SAMSUNG ELECTRONICS Co., Ltd.,
Regulatory Compliance Group
IT R&D Center

416, Maetan-3dong,
Yeongtong-gu, Suwon-si,
Gyeonggi-do, Korea 443-742

TEST REPORT ON HAC

Model Tested:	**SPH-i325**
FCC ID (Requested) :	**A3LSPHI325**
Job No :	**AE-056**
Report No :	**AE-056-M1**
Date issued :	**Oct.26 2007**
Result Summary :	**M3 (RF EMISSION Category)**

- Abstract –

This document reports on HAC Tests carried out in accordance with ANSI C63.19(2006), FCC Rule Part(s) FCC 47 CFR §20.19, §6.3, §7.3

Prepared By

EH JUNG – Test Engineer

Authorized By

JH NAM – Technical Manager

Contents

1. GENERAL INFORMATION

Test Sample :	Dual-Band CDMA Phone with Bluetooth
Model Number :	SPH-i325
Serial Number :	Identical prototype (S/N : # AE-056-A)
Manufacturer :	SAMSUNG ELECTRONICS Co., Ltd.
Contact :	JH JEONG
Phone :	+82-54-479-3555
Fax :	+82-54-479-5866
Test Standard :	ANSI C 63.19 (2006), FCC 47 CFR § 20.19, §6.3, §7.3
FCC Classification	Licensed Portable Transmitter Held to Ear (PCE)
Test Dates :	Oct.15 ,2007 ~ Oct.15 ,2007
Tested for :	FCC/TCB Certification

2. DESCRIPTION OF DEVICE

Tx Freq. Range :	824.70 ~ 848.31 MHz(CDMA) 1851.25 ~ 1908.76 MHz(PCS)
Rx Freq. Range :	869.70 ~ 893.31 MHz(CDMA) 1931.25 ~ 1988.76 MHz(PCS)
Antenna Configuration :	KR62007
Antenna Manufacturer :	Ethertronics
Antenna Dmimensions :	52.2mm*9.84mm*5.85mm

3. DESCRIPTION OF TEST EQUIPMENT

3.1 HAC Measurement Setup

Robotic System

Measurements are performed using the DASY4 automated dosimetric assessment system. Which is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland and consists of high precision robotics system (Staubli), robot controller, measurement server, Samsung computer, near-field probe, probe alignment sensor, and the SAM twin phantom containing the brain equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF) (see Fig. 3.1).

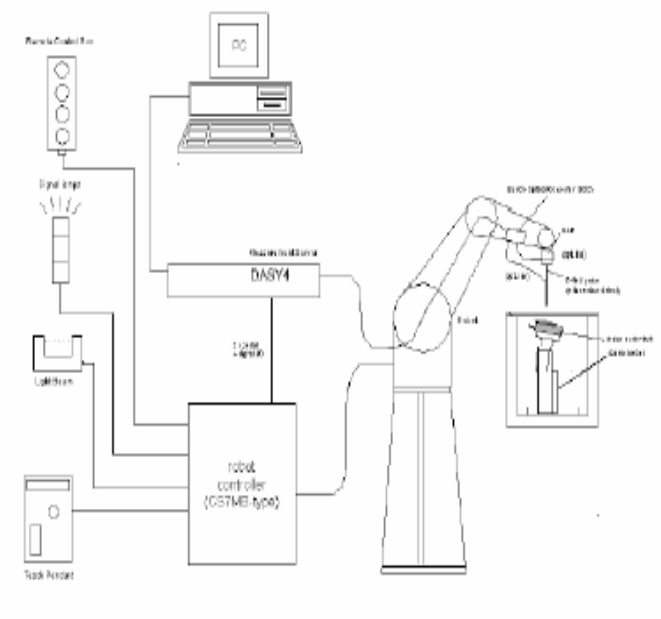


Figure 3.1 HAC Measurement System Setup

System Hardware

A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and a remote control is used to drive the robot motors. The PC consists of the Samsung computer with Windows XP system and HAC Measurement Software DASY4, LCD monitor, mouse and keyboard. The Staubli Robot is connected to the cell controller to allow software manipulation of the robot. A

data acquisition electronic (DAE) circuit that performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the measurement server

System Electronics

The DAE4(or DAE3) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16-bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer.

3.2 Probe Description

ER3DV6 E-Field Probe Description

Construction: One dipole parallel, two dipoles normal to probe axis
Built-in shielding against static charges

Calibration: In air from 100 MHz to 3.0 GHz
(absolute accuracy ±6.0%, k=2)

Frequency: 100 MHz to > 6 GHz;
Linearity: ± 0.2 dB (100 MHz to 3 GHz)

Figure 3.2 E-field Probe

Directivity ± 0.2 dB in air (rotation around probe axis)
± 0.4 dB 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: 330 mm (Tip: 16 mm)
Tip diameter: 8 mm (Body: 12 mm)
Distance from probe tip to dipole centers: 2.5 mm

H3DV6 H-Field Probe Description

Construction: Three concentric loop sensors with 3.8 mm loop diameters Resistively loaded detector diodes for linear response Built-in shielding against static charges

Frequency: 200 MHz to 3 GHz (absolute accuracy ± 6.0%, k=2); Output linearized

Directivity: ± 0.25 dB (spherical isotropy error)

Dynamic Range: 10mA/mto2A/mat1 GHz
(M3 or better device readings fall well below diode compression point)

Dimensions: Overall length: 330 mm (Tip: 40 mm)
Tip diameter: 6 mm (Body: 12 mm)
Distance from probe tip to dipole centers: 3 mm

E-Field Interference < 10% at 3 GHz (for plane wave)

Figure 3.3 H-field Probe

3.3 Test Arch Phantom

Enables easy and well defined positioning of the phone and calibration dipoles as well as simple teaching of the robot (See Figure 3.4)

Dimensions: 370 x 370 x 370 mm

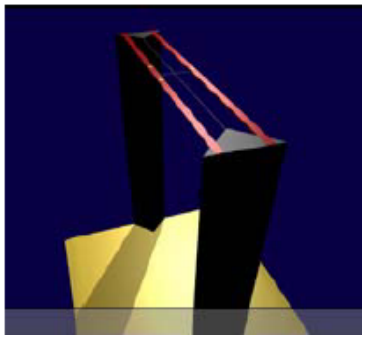


Figure 3.4 Test Arch Phantom

3.4 Validation Dipole

The reference dipole should have a return loss better than –20 dB (measured in the setup) at the resonant frequency to reduce the uncertainty in the power measurement.

Application	- Free space antenna - Hearing Aid susceptibility measurements according to ANSI C 63.19 - Validaation of Hearing Aid RF setup for wireless device emission measurement according to ANSI C63.19
Frequency	835 MHz, 1880 MHz, 2450 MHz
Return Loss	< -20 dB at specified validation position
Dimensions	835 MHz : 166 x 330 mm 1880MHz : 80.8 x 330 mm 2450MHz : 59.9 x 330 mm

3.5 Equipment Calibration

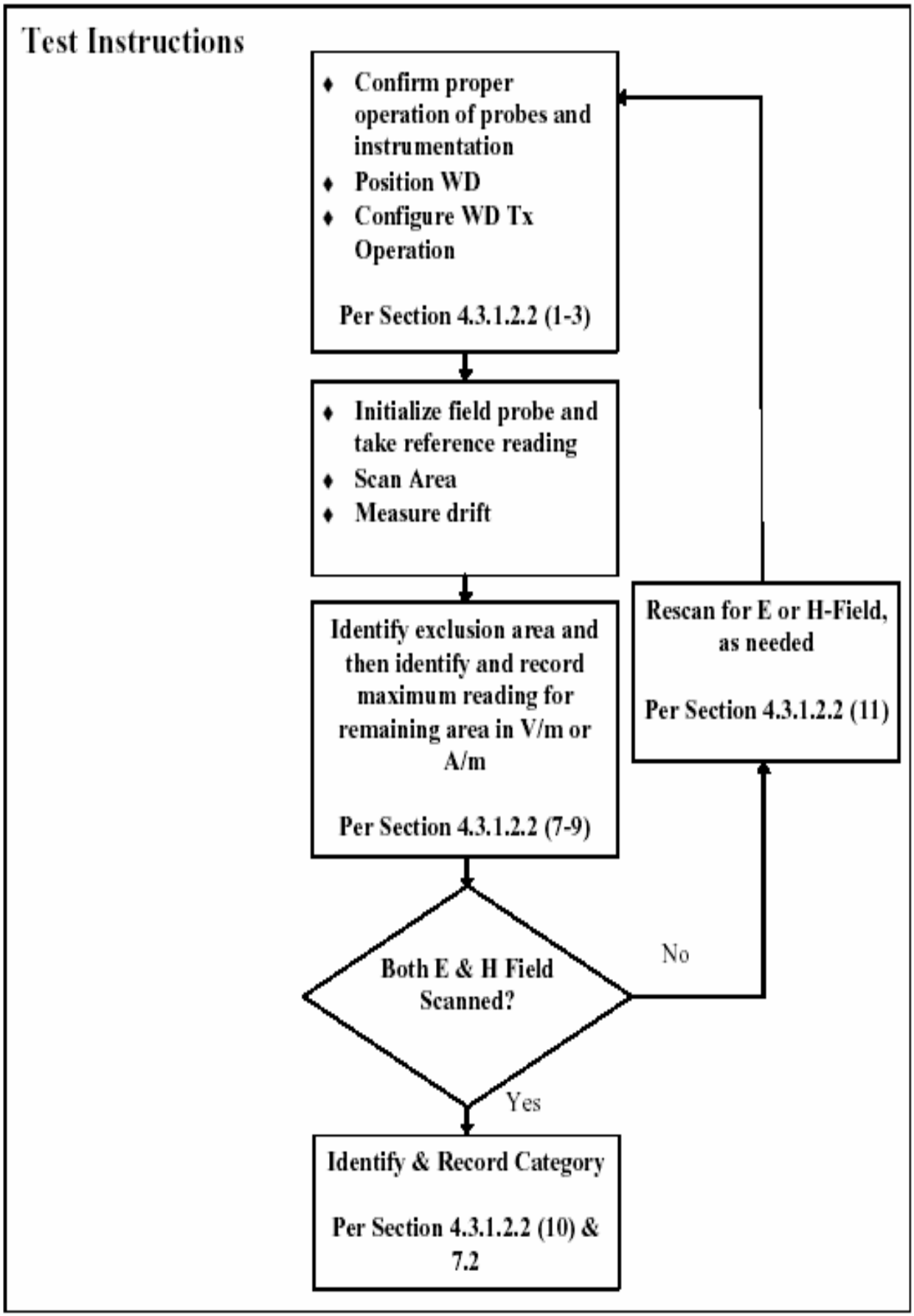
Table 3.2 Test Equipment Calibration

Type	Calibration Due Date	Serial No.
Stäubli Robot RX90BL	Not Required	F05/51G6A1/A/01
HAC Phantom	Not Required	1018
DAE4 V1	2008.04.30	486
SPEAG E-Field Probe ER3DV6	2008.04.20	2370
SPEAG H-Field Probe H3DV6	2008.04.20	6197
SPEAG Validation Dipole CD835 V3	2009.03.21	1021
SPEAG Validation Dipole CD1880 V3	2009.03.21	1016
E4438C Signal Generator	2008.03.21	MY45092224
BBS3Q7ECK Power Amp	2008.01.22	1023
E4419B Power Meter	2008.05.10	MY45101764
E9300B Power Sensor	2008.04.27	MY52505880
DASY4 S/W (ver 4.7)	Not Required	-
Directional Coupler	2008.05.31	18862
Spectrum Analyzer	2008.02.05	MY46186167
Base Station Simulator	2008.06.20	GB45360270

NOTE:

The E-field and H-field probe was calibrated by SPEAG,

4. HAC MEASUREMENT PROCEDURE



The evaluation was performed using the following procedure.

