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# Hearing Aid Compatibility(HAC) **TEST REPORT**

### <For RF-Emission measurement>

Applicant Name	Motorola, Inc.
Address of Applicant	One Motorola Plaza, MD: B-13 Holtsville, NY 11742-1300
EUT Type	Mobile Computer
Model Number	MC9598
Date of receive	2009.03.24
Date of Test(s)	2009.03.28
Date of Issue	2009.03.30

Standards:

### ANSI C63.19-2007

FCC RULE PART(S): 47 CFR PART 20.19(B)

M4 (M Category) **HAC CATEGORY:** 

In the configuration tested, the EUT complied with the standards specified above. Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS Taiwan Electronics & Communication Laboratory or testing done by SGS Taiwan Electronics & Communication Laboratory in connection with distribution or use of the product described in this report must be approved by SGS Taiwan Electronics & Communication Laboratory in writing.

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Asst. Supervisor

Date: 2009/03/30

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### 1. Introduction

The purpose of the Hearing Aid Compatibility extension is to enable measurements of the near electric and magnetic fields generated by wireless communication devices in the region controlled for use by a hearing aid in accordance with ANSI-C63.19-2007

FCC has granted a request for waiver of the HAC rules in section 20.19 for dual band GSM handsets. The waiver has specific conditions, as stated in the order (FCC 05-166) and expires 1 August 2006.

The purpose of this standard is to establish categories for hearing aids and for WD (wireless communications devices) that can indicate to health care practitioners and hearing aid users which hearing aids are compatible with which WD, and to provide tests that can be used to assess the electromagnetic characteristics of hearing aids and WD and assign them to these categories. The various parameters required, in order to demonstrate compatibility and accessibility are measured. The design of the standard is such that when a hearing aid and WD achieve one of the categories specified, as measured by the methodology of this standard, the indicated performance is realized.

In order to provide for the usability of a hearing aid with a WD, several factors must be coordinated:

a) Radio frequency (RF) measurements of the near-field electric and magnetic fields emitted by a WD to categorize these emissions for correlation with the RF immunity of a hearing

Hence, the following are measurements made for the WD:

- a) RF E-Field emissions
- b) RF H-Field emissions

The measurement plane is parallel to, and 1.5cm in front of, the reference plane.

Applications for certification of equipment operation under part 20, that a manufacturer is seeking to certify as hearing aid compatible, as set forth in §20.19 of that part, shall include a statement indication compliance with the test requirements of §20.19 and indicating the appropriate U-rating for the equipment. The manufacturer of the equipment shall be responsible for maintaining the test results.

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# 2. Testing Laboratory

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Company address	134, Wu Kung Road, Wuku Industrial Zone Taipei,	
	Taiwan, R.O.C.	
Telephone	+886-2-2299-3279	
Fax	+886-2-2298-0488	
Website	http://www.tw.sgs.com/	

# 3. Details of Applicant

Applicant Name	Motorola, Inc.
Applicant Address	One Motorola Plaza, MD: B-13 Holtsville, NY 11742-1300
Contact Person	Alan Mears
TEL	631-738-5941
Fax	631-627-7179
E-mail	Alan.Mears@motorola.com

# 4. Description of EUT

EUT Type	Mobile Computer		
FCC ID	UZ7MC9598		
Model Name	MC9598		
Brand Name	Motorola		
Freq. of Operation	Cellular/ US PCS Band		
Definition	Production unit		

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Channel Number (ARFCN)	1013-777	25-1175	
Maximum Output	Cellular	US PCS	
Power Setting (dBm)	24.36dbm	24.88dbm	
Duty Cycle	1		
ESN	60403522		

### 5. Test Environment

Ambient Temperature	22.2° C	
Relative Humidity	<60 %	

# 6. System Specifications of DASY4

6.1 Measurement system Diagram for SPEAG Robotic

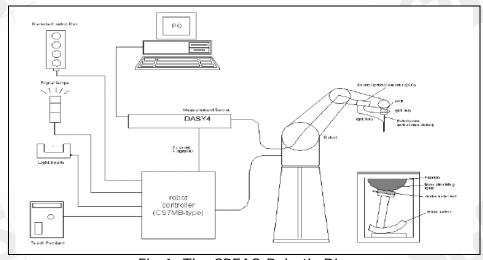


Fig 1. The SPEAG Robotic Diagram

The DASY4 system for performing compliance tests consists of the following items:

 A standard high precision 6-axis robot (Staubli RX family) with controller, teach pendant and software. An arm extension is for accommodating the data acquisition electronics (DAE).

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E and H Field probe.

- · A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 2000 or Windows XP.
- DASY4 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The Test Arch phantom.
- The device holder for handheld mobile phones.
- Validation dipole kits allowing to validate the proper functioning of the system.

#### 6.2 E and H Field Probe

0.2 L dila ii ii	<u> </u>	
Construction	One dipole parallel, two dipoles normal to probe axis Built-in shielding against static charges PEEK enclosure material	
Calibration	In air from 100 MHz to 3.0 GHz (absolute accuracy $\pm 6.0\%$ , $k=2$ )	14/15
Frequency	100 MHz to > 6 GHz (extended to 20 MHz for MRI), Linearity: ± 0.2 dB (100 MHz to 3 GHz)	ER3DV6 E-Field Probe
Directivity	<ul><li>± 0.2 dB in air (rotation around probe axis)</li><li>± 0.4 dB in air (rotation normal to probe axis)</li></ul>	(s)
Dynamic Range	2 V/m to > 1000 V/m; Linearity: ± 0.2 dB	a Follow
Dimensions	Overall length: 330 mm (Tip: 16 mm) Tip diameter: 8 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.	.5 mm
Application	General near-field measurements up to 6 GF Field component measurements Fast automatic scanning in phantoms	<del>l</del> z

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Construction	Three concentric loop sensors with 3.8 mm loop diameters Resistively loaded detector diodes for linear response Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., glycolether)		
Frequency	200 MHz to 3 GHz (absolute accuracy ± 6.0%, k=2); Output linearized	H3DV6 H-Field Probe	
Directivity	± 0.2 dB (spherical isotropy error)		
Dynamic Range	10 mA/m to 2 A/m at 1 GHz		
E-Field Interference	< 10% at 3 GHz (for plane wave)		
Dimensions	Overall length: 330 mm (Tip: 40 mm) Tip diameter: 6 mm (Body: 12 mm) Distance from probe tip to dipole centers: 3 m	nm	
Application	General magnetic near-field measurements up liquids) Field component measurements Surface current measurements Low interaction with the measured field	o to 3 GHz (in air or	

### 6.3 Test Arch

0.0 1031711011		
Description	Enables easy and well defined positioning of	
	the phone and validation dipoles as well as	
	simple teaching of the robot.	
Dimensions	length: 370 mm	
	width: 370 mm	
	height: 370 mm	
V	ŭ	Test Arch

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### 6.4 Phone Holder

Description	Supports accurate and reliable positioning	
	of any phone Effect on near field <+/- 0.5	
	dB	
		FA
		Phone Holder

### 7. Measurement Procedure

The following illustrate a typical RF emissions test scan over a wireless communications device:

- 1. Proper operation of the field probe, probe measurement system, other instrumentation, and the positioning system was confirmed.
- 2. WD is positioned in its intended test position, acoustic output point of the device perpendicular to the field probe.
- 3. the WD operation for maximum rated RF output power was configured and confirmed with the base station simulator, at the test channel and other normal operating parameters as intended for the test. The battery was ensured to be fully charged before each test.
- 4. the center sub-grid was centered over the center of the acoustic output (also audio band magnetic output, if applicable). The WD audio output was positioned tangent (as physically possible) to the measurement plane.
- 5. A surface calibration was performed before each setup change to ensure repeatable spacing and proper maintenance of the measurement plane using the HAC Phantom.
- The measurement system measured the field strength at the reference location.
- 7. Measurements at 2mm increments in the  $5 \times 5$  cm region were performed and recorded. A 360° rotation about the azimuth axis at the maximum interpolated position was measured. For the worst-case condition, the peak reading from this rotation was used in re-evaluating the HAC category.

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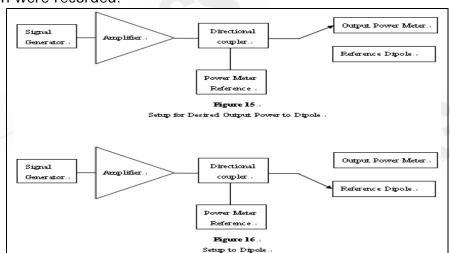
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- 8. The system performed a drift evaluation by measuring the field at the reference location.
- 9. Steps 1-8 were done for both the E and H-Field measurements.

# 8. System Verification

A dipole antenna meeting the requirements given in C63.19 was placed in the position normally occupied by the WD.

The length of the dipole was scanned with both E-field and H-field probes and the maximum values for each were recorded.



For E-Field Scan

Mode	Frequency	Input	Measured	Target	Measured
	(MHz)	Power(dBm)	Value(V/m)	Value(V/m)	Date
CW	835	20	170.5	165.2	2009/03/28
Mode	Frequency	Input	Measured	Target	Measured
	(MHz)	Power(dBm)	Value(V/m)	Value(V/m)	Date
CW	1880	20	146.4	141.4	2009/03/28

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For H-Field Scan

Mode	Frequency	Input	Measured	Target	Measured
Mode	Trequency	Power	Value(A/m)	Value(A/m)	Date
CW	835	20	0.452	0.457	2009/03/28
Mode	Eroguepey	Input	Measured	Target	Measured
Mode	Frequency	Power	Value(A/m)	Value(A/m)	Date
CW	1880	20	0.467	0.464	2009/03/28

### 9. Probe Modulation Factor

The measurement setup for determination of the PMF is given in DASY4 manual section 28.2. The following points describe the installation, the measurement procedure and the evaluation.

- 1. Install the field probe in the DASY4 window setup.
- 2. Mount a validation dipole for the appropriate frequency band under the Test Arch. Move the probe manually to a point of high field strength for the specific field type. The probe may be very close to the dipole and might even touch it. During the fine adjustment of the probe with a signal applied to the dipole, read the x, y and z channel amplitudes in a multimeter job. They should all show a similar amplitude.
- 3. For comparing the peak amplitudes of modulated and CW signal, the same spectrum analyzer settings are required. The signal path (and setup geometry) between spectrum analyzer and probe must not be changed during the evaluation of the PMF! Only signal type and amplitudes as well as DASY4 settings may be varied. Spectrum analyzer settings:

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- Center Frequency: nominal center frequency of channel
- Span: zero
- Resolution bandwidth >= emission bandwidth
- Video bandwidth = 20dB
- Detection: RMS detection
- Trigger: Video or IF trigger, adjusted to give a stable display of the transmission
- Sweep rate: Set to show a complete tranmission cycle
- Line max hold may be used temporarily to ease the peak reading.
- 4. Define a DASY4 document and set the procedure properties (frequency as above, modulation frequency and crest factor for the modulated signal) according to the measured signal. Define a multimeter job (continuous mode) for the field reading. The probe shall not move. A predefined document is available.
- 5. Define a DASY4 document with a procedure for the evaluation of the CW signal (frequency, modulation frequency = 0, crest factor = 1) with a multimeter job.

