Class II Permission Change Application for HAC Compliance
FCC ID: OVFKWC-KX5-5X0
731 Confirmation number: EA313870
Correspondence Reference Number: 29769

Response A

Prepared by: Jagadish Nadakuduti
Reviewd by: Lin Lu

10-14-2005

This document is generated in response to the queries asked in the e-mail from FCC Equipment Authorization Branch titled "FCC ID: OVFKWC-KX5-5X0" with Correspondence Reference # 29769, 731 Confirmation # EA313870. The queries asked in the e-mail received by C.K. Li on 12th of October 2005 are listed below followed by the responses for each of the questions.

X-BigFish: vpcs-40(zz1936I655IH128aO1b0bMec5J15b2R200bizzzzz2dh)

Date: Wed, 12 Oct 2005 09:57:32 -0400 (EDT)

From: Generic Office of Engineering Technology <oetech@fccsun27w.fcc.gov>

To: cli@kyocera-wireless.com

Subject: FCC Equipment Authorization System

To: C. K. Li, Kyocera Wireless Corp

From: Stan Lyles

Stanley.Lyles@fcc.gov

FCC Application Processing Branch

Re: FCC ID OVFKWC-KX5-5X0

Applicant: Kyocera Wireless Corp.

Correspondence Reference Number: 29769

731 Confirmation Number: EA313870

1) Please clarify if this device has cdma2000 operation as user manual suggests. Filings should be clear about transmitter setup & operation capabilities to ensure devices are configured properly according to communication protocol and operating requirements to obtain valid HAC results. All modes must be tested.

Supporting info should include but may not be limited to:

a) CDMA MS Protocol Revision number.

b) Applicability of test codes to simulate the required test conditions, as defined in 3GPP2, TIA, and other standards.

c) Base station simulator and test device configuration info and procedures used to maximize output in all applicable modes, including code domain channels, power & relative gain levels.

d) Identify CDMA Radio Configurations, Service Options, multiplex options, voice/data, code channel combinations and options used for the SAR tests.

e) Because of the different RC's, SO's, data rates, channel combinations and modulations, filing should include justifications on the selection of applicable configurations to establish and maintain maximum output to demonstrate SAR compliance for other configurations that are not tested.

f) Please include a discussion of vocoder rates.

2) Please provide additional details of power measurements made throughout the report. Please specify the procedure used for each. Please include 0 span analyzer plots for PMF if applicable. Please also explain difference in powers noted. For example 25.9 dBm was seen in parts while 25.4 dBm was seen in other parts for 800 MHz.

3) Please justify use of PMF 1 as mentioned I the summary tables.

4) Please describe the purpose for blue tooth operation for at ear use. Can the user disable? If so how?

5) Text mentioned absorber blocks under the test table. Such absorbers could not be seen I the setup photos. Please explain.

6) Please explain how the DASY4 was configured to place the nearest probes sensor element 1 cm from the reference plane.

7) In the worst case configuration please provide results with probe rotation at the final measurement point.

8) Regarding BT collocation. Please provide contour plot with BT only transmission over the C63.19 measurement grid. Please assure that the DASY4 is setup to account for BT signal characteristics in the measurement. Continuous transmission is acceptable if maximum power is supported. Alternatively, conversion to peak must be justified.

FYI For future tests please discuss expected PMF for AM and WD with those measured.

Question: 1) Please clarify if this device has cdma2000 operation as user manual suggests. Filings should be clear about transmitter setup & operation capabilities to ensure devices are configured properly according to communication protocol and operating requirements to obtain valid HAC results. All modes must be tested.

The technical description of KX5-5X0 has been included in the Exhibit 1, which was submitted with the original application.

KX5-5X0 operates in the CDMA mode specified in IS-2000.2 standard, release 0. It supports radio configuration 1 and 3. For RC 1, the creation of s(t) (signal) nets an identical waveform to the waveform created in the legacy IS-95B system / standard. Thus, backwards compatibility is insured. For RC 3, s(t) differs in a manner as described in the Exhibit 1, section 9.2. However, even though the composite waveform differs, the resultant is still based upon Spreading Rate 1 using the direct-sequence CDMA technique as defined in IS-2000.2, release 0. Thus the 3dB bandwidth is still 1.25MHz, and all of the channels share the same CDMA frequency assignment, as in the legacy 95B system. In other words, forRC3, SR1 in IS-2000, the frequency response is identical to the legacy IS-95 B system standard. Therefore, configuring KX5-5X0 in RC3 is a valid test condition for HAC measurement.

Question: 1a) CDMA MS Protocol Revision number.

KX5-5X0 is supporting CDMA MS Protocol revision 6.

Question: 1b) applicability of test codes to simulate the required test conditions, as defined in 3GPP2, TIA, and other standards.

The test code mode is not applicable for HAC testing in this submittal. For all of measurements reported in the original application, KX5-5X0 was set to applicable CDMA transmitting modes via Agilent 8960 as a base station simulator.

Question: 1c) Base station simulator and test device configuration info and procedures used to establish maximum output in all applicable modes, including code domain channels, power & relative gain levels.

HAC measurements were conducted with Agilent 8960 as a base station simulator. The base station simulator establishes a CDMA link with the test device. The CDMA link was configured via 8960 for all of measurements as follows:

Radio Configuration: RC3
Service Options: SO3 (Voice)
Code domain channels: R-FCH + R-PICH
Cell Power: -100 dBm/1.23MHz to –103 dBm/1.23MHz

Data Rate: full rate

There is a typo on Page 5 (section 4.3) of original submittal regarding the above details and has been updated sent along with this response.

Question: 1d) Identify CDMA Radio Configurations, Service Options, multiplex options, voice/data, code channel combinations and options used for the SAR tests.

We think the question meant HAC tests and not SAR. To perform HAC tests, the CDMA radio link was configured as provided in response for question 1c.

Question: 1e) Because of the different RC's, SO's, data rates, channel combinations and modulations, filing should include justifications on the selection of applicable configurations to establish and maintain maximum output to demonstrate SAR compliance for other configurations that are not tested.

We think the question meant HAC tests and not SAR. For HAC compliance, the phone should be configured in voice call mode, which is reported in the submittal. We tested the voice call mode with full rate as the worst-case configuration. Other data transmission configurations are not applicable for HAC testing.

Question: 1f) Please include a discussion of vocoder rates.

The vocoder rates are programmable. For KX5-5X0, EVRC rate can be set as a full rate, 1/2 rate and 1/8 rate via the software.

Question: 2) Please provide additional details of power measurements made throughout the report. Please specify the procedure used for each. Please include 0 span analyzer plots for PMF if applicable. Please also explain difference in powers noted. For example 25.9 dBm was seen in parts while 25.4 dBm was seen in other parts for 800 MHz.

All the power measurements made throughout the report were conducted using a calibrated Gigatronics 8541C power meter (section 8.2 i.e., 25.9 dBm), except for probe modulation factor measurements (section 7.4).

As per ANSI PC63.19-2005 section C.3.1, calculation of probe modulation factor involves a relative measurement between the wireless device and CW signal generator as long as they input equal power to the dipole. This reported value (25.47 dBm on page 11, section 7.4) is just a relative reading used for both the wireless device and CW signal generator.

The 0 span analyzer plots for PMF is not applicable in this case. In this submittal, the PMF was determined as per the alternative procedure described in ANSI PC63.19-2005 section C.3.1.

Question: 3) Please justify use of PMF 1 as mentioned I the summary tables.

Probe modulation factor reported in section 7.4 shows the values to be in close proximity to 1, so in the summary tables it has been rounded off to 1.

Question: 4) Please describe the purpose for blue tooth operation for at ear use. Can the user disable? If so how?

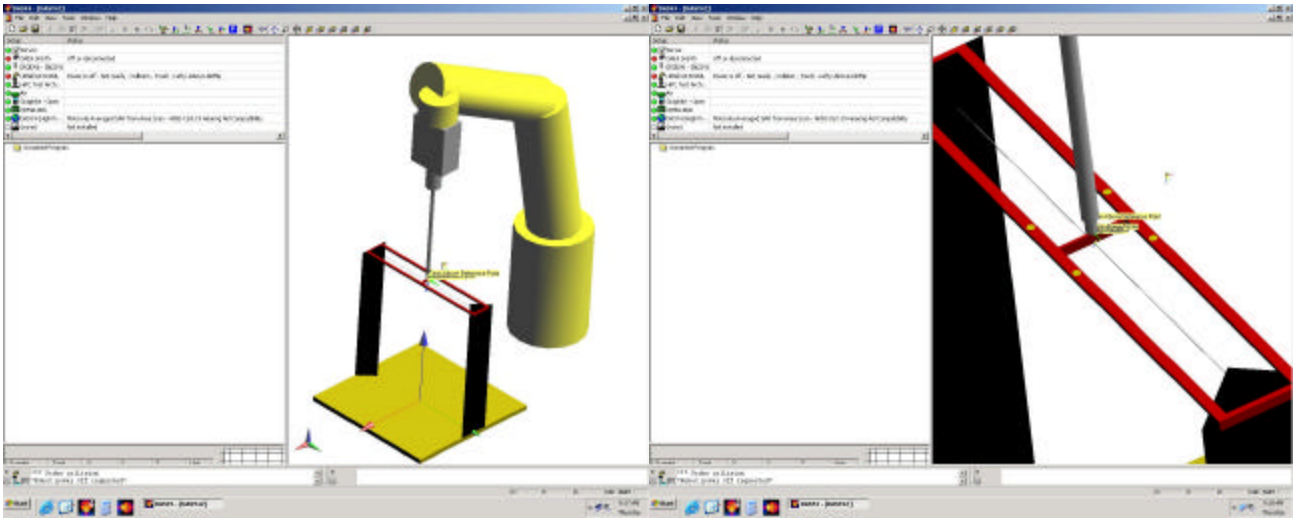
The purpose for Blue tooth operation for at ear use is to provide a wireless connection between the phone and a headset. Blue tooth operation should be disabled when the phone is positioned at the ear. The HAC testing with Bluetooth operation is not necessary. The user has the option to enable/disable Bluetooth using the phone keypad selection keys (refer to the user manual, section 12).