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

2. WD is positioned in its intended test position, acoustic output point of the device perpendicular to the field probe.

3. The WD operation for maximum rated RF output power was configured and confirmed with the base station simulator, at the test channel and other normal operating parameters as intended for the test. The battery was ensured to be fully charged before each test.

4. The center sub-grid was centered over the center of the acoustic output (also audio band magnetic output, if applicable). The WD audio output was positioned tangent (as physically possible) to the measurement plane.

5. A surface calibration was performed before each setup change to ensure repeatable spacing and proper maintenance of the measurement plane using the HAC Phantom.

6. The measurement system measured the field strength at the reference location.

7. Measurements at 2mm increments in the 5 x 5 cm region were performed and recorded. A 360° rotation about the azimuth axis at the maximum interpolated position was measured. For the worst-case condition, the peak reading from this rotation was used in re-evaluating the HAC category.

8. The system performed a drift evaluation by measuring the field at the reference location.

9. Steps 1-8 were done for both the E and H-Field measurements.

10. The HAC measurement software calculates a reference point at the start and end of the test to check fo power drifts. If conducted power deviations of more than 5% occurred, the tests were repeated.

5. DESCRIPTION OF TEST POSITION

5.1 Measurement reference and plane

Figure 5.1 Wireless Device and Measurement Plane

1. The grid is 5 cm by 5 cm area that is divided into 9 evenly sized blocks or sub-grids.

2. The grid is centered on the audio frequency output transducer of the WD (speaker or T- coil).

3. The grid is in a reference plane, which is defined as the planar area that contains the highest point in the area of the phone that normally rests against the user's ear. It is parallel to the centerline of the receiver area of the phone and is defined by the points of the receiver-end of the WD handset, which, in normal handset use, rest against the ear.

4. The measurement plane is parallel to, and 1.0 cm in front of, the reference plane.

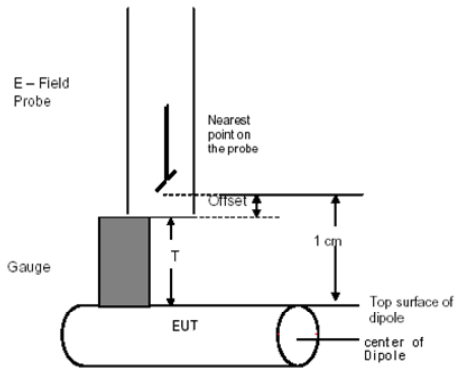


Figure 5.2 Gauge block with E-field probe

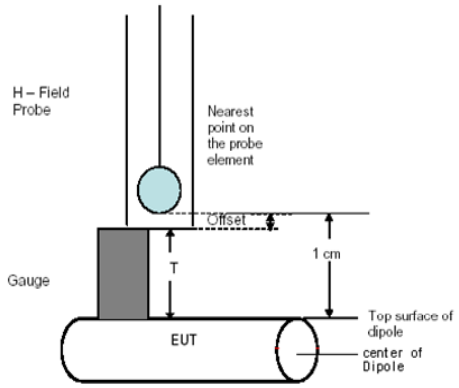


Figure 5.3 Gauge block with H-field probe

6. MEASUREMENT UNCERTAINTY

Source of Uncertainty	Value	Probability distribution	Divisor	c_i E	c_i H	Standard uncertainty		v_i or v_{eff}	
						E	H	E	H
Measurement System									
Probe Calibration	10.20	normal	2.000	0.99	1	5.05	5.10	∞	∞
Axial Isotropy	4.70	rectangular	1.732	1	1	2.71	2.71	∞	∞
Sensor Displacement	16.50	rectangular	1.732	1	0.145	9.53	1.38	∞	∞
Boundary Effects	2.40	rectangular	1.732	1	1	1.39	1.39	∞	∞
Linearity	4.70	rectangular	1.732	1	1	2.71	2.71	∞	∞
Scaling to Peak Envelop Power	2.00	rectangular	1.732	1	1	1.15	1.15	∞	∞
System Detection Limit	1.00	rectangular	1.732	1	1	0.58	0.58	∞	∞
Readout Electronics	0.30	normal	1.000	1	1	0.30	0.30	∞	∞
Response Time	0.80	rectangular	1.732	1	1	0.46	0.46	∞	∞
Integration time	2.60	rectangular	1.732	1	1	1.50	1.50	∞	∞
RF Ambient condition	3.00	rectangular	1.732	1	1	1.73	1.73	∞	∞
RF Reflections	1.74	normal	1.000	1	0.68	1.74	1.19	∞	∞
Probe Positioner	1.20	rectangular	1.732	1	0.67	0.69	0.46	∞	∞
Probe Positioning	4.70	rectangular	1.732	1	0.67	2.71	1.82	∞	∞
Extrap. And Interpolation	1.00	rectangular	1.732	1	1	0.58	0.58	∞	∞
Test Sample Related									
Device Positioning	1.53	normal	1.000	1	0.94	1.53	1.44	23	23
Device Holder and Phantom	2.40	rectangular	1.732	1	1	1.39	1.39	∞	∞
Power Drift	5.00	rectangular	1.732	1	1	2.89	2.89	∞	∞
Phantom and Setup Related									
Phantom Thickness	2.40	rectangular	1.732	1	0.67	1.39	0.93	∞	∞
Combined Standard Uncertainty		normal	-	-	-	**12.88**	**8.38**	**147117**	**26396**
Expanded Uncertainty [95% confidence]						**25.76**	**16.76**		
Expanded Uncertainty [95% confidence] on Field						**12.88**	**8.38**		

7. SYSTEM VERIFICATION

7.1 Test System Validation

Prior to assessment, the system is verified to the ±10% of the specification at 835MHz, 1880MHz, by using the system validation kit(s). (see Appendix C, Graphic Plot Attached)

Table 7.2 System Validation Results

Frequency	Targeted E-field (V/m)	Measured E-field (V/m)	Deviation (%)	Targeted H-field (A/m)	Measured H-field (A/m)	Deviation (%)	Date
835 MHz	163.8	160.3	-2.11	0.451	0.435	-3.55	Oct.09,2007
1880 MHz	133.6	143	7.08	0.444	0.452	1.80	Oct.09,2007

*Validation was measured with input power 100 mW

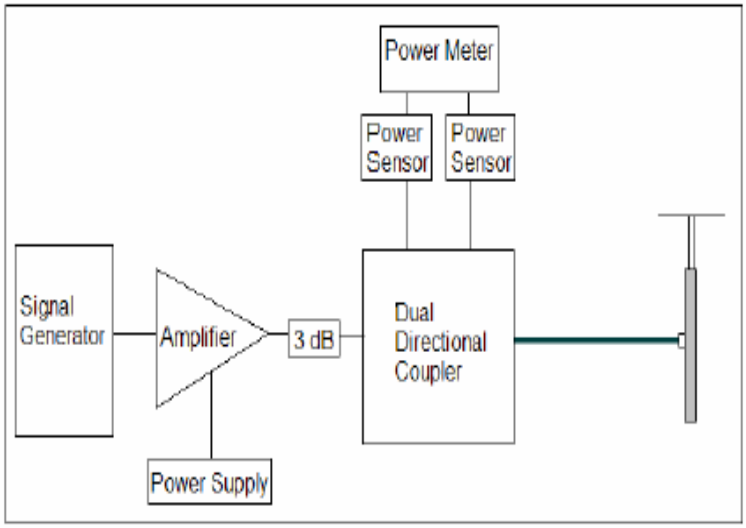


Figure 7.1 Dipole Validation Test Setup

Validations of the DASY4 test system were performed using the measurement equipment listed in Section 3.2. All validations occur in free space using the DASY4 test arch. Note that the 10mm probe to dipole separation is measured from the top edge of the dipole to the calibration reference point of the probe. SPEAG uses the center point of the probe sensor(s) as the reference point when establishing targets for their dipoles. Therefore, because SPEAG's dipoles and targets are used, it is appropriate to measure the 10mm separation distance to the center of the sensors as they do. This reference point was used for validation only. Validations were performed at 835 MHz and/or 1880 MHz. These frequencies are within each operating band and are within 2MHz of the mid-band frequency of the test device. The obtained results from the validations are displayed in the table 7.2.

8. MODULATION FACTOR

After every probe calibration, the response of the probe to each applicable modulated signal (CDMA, GSM, etc) must be assessed at both 835 MHz and 1880 MHz. The response of the probe system to a CW field at the frequency(s) of interest is compared to its response to a modulated signal with equal peak amplitude. For each PMF assessment, a Signal Generator was used to replace the original CW signal with the desired modulated signal. The PMF results are shown in Tables 5.
RF Field Probe Modulation Response was measured with the field probe and associated measurement equipment. The proposed setup corresponds to the procedure as required in the Standard.

1. Install a validation dipole for the appropriate frequency band under the Test Arch Phantom Move the probe to the field reference point. Do not move the probe between the corresponding CW and modulated measurements.

2. Install the field probe in the setup.

3. The signal to the dipole must be monitored to record peak amplitude. Set a CW signal to the same level (refer to Appendix B)

4. Set the procedure properties (frequency, modulation frequency and crest factor) according to the measured signal. Define a multimeter job for the field reading.

5. Define a second procedure for the evaluation of the CW signal (frequency set as above, modulation frequency = 0, crest factor = 1) and a multimeter job.

6. The ratio of the CW reading to modulated signal reading is the probe modulation factor(PMF) for the modulation and field probe combination. This was repeated for 80% AM.

