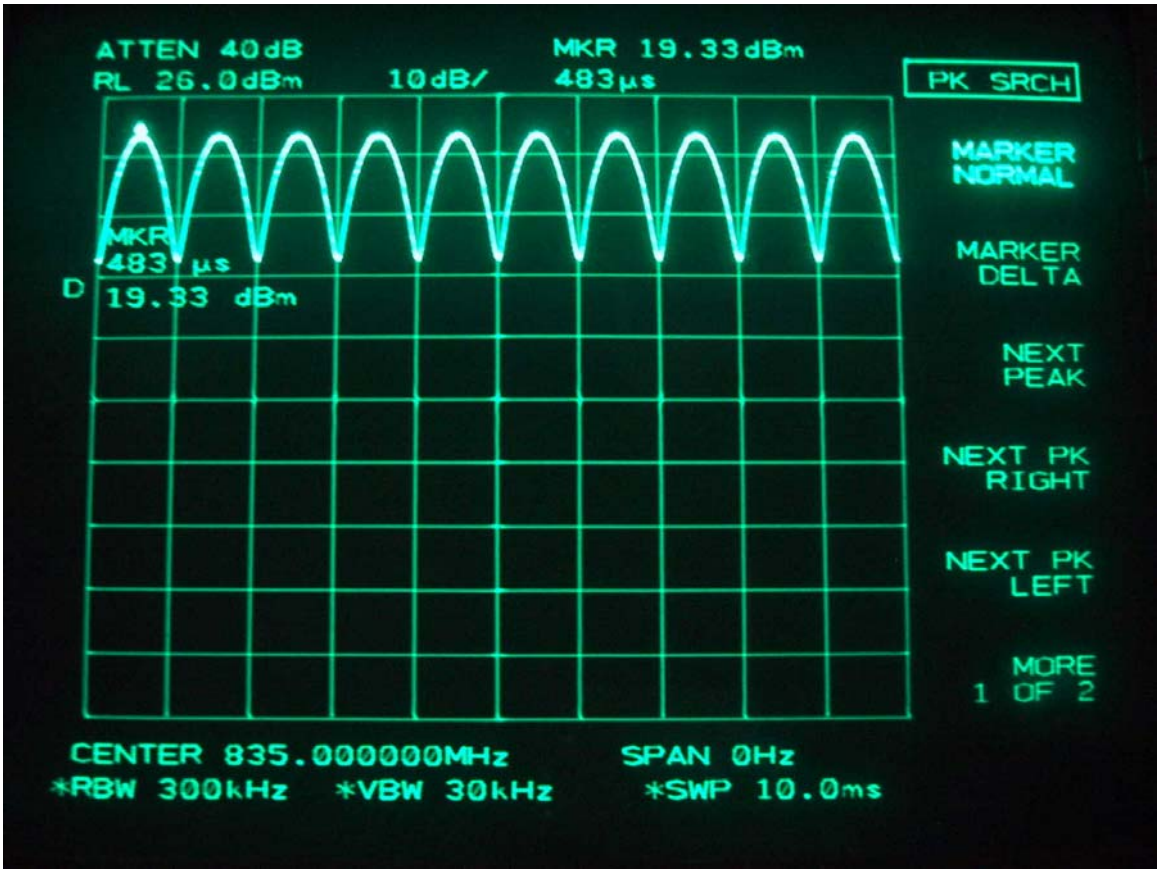
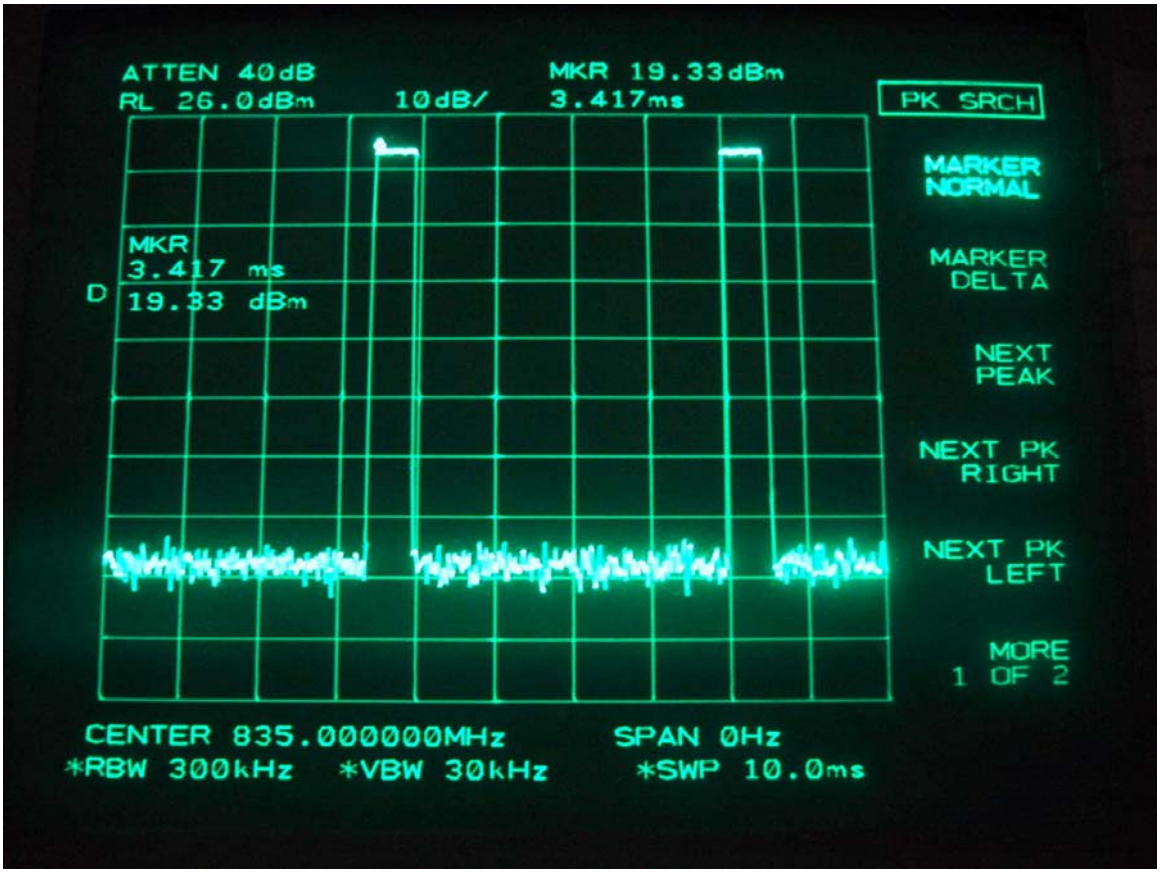
Annex A: Measurement data and plots

A.1 Spectrum analyser plots: CW, 80% AM and GSM signals

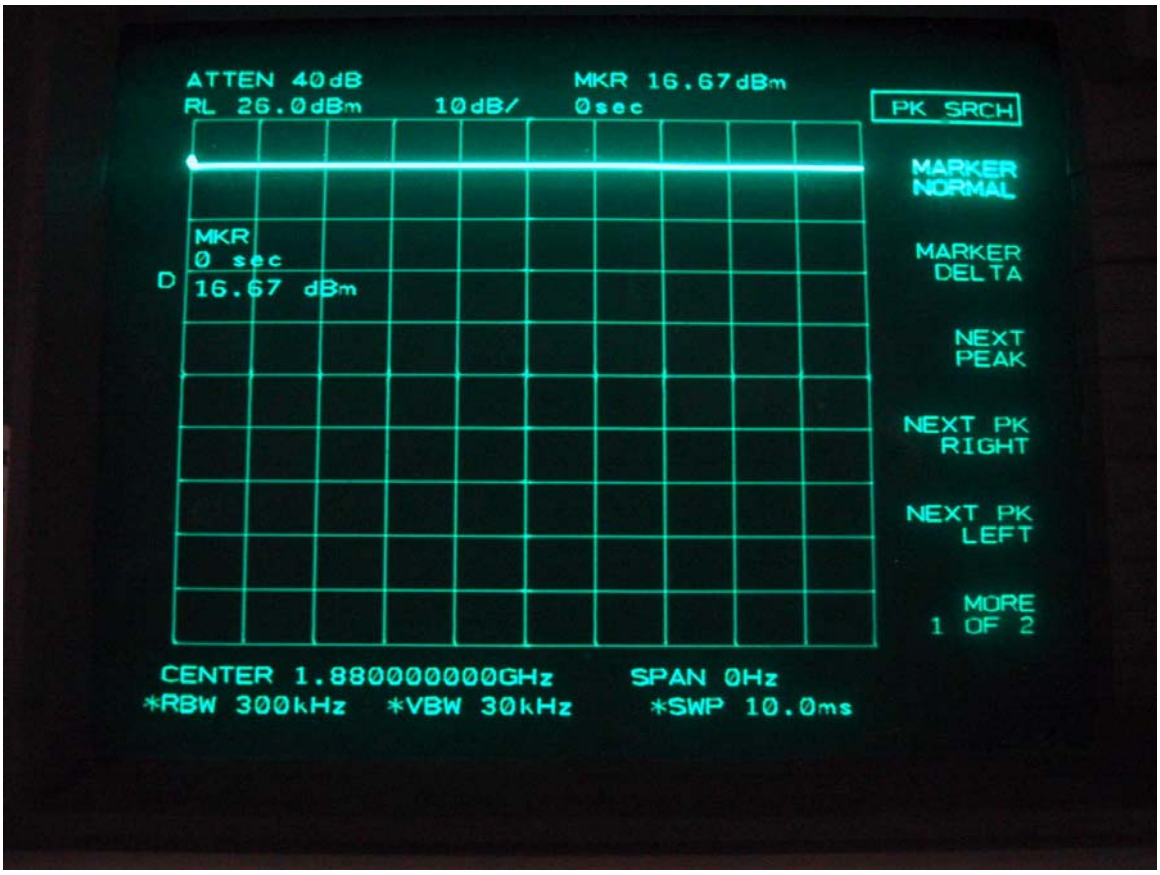
0 Hz Span CW Plot (835MHz)



