**Max Calc. 1g-SAR (W/kg)**	**Max Calc. 10g-SAR (W/kg)**
PS-AB-090905-05 / 777TKN0846	PMAF4003A	869.000	PMNN4069A	Back - Antenna at 2.5cm	None	PMLN5097A 3-Wire	2.830	-0.612	2.760	1.940	1.68	1.18
PS-AB-090905-06 / 777TKN0846	PMAF4003A	869.000	PMNN4069A	Back of DUT at 2.5cm	None	PMLN5097A 3-Wire	2.800	-0.545	0.865	0.637	0.53	0.39
PS-AB-090905-07 / 777TKN0846	PMAF4003A	869.000	PMNN4069A	Front of DUT at 2.5cm	None	PMLN5097A 3-Wire	2.850	-0.802	1.050	0.760	0.66	0.48

Assessment at the Face: All possible combinations of the offered antenna PMAF4003A, batteries, with and without the audio accessory RLN5878A were evaluated at the mid channel of the 851-869MHz band with the front of the radio positioned at 2.5cm from the phantom. Depending on the SAR result for each of the test configurations at the mid channel, the high and low channels are assessed only for the configuration that indicated highest SAR result or for each of the configurations that indicated SAR results within 3.0dB of the SAR limit.

All SAR plots from the table below are included in APPENDIX F Section 6.0 – 851-869MHz Face Assessment.

Table 17

851-869MHz Band Assessments at Face												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**SAR Drift (dB)**	**Meas. 1g-SAR (W/kg)**	**Meas. 10g-SAR (W/kg)**	**Max Calc. 1g-SAR (W/kg)**	**Max Calc. 10g-SAR (W/kg)**
Assessment at the Face with the offered batteries and without audio accessory												
PS-FACE-090821-17 / 777TKN0846	PMAF4003A	860.500	PMNN4069A	Front of DUT at 2.5cm	None	None	2.930	-0.878	1.272	0.913	0.80	0.57
PS-FACE-090821-16 / 777TKN0846	PMAF4003A	860.500	PMNN4077C	Front of DUT at 2.5cm	None	None	3.140	-0.900	1.522	1.101	0.94	0.68
Assessment at the Face with the offered batteries and audio accessory RLN5878A												
CcC-FACE-090903-05 / 777TKN0846	PMAF4003A	860.500	PMNN4069A	Front of DUT at 2.5cm	None	RLN5878A	2.860	-0.847	1.450	1.060	0.92	0.68
PS-FACE-090821-18 / 777TKN0846	PMAF4003A	860.500	PMNN4077C	Front of DUT at 2.5cm	None	RLN5878A	3.140	-0.781	1.122	0.817	0.67	0.49
Assessment across frequency band at the highest SAR test configuration from above												
PS-FACE-090821-19 / 777TKN0846	PMAF4003A	851.0125	PMNN4077C	Front of DUT at 2.5cm	None	None	3.150	-0.792	1.632	1.171	0.98	0.70
CcC-FACE-090903-07 / 777TKN0846	PMAF4003A	869.000	PMNN4077C	Front of DUT at 2.5cm	None	None	3.100	-0.804	1.470	1.080	0.88	0.65

13.3 896 - 902MHz Test Data (CW mode)

Assessment at the Body with offered body-worn accessory: All possible combinations of the offered antenna PMAF4003A, batteries, body worn RLN4570A, with and without the audio accessory PMLN5097A were evaluated at the mid channel of the 896-902MHz band. Depending on the SAR result for each of the test configurations at the mid channel, the high and low channels are assessed only for the configuration that indicated highest SAR result or for each of the configurations that indicated SAR results within 3.0dB of the SAR limit.

All SAR plots from the table below are included in APPENDIX F Section 7.0 – 896-902MHz Body Assessment.

