

## TEST REPORT

Test Report No.: 1-4254/12-02-02-A



### Testing Laboratory

**CETECOM ICT Services GmbH**

Untertürkheimer Straße 6 – 10  
66117 Saarbrücken/Germany  
Phone: + 49 681 5 98 - 0  
Fax: + 49 681 5 98 - 9075  
Internet: <http://www.cetecom.com>  
e-mail: [ict@cetecom.com](mailto:ict@cetecom.com)

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### Applicant

**Sony Ericsson Mobile Communications AB**

Nya Vattentornet  
22188 Lund/SWEDEN

Phone: +46 46 19 30 00

Contact: Håkan Sjöberg  
e-mail: [hakan.sjoberg@sonyericsson.com](mailto:hakan.sjoberg@sonyericsson.com)  
Phone: +46 46 19 35 59  
Fax: +46 46 19 32 95

### Manufacturer

**Sony Ericsson Mobile Communications AB**

Nya Vattentornet  
22188 Lund/SWEDEN

### Test Standard/s

ANSI C63.19-2007	Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids
FCC 47 CFR §20.19	Hearing Aid Compatible Mobile Headsets

### Test Item

Kind of test item:	Mobile Phone
Device type:	portable device
<b>Model name:</b>	<b>AAL-8880001-BV</b>
S/N serial number:	CB5A1JE2QX
FCC-ID:	PY7A8880001
IC:	4170B-A8880001
IMEI-Number:	00440214-355146-7
Hardware status:	AP2
Software status:	6.0.C.1.24/ ETS
Frequency:	see technical details
Antenna:	integrated antenna
Battery option:	integrated battery
Accessories:	---
Test sample status:	identical prototype
HAC-Rating:	M3

### Test Report authorised:

2012-04-03 Thomas Vogler  
Senior Testing Manager

### Test performed:

2012-04-03 Oleksandr Hnatovskiy  
Testing Manager

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**2 General information**

**2.1 Notes and disclaimer**

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**2.2 Application details**

Date of receipt of order:	2012-01-06
Date of receipt of test item:	2012-01-05
Start of test:	2012-01-09
End of test:	2012-01-10
Person(s) present during the test:	

**2.3 Statement of compliance**

The AAL-8880001-BV Mobile Phone has been tested in accordance with ANSI C63.19-2007: American National Standard for Methods of Measurement of Compatibility between Wireless Communication Devices and Hearing Aids.

**C63.19 HAC Rated Category: M3**

## 2.4 Technical details

Band tested for this test report	Technology	Frequency band	Lowest transmit frequency/MHz	Highest transmit frequency/MHz	Lowest receive Frequency/MHz	Highest receive Frequency/MHz	Kind of modulation	Power Class	Tested power control level	GPRS/EGPRS mobile station class	GPRS/EGPRS multislots class	(E)GPRS voice mode or DTM	Test channel low	Test channel middle	Test channel high	Maximum output power/dBm )*
<input type="checkbox"/>	GSM	GSM	880.2	914.8	925.2	959.8	GMSK 8-PSK	4 E2	5	B	10	no	975	37	124	--
<input type="checkbox"/>	GSM	DCS	1710.2	1784.8	1805.2	1879.8	GMSK 8-PSK	1 E2	0	B	10	no	512	698	885	--
<input checked="" type="checkbox"/>	GSM	cellular	824.2	848.8	869.2	893.8	GMSK 8-PSK	4 E2	5	B	10	no	128	190	251	33.7
<input checked="" type="checkbox"/>	GSM	PCS	1850.2	1909.8	1930.2	1989.8	GMSK 8-PSK	1 E2	0	B	10	no	512	661	810	30.5
<input type="checkbox"/>	UMTS	FDD I	1922.4	1977.6	2112.4	2167.6	QPSK	3	max	--	--	--	9612	9750	9888	--
<input checked="" type="checkbox"/>	UMTS	FDD II	1852.4	1907.6	1982.4	1987.6	QPSK	3	max	--	--	--	9262	9400	9538	23.7
<input checked="" type="checkbox"/>	UMTS	FDD IV	1712.4	1752.6	1807.4	1877.6	QPSK	3	max	--	--	--	1312	1412	1513	24.7
<input checked="" type="checkbox"/>	UMTS	FDD V	826.4	846.6	871.4	891.6	QPSK	3	max	--	--	--	4132	4182	4233	25.2
<input type="checkbox"/>	LTE	FDD 4	1710	1755	2110	2155	OFDM QPSK 16QAM	3	max	--	--	--	19957 20050	20175	20393 20300	23.94
<input type="checkbox"/>	LTE	FDD 17	704	716	734	746	OFDM QPSK 16QAM	3	max	--	--	--	23780	23790	23800	23.88
<input type="checkbox"/>	WLAN	ISM	2412	2472	2412	2472	CCK OFDM	--	max	--	--	--	1	7	13	--
<input type="checkbox"/>	WLAN US	ISM	2412	2462	2412	2462	CCK OFDM	--	max	--	--	--	1	6	11	15.7
<input type="checkbox"/>	BT	ISM	2402	2480	2402	2480	GFSK	3	max	--	--	--	0	39	78	6

)\*: slotted peak power for GSM, averaged max. RMS power for UMTS, WLAN and BT.

Note: HAC testing only includes the requirements of ANSI C63.19-2007 (GSM and UMTS)  
 WLAN is limited to VoIP and not required for HAC testing.  
 LTE does not support any speech mode apart from VoIP, too.

### 3 Test standard/s:

Test Standard	Version	Test Standard Description
ANSI C63.19	2007	Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids
FCC 47 CFR §20.19		Hearing Aid Compatible Mobile Headsets

#### 3.1 Categories of hearing aid compatibility for wireless devices

Telephone RF Parameters					
Category	AWF (dB)	Limits for E-Field Emissions		Limits for H-Field Emissions	
		V/m	dBV/m	A/m	dB A/m
<b>&lt; 960 MHz</b>					
M1	0	631 - 1122	56 – 61	1.91 - 3.39	5.6 – 10.6
	-5	473.2 - 841.4	53.5 – 58.5	1.43 - 2.54	3.1 – 8.1
M2	0	354.8 - 631	51 – 56	1.07 - 1.91	0.6 – 5.6
	-5	266.1 - 473.2	48.5 – 53.5	0.8 - 1.43	-1.9 – 3.1
M3	0	199.5 - 354.8	46 – 51	0.6 - 1.07	-4.4 – 0.6
	-5	149.6 - 266.1	43.5 – 48.5	0.45 - 0.8	-6.9 – -1.9
M4	0	<199.5	<46	<0.6	< -4.4
	-5	<149.6	<43.5	<0.45	< -6.9
<b>&gt; 960 MHz</b>					
		V/m	dBV/m	A/m	dB A/m
M1	0	199.5 – 354.8	46 – 51	0.6 – 1.07	-4.4 – 0.6
	-5	149.6 – 266.1	43.5 – 48.5	0.45 – 0.8	-6.9 – -1.9
M2	0	112.2 – 199.5	41 – 46	0.34 – 0.6	-9.4 – -4.4
	-5	84.1 – 149.6	38.5 – 43.5	0.25 – 0.45	-11.9 – -6.9
M3	0	63.1 – 112.2	36 – 41	0.19 – 0.34	-14.4 – -9.4
	-5	47.3 – 84.1	33.5 – 38.5	0.15 – 0.25	-16.9 – -11.9
M4	0	<63.1	<36	<0.19	< -14.4
	-5	<47.3	<33.5	<0.14	< -16.9

#### AWF : Articulation Weighting Factor

Standard	Technology	AWF
TIA/EIA/IS-2000	CDMA	0
TIA/EIA-136	TDMA (50 Hz)	0
<b>J-STD-007</b>	<b>GSM (217 Hz)</b>	<b>-5</b>
<b>T1/T1P1/3GPP</b>	<b>UMTS (WCDMA)</b>	<b>0</b>
iDEN	TDMA (22 Hz and 11 Hz)	0

#### 4 Summary of Measurement Results

<input checked="" type="checkbox"/>	No deviations from the technical specifications ascertained
	HAC-Category : M3
<input type="checkbox"/>	Deviations from the technical specifications ascertained

#### 5 Test Environment

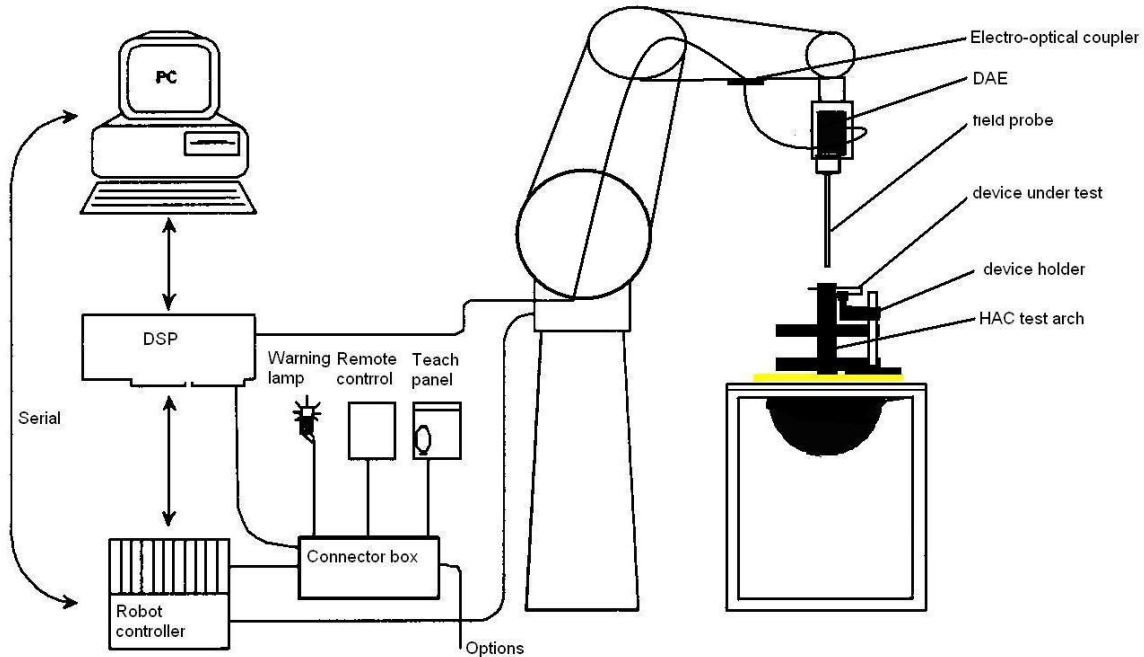
Ambient temperature: 20 – 24 °C  
 Relative humidity content: 40 – 50 %  
 Air pressure: not relevant for this kind of testing  
 Power supply: 230 V / 50 Hz

## 6 Test Set-up

### 6.1 Measurement system

#### 6.1.1 System Description

For performing HAC measurements the Schmid & Partner DASY4 dosimetric assessment system is used which is described below. Instead of dosimetric probes E-field and H-field probes for measurement in air are in use together with a HAC test arch:



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

- A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronic (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.
- A unit to operate the optical surface detector which is connected to the EOC.
- The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY4 measurement server.
- The DASY4 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows 2000
- DASY4 software and SEMCAD data evaluation software.
- Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
- The generic twin phantom enabling the testing of left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- System validation dipoles allowing to validate the proper functioning of the system.

### 6.1.2 Test environment

The DASY4 measurement system is placed at the head end of a room with dimensions : 5 x 2.5 x 3 m<sup>3</sup>, the SAM phantom is placed in a distance of 75 cm from the side walls and 1.1m from the rear wall. Above the test system a 1.5 x 1.5 m<sup>2</sup> array of pyramid absorbers is installed to reduce reflections from the ceiling.

Additional absorbers are placed around the HAC test set-up to prevent reflections from the robot arm.

Picture 1 of the photo documentation shows a complete view of the the test environment.

The system allows the measurement of E-field values larger than 2 V/m and H-field values larger than 10mA/m.

### 6.1.3 Probe description

Isotropic E-Field Probe ET3DV6 for Dosimetric Measurements

E-Field Probe ER3DV6 (Technical data according to manufacturer information)	
Construction	One dipole parallel and two dipoles normal to probe axis Built-in shielding against static charges
Calibration	In air from 100 MHz to 3 GHz (absolute accuracy $\pm 6.0\%$ ; k=2)
Frequency	100 MHz to >6 GHz; Linearity: $\pm 0.2$ dB (100MHz to 3 GHz)
Directivity	$\pm 0.2$ dB in air (rotation around probe axis) $\pm 0.4$ dB in air (rotation normal to probe axis)
Dynamic range	2 V/m to > 1000 V/m (M3/M4 device readings fall well below diode compression point)
Dimensions	Overall length: 330 mm; Tip length: 16 mm Body diameter: 12 mm; Tip diameter: 8 mm Distance from probe tip to dipole centers: 2.5mm

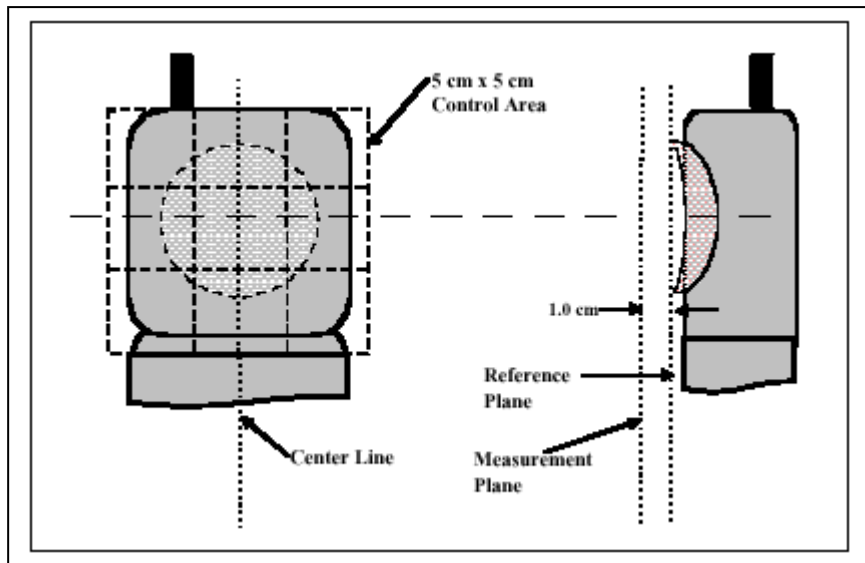
H-Field Probe H3DV6 (Technical data according to manufacturer information)	
Construction	Three concentric loop sensors with 3.8 mm loop diameters. Resistively loaded detector diodes for linear response Built-in shielding against static charges
Calibration	In air from 100 MHz to 3 GHz (absolute accuracy $\pm 6.0\%$ ; k=2)
Frequency	200 MHz to 3 GHz; Linearity: $\pm 0.2$ dB (100MHz to 3 GHz)
Directivity	$\pm 0.25$ dB (spherical isotropy error)
Dynamic range	10 mA/m to 2 A/m at 1 GHz (M3/M4 device readings fall well below diode compression point)
Dimensions	Overall length: 330 mm; Tip length: 40 mm Body diameter: 12 mm; Tip diameter: 6 mm Distance from probe tip to loop centers: 3 mm
E-Field Interference	< 10% at 3 GHz (for plane wave)



#### 6.1.4 HAC test arch description

The HAC test arch is especially designed for performing measurements according to the requirements of ANSI C63.19. It allows centering the wireless device inside a 5 x 5 cm control area marked with 4 points for position adjustment. Plastic bridges allow an exact adjustment of the measurement distance to 1 cm from the DUT, which also includes the distance of the dipole center to the probe tip. For centering the mobile phone speaker inside the control area and for adjusting the validation dipole position the test arch contains a nylon thread for alignment (see picture).

The HAC test arch is placed on the cover of the DASY4 SAM phantom.



#### 6.1.5 Device holder description

The DASY4 device holder (see picture above) has three scales for device inclination, height and side adjustment. The device holder position is adjusted to the standard measurement position e.g. center of the DUT speaker to the center of the 5 x 5 cm<sup>2</sup> control area with the device touching the plastic bridge of the HAC test arch. This device holder is used for standard mobile phones or PDA's only. If necessary an additional support of polystyrene material is used.

### 6.1.6 Scanning procedure

The DASY4 installation includes predefined files with recommended procedures for measurements and validation. They are read-only document files and destined as fully defined but unmeasured masks. All tests are performed with the same configuration of test steps in accordance with the requirements described in C63.19-2007 Chapter 4.4.1.2.2.

1. The HAC test setup is placed at the pre-defined position on top of the SAR phantom cover.
2. A phantom adjustment and verification is performed, which allows checking the borders and center position of the 5 x 5 cm<sup>2</sup> control area. The probe tip touches down on the 4 points at the corners of the control area
3. The wireless device (WD) is oriented in its intended test position (see photo documentation) with the reference plane in the horizontal plane and secured by the device holder. The acoustical output is placed in the center of the control area (predefined by the HAC test arch)
4. The DUT is set to transmit at maximum output power at the desired test channel(s).
5. „Reference“ and „drift“ measurements are located at the beginning and the end of the test batch process. They measure the field drift at one single point above the DUT over the complete procedure. The indicated drift is mainly the variation of the DUT's output power and should vary max. +/- 5 % (+/- 0.2 dB).
6. The „area scan“ measures the electrical or magnetic field strength above the WD on a parallel plane to the surroundings of the control area at the upper end of the HAC test arch. It is used to locate the approximate location of the peak field strength with 2D spline interpolation. The robot performs a stepped movement along one grid axis while the local electrical or magnetic field strength is measured by the probe. The probe is moving at a distance of 1 cm to a defined plane above the WD during acquisition of measurement values. Standard grid spacing is 5 mm in x- and y- dimension. If a finer resolution is needed, the grid spacing can be reduced. Results of this scan are shown in annex 2.
7. At the maximum interpolated position a 360° rotation of the probe around the azimuth is performed. The maximum and delta reading from this rotation is used in re-evaluating the HAC category.
8. The automatic data evaluation performed by the software in respect of the requirements of the test standard subdivides the tested area of 5 x 5 cm into 9 squares. Within each square the maximum electrical or magnetic field strength is detected. For classification of M categories the 3 squares with highest field values are excluded. Among the remaining 6, one of which is the center square, 4 squares with highest values both in E-field and in H-field scan are evaluated. The results are automatically exported by the SEMCAD evaluation software together with the measurement plots.

The SEMCAD software also respects the articulation weighing factor (AWF), and converts the measured values to peak V/m or peak A/m using appropriate factors derived from the probe modulation factor, which is determined by system validation measurements.

## 6.1.7 Data Storage and Evaluation

### Data Storage

The DASY4 software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension ".DA4". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [mW/g], [mW/cm<sup>2</sup>], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

### Data Evaluation by SEMCAD

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	Norm <sub>i</sub> , a <sub>i0</sub> , a <sub>i1</sub> , a <sub>i2</sub>
	- Conversion factor	ConvF <sub>i</sub>
	- Diode compression point	Dcpi
Device parameters:	- Frequency	f
	- Crest factor	cf
Media parameters:	- Conductivity	$\sigma$
	- Density	$\rho$

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY4 components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics.

If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot cf/dcp_i$$

with  $V_i$  = compensated signal of channel i (i = x, y, z)  
 $U_i$  = input signal of channel i (i = x, y, z)  
 cf = crest factor of exciting field (DASY parameter)  
 $dcp_i$  = diode compression point (DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

E-field probes: 
$$E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$$

H-field probes: 
$$H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1}f + a_{i2}f^2)/f$$

with  $V_i$  = compensated signal of channel i (i = x, y, z)  
 $Norm_i$  = sensor sensitivity of channel i (i = x, y, z)  
 [mV/(V/m)<sup>2</sup>] for E-field Probes  
 $ConvF$  = sensitivity enhancement in solution  
 $a_{ij}$  = sensor sensitivity factors for H-field probes  
 $f$  = carrier frequency [GHz]  
 $E_i$  = electric field strength of channel i in V/m  
 $H_i$  = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = (E_x^2 + E_y^2 + E_z^2)^{1/2}$$

with  $P_{pwe}$  = equivalent power density of a plane wave in mW/cm<sup>2</sup>  
 $E_{tot}$  = total electric field strength in V/m  
 $H_{tot}$  = total magnetic field strength in A/m

### 6.1.8 Measurement uncertainty evaluation for HAC measurements

This measurement uncertainty budget is suggested by ANSI-C63.19 and determined by Schmid & Partner Engineering AG. It is valid for the frequency range 800 MHz – 3 GHz and represents a worst case analysis. The breakdown of the individual uncertainties is as follows:

Error Sources	Uncertainty Value	Probability Distribution	Divisor	c <sub>i</sub> E	c <sub>i</sub> H	Standard Uncertainty E	Standard Uncertainty H
<b>Measurement System</b>							
Probe calibration	± 5.1%	Normal	1	1	1	± 5.1%	± 5.1%
Axial isotropy )*	± 4.7%	Rectangular	√3	1	1	± 2.7%	± 2.7%
Sensor displacement	±16.5%	Rectangular	√3	1	0.145	± 9.5%	± 1.4%
Boundary effects	± 2.4%	Rectangular	√3	1	1	± 1.4%	± 1.4%
Probe linearity	± 4.7%	Rectangular	√3	1	1	± 2.7%	± 2.7%
Scaling to peak envelope power	± 2.0%	Rectangular	√3	1	1	± 1.2%	± 1.2%
System detection limits	± 1.0%	Rectangular	√3	1	1	± 0.6%	± 0.6%
Readout electronics	± 0.3%	Normal	1	1	1	± 0.3%	± 0.3%
Response time	± 0.8%	Rectangular	√3	1	1	± 0.5%	± 0.5%
Integration time	± 2.6%	Rectangular	√3	1	1	± 1.5%	± 1.5%
RF ambient conditions )*	± 3.0%	Rectangular	√3	1	1	± 1.7%	± 1.7%
RF reflections )*	± 7.5%	Rectangular	√3	1	1	± 4.3%	± 4.3%
Probe positioner	± 1.2%	Rectangular	√3	1	0.67	± 0.7%	± 0.5%
Probe positioning	± 4.7%	Rectangular	√3	1	0.67	± 2.7%	± 1.8%
Extrapolation and Interpolation	± 1.0%	Rectangular	√3	1	1	± 0.6%	± 0.6%
<b>Test sample related</b>							
Device positioning vertical	± 4.7%	Rectangular	√3	1	0.67	± 2.7%	± 1.8%
Device positioning lateral	± 1.0%	Rectangular	√3	1	1	± 0.6%	± 0.6%
Device holder and Phantom	± 2.4%	Rectangular	√3	1	1	± 1.4%	± 1.4%
Power drift	± 5.0%	Rectangular	√3	1	1	± 2.9%	± 2.9%
<b>Combined Uncertainty</b>						<b>± 13.6%</b>	<b>± 9.4%</b>
<b>Expanded Std. Uncertainty on Power</b>						<b>± 27.2%</b>	<b>± 18.8%</b>
<b>Expanded Std. Uncertainty on Field</b>						<b>± 13.6%</b>	<b>± 9.4%</b>

)\* : site specific

Table 1: Measurement uncertainties

### 6.1.9 Measurement uncertainty evaluation for system validation

This measurement uncertainty budget is suggested by ANSI-C63.19 and determined by Schmid & Partner Engineering AG. It is valid for the frequency range 800 MHz – 3 GHz and represents a worst case analysis. The breakdown of the individual uncertainties is as follows:

Error Sources	Uncertainty Value	Probability Distribution	Divisor	c <sub>i</sub> E	c <sub>i</sub> H	Standard Uncertainty E	Standard Uncertainty H
<b>Measurement System</b>							
Probe calibration	± 5.1%	Normal	1	1	1	± 5.1%	± 5.1%
Axial isotropy )*	± 4.7%	Rectangular	√3	1	1	± 2.7%	± 2.7%
Sensor displacement	±16.5%	Rectangular	√3	1	0.145	± 9.5%	± 1.4%
Boundary effects	± 2.4%	Rectangular	√3	1	1	± 1.4%	± 1.4%
Probe linearity	± 4.7%	Rectangular	√3	1	1	± 2.7%	± 2.7%
Scaling to peak envelope power	± 0.0%	Rectangular	√3	1	1	± 0.0%	± 0.0%
System detection limits	± 1.0%	Rectangular	√3	1	1	± 0.6%	± 0.6%
Readout electronics	± 0.3%	Normal	1	1	1	± 0.3%	± 0.3%
Response time	± 0.0%	Rectangular	√3	1	1	± 0.0%	± 0.0%
Integration time	± 0.0%	Rectangular	√3	1	1	± 0.0%	± 0.0%
RF ambient conditions )*	± 3.0%	Rectangular	√3	1	1	± 1.7%	± 1.7%
RF reflections )*	± 3.8%	Rectangular	√3	1	1	± 2.2%	± 2.2%
Probe positioner	± 1.2%	Rectangular	√3	1	0.67	± 0.7%	± 0.5%
Probe positioning	± 4.7%	Rectangular	√3	1	0.67	± 2.7%	± 1.8%
Extrapolation and Interpolation	± 1.0%	Rectangular	√3	1	1	± 0.6%	± 0.6%
Probe calibration	± 5.1%	Normal	1	1	1	± 5.1%	± 5.1%
<b>Dipole related</b>							
Distance dipole – scanning plane	± 5.2%	Rectangular	√3	1	0.3	± 3.0%	± 0.9%
Input power	± 4.7%	Normal	1	1	1	± 4.7%	± 4.7%
<b>Combined Uncertainty</b>						<b>± 13.4%</b>	<b>± 8.9%</b>
<b>Expanded Std. Uncertainty on Power</b>						<b>± 26.9%</b>	<b>± 17.8%</b>
<b>Expanded Std. Uncertainty on Field</b>						<b>± 13.4%</b>	<b>± 8.9%</b>

)\* : site specific

Table 2: Measurement uncertainties

### 6.1.10 System validation

The system validation is performed for verifying the accuracy of the complete measurement system and performance of the software. The following table shows validation results for all frequency bands and both for E- and H-fields. (graphic plot(s) see annex A).

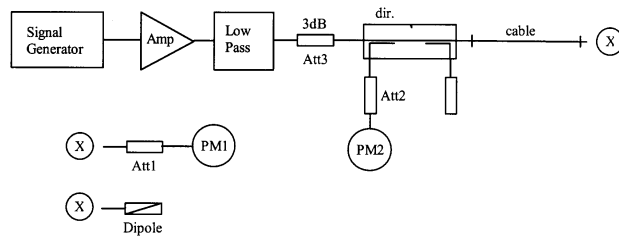
### 6.1.11 Validation procedure

According to the requirements of ANSI C63.19 chapter 4.3.2.1.1 the validation is performed by using a validation dipole which is positioned parallel to the nylon fibre of the HAC test arch. The dipole is connected to the signal source consisting of signal generator and amplifier via a directional coupler, N-connector cable and adaption to SMA. It is fed with a power of 100 mW (20 dBm). To adjust this power a power meter is used. The power sensor is connected to the cable before the validation to measure the power at this point and do adjustments at the signal generator. At the outputs of the directional coupler both return loss as well as forward power are controlled during the validation to make sure that emitted power at the dipole is kept constant. This can also be checked by the power drift measurement after the test (result on plot).

During the validation the measurement system scans a grid along the length of the dipole and the maximum value is recorded.

This validation is performed periodically both with E and H field probes on the center frequencies of the frequency bands used by the wireless device.

Validation results have to be equal or near the values determined during dipole calibration (target SAR in table below) with the same test system set-up.



Freq. / MHz	Signal type	Peak Output Power / dBm	Target Field Strength (+/- 10%)	Measured Field Strength
835	CW	20	167.1 V/m	153.6
1730	CW	20	151.4 V/m	140.5
1880	CW	20	140.2 V/m	128.8
835	CW	20	0.448 A/m	0.441
1730	CW	20	0.493A/m	0.490
1880	CW	20	0.479 A/m	0.462

Table 3: Results system validation

According to ANSI C63.19 Chapter 4.3.2.1.2 it is recommended to compare measurement results of 3 different test cases: CW, 80% AM and signal of the wireless device.

The probe is moved to the position with the highest field strength found during system validation with CW. The wireless device (WD) or an emulated signal source (e.g. CMU 200) is set to apply full rated power into the reference dipole.

Average and peak output power of the WD or emulated signal source are measured using a peak power meter.

Average power emitted by the dipole is measured with the DASY4 system.

The same procedure is repeated with a CW and an AM signal with 80% modulation index which have the same peak power as determined with the signal modulation format of the wireless device.

From the measured results the peak-to-average-ratio (PAR) is determined.

Estimation of expected values:

CW

Peak-to-Average-Ratio: 0.0 dB

80% AM

Peak-to-Average Ratio (dB) =  $10 \cdot \log(m+1)^2$  with modulation index  $m = 0.8$

$PAR_{\log} = 5.1$  dB

$PAR_{\text{lin}} = 1.8$

c) GSM

$PAR_{\log} = 9$  dB

$PAR_{\text{lin}} = 8$  (for one of eight timeslots in use)

The linear PAR corresponds to the crest factor of the corresponding signal type.