7. Steps 1-6 were repeated at all frequency bands and for both E and H field probes.

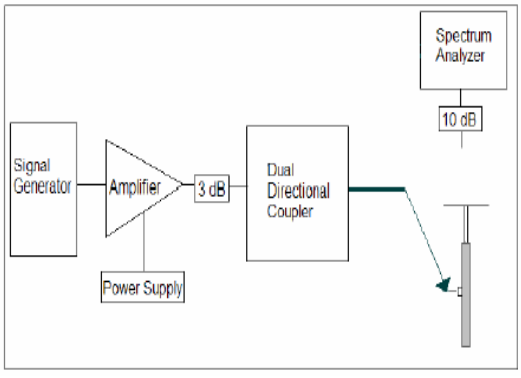


Figure 8.1 Setup to Dipole

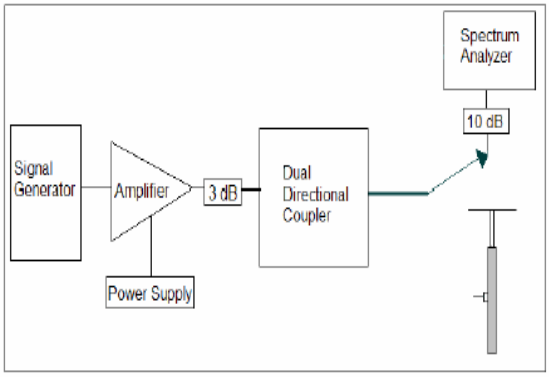


Figure 8.2 Setup to Peak Power using Spectrum Analyzer

8.1 Modulation Factors

Frequency	Protocol	E-field (V/m)	H-field (A/m)	E-Field PMF	H-Field PMF
835 MHz	AM	61.9	0.125	1.55	1.53
835 MHz	CDMA	101.7	0.186	0.95	1.03
835 MHz	CW	96.1	0.191	-	-
835 MHz	CDMA/SO3	-	-	-	-
835 MHz	CW	-	-	-	-
1880 MHz	AM	41.7	0.092	1.55	1.54
1880 MHz	CDMA	62.2	0.139	1.04	1.02
1880 MHz	CW	64.9	0.141	-	-
1880 MHz	CDMA/SO3	21.2	-	2.550	-
1880 MHz	CW	54.1	-	-	-

Table 8.1 Modulation Factors

8.2 CW and Modulated Signal Zero-span plots:

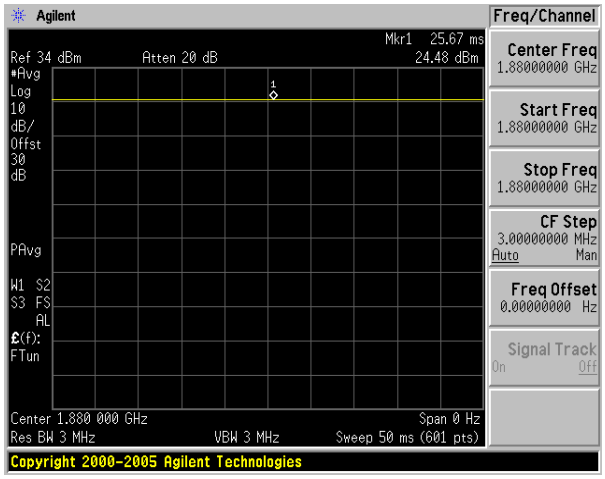


Figure 8.3 CW Signal

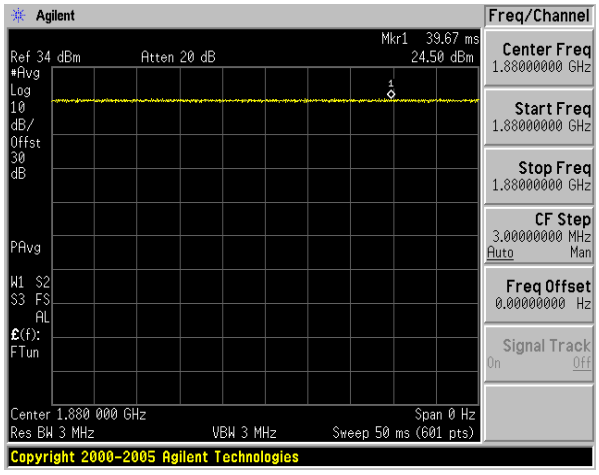


Figure 8.4 CDMA Signal

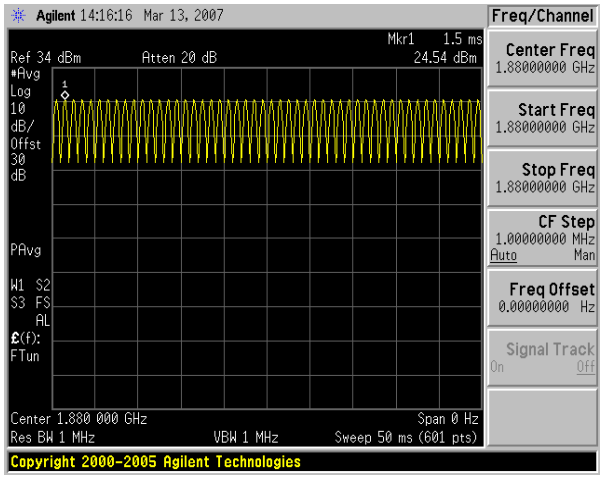


Figure 8.5 AM 80% Signal

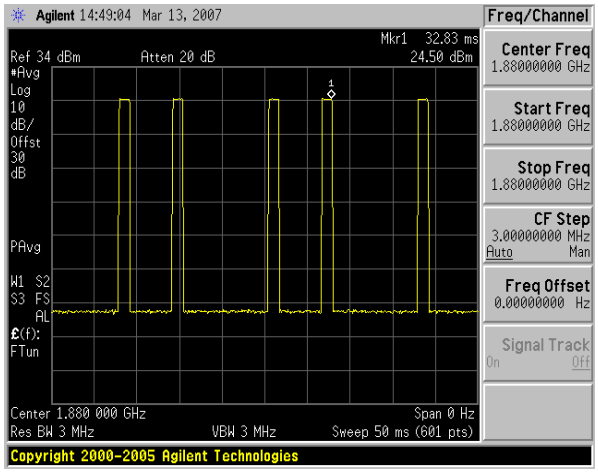


Figure 8.6 1/8 rate Signal

9. FCC 3G MEASUREMENTS – MAY/JUNE 2006

Sample pre-testing of the various modes were performed at the worst case probe location as part of subset testing justification. See below for measured conducted power for applicable device modes.

9.1 Handset Capabilities*

* See Device Capabilities attachment for applicable device modes and powers

9.2 Worst-Case Probe Location Measurements

Below are RC/SO mode investigation results of the device at the worst-case(maximum) field point location.

Mode	Channel	Back light	RC/SO	Battery	Antenna	Conducted Power at BS(dBm)	Time Avg. Field [V/m]	Peak Field [V/m]	Peak Field [dBV/m]	Category	FCC limit [dBV/m]	FCC Margin [dB]
E-field Emissions												
PCS	600	off	RC3/SO55	Standard	Intenna	24.7	63.6	66.13	36.41	M3	41.0	-4.59
PCS	600	on	RC3/SO55	Standard	Intenna	24.7	63.1	65.62	36.34	M3	41.0	-4.66
PCS	600	off	RC1/SO2	Standard	Intenna	24.6	63.0	65.54	36.33	M3	41.0	-4.67
PCS	600	off	RC3/SO2	Standard	Intenna	24.6	63.7	66.24	36.42	M3	41.0	-4.58
PCS	600	off	RC1/SO55	Standard	Intenna	24.6	63.1	65.60	36.34	M3	41.0	-4.66
PCS	600	off	RC2/SO9	Standard	Intenna	24.5	63.0	65.55	36.33	M3	41.0	-4.67
PCS	600	off	RC1/SO3	Standard	Intenna	24.4	21.5	54.88	34.79	M4	41.0	-6.21
PCS	600	off	RC3/SO3	Standard	Intenna	24.6	60.9	63.36	36.04	M3	41.0	-4.96
PCS	600	off	RC2/SO17	Standard	Intenna	24.3	21.7	55.44	34.88	M4	41.0	-6.12
PCS	600	off	RC3/SO2	Extended	Intenna	24.28	63.42	65.96	36.39	M3	41.0	-4.61

Table 9-1 Handset 3G mode variation on RF Emission

10. Test Results

10.1 Measurement Results(E-field)

E-FIELD EMISSIONS:

Mode	Channel	Back light	RC/SO	Battery	Antenna	Conducted Power at BS(dBm)	Time Avg. Field [V/m]	Peak Field [V/m]	Peak Field [dBV/m]	Category	FCC limit [dBV/m]	FCC Margin [dB]	Excl Blocks Per 4.3.1.2.2
E-field Emissions													
CDMA	1013	off	RC3/SO2	Standard	Intenna	25.6	117.7	111.8	40.97	M4	51.0	-10.03	None
CDMA	384	off	RC3/SO2	Standard	Intenna	25.6	100.9	95.9	39.64	M4	51.0	-11.36	None
CDMA	777	off	RC3/SO2	Standard	Intenna	25.7	107.8	102.4	40.21	M4	51.0	-10.79	None
PCS	25	off	RC3/SO2	Standard	Intenna	24.7	59.5	61.9	35.83	M4	41.0	-5.17	None
PCS	600	off	RC3/SO2	Standard	Intenna	24.6	65.2	67.8	36.62	M3	41.0	-4.38	None
PCS	1175	off	RC3/SO2	Standard	Intenna	24.7	61.4	63.9	36.11	M3	41.0	-4.89	None
PCS	600	on	RC3/SO2	Standard	Intenna	24.6	61.3	63.80	36.10	M3	41.0	-4.90	None
PCS	600	off	RC3/SO2	Extended	Intenna	24.7	63.4	65.9	36.38	M3	41.0	-4.62	None

NOTES:

1. The test data reported are the worst-case HAC value with the test position set in a typical configuration. Test procedures used are according to ANSI C 63.19 (2006).
2. All modes of operation were investigated, and the worst-case results are reported.
3. Battery is fully charged for all readings.
4. *Power Measured ☑ Conducted
5. Battery Option ☑ Standard ☑ Extended ☐ Slim
6. Bluetooth deactivated (According to customer's request)

Note: Worst-case measurement evaluated for worst-case 1/8 rate gating condition in RC1/SO3; Mute=Yes

10.2 Measurement Results(H-field)

H-FIELD EMISSIONS:

Mode	Channel	Back light	RC/SO	Battery	Antenna	Conducted Power at BS(dBm)	Time Avg. Field [A/m]	Peak Field [A/m]	Peak Field [dBA/m]	Category	FCC limit [dBA/m]	FCC Margin [dB]	Excl Blocks Per 4.3.1.2.2
H-field Emissions													
CDMA	1013	off	RC3/SO2	Standard	Intenna	25.6	0.188	0.194	-14.24	M4	0.6	-14.84	None
CDMA	384	off	RC3/SO2	Standard	Intenna	25.6	0.161	0.166	-15.60	M4	0.6	-16.20	None
CDMA	777	off	RC3/SO2	Standard	Intenna	25.7	0.175	0.180	-14.89	M4	0.6	-15.49	None
PCS	25	off	RC3/SO2	Standard	Intenna	24.7	0.140	0.143	-16.89	M4	-9.4	-7.49	None
PCS	600	off	RC3/SO2	Standard	Intenna	24.6	0.137	0.140	-17.08	M4	-9.4	-7.68	None
PCS	1175	off	RC3/SO2	Standard	Intenna	24.7	0.142	0.145	-16.77	M4	-9.4	-7.37	None

NOTES:

1. The test data reported are the worst-case HAC value with the test position set in a typical configuration. Test procedures used are according to ANSI C 63.19 (2006).
2. All modes of operation were investigated, and the worst-case results are reported.
3. Battery is fully charged for all readings.
4. *Power Measured ☑ Conducted
5. Battery Option ☑ Standard ☑ Extended ☐ Slim
6. Bluetooth deactivated (According to customer's request)

