HAC TEST REPORT

Summary Result HAC Category = M4

REPORT NO.: HC110713C07

MODEL NO.: PI46110

FCC ID: NM8PI46110

RECEIVED: Jul. 13, 2011

TESTED: Jul. 29, 2011

ISSUED: Aug. 01, 2011

APPLICANT: HTC Corporation

ADDRESS: No. 23, Xinghua Rd., Taoyuan City, Taoyuan, 330 Taiwan

ISSUED BY: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou Hsiang, Taipei Hsien 244, Taiwan, R.O.C.

TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	N/A	Aug. 01, 2011

1. CERTIFICATION

PRODUCT : Smartphone
MODEL NO. : PI46110
BRAND : HTC
APPLICANT : HTC Corporation
TESTED : Jul. 29, 2011
TEST SAMPLE : ENGINEERING SAMPLE
STANDARDS : **FCC Part 20.19**
ANSI C63.19 2007
TEST ITEM: RF emissions

The above equipment (Model: PI46110) have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's characteristics under the conditions specified in this report.

PREPARED BY : _____ , **DATE:** Aug. 01, 2011
Pettie Chen / Specialist

APPROVED BY : _____ , **DATE:** Aug. 01, 2011
Gary Chang / Assistant Manager

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

EUT	Smartphone
MODEL NO.	PI46110
POWER SUPPLY	5.0Vdc (adapter or host equipment) 3.8Vdc (battery)
CLASSIFICATION	Production Unit
MODULATION TYPE	QPSK, OQPSK, HPSK
FREQUENCY RANGE	824.7MHz ~ 848.31MHz 1851.25MHz ~ 1908.75MHz
CHANNEL FREQUENCIES UNDER TEST AND ITS CONDUCTED OUTPUT POWER	Refer to note as below
HAC RATE CATEGORY	M4
ANTENNA TYPE	For 850 Band: Fixed internal antenna with -1.5dBi gain For 1900 Band: Fixed internal antenna with 2.0dBi gain
DATA CABLE	Refer to Note as below
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Refer to Note as below

Air Interfaces/Bands List						
Air Interface	**Band**	**Type**	**C63.19 Tested**	**Simultaneous Transmissions**	**Reduced Power**	**VOIP**
CDMA 1xRTT	850	Voice	Yes	WLAN+BT	N/A	N/A
	1900	Voice	Yes	WLAN+BT	N/A	N/A
CDMA 1xEVDO	850	Data	N/A	WLAN+BT	N/A	Yes
	1900	Data	N/A	WLAN+BT	N/A	Yes
WLAN	2450	Data	N/A	CDMA+BT	N/A	Yes
BT	2450	Data	N/A	CDMA+WLAN	N/A	N/A

Note: The HAC rating was evaluated for voice mode only.

NOTE:

1. The EUT's accessories list refers to Ext Pho_NM8PI46110.pdf.
   *Main sample+ item 3, 6 were the worst for the final test.
2. Conducted power list as below:

CH	FREQ. (MHz)	1x EV-DO	
		Rev. A	Rev. 0
		dBm	dBm
1013	824.70	23.38	23.47
384	836.52	23.11	23.23
777	848.31	23.24	23.31

CH	FREQ. (MHz)	CDMA 850			
		RC	SO55	TDSO SO32 (FCH)	TDSO SO32 (FCH+SCH)
1013	824.70	RC1	23.45	-	-
		RC3	23.54	23.51	23.48
384	836.52	RC1	23.22	-	-
		RC3	23.27	23.21	23.18
777	848.31	RC1	23.42	-	-
		RC3	23.44	23.41	23.37

CH	FREQ. (MHz)	1x EV-DO	
		Rev. A	Rev. 0
		dBm	dBm
25	1851.25	23.16	23.14
600	1880.00	23.56	23.37
1175	1908.75	23.55	23.35

CH	FREQ. (MHz)	CDMA 1900			
		RC	SO55	TDSO SO32 (FCH)	TDSO SO32 (FCH+SCH)
25	1851.25	RC1	23.12	-	-
		RC3	23.22	23.18	23.17
600	1880.00	RC1	23.83	-	-
		RC3	23.83	23.80	23.83
1175	1908.75	RC1	23.22	-	-
		RC3	23.43	23.40	23.41

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

2.2 DESCRIPTIONOF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.
1	Universal Radio Communication Tester	R&S	CMU200	101095

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA

NOTE: All power cords of the above support units are non shielded (1.8m).

2.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

According to the specifications of the manufacturer, this product must comply with the requirements of the following standards:

FCC Part 20.19

ANSI C63.19 – 2007

All test items have been performed and recorded as per the above standards.

3. GENERAL INFORMATION OF THE DASY5SYSTEM

3.1. GENERAL INFORMATION OF TEST EQUIPMENT

DASY5 (**Software DASY52, Version 52.6**) consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY5 software defined. The DASY5 software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion form the optical into digital electric signal of the DAE and transfers data to the PC.

ER3DV6 E-FIELD PROBE

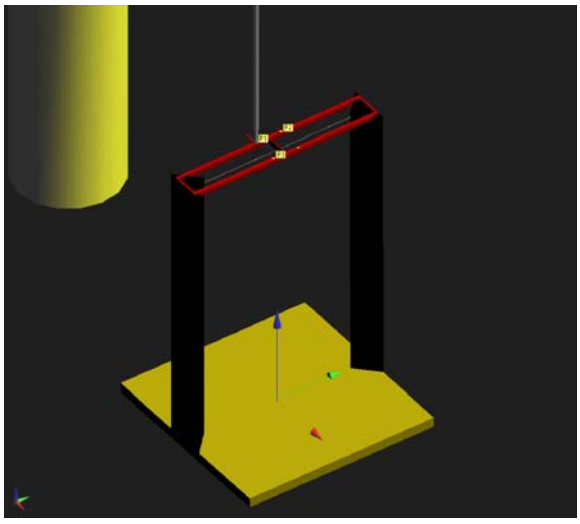
CONSTRUCTION	One dipole parallel, two dipoles normal to probe axis Built-in shielding against static charges
CALIBRATION	In air from 100MHz to 3.0GHz (absolute accuracy ± 6.0%, k = 2)
FREQUENCY	100MHz to > 6GHz; Linearity: ± 0.2dB (100MHz to 3GHz)
DIRECTIVITY	± 0.2dB in air (rotation around probe axis) ± 0.4dB in air (rotation normal to probe axis)
DYNAMIC RANGE	2V/m to > 1000V/m (M3 or better device readings fall well below diode compression point) Linearity: ± 0.2dB
DIMENSIONS	Overall length: 330mm (Tip: 16mm) Tip diameter: 8mm (Body: 12mm) Distance from probe tip to dipole centers: 2.5mm

H3DV6 H-FIELD PROBE

CONSTRUCTION	Three concentric loop sensors with 3.8mm loop diameters Resistively loaded detector diodes for linear response Built-in shielding against static charges
FREQUENCY	200MHz to 3GHz (absolute accuracy ± 6.0%, k = 2); Output linearized
DIRECTIVITY	± 0.25dB (spherical isotropy error)
DYNAMIC RANGE	10mA/m to 2A/m at 1GHz (M3 or better device readings fall well below diode compression point)
DIMENSIONS	Overall length: 330mm (Tip: 40mm) Tip diameter: 6mm (Body: 12mm) Distance from probe tip to dipole centers: 3mm
E-FIELD INTERFERENCE	< 10% at 3GHz (for plane wave)

NOTE: The Probe parameters have been calibrated by the SPEAG. Please reference “APPENDIX D” for the Calibration Certification Report.

HAC ARCH



DIMENSIONS 370 x 370 x 370mm

SYSTEM VALIDATION KITS:

CD835V3

Frequency Band: 800 ~ 960MHz (free space)
Return Loss: > 15dB
Calibrated at: 835MHz
Power Capability: 50W continuous
Length & Height: 166 x 330mm

CD1880V3

Frequency Band: 1710 ~ 2000MHz (free space)
Return Loss: > 18dB
Calibrated at: 1880MHz
Power Capability: 50W continuous
Length & Height: 80.8 x 330mm

DEVICE HOLDER

CONSTRUCTION Supports accurate and reliable positioning of any phone effect on near field <+/- 0.5dB

DATA ACQUISITION ELECTRONICS (DAE)

CONSTRUCTION The data acquisition electronics (DAE3) consists of a highly sensitive electrometer grade preamplifier with auto-zeroing, a channel and gain-switching multiplex, a fast 16 bit AD converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock. The mechanical probe is mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection. The input impedance of the DAE3 box is 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80dB.

3.2. TEST EQUIPMENT LIST

ITEM	NAME	BRAND	TYPE	SERIES NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
1	HAC ARCH	S & P	SD HAC P01 BA	1034	NA	NA
2	Signal Generator	Agilent	E8257C	MY43320668	Dec. 27, 2010	Dec. 26, 2011
3	E-Field Probe	Speag	ER3DV6	2293	Jan. 24, 2011	Jan. 23, 2012
4	H-Field Probe	Speag	H3DV6	6124	Jan. 24, 2011	Jan. 23, 2012
5	DAE	S & P	DAE 3	510	Oct. 04, 2010	Oct. 03, 2011
6	Robot Positioner	Staubli Unimation	NA	NA	NA	NA
7	Validation Dipole	S & P	CD835V3	1041	Mar. 15, 2011	Mar. 14, 2012
8	Validation Dipole	S & P	CD1880V3	1032	Apr. 12, 2011	Apr. 11, 2012

NOTE: Before starting the measurement, all test equipment shall be warmed up for 30min.

3.3. MEASUREMENT UNCERTAINTY

HAC UNCERTAINTY BUDGET ACCORDING TO ANSI C63.19[1]							
ERROR DESCRIPTION	**UNCERTAINTY VALUE**	**PROBABILITY DISTRIBUTION**	**DIVISOR**	**(Ci) E**	**(Ci) H**	**STD. UNC. E (%)**	**STD. UNC. H (%)**
MEASUREMENT SYSTEM							
Probe calibration	5.1	Normal	1	1	1	5.1	5.1
Axial isotropy	0.5	Rectangular	√3	1	1	0.3	0.3
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
Linearity	0.6	Rectangular	√3	1	1	0.3	0.3
Scaling to Peak Envelope Power	2.0	Rectangular	√3	1	1	1.2	1.2
System Detection Limit	1.0	Rectangular	√3	1	1	0.6	0.6
Readout Electronics	0.3	Rectangular	√3	1	1	0.2	0.2
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 Condition	3.0	Rectangular	√3	1	1	1.7	1.7
RF Reflections	12.0	Rectangular	√3	1	1	6.9	6.9
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
Extrap. And Interpolation	1.0	Rectangular	√3	1	1	0.6	0.6
TEST SAMPLE RELATED							
Device Positioning Vertical	2.6	Normal	1	1	1	2.6	2.6
Device Positioning Lateral	2.6	Normal	1	1	1	2.6	2.6
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
PHANTOM AND SETUP RELATED							
Phantom Thickness	2.4	Rectangular	√3	1	0.67	1.4	0.9
COMBINED STD. UNCERTAINTY						14.4	10.7
EXPANDED STD. UNCERTAINTY ON POWER						28.8	21.3
EXPANDED STD. UNCERTAINTY ON FIELD						14.4	10.7

NOTE: Worst-case uncertainty budget for HAC free field assessment according to ANSI C63.19 [1]. The budget is valid for the frequency range 800MHz ~ 3GHz and represents a worst-case analysis. For specific tests and configurations, the uncertainty could be considerably smaller.

3.4. GENERAL DESCRIPTION OF THE HAC EVALUATION

The DASY5 post-processing software (SEMCAD) automatically executes the following procedures to calculate the field units from the micro-volt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	$Norm_i$, a_{i0}, a_{i1}, a_{i2}
	- Conversion factor	$ConvF_i$
	- Diode compression point	dcp_i
Device parameters:	- Frequency	F
	- Crest factor	Cf

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:

$$V_i = U_i + U_i^2 \bullet \frac{cf}{dcp_i}$$

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:

$$\textbf{\textit{E-field probes:}}\quad E_i = \sqrt{\frac{V_1}{Norm_i \cdot ConvF}}$$

$$\textbf{\textit{H-field probes:}}\quad H_i = \sqrt{V_i} \cdot \frac{a_{i0} + a_{i1} f + a_{i2} f^2}{f}$$

V_i = compensated signal of channel I (i = x, y, z)

$Norm_i$ = sensor sensitivity of channel i μV/(V/m)2 for E-field Probes (i = x, y, z)

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):

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

The primary field data are used to calculate the derived field units.

E = field strength in V/m

E_{tot} = total field strength in V/m

NOTE: The signal response time is evaluated as the time required by the system to reach 90% of the expected final value after an on/off switch of the power source with an integration time of 500ms and a probe response time of < 5ms. In the current implementation, DASY5waits longer than 100ms after having reached the grid point before starting a measurement, i.e., the response time uncertainty is negligible.

4. PERFORMANCE CATEGORIES

The ANSI Standard presents performance requirements for acceptable interoperability of hearing aids with wireless communications devices. When these parameters are met, a hearing aid operates acceptably in close proximity to a wireless communications device.

CATEGORY NEAR FIELD	TELEPHONE RF PARAMETERS < 960MHz				
	AWF	E-FIELD EMISSION CW (dBV/m)	E-FIELD EMISSION CW (V/m)	H-FIELD EMISSION CW (dBA/m)	H-FIELD EMISSION CW (A/m)
M1	0	56.0 to 61.0	631.0 to 1122.0	5.6 to 10.6	1.91 to 3.39
	-5	53.5 to 58.5	473.2 to 841.4	3.1 to 8.1	1.43 to 2.54
M2	0	51.0 to 56.0	354.8 to 631.0	0.6 to 5.6	1.07 to 1.91
	-5	48.5 to 53.5	266.1 to 473.2	-1.9 to 3.1	0.80 to 1.43
M3	0	46.0 to 51.0	199.5 to 354.8	-4.4 to 0.6	0.60 to 1.07
	-5	43.5 to 48.5	149.6 to 266.1	-6.9 to -1.9	0.45 to 0.80
M4	0	< 46.0	< 199.5	< -4.4	< 0.60
	-5	< 43.5	< 149.6	< -6.9	< 0.45

CATEGORY NEAR FIELD	TELEPHONE RF PARAMETERS > 960MHz				
	AWF	E-FIELD EMISSION CW (dBV/m)	E-FIELD EMISSION CW (V/m)	H-FIELD EMISSION CW (dBA/m)	H-FIELD EMISSION CW (A/m)
M1	0	46.0 to 51.0	199.5 to 354.8	-4.4 to 0.6	0.60 to 1.07
	-5	43.5 to 48.5	149.6 to 266.1	-6.9 to -1.9	0.45 to 0.80
M2	0	41.0 to 46.0	112.2 to 199.5	-9.4 to -4.4	0.34 to 0.60
	-5	48.5 to 53.5	84.1 to 149.6	-11.9 to -6.9	0.25 to 0.45
M3	0	36.0 to 41.0	63.1 to 112.2	-14.4 to -9.4	0.19 to 0.34
	-5	33.5 to 38.5	47.3 to 84.1	-16.9 to -11.9	0.14 to 0.25
M4	0	< 36.0	< 63.1	< -14.4	< 0.19
	-5	< 33.5	< 47.3	< -16.9	< 0.14

ARTICULATION WEIGHING FACTOR (AWF)

The following AWF factors shall be used for the standard transmission protocols:

STANDARD	TECHNOLOGY	AWF (dB)
TIA/EIA/IS-2000	CDMA	0
TIA/EIA-136	TDMA (50Hz)	0
iDENTM	TDMA (22 and 11Hz)	0
J-STD-007	GSM (217)	-5
T1/T1P1/3GPP	UMTS (WCDMA)	0

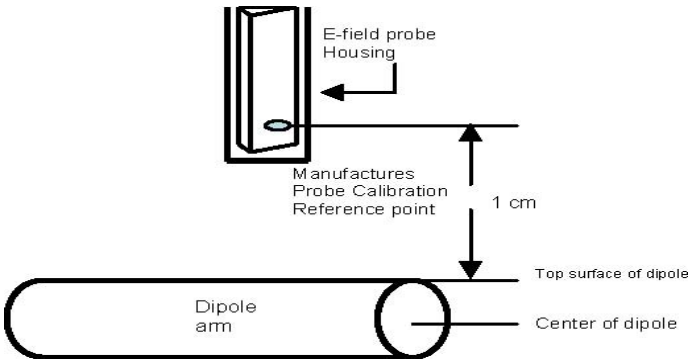
5. SYSTEM CHECK

The measured values (E-field and H-field) were compared with the values provided by the probe manufacturer and must within the allowed tolerance of **25%**.

5.1. VALIDATION STRUCTURE

The input signal was an un-modulated continuous wave. The following points were taken into consideration in performing this check:

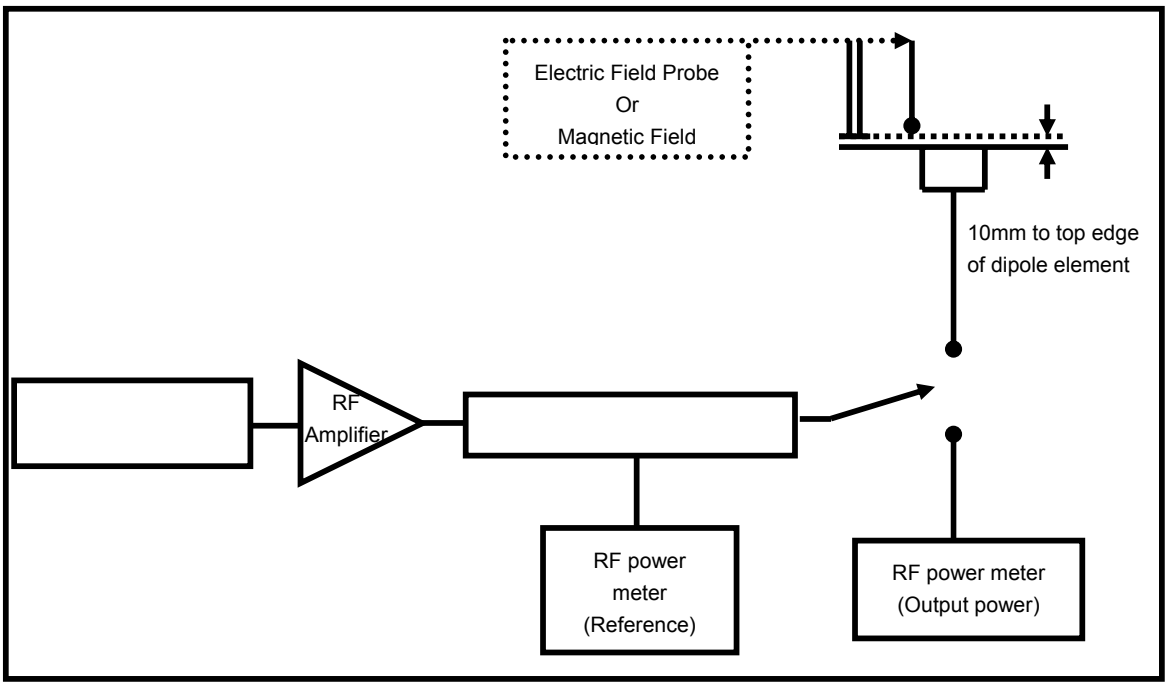
- Average Input Power P = 100mW RMS (20dBm RMS) after adjustment for return loss
- The test fixture must meet the 2 wavelength separation criterion
- The proper measurement of the 1cm probe to dipole separation, which is measured from top surface of the dipole to the calibration reference point of the sensor, defined by the probe manufacturer is shown in the following diagram:



5.2. SYSTEM CHECK PROCEDURE

1. Before you start the system performance check, need only to tell the system with which components (probe type, validation dipole and HAC arch) are performing the system performance check; the system will take care of all parameters.

The system check configuration is shown in the following figure:



2. The dipole was energized with a 20dBm un-modulated continuous-wave signal.
3. The length of the dipole was scanned with both E-field and H-field probes and the maximum values for each were recorded.

5.3. VALIDATION RESULTS

SYSTEM CHECK						
TEST FREQUENCY (MHz)	**BEGIN TEST SG POWER (mW)**	**REQUIRED E-FILED (V/m)**	**MEASURED E-FILED (V/m)**	**DEVIATION (%)**	**SEPARATION DISTANCE (mm)**	**TESTED DATE**
835	100.0	170.8	(157.7+157.9)/2 = 157.8	-7.61	10	Jul. 29, 2011
1880	100.0	143.9	(133+134.3)/2 = 133.65	-7.12	10	Jul. 29, 2011
TEST FREQUENCY (MHz)	**BEGIN TEST SG POWER (mW)**	**REQUIRED H-FILED (A/m)**	**MEASURED H-FILED (A/m)**	**DEVIATION (%)**	**SEPARATION DISTANCE (mm)**	**TESTED DATE**
835	100.0	0.471	0.495	5.10	10	Jul. 29, 2011
1880	100.0	0.471	0.489	3.82	10	Jul. 29, 2011
TESTED BY	Sam Onn					

NOTE: Please see Appendix for the system validation test data.

6. MODULATION FACTOR

A calibration was made of the modulation response of the probe and its instrumentation chain. This calibration was performed with the field probe, attached to its instrumentation. The response of the probe system to a CW field at the frequency of interest is compared to its response to a modulated signal with equal peak amplitude to that of a CW signal. The field level of the test signals are ensured to 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 reading was applied to the DUT measurements.

This was done using the following procedure:

1. Fixing the probe in a set location relative to a field generating device, such as a reference dipole antenna, as illustrated in the system check procedure.
2. Illuminate the probe using the wireless device 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 10dB above the probe system noise floor but within the systems operating range.
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 RF signal generator producing an 80%AM signal and set to the wireless device operating frequency. Set the amplitude of the signal to equal that recorded from the wireless device.
8. Record the reading of the probe measurement system of the 80%AM signal.
9. The ratio, in linear units, of the probe reading in Step 3) or 8) to the reading in Step 6) is the E-field modulation factor.
10. Steps 1-9 were repeated at all frequency bands and for both E and H field probes.

NOTE: The ratio of the CW to modulated signal reading is the modulation factor. The modulation factors obtained were applied to readings taken of the actual wireless device, in order to obtain an accurate peak field reading using the formula:

$$\mathbf{Peak = 20 \cdot log(Raw \cdot ProbeModulationFactor)}$$

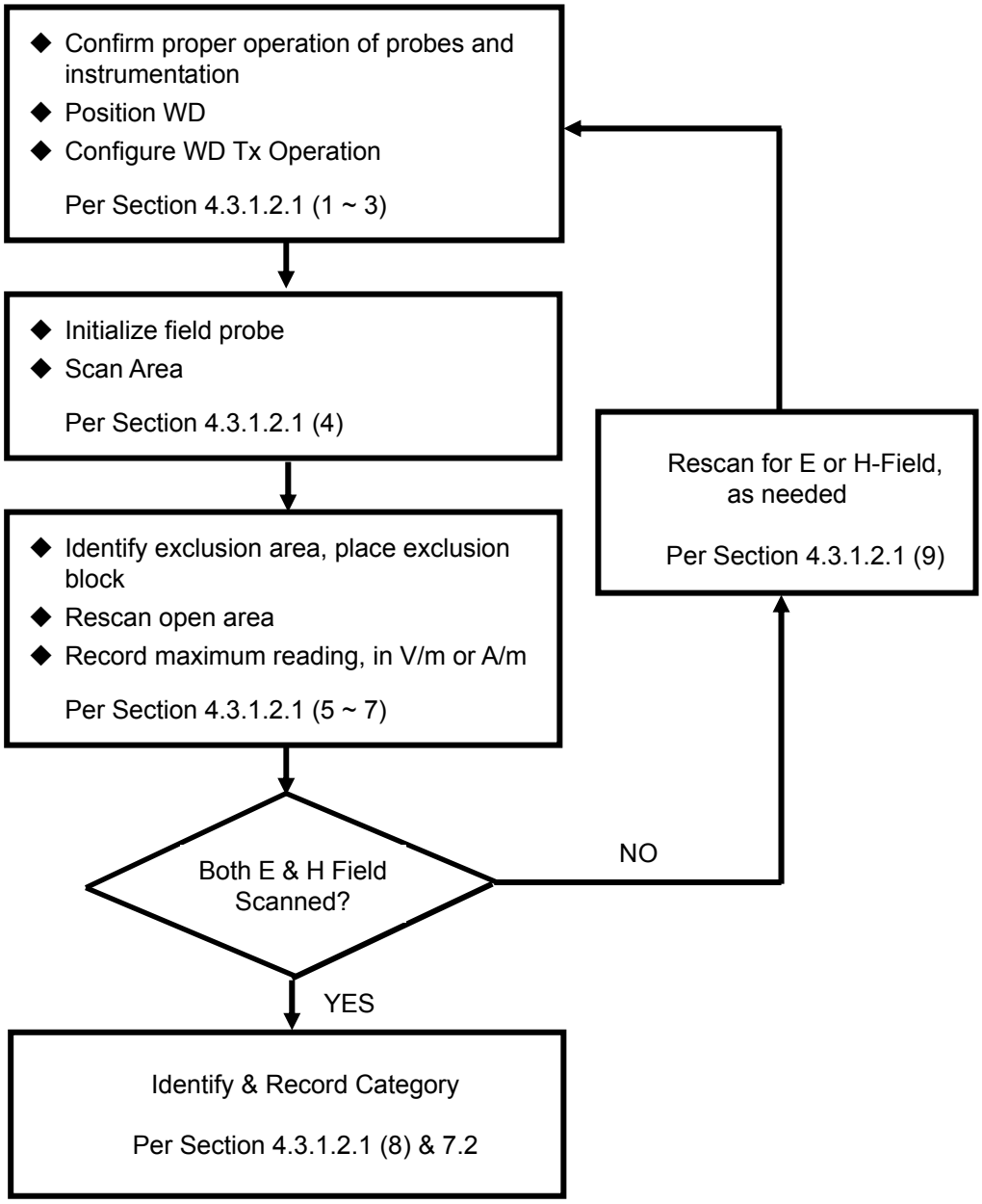
6.1 MODULATION FACTOR TEST RESULTS

TEST FREQUENCY (MHz)	PROTOCOL	REFERENCE LEVEL	MEASURED E-FILED (V/m)	E-FILED MODULATION FACTOR	TESTED DATE
824.7	CW	Refer to the next three plots	145.2	NA	Jul. 29, 2011
	80% AM		124.9	1.16	
	CDMA 850		148.1	0.98	
836.52	CW	Refer to the next three plots	150.9	NA	Jul. 29, 2011
	80% AM		133.1	1.13	
	CDMA 850		155.6	0.97	
848.31	CW	Refer to the next three plots	145.5	NA	Jul. 29, 2011
	80% AM		130.3	1.12	
	CDMA 850		154.8	0.94	
TEST FREQUENCY (MHz)	**PROTOCOL**	**REFERENCE LEVEL**	**MEASURED H-FILED (A/m)**	**H-FILED MODULATION FACTOR**	**TESTED DATE**
1851.25	CW	Refer to the next three plots	107.8	NA	Jul. 29, 2011
	80% AM		99.374	1.08	
	CDMA 1900		113.7	0.95	
1880.00	CW	Refer to the next three plots	120.2	NA	Jul. 29, 2011
	80% AM		108.7	1.11	
	CDMA 1900		126.9	0.95	
1908.75	CW	Refer to the next three plots	120.6	NA	Jul. 29, 2011
	80% AM		105.8	1.14	
	CDMA 1900		127.2	0.95	
TESTED BY	Sam Onn				

TEST FREQUENCY (MHz)	PROTOCOL	REFERENCE LEVEL	MEASURED H-FILED (A/m)	H-FILED MODULATION FACTOR	TESTED DATE
824.7	CW	Refer to the next three plots	0.450	NA	Jul. 29, 2011
	80% AM		0.404	1.11	
	CDMA 850		0.476	0.95	
836.52	CW	Refer to the next three plots	0.452	NA	Jul. 29, 2011
	80% AM		0.415	1.09	
	CDMA 850		0.477	0.95	
848.31	CW	Refer to the next three plots	0.442	NA	Jul. 29, 2011
	80% AM		0.411	1.08	
	CDMA 850		0.460	0.96	
TEST FREQUENCY (MHz)	**PROTOCOL**	**REFERENCE LEVEL**	**MEASURED H-FILED (A/m)**	**H-FILED MODULATION FACTOR**	**TESTED DATE**
1851.25	CW	Refer to the next three plots	0.384	NA	Jul. 29, 2011
	80% AM		0.369	1.04	
	CDMA 1900		0.422	0.91	
1880.00	CW	Refer to the next three plots	0.441	NA	Jul. 29, 2011
	80% AM		0.423	1.04	
	CDMA 1900		0.483	0.91	
1908.75	CW	Refer to the next three plots	0.439	NA	Jul. 29, 2011
	80% AM		0.404	1.09	
	CDMA 1900		0.472	0.93	
TESTED BY	Sam Onn				

7. RF EMISSION TEST PROCEDURES

7.1. TEST INSTRUCTION



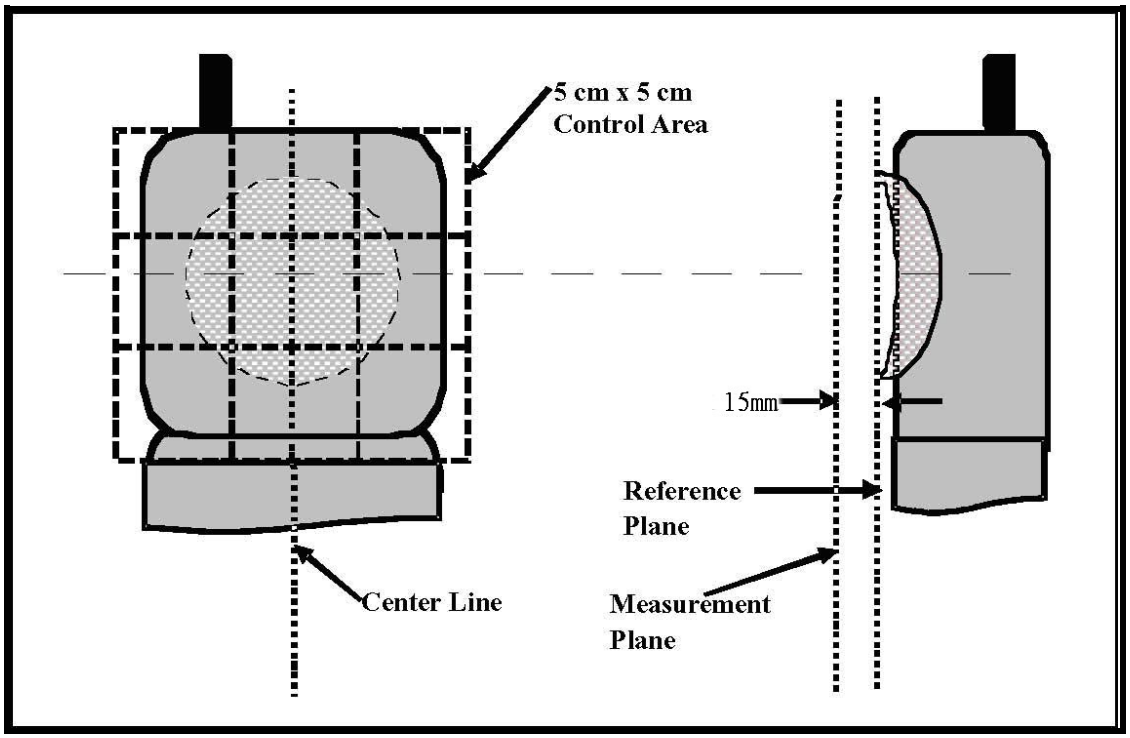
7.2. TEST PROCEDURES

The EUT makes a phone call to the GSM base station. Establish the simulation communication configuration rather the actual communication. Then the EUT could continuous the transmission mode. Adjust the PCL of the base station could controlled the EUT to transmitted the maximum output power. The base station also could control the transmission channel.

The recommended procedure for assessing the RF emission value consists of the following steps:

1. Proper operation of the field probe, probe measurement system, other instrumentation, and the positioning system was confirmed.
2. WD is positioned in its intended test position, acoustic output point of the device perpendicular to the field probe.
3. The center sub-grid was centered over the center of the acoustic output (also audio band magnetic output, if applicable). The WD audio output was positioned tangent (as physically possible) to the measurement plane.
4. A surface calibration was performed before each setup change to ensure repeatable spacing and proper maintenance of the measurement plane using the HAC arch.
5. The measurement system measured the field strength at the reference location.
6. Measurements at 2mm increments in the 5 x 5cm region were performed and recorded. A 360^{o} rotation about the azimuth axis at the maximum interpolated position was measured. For the worst-case condition, the peak reading from this rotation was used in re-evaluating the HAC category.
7. Steps 1-6 were done for both the E and H-Field measurements.

7.3. DESCRIPTION OF TEST POSITION AND CONFIGURATIONS



7.4. SUMMARY OF MEASURED HAC RESULTS

E-FIELD EMISSION

ENVIRONMENTAL CONDITION	Air Temperature：22.3°C, Humidity：60%RH		
TESTED BY	Sam Onn	DATE	Jul. 30, 2011

DUT	FREQ. (MHz)	CHAN.	MODE	MEASURED PMF	PEAK FIELD (V/m)	M-RATING
1	824.70 (Low)	1013	CDMA 850 (RC3+SO55)	0.98	41.14	M4
1	836.52 (Mid.)	384		0.97	43.639	M4
1	848.31 (High)	777		0.94	57.507	M4
2	848.31 (High)	777		0.94	57.398	M4

NOTE:
1. Please see the Appendix A for the measured data and test plots.

ENVIRONMENTAL CONDITION	Air Temperature：22.3°C, Humidity：60%RH		
TESTED BY	Sam Onn	DATE	Jul. 30, 2011

DUT	FREQ. (MHz)	CHAN.	MODE	MEASURED PMF	PEAK FIELD (V/m)	M-RATING
1	1851.25 (Low)	25	CDMA 1900 (RC3+SO55)	0.95	25.317	M4
1	1880.00 (Mid.)	600		0.95	14.607	M4
1	1908.75 (High)	1175		0.95	11.151	M4
2	1851.25 (Low)	25		0.95	25.114	M4

NOTE:
1. Please see the Appendix A for the measured data and test plots.

H-FIELD EMISSION

ENVIRONMENTAL CONDITION	Air Temperature：22.3°C, Humidity：60%RH		
TESTED BY	Sam Onn	DATE	Jul. 30, 2011

DUT	FREQ. (MHz)	CHAN.	MODE	MEASURED PMF	PEAK FIELD (A/m)	M-RATING
1	824.70 (Low)	1013	CDMA 850 (RC3+SO55)	0.95	0.061	M4
1	836.52 (Mid.)	384		0.95	0.068	M4
1	848.31 (High)	777		0.96	0.079	M4
2	848.31 (High)	777		0.96	0.074	M4

NOTE:
1. Please see the Appendix A for the measured data and test plots.

ENVIRONMENTAL CONDITION	Air Temperature：22.3°C, Humidity：60%RH		
TESTED BY	Sam Onn	DATE	Jul. 30, 2011

DUT	FREQ. (MHz)	CHAN.	MODE	MEASURED PMF	PEAK FIELD (A/m)	M-RATING
1	1851.25 (Low)	25	CDMA 1900 (RC3+SO55)	0.91	0.075	M4
1	1880.00 (Mid.)	600		0.91	0.073	M4
1	1908.75 (High)	1175		0.93	0.087	M4
2	1908.75 (High)	1175		0.93	0.086	M4

NOTE:
1. Please see the Appendix A for the measured data and test plots.

8. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5.phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Email: service.adt@tw.bureauveritas.com
Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.