The HAC measurement procedure is as follows:

- 6. Prepare the evaluation sheet for the installed field probe, frequency and modulation type.
- 7. Modulated signal measurement: Connect the modulated signal using the appropriate frequency via the cable to the setup. Do not move the setup between the following measurements.
- 8. Run the multimeter job in the procedure with the corresponding modulation setting in continuous mode.
- 9. Adjust the signal amplitude to achieve the the desired field level display in the multimeter. (A number of levels over the full dynamic range of the probe in the desired range shall be set, including the values read during the WD scans.)
- 10. Read the total field for the modulated signal.
- 11. Read the peak envelope signal on the spectrum analyzer.
- 12. Repeat these readings for other amplitude settings.
- 13. Switch the signal source off and verify that the ambient and instrumentation noise level is at least 10dB lower (a factor of 3 in field).
- 14. CW measurement: Change the signal to CW at the same center frequency, without touching or moving dipole or probe in the setup.

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15. Adjust the CW signal amplitude to a similar range of peak levels on the spectrum analyzer.

- 16. Run the multimeter in the CW procedure in continuous mode.
- 17. Read the multimeter total field display.
- 18. Read the signal on the spectrum analyzer.
- 19. Repeat these readings for other amplitude settings.
- 20. Select the correct type of predefined Excel calculation sheet and insert the readings into the appropriate measurement columns. Conversion from linear DASY readings to logarithmic will be automatically made. The diagrams contain fitting curves for the logarithmic quantities. CW and E-field values will be fitted by linear trendlines, H-field values by quadratic.

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# 10. Test Standards and Limits

The measurements were performed to ensure compliance to the ANSI C63.19-2007 standard,

Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
M2	0	112.2 - 199.5	0.34 - 0.6
М3	0	63.1 - 112.2	0.19 - 0.34
M4	0	<63.1	<0.19
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
M2	0	354.8 - 631	1.07 - 1.91
МЗ	0	199.5 - 354.8	0.6 - 1.07
M4	0	<199.5	<0.6

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# 11. Instruments List

Manufacturer	Device	Туре	Serial number	Date of last calibration
Schmid & Partner	E-Field and H-Field	ER3DV6	2306	Apr.17.2008
Engineering AG	Probe	H3DV6	6142	Apr.21.2008
Schmid & Partner Engineering AG	835&1880 MHz System Validation Dipole In Air	CD835V3 CD1880V3	1052 1044	Apr.10.2008 Apr.10.2008
Schmid & Partner Engineering AG	Data acquisition Electronics	DAE4	547	Jan.20.2009
Schmid & Partner Engineering AG	Software	DASY 4 V4.7 Build 80	N/A	Calibration isn't necessary
Agilent	Dielectric Probe Kit	85070D	US01440168	Calibration isn't necessary
Agilent	Dual-directional coupler	778D	50313	Aug.26.2008
Agilent	RF Signal Generator	8648D	3847M00432	May.21.2008
Agilent	Power Sensor	8481H	MY41091361	May.20.2008
R&S	Radio Communication Test	CMU200	113505	Sep.03.2008
Schmid & Partner Engineering AG	Test Arch SD HAC	P01	1047	N/A
Agilent	Spectrum Analyzer	E4405B	MY45113250	Jun.03.2008

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# 12. Summary of Results

### E-Field

E-Field Emission	Band	Channel	Modulation Factor	Conducte d Power at BS (dBm)	Measured Drift(%)	Time Avg. Field (V/m)	RESULT	Excl Blocks per 4.3.1.2.2
		1013	0.991	24.23	0.040	42.3	M4	369
CDMA	Cellular	384	0.991	24.33	0.051	37.1	M4	789
		777	0.991	24.36	-0.009	34.8	M4	369
E-Field Emission	Band	Channel	Modulation Factor	Conducte d Power at BS (dBm)	Measured Drift(%)	Time Avg. Field (V/m)	RESULT	Excl Blocks per 4.3.1.2.2
		25	0.986	24.74	-0.135	19.1	M4	123
CDMA	US PCS	600	0.986	24.78	-0.042	19.7	M4	123
		1175	0.986	24.88	-0.014	19.3	M4	124

#### H-Filed

11-1 lieu								
H-Field Emission	Band	Channel	Modulation Factor	Conducte d Power at BS (dBm)	Measured Drift(%)	Time Avg. Field (A/m)	RESULT	Excl Blocks per 4.3.1.2.2
		1013	0.987	24.23	-0.103	0.107	M4	478
CDMA	Cellular	384	0.987	24.33	-0.003	0.092	M4	478
		777	0.987	24.36	0.031	0.106	M4	478
H-Field Emission	Band	Channel	Modulation Factor	Conducte d Power at BS (dBm)	Measured Drift(%)	Time Avg. Field (A/m)	RESULT	Excl Blocks per 4.3.1.2.2
		25	0.975	24.74	-0.047	0.066	M4	123
CDMA	US PCS	600	0.975	24.78	0.041	0.078	M4	123
		1175	0.975	24.88	0.066	0.064	M4	123

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### 13. Measurement Data

Date/Time: 2009/3/28 00:38:27

### HAC E Cellular CH1013

#### **DUT: VT208;**

Communication System: CDMA\_850; Frequency: 824.7 MHz; Duty Cycle: 1:1 Medium: Air Medium parameters used:  $\sigma = 0$  mho/m,  $\varepsilon_r = 1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: E Dipole Section

Probe: ER3DV6 - SN2306; ConvF(1, 1, 1); Calibrated: 2008/4/17

Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn547; Calibrated: 2009/1/20

Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA;

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

### E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 42.3 V/m

Probe Modulation Factor = 0.991

Device Reference Point: 0.000, 0.000, 354.7 mm Reference Value = 32.5 V/m; Power Drift = 0.040 dB Hearing Aid Near-Field Category: M4 (AWF 0 dB)

#### Peak E-field in V/m

Grid 1	Grid 2	Grid 3
25.4 M4	36.7 M4	48.5 M4
Grid 4	Grid 5	Grid 6
28.1 M4	42.3 M4	53.1 M4
Grid 7	Grid 8	Grid 9
29.6 M4	41.9 M4	52.8 M4

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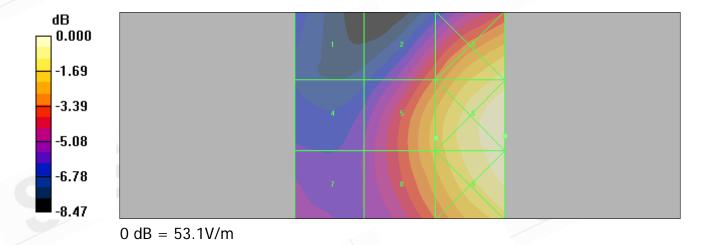
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AWF <sup>l</sup> (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
0	199.5 - 354.8	0.6 - 1.07
-5	149.6 - 266.1	0.45 - 0.8
0	112.2 - 199.5	0.34 - 0.6
-5	84.1 - 149.6	0.25 - 0.45
0	63.1 - 112.2	0.19 - 0.34
-5	47.3 - 84.1	0.14 - 0.25
0	<63.1	<0.19
-5	<47.3	<0.14
AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
0	631 - 1122	1.91 - 3.39
-5	473.2 - 841.4	1.43 - 2.54
0	354.8 - 631	1.07 - 1.91
-5	266.1 - 473.2	0.8 - 1.43
0	199.5 - 354.8	0.6 - 1.07
-5	149.6 - 266.1	0.45 - 0.8
0	<199.5	<0.6
-5	<149.6	<0.45
	(dB)  0 -5 0 -5 0 -5 0 -5 0 -5 0 -5 0 -5 0	(dB) 960MHz  0 199.5 - 354.8  -5 149.6 - 266.1  0 112.2 - 199.5  -5 84.1 - 149.6  0 63.1 - 112.2  -5 47.3 - 84.1  0 <63.1  -5 <47.3  AWF Limits for E-Field Emissions (V/m) < 960MHz  0 631 - 1122  -5 473.2 - 841.4  0 354.8 - 631  -5 266.1 - 473.2  0 199.5 - 354.8  -5 149.6 - 266.1  0 <199.5



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Date/Time: 2009/3/28 01:02:19

# HAC\_E\_Cellular\_CH384

### **DUT: VT208;**

Communication System: CDMA\_850; Frequency: 836.52 MHz; Duty Cycle: 1:1 Medium: Air Medium parameters used:  $\sigma = 0$  mho/m,  $\varepsilon_r = 1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: E Dipole Section

### DASY4 Configuration:

Probe: ER3DV6 - SN2306; ConvF(1, 1, 1); Calibrated: 2008/4/17

Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn547; Calibrated: 2009/1/20

Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA;

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

### E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 37.1 V/m

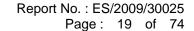
Probe Modulation Factor = 0.991

Device Reference Point: 0.000, 0.000, 354.7 mm Reference Value = 43.5 V/m; Power Drift = 0.051 dB Hearing Aid Near-Field Category: M4 (AWF 0 dB)

#### Peak F-field in V/m

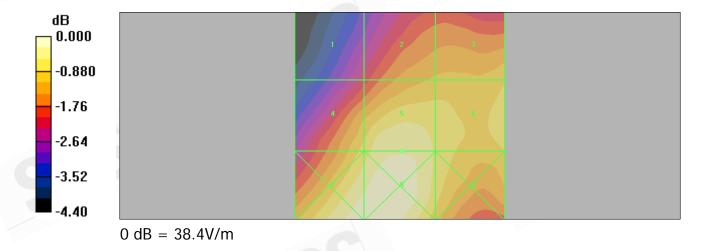
Grid 1	Grid 2	Grid 3
29.9 M4	33.8 M4	34.7 M4
Grid 4	Grid 5	Grid 6
35.3 M4	37.1 M4	35.7 M4
Grid 7	Grid 8	Grid 9
37.9 M4	38.4 M4	35.7 M4

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Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5	<47.3	<0.14
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5	<149.6	<0.45





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Date/Time: 2009/3/28 01:16:09

# HAC\_E\_Cellular\_CH777

### **DUT: VT208;**

Communication System: CDMA\_850; Frequency: 848.31 MHz; Duty Cycle: 1:1 Medium: Air Medium parameters used:  $\sigma = 0$  mho/m,  $\varepsilon_r = 1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: E Dipole Section