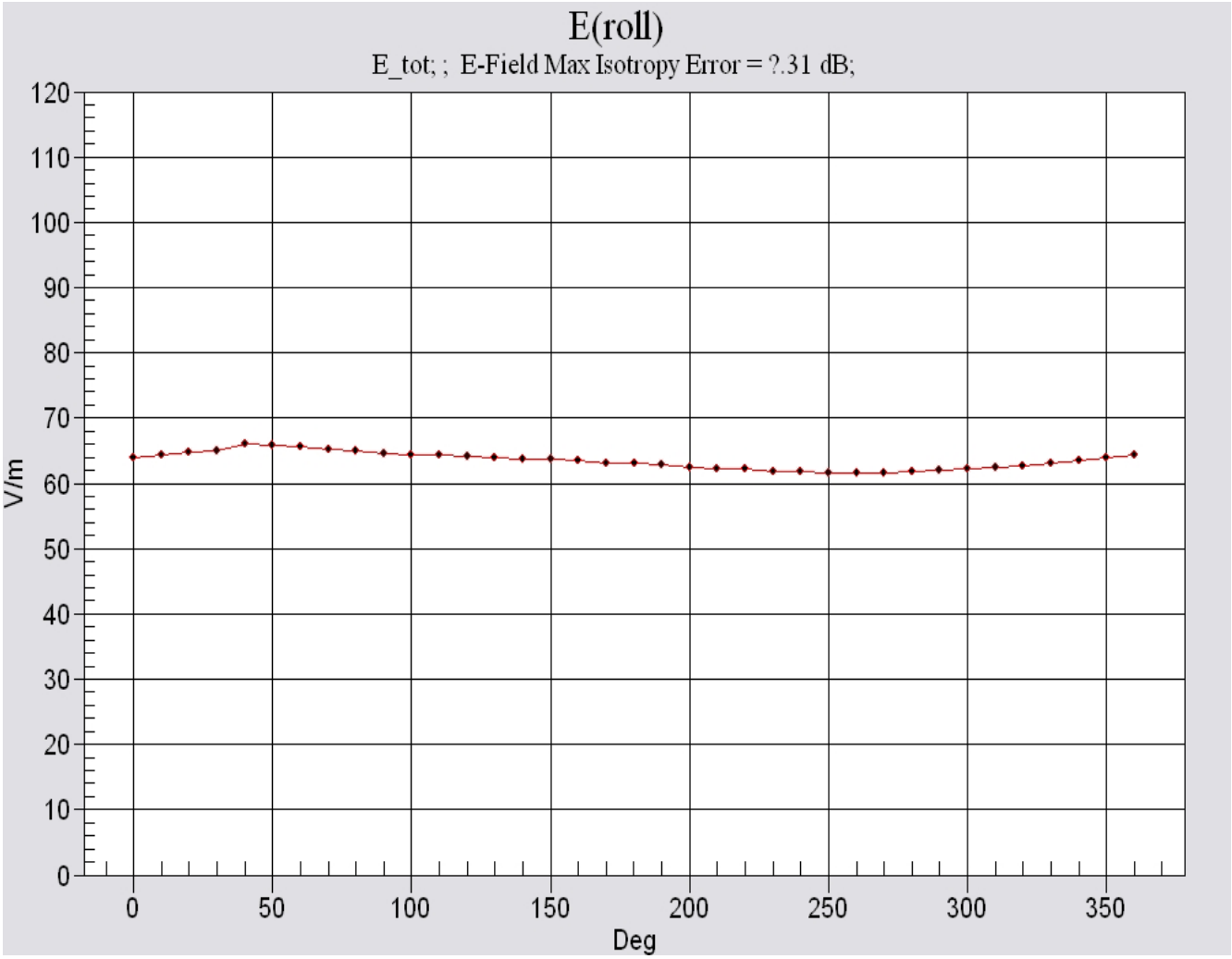
Note: Worst-case measurement evaluated for worst-case 1/8 rate gating condition in RC1/SO3; Mute=Yes

10.3 Worst-case Configuration Evaluation

PCS E-field Emission

Mode	Channel	Back light	RC/SO	Battery	Antenna	Conducted Power at BS(dBm)	Time Avg. Field [V/m]	Peak Field [V/m]	Peak Field [dBV/m]	Category	FCC limit [dBV/m]	FCC Margin [dB]
E-field Emissions												
PCS	600	off	RC3/SO2	Standard	Intenna	24.6	66.0	68.62	36.73	M3	41.0	-4.27

Peak Reading 360 degree Probe Rotation at Azimuth axis



Worst-Case Probe Rotation about Azimuth axis

Note: Location of probe rotation is shown in APPENDIX E

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APPENDIX A

Probe Modulation Factor

Measurement procedure

1. Modulated signal measurement: Connect the modulated signal with the correct frequency via the cable to the dipole.
2. Run the multimeter in the procedure with the corresponding modulation setting in continuous mode.
3. Adjust the signal amplitude to acheive the same field level display in the multimeter as during the WD field scan. Read the multimeter display and note it together with the probe ID,modulation type and frequency.
4. Read the peak envelope on the monitor in order to adjust the CW signal later to the same level.
5. Switch the signal source off and verify that the ambient and instrumentation noise level is at least 10dB lower.
6. CW measurement: Change the signal to CW at the same center frequency, without touching or moving the dipole or probe in the setup.
7. Adjust the CW signal amplitude to the same peak level on the monitor.
8. Run the multimeter in the CW procedure in continuous mode.
9. Read the multimeter display and note it together with the probe ID, modulation type and frequency.
10. Calculate the Probe Modulation Factor as the ratio between the CW multimeter field reading and the r for the applicable modulation.
11. Perform the above setup and procedure for E-field and H-field probes.

Spectrum Analyzer setting.

1. Frequency Setting

ex) 835 MHz, 1880MHz, 2450 MHz

2. RBW/VBW/SPAN/Detector Setting.

	CW	GSM	CDMA	WCDMA	AM80%
RBW	Same setting with modulated signal respectively.	1MHz	3MHz	5MHz	1MHz
VBW		1MHz	3MHz	5MHz	1MHz
SPAN		0MHz	0MHz	0MHz	0MHz
DETECTOR		Peak	Average	Average	Peak

3. Trigger: Video or IF trigger, adjusted to give a stable display of the transmission
4. Sweep rate: Sufficiently rapid to permit the transmit pulse to be resolved accurately.

APPENDIX B

ANSI C63.19 (2006)- Telephone near-field categories.

Category	Telephone RF Parameters <960MHz				
Near Field	AWF	E-Field Emissions		H-Field Emissions	
Category M1/T1	0	631.0 to 1122.0	V/m	1.91 to 3.39	A/m
	-5	473.2 to 841.4	V/m	1.43 to 2.54	A/m
Category M2/T2	0	354.8 to 631.0	V/m	1.07 to 1.91	A/m
	-5	266.1 to 473.2	V/m	0.80 to 1.43	A/m
Category M3/T3	0	199.5 to 354.8	V/m	0.60 to 1.07	A/m
	-5	149.6 to 266.1	V/m	0.45 to 0.80	A/m
Category M4/T4	0	< 199.5	V/m	< 0.60	A/m
	-5	< 149.6	V/m	< 0.45	A/m
Category	Telephone RF Parameters >960MHz				
Near Field	AWF	E-Field Emissions		H-Field Emissions	
Category M1/T1	0	199.5 to 354.8	V/m	0.60 to 1.07	A/m
	-5	149.6 to 266.1	V/m	0.45 to 0.80	A/m
Category M2/T2	0	112.2 to 199.5	V/m	0.34 to 0.60	A/m
	-5	84.1 to 149.6	V/m	0.25 to 0.45	A/m
Category M3/T3	0	63.1 to 112.2	V/m	0.19 to 0.34	A/m
	-5	47.3 to 84.1	V/m	0.14 to 0.25	A/m
Category M4/T4	0	<63.1	V/m	<0.19	A/m
	-5	<47.3	V/m	<0.14	A/m

Table B.1 Telephone near-field categories in linear units.

Category	Telephone RF Parameters <960MHz				
Near Field	AWF	E-Field Emissions		H-Field Emissions	
Category M1/T1	0	56 to 61	dB (V/m)	+5.6 to +10.6	dB (A/m)
	-5	53.5 to 58.5	dB (V/m)	+3.1 to +8.1	dB (A/m)
Category M2/T2	0	51 to 56	dB (V/m)	+0.6 to +5.6	dB (A/m)
	-5	48.5 to 53.5	dB (V/m)	-1.9 to +3.1	dB (A/m)
Category M3/T3	0	46 to 51	dB (V/m)	-4.4 to +0.6	dB (A/m)
	-5	43.5 to 48.5	dB (V/m)	-6.9 to -1.9	dB (A/m)
Category M4/T4	0	<46	dB (V/m)	< -4.4	dB (A/m)
	-5	< 43.5	dB (V/m)	< -6.9	dB (A/m)
Category	Telephone RF Parameters >960MHz				
Near Field	AWF	E-Field Emissions		H-Field Emissions	
Category M1/T1	0	46 to 51	dB (V/m)	-4.4 to 0.6	dB (A/m)
	-5	43.5 to 48.5	dB (V/m)	-6.9 to -1.9	dB (A/m)
Category M2/T2	0	41 to 46	dB (V/m)	-9.4 to -4.4	dB (A/m)
	-5	38.5 to 43.5	dB (V/m)	-11.9 to -6.9	dB (A/m)
Category M3/T3	0	36 to 41	dB (V/m)	-14.4 to -9.4	dB (A/m)
	-5	33.5 to 38.5	dB (V/m)	-16.9 to -11.9	dB (A/m)
Category M4/T4	0	<36	dB (V/m)	<-14.4	dB (A/m)
	-5	<33.5	dB (V/m)	<-16.9	dB (A/m)

Table B.2 Telephone near-field categories in logarithmic units.

APPENDIX C

The Validation Measurements

DUT: Dipole 835 MHz; Serial: D835V2 - SN:1021
Program Name: HAC E Dipole, Tested Date : 2007.10.09
Procedure Name: E Scan 10mm above CD 835 MHz

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: E Dipole Section

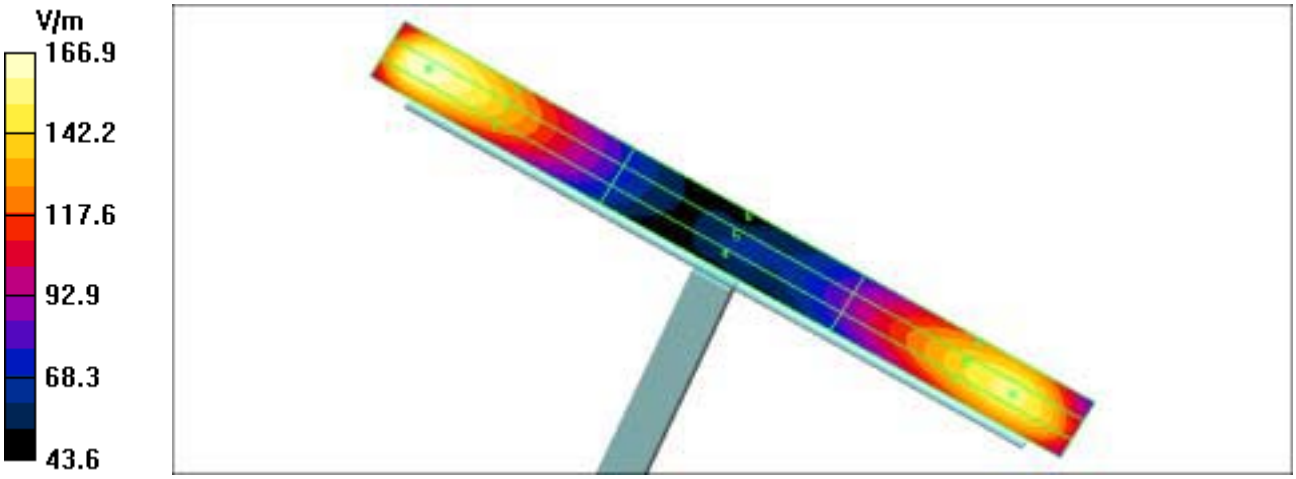
DASY4 Configuration:
- Probe: ER3DV6 - SN2370; ConvF(1, 1, 1); Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

