HAC RF TEST REPORT

No. 2012HAC00018-1

For

TCT Mobile Limited

CDMA2000 dual band mobile phone

Venus

one touch 909B

With

Hardware Version: PIO

Software Version: vF84

FCCID：RAD210

Results Summary: M Category = M4

Issued Date: 2012-05-03

Deutscher Akkreditierungs Rat

***No.* DGA-PL-114/01-02**

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

Test Laboratory:

TMC Beijing, Telecommunication Metrology Center of MIIT

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TABLE OF CONTENT

1 Test Laboratory

1.1 Testing Location

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Postal Code:	100191
Telephone:	+86-10-62304633
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1.2 Testing Environment

Temperature:	18°C~25 °C,
Relative humidity:	30%~ 70%
Ground system resistance:	< 0.5 Ω

Ambient noise is checked and found very low and in compliance with requirement of standards.

Reflection of surrounding objects is minimized and in compliance with requirement of standards.

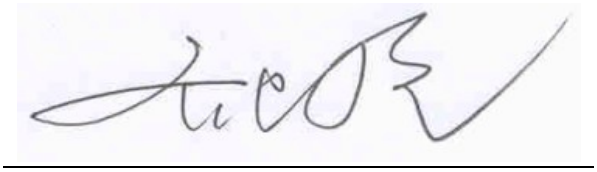
1.3 Project Data

Project Leader:	Qi Dianyuan
Test Engineer:	Lin Hao
Testing Start Date:	April 5, 2012
Testing End Date:	April 5, 2012

1.4 Signature

Lin Hao

(Prepared this test report)



Qi Dianyuan

(Reviewed this test report)

Xiao Li

Deputy Director of the laboratory

(Approved this test report)

2 Client Information

2.1 Applicant Information

Company Name:	TCT Mobile Limited
Address /Post:	5F, E building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203
City:	Shanghai
Postal Code:	201203
Country:	P. R. China
Contact Person:	Gong Zhizhou
Telephone:	0086-21-61460890
Fax:	0086-21-61460602

2.2 Manufacturer Information

Company Name:	TCT Mobile Limited
Address /Post:	5F, E building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203
City:	Shanghai
Postal Code:	201203
Country:	P. R. China
Contact Person:	Gong Zhizhou
Telephone:	0086-21-61460890
Fax:	0086-21-61460602

3 Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1 About EUT

EUT Description:	CDMA2000 dual band mobile phone
Model Name:	Venus
Marketing Name:	one touch 909B
Frequency Band:	CDMA 835/1880

3.2 Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	a100000868ba20 / a100002642935c	PIO	vF84

*EUT ID: is used to identify the test sample in the lab internally.

3.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Battery	CAB31P0000C1	/	BYD

*AE ID: is used to identify the test sample in the lab internally

4 CONDUCTED OUTPUT POWER MEASUREMENT

4.1 Summary

During the process of testing, the EUT was controlled via Agilent Digital Radio Communication tester (8960) to ensure the maximum power transmission and proper modulation. This result contains conducted output power for the EUT. In all cases, the measured output power should be greater and within 5% than EMI measurement.

4.2 Conducted Power

CDMA 835MHz	**Conducted Power (dBm)**		
	Channel 777(848.31MHz)	**Channel 384(836.52MHz)**	**Channel 1013(824.7MHz)**
	24.64	25.14	24.70
CDMA 1900MHz	**Conducted Power (dBm)**		
	Channel 1175(1908.75MHz)	**Channel 600(1880MHz)**	**Channel 25(1851.25MHz)**
	24.97	24.89	24.74

5. Reference Documents

5.1Reference Documents for testing

The following document listed in this section is referred for testing.

Reference	Title	Version
ANSI C63.19-2007	American National Standard for Methods of Measurement of Compatibility between Wireless Communication Devices and Hearing Aids	2007 Edition
CTIA	CTIA_HAC_Test_Plan_Rev_2.0	2.0

6 OPERATIONAL CONDITIONS DURING TEST

6.1 HAC MEASUREMENT SET-UP

These measurements are performed using the DASY5 NEO automated dosimetric assessment system. It is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland. It consists of high precision robotics system (Stäubli), robot controller, Intel Core2 computer, near-field probe, probe alignment sensor. The robot is a six-axis industrial robot performing precise movements. A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The PC consists of the HP Intel Core2 1.86 GHz computer with Windows XP system and HAC Measurement Software DASY5 NEO, A/D interface card, monitor, mouse, and keyboard. The Stäubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card.

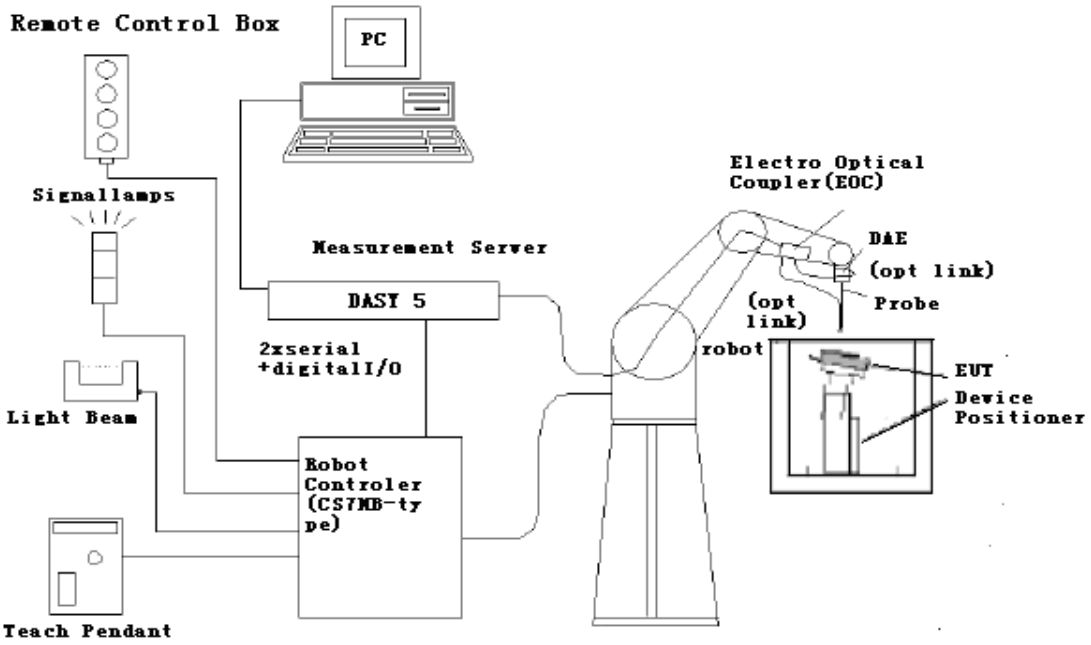


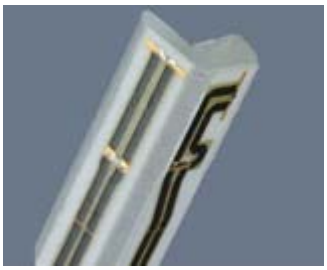
Fig. 1 HAC Test Measurement Set-up

The DAE4 consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer.

6.2 Probe Specification

6.2.1 E-Field Probe Description

Construction	One dipole parallel, two dipoles normal to probe axis Built-in shielding against static charges PEEK enclosure material
Calibration	In air from 100 MHz to 3.0 GHz (absolute accuracy ±6.0%, k=2)
Frequency	40 MHz to > 6 GHz (can be extended to < 20 MHz) Linearity: ± 0.2 dB (100 MHz to 3 GHz)
Directivity	± 0.2 dB in air (rotation around probe axis) ± 0.4 dB in air (rotation normal to probe axis)
Dynamic Range	2 V/m to > 1000 V/m; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm (Tip: 16 mm) Tip diameter: 8 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.5 mm



[ER3DV6]

Application	General near-field measurements up to 6 GHz Field component measurements Fast automatic scanning in phantoms

6.2.2 H-Field Probe Description

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

[H3DV6]

6.3 Test Arch Phantom & Phone Positioner

The Test Arch phantom should be positioned horizontally on a stable surface. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot. It enables easy and well defined positioning of the phone and validation dipoles as well as simple teaching of the robot (Dimensions: 370 x 370 x 370 mm).

The Phone Positioner supports accurate and reliable positioning of any phone with effect on near field <±0.5 dB.

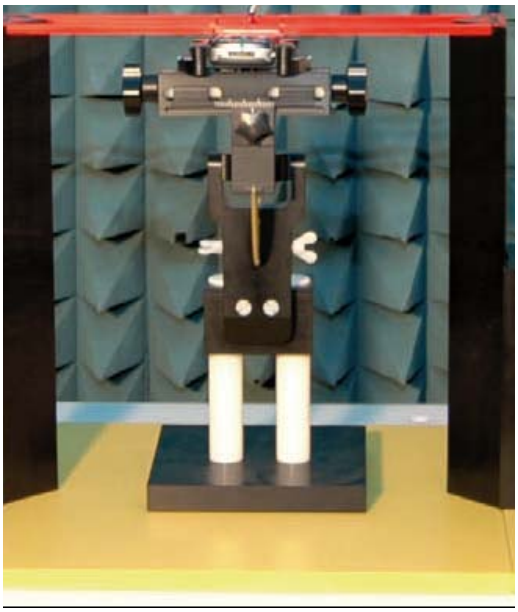


Fig. 2 HAC Phantom & Device Holder

6.4 Robotic System Specifications

Specifications

Positioner: Stäubli Unimation Corp. Robot Model: RX160L
Repeatability: ±0.02 mm
No. of Axis: 6

Data Acquisition Electronic (DAE) System

Cell Controller
Processor: Intel Core2
Clock Speed: 1.86 GHz
Operating System: Windows XP
Data Converter
Features: Signal Amplifier, multiplexer, A/D converter, and control logic
Software: DASY5 software
Connecting Lines: Optical downlink for data and status info.
Optical uplink for commands and clock

7 EUT ARRANGEMENT

7.1 WD RF Emission Measurements Reference and Plane

Figure 4 illustrates the references and reference plane that shall be used in the WD emissions measurement.

- The grid is 5 cm by 5 cm area that is divided into 9 evenly sized blocks or sub-grids.
- The grid is centered on the audio frequency output transducer of the WD (speaker or T-coil).
- The grid is located by reference to a reference plane. This reference plane is the planar area that contains the highest point in the area of the WD that normally rests against the user's ear
- The measurement plane is located parallel to the reference plane and 10 mm from it, out from

the phone. The grid is located in the measurement plane.

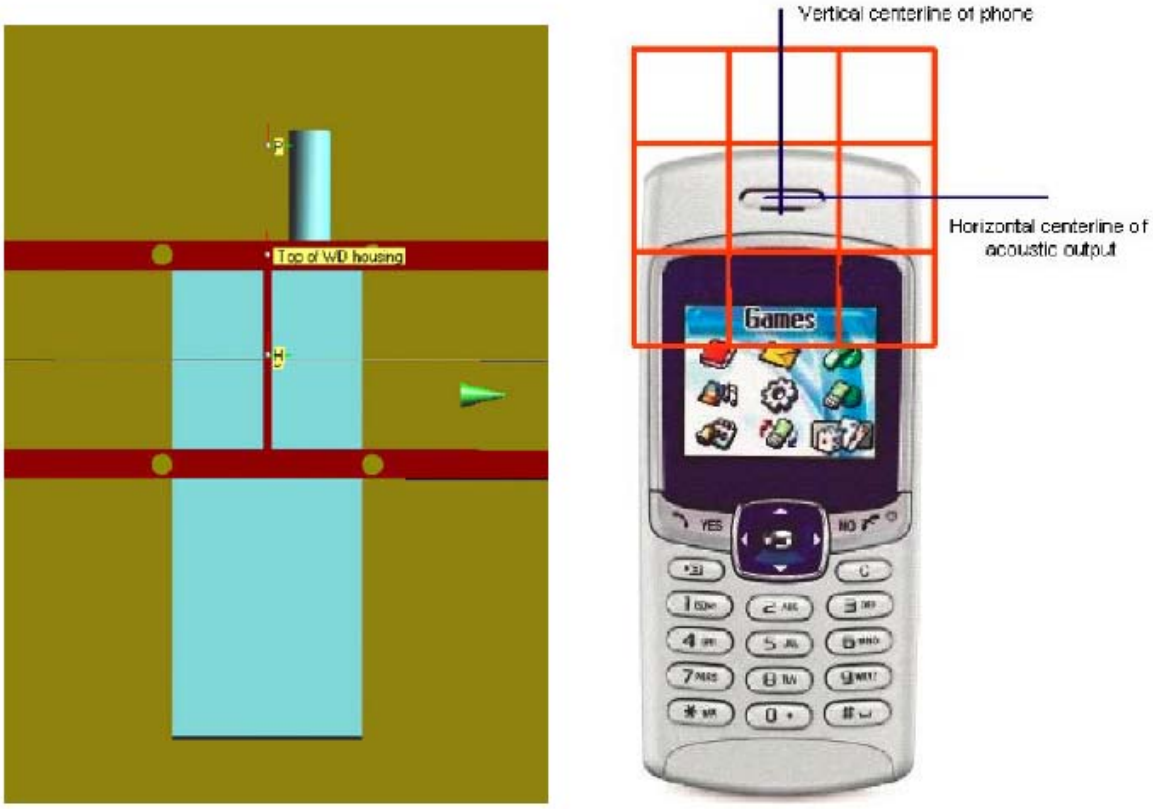


Fig. 3 WD reference and plane for RF emission measurements

8 SYSTEM VALIDATION

8.1 Validation Procedure

Place a dipole antenna meeting the requirements given in ANSI C63.19 D.5 in the position normally occupied by the WD. The dipole antenna serves as a known source for an electrical and magnetic output. Position the E-field and H-field probes so that:

- The probes and their cables are parallel to the coaxial feed of the dipole antenna
- The probe cables and the coaxial feed of the dipole antenna approach the measurement area from opposite directions
- The center point of the probe element(s) are 10 mm from the closest surface of the dipole elements.

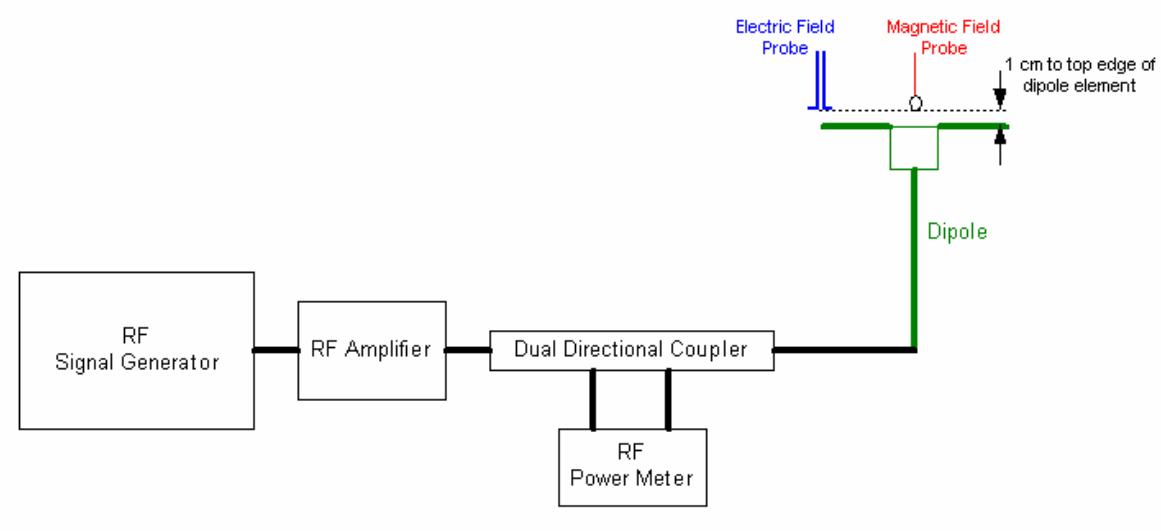


Fig. 4 Dipole Validation Setup

8.2 Validation Result

E-Field Scan						
Mode	**Frequency (MHz)**	**Input Power (mW)**	**Measured[1] Value(V/m)**	**Target[2] Value(V/m)**	**Deviation[3] (%)**	**Limit[4] (%)**
CW	835	100	162.1	160.7	0.87	±25
CW	1880	100	142.6	141.5	0.78	±25
H-Field Scan						
Mode	**Frequency (MHz)**	**Input Power (mW)**	**Measured Value(A/m)**	**Target Value(A/m)**	**Deviation (%)**	**Limit (%)**
CW	835	100	0.464	0.456	1.75	±25
CW	1880	100	0.467	0.473	-1.27	±25

Notes:

1. Please refer to the attachment for detailed measurement data and plot.
2. Target value is provided by SPEAD in the calibration certificate of specific dipoles.
3. Deviation (%) = 100 * (Measured value minus Target value) divided by Target value.
4. ANSI C63.19 requires values within ± 25% are acceptable, of which 12% is deviation and 13% is measurement uncertainty. Values independently validated for the dipole actually used in the measurements should be used, when available.

9 Probe Modulation Factor

The Probe Modulation Factor (PMF) is defined as the ratio of the field readings for a CW and a modulated signal with the equivalent Field Envelope Peak as defined in ANSI C63.19 (Chapter C.3.1).Calibration shall be made of the modulation response of the probe and its instrumentation chain. This Calibration shall be performed with the field probe, attached to the instrumentation that is to be used with it during the measurement. The response of the probe system to a CW field at the frequency(s) of interest is compared to its response to a modulated signal with equal peak amplitude. The field level of the test signals shall be more than 10dB above the ambient level and

the noise floor of the instrumentation being used. The ratio of the CW reading to that taken with a modulated field shall be applied to the readings taken of modulated fields of the specified type.

Note:

For the PMF of CDMA, we need to calculate it at CDMA SO55 and SO3 respectively according to CTIA request.