### DASY4 Configuration:

Probe: ER3DV6 - SN2306; ConvF(1, 1, 1); Calibrated: 2008/4/17

Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn547; Calibrated: 2009/1/20

Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA;

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

### E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 34.8 V/m

Probe Modulation Factor = 0.991

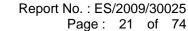
Device Reference Point: 0.000, 0.000, 354.7 mm Reference Value = 38.9 V/m; Power Drift = -0.009 dB Hearing Aid Near-Field Category: M4 (AWF 0 dB)

#### Peak F-field in V/m

Grid 1	Grid 2	Grid 3
22.3 M4	32.6 M4	37.0 M4
Grid 4	Grid 5	Grid 6
26.9 M4	34.8 M4	39.3 M4
Grid 7	Grid 8	Grid 9
29.7 M4	34.7 M4	38.9 M4

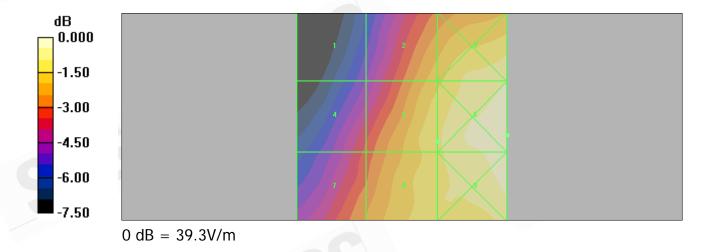
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Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5	<47.3	<0.14
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
IEC	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5	<149.6	<0.45





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Date/Time: 2009/3/28 09:11:00

# HAC\_H\_Cellular\_CH1013

### **DUT: VT208;**

Communication System: CDMA 850; Frequency: 824.7 MHz; Duty Cycle: 1:1 Medium: Air Medium parameters used:  $\sigma = 0$  mho/m,  $\varepsilon_r = 1$ ;  $\rho = 1$  kg/m<sup>3</sup>

Phantom section: H Dipole Section

#### DASY4 Configuration:

Probe: H3DV6 - SN6142; ; Calibrated: 2008/4/21

Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn547; Calibrated: 2009/1/20

Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA;

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

### H Scan - H3DV6 - measurement discance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.107 A/m

Probe Modulation Factor = 0.987

Device Reference Point: 0.000, 0.000, 354.7 mm

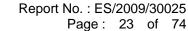
Reference Value = 0.121 A/m; Power Drift = -0.103 dB Hearing Aid Near-Field Category: M4 (AWF 0 dB)

#### Peak H-field in A/m

Grid 1	Grid 2	Grid 3
0.103 M4	0.107 M4	0.106 M4
Grid 4	Grid 5	Grid 6
0.106 M4	0.107 M4	0.106 M4
Grid 7	Grid 8	Grid 9
0.109 M4	0.109 M4	0.103 M4

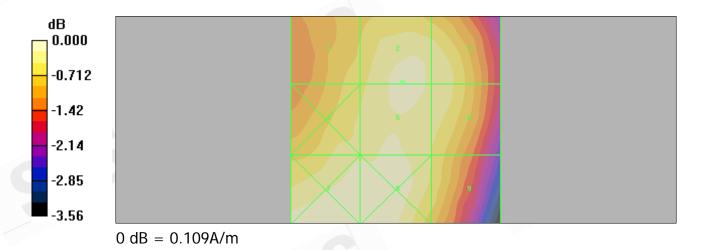
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Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5	<47.3	<0.14
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
IEC	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5	<149.6	<0.45





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# HAC\_H\_Cellular\_CH384

### **DUT: VT208;**

Communication System: CDMA\_850; Frequency: 836.52 MHz; Duty Cycle: 1:1 Medium: Air Medium parameters used:  $\sigma = 0$  mho/m,  $\varepsilon_r = 1$ ;  $\rho = 1$  kg/m<sup>3</sup>

Phantom section: H Dipole Section

### DASY4 Configuration:

Probe: H3DV6 - SN6142; ; Calibrated: 2008/4/21

Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn547; Calibrated: 2009/1/20

Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA;

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

### H Scan - H3DV6 - measurement discance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.092 A/m

Probe Modulation Factor = 0.987

Device Reference Point: 0.000, 0.000, 354.7 mm

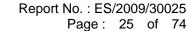
Reference Value = 0.089 A/m; Power Drift = -0.003 dB Hearing Aid Near-Field Category: M4 (AWF 0 dB)

#### Peak H-field in A/m

Grid 1	Grid 2	Grid 3
0.092 M4	0.079 M4	0.069 M4
Grid 4	Grid 5	Grid 6
0.098 M4	0.088 M4	0.075 M4
Grid 7	Grid 8	Grid 9
0.109 M4	0.093 M4	0.077 M4

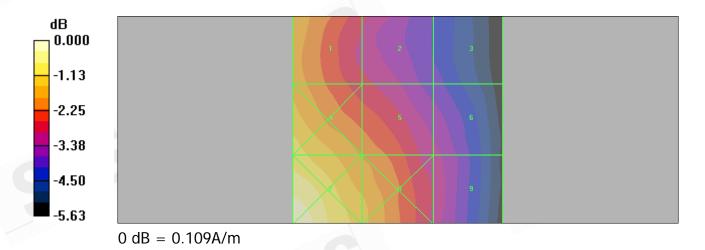
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Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5	<47.3	<0.14
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
IEC	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5	<149.6	<0.45





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# HAC\_H\_Cellular\_CH777

### **DUT: VT208;**

Communication System: CDMA\_850; Frequency: 848.31 MHz; Duty Cycle: 1:1 Medium: Air Medium parameters used:  $\sigma = 0$  mho/m,  $\varepsilon_r = 1$ ;  $\rho = 1$  kg/m<sup>3</sup>

Phantom section: H Dipole Section

### DASY4 Configuration:

Probe: H3DV6 - SN6142; ; Calibrated: 2008/4/21

Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn547; Calibrated: 2009/1/20

Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA;

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

### H Scan - H3DV6 - measurement discance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.106 A/m

Probe Modulation Factor = 0.987

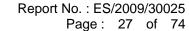
Device Reference Point: 0.000, 0.000, 354.7 mm Reference Value = 0.109 A/m; Power Drift = 0.031 dB Hearing Aid Near-Field Category: M4 (AWF 0 dB)

#### Peak H-field in A/m

Grid 1	Grid 2	Grid 3
0.104 M4	0.097 M4	0.087 M4
Grid 4	Grid 5	Grid 6
0.113 M4	0.106 M4	0.091 M4
Grid 7	Grid 8	Grid 9
0.123 M4	0.110 M4	0.091 M4

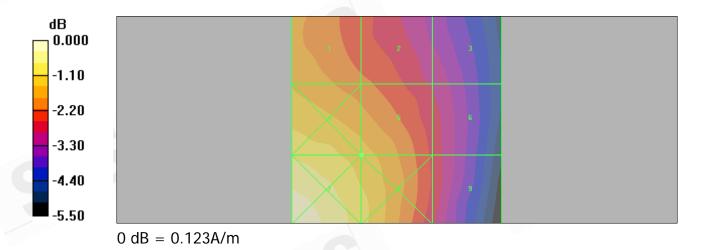
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Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5	<47.3	<0.14
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
IEC	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5	<149.6	<0.45





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# HAC\_E\_PCS\_CH25

### **DUT: VT208;**

Communication System: CDMA2000; Frequency: 1851.25 MHz; Duty Cycle: 1:1 Medium: Air Medium parameters used:  $\sigma = 0$  mho/m,  $\varepsilon_r = 1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: E Dipole Section

### DASY4 Configuration:

Probe: ER3DV6 - SN2306; ConvF(1, 1, 1); Calibrated: 2008/4/17

Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn547; Calibrated: 2009/1/20

Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA;

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

### E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 19.1 V/m

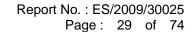
Probe Modulation Factor = 0.986

Device Reference Point: 0.000, 0.000, 354.7 mm Reference Value = 9.84 V/m; Power Drift = -0.135 dB Hearing Aid Near-Field Category: M4 (AWF 0 dB)

#### Peak F-field in V/m

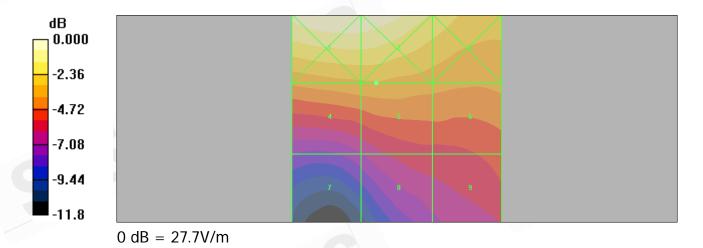
Grid 1	Grid 2	Grid 3
27.7 M4	27.6 M4	22.9 M4
Grid 4	Grid 5	Grid 6
19.0 M4	19.1 M4	18.3 M4
Grid 7	Grid 8	Grid 9
12.2 M4	14.4 M4	15.4 M4

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Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5	<47.3	<0.14
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5	<149.6	<0.45





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# HAC\_E\_PCS\_CH600

### **DUT: VT208;**

Communication System: CDMA2000; Frequency: 1880 MHz; Duty Cycle: 1:1 Medium: Air Medium parameters used:  $\sigma = 0$  mho/m,  $\varepsilon_r = 1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: E Dipole Section

#### DASY4 Configuration:

Probe: ER3DV6 - SN2306; ConvF(1, 1, 1); Calibrated: 2008/4/17

Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn547; Calibrated: 2009/1/20

Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA;

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

### E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 19.7 V/m

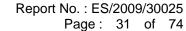
Probe Modulation Factor = 0.986

Device Reference Point: 0.000, 0.000, 354.7 mm Reference Value = 12.4 V/m; Power Drift = -0.042 dB Hearing Aid Near-Field Category: M4 (AWF 0 dB)

#### Peak F-field in V/m

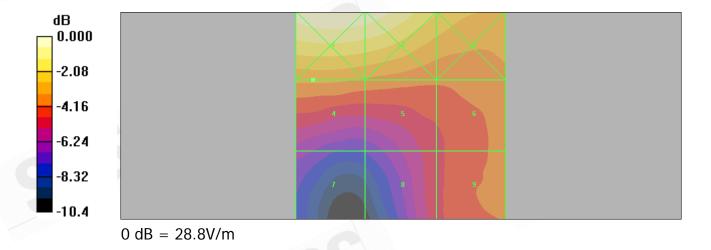
Grid 1	Grid 2	Grid 3
28.8 M4	28.3 M4	22.9 M4
Grid 4	Grid 5	Grid 6
19.7 M4	19.1 M4	19.1 M4
Grid 7	Grid 8	Grid 9
13.6 M4	16.1 M4	18.6 M4

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Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5	<47.3	<0.14
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
IEC	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5	<149.6	<0.45





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Date/Time: 2009/3/28 05:31:47