Table 18

896-902MHz Band Assessments at Body with body worn accessory												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**SAR Drift (dB)**	**Meas. 1g-SAR (W/kg)**	**Meas. 10g-SAR (W/kg)**	**Max Calc. 1g-SAR (W/kg)**	**Max Calc. 10g-SAR (W/kg)**
Assessment across frequency bands at the Body with the offered batteries, body-worn RLN4570A and without audio accessory												
***CcC-AB-090817-04 / 777TKN0846**	PMAF4003A	899.000	PMNN4069A	Against phantom	RLN4570A Chest Pack	None	2.900	-0.833	7.270	5.030	4.56	3.15
PS-AB-090817-18 / 777TKN0846	PMAF4003A	896.000	PMNN4069A	Against phantom	RLN4570A Chest Pack	None	2.920	-0.7060	7.180	5.000	4.34	3.02
PS-AB-090817-19 / 777TKN0846	PMAF4003A	902.000	PMNN4069A	Against phantom	RLN4570A Chest Pack	None	2.890	-0.833	7.100	4.920	4.46	3.09
PS-AB-090905-08 / 777TKN0846	PMAF4003A	899.000	PMNN4077C	Against phantom	RLN4570A Chest Pack	None	3.030	-0.814	4.980	3.540	3.00	2.13
Assessment at the Body with the offered batteries, body-worn RLN4570A and audio accessory PMLN5097A												
PS-AB-090817-11 / 777TKN0846	PMAF4003A	899.000	PMNN4069A	Against phantom	RLN4570A Chest Pack	PMLN5097A 3-Wire	2.900	-0.704	7.060	4.900	4.29	2.98
PS-AB-090905-09 / 777TKN0846	PMAF4003A	896.000	PMNN4069A	Against phantom	RLN4570A Chest Pack	PMLN5097A 3-Wire	2.840	-0.752	6.350	4.420	3.99	2.78
PS-AB-090905-10 / 777TKN0846	PMAF4003A	902.000	PMNN4069A	Against phantom	RLN4570A Chest Pack	PMLN5097A 3-Wire	2.800	-0.775	6.170	4.290	3.95	2.75
PS-AB-090905-11 / 777TKN0846	PMAF4003A	899.000	PMNN4077C	Against phantom	RLN4570A Chest Pack	PMLN5097A 3-Wire	3.060	-0.990	4.310	3.060	2.71	1.92

Assessment without body worn accessory at 2.5cm: the test configuration that indicated the highest SAR result was selected to assess at 2.5cm, with the front and back of the device facing the phantom.

Note: The 2.5cm assessments included the following configurations:

- Back of the device facing the phantom, positioned at 2.5cm from the phantom surface. Results for this test configuration may or may not be included depending on the location of the hot spot. If the peak SAR is located on the antenna then SAR result for this configuration would be lower due to increased separation distance.
- Back of the device facing the phantom, the antenna at 2.5cm from the phantom surface. Results for this test configuration may or may not be included depending on the location of the hot spot. This test position would not be applicable for cases where the peak is located on the DUT body and not the antenna.
- Front of the device facing the phantom, at 2.5cm from the phantom surface.

All SAR plots from the table below are included in APPENDIX F Section 8.0 – 896-902MHz Body Assessment at 2.5cm.

Table 19

896-902MHz Band Assessments at 2.5cm												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**SAR Drift (dB)**	**Meas. 1g-SAR (W/kg)**	**Meas. 10g-SAR (W/kg)**	**Max Calc. 1g-SAR (W/kg)**	**Max Calc. 10g-SAR (W/kg)**
PS-AB-090817-21 / 777TKN0846	PMAF4003A	899.000	PMNN4069A	Back of DUT at 2.5cm	None	PMLN5097A 3-Wire	2.900	-0.634	1.250	0.907	0.75	0.54
CcC-AB-090818-02 / 777TKN0846	PMAF4003A	899.000	PMNN4069A	Front of DUT at 2.5cm	None	PMLN5097A 3-Wire	2.930	-0.553	1.430	1.050	0.83	0.61

Assessment at the Face: All possible combinations of the offered antenna PMAF4003A, batteries, with and without the audio accessory RLN5878A were evaluated at the mid channel of the 896-902MHz band with the front of the radio positioned at 2.5cm from the phantom. Depending on the SAR result for each of the test configurations at the mid channel, the high and low channels are assessed only for the configuration that indicated highest SAR result or for each of the configurations that indicated SAR results within 3.0dB of the SAR limit.

All SAR plots from the table below are included in APPENDIX F Section 9.0 – 896-902MHz Face Assessment.

Table 20

896-902MHz Band Assessments at Face												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**SAR Drift (dB)**	**Meas. 1g-SAR (W/kg)**	**Meas. 10g-SAR (W/kg)**	**Max Calc. 1g-SAR (W/kg)**	**Max Calc. 10g-SAR (W/kg)**
Assessment at the Face with the offered batteries and without audio accessory												
CcC-FACE-090822-04 / 777TKN0846	PMAF4003A	899.000	PMNN4069A	Front of DUT at 2.5cm	None	None	2.900	-0.533	1.960	1.420	1.15	0.83
CcC-FACE-090822-03 / 777TKN0846	PMAF4003A	899.000	PMNN4077C	Front of DUT at 2.5cm	None	None	3.130	-0.714	2.070	1.500	1.22	0.88
Assessment at the Face with the offered batteries and audio accessory RLN5878A												
CcC-FACE-090903-08 / 777TKN0846	PMAF4003A	899.000	PMNN4069A	Front of DUT at 2.5cm	None	RLN5878A	2.850	-0.678	1.750	1.270	1.08	0.78
CcC-FACE-090822-05 / 777TKN0846	PMAF4003A	899.000	PMNN4077C	Front of DUT at 2.5cm	None	RLN5878A	3.130	-0.747	2.030	1.460	1.21	0.87
Assessment across frequency band at the highest SAR test configuration from above												
CcC-FACE-090822-06 / 777TKN0846	PMAF4003A	896.000	PMNN4077C	Front of DUT at 2.5cm	None	None	3.120	-0.713	2.020	1.460	1.19	0.86
CcC-FACE-090822-07 / 777TKN0846	PMAF4003A	902.000	PMNN4077C	Front of DUT at 2.5cm	None	None	3.140	-0.726	2.050	1.490	1.21	0.88