### 6.1.12 Determination of probe modulation factor

The probe modulation factor indicates the relation between the measured RMS (average) field strength values and the peak field strength of a modulated signal, which will be used by the data evaluation software to calculate from measured RMS values to peak field values for HAC evaluation. It can be determined by comparing a CW signal with a modulated signal having the same peak envelope power as defined in ANSI C63.19 Annex C.3.1.

The following procedure according to the recommendations of DASY4 HAC application note chapter 28.6 has been used:

The probe remains in the position with the highest field strength found during system validation.

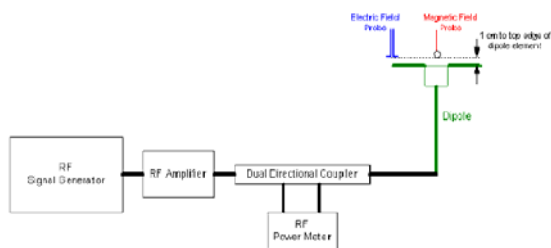
The probe is illuminated with a signal using the same modulation as the DUT (The WD itself or an emulated signal generated by the CMU 200) on the center of the WD's frequency band. The output power is adjusted to the standard peak envelope power of the WD's modulation system and measured with a spectrum analyzer in linear mode with 0 Hz span (ANSI recommendation) and/or a power meter being able to measure Peak envelope power (FCC recommendation).

The field strength at this position is recorded using the multi meter function of DASY4 software.

Then a CW signal is adjusted to the same frequency and peak reading as the modulated signal measured with spectrum analyzer or power meter.

This signal is fed to the validation dipole and the measured field strength is recorded.

The ratio of the CW to the modulated signal reading is the modulation factor.



Modulation Factor = Measured E/H-Field (CW signal) / Measured E/H-Field (modulated signal)

For E-field probes the following formula is generally valid:

$$(\text{Probe Modulation Factor})^2 = \text{Crest Factor}$$

For GSM with 1 of 8 timeslots in use the PMF should be  $\approx 2.82$

For H-field probes the modulation factor differs with amplitude, frequency, modulation and probe.

Specific information about the determination of the probe modulation factor (manufacturer application note) is attached to the calibration document delivered together with this test report.

## Measured PAR and PMF

Freq. / MHz	Signal type	Peak-to-Average Ratio / dB	Measured Field Strength with DASY4 System	Probe Modulation Factor
835	CW	0.0	152 V/m	----
835	80% AM	5.1	102.78 V/m	1.48
835	GSM	9.1	52.21 V/m	<b>2.91</b>
835	CW	0.0	0.441 A/m	----
835	80% AM	5.1	0.302 A/m	1.46
835	GSM	9.1	0.156 A/m	<b>2.83</b>
1880	CW	0.0	128.4 V/m	----
1880	80% AM	5.1	86.13 V/m	1.46
1880	GSM	9.1	44.75 V/m	<b>2.83</b>
1880	CW	0.0	0.462 A/m	----
1880	80% AM	5.1	0.387 A/m	1.19
1880	GSM	9.1	0.187 A/m	<b>2.48</b>

Table 4: Results system validation

Peak and average output power levels were measured using the Rhode & Schwarz NRP Power Meter. For WCDMA a PMF of 1.00 can generally be applied.

## Important note:

According to manufacturer information diode based probes are inherently non-symmetric and tend to peak detection for modulated signals. SPEAG's E-field probes are designed such they are largely symmetric and accurate RMS can be obtained from pulsed signals applying the correct crest factor. The same feature could not be applied for the H-field probes such that the RMS value cannot be detected for signals other than CW without additional calibration.

So probe modulation factors of H-field probes differ more or less from those determined for E-field probes or expected target values.

In DASY V4.7 the crest factor and probe modulation factor handling has been separated.

For HAC evaluation with SPEAG's SEMCAD software the above listed probe modulation factors need to be entered additionally, so that time averaged values are automatically calculated to slotted peak field strength values.

The crest factor setting is still necessary as it is used to perform the compensation of the diode compression on the peak power (DASY4 user manual chapter 4.4.2).

## 6.2 Conducted power measurements

For the measurements a Rohde & Schwarz Radio Communication Tester CMU 200 was used. The output power was measured using an integrated RF connector and attached RF cable. The conducted output power was also checked before and after each SAR measurement. The resulting power values were within a 0.2 dB tolerance of the values shown below.

### 6.2.1 Conducted power measurements GSM 850 MHz

Channel / frequency	modulation	timeslots	slotted avg. power	time based avg. power (calculated)
128 / 824.2 MHz	GMSK	1	33.6 dBm	24.6 dBm
190 / 836.6 MHz	GMSK	1	33.7 dBm	24.7 dBm
251 / 848.0 MHz	GMSK	1	33.7 dBm	24.7 dBm

Table 5: Test results conducted power measurement GSM 850 MHz

### 6.2.2 Conducted power measurements GSM 1900 MHz

Channel / frequency	modulation	timeslots	slotted avg. power	time based avg. power (calculated)
512 / 1850.2 MHz	GMSK	1	30.4 dBm	21.4 dBm
661 / 1880.0 MHz	GMSK	1	30.5 dBm	21.5 dBm
810 / 1909.8 MHz	GMSK	1	30.5 dBm	21.5 dBm

Table 6: Test results conducted power measurement GSM 1900 MHz

### 6.2.3 Conducted power measurements WCDMA FDD V (850 MHz)

Max. RMS output power 850 MHz (FDD V) / dBm			
	Channel / frequency		
mode	4132 / 826.4 MHz	4182 / 836.6 MHz	4233 / 846.6 MHz
AMR 12.2 kbit/s	25.1	25.2	25.0

Table 7: Test results conducted power measurement WCDMA 850

### 6.2.4 Conducted power measurements WCDMA FDD II (1900 MHz)

Max. RMS output power 1900 MHz (FDD II) / dBm			
	Channel / frequency		
mode	9262 / 1852.4 MHz	9400 / 1880.0 MHz	9538 / 1907.6 MHz
AMR 12.2 kbit/s	23.6	23.7	23.6

Table 8: Test results conducted power measurement WCDMA 1900

### 6.2.5 Conducted power measurements WCDMA FDD IV (1700 MHz)

Max. RMS output power FDD IV (1700MHz) / dBm			
	Channel / frequency		
mode	1312 / 1712.4 MHz	1412 / 1732.4 MHz	1513 / 1752.6 MHz
AMR 12.2 kbit/s	24.4	24.6	24.7

Table 9: Test results conducted power measurement WCDMA FDD IV 1700MHz

### 6.3 Test results

The following tables summarize the worst case E- and H-field results of the measured field distributions shown in Annex A.2. In GSM band exclusion blocks have been applied in the area of highest E-field. In WCDMA bands no exclusion blocks were applied.

#### 6.3.1 Test Results at speaker position

Hearing Aid Compatibility results for E-Field					
Channel / frequency		Max E-Field (peak)	M3 limit	category	air temperature
128 / 824.2 MHz		137.3 V/m	266.1 V/m	M4	22.3 °C
190 / 836.6 MHz		161.5 V/m	266.1 V/m	M3	22.3 °C
251 / 848.8 MHz		164.0 V/m	266.1 V/m	M3	22.3 °C
251 / 848.8 MHz	worst case	<b>164.6 V/m</b>	266.1 V/m	M3	22.3 °C
512 / 1850.2 MHz		75.5 V/m	84.1 V/m	M3	22.3 °C
661 / 1880.0 MHz		77.9 V/m	84.1 V/m	M3	22.3 °C
810 / 1909.8 MHz		72.2 V/m	84.1 V/m	M3	22.3 °C
661 / 1880.0 MHz	worst case	<b>81.3 V/m</b>	84.1 V/m	M3	22.3 °C

Table 10: Test results GSM 850 and 1900 MHz (E-field) at speaker position

Hearing Aid Compatibility results for E-Field					
Channel / frequency		Max E-Field (peak)	M3 limit	category	air temperature
4132 / 826.4 MHz		65.6 V/m	266.1 V/m	M4	22.3 °C
4182 / 836.4 MHz		72.0 V/m	266.1 V/m	M4	22.3 °C
4233 / 846.6 MHz		76.4 V/m	266.1 V/m	M4	22.3 °C
4233 / 846.6 MHz	worst case	<b>77.2 V/m</b>	266.1 V/m	M4	22.3 °C
1312 / 1712.4 MHz		53.8 V/m	84.1 V/m	M4	22.3 °C
1412 / 1732.4 MHz		57.3 V/m	84.1 V/m	M4	22.3 °C
1513 / 1752.6 MHz		43.4 V/m	84.1 V/m	M4	22.3 °C
1412 / 1732.4 MHz	worst case	<b>57.4 V/m</b>	84.1 V/m	M4	22.3 °C
9262 / 1852.4 MHz		47.9 V/m	84.1 V/m	M4	22.3 °C
9400 / 1880.0 MHz		50.1 V/m	84.1 V/m	M4	22.3 °C
9538 / 1907.6 MHz		48.7 V/m	84.1 V/m	M4	22.3 °C
9400 / 1880.0 MHz	worst case	<b>50.7 V/m</b>	84.1 V/m	M4	22.3 °C

Table 11: Test results WCDMA FDD II, FDD IV and FDD V (E-field) at speaker position

Hearing Aid Compatibility results for H-Field					
Channel / frequency		Max H-Field (peak)	M3 limit	category	air temperature
128 / 824.2 MHz		0.296 A/m	0.8 A/m	M4	22.3 °C
190 / 836.6 MHz		0.342 A/m	0.8 A/m	M4	22.3 °C
251 / 848.8 MHz		0.372 A/m	0.8 A/m	M4	22.3 °C
251 / 848.8 MHz	worst case	<b>0.401 A/m</b>	0.8 A/m	M4	22.3 °C
512 / 1850.2 MHz		0.225 A/m	0.25 A/m	M3	22.3 °C
661 / 1880.0 MHz		0.227 A/m	0.25 A/m	M3	22.3 °C
810 / 1909.8 MHz		0.195 A/m	0.25 A/m	M3	22.3 °C
661 / 1880.0 MHz	worst case	<b>0.240 A/m</b>	0.25 A/m	M3	22.3 °C

Table 12: Test results GSM 850 and 1900 MHz (H-field) at speaker position

Hearing Aid Compatibility results for H-Field					
Channel / frequency		Max H-Field (peak)	M3 limit	category	air temperature
4132 / 826.4 MHz		0.139 A/m	0.8 A/m	M4	22.3 °C
4182 / 836.4 MHz		0.148 A/m	0.8 A/m	M4	22.3 °C
4233 / 846.6 MHz		0.155 A/m	0.8 A/m	M4	22.3 °C
4233 / 846.6 MHz	worst case	<b>0.168 A/m</b>	0.8 A/m	M4	22.3 °C
1312 / 1712.4 MHz		0.168 A/m	0.25 A/m	M4	22.3 °C
1412 / 1732.4 MHz		0.174 A/m	0.25 A/m	M4	22.3 °C
1513 / 1752.6 MHz		0.178 A/m	0.25 A/m	M4	22.3 °C
1513 / 1752.6 MHz	worst case	<b>0.189 A/m</b>	0.25 A/m	M4	22.3 °C
9262 / 1852.4 MHz		0.150 A/m	0.25 A/m	M4	22.3 °C
9400 / 1880.0 MHz		0.158 A/m	0.25 A/m	M4	22.3 °C
9538 / 1907.6 MHz		0.151 A/m	0.25 A/m	M4	22.3 °C
9400 / 1880.0 MHz	worst case	<b>0.172 A/m</b>	0.25 A/m	M4	22.3 °C

Table 13: Test results WCDMA FDD II, FDD IV and FDD V (H-field) at speaker position

Overall category: M3

### 6.3.2 General description of test procedures

The device was tested using a CMU 200 communications tester as controller unit to set test channels and maximum output power to the DUT, as well as for measuring the conducted peak power. The conducted output power was measured using an integrated RF connector and attached RF cable.

Worst case configuration evaluation was performed at channel with highest field level by rotating the probe 360° at azimuth axis (see annex B) and calculation to maximum peak.

## 7 Test equipment and ancillaries used for tests

To simplify the identification of the test equipment and/or ancillaries which were used, the reporting of the relevant test cases only refer to the test item number as specified in the table below.

No	used	Equipment	Type	Manufacturer	Serial No.	Last Calibration	Frequency (months)
1	<input checked="" type="checkbox"/>	E-Field Probe	ER3DV6	Schmid & Partner Engineering AG	2262	January 14, 2011	12
2	<input checked="" type="checkbox"/>	H-Field Probe	H3DV6	Schmid & Partner Engineering AG	6086	January 14, 2011	12
3	<input checked="" type="checkbox"/>	835 MHz System Validation Dipole	CD900V3	Schmid & Partner Engineering AG	1027	May 10, 2011	12
4	<input checked="" type="checkbox"/>	1880 MHz System Validation Dipole	CD1880V3	Schmid & Partner Engineering AG	1021	May 10, 2011	12
5	<input type="checkbox"/>	2450 MHz System Validation Dipole	CD2450V3	Schmid & Partner Engineering AG	1023	May 31, 2007	12
6	<input checked="" type="checkbox"/>	Data acquisition electronics	DAE3V1	Schmid & Partner Engineering AG	413	January 13, 2011	12
7	<input checked="" type="checkbox"/>	Software	DASY 4 V4.7	Schmid & Partner Engineering AG	---	N/A	--
8	<input checked="" type="checkbox"/>	HAC test arch	SD HAC P01 BA	Schmid & Partner Engineering AG	1022	N/A	--
9	<input checked="" type="checkbox"/>	Universal Radio Communication Tester	CMU 200	Rohde & Schwarz	106826	January 12, 2011	12
10	<input checked="" type="checkbox"/>	Signal Generator	8665A	Hewlett Packard	2833A00112	January 4, 2012	12
11	<input checked="" type="checkbox"/>	Amplifier	M20.40.30	Nuclitudes	35/2001	N/A	--
12	<input checked="" type="checkbox"/>	Power Meter	NRP	Rohde & Schwarz	101367	January 6, 2011	24
13	<input checked="" type="checkbox"/>	Power Meter Sensor	NRP Z22	Rohde & Schwarz	100227	January 6, 2011	24
14	<input checked="" type="checkbox"/>	Power Meter Sensor	NRP Z22	Rohde & Schwarz	100234	January 6, 2011	24

## 8 Observations

No observations exceeding those reported with the single test cases have been made.

**Annex A: System performance verification**

Date/Time: 09.01.2012 13:55:22

**DUT: HAC-Dipole 835 MHz; Type: D835V3; Serial: 1027**

**Program Name: HAC E Dipole**

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

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

Phantom section: E Dipole Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - measurement distance from the probe sensor center to CD835 Dipole = 10 mm/Hearing Aid Compatibility Test (41x361x1):** Measurement grid:

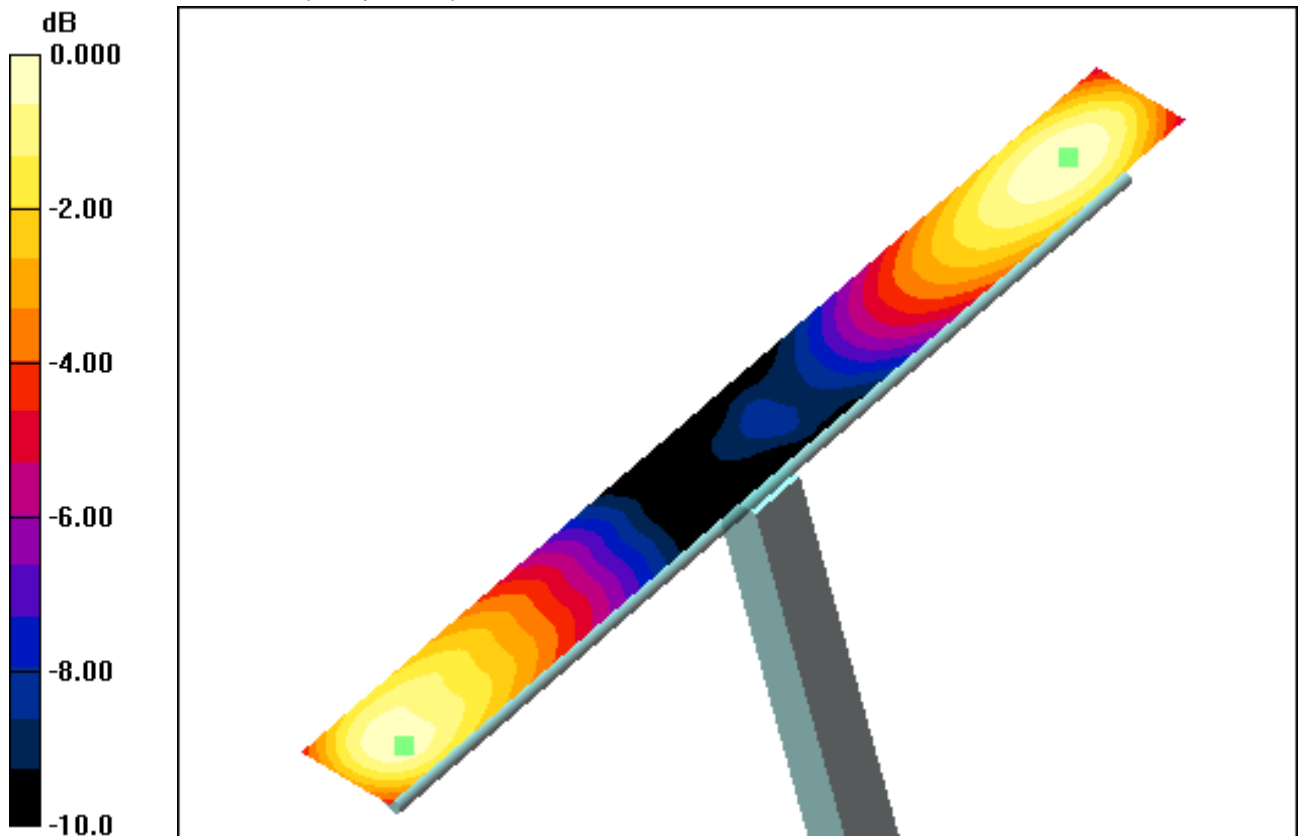
dx=5mm, dy=5mm

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 354.7 mm

Reference Value = 53.3 V/m; Power Drift = -0.014 dB

Maximum value of Total (interpolated) = 153.6 V/m



0 dB = 143.6V/m

Date/Time: 10.01.2012 11:01:16

**DUT: HAC-Dipole 835 MHz; Type: D835V3; Serial: 1027**

**Program Name: HAC H Dipole**

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

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

Phantom section: H Dipole Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - measurement distance from the probe sensor center to CD835**

**Dipole = 10 mm/Hearing Aid Compatibility Test (41x361x1):** Measurement grid:

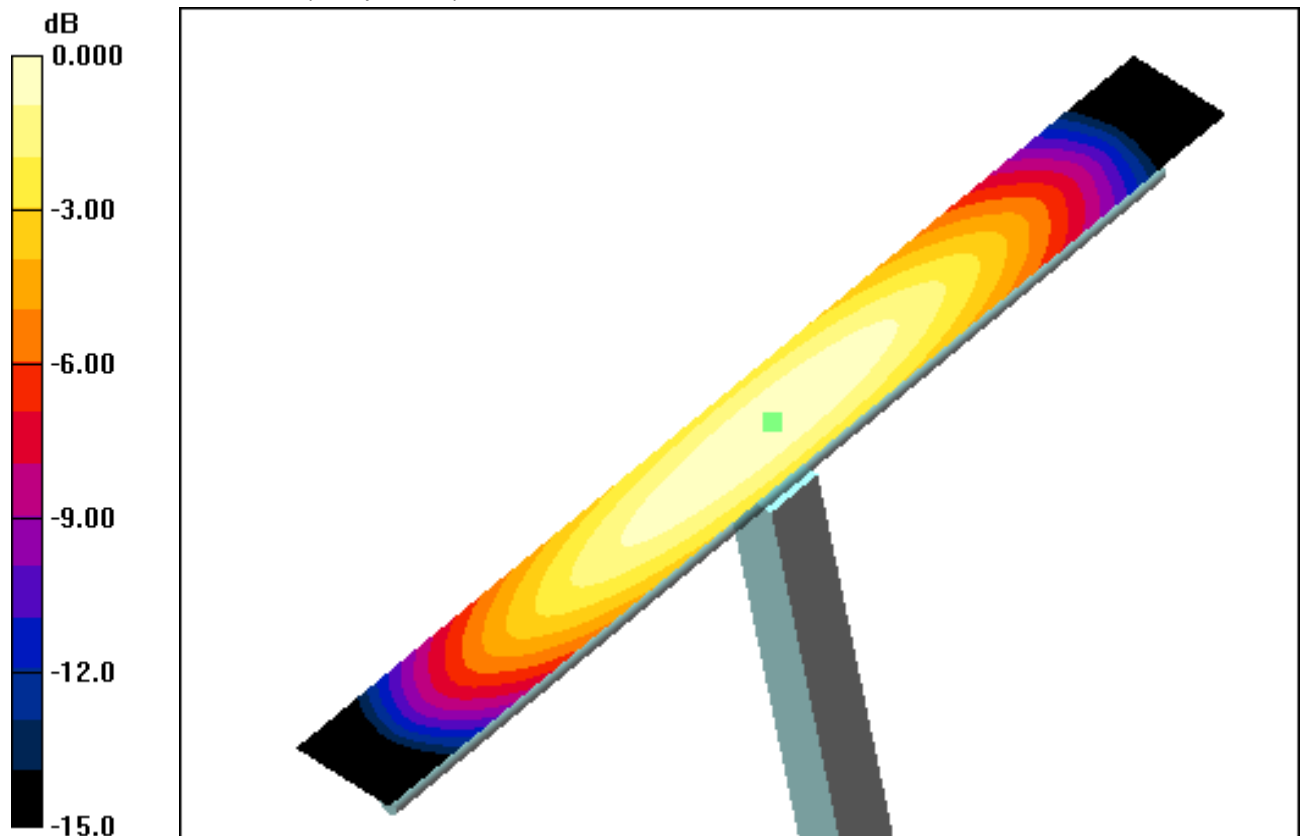
dx=5mm, dy=5mm

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 354.7 mm

Reference Value = 0.440 A/m; Power Drift = 0.016 dB

Maximum value of Total (interpolated) = 0.441 A/m



0 dB = 0.441A/m



Date/Time: 09.01.2012 13:27:43

**DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: 1021**

**Program Name: HAC E Dipole**

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

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

Phantom section: E Dipole Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10 mm/Hearing Aid Compatibility Test (41x361x1):** Measurement grid:

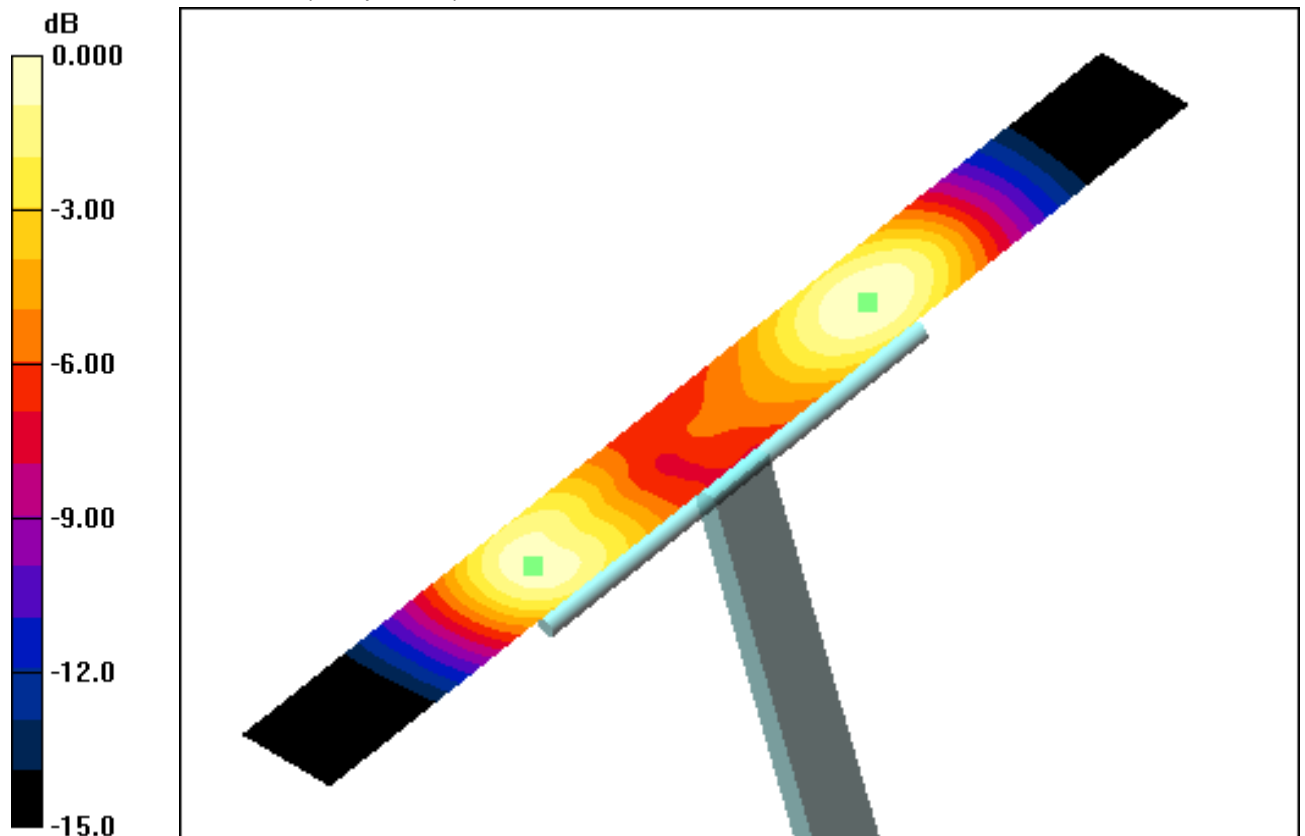
dx=5mm, dy=5mm

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 354.7 mm

Reference Value = 66.4 V/m; Power Drift = 0.025 dB

Maximum value of Total (interpolated) = 128.8 V/m



0 dB = 128.8V/m

Date/Time: 10.01.2012 10:34:43

**DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: 1021**

**Program Name: HAC H Dipole**

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

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

Phantom section: H Dipole Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10 mm/Hearing Aid Compatibility Test (41x361x1):** Measurement grid:

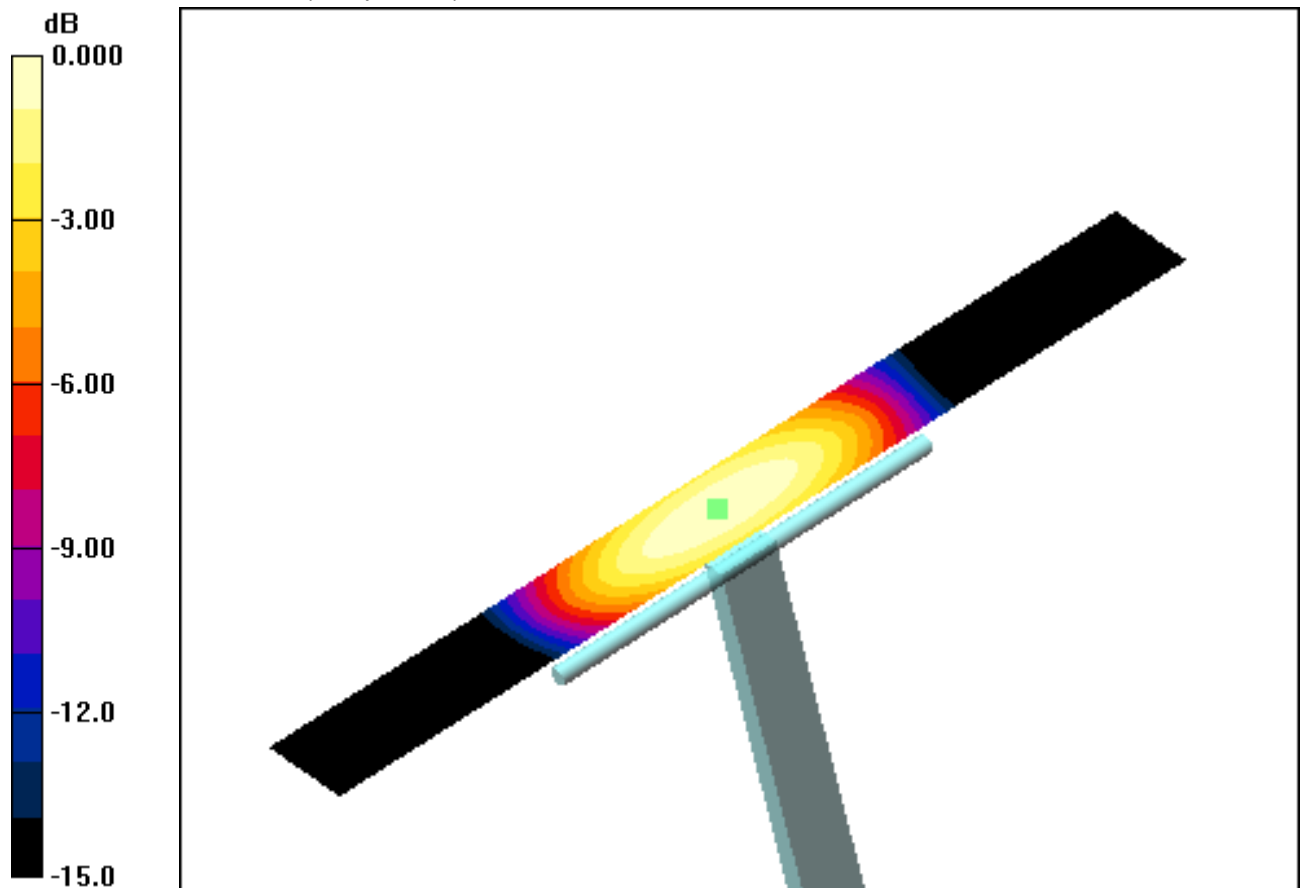
dx=5mm, dy=5mm

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 354.7 mm

Reference Value = 0.461 A/m; Power Drift = 0.019 dB

Maximum value of Total (interpolated) = 0.462 A/m



0 dB = 0.462A/m

Date/Time: 09.01.2012 14:49:39

**DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: 1021**

**Program Name: HAC E Dipole**

Communication System: CW; Frequency: 1730 MHz; Duty Cycle: 1:1

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

Phantom section: E Dipole Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10 mm/Hearing Aid Compatibility Test (41x361x1):** Measurement grid:

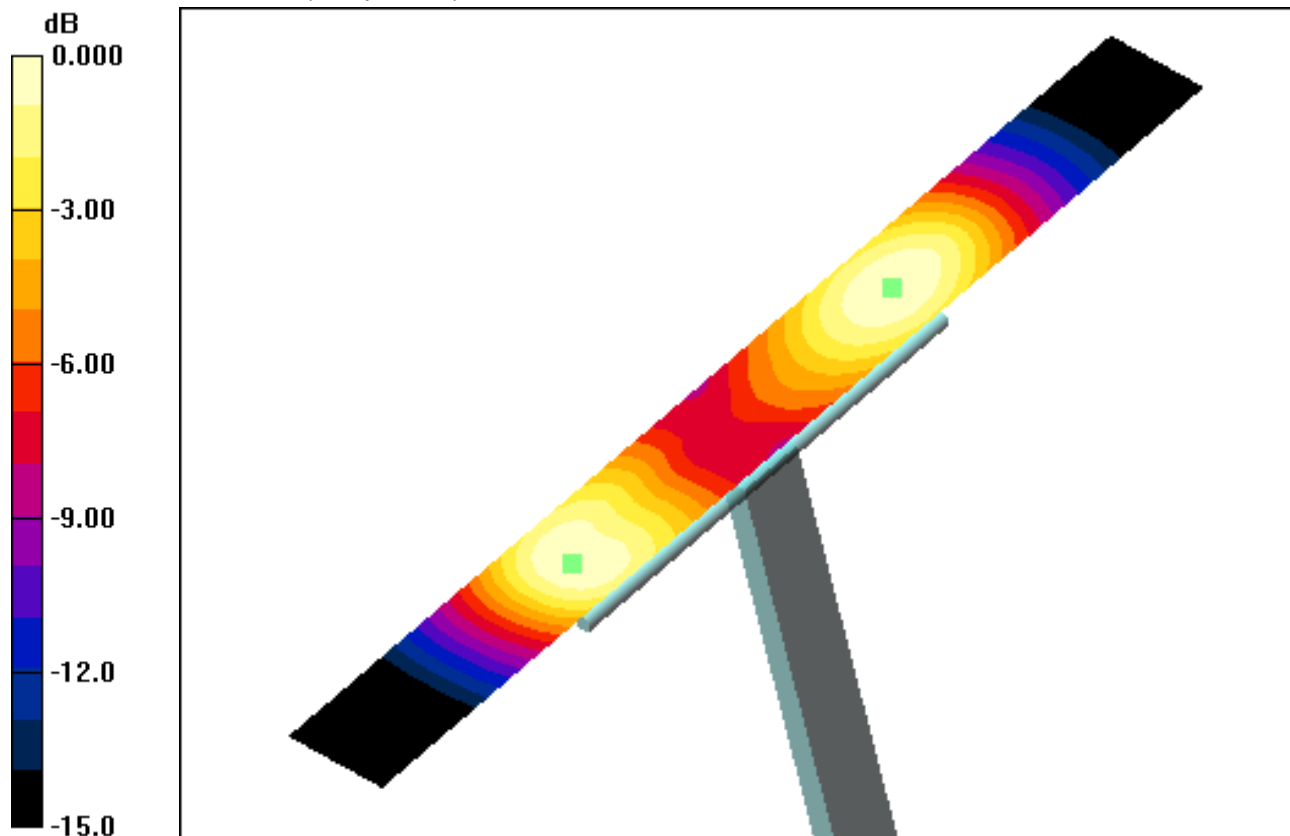
dx=5mm, dy=5mm

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 354.7 mm

Reference Value = 65.1 V/m; Power Drift = -0.001 dB

Maximum value of Total (interpolated) = 140.5 V/m



0 dB = 140.5V/m

Date/Time: 10.01.2012 10:23:29

**DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: 1021**

**Program Name: HAC H Dipole**

Communication System: CW; Frequency: 1730 MHz; Duty Cycle: 1:1

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

Phantom section: H Dipole Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10 mm/Hearing Aid Compatibility Test (41x361x1):** Measurement grid:

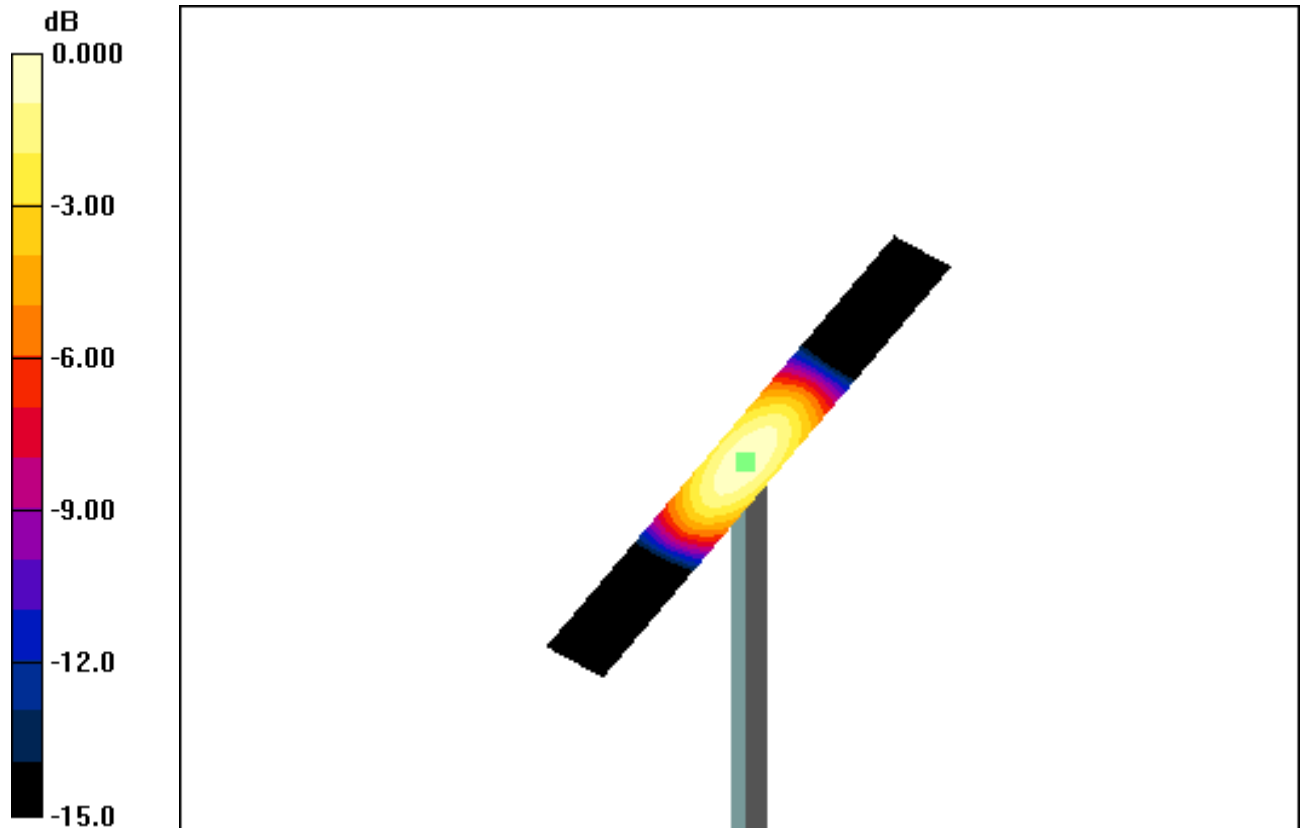
dx=5mm, dy=5mm

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 354.7 mm

Reference Value = 0.489 A/m; Power Drift = 0.020 dB

Maximum value of Total (interpolated) = 0.490 A/m



0 dB = 0.490A/m

**Annex B: DASY4 measurement results**

**Annex B.1: GSM 835 MHz**

Date/Time: 09.01.2012 15:27:45

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC E Device**

Communication System: PCS 850; Frequency: 824.2 MHz; Duty Cycle: 1:8

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

Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011

- Sensor-Surface: (Fix Surface)

- Electronics: DAE3 Sn413; Calibrated: 13.01.2011

- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022

- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - ER3D - 2007: 15 mm from Probe Center to the Device/Hearing Aid**

**Compatibility Test (101x101x1):** Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 137.3 V/m

Probe Modulation Factor = 2.91

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 60.1 V/m; Power Drift = -0.068 dB

**Hearing Aid Near-Field Category: M4 (AWF -5 dB)**

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
<b>120.4 M4</b>	<b>131.2 M4</b>	<b>126.2 M4</b>
Grid 4	Grid 5	Grid 6
<b>129.6 M4</b>	<b>135.9 M4</b>	<b>128.3 M4</b>
Grid 7	Grid 8	Grid 9
<b>134.1 M4</b>	<b>137.3 M4</b>	<b>128.3 M4</b>

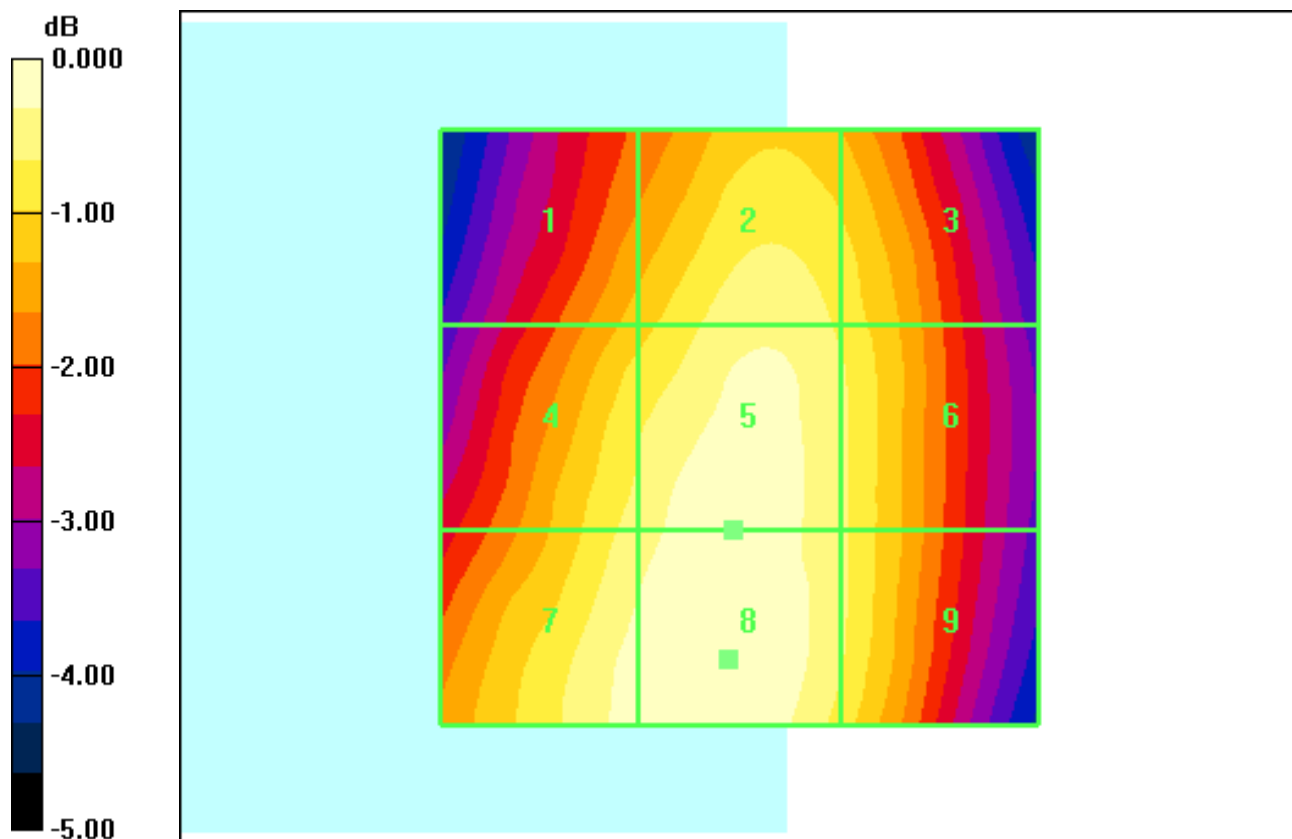
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5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

**Cursor:**

Total = 137.3 V/m

E Category: M4

Location: 1, 19.5, 369.9 mm



0 dB = 137.3V/m

Date/Time: 09.01.2012 15:34:44

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC E Device**

Communication System: PCS 850; Frequency: 836.6 MHz; Duty Cycle: 1:8

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

Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - ER3D - 2007: 15 mm from Probe Center to the Device 2/Hearing**

**Aid Compatibility Test (101x101x1):** Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 161.5 V/m

Probe Modulation Factor = 2.91

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 70.0 V/m; Power Drift = -0.004 dB

**Hearing Aid Near-Field Category: M3 (AWF -5 dB)**

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
<b>138.7 M4</b>	<b>154.6 M3</b>	<b>150.8 M3</b>
Grid 4	Grid 5	Grid 6
<b>150.6 M3</b>	<b>160.2 M3</b>	<b>152.8 M3</b>
Grid 7	Grid 8	Grid 9
<b>155.9 M3</b>	<b>161.5 M3</b>	<b>152.8 M3</b>

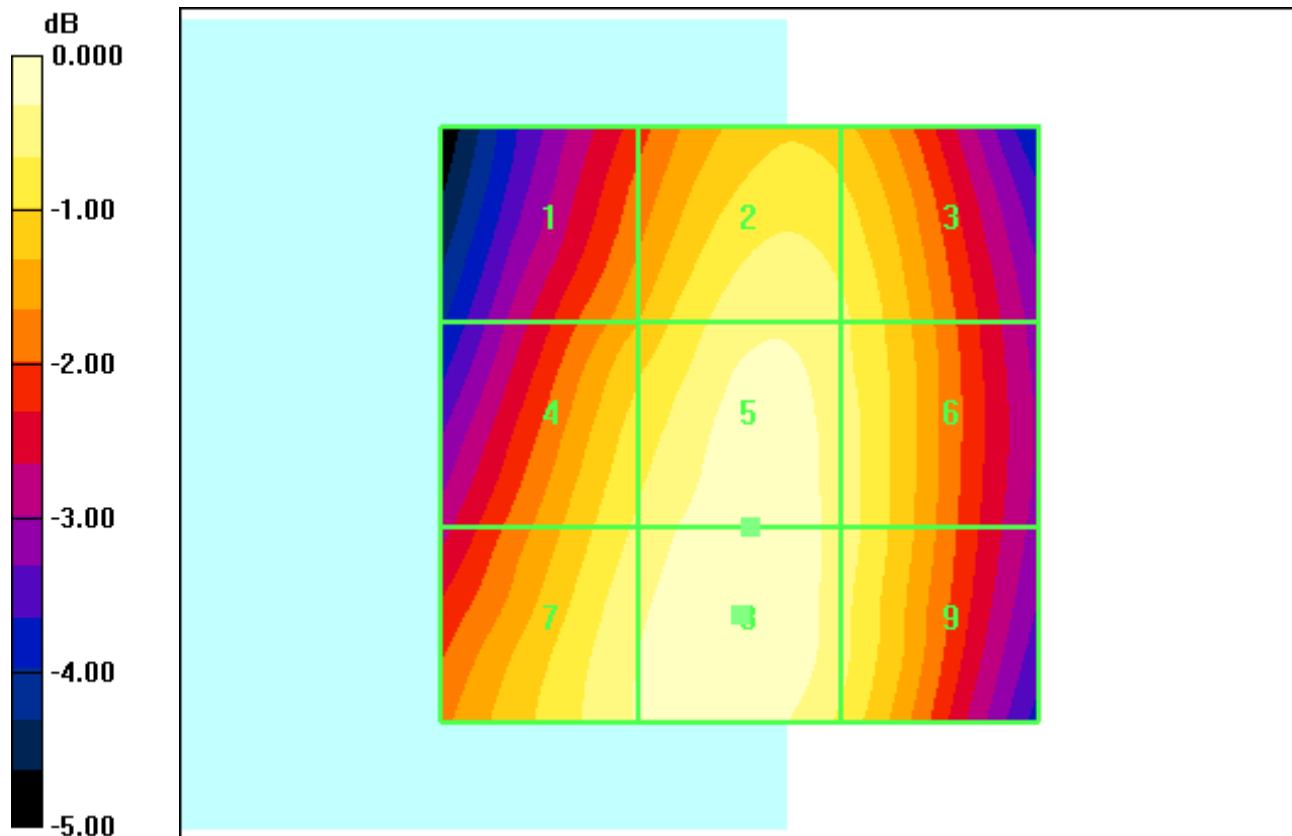
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5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

**Cursor:**

Total = 161.5 V/m

E Category: M3

Location: 0, 16, 369.9 mm



0 dB = 161.5V/m



Date/Time: 09.01.2012 15:44:10

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC E Device**

Communication System: PCS 850; Frequency: 848.8 MHz; Duty Cycle: 1:8

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

Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - ER3D - 2007: 15 mm from Probe Center to the Device 3/Hearing**

**Aid Compatibility Test (101x101x1):** Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 164.0 V/m

Probe Modulation Factor = 2.91

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 69.8 V/m; Power Drift = 0.027 dB

**Hearing Aid Near-Field Category: M3 (AWF -5 dB)**

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
<b>138.0 M4</b>	<b>153.0 M3</b>	<b>149.4 M4</b>
Grid 4	Grid 5	Grid 6
<b>152.0 M3</b>	<b>160.8 M3</b>	<b>153.0 M3</b>
Grid 7	Grid 8	Grid 9
<b>158.8 M3</b>	<b>164.0 M3</b>	<b>154.0 M3</b>

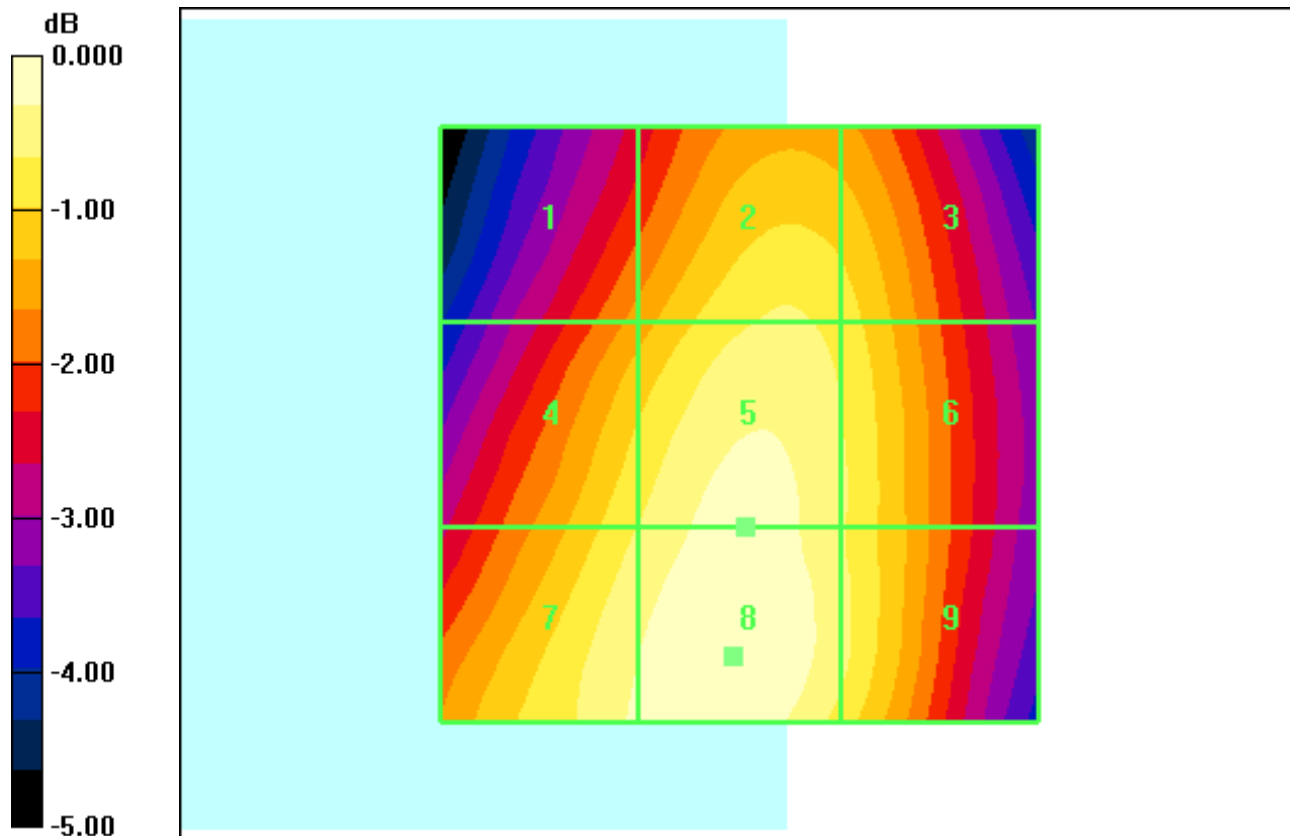
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5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

**Cursor:**

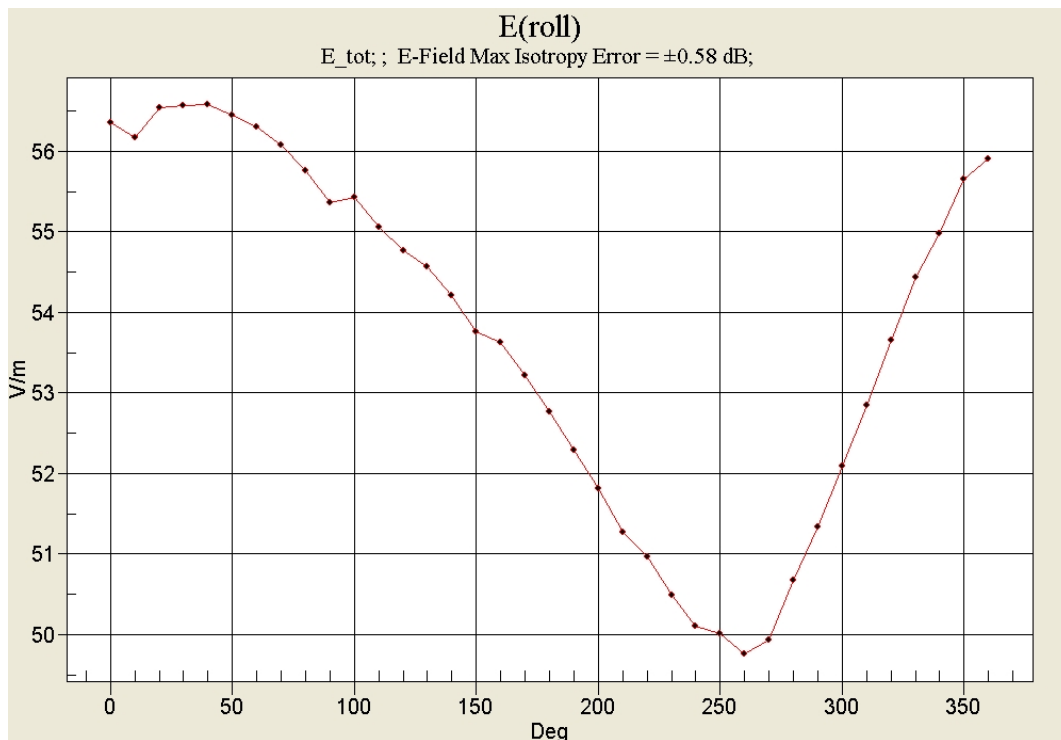
Total = 164.0 V/m

E Category: M3

Location: 0.5, 19.5, 369.9 mm



0 dB = 164.0V/m



$(56.6 - 56.4) / 56.6 = 0.35 \%$

Worst case calculation of result above:  $164 \times 1.0035 = 164.6 \text{ V/m}$ .