9.1 Modulation Factor Test Procedure

This may be done using the following procedure:

1. Fix the field probe in a set location relative to a field generating device, such as the reference dipole antenna, as illustrated in the following figure.
2. Illuminate the probe using the wireless device（EUT）connected to the reference dipole with a test signal at the intended measurement frequency, Ensure there is sufficient field coupling between the probe and the antenna so the resulting reading is greater than 10 dB above the probe system noise floor but within the systems operating range.

   Note：

   - The EUT shall be placed on a Service Option 3 call using Radio Configuration 1. The EUT audio shall be muted such that the RF gating is guaranteed to be 1/8th rate.

   - The EUT shall be placed on a Service Option 2 or Service Option 55 call using Radio Configuration 1. The data rate shall be set to “Full”.

   - The test shall be run in Cell Band and PCS Band at low, mid, and high channels. Cell Band test channels shall be 1013, 384, and 777. PCS Band test channels shall be 25, 600, and 1175.
3. Record the amplitude applied to the antenna during transmission and the field strength measured by the E-field probe located near the tip of the dipole antenna
4. Replace the wireless device with an RF signal generator producing an unmodulated CW signal and set to the wireless device operating frequency.
5. Set the amplitude of the unmodulated signal to equal that recorded from the wireless device.
6. Record the reading of the probe measurement system of the unmodulated signal.
7. The ratio, in linear units, of the probe reading in Step 6) to the reading in Step 3) is the E-field modulation factor. $PMF_E = E_{CW} / E_{mod}$ ($PMF_H = H_{CW} / H_{mod}$)
8. Repeat the previous steps using the H-field probe, except locate the probe at the center of the dipole.

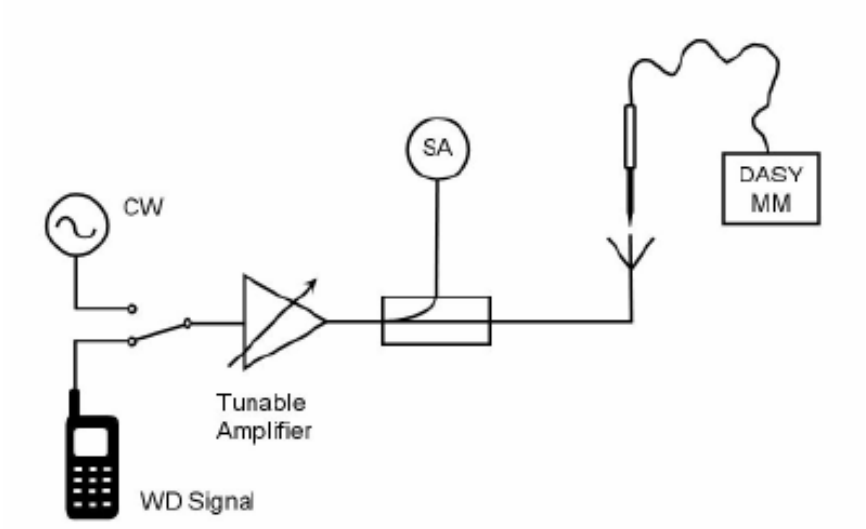


Fig. 6 Probe Modulation Factor Test Setup

9.2 Modulation Factor

9.2.1 E-Field

Mode	Frequency (MHz)	E-Field Measured Value (V/m)	Probe Modulation Factor
CW	848.31	263	**0.960**
CDMA(SO55)		274	
CW	836.52	245	**0.928**
CDMA(SO55)		264	
CW	824.7	228	**0.942**
CDMA(SO55)		242	
CW	848.31	34.21	**2.887**
CDMA(SO3)		11.85	
CW	836.52	34.63	**2.905**
CDMA(SO3)		11.92	
CW	824.7	34.55	**2.950**
CDMA(SO3)		11.71	
CW	1908.75	169	**0.934**
CDMA(SO55)		181	
CW	1880	173	**0.940**
CDMA(SO55)		184	
CW	1851.25	159	**0.924**
CDMA(SO55)		172	
CW	1908.75	43.31	**2.932**
CDMA(SO3)		14.77	
CW	1880	41.48	**2.889**
CDMA(SO3)		14.36	
CW	1851.25	41.75	**2.901**
CDMA(SO3)		14.39	

9.2.2 H-Field

Mode	Frequency (MHz)	H-Field Measured Value (A/m)	Probe Modulation Factor
CW	848.31	0.591	**0.904**
CDMA(SO55)		0.654	
CW	836.52	0.574	**0.895**
CDMA(SO55)		0.641	
CW	824.7	0.573	**0.897**
CDMA(SO55)		0.639	
CW	848.31	0.311	**2.853**
CDMA(SO3)		0.109	
CW	836.52	0.287	**2.842**
CDMA(SO3)		0.101	
CW	824.7	0.291	**2.694**
CDMA(SO3)		0.108	

CW	1908.75	0.481	**0.921**
CDMA(SO55)		0.522	
CW	1880	0.493	**0.934**
CDMA(SO55)		0.528	
CW	1851.25	0.484	**0.934**
CDMA(SO55)		0.518	
CW	1908.75	0.265	**2.849**
CDMA(SO3)		0.093	
CW	1880	0.246	**2.860**
CDMA(SO3)		0.086	
CW	1851.25	0.247	**2.714**
CDMA(SO3)		0.091	

10 RF TEST PROCEDUERES

The evaluation was performed with the following procedure:

1) Confirm proper operation of the field probe, probe measurement system and other instrumentation and the positioning system.

2) Position the WD in its intended test position. The gauge block can simplify this positioning. Note that a separate E-field and H-field gauge block will be needed if the center of the probe sensor elements are at different distances from the tip of the probe.

3) Configure the WD normal operation for maximum rated RF output power, at the desired channel and other operating parameters (e.g., test mode), as intended for the test.

4) The center sub-grid shall centered on the center of the T-Coil mode axial measurement point or the acoustic output, as appropriate. Locate the field probe at the initial test position in the 50 mm by 50 mm grid, which is contained in the measurement plane. If the field alignment method is used, align the probe for maximum field reception.

5) Record the reading.

6) Scan the entire 50 mm by 50 mm region in equally spaced increments and record the reading at each measurement point. The distance between measurement points shall be sufficient to assure the identification of the maximum reading.

7) Identify the five contiguous sub-grids around the center sub-grid with the lowest maximum field strength readings. Thus the six areas to be used to determine the WD's highest emissions are identified and outlined for the final manual scan. Please note that a maximum of five blocks can be excluded for both E-field and H-field measurements for the WD output being measured. Stated another way, the center sub-grid and three others must be common to both the E-field and H-field measurements.

8) Identify the maximum field reading within the non-excluded sub-grids identified in Step 7)

9) Convert the maximum field strength reading identified in Step 8) to V/m or A/m, as appropriate. For probes which require a probe modulation factor, this conversion shall be done using the appropriate probe modulation factor and the calibration.

10) Repeat Step 1) through Step 10) for both the E-field and H-field measurements.

11) Compare this reading to the categories in ANSI C63.19 Clause 7 and record the resulting category. The lowest category number listed in 7.2, Table 7.4, or Table 7.5 obtained in Step 10) for

either E- or H-field determines the M category for the audio coupling mode assessment. Record the WD category rating.

11 HAC RF TEST DATA SUMMARY

11.1 Measurement Results (E-Field)

CDMA Mode: SO55

Frequency		AWF	Measured Value	Power Drift	Category
MHz	Channel		(V/m)	(dB)	
CDMA 835					
848.31	777	0	98.2	-0.086	**M4**(see Fig B.1)
836.52	384	0	104.6	-0.00491	**M4**(see Fig B.2)
824.7	1013	0	87.3	-0.039	**M4**(see Fig B.3)
CDMA 1880					
1908.75	1175	0	46.1	-0.027	**M4**(see Fig B.4)
1880	600	0	50.1	-0.100	**M4**(see Fig B.5)
1851.25	25	0	56.2	-0.184	**M4**(see Fig B.6)

CDMA Mode: SO3

Frequency		AWF	Measured Value	Power Drift	Category
MHz	Channel		(V/m)	(dB)	
CDMA 835					
848.31	777	0	32.4	0.040	**M4**(see Fig B.7)
836.52	384	0	35.5	-0.068	**M4**(see Fig B.8)
824.7	1013	0	29.2	0.072	**M4**(see Fig B.9)
CDMA 1880					
1908.75	1175	0	16.3	0.047	**M4**(see Fig B.10)
1880	600	0	18.2	-0.144	**M4**(see Fig B.11)
1851.25	25	0	18.4	0.072	**M4**(see Fig B.12)

11.2 Measurement Results (H-Field)

CDMA Mode: SO55

Frequency		AWF	Measured Value	Power Drift	Category
MHz	Channel		(A/m)	(dB)	
CDMA 835					
848.31	777	0	0.091	-0.072	**M4**(see Fig B.13)
836.52	384	0	0.094	-0.077	**M4**(see Fig B.14)
824.7	1013	0	0.076	-0.043	**M4**(see Fig B.15)
CDMA 1880					
1908.75	1175	0	0.113	0.088	**M4**(see Fig B.16)
1880	600	0	0.123	-0.161	**M4**(see Fig B.17)
1851.25	25	0	0.121	-0.049	**M4**(see Fig B.18)

CDMA Mode: SO3

Frequency		AWF	Measured Value (A/m)	Power Drift (dB)	Category
MHz	Channel				
CDMA 835					
848.31	777	0	0.030	-0.086	**M4**(see Fig B.19)
836.52	384	0	0.033	0.056	**M4**(see Fig B.20)
824.7	1013	0	0.027	-0.031	**M4**(see Fig B.21)
CDMA 1880					
1908.75	1175	0	0.039	0.00924	**M4**(see Fig B.22)
1880	600	0	0.043	0.065	**M4**(see Fig B.23)
1851.25	25	0	0.042	-0.00425	**M4**(see Fig B.24)

11.3 Total M-rating

CDMA Mode: SO55

Mode	Maximum value of peak Total E-Field (V/m)	Maximum value of peak Total H-Field (A/m)	E-Field M Rating	H-Field M Rating	Total M Rating
CDMA 835	104.6	0.094	M4 (AWF 0 dB)	M4 (AWF 0 dB)	M4(see Fig B.25)
CDMA 1880	56.2	0.123	M4 (AWF 0 dB)	M4 (AWF 0 dB)	M4(see Fig B.26)

CDMA Mode: SO3

Mode	Maximum value of peak Total E-Field (V/m)	Maximum value of peak Total H-Field (A/m)	E-Field M Rating	H-Field M Rating	Total M Rating
CDMA 835	35.5	0.033	M4 (AWF 0 dB)	M4 (AWF 0 dB)	M4(see Fig B.27)
CDMA 1880	18.4	0.043	M4 (AWF 0 dB)	M4 (AWF 0 dB)	M4(see Fig B.28)

12 ANSI C 63.19-2007 LIMITS

Table 1: Telephone near-field categories in linear units

Category		Telephone RF parameters < 960 MHz			
Near field	AWF	E-field emissions		H-field emissions	
Category M1/T1	0	631.0 to 1122.0	V/m	1.91 to 3.39	A/m
	–5	473.2 to 841.4	V/m	1.43 to 2.54	A/m
Category M2/T2	0	354.8 to 631.0	V/m	1.07 to 1.91	A/m
	–5	266.1 to 473.2	V/m	0.80 to 1.43	A/m
Category M3/T3	0	199.5 to 354.8	V/m	0.60 to 1.07	A/m
	–5	149.6 to 266.1	V/m	0.45 to 0.80	A/m
Category M4/T4	0	< 199.5	V/m	< 0.60	A/m
	–5	< 149.6	V/m	< 0.45	A/m

Category		Telephone RF parameters > 960 MHz			
Near field	AWF	E-field emissions		H-field emissions	
Category M1/T1	0	199.5 to 354.8	V/m	0.60 to 1.07	A/m
	–5	149.6 to 266.1	V/m	0.45 to 0.80	A/m
Category M2/T2	0	112.2 to 199.5	V/m	0.34 to 0.60	A/m
	–5	84.1 to 149.6	V/m	0.25 to 0.45	A/m
Category M3/T3	0	63.1 to 112.2	V/m	0.19 to 0.34	A/m
	–5	47.3 to 84.1	V/m	0.14 to 0.25	A/m
Category M4/T4	0	< 63.1	V/m	< 0.19	A/m
	–5	< 47.3	V/m	< 0.14	A/m

13 MEASUREMENT UNCERTAINTY

No.	Error source	Type	Uncertainty Value (%)	Prob. Dist.	k	c_i E	c_i H	Standard Uncertainty (%) u_i' (%) E	Standard Uncertainty (%) u_i' (%) H	Degree of freedom V_{eff} or v_i
1	System repeatability	A	0.24	N	1	1	1	0.24	0.24	9
Measurement System										
2	—Probe Calibration	B	3	N	1	1	1	5.1	5.1	∞
3	—Axial Isotropy	B	3.5	R	$\sqrt{3}$	1	1	2.7	2.7	∞
4	— Sensor Displacement	B	16.5	R	$\sqrt{3}$	1	0.145	9.5	1.4	∞
5	—Boundary Effects	B	2.4	R	$\sqrt{3}$	1	1	1.4	1.4	∞
6	—Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
7	— Scaling to Peak Envolope Power	B	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	∞
8	— System Detection Limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
9	— Readout Electronics	B	0.3	N	1	1	1	0.3	0.3	∞
10	- Response Time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
11	—Integration Time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
12	— RF Ambient Conditions	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞

13	—RF Reflections	B	12.0	R	$\sqrt{3}$	1	1	6.9	6.9	∞
14	—Probe Positioner	A	1.2	R	$\sqrt{3}$	1	0.67	0.7	0.5	∞
15	—Probe Positioning	A	4.7	R	$\sqrt{3}$	1	0.67	2.7	1.8	∞
16	— Extra. And Interpolation	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Test Sample Related										
17	—Device Positioning Vertical	B	4.7	R	$\sqrt{3}$	1	0.67	2.7	1.8	∞
18	—Device Positioning Lateral	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
19	—Device Holder and Phantom	B	2.4	R	$\sqrt{3}$	1	1	1.4	1.4	∞
20	—Power Drift	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and Setup related										
21	— Phantom Thickness	B	2.4	R	$\sqrt{3}$	1	0.67	1.4	0.9	∞
PMF										
22	— monitoring amplitude ratio	B	2.8	R	$\sqrt{3}$	1	1	1.6	1.6	∞
23	—setup repeatability	A	2.7	N	1	1	1	2.7	2.7	9
24	—sensor amplitude	B	11.6	R	$\sqrt{3}$	1	0.569	6.7	3.8	∞
Combined standard uncertainty (%)		$u_c^{'} = \sqrt{\sum_{i=1}^{24} c_i^2 u_i^2}$						16.4	11.5	
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$		N		k=2		32.8	23.0	

14 MAIN TEST INSTRUMENTS

Table 2: List of Main Instruments

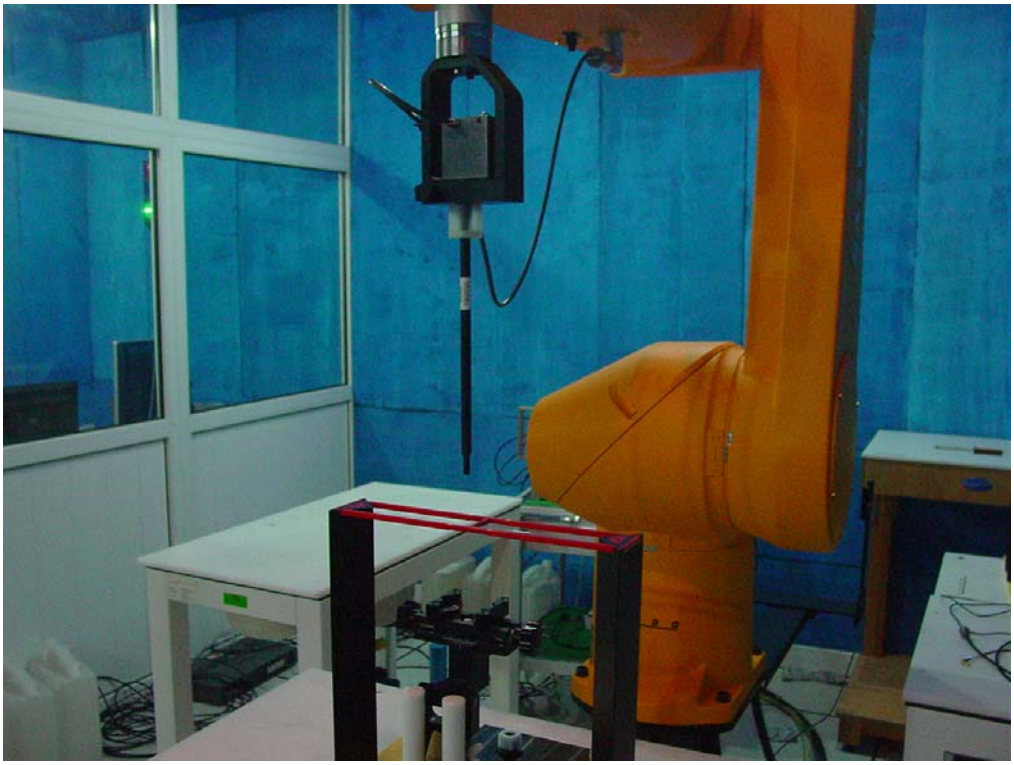
No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	E-Field Probe	ER3DV6	2302	June 15, 2011	One year
02	H-Field Probe	H3DV6	6187	June 17, 2011	One year
03	HAC Dipole	CD835V3	1133	February 21, 2012	One year
04	HAC Dipole	CD1880V3	1115	February 21, 2012	One year
05	BTS	8960	MY48365192	November 17, 2011	One year
06	DAE	SPEAG DAE4	777	July 8, 2011	One year

15 CONCLUSION

The HAC measurement indicates that the EUT complies with the HAC limits of the ANSI C63.19-2007. The total M-rating is **M4** for CDMA 835 and CDMA 1900.