13.4 935 - 941MHz Test Data

Assessment at the Body with offered body-worn accessory: All possible combinations of the offered antenna PMAF4003A, batteries, body worn RLN4570A, with and without the audio accessory PMLN5097A were evaluated at the mid channel of the 935-941MHz band. Depending on the SAR result for each of the test configurations at the mid channel, the high and low channels are assessed only for the configuration that indicated highest SAR result or for each of the configurations that indicated SAR results within 3.0dB of the SAR limit.

All SAR plots from the table below are included in APPENDIX F Section 10.0 – 935-941MHz Body Assessment.

Table 21

935-941MHz Band Assessments at Body with body worn accessory												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**SAR Drift (dB)**	**Meas. 1g-SAR (W/kg)**	**Meas. 10g-SAR (W/kg)**	**Max Calc. 1g-SAR (W/kg)**	**Max Calc. 10g-SAR (W/kg)**
Assessment at the Body with the offered batteries, body-worn RLN4570A and without audio accessory												
PS-AB-090819-09 / 777TKN0846	PMAF4003A	938.000	PMNN4069A	Against phantom	RLN4570A Chest Pack	None	2.870	-1.180	5.010	3.430	3.44	2.35
PS-AB-090906-02 / 777TKN0846	PMAF4003A	938.000	PMNN4077C	Against phantom	RLN4570A Chest Pack	None	3.060	-1.040	4.590	3.220	2.92	2.05
Assessment at the Body with the offered batteries, body-worn RLN4570A and audio accessory PMLN5097A												
PS-AB-090819-16 / 777TKN0846	PMAF4003A	938.000	PMNN4069A	Against phantom	RLN4570A Chest Pack	PMLN5097A 3-Wire	2.890	-0.956	4.130	2.810	2.67	1.82
PS-AB-090906-04 / 777TKN0846	PMAF4003A	938.000	PMNN4077C	Against phantom	RLN4570A Chest Pack	PMLN5097A 3-Wire	3.090	-0.691	4.120	2.900	2.42	1.70
Assessment across the frequency bands at the highest SAR test configuration from above												
CcC-AB-090820-04 / 777TKN0846	PMAF4003A	935.000	PMNN4069A	Against phantom	RLN4570A Chest Pack	None	2.870	-1.01	5.390	3.680	3.55	2.43
PS-AB-090828-02 / 777TKN0846	PMAF4003A	941.000	PMNN4069A	Against phantom	RLN4570A Chest Pack	None	2.940	-1.170	4.650	3.180	3.11	2.12

Assessment without body worn accessory at 2.5cm: the test configuration that indicated the highest SAR result was selected to assess at 2.5cm, with the front and back of the device facing the phantom.

Note: The 2.5cm assessments included the following configurations:

- Back of the device facing the phantom, positioned at 2.5cm from the phantom surface. Results for this test configuration may or may not be included depending on the location of the hot spot. If the peak SAR is located on the antenna then SAR result for this configuration would be lower due to increased separation distance.
- Back of the device facing the phantom, the antenna at 2.5cm from the phantom surface. Results for this test configuration may or may not be included depending on the location of the hot spot. This test position would not be applicable for cases where the peak is located on the DUT body and not the antenna.
- Front of the device facing the phantom, at 2.5cm from the phantom surface.

All SAR plots from the table below are included in APPENDIX F Section 11.0 – 935-941MHz Body Assessment at 2.5cm.

Table 22

935-941MHz Band Assessments at 2.5cm												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**SAR Drift (dB)**	**Meas. 1g-SAR (W/kg)**	**Meas. 10g-SAR (W/kg)**	**Max Calc. 1g-SAR (W/kg)**	**Max Calc. 10g-SAR (W/kg)**
PS-AB-090906-06 / 777TKN0846	PMAF4003A	935.000	PMNN4069A	Back of DUT at 2.5cm	None	PMLN5097A 3-Wire	2.720	-1.010	1.260	0.910	0.88	0.63
PS-AB-090906-07 / 777TKN0846	PMAF4003A	935.000	PMNN4069A	Front of DUT at 2.5cm	None	PMLN5097A 3-Wire	2.700	-0.891	1.240	0.905	0.85	0.62

Assessment at the Face: All possible combinations of the offered antenna PMAF4003A, batteries, with and without the audio accessory RLN5878A were evaluated at the mid channel of the 935-941MHz band with the front of the radio positioned at 2.5cm from the phantom. Depending on the SAR result for each of the test configurations at the mid channel, the high and low channels are assessed only for the configuration that indicated highest SAR result or for each of the configurations that indicated SAR results within 3.0dB of the SAR limit.