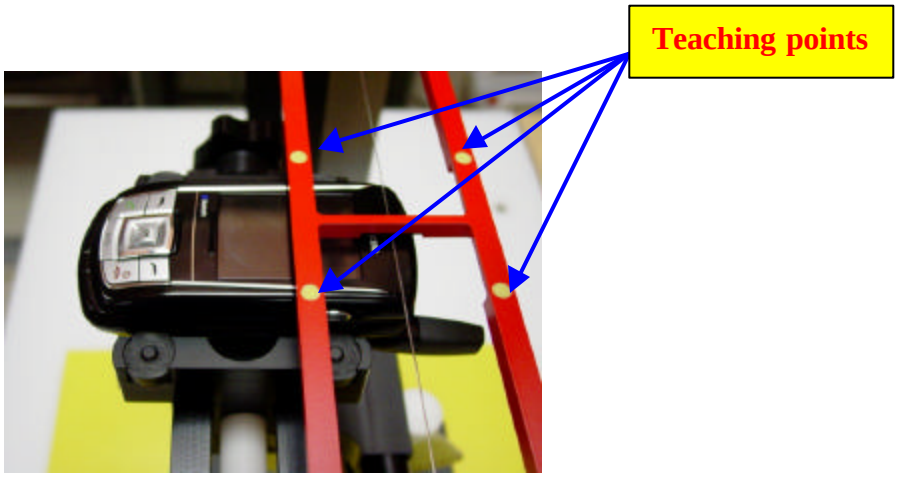
Question: 5) Text mentioned absorber blocks under the test table. Such absorbers could not be seen I the setup photos. Please explain.

The system validation shows that the measured field strengths are within the 10% of target values. Consequently, all of the HAC measurements do not require additional ferrite panels to minimize reflections. The statement in section 4.2 is misplaced and has been removed in the updated report sent along with this response.

Question: 6) Please explain how the DASY4 was configured to place the nearest probes sensor element 1 cm from the reference plane.

The HAC test arch shown in the test setup photos comes along with the DASY4 system. The DASY4 system has a built-in template of the HAC Test Arch (corresponding to its physical dimensions) as shown in the following screen captures:

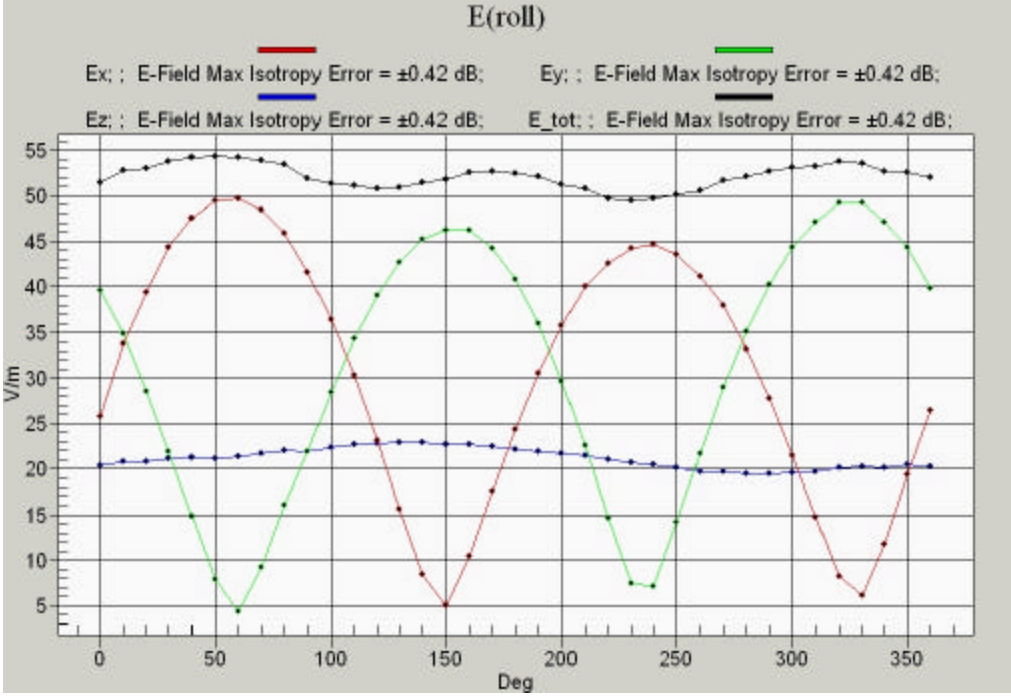


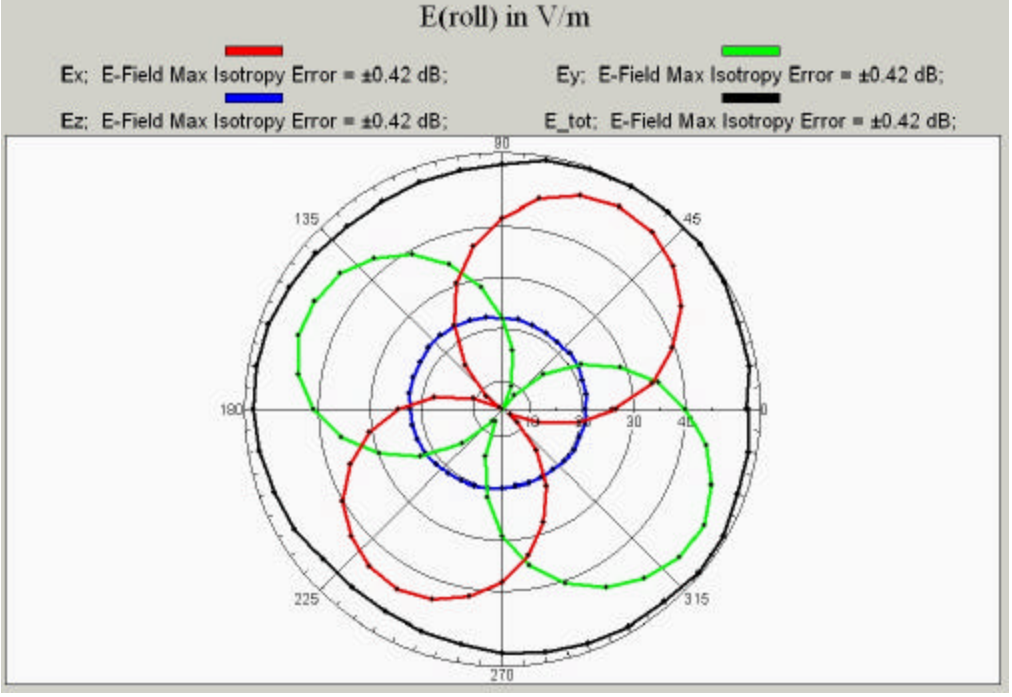


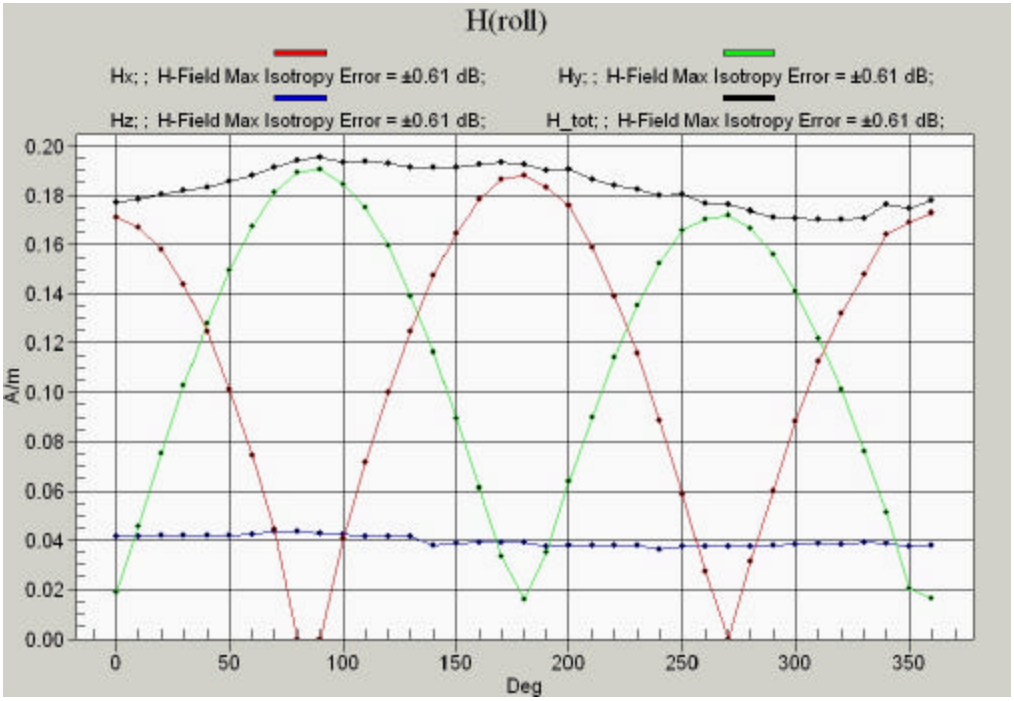
To ensure that DASY4 system knows HAC test arch and wireless device locations, the DASY4 field probe is manually moved in order to teach the locations of all the 4 points on the fixture. Once the built-in template knows the physical location of the HAC test arch, using the DASY4 manual control panel, we can position the probe sensor element at a height of 1 cm from the reference plane (speaker of wireless device placed under the test arch) provided we know thickness of test arch (5.3 mm provided by SPEAG) and distance from the tip of probe sensor to its nearest internal sensor element (1.4 mm for E-probe and 1.9 mm for H-probe provided by SPEAG).

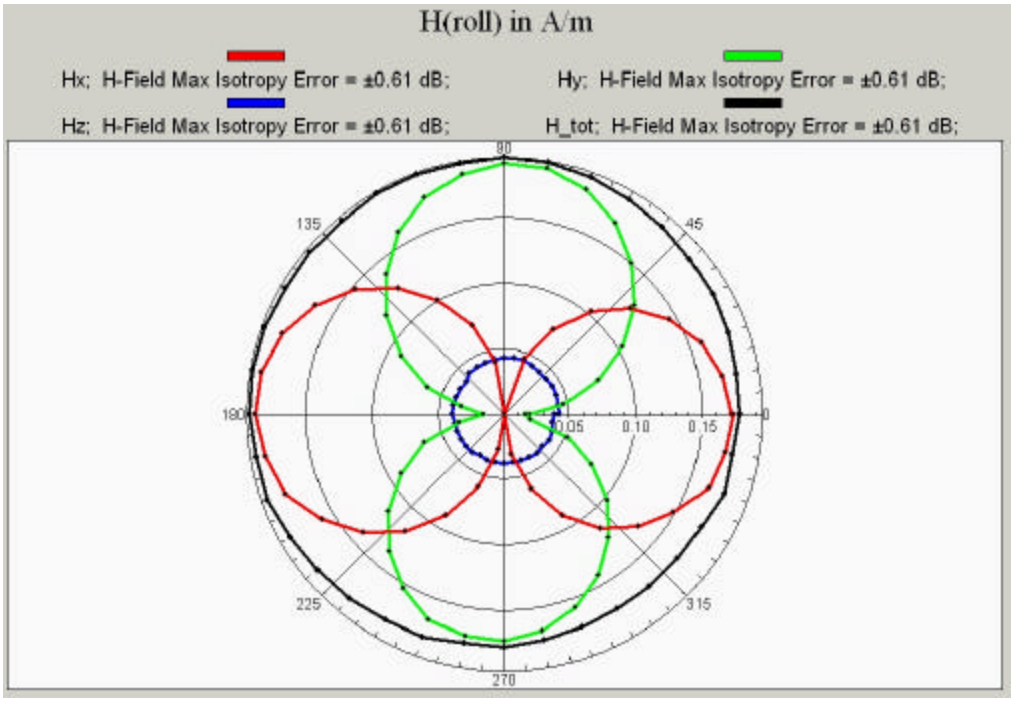
Question: 7) In the worst case configuration please provide results with probe rotation at the final measurement point.

Among all of the worst-case configurations, the highest E and H field strength cases are tested for probe rotation data at the final measurement point. The following are the plots:






H(roll)
Hx; ; H-Field Max Isotropy Error = ±0.61 dB;
Hy; ; H-Field Max Isotropy Error = ±0.61 dB;
Hz; ; H-Field Max Isotropy Error = ±0.61 dB;
H_tot; ; H-Field Max Isotropy Error = ±0.61 dB;
A/m
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0
50
100
150
200
250
300
350
Deg


H(roll) in A/m
Hx; H-Field Max Isotropy Error = ±0.61 dB;
Hy; H-Field Max Isotropy Error = ±0.61 dB;
Hz; H-Field Max Isotropy Error = ±0.61 dB;
H_tot; H-Field Max Isotropy Error = ±0.61 dB;
90
45
135
180
0
225
315
270
0.05
0.10
0.15

Question: 8) Regarding BT collocation. Please provide contour plot with BT only transmission over the C63.19 measurement grid. Please assure that the DASY4 is setup to account for BT signal characteristics in the measurement. Continuous transmission is acceptable if maximum power is supported. Alternatively, conversion to peak must be justified.

The phone was tested with Bluetooth transmitting continuously in one fixed Bluetooth channel (mid channel) at a maximum power. The following tests were conducted and the contour plots are as shown in the proceeding pages.

1) E-field, phone in Rx mode in PCS band, phone closed
2) E-field, phone in Rx mode in PCS band, phone open
3) H-field, phone in Rx mode in PCS band, phone closed
4) H-field, phone in Rx mode in PCS band, phone open
5) E-field, phone in Rx mode in Cell band, phone closed
6) E-field, phone in Rx mode in Cell band, phone open
7) H-field, phone in Rx mode in Cell band, phone closed
8) H-field, phone in Rx mode in Cell band, phone open

The validation data are as shown in the table below and the plots are as shown in Appendix A. The relevant manufacture dipole calibration data was submitted alone with the original application.

Freq. (MHz)	Parameter	Target	Measured	Delta (%)	Test date
835	**E dB(V/m)**	166.4	180.4	8.4%	10/12/05
	H dB(A/m)	0.450	0.429	4.7%	10/12/05
1880	**E dB(V/m)**	140.0	141.0	0.7%	10/12/05
	H dB(A/m)	0.458	0.477	4.1%	10/12/05

Date/Time: 10/12/2005 4:13:54 PM

Test Laboratory: Kyocera Wireless Corp.
File Name: E-FIELD_E_Device, 10_12_2005 BLUETOOTH ON ONLY Graphite BT #X32T, PCS band, Backlight Off & Phone Closed.da4

DUT: KX5-5X0
Program Name: HAC E-FIELD

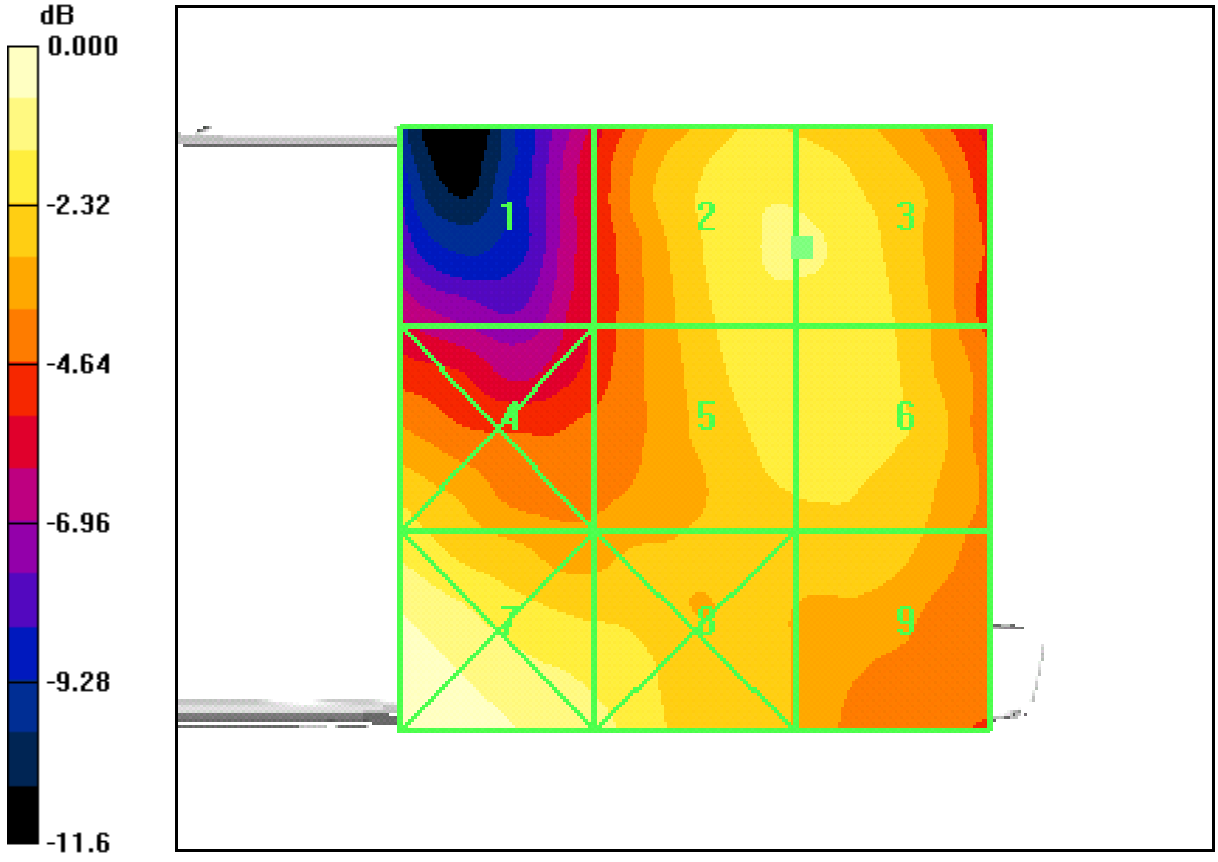
Communication System: CDMA-1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3