# HAC\_E\_PCS\_CH1175

### **DUT: VT208;**

Communication System: CDMA2000; Frequency: 1908.75 MHz; Duty Cycle: 1:1 Medium: Air Medium parameters used:  $\sigma = 0$  mho/m,  $\varepsilon_r = 1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: E Dipole Section

#### DASY4 Configuration:

Probe: ER3DV6 - SN2306; ConvF(1, 1, 1); Calibrated: 2008/4/17

Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn547; Calibrated: 2009/1/20

Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA;

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

### E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 19.3 V/m

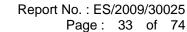
Probe Modulation Factor = 0.986

Device Reference Point: 0.000, 0.000, 354.7 mm Reference Value = 10.8 V/m; Power Drift = -0.014 dB Hearing Aid Near-Field Category: M4 (AWF 0 dB)

#### Peak F-field in V/m

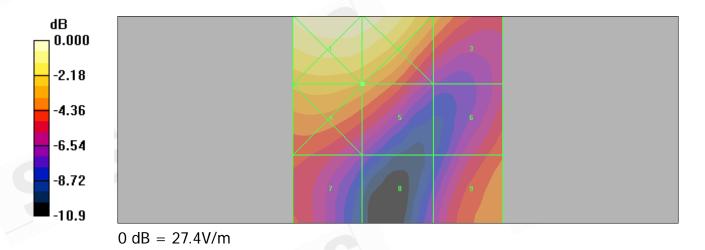
Grid 1	Grid 2	Grid 3
	27.0 M4	
Grid 4	Grid 5	Grid 6
20.5 M4	19.3 M4	16.5 M4
Grid 7	Grid 8	Grid 9
15.7 M4	12.4 M4	17.9 M4

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Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5	<47.3	<0.14
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
IEC	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5	<149.6	<0.45





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# HAC\_H\_PCS\_CH25

### **DUT: VT208;**

Communication System: CDMA2000; Frequency: 1851.25 MHz; Duty Cycle: 1:1 Medium: Air Medium parameters used:  $\sigma = 0$  mho/m,  $\varepsilon_r = 1$ ;  $\rho = 1$  kg/m<sup>3</sup>

Phantom section: H Dipole Section

#### DASY4 Configuration:

Probe: H3DV6 - SN6142; ; Calibrated: 2008/4/21

Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn547; Calibrated: 2009/1/20

Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA;

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

### H Scan - H3DV6 - measurement discance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.066 A/m

Probe Modulation Factor = 0.975

Device Reference Point: 0.000, 0.000, 354.7 mm

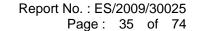
Reference Value = 0.074 A/m; Power Drift = -0.047 dB Hearing Aid Near-Field Category: M4 (AWF 0 dB)

#### Peak H-field in A/m

Grid 1	Grid 2	Grid 3
0.082 M4	0.071 M4	0.067 M4
Grid 4	Grid 5	Grid 6
0.066 M4	0.066 M4	0.066 M4
Grid 7	Grid 8	Grid 9
0.057 M4	0.059 M4	0.060 M4

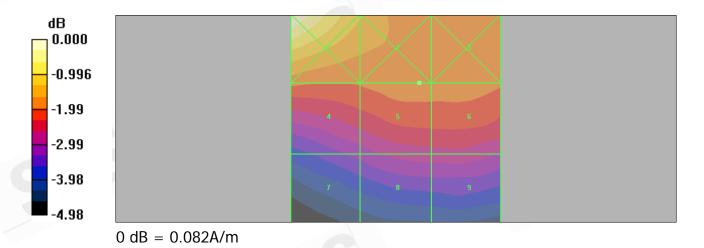
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Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5	<47.3	<0.14
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5	<149.6	<0.45





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# HAC\_H\_PCS\_CH600

### **DUT: VT208;**

Communication System: CDMA2000; Frequency: 1880 MHz; Duty Cycle: 1:1 Medium: Air Medium parameters used:  $\sigma = 0$  mho/m,  $\varepsilon_r = 1$ ;  $\rho = 1$  kg/m<sup>3</sup>

Phantom section: H Dipole Section

### DASY4 Configuration:

Probe: H3DV6 - SN6142; ; Calibrated: 2008/4/21

Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn547; Calibrated: 2009/1/20

Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA;

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

### H Scan - H3DV6 - measurement discance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.078 A/m

Probe Modulation Factor = 0.975

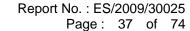
Device Reference Point: 0.000, 0.000, 354.7 mm Reference Value = 0.088 A/m; Power Drift = 0.041 dB Hearing Aid Near-Field Category: M4 (AWF 0 dB)

#### Peak H-field in A/m

Grid 1	Grid 2	Grid 3
0.085 M4	0.078 M4	0.078 M4
Grid 4	Grid 5	Grid 6
0.074 M4	0.078 M4	0.078 M4
Grid 7	Grid 8	Grid 9
0.067 M4	0.072 M4	0.073 M4

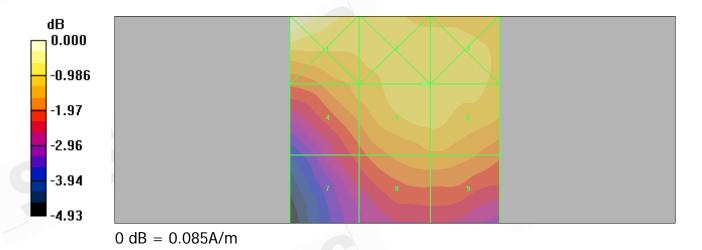
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Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5	<47.3	<0.14
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
IEC	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5	<149.6	<0.45



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Date/Time: 2009/3/28 13:37:08

# HAC\_H\_PCS\_CH1175

#### **DUT: VT208;**

Communication System: CDMA2000; Frequency: 1908.75 MHz; Duty Cycle: 1:1 Medium: Air Medium parameters used:  $\sigma = 0$  mho/m,  $\varepsilon_r = 1$ ;  $\rho = 1$  kg/m<sup>3</sup>

Phantom section: H Dipole Section

#### DASY4 Configuration:

Probe: H3DV6 - SN6142; ; Calibrated: 2008/4/21

Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn547; Calibrated: 2009/1/20

Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA;

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

# H Scan - H3DV6 - measurement discance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.064 A/m

Probe Modulation Factor = 0.975

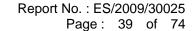
Device Reference Point: 0.000, 0.000, 354.7 mm Reference Value = 0.070 A/m; Power Drift = 0.066 dB Hearing Aid Near-Field Category: M4 (AWF 0 dB)

#### Peak H-field in A/m

Grid 1	Grid 2	Grid 3
0.068 M4	0.063 M4	0.064 M4
Grid 4	Grid 5	Grid 6
0.053 M4	0.063 M4	0.064 M4
Grid 7	Grid 8	Grid 9
0.051 M4	0.061 M4	0.062 M4

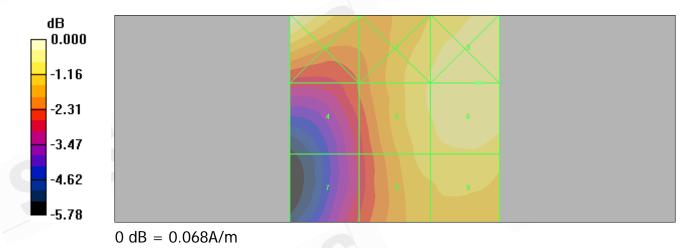
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Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5	<47.3	<0.14
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5	<149.6	< 0.45



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# 14. SYSTEM Verification

Date/Time: 2009/3/28 00:09:47

# HAC\_E\_Dipole\_835MHz

## **DUT: HAC-Dipole 835 MHz;**

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Air Medium parameters used:  $\sigma = 0$  mho/m,  $\varepsilon_r = 1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: E Dipole Section

Probe: ER3DV6 - SN2306; ConvF(1, 1, 1); Calibrated: 2008/4/17

Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn547; Calibrated: 2009/1/20

Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA;

Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 186

## E Scan - ER probe center 10mm above CD835 Dipole/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 170.5 V/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 354.7 mm

Reference Value = 104.0 V/m; Power Drift = -0.023 dB

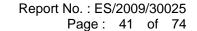
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

#### Peak E-field in V/m

Grid 1	Grid 2	Grid 3	
166.5 M4	170.5 M4	165.8 M4	
Grid 4	Grid 5	Grid 6	
90.8 M4	92.3 M4	89.5 M4	
Grid 7	Grid 8	Grid 9	
166.9 M4	173.2 M4	168.4 M4	

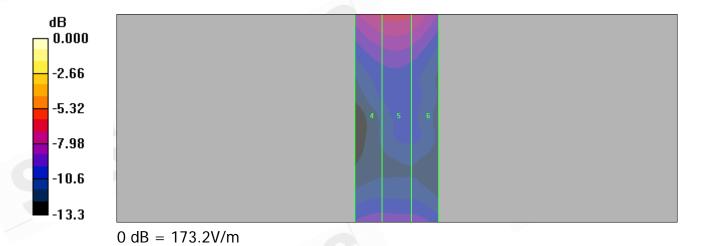
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Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5	<47.3	<0.14
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5	<149.6	<0.45



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Date/Time: 2009/3/28 08:39:57

# HAC\_H\_Dipole\_835MHz

## DUT: HAC-Dipole 835 MHz;

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Air Medium parameters used:  $\sigma = 0$  mho/m,  $\varepsilon_r = 1$ ;  $\rho = 1$  kg/m<sup>3</sup>

Phantom section: H Dipole Section

#### DASY4 Configuration:

Probe: H3DV6 - SN6142; ; Calibrated: 2008/4/21

Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn547; Calibrated: 2009/1/20

Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA;

Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 186

## H Scan - H3DV6 probe center 10mm above CD835 Dipole/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.452 A/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 354.7 mm

Reference Value = 0.478 A/m; Power Drift = -0.012 dB Hearing Aid Near-Field Category: M4 (AWF 0 dB)

#### Peak H-field in A/m

Grid 1	Grid 2	Grid 3
0.360 M4	0.397 M4	0.386 M4
Grid 4	Grid 5	Grid 6
0.413 M4	0.452 M4	0.441 M4
Grid 7	Grid 8	Grid 9
0.372 M4	0.407 M4	0.399 M4