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Date/Time: 2011/7/29 17:33:27

E-CDMA850-Ch1013

DUT: Smartphone ; Type: PI46110 ; Test Frequency: 824.7 MHz

Communication System: CDMA ; Frequency: 824.7 MHz ; Duty Cycle: 1:1Modulation type: OQPSK
Medium: Air Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3 ;
Phantom section: RF Section ;
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

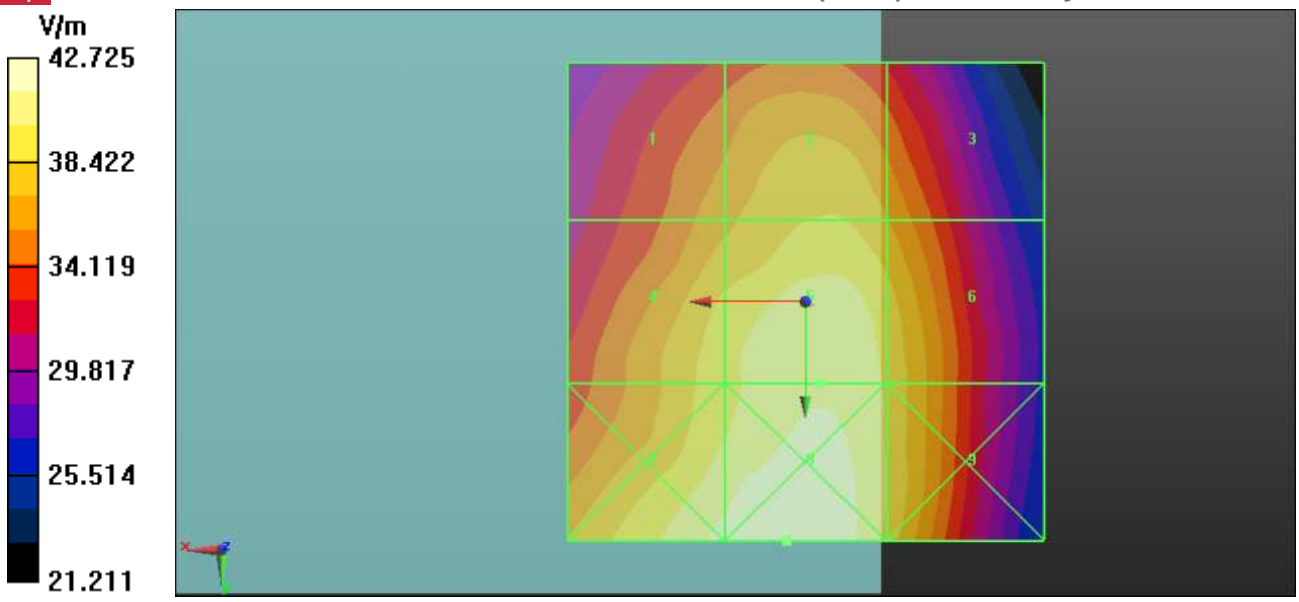
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Device E-Field measurement with ER probe/E Scan - ER3D - 2007: 15 mm from Probe Center to the Device Low/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 41.140 V/m
Probe Modulation Factor = 0.980
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 53.120 V/m; Power Drift = 0.05 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **36.660 M4**	Grid 2 **38.570 M4**	Grid 3 **37.148 M4**
Grid 4 **39.429 M4**	Grid 5 **41.140 M4**	Grid 6 **39.690 M4**
Grid 7 **41.786 M4**	Grid 8 **42.725 M4**	Grid 9 **39.967 M4**


V/m
42.725
38.422
34.119
29.817
25.514
21.211

Date/Time: 2011/7/29 17:39:09

E-CDMA850-Ch384

DUT: Smartphone ; Type: PI46110 ; Test Frequency: 836.52 MHz

Communication System: CDMA ; Frequency: 836.52 MHz ; Duty Cycle: 1:1 Modulation type: OQPSK
Medium: Air Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3 ;
Phantom section: RF Section ;
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

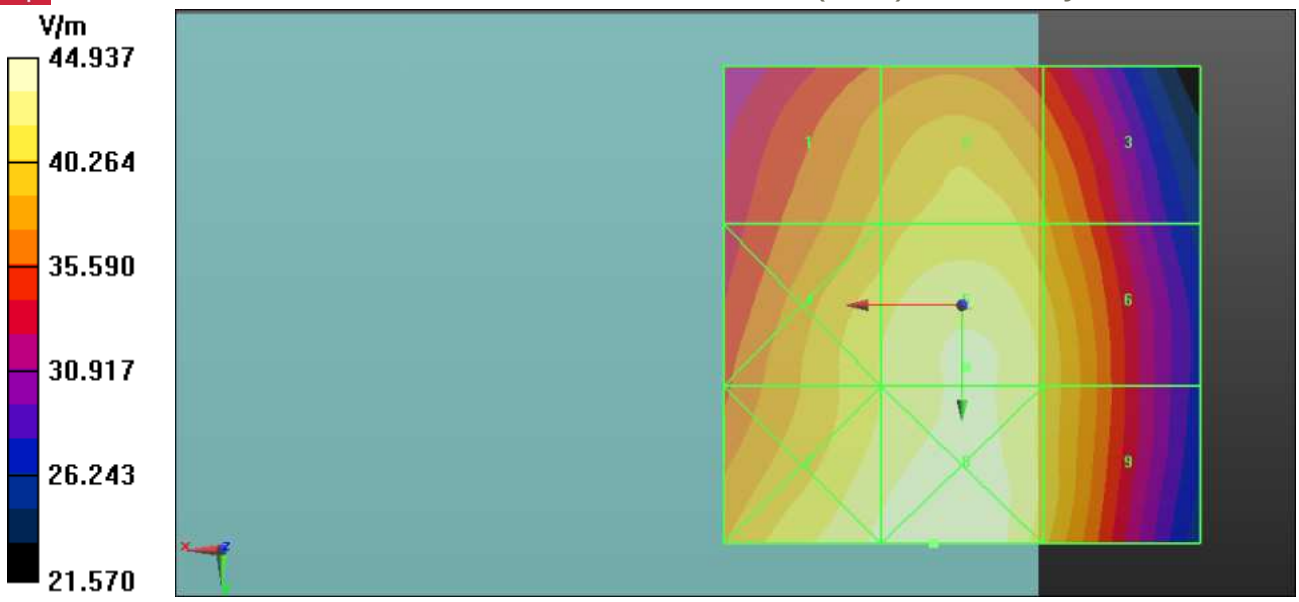
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Device E-Field measurement with ER probe/E Scan - ER3D - 2007: 15 mm from Probe Center to the Device Mid/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 43.639 V/m
Probe Modulation Factor = 0.970
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 57.268 V/m; Power Drift = -0.08 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **39.323 M4**	Grid 2 **41.032 M4**	Grid 3 **39.148 M4**
Grid 4 **41.903 M4**	Grid 5 **43.639 M4**	Grid 6 **41.560 M4**
Grid 7 **43.829 M4**	Grid 8 **44.937 M4**	Grid 9 **41.565 M4**


V/m
44.937
40.264
35.590
30.917
26.243
21.570
1
3
6
9

Date/Time: 2011/7/29 17:45:01

E-CDMA850-Ch1175

DUT: Smartphone ; Type: PI46110 ; Test Frequency: 848.31 MHz

Communication System: CDMA ; Frequency: 848.31 MHz ; Duty Cycle: 1:1 Modulation type: OQPSK
Medium: Air Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3 ;
Phantom section: RF Section ;
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

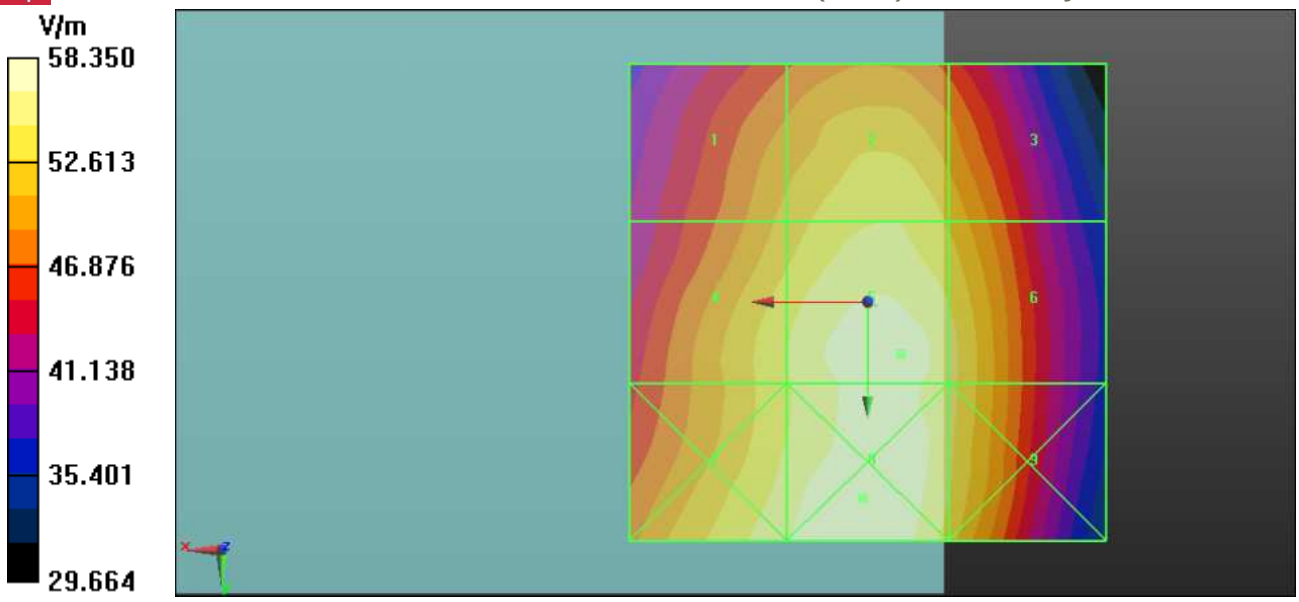
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Device E-Field measurement with ER probe/E Scan - ER3D - 2007: 15 mm from Probe Center to the Device High /Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 57.507 V/m
Probe Modulation Factor = 0.940
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 78.204 V/m; Power Drift = -0.10 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **51.409 M4**	Grid 2 **54.514 M4**	Grid 3 **52.390 M4**
Grid 4 **54.508 M4**	Grid 5 **57.507 M4**	Grid 6 **55.365 M4**
Grid 7 **56.312 M4**	Grid 8 **58.350 M4**	Grid 9 **55.230 M4**


V/m
58.350
52.613
46.876
41.138
35.401
29.664

Date/Time: 2011/7/29 17:53:00

E-CDMA850-Ch777 / 2nd

DUT: Smartphone ; Type: PI46110 ; Test Frequency: 848.31 MHz

Communication System: CDMA ; Frequency: 848.31 MHz ; Duty Cycle: 1:1 Modulation type: OQPSK
Medium: Air Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3 ;
Phantom section: RF Section ;
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

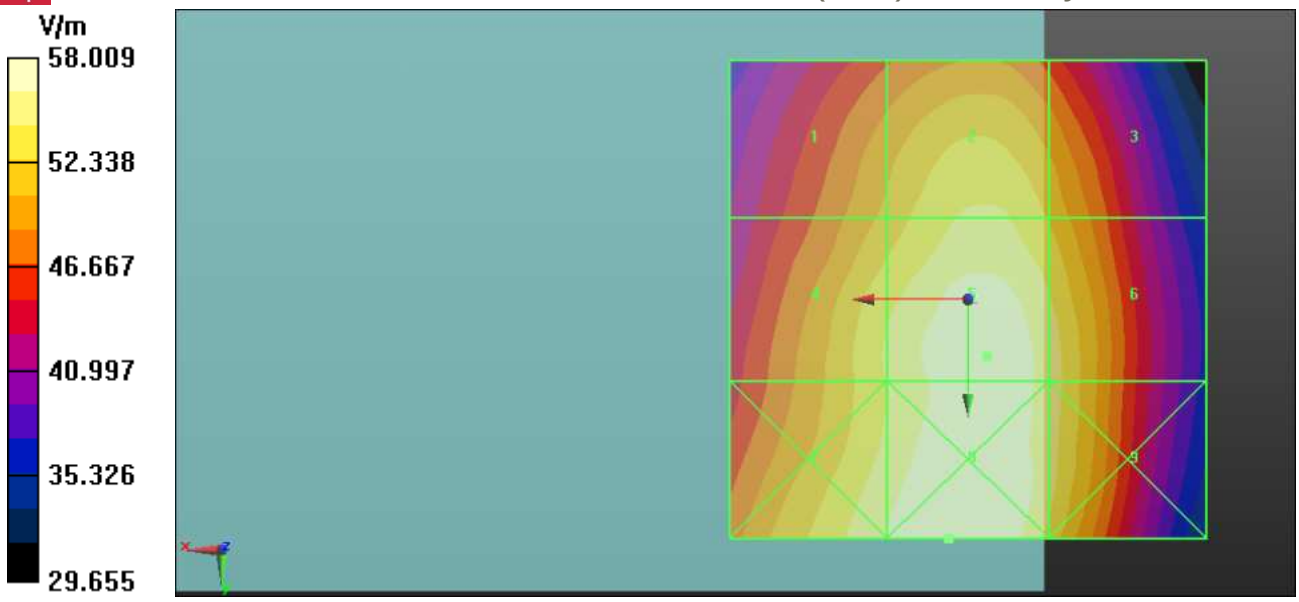
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Device E-Field measurement with ER probe/E Scan - ER3D - 2007: 15 mm from Probe Center to the Device High/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 57.398 V/m
Probe Modulation Factor = 0.940
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 77.683 V/m; Power Drift = -0.03 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **51.121 M4**	Grid 2 **54.569 M4**	Grid 3 **52.189 M4**
Grid 4 **54.494 M4**	Grid 5 **57.398 M4**	Grid 6 **55.281 M4**
Grid 7 **56.353 M4**	Grid 8 **58.009 M4**	Grid 9 **55.282 M4**


V/m
58.009
52.338
46.667
40.997
35.326
29.655

Date/Time: 2011/7/29 18:00:32

E-CDMA1900-Ch25

DUT: Smartphone ; Type: PI46110 ; Test Frequency: 1851.25 MHz

Communication System: CDMA ; Frequency: 1851.25 MHz ; Duty Cycle: 1:1Modulation type: OQPSK
Medium: Air Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3 ;
Phantom section: RF Section ;
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

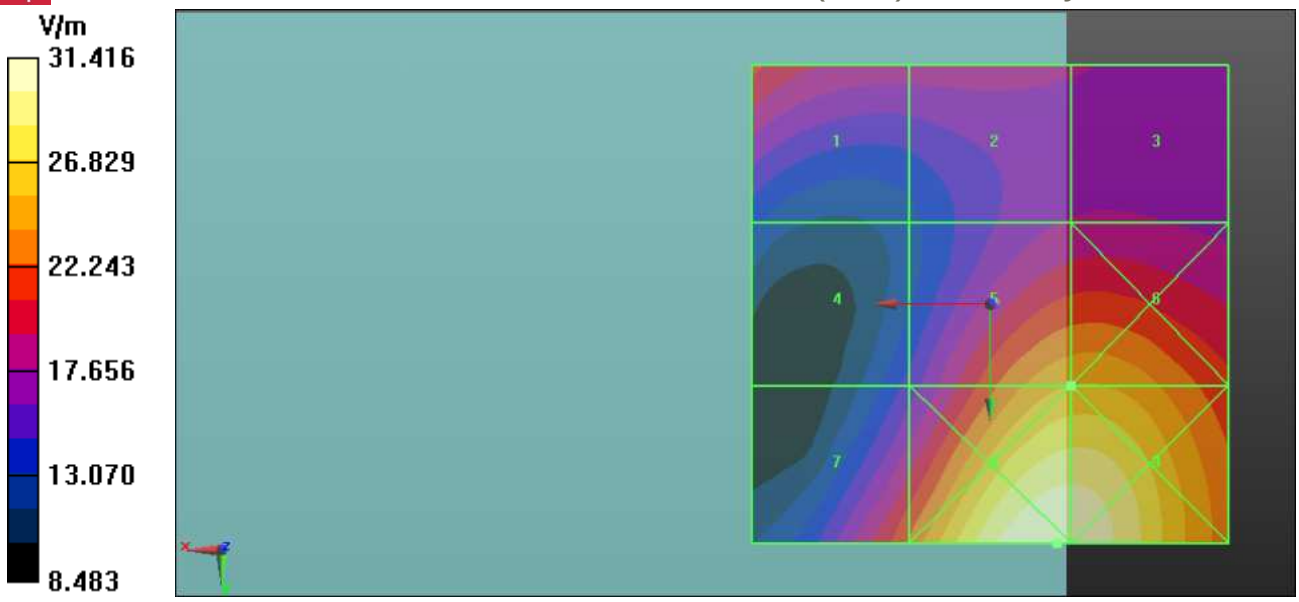
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Device E-Field measurement with ER probe/E Scan - ER3D - 2007: 15 mm from Probe Center to the Device Low /Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 25.317 V/m
Probe Modulation Factor = 0.950
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 22.377 V/m; Power Drift = 0.19 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **21.267 M4**	Grid 2 **18.625 M4**	Grid 3 **18.057 M4**
Grid 4 **15.353 M4**	Grid 5 **25.317 M4**	Grid 6 **25.432 M4**
Grid 7 **22.542 M4**	Grid 8 **31.416 M4**	Grid 9 **31.305 M4**


V/m
31.416
26.829
22.243
17.656
13.070
8.483
1
2
3
4
5
6
7
8
9

Date/Time: 2011/7/29 18:06:17

E-CDMA1900-Ch600

DUT: Smartphone ; Type: PI46110 ; Test Frequency: 1880 MHz

Communication System: CDMA ; Frequency: 1880 MHz ; Duty Cycle: 1:1 Modulation type: OQPSK
Medium: Air Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3 ;
Phantom section: RF Section ;
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

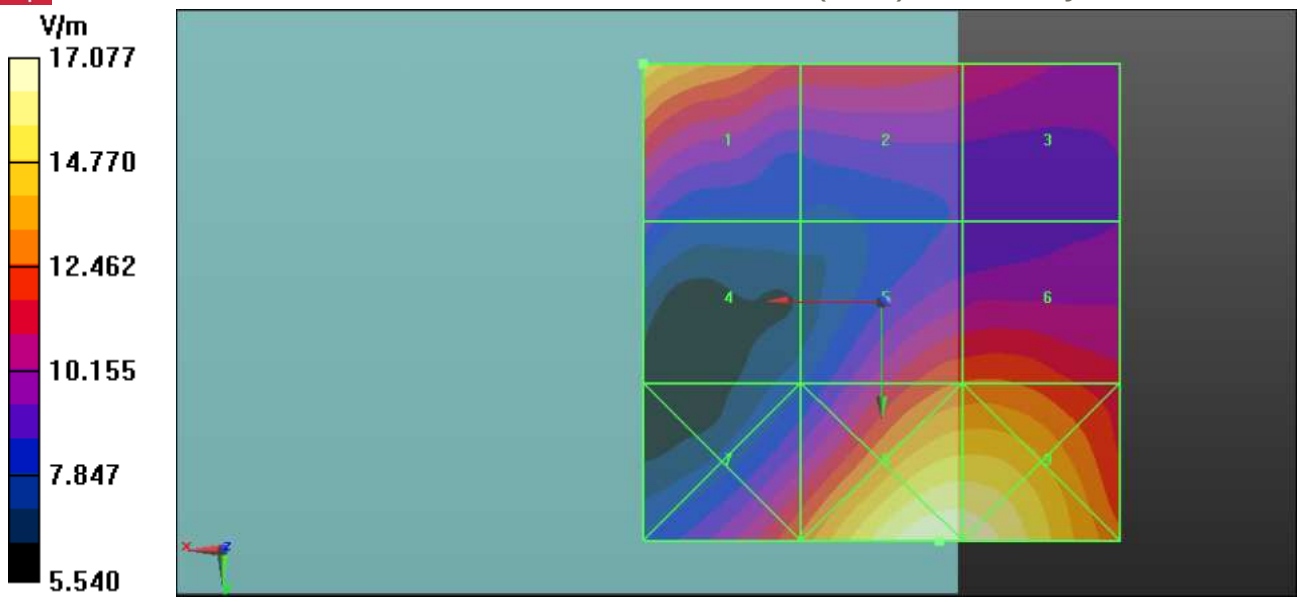
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Device E-Field measurement with ER probe/E Scan - ER3D - 2007: 15 mm from Probe Center to the Device Mid/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 14.607 V/m
Probe Modulation Factor = 0.950
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 11.856 V/m; Power Drift = -0.15 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **14.607 M4**	Grid 2 **11.737 M4**	Grid 3 **11.122 M4**
Grid 4 **9.117 M4**	Grid 5 **12.528 M4**	Grid 6 **12.626 M4**
Grid 7 **12.693 M4**	Grid 8 **17.077 M4**	Grid 9 **16.931 M4**


V/m
17.077
14.770
12.462
10.155
7.847
5.540
1
2
3
4
5
6

Date/Time: 2011/7/29 18:12:07

E-CDMA1900-Ch1175

DUT: Smartphone ; Type: PI46110 ; Test Frequency: 1908.75 MHz

Communication System: CDMA ; Frequency: 1908.75 MHz ; Duty Cycle: 1:1Modulation type: OQPSK
Medium: Air Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3 ;
Phantom section: RF Section ;
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

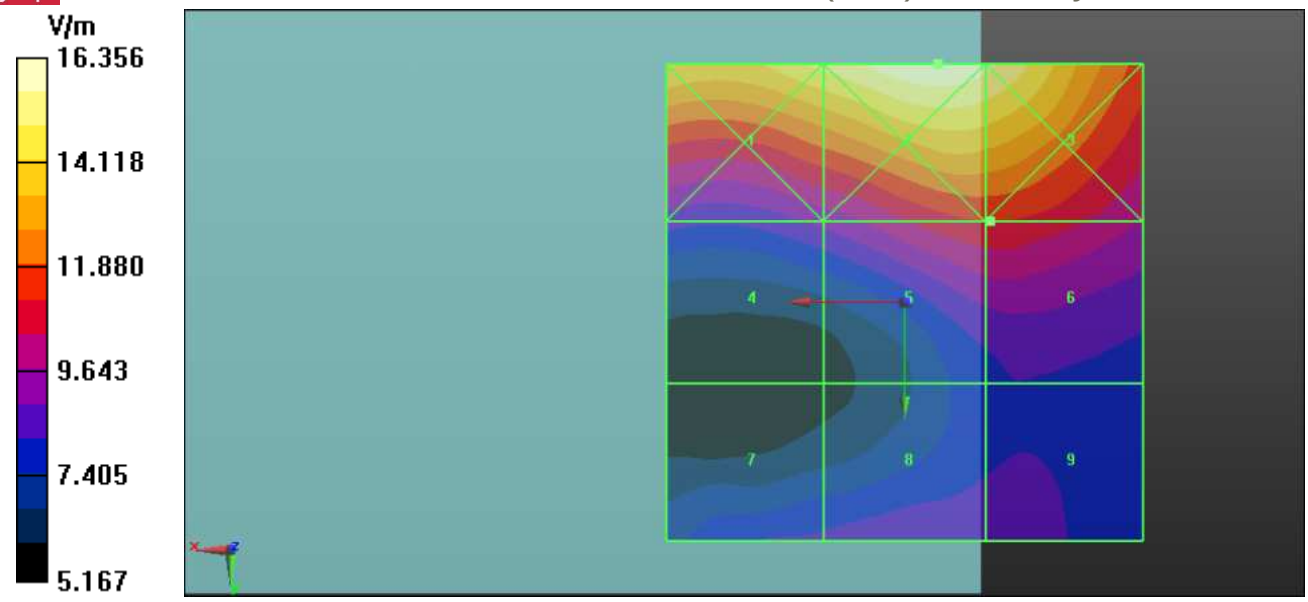
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Device E-Field measurement with ER probe/E Scan - ER3D - 2007: 15 mm from Probe Center to the Device High/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 11.151 V/m
Probe Modulation Factor = 0.950
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 8.879 V/m; Power Drift = 0.09 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **15.161 M4**	Grid 2 **16.356 M4**	Grid 3 **15.861 M4**
Grid 4 **9.174 M4**	Grid 5 **11.147 M4**	Grid 6 **11.151 M4**
Grid 7 **8.383 M4**	Grid 8 **8.871 M4**	Grid 9 **8.764 M4**


V/m
16.356
14.118
11.880
9.643
7.405
5.167
4
5
6
7
8
9

Date/Time: 2011/7/29 18:17:58

E-CDMA1900-Ch25 / 2nd

DUT: Smartphone ; Type: PI46110 ; Test Frequency: 1851.25 MHz

Communication System: CDMA ; Frequency: 1851.25 MHz ; Duty Cycle: 1:1Modulation type: OQPSK
Medium: Air Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3 ;
Phantom section: RF Section ;
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

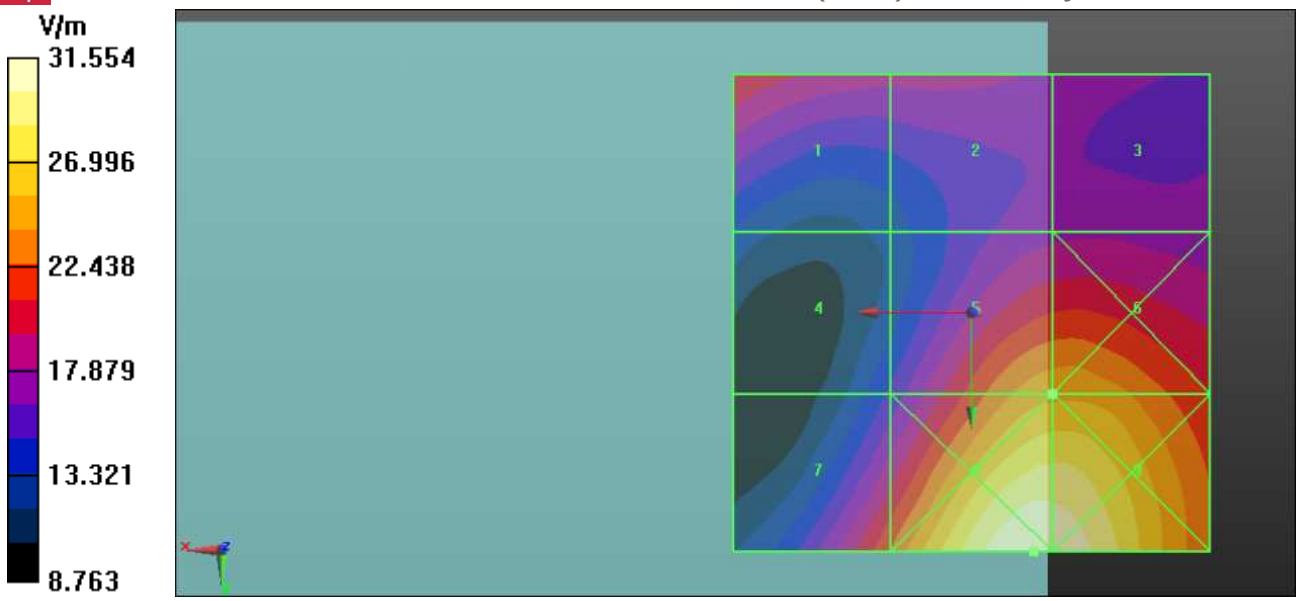
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Device E-Field measurement with ER probe/E Scan - ER3D - 2007: 15 mm from Probe Center to the Device Low/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 25.114 V/m
Probe Modulation Factor = 0.950
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 22.479 V/m; Power Drift = 0.03 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **21.027 M4**	Grid 2 **18.613 M4**	Grid 3 **17.692 M4**
Grid 4 **15.339 M4**	Grid 5 **25.114 M4**	Grid 6 **25.178 M4**
Grid 7 **22.627 M4**	Grid 8 **31.554 M4**	Grid 9 **31.340 M4**


V/m
31.554
26.996
22.438
17.879
13.321
8.763
1
2
3
4
5
6
7

Date/Time: 2011/7/29 10:45:12

H-CDMA850-Ch1013

DUT: Smartphone ; Type: PI46110 ; Test Frequency: 824.7 MHz

Communication System: CDMA ; Frequency: 824.7 MHz ; Duty Cycle: 1:1Modulation type: OQPSK
Medium: Air Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3 ;
Phantom section: RF Section ;
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

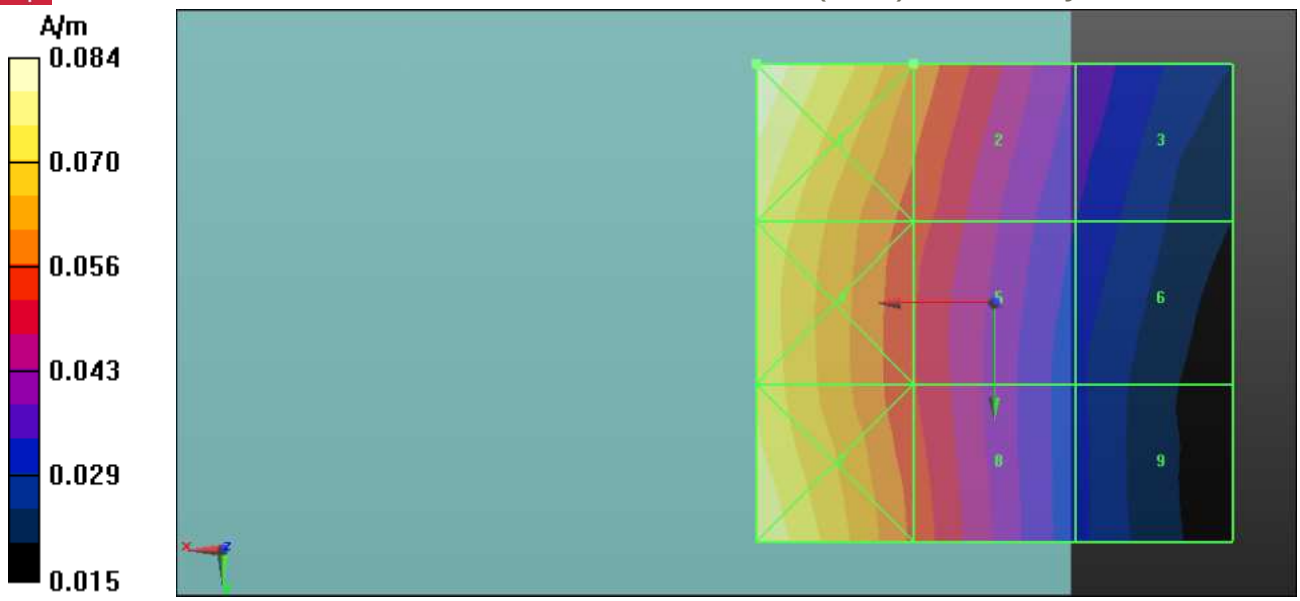
- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Device H-Field meausrement with H3DV6 probe/H Scan - H3DV6 - 2007: 15 mm from Probe Center to the Device Low/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.061 A/m
Probe Modulation Factor = 0.950
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.046 A/m; Power Drift = -0.08 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.084 M4**	Grid 2 **0.061 M4**	Grid 3 **0.038 M4**
Grid 4 **0.076 M4**	Grid 5 **0.054 M4**	Grid 6 **0.034 M4**
Grid 7 **0.080 M4**	Grid 8 **0.055 M4**	Grid 9 **0.031 M4**


A/m
0.084
0.070
0.056
0.043
0.029
0.015
2
3
5
6
8
9

Date/Time: 2011/7/29 10:51:00

H-CDMA850-Ch384

DUT: Smartphone ; Type: PI46110 ; Test Frequency: 836.52 MHz

Communication System: CDMA ; Frequency: 836.52 MHz ; Duty Cycle: 1:1 Modulation type: OQPSK
Medium: Air Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3 ;
Phantom section: RF Section ;
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

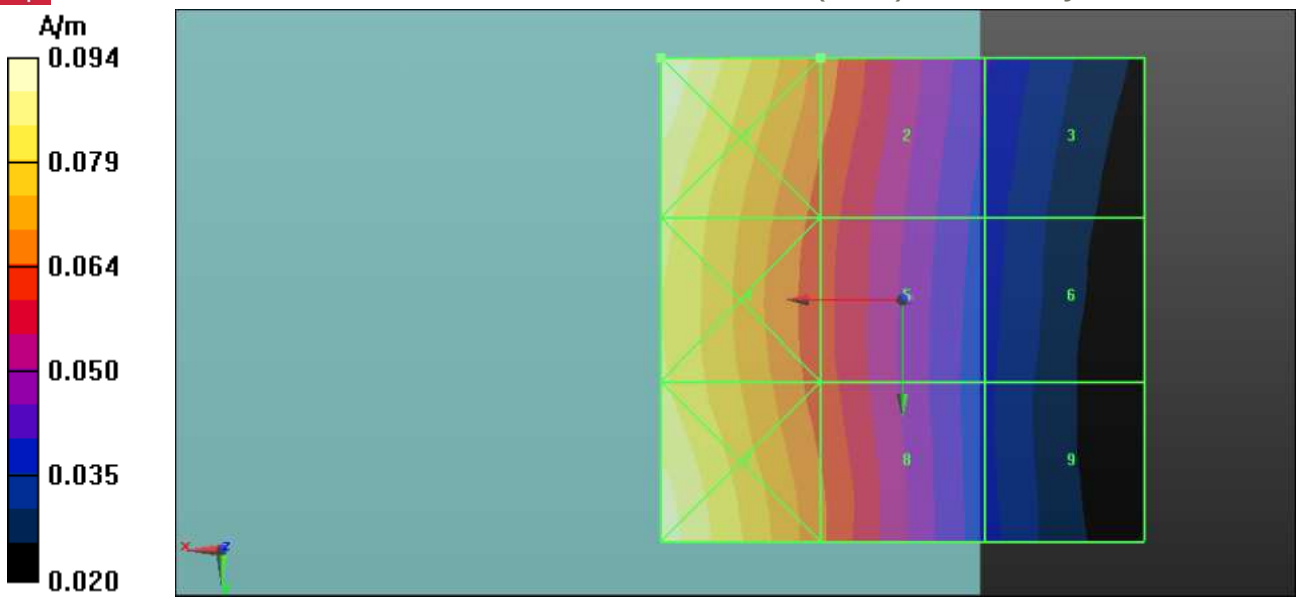
- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Device H-Field meausrement with H3DV6 probe/H Scan - H3DV6 - 2007: 15 mm from Probe Center to the Device Mid/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.068 A/m
Probe Modulation Factor = 0.950
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.055 A/m; Power Drift = -0.04 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.094 M4**	Grid 2 **0.068 M4**	Grid 3 **0.041 M4**
Grid 4 **0.086 M4**	Grid 5 **0.063 M4**	Grid 6 **0.038 M4**
Grid 7 **0.092 M4**	Grid 8 **0.066 M4**	Grid 9 **0.037 M4**


A/m
0.094
0.079
0.064
0.050
0.035
0.020
2
3
5
6
8
9

Date/Time: 2011/7/29 10:57:17

H-CDMA850-Ch777

DUT: Smartphone ; Type: PI46110 ; Test Frequency: 848.31 MHz

Communication System: CDMA ; Frequency: 848.31 MHz ; Duty Cycle: 1:1 Modulation type: OQPSK
Medium: Air Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3 ;
Phantom section: RF Section ;
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

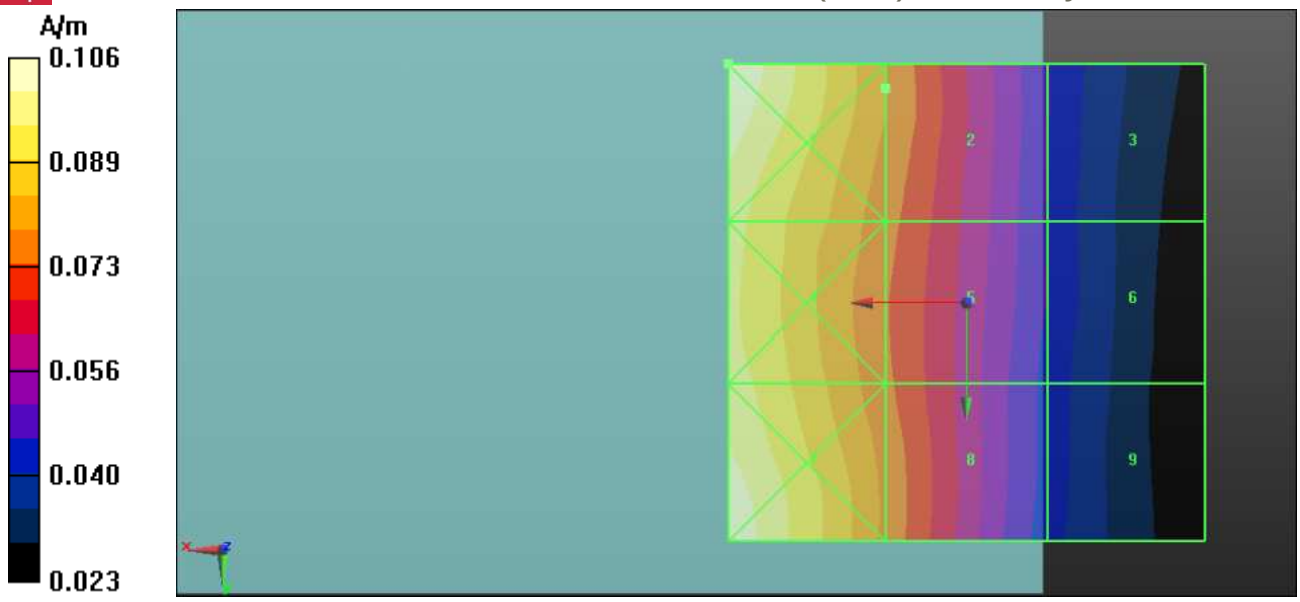
- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Device H-Field meausrement with H3DV6 probe/H Scan - H3DV6 - 2007: 15 mm from Probe Center to the Device High/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.079 A/m
Probe Modulation Factor = 0.960
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.067 A/m; Power Drift = 0.01 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.106 M4**	Grid 2 **0.079 M4**	Grid 3 **0.046 M4**
Grid 4 **0.098 M4**	Grid 5 **0.075 M4**	Grid 6 **0.045 M4**
Grid 7 **0.106 M4**	Grid 8 **0.077 M4**	Grid 9 **0.044 M4**