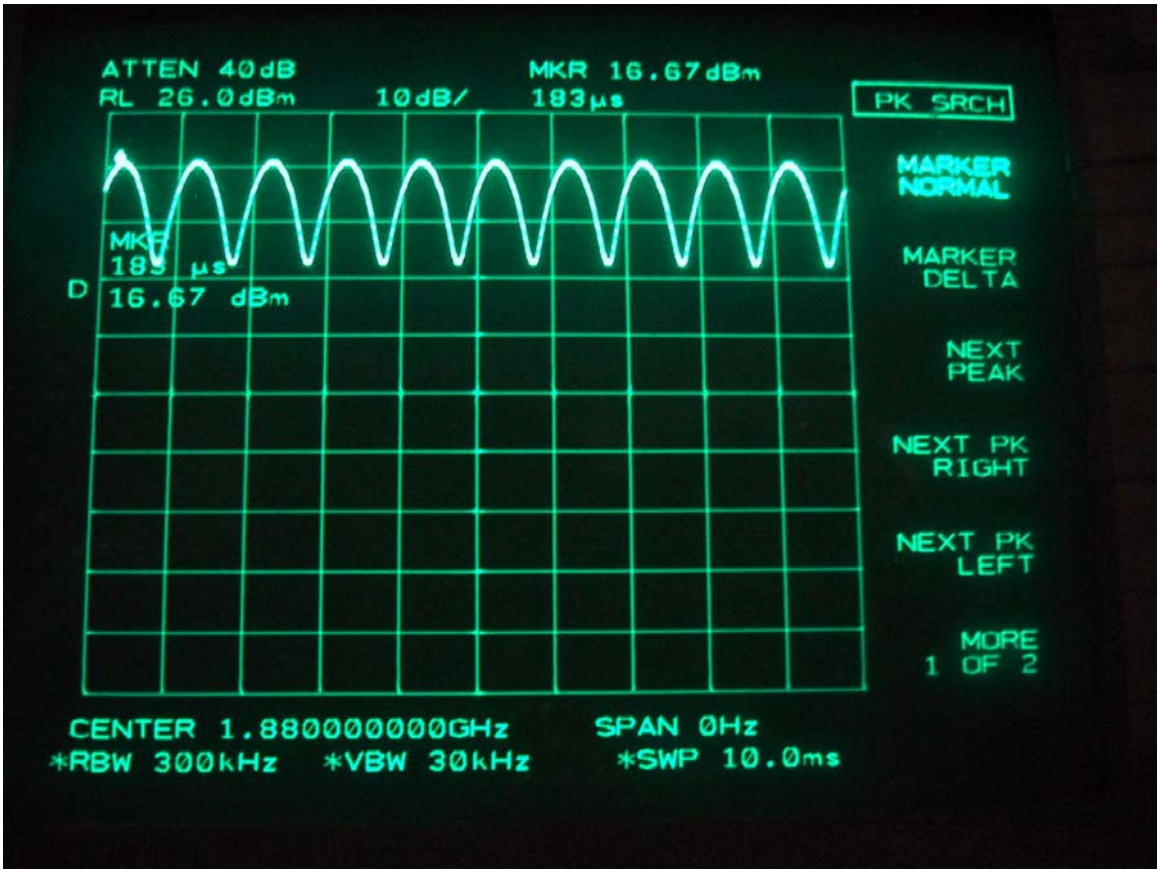
0 Hz Span 80% AM Plot (835MHz)



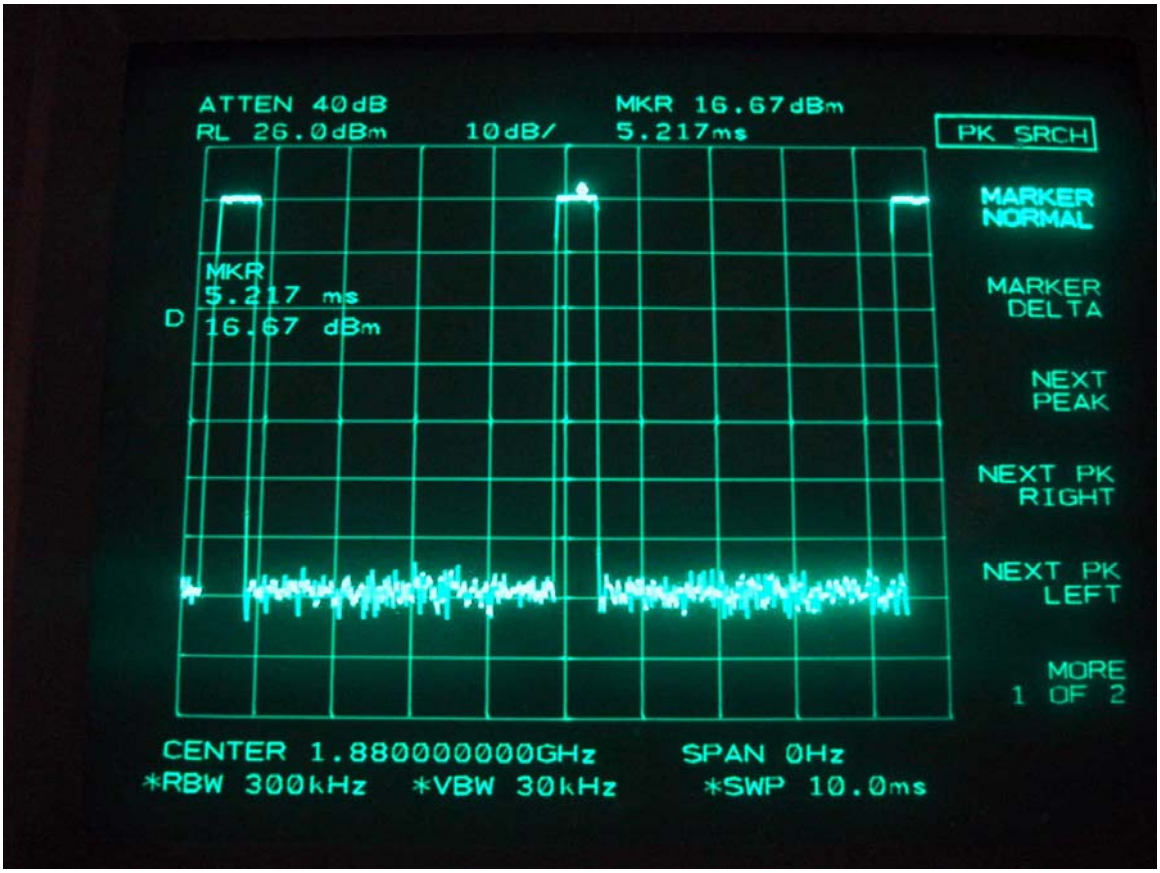
0 Hz Span GSM (835MHz)



0 Hz Span CW Plot (1880MHz)



0 Hz Span 80% AM Plot (1880MHz)



0 Hz Span GSM (1880MHz)

A.2 Dipole validation and probe modulation factor plots

Date/Time: 27/06/2006 8:04:36 AM

Test Laboratory: RTS

HAC_E_Dipole_835 MHz_CW_20dBm

DUT: HAC-Dipole 835 MHz; Type: D835V3; Serial: Not Specified

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: H Device Section

DASY4 Configuration:

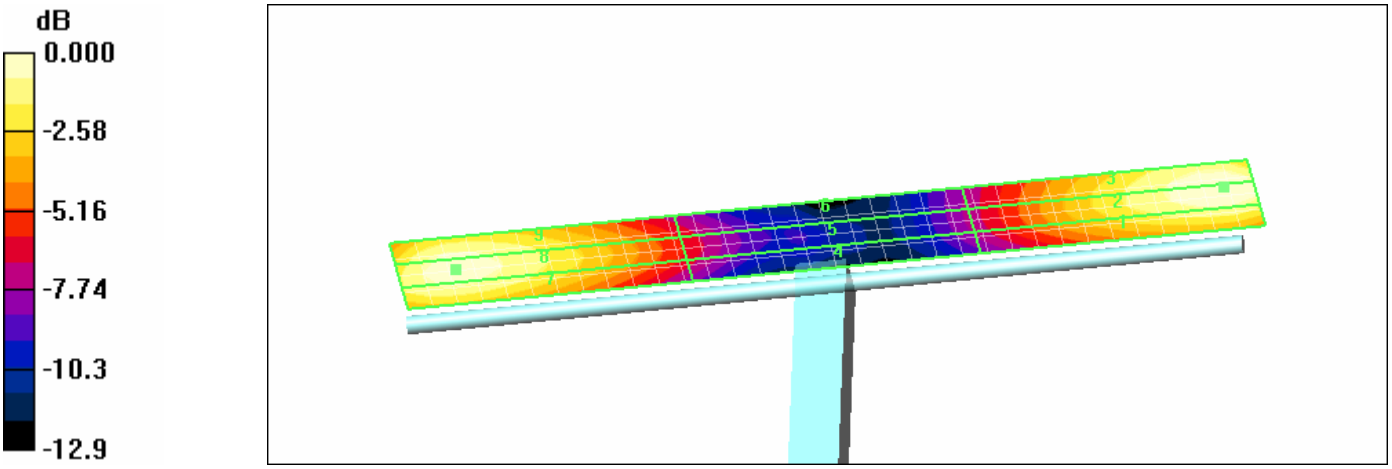
- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (5x35x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 54.1 V/m; Power Drift = 0.117 dB
Maximum value of Total (measured) = 164.4 V/m

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x341x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 167.2 V/m
Probe Modulation Factor = 1.00
Reference Value = 54.1 V/m; Power Drift = 0.117 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak E-field in V/m

Grid **151.9**	Grid **167.2**	Grid **166.7**
Grid **80.7**	Grid **84.3**	Grid **82.9**
Grid	Grid	Grid



0 dB = 167.2V/m

Date/Time: 27/06/2006 8:12:02 AM

Test Laboratory: RTS

HAC_E_Dipole_835 MHz_CW_19_33dBm_PMF

DUT: HAC-Dipole 835 MHz; Type: D835V3; Serial: Not Specified

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: H Device Section

DASY4 Configuration:

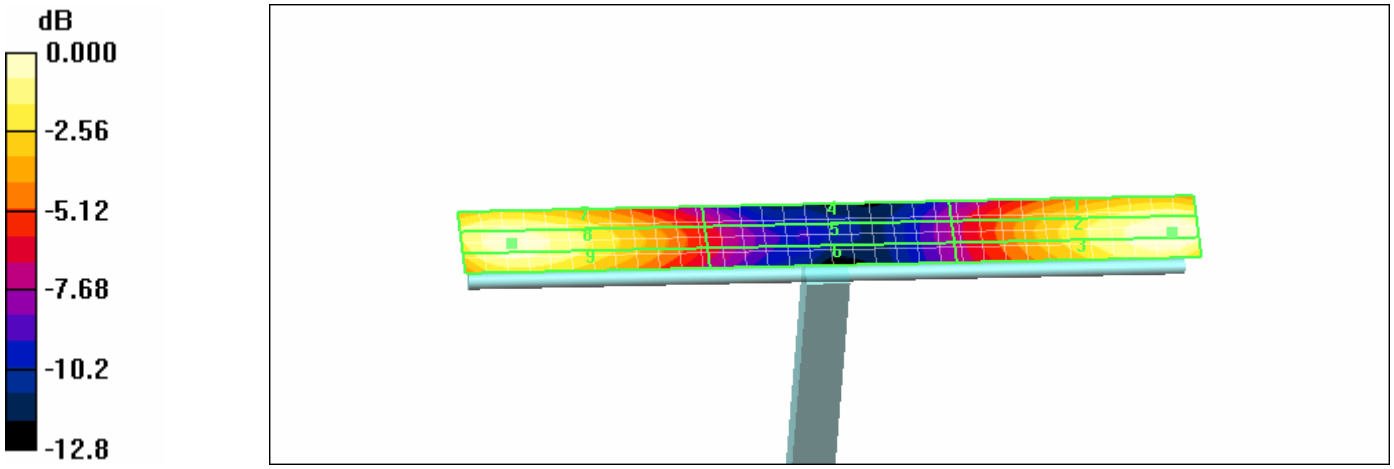
- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (5x35x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 49.2 V/m; Power Drift = 0.070 dB
Maximum value of Total (measured) = 149.6 V/m