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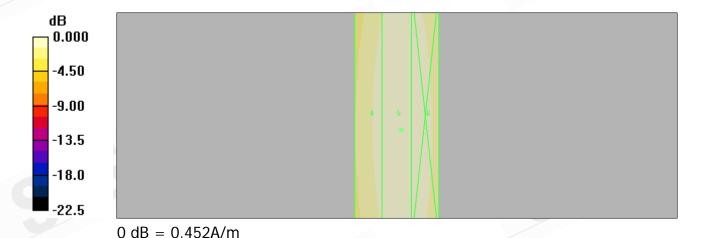
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AWF <sup>l</sup> (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
0	199.5 - 354.8	0.6 - 1.07
-5	149.6 - 266.1	0.45 - 0.8
0	112.2 - 199.5	0.34 - 0.6
-5	84.1 - 149.6	0.25 - 0.45
0	63.1 - 112.2	0.19 - 0.34
-5	47.3 - 84.1	0.14 - 0.25
0	<63.1	<0.19
-5	<47.3	<0.14
AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
0	631 - 1122	1.91 - 3.39
-5	473.2 - 841.4	1.43 - 2.54
0	354.8 - 631	1.07 - 1.91
-5	266.1 - 473.2	0.8 - 1.43
0	199.5 - 354.8	0.6 - 1.07
-5	149.6 - 266.1	0.45 - 0.8
0	<199.5	<0.6
-5	<149.6	<0.45
	(dB)  0 -5 0 -5 0 -5 0 -5 0 -5 0 -5 0 -5 0	(dB) 960MHz  0 199.5 - 354.8  -5 149.6 - 266.1  0 112.2 - 199.5  -5 84.1 - 149.6  0 63.1 - 112.2  -5 47.3 - 84.1  0 <63.1  -5 <47.3  AWF Limits for E-Field Emissions (V/m) < 960MHz  0 631 - 1122  -5 473.2 - 841.4  0 354.8 - 631  -5 266.1 - 473.2  0 199.5 - 354.8  -5 149.6 - 266.1  0 <199.5



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Date/Time: 2009/3/28 04:06:30

# HAC\_E\_Dipole\_1880MHz

## DUT: HAC-Dipole 1880MHz;

Communication System: CW; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: Air Medium parameters used:  $\sigma = 0$  mho/m,  $\varepsilon_r = 1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: E Dipole Section

#### DASY4 Configuration:

Probe: ER3DV6 - SN2306; ConvF(1, 1, 1); Calibrated: 2008/4/17

Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn547; Calibrated: 2009/1/20

Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA;

Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 186

## E Scan - ER probe center 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 146.4 V/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 354.7 mm

Reference Value = 167.4 V/m; Power Drift = -0.025 dB

Hearing Aid Near-Field Category: M2 (AWF 0 dB)

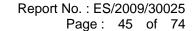
#### Peak E-field in V/m

Grid 1	Grid 2	Grid 3
146.2 M2	147.4 M2	141.9 M2
Grid 4	Grid 5	Grid 6
105.2 M3	106.3 M3	100.1 M3
Grid 7	Grid 8	Grid 9
139.3 M2	146.4 M2	145.1 M2

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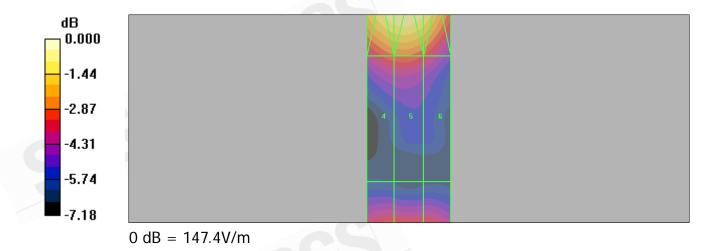
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Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5	<47.3	<0.14
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
150	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5	<149.6	<0.45



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Date/Time: 2009/3/28 12:28:01

# HAC\_H\_Dipole\_1880MHz

## DUT: HAC-Dipole 1880MHz;

Communication System: CW; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: Air Medium parameters used:  $\sigma = 0$  mho/m,  $\varepsilon_r = 1$ ;  $\rho = 1$  kg/m<sup>3</sup>

Phantom section: H Dipole Section

#### DASY4 Configuration:

Probe: H3DV6 - SN6142; ; Calibrated: 2008/4/21

Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn547; Calibrated: 2009/1/20

Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA;

Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 186

# H Scan - H3DV6 probe center 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.467 A/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 354.7 mm

Reference Value = 0.492 A/m; Power Drift = -0.010 dB Hearing Aid Near-Field Category: M2 (AWF 0 dB)

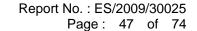
#### Peak H-field in A/m

Grid 1	Grid 2	Grid 3
0.392 M2	0.429 M2	0.415 M2
Grid 4	Grid 5	Grid 6
0.431 M2	0.467 M2	0.458 M2
Grid 7	Grid 8	Grid 9
0.391 M2	0.431 M2	0.424 M2

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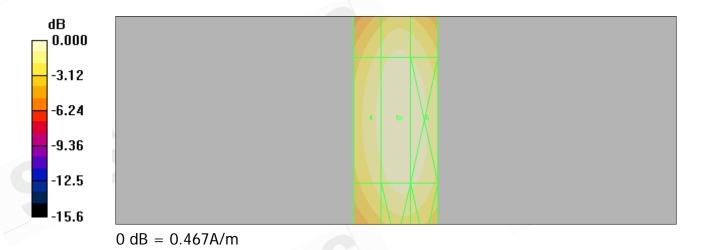
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Category AWF (dB) Limits for E-Field Emissions (V/m) > Limits for H-Field Emission 960MHz  M1 0 199.5 - 354.8	s (A/m) >
M1 0 199.5 - 354.8	
	0.6 - 1.07
-5 149.6 - 266.1	0.45 - 0.8
M2 0 112.2 - 199.5	0.34 - 0.6
-5 84.1 - 149.6 C	).25 - 0.45
M3 0 63.1 - 112.2	0.19 - 0.34
-5 47.3 - 84.1	0.14 - 0.25
M4 0 <63.1	<0.19
-5 <47.3	<0.14
Category AWF (dB) Limits for E-Field Emissions (V/m) < Limits for H-Field Emission 960 MHz	s (A/m) <
M1 0 631 - 1122 1	.91 - 3.39
-5 473.2 - 841.4	.43 - 2.54
M2 0 354.8 - 631 1	.07 - 1.91
-5 266.1 - 473.2	0.8 - 1.43
M3 0 199.5 - 354.8	0.6 - 1.07
-5 149.6 - 266.1	0.45 - 0.8
M4 0 <199.5	<0.6
-5 <149.6	< 0.45



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# 15. DAE & Probe Calibration certificate

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





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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

lient SGS (Auden)		Certi	fficate No: DAE4-547_Jan09
CALIBRATION CE	RTIFICATE		
Object .	DAE4 - SD 000 D	04 BJ - SN: 547	
	QA CAL-06.v12 Calibration proced	dure for the data acquisition	on electronics (DAE)
Calibration date:	January 19, 2009		
Condition of the calibrated item	In Tolerance		
All calibrations have been conducte Calibration Equipment used (M&TE	critical for calibration)		
Primary Standards	ID#	Cal Date (Certificate No.)	Scheduled Calibration
Fluke Process Calibrator Type 702 Keithley Multimeter Type 2001	SN: 6295803 SN: 0810278	30-Sep-08 (No: 7673) 30-Sep-08 (No: 7670)	Sep-09 Sep-09
Secondary Standards	ID#	Check Date (in house)	Scheduled Check
Calibrator Box V1.1	SE UMS 006 AB 1004		In house check: Jun-09
2	Name	Function	Signature
Calibrated by:	Daniel Hess	Technician	D. Hen
Approved by:	Fin Bomholt	R&D Director	D. Hen

Certificate No: DAE4-547 Jan09

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Cortificate No: ER3-2306 Apr08

Object	ER3DV6 - SN:2306		
Calibration procedure(s)	QA CAL-02.v5 Calibration procedure for E-field probes optimized for close near field evaluations in air		
Calibration date:	April 17, 2008		
Condition of the calibrated item	In Tolerance		
Primary Standards	ID#	Cal Date (Certificate No.)	Scheduled Calibration
remary connectes	10.0	contracts from the same sace y	
Power meter E4419B	GB41293874	1-Apr-06 (No. 217-00788)	Apr-08
Power sensor E4412A	MY41495277	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A Power sensor E4412A	MY41495277 MY41498087	1-Apr-08 (No. 217-00788) 1-Apr-08 (No. 217-00788)	Apr-08 Apr-09
Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator	MY41495277 MY41498087 SN: S5054 (3c)	1-Apr-06 (No. 217-00788) 1-Apr-06 (No. 217-00788) 8-Aug-07 (No. 217-00719)	Apr-08 Apr-08
Power mater E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator	MY41495277 MY41498087	1-Apr-08 (No. 217-00788) 1-Apr-08 (No. 217-00788)	Apr-08 Apr-09
Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator	MY41495277 MY41498087 SN: S5054 (3c) SN: S5096 (20b)	1-Apr-06 (No. 217-00768) 1-Apr-06 (No. 217-00768) 8-Aug-07 (No. 217-00719) 31-Mar-08 (No. 217-00787)	Apr-08 Apr-09 Aug-08 Apr-09
Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator	MY41495277 MY41498087 SN: S5054 (3c) SN: S5096 (20b) SN: S5129 (30b)	1-Apr-06 (No. 217-00786) 1-Apr-06 (No. 217-00786) 8-Aug-07 (No. 217-00787) 31-Mar-06 (No. 217-00787) 8-Aug-07 (No. 217-00720)	Apr-09 Apr-09 Aug-08 Apr-08 Aug-08
Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2	MY41495277 MY41495087 SN: SS054 (3d) SN: SS086 (20b) SN: SS129 (30b) SN: SS129 (30b) SN: GS4	1-Apr-06 (No. 217-00786) 1-Apr-06 (No. 217-00786) 8-Aug-07 (No. 217-00787) 31-Mar-08 (No. 217-00787) 8-Aug-07 (No. 217-00720) 2-Jan-06 (No. E83-3013_Jan08) 20-Apr-07 (No. DAE4-654_Apr07) Check Date (In house)	Apr-09 Apr-09 Aug-08 Apr-09 Aug-08 Jen-09 Apr-09 Apr-08
Power sensor E4412A Power sensor E4412A Power sensor E4412A Reference 30 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards RF generator NF B448C	MY41495277 MY41448087 SN: S5084 (3c) SN: S5086 (20b) SN: S5129 (30b) SN: S5129 (30b) SN: 654	1-Apr-06 (No. 217-00786) 1-Apr-06 (No. 217-00786) 8-Aug-07 (No. 217-00787) 31-Mar-06 (No. 217-00787) 8-Aug-07 (No. 217-00720) 2-Jan-08 (No. E33-3013_Jan08) 20-Apr-07 (No. DAE4-654_Apr07) Check Date (In house) 4-Aug-99 (in house)	Apr-08 Apr-09 Aug-08 Apr-09 Aug-08 Aug-08 Jan-09 Apr-08 Scheduled Check In house check: Oct-09
Power sensor E4412A Power sensor E4412A Reference 3 dB Altenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards	MY41495277 MY41495087 SN: SS054 (3d) SN: SS086 (20b) SN: SS129 (30b) SN: SS129 (30b) SN: GS4	1-Apr-06 (No. 217-00786) 1-Apr-06 (No. 217-00786) 8-Aug-07 (No. 217-00787) 31-Mar-08 (No. 217-00787) 8-Aug-07 (No. 217-00720) 2-Jan-06 (No. E83-3013_Jan08) 20-Apr-07 (No. DAE4-654_Apr07) Check Date (In house)	Apr-09 Apr-09 Aug-08 Apr-09 Aug-08 Jen-09 Apr-09 Apr-08
Power sensor E4412A Power sensor E4412A Power sensor E4412A Reference 30 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards RF generator NP 8548C Notwork Analyzer NP 8753E	MY41495277 MY41448087 SN: 85084 (3c) SN: 95086 (30b) SN: 95129 (30b) SN: 95129 (30b) SN: 954 D # US3642U01700 US37390585	1-Apr-06 (No. 217-00786) 1-Apr-06 (No. 217-00786) 8-Aug-07 (No. 217-00787) 31-Mar-08 (No. 217-00787) 8-Aug-07 (No. 217-00787) 8-Aug-07 (No. 217-00720) 2-Jan-08 (No. 583-9013_Jan08) 20-Apr-07 (No. DAE4-854_Apr07) Check Date (In house) 4-Aug-99 (In house theck Oct-07) 18-Oct-01 (In house check Oct-07)	Apr-08 Apr-09 Aug-08 Apr-09 Aug-08 Aug-08 Jan-09 Apr-08 Scheduled Check In house check: Oct-09
Power sensor E4412A Power sensor E4412A Power sensor E4412A Reference 30 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards RF generator NF B448C	MY41495277 MY41408087 SN: S5084 (3c) SN: S5086 (20b) SN: S5129 (30b) SN: 3013 SN: 654 D # US3642U01700 US37390585	1-Apr-06 (No. 217-00786) 1-Apr-06 (No. 217-00786) 8-Aug-07 (No. 217-00787) 8-Aug-07 (No. 217-00787) 8-Aug-07 (No. 237-00787) 2-Jan-06 (No. E33-3013_Jan05) 20-Apr-07 (No. DAE4-654_Apr07) Check Date (In house) 4-Aug-99 (in house check Oct-07) 18-Oct-01 (in house check Oct-07)	Apr-09 Apr-09 Aug-08 Apr-09 Aug-08 Jan-09 Apr-09 Apr-06 Scheduled Check In house check: Oct-09 In house check: Oct-09