All SAR plots from the table below are included in APPENDIX F Section 12.0 – 935-941MHz Face Assessment.

Table 23

935-941MHz Band Assessments at Face												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**SAR Drift (dB)**	**Meas. 1g-SAR (W/kg)**	**Meas. 10g-SAR (W/kg)**	**Max Calc. 1g-SAR (W/kg)**	**Max Calc. 10g-SAR (W/kg)**
Assessment at the Face with the offered batteries and without audio accessory												
CcC-FACE-090822-09 / 777TKN0846	PMAF4003A	938.000	PMNN4069A	Front of DUT at 2.5cm	None	None	2.920	-0.974	1.580	1.140	1.02	0.73
CcC-FACE-090822-08 / 777TKN0846	PMAF4003A	938.000	PMNN4077C	Front of DUT at 2.5cm	None	None	3.140	-1.100	1.630	1.170	1.05	0.75
Assessment at the Face with the offered batteries and audio accessory RLN5878A												
CcC-FACE-090903-09 / 777TKN0846	PMAF4003A	938.000	PMNN4069A	Front of DUT at 2.5cm	None	RLN5878A	2.860	-1.150	1.160	0.836	0.79	0.57
CcC-FACE-090822-10 / 777TKN0846	PMAF4003A	938.000	PMNN4077C	Front of DUT at 2.5cm	None	RLN5878A	3.150	-1.000	1.840	1.330	1.16	0.84
Assessment across frequency band at the highest SAR test configuration from above												
CcC-FACE-090823-02 / 777TKN0846	PMAF4003A	935.000	PMNN4077C	Front of DUT at 2.5cm	None	RLN5878A	3.140	-1.170	1.980	1.420	1.30	0.93
CcC-FACE-090823-03 / 777TKN0846	PMAF4003A	941.000	PMNN4077C	Front of DUT at 2.5cm	None	RLN5878A	3.150	-0.906	1.550	1.110	0.95	0.68

13.5 Shorten Scan Assessment

Short scan assessment of the overall SAR highest configuration (896 - 902MHz, Table 18, pg 20). A "shortened" scan was performed, using the test configuration and unit that produced the highest SAR results overall (in bold with *) below, to validate the SAR drift of the full DASY4™ coarse and 5x5x7 zoom scans. Note that the shortened scan represents the zoom scan performance result; this is obtained by first running a coarse scan to find the peak area and then, using a newly charged battery, a 5x5x7 zoom scan only was performed. The results of the shortened cube scan presented in APPENDIX E demonstrate that the scaling methodology used to determine the calculated SAR results presented herein are valid. The shorten scan result from the table below is provided in APPENDIX E - Shortened Scan Result.

Table 24

Shorten Scan												
Run Number/ SN	**Antenna**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**SAR Drift (dB)**	**Meas. 1g-SAR (W/kg)**	**Meas. 10g-SAR (W/kg)**	**Max Calc. 1g-SAR (W/kg)**	**Max Calc. 10g-SAR (W/kg)**
***CcC-AB-090817-04 / 777TKN0846**	PMAF4003A	899.000	PMNN4069A	Against phantom	RLN4570A Chest Pack	None	2.900	-0.833	7.270	5.030	4.56	3.15
Shorten scan PS-AB-090821-10 / 777TKN0846	PMAF4003A	899.000	PMNN4069A	Against phantom	RLN4570A Chest Pack	None	2.940	-0.576	7.680	5.360	4.47	3.12

14.0 Conclusion

The highest Operational Maximum Calculated 1-gram and 10-gram average SAR values found for FCC ID: ABZ99FT5011 model PMUF1413A.

Max. Calc.: 1-g Avg. SAR: 4.56 W/kg (Body); 10-g Avg. SAR: 3.15 W/kg (Body)
Max. Calc.: 1-g Avg. SAR: 1.30 W/kg (Face); 10-g Avg. SAR: 0.93 W/kg (Face)

The test results clearly demonstrate compliance with FCC Occupational/Controlled RF Exposure limits of **8 W/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 ranging from 800MHz to 3GHz, and for Dipole test frequency ranging from 800MHz to 3GHz. Therefore, the highest tolerance for the probe calibration uncertainty is indicated.