END OF REPORT BODY

ANNEX A TEST LAYOUT



Picture A1: HAC RF System Layout

ANNEX B TEST PLOTS

HAC RF E-Field CDMA 835 High – SO55

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

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

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 835; Frequency: 848.31 MHz; Duty Cycle: 1:1

Probe: ER3DV6 - SN2302;ConvF(1, 1, 1)

E Scan - ER3DV6 - 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 = 72.2 V/m

Probe Modulation Factor = 0.960

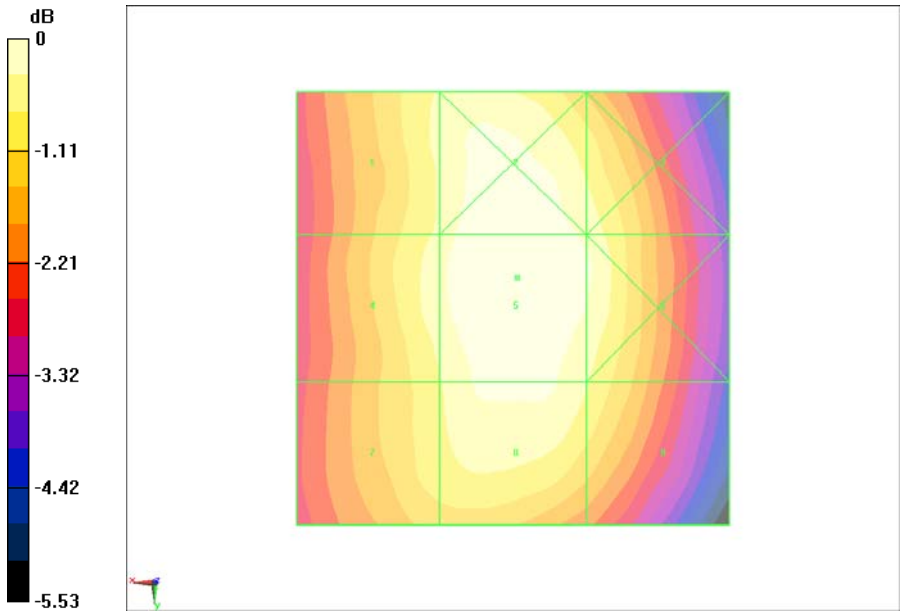
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 98.2 V/m; Power Drift = -0.086 dB

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

Peak E-field in V/m

Grid 1 **67.2 M4**	Grid 2 **71.2 M4**	Grid 3 **68.4 M4**
Grid 4 **68.4 M4**	Grid 5 **72.2 M4**	Grid 6 **69.7 M4**
Grid 7 **66.1 M4**	Grid 8 **69.9 M4**	Grid 9 **66.6 M4**



0 dB = 72.2V/m

Fig B.1 HAC RF E-Field CDMA 835 High

HAC RF E-Field CDMA 835 Middle – SO55

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

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

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 835; Frequency: 836.52 MHz; Duty Cycle: 1:1

Probe: ER3DV6 - SN2302;ConvF(1, 1, 1)

E Scan - ER3DV6 - 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 V/m

Probe Modulation Factor = 0.928

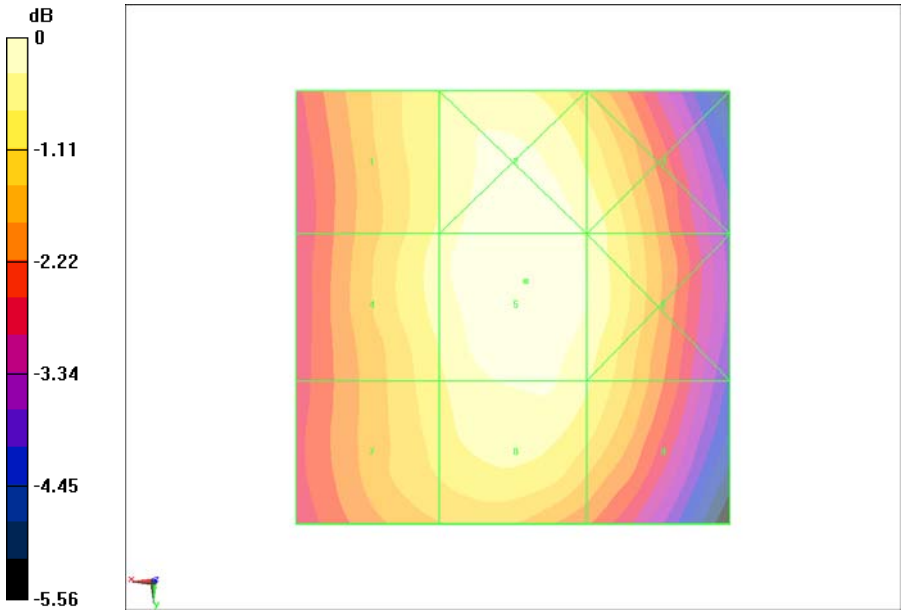
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 104.6 V/m; Power Drift = -0.00491 dB

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

Peak E-field in V/m

Grid 1 **69.5 M4**	Grid 2 **74.2 M4**	Grid 3 **71.4 M4**
Grid 4 **70.5 M4**	Grid 5 **75 M4**	Grid 6 **71.9 M4**
Grid 7 **68.3 M4**	Grid 8 **72.4 M4**	Grid 9 **69.4 M4**



0 dB = 75V/m

Fig B.2 HAC RF E-Field CDMA 835 Middle

HAC RF E-Field CDMA 835 Low – SO55

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

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

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 835; Frequency: 824.7 MHz; Duty Cycle: 1:1

Probe: ER3DV6 - SN2302;ConvF(1, 1, 1)

E Scan - ER3DV6 - 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 = 62.7 V/m

Probe Modulation Factor = 0.942

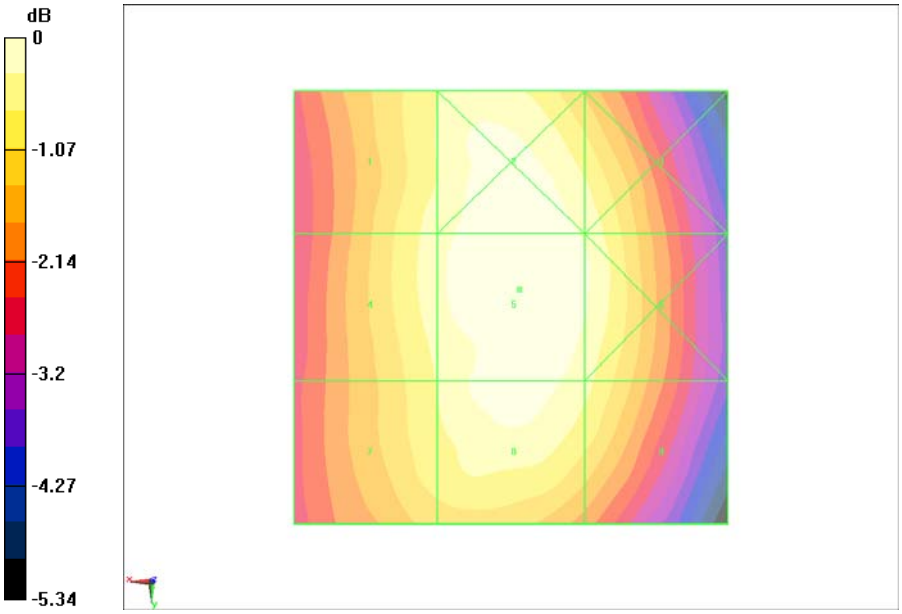
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 87.3 V/m; Power Drift = -0.039 dB

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

Peak E-field in V/m

Grid 1 **59.1 M4**	Grid 2 **62.2 M4**	Grid 3 **59.8 M4**
Grid 4 **59.5 M4**	Grid 5 **62.7 M4**	Grid 6 **60.7 M4**
Grid 7 **57.9 M4**	Grid 8 **61.7 M4**	Grid 9 **58.6 M4**



0 dB = 62.7V/m

Fig B.3 HAC RF E-Field CDMA 835 Low

HAC RF E-Field CDMA 1900 High – SO55

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

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

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 1900; Frequency: 1908.75 MHz; Duty Cycle: 1:1

Probe: ER3DV6 - SN2302;ConvF(1, 1, 1)

E Scan - ER3DV6 - 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 = 43.4 V/m

Probe Modulation Factor = 0.934

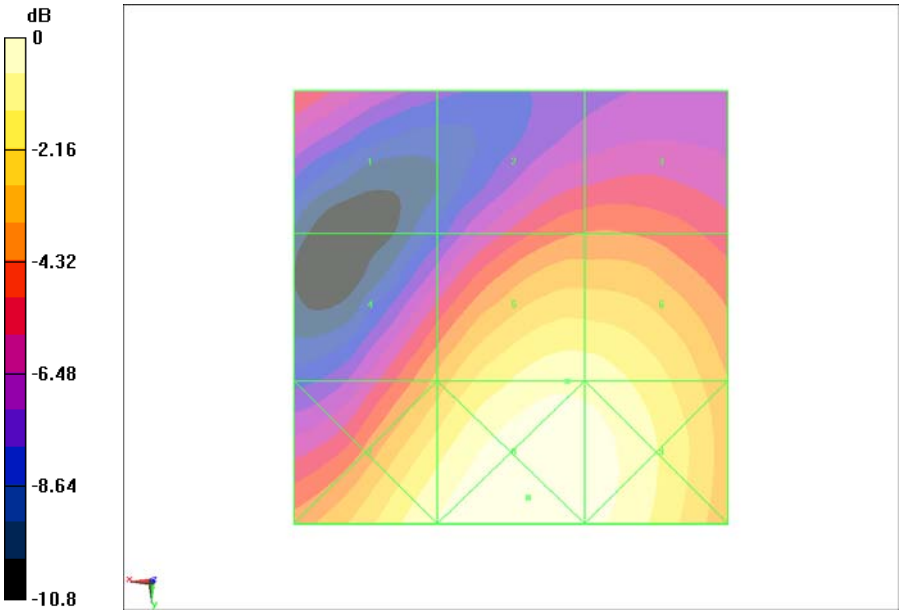
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 46.1 V/m; Power Drift = -0.027 dB

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

Peak E-field in V/m

Grid 1 **27.1 M4**	Grid 2 **29.5 M4**	Grid 3 **29.7 M4**
Grid 4 **32.8 M4**	Grid 5 **43.4 M4**	Grid 6 **43.1 M4**
Grid 7 **44.6 M4**	Grid 8 **48.2 M4**	Grid 9 **46.7 M4**



0 dB = 48.2V/m

Fig B.4 HAC RF E-Field CDMA 1900 High

HAC RF E-Field CDMA 1900 Middle – SO55

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

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

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 1900; Frequency: 1880 MHz; Duty Cycle: 1:1

Probe: ER3DV6 - SN2302;ConvF(1, 1, 1)

E Scan - ER3DV6 - 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 = 47.2 V/m

Probe Modulation Factor = 0.940

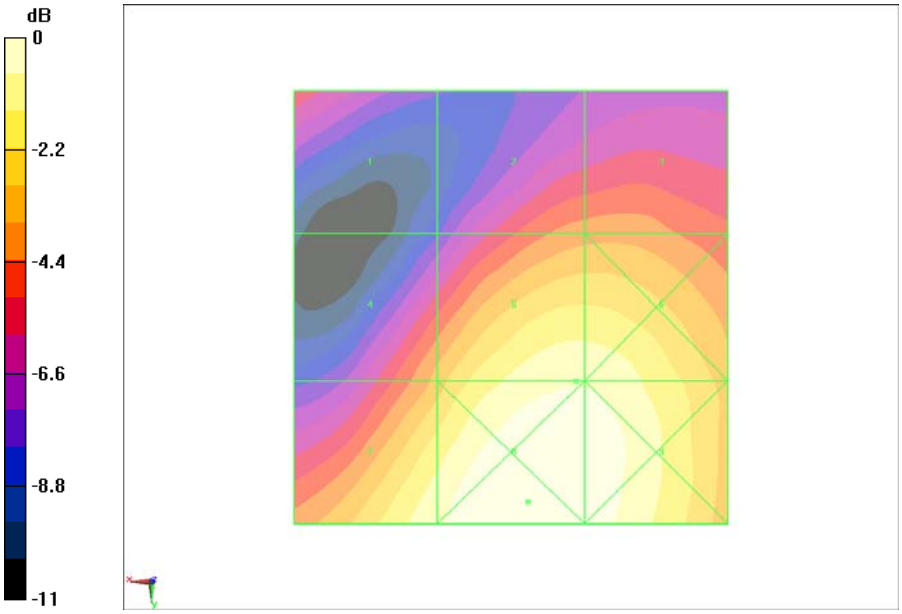
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 50.1 V/m; Power Drift = -0.100 dB

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

Peak E-field in V/m

Grid 1 **28.1 M4**	Grid 2 **32.9 M4**	Grid 3 **33.2 M4**
Grid 4 **35.4 M4**	Grid 5 **47.2 M4**	Grid 6 **47.2 M4**
Grid 7 **47.1 M4**	Grid 8 **51.9 M4**	Grid 9 **51 M4**



0 dB = 51.9V/m

Fig B.5 HAC RF E-Field CDMA 1900 Middle

HAC RF E-Field CDMA 1900 Low – SO55

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

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

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 1900; Frequency: 1851.25 MHz; Duty Cycle: 1:1

Probe: ER3DV6 - SN2302;ConvF(1, 1, 1)

E Scan - ER3DV6 - 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 = 49.7 V/m

Probe Modulation Factor = 0.924

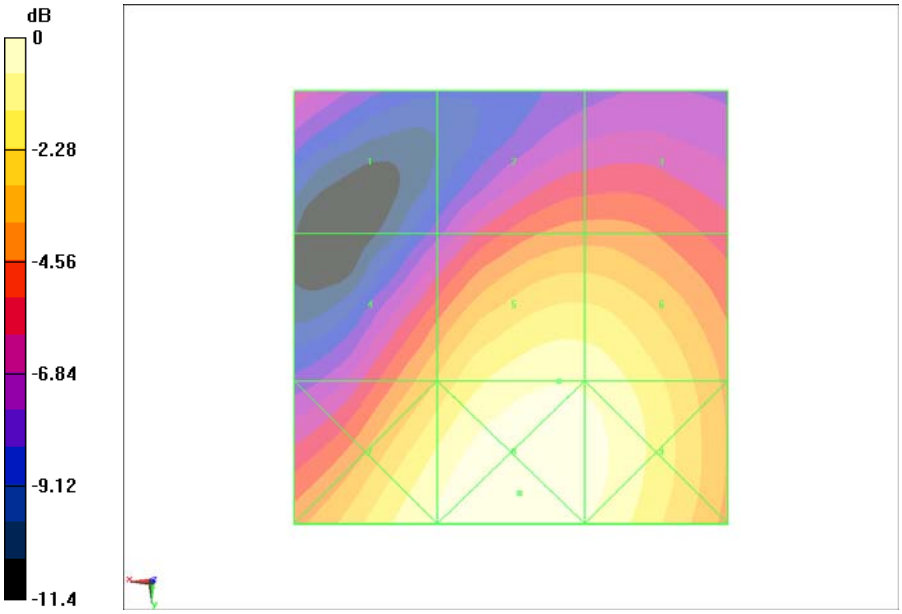
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 56.2 V/m; Power Drift = -0.184 dB

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

Peak E-field in V/m

Grid 1 **26.7 M4**	Grid 2 **33.9 M4**	Grid 3 **33.9 M4**
Grid 4 **38.9 M4**	Grid 5 **49.7 M4**	Grid 6 **49.1 M4**
Grid 7 **50.6 M4**	Grid 8 **54.6 M4**	Grid 9 **52.2 M4**



0 dB = 54.6V/m

Fig B.6 HAC RF E-Field CDMA 1900 Low

HAC RF E-Field CDMA 835 High – SO3

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

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

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 835; Frequency: 848.31 MHz; Duty Cycle: 1:1

Probe: ER3DV6 - SN2302;ConvF(1, 1, 1)

E Scan - ER3DV6 - 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 = 72.1 V/m

Probe Modulation Factor = 2.89

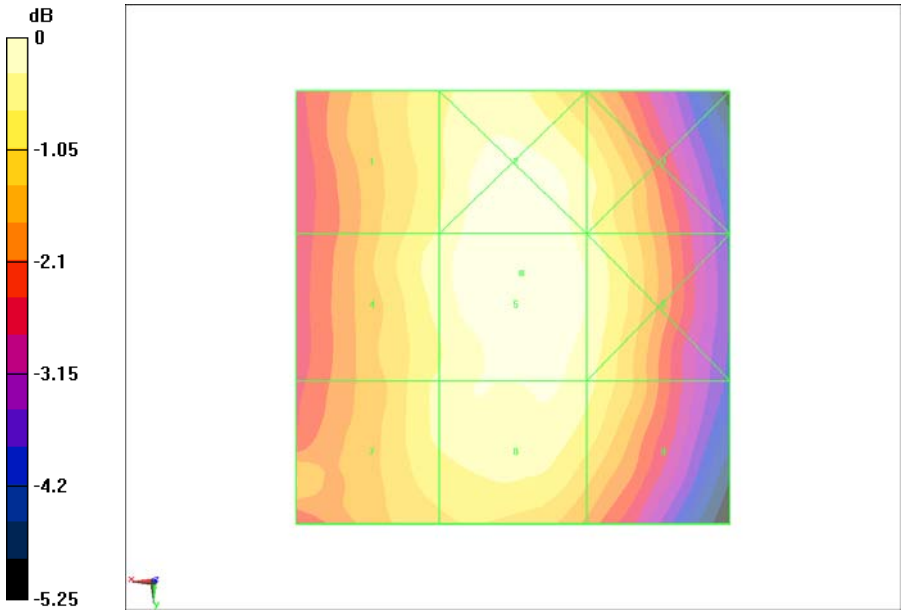
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 32.4 V/m; Power Drift = 0.040 dB