Date/Time: 10.01.2012 11:31:24

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC H Device**

Communication System: PCS 850; Frequency: 824.2 MHz; Duty Cycle: 1:8

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

Phantom section: H Device Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - H3DV6 - measurement distance from the probe sensor center to the device = 15 mm/Hearing Aid Compatibility Test (101x101x1):** Measurement

grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.296 A/m

Probe Modulation Factor = 2.83

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 0.056 A/m; Power Drift = -0.099 dB

**Hearing Aid Near-Field Category: M4 (AWF -5 dB)**

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
<b>0.296 M4</b>	<b>0.211 M4</b>	<b>0.132 M4</b>
Grid 4	Grid 5	Grid 6
<b>0.278 M4</b>	<b>0.199 M4</b>	<b>0.121 M4</b>
Grid 7	Grid 8	Grid 9
<b>0.296 M4</b>	<b>0.199 M4</b>	<b>0.115 M4</b>

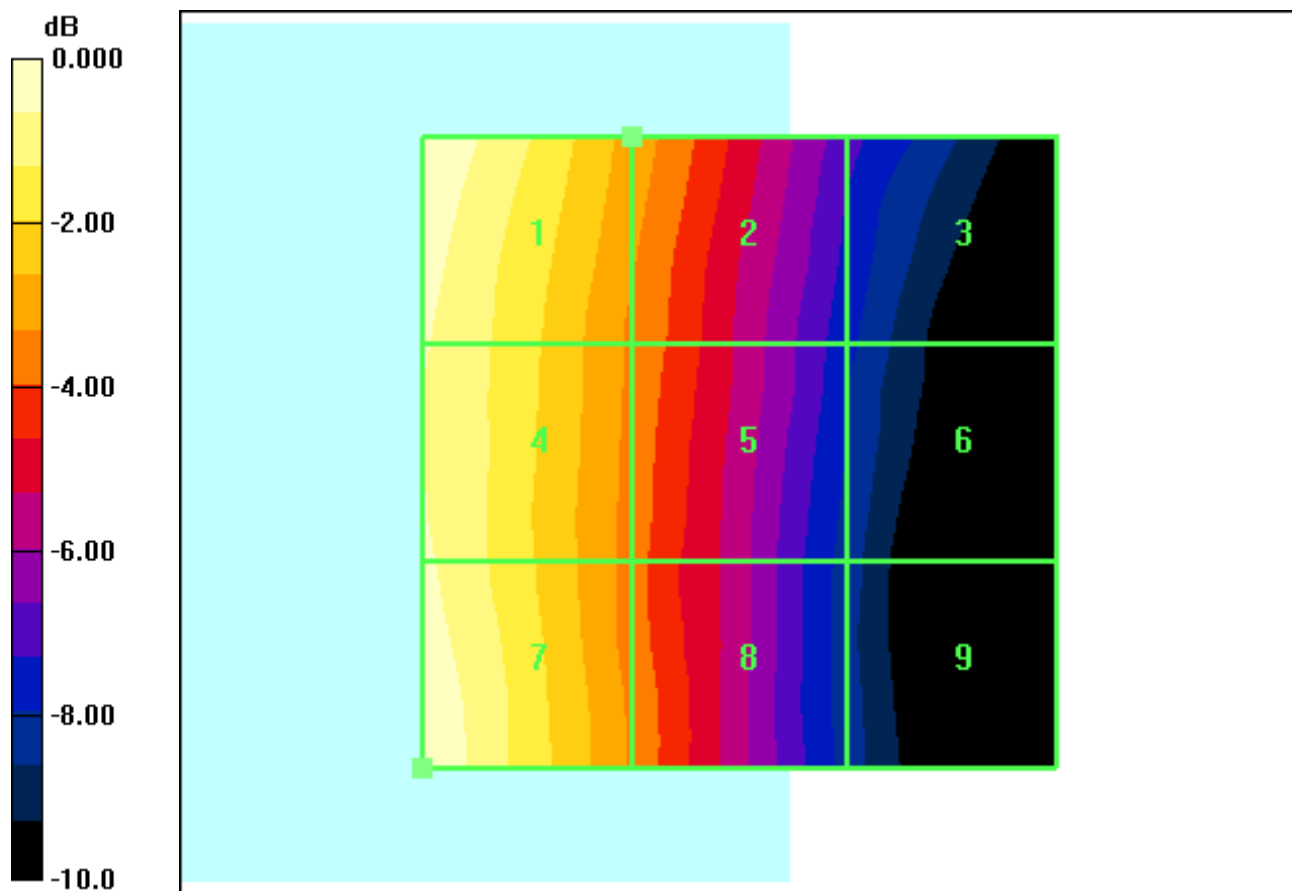
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5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

**Cursor:**

Total = 0.296 A/m

H Category: M4

Location: 25, 25, 368.7 mm



0 dB = 0.296A/m

Date/Time: 10.01.2012 11:40:26

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC H Device**

Communication System: PCS 850; Frequency: 836.6 MHz; Duty Cycle: 1:8

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

Phantom section: H Device Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - H3DV6 - measurement distance from the probe sensor center to the device = 15 mm 2/Hearing Aid Compatibility Test (101x101x1):**

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

Maximum value of peak Total field = 0.342 A/m

Probe Modulation Factor = 2.83

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 0.066 A/m; Power Drift = -0.079 dB

**Hearing Aid Near-Field Category: M4 (AWF -5 dB)**

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
<b>0.332 M4</b>	<b>0.243 M4</b>	<b>0.152 M4</b>
Grid 4	Grid 5	Grid 6
<b>0.319 M4</b>	<b>0.231 M4</b>	<b>0.139 M4</b>
Grid 7	Grid 8	Grid 9
<b>0.342 M4</b>	<b>0.235 M4</b>	<b>0.140 M4</b>

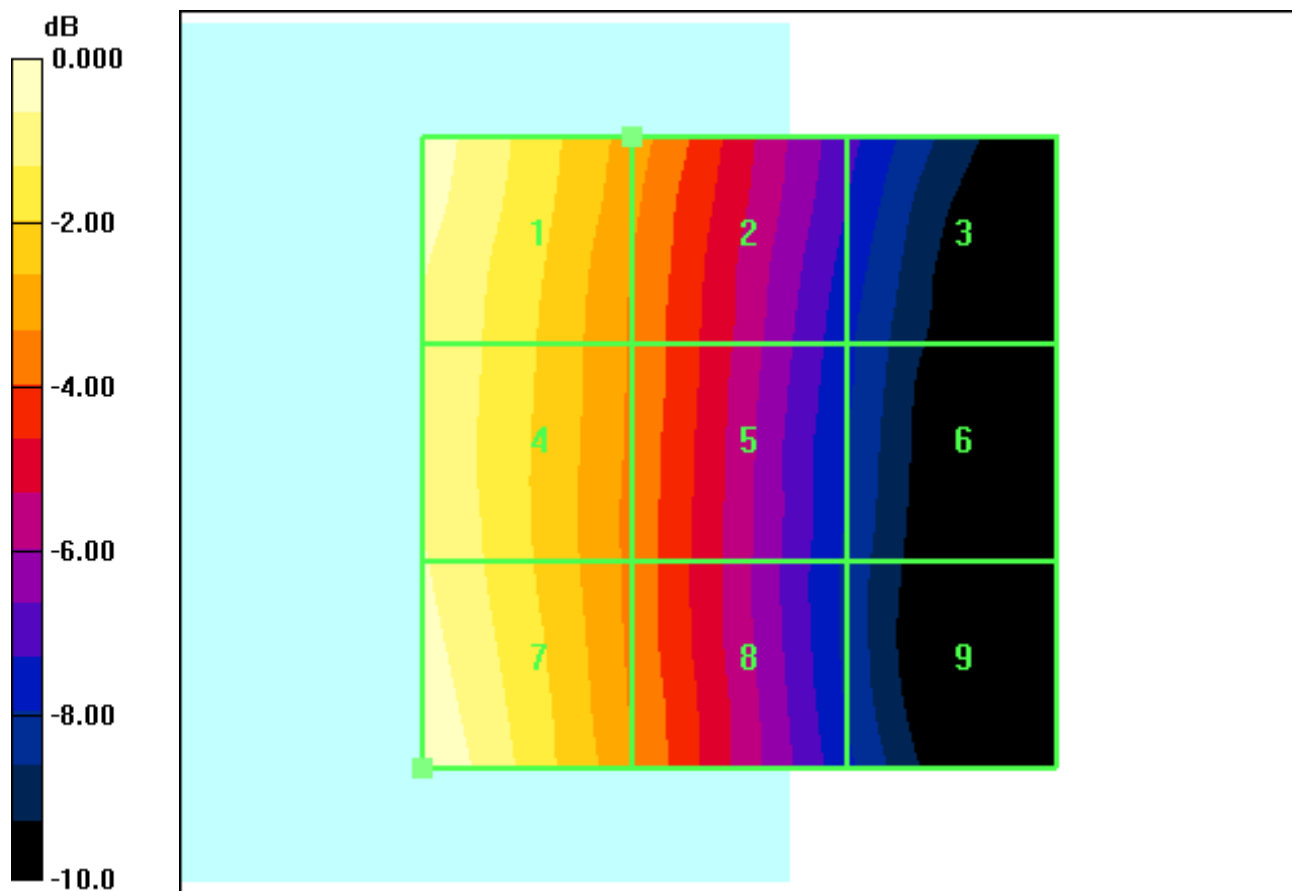
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5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

**Cursor:**

Total = 0.342 A/m

H Category: M4

Location: 25, 25, 368.7 mm



0 dB = 0.342A/m

Date/Time: 10.01.2012 11:46:53

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC H Device**

Communication System: PCS 850; Frequency: 848.8 MHz; Duty Cycle: 1:8

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

Phantom section: H Device Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - H3DV6 - measurement distance from the probe sensor center to the device = 15 mm 3/Hearing Aid Compatibility Test (101x101x1):**

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

Maximum value of peak Total field = 0.372 A/m

Probe Modulation Factor = 2.83

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 0.076 A/m; Power Drift = -0.065 dB

**Hearing Aid Near-Field Category: M4 (AWF -5 dB)**

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
<b>0.362 M4</b>	<b>0.268 M4</b>	<b>0.168 M4</b>
Grid 4	Grid 5	Grid 6
<b>0.347 M4</b>	<b>0.260 M4</b>	<b>0.160 M4</b>
Grid 7	Grid 8	Grid 9
<b>0.372 M4</b>	<b>0.257 M4</b>	<b>0.153 M4</b>

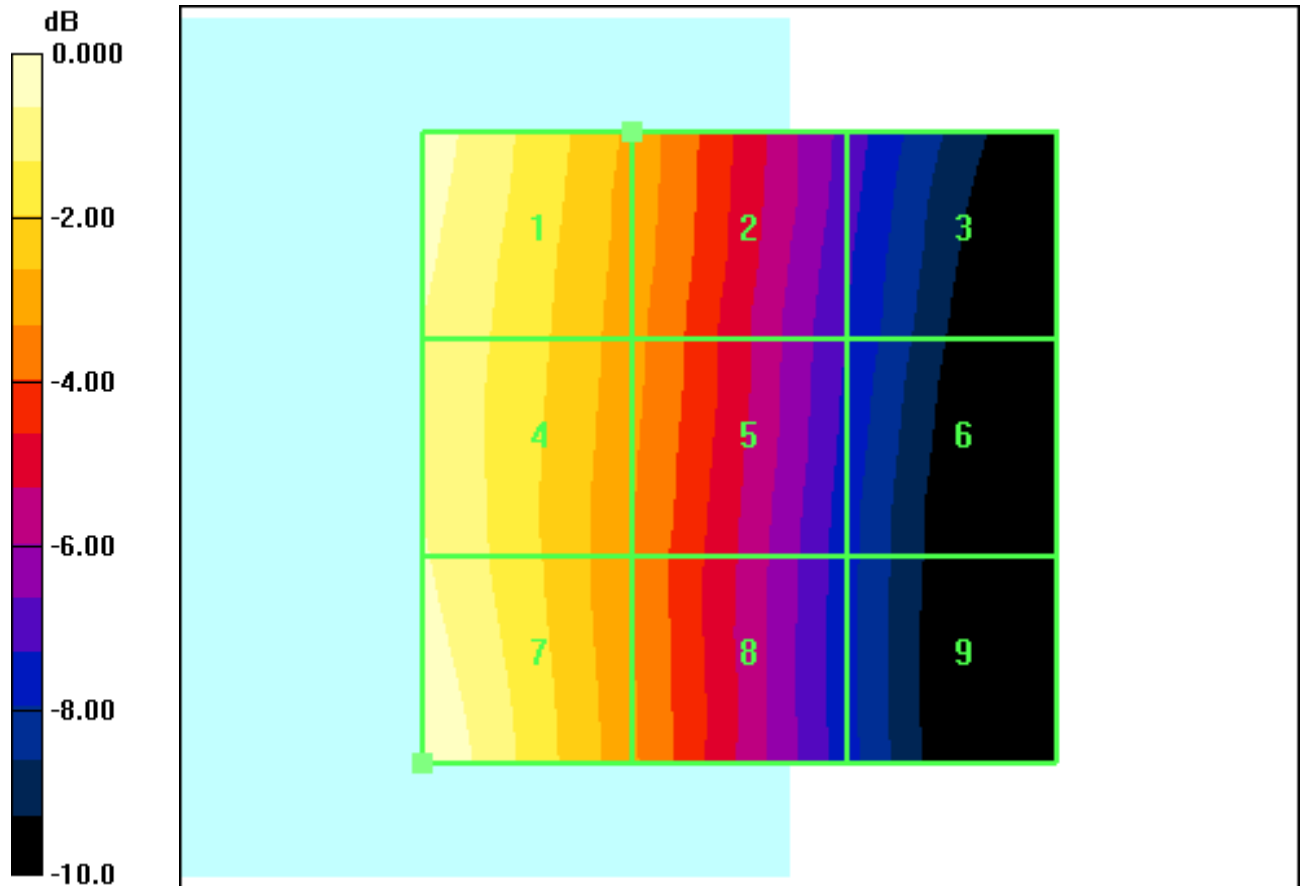
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5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

**Cursor:**

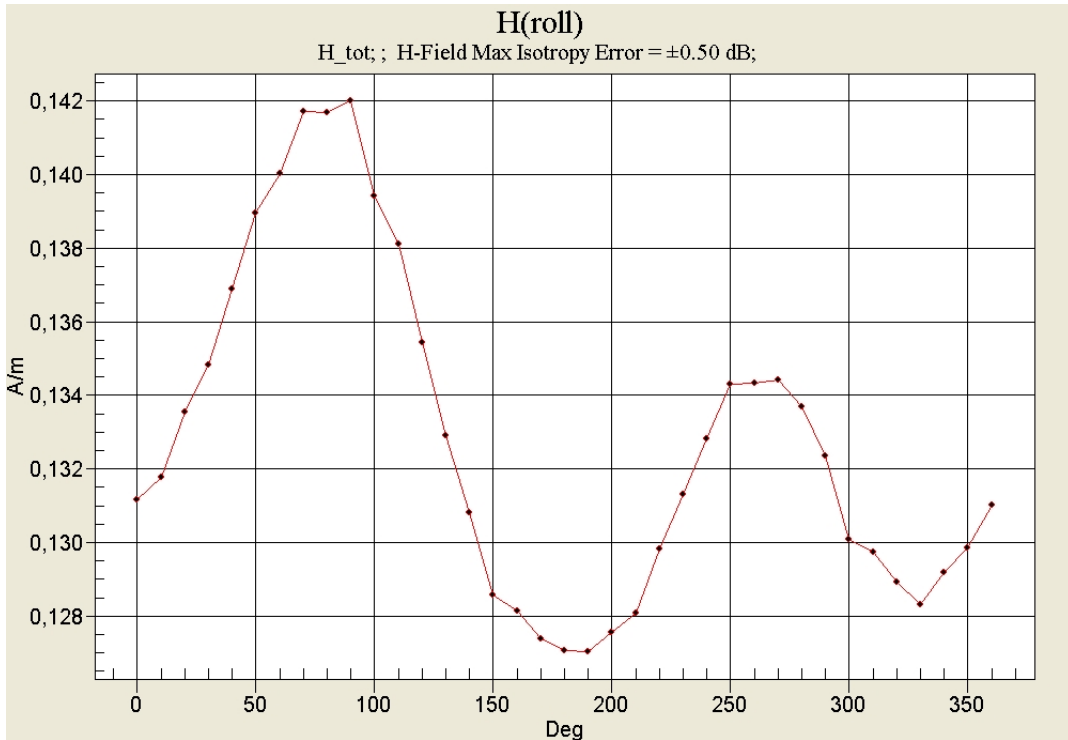
Total = 0.372 A/m

H Category: M4

Location: 25, 25, 368.7 mm



0 dB = 0.372A/m



$(0.142 - 0.128) / 0.128 = 10.9\%$

Worst case calculation of result above:  $0.372 \times 1.077 = 0.401 \text{ A/m}$ .



**Annex B.2: GSM 1880 MHz**

Date/Time: 09.01.2012 15:59:38

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC E Device**

Communication System: PCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8

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

Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - ER3D - 2007: 15 mm from Probe Center to the Device/Hearing Aid**

**Compatibility Test (101x101x1):** Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 75.5 V/m

Probe Modulation Factor = 2.87

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 18.6 V/m; Power Drift = -0.015 dB

**Hearing Aid Near-Field Category: M3 (AWF -5 dB)**

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
<b>68.1 M3</b>	<b>65.7 M3</b>	<b>65.6 M3</b>
Grid 4	Grid 5	Grid 6
<b>45.9 M4</b>	<b>63.0 M3</b>	<b>63.0 M3</b>
Grid 7	Grid 8	Grid 9
<b>62.0 M3</b>	<b>75.5 M3</b>	<b>74.5 M3</b>

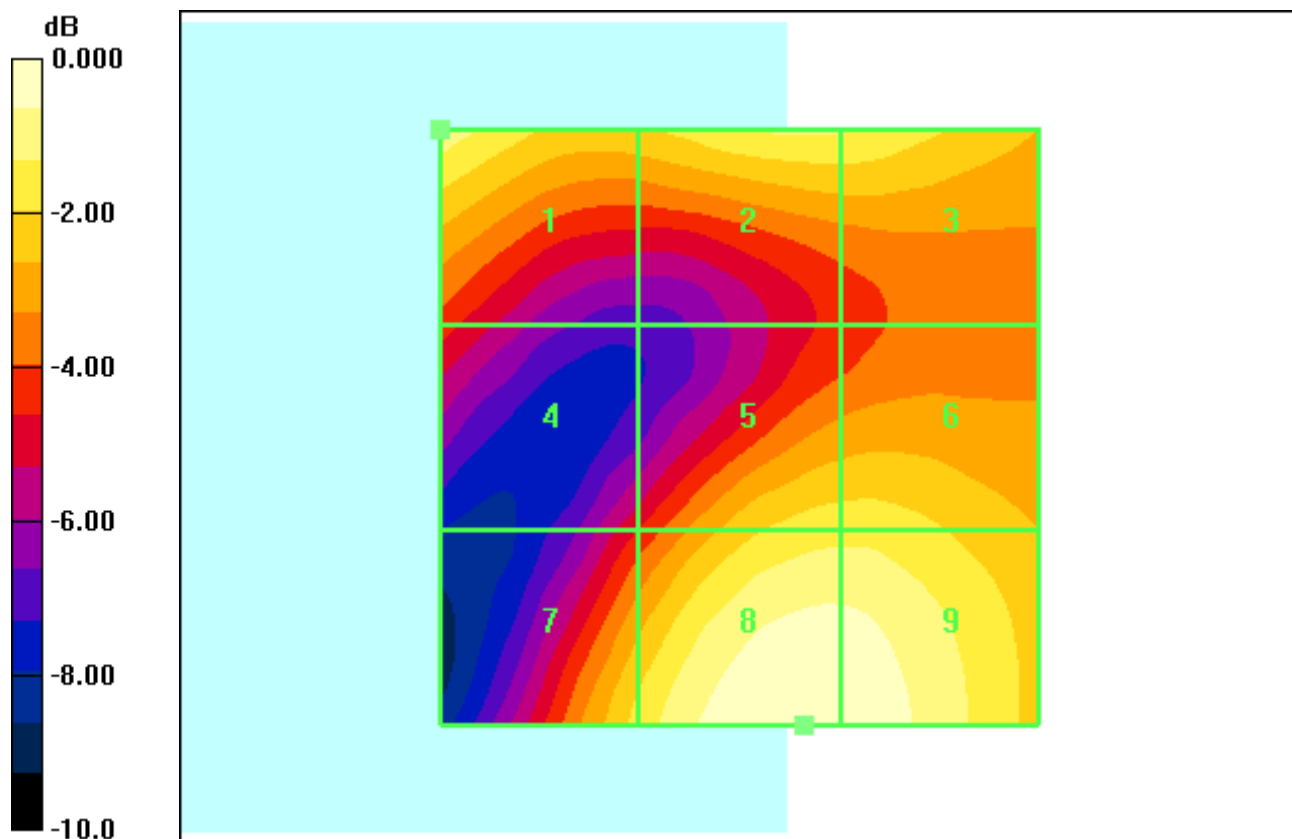
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz
M1	0	199.5 - 354.8
	-5	149.6 - 266.1
M2	0	112.2 - 199.5
	-5	84.1 - 149.6
M3	0	63.1 - 112.2
	-5	47.3 - 84.1
M4	0	<63.1
	-5	<47.3

**Cursor:**

Total = 75.5 V/m

E Category: M3

Location: -5.5, 25, 369.9 mm



0 dB = 75.5V/m

Date/Time: 09.01.2012 16:08:33

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC E Device**

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8

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

Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - ER3D - 2007: 15 mm from Probe Center to the Device 2/Hearing**

**Aid Compatibility Test (101x101x1):** Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 77.9 V/m

Probe Modulation Factor = 2.87

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 16.3 V/m; Power Drift = -0.034 dB

**Hearing Aid Near-Field Category: M3 (AWF -5 dB)**

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
<b>77.9 M3</b>	<b>61.8 M3</b>	<b>59.8 M3</b>
Grid 4	Grid 5	Grid 6
<b>51.6 M3</b>	<b>59.5 M3</b>	<b>59.7 M3</b>
Grid 7	Grid 8	Grid 9
<b>58.9 M3</b>	<b>72.7 M3</b>	<b>71.4 M3</b>

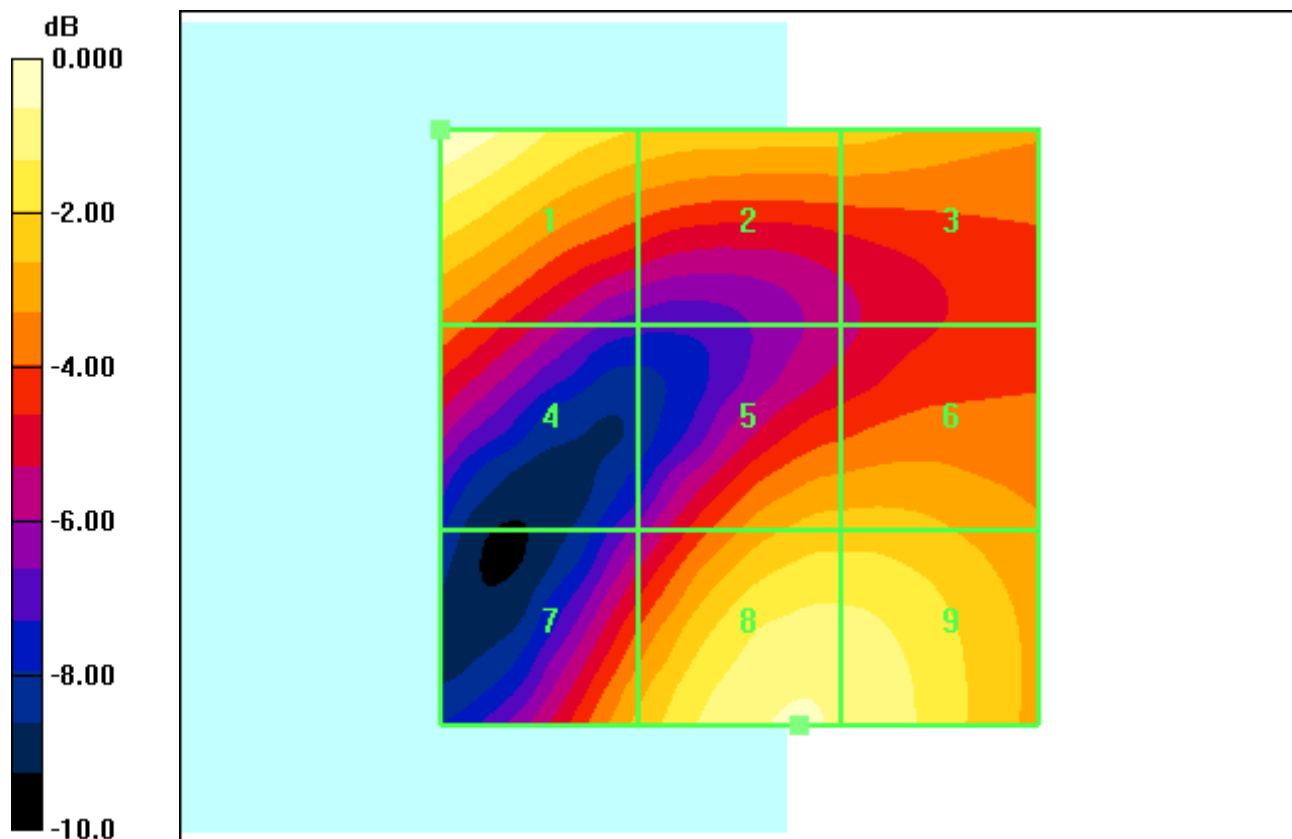
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

Total = 77.9 V/m

E Category: M3

Location: 25, -25, 369.9 mm



0 dB = 77.9V/m

Date/Time: 09.01.2012 16:17:37

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC E Device**

Communication System: PCS 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8

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

Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - ER3D - 2007: 15 mm from Probe Center to the Device 3/Hearing**

**Aid Compatibility Test (101x101x1):** Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 72.2 V/m

Probe Modulation Factor = 2.87

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 10.1 V/m; Power Drift = -0.041 dB

**Hearing Aid Near-Field Category: M3 (AWF -5 dB)**

Peak E-field in V/m

Grid 1 <b>89.2 M2</b>	Grid 2 <b>72.2 M3</b>	Grid 3 <b>53.0 M3</b>
Grid 4 <b>55.1 M3</b>	Grid 5 <b>51.6 M3</b>	Grid 6 <b>52.1 M3</b>
Grid 7 <b>60.2 M3</b>	Grid 8 <b>72.0 M3</b>	Grid 9 <b>69.8 M3</b>

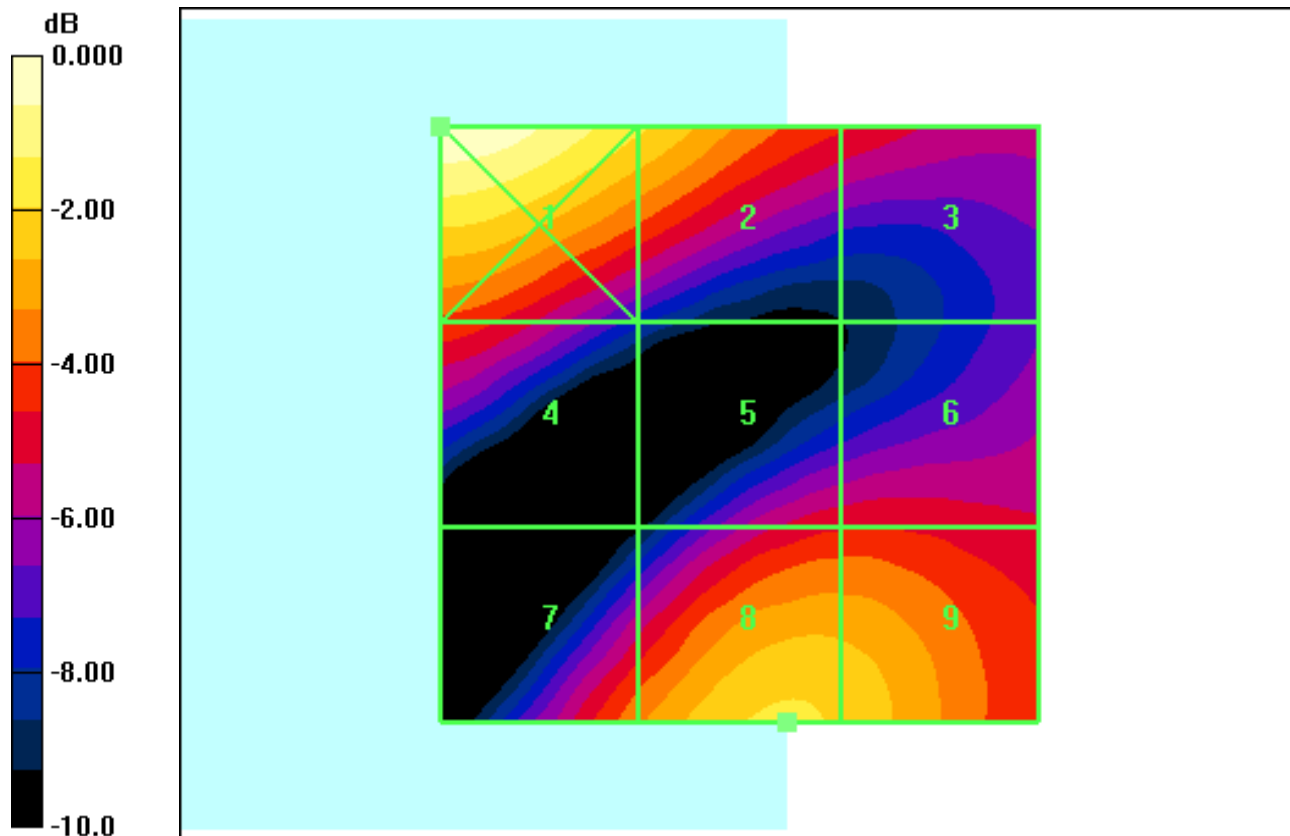
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

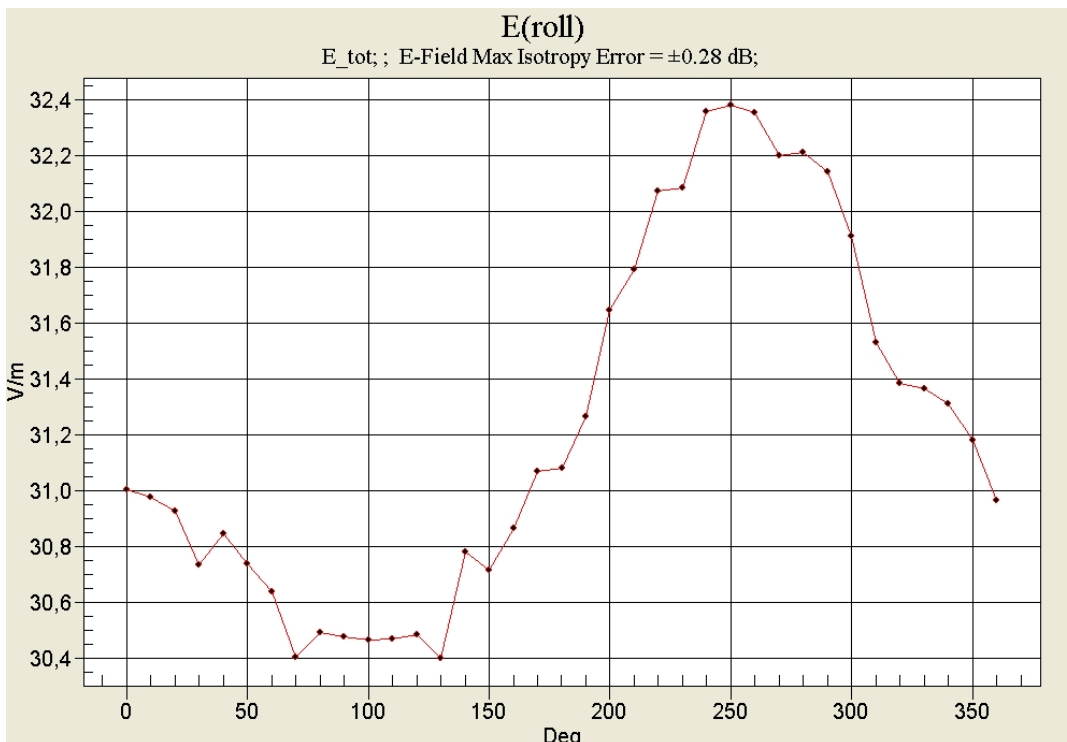
Total = 89.2 V/m

E Category: M2

Location: 25, -25, 369.9 mm



0 dB = 89.2V/m



$(32.4 - 31) / 32.4 = 4.3 \%$

Worst case calculation of result above:  $77.9 \times 1.043 = 81.27 \text{ V/m}$ .