A/m
0.106
0.089
0.073
0.056
0.040
0.023
2
3
5
6
8
9

Date/Time: 2011/7/29 12:10:23

H-CDMA850-Ch777 / 2nd

DUT: Smartphone ; Type: PI46110 ; Test Frequency: 848.31 MHz

Communication System: CDMA ; Frequency: 848.31 MHz ; Duty Cycle: 1:1 Modulation type: OQPSK
Medium: Air Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3 ;
Phantom section: RF Section ;
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

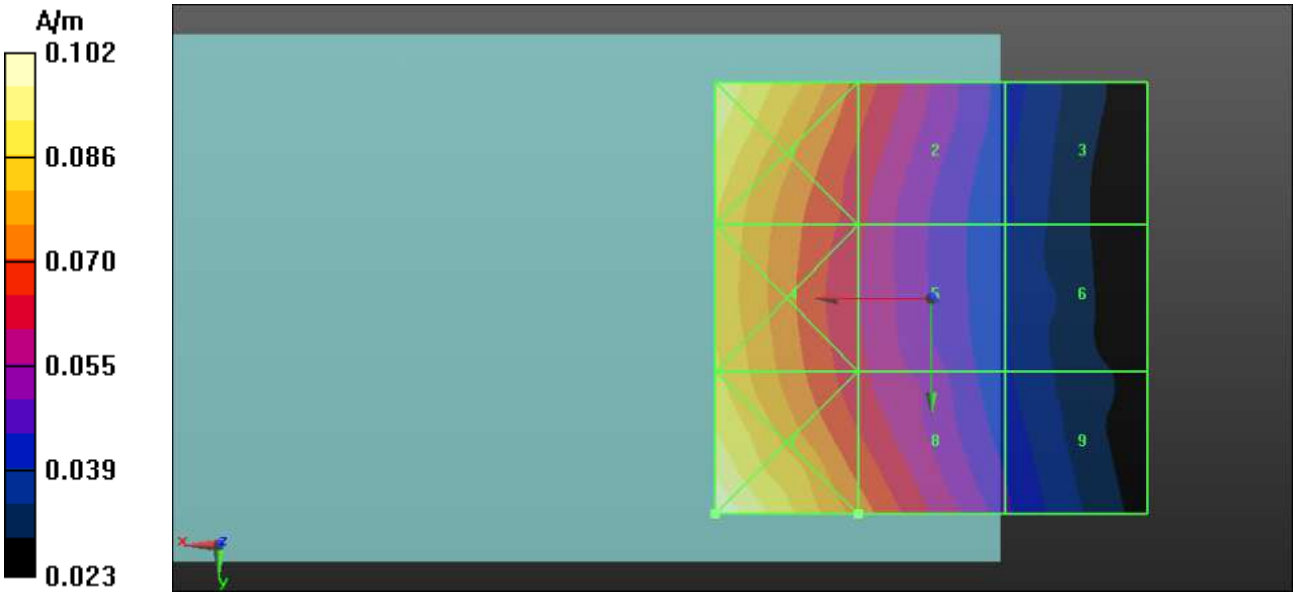
- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Device H-Field meausrement with H3DV6 probe/H Scan - H3DV6 - 2007: 15 mm from Probe Center to the Device High 2nd/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.074 A/m
Probe Modulation Factor = 0.960
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.051 A/m; Power Drift = -0.0034 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.096 M4**	Grid 2 **0.069 M4**	Grid 3 **0.042 M4**
Grid 4 **0.087 M4**	Grid 5 **0.062 M4**	Grid 6 **0.040 M4**
Grid 7 **0.102 M4**	Grid 8 **0.074 M4**	Grid 9 **0.046 M4**


A/m
0.102
0.086
0.070
0.055
0.039
0.023
2
3
5
6
8
9

Date/Time: 2011/7/29 11:21:51

H-CDMA1900-Ch25

DUT: Smartphone ; Type: PI46110 ; Test Frequency: 1851.25 MHz

Communication System: CDMA ; Frequency: 1851.25 MHz ; Duty Cycle: 1:1Modulation type: OQPSK
Medium: Air Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3 ;
Phantom section: RF Section ;
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

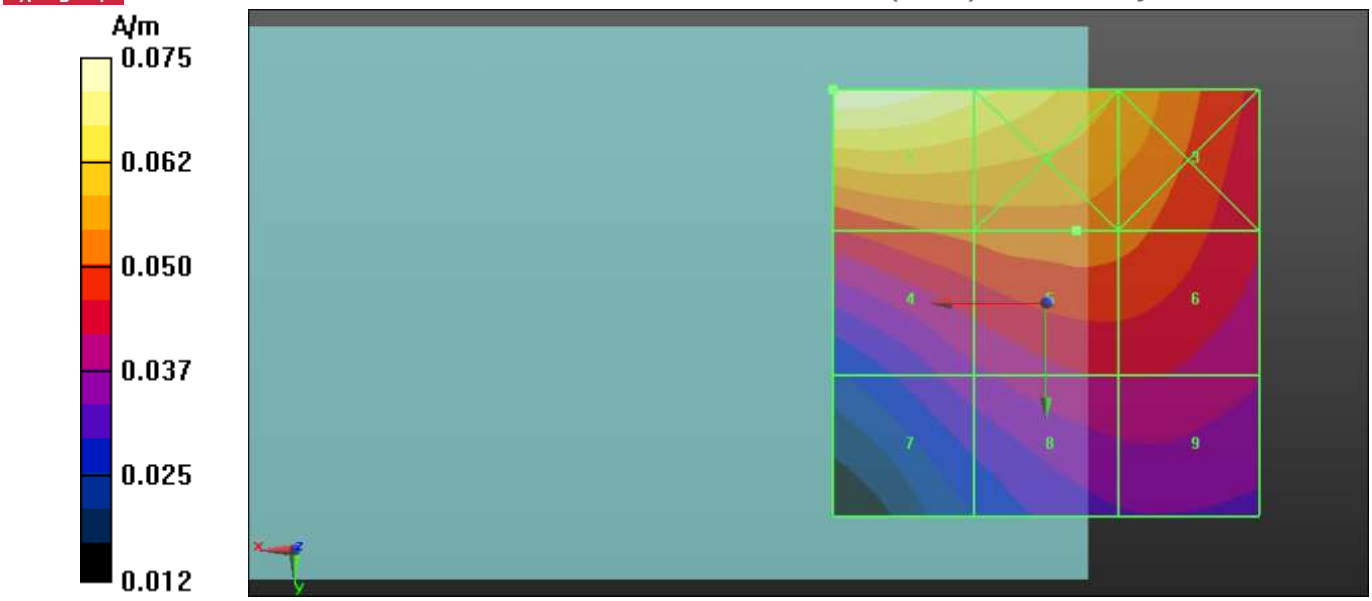
- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Device H-Field meausrement with H3DV6 probe/H Scan - H3DV6 - 2007: 15 mm from Probe Center to the Device Low/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.075 A/m
Probe Modulation Factor = 0.910
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.056 A/m; Power Drift = -0.03 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.075 M4**	Grid 2 **0.068 M4**	Grid 3 **0.058 M4**
Grid 4 **0.051 M4**	Grid 5 **0.052 M4**	Grid 6 **0.051 M4**
Grid 7 **0.036 M4**	Grid 8 **0.042 M4**	Grid 9 **0.042 M4**


A/m
0.075
0.062
0.050
0.037
0.025
0.012
1
3
4
5
6
7
8
9

Date/Time: 2011/7/29 11:33:23

H-CDMA1900-Ch600

DUT: Smartphone ; Type: PI46110 ; Test Frequency: 1880 MHz

Communication System: CDMA ; Frequency: 1880 MHz ; Duty Cycle: 1:1 Modulation type: OQPSK
Medium: Air Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3 ;
Phantom section: RF Section ;
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

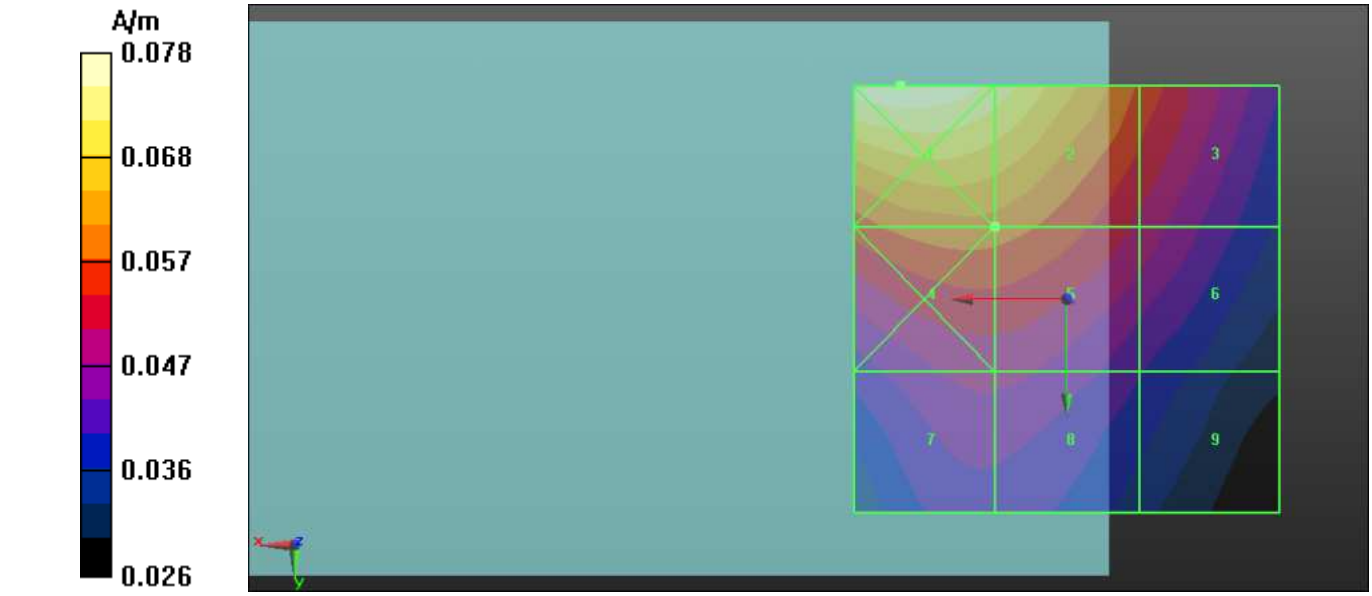
- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Device H-Field meausrement with H3DV6 probe/H Scan - H3DV6 - 2007: 15 mm from Probe Center to the Device Mid/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.073 A/m
Probe Modulation Factor = 0.910
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.057 A/m; Power Drift = -0.11 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.078 M4**	Grid 2 **0.073 M4**	Grid 3 **0.057 M4**
Grid 4 **0.060 M4**	Grid 5 **0.059 M4**	Grid 6 **0.050 M4**
Grid 7 **0.048 M4**	Grid 8 **0.048 M4**	Grid 9 **0.040 M4**


A/m
0.078
0.068
0.057
0.047
0.036
0.026
3
6
7
8
9

Date/Time: 2011/7/29 11:27:42

H-CDMA1900-Ch1175

DUT: Smartphone ; Type: PI46110 ; Test Frequency: 1908.75 MHz

Communication System: CDMA ; Frequency: 1908.75 MHz ; Duty Cycle: 1:1Modulation type: OQPSK
Medium: Air Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3 ;
Phantom section: RF Section ;
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

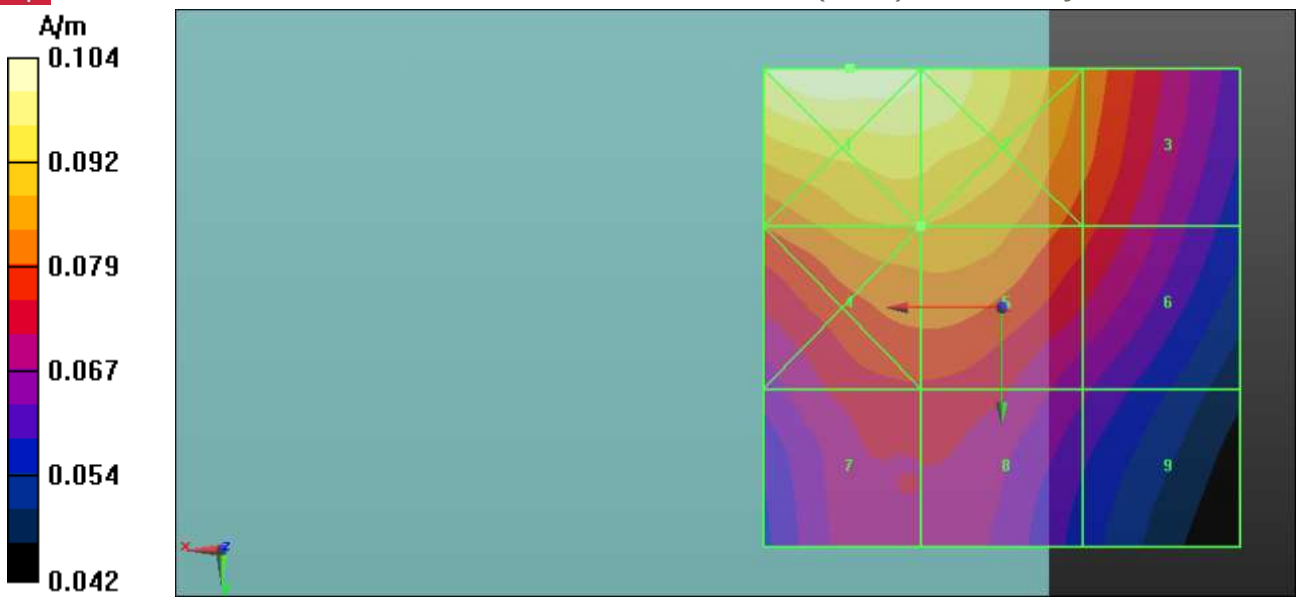
- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Device H-Field meausrement with H3DV6 probe/H Scan - H3DV6 - 2007: 15 mm from Probe Center to the Device High/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.087 A/m
Probe Modulation Factor = 0.930
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.087 A/m; Power Drift = 0.05 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.104 M4**	Grid 2 **0.101 M4**	Grid 3 **0.083 M4**
Grid 4 **0.088 M4**	Grid 5 **0.087 M4**	Grid 6 **0.077 M4**
Grid 7 **0.075 M4**	Grid 8 **0.075 M4**	Grid 9 **0.064 M4**


A/m
0.104
0.092
0.079
0.067
0.054
0.042
3
6
7
8
9

Date/Time: 2011/7/29 12:17:22

H-CDMA1900-Ch1175 / 2nd

DUT: Smartphone ; Type: PI46110 ; Test Frequency: 1908.75 MHz

Communication System: CDMA ; Frequency: 1908.75 MHz ; Duty Cycle: 1:1Modulation type: OQPSK
Medium: Air Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3 ;
Phantom section: RF Section ;
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

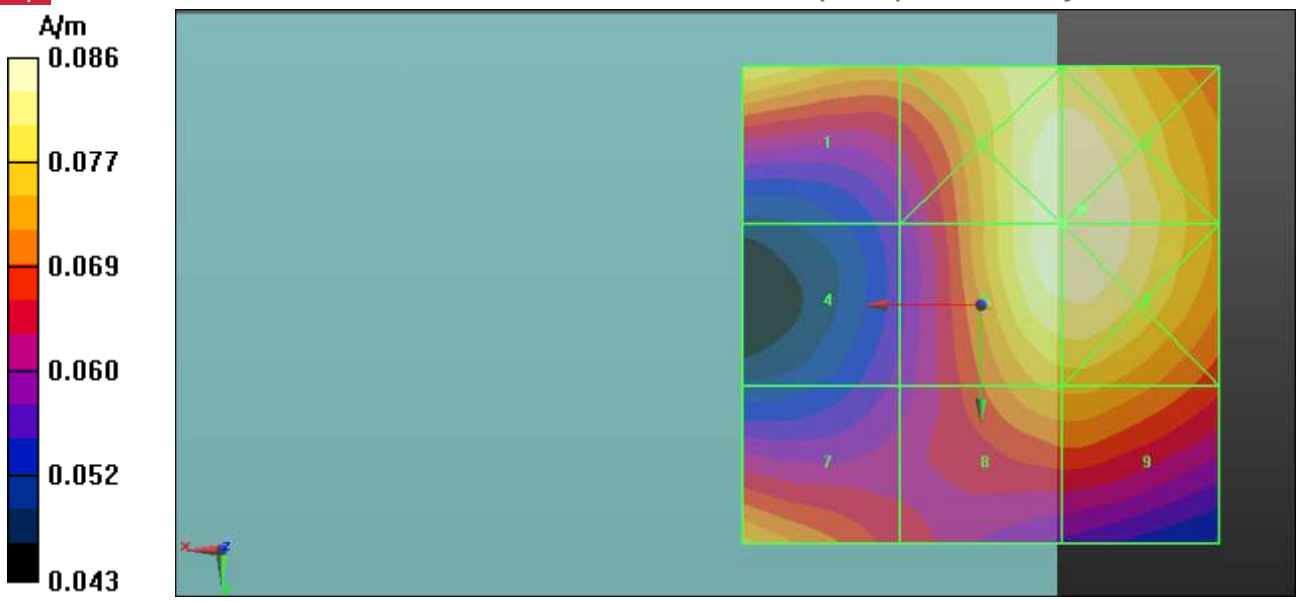
- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Device H-Field meausrement with H3DV6 probe/H Scan - H3DV6 - 2007: 15 mm from Probe Center to the Device Mid 2nd/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.086 A/m
Probe Modulation Factor = 0.930
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.065 A/m; Power Drift = -0.01 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.081 M4**	Grid 2 **0.086 M4**	Grid 3 **0.086 M4**
Grid 4 **0.059 M4**	Grid 5 **0.086 M4**	Grid 6 **0.086 M4**
Grid 7 **0.076 M4**	Grid 8 **0.075 M4**	Grid 9 **0.075 M4**


A/m
0.086
0.077
0.069
0.060
0.052
0.043
1
4
7
8
9

Date/Time: 2011/7/29 07:52:02

H-WD-CDMA850-Ch1013

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 824.7 MHz

Communication System: CDMA ; Frequency: 824.7 MHz; Duty Cycle: 1:1; Modulation type: OQPSK
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

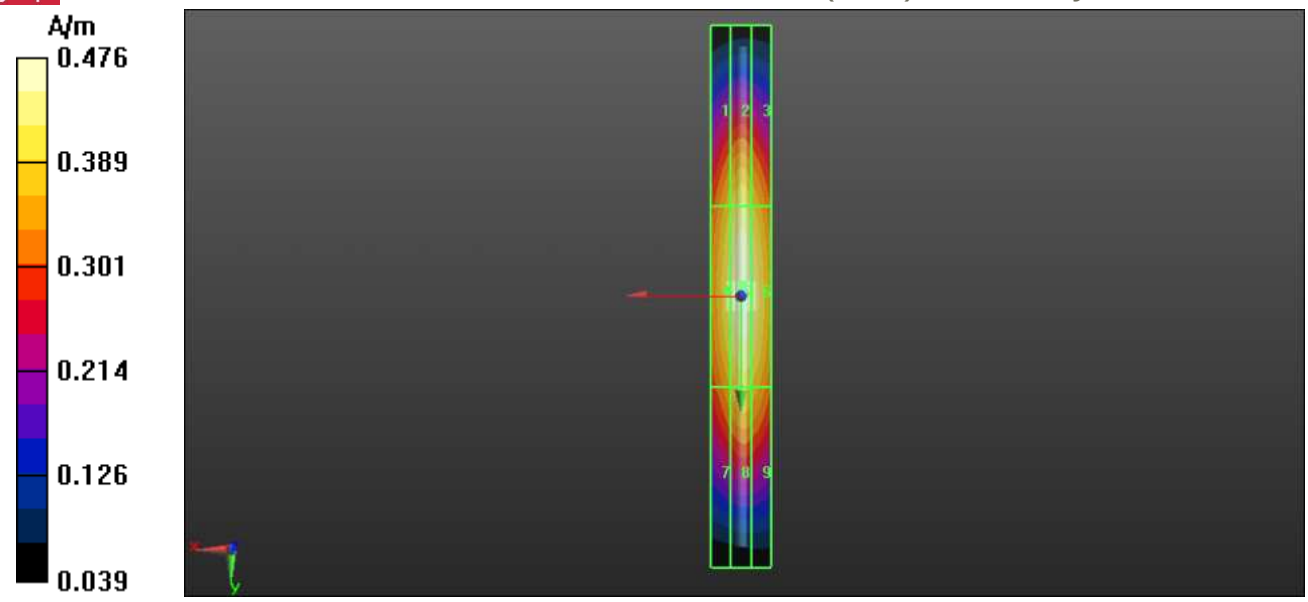
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD835 Dipole = 10mm Low/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.476 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.509 A/m; Power Drift = -0.04 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.389 M4**	Grid 2 **0.423 M4**	Grid 3 **0.398 M4**
Grid 4 **0.437 M4**	Grid 5 **0.476 M4**	Grid 6 **0.453 M4**
Grid 7 **0.365 M4**	Grid 8 **0.400 M4**	Grid 9 **0.386 M4**


A/m
0.476
0.389
0.301
0.214
0.126
0.039
1
2
3
7
8
9

Date/Time: 2011/7/29 08:01:17

H-WD-CDMA850-Ch384

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 836.52 MHz

Communication System: CDMA ; Frequency: 836.52 MHz; Duty Cycle: 1:1; Modulation type: OQPSK
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

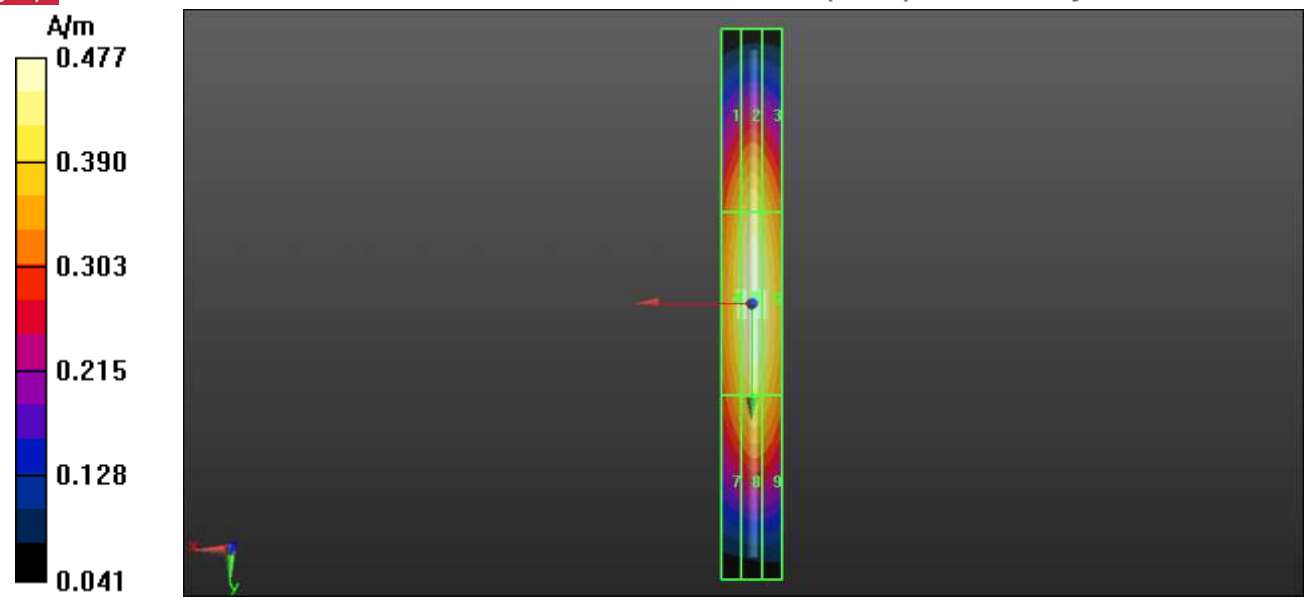
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD835 Dipole = 10mm Mid/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.477 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.511 A/m; Power Drift = -0.03 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.390 M4**	Grid 2 **0.425 M4**	Grid 3 **0.403 M4**
Grid 4 **0.438 M4**	Grid 5 **0.477 M4**	Grid 6 **0.455 M4**
Grid 7 **0.377 M4**	Grid 8 **0.411 M4**	Grid 9 **0.399 M4**


A/m
0.477
0.390
0.303
0.215
0.128
0.041
1
2
3
7
8
9

Date/Time: 2011/7/29 08:09:07

H-WD-CDMA850-Ch777

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 848.31 MHz

Communication System: CDMA ; Frequency: 848.31 MHz; Duty Cycle: 1:1; Modulation type: OQPSK
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

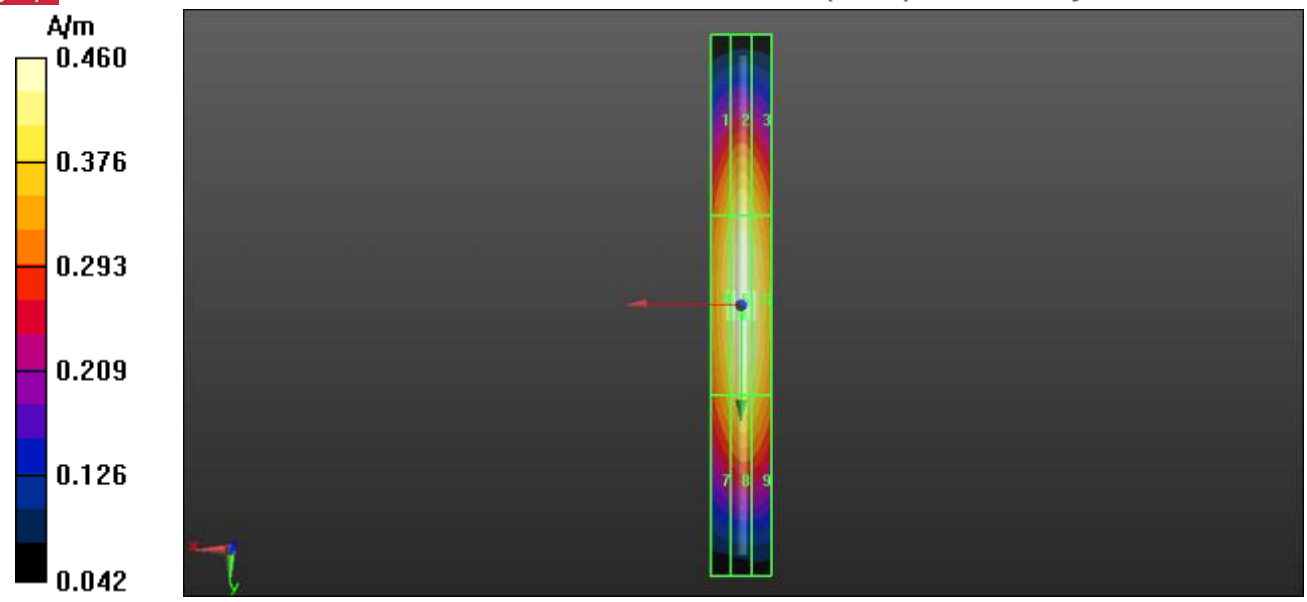
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD835 Dipole = 10mm High/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.460 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.490 A/m; Power Drift = 0.03 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.383 M4**	Grid 2 **0.417 M4**	Grid 3 **0.396 M4**
Grid 4 **0.423 M4**	Grid 5 **0.460 M4**	Grid 6 **0.440 M4**
Grid 7 **0.372 M4**	Grid 8 **0.408 M4**	Grid 9 **0.392 M4**


A/m
0.460
0.376
0.293
0.209
0.126
0.042

Date/Time: 2011/7/29 08:53:41

H-CW-824.7

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 824.7 MHz

Communication System: CW ; Frequency: 824.7 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

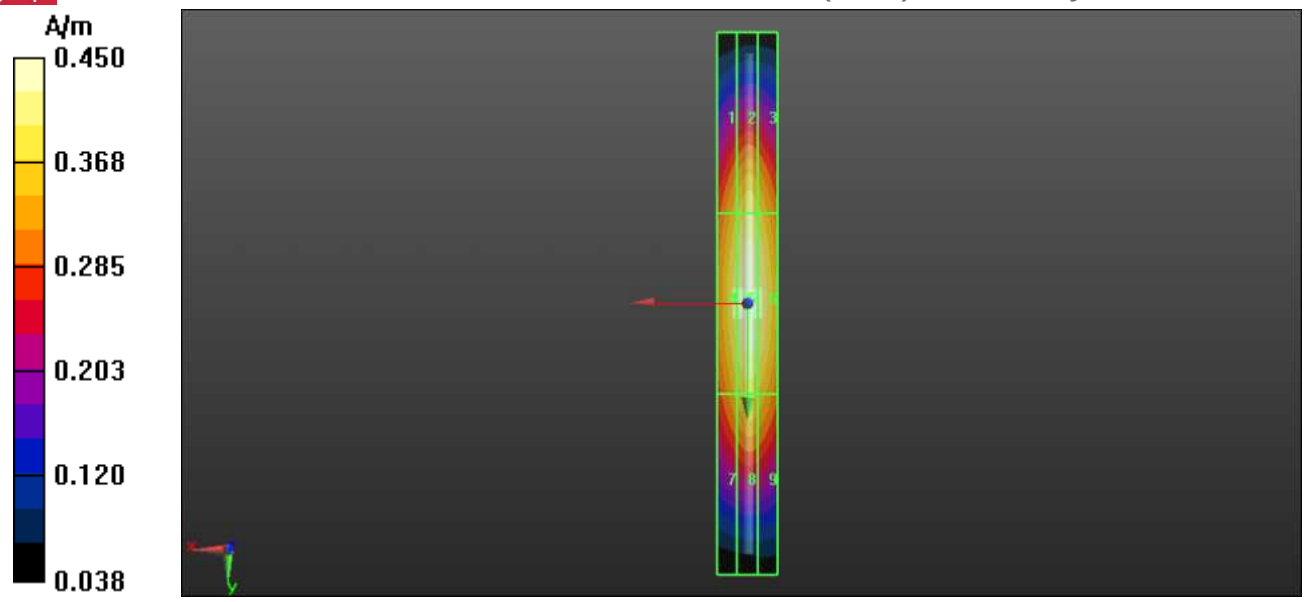
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD835 Dipole = 10mm Low/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.450 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.484 A/m; Power Drift = -0.09 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.366 M4**	Grid 2 **0.398 M4**	Grid 3 **0.380 M4**
Grid 4 **0.415 M4**	Grid 5 **0.450 M4**	Grid 6 **0.432 M4**
Grid 7 **0.352 M4**	Grid 8 **0.380 M4**	Grid 9 **0.366 M4**


A/m
0.450
0.368
0.285
0.203
0.120
0.038
1 2 3
7 8 9

Date/Time: 2011/7/29 09:01:46

H-CW-836.52

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 836.52 MHz

Communication System: CW ; Frequency: 836.52 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

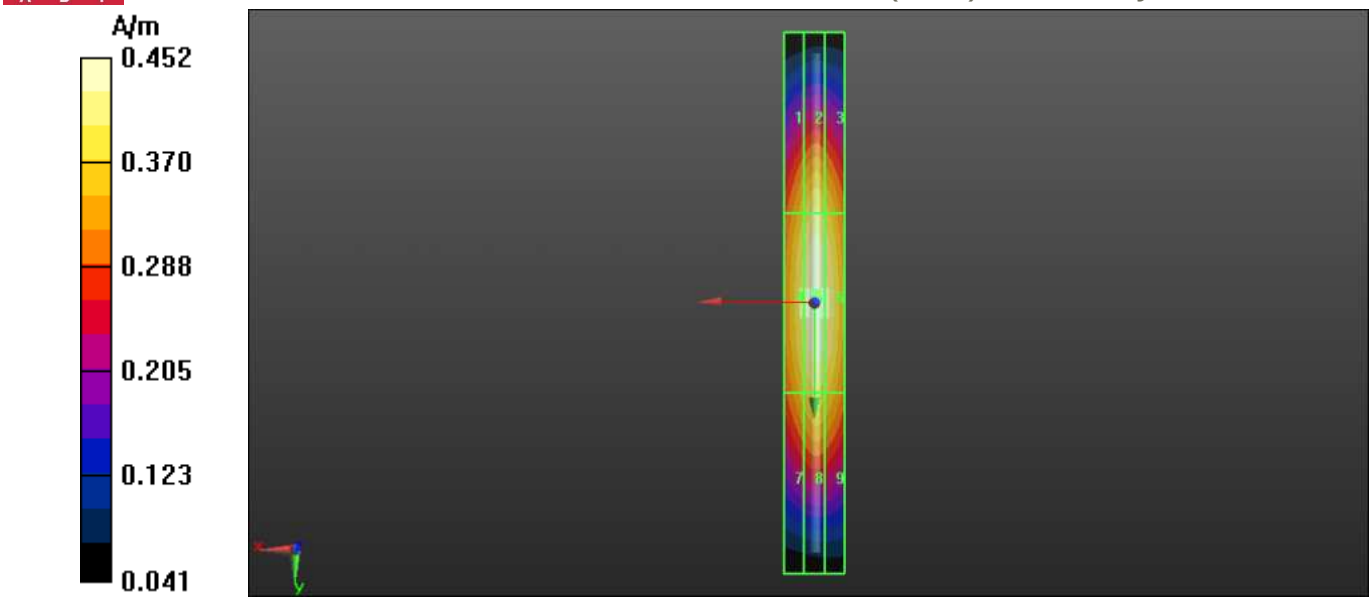
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD835 Dipole = 10mm Mid/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.452 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.484 A/m; Power Drift = -0.09 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.368 M4**	Grid 2 **0.404 M4**	Grid 3 **0.385 M4**
Grid 4 **0.417 M4**	Grid 5 **0.452 M4**	Grid 6 **0.434 M4**
Grid 7 **0.362 M4**	Grid 8 **0.391 M4**	Grid 9 **0.378 M4**


A/m
0.452
0.370
0.288
0.205
0.123
0.041
1 2 3
7 8 9

Date/Time: 2011/7/29 09:09:59

H-CW-848.31

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 848.31 MHz

Communication System: CW ; Frequency: 848.31 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