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

Peak E-field in V/m

Grid 1 **67 M4**	Grid 2 **72 M4**	Grid 3 **67.7 M4**
Grid 4 **68.3 M4**	Grid 5 **72.1 M4**	Grid 6 **69.2 M4**
Grid 7 **67.3 M4**	Grid 8 **69.9 M4**	Grid 9 **67.5 M4**



0 dB = 72.1V/m

Fig B.7 HAC RF E-Field CDMA 835 High

HAC RF E-Field CDMA 835 Middle – SO3

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

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

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 835; Frequency: 836.52 MHz; Duty Cycle: 1:1

Probe: ER3DV6 - SN2302;ConvF(1, 1, 1)

E Scan - ER3DV6 - 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 = 82.2 V/m

Probe Modulation Factor = 2.91

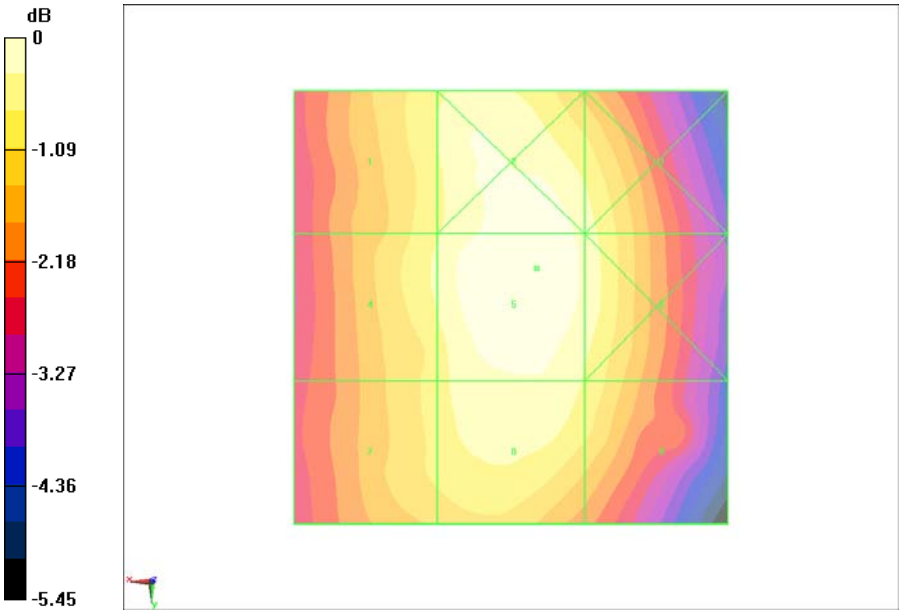
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 35.5 V/m; Power Drift = -0.068 dB

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

Peak E-field in V/m

Grid 1 **75.6 M4**	Grid 2 **81.3 M4**	Grid 3 **77.4 M4**
Grid 4 **76.4 M4**	Grid 5 **82.2 M4**	Grid 6 **78.1 M4**
Grid 7 **74.2 M4**	Grid 8 **78.7 M4**	Grid 9 **75.3 M4**



0 dB = 82.2V/m

Fig B.8 HAC RF E-Field CDMA 835 Middle

HAC RF E-Field CDMA 835 Low – SO3

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

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

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 835; Frequency: 824.7 MHz; Duty Cycle: 1:1

Probe: ER3DV6 - SN2302;ConvF(1, 1, 1)

E Scan - ER3DV6 - 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 = 68 V/m

Probe Modulation Factor = 2.95

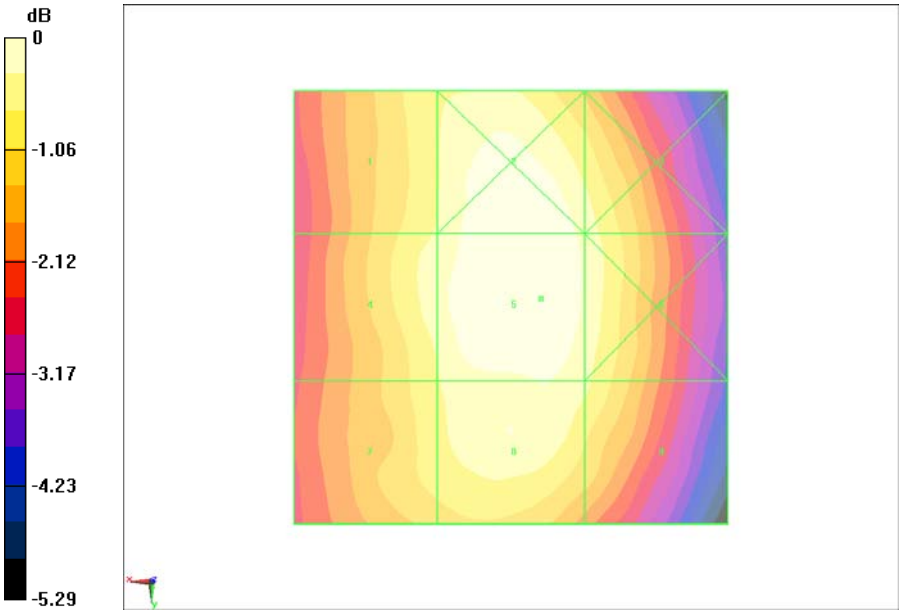
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 29.2 V/m; Power Drift = 0.072 dB

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

Peak E-field in V/m

Grid 1 **63.2 M4**	Grid 2 **67.7 M4**	Grid 3 **64.4 M4**
Grid 4 **64.4 M4**	Grid 5 **68 M4**	Grid 6 **65 M4**
Grid 7 **62.5 M4**	Grid 8 **65.4 M4**	Grid 9 **63.3 M4**



0 dB = 68V/m

Fig B.9 HAC RF E-Field CDMA 835 Low

HAC RF E-Field CDMA 1900 High – SO3

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

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

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 1900; Frequency: 1908.75 MHz; Duty Cycle: 1:1

Probe: ER3DV6 - SN2302;ConvF(1, 1, 1)

E Scan - ER3DV6 - 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 = 2.93

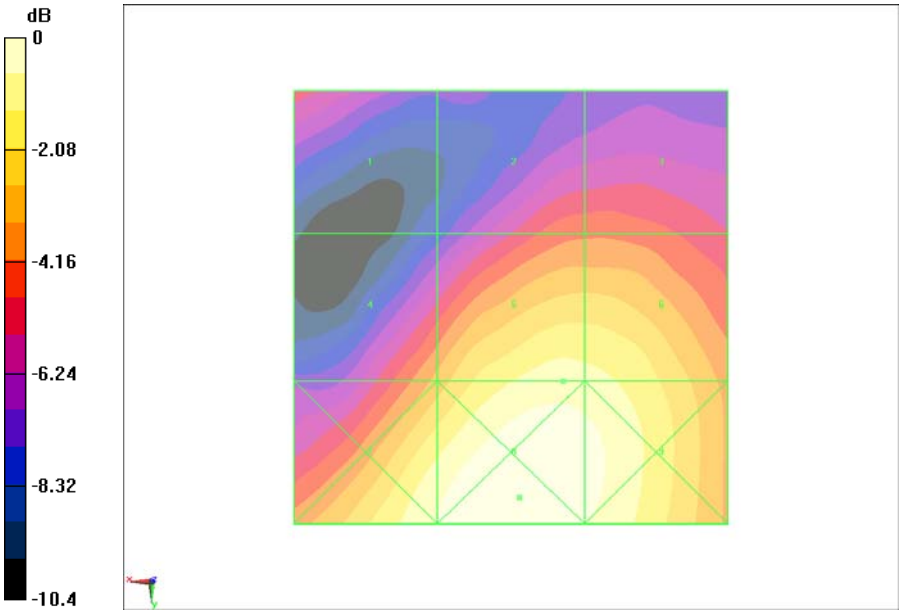
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 16.3 V/m; Power Drift = 0.047 dB

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

Peak E-field in V/m

Grid 1 **29.8 M4**	Grid 2 **33 M4**	Grid 3 **33.1 M4**
Grid 4 **37.3 M4**	Grid 5 **47.9 M4**	Grid 6 **47.4 M4**
Grid 7 **49.9 M4**	Grid 8 **53.9 M4**	Grid 9 **51.4 M4**



0 dB = 53.9V/m

Fig B.10 HAC RF E-Field CDMA 1900 High

HAC RF E-Field CDMA 1900 Middle – SO3

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

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

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 1900; Frequency: 1880 MHz; Duty Cycle: 1:1

Probe: ER3DV6 - SN2302;ConvF(1, 1, 1)

E Scan - ER3DV6 - 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 = 52.4 V/m

Probe Modulation Factor = 2.89

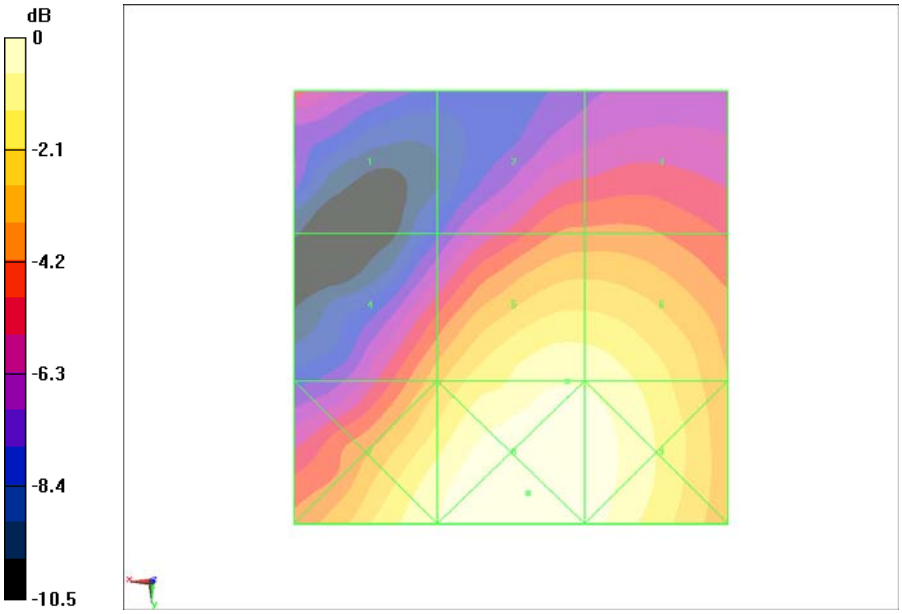
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 18.2 V/m; Power Drift = -0.144 dB

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

Peak E-field in V/m

Grid 1 **31.8 M4**	Grid 2 **36.1 M4**	Grid 3 **36.3 M4**
Grid 4 **40.4 M4**	Grid 5 **52.4 M4**	Grid 6 **52.1 M4**
Grid 7 **52.6 M4**	Grid 8 **57.1 M4**	Grid 9 **55.3 M4**



0 dB = 57.1V/m

Fig B.11 HAC RF E-Field CDMA 1900 Middle

HAC RF E-Field CDMA 1900 Low – SO3

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

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

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 1900; Frequency: 1851.25 MHz; Duty Cycle: 1:1

Probe: ER3DV6 - SN2302;ConvF(1, 1, 1)

E Scan - ER3DV6 - 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 = 52.8 V/m

Probe Modulation Factor = 2.9

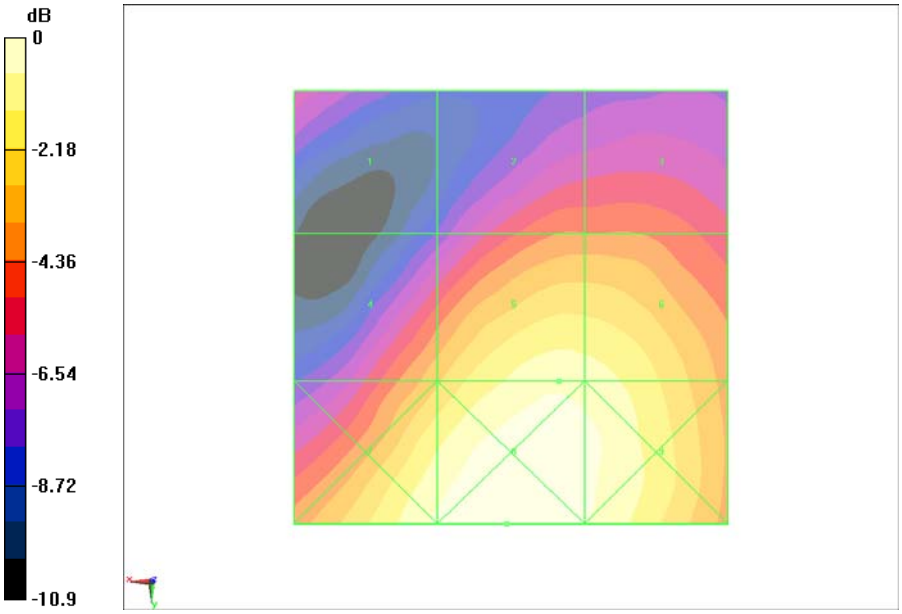
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 18.4 V/m; Power Drift = 0.072 dB

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

Peak E-field in V/m

Grid 1 **29.5 M4**	Grid 2 **35.9 M4**	Grid 3 **35.9 M4**
Grid 4 **41.4 M4**	Grid 5 **52.8 M4**	Grid 6 **51.9 M4**
Grid 7 **54.8 M4**	Grid 8 **58.7 M4**	Grid 9 **55.4 M4**



0 dB = 58.7V/m

Fig B.12 HAC RF E-Field CDMA 1900 Low

HAC RF H-Field CDMA 835 High – SO55

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 835; Frequency: 848.31 MHz; Duty Cycle: 1:1

Probe: H3DV6 - SN6187;

H Scan - H3DV6 - 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 = 0.113 A/m

Probe Modulation Factor = 0.904

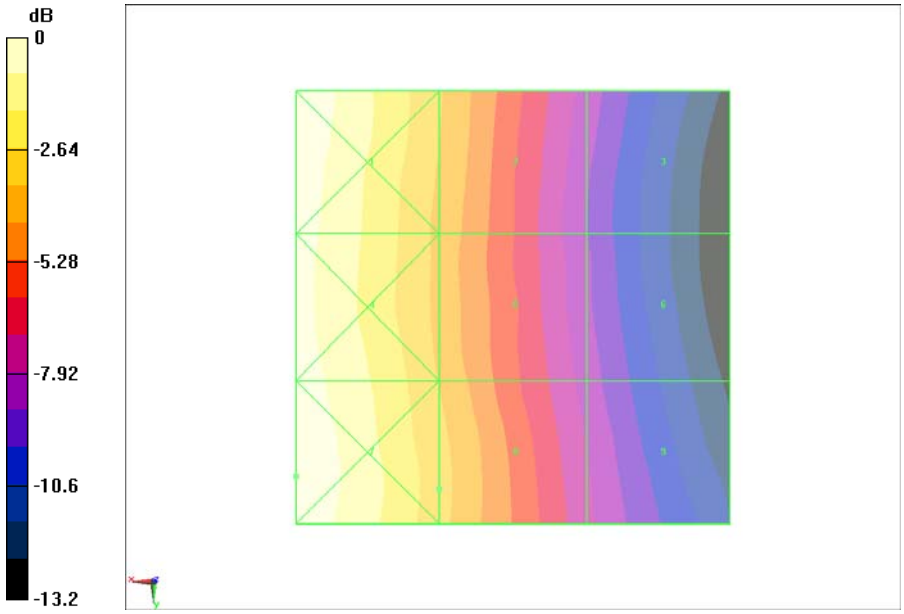
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.091 A/m; Power Drift = -0.072 dB

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

Peak H-field in A/m

Grid 1 **0.158 M4**	Grid 2 **0.109 M4**	Grid 3 **0.063 M4**
Grid 4 **0.156 M4**	Grid 5 **0.108 M4**	Grid 6 **0.063 M4**
Grid 7 **0.162 M4**	Grid 8 **0.113 M4**	Grid 9 **0.067 M4**



0 dB = 0.162A/m

Fig B.13 HAC RF H-Field CDMA 835 High

HAC RF H-Field CDMA 835 Middle – SO55

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 835; Frequency: 836.52 MHz; Duty Cycle: 1:1

Probe: H3DV6 - SN6187;

H Scan - H3DV6 - 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 = 0.120 A/m

Probe Modulation Factor = 0.895

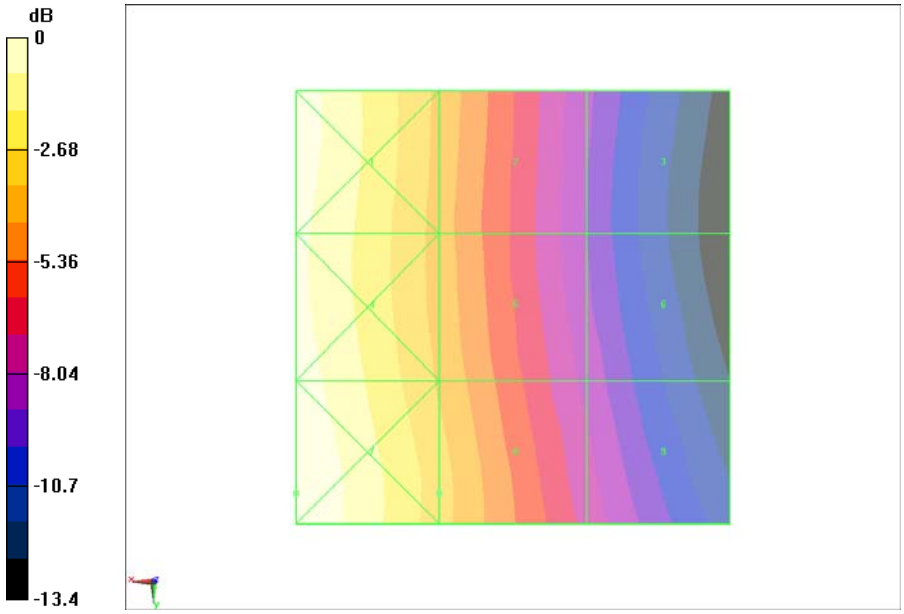
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.094 A/m; Power Drift = -0.077 dB