DASY4 Configuration:
- Probe: ER3DV6 - SN2341; ConvF(1, 1, 1); Calibrated: 4/22/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn675; Calibrated: 4/12/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 4.35 V/m
Probe Modulation Factor = 1.00
Reference Value = 3.78 V/m; Power Drift = -0.033 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **2.80**	Grid 2 **4.35**	Grid 3 **4.35**
Grid 4 **4.08**	Grid 5 **4.23**	Grid 6 **4.24**
Grid 7 **5.11**	Grid 8 **4.35**	Grid 9 **3.89**



0 dB = 5.11V/m

Date/Time: 10/12/2005 4:36:19 PM

Test Laboratory: Kyocera Wireless Corp.
File Name: E-FIELD_E_Device, 10_12_2005 BLUETOOTH ON ONLY Graphite BT #X32T, PCS band, Backlight Off & Phone OPEN.da4

DUT: KX5-5X0
Program Name: HAC E-FIELD

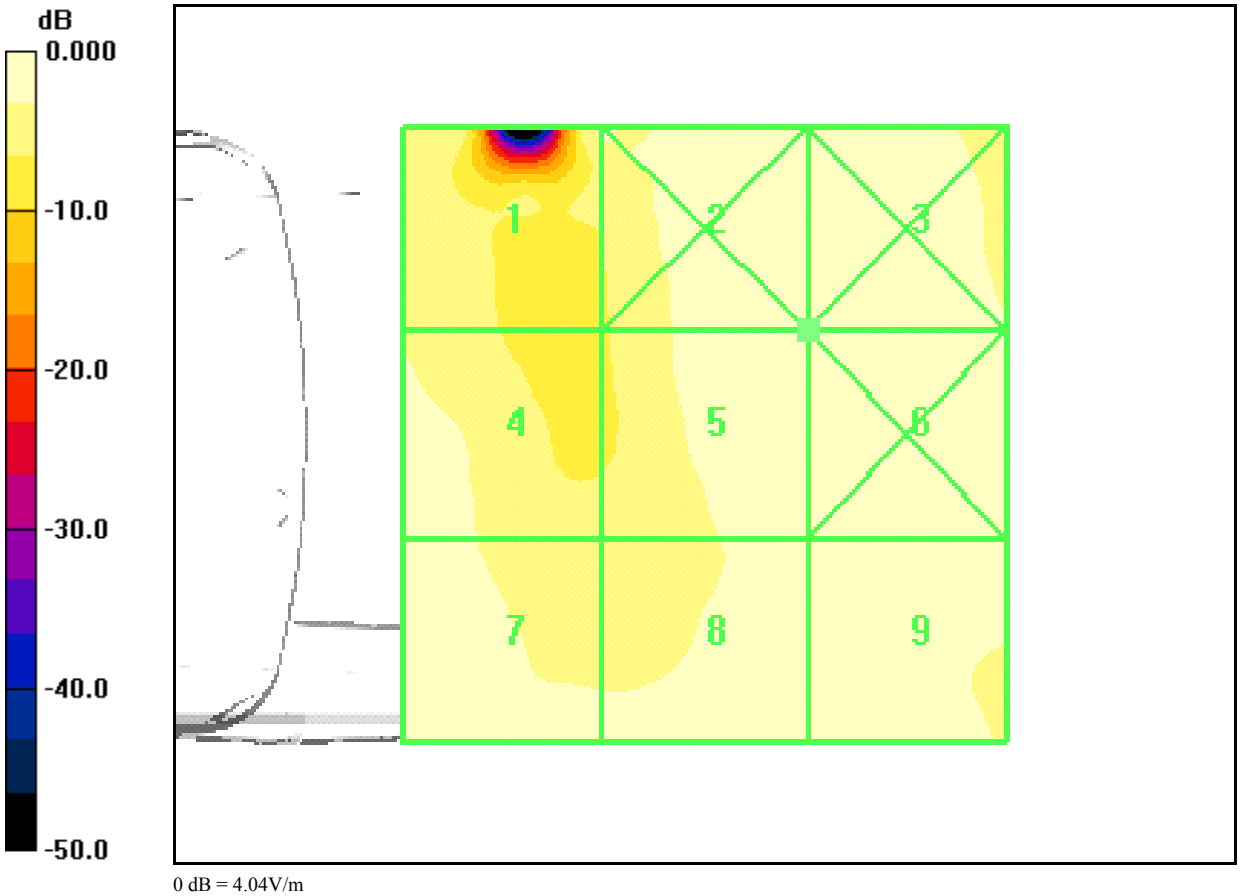
Communication System: CDMA-1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3

DASY4 Configuration:
- Probe: ER3DV6 - SN2341; ConvF(1, 1, 1); Calibrated: 4/22/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn675; Calibrated: 4/12/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 4.00 V/m
Probe Modulation Factor = 1.00
Reference Value = 3.07 V/m; Power Drift = 0.125 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB

Peak E-field in V/m

Grid 1 **2.93**	Grid 2 **4.03**	Grid 3 **4.04**
Grid 4 **3.38**	Grid 5 **4.00**	Grid 6 **4.02**
Grid 7 **3.93**	Grid 8 **3.41**	Grid 9 **3.44**



0 dB = 4.04V/m

Date/Time: 10/12/2005 5:21:06 PM

Test Laboratory: Kyocera Wireless Corp.
File Name: E-FIELD_E_Device, 10_12_2005 BLUETOOTH ON ONLY Graphite BT #X32T, Cell band, Backlight Off & Phone closed.da4

DUT: KX5-5X0
Program Name: HAC E-FIELD

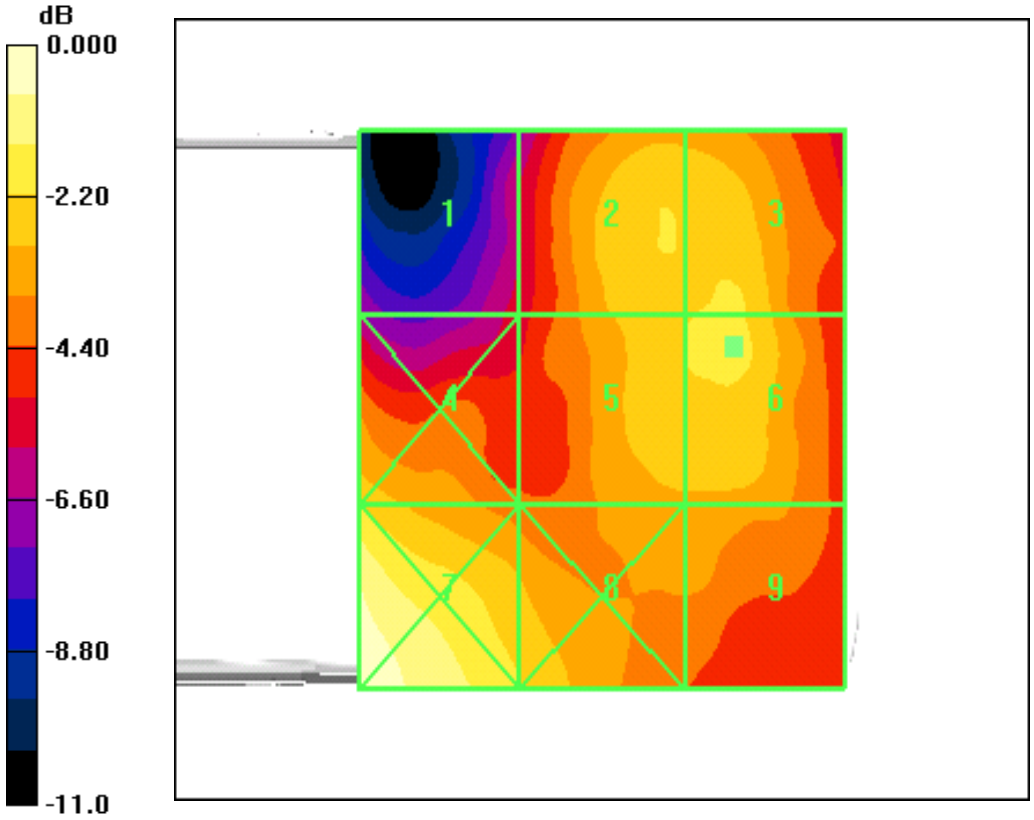
Communication System: CDMA-800; Frequency: 836.49 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3
Phantom section: E Device Section