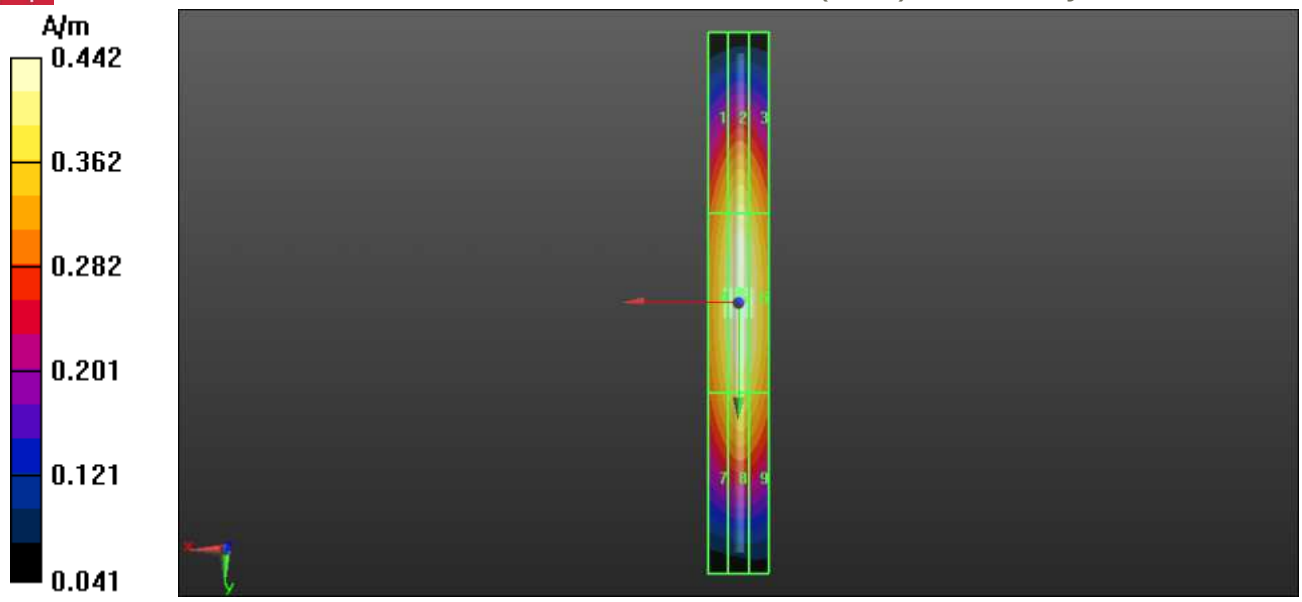
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD835 Dipole = 10mm High/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.442 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.472 A/m; Power Drift = -0.09 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.368 M4**	Grid 2 **0.400 M4**	Grid 3 **0.381 M4**
Grid 4 **0.409 M4**	Grid 5 **0.442 M4**	Grid 6 **0.423 M4**
Grid 7 **0.363 M4**	Grid 8 **0.391 M4**	Grid 9 **0.377 M4**


A/m
0.442
0.362
0.282
0.201
0.121
0.041

Date/Time: 2011/7/29 09:21:05

H-AM-824.7

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 824.7 MHz

Communication System: AM ; Frequency: 824.7 MHz; Duty Cycle: 1:1; Modulation type: AM
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

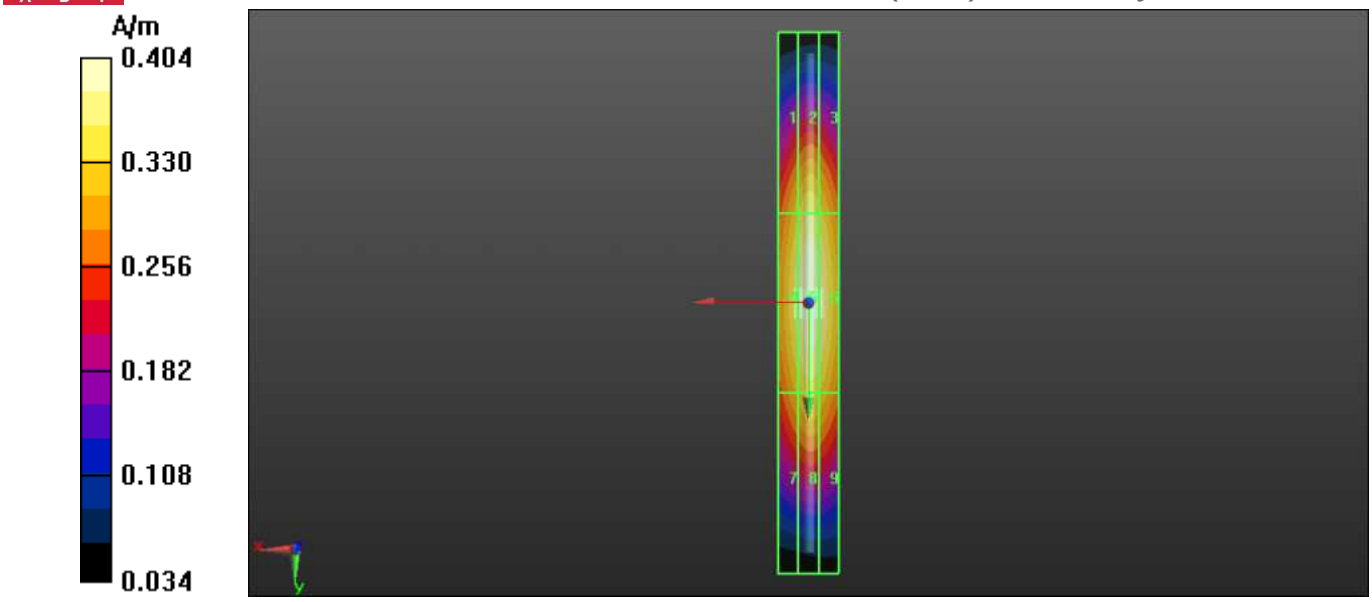
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD835 Dipole = 10mm Low/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.404 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.431 A/m; Power Drift = -0.04 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.327 M4**	Grid 2 **0.358 M4**	Grid 3 **0.342 M4**
Grid 4 **0.372 M4**	Grid 5 **0.404 M4**	Grid 6 **0.389 M4**
Grid 7 **0.315 M4**	Grid 8 **0.341 M4**	Grid 9 **0.330 M4**


A/m
0.404
0.330
0.256
0.182
0.108
0.034

Date/Time: 2011/7/29 09:29:03

H-AM-836.52

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 836.52 MHz

Communication System: AM ; Frequency: 836.52 MHz; Duty Cycle: 1:1; Modulation type: AM
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

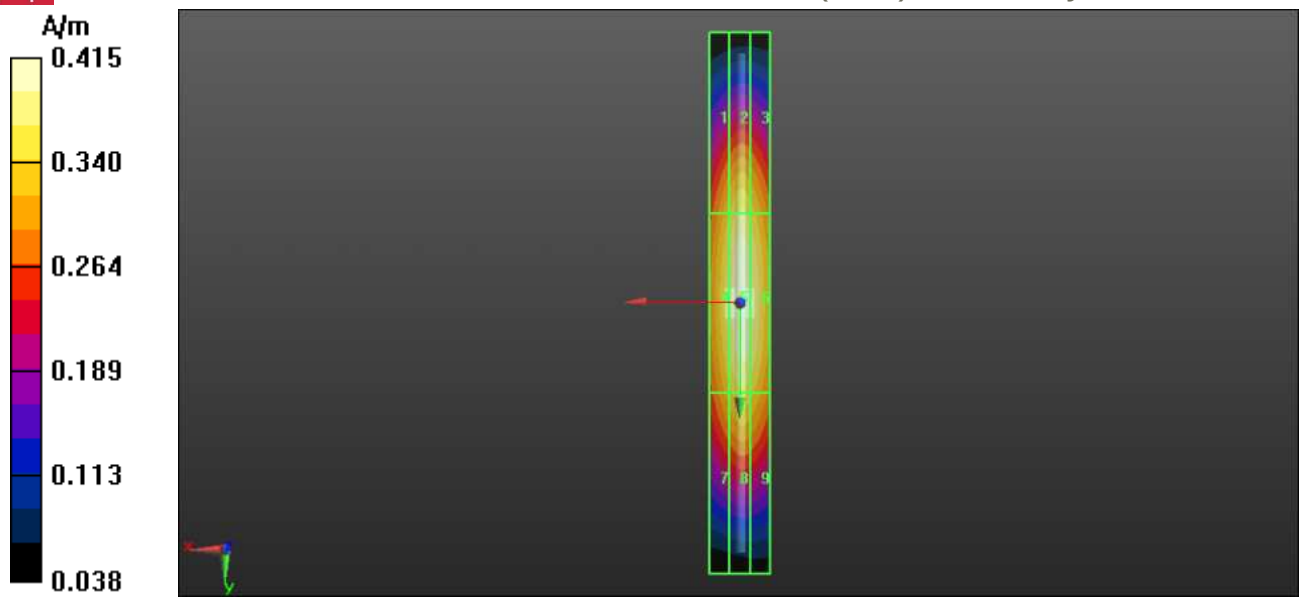
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD835 Dipole = 10mm Mid/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.415 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.441 A/m; Power Drift = 0.03 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.339 M4**	Grid 2 **0.369 M4**	Grid 3 **0.354 M4**
Grid 4 **0.383 M4**	Grid 5 **0.415 M4**	Grid 6 **0.399 M4**
Grid 7 **0.331 M4**	Grid 8 **0.359 M4**	Grid 9 **0.347 M4**


A/m
0.415
0.340
0.264
0.189
0.113
0.038

Date/Time: 2011/7/29 09:37:32

H-AM-848.31

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 848.31 MHz

Communication System: AM ; Frequency: 848.31 MHz; Duty Cycle: 1:1; Modulation type: AM
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

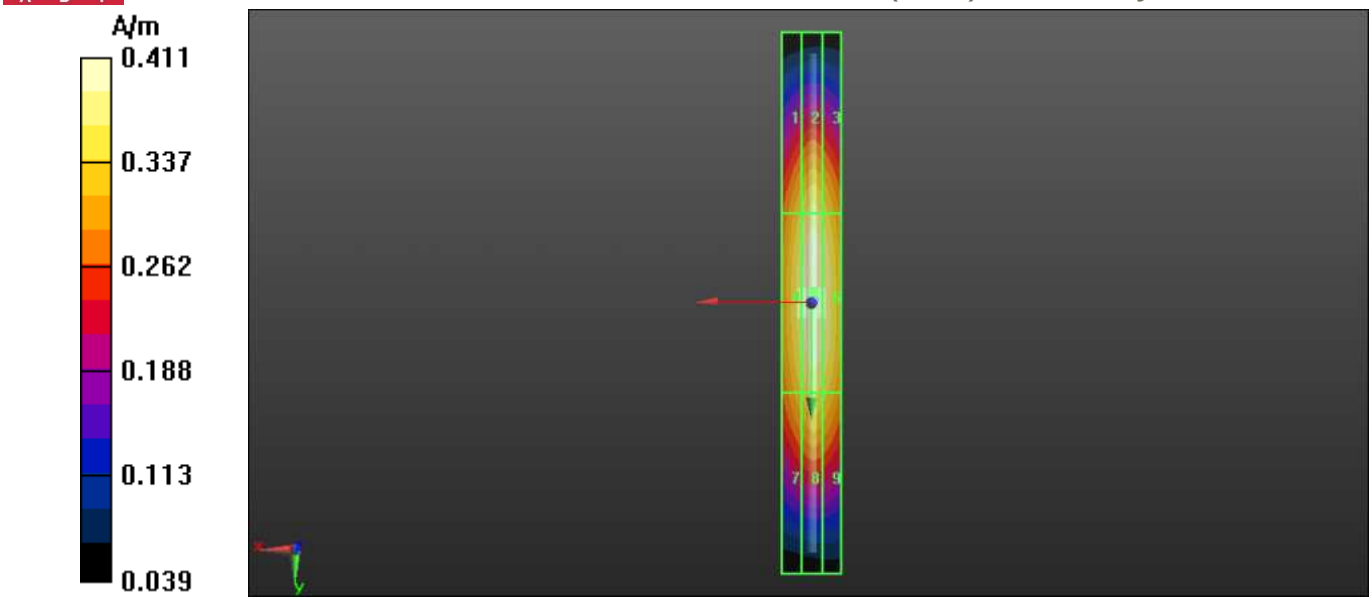
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD835 Dipole = 10mm High/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.411 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.439 A/m; Power Drift = -0.04 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.342 M4**	Grid 2 **0.372 M4**	Grid 3 **0.356 M4**
Grid 4 **0.380 M4**	Grid 5 **0.411 M4**	Grid 6 **0.395 M4**
Grid 7 **0.336 M4**	Grid 8 **0.362 M4**	Grid 9 **0.351 M4**


A/m
0.411
0.337
0.262
0.188
0.113
0.039

Date/Time: 2011/7/29 08:24:48

H-WD-CDMA1900-Ch25

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1851.25 MHz

Communication System: CDMA1900 ; Frequency: 1851.25 MHz; Duty Cycle: 1:1; Modulation type: OQPSK
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

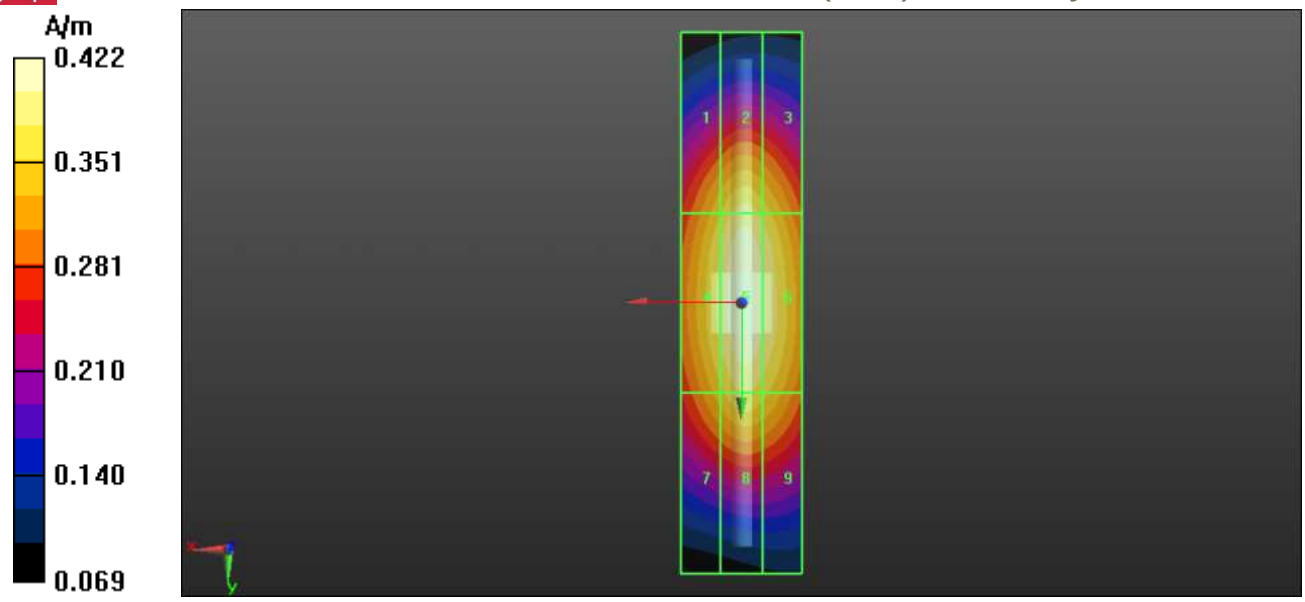
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm Low/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.422 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.449 A/m; Power Drift = -0.04 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.350 M2**	Grid 2 **0.386 M2**	Grid 3 **0.366 M2**
Grid 4 **0.385 M2**	Grid 5 **0.422 M2**	Grid 6 **0.401 M2**
Grid 7 **0.343 M2**	Grid 8 **0.373 M2**	Grid 9 **0.360 M2**


A/m
0.422
0.351
0.281
0.210
0.140
0.069
1
2
3
7
8
9

Date/Time: 2011/7/29 08:29:43

H-WD-CDMA1900-Ch600

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1880 MHz

Communication System: CDMA1900 ; Frequency: 1880 MHz; Duty Cycle: 1:1; Modulation type: OQPSK
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

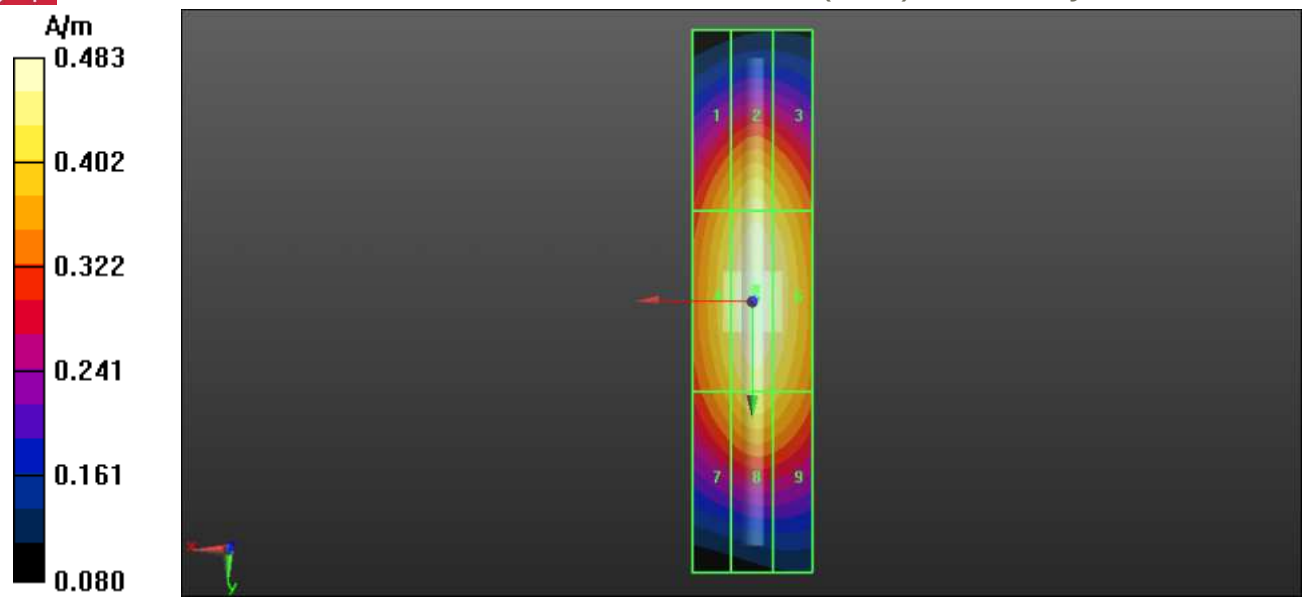
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm Mid/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.483 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.514 A/m; Power Drift = 0.01 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.407 M2**	Grid 2 **0.447 M2**	Grid 3 **0.423 M2**
Grid 4 **0.444 M2**	Grid 5 **0.483 M2**	Grid 6 **0.462 M2**
Grid 7 **0.396 M2**	Grid 8 **0.433 M2**	Grid 9 **0.416 M2**


A/m
0.483
0.402
0.322
0.241
0.161
0.080
1
2
3
7
8
9

Date/Time: 2011/7/29 08:34:48

H-WD-CDMA1900-Ch1175

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1908.75 MHz

Communication System: CDMA1900 ; Frequency: 1908.75 MHz; Duty Cycle: 1:1; Modulation type: OQPSK
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

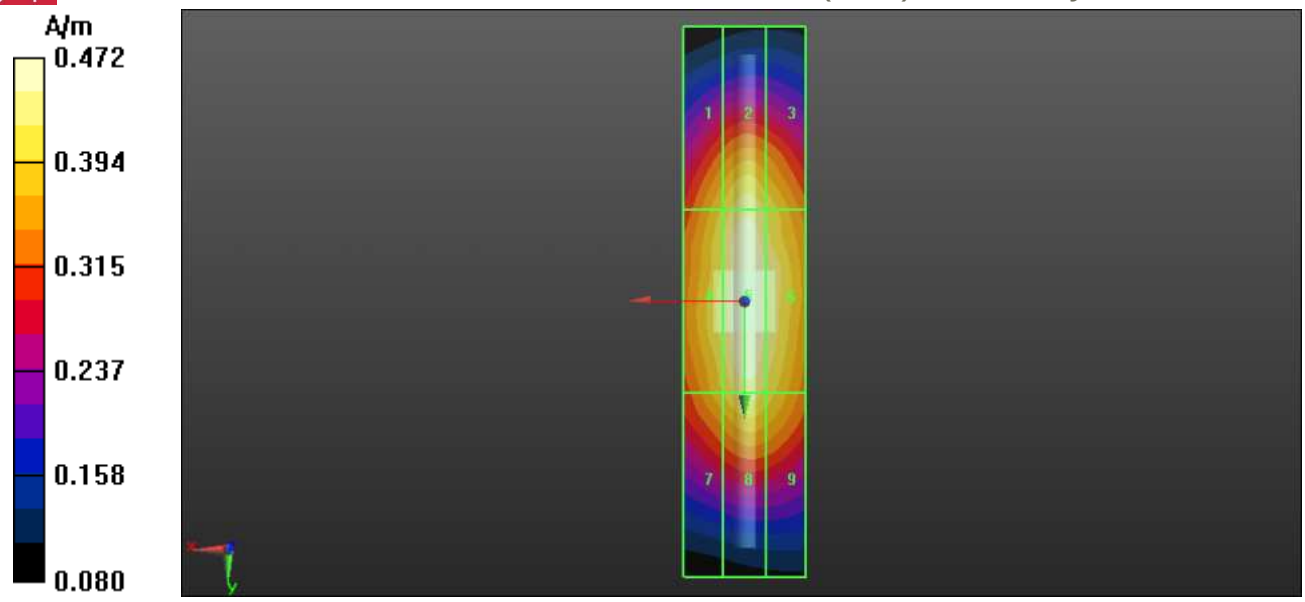
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm High/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.472 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.505 A/m; Power Drift = 0.13 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.401 M2**	Grid 2 **0.438 M2**	Grid 3 **0.417 M2**
Grid 4 **0.436 M2**	Grid 5 **0.472 M2**	Grid 6 **0.452 M2**
Grid 7 **0.394 M2**	Grid 8 **0.432 M2**	Grid 9 **0.410 M2**


A/m
0.472
0.394
0.315
0.237
0.158
0.080
1
2
3
7
8
9

Date/Time: 2011/7/29 09:49:48

H-CW-1851.25

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1851.25 MHz

Communication System: CW ; Frequency: 1851.25 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

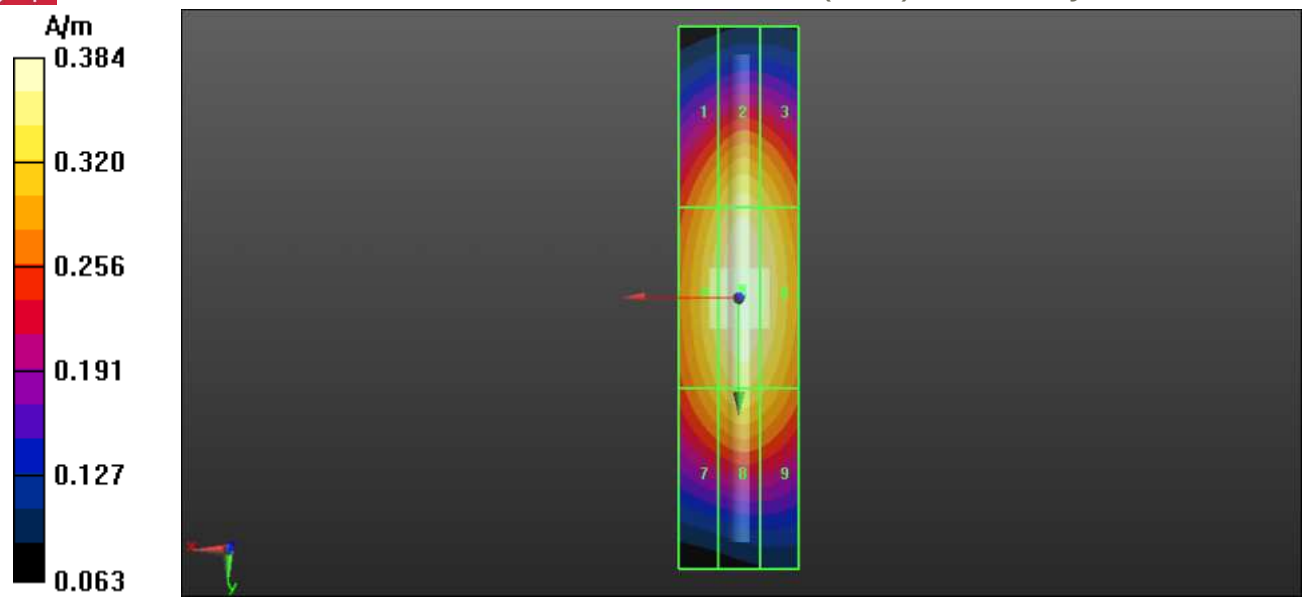
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm Low/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.384 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.408 A/m; Power Drift = -0.01 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.324 M3**	Grid 2 **0.355 M2**	Grid 3 **0.342 M2**
Grid 4 **0.356 M2**	Grid 5 **0.384 M2**	Grid 6 **0.370 M2**
Grid 7 **0.318 M3**	Grid 8 **0.342 M2**	Grid 9 **0.329 M3**


A/m
0.384
0.320
0.256
0.191
0.127
0.063
1
2
3
7
8
9

Date/Time: 2011/7/29 09:55:24

H-CW-1880

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1880 MHz

Communication System: CW ; Frequency: 1880 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

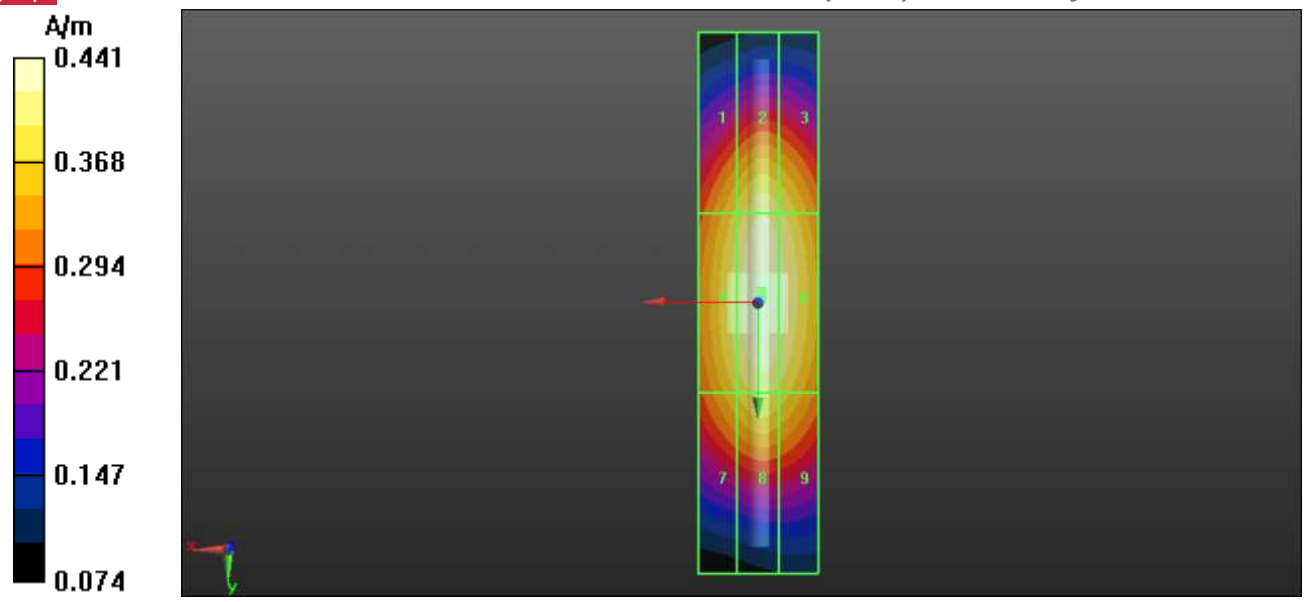
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm Mid/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.441 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.469 A/m; Power Drift = -0.02 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.376 M2**	Grid 2 **0.413 M2**	Grid 3 **0.399 M2**
Grid 4 **0.408 M2**	Grid 5 **0.441 M2**	Grid 6 **0.427 M2**
Grid 7 **0.370 M2**	Grid 8 **0.398 M2**	Grid 9 **0.384 M2**


A/m
0.441
0.368
0.294
0.221
0.147
0.074
1
2
3
7
8
9

Date/Time: 2011/7/29 10:01:05

H-CW-1908.75

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1908.75 MHz

Communication System: CW ; Frequency: 1908.75 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

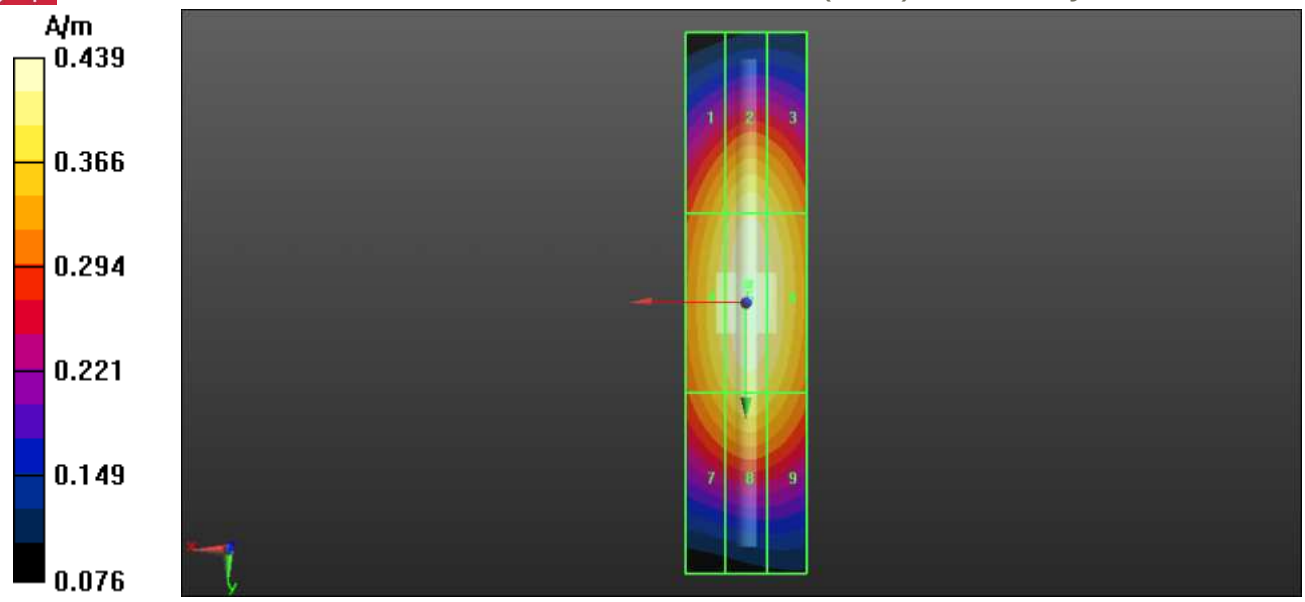
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm High/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.439 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.467 A/m; Power Drift = -0.03 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.376 M2**	Grid 2 **0.412 M2**	Grid 3 **0.397 M2**
Grid 4 **0.408 M2**	Grid 5 **0.439 M2**	Grid 6 **0.424 M2**
Grid 7 **0.370 M2**	Grid 8 **0.396 M2**	Grid 9 **0.380 M2**


A/m
0.439
0.366
0.294
0.221
0.149
0.076
1
2
3
7
8
9

Date/Time: 2011/7/29 10:09:38

H-AM-1851.25

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1851.25 MHz

Communication System: AM ; Frequency: 1851.25 MHz; Duty Cycle: 1:1; Modulation type: AM
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

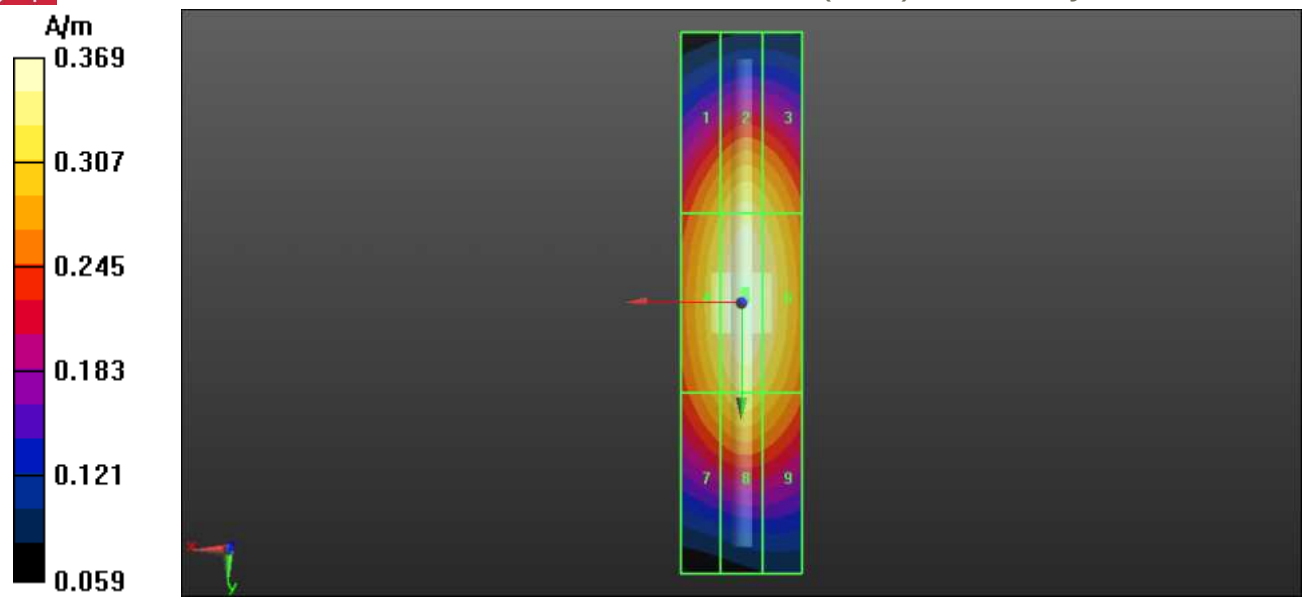
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm Low/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.369 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.394 A/m; Power Drift = -0.0096 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.308 M3**	Grid 2 **0.339 M3**	Grid 3 **0.326 M3**
Grid 4 **0.339 M3**	Grid 5 **0.369 M2**	Grid 6 **0.353 M2**
Grid 7 **0.302 M3**	Grid 8 **0.326 M3**	Grid 9 **0.312 M3**


A/m
0.369
0.307
0.245
0.183
0.121
0.059
1
2
3
7
8
9

Date/Time: 2011/7/29 10:14:46

H-AM-1880

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1880 MHz

Communication System: AM ; Frequency: 1880 MHz; Duty Cycle: 1:1; Modulation type: AM
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

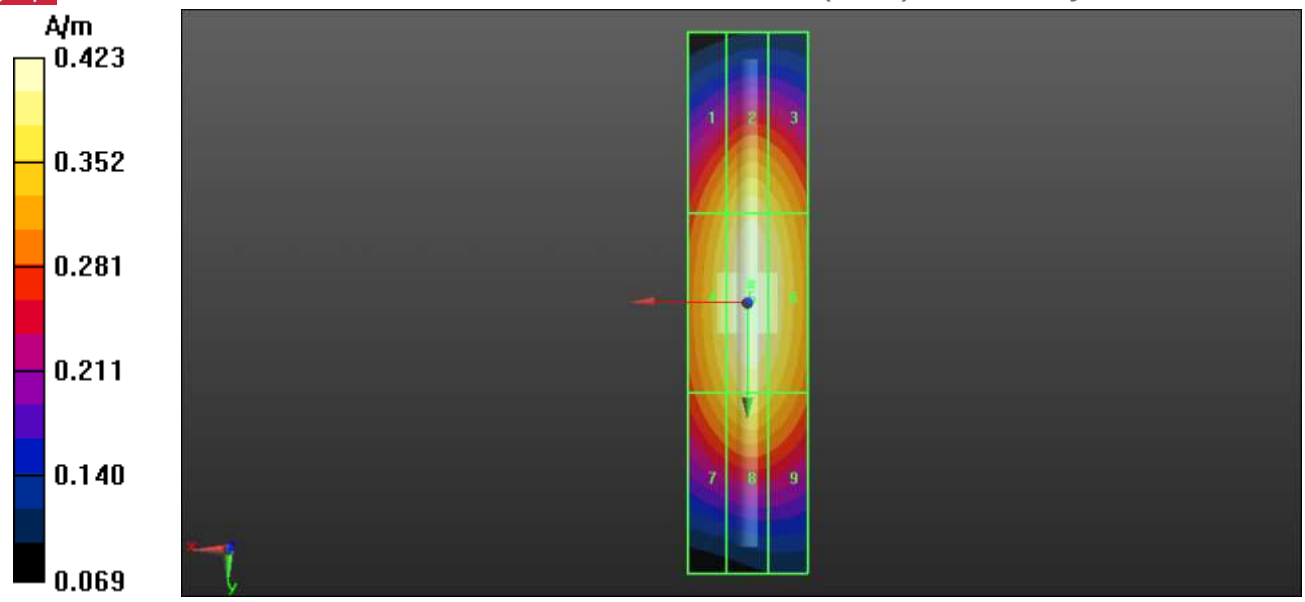
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm Mid/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.423 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.450 A/m; Power Drift = 0.00035 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.355 M2**	Grid 2 **0.393 M2**	Grid 3 **0.376 M2**
Grid 4 **0.387 M2**	Grid 5 **0.423 M2**	Grid 6 **0.404 M2**
Grid 7 **0.349 M2**	Grid 8 **0.378 M2**	Grid 9 **0.361 M2**