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

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g*	*h = c x f / e*	*i = c x g / e*	*k*
Uncertainty Component	**IEEE 1528 section**	**Tol. (± %)**	**Prob Dist**	**Div.**	**c_i (1 g)**	**c_i (10 g)**	**1 g u_i (±%)**	**10 g u_i (±%)**	**v_i**
Measurement System									
Probe Calibration	E.2.1	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	

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

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g*	*h = c x f / e*	*i = c x g / e*	*k*
Uncertainty Component	**IEEE 1528 section**	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i (1 g)**	**c_i (10 g)**	**1 g u_i (±%)**	**10 g u_i (±%)**	**v_i**
Measurement System									
Probe Calibration	E.2.1	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)			*k*=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) *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
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 MY (Precision)** **Certificate No: ES3-3122_Apr09**

CALIBRATION CERTIFICATE

Object	ES3DV3 - SN:3122
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:	April 24, 2009
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-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41495277	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41498087	1-Apr-09 (No. 217-01030)	Apr-10
Reference 3 dB Attenuator	SN: S5054 (3c)	31-Mar-09 (No. 217-01026)	Mar-10
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-09 (No. 217-01028)	Mar-10
Reference 30 dB Attenuator	SN: S5129 (30b)	31-Mar-09 (No. 217-01027)	Mar-10
Reference Probe ES3DV2	SN: 3013	2-Jan-09 (No. ES3-3013_Jan09)	Jan-10
DAE4	SN: 660	9-Sep-08 (No. DAE4-660_Sep08)	Sep-09

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

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

Issued: April 24, 2009

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
NORMx,y,z	sensitivity in free space
ConvF	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) 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:

- *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 ES3DV3

SN:3122

Manufactured:	July 11, 2006
Last calibrated:	May 15, 2008
Recalibrated:	April 24, 2009

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ES3DV3 SN:3122 **April 24, 2009**

DASY - Parameters of Probe: ES3DV3 SN:3122

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

NormX	**1.34** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**94** mV
NormY	**1.27** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**93** mV
NormZ	**1.44** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**94** 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	9.9	5.7
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	8.4	4.6
SAR_{be} [%]	With Correction Algorithm	0.7	1.3

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%.

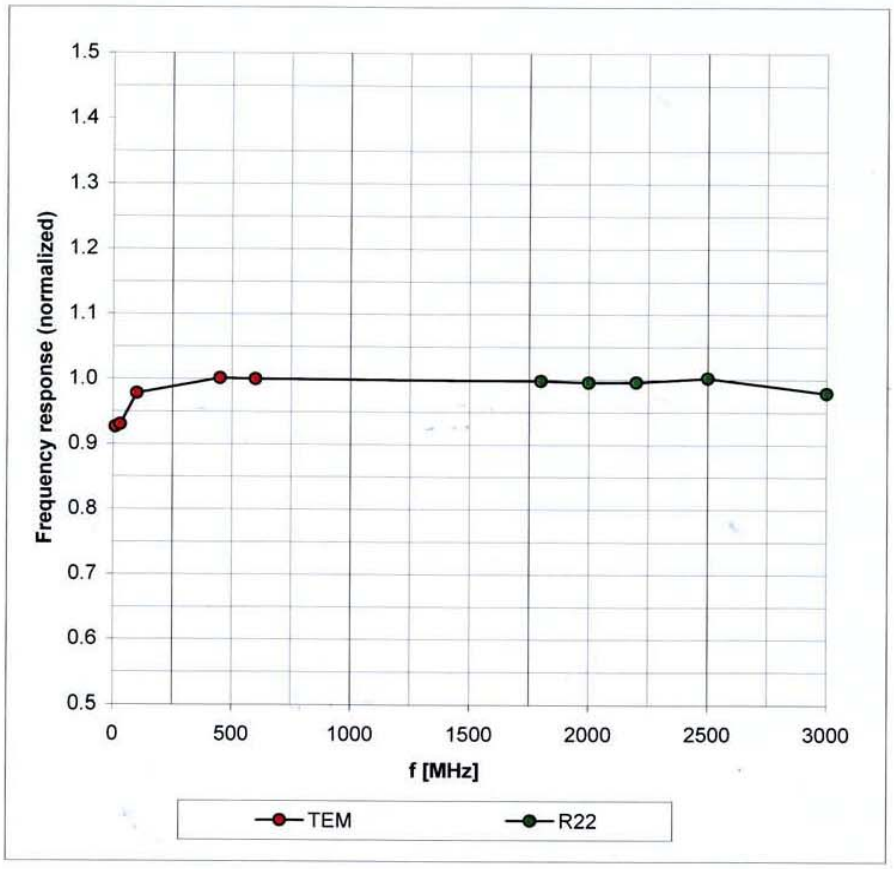
[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).

[B] Numerical linearization parameter: uncertainty not required.