DASY4 Configuration:
- Probe: ER3DV6 - SN2341; ConvF(1, 1, 1); Calibrated: 4/22/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn675; Calibrated: 4/12/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 4.28 V/m
Probe Modulation Factor = 1.00
Reference Value = 3.69 V/m; Power Drift = -0.011 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **2.87**	Grid 2 **4.18**	Grid 3 **4.24**
Grid 4 **4.20**	Grid 5 **4.18**	Grid 6 **4.28**
Grid 7 **5.37**	Grid 8 **4.21**	Grid 9 **3.75**



0 dB = 5.37V/m

Date/Time: 10/12/2005 5:00:10 PM

Test Laboratory: The name of your organization
File Name: E-FIELD_E_Device, 10_12_2005 BLUETOOTH ON ONLY Graphite BT #X32T, Cell band, Backlight Off & Phone OPEN.da4

DUT: KX5-5X0
Program Name: HAC E-FIELD

Communication System: CDMA-800; Frequency: 836.49 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3

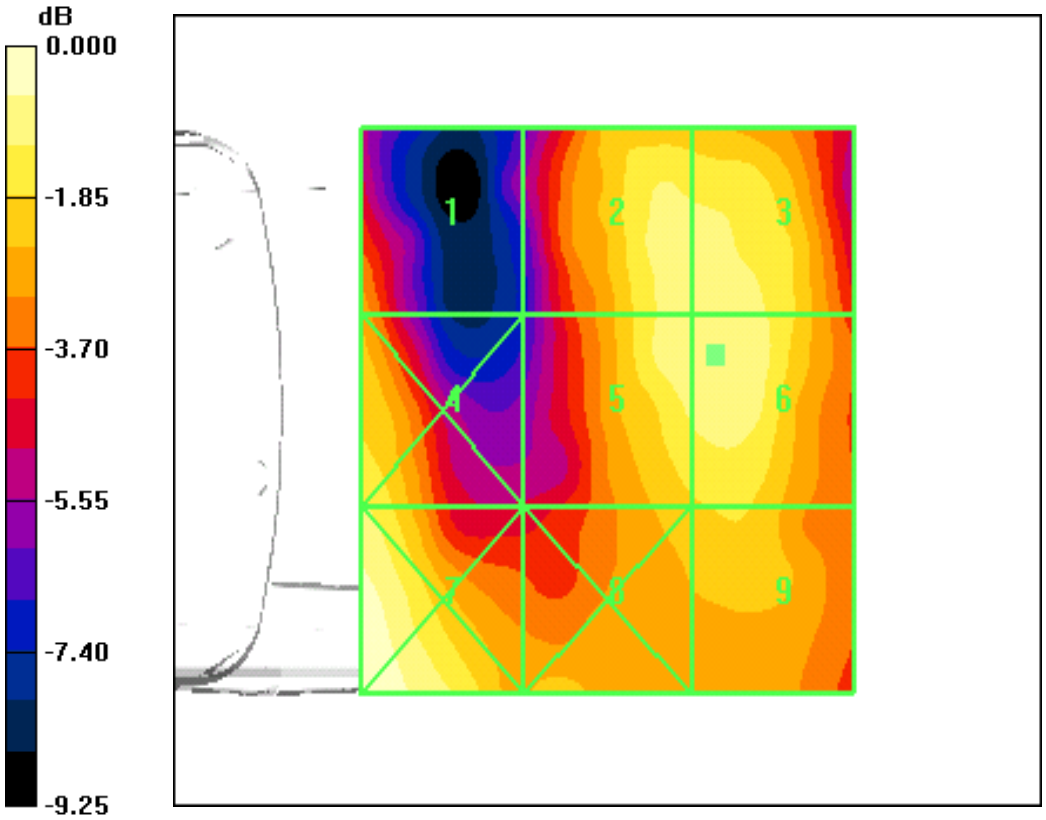
DASY4 Configuration:
- Probe: ER3DV6 - SN2341; ConvF(1, 1, 1); Calibrated: 4/22/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn675; Calibrated: 4/12/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 3.81 V/m
Probe Modulation Factor = 1.00
Reference Value = 3.07 V/m; Power Drift = -0.018 dB

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

Peak E-field in V/m

Grid 1 **3.03**	Grid 2 **3.70**	Grid 3 **3.71**
Grid 4 **3.58**	Grid 5 **3.77**	Grid 6 **3.81**
Grid 7 **4.09**	Grid 8 **3.26**	Grid 9 **3.35**



0 dB = 4.09V/m

Date/Time: 10/12/2005 3:57:07 PM

Test Laboratory: Kyocera Wireless Corp.
File Name: H-FIELD, 10_12_2005 BLUETOOTH ON ONLY Graphite BT #X32T, PCS band, Backlight OFF & Phone Closed .da4

DUT: KX5-5X0
Program Name: HAC H-FIELD

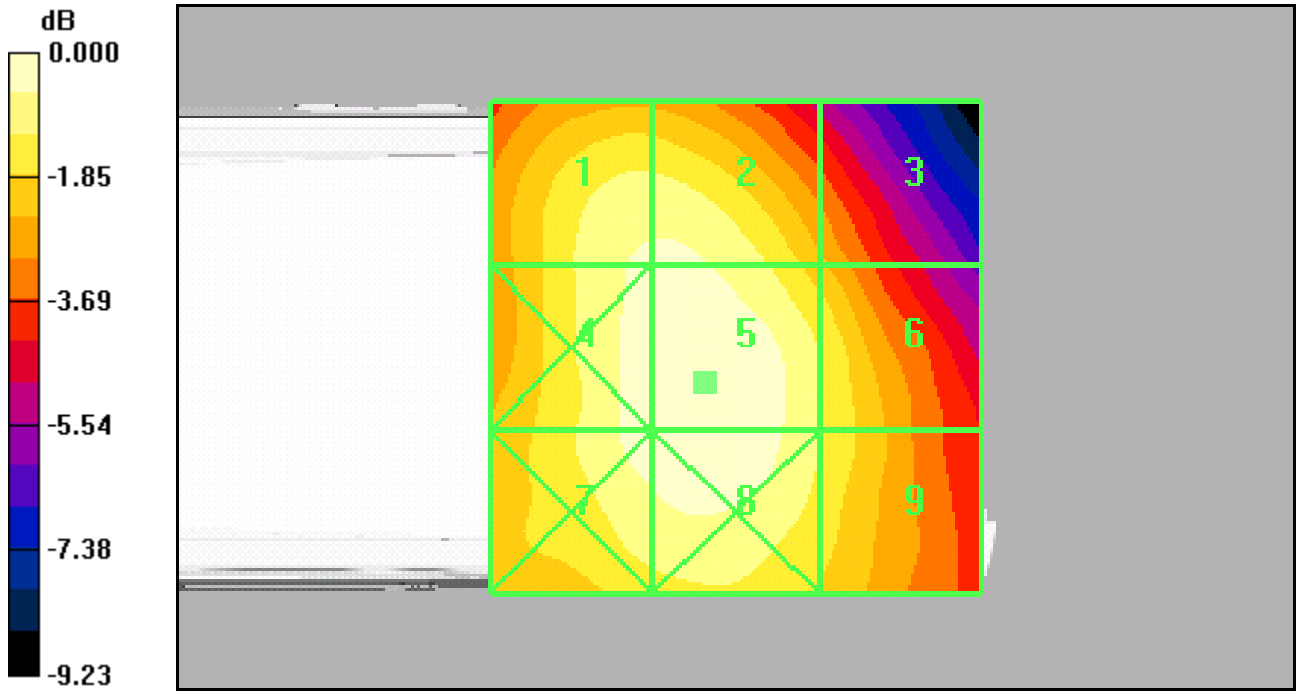
Communication System: CDMA-1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3

DASY4 Configuration:
- Probe: H3DV5 - SN6029; ; Calibrated: 6/13/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn675; Calibrated: 4/12/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.017 A/m
Probe Modulation Factor = 1.00
Reference Value = 0.017 A/m; Power Drift = 0.057 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.016**	Grid 2 **0.016**	Grid 3 **0.013**
Grid 4 **0.016**	Grid 5 **0.017**	Grid 6 **0.015**
Grid 7 **0.016**	Grid 8 **0.017**	Grid 9 **0.015**