Date/Time: 10.01.2012 11:54:18

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC H Device**

Communication System: PCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8

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

Phantom section: H Device Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - H3DV6 - measurement distance from the probe sensor center to the device = 15 mm/Hearing Aid Compatibility Test (101x101x1):** Measurement

grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.225 A/m

Probe Modulation Factor = 2.48

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 0.074 A/m; Power Drift = -0.037 dB

**Hearing Aid Near-Field Category: M3 (AWF -5 dB)**

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
<b>0.225 M3</b>	<b>0.225 M3</b>	<b>0.181 M3</b>
Grid 4	Grid 5	Grid 6
<b>0.178 M3</b>	<b>0.181 M3</b>	<b>0.167 M3</b>
Grid 7	Grid 8	Grid 9
<b>0.184 M3</b>	<b>0.167 M3</b>	<b>0.137 M4</b>

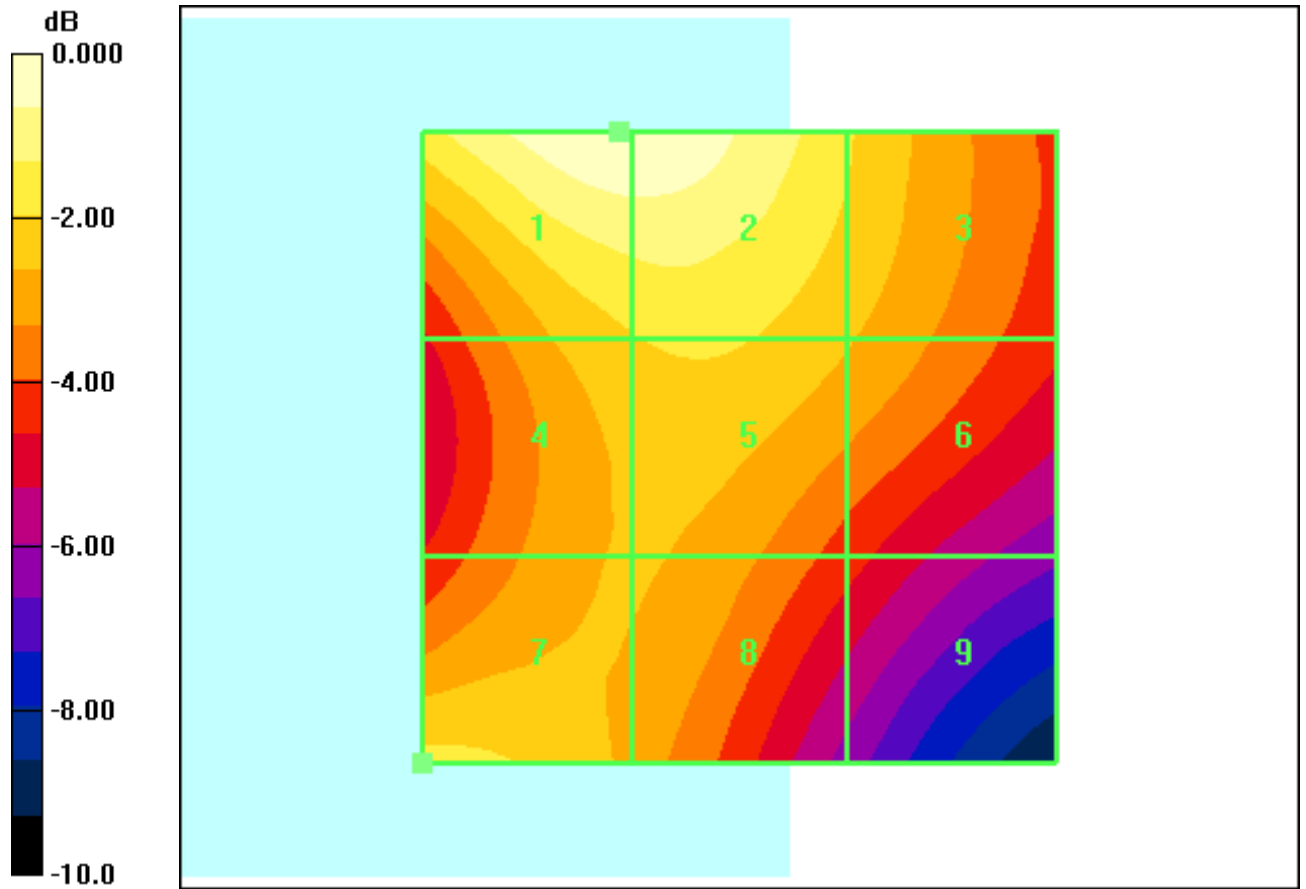
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

Total = 0.225 A/m

H Category: M3

Location: 9.5, -25, 368.7 mm



0 dB = 0.225A/m



Date/Time: 10.01.2012 12:07:10

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC H Device**

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8

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

Phantom section: H Device Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - H3DV6 - measurement distance from the probe sensor center to the device = 15 mm 2/Hearing Aid Compatibility Test (101x101x1):**

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

Maximum value of peak Total field = 0.227 A/m

Probe Modulation Factor = 2.48

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 0.084 A/m; Power Drift = -0.014 dB

**Hearing Aid Near-Field Category: M3 (AWF -5 dB)**

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
<b>0.227 M3</b>	<b>0.227 M3</b>	<b>0.191 M3</b>
Grid 4	Grid 5	Grid 6
<b>0.190 M3</b>	<b>0.196 M3</b>	<b>0.182 M3</b>
Grid 7	Grid 8	Grid 9
<b>0.191 M3</b>	<b>0.189 M3</b>	<b>0.157 M3</b>

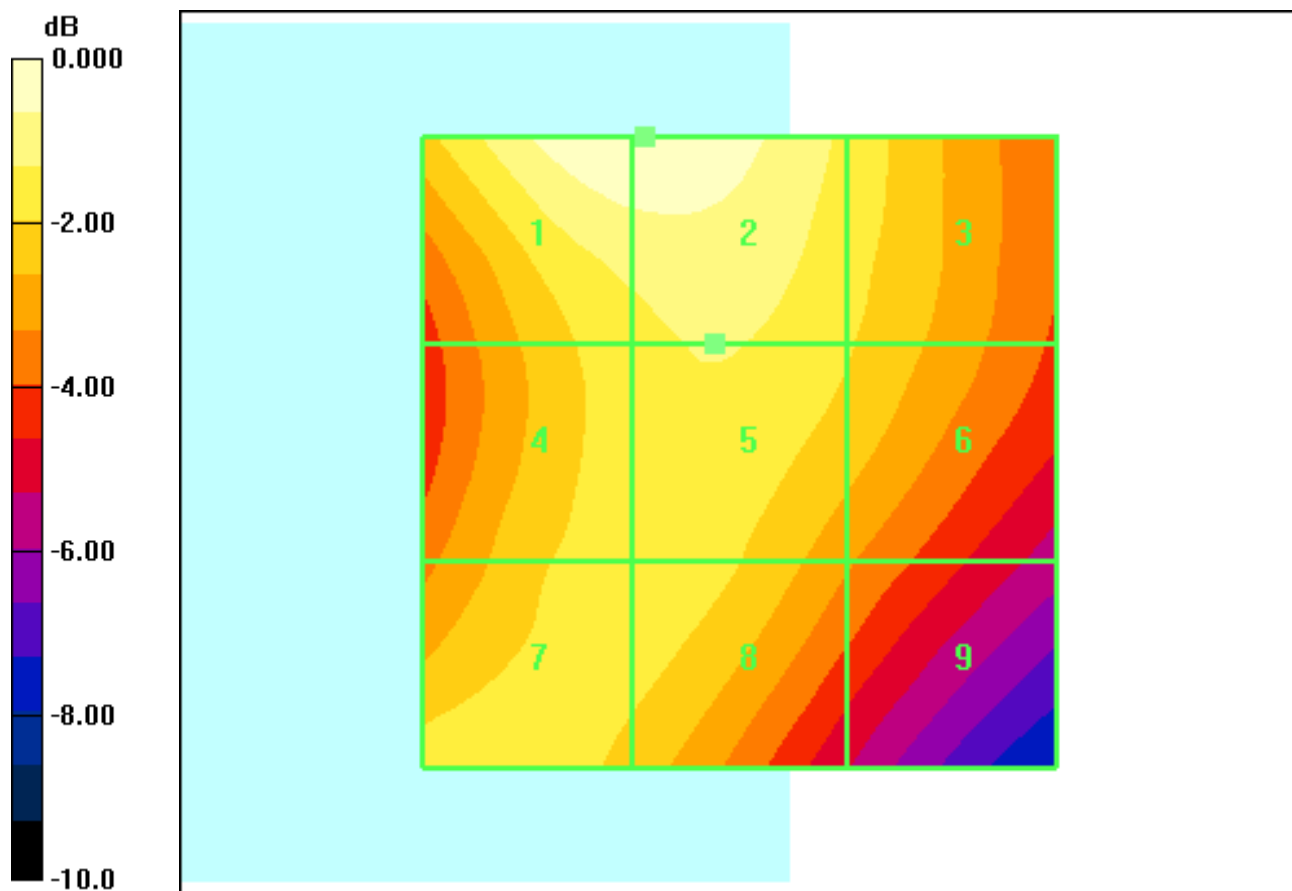
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

Total = 0.227 A/m

H Category: M3

Location: 7.5, -25, 368.7 mm



0 dB = 0.227A/m

Date/Time: 10.01.2012 12:18:43

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC H Device**

Communication System: PCS 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8

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

Phantom section: H Device Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - H3DV6 - measurement distance from the probe sensor center to the device = 15 mm 3/Hearing Aid Compatibility Test (101x101x1):**

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

Maximum value of peak Total field = 0.195 A/m

Probe Modulation Factor = 2.48

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 0.086 A/m; Power Drift = 0.000 dB

**Hearing Aid Near-Field Category: M3 (AWF -5 dB)**

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
<b>0.193 M3</b>	<b>0.195 M3</b>	<b>0.179 M3</b>
Grid 4	Grid 5	Grid 6
<b>0.184 M3</b>	<b>0.188 M3</b>	<b>0.179 M3</b>
Grid 7	Grid 8	Grid 9
<b>0.183 M3</b>	<b>0.186 M3</b>	<b>0.161 M3</b>

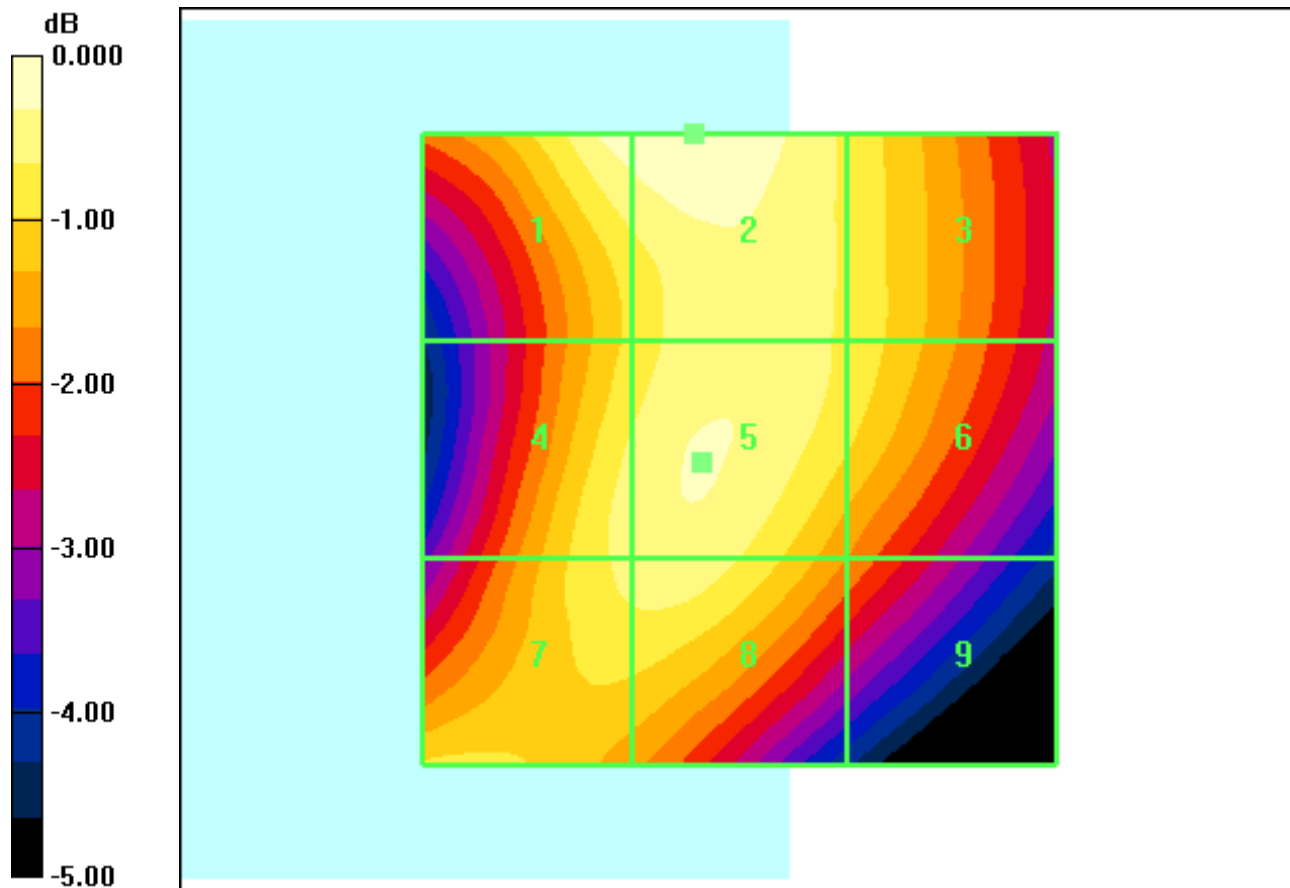
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

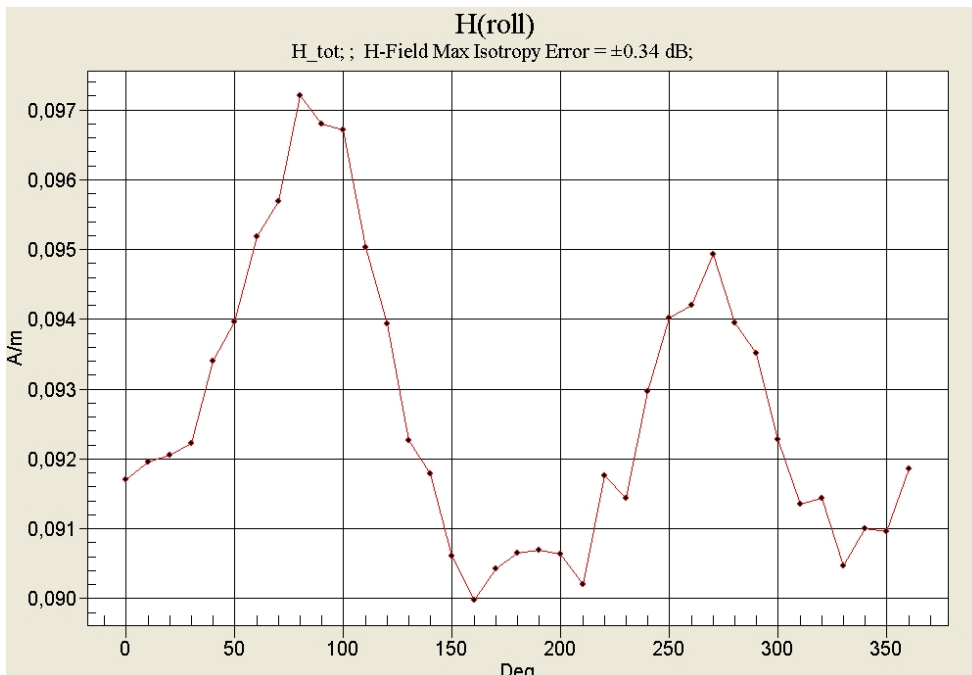
Total = 0.195 A/m

H Category: M3

Location: 3.5, -25, 368.7 mm



0 dB = 0.195A/m



$(0.0972 - 0.0917) / 0.0917 = 5.66 \%$

Worst case calculation of result above:  $0.227 \times 1.0566 = 0.240 \text{ A/m}$ .

**Annex B.3: UMTS WCDMA FDD V 853MHz**

Date/Time: 09.01.2012 16:44:13

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC E Device**

Communication System: WCDMA FDD V; Frequency: 826.4 MHz; Duty Cycle: 1:1

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

Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - ER3D - 2007: 15 mm from Probe Center to the Device/Hearing Aid**

**Compatibility Test (101x101x1):** Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 65.6 V/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 81.9 V/m; Power Drift = 0.060 dB

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

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
<b>56.3 M4</b>	<b>61.7 M4</b>	<b>60.2 M4</b>
Grid 4	Grid 5	Grid 6
<b>61.5 M4</b>	<b>64.3 M4</b>	<b>60.8 M4</b>
Grid 7	Grid 8	Grid 9
<b>64.0 M4</b>	<b>65.6 M4</b>	<b>60.8 M4</b>

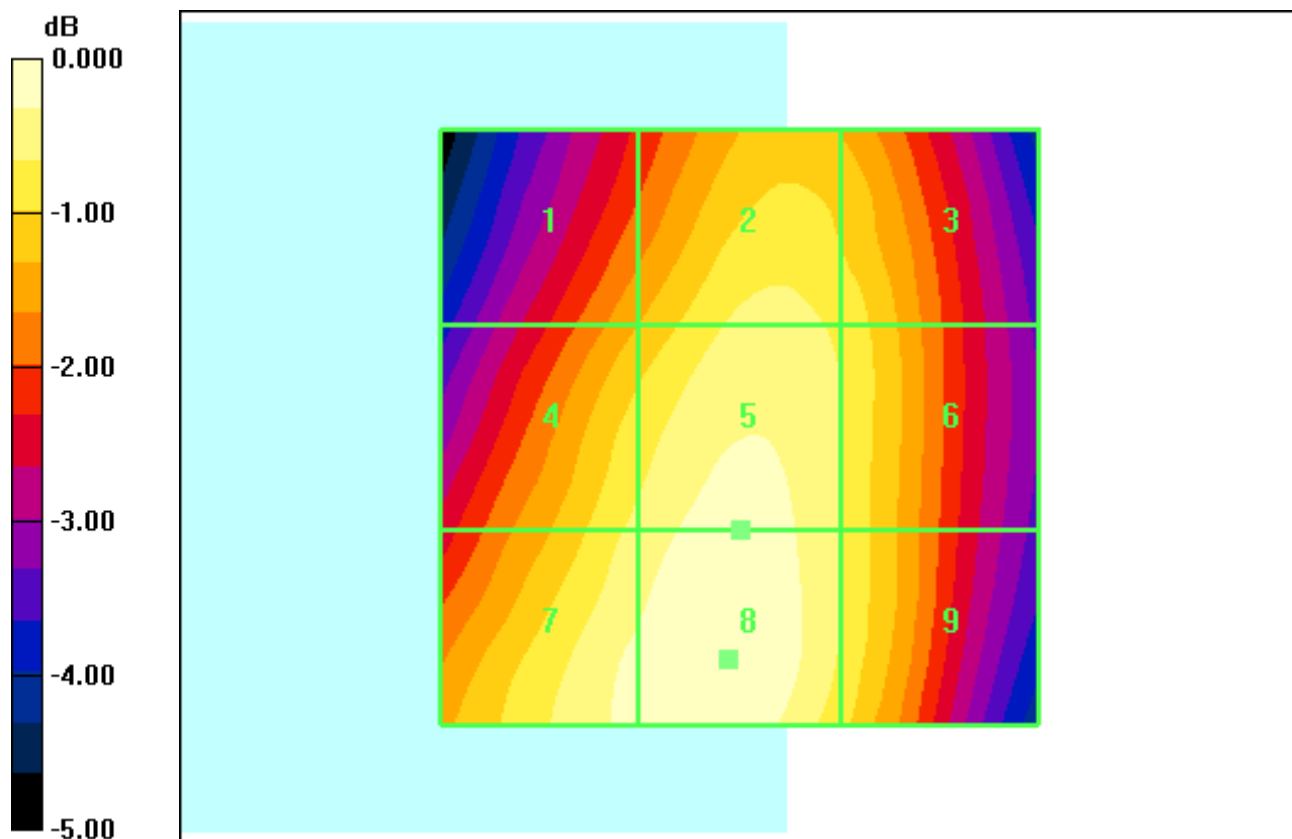
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5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

**Cursor:**

Total = 65.6 V/m

E Category: M4

Location: 1, 19.5, 369.9 mm



0 dB = 65.6V/m

Date/Time: 09.01.2012 16:50:01

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC E Device**

Communication System: WCDMA FDD V; Frequency: 836.4 MHz; Duty Cycle: 1:1

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

Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - ER3D - 2007: 15 mm from Probe Center to the Device 2/Hearing**

**Aid Compatibility Test (101x101x1):** Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 72.0 V/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 89.6 V/m; Power Drift = 0.031 dB

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

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
<b>59.9 M4</b>	<b>65.3 M4</b>	<b>63.2 M4</b>
Grid 4	Grid 5	Grid 6
<b>67.3 M4</b>	<b>70.1 M4</b>	<b>66.5 M4</b>
Grid 7	Grid 8	Grid 9
<b>71.4 M4</b>	<b>72.0 M4</b>	<b>67.5 M4</b>

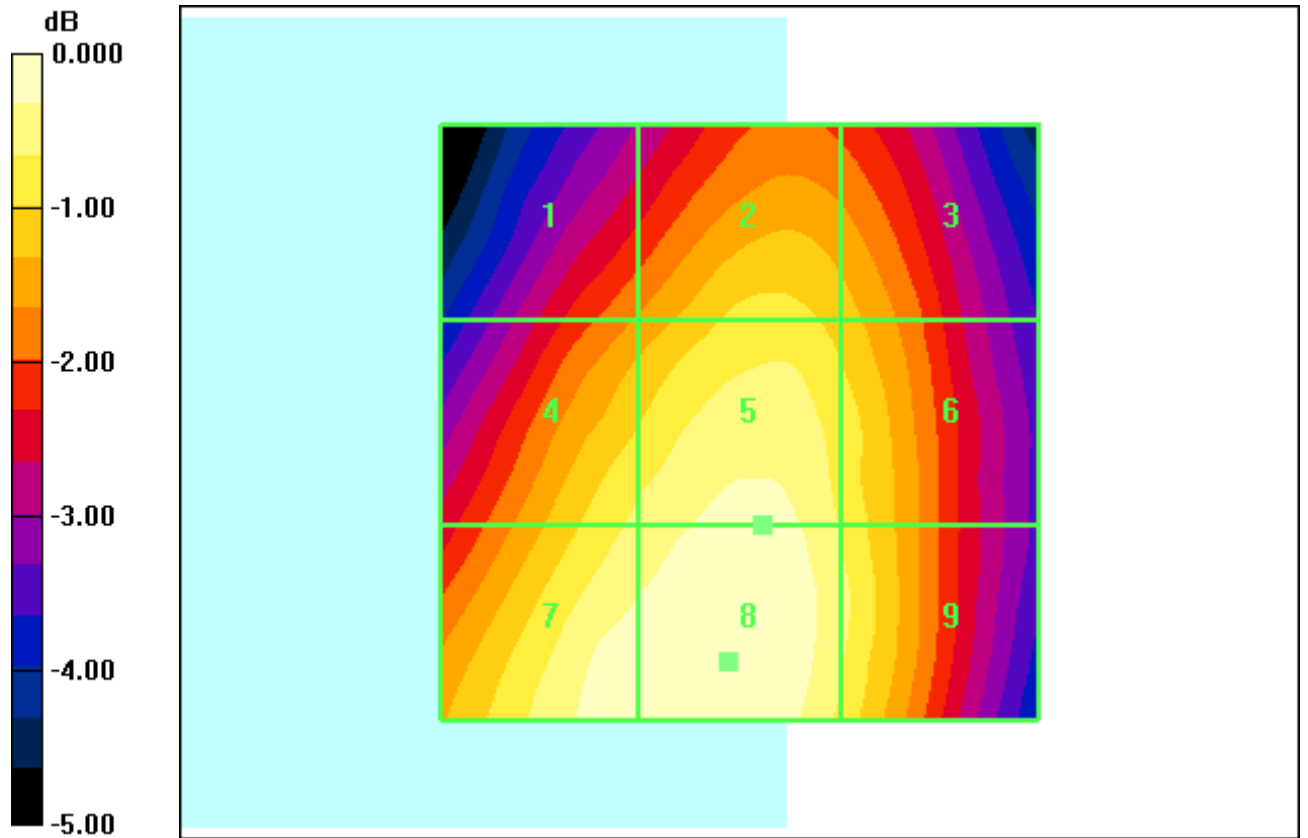
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5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

**Cursor:**

Total = 72.0 V/m

E Category: M4

Location: 1, 20, 369.9 mm



0 dB = 72.0V/m



Date/Time: 09.01.2012 16:54:56

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC E Device**

Communication System: WCDMA FDD V; Frequency: 846.6 MHz; Duty Cycle: 1:1

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

Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - ER3D - 2007: 15 mm from Probe Center to the Device 3/Hearing**

**Aid Compatibility Test (101x101x1):** Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 76.4 V/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 93.0 V/m; Power Drift = 0.031 dB

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

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
<b>62.5 M4</b>	<b>65.3 M4</b>	<b>61.5 M4</b>
Grid 4	Grid 5	Grid 6
<b>71.2 M4</b>	<b>73.9 M4</b>	<b>68.6 M4</b>
Grid 7	Grid 8	Grid 9
<b>75.4 M4</b>	<b>76.4 M4</b>	<b>70.1 M4</b>

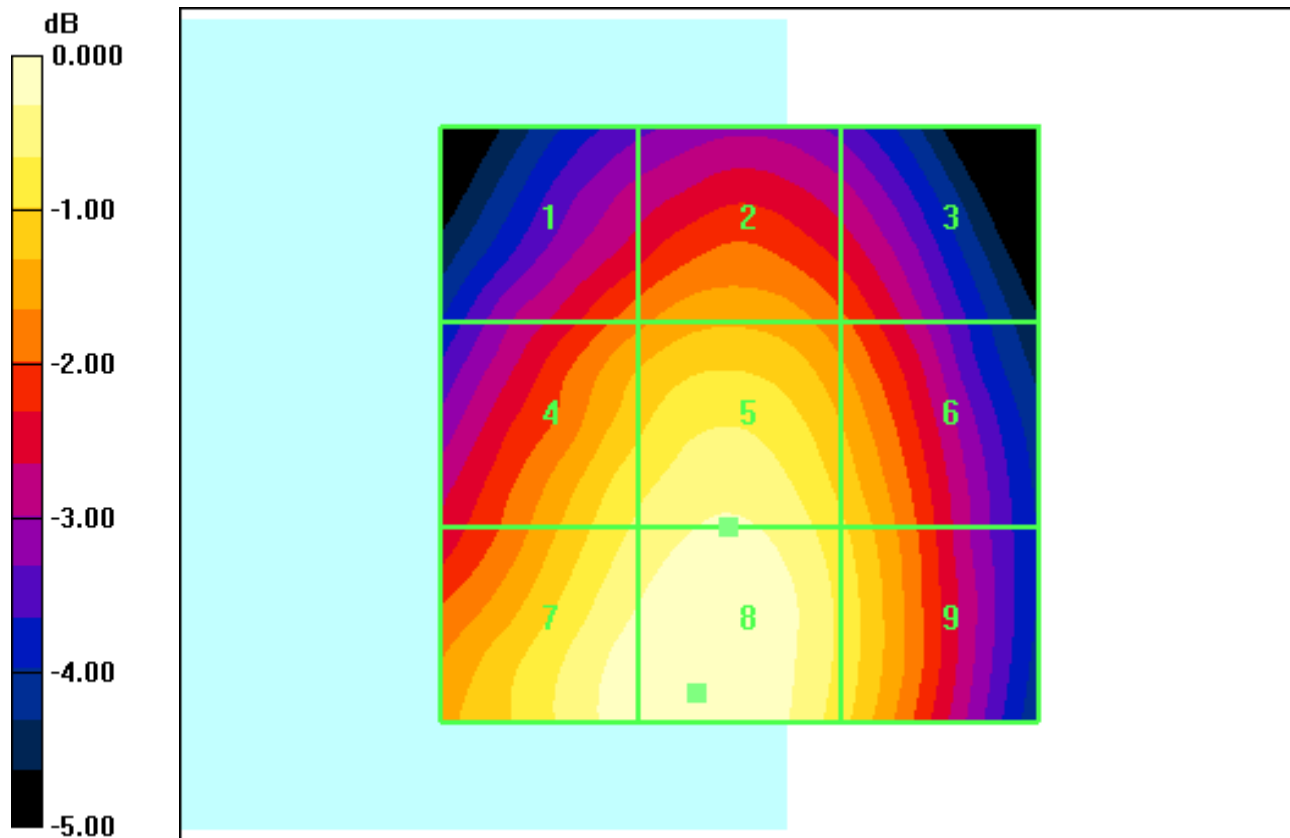
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5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

**Cursor:**

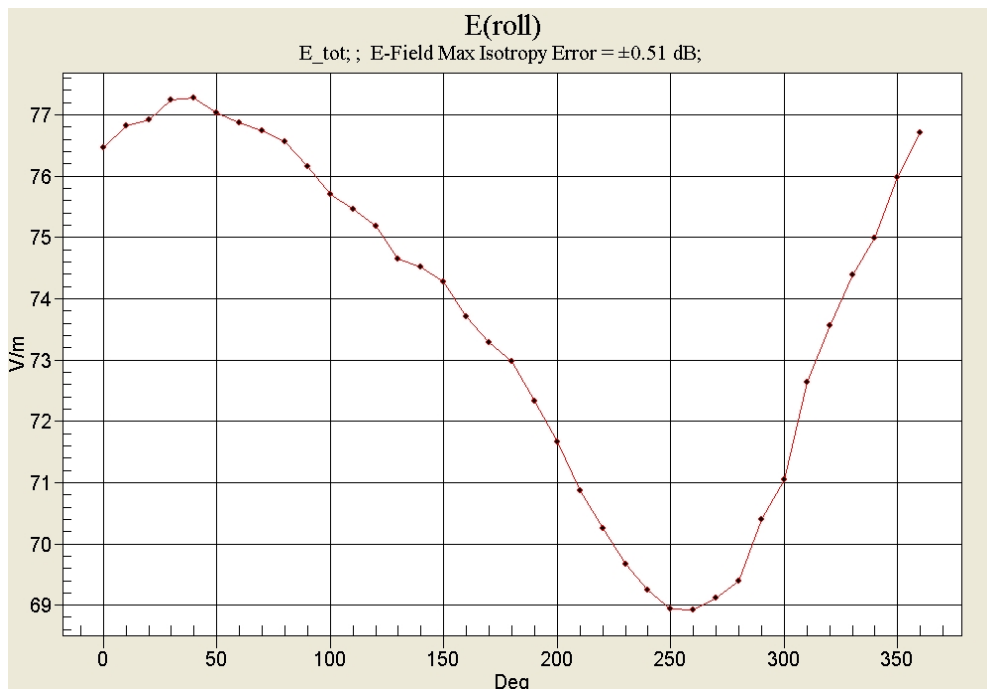
Total = 76.4 V/m

E Category: M4

Location: 3.5, 22.5, 369.9 mm



0 dB = 76.4V/m



$(77.3-76.5) / 77.3 = 1 \%$

Worst case calculation of result above:  $76.4 \times 1.01 = 77.19 \text{ V/m}$ .