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

Peak H-field in A/m

Grid 1 **0.165 M4**	Grid 2 **0.111 M4**	Grid 3 **0.063 M4**
Grid 4 **0.164 M4**	Grid 5 **0.113 M4**	Grid 6 **0.066 M4**
Grid 7 **0.172 M4**	Grid 8 **0.120 M4**	Grid 9 **0.073 M4**



0 dB = 0.172A/m

Fig B.14 HAC RF H-Field CDMA 835 Middle

HAC RF H-Field CDMA 835 Low – SO55

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 835; Frequency: 824.7 MHz; Duty Cycle: 1:1

Probe: H3DV6 - SN6187;

H Scan - H3DV6 - 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 = 0.097 A/m

Probe Modulation Factor = 0.897

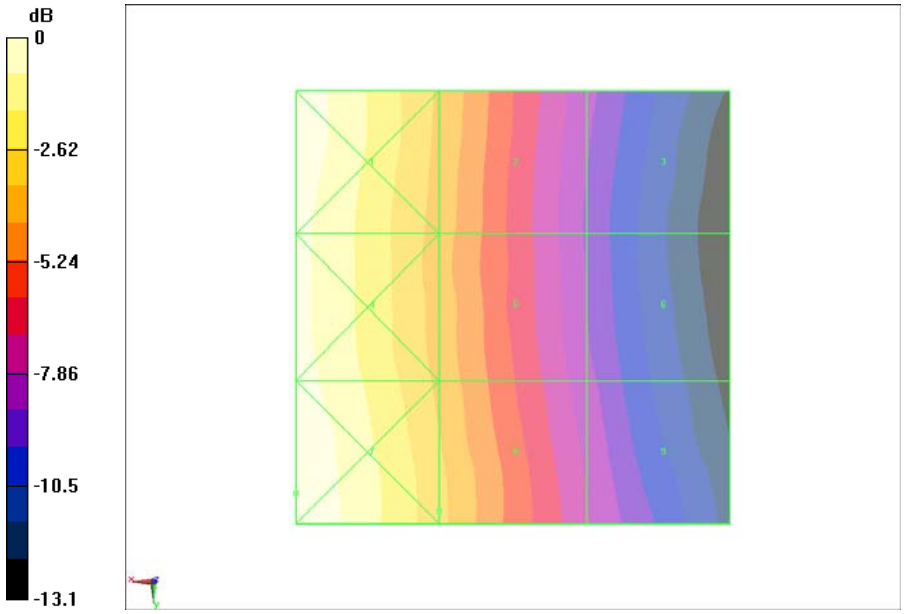
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.076 A/m; Power Drift = -0.043 dB

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

Peak H-field in A/m

Grid 1 **0.136 M4**	Grid 2 **0.092 M4**	Grid 3 **0.053 M4**
Grid 4 **0.133 M4**	Grid 5 **0.091 M4**	Grid 6 **0.053 M4**
Grid 7 **0.140 M4**	Grid 8 **0.097 M4**	Grid 9 **0.058 M4**



0 dB = 0.140A/m

Fig B.15 HAC RF H-Field CDMA 835 Low

HAC RF H-Field CDMA 1900 High – SO55

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 1900; Frequency: 1908.75 MHz; Duty Cycle: 1:1

Probe: H3DV6 - SN6187;

H Scan - H3DV6 - 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 = 0.109 A/m

Probe Modulation Factor = 0.921

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.113 A/m; Power Drift = 0.088 dB

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

Peak H-field in A/m

Grid 1 **0.098 M4**	Grid 2 **0.099 M4**	Grid 3 **0.093 M4**
Grid 4 **0.124 M4**	Grid 5 **0.109 M4**	Grid 6 **0.091 M4**
Grid 7 **0.156 M4**	Grid 8 **0.121 M4**	Grid 9 **0.078 M4**

0 dB = 0.156A/m

Fig B.16 HAC RF H-Field CDMA 1900 High

HAC RF H-Field CDMA 1900 Middle – SO55

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 1900; Frequency: 1880 MHz; Duty Cycle: 1:1

Probe: H3DV6 - SN6187;

H Scan - H3DV6 - 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 = 0.117 A/m

Probe Modulation Factor = 0.934

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.123 A/m; Power Drift = -0.161 dB

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

Peak H-field in A/m

Grid 1 **0.106 M4**	Grid 2 **0.107 M4**	Grid 3 **0.101 M4**
Grid 4 **0.134 M4**	Grid 5 **0.117 M4**	Grid 6 **0.099 M4**
Grid 7 **0.167 M4**	Grid 8 **0.130 M4**	Grid 9 **0.085 M4**

0 dB = 0.167A/m

Fig B.17 HAC RF H-Field CDMA 1900 Middle

HAC RF H-Field CDMA 1900 Low – SO55

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 1900; Frequency: 1851.25 MHz; Duty Cycle: 1:1

Probe: H3DV6 - SN6187;

H Scan - H3DV6 - 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 = 0.116 A/m

Probe Modulation Factor = 0.934

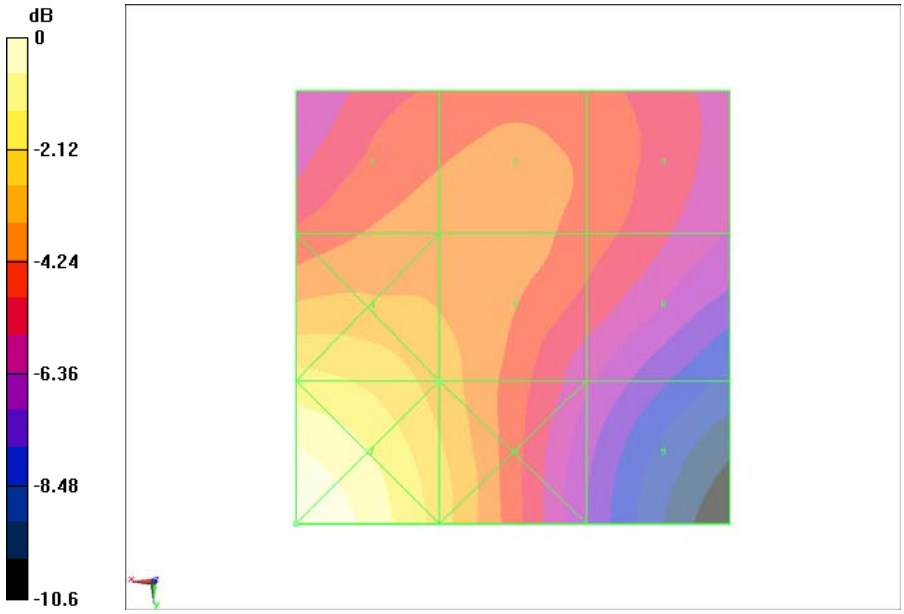
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.121 A/m; Power Drift = -0.049 dB

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

Peak H-field in A/m

Grid 1 **0.106 M4**	Grid 2 **0.107 M4**	Grid 3 **0.100 M4**
Grid 4 **0.134 M4**	Grid 5 **0.116 M4**	Grid 6 **0.098 M4**
Grid 7 **0.166 M4**	Grid 8 **0.125 M4**	Grid 9 **0.082 M4**



0 dB = 0.166A/m

Fig B.18 HAC RF H-Field CDMA 1900 Low

HAC RF H-Field CDMA 835 High – SO3

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 835; Frequency: 848.31 MHz; Duty Cycle: 1:1

Probe: H3DV6 - SN6187;

H Scan - H3DV6 - 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 = 0.118 A/m

Probe Modulation Factor = 2.85

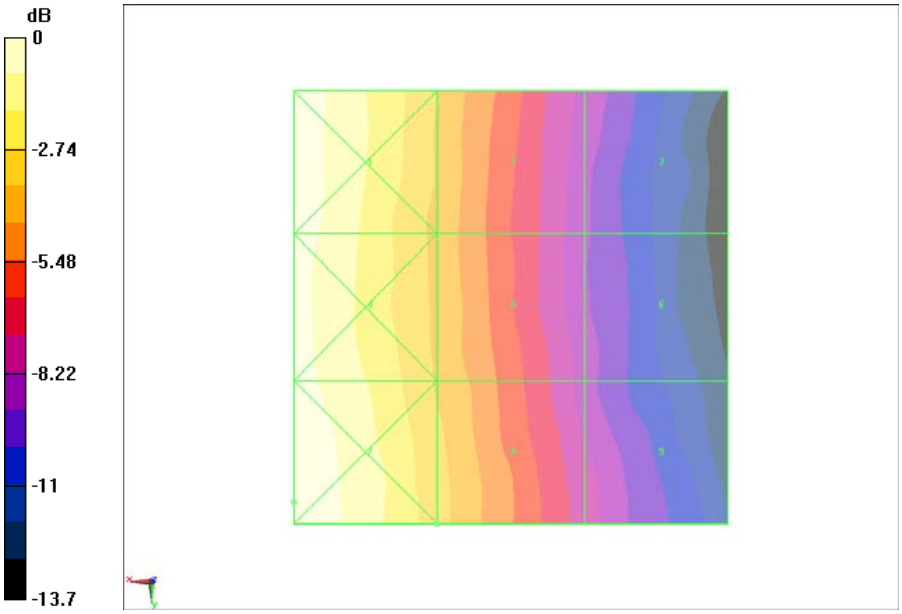
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.030 A/m; Power Drift = -0.086 dB

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

Peak H-field in A/m

Grid 1 **0.164 M4**	Grid 2 **0.113 M4**	Grid 3 **0.065 M4**
Grid 4 **0.162 M4**	Grid 5 **0.111 M4**	Grid 6 **0.063 M4**
Grid 7 **0.171 M4**	Grid 8 **0.118 M4**	Grid 9 **0.071 M4**



0 dB = 0.171A/m

Fig B.19 HAC RF H-Field CDMA 835 High

HAC RF H-Field CDMA 835 Middle – SO3

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 835; Frequency: 836.52 MHz; Duty Cycle: 1:1

Probe: H3DV6 - SN6187;

H Scan - H3DV6 - 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 = 0.133 A/m

Probe Modulation Factor = 2.84

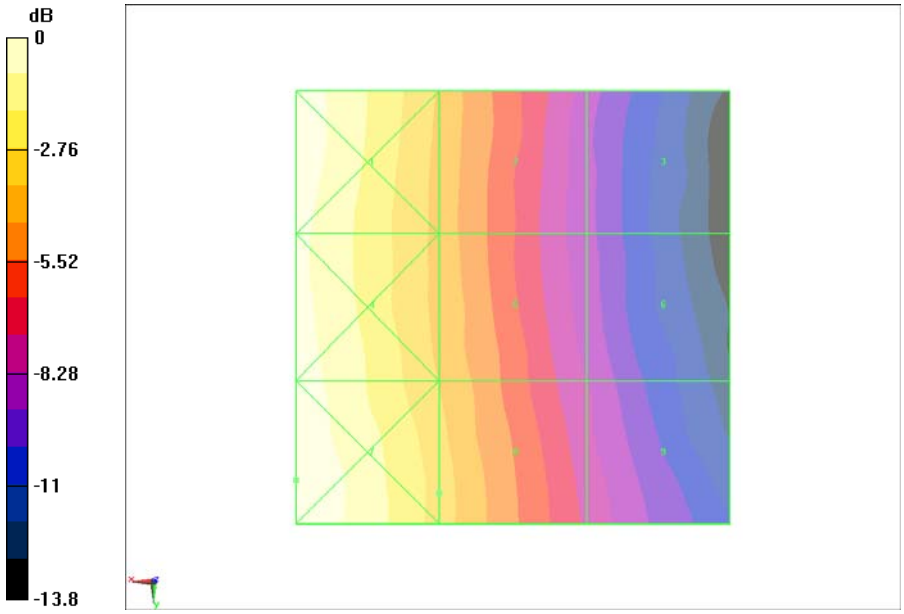
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.033 A/m; Power Drift = 0.056 dB

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

Peak H-field in A/m

Grid 1 **0.183 M4**	Grid 2 **0.124 M4**	Grid 3 **0.070 M4**
Grid 4 **0.181 M4**	Grid 5 **0.125 M4**	Grid 6 **0.074 M4**
Grid 7 **0.191 M4**	Grid 8 **0.133 M4**	Grid 9 **0.081 M4**



0 dB = 0.191A/m

Fig B.20 HAC RF H-Field CDMA 835 Middle

HAC RF H-Field CDMA 835 Low – SO3

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 835; Frequency: 824.7 MHz; Duty Cycle: 1:1

Probe: H3DV6 - SN6187;

H Scan - H3DV6 - 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 = 0.101 A/m

Probe Modulation Factor = 2.69

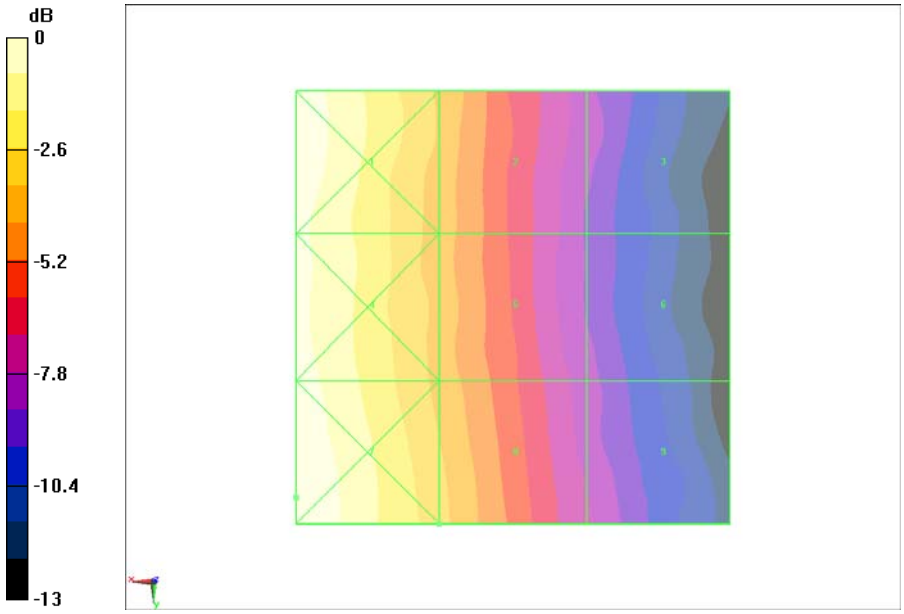
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.027 A/m; Power Drift = -0.031 dB

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

Peak H-field in A/m

Grid 1 **0.140 M4**	Grid 2 **0.096 M4**	Grid 3 **0.057 M4**
Grid 4 **0.139 M4**	Grid 5 **0.094 M4**	Grid 6 **0.056 M4**
Grid 7 **0.145 M4**	Grid 8 **0.101 M4**	Grid 9 **0.060 M4**



0 dB = 0.145A/m

Fig B.21 HAC RF H-Field CDMA 835 Low

HAC RF H-Field CDMA 1900 High – SO3

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 1900; Frequency: 1908.75 MHz; Duty Cycle: 1:1

Probe: H3DV6 - SN6187;

H Scan - H3DV6 - 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 = 0.114 A/m

Probe Modulation Factor = 2.85

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.039 A/m; Power Drift = 0.00924 dB

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

Peak H-field in A/m

Grid 1 **0.106 M4**	Grid 2 **0.108 M4**	Grid 3 **0.099 M4**
Grid 4 **0.131 M4**	Grid 5 **0.114 M4**	Grid 6 **0.098 M4**
Grid 7 **0.167 M4**	Grid 8 **0.127 M4**	Grid 9 **0.083 M4**

0 dB = 0.167A/m

Fig B.22 HAC RF H-Field CDMA 1900 High

HAC RF H-Field CDMA 1900 Middle – SO3

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 1900; Frequency: 1880 MHz; Duty Cycle: 1:1

Probe: H3DV6 - SN6187;

H Scan - H3DV6 - 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 = 0.125 A/m

Probe Modulation Factor = 2.86

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.043 A/m; Power Drift = 0.065 dB

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

Peak H-field in A/m

Grid 1 **0.118 M4**	Grid 2 **0.116 M4**	Grid 3 **0.110 M4**
Grid 4 **0.141 M4**	Grid 5 **0.125 M4**	Grid 6 **0.107 M4**
Grid 7 **0.178 M4**	Grid 8 **0.137 M4**	Grid 9 **0.091 M4**

0 dB = 0.178A/m

Fig B.23 HAC RF H-Field CDMA 1900 Middle

HAC RF H-Field CDMA 1900 Low – SO3

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 1900; Frequency: 1851.25 MHz; Duty Cycle: 1:1

Probe: H3DV6 - SN6187;

H Scan - H3DV6 - 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 = 0.116 A/m

Probe Modulation Factor = 2.71

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.042 A/m; Power Drift = -0.00425 dB

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

Peak H-field in A/m

Grid 1 **0.110 M4**	Grid 2 **0.110 M4**	Grid 3 **0.101 M4**
Grid 4 **0.133 M4**	Grid 5 **0.116 M4**	Grid 6 **0.100 M4**
Grid 7 **0.168 M4**	Grid 8 **0.126 M4**	Grid 9 **0.082 M4**