A/m
0.423
0.352
0.281
0.211
0.140
0.069
1
2
3
7
8
9

Date/Time: 2011/7/29 10:20:15

H-AM-1908.75

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1908.75 MHz

Communication System: AM ; Frequency: 1908.75 MHz; Duty Cycle: 1:1; Modulation type: AM
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

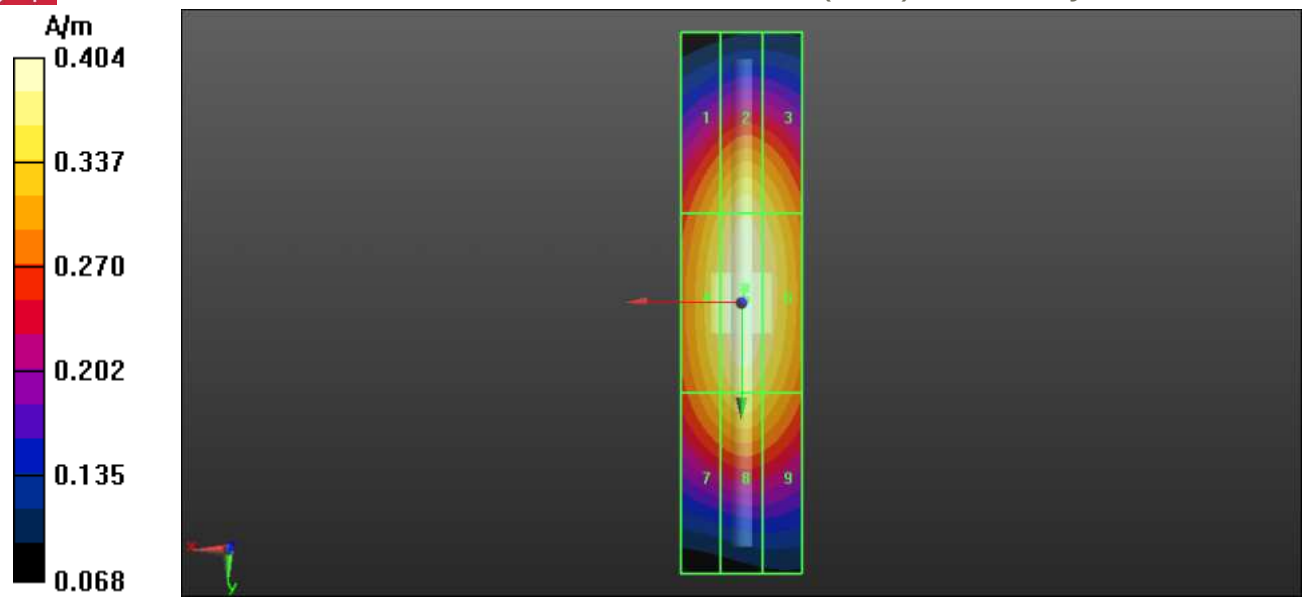
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/H Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm High/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.404 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.432 A/m; Power Drift = -0.04 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.342 M2**	Grid 2 **0.377 M2**	Grid 3 **0.360 M2**
Grid 4 **0.372 M2**	Grid 5 **0.404 M2**	Grid 6 **0.386 M2**
Grid 7 **0.335 M3**	Grid 8 **0.361 M2**	Grid 9 **0.344 M2**


A/m
0.404
0.337
0.270
0.202
0.135
0.068
1
2
3
7
8
9

Date/Time: 2011/7/29 14:31:15

E-WD-CDMA850-Ch1013

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 824.7 MHz

Communication System: CDMA ; Frequency: 824.7 MHz; Duty Cycle: 1:1; Modulation type: OQPSK
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

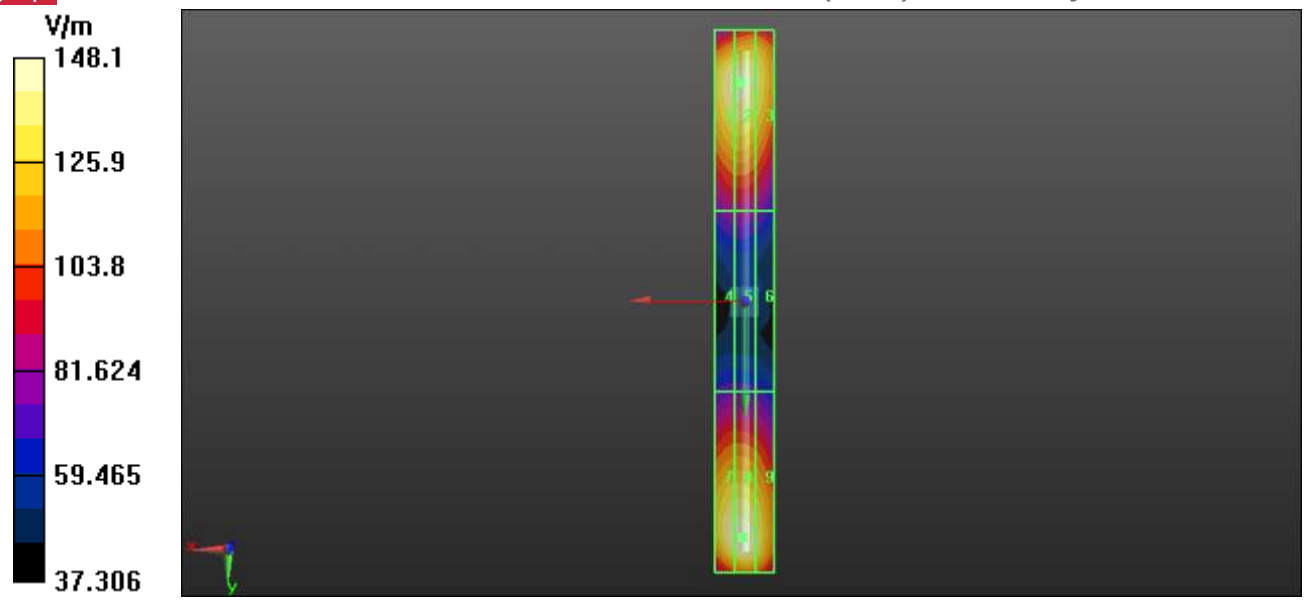
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

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

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 148.1 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 100.3 V/m; Power Drift = 0.03 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **143.4 M4**	Grid 2 **144.4 M4**	Grid 3 **138.5 M4**
Grid 4 **82.776 M4**	Grid 5 **83.493 M4**	Grid 6 **78.777 M4**
Grid 7 **145.4 M4**	Grid 8 **148.1 M4**	Grid 9 **140.7 M4**


V/m
148.1
125.9
103.8
81.624
59.465
37.306

Date/Time: 2011/7/29 14:38:55

E-WD-CDMA850-Ch384

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 836.52 MHz

Communication System: CDMA ; Frequency: 836.52 MHz; Duty Cycle: 1:1; Modulation type: OQPSK
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

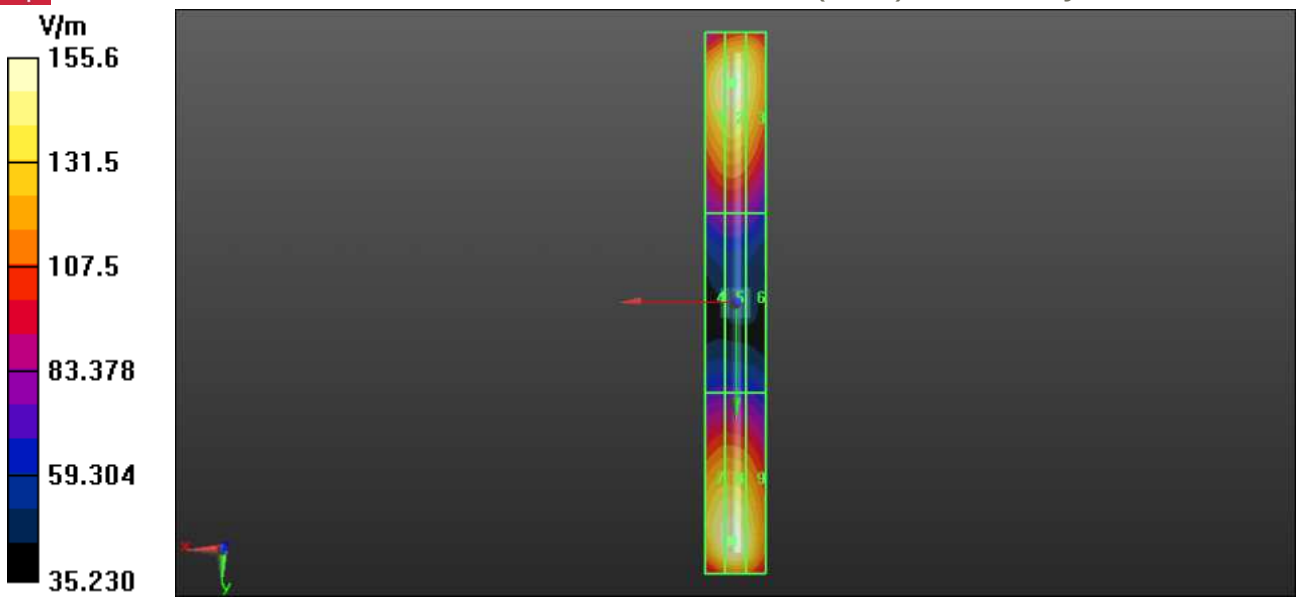
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

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

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 155.6 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 102.5 V/m; Power Drift = 0.0092 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **150.6 M4**	Grid 2 **152.5 M4**	Grid 3 **145.8 M4**
Grid 4 **83.538 M4**	Grid 5 **84.491 M4**	Grid 6 **80.015 M4**
Grid 7 **153.3 M4**	Grid 8 **155.6 M4**	Grid 9 **147.6 M4**


V/m
155.6
131.5
107.5
83.378
59.304
35.230

Date/Time: 2011/7/29 14:46:37

E-WD-CDMA850-Ch777

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 848.31 MHz

Communication System: CDMA ; Frequency: 848.31 MHz; Duty Cycle: 1:1; Modulation type: OQPSK
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

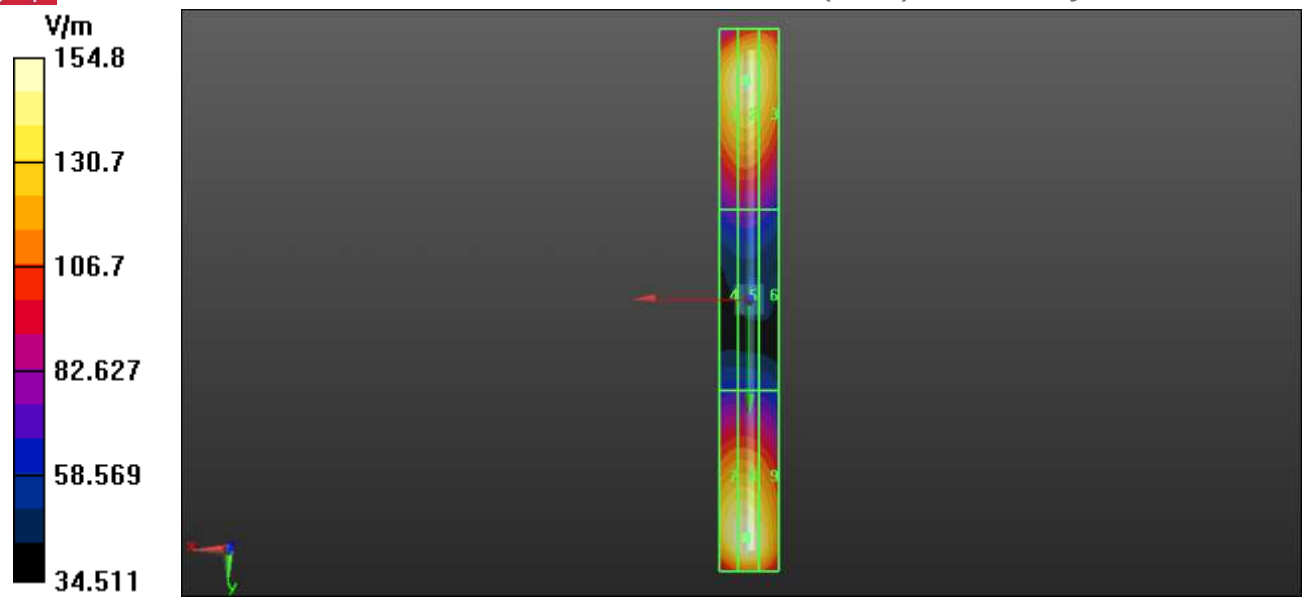
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

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

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 154.8 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 96.213 V/m; Power Drift = 0.0021 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **146.6 M4**	Grid 2 **148.7 M4**	Grid 3 **142.7 M4**
Grid 4 **77.837 M4**	Grid 5 **79.088 M4**	Grid 6 **75.246 M4**
Grid 7 **152.6 M4**	Grid 8 **154.8 M4**	Grid 9 **146.2 M4**


V/m
154.8
130.7
106.7
82.627
58.569
34.511

Date/Time: 2011/7/29 15:32:11

E-CW-824.7

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 824.7 MHz

Communication System: CW ; Frequency: 824.7 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

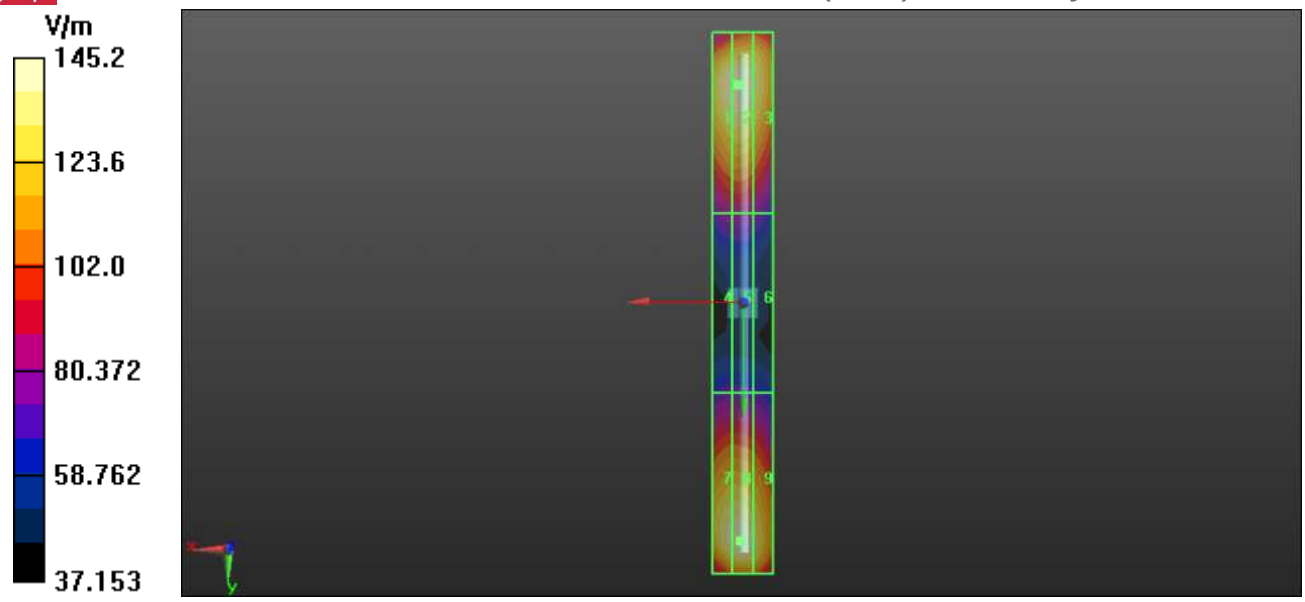
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

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

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 145.2 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 98.868 V/m; Power Drift = -0.10 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **143.8 M4**	Grid 2 **145.2 M4**	Grid 3 **137.9 M4**
Grid 4 **82.151 M4**	Grid 5 **82.944 M4**	Grid 6 **78.398 M4**
Grid 7 **142.5 M4**	Grid 8 **144.5 M4**	Grid 9 **137.3 M4**


V/m
145.2
123.6
102.0
80.372
58.762
37.153

Date/Time: 2011/7/29 15:40:28

E-CW-836.52

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 836.52 MHz

Communication System: CW ; Frequency: 836.52 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

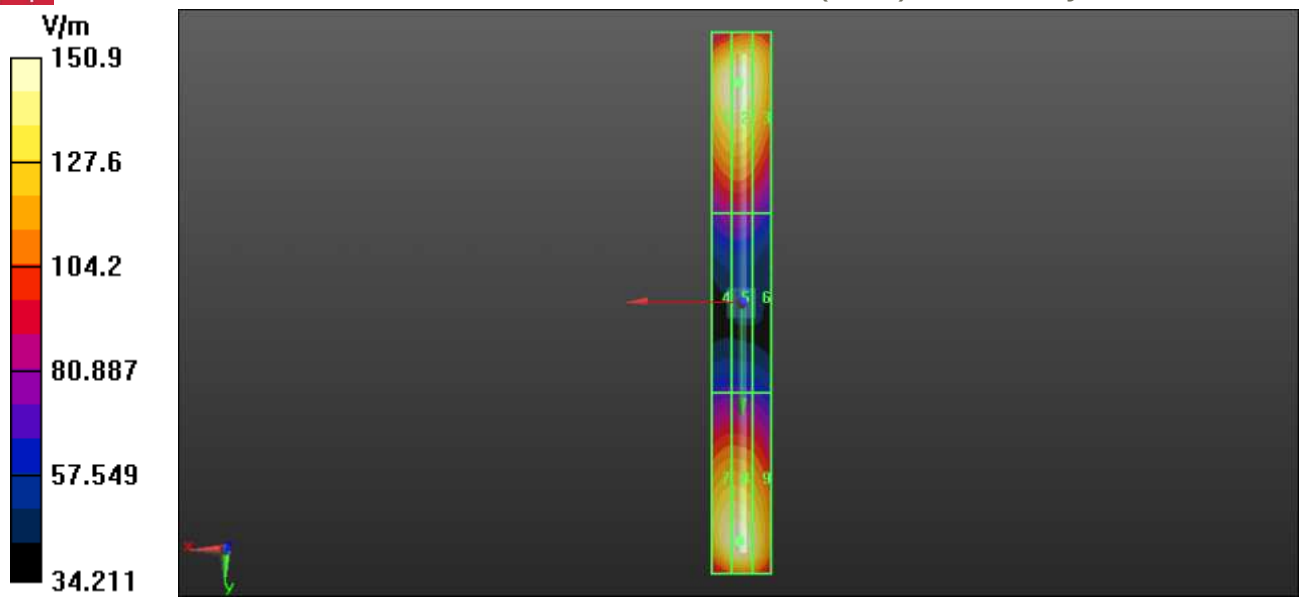
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

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

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 150.9 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 99.760 V/m; Power Drift = -0.06 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **149.3 M4**	Grid 2 **150.9 M4**	Grid 3 **143.4 M4**
Grid 4 **82.727 M4**	Grid 5 **83.636 M4**	Grid 6 **78.853 M4**
Grid 7 **147.3 M4**	Grid 8 **149.5 M4**	Grid 9 **142.6 M4**


V/m
150.9
127.6
104.2
80.887
57.549
34.211

Date/Time: 2011/7/29 15:48:37

E-CW-848.31

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 848.31 MHz

Communication System: CW ; Frequency: 848.31 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

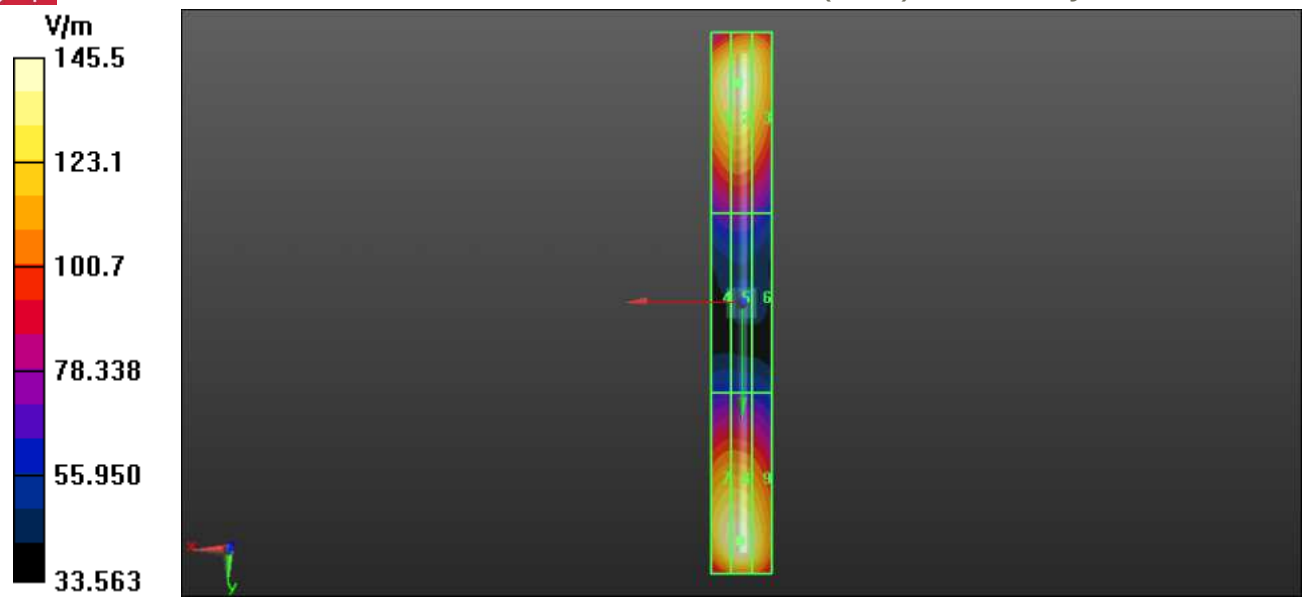
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

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

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 145.5 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 91.901 V/m; Power Drift = -0.06 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **141.8 M4**	Grid 2 **143.2 M4**	Grid 3 **137.1 M4**
Grid 4 **75.278 M4**	Grid 5 **76.270 M4**	Grid 6 **72.373 M4**
Grid 7 **143.1 M4**	Grid 8 **145.5 M4**	Grid 9 **138.6 M4**


V/m
145.5
123.1
100.7
78.338
55.950
33.563

Date/Time: 2011/7/29 15:57:35

E-AM-824.7

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 824.7 MHz

Communication System: AM ; Frequency: 824.7 MHz; Duty Cycle: 1:1; Modulation type: AM
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

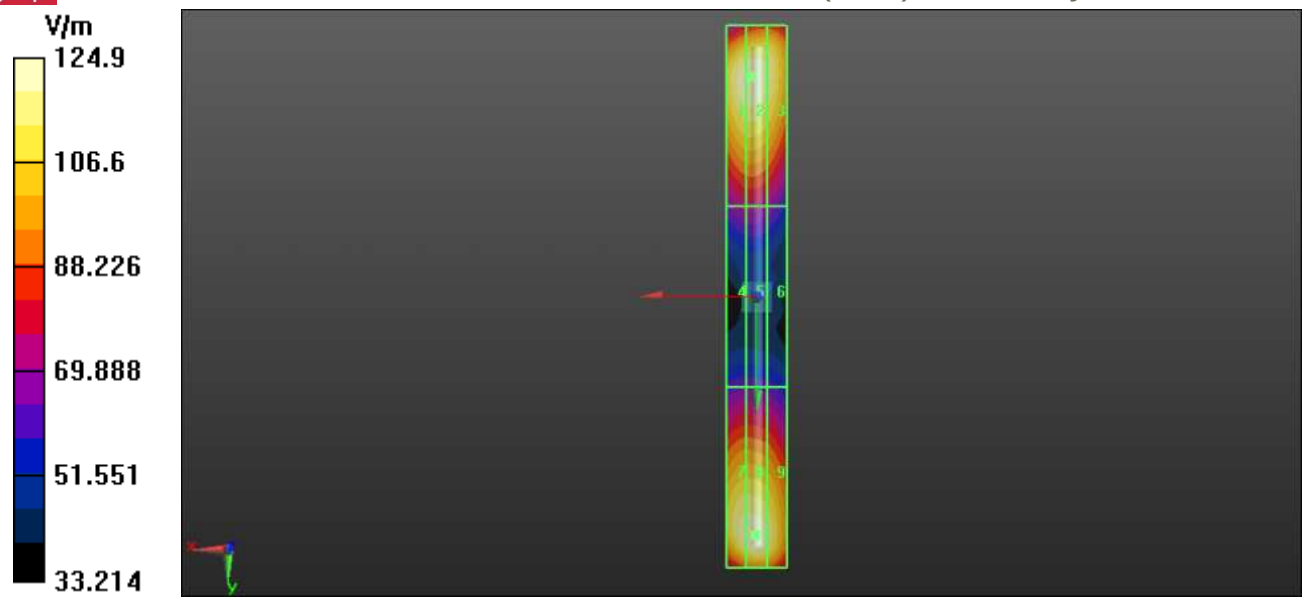
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

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

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 124.9 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 86.301 V/m; Power Drift = -0.02 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **124.3 M4**	Grid 2 **124.7 M4**	Grid 3 **120.3 M4**
Grid 4 **72.599 M4**	Grid 5 **73.135 M4**	Grid 6 **69.432 M4**
Grid 7 **123.3 M4**	Grid 8 **124.9 M4**	Grid 9 **120.2 M4**


V/m
124.9
106.6
88.226
69.888
51.551
33.214

Date/Time: 2011/7/29 16:05:37

E-AM-836.52

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 836.52 MHz

Communication System: AM ; Frequency: 836.52 MHz; Duty Cycle: 1:1; Modulation type: AM
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

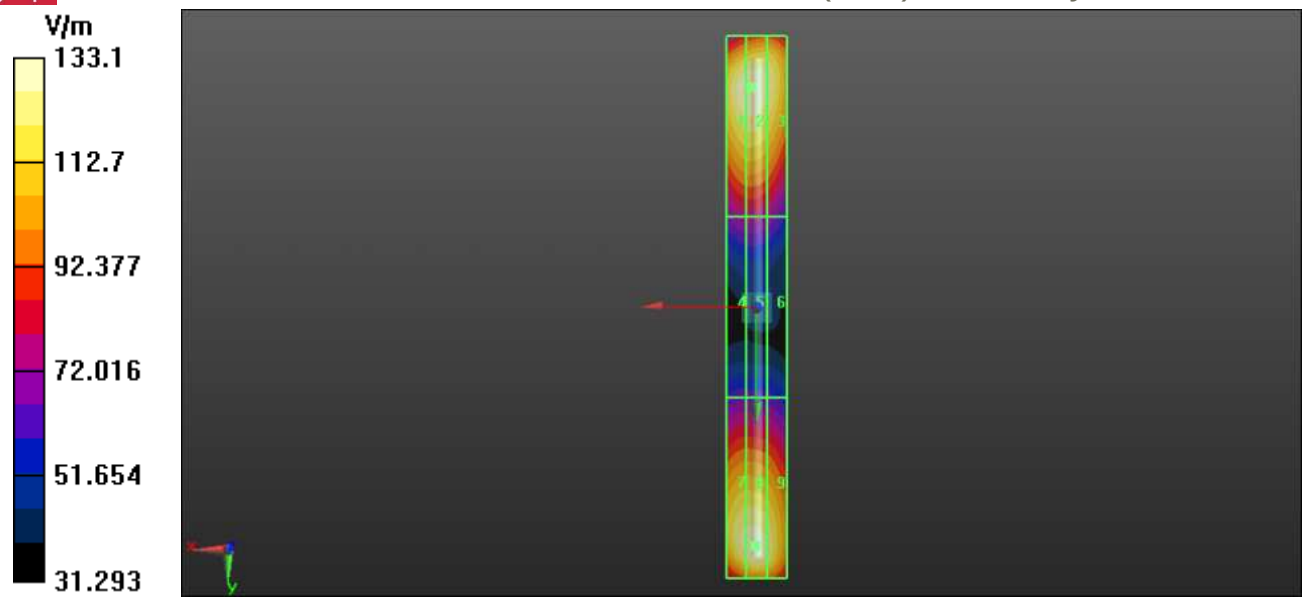
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

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

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 133.1 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 89.053 V/m; Power Drift = -0.02 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **132.7 M4**	Grid 2 **133.1 M4**	Grid 3 **128.0 M4**
Grid 4 **74.796 M4**	Grid 5 **75.347 M4**	Grid 6 **71.516 M4**
Grid 7 **130.3 M4**	Grid 8 **132.4 M4**	Grid 9 **127.4 M4**


V/m
133.1
112.7
92.377
72.016
51.654
31.293

Date/Time: 2011/7/29 16:13:51

E-AM-848.31

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 848.31 MHz

Communication System: AM ; Frequency: 848.31 MHz; Duty Cycle: 1:1; Modulation type: AM
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

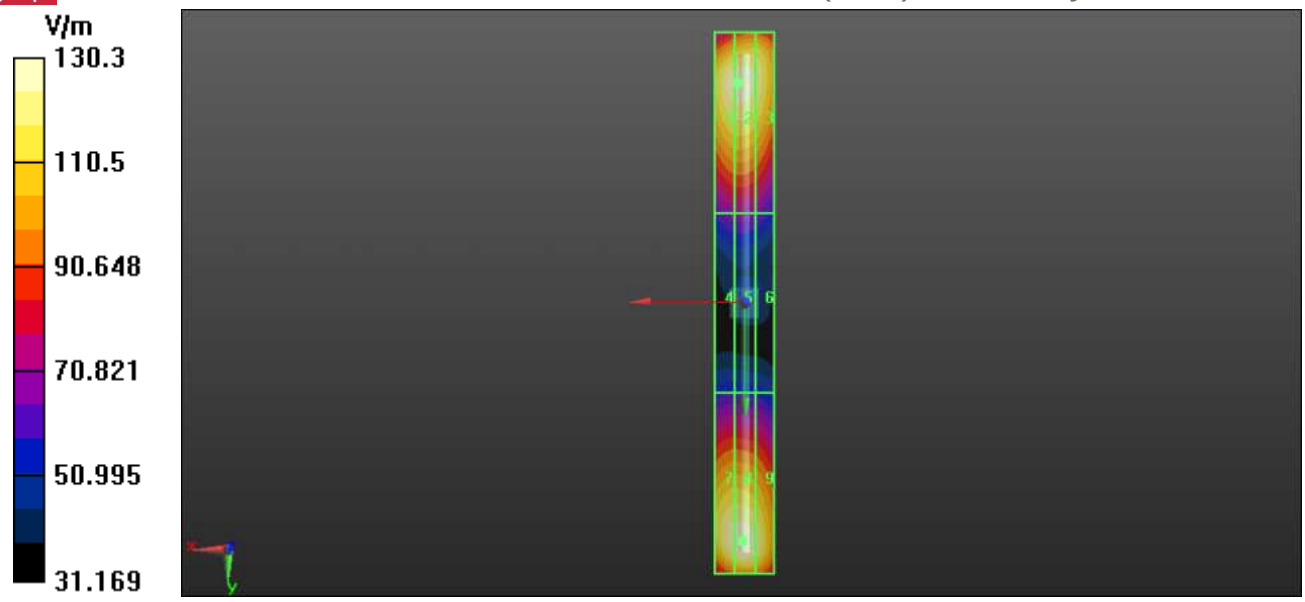
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

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

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 130.3 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 83.105 V/m; Power Drift = 0.0063 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **127.7 M4**	Grid 2 **128.1 M4**	Grid 3 **124.0 M4**
Grid 4 **69.149 M4**	Grid 5 **69.824 M4**	Grid 6 **66.559 M4**
Grid 7 **128.3 M4**	Grid 8 **130.3 M4**	Grid 9 **125.5 M4**


V/m
130.3
110.5
90.648
70.821
50.995
31.169

Date/Time: 2011/7/29 15:07:49

E-WD-CDMA1900-Ch25

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1851.25 MHz

Communication System: CDMA ; Frequency: 1851.25 MHz; Duty Cycle: 1:1; Modulation type: OQPSK
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

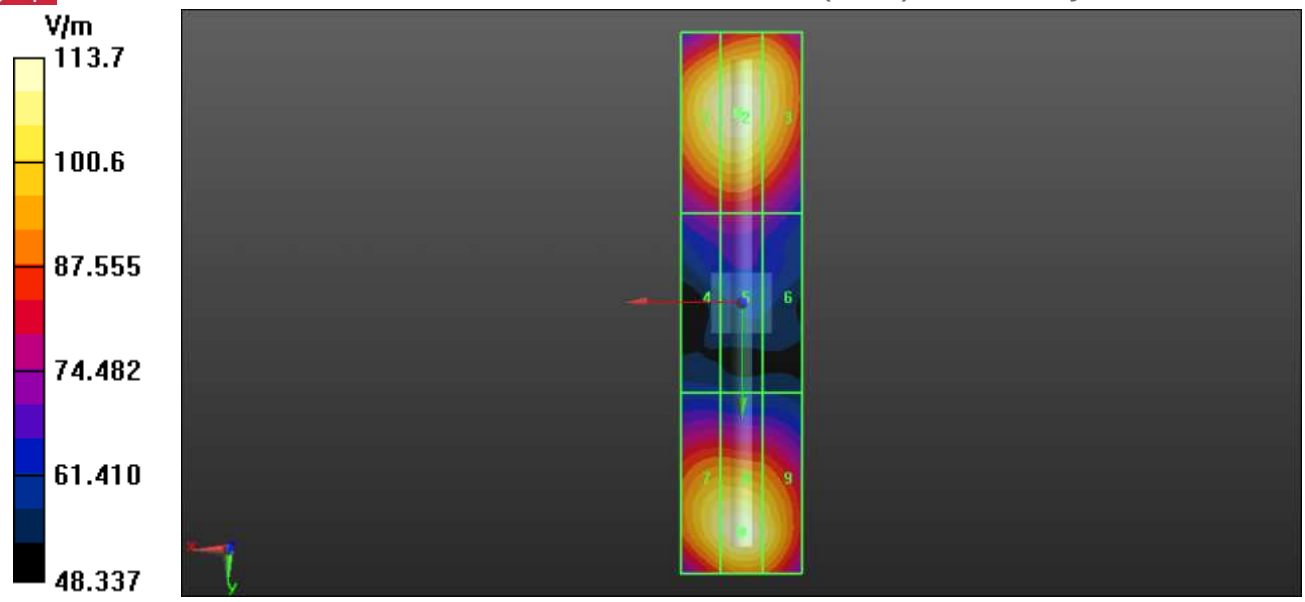
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole E-Field measurement/E Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm Low/Hearing Aid Compatibility Test (41x181x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 113.7 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 127.4 V/m; Power Drift = -0.03 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **111.7 M3**	Grid 2 **113.7 M2**	Grid 3 **108.8 M3**
Grid 4 **77.311 M3**	Grid 5 **78.571 M3**	Grid 6 **74.329 M3**
Grid 7 **109.1 M3**	Grid 8 **112.9 M2**	Grid 9 **108.1 M3**


V/m
113.7
100.6
87.555
74.482
61.410
48.337

Date/Time: 2011/7/29 15:12:58

E-WD-CDMA1900-Ch600

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1880 MHz

Communication System: CDMA ; Frequency: 1880 MHz; Duty Cycle: 1:1; Modulation type: OQPSK
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