ES3DV3 SN:3122 April 24, 2009

Frequency Response of E-Field

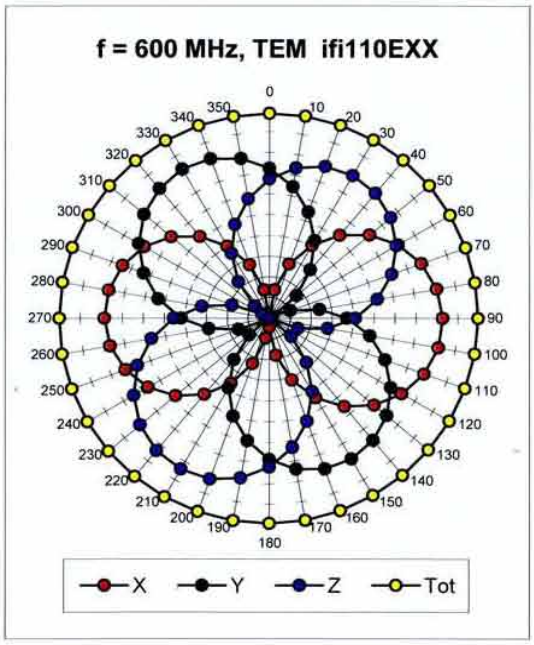
(TEM-Cell:ifi110 EXX, Waveguide: R22)

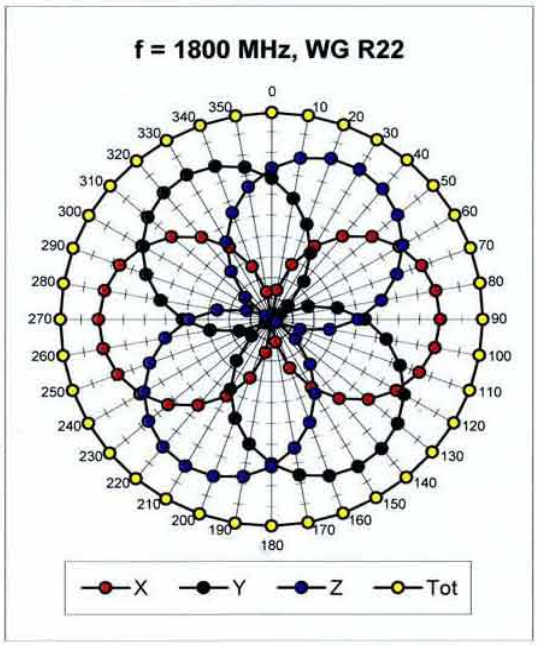


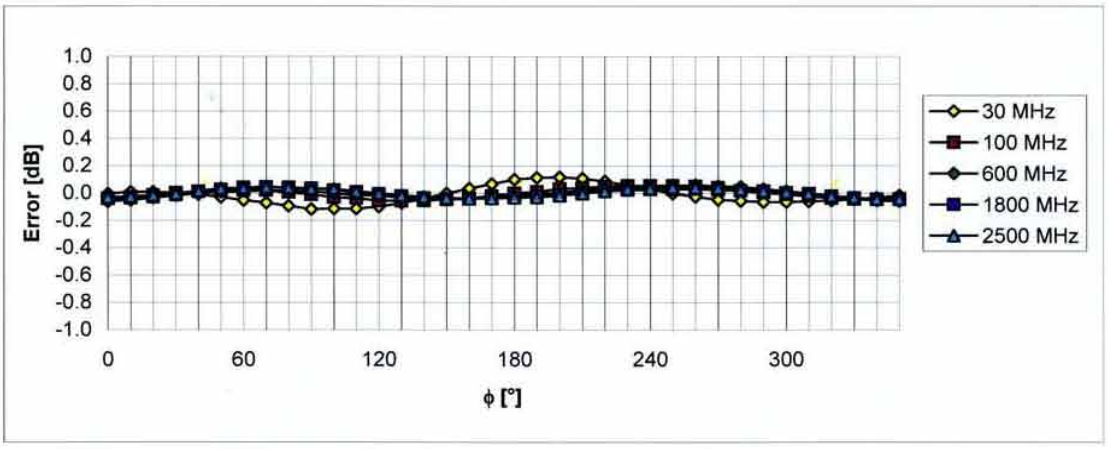
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