0 dB = 0.168A/m

Fig B.24 HAC RF H-Field CDMA 1900 Low

Total M-rating of CDMA 835 MHz Band – SO55

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

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

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 835; Frequency: 836.52 MHz; Duty Cycle: 1:1

Probe: ER3DV6 - SN2302Probe: H3DV6 - SN6187;ConvF(1, 1, 1)

E Scan - ER3DV6 - 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 V/m

Probe Modulation Factor = 0.928

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 104.6 V/m; Power Drift = -0.00491 dB

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

Peak E-field in V/m

Grid 1 **69.5 M4**	Grid 2 **74.2 M4**	Grid 3 **71.4 M4**
Grid 4 **70.5 M4**	Grid 5 **75 M4**	Grid 6 **71.9 M4**
Grid 7 **68.3 M4**	Grid 8 **72.4 M4**	Grid 9 **69.4 M4**

H Scan - H3DV6 - 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 = 0.120 A/m

Probe Modulation Factor = 0.895

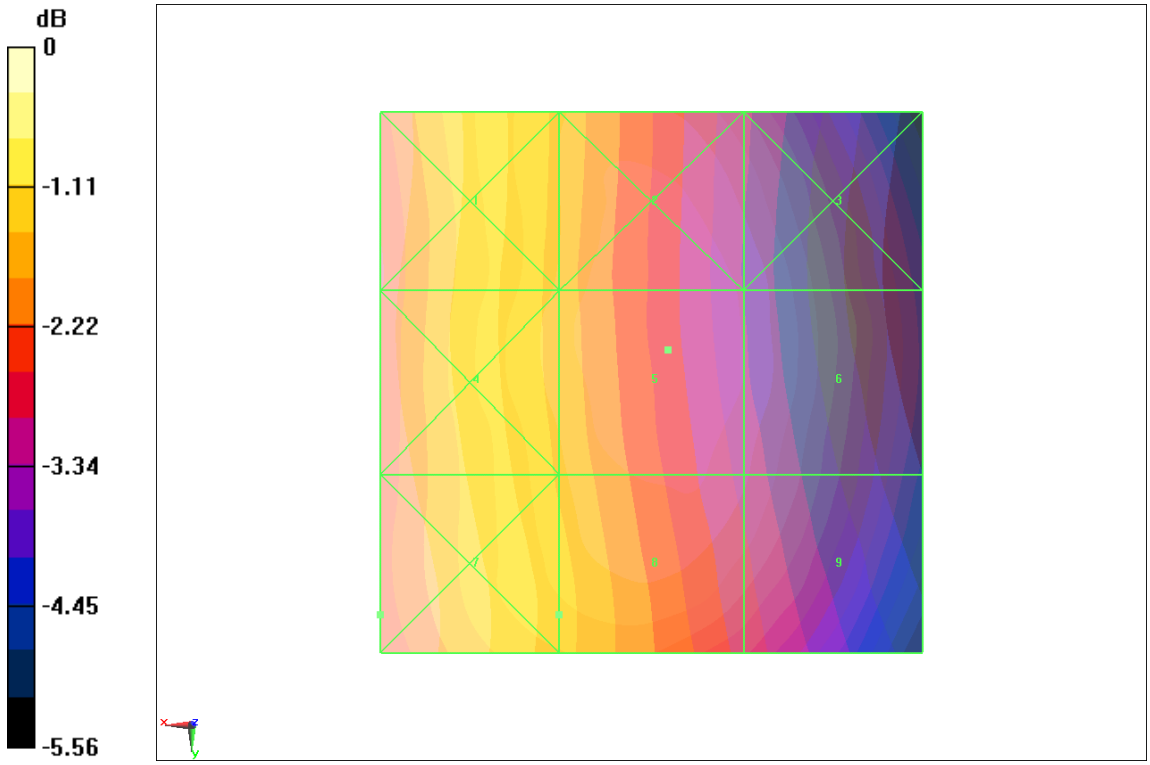
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.094 A/m; Power Drift = -0.077 dB

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

Peak H-field in A/m

Grid 1 **0.165 M4**	Grid 2 **0.111 M4**	Grid 3 **0.063 M4**
Grid 4 **0.164 M4**	Grid 5 **0.113 M4**	Grid 6 **0.066 M4**
Grid 7 **0.172 M4**	Grid 8 **0.120 M4**	Grid 9 **0.073 M4**



0 dB = 75V/m

RF RESULTS AND M-RATING	E-Field M Rating	**M4 (AWF 0 dB)**
	H-Field M Rating	**M4 (AWF 0 dB)**
	Total M Rating	**M4**

Fig B.25 Total M-rating of CDMA 835

Total M-rating of CDMA 1900 MHz Band – SO55

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

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

Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C

Communication System: CDMA 1900; Frequency: 1851.25 MHz; Frequency: 1880 MHz; Duty Cycle: 1:1

Probe: ER3DV6 - SN2302Probe: H3DV6 - SN6187;ConvF(1, 1, 1)

E Scan - ER3DV6 - 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 = 49.7 V/m

Probe Modulation Factor = 0.924

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 56.2 V/m; Power Drift = -0.184 dB

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

Peak E-field in V/m

Grid 1 **26.7 M4**	Grid 2 **33.9 M4**	Grid 3 **33.9 M4**
Grid 4 **38.9 M4**	Grid 5 **49.7 M4**	Grid 6 **49.1 M4**
Grid 7 **50.6 M4**	Grid 8 **54.6 M4**	Grid 9 **52.2 M4**

H Scan - H3DV6 - 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 = 0.117 A/m

Probe Modulation Factor = 0.934

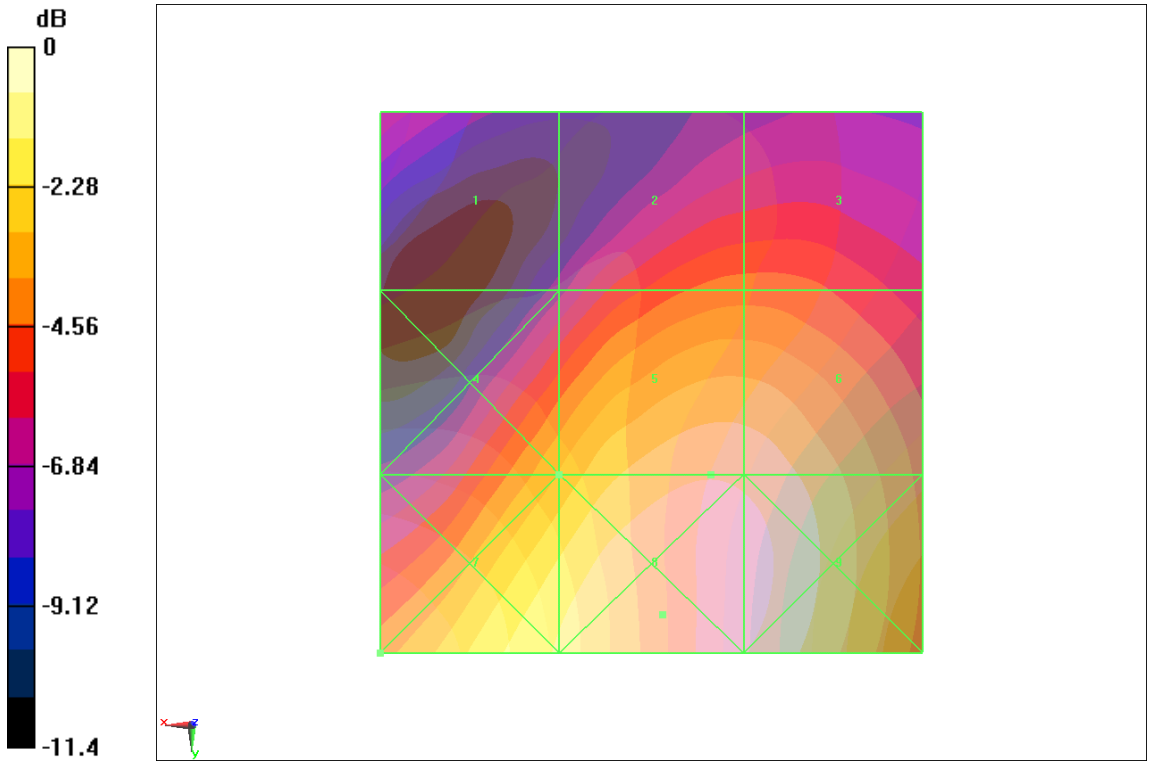
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.123 A/m; Power Drift = -0.161 dB

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

Peak H-field in A/m

Grid 1 **0.106 M4**	Grid 2 **0.107 M4**	Grid 3 **0.101 M4**
Grid 4 **0.134 M4**	Grid 5 **0.117 M4**	Grid 6 **0.099 M4**
Grid 7 **0.167 M4**	Grid 8 **0.130 M4**	Grid 9 **0.085 M4**



0 dB = 54.6V/m

RF RESULTS AND M-RATING	E-Field M Rating	M4 (AWF 0 dB)
	H-Field M Rating	M4 (AWF 0 dB)
	Total M Rating	M4

Fig B.26 Total M-rating of CDMA 1900

Total M-rating of CDMA 835 MHz Band – SO3

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

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

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: CDMA 835; Frequency: 836.52 MHz; Duty Cycle: 1:1

Probe: ER3DV6 - SN2302Probe: H3DV6 - SN6187;ConvF(1, 1, 1)

E Scan - ER3DV6 - 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 = 82.2 V/m

Probe Modulation Factor = 2.91

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 35.5 V/m; Power Drift = -0.068 dB

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

Peak E-field in V/m

Grid 1 **75.6 M4**	Grid 2 **81.3 M4**	Grid 3 **77.4 M4**
Grid 4 **76.4 M4**	Grid 5 **82.2 M4**	Grid 6 **78.1 M4**
Grid 7 **74.2 M4**	Grid 8 **78.7 M4**	Grid 9 **75.3 M4**

H Scan - H3DV6 - 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 = 0.133 A/m

Probe Modulation Factor = 2.84

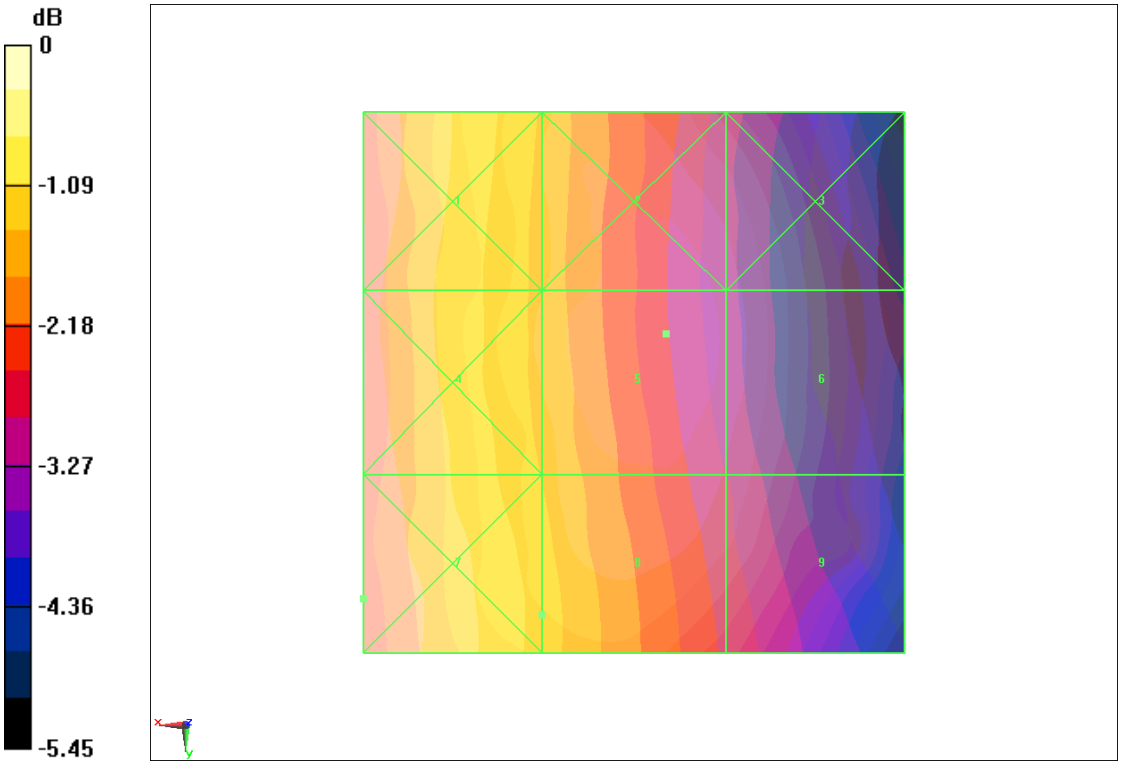
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.033 A/m; Power Drift = 0.056 dB

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

Peak H-field in A/m

Grid 1 **0.183 M4**	Grid 2 **0.124 M4**	Grid 3 **0.070 M4**
Grid 4 **0.181 M4**	Grid 5 **0.125 M4**	Grid 6 **0.074 M4**
Grid 7 **0.191 M4**	Grid 8 **0.133 M4**	Grid 9 **0.081 M4**



0 dB = 82.2V/m

RF RESULTS AND M-RATING	E-Field M Rating	**M4 (AWF 0 dB)**
	H-Field M Rating	**M4 (AWF 0 dB)**
	Total M Rating	**M4**

Fig B.27 Total M-rating of CDMA 835

Total M-rating of CDMA 1900 MHz Band – SO3

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

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

Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C

Communication System: CDMA 1900; Frequency: 1851.25 MHz, Frequency: 1880 MHz; Duty Cycle: 1:1

Probe: ER3DV6 - SN2302Probe: H3DV6 - SN6187;ConvF(1, 1, 1)

E Scan - ER3DV6 - 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 = 52.8 V/m

Probe Modulation Factor = 2.9

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 18.4 V/m; Power Drift = 0.072 dB

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

Peak E-field in V/m

Grid 1 **29.5 M4**	Grid 2 **35.9 M4**	Grid 3 **35.9 M4**
Grid 4 **41.4 M4**	Grid 5 **52.8 M4**	Grid 6 **51.9 M4**
Grid 7 **54.8 M4**	Grid 8 **58.7 M4**	Grid 9 **55.4 M4**

H Scan - H3DV6 - 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 = 0.125 A/m

Probe Modulation Factor = 2.86

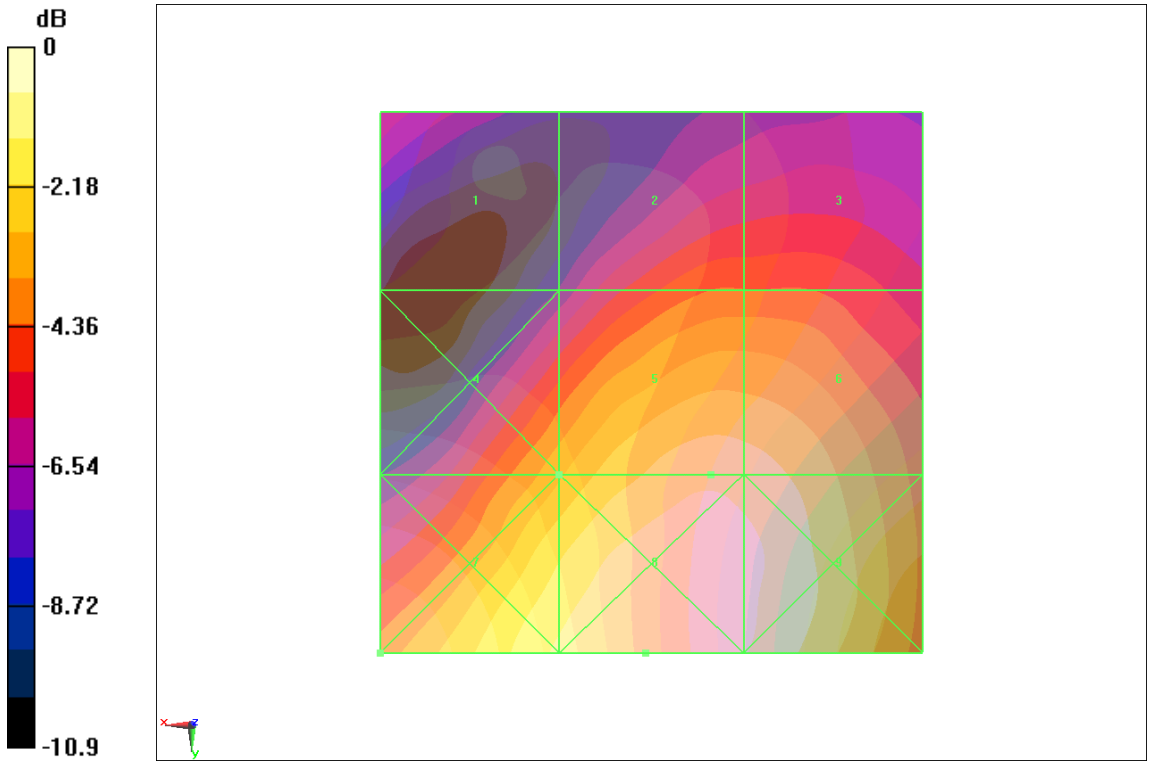
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.043 A/m; Power Drift = 0.065 dB

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

Peak H-field in A/m

Grid 1 **0.118 M4**	Grid 2 **0.116 M4**	Grid 3 **0.110 M4**
Grid 4 **0.141 M4**	Grid 5 **0.125 M4**	Grid 6 **0.107 M4**
Grid 7 **0.178 M4**	Grid 8 **0.137 M4**	Grid 9 **0.091 M4**



0 dB = 58.7V/m

RF RESULTS AND M-RATING	E-Field M Rating	M4 (AWF 0 dB)
	H-Field M Rating	M4 (AWF 0 dB)
	Total M Rating	M4