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x341x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 152.1 V/m
Probe Modulation Factor = 1.00
Reference Value = 49.2 V/m; Power Drift = 0.070 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak E-field in V/m

Grid **138.2**	Grid **152.1**	Grid **151.5**
Grid **73.4**	Grid **76.8**	Grid **75.3**
Grid	Grid	Grid



0 dB = 152.1V/m

Date/Time: 27/06/2006 8:18:27 AM

Test Laboratory: RTS

HAC_E_Dipole_835 MHz_80%AM_19_33dBm_PMF

DUT: HAC-Dipole 835 MHz; Type: D835V3; Serial: Not Specified

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: H Device Section

DASY4 Configuration:

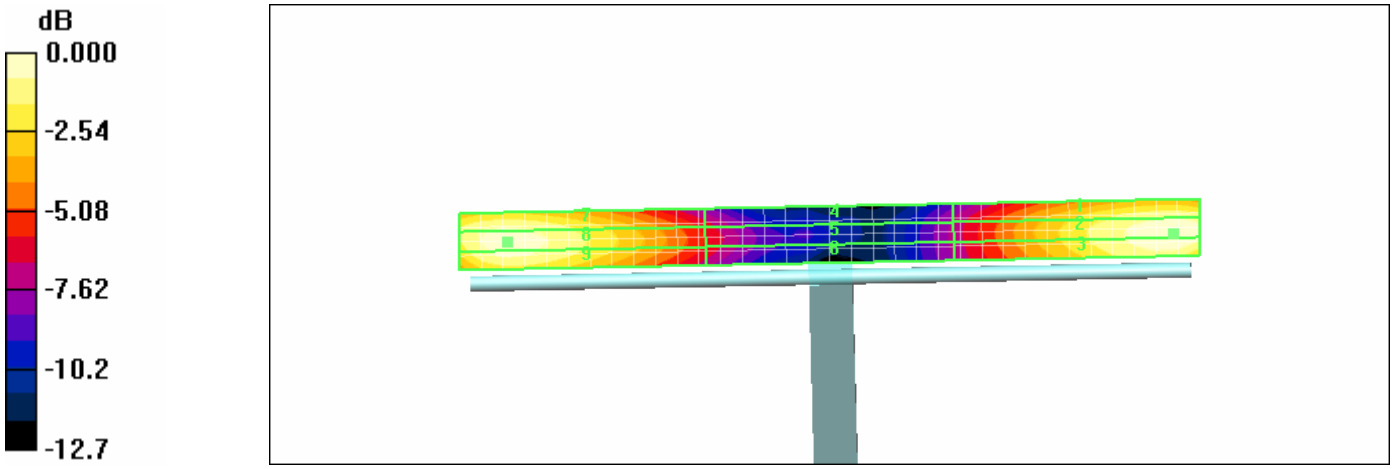
- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (5x35x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 31.1 V/m; Power Drift = -0.046 dB
Maximum value of Total (measured) = 92.6 V/m

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x341x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 93.8 V/m
Probe Modulation Factor = 1.00
Reference Value = 31.1 V/m; Power Drift = -0.046 dB
Hearing Aid Near-Field Category: M3 (AWF 0 dB)

Peak E-field in V/m

Grid **86.2**	Grid **93.8**	Grid **93.4**
Grid **46.0**	Grid **47.9**	Grid **47.2**
Grid	Grid	Grid



0 dB = 93.8V/m

Date/Time: 27/06/2006 8:31:39 AM

Test Laboratory: RTS

HAC_E_Dipole_835 MHz__GSM_19_33dBm_PMF

DUT: HAC-Dipole 835 MHz; Type: D835V3; Serial: Not Specified

Communication System: GSM 850; Frequency: 835 MHz;Duty Cycle: 1:8.3
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: H Device Section

DASY4 Configuration:

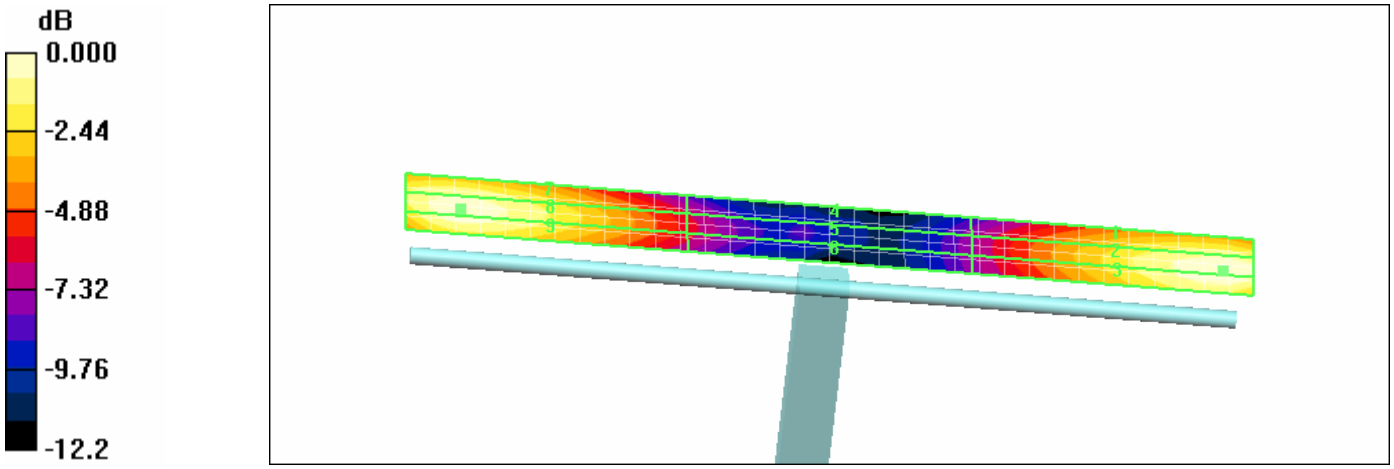
- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (5x35x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 18.5 V/m; Power Drift = -0.038 dB
Maximum value of Total (measured) = 51.7 V/m

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x341x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 52.5 V/m
Probe Modulation Factor = 1.00
Reference Value = 18.5 V/m; Power Drift = -0.038 dB
Hearing Aid Near-Field Category: M3 (AWF -5 dB)

Peak E-field in V/m

Grid **47.3**	Grid **52.5**	Grid **52.2**
Grid **25.1**	Grid **26.4**	Grid **26.1**
Grid	Grid	Grid



0 dB = 52.5V/m

Date/Time: 27/06/2006 9:28:59 AM

Test Laboratory: RTS

HAC_H_Dipole_835 MHz_CW_20dBm

DUT: HAC-Dipole 835 MHz; Type: D835V3; Serial: Not Specified

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3
Phantom section: H Device Section

DASY4 Configuration:

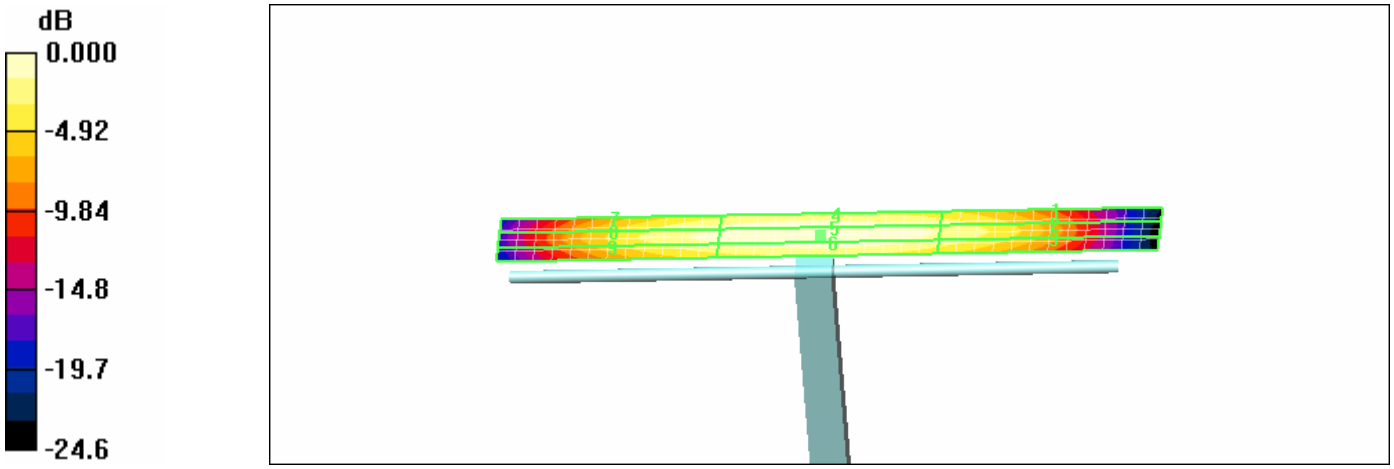
- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

H Scan - H3DV6 probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (5x37x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.473 A/m; Power Drift = 0.029 dB
Maximum value of Total (measured) = 0.485 A/m

H Scan - H3DV6 probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.485 A/m
Probe Modulation Factor = 1.00
Reference Value = 0.473 A/m; Power Drift = 0.029 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid **0.375**	Grid **0.400**	Grid **0.378**
Grid **0.458**	Grid **0.485**	Grid **0.453**
Grid	Grid	Grid



0 dB = 0.485A/m

Date/Time: 27/06/2006 9:00:18 AM

Test Laboratory: RTS

HAC_H_Dipole_835 MHz_CW_19_33dBm

DUT: HAC-Dipole 835 MHz; Type: D835V3; Serial: Not Specified

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3
Phantom section: H Device Section

DASY4 Configuration:

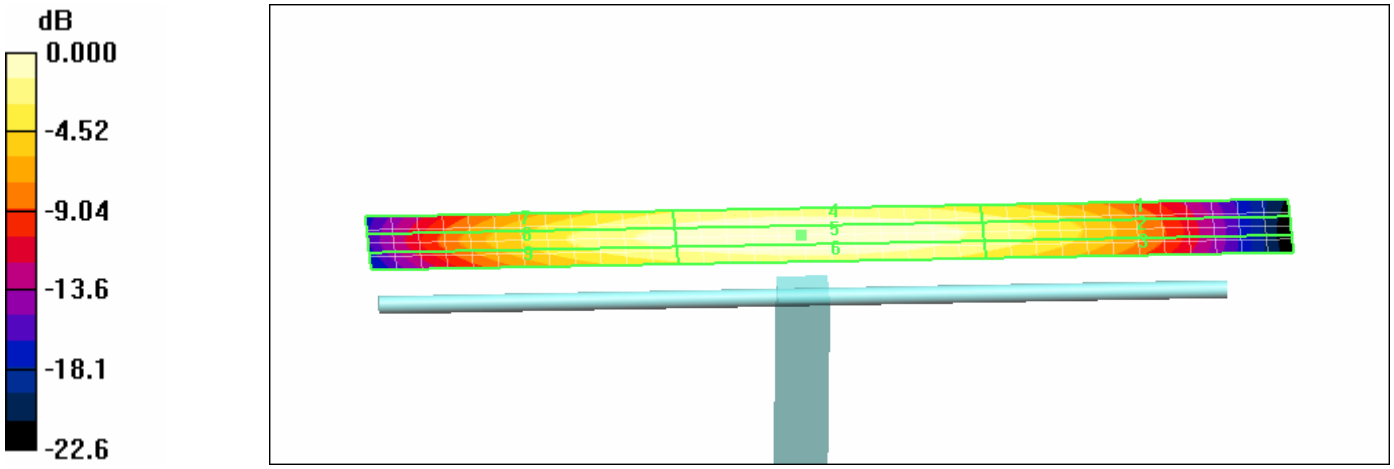
- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