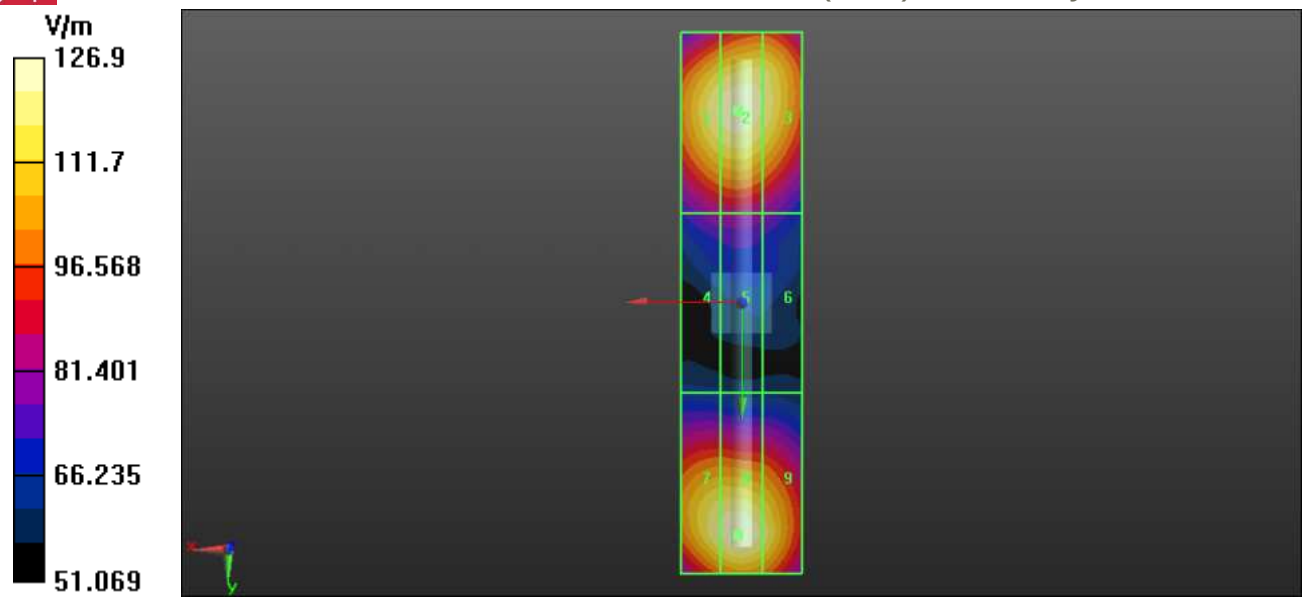
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole E-Field measurement/E Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm Mid/Hearing Aid Compatibility Test (41x181x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 126.9 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 143.4 V/m; Power Drift = -0.03 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **122.9 M2**	Grid 2 **125.6 M2**	Grid 3 **121.7 M2**
Grid 4 **82.652 M3**	Grid 5 **84.150 M3**	Grid 6 **80.213 M3**
Grid 7 **123.0 M2**	Grid 8 **126.9 M2**	Grid 9 **120.2 M2**


V/m
126.9
111.7
96.568
81.401
66.235
51.069

Date/Time: 2011/7/29 15:17:54

E-WD-CDMA1900-Ch1175

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1908.75 MHz

Communication System: CDMA ; Frequency: 1908.75 MHz; Duty Cycle: 1:1; Modulation type: OQPSK
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

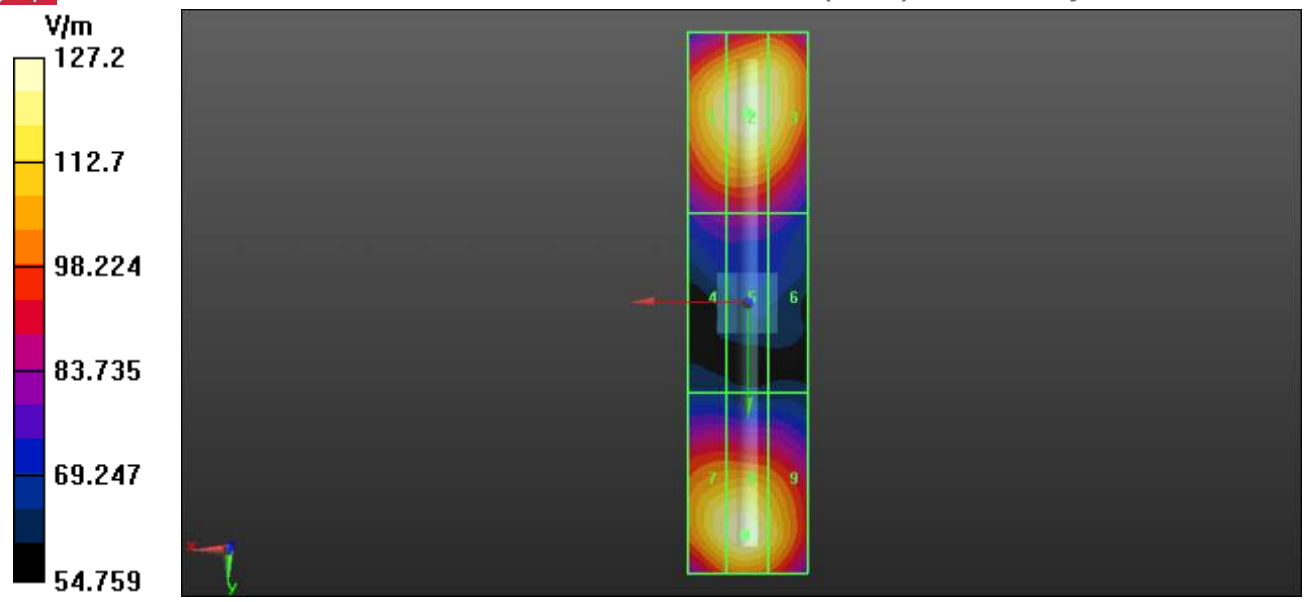
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole E-Field measurement/E Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm High/Hearing Aid Compatibility Test (41x181x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 127.2 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 142.8 V/m; Power Drift = -0.09 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **123.7 M2**	Grid 2 **127.2 M2**	Grid 3 **123.6 M2**
Grid 4 **84.454 M3**	Grid 5 **87.014 M3**	Grid 6 **83.478 M3**
Grid 7 **123.4 M2**	Grid 8 **126.8 M2**	Grid 9 **118.1 M2**


V/m
127.2
112.7
98.224
83.735
69.247
54.759

Date/Time: 2011/7/29 16:28:53

E-CW-1851.25

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1851.25 MHz

Communication System: CW ; Frequency: 1851.25 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

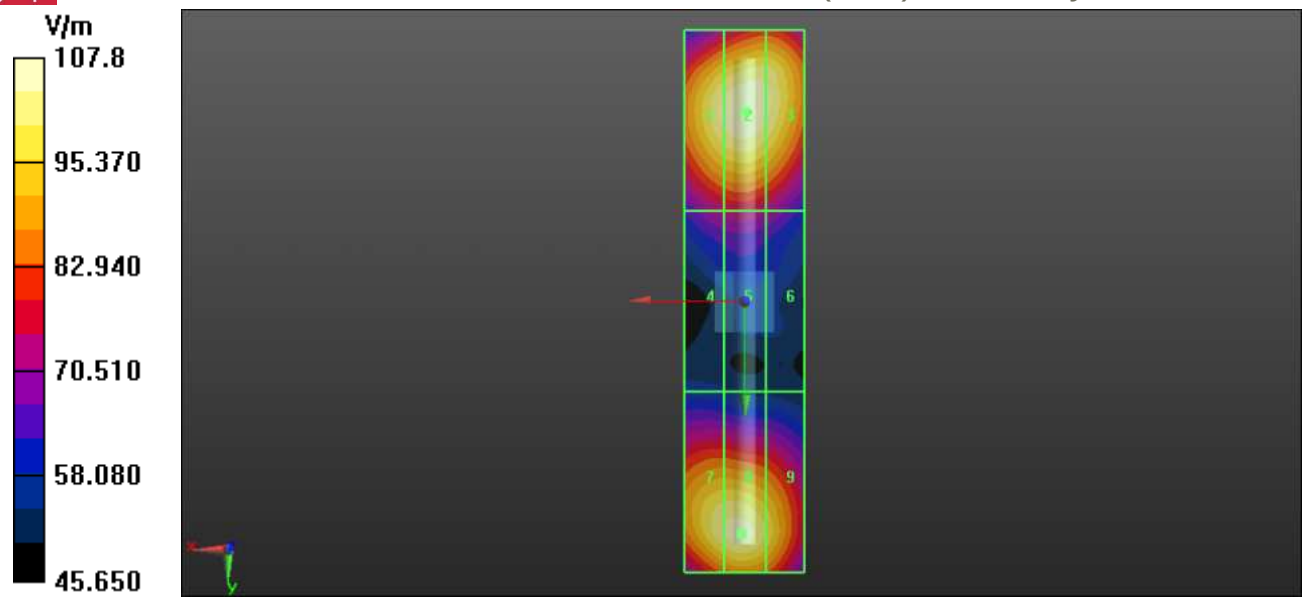
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole E-Field measurement/E Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm Low/Hearing Aid Compatibility Test (41x181x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 107.8 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 119.9 V/m; Power Drift = -0.02 dB
Hearing Aid Near-Field Category: M3 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **104.9 M3**	Grid 2 **107.8 M3**	Grid 3 **105.4 M3**
Grid 4 **73.332 M3**	Grid 5 **75.114 M3**	Grid 6 **71.805 M3**
Grid 7 **103.8 M3**	Grid 8 **106.0 M3**	Grid 9 **99.507 M3**


V/m
107.8
95.370
82.940
70.510
58.080
45.650

Date/Time: 2011/7/29 16:34:05

E-CW-1880

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1880 MHz

Communication System: CW ; Frequency: 1880 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

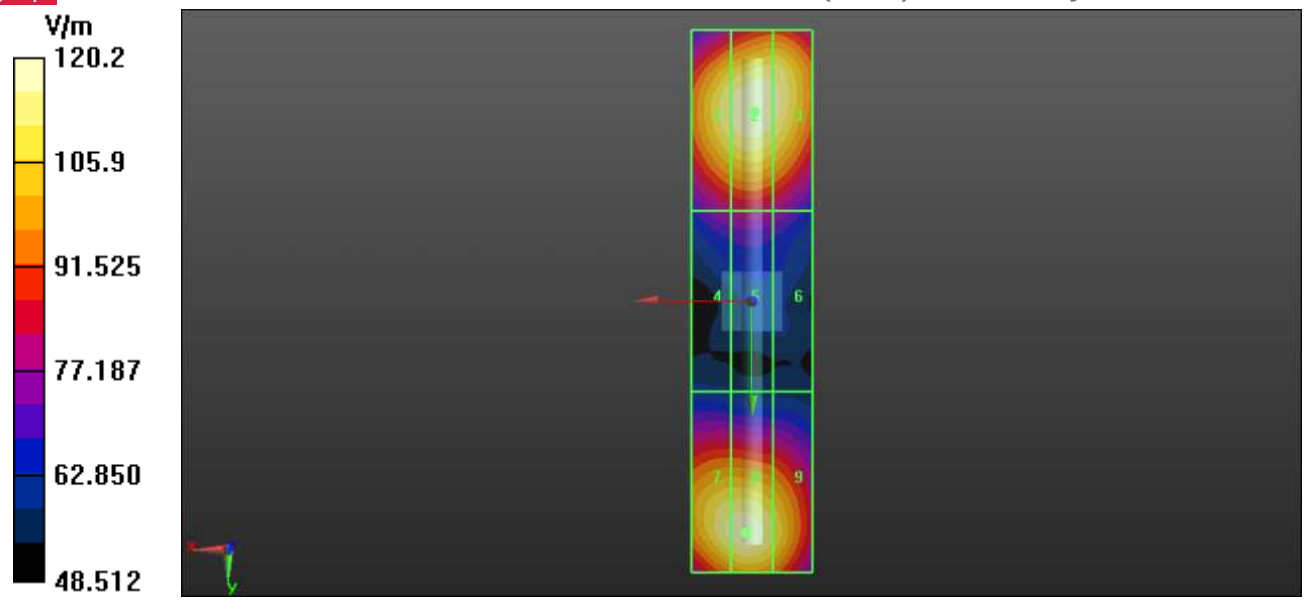
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole E-Field measurement/E Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm Mid/Hearing Aid Compatibility Test (41x181x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 120.2 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 135.5 V/m; Power Drift = -0.02 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **116.3 M2**	Grid 2 **120.2 M2**	Grid 3 **118.1 M2**
Grid 4 **79.257 M3**	Grid 5 **81.501 M3**	Grid 6 **78.087 M3**
Grid 7 **117.4 M2**	Grid 8 **119.8 M2**	Grid 9 **111.7 M3**


V/m
120.2
105.9
91.525
77.187
62.850
48.512

Date/Time: 2011/7/29 16:39:14

E-CW-1908.75

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1908.75 MHz

Communication System: CW ; Frequency: 1908.75 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

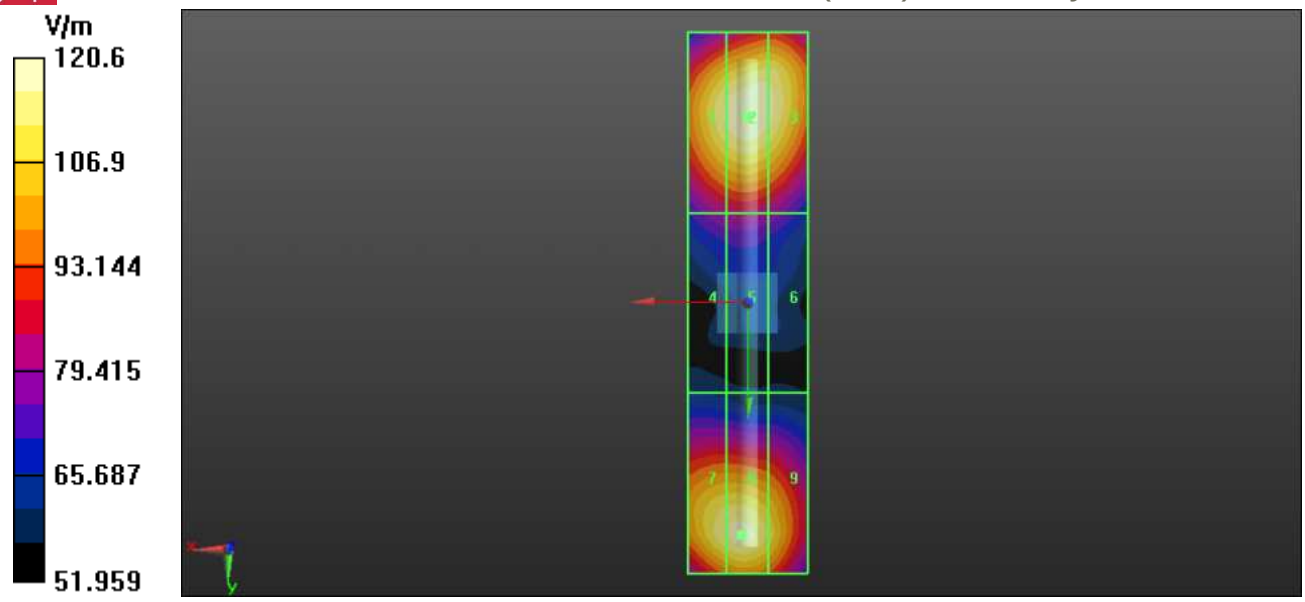
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole E-Field measurement/E Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm High/Hearing Aid Compatibility Test (41x181x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 120.6 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 133.3 V/m; Power Drift = -0.0041 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **116.9 M2**	Grid 2 **120.6 M2**	Grid 3 **118.3 M2**
Grid 4 **81.366 M3**	Grid 5 **83.388 M3**	Grid 6 **79.728 M3**
Grid 7 **116.2 M2**	Grid 8 **118.4 M2**	Grid 9 **110.3 M3**


V/m
120.6
106.9
93.144
79.415
65.687
51.959

Date/Time: 2011/7/29 16:46:28

E-AM-1851.25

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1851.25 MHz

Communication System: AM ; Frequency: 1851.25 MHz; Duty Cycle: 1:1; Modulation type: AM
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

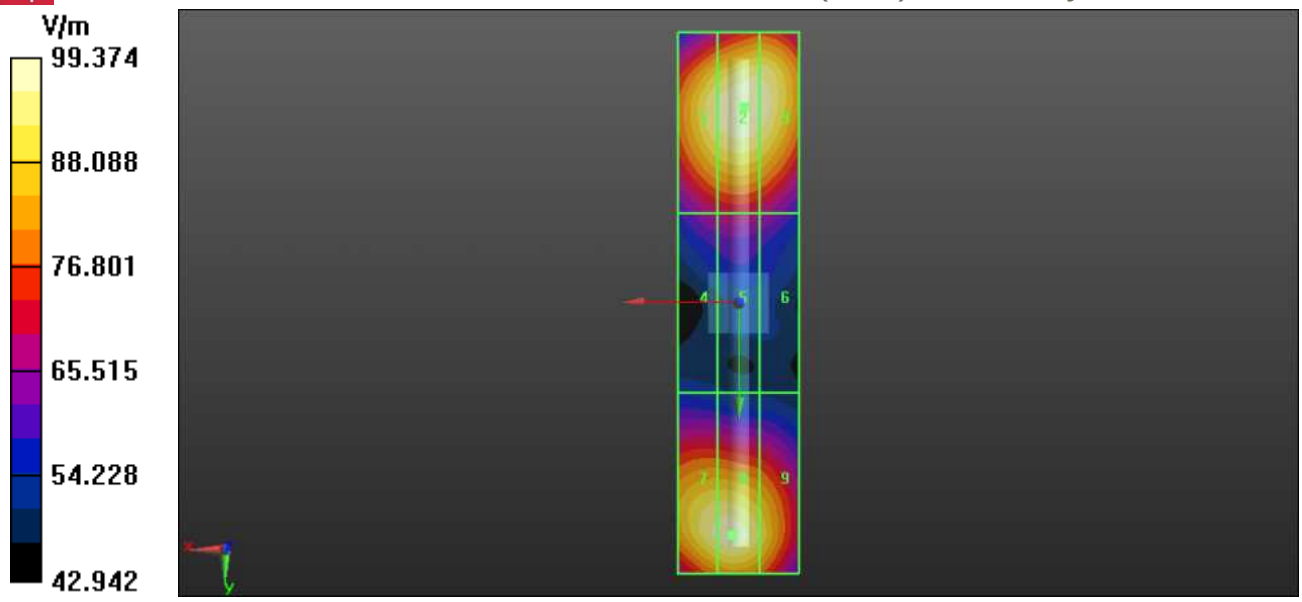
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole E-Field measurement/E Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm Low/Hearing Aid Compatibility Test (41x181x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 99.374 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 110.4 V/m; Power Drift = -0.02 dB
Hearing Aid Near-Field Category: M3 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **96.450 M3**	Grid 2 **99.374 M3**	Grid 3 **98.554 M3**
Grid 4 **68.384 M3**	Grid 5 **70.217 M3**	Grid 6 **67.742 M3**
Grid 7 **96.965 M3**	Grid 8 **98.339 M3**	Grid 9 **91.543 M3**


V/m
99.374
88.088
76.801
65.515
54.228
42.942

Date/Time: 2011/7/29 16:51:41

E-AM-1880

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1880 MHz

Communication System: AM ; Frequency: 1880 MHz; Duty Cycle: 1:1; Modulation type: AM
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

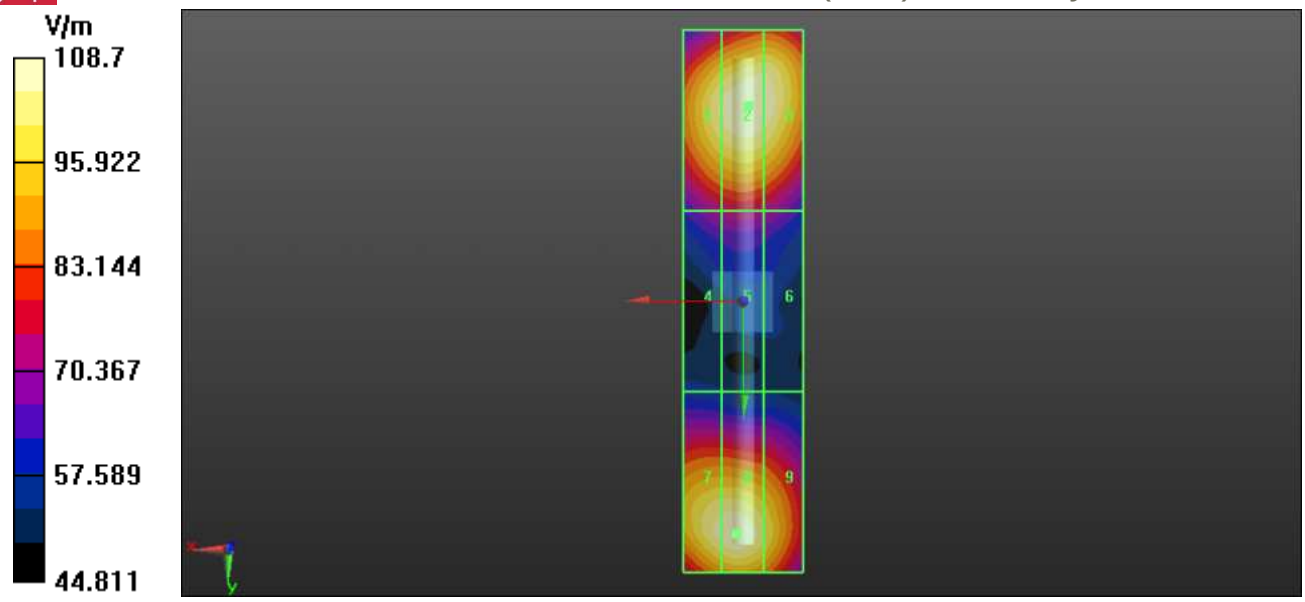
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole E-Field measurement/E Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm Mid/Hearing Aid Compatibility Test (41x181x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 108.7 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 122.3 V/m; Power Drift = 0.0067 dB
Hearing Aid Near-Field Category: M3 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **105.2 M3**	Grid 2 **108.6 M3**	Grid 3 **107.8 M3**
Grid 4 **72.701 M3**	Grid 5 **74.817 M3**	Grid 6 **72.201 M3**
Grid 7 **106.9 M3**	Grid 8 **108.7 M3**	Grid 9 **101.2 M3**


V/m
108.7
95.922
83.144
70.367
57.589
44.811

Date/Time: 2011/7/29 16:56:55

E-AM-1908.75

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1908.75 MHz

Communication System: AM ; Frequency: 1908.75 MHz; Duty Cycle: 1:1; Modulation type: AM
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

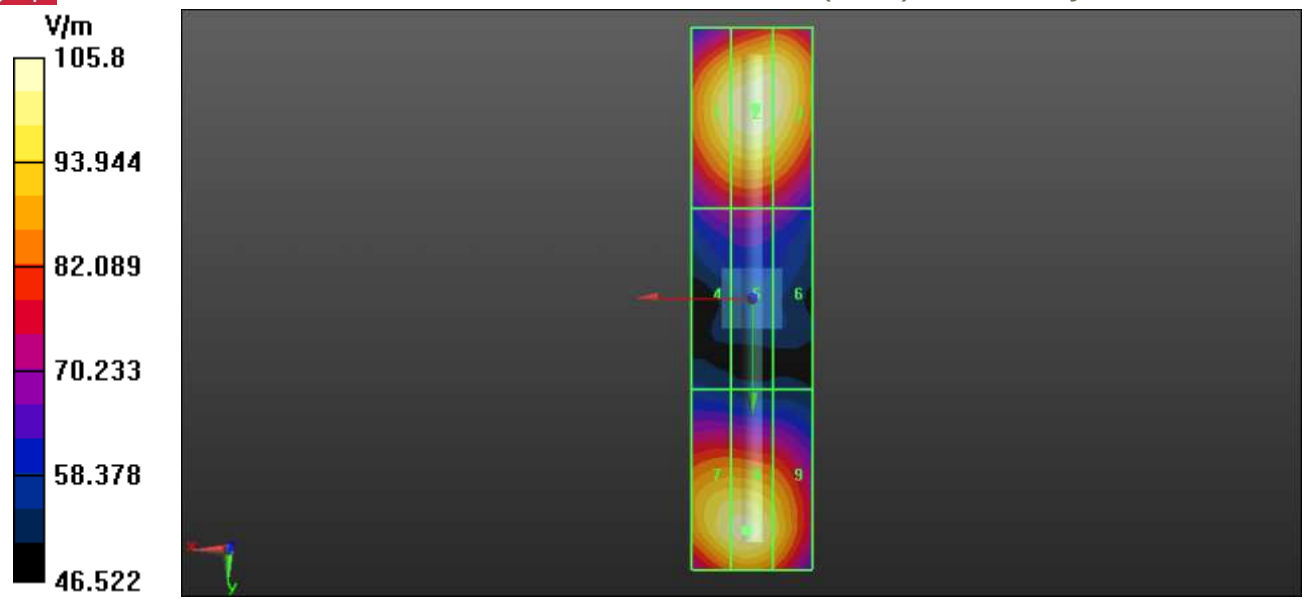
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole E-Field measurement/E Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm High/Hearing Aid Compatibility Test (41x181x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 105.8 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 117.0 V/m; Power Drift = 0.0074 dB
Hearing Aid Near-Field Category: M3 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **102.8 M3**	Grid 2 **105.8 M3**	Grid 3 **104.7 M3**
Grid 4 **72.434 M3**	Grid 5 **74.041 M3**	Grid 6 **71.334 M3**
Grid 7 **102.5 M3**	Grid 8 **104.3 M3**	Grid 9 **97.184 M3**


V/m
105.8
93.944
82.089
70.233
58.378
46.522

Date/Time: 2011/7/29 07:22:12

H-System Performance Check-835MHz

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 835 MHz

Communication System: CW ; Frequency: 835 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

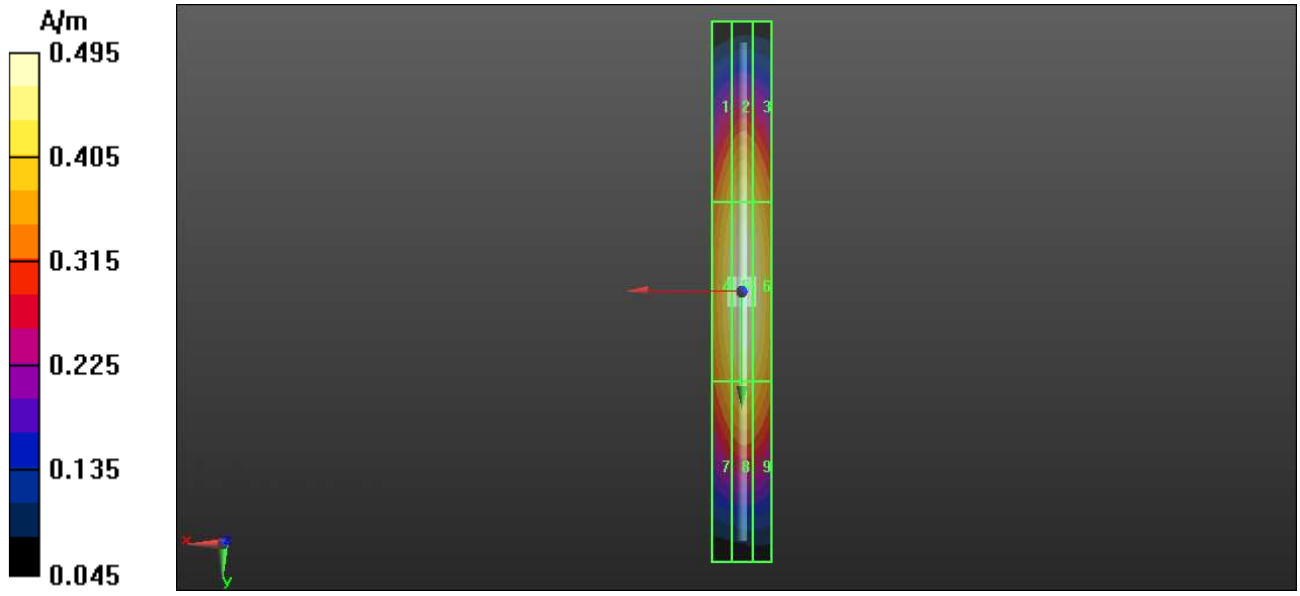
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/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 = 0.495 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.529 A/m; Power Drift = -0.06 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.405 M4**	Grid 2 **0.442 M4**	Grid 3 **0.421 M4**
Grid 4 **0.456 M4**	Grid 5 **0.495 M4**	Grid 6 **0.476 M4**
Grid 7 **0.398 M4**	Grid 8 **0.430 M4**	Grid 9 **0.415 M4**


A/m
0.495
0.405
0.315
0.225
0.135
0.045

Date/Time: 2011/7/29 07:33:10

H-System Performance Check-1880MHz

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1880 MHz

Communication System: CW ; Frequency: 1880 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

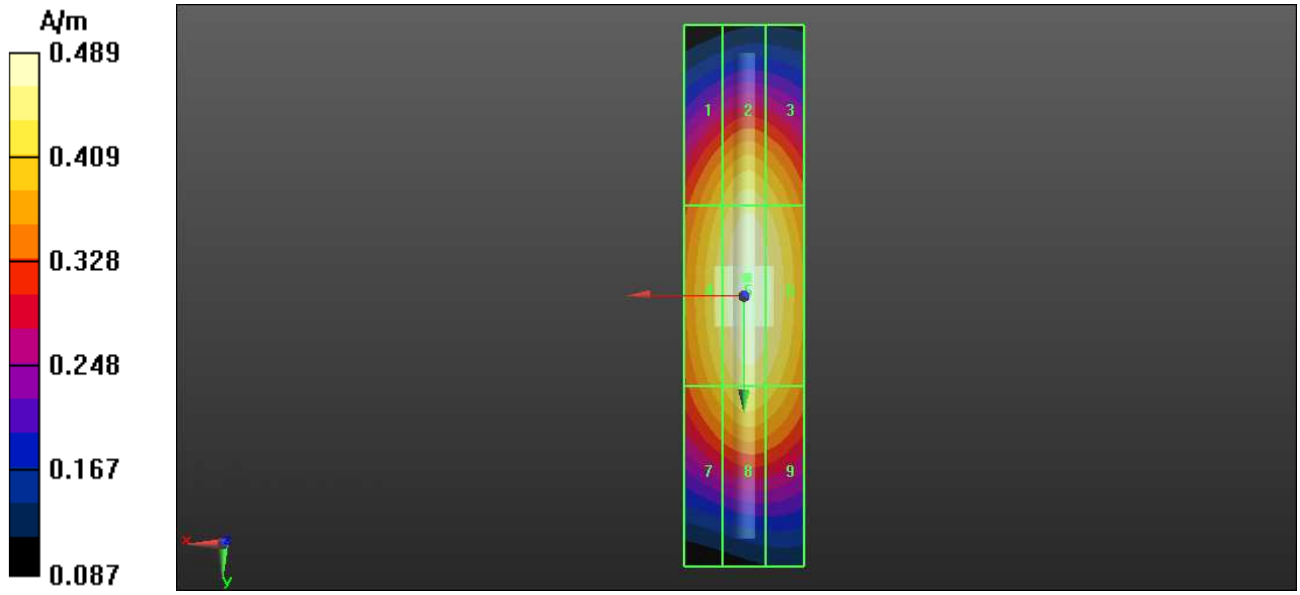
DASY5 Configuration:

- Probe: H3DV6 - SN6124; ; Calibrated: 2011/1/14
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole H-Field meausrement with H3DV6 probe/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 = 0.489 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.518 A/m; Power Drift = -0.03 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.418 M2**	Grid 2 **0.455 M2**	Grid 3 **0.439 M2**
Grid 4 **0.454 M2**	Grid 5 **0.489 M2**	Grid 6 **0.473 M2**
Grid 7 **0.410 M2**	Grid 8 **0.443 M2**	Grid 9 **0.429 M2**


A/m
0.489
0.409
0.328
0.248
0.167
0.087
1
2
3
7
8
9

Date/Time: 2011/7/29 13:41:07

E-System Performance Check-835MHz

DUT: HAC-Dipole 835 MHz ; Type: D835V3 ; Serial: 1041 ; Test Frequency: 835 MHz
Communication System: CW ; Frequency: 835 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

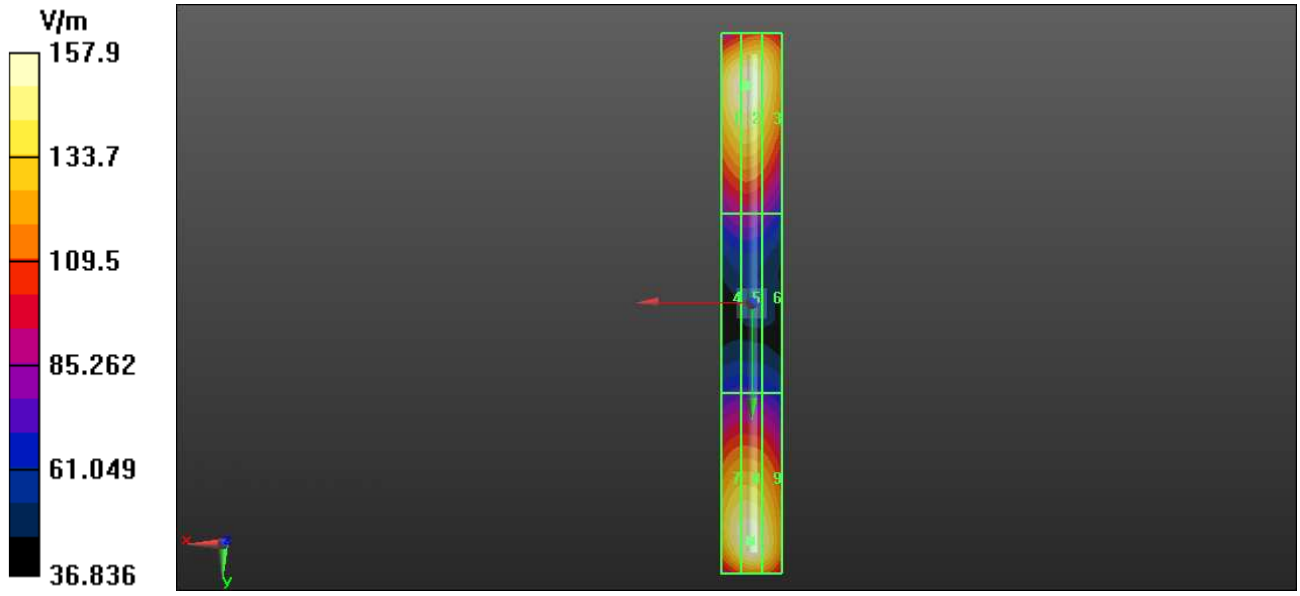
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole E-Field measurement/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 = 157.9 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 105.1 V/m; Power Drift = -0.17 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **156.8 M4**	Grid 2 **157.7 M4**	Grid 3 **149.0 M4**
Grid 4 **87.383 M4**	Grid 5 **88.070 M4**	Grid 6 **82.446 M4**
Grid 7 **154.9 M4**	Grid 8 **157.9 M4**	Grid 9 **151.8 M4**


V/m
157.9
133.7
109.5
85.262
61.049
36.836

Date/Time: 2011/7/29 13:56:25

E-System Performance Check-1880MHz

DUT: HAC Dipole 1880 MHz ; Type: CD1880V3 ; Serial: 1032 ; Test Frequency: 1880 MHz
Communication System: CW ; Frequency: 1880 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: Air;Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007);

DASY5 Configuration:

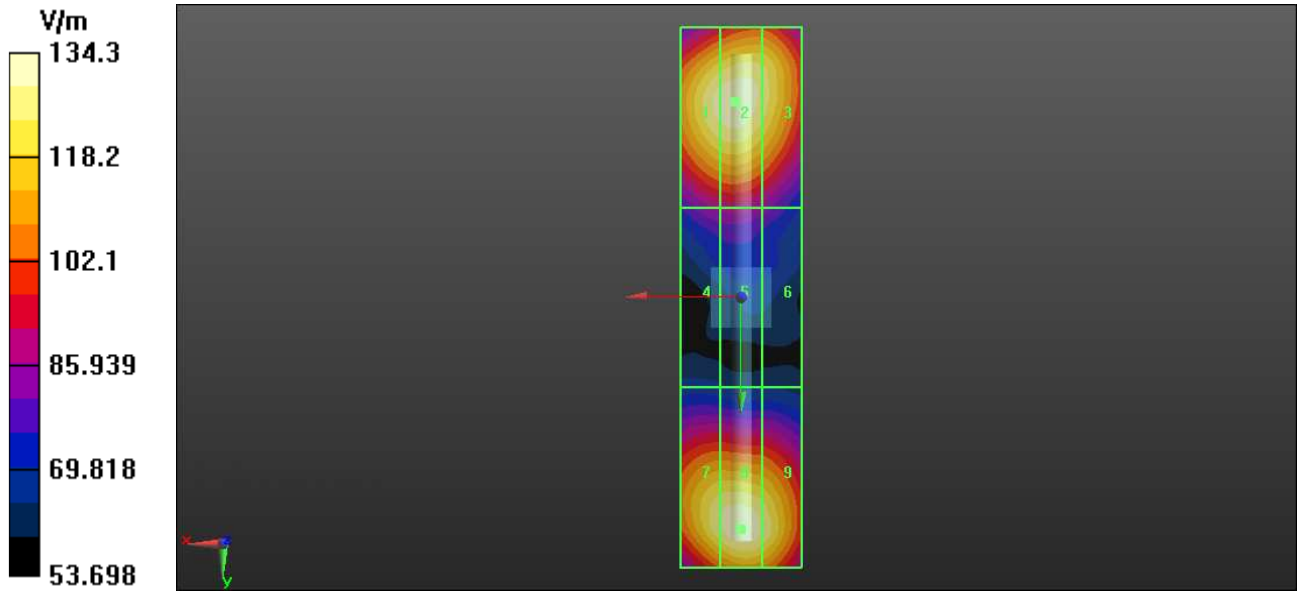
- Probe: ER3DV6 - SN2293; ConvF(1, 1, 1); Calibrated: 2011/1/24
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn510; Calibrated: 2010/10/4
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Dipole E-Field measurement/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 = 134.3 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 151.8 V/m; Power Drift = -0.0054 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **131.2 M2**	Grid 2 **133.0 M2**	Grid 3 **127.6 M2**
Grid 4 **87.885 M3**	Grid 5 **89.303 M3**	Grid 6 **84.067 M3**
Grid 7 **129.0 M2**	Grid 8 **134.3 M2**	Grid 9 **129.5 M2**


V/m
134.3
118.2
102.1
85.939
69.818
53.698

APPENDIX B: SYSTEM CERTIFICATE & CALIBRATION

Schmid & Partner Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

Certificate of Conformity / First Article Inspection

Item	SAM Twin Phantom V4.0
Type No	QD 000 P40 C
Series No	TP-1150 and higher
Manufacturer	SPEAG Zeughausstrasse 43 CH-8004 Zürich Switzerland

Tests

The series production process used allows the limitation to test of first articles.
Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series items (called samples) or are tested at each item.