Fig B.28 Total M-rating of CDMA 1900

ANNEX C SYSTEM VALIDATION RESULT

E SCAN of Dipole 835 MHz

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

Medium parameters used: σ = 0 mho/m, εr = 1; ρ = 1000 kg/m3

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

Probe: ER3DV6 - SN2302;ConvF(1, 1, 1)

E Scan - measurement distance from the probe sensor center to CD835 Dipole = 10mm/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 162.1 V/m

Probe Modulation Factor = 1

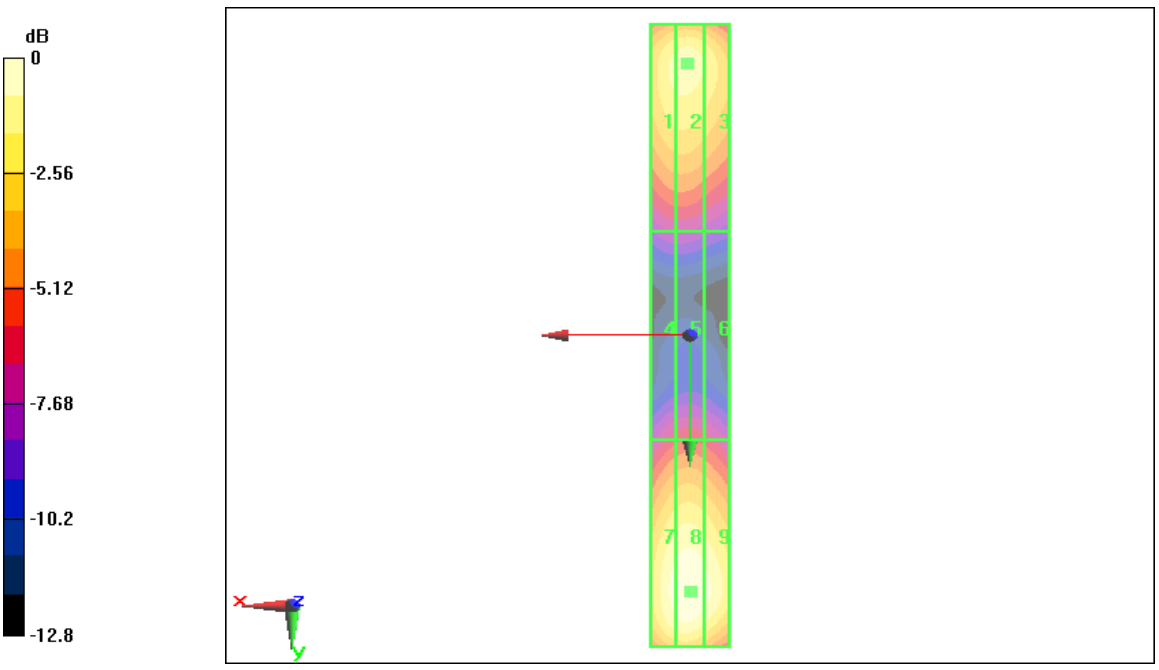
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 105.3 V/m; Power Drift = -0.026 dB

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

Peak E-field in V/m

Grid 1 **157.0 M4**	Grid 2 **162.1 M4**	Grid 3 **147.9 M4**
Grid 4 **86.8 M4**	Grid 5 **89.5 M4**	Grid 6 **87.0 M4**
Grid 7 **152.2 M4**	Grid 8 **160.7 M4**	Grid 9 **158.4 M4**



0 dB = 162.1V/m

H SCAN of Dipole 835 MHz

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

Medium parameters used: σ = 0 mho/m, εr = 1; ρ = 1 kg/m3

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

Probe: H3DV6 - SN6187;

H Scan - measurement distance from the probe sensor center to CD835 Dipole = 10mm/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.464 A/m

Probe Modulation Factor = 1

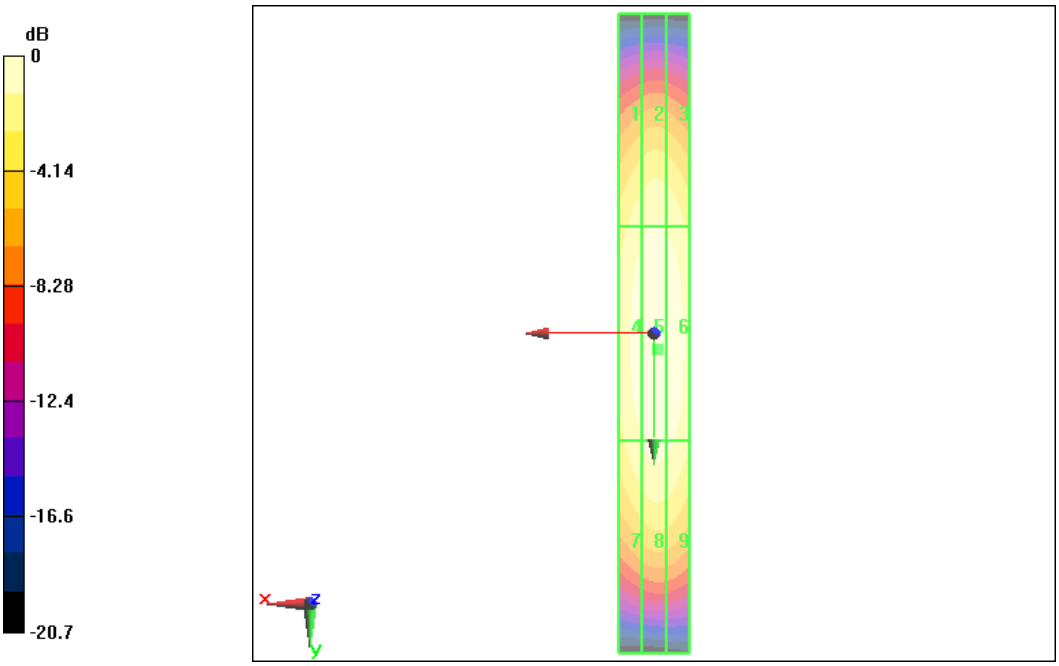
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.495 A/m; Power Drift = 0.037 dB

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

Peak H-field in A/m

Grid 1 **0.384 M4**	Grid 2 **0.403 M4**	Grid 3 **0.395 M4**
Grid 4 **0.433 M4**	Grid 5 **0.464 M4**	Grid 6 **0.441 M4**
Grid 7 **0.375 M4**	Grid 8 **0.404 M4**	Grid 9 **0.394 M4**



0 dB = 0.464A/m

E SCAN of Dipole 1880 MHz

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3

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

Probe: ER3DV6 - SN2302;ConvF(1, 1, 1)

E Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 142.6 V/m

Probe Modulation Factor = 1

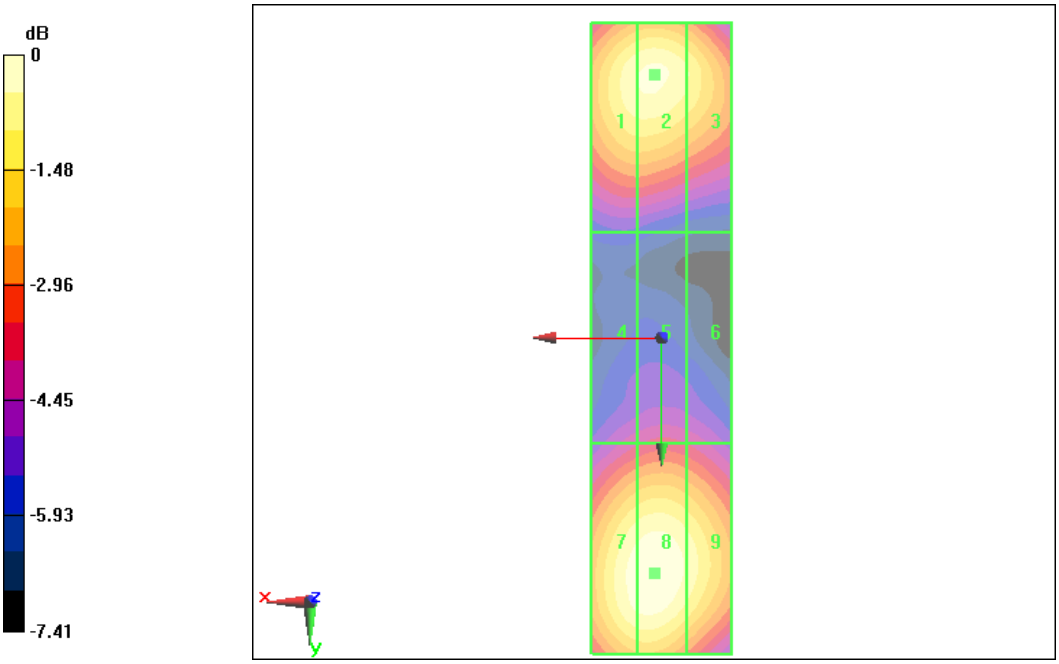
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 160.2 V/m; Power Drift = 0.004 dB

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

Peak E-field in V/m

Grid 1 **133.5 M2**	Grid 2 **138.8 M2**	Grid 3 **135.7 M2**
Grid 4 **89.4 M3**	Grid 5 **92.4 M3**	Grid 6 **89.2 M3**
Grid 7 **133.5 M2**	Grid 8 **142.6 M2**	Grid 9 **141.0 M2**



0 dB = 142.6V/m

H SCAN of Dipole 1880 MHz

Date: 4/5/2012

Electronics: DAE4 Sn777

Medium: Air

Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3

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

Probe: H3DV6 - SN6187;

H Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.467 A/m

Probe Modulation Factor = 1

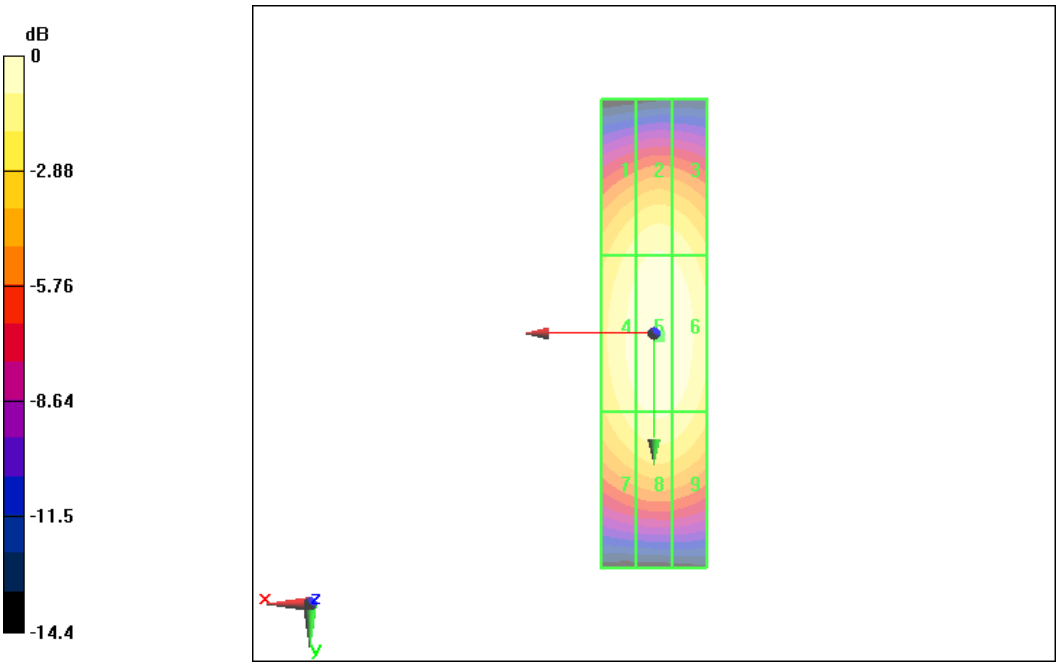
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.496 A/m; Power Drift = -0.040 dB

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

Peak H-field in A/m

Grid 1 **0.397 M2**	Grid 2 **0.428 M2**	Grid 3 **0.403 M2**
Grid 4 **0.444 M2**	Grid 5 **0.467 M2**	Grid 6 **0.458 M2**
Grid 7 **0.408 M2**	Grid 8 **0.434 M2**	Grid 9 **0.418 M2**



0 dB = 0.467A/m

ANNEX D PROBE CALIBRATION CERTIFICATE

E_Probe ER3DV6

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

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

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

Accreditation No.: SCS 108

Client: Auden

Certificate No: ER3-2302_Jun11

CALIBRATION CERTIFICATE

Object: ER3DV6 - SN:2302

Calibration procedure(s): QA CAL-02.v6, QA CAL-25.v4
Calibration procedure for E-field probes optimized for close near field evaluations in air

Calibration date: June 15, 2011

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ER3DV6	SN: 2328	4-Oct-10 (No. ER3-2328_Oct10)	Oct-11
DAE4	SN: 789	6-Apr-11 (No. DAE4-789_Apr11)	Apr-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: June 17, 2011

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

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Accreditation No.: SCS 108

Glossary:

NORMx,y,z	sensitivity in free space
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

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

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 for XY sensors and ϑ = 90 for Z sensor (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart).
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z, VRx,y,z: A, B, C* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *Spherical isotropy (3D deviation from isotropy):* in a locally homogeneous field realized using an open waveguide setup.
- *Sensor Offset:* The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle:* The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

Probe ER3DV6

SN:2302

Manufactured: November 6, 2002
Calibrated: June 15, 2011

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: ER3DV6 - SN:2302

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)	1.47	1.34	1.44	± 10.1 %
DCP (mV)[B]	98.2	96.7	101.8	

Modulation Calibration Parameters

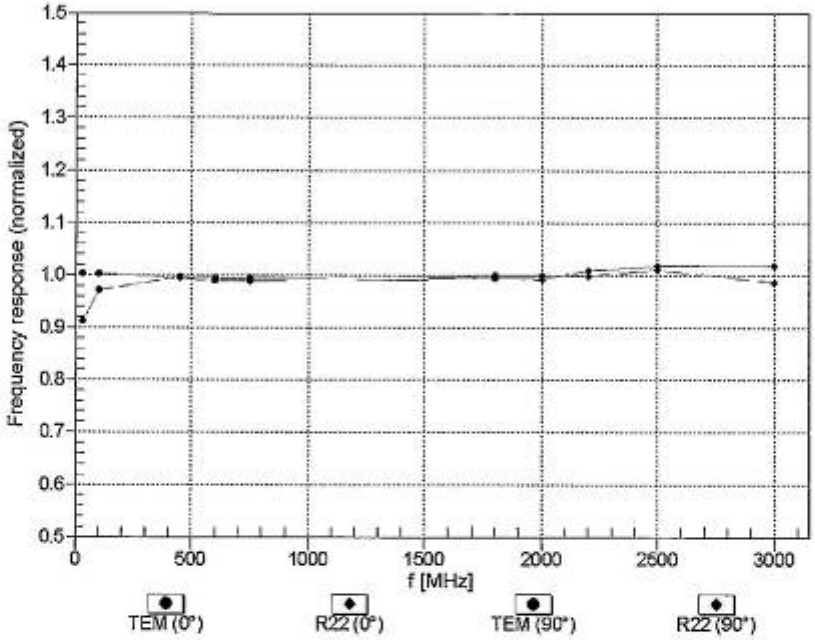
UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	113.8	±3.0 %
			Y	0.00	0.00	1.00	99.1	
			Z	0.00	0.00	1.00	95.3	

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

[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

ER3DV6– SN:2302 June 15, 2011

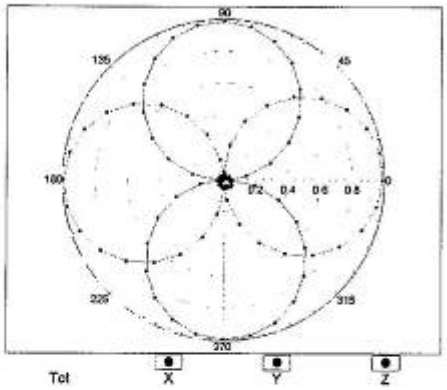
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



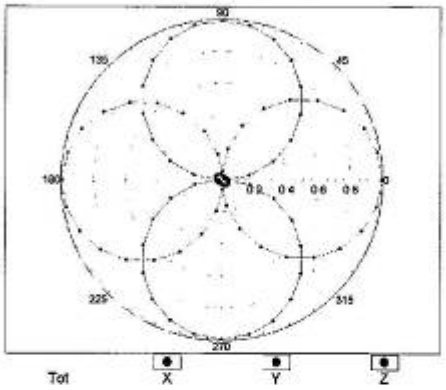
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM,0°