H Scan - H3DV6 probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (5x37x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.435 A/m; Power Drift = 0.124 dB
Maximum value of Total (measured) = 0.377 A/m

H Scan - H3DV6 probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.377 A/m
Probe Modulation Factor = 1.00
Reference Value = 0.435 A/m; Power Drift = 0.124 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid **0.292**	Grid **0.306**	Grid **0.298**
Grid **0.357**	Grid **0.377**	Grid **0.362**
Grid	Grid	Grid



0 dB = 0.377A/m

Date/Time: 27/06/2006 9:07:47 AM

Test Laboratory: RTS

HAC_H_Dipole_835 MHz_80%AM_19_33dBm

DUT: HAC-Dipole 835 MHz; Type: D835V3; Serial: Not Specified

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3
Phantom section: H Device Section

DASY4 Configuration:

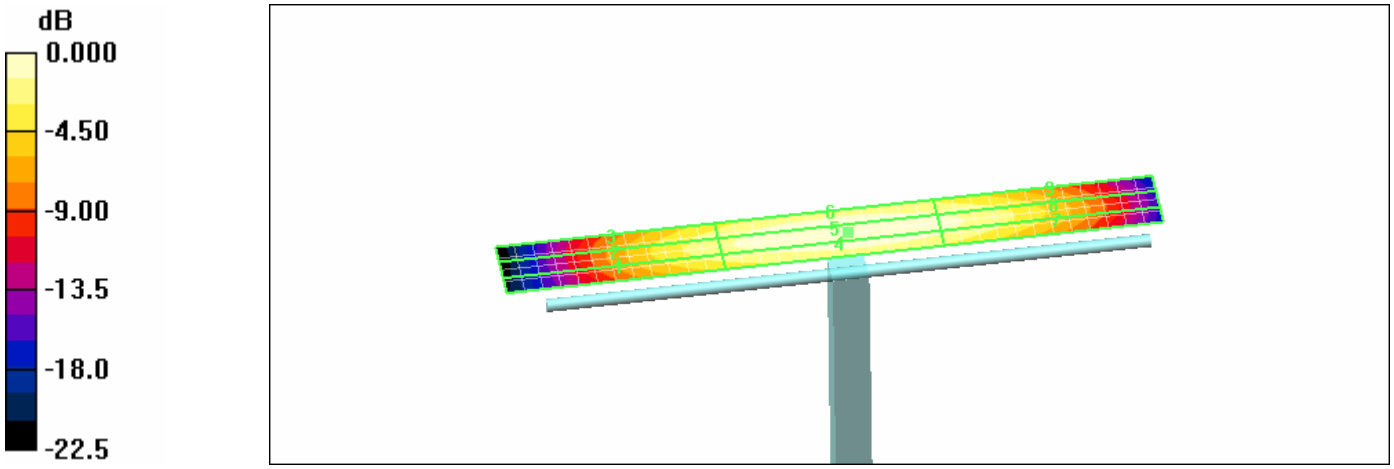
- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

H Scan - H3DV6 probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (5x37x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.270 A/m; Power Drift = 0.057 dB
Maximum value of Total (measured) = 0.236 A/m

H Scan - H3DV6 probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.236 A/m
Probe Modulation Factor = 1.00
Reference Value = 0.270 A/m; Power Drift = 0.057 dB
Hearing Aid Near-Field Category: M3 (AWF 0 dB)

Peak H-field in A/m

Grid **0.183**	Grid **0.191**	Grid **0.185**
Grid **0.224**	Grid **0.236**	Grid **0.224**
Grid	Grid	Grid



0 dB = 0.236A/m

Date/Time: 27/06/2006 8:48:36 AM

Test Laboratory: RTS

HAC_H_Dipole_835 MHz_GSM_19_33dBm

DUT: HAC-Dipole 835 MHz; Type: D835V3; Serial: Not Specified

Communication System: GSM 850; Frequency: 835 MHz;Duty Cycle: 1:8.3
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3
Phantom section: H Device Section

DASY4 Configuration:

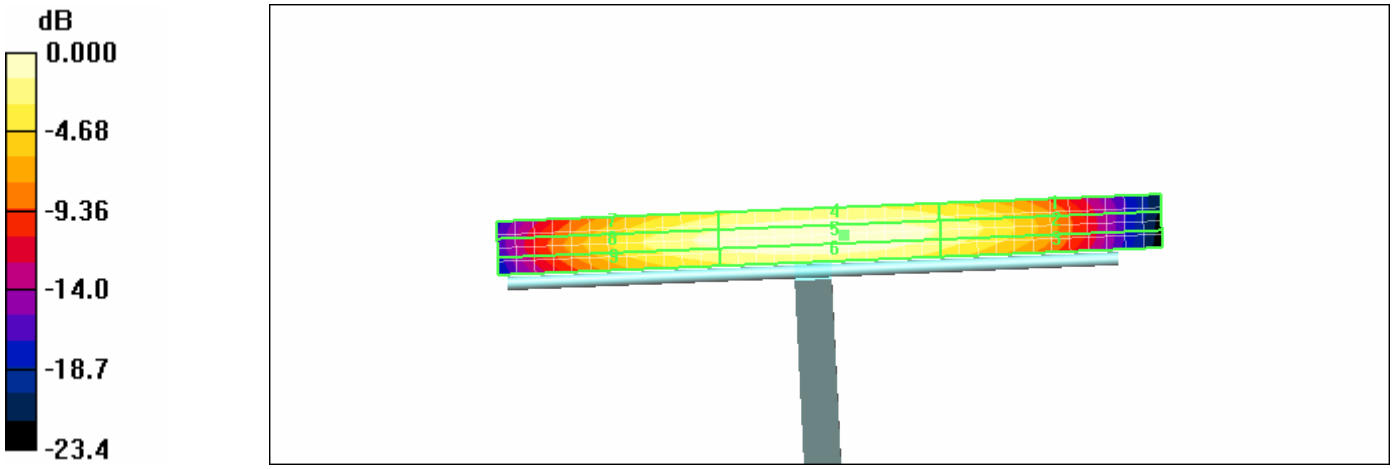
- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

H Scan - H3DV6 probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (5x37x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.157 A/m; Power Drift = 0.199 dB
Maximum value of Total (measured) = 0.137 A/m

H Scan - H3DV6 probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.137 A/m
Probe Modulation Factor = 1.00
Reference Value = 0.157 A/m; Power Drift = 0.199 dB
Hearing Aid Near-Field Category: M4 (AWF -5 dB)

Peak H-field in A/m

Grid **0.103**	Grid **0.112**	Grid **0.108**
Grid **0.125**	Grid **0.137**	Grid **0.131**
Grid	Grid	Grid



0 dB = 0.137A/m

Date/Time: 26/06/2006 1:38:01 PM

Test Laboratory: RTS

HAC_E_Dipole_1880 MHz_CW_20dBm

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: Not Specified

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: H Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (5x19x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 68.1 V/m; Power Drift = 0.008 dB
Maximum value of Total (measured) = 120.6 V/m

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 81.2 V/m
Probe Modulation Factor = 1.00
Reference Value = 68.1 V/m; Power Drift = 0.008 dB
Hearing Aid Near-Field Category: M3 (AWF 0 dB)

Peak E-field in V/m

Grid **118.5**	Grid **122.9**	Grid **119.1**
Grid **77.4**	Grid **81.2**	Grid **80.7**
Grid	Grid	Grid

Cursor:

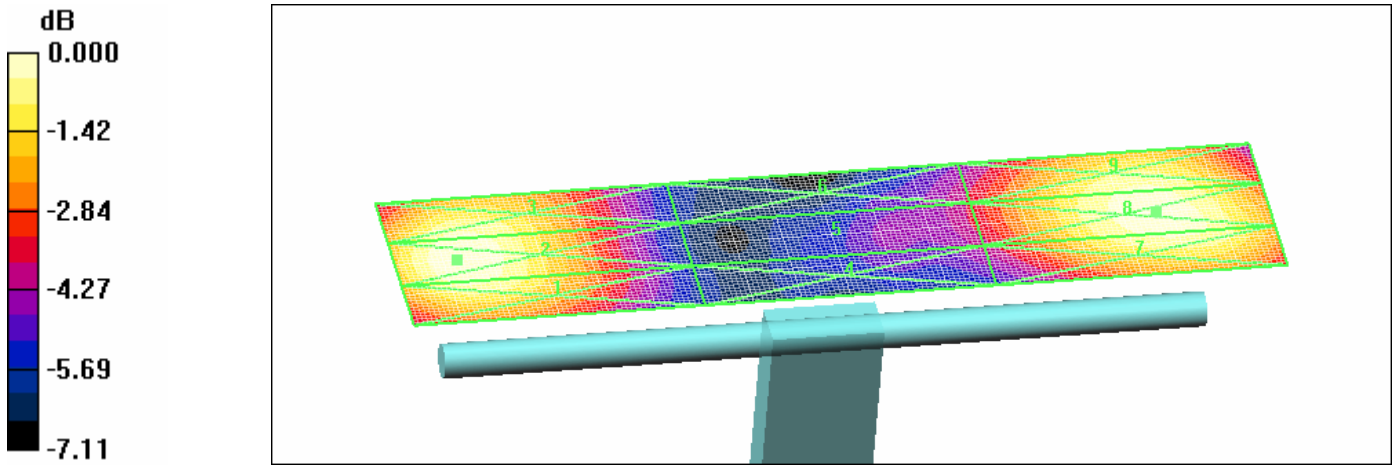
Total = 41.7929 dB V/m
E Category: M2
Location: 0, -38.5, 364.3 mm

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 68.1 V/m; Power Drift = 0.008 dB
Maximum value of Total (interpolated) = 122.9 V/m

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 122.9 V/m
Probe Modulation Factor = 1.00
Reference Value = 68.1 V/m; Power Drift = 0.008 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak E-field in V/m

Grid **118.5**	Grid **122.9**	Grid **119.1**
Grid **77.4**	Grid **81.2**	Grid **80.7**
Grid	Grid	Grid



0 dB = 122.9V/m

Date/Time: 26/06/2006 3:30:32 PM

Test Laboratory: RTS

HAC_E_Dipole_1880 MHz_CW_16_67dBm_PMF

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: Not Specified

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: H Device Section

DASY4 Configuration:

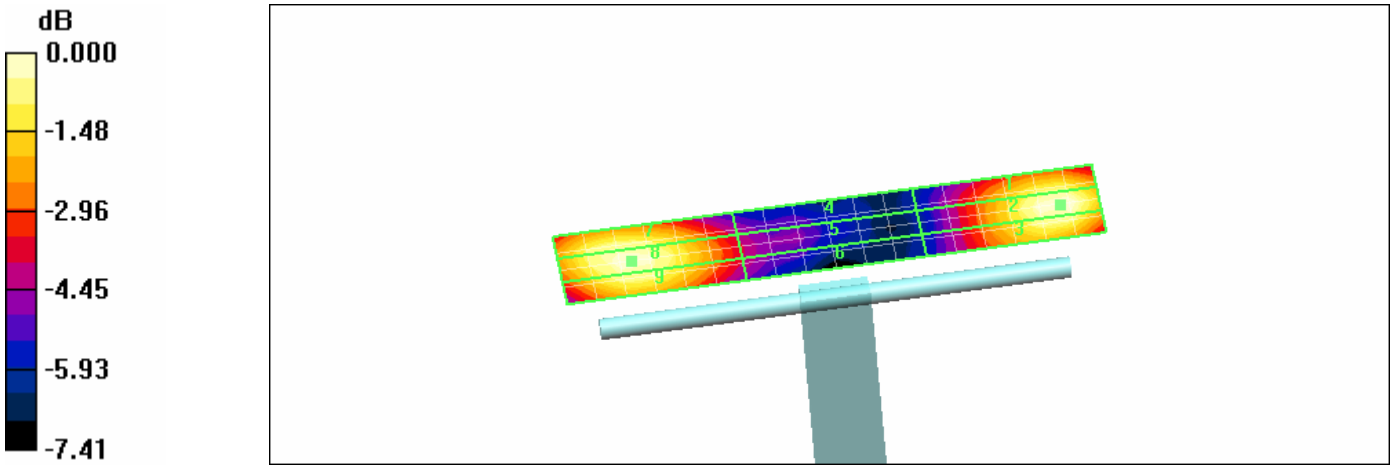
- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (5x19x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 45.1 V/m; Power Drift = -0.066 dB
Maximum value of Total (measured) = 81.3 V/m

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 82.8 V/m
Probe Modulation Factor = 1.00
Reference Value = 45.1 V/m; Power Drift = -0.066 dB
Hearing Aid Near-Field Category: M3 (AWF 0 dB)

Peak E-field in V/m

Grid **78.2**	Grid **82.8**	Grid **80.0**
Grid **51.4**	Grid **53.7**	Grid **53.0**
Grid	Grid	Grid



0 dB = 82.8V/m

Date/Time: 26/06/2006 2:53:54 PM

Test Laboratory: RTS

HAC_E_Dipole_1880 MHz_80%AM_16_7dBm_PMF

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: Not Specified

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: H Device Section

DASY4 Configuration:

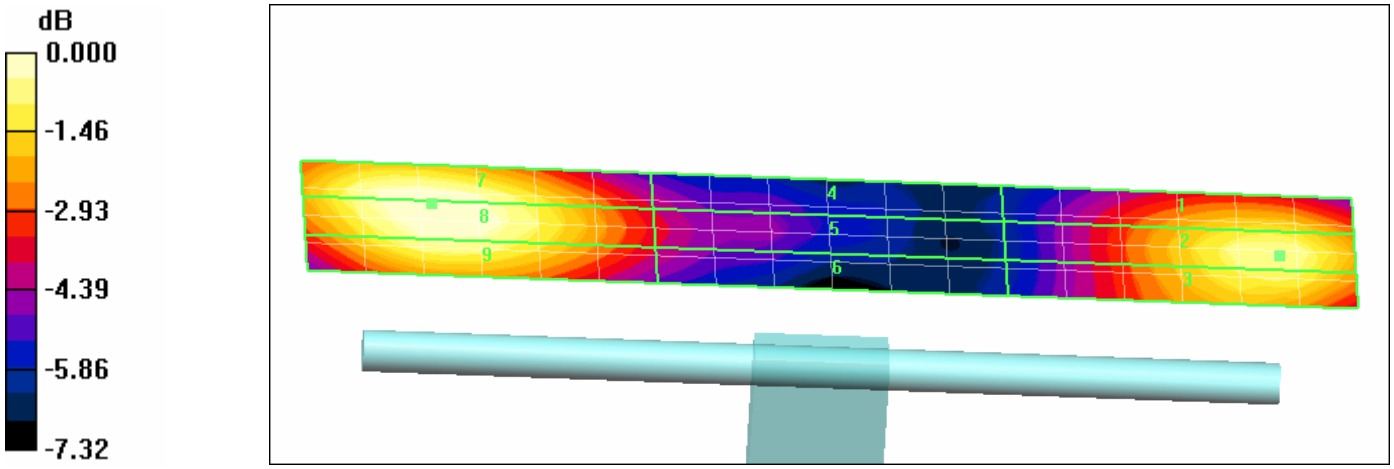
- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (5x19x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 29.7 V/m; Power Drift = -0.059 dB
Maximum value of Total (measured) = 53.4 V/m

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 54.3 V/m
Probe Modulation Factor = 1.00
Reference Value = 29.7 V/m; Power Drift = -0.059 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid **47.8**	Grid **51.4**	Grid **50.4**
Grid **34.9**	Grid **36.0**	Grid **35.1**
Grid	Grid	Grid



0 dB = 54.3V/m

Date/Time: 26/06/2006 3:38:14 PM

Test Laboratory: RTS

HAC_E_Dipole_GSM 1880_16_67dBm_PMF

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: Not Specified

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: H Device Section

DASY4 Configuration:

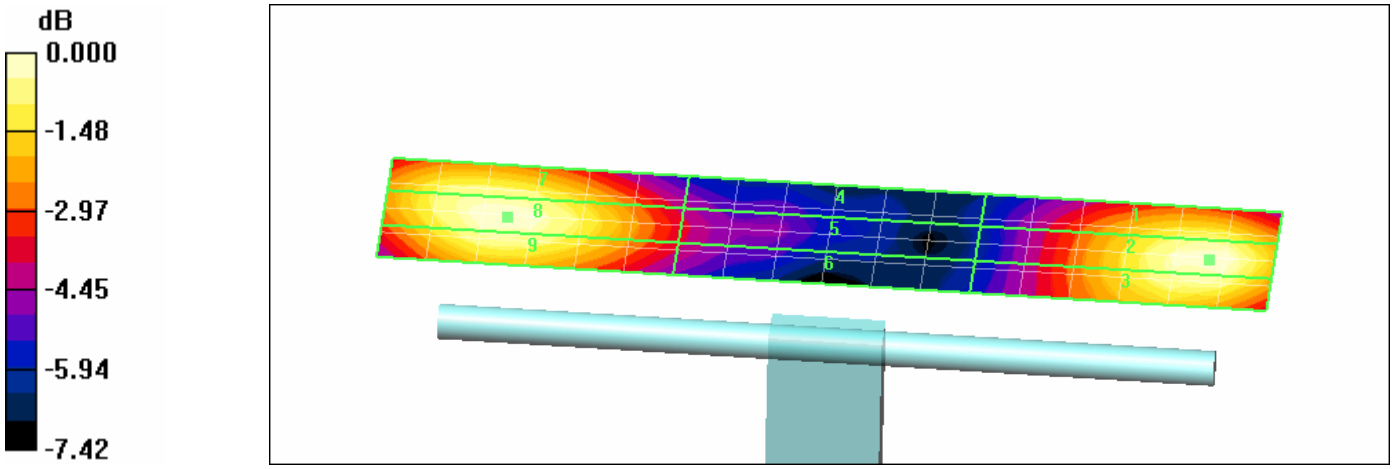
- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (5x19x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 15.6 V/m; Power Drift = 0.046 dB
Maximum value of Total (measured) = 28.3 V/m

E Scan - ER probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 28.8 V/m
Probe Modulation Factor = 1.00
Reference Value = 15.6 V/m; Power Drift = 0.046 dB
Hearing Aid Near-Field Category: M4 (AWF -5 dB)

Peak E-field in V/m

Grid **26.9**	Grid **28.8**	Grid **28.1**
Grid **17.8**	Grid **18.8**	Grid **18.6**
Grid	Grid	Grid



0 dB = 28.8V/m

Date/Time: 26/06/2006 4:20:41 PM

Test Laboratory: RTS

HAC_H_Dipole_1880 MHz_CW_20dBm

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: Not Specified

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 Device Section

DASY4 Configuration:

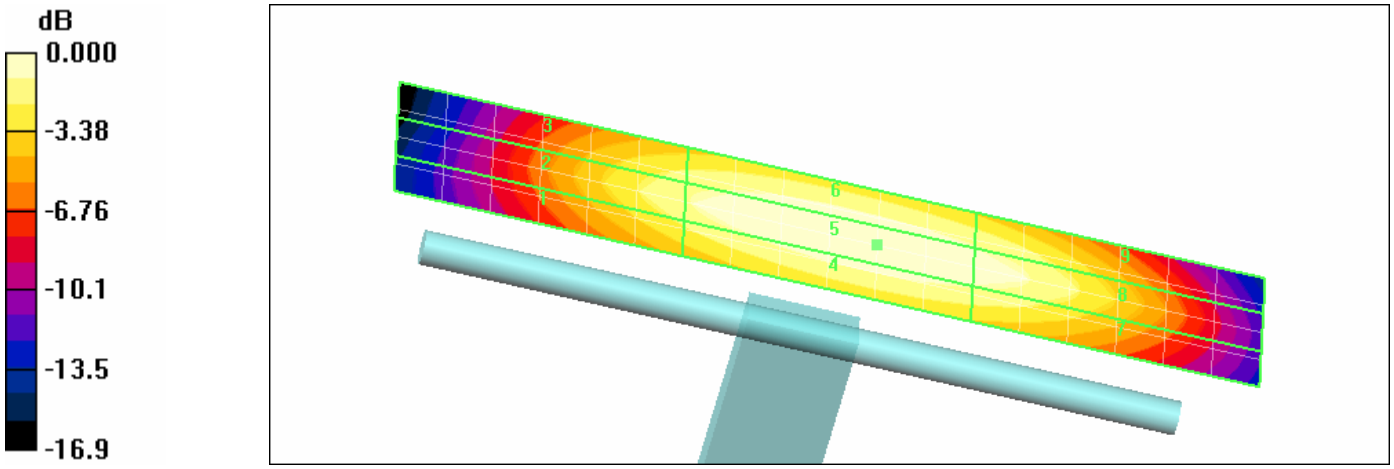
- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

H Scan - H3DV6 probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (5x19x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.457 A/m; Power Drift = -0.112 dB
Maximum value of Total (measured) = 0.470 A/m

H Scan - H3DV6 probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.470 A/m
Probe Modulation Factor = 1.00
Reference Value = 0.457 A/m; Power Drift = -0.112 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Peak H-field in A/m

Grid **0.376**	Grid **0.409**	Grid **0.392**
Grid **0.436**	Grid **0.470**	Grid **0.442**
Grid	Grid	Grid