Date/Time: 10.01.2012 13:43:30

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC H Device**

Communication System: WCDMA FDD V; Frequency: 826.4 MHz; Duty Cycle: 1:1

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

Phantom section: H Device Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - H3DV6 - measurement distance from the probe sensor center to the device = 15 mm/Hearing Aid Compatibility Test (101x101x1):** Measurement

grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.139 A/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 0.084 A/m; Power Drift = 0.069 dB

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

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
<b>0.137 M4</b>	<b>0.106 M4</b>	<b>0.069 M4</b>
Grid 4	Grid 5	Grid 6
<b>0.130 M4</b>	<b>0.101 M4</b>	<b>0.064 M4</b>
Grid 7	Grid 8	Grid 9
<b>0.139 M4</b>	<b>0.097 M4</b>	<b>0.058 M4</b>

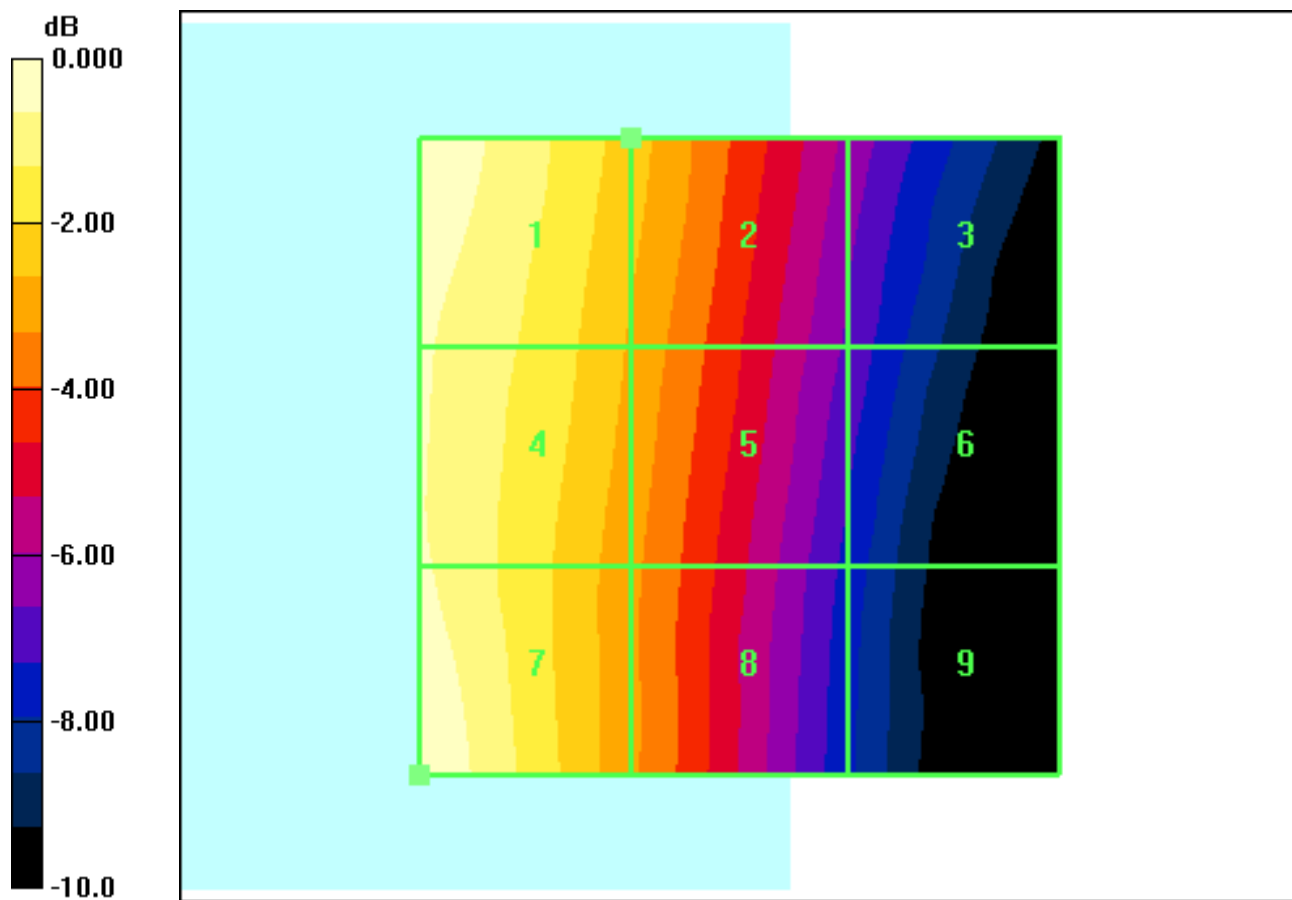
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5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

**Cursor:**

Total = 0.139 A/m

H Category: M4

Location: 25, 25, 368.7 mm



0 dB = 0.139A/m

Date/Time: 10.01.2012 13:28:57

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC H Device**

Communication System: WCDMA FDD V; Frequency: 836.4 MHz; Duty Cycle: 1:1

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

Phantom section: H Device Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - H3DV6 - measurement distance from the probe sensor center to the device = 15 mm 2/Hearing Aid Compatibility Test (101x101x1):**

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

Maximum value of peak Total field = 0.148 A/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 0.097 A/m; Power Drift = 0.013 dB

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

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
<b>0.138 M4</b>	<b>0.112 M4</b>	<b>0.072 M4</b>
Grid 4	Grid 5	Grid 6
<b>0.140 M4</b>	<b>0.112 M4</b>	<b>0.070 M4</b>
Grid 7	Grid 8	Grid 9
<b>0.148 M4</b>	<b>0.106 M4</b>	<b>0.064 M4</b>

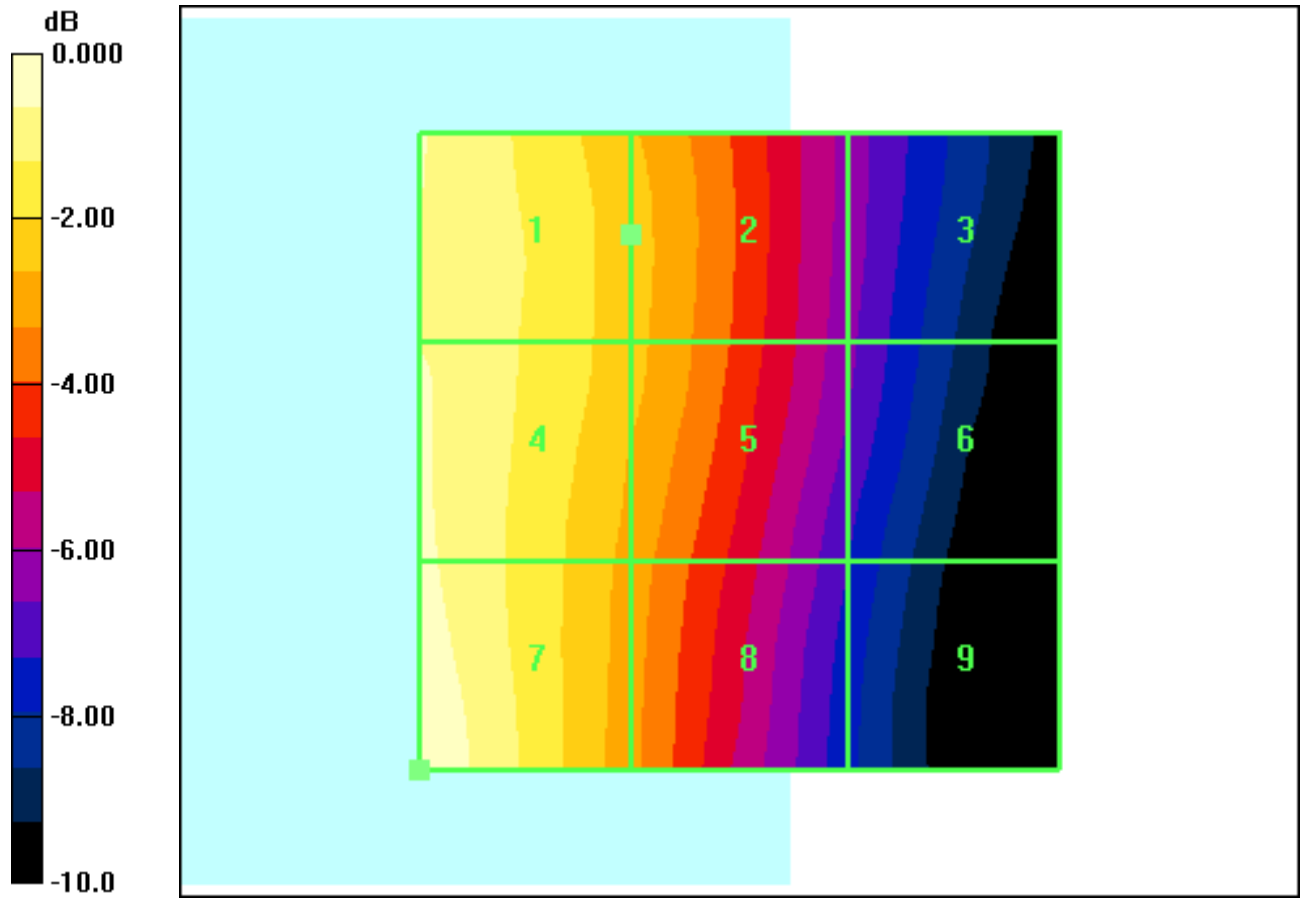
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5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

**Cursor:**

Total = 0.148 A/m

H Category: M4

Location: 25, 25, 368.7 mm



0 dB = 0.148A/m

Date/Time: 10.01.2012 13:18:11

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC H Device**

Communication System: WCDMA FDD V; Frequency: 846.6 MHz; Duty Cycle: 1:1

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

Phantom section: H Device Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - H3DV6 - measurement distance from the probe sensor center to the device = 15 mm 3/Hearing Aid Compatibility Test (101x101x1):**

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

Maximum value of peak Total field = 0.155 A/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 0.104 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
<b>0.140 M4</b>	<b>0.117 M4</b>	<b>0.076 M4</b>
Grid 4	Grid 5	Grid 6
<b>0.145 M4</b>	<b>0.116 M4</b>	<b>0.075 M4</b>
Grid 7	Grid 8	Grid 9
<b>0.155 M4</b>	<b>0.110 M4</b>	<b>0.067 M4</b>

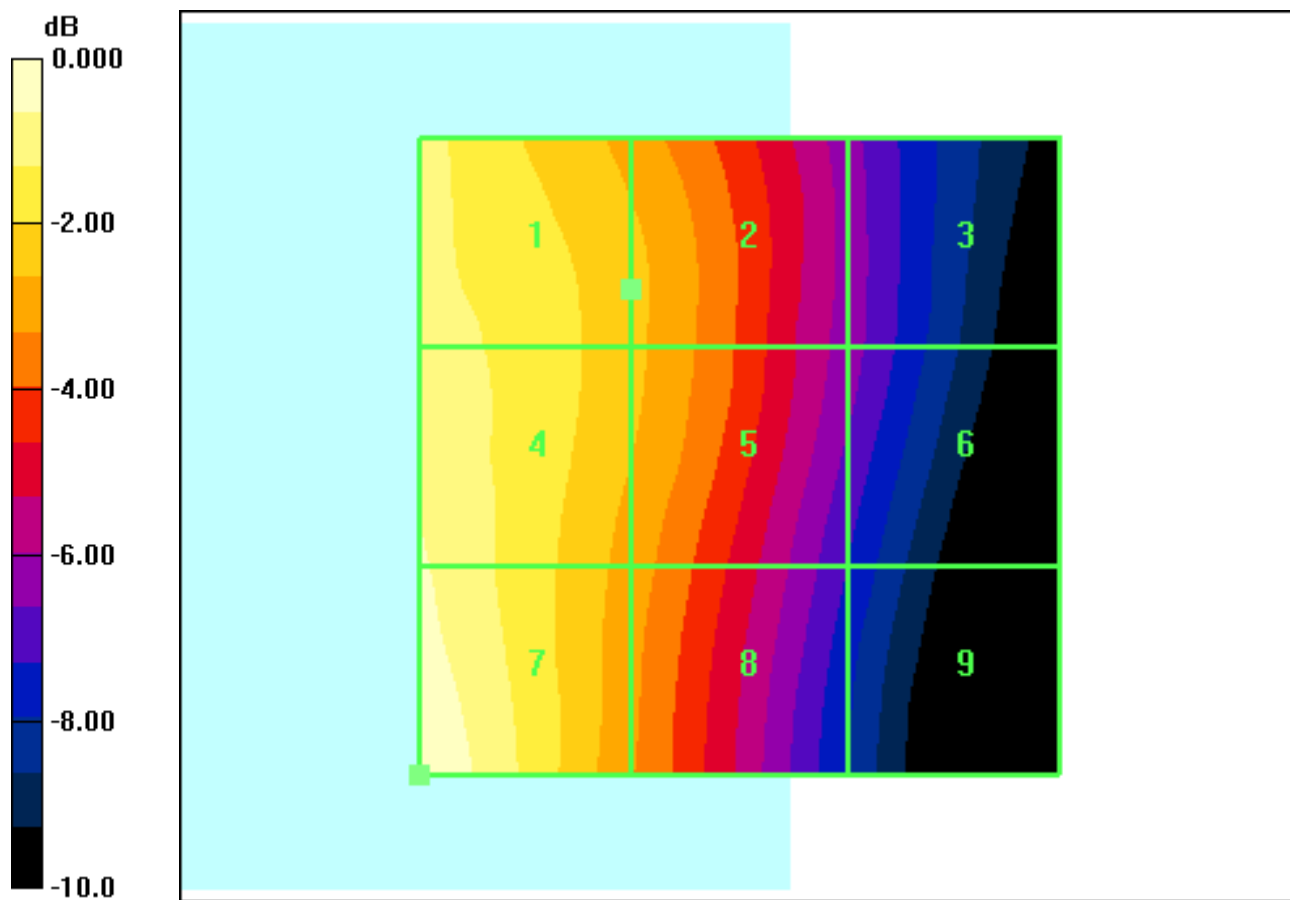
Category	AWF (dB)	Limits for E-Field Emissions (V/m) < 960MHz	Limits for H-Field Emissions (A/m) < 960 MHz
M1	0	631 - 1122	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631	1.07 - 1.91
	-5	266.1 - 473.2	0.8 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M4	0	<199.5	<0.6
	-5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

**Cursor:**

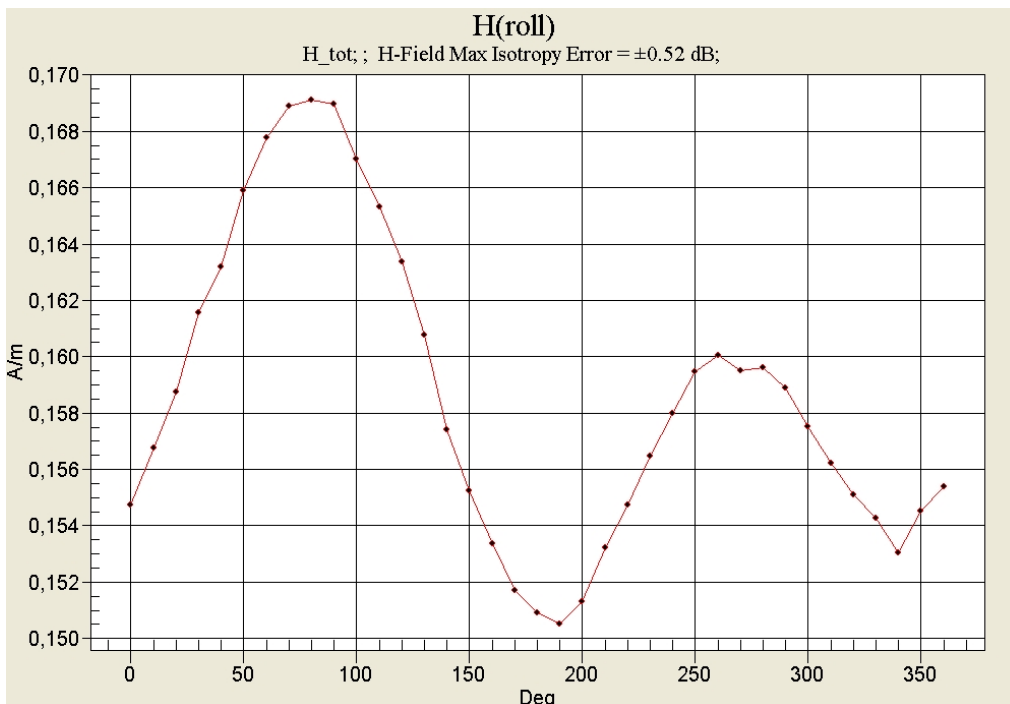
Total = 0.155 A/m

H Category: M4

Location: 25, 25, 368.7 mm



0 dB = 0.155A/m



$(0.169 - 0.155) / 0.169 = 8.3 \%$

Worst case calculation of result above:  $0.155 \times 1.083 = 0.168 \text{ A/m}$ .



**Annex B.4: UMTS WCDMA FDD II 1880MHz**

Date/Time: 09.01.2012 16:27:19

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC E Device**

Communication System: WCDMA FDD II; Frequency: 1852.5 MHz; Duty Cycle: 1:1

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

Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - ER3D - 2007: 15 mm from Probe Center to the Device/Hearing Aid**

**Compatibility Test (101x101x1):** Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 47.9 V/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 28.5 V/m; Power Drift = -0.032 dB

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

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
<b>47.9 M4</b>	<b>40.0 M4</b>	<b>40.1 M4</b>
Grid 4	Grid 5	Grid 6
<b>30.7 M4</b>	<b>38.4 M4</b>	<b>38.6 M4</b>
Grid 7	Grid 8	Grid 9
<b>39.7 M4</b>	<b>47.8 M4</b>	<b>47.2 M4</b>

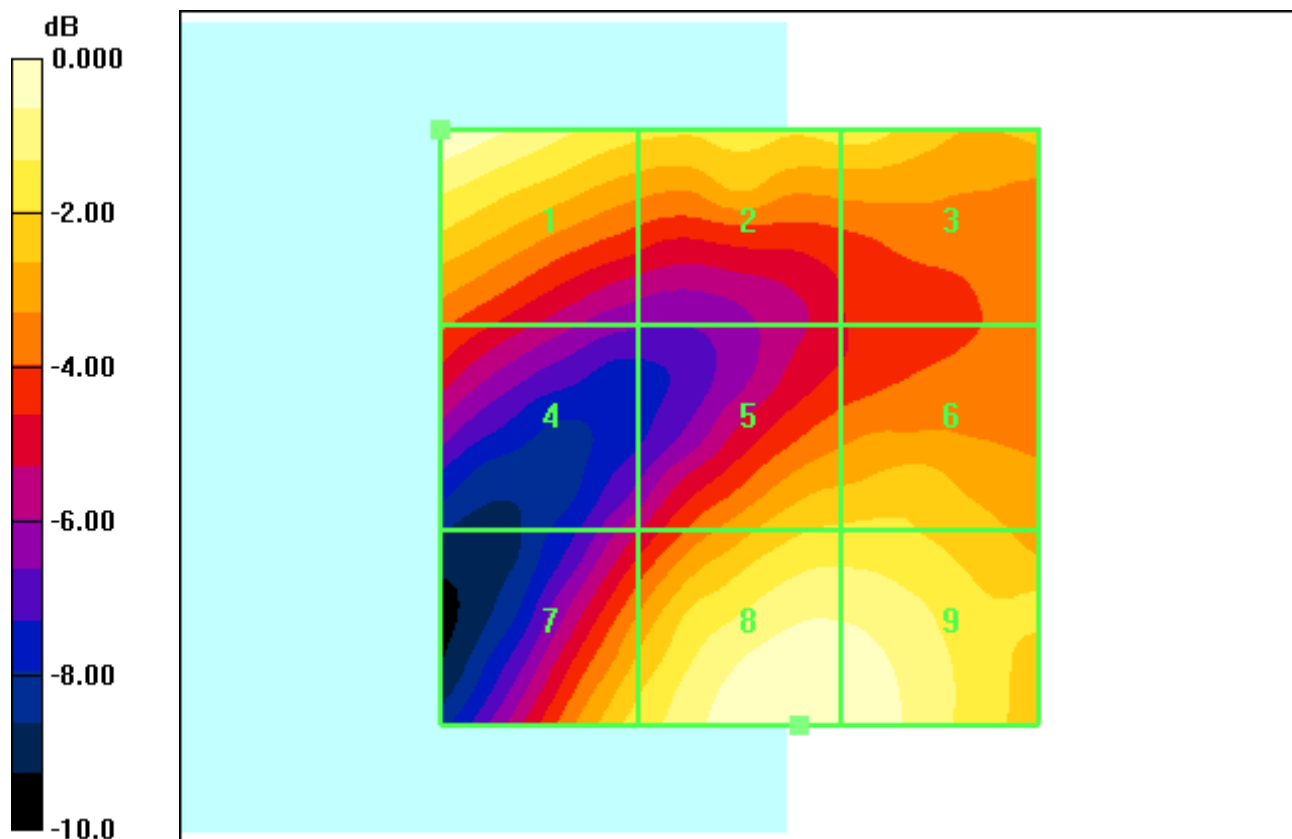
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

Total = 47.9 V/m

E Category: M4

Location: 25, -25, 369.9 mm



0 dB = 47.9V/m

Date/Time: 09.01.2012 16:32:29

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC E Device**

Communication System: WCDMA FDD II; Frequency: 1880 MHz; Duty Cycle: 1:1

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

Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - ER3D - 2007: 15 mm from Probe Center to the Device 2/Hearing**

**Aid Compatibility Test (101x101x1):** Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 50.1 V/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 33.5 V/m; Power Drift = -0.201 dB

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

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
<b>48.3 M4</b>	<b>40.4 M4</b>	<b>37.2 M4</b>
Grid 4	Grid 5	Grid 6
<b>29.8 M4</b>	<b>39.5 M4</b>	<b>39.6 M4</b>
Grid 7	Grid 8	Grid 9
<b>40.7 M4</b>	<b>50.1 M4</b>	<b>50.1 M4</b>

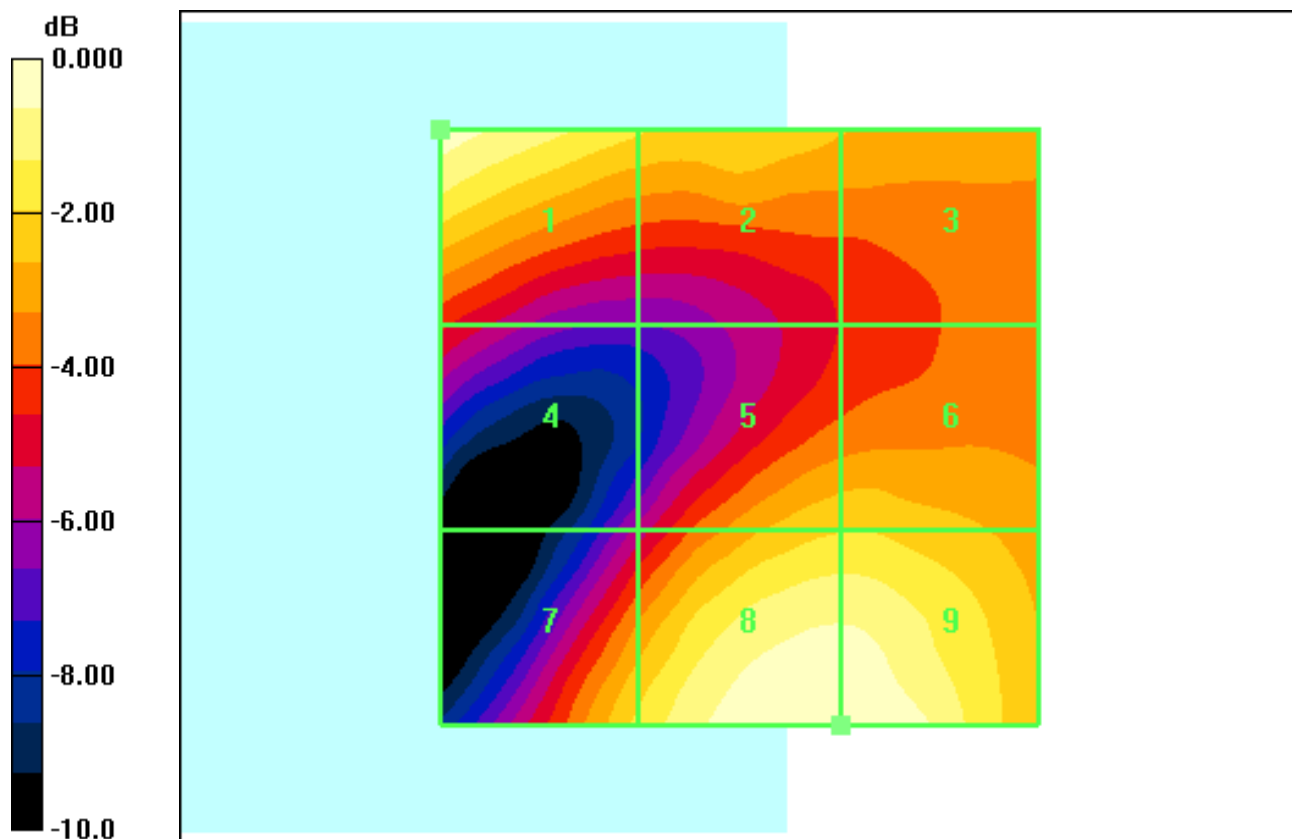
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

Total = 50.1 V/m

E Category: M4

Location: -8.5, 25, 369.9 mm



0 dB = 50.1V/m

Date/Time: 09.01.2012 16:37:17

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC E Device**

Communication System: WCDMA FDD II; Frequency: 1907.6 MHz; Duty Cycle: 1:1

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

Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - ER3D - 2007: 15 mm from Probe Center to the Device 3/Hearing**