Test	Requirement	Details	Units tested
Dimensions	Compliant with the geometry according to the CAD model.	IT'IS CAD File (*)	First article, Samples
Material thickness of shell	Compliant with the requirements according to the standards	2mm +/- 0.2mm in flat and specific areas of head section	First article, Samples, TP-1314 ff.
Material thickness at ERP	Compliant with the requirements according to the standards	6mm +/- 0.2mm at ERP	First article, All items
Material parameters	Dielectric parameters for required frequencies	300 MHz – 6 GHz: Relative permittivity < 5, Loss tangent < 0.05	Material samples
Material resistivity	The material has been tested to be compatible with the liquids defined in the standards if handled and cleaned according to the instructions. Observe technical Note for material compatibility.	DEGMBE based simulating liquids	Pre-series, First article, Material samples
Sagging	Compliant with the requirements according to the standards. Sagging of the flat section when filled with tissue simulating liquid.	< 1% typical < 0.8% if filled with 155mm of HSL900 and without DUT below	Prototypes, Sample testing

Standards

[1] CENELEC EN 50361
[2] IEEE Std 1528-2003
[3] IEC 62209 Part I
[4] FCC OET Bulletin 65, Supplement C, Edition 01-01
(*) The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of the other documents.

Conformity

Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standards [1] to [4].

Date 07.07.2005

Signature / Stamp

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

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

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

Accreditation No.: **SCS 108**

Client **B.V. ADT (Auden)**

Certificate No: **ER3-2293_Jan11**

CALIBRATION CERTIFICATE

Object ER3DV6 - SN:2293

Calibration procedure(s) QA CAL-02.v6, QA CAL-25.v3
Calibration procedure for E-field probes optimized for close near field evaluations in air

Calibration date: January 24, 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	01-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41495277	01-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41498087	01-Apr-10 (No. 217-01136)	Apr-11
Reference 3 dB Attenuator	SN: S5054 (3c)	30-Mar-10 (No. 217-01159)	Mar-11
Reference 20 dB Attenuator	SN: S5086 (20b)	30-Mar-10 (No. 217-01161)	Mar-11
Reference 30 dB Attenuator	SN: S5129 (30b)	30-Mar-10 (No. 217-01160)	Mar-11
Reference Probe ER3DV6	SN: 2328	4-Oct-10 (No. ER3-2328_Oct10)	Oct-11
DAE4	SN: 789	31-Aug-10 (No. DAE4-789_Aug10)	Aug-11
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:	Katja Pokovic	Technical Manager	
Approved by:	Fin Bomholt	R&D Director	

Issued: January 24, 2011

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.
- *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:2293

Manufactured: October 2, 2002
Calibrated: January 24, 2011

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

DASY/EASY - Parameters of Probe: ER3DV6 - SN:2293

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)	1.28	1.08	1.41	± 10.1 %
DCP (mV)[B]	102.1	101.1	99.7	

Modulation Calibration Parameters

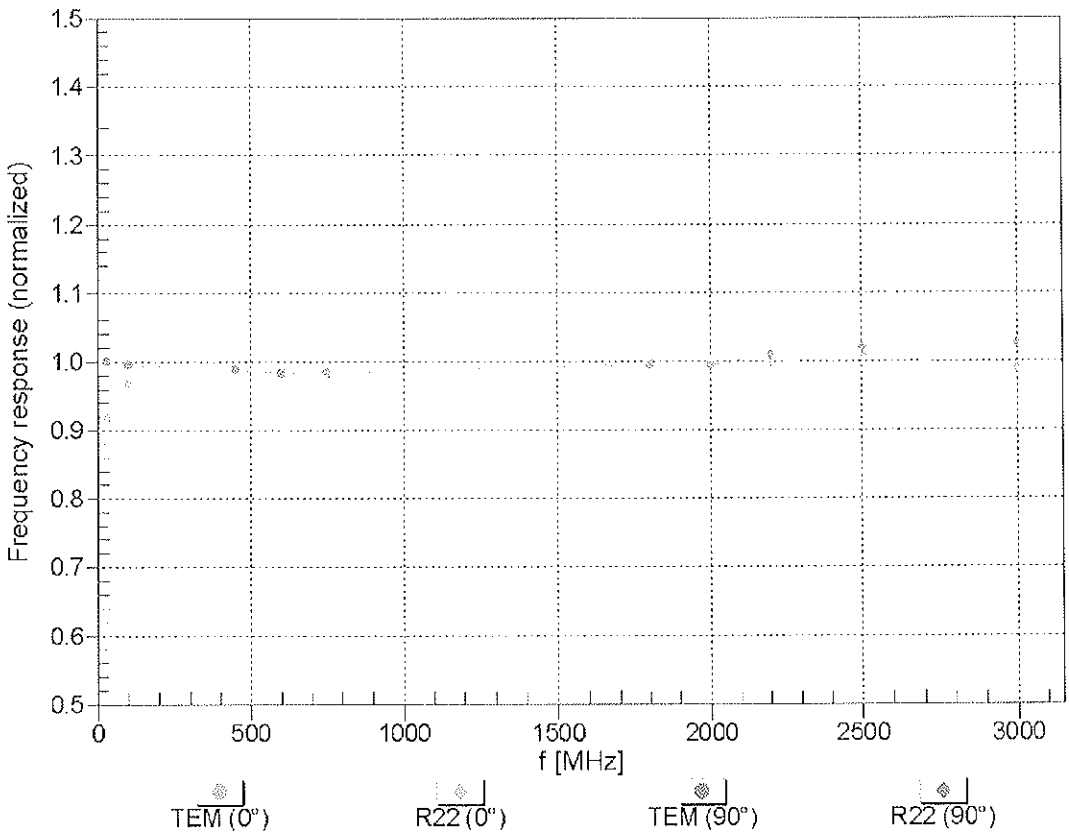
UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	141.0	±2.4 %
			Y	0.00	0.00	1.00	118.1	
			Z	0.00	0.00	1.00	124.3	

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.

Frequency Response of E-Field

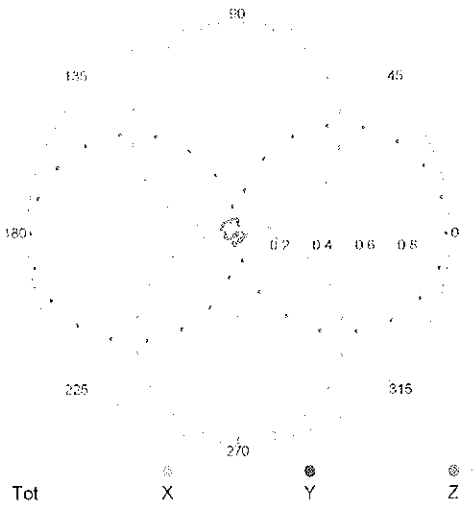
(TEM-Cell:ifi110 EXX, Waveguide: R22)



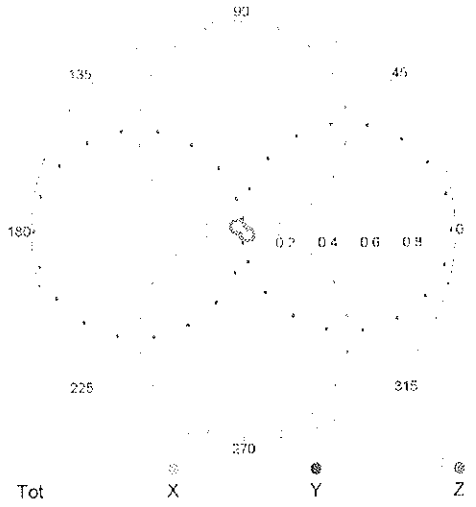
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM,0°

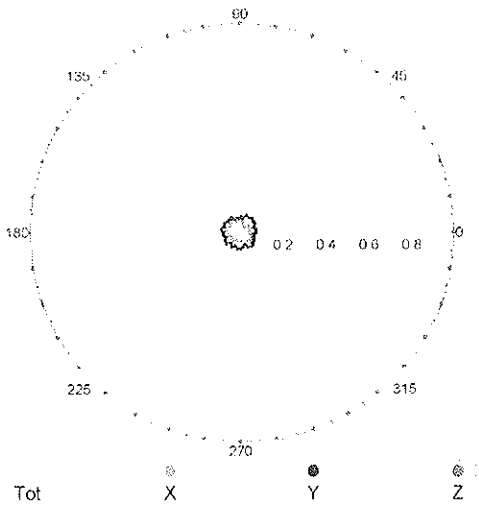


f=2500 MHz,R22,0°

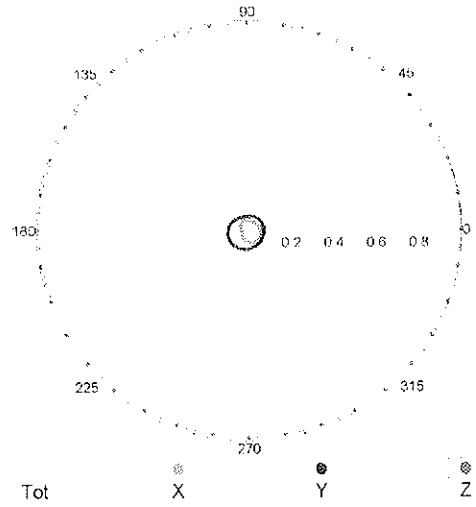


Receiving Pattern (ϕ), ϑ = 90°

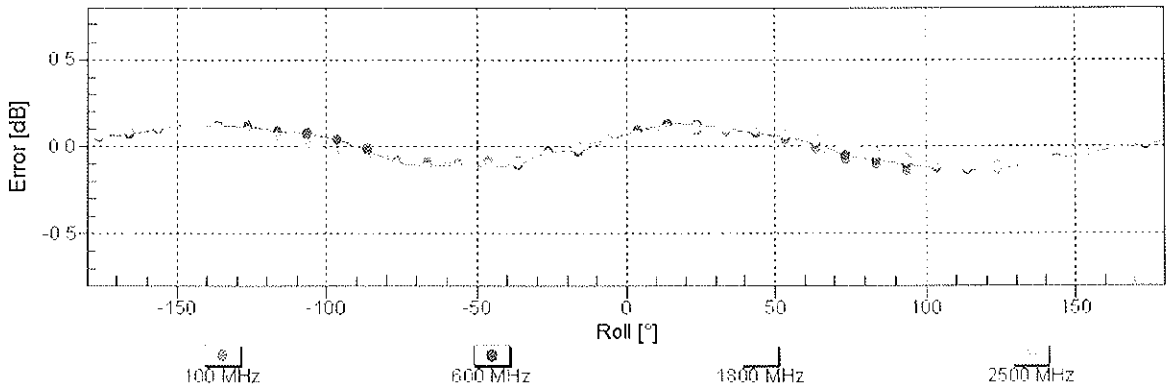
f=600 MHz,TEM,90°



f=2500 MHz,R22,90°

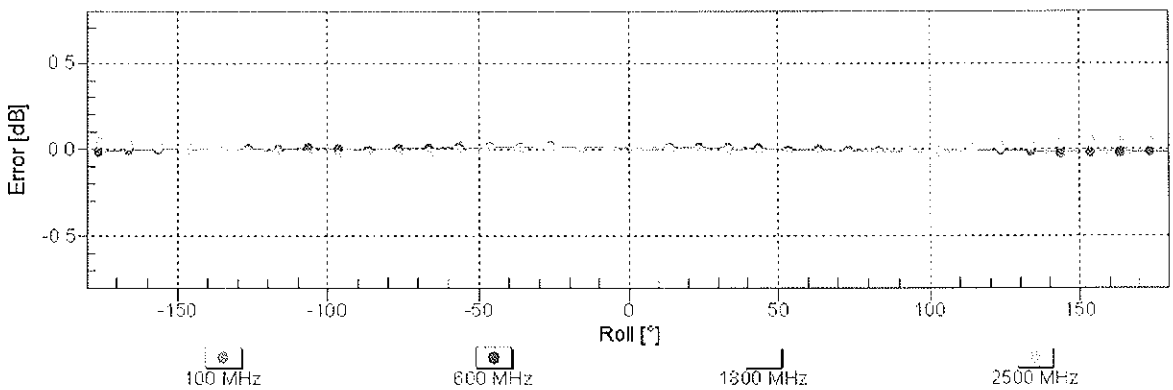


Receiving Pattern (ϕ), ϑ = 0°



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

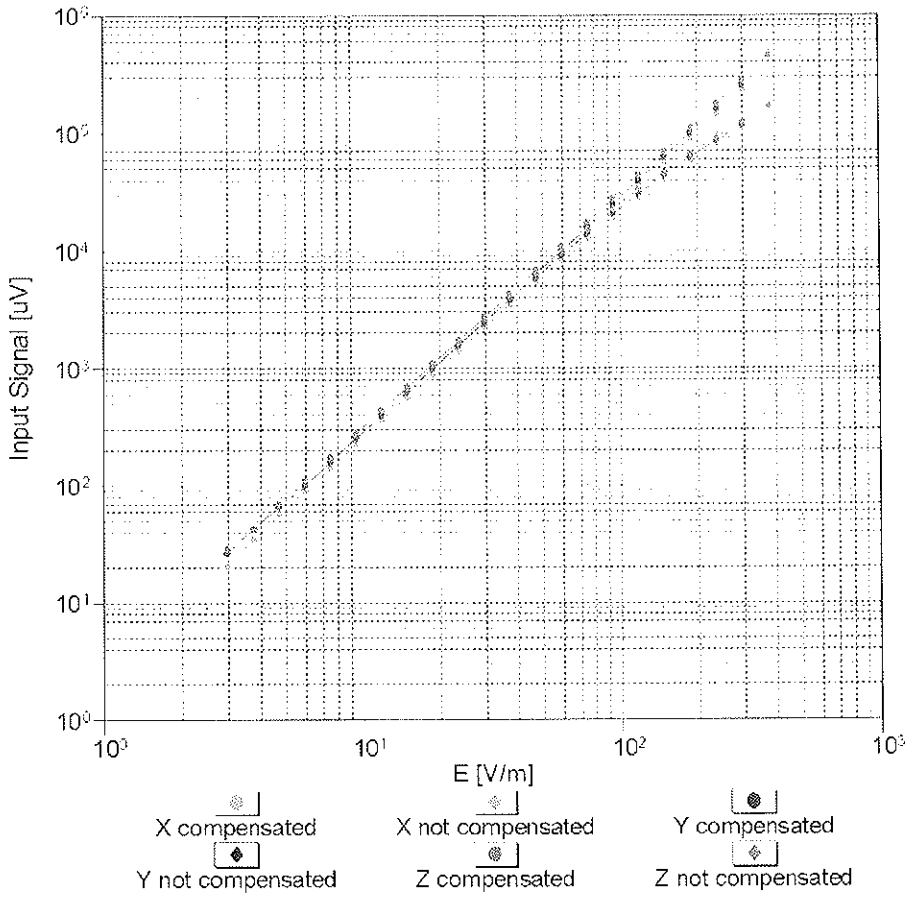
Receiving Pattern (ϕ), ϑ = 90°

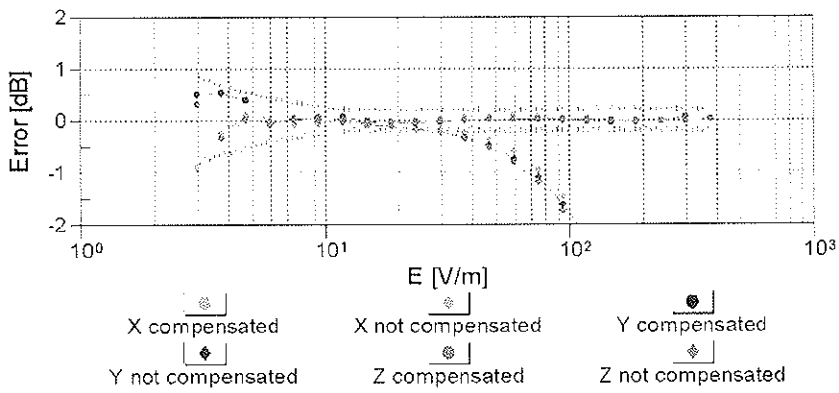


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(E-field)

(TEM cell , f = 900 MHz)

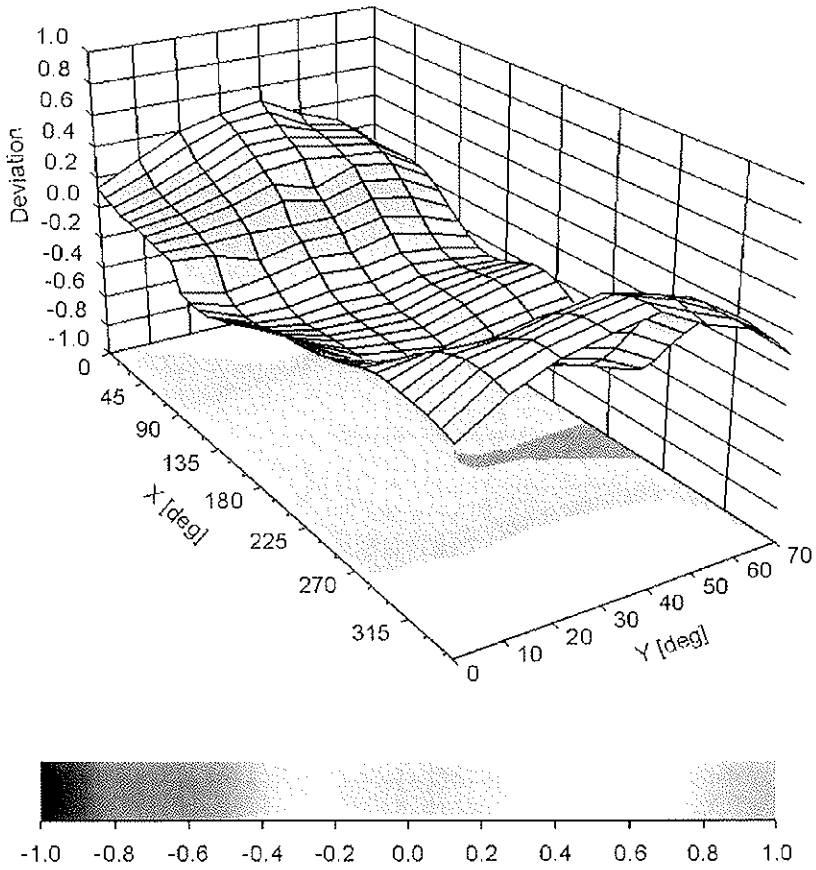




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

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:2293

Other Probe Parameters

Sensor Arrangement	Rectangular
Connector Angle (°)	163.7
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

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

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

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

Accreditation No.: SCS 108

Client B.V. ADT (Auden)

Certificate No: H3-6124_Jan11

CALIBRATION CERTIFICATE

Object: H3DV6 - SN:6124

Calibration procedure(s): QA CAL-03.v6, QA CAL-25.v3
Calibration procedure for H-field probes optimized for close near field evaluations in air

Calibration date: January 14, 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	01-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41495277	01-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41498087	01-Apr-10 (No. 217-01136)	Apr-11
Reference 3 dB Attenuator	SN: S5054 (3c)	30-Mar-10 (No. 217-01159)	Mar-11
Reference 20 dB Attenuator	SN: S5086 (20b)	30-Mar-10 (No. 217-01161)	Mar-11
Reference 30 dB Attenuator	SN: S5129 (30b)	30-Mar-10 (No. 217-01160)	Mar-11
Reference Probe H3DV6	SN: 6182	4-Oct-10 (No. H3-6182_Oct10)	Oct-11
DAE4	SN: 789	31-Aug-10 (No. DAE4-789_Aug10)	Aug-11
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:	Marcel Fehr	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 25, 2011

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.
- *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:6124

Manufactured: June 8, 2002
Calibrated: January 14, 2011

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

DASY/EASY - Parameters of Probe: H3DV6 - SN:6124

Basic Calibration Parameters

		Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (A/m / √(mV))	a0	2.84E-003	2.94E-003	3.18E-003	± 5.1 %
Norm (A/m / √(mV))	a1	-2.51E-004	-3.82E-004	-3.47E-004	± 5.1 %
Norm (A/m / √(mV))	a2	9.03E-005	6.51E-005	5.46E-005	± 5.1 %
DCP (mV)[B]		92.7	92.3	95.4	

Modulation Calibration Parameters

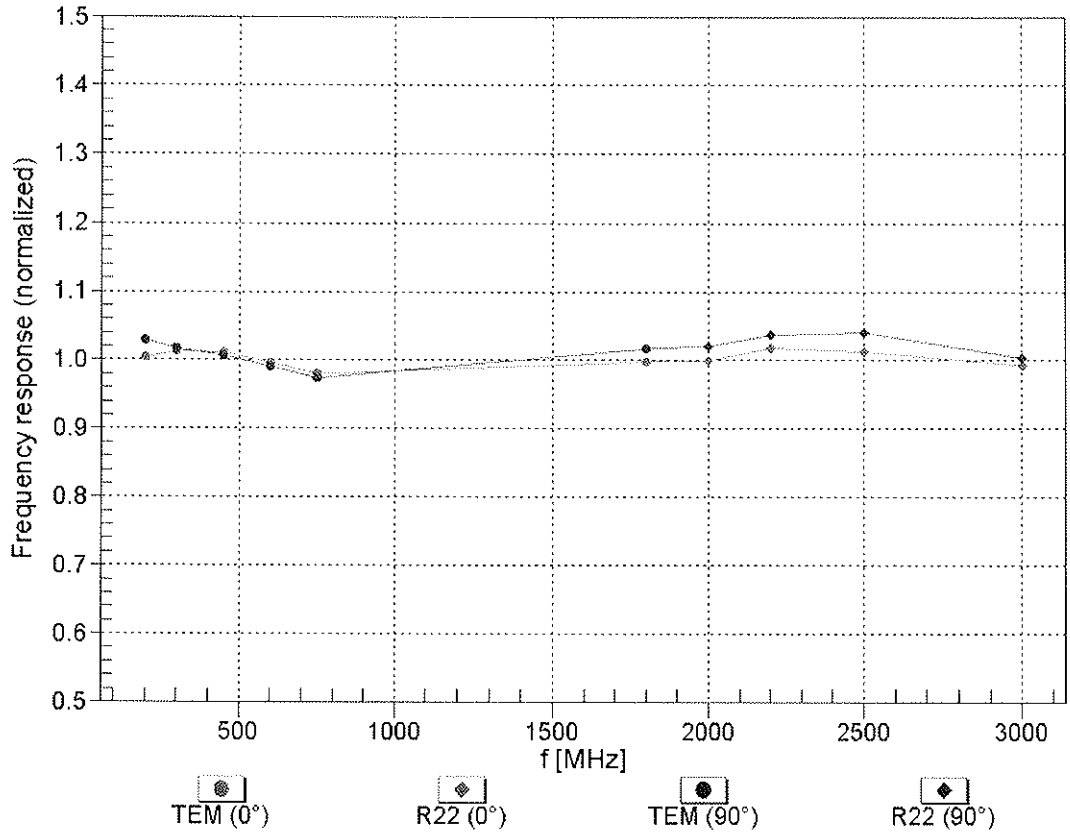
UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	236.8	±1.9 %
			Y	0.00	0.00	1.00	237.5	
			Z	0.00	0.00	1.00	240.1	

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

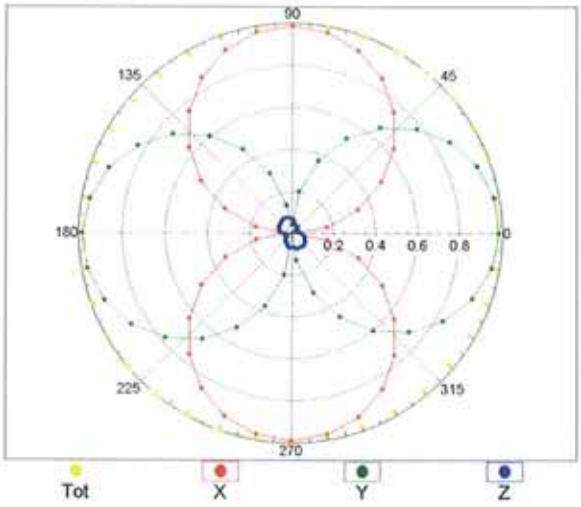
(TEM-Cell:ifi110 EXX, Waveguide: R22)



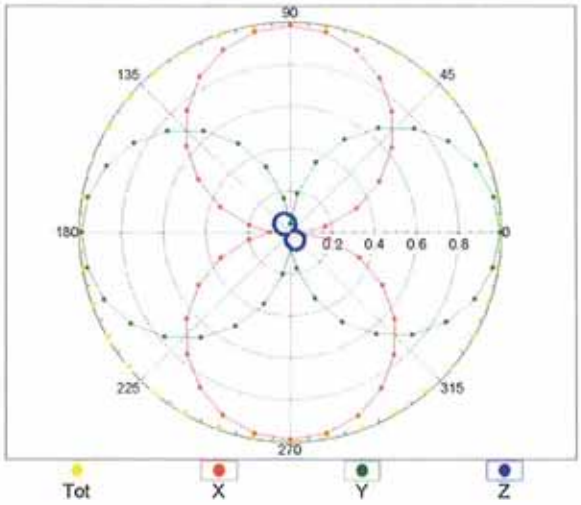
Uncertainty of Frequency Response of H-field: ± 6.3% (k=2)

Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM,0°

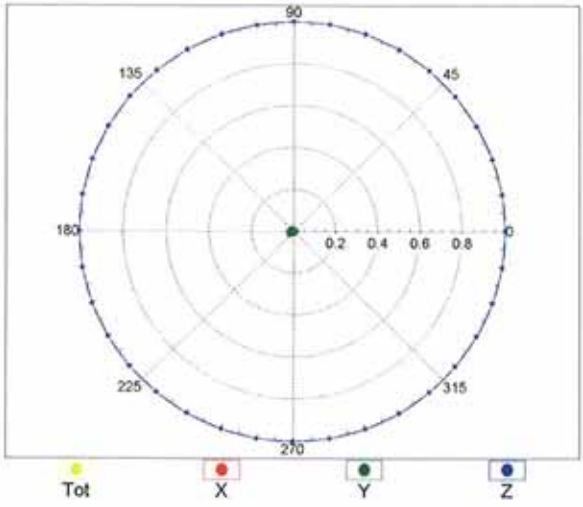


f=2500 MHz,R22,0°

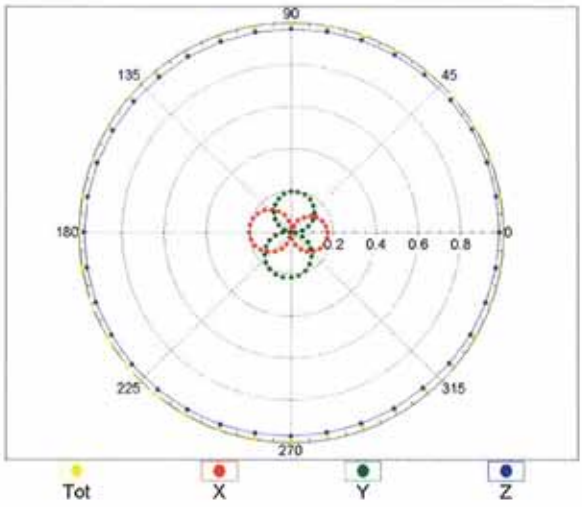


Receiving Pattern (ϕ), ϑ = 90°

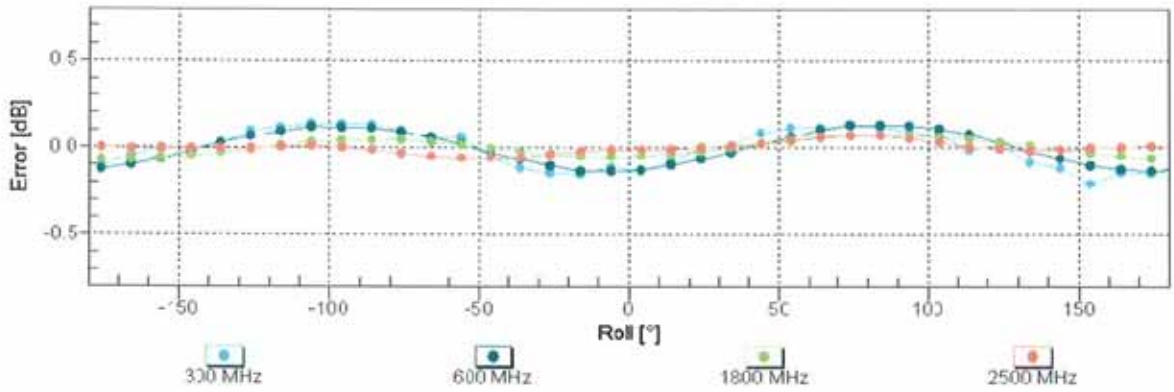
f=600 MHz,TEM,90°



f=2500 MHz,R22,90°

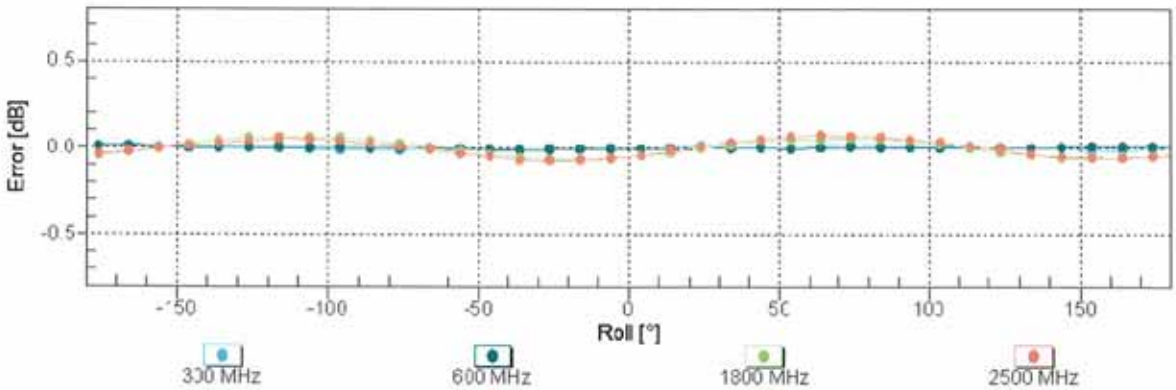


Receiving Pattern (ϕ), ϑ = 0°



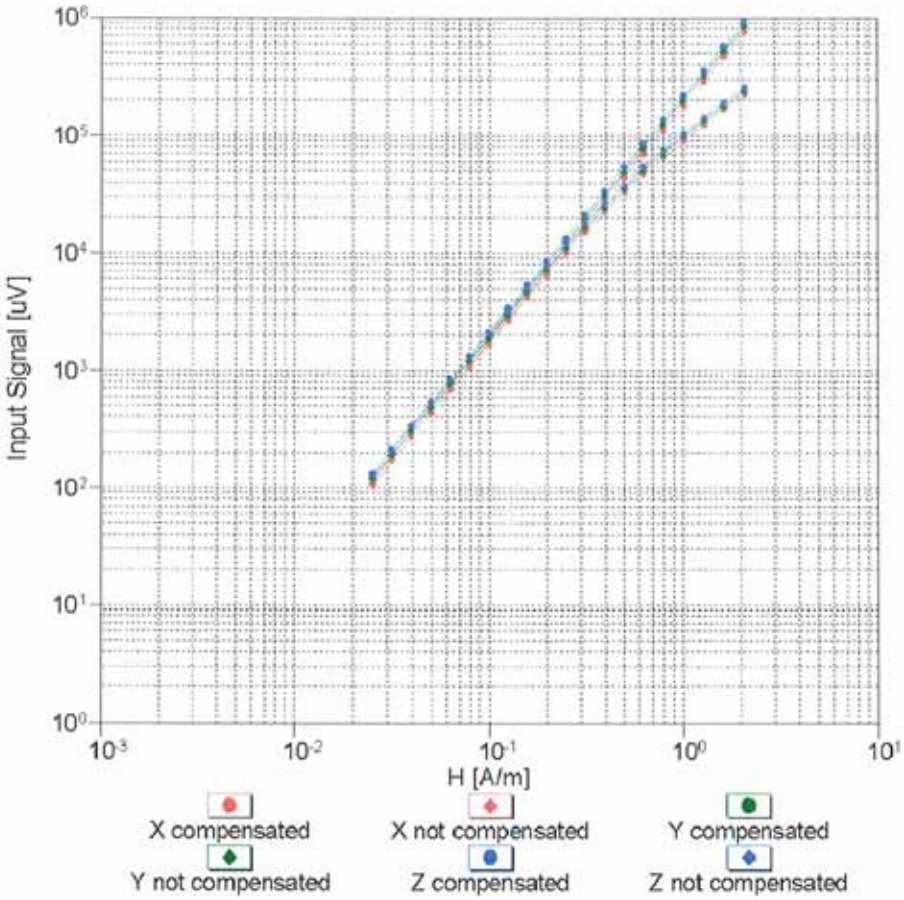
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

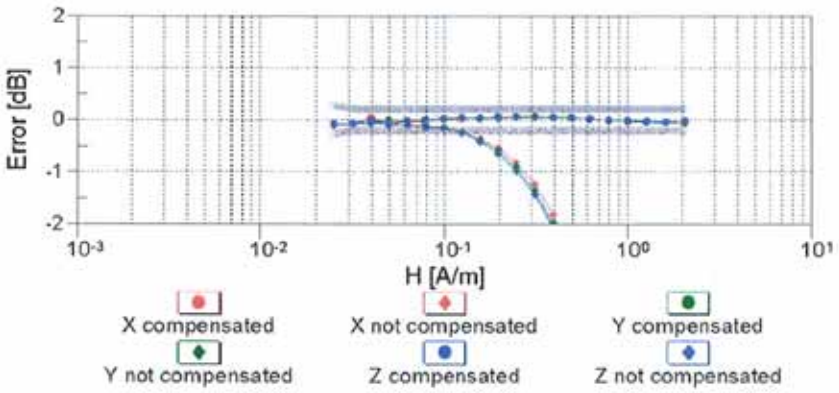
Receiving Pattern (ϕ), ϑ = 90°



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

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

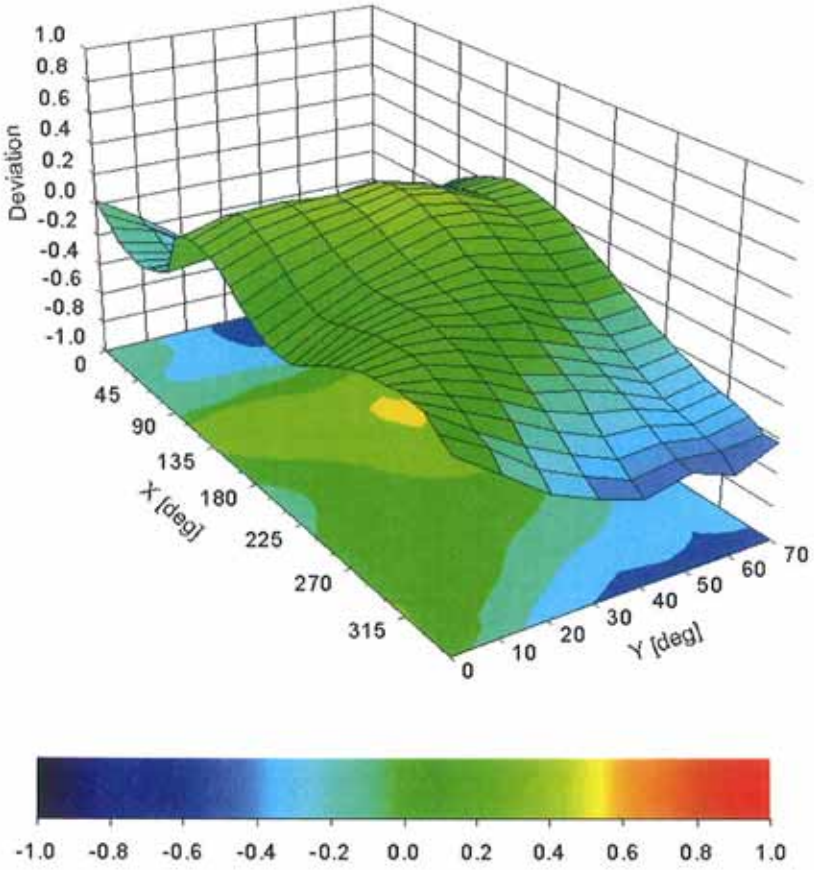




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

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:6124

Other Probe Parameters

Sensor Arrangement	Rectangular
Connector Angle (°)	-146.1
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

Schmid & Partner Engineering AG

s p e a g

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Phone +41 44 245 9700, Fax +41 44 245 9779
info@speag.com, http://www.speag.com

IMPORTANT NOTICE

USAGE OF THE DAE 3

The DAE unit is a delicate, high precision instrument and requires careful treatment by the user. There are no serviceable parts inside the DAE. Special attention shall be given to the following points:

Battery Exchange: The battery cover of the DAE3 unit is connected to a fragile 3-pin battery connector. Customer is responsible to apply outmost caution not to bend or damage the connector when changing batteries.