0 dB = 0.470A/m

Date/Time: 26/06/2006 3:57:46 PM

Test Laboratory: RTS

HAC_H_Dipole_1880 MHz_CW_16_67dBm

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: Not Specified

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 Device Section

DASY4 Configuration:

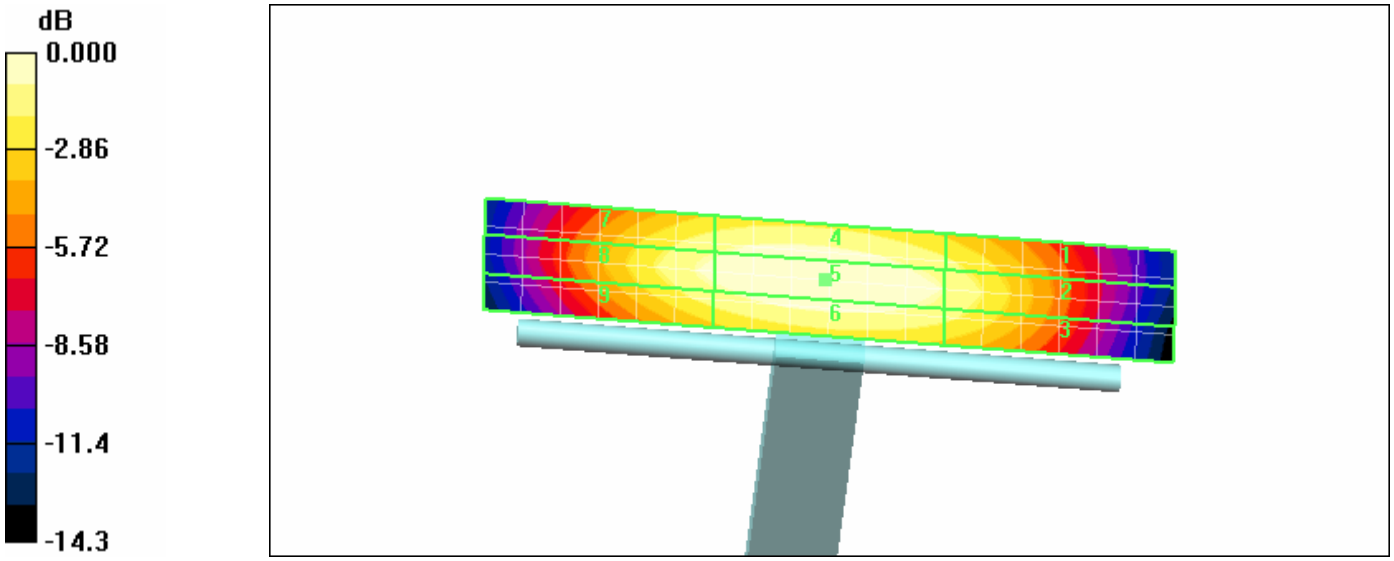
- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

H Scan - H3DV6 probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (5x19x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.292 A/m; Power Drift = -0.024 dB
Maximum value of Total (measured) = 0.254 A/m

H Scan - H3DV6 probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.255 A/m
Probe Modulation Factor = 1.00
Reference Value = 0.292 A/m; Power Drift = -0.024 dB
Hearing Aid Near-Field Category: M3 (AWF 0 dB)

Peak H-field in A/m

Grid **0.217**	Grid **0.228**	Grid **0.219**
Grid **0.244**	Grid **0.255**	Grid **0.242**
Grid	Grid	Grid



0 dB = 0.255A/m

Date/Time: 26/06/2006 4:06:03 PM

Test Laboratory: RTS

HAC_H_Dipole_1880 MHz_80%AM_16_67dBm

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: Not Specified

Communication System: CW; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3
Phantom section: H Device Section

DASY4 Configuration:

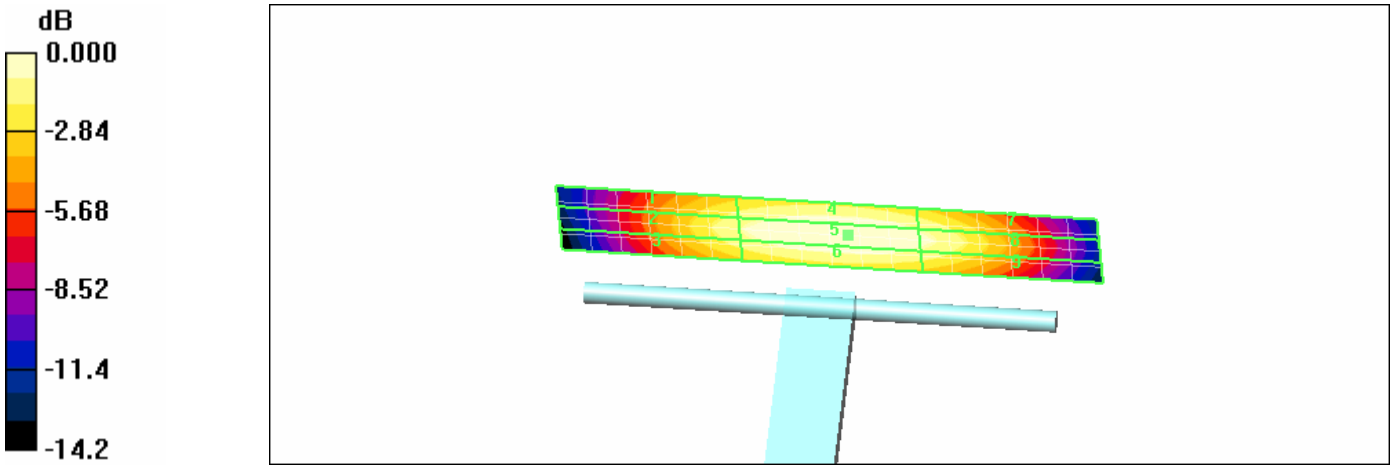
- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

H Scan - H3DV6 probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (5x19x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.185 A/m; Power Drift = 0.048 dB
Maximum value of Total (measured) = 0.163 A/m

H Scan - H3DV6 probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.163 A/m
Probe Modulation Factor = 1.00
Reference Value = 0.185 A/m; Power Drift = 0.048 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid **0.138**	Grid **0.145**	Grid **0.141**
Grid **0.157**	Grid **0.163**	Grid **0.155**
Grid	Grid	Grid



0 dB = 0.163A/m

Date/Time: 26/06/2006 3:50:18 PM

Test Laboratory: RTS

HAC_H_Dipole_1880 MHz_GSM_16_67dBm

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: Not Specified

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: H Device Section

DASY4 Configuration:

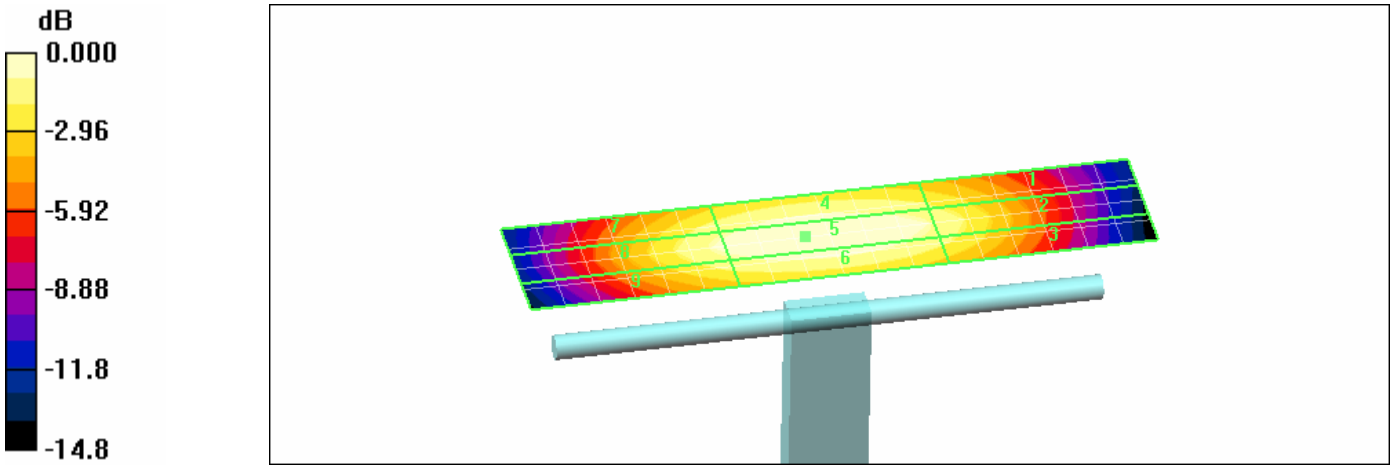
- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

H Scan - H3DV6 probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (5x19x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.110 A/m; Power Drift = -0.062 dB
Maximum value of Total (measured) = 0.095 A/m

H Scan - H3DV6 probe tip 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.095 A/m
Probe Modulation Factor = 1.00
Reference Value = 0.110 A/m; Power Drift = -0.062 dB
Hearing Aid Near-Field Category: M4 (AWF -5 dB)

Peak H-field in A/m

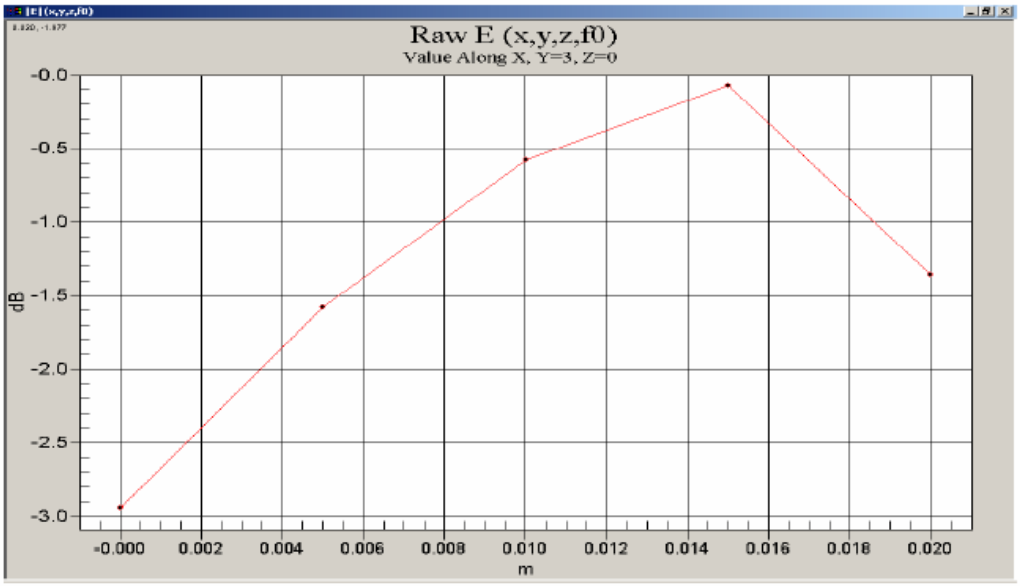
Grid **0.079**	Grid **0.084**	Grid **0.080**
Grid **0.090**	Grid **0.095**	Grid **0.090**
Grid	Grid	Grid