ES3DV3 SN:3122 **April 24, 2009**

Receiving Pattern (ϕ), ϑ = 0°





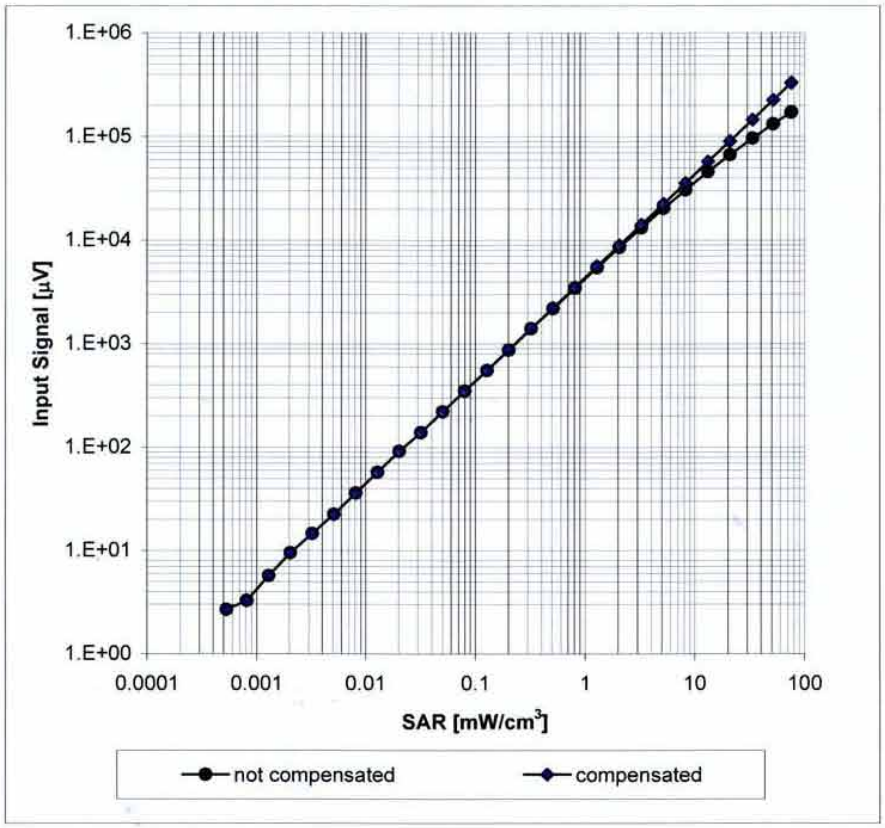


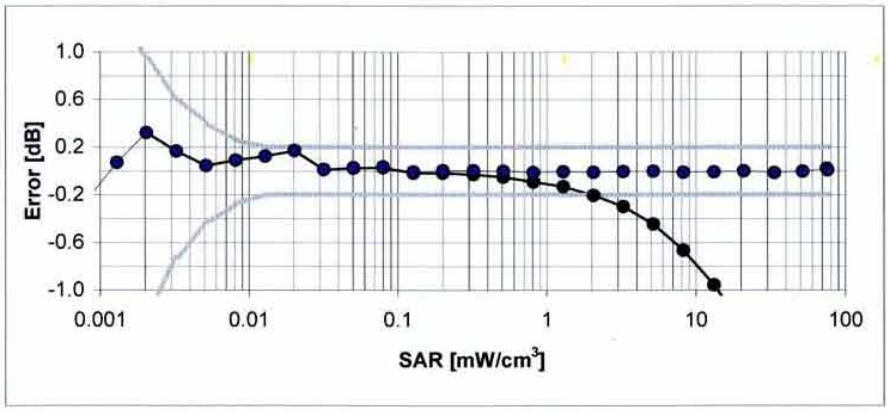
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

ES3DV3 SN:3122 April 24, 2009

Dynamic Range f(SAR_{head})

(Waveguide R22, f = 1800 MHz)