E Scan 10mm above CD 835 MHz /Hearing Aid Compatibility Test (41x361x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 166.9 V/m
Probe Modulation Factor = 1.00
Device Reference Point: 0.000, 0.000, 354.7 mm
Reference Value = 119.5 V/m; Power Drift = 0.015 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **157.7 M4**	Grid 2 **166.9 M4**	Grid 3 **164.1 M4**
Grid 4 **85.1 M4**	Grid 5 **88.4 M4**	Grid 6 **86.9 M4**
Grid 7 **149.2 M4**	Grid 8 **153.7 M4**	Grid 9 **150.3 M4**



DUT: Dipole 835 MHz; Serial: D835V2 - SN:1021
Program Name: HAC H Dipole, Tested Date : 2007.10.09
Procedure Name: H Scan 10mm above CD 835 MHz

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: H Dipole Section

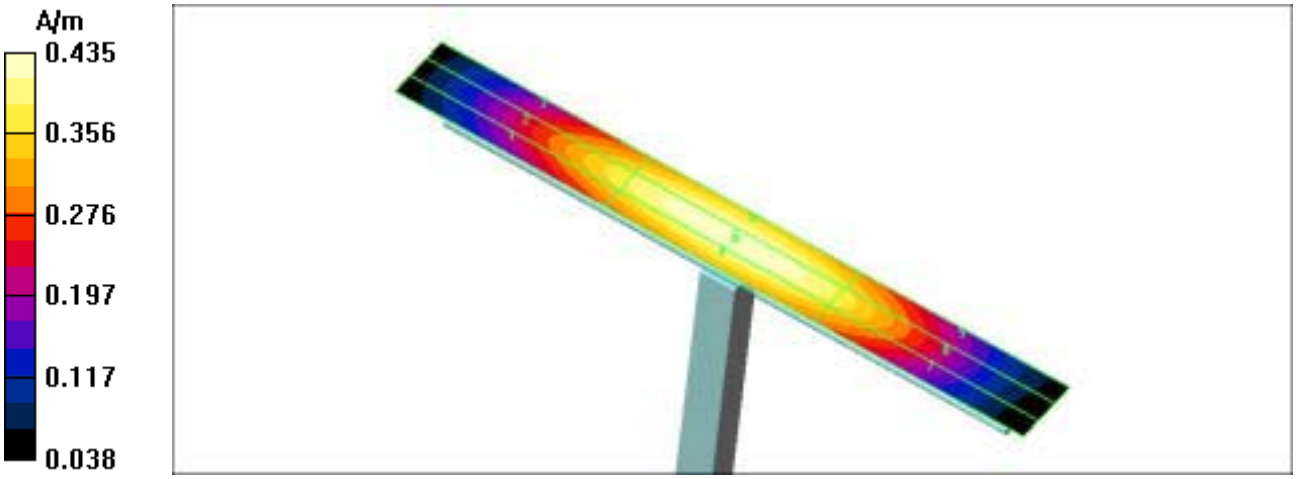
DASY4 Configuration:
- Probe: H3DV6 - SN6197; ; Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

H Scan 10mm above CD 835 MHz/Hearing Aid Compatibility Test (41x361x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.435 A/m
Probe Modulation Factor = 1.00
Device Reference Point: 0.000, 0.000, 354.7 mm
Reference Value = 0.463 A/m; Power Drift = -0.023 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.355 M4**	Grid 2 **0.382 M4**	Grid 3 **0.367 M4**
Grid 4 **0.408 M4**	Grid 5 **0.435 M4**	Grid 6 **0.417 M4**
Grid 7 **0.356 M4**	Grid 8 **0.377 M4**	Grid 9 **0.363 M4**



DUT: HAC Dipole 1880 MHz; Serial: SN:1016
Program Name: HAC E Dipole, Tested Date : 2007.10.09
Procedure Name: E Scan 10mm above CD 1880 MHz

Communication System: CW; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: E Dipole Section

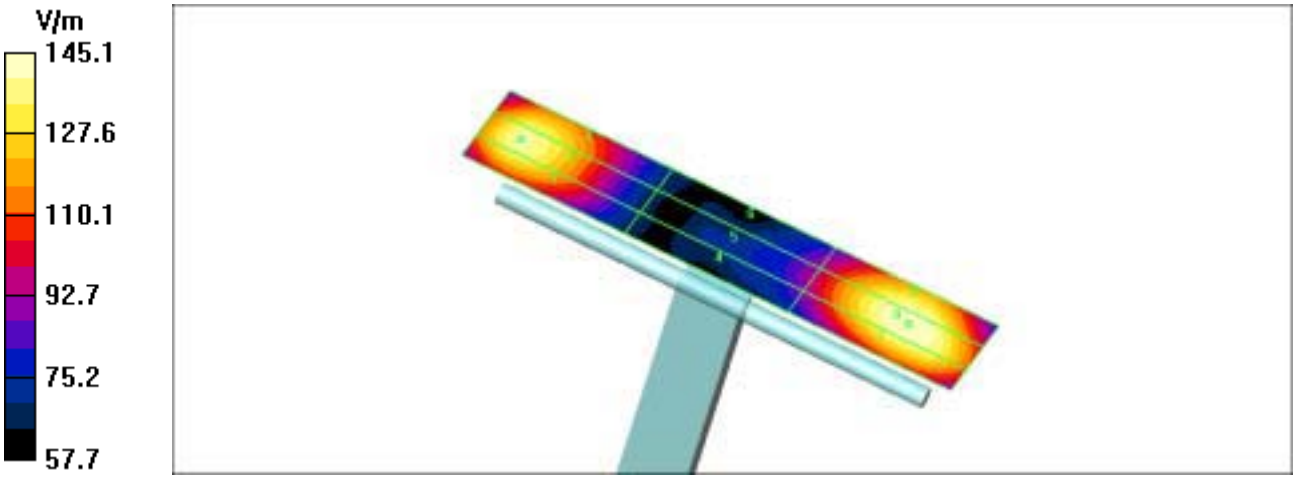
DASY4 Configuration:
- Probe: ER3DV6 - SN2370; ConvF(1, 1, 1); Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

E Scan 10mm above CD 1880 MHz/Hearing Aid Compatibility Test (41x181x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 145.1 V/m
Probe Modulation Factor = 1.00
Device Reference Point: 0.000, 0.000, 354.7 mm
Reference Value = 149.6 V/m; Power Drift = -0.006 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **136.4 M2**	Grid 2 **140.9 M2**	Grid 3 **136.3 M2**
Grid 4 **90.2 M3**	Grid 5 **95.6 M3**	Grid 6 **94.1 M3**
Grid 7 **139.4 M2**	Grid 8 **145.1 M2**	Grid 9 **141.7 M2**



DUT: HAC Dipole 1880 MHz; Serial: SN:1016
Program Name: HAC H Dipole, Tested Date : 2007.10.09
Procedure Name: H Scan 10mm above CD 1880 MHz

Communication System: CW; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: H Dipole Section

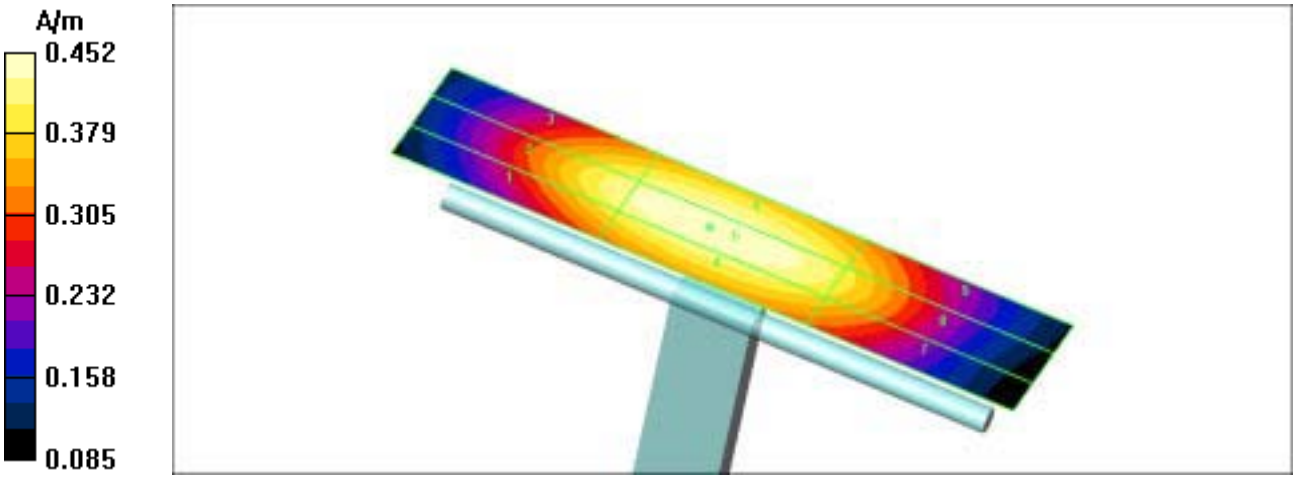
DASY4 Configuration:
- Probe: H3DV6 - SN6197; ; Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

H Scan 10mm above CD 1880 MHz/Hearing Aid Compatibility Test (41x181x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.452 A/m
Probe Modulation Factor = 1.00
Device Reference Point: 0.000, 0.000, 354.7 mm
Reference Value = 0.449 A/m; Power Drift = 0.019 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.399 M2**	Grid 2 **0.428 M2**	Grid 3 **0.413 M2**
Grid 4 **0.425 M2**	Grid 5 **0.452 M2**	Grid 6 **0.438 M2**
Grid 7 **0.374 M2**	Grid 8 **0.397 M2**	Grid 9 **0.385 M2**



APPENDIX D

Plots of The HAC Measurements

DUT: SPH-i325; Serial: AE-056-A
Program Name: SPH-i325(CDMA) E-Field, Date: Oct/15/2007
Procedure Name: Ch.1013, Ant, Intenna, Bat. Standard

Communication System: CDMA(HAC); Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: E Device Section