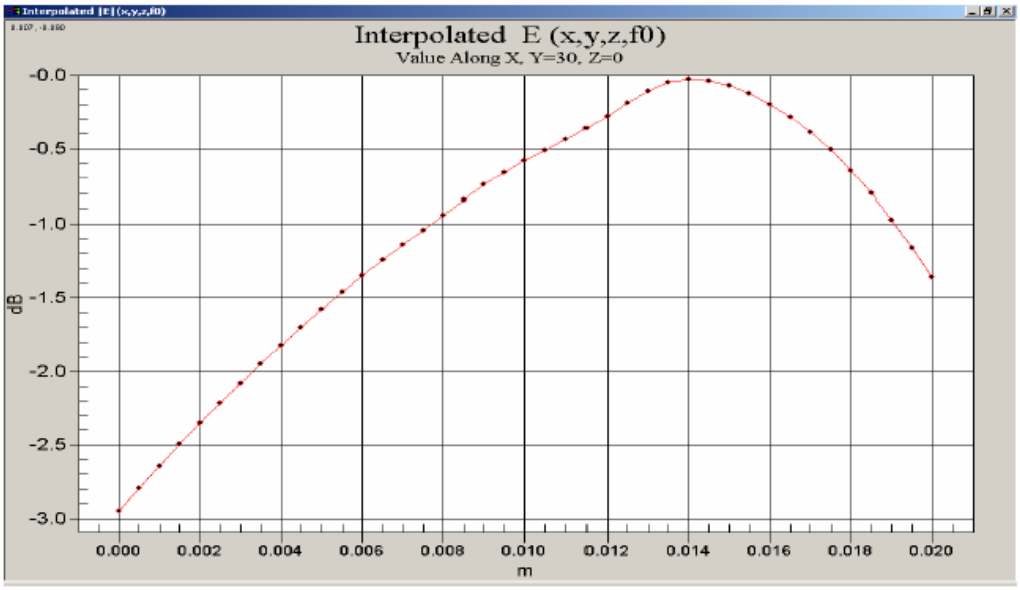
0 dB = 0.095A/m

Justification of Step Size and Interpolation

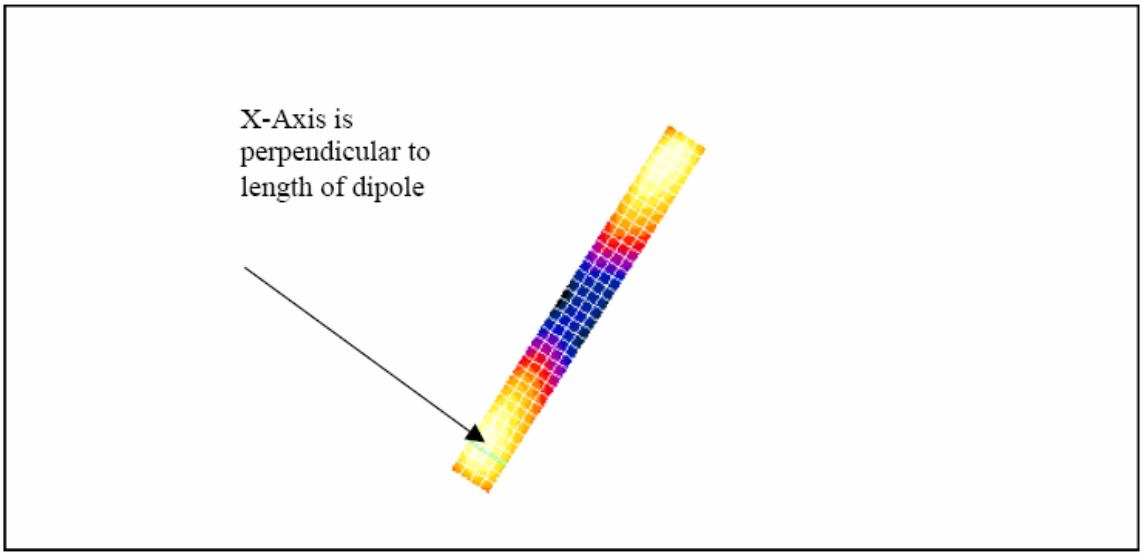
This section demonstrates that a 5mm step size with interpolation provides sufficient resolution for RF emissions measurements. The DASY 4 uses interpolation algorithms to derive 9 interpolated points between every measured point.



The figure above shows the raw measured field strength perpendicular to the length of the validation dipole. The TCB guidance slides require the 3dB width to be much larger than the step size. The width between -3dB points is > 21mm, at least 4 times the step size.



This figure shows the interpolated field strength perpendicular to the dipole. The interpolated points follow the raw points with no inconsistencies.



The green line in this figure shows the axis along which the points lie.

Comparison of 5mm and 2mm step sizes

An additional set of measurements was taken: dipole validations were performed using 5mm and 2mm step sizes. The delta between the two readings is insignificant for both field types (< 0.4% for E and 0% for H), demonstrating that 5mm is sufficient. The plots follow.

Date/Time: 14/07/2005 11:35:24 AM

Lab: RIM Testing Services (RTS)

Dipole Validation 1880 MHz_E-Field 07_14_05

DUT: HAC Dipole 1880 MHz; Type: CD1880V3

Communication System: CW; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: H Device Section

DASY4 Configuration:
- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 10/12/2004
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

E Scan 10mm above CD 1880 MHz/Hearing Aid Compatibility Test (5x19x1):
Measurement grid: dx=5mm, dy=5mm
Maximum value of Total (measured) = 134.8 V/m

E Scan 10mm above CD 1880 MHz/Hearing Aid Compatibility Test (41x181x1):
Measurement grid: dx=5mm, dy=5mm
Maximum value of Total field (slot averaged) = 131.0 V/m
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

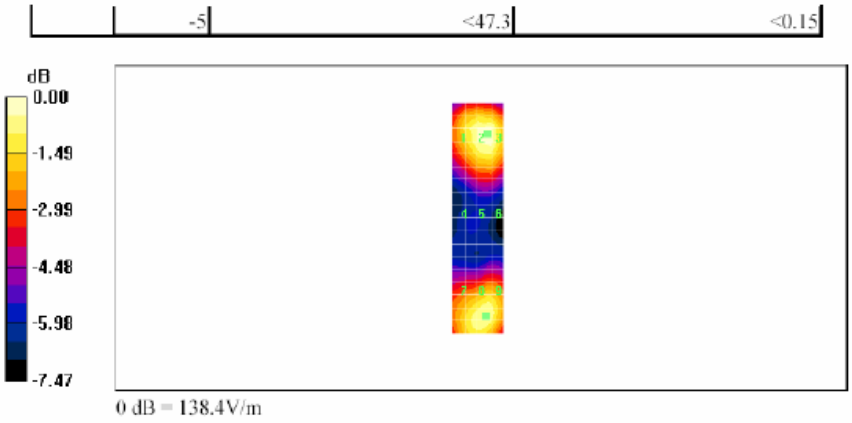
E in V/m (Time averaged)

Grid 1 **123.2**	Grid 2 **138.1**	Grid 3 **138.4**
Grid 4 **80.9**	Grid 5 **92.3**	Grid 6 **92.2**
Grid 7 **119.8**	Grid 8 **131.0**	Grid 9 **130.7**

E in V/m (Slot averaged)

Grid 1 **123.2**	Grid 2 **138.1**	Grid 3 **138.4**
Grid 4 **80.9**	Grid 5 **92.3**	Grid 6 **92.2**
Grid 7 **119.8**	Grid 8 **131.0**	Grid 9 **130.7**

Category	AWF (dB)	Limits for E-Field Emissions (V/m)	Limits for H-Field Emissions (A/m)
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.15 - 0.25
M4	0	<63.1	<0.19



Date/Time: 14/07/2005 11:44:51 AM

Lab: RIM Testing Services (RTS)

Dipole Validation 1880 MHz_2mm step_E-Field 07_14_05

DUT: HAC Dipole 1880 MHz; Type: CD1880V3

Communication System: CW; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: H Device Section

DASY4 Configuration:
- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 10/12/2004
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

E Scan 10mm above CD 1880 MHz/Hearing Aid Compatibility Test (11x46x1):
Measurement grid: dx=2mm, dy=2mm
Maximum value of Total (measured) = 138.0 V/m

E Scan 10mm above CD 1880 MHz/Hearing Aid Compatibility Test (101x451x1):
Measurement grid: dx=2mm, dy=2mm
Maximum value of Total field (slot averaged) = 131.2 V/m
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

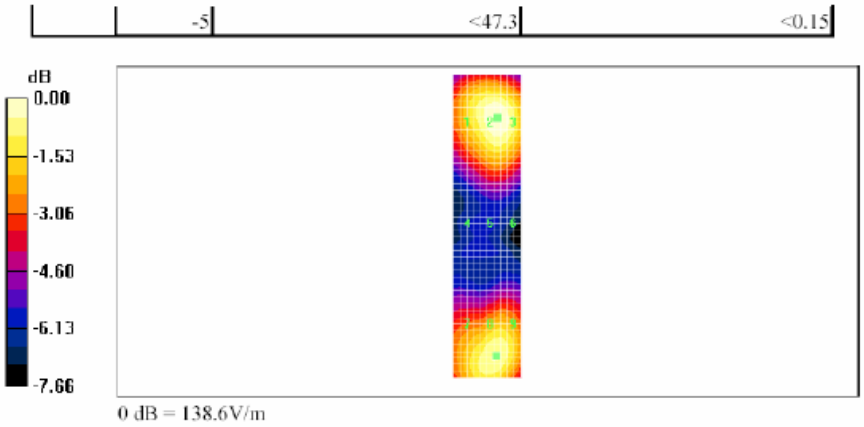
E in V/m (Time averaged)

Grid 1	Grid 2	Grid 3
123.1	**138.6**	**138.6**
Grid 4	Grid 5	Grid 6
81.4	**92.1**	**91.6**
Grid 7	Grid 8	Grid 9
121.3	**131.2**	**131.0**

E in V/m (Slot averaged)

Grid 1	Grid 2	Grid 3
123.1	**138.6**	**138.6**
Grid 4	Grid 5	Grid 6
81.4	**92.1**	**91.6**
Grid 7	Grid 8	Grid 9
121.3	**131.2**	**131.0**

Category	AWF (dB)	Limits for E-Field Emissions (V/m)	Limits for H-Field Emissions (A/m)
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.15 - 0.25
M4	0	<63.1	<0.19



Date/Time: 14/07/2005 12:43:02 PM

Lab: RIM Testing Services (RTS)

HAC_H_Dipole_CW 1880_5 mm step_07_14_05

DUT: HAC Dipole 1880 MHz; Type: CD1880V3

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

DASY4 Configuration:
- Probe: H3DV6 - SN6105; ; Calibrated: 10/12/2004
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

H Scan 10mm above CD 1880 MHz/Hearing Aid Compatibility Test (5x19x1):
Measurement grid: dx=5mm, dy=5mm
Maximum value of Total (measured) = 0.406 A/m

H Scan 10mm above CD 1880 MHz/Hearing Aid Compatibility Test (41x181x1):
Measurement grid: dx=5mm, dy=5mm
Maximum value of Total field (slot averaged) = 0.406 A/m
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