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Accreditation No.: SCS 108

Accredited by the Swiss Accreditation Service (SAS)
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Multilateral Agreement for the recognition of calibration certificates

Glossary:

Polarization 9

Connector Angle

NORMx,y,z DCP Polarization φ

sensitivity in free space diode compression point φ rotation around probe axis

3 rotation around an axis that is in the plane normal to probe axis (at

measurement center), i.e., 3 = 0 is normal to probe axis information used in DASY system to align probe sensor X to the robot

coordinate system

Calibration is Performed According to the Following Standards:

a) IEEE Std 1309-2005, "IEEE Standard for calibration of electromagnetic field sensors and probes, excluding antennas, from 9 kHz to 40 GHz", December 2005.

Methods Applied and Interpretation of Parameters:

- NORMx,y,z: Assessed for E-field polarization 9 = 0 for XY sensors and 9 = 90 for Z sensor (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide).
- NORM(f)x,y,z = NORMx,y,z \* frequency\_response (see Frequency Response Chart).
- 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.
- Spherical isotropy (3D deviation from isotropy): in a locally homogeneous field realized using an open waveguide setup.
- Sensor Offset: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle: The angle is assessed using the information gained by determining the NORMx (no uncertainty required).

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ER3DV6 SN:2306

April 17, 2008



# Probe ER3DV6

SN:2306

Manufactured:

December 17, 2002

Last calibrated: Recalibrated:

April 20, 2007 April 17, 2008

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

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ER3DV6 SN:2306

April 17, 2008

## DASY - Parameters of Probe: ER3DV6 SN:2306

Sensitivity in Free Space [µV/(V/m)2]

Diode Compression<sup>A</sup>

NormX 1.08 ± 10.1 % (k=2) NormY 1.11 ± 10.1 % (k=2) NormZ 1.26 ± 10.1 % (k=2) DCP X 96 mV DCP Y 96 mV DCP Z 100 mV

#### Frequency Correction

0.0 Y 0.0 Z 0.0

Sensor Offset (Probe Tip to Sensor Center)

2.5 mm 2.5 mm Z 2.5 mm Connector Angle -224 °

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%.

rical linearization parameter: uncertainty not required

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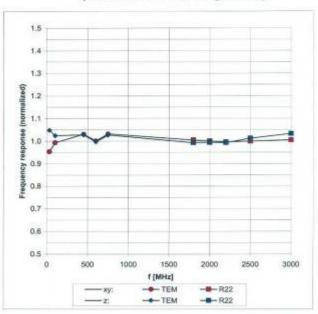
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ER3DV6 SN:2306

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## Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide R22)



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

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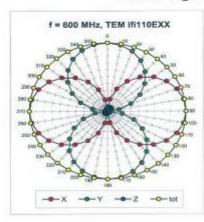


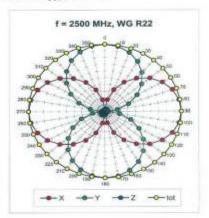
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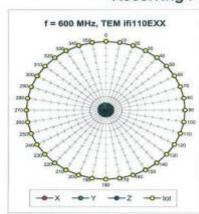
April 17, 2008

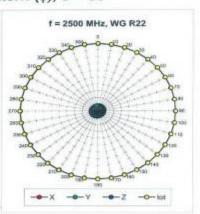
#### Receiving Pattern (6), 9 = 0°





#### Receiving Pattern (\$\phi\$), 9 = 90°





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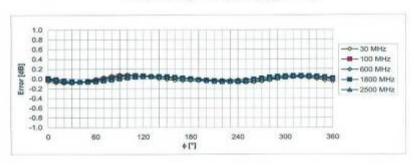


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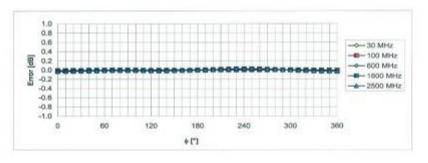
April 17, 2008

#### Receiving Pattern (φ), 9 = 0°



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

#### Receiving Pattern (6), 9 = 90°



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

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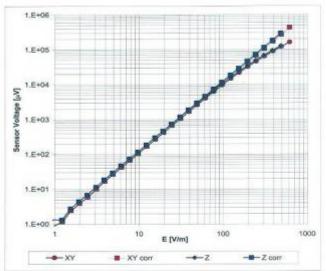
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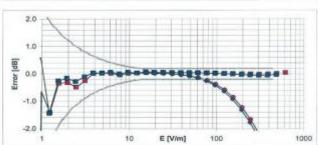
ER3DV6 SN:2306

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## Dynamic Range f(E-field)

(Waveguide R22, f = 1800 MHz)





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

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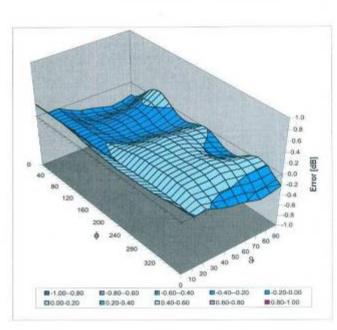


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April 17, 2008

#### Deviation from Isotropy in Air Error (φ, θ), f = 900 MHz



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

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#### Certificate No: H3-6142 Apr08 SGS (Auden) **CALIBRATION CERTIFICATE** H3DV6 - SN:6142 Object QA CAL-03.v5 Calibration procedure(s) Calibration procedure for H-field probes optimized for close near field evaluations in air April 21, 2008 Calibration date In Tolerance Condition of the calibrated item 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 $(22 \pm 3)^{\circ}C$ and humidity < 70%Calibration Equipment used (M&TE critical for calibration) Cai Date (Certificate No.) Scheduled Calibration Power meter E4419B GB41293874 1-Apr-08 (No. 217-00768) 1-Apr-08 (No. 217-00788) Apr-09 MY41495277 Power sensor E4412A Apr-09 1-Apr-08 (No. 217-00788) 8-Aug-07 (No. 217-00719) Power sensor E4412A MY41498087 Apr-09 SN: S5054 (3c) Reference 3 dB Attenuator Aug-09 Reference 20 dB Attenuator SN: 35086 (20b) 31-Mar-08 (No. 217-00767) Apr-09 SN: S5129 (30b) B-Aug-07 (No. 217-00720) Reference 30 dB Attenuator Aug-88 Reference Probe H3DV6 2-Oct-07 (No. H3-6182\_Oct07) SN: 6182 DAE4 SN: 660 3-Sep-07 (No. DAE4-660, Sep07). Sep-08 Secondary Standards Check Date (In house) Scheduled Check U\$3642U01700 RF generator HP 8648C 4-Aug-99 (in house check Oct-07) In house check: Oct-05 Network Analyzer HP 8753E US37390685 18-Oct-01 (in house check Oct-07) In house check: Oct-08 Calibrated by: Katja Pokovic Technical Manager Approved by: Niets Kuster Quality Manag Issued: April 21, 2008 This calibration certificate shall not be reproduced except in full without written approval of the laboratory

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Calibration Laboratory of Schmid & Partner Engineering AG aughausstrasse 43, 8004 Zurich, Switzerla





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

Accreditation No.: SCS 108

Appredited 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

Glossary:

NORMx,y,z sensitivity in free space DCP diode compression point φ rotation around probe axis Polarization φ

9 rotation around an axis that is in the plane normal to probe axis (at Polarization 9

measurement center), i.e., 9 = 0 is normal to probe axis information used in DASY system to align probe sensor X to the robot Connector Angle

coordinate system

Calibration is Performed According to the Following Standards:

a) IEEE Std 1309-2005, "IEEE Standard for calibration of electromagnetic field sensors and probes, excluding antennas, from 9 kHz to 40 GHz", December 2005.

Methods Applied and Interpretation of Parameters:

X,Y,Z\_a0a1a2: Assessed for E-field polarization 9 = 90 for XY sensors and 9 = 0 for Z sensor (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide).

X,Y,Z(f)\_a0a1a2= X,Y,Z\_a0a1a2\* frequency\_response (see Frequency Response Chart).

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.

Spherical isotropy (3D deviation from isotropy): in a locally homogeneous field realized using an open waveguide setup.

Sensor Offset: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Connector Angle: The angle is assessed using the information gained by determining the X\_a0a1a2 (no uncertainty required).