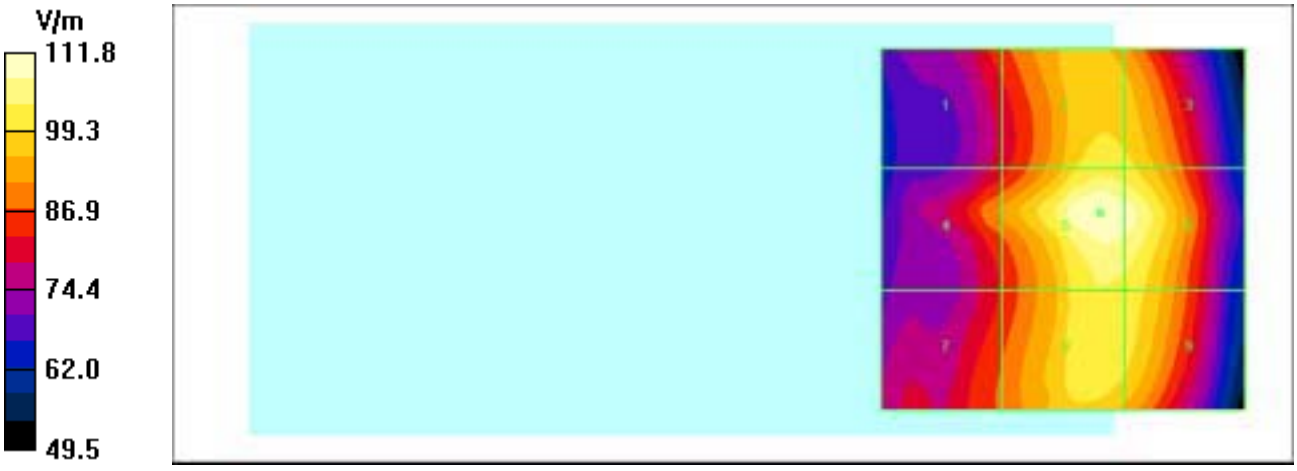
DASY4 Configuration:
- Probe: ER3DV6 - SN2370; ConvF(1, 1, 1); Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Ch.1013, Ant, Intenna, Bat. Standard/Hearing Aid Compatibility Test (251x251x1):

Measurement grid: dx=2mm, dy=2mm
Maximum value of peak Total field = 111.8 V/m
Probe Modulation Factor = 0.950
Device Reference Point: 0.000, 0.000, 353.7 mm
Reference Value = 110.6 V/m; Power Drift = 0.088 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **85.6 M4**	Grid 2 **102.1 M4**	Grid 3 **101.2 M4**
Grid 4 **91.6 M4**	Grid 5 **111.8 M4**	Grid 6 **109.9 M4**
Grid 7 **88.0 M4**	Grid 8 **103.5 M4**	Grid 9 **102.6 M4**



DUT: SPH-i325; Serial: AE-056-A
Program Name: SPH-i325(CDMA) E-Field, Date: Oct/15/2007
Procedure Name: Ch.0384, Ant, Intenna, Bat. Standard

Communication System: CDMA(HAC); Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: E Device Section

DASY4 Configuration:
- Probe: ER3DV6 - SN2370; ConvF(1, 1, 1); Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Ch.0384, Ant, Intenna, Bat. Standard/Hearing Aid Compatibility Test (251x251x1):

Measurement grid: dx=2mm, dy=2mm
Maximum value of peak Total field = 95.9 V/m
Probe Modulation Factor = 0.950
Device Reference Point: 0.000, 0.000, 353.7 mm
Reference Value = 100.4 V/m; Power Drift = -0.156 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **76.2 M4**	Grid 2 **88.2 M4**	Grid 3 **87.6 M4**
Grid 4 **80.1 M4**	Grid 5 **95.9 M4**	Grid 6 **94.8 M4**
Grid 7 **77.5 M4**	Grid 8 **88.8 M4**	Grid 9 **88.2 M4**

DUT: SPH-i325; Serial: AE-056-A
Program Name: SPH-i325(CDMA) E-Field, Date: Oct/15/2007
Procedure Name: Ch.777, Ant, Intenna, Bat. Standard

Communication System: CDMA(HAC); Frequency: 848.31 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: E Device Section

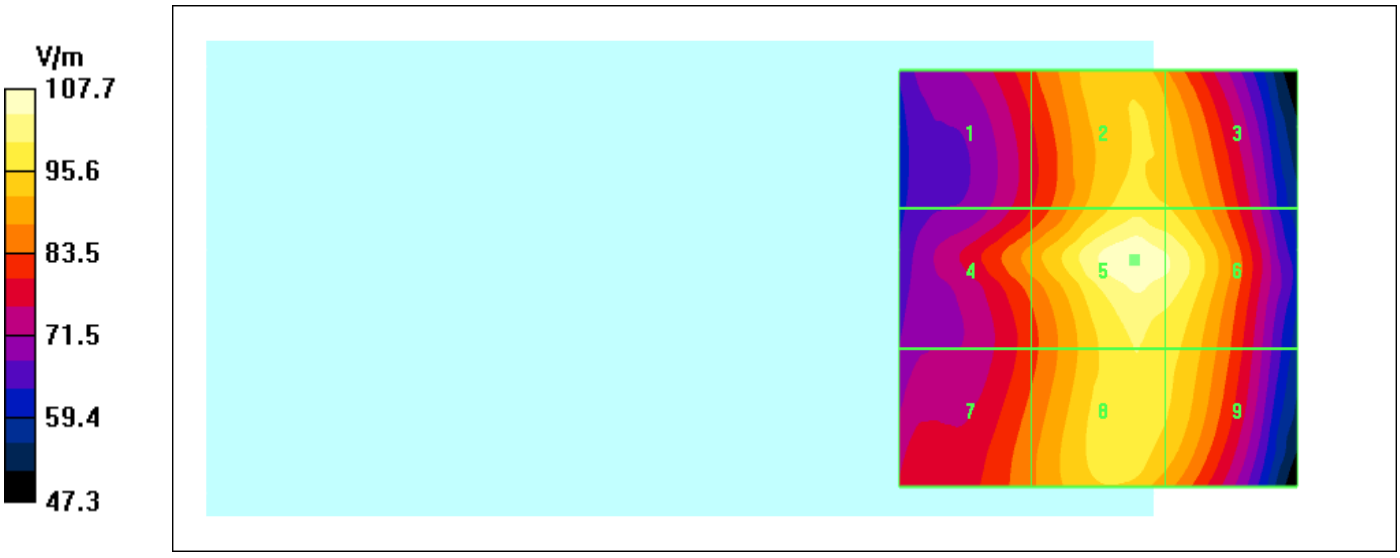
DASY4 Configuration:
- Probe: ER3DV6 - SN2370; ConvF(1, 1, 1); Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Ch.777, Ant, Intenna, Bat. Standard/Hearing Aid Compatibility Test (251x251x1):

Measurement grid: dx=2mm, dy=2mm
Maximum value of peak Total field = 102.4 V/m
Probe Modulation Factor = 0.950
Device Reference Point: 0.000, 0.000, 353.7 mm
Reference Value = 104.2 V/m; Power Drift = -0.015 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **78.6 M4**	Grid 2 **93.8 M4**	Grid 3 **91.3 M4**
Grid 4 **85.2 M4**	Grid 5 **102.4 M4**	Grid 6 **99.1 M4**
Grid 7 **82.6 M4**	Grid 8 **94.7 M4**	Grid 9 **92.5 M4**



DUT: SPH-i325; Serial: AE-056-A
Program Name: SPH-i325(PCS) E-Field, Date: Oct/15/2007
Procedure Name: Ch.25, Ant, Intenna, Bat. Standard

Communication System: PCS; Frequency: 1851.25 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: E Device Section

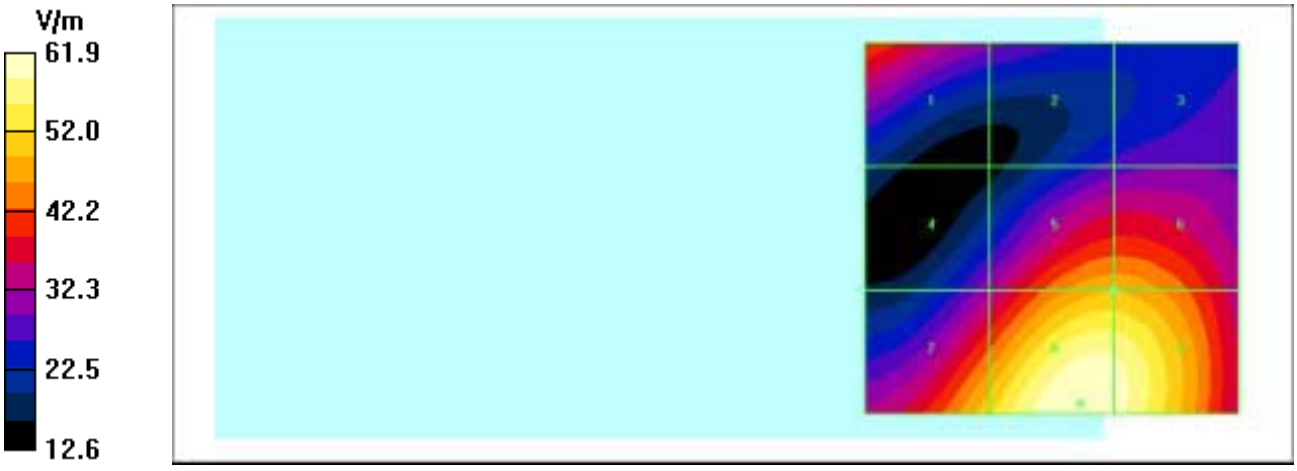
DASY4 Configuration:
- Probe: ER3DV6 - SN2370; ConvF(1, 1, 1); Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Ch.25, Ant, Intenna, Bat. Standard/Hearing Aid Compatibility Test (251x251x1):

Measurement grid: dx=2mm, dy=2mm
Maximum value of peak Total field = 61.9 V/m
Probe Modulation Factor = 1.04
Device Reference Point: 0.000, 0.000, 353.7 mm
Reference Value = 33.4 V/m; Power Drift = -0.023 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **42.2 M4**	Grid 2 **30.5 M4**	Grid 3 **29.4 M4**
Grid 4 **31.9 M4**	Grid 5 **48.6 M4**	Grid 6 **48.6 M4**
Grid 7 **51.3 M4**	Grid 8 **61.9 M4**	Grid 9 **60.5 M4**



DUT: SPH-i325; Serial: AE-056-A
Program Name: SPH-i325(PCS) E-Field, Date: Oct/15/2007
Procedure Name: Ch.600, Ant, Intenna, Bat. Standard

Communication System: PCS; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: E Device Section

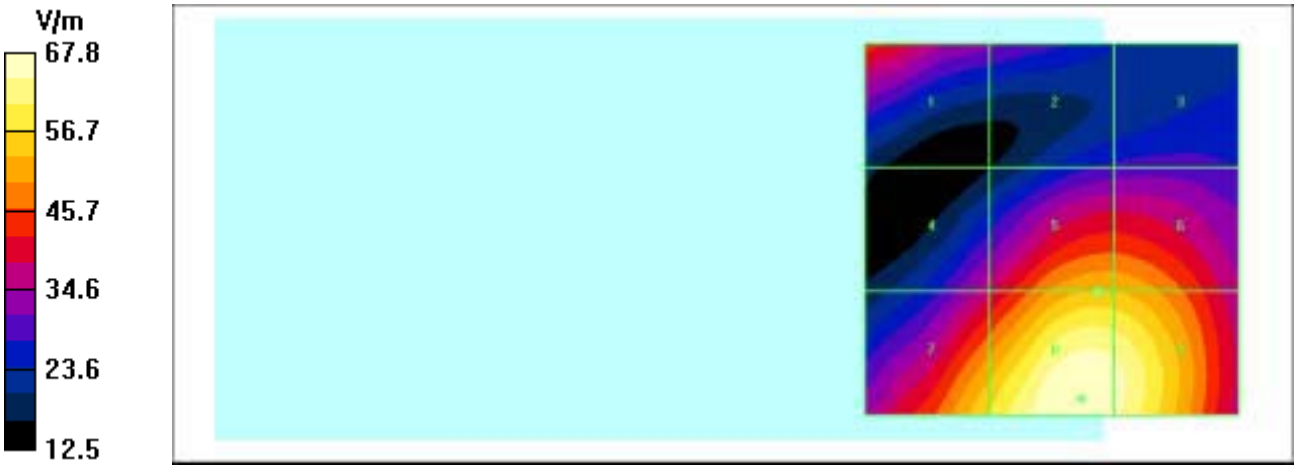
DASY4 Configuration:
- Probe: ER3DV6 - SN2370; ConvF(1, 1, 1); Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Ch.600, Ant, Intenna, Bat. Standard/Hearing Aid Compatibility Test (251x251x1):