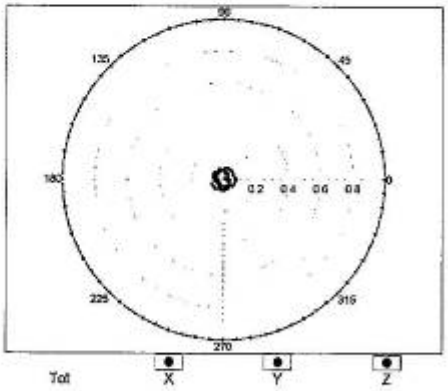


f=2500 MHz,R22,0°

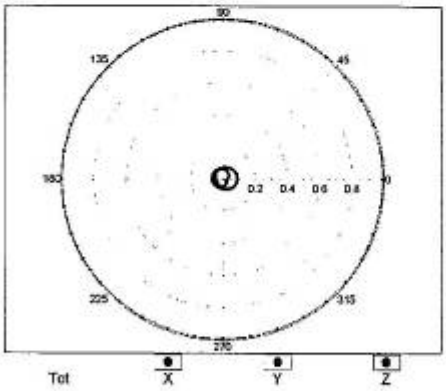


Receiving Pattern (ϕ), ϑ = 90°

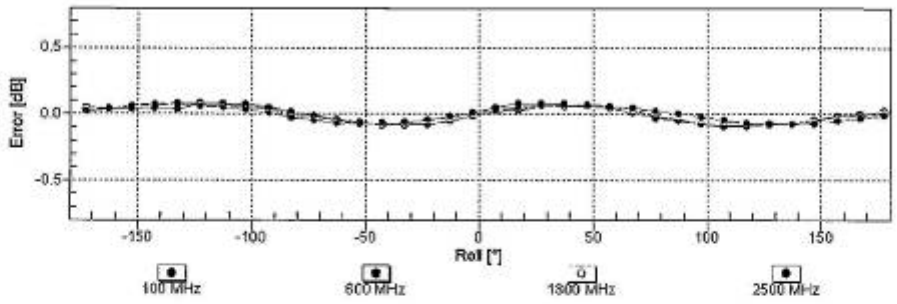
f=600 MHz,TEM,90°



f=2500 MHz,R22,90°

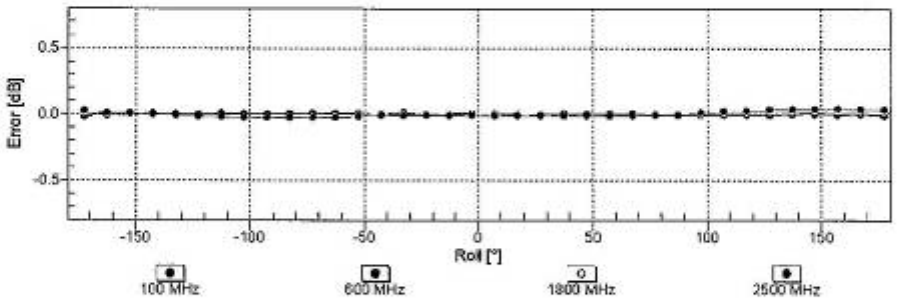


Receiving Pattern (ϕ), ϑ = 0°



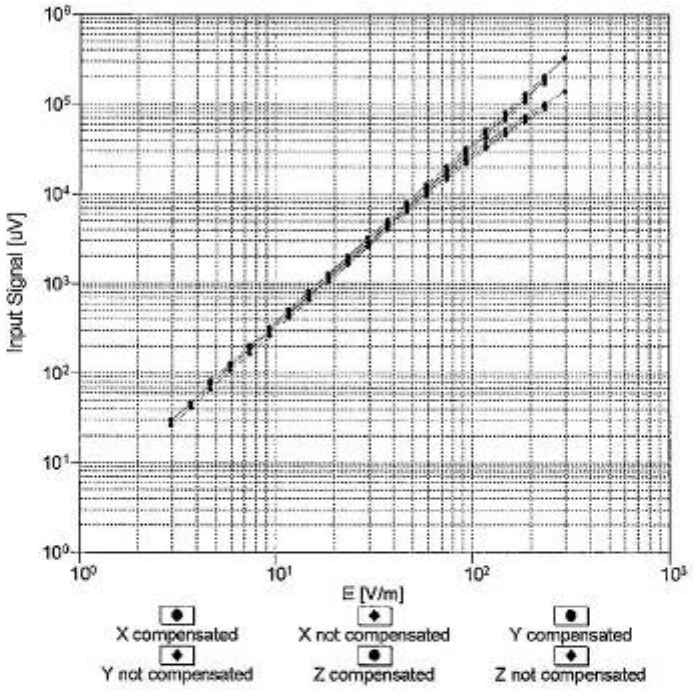
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

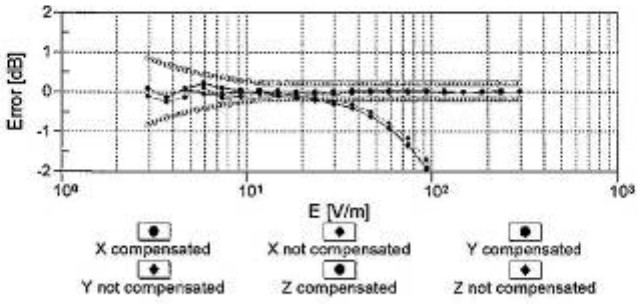
Receiving Pattern (ϕ), ϑ = 90°



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

Dynamic Range f(E-field)
(TEM cell , f = 900 MHz)

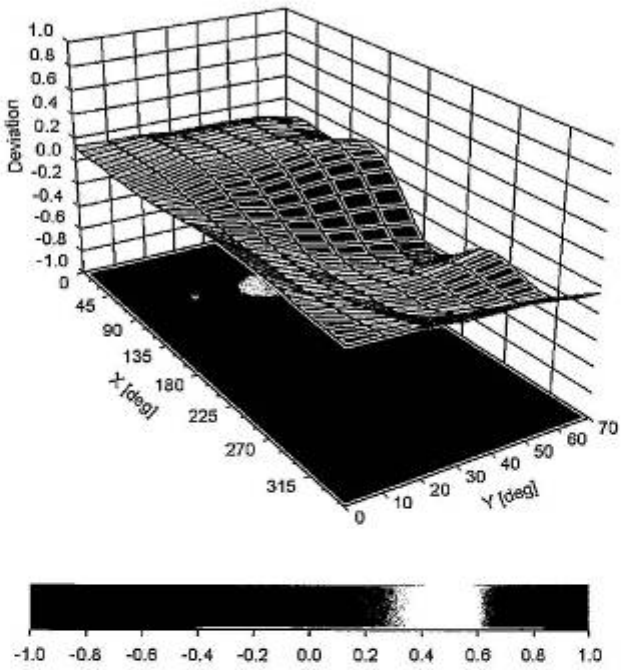




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Deviation from Isotropy in Air

Error (ϕ, ϑ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: ER3DV6 - SN:2302

Other Probe Parameters

Sensor Arrangement	Rectangular
Connector Angle (°)	-2.7
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	8 mm
Probe Tip to Sensor X Calibration Point	2.5 mm
Probe Tip to Sensor Y Calibration Point	2.5 mm
Probe Tip to Sensor Z Calibration Point	2.5 mm

H_Probe H3DV6

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

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Accreditation No.: SCS 108

Client: Auden

Certificate No: H3-6187_Jun11

CALIBRATION CERTIFICATE

Object: H3DV6 - SN:6187

Calibration procedure(s): QA CAL-03.v6, QA CAL-25.v4
Calibration procedure for H-field probes optimized for close near field evaluations in air

Calibration date: June 17, 2011

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41496087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe H3DV6	SN: 6182	4-Oct-10 (No. H3-6182_Oct10)	Oct-11
DAE4	SN: 789	6-Apr-11 (No. DAE4-789_Apr11)	Apr-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: June 17, 2011

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

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Accreditation No.: SCS 108

Glossary:

NORMx,y,z	sensitivity in free space
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

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

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 for XY sensors and ϑ = 90 for Z sensor (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide).
- *X,Y,Z(f)_a0a1a2= X,Y,Z_a0a1a2* frequency_response* (see Frequency Response Chart).
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z, VRx,y,z: A, B, C* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *Spherical isotropy (3D deviation from isotropy)*: in a locally homogeneous field realized using an open waveguide setup.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *X_a0a1a2* (no uncertainty required).

Probe H3DV6

SN:6187

Manufactured: June 8, 2004
Calibrated: June 17, 2011

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: H3DV6 - SN:6187

Basic Calibration Parameters

		Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (A/m / √(mV))	a0	3.25E-003	2.53E-003	3.06E-003	± 5.1 %
Norm (A/m / √(mV))	a1	-2.03E-005	4.43E-005	-4.88E-005	± 5.1 %
Norm (A/m / √(mV))	a2	2.36E-005	1.59E-005	7.21E-005	± 5.1 %
DCP (mV)[B]		108.1	92.6	91.8	

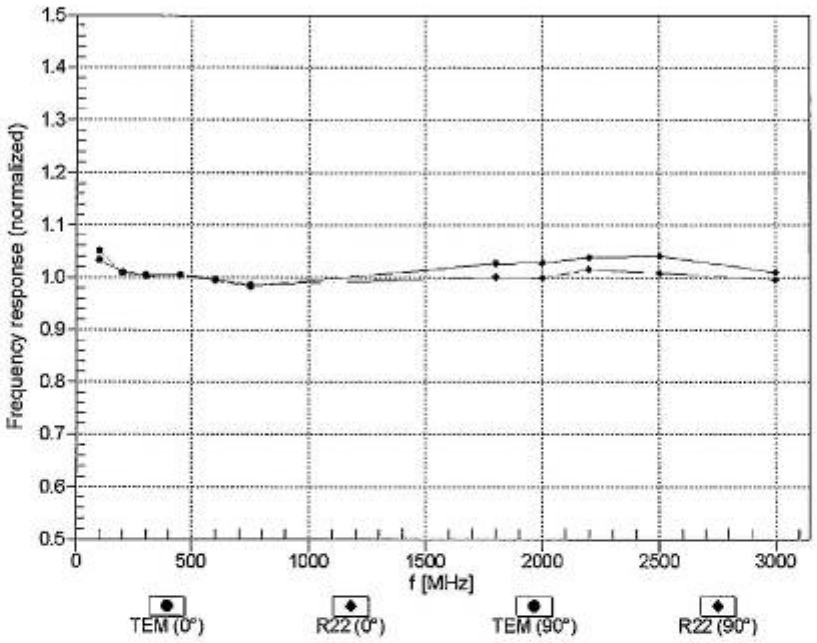
Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	77.7	±3.0 %
			Y	0.00	0.00	1.00	72.9	
			Z	0.00	0.00	1.00	90.7	

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

[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

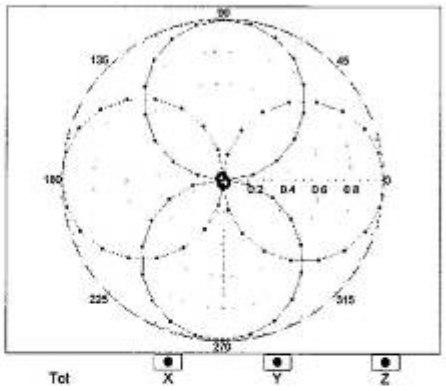
Frequency Response of H-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



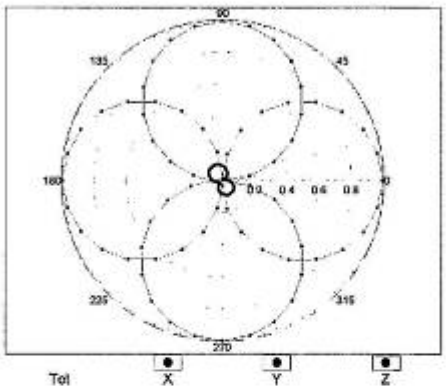
Uncertainty of Frequency Response of H-field: ± 6.3% (k=2)

Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM,0°

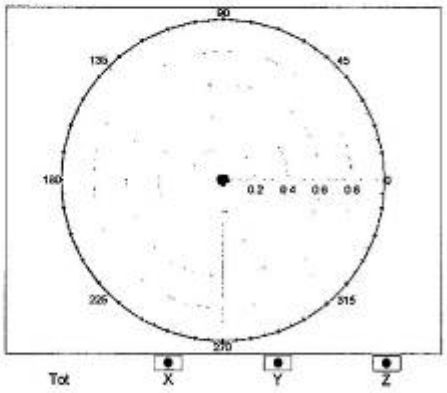


f=2500 MHz,R22,0°

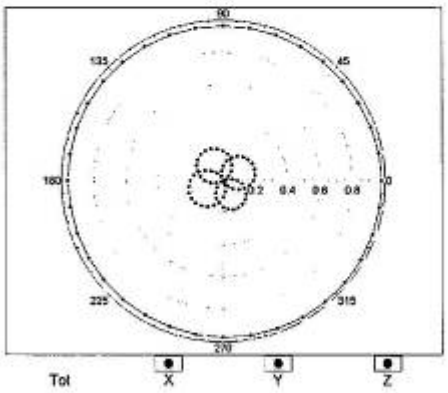


Receiving Pattern (ϕ), ϑ = 90°

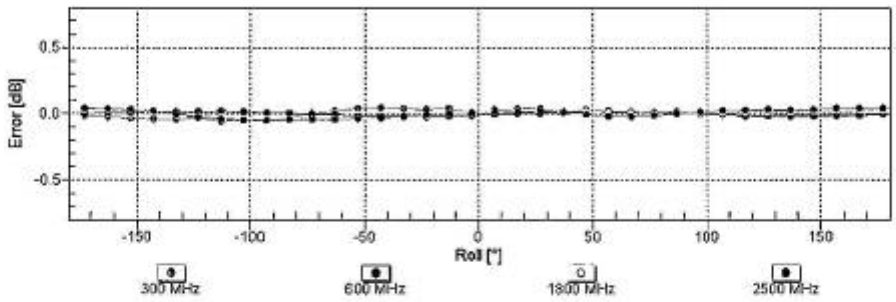
f=600 MHz,TEM,90°



f=2500 MHz,R22,90°

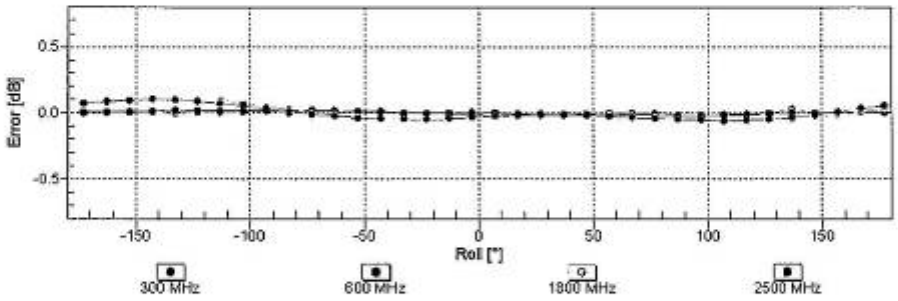


Receiving Pattern (ϕ), ϑ = 0°



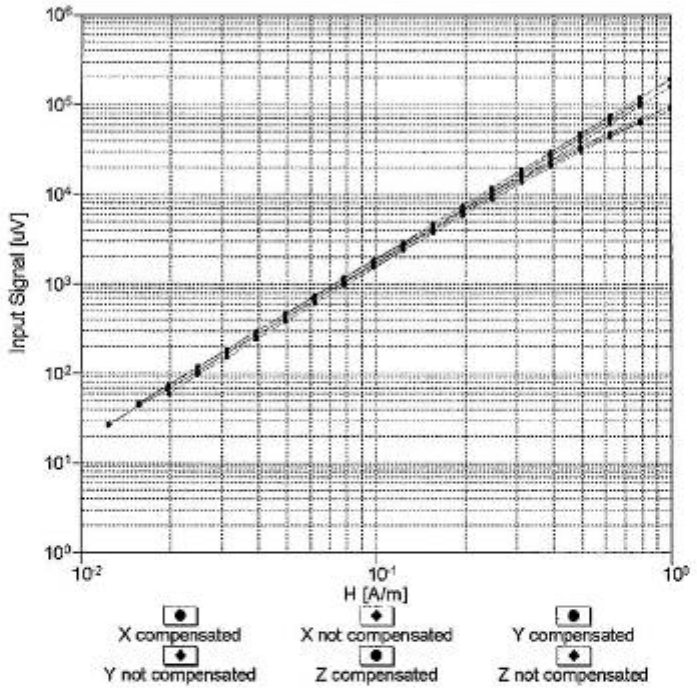
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

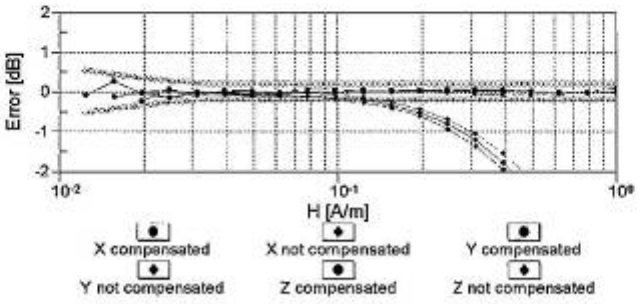
Receiving Pattern (ϕ), ϑ = 90°



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

Dynamic Range f(H-field)
(TEM cell, f = 900 MHz)

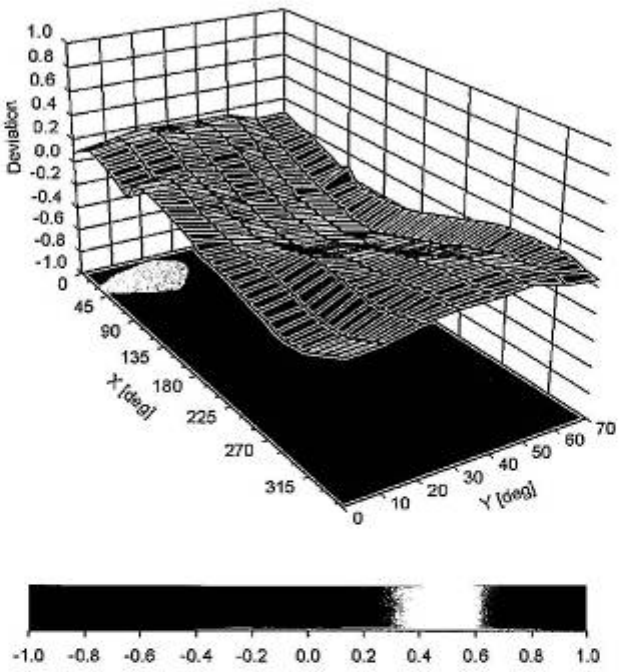




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Deviation from Isotropy in Air

Error (ϕ, ϑ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: H3DV6 - SN:6187

Other Probe Parameters

Sensor Arrangement	Rectangular
Connector Angle (°)	-113
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	20 mm
Tip Diameter	6 mm
Probe Tip to Sensor X Calibration Point	3 mm
Probe Tip to Sensor Y Calibration Point	3 mm
Probe Tip to Sensor Z Calibration Point	3 mm