**Aid Compatibility Test (101x101x1):** Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 48.7 V/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 35.4 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
<b>41.2 M4</b>	<b>39.5 M4</b>	<b>39.1 M4</b>
Grid 4	Grid 5	Grid 6
<b>25.8 M4</b>	<b>39.0 M4</b>	<b>39.0 M4</b>
Grid 7	Grid 8	Grid 9
<b>39.8 M4</b>	<b>48.7 M4</b>	<b>47.5 M4</b>

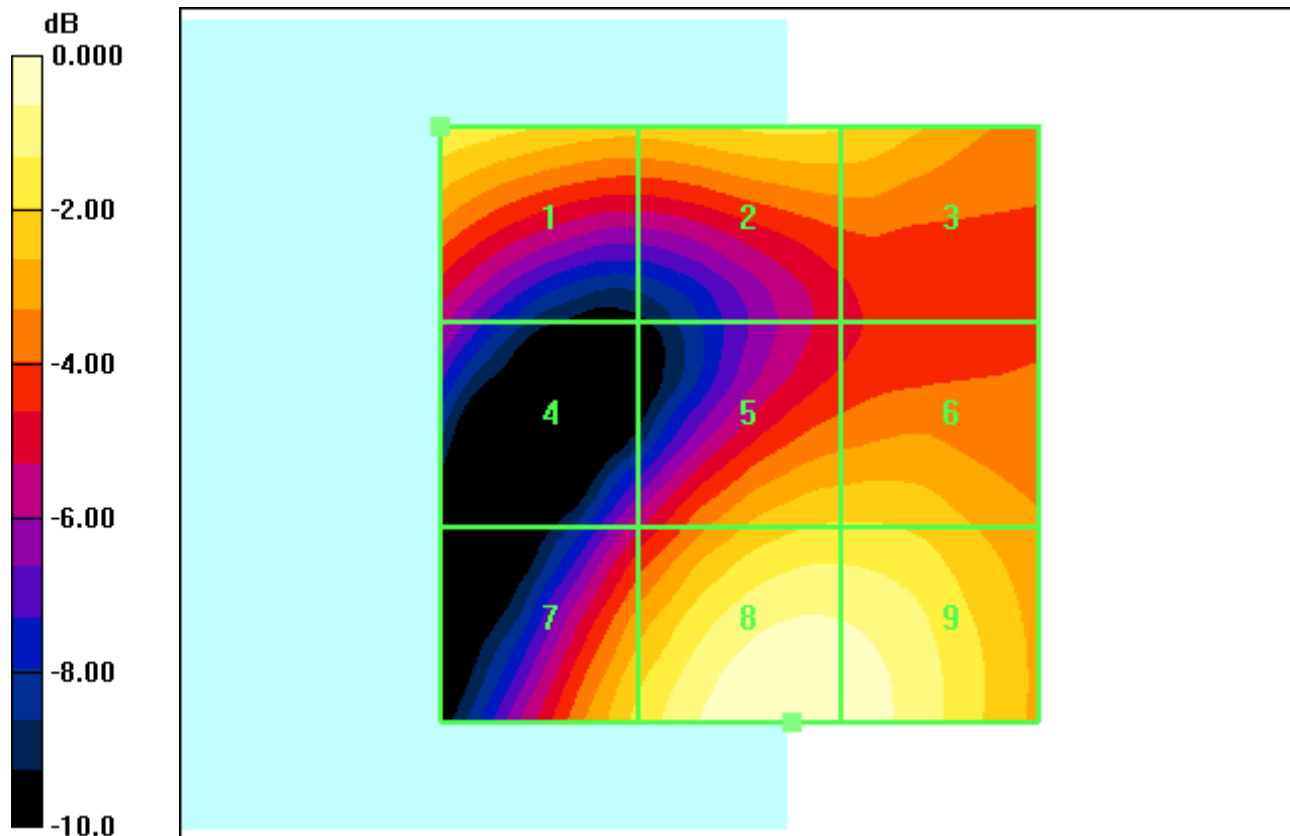
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

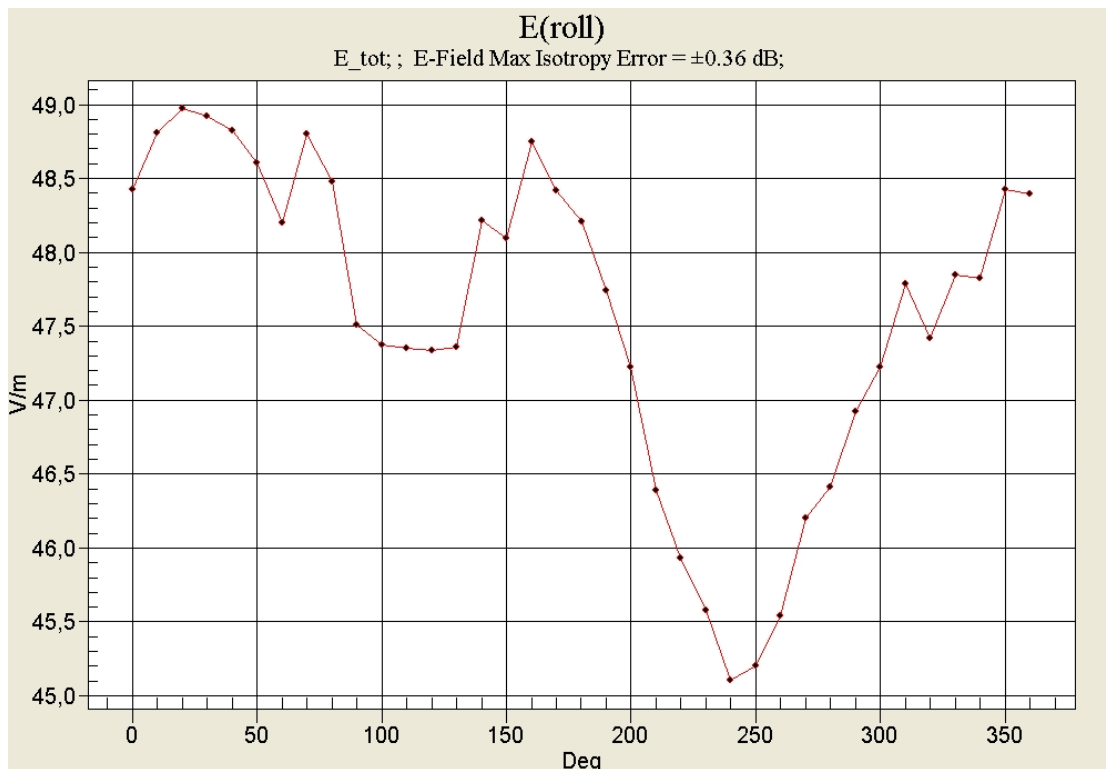
Total = 48.7 V/m

E Category: M4

Location: -4.5, 25, 369.9 mm



0 dB = 48.7V/m



(49-48.4) / 49 = 1.2 %

Worst case calculation of result above:  $50.1 \times 1.012 = 50.7 \text{ V/m}$ .

Date/Time: 10.01.2012 12:48:49

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC H Device**

Communication System: WCDMA FDD II; Frequency: 1852.5 MHz; Duty Cycle: 1:1

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

Phantom section: H Device Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - H3DV6 - measurement distance from the probe sensor center to the device = 15 mm/Hearing Aid Compatibility Test (101x101x1):** Measurement

grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.150 A/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 0.137 A/m; Power Drift = 0.152 dB

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

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
<b>0.150 M4</b>	<b>0.150 M4</b>	<b>0.125 M4</b>
Grid 4	Grid 5	Grid 6
<b>0.126 M4</b>	<b>0.128 M4</b>	<b>0.120 M4</b>
Grid 7	Grid 8	Grid 9
<b>0.129 M4</b>	<b>0.122 M4</b>	<b>0.102 M4</b>

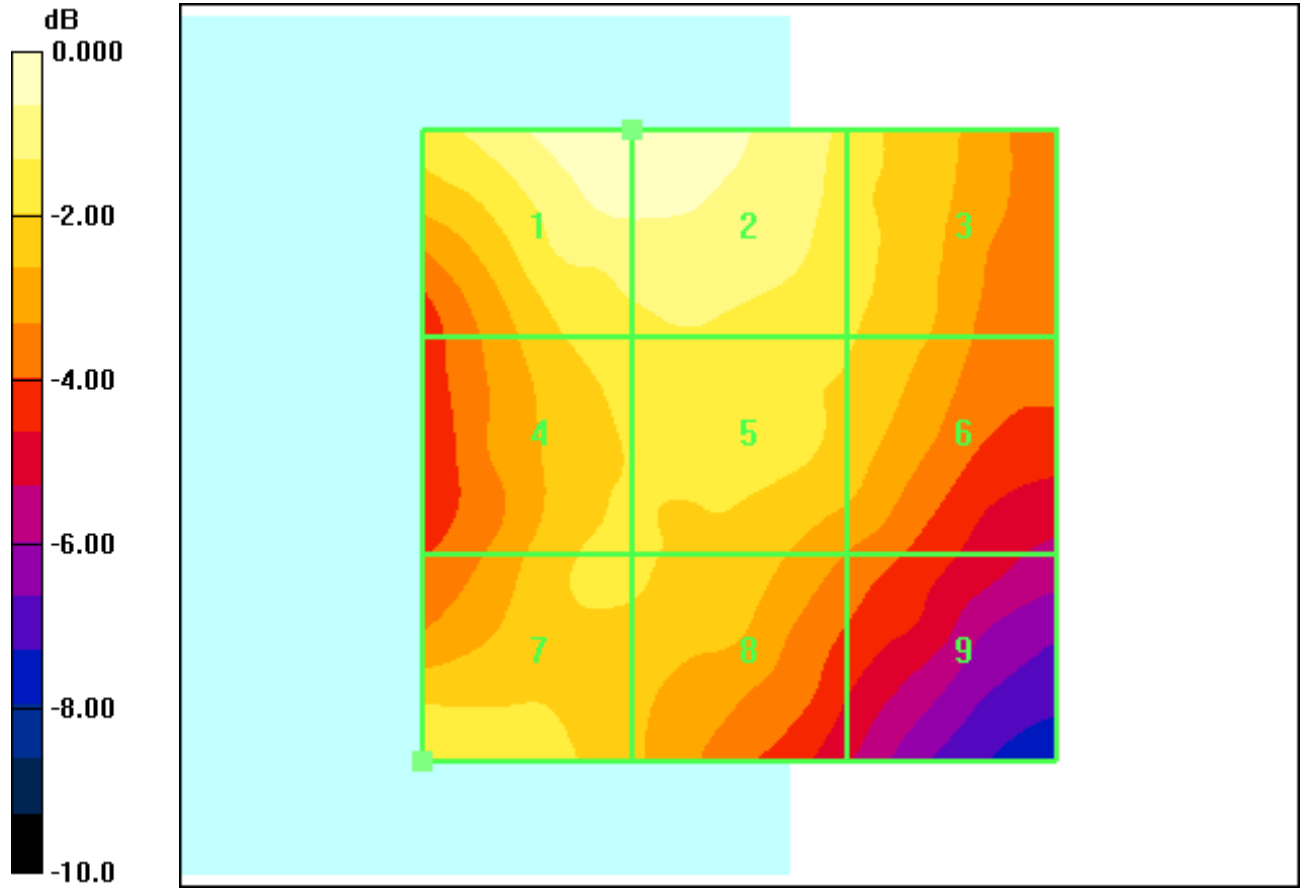
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

Total = 0.150 A/m

H Category: M4

Location: 8.5, -25, 368.7 mm



0 dB = 0.150A/m



Date/Time: 10.01.2012 12:38:41

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC H Device**

Communication System: WCDMA FDD II; Frequency: 1880 MHz; Duty Cycle: 1:1

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

Phantom section: H Device Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - H3DV6 - measurement distance from the probe sensor center to the device = 15 mm 2/Hearing Aid Compatibility Test (101x101x1):**

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

Maximum value of peak Total field = 0.158 A/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 0.160 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
<b>0.152 M4</b>	<b>0.158 M4</b>	<b>0.140 M4</b>
Grid 4	Grid 5	Grid 6
<b>0.140 M4</b>	<b>0.148 M4</b>	<b>0.137 M4</b>
Grid 7	Grid 8	Grid 9
<b>0.135 M4</b>	<b>0.137 M4</b>	<b>0.119 M4</b>

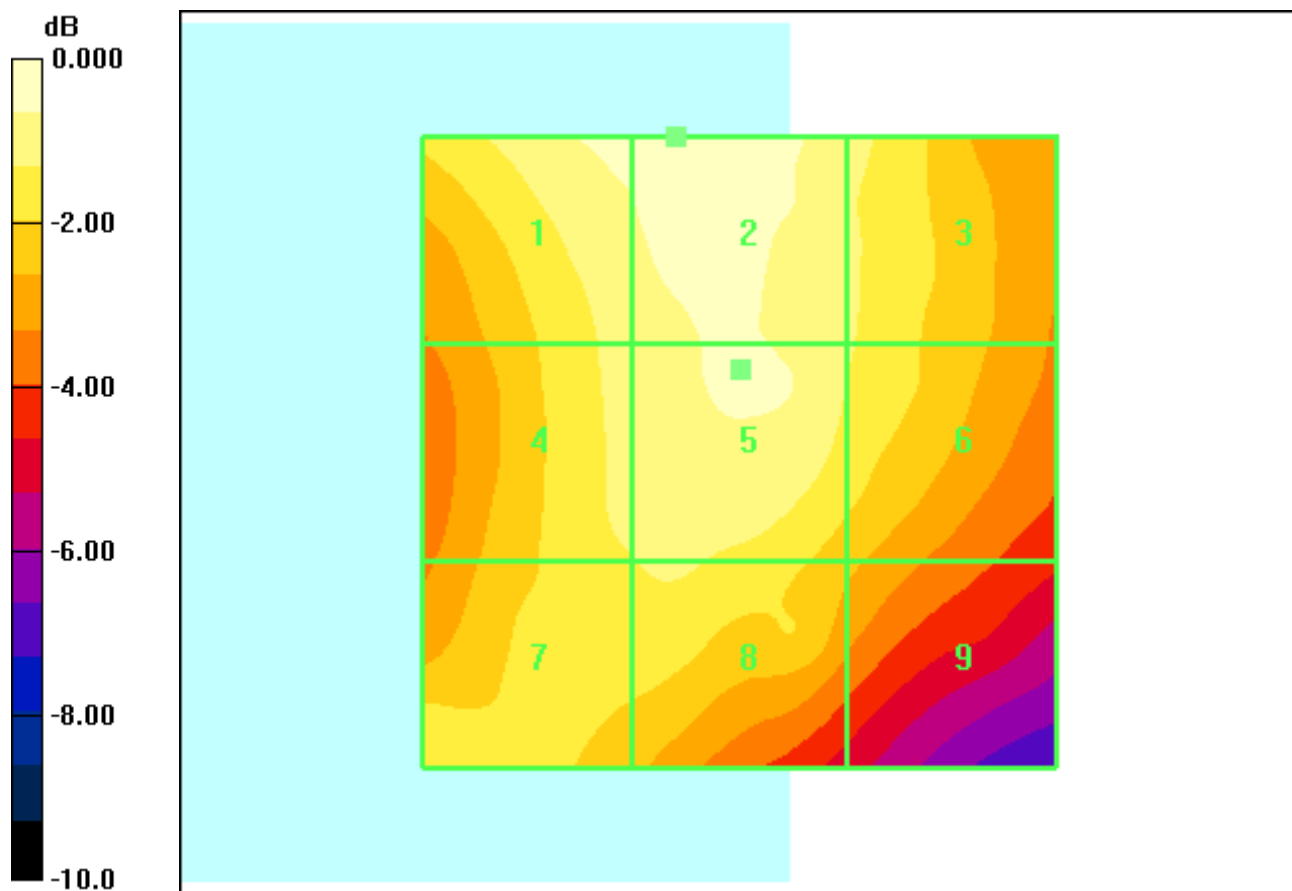
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

Total = 0.158 A/m

H Category: M4

Location: 5, -25, 368.7 mm



0 dB = 0.158A/m

Date/Time: 10.01.2012 12:33:15

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC H Device**

Communication System: WCDMA FDD II; Frequency: 1907.6 MHz; Duty Cycle: 1:1

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

Phantom section: H Device Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - H3DV6 - measurement distance from the probe sensor center to the device = 15 mm 3/Hearing Aid Compatibility Test (101x101x1):**

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

Maximum value of peak Total field = 0.151 A/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 0.168 A/m; Power Drift = -0.522 dB

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

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
<b>0.150 M4</b>	<b>0.151 M4</b>	<b>0.137 M4</b>
Grid 4	Grid 5	Grid 6
<b>0.142 M4</b>	<b>0.147 M4</b>	<b>0.135 M4</b>
Grid 7	Grid 8	Grid 9
<b>0.130 M4</b>	<b>0.131 M4</b>	<b>0.113 M4</b>

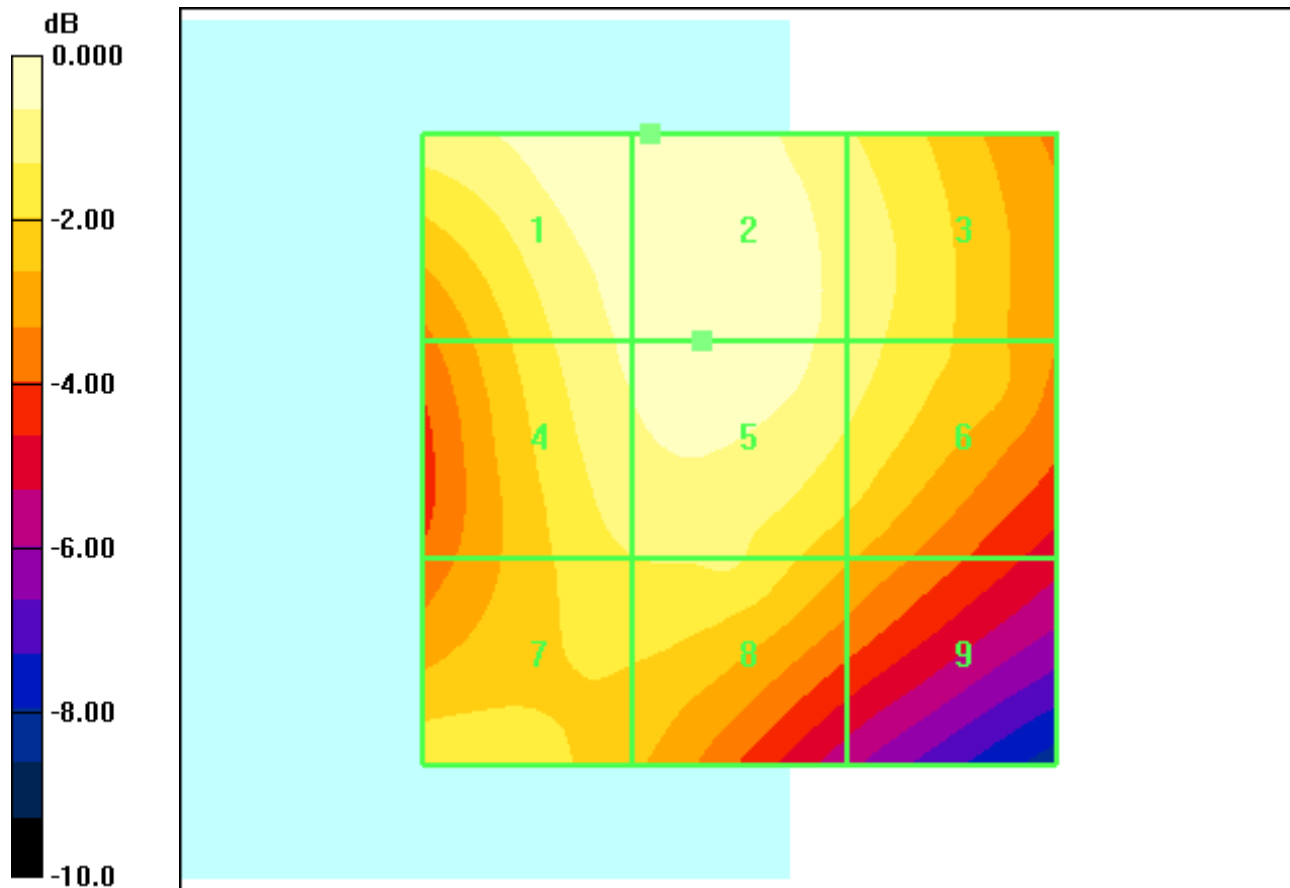
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

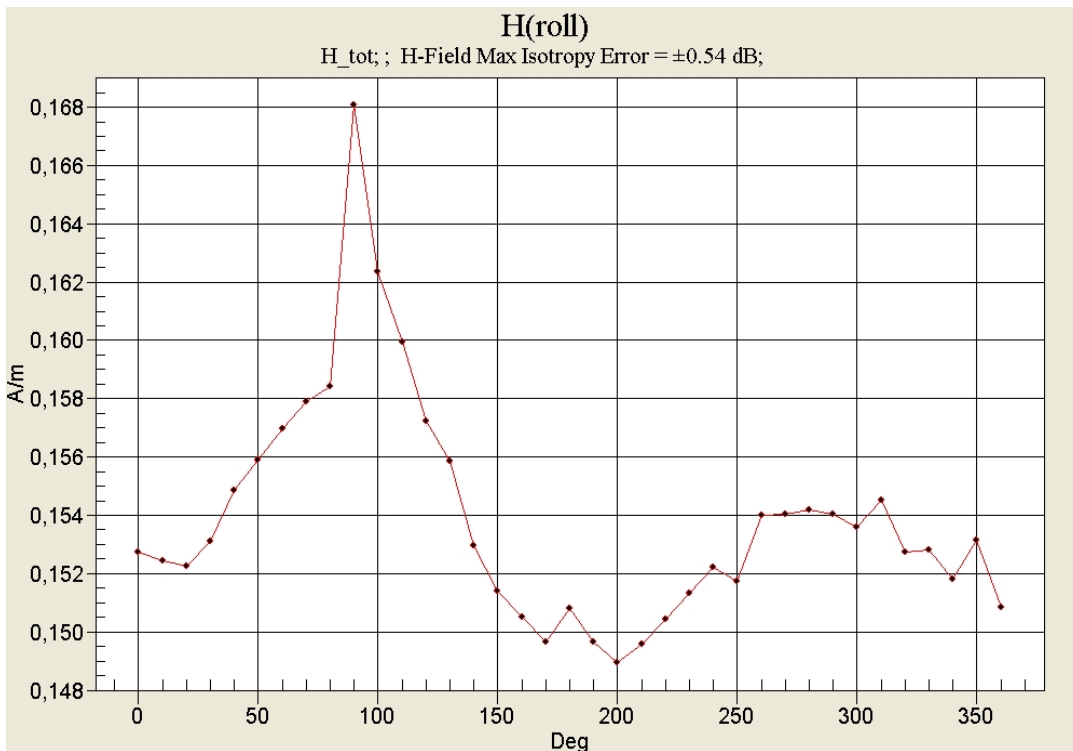
Total = 0.151 A/m

H Category: M4

Location: 7, -25, 368.7 mm



0 dB = 0.151A/m



$(0.168 - 0.153) / 0.168 = 8.9\%$

Worst case calculation of result above:  $0.158 \times 1.089 = 0.172 \text{ A/m}$ .

**Annex B.5: UMTS WCDMA FDD IV 1700MHz**

Date/Time: 10.01.2012 09:11:18

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC E Device**

Communication System: WCDMA FDD IV; Frequency: 1712.4 MHz; Duty Cycle: 1:1

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

Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011

- Sensor-Surface: (Fix Surface)

- Electronics: DAE3 Sn413; Calibrated: 13.01.2011

- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022

- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - ER3D - 2007: 15 mm from Probe Center to the Device/Hearing Aid**

**Compatibility Test (101x101x1):** Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 53.8 V/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 55.9 V/m; Power Drift = -0.019 dB

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

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
<b>40.9 M4</b>	<b>43.8 M4</b>	<b>41.2 M4</b>
Grid 4	<b>Grid 5</b>	Grid 6
<b>37.0 M4</b>	<b>48.8 M4</b>	<b>48.4 M4</b>
Grid 7	Grid 8	Grid 9
<b>46.7 M4</b>	<b>53.8 M4</b>	<b>52.6 M4</b>

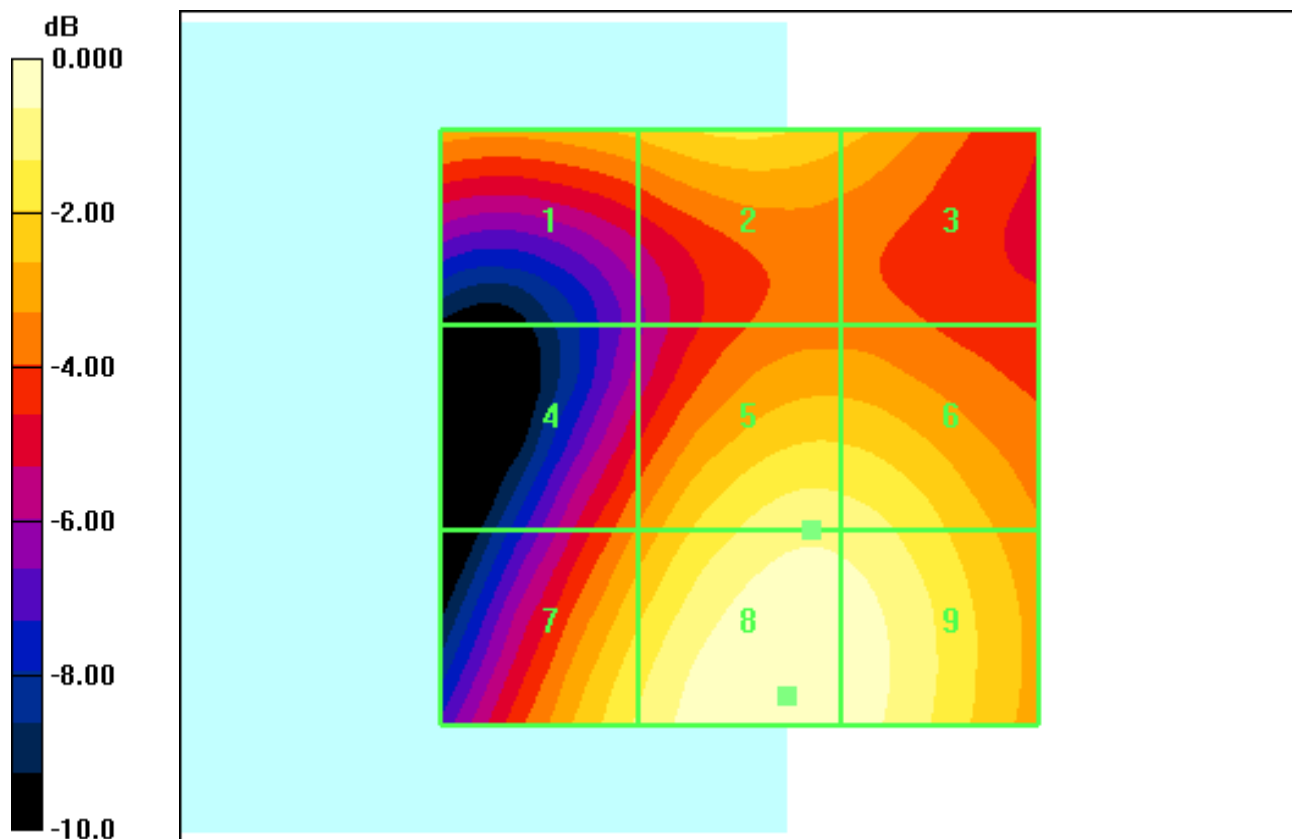
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

Total = 53.8 V/m

E Category: M4

Location: -4, 22.5, 369.9 mm



0 dB = 53.8V/m

Date/Time: 10.01.2012 09:25:59

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC E Device**

Communication System: WCDMA FDD IV; Frequency: 1732.4 MHz; Duty Cycle: 1:1

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

Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - ER3D - 2007: 15 mm from Probe Center to the Device 2/Hearing**

**Aid Compatibility Test (101x101x1):** Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 57.3 V/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 56.5 V/m; Power Drift = 0.007 dB

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

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
<b>43.1 M4</b>	<b>47.6 M4</b>	<b>45.6 M4</b>
Grid 4	Grid 5	Grid 6
<b>38.8 M4</b>	<b>51.6 M4</b>	<b>51.3 M4</b>
Grid 7	Grid 8	Grid 9
<b>48.8 M4</b>	<b>57.3 M4</b>	<b>56.4 M4</b>