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H3DV6 SN:6142

April 21, 2008



SN:6142

Manufactured: Last calibrated: Recalibrated:

July 3, 2002 April 20, 2007 April 21, 2008

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

Certificate No: H3-6142 Apr08

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H3DV6 SN:6142

April 21, 2008

# Probe H3DV6

SN:6142

Manufactured: Last calibrated: Recalibrated:

July 3, 2002 April 20, 2007 April 21, 2008

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

Certificate No: H3-6142\_Apr08

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H3DV6 SN:6142

April 21, 2008

#### DASY - Parameters of Probe: H3DV6 SN:6142

Sensitivity in Free Space [A/m / √(µV)]

	a0	81	a2	
×	2.690E-03	-3.109E-5	-2.870E-5	± 5.1 % (k=2)
Y	2.661E-03	-5.442E-5	-6.570E-6	± 5.1 % (k=2)
Z	3.031E-03	-2.357E-4	1.583E-5	± 5.1 % (k=2)

#### Diode Compression<sup>1</sup>

DCP X 86 mV DCP Y 86 mV DCP Z 85 mV

Sensor Offset (Probe Tip to Sensor Center)

> 3.0 mm 3.0 mm Z 3.0 mm

Connector Angle

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%.

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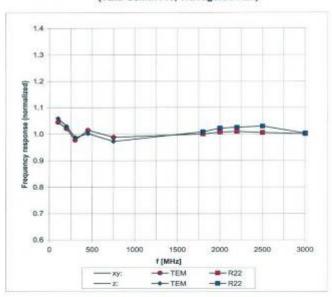
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H3DV6 SN:6142

April 21, 2008

#### Frequency Response of H-Field

(TEM-Cell:ifi110, Waveguide R22)



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

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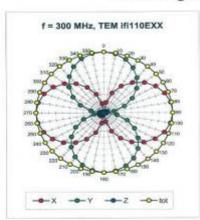


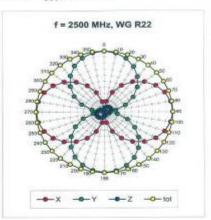
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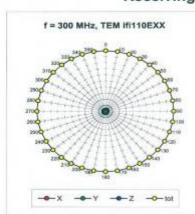
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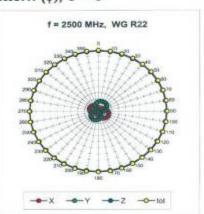
## Receiving Pattern (6), 9 = 90°





# Receiving Pattern (\$\phi\$), \$\theta = 0^\circ\$





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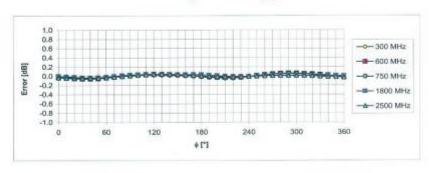


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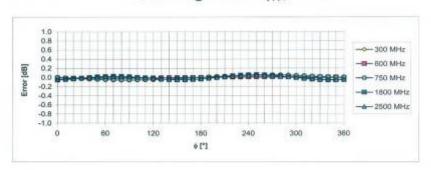
April 21, 2008

## Receiving Pattern (\$\phi\$), \$\theta = 90°



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

## Receiving Pattern (6), 9 = 0°



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

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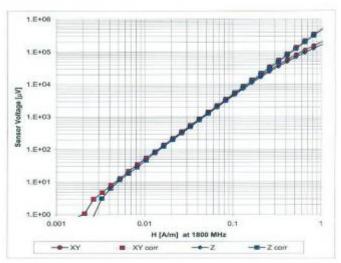
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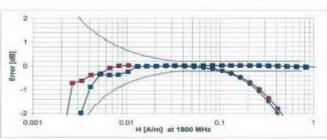
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### Dynamic Range f(H-field)

(Waveguide R22, f = 1800 MHz)





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

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# 16. Uncertainty Analysis

Error Description	Uncertainty value	Prob. Dist.	Div.	$egin{pmatrix} (c_i) \ E \end{pmatrix}$	$(c_i)$ $\Pi$	Std. Unc.	Std. Une.
Measurement System							
Probe Calibration	15.1%	И	1	1	1	15.1%	±5.1%
Axial Isotropy	14.7%	R	$\sqrt{3}$	1	1	±2.7%	±2.7 %
Sensor Displacement	116.5 %	R	$\sqrt{3}$	1	0.145	±9.5%	±1.4%
Boundary Effects	±2.4 %	R	$\sqrt{3}$	1	1	±1.4%	±1.4%
Linearity	±4.7 %	R	$\sqrt{3}$	1	1	±2.7 %	±2.7%
Scaling to Peak Envelope Power	±0%	R	$\sqrt{3}$	1	I	±0%	±0%
System Detection Limit	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%
Readout Electronics	±0.3 %	N	1	1	1	±0.3%	±0.3 %
Response Time	±0%	R	$\sqrt{3}$	1	1	±0%	±0%
Integration Time	±0%	R	$\sqrt{3}$	1	1	±0%	±0%
RF Ambient Conditions	13.0%	R	$\sqrt{3}$	1	1)	+1.7%	11.7%
RF Reflections	+6.0%	R	$\sqrt{3}$	1	1	±3.5 %	±3.5 %
Probe Positioner	±1.2%	R	$\sqrt{3}$	1	0.67	±0.7%:	±0.5 %
Probe Positioning	±4.7%	R	$\sqrt{3}$	1	0.67	±2.7%	土1.8%
Extrap. and Interpolation	±1.0%	R	$\sqrt{3}$	1	1	+0.6%	0.6%
Dipole Related							
Distance Dipole - Scanning Plane	±5.2%	R.	$\sqrt{3}$	1	0.3	±3.0 %	±0.9%
Input power	±4.7%	N	1	1	1	±4.7%	=4.7%
Combined Std. Uncertainty	1					±13.7 %	±9.3 %
Expanded Std. Uncertainty or Expanded Std. Uncertainty or						27.4 % =13.7 %	±18.6 % ±9.3 %

Table 28.1: Uncertainty budget for HAC setup performance test. The budget is valid for the frequency range 800 MHz - 3 GHz and represents a worst-case analysis with respect to power uncertainty of the field. Some of the parameters are dependent on the user situations and need adjustment according to the actual laboratory conditions.

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# 17. System Validation from Original equipment supplier

Calibration Laboratory of Schweizerischer Kalibrierd Schmid & Partner Service suisse d'étalonnage C CHARATT Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland Servizio svizzero di taratura Swiss Calibration Service Accreditation No.: SCS 108 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 Certificate No: CD835V3-1052\_Apr08 CALIBRATION CERTIFICATE CD835V3 - SN: 1052 OA CAL-20 v4 Calibration procedure(s) Calibration procedure for dipoles in air April 10, 2008 Calibration date: Condition of the calibrated item In Tolerance This calibration certificate documents the traceability to national standards, which realize the physical units of measu All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%. Primary Standards Cal Date (Certificate No.) Scheduled Calibration Power meter EPM-442A GB37480704 04-Oct-07 (No. 217-00736) Oct-08 US37292783 04-Oct-07 (No. 217-00738) Oct-08 Probe ER3DV6 SN: 2336 31-Dec-07 (No. ER3-2336 Dec07) Dec-08 Probe H3DV6 31-Dec-07 (No. H3-6065\_-Dec07) Dec-08 DAE4 SN: 781 2-Oct-07 (No. DAE4-781\_Oct07) Oct-08 Secondary Standards Check Date (in house) Scheduled Check Power meter EPM-4419B Power sensor HP 8482A GB42420191 US37295597 11-May-05 (in house check Oct -07) In house check; Nov-08 11-May-05 (in house check Oct -07) In house check: Nov-08 Power sensor HP 8482H 3318A09450 08-Jan-02 (in house check Oct -07) In house check: Nov-08 Network Analyzer HP 8753F LIS37390585 18-Oct-01 (in house check Oct-07) In house check: Nov-09 RF generator E44338 MY 41310391 22-Nov-04 (in house check Oct-07) In house check: Nov-09 Eurotion. Claudio Leubier Calibrated by: Laboratory Technician Approved by: Technical Director

Certificate No: CD835V3-1052\_Apr08

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#### 3.3.2 DASY4 H-field result

Date/Time: 09.04.2008 14:06:12

Test Laboratory: SPEAG Lab 2

H\_CD835\_1052\_080409

DUT: HAC-Dipole 835 MHz; Type: D835V3; Serial: 1052

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used:  $\sigma = 0$  mho/m,  $\epsilon_r = 1$ ;  $\rho = 1 \text{ kg/m}^3$ 

Phantom section: H Dipole Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: H3DV6 SN6065; ; Calibrated: 31.12.2007 Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn781; Calibrated: 02.10.2007
- Phanton: HAC Test Arch with Coll; Type: SD HAC P01 BA; Serial: 1070 Measurement SW: DASY4, V4.7 Build 65; Postprocessing SW: SEMCAD, V1.8 Build 176

## H Scan - Sensor Center 10mm above CD835 Dipole/Hearing Aid Compatibility Test (41x361x1):

Measurement grid: dx=5mm, dy=5mm Maximum value of peak Total field = 0.457 A/m

Probe Modulation Factor = 1.00

Reference Value = 0.486 A/m; Power Drift = -0.003 dB

Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid I	Grid 2	Grid 3
0.385 M4	0.401 M4	0.373 M4
Grid 4	Grid 5	Grid 6
0.433 M4	0.457 M4	0.433 M4
Grid 7	Grid 8	Grid 9
0.381 M4	0.411 M4	0.393 M4



0 dB = 0.457A/m

Certificate No: CD835V3-1052\_Apr06

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#### 3.3.3 DASY4 E-field result

Date/Time: 10.04.2008 14:46:36

Test Laboratory: SPEAG Lab 2

E\_CD835\_1052\_080410

DUT: HAC-Dipole 835 MHz; Type: D835V3; Serial: 1052

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1 Medium parameters used:  $\sigma = 0$  mho/m,  $\epsilon_r = 1$ ;  $\rho = 1000 \text{ kg/m}^3$ 

Phantom section: E Dipole Section Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

Probe: ER3DV6 - SN2336; ConvF(1, 1, 1); Calibrated: 31.12.2007 Sensor-Surface: (Fix Surface)

Electronics: DAE4 Sn781; Calibrated: 02.10.2007

Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Scrial: 1070

Measurement SW: DASY4, V4.7 Build 61; Postprocessing SW: SEMCAD, V1.8 Build 176

#### E Scan - Sensor Center 10mm above CD835 Dipole 2/Hearing Aid Compatibility Test (41x361x1):

Measurement grid: dx-5mm, dy-5mm

Maximum value of peak Total field = 165.2 V/m

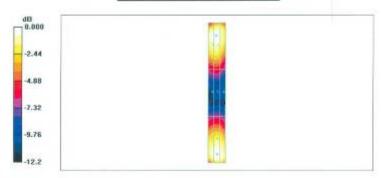
Probe Modulation Factor = 1.00

Reference Value = 104.3 V/m; Power Drift = -0.008 dB

Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
161.1 M4	163.4 M4	153.7 M4
Grid 4	Grid 5	Grid 6
87.2 M4	88.2 M4	83.4 M4
Grid 7	Grid 8	Grid 9
158.5 M4	165.2 M4	161.7 M4