Measurement grid: dx=2mm, dy=2mm
Maximum value of peak Total field = 67.8 V/m
Probe Modulation Factor = 1.04
Device Reference Point: 0.000, 0.000, 353.7 mm
Reference Value = 38.5 V/m; Power Drift = -0.029 dB
Hearing Aid Near-Field Category: M3 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **44.4 M4**	Grid 2 **32.4 M4**	Grid 3 **29.3 M4**
Grid 4 **37.7 M4**	Grid 5 **53.6 M4**	Grid 6 **53.4 M4**
Grid 7 **56.9 M4**	Grid 8 **67.8 M3**	Grid 9 **65.7 M3**



DUT: SPH-i325; Serial: AE-056-A
Program Name: SPH-i325(PCS) E-Field, Date: Oct/15/2007
Procedure Name: Ch.1175, Ant, Intenna, Bat. Standard

Communication System: PCS; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: E Device Section

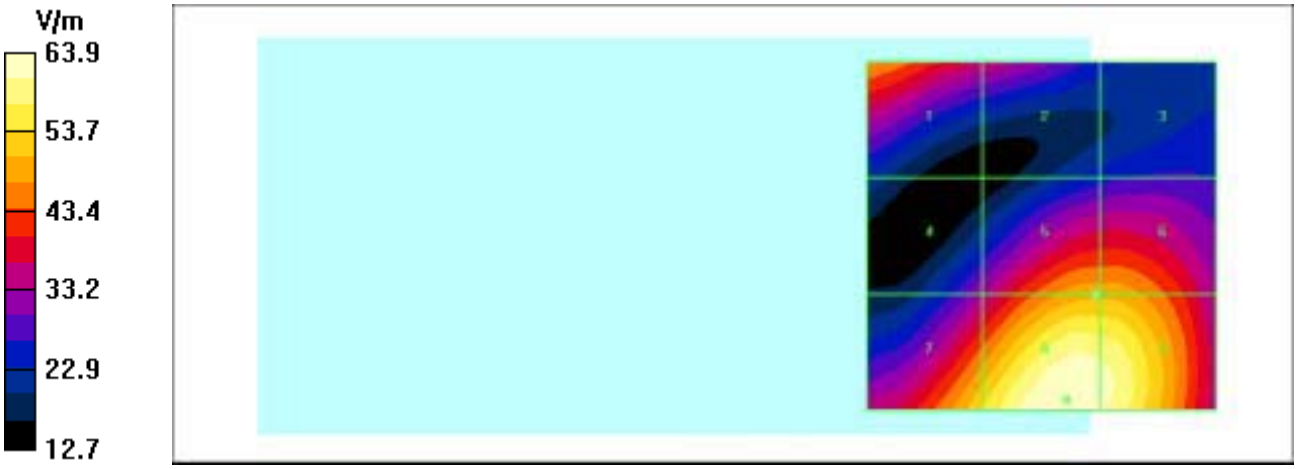
DASY4 Configuration:
- Probe: ER3DV6 - SN2370; ConvF(1, 1, 1); Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Ch.1175, Ant, Intenna, Bat. Standard/Hearing Aid Compatibility Test (251x251x1):

Measurement grid: dx=2mm, dy=2mm
Maximum value of peak Total field = 63.9 V/m
Probe Modulation Factor = 1.04
Device Reference Point: 0.000, 0.000, 353.7 mm
Reference Value = 33.7 V/m; Power Drift = -0.081 dB
Hearing Aid Near-Field Category: M3 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **48.0 M4**	Grid 2 **36.1 M4**	Grid 3 **27.2 M4**
Grid 4 **33.2 M4**	Grid 5 **49.4 M4**	Grid 6 **49.4 M4**
Grid 7 **54.0 M4**	Grid 8 **63.9 M3**	Grid 9 **61.8 M4**



DUT: SPH-i325; Serial: AE-056-A
Program Name: SPH-i325(PCS) E-Field, Date: Oct/15/2007
Procedure Name: Ch.600, Ant, Intenna, Bat. Standard Backlight ON

Communication System: PCS; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: E Device Section

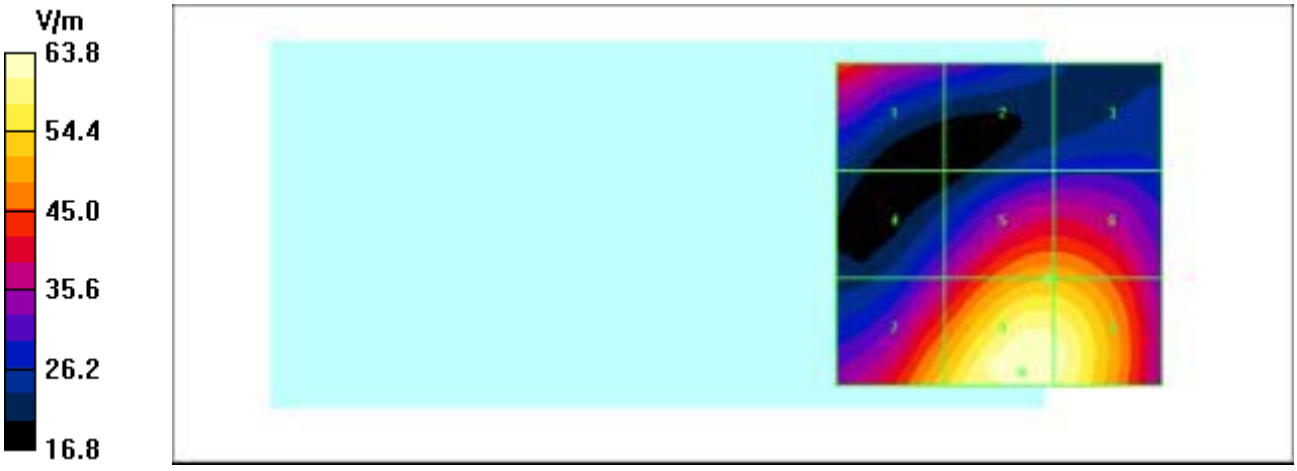
DASY4 Configuration:
- Probe: ER3DV6 - SN2370; ConvF(1, 1, 1); Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Ch.600, Ant, Intenna, Bat. Standard Backlight ON/Hearing Aid Compatibility Test (251x251x1): Measurement grid: dx=2mm, dy=2mm

Maximum value of peak Total field = 63.8 V/m
Probe Modulation Factor = 1.04
Device Reference Point: 0.000, 0.000, 353.7 mm
Reference Value = 36.7 V/m; Power Drift = -0.074 dB
Hearing Aid Near-Field Category: M3 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **44.4 M4**	Grid 2 **32.9 M4**	Grid 3 **28.8 M4**
Grid 4 **35.4 M4**	Grid 5 **51.0 M4**	Grid 6 **50.9 M4**
Grid 7 **53.7 M4**	Grid 8 **63.8 M3**	Grid 9 **62.2 M4**



DUT: SPH-i325; Serial: AE-056-A
Program Name: SPH-i325(PCS) E-Field, Date: Oct/15/2007
Procedure Name: Ch.600, Ant, Intenna, Bat. Extended

Communication System: PCS; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: E Device Section

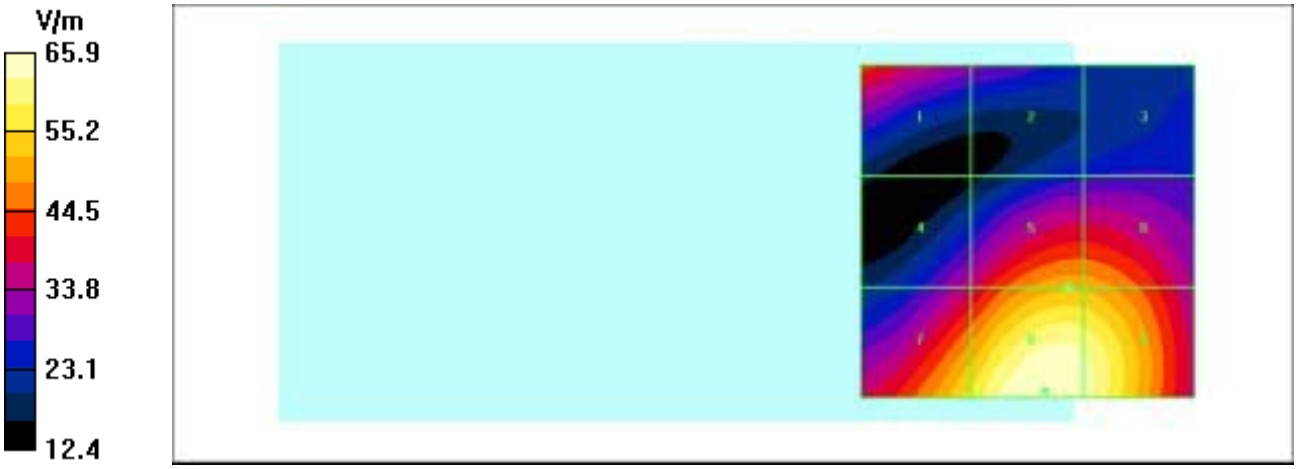
DASY4 Configuration:
- Probe: ER3DV6 - SN2370; ConvF(1, 1, 1); Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Ch.600, Ant, Intenna, Bat. Extended/Hearing Aid Compatibility Test (251x251x1):

Measurement grid: dx=2mm, dy=2mm
Maximum value of peak Total field = 65.9 V/m
Probe Modulation Factor = 1.04
Device Reference Point: 0.000, 0.000, 353.7 mm
Reference Value = 36.8 V/m; Power Drift = -0.135 dB
Hearing Aid Near-Field Category: M3 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **43.3 M4**	Grid 2 **32.1 M4**	Grid 3 **27.4 M4**
Grid 4 **36.8 M4**	Grid 5 **51.0 M4**	Grid 6 **50.9 M4**
Grid 7 **56.5 M4**	Grid 8 **65.9 M3**	Grid 9 **63.6 M3**



DUT: SPH-i325; Serial: AE-056-A
Program Name: SPH-i325(CDMA) H-field, Date: Oct/15/2007
Procedure Name: Ch.1013, Ant. Intenna, Bat. Standard

Communication System: CDMA(HAC); Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: H Device Section

DASY4 Configuration:
- Probe: H3DV6 - SN6197; ; Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Ch.1013, Ant. Intenna, Bat. Standard/Hearing Aid Compatibility Test (251x251x1):

Measurement grid: dx=2mm, dy=2mm
Maximum value of peak Total field = 0.194 A/m
Probe Modulation Factor = 1.03
Device Reference Point: 0.000, 0.000, 353.7 mm
Reference Value = 0.104 A/m; Power Drift = -0.090 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.194 M4**	Grid 2 **0.142 M4**	Grid 3 **0.093 M4**
Grid 4 **0.171 M4**	Grid 5 **0.127 M4**	Grid 6 **0.086 M4**
Grid 7 **0.187 M4**	Grid 8 **0.135 M4**	Grid 9 **0.081 M4**