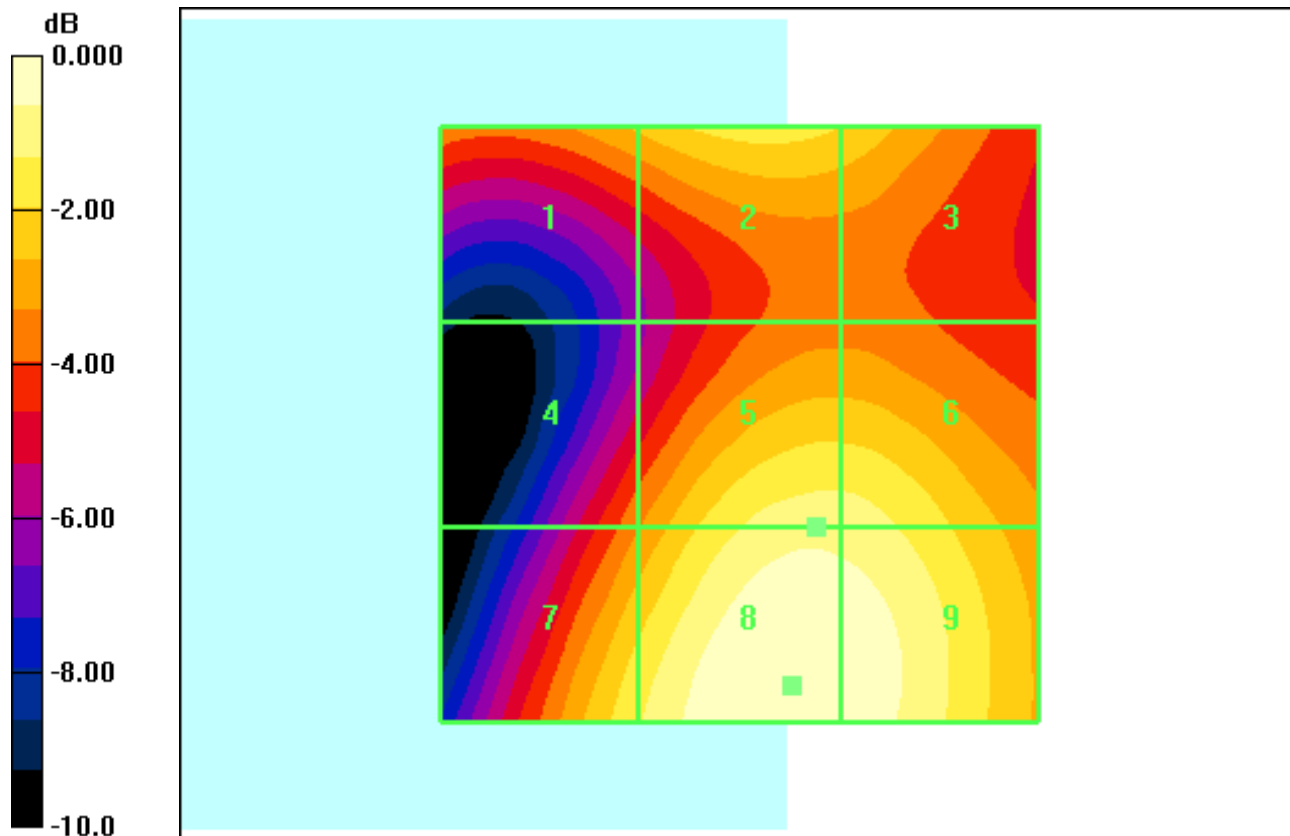
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

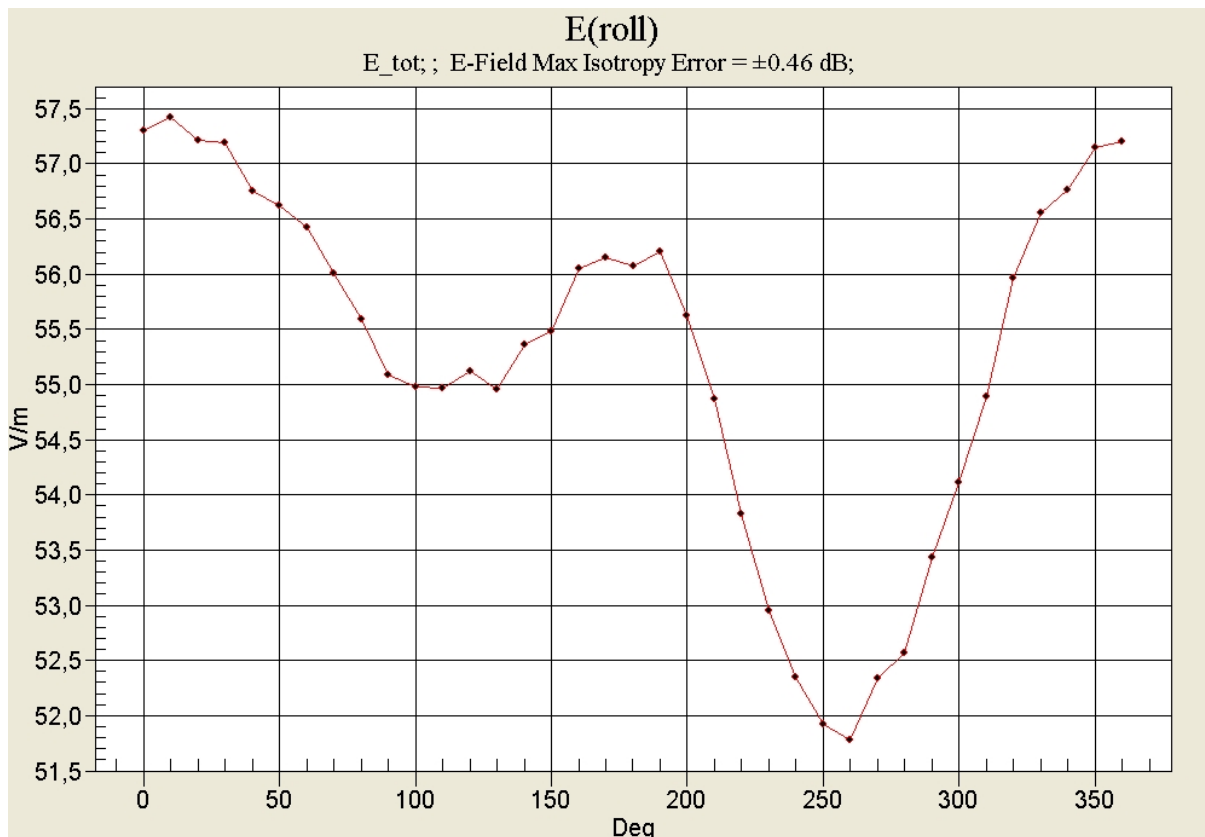
Total = 57.3 V/m

E Category: M4

Location: -4.5, 22, 369.9 mm



0 dB = 57.3V/m



$(57.4 - 57.3) / 57.3 = 0.2 \%$

Worst case calculation of result above:  $57.3 \times 1.002 = 57.4 \text{ V/m}$ .



Date/Time: 10.01.2012 09:38:42

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC E Device**

Communication System: WCDMA FDD IV; Frequency: 1752.6 MHz; Duty Cycle: 1:1

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

Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2262; ConvF(1, 1, 1); Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**E Scan - ER3D - 2007: 15 mm from Probe Center to the Device 3/Hearing**

**Aid Compatibility Test (101x101x1):** Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 43.4 V/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 41.7 V/m; Power Drift = -0.244 dB

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

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
<b>36.3 M4</b>	<b>41.5 M4</b>	<b>40.0 M4</b>
Grid 4	Grid 5	Grid 6
<b>28.3 M4</b>	<b>38.1 M4</b>	<b>38.0 M4</b>
Grid 7	Grid 8	Grid 9
<b>37.1 M4</b>	<b>43.4 M4</b>	<b>42.8 M4</b>

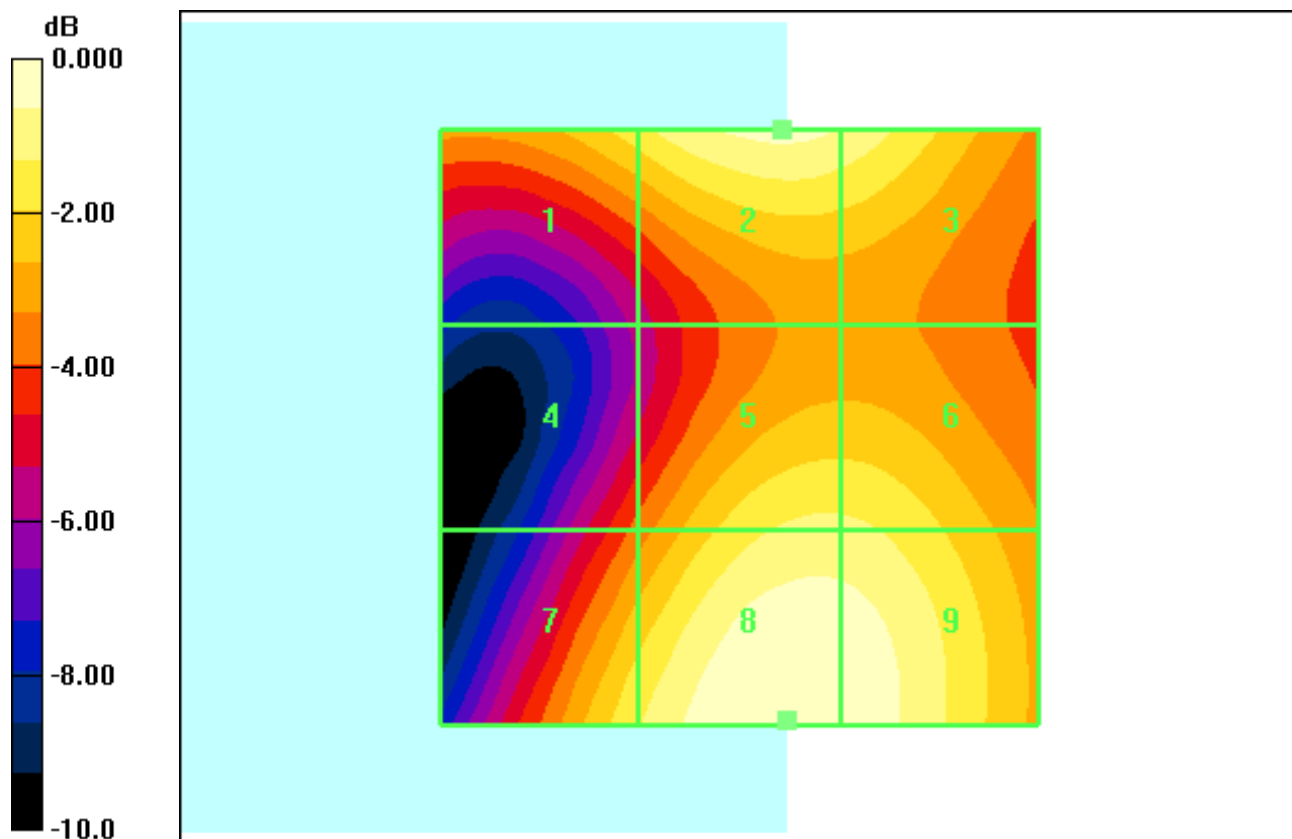
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

Total = 43.4 V/m

E Category: M4

Location: -4, 24.5, 369.9 mm



0 dB = 43.4V/m

Date/Time: 10.01.2012 13:09:26

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC H Device**

Communication System: WCDMA FDD IV; Frequency: 1712.4 MHz; Duty Cycle: 1:1

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

Phantom section: H Device Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - H3DV6 - measurement distance from the probe sensor center to the device = 15 mm/Hearing Aid Compatibility Test (101x101x1):** Measurement

grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.168 A/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 0.143 A/m; Power Drift = -0.009 dB

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

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
<b>0.168 M4</b>	<b>0.166 M4</b>	<b>0.138 M4</b>
Grid 4	Grid 5	Grid 6
<b>0.147 M4</b>	<b>0.147 M4</b>	<b>0.133 M4</b>
Grid 7	Grid 8	Grid 9
<b>0.130 M4</b>	<b>0.115 M4</b>	<b>0.102 M4</b>

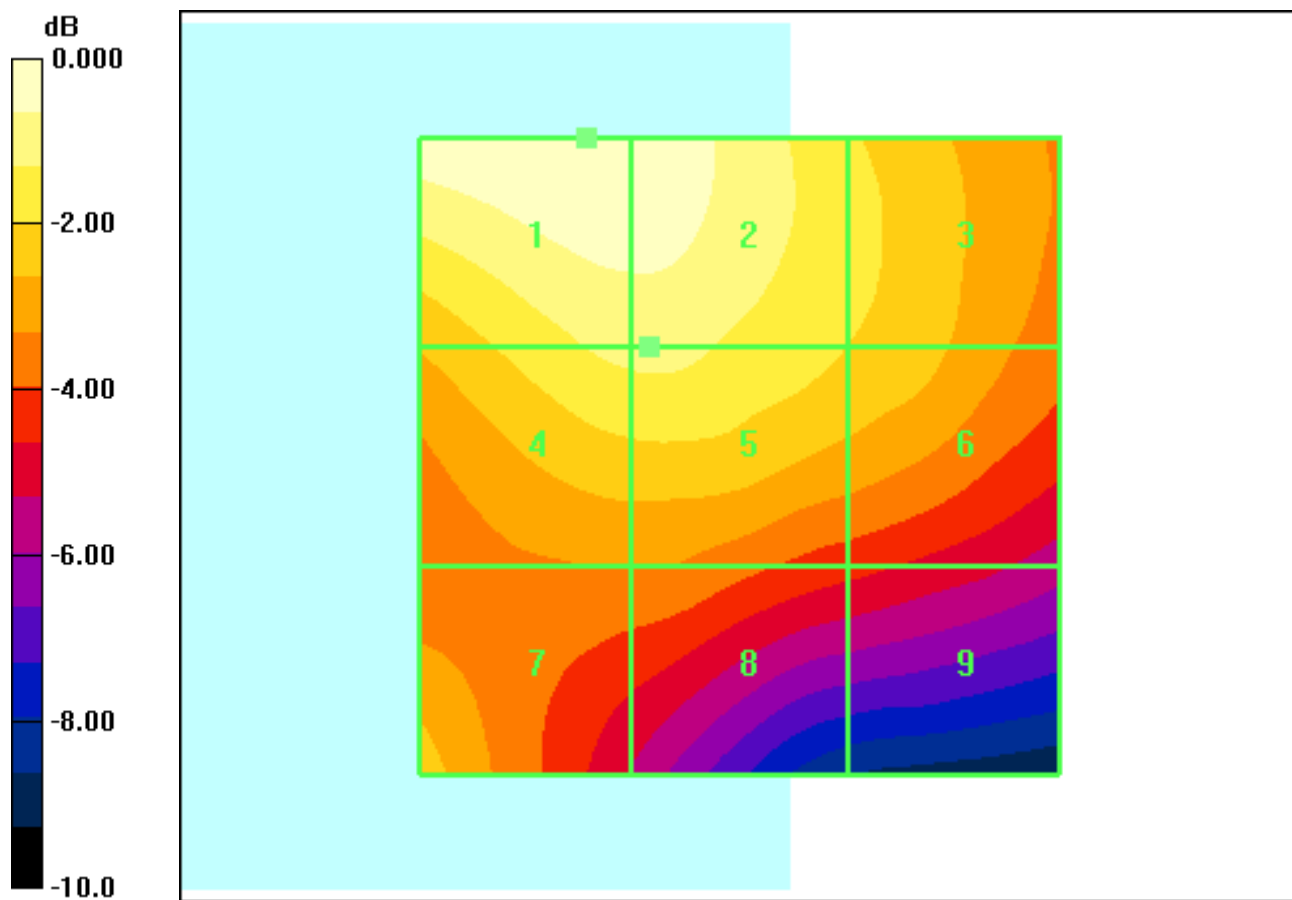
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

Total = 0.168 A/m

H Category: M4

Location: 12, -25, 368.7 mm



0 dB = 0.168A/m

Date/Time: 10.01.2012 13:03:29

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC H Device**

Communication System: WCDMA FDD IV; Frequency: 1732.4 MHz; Duty Cycle: 1:1

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

Phantom section: H Device Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - H3DV6 - measurement distance from the probe sensor center to the device = 15 mm 2/Hearing Aid Compatibility Test (101x101x1):**

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

Maximum value of peak Total field = 0.174 A/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 0.147 A/m; Power Drift = -0.010 dB

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

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
<b>0.174 M4</b>	<b>0.171 M4</b>	<b>0.144 M4</b>
Grid 4	Grid 5	Grid 6
<b>0.150 M4</b>	<b>0.150 M4</b>	<b>0.142 M4</b>
Grid 7	Grid 8	Grid 9
<b>0.141 M4</b>	<b>0.116 M4</b>	<b>0.106 M4</b>

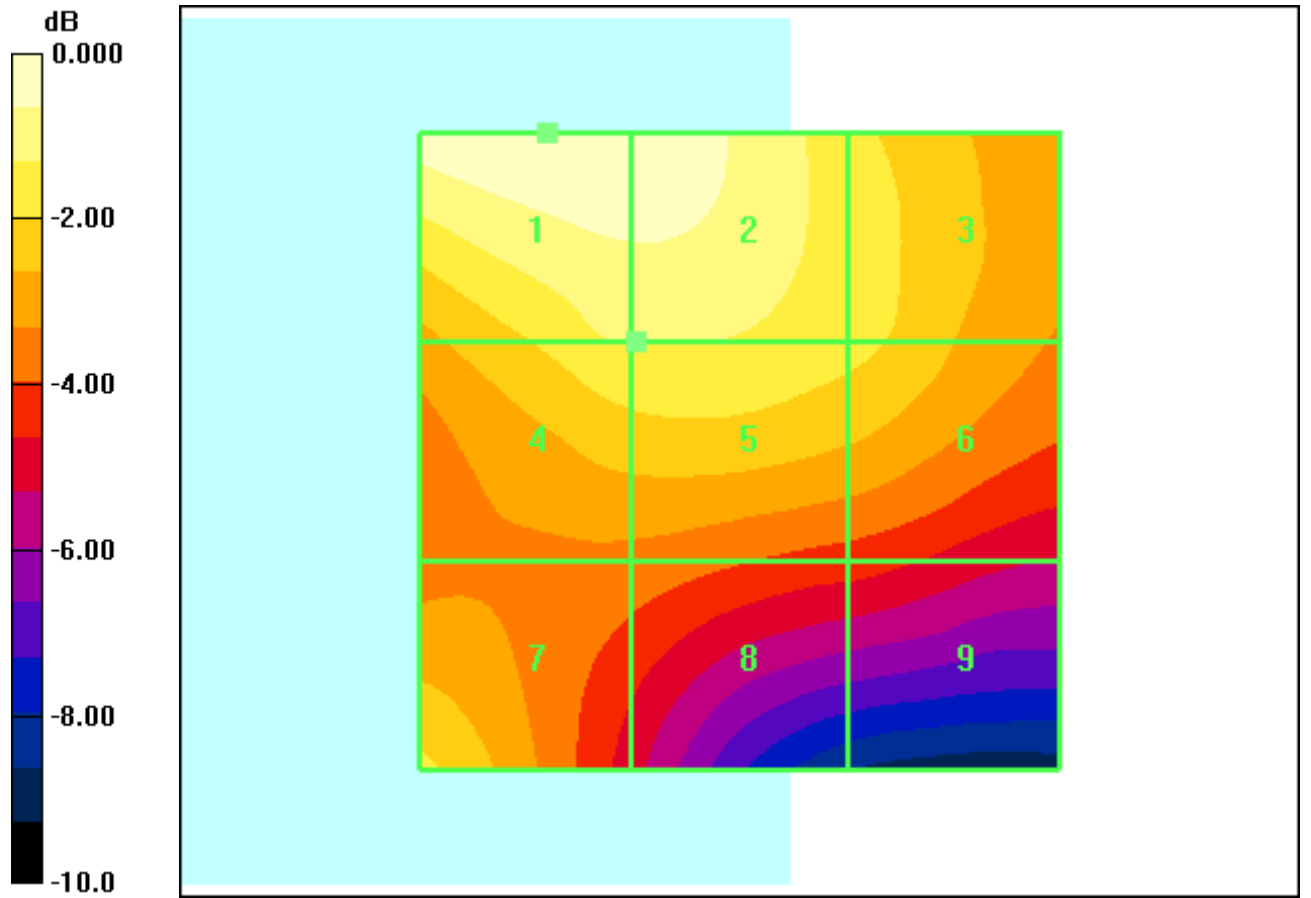
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

Total = 0.174 A/m

H Category: M4

Location: 15, -25, 368.7 mm



0 dB = 0.174A/m

Date/Time: 10.01.2012 12:56:07

**DUT: Sony Ericsson; Type: AAL-8880001-BV; Serial: CB5A1JE2QX**

**Program Name: HAC H Device**

Communication System: WCDMA FDD IV; Frequency: 1752.6 MHz; Duty Cycle: 1:1

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

Phantom section: H Device Section

DASY4 Configuration:

- Probe: H3DV6 - SN6086; ; Calibrated: 14.01.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn413; Calibrated: 13.01.2011
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1022
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**H Scan - H3DV6 - measurement distance from the probe sensor center to the device = 15 mm 3/Hearing Aid Compatibility Test (101x101x1):**

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

Maximum value of peak Total field = 0.178 A/m

Probe Modulation Factor = 1.00

Device Reference Point: 0.000, 0.000, 353.7 mm

Reference Value = 0.143 A/m; Power Drift = -0.010 dB

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

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
<b>0.178 M4</b>	<b>0.175 M4</b>	<b>0.140 M4</b>
Grid 4	Grid 5	Grid 6
<b>0.147 M4</b>	<b>0.147 M4</b>	<b>0.135 M4</b>
Grid 7	Grid 8	Grid 9
<b>0.139 M4</b>	<b>0.117 M4</b>	<b>0.106 M4</b>

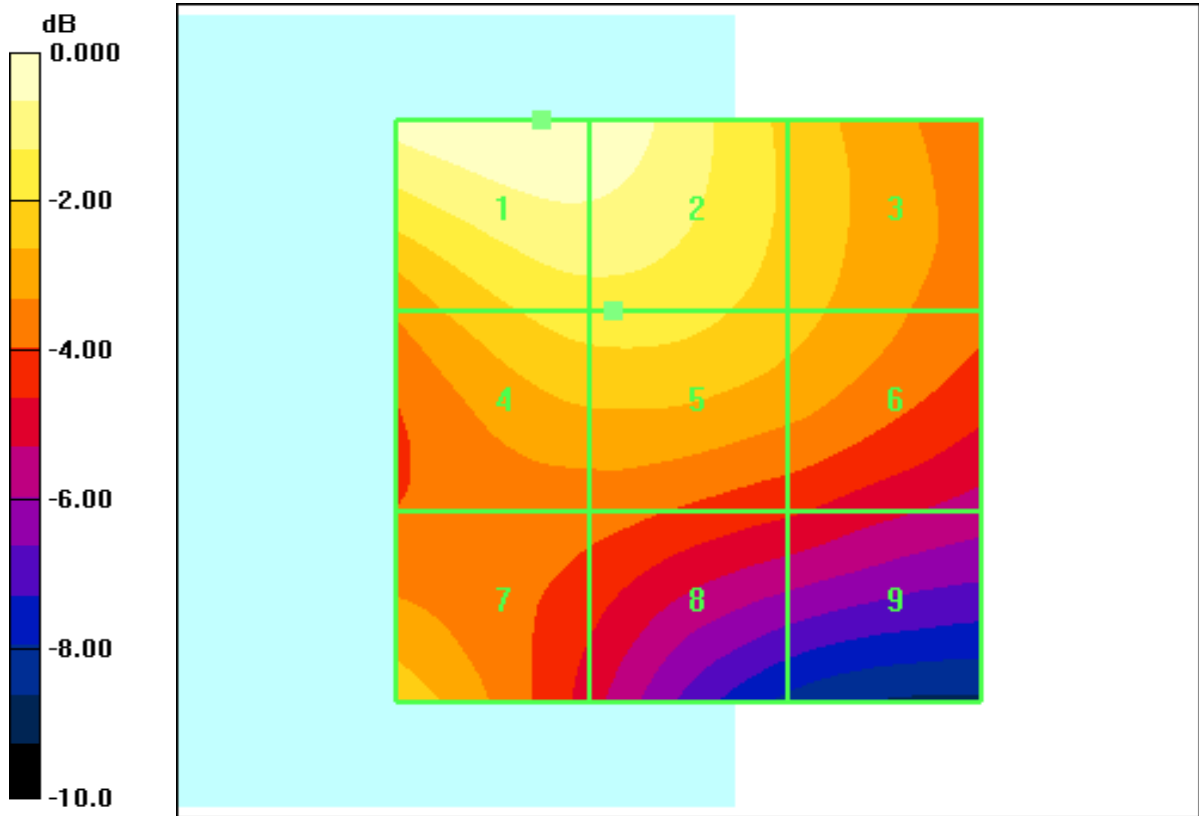
Category	AWF (dB)	Limits for E-Field Emissions (V/m) > 960MHz	Limits for H-Field Emissions (A/m) > 960MHz
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.14 - 0.25
M4	0	<63.1	<0.19
	-5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

**Cursor:**

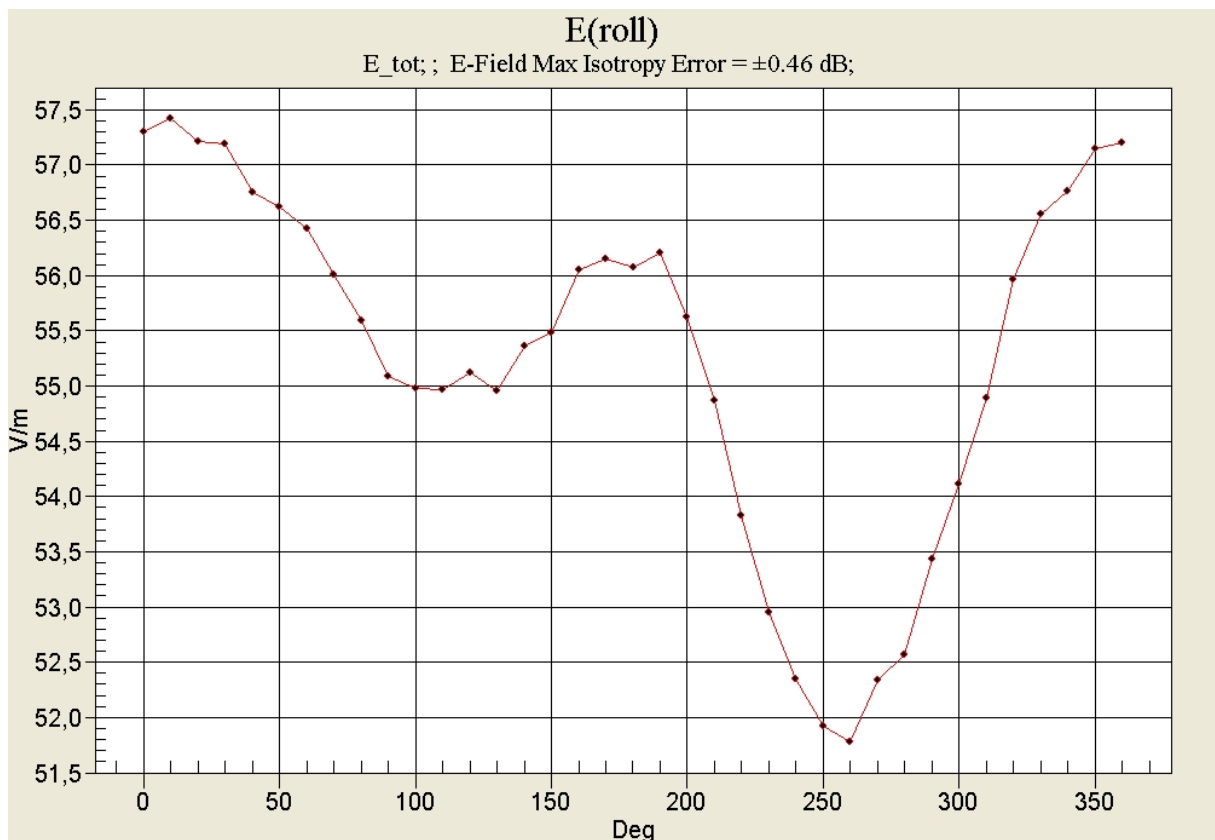
Total = 0.178 A/m

H Category: M4

Location: 12.5, -25, 368.7 mm



0 dB = 0.178A/m



$(0.188-0.177) / 0.177 = 6.2 \%$

Worst case calculation of result above:  $0.178 \times 1.062 = 0.189 \text{ A/m}$ .



## **Annex C: Photo documentation**

Photo documentation is described in the additional document:

**Appendix to test report no. 1-4254/12-02-02-A Photo documentation**

## Annex D: Calibration parameters

Calibration parameters are described in the additional document :

## Appendix to test report no. 1-4254/12-02-02-A Calibration data and sytem validation information

## Annex E: Document History

Version	Applied Changes	Date of Release
	Initial Release	2012-01-17
A	FDD IV results included	2012-04-03

## Annex F: Further Information

### Glossary

DUT	-	Device under Test
EUT	-	Equipment under Test
FCC	-	Federal Communication Commission
FCC ID	-	Company Identifier at FCC
HAC	.	Hearing Aid Compatibility
HW	-	Hardware
IC	-	Industry Canada
Inv. No.	-	Inventory number
N/A	-	not applicable
S/N	-	Serial Number
SW	-	Software