0 dB = 165.2 V/m

Certificate No: CD835V3-1052\_Apr08

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#### Calibration Laboratory of Schmid & Partner

Engineering AG Zoughausstrasse 43, 8004 Zurich, Switzerland





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SGS (Auden)

Accreditation No.: SCS 108

Certificate No: CD1880V3-1044\_Apr08

Object	CD1880V3 - SN: 1044			
Calibration procedure(s)	QA CAL-20.v4 Calibration pro	cedure for dipoles in air		
Calibration date:	April 10, 2008			
Condition of the calibrated item	In Tolerance			
Calibration Equipment used (M&			Scheduled Calibration	
Primary Standards	ID #	Cal Date (Certificate No.)		
Power meter EPM-442A	G837480704	04-Oct-07 (No. 217-00736)	Oct-08	
Power meter EPM-442A Power sensor HP 8481A	GB37480704 US37292783	04-Oct-07 (No. 217-00736) 04-Oct-07 (No. 217-00736)	Oct-08 Oct-08	
Power meter EPM-442A Power sensor HP 8481A Probe ER3DV6	G837480704	04-0at-07 (No. 217-00736) 04-0at-07 (No. 217-00736) 31-Dec-07 (No. ER3-2338_Dec07)	Oct-08	
Primary Standards Power meter EPM-442A Power sensor HP 8481A Probe ER3DV6 Probe H3DV6 DAE4	G837480704 US37292783 SN: 2336	04-Oct-07 (No. 217-00736) 04-Oct-07 (No. 217-00736)	Oct-08 Oct-08 Dec-08	
Power meter EPM-442A Power sensor HP 8481A Probe ER3DV6 Probe H3DV6	G837480704 US37292783 SN: 2336 SN: 6065	04-Oct-07 (No. 217-00736) 04-Oct-07 (No. 217-00736) 31-Dec-07 (No. ER3-2336_Dec07) 31-Dec-07 (No. H3-6065_Dec07)	Oct-08 Oct-08 Dec-08 Dec-08	
Power meter EPM-442A Power sensor HP 8481A Probe ER30V6 Probe H30V6 DAE4	G837480704 US37292783 SN: 2336 SN: 6065 SN: 781	04-Oct-07 (No. 217-00736) 04-Oct-07 (No. 217-00736) 31-Dec-07 (No. ER3-2338_Dec07) 31-Dec-07 (No. H3-6065_Dec07) 2-Oct-07 (No. DAE4-781_Oct07)	Oct-08 Oct-08 Dec-08 Dec-08 Oct-08	
Power mater EPM-442A Power sensor HP 8481A Probe ER3DV8 Probe H3DV8 DAE4  Secondary Standards Power meter EPM-4419B Power sensor HP 8482A	G837480704 US37292783 SN: 2336 SN: 9085 SN: 781 ID # G842420191 US37295597	04-Oct-07 (No. 217-00736) 04-Oct-07 (No. 217-00736) 31-Dec-07 (No. ER3-2338_Dec07) 31-Dec-07 (No. H3-6065_Dec07) 2-Oct-07 (No. DAE4-781_Oct07) Check Date (in house) 11-May-05 (in house check Oct-07) 11-May-05 (in house check Oct-07)	Oct-08 Oct-08 Dec-08 Dec-08 Oct-08 Scheduled Check In house check: Nov-08 In house check: Nov-08	
Power meter EPM-442A Power sensor HP 8481A Probe ER3DV6 Probe H3DV6 DAE4  Secondary Standards Power meter EPM-4419B Power sensor HP 8482A Power sensor HP 8482H	GB37480704 US37292783 SN: 2336 SN: 6065 SN: 781 ID # GB42420191 US3729597 3318A09450	04-Oct-07 (No. 217-00736) 04-Oct-07 (No. 217-00736) 31-Dec-07 (No. ER3-2338_Dec07) 31-Dec-07 (No. H3-6065_Dec07) 2-Oct-07 (No. DAE4-781_Oct07) Check Date (in house) 11-May-05 (in house check Oct-07) 11-May-05 (in house check Oct-07) 08-Jan-02 (in house check Oct-07)	Oct-08 Oct-08 Dec-08 Dec-08 Oct-08 Scheduled Check In house check: Nov-08 In house check: Nov-08 In house check: Nov-08	
Power meter EPM-442A Power sensor HP 8481A Probe ER3DV6 Probe H3DV6 DAE4  Secondary Standards Power meter EPM-4419B Power sensor HP 8482A Power sensor HP 8482H	G837480704 US37292783 SN: 2336 SN: 9085 SN: 781 ID # G842420191 US37295597	04-Oct-07 (No. 217-00736) 04-Oct-07 (No. 217-00736) 31-Dec-07 (No. ER3-2338_Dec07) 31-Dec-07 (No. H3-6065_Dec07) 2-Oct-07 (No. DAE4-781_Oct07) Check Date (in house) 11-May-05 (in house check Oct-07) 11-May-05 (in house check Oct-07)	Oct-08 Oct-08 Dec-08 Dec-08 Oct-08 Scheduled Check In house check: Nov-08	
Power meter EPM-442A Power sensor HP 8481A Probe ER30V8 Probe H30V6 DAE4 Secondary Standards	GB37480704 US37292783 SN: 2336 SN: 6065 SN: 781 ID # GB42420191 US3729597 3318A09450	04-Oct-07 (No. 217-00736) 04-Oct-07 (No. 217-00736) 31-Dec-07 (No. ER3-2338_Dec07) 31-Dec-07 (No. H3-6065_Dec07) 2-Oct-07 (No. DAE4-781_Oct07) Check Date (in house) 11-May-05 (in house check Oct-07) 11-May-05 (in house check Oct-07) 08-Jan-02 (in house check Oct-07)	Oct-08 Oct-08 Dec-08 Dec-08 Oct-08 Scheduled Check In house check: Nov-08 In house check: Nov-08 In house check: Nov-08	
Power meter EPM-442A Power sensor HP 8481A Probe ER3DV6 Probe H3DV6 DAE4  Secondary Standards Power meter EPM-4419B Power sensor HP 8482A Power sensor HP 8482H	GB37480704 US37292783 SN: 2336 SN: 6065 SN: 781 ID # GB42420191 US3729597 3318A09450 US37390585	04-Oct-07 (No. 217-00736) 04-Oct-07 (No. 217-00736) 31-Dec-07 (No. ER3-2338_Dec07) 31-Dec-07 (No. H3-6065_Dec07) 2-Oct-07 (No. DAE4-781_Oct07) Check Date (in house) 11-May-05 (in house check Oct-07) 11-May-05 (in house check Oct-07) 08-Jan-02 (in house check Oct-07) 18-Oct-01 (in house check Oct-07)	Oct-08 Oct-08 Dec-08 Dec-08 Oct-08 Scheduled Check In house check: Nov-08 In house check: Nov-08 In house check: Nov-08	

Certificate No: CD1880V3-1044\_Apr08

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#### 3.3.2 DASY4 E-Field Result

Date/Time: 10.04.2008 12:31:18

Test Laboratory: SPEAG Lab 2

#### E\_CD1880\_1044\_080410

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: 1044 Communication System: CW; Frequency: 1880 MHz; Duty Cycle: 1:1 Medium parameters used:  $\sigma=0$  mho/m,  $\epsilon_i=1$ ;  $\rho=1000$  kg/m<sup>3</sup>

Phantom section: E Dipole Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ER3DV6 SN2336; ConvF(1, 1, 1); Calibrated: 31.12.2007
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn781; Calibrated: 02.10.2007
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1070
- Measurement SW: DASY4, V4.7 Build 61; Postprocessing SW: SEMCAD, V1.8 Build 176

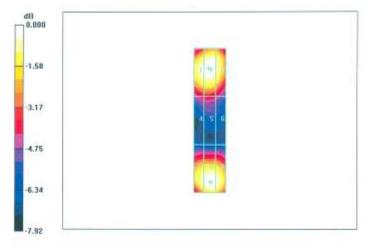
#### E Scan - Sensor Center 10mm above CD1880V3 Dipole/Hearing Aid Compatibility Test (41x181x1):

Measurement grid: dx=5mm, dy=5mm Maximum value of peak Total field = 141.4 V/m Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 354.7 mm Reference Value = 160.0 V/m; Power Drift = 0.013 dB Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
136.8 M2	139.9 M2	134.0 M2
Grid 4	Grid 5	Grid 6
91.9 M3	93.3 M3	87.9 M3
Grid 7	Grid 8	Grid 9
134.9 M2	141.4 M2	137.4 M2



0 dB = 141.4V/m

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Certificate No: CD1880V3-1044\_Apr08

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#### 3.3.2 DASY4 H-Field Result

Date/Time: 09.04.2008 15:00:21

Test Laboratory: SPEAG Lab 2

#### H\_CD1880\_1044\_080409

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: 1044 Communication System: CW; Frequency: 1880 MHz; Duty Cycle: 1:1 Medium parameters used:  $\alpha=0$  mbn/m,  $\epsilon_i=1$ ;  $\rho=1$  kg/m<sup>2</sup> Phantom section: H Dipole Section

Measurement Standard: DASY4 (High Precision Assessment)

- DASY4 Configuration:
  Probe: H3DV6 SN6065; ; Calibrated: 31.12.2007

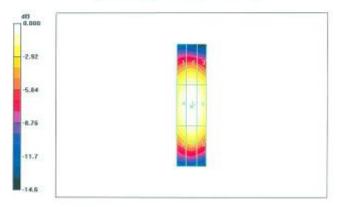
  - Probe HSDV6 SNobols, Cambrated 31.12.2007
    Sensor-Surface; (Fix Surface)
    Electronics: DAE4 8781; Calibrated: 02.10.2007
    Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1070
    Measurement SW: DASY4, V4.7 Build 65; Postprocessing SW: SEMCAD, V1.8 Build 176

#### E Scan - Sensor Center 10mm above CD1880V3 Dipole/Hearing Aid Compatibility Test (41x181x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.464 A/m
Probe Modulation Factor = 1.00 Device Reference Point: 0.000, 0.000, 354.7 mm Reference Value = 0.492 A/m; Power Drift = -0.003 dB Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
0.402 M2	0.420 M2	0.398 M2
Grid 4	Grid 5	Grid 6
0.444 M2	0.464 M2	0.442 M2
Grid 7	Orid 8	Grid 9
0.406 M2	0.430 M2	0.409 M2



0 dB = 0.464 A/m

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# End of 1<sup>st</sup> part of report

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