DUT: SPH-i325; Serial: AE-056-A
Program Name: SPH-i325(CDMA) H-field, Date: Oct/15/2007
Procedure Name: Ch.384, Ant. Intenna, Bat. Standard

Communication System: CDMA(HAC); Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: H Device Section

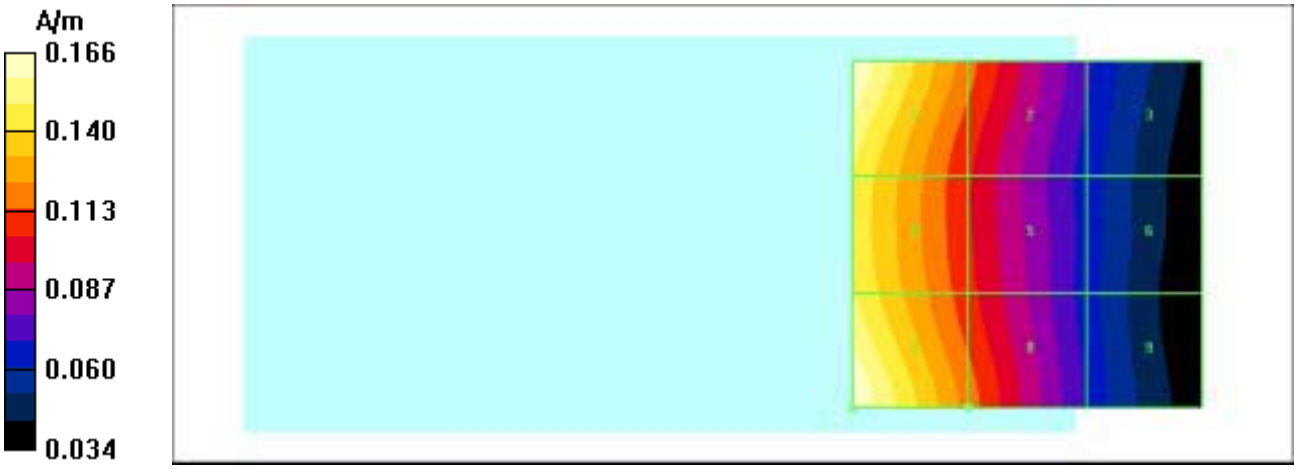
DASY4 Configuration:
- Probe: H3DV6 - SN6197; ; Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Ch.384, Ant. Intenna, Bat. Standard/Hearing Aid Compatibility Test (251x251x1):

Measurement grid: dx=2mm, dy=2mm
Maximum value of peak Total field = 0.166 A/m
Probe Modulation Factor = 1.03
Device Reference Point: 0.000, 0.000, 353.7 mm
Reference Value = 0.086 A/m; Power Drift = -0.066 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.166 M4**	Grid 2 **0.117 M4**	Grid 3 **0.072 M4**
Grid 4 **0.149 M4**	Grid 5 **0.108 M4**	Grid 6 **0.066 M4**
Grid 7 **0.166 M4**	Grid 8 **0.118 M4**	Grid 9 **0.069 M4**



DUT: SPH-i325; Serial: AE-056-A
Program Name: SPH-i325(CDMA) H-field, Date: Oct/15/2007
Procedure Name: Ch.777, Ant. Intenna, Bat. Standard

Communication System: CDMA(HAC); Frequency: 848.31 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: H Device Section

DASY4 Configuration:
- Probe: H3DV6 - SN6197; ; Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Ch.777, Ant. Intenna, Bat. Standard/Hearing Aid Compatibility Test (251x251x1):

Measurement grid: dx=2mm, dy=2mm
Maximum value of peak Total field = 0.180 A/m
Probe Modulation Factor = 1.03
Device Reference Point: 0.000, 0.000, 353.7 mm
Reference Value = 0.095 A/m; Power Drift = -0.031 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.180 M4**	Grid 2 **0.130 M4**	Grid 3 **0.081 M4**
Grid 4 **0.162 M4**	Grid 5 **0.120 M4**	Grid 6 **0.076 M4**
Grid 7 **0.179 M4**	Grid 8 **0.130 M4**	Grid 9 **0.077 M4**

DUT: SPH-i325; Serial: AE-056-A
Program Name: SPH-i325(PCS) H-Field, Date: Oct/15/2007
Procedure Name: Ch.25, Ant. Intenna, Bat. Standard

Communication System: PCS; Frequency: 1851.25 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: H Device Section

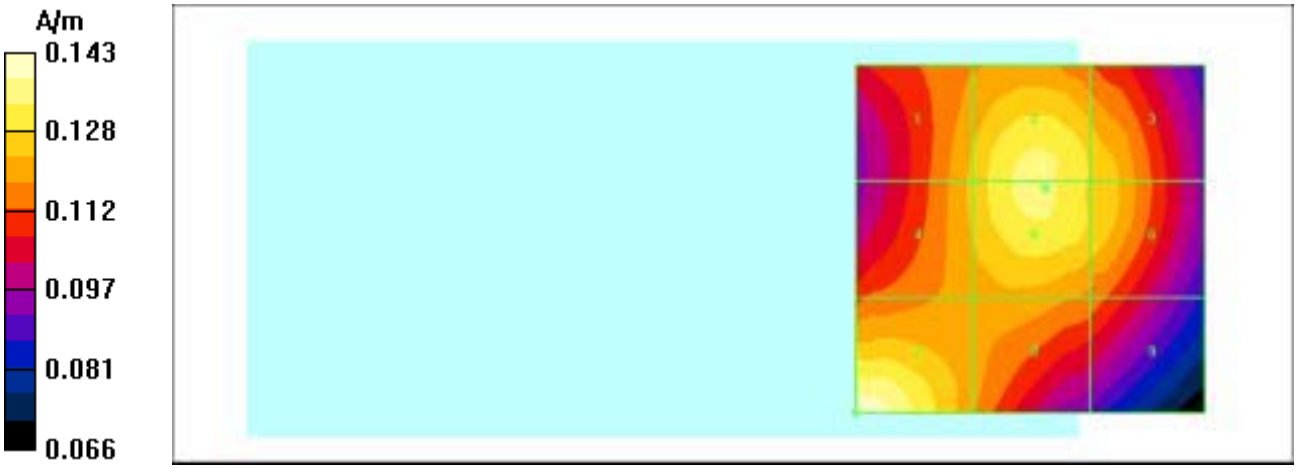
DASY4 Configuration:
- Probe: H3DV6 - SN6197; ; Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Ch.25, Ant. Intenna, Bat. Standard/Hearing Aid Compatibility Test (251x251x1):

Measurement grid: dx=2mm, dy=2mm
Maximum value of peak Total field = 0.143 A/m
Probe Modulation Factor = 1.02
Device Reference Point: 0.000, 0.000, 353.7 mm
Reference Value = 0.135 A/m; Power Drift = -0.117 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.124 M4**	Grid 2 **0.135 M4**	Grid 3 **0.128 M4**
Grid 4 **0.124 M4**	Grid 5 **0.135 M4**	Grid 6 **0.127 M4**
Grid 7 **0.143 M4**	Grid 8 **0.121 M4**	Grid 9 **0.116 M4**



DUT: SPH-i325; Serial: AE-056-A
Program Name: SPH-i325(PCS) H-Field, Date: Oct/15/2007
Procedure Name: Ch.0600, Ant. Intenna, Bat. Standard

Communication System: PCS; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: H Device Section

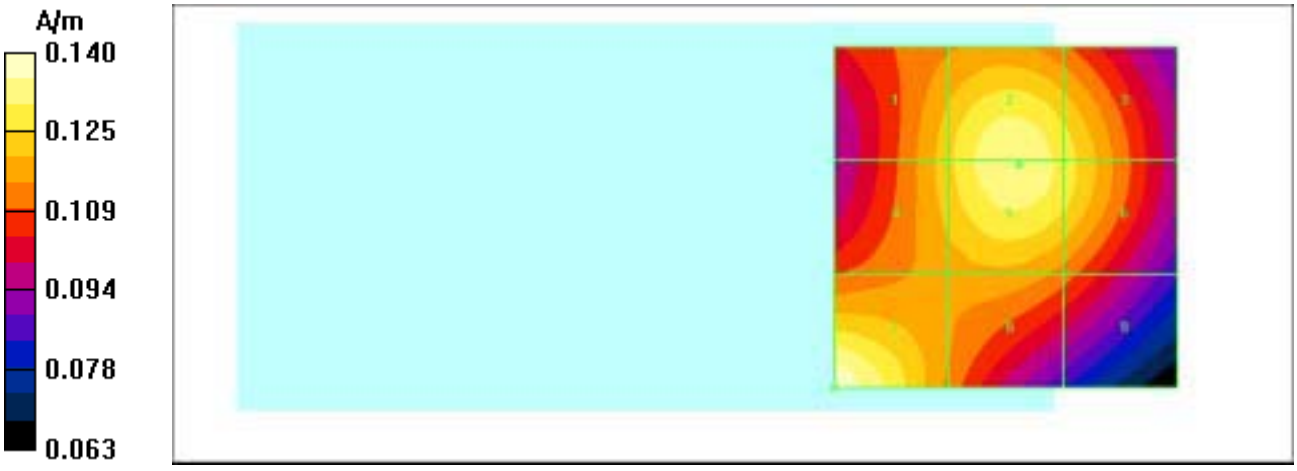
DASY4 Configuration:
- Probe: H3DV6 - SN6197; ; Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Ch.0600, Ant. Intenna, Bat. Standard/Hearing Aid Compatibility Test (251x251x1):

Measurement grid: dx=2mm, dy=2mm
Maximum value of peak Total field = 0.140 A/m
Probe Modulation Factor = 1.02
Device Reference Point: 0.000, 0.000, 353.7 mm
Reference Value = 0.134 A/m; Power Drift = -0.158 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.123 M4**	Grid 2 **0.134 M4**	Grid 3 **0.128 M4**
Grid 4 **0.123 M4**	Grid 5 **0.134 M4**	Grid 6 **0.128 M4**
Grid 7 **0.140 M4**	Grid 8 **0.118 M4**	Grid 9 **0.112 M4**



DUT: SPH-i325; Serial: AE-056-A
Program Name: SPH-i325(PCS) H-Field, Date: Oct/15/2007
Procedure Name: Ch.1175, Ant. Intenna, Bat. Standard

Communication System: PCS; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: H Device Section

DASY4 Configuration:
- Probe: H3DV6 - SN6197; ; Calibrated: 2007-04-20
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn486; Calibrated: 2007-04-30
- Phantom: HAC Test Arch with Coil; Type: SD HAC P01 BA; Serial: 1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Ch.1175, Ant. Intenna, Bat. Standard/Hearing Aid Compatibility Test (251x251x1):

Measurement grid: dx=2mm, dy=2mm
Maximum value of peak Total field = 0.145 A/m
Probe Modulation Factor = 1.02
Device Reference Point: 0.000, 0.000, 353.7 mm
Reference Value = 0.131 A/m; Power Drift = 0.012 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.121 M4**	Grid 2 **0.135 M4**	Grid 3 **0.130 M4**
Grid 4 **0.121 M4**	Grid 5 **0.135 M4**	Grid 6 **0.130 M4**
Grid 7 **0.145 M4**	Grid 8 **0.119 M4**	Grid 9 **0.113 M4**