0 dB = 0.017A/m

Date/Time: 10/12/2005 3:09:38 PM

Test Laboratory: Kyocera Wirless Corp.
File Name: H-FIELD, 10_12_2005 BLUETOOTH ON ONLY Graphite BT #X32T, PCS band, Backlight OFF & Phone Open.da4

DUT: KX5-5X0
Program Name: HAC H-FIELD

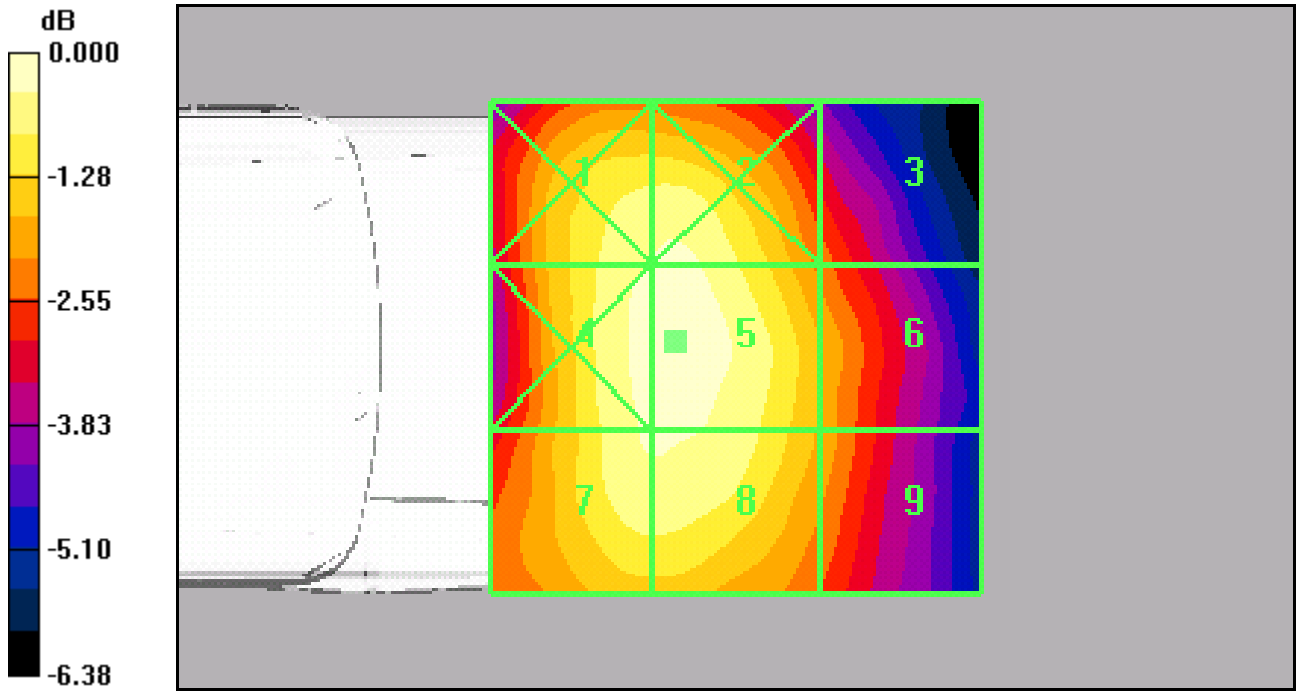
Communication System: CDMA-1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3

DASY4 Configuration:
- Probe: H3DV5 - SN6029; ; Calibrated: 6/13/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn675; Calibrated: 4/12/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.015 A/m
Probe Modulation Factor = 1.00
Reference Value = 0.015 A/m; Power Drift = 0.008 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.014**	Grid 2 **0.014**	Grid 3 **0.012**
Grid 4 **0.015**	Grid 5 **0.015**	Grid 6 **0.012**
Grid 7 **0.014**	Grid 8 **0.014**	Grid 9 **0.012**



0 dB = 0.015A/m

Date/Time: 10/12/2005 3:46:19 PM

File Name: H-FIELD, 11_12_2005 BLUETOOTH ON ONLY Graphite BT #X32T, Cell band, Backlight OFF & Phone Closed.da4

DUT: KX5-5X0
Program Name: HAC H-FIELD

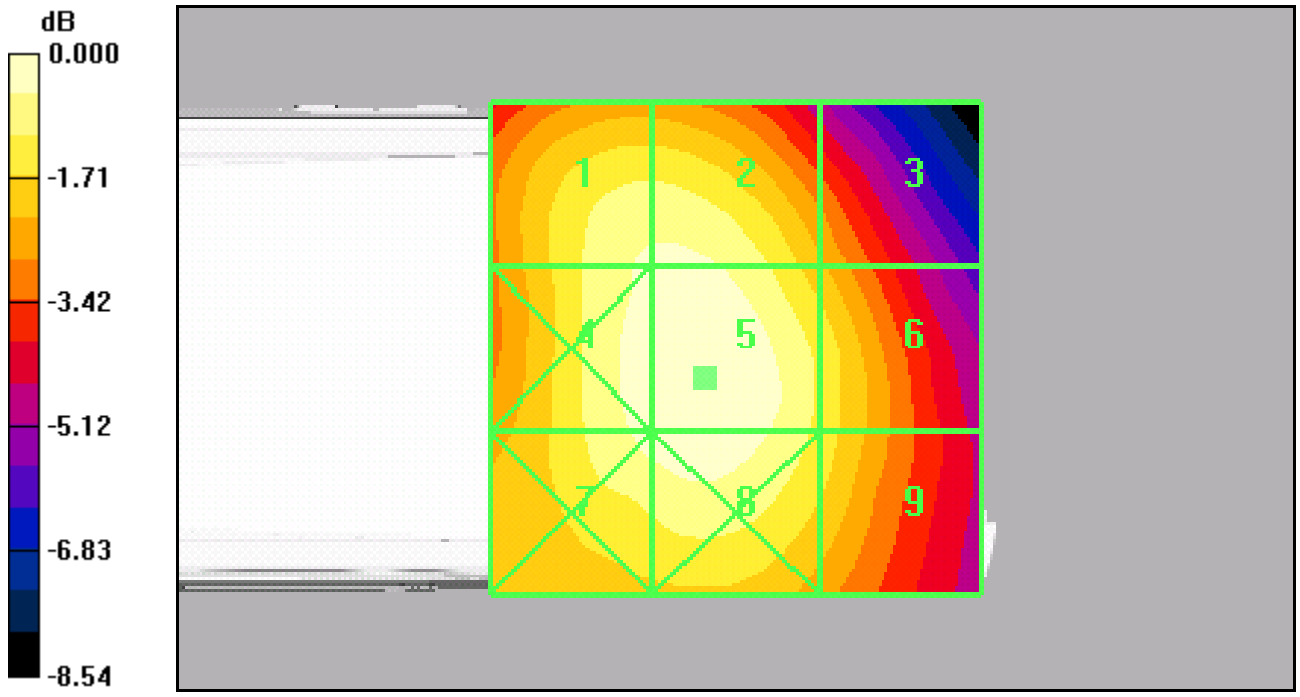
Communication System: CDMA-800; Frequency: 836.49 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3

DASY4 Configuration:
- Probe: H3DV5 - SN6029; ; Calibrated: 6/13/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn675; Calibrated: 4/12/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.039 A/m
Probe Modulation Factor = 1.00
Reference Value = 0.039 A/m; Power Drift = 0.029 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.037**	Grid 2 **0.037**	Grid 3 **0.030**
Grid 4 **0.038**	Grid 5 **0.039**	Grid 6 **0.034**
Grid 7 **0.037**	Grid 8 **0.038**	Grid 9 **0.034**



0 dB = 0.039A/m

Date/Time: 10/12/2005 3:26:57 PM

Test Laboratory: Kyocera Wireless Corp.
File Name: H-FIELD, 11122005 BLUETOOTH ON ONLY Graphite BT #X32T, Cell band, Backlight OFF & Phone OPEN.da4

DUT: KX5-5X0
Program Name: HAC H-FIELD

Communication System: CDMA-800; Frequency: 836.49 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3
Phantom section: E Device Section