Shipping of the DAE: Before shipping the DAE to SPEAG for calibration the customer shall remove the batteries and pack the DAE in an antistatic bag. This antistatic bag shall then be packed into a larger box or container which protects the DAE from impacts transportation. The package shall be marked to indicate that a fragile instrument is inside.

E-Stop Failures: Touch detection may be malfunctioning due to broken magnets in the E-stop. Rough handling of the E-stop may lead to damage of these magnets. Touch and collision errors are often caused by dust and dirt accumulated in the E-stop. To prevent E-stop failure, Customer shall always mount the probe to the DAE carefully and keep the DAE unit in a non-dusty environment if not used for measurements.

Repair: Minor repairs are performed at no extra cost during the annual calibration. However, SPEAG reserves the right to charge for any repair especially if rough unprofessional handling caused the defect.

DASY Configuration Files: Since the exact values of the DAE input resistances, as measured during the calibration procedure of a DAE unit, are not used by the DASY software, a nominal value of 200 MOhm is given in the corresponding configuration file.

Important Note:
Warranty and calibration is void if the DAE unit is disassembled partly or fully by the Customer.

Important Note:
Never attempt to grease or oil the E-stop assembly. Cleaning and readjusting of the E-stop assembly is allowed by certified SPEAG personnel only and is part of the annual calibration procedure.

Important Note:
To prevent damage of the DAE probe connector pins, use great care when installing the probe to the DAE. Carefully connect the probe with the connector notch oriented in the mating position. Avoid any rotational movement of the probe body versus the DAE while turning the locking nut of the connector. The same care shall be used when disconnecting the probe from the DAE.

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

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

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

Accreditation No.: SCS 108

Client **ADT (Auden)**

Certificate No: DAE3-510_Oct10

CALIBRATION CERTIFICATE

Object	DAE3 - SD 000 D03 AA - SN: 510
Calibration procedure(s)	QA CAL-06.v22 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	October 4, 2010

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
Keithley Multimeter Type 2001	SN: 0810278	28-Sep-10 (No:10376)	Sep-11
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Calibrator Box V1.1	SE UMS 006 AB 1004	07-Jun-10 (in house check)	In house check: Jun-11

	Name	Function	Signature
Calibrated by:	Dominique Steffen	Technician	
Approved by:	Fin Bomholt	R&D Director	

Issued: October 4, 2010

Glossary

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
  - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
  - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
  - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
  - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
  - *Input Offset Measurement*: Output voltage and statistical results over a large number of zero voltage measurements.
  - *Input Offset Current:* Typical value for information; Maximum channel input offset current, not considering the input resistance.
  - *Input resistance:* Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
  - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
  - *Power consumption:* Typical value for information. Supply currents in various operating modes.

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range:	1LSB =	6.1μV ,	full range =	-100...+300 mV
Low Range:	1LSB =	61nV ,	full range =	-1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	404.204 ± 0.1% (k=2)	404.261 ± 0.1% (k=2)	404.619 ± 0.1% (k=2)
Low Range	3.97841 ± 0.7% (k=2)	3.96431 ± 0.7% (k=2)	3.98318 ± 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	280.0 ° ± 1 °

Appendix

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	200002.6	1.33	0.00
Channel X	+ Input	20001.52	1.72	0.01
Channel X	- Input	-19997.99	1.81	-0.01
Channel Y	+ Input	200010.4	0.89	0.00
Channel Y	+ Input	20000.89	1.39	0.01
Channel Y	- Input	-19998.10	1.60	-0.01
Channel Z	+ Input	200007.2	-1.37	-0.00
Channel Z	+ Input	19998.21	-1.29	-0.01
Channel Z	- Input	-20001.73	-2.13	0.01

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2000.1	0.23	0.01
Channel X	+ Input	200.27	0.27	0.13
Channel X	- Input	-199.76	0.04	-0.02
Channel Y	+ Input	2000.8	0.66	0.03
Channel Y	+ Input	199.56	-0.44	-0.22
Channel Y	- Input	-200.06	-0.16	0.08
Channel Z	+ Input	1999.4	-0.75	-0.04
Channel Z	+ Input	199.53	-0.57	-0.28
Channel Z	- Input	-201.06	-1.16	0.58

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	17.87	16.44
	- 200	-15.36	-17.11
Channel Y	200	14.99	14.97
	- 200	-16.63	-16.47
Channel Z	200	-8.65	-8.74
	- 200	7.23	7.63

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	4.37	-3.14
Channel Y	200	6.07	-	3.36
Channel Z	200	3.03	-0.24	-

4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	15917	15639
Channel Y	16112	16210
Channel Z	16121	16322

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	0.61	0.06	2.59	0.30
Channel Y	1.72	-0.56	3.01	0.39
Channel Z	-1.94	-2.73	-0.59	0.30

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	–0.01	-8	-9

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S Swiss Calibration Service

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

Accreditation No.: **SCS 108**

Client **B.V. ADT (Auden)**

Certificate No: **CD835V3-1041_Mar11**

CALIBRATION CERTIFICATE

Object CD835V3 - SN: 1041

Calibration procedure(s) QA CAL-20.v5
Calibration procedure for dipoles in air

Calibration date: March 15, 2011

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
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 EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Probe ER3DV6	SN: 2336	29-Dec-10 (No. ER3-2336_Dec10)	Dec-11
Probe H3DV6	SN: 6065	29-Dec-10 (No. H3-6065_Dec10)	Dec-11
DAE4	SN: 781	20-Oct-10 (No. DAE4-781_Oct10)	Oct-11

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter Agilent 4419B	SN: GB42420191	09-Oct-09 (in house check Oct-10)	In house check: Oct-11
Power sensor HP 8482H	SN: 3318A09450	09-Oct-09 (in house check Oct-10)	In house check: Oct-11
Power sensor HP 8482A	SN: US37295597	09-Oct-09 (in house check Oct-10)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-10)	In house check: Oct-11
RF generator E4433B	MY 41000675	03-Nov-04 (in house check Oct-09)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Fin Bomholt	Technical Director	

Issued: March 16, 2011

References

[1] ANSI-C63.19-2007
American National Standard for Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids.

Methods Applied and Interpretation of Parameters:

- *Coordinate System:* y-axis is in the direction of the dipole arms. z-axis is from the basis of the antenna (mounted on the table) towards its feed point between the two dipole arms. x-axis is normal to the other axes. In coincidence with the standards [1], the measurement planes (probe sensor center) are selected to be at a distance of 10 mm above the top edge of the dipole arms.
- *Measurement Conditions:* Further details are available from the hardcopies at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated. The forward power to the dipole connector is set with a calibrated power meter connected and monitored with an auxiliary power meter connected to a directional coupler. While the dipole under test is connected, the forward power is adjusted to the same level.
- *Antenna Positioning:* The dipole is mounted on a HAC Test Arch phantom using the matching dipole positioner with the arms horizontal and the feeding cable coming from the floor. The measurements are performed in a shielded room with absorbers around the setup to reduce the reflections.
  It is verified before the mounting of the dipole under the Test Arch phantom, that its arms are perfectly in a line. It is installed on the HAC dipole positioner with its arms parallel below the dielectric reference wire and able to move elastically in vertical direction without changing its relative position to the top center of the Test Arch phantom. The vertical distance to the probe is adjusted after dipole mounting with a DASY5 Surface Check job. Before the measurement, the distance between phantom surface and probe tip is verified. The proper measurement distance is selected by choosing the matching section of the HAC Test Arch phantom with the proper device reference point (upper surface of the dipole) and the matching grid reference point (tip of the probe) considering the probe sensor offset. The vertical distance to the probe is essential for the accuracy.
- *Feed Point Impedance and Return Loss:* These parameters are measured using a HP 8753E Vector Network Analyzer. The impedance is specified at the SMA connector of the dipole. The influence of reflections was eliminating by applying the averaging function while moving the dipole in the air, at least 70cm away from any obstacles.
- *E- field distribution:* E field is measured in the x-y-plane with an isotropic ER3D-field probe with 100 mW forward power to the antenna feed point. In accordance with [1], the scan area is 20mm wide, its length exceeds the dipole arm length (180 or 90mm). The sensor center is 10 mm (in z) above the top of the dipole arms. Two 3D maxima are available near the end of the dipole arms. Assuming the dipole arms are perfectly in one line, the average of these two maxima (in subgrid 2 and subgrid 8) is determined to compensate for any non-parallelity to the measurement plane as well as the sensor displacement. The E-field value stated as calibration value represents the maximum of the interpolated 3D-E-field, 10mm above the dipole surface.
- *H-field distribution:* H-field is measured with an isotropic H-field probe with 100mW forward power to the antenna feed point, in the x-y-plane. The scan area and sensor distance is equivalent to the E-field scan. The maximum of the field is available at the center (subgrid 5) above the feed point. The H-field value stated as calibration value represents the maximum of the interpolated H-field, 10mm above the dipole surface at the feed point.

1 Measurement Conditions

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

DASY Version	DASY5	V52.6.2 (424)
DASY PP Version	SEMCAD X	V14.4.4 (2829)
Phantom	HAC Test Arch	SD HAC P01 BA, #1070
Distance Dipole Top - Probe Center	10 mm	
Scan resolution	dx, dy = 5 mm	area = 20 x 180 mm
Frequency	**835 MHz** ± 1 MHz	
Forward power at dipole connector	20.0 dBm = 100mW	
Input power drift	< 0.05 dB	

2 Maximum Field values

H-field 10 mm above dipole surface	condition	**interpolated maximum**
Maximum measured	100 mW forward power	**0.471 A/m**

Uncertainty for H-field measurement: 8.2% (k=2)

E-field 10 mm above dipole surface	condition	**Interpolated maximum**
Maximum measured above high end-	100 mW forward power	170.8 V/m
Maximum measured above low end	100 mW forward power	163.2 V/m
Averaged maximum above arm	100 mW forward power	**168.0 V/m**

Uncertainty for E-field measurement: 12.8% (k=2)

3 Appendix

3.1 Antenna Parameters

Frequency	**Return Loss**	**Impedance**
800 MHz	15.8 dB	(42.4 – j13.1) Ohm
835 MHz	**26.7 dB**	**(47.1 + j3.4) Ohm**
900 MHz	17.1 dB	(57.3 – j13.3) Ohm
950 MHz	17.8 dB	(47.6 + j12.4) Ohm
960 MHz	13.9 dB	(56.7 + j20.9) Ohm

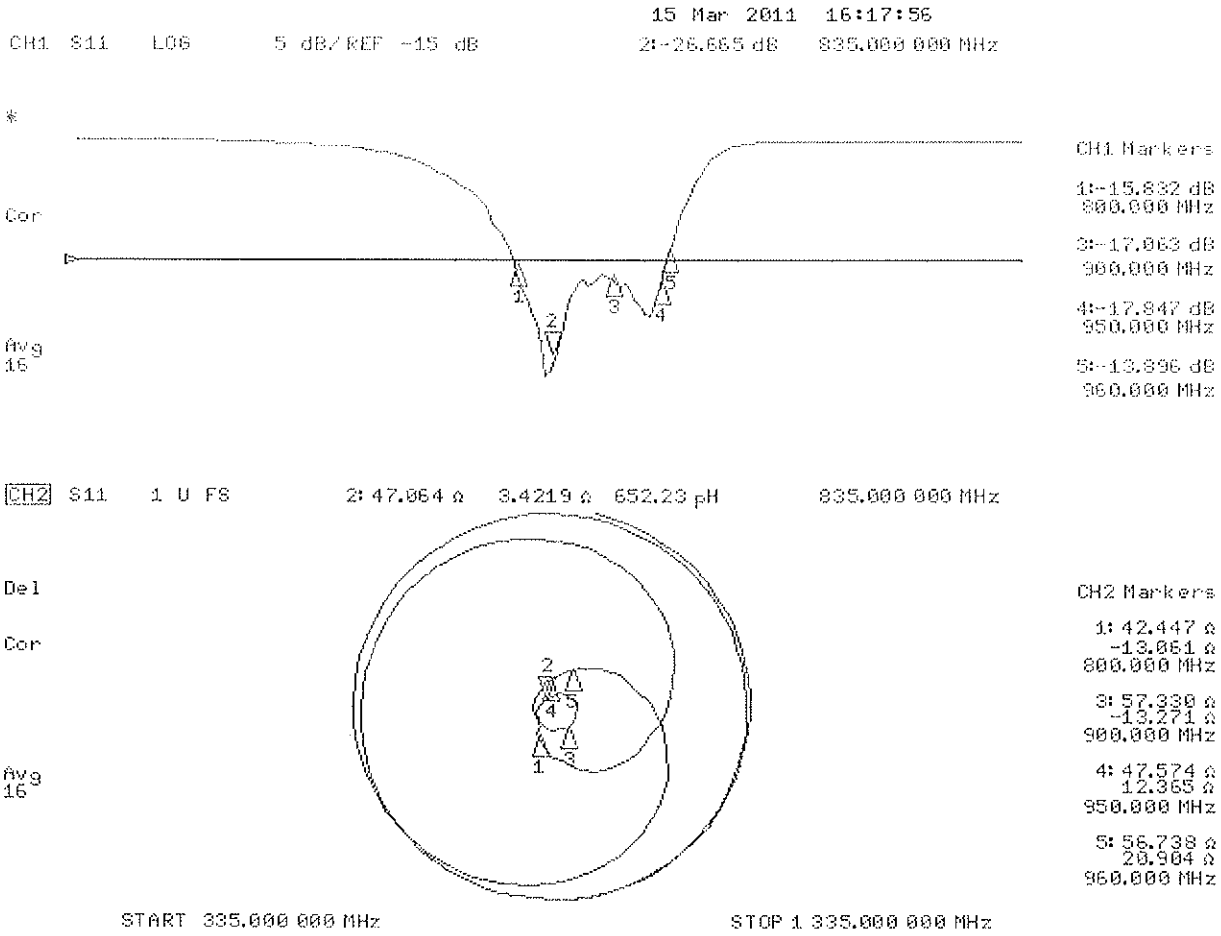
3.2 Antenna Design and Handling

The calibration dipole has a symmetric geometry with a built-in two stub matching network, which leads to the enhanced bandwidth.
The dipole is built of standard semirigid coaxial cable. The internal matching line is open ended. The antenna is therefore open for DC signals.
Do not apply force to dipole arms, as they are liable to bend. The soldered connections near the feedpoint may be damaged. After excessive mechanical stress or overheating, check the impedance characteristics to ensure that the internal matching network is not affected.

After long term use with 40W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

3.3 Measurement Sheets

3.3.1 Return Loss and Smith Chart



3.3.3 DASY4 H-field Result

Date/Time: 15.03.2011 10:09:03

Test Laboratory: SPEAG Lab2

HAC RF_CD835_1041_H_110315_CL

DUT: HAC-Dipole 835 MHz; Type: CD835V3; Serial: 1041

Communication System: CW; Frequency: 835 MHz
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

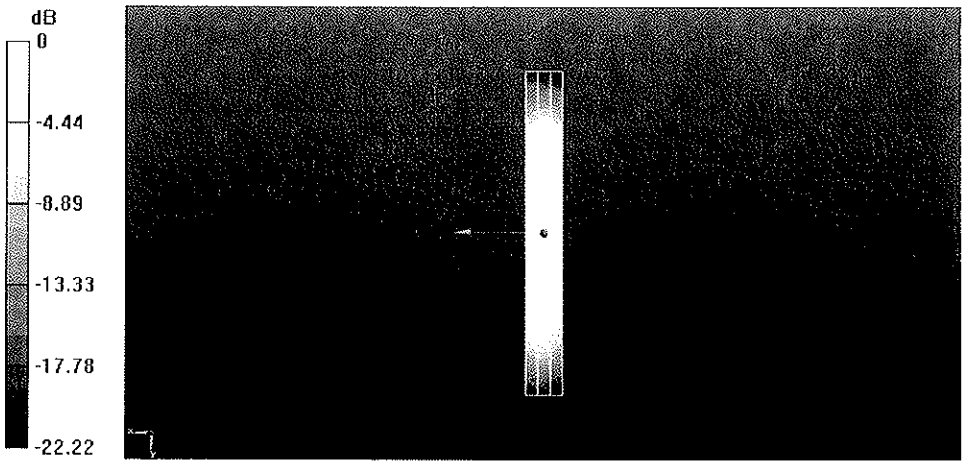
DASY5 Configuration:

- Probe: H3DV6 - SN6065; ; Calibrated: 29.12.2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn781; Calibrated: 20.10.2010
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA; Serial: 1070
- Measurement SW: DASY52, V52.6 Build 2, Version 52.6.2 (424)
- Postprocessing SW: SEMCAD X, V14.4 Build 4, Version 14.4.4 (2829)

Dipole H-Field measurement @ 835MHz/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 = 0.471 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.502 A/m; Power Drift = 0.01 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.390 M4**	Grid 2 **0.413 M4**	Grid 3 **0.392 M4**
Grid 4 **0.449 M4**	Grid 5 **0.471 M4**	Grid 6 **0.442 M4**
Grid 7 **0.398 M4**	Grid 8 **0.414 M4**	Grid 9 **0.385 M4**



0 dB = 0.470A/m

3.3.2 DASY4 E-field Result

Date/Time: 15.03.2011 12:53:58

Test Laboratory: SPEAG Lab2

HAC RF_CD835_1041_E_110315_CL

DUT: HAC-Dipole 835 MHz; Type: CD835V3; Serial: 1041

Communication System: CW; Frequency: 835 MHz
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

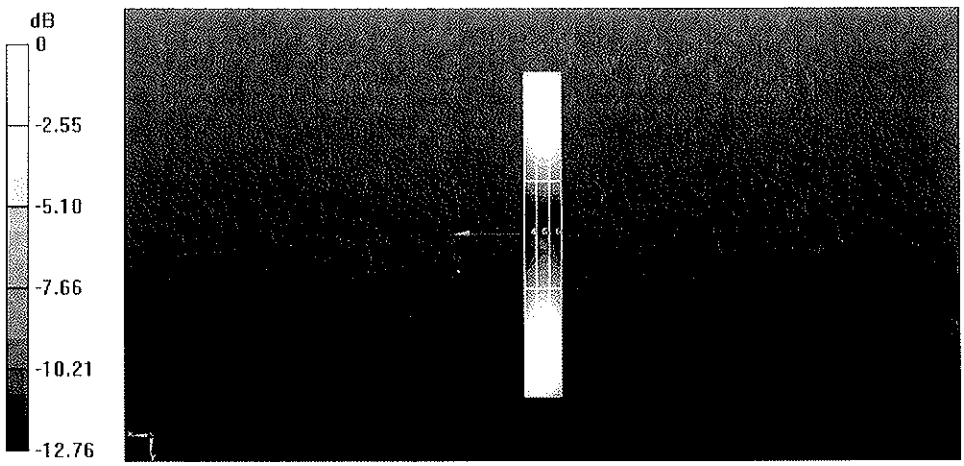
DASY5 Configuration:

- Probe: ER3DV6 - SN2336; ConvF(1, 1, 1); Calibrated: 29.12.2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn781; Calibrated: 20.10.2010
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA; Serial: 1070
- Measurement SW: DASY52, V52.6 Build 2, Version 52.6.2 (424)
- Postprocessing SW: SEMCAD X, V14.4 Build 4, Version 14.4.4 (2829)

Dipole E-Field measurement @ 835MHz/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 = 170.8 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 124.9 V/m; Power Drift = -0.02 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **158.6 M4**	Grid 2 **170.8 M4**	Grid 3 **167.4 M4**
Grid 4 **86.752 M4**	Grid 5 **90.542 M4**	Grid 6 **88.762 M4**
Grid 7 **158.6 M4**	Grid 8 **163.2 M4**	Grid 9 **158.5 M4**



0 dB = 170.8V/m

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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 **B.V. ADT (Auden)**

Certificate No: **CD1880V3-1032_Apr11**

CALIBRATION CERTIFICATE

Object: CD1880V3 - SN: 1032

Calibration procedure(s): QA CAL-20.v5
Calibration procedure for dipoles in air

Calibration date: April 12, 2011

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
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 EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Probe ER3DV6	SN: 2336	29-Dec-10 (No. ER3-2336_Dec10)	Dec-11
Probe H3DV6	SN: 6065	29-Dec-10 (No. H3-6065_Dec10)	Dec-11
DAE4	SN: 781	20-Oct-10 (No. DAE4-781_Oct10)	Oct-11

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter Agilent 4419B	SN: GB42420191	09-Oct-09 (in house check Oct-10)	In house check: Oct-11
Power sensor HP 8482H	SN: 3318A09450	09-Oct-09 (in house check Oct-10)	In house check: Oct-11
Power sensor HP 8482A	SN: US37295597	09-Oct-09 (in house check Oct-10)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-10)	In house check: Oct-11
RF generator E4433B	MY 41000675	03-Nov-04 (in house check Oct-09)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Fin Bomholt	R&D Director	

Issued: April 12, 2011

References

[1] ANSI-C63.19-2007
American National Standard for Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids.

Methods Applied and Interpretation of Parameters:

- *Coordinate System:* y-axis is in the direction of the dipole arms. z-axis is from the basis of the antenna (mounted on the table) towards its feed point between the two dipole arms. x-axis is normal to the other axes. In coincidence with the standards [1], the measurement planes (probe sensor center) are selected to be at a distance of 10 mm above the top edge of the dipole arms.
- *Measurement Conditions:* Further details are available from the hardcopies at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated. The forward power to the dipole connector is set with a calibrated power meter connected and monitored with an auxiliary power meter connected to a directional coupler. While the dipole under test is connected, the forward power is adjusted to the same level.
- *Antenna Positioning:* The dipole is mounted on a HAC Test Arch phantom using the matching dipole positioner with the arms horizontal and the feeding cable coming from the floor. The measurements are performed in a shielded room with absorbers around the setup to reduce the reflections.
  It is verified before the mounting of the dipole under the Test Arch phantom, that its arms are perfectly in a line. It is installed on the HAC dipole positioner with its arms parallel below the dielectric reference wire and able to move elastically in vertical direction without changing its relative position to the top center of the Test Arch phantom. The vertical distance to the probe is adjusted after dipole mounting with a DASY5 Surface Check job. Before the measurement, the distance between phantom surface and probe tip is verified. The proper measurement distance is selected by choosing the matching section of the HAC Test Arch phantom with the proper device reference point (upper surface of the dipole) and the matching grid reference point (tip of the probe) considering the probe sensor offset. The vertical distance to the probe is essential for the accuracy.
- *Feed Point Impedance and Return Loss:* These parameters are measured using a HP 8753E Vector Network Analyzer. The impedance is specified at the SMA connector of the dipole. The influence of reflections was eliminating by applying the averaging function while moving the dipole in the air, at least 70cm away from any obstacles.
- *E- field distribution:* E field is measured in the x-y-plane with an isotropic ER3D-field probe with 100 mW forward power to the antenna feed point. In accordance with [1], the scan area is 20mm wide, its length exceeds the dipole arm length (180 or 90mm). The sensor center is 10 mm (in z) above the top of the dipole arms. Two 3D maxima are available near the end of the dipole arms. Assuming the dipole arms are perfectly in one line, the average of these two maxima (in subgrid 2 and subgrid 8) is determined to compensate for any non-parallelity to the measurement plane as well as the sensor displacement. The E-field value stated as calibration value represents the maximum of the interpolated 3D-E-field, 10mm above the dipole surface.
- *H-field distribution:* H-field is measured with an isotropic H-field probe with 100mW forward power to the antenna feed point, in the x-y-plane. The scan area and sensor distance is equivalent to the E-field scan. The maximum of the field is available at the center (subgrid 5) above the feed point. The H-field value stated as calibration value represents the maximum of the interpolated H-field, 10mm above the dipole surface at the feed point.

1. Measurement Conditions

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

DASY Version	DASY5	V52.6.2 (424)
DASY PP Version	SEMCAD X	V14.4.4 (2829)
Phantom	HAC Test Arch	SD HAC P01 BA, #1070
Distance Dipole Top - Probe Center	10 mm	
Scan resolution	dx, dy = 5 mm	area = 20 x 90 mm
Frequency	**1880 MHz** ± 1 MHz	
Forward power at dipole connector	20.0 dBm = 100mW	
Input power drift	< 0.05 dB	

2. Maximum Field values

H-field 10 mm above dipole surface	condition	**Interpolated maximum**
Maximum measured	100 mW forward power	**0.471 A/m**

Uncertainty for H-field measurement: 8.2% (k=2)

E-field 10 mm above dipole surface	condition	**Interpolated maximum**
Maximum measured above high end	100 mW forward power	143.9 V/m
Maximum measured above low end	100 mW forward power	140.3 V/m
Averaged maximum above arm	100 mW forward power	**142.1 V/m**

Uncertainty for E-field measurement: 12.8% (k=2)

3. Appendix

3.1 Antenna Parameters

Frequency	**Return Loss**	**Impedance**
1730 MHz	25.8 dB	(51.2 + j5.1) Ohm
1880 MHz	**21.1 dB**	**(51.2 + j8.9) Ohm**
1900 MHz	21.2 dB	(53.5 + j8.4) Ohm
1950 MHz	27.3 dB	(54.5 – j0.1) Ohm
2000 MHz	22.8 dB	(43.5 + j1.9) Ohm

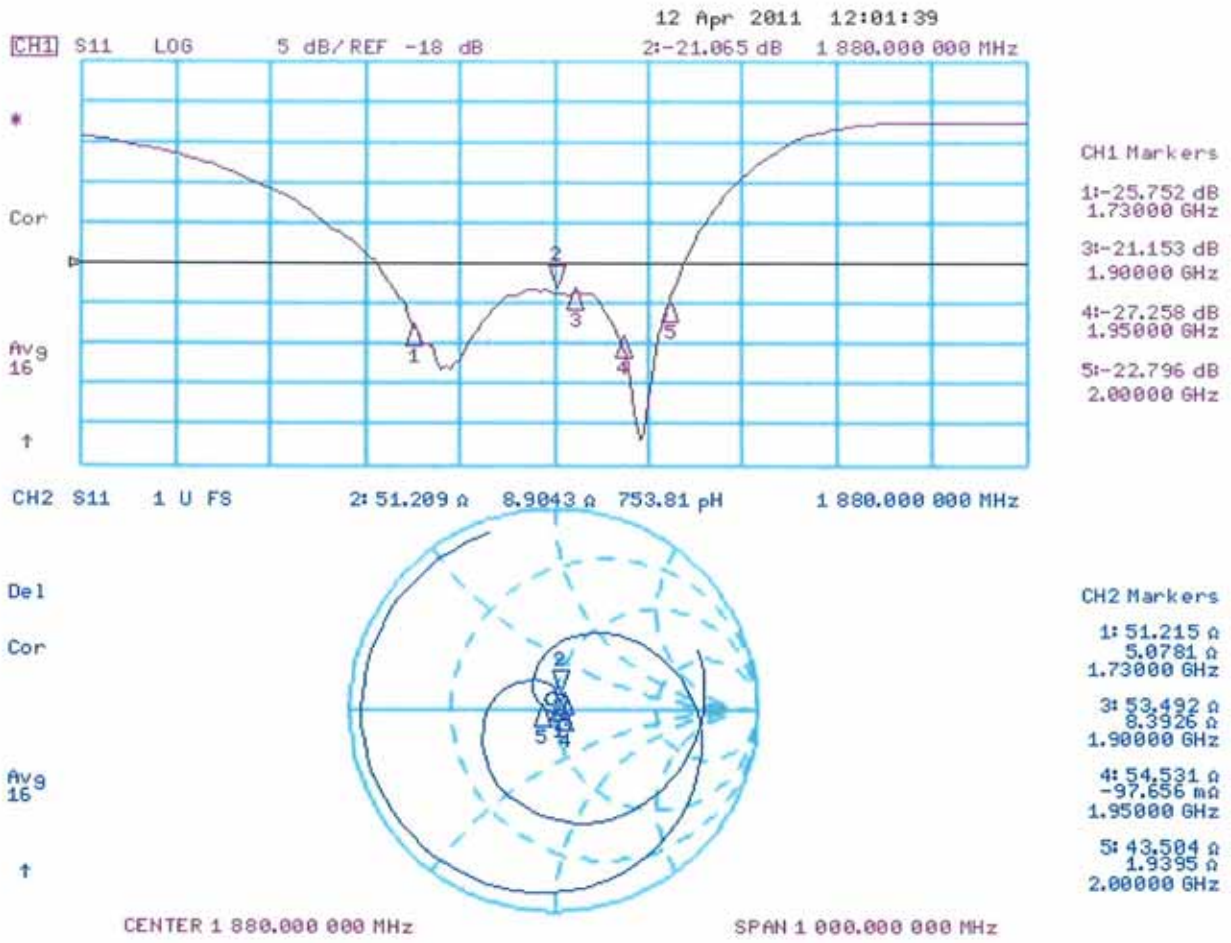
3.2 Antenna Design and Handling

The calibration dipole has a symmetric geometry with a built-in two stub matching network, which leads to the enhanced bandwidth.
The dipole is built of standard semirigid coaxial cable. The internal matching line is open ended. The antenna is therefore open for DC signals.
Do not apply force to dipole arms, as they are liable to bend. The soldered connections near the feedpoint may be damaged. After excessive mechanical stress or overheating, check the impedance characteristics to ensure that the internal matching network is not affected.

After long term use with 40W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

3.3 Measurement Sheets

3.3.1 Return Loss and Smith Chart



3.3.2 DASY4 H-Field Result

Date/Time: 12.04.2011 12:39:46

Test Laboratory: SPEAG Lab2

HAC_RF_CD1880_1032_H_110412_CL

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: 1032

Communication System: CW; Frequency: 1880 MHz
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: RF Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

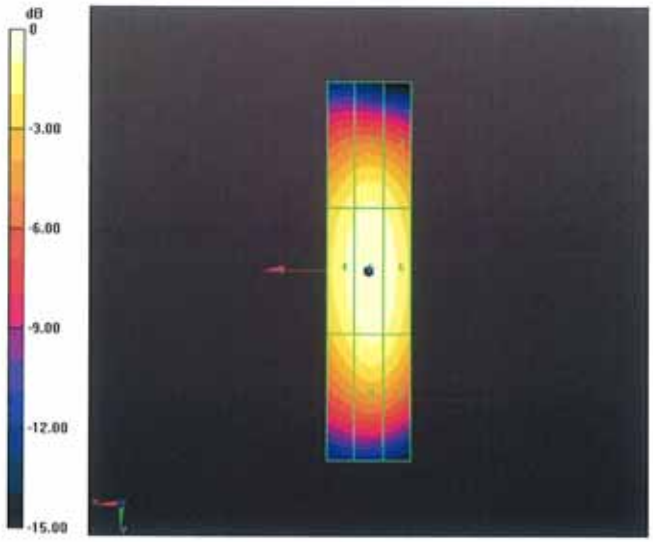
DASY5 Configuration:

- Probe: H3DV6 - SN6065; ; Calibrated: 29.12.2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn781; Calibrated: 20.10.2010
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA; Serial: 1070
- Measurement SW: DASY52, V52.6 Build 2, Version 52.6.2 (424)
- Postprocessing SW: SEMCAD X, V14.4 Build 4, Version 14.4.4 (2829)

Dipole H-Field measurement @ 1880MHz/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 = 0.471 A/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 0.500 A/m; Power Drift = -0.0016 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.406 M2**	Grid 2 **0.432 M2**	Grid 3 **0.416 M2**
Grid 4 **0.441 M2**	Grid 5 **0.471 M2**	Grid 6 **0.457 M2**
Grid 7 **0.401 M2**	Grid 8 **0.433 M2**	Grid 9 **0.421 M2**



0 dB = 0.470A/m

3.3.3 DASY4 E-Field Result

Date/Time: 12.04.2011 15:07:52

Test Laboratory: SPEAG Lab2

HAC_RF_CD1880_1032_E_110412_CL

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: 1032

Communication System: CW; Frequency: 1880 MHz
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: RF Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

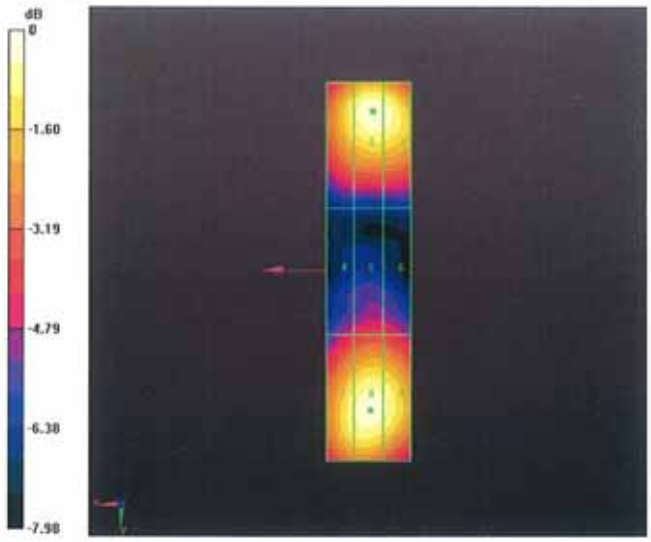
DASY5 Configuration:

- Probe: ER3DV6 - SN2336; ConvF(1, 1, 1); Calibrated: 29.12.2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn781; Calibrated: 20.10.2010
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA; Serial: 1070
- Measurement SW: DASY52, V52.6 Build 2, Version 52.6.2 (424)
- Postprocessing SW: SEMCAD X, V14.4 Build 4, Version 14.4.4 (2829)

Dipole E-Field measurement @ 1880MHz/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 = 143.9 V/m
Probe Modulation Factor = 1.000
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 144.4 V/m; Power Drift = -0.0043 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **131.8** **M2**	Grid 2 **143.9** **M2**	Grid 3 **141.3** **M2**
Grid 4 **86.926** **M3**	Grid 5 **92.728** **M3**	Grid 6 **91.584** **M3**
Grid 7 **133.8** **M2**	Grid 8 **140.3** **M2**	Grid 9 **137.0** **M2**



0 dB = 143.9V/m