H in A/m (Time averaged)

Grid 1	Grid 2	Grid 3
0.342	**0.359**	**0.344**
Grid 4	Grid 5	Grid 6
0.389	**0.406**	**0.389**
Grid 7	Grid 8	Grid 9
0.363	**0.378**	**0.363**

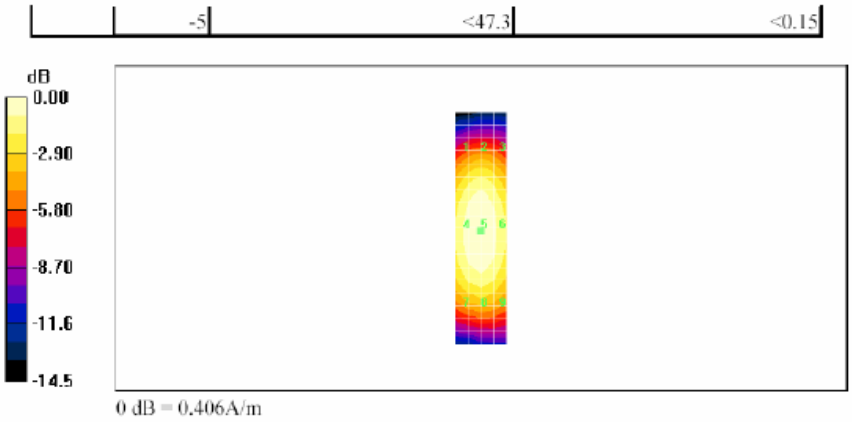
H in A/m (Slot averaged)

Grid 1	Grid 2	Grid 3
0.342	**0.359**	**0.344**
Grid 4	Grid 5	Grid 6
0.389	**0.406**	**0.389**
Grid 7	Grid 8	Grid 9
0.363	**0.378**	**0.363**

Category	AWF (dB)	Limits for E-Field Emissions (V/m)	Limits for H-Field Emissions (A/m)
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.15 - 0.25
M4	0	<63.1	<0.19

Date/Time: 14/07/2005 12:43:02 PM

Page 2 of 2



0 dB = 0.406A/m

file://C:\Program%20Files\DASY4\Print_Templates\HAC_H_Dipole_CW%201880_5%... 14/07/2005

Date/Time: 14/07/2005 12:53:40 PM

Lab: RIM Testing Services (RTS)

HAC_H_Dipole_CW 1880_2 mm step_07_14_05

DUT: HAC Dipole 1880 MHz; Type: CD1880V3

Communication System: CW; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3
Phantom section: H Dipole Section

DASY4 Configuration:
- Probe: H3DV6 - SN6105; ; Calibrated: 10/12/2004
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

H Scan 10mm above CD 1880 MHz/Hearing Aid Compatibility Test (11x46x1):
Measurement grid: dx=2mm, dy=2mm
Maximum value of Total (measured) = 0.406 A/m

H Scan 10mm above CD 1880 MHz/Hearing Aid Compatibility Test (101x451x1):
Measurement grid: dx=2mm, dy=2mm
Maximum value of Total field (slot averaged) = 0.406 A/m
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

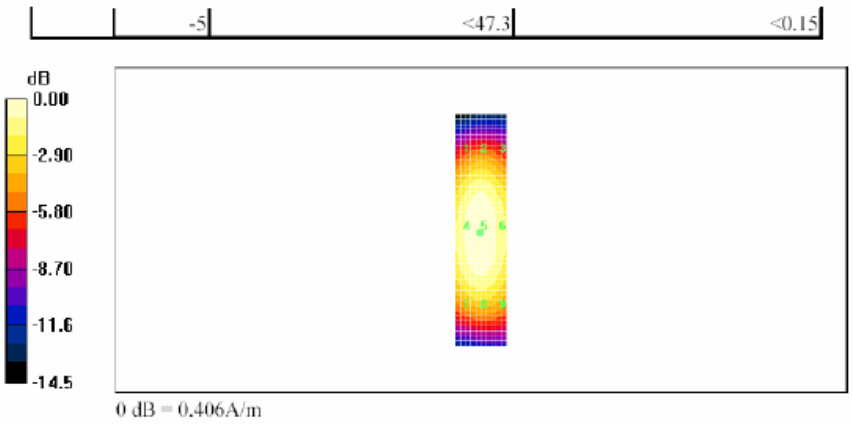
H in A/m (Time averaged)

Grid 1	Grid 2	Grid 3
0.347	**0.361**	**0.348**
Grid 4	Grid 5	Grid 6
0.394	**0.406**	**0.391**
Grid 7	Grid 8	Grid 9
0.367	**0.380**	**0.365**

H in A/m (Slot averaged)

Grid 1	Grid 2	Grid 3
0.347	**0.361**	**0.348**
Grid 4	Grid 5	Grid 6
0.394	**0.406**	**0.391**
Grid 7	Grid 8	Grid 9
0.367	**0.380**	**0.365**

Category	AWF (dB)	Limits for E-Field Emissions (V/m)	Limits for H-Field Emissions (A/m)
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.15 - 0.25
M4	0	<63.1	<0.19



0 dB = 0.406A/m

A.3 RF emission field plots

For plots where the probe was rotated, there is an arrow showing location of the probe rotation after the exclusion block.

Date/Time: 28/06/2006 12:04:54 PM

Test Laboratory: RTS

HAC_E_RBH42GW_GSM850_Spk center_low_chan
DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: E Device Section
DASY4 Configuration:

- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

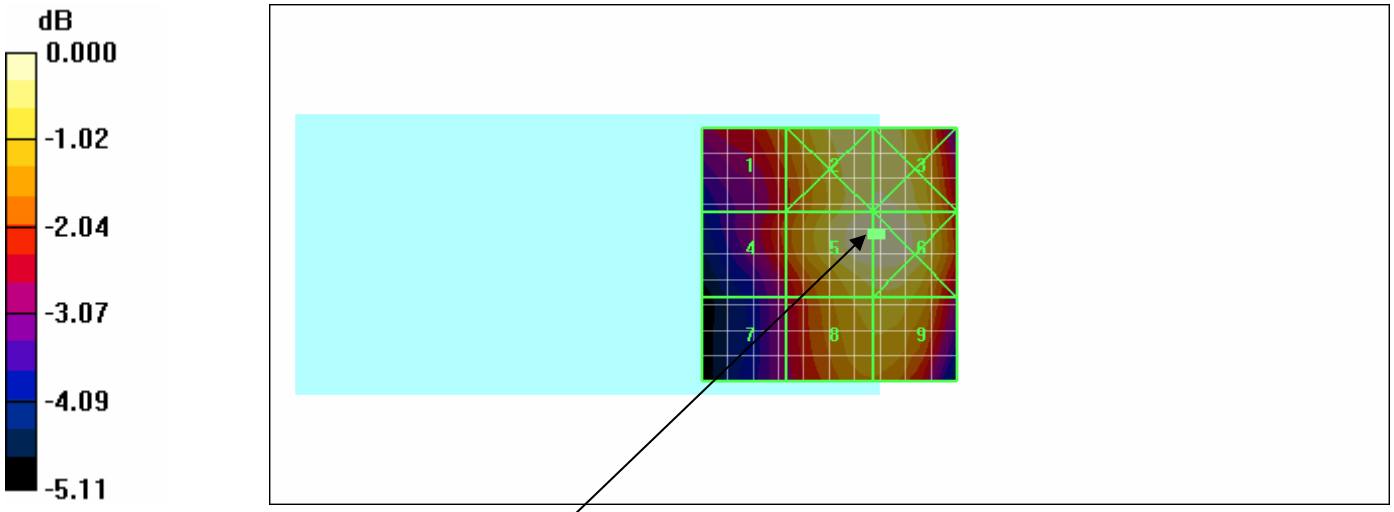
E Scan - ER probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 78.1 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 77.9 V/m; Power Drift = -0.131 dB
Maximum value of Total (measured) = 78.6 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 227.6 V/m
Probe Modulation Factor = 2.90
Reference Value = 77.9 V/m; Power Drift = -0.131 dB

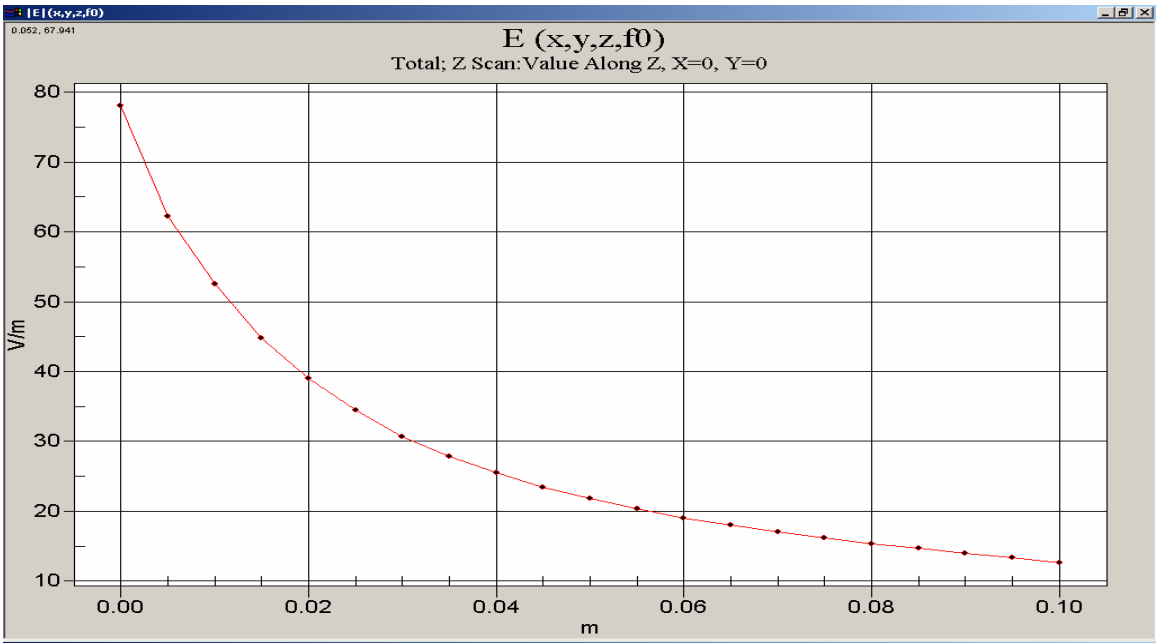
Peak E-field in V/m

Grid **191.9**	Grid **222.1**	Grid **222.6**
Grid **184.0**	Grid **227.6**	Grid **228.1**
Grid	Grid	Grid



0 dB = 228.1V/m

Location of the Probe rotation



Probe rotation at max location after exclusion block

E (delta) = (E max - E at zero degress) * PMF
= (72.6 – 71.6) * 2.90
= 1 * 2.90
= 2.89 V/m

Date/Time: 28/06/2006 12:14:44 PM

Test Laboratory: RTS

HAC_E_RBH42GW_GSM850_Spk center_mid_chan
DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 836.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: E Device Section
DASY4 Configuration:

- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