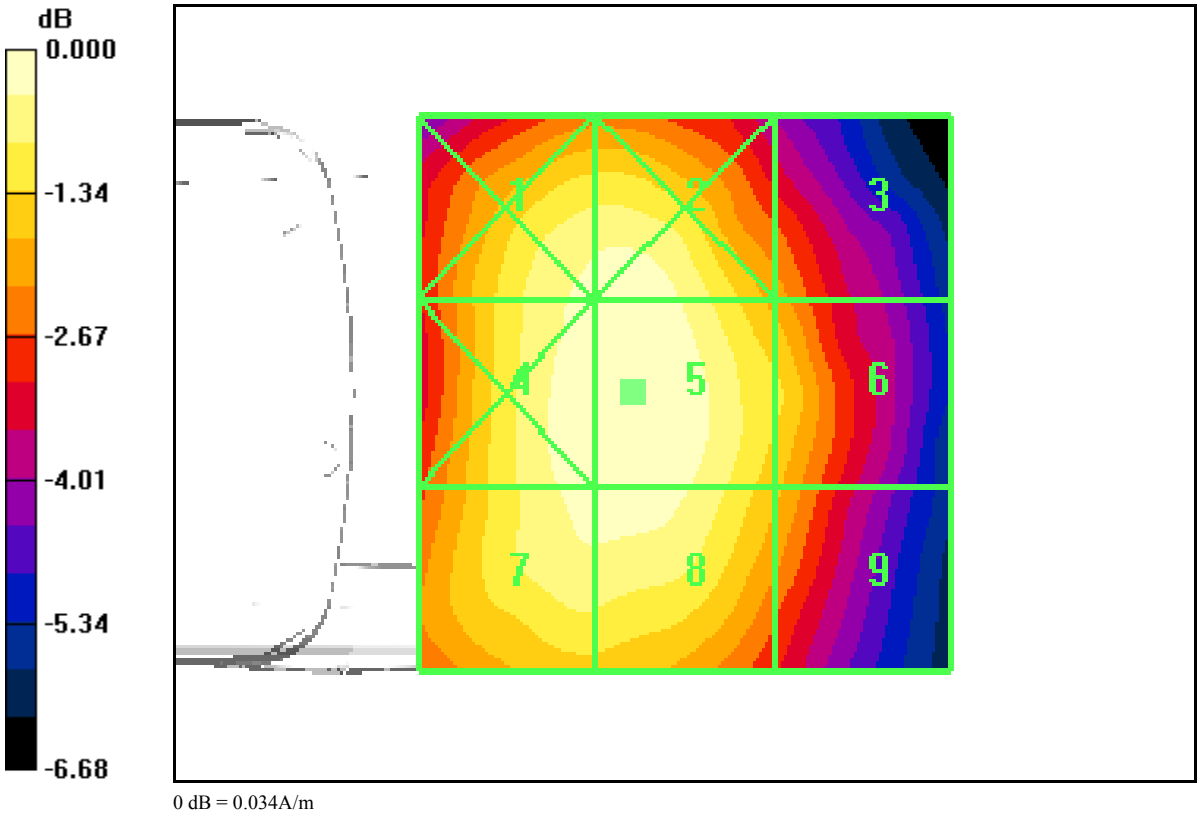
DASY4 Configuration:
- Probe: H3DV5 - SN6029; ; Calibrated: 6/13/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn675; Calibrated: 4/12/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.034 A/m
Probe Modulation Factor = 1.00
Reference Value = 0.034 A/m; Power Drift = 0.047 dB

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

Peak H-field in A/m

Grid 1 **0.033**	Grid 2 **0.034**	Grid 3 **0.027**
Grid 4 **0.034**	Grid 5 **0.034**	Grid 6 **0.030**
Grid 7 **0.033**	Grid 8 **0.034**	Grid 9 **0.028**



0 dB = 0.034A/m

Appendix A

Validation plots

Date/Time: 10/12/2005 9:47:26 AM

Test Laboratory: Kyocera Wireless Corp.
File Name: Validation_E_Dipole_Probe SN2341, Dipole SN1015, set to probe sensor center for 1880Mhz, 10_12_05.da4

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: 1015
Program Name: HAC E-FIELD

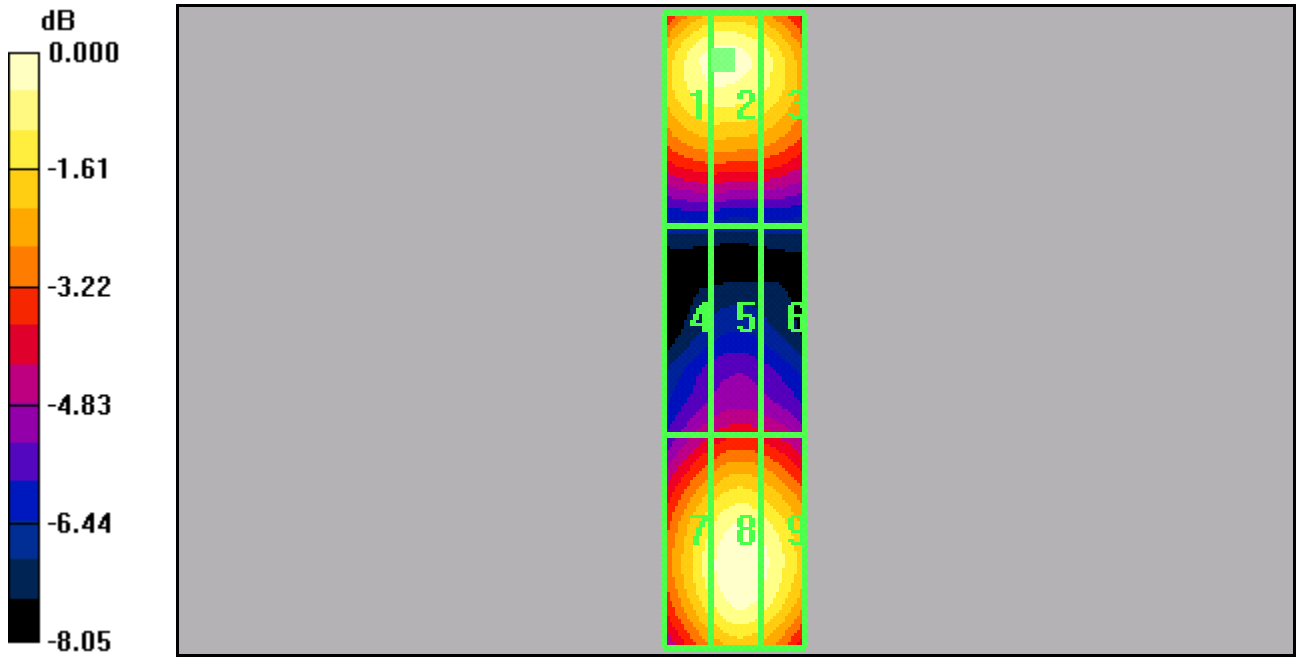
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3

DASY4 Configuration:
- Probe: ER3DV6 - SN2341; ConvF(1, 1, 1); Calibrated: 4/22/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn675; Calibrated: 4/12/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

E Scan 10mm above CD1880MHz/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 141.0 V/m
Probe Modulation Factor = 1.00
Reference Value = 66.9 V/m; Power Drift = 0.072 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **136.0**	Grid 2 **136.8**	Grid 3 **130.0**
Grid 4 **87.1**	Grid 5 **92.1**	Grid 6 **89.8**
Grid 7 **130.3**	Grid 8 **141.0**	Grid 9 **136.2**



0 dB = 141.0V/m

Date/Time: 10/12/2005 10:42:17 AM

Test Laboratory: Kyocera Wireless Corp.
File Name: Validation_H_Dipole_Probe SN6029, Dipole SN1015, set to probe sensor center for 1880Mhz,10-12-05.da4

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: 1015
Program Name: HAC H-FIELD

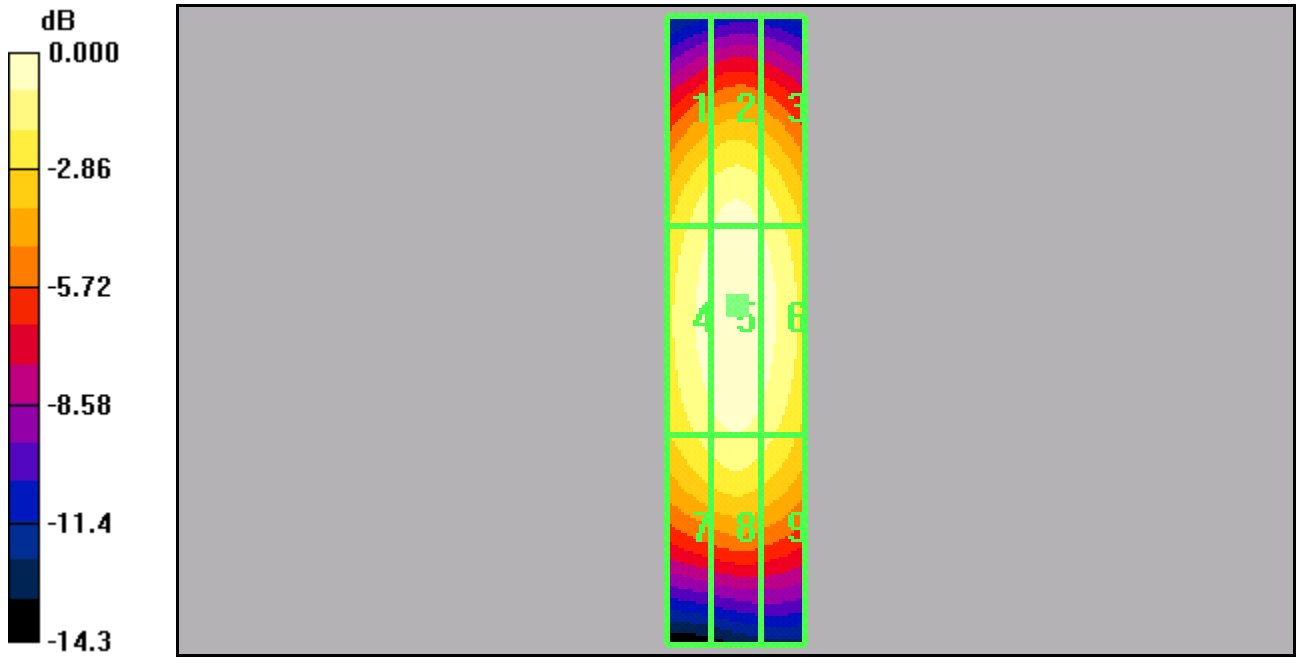
Communication System: CW; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3