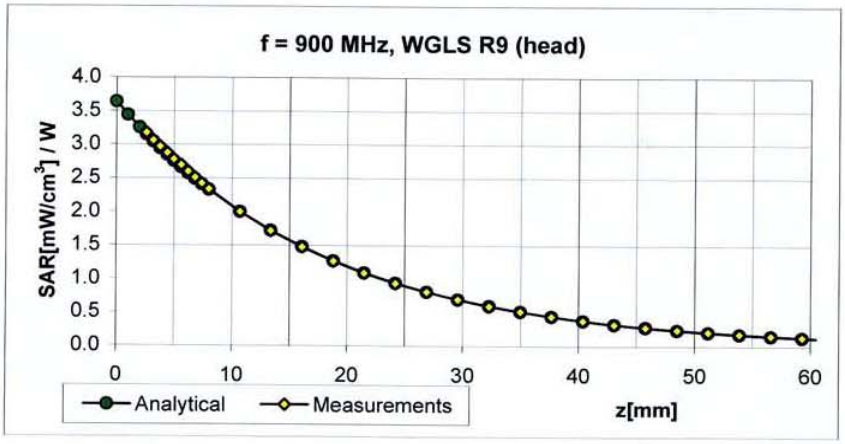




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

ES3DV3 SN:3122 April 24, 2009

Conversion Factor Assessment



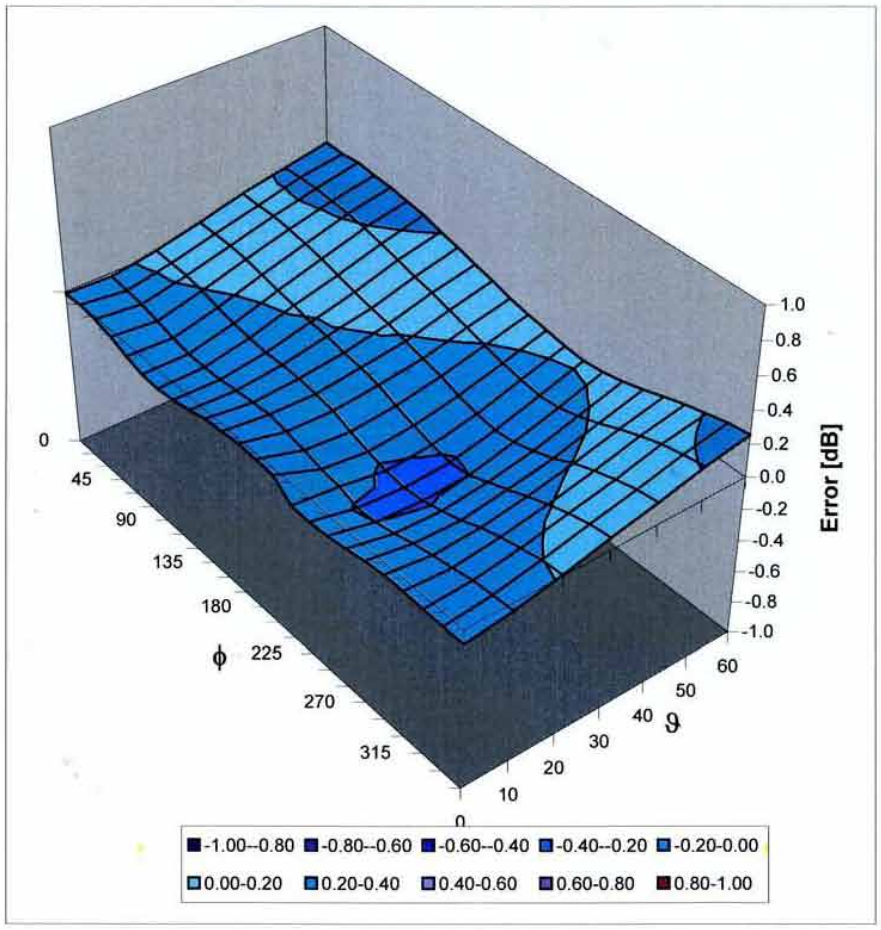
f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
450	± 50 / ± 100	Head	43.5 ± 5%	0.87 ± 5%	0.24	1.52	6.15 ± 13.3% (k=2)
750	± 50 / ± 100	Head	41.9 ± 5%	0.89 ± 5%	0.99	1.07	6.03 ± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.76	1.17	5.78 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.39	1.73	4.96 ± 11.0% (k=2)
2300	± 50 / ± 100	Head	39.5 ± 5%	1.67 ± 5%	0.35	1.93	4.78 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.39	1.86	4.47 ± 11.0% (k=2)
2600	± 50 / ± 100	Head	39.0 ± 5%	1.96 ± 5%	0.39	1.91	4.45 ± 11.0% (k=2)
3500	± 50 / ± 100	Head	37.9 ± 5%	2.91 ± 5%	0.75	1.40	3.86 ± 13.1% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.16	1.28	6.65 ± 13.3% (k=2)
750	± 50 / ± 100	Body	55.5 ± 5%	0.96 ± 5%	0.99	1.08	5.87 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.94	1.11	5.78 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.39	1.97	4.65 ± 11.0% (k=2)
2300	± 50 / ± 100	Body	52.8 ± 5%	1.85 ± 5%	0.65	1.33	4.16 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.35	1.80	4.14 ± 11.0% (k=2)
2600	± 50 / ± 100	Body	52.5 ± 5%	2.16 ± 5%	0.99	1.03	4.05 ± 11.0% (k=2)
3500	± 50 / ± 100	Body	51.3 ± 5%	3.31 ± 5%	0.75	1.50	3.37 ± 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.

ES3DV3 SN:3122 April 24, 2009

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

Schmid & Partner Engineering AG

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

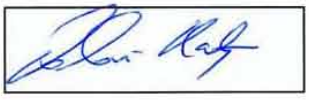
Additional Conversion Factors

for Dosimetric E-Field Probe

Type:	**ES3DV3**
Serial Number:	**3122**
Place of Assessment:	**Zurich**
Date of Assessment:	**April 28, 2009**
Probe Calibration Date:	**April 24, 2009**

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:3122

Conversion factor (± standard deviation)

150 MHz	*ConvF*	**7.9 ± 10%**	**ε_r = 52.3** **σ = 0.76 mho/m** (head tissue)
250 MHz	*ConvF*	**7.3 ± 10%**	**ε_r = 47.6** **σ = 0.83 mho/m** (head tissue)
300 MHz	*ConvF*	**7.1 ± 9%**	**ε_r = 45.3** **σ = 0.87 mho/m** (head tissue)
150 MHz	*ConvF*	**7.6 ± 10%**	**ε_r = 61.9** **σ = 0.80 mho/m** (body tissue)
250 MHz	*ConvF*	**7.2 ± 10%**	**ε_r = 59.4** **σ = 0.88 mho/m** (body tissue)
300 MHz	*ConvF*	**7.1 ± 9%**	**ε_r = 58.2** **σ = 0.92 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.