DASY4 Configuration:
- Probe: H3DV5 - SN6029; ; Calibrated: 6/13/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn675; Calibrated: 4/12/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

H Scan 10mm above CD1880MHz/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.477 A/m
Probe Modulation Factor = 1.00
Reference Value = 0.480 A/m; Power Drift = -0.082 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.427**	Grid 2 **0.451**	Grid 3 **0.427**
Grid 4 **0.454**	Grid 5 **0.477**	Grid 6 **0.455**
Grid 7 **0.405**	Grid 8 **0.425**	Grid 9 **0.404**



0 dB = 0.477A/m

Date/Time: 10/12/2005 9:31:08 AM

Test Laboratory: Kyocera Wireless Corp.
File Name: Validation_E_Dipole_Probe SN2341, Dipole SN1020, set to probe sensor center for 835Mhz_101205.da4

DUT: HAC-Dipole 835 MHz; Type: D835V3; Serial: 1020
Program Name: HAC E-FIELD

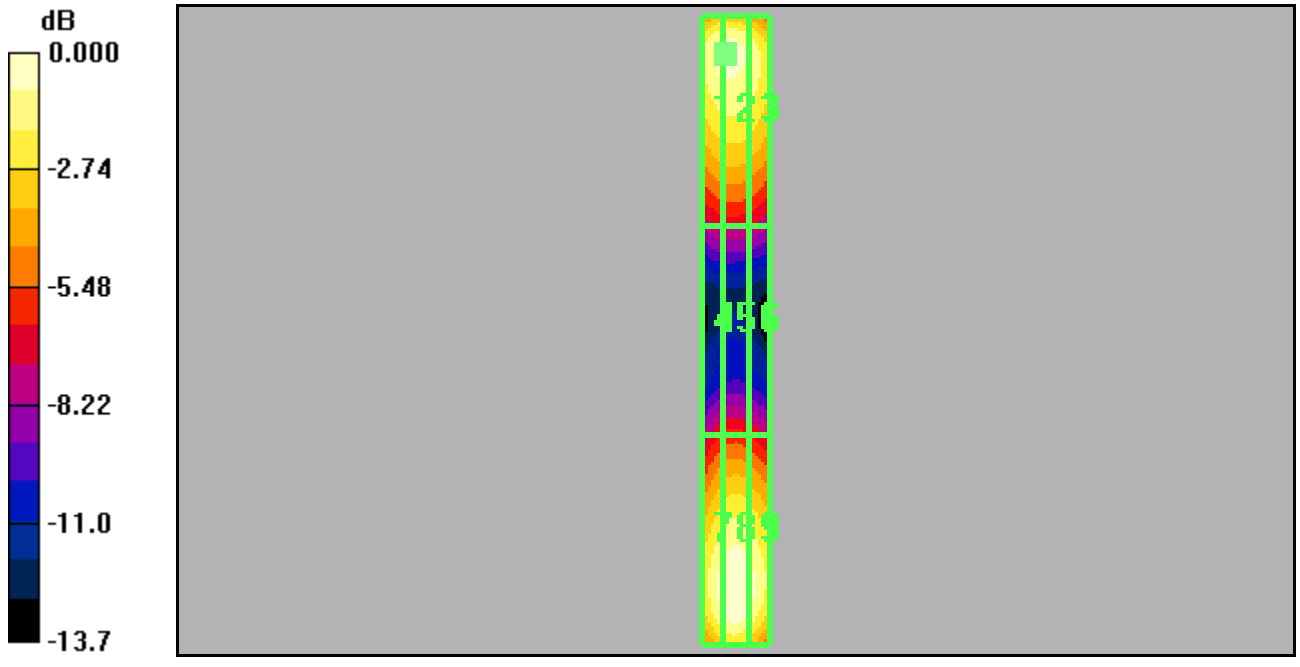
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3

DASY4 Configuration:
- Probe: ER3DV6 - SN2341; ConvF(1, 1, 1); Calibrated: 4/22/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn675; Calibrated: 4/12/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

E Scan 10mm above CD835MHz/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 180.4 V/m
Probe Modulation Factor = 1.00
Reference Value = 48.5 V/m; Power Drift = 0.062 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **170.6**	Grid 2 **170.7**	Grid 3 **161.4**
Grid 4 **88.5**	Grid 5 **90.9**	Grid 6 **87.3**
Grid 7 **173.0**	Grid 8 **180.4**	Grid 9 **171.9**



0 dB = 180.4V/m

Date/Time: 10/12/2005 1:52:49 PM

Test Laboratory: Kyocera Wireless Corp.
File Name: Validation_H_Dipole_Probe SN6029, Dipole SN1020, set to probe sensor center for 835Mhz, 10-12-05.da4

DUT: HAC-Dipole 835 MHz; Type: D835V3; Serial: 1020
Program Name: HAC H-FIELD

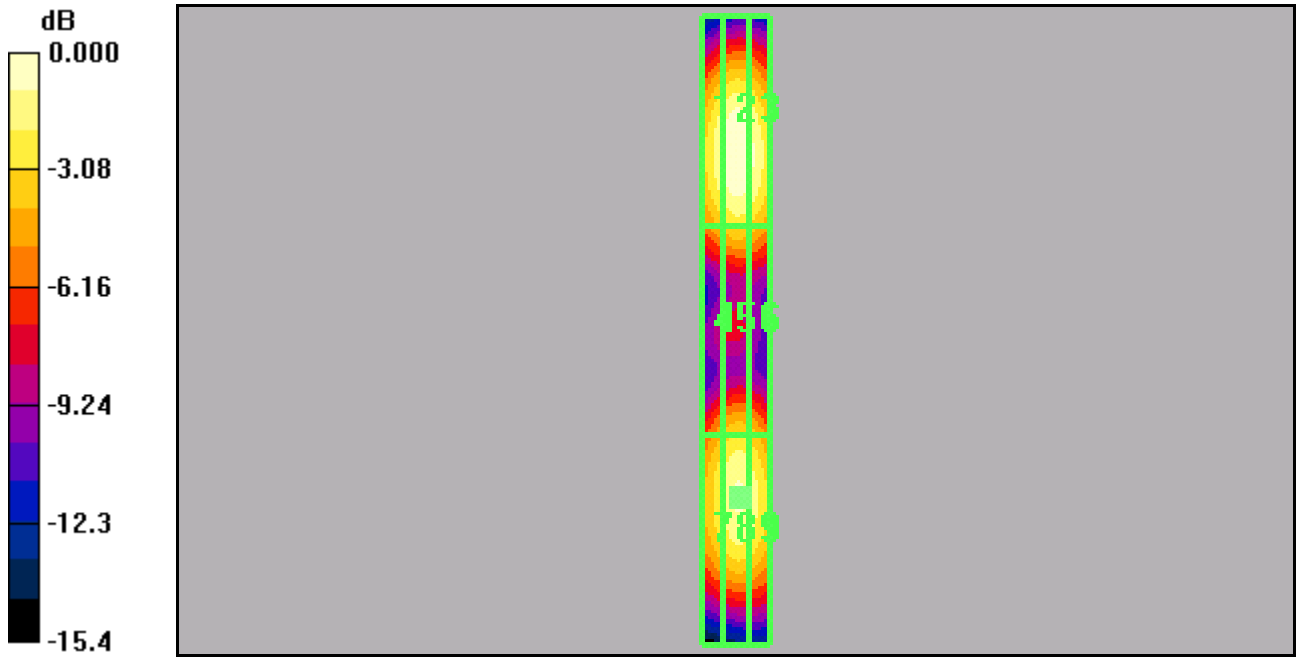
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3

DASY4 Configuration:
- Probe: H3DV5 - SN6029; ; Calibrated: 6/13/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn675; Calibrated: 4/12/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

H Scan 10mm above CD835MHz/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.429 A/m
Probe Modulation Factor = 1.00
Reference Value = 0.178 A/m; Power Drift = 0.106 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.390**	Grid 2 **0.429**	Grid 3 **0.406**
Grid 4 **0.285**	Grid 5 **0.311**	Grid 6 **0.297**
Grid 7 **0.348**	Grid 8 **0.387**	Grid 9 **0.373**



0 dB = 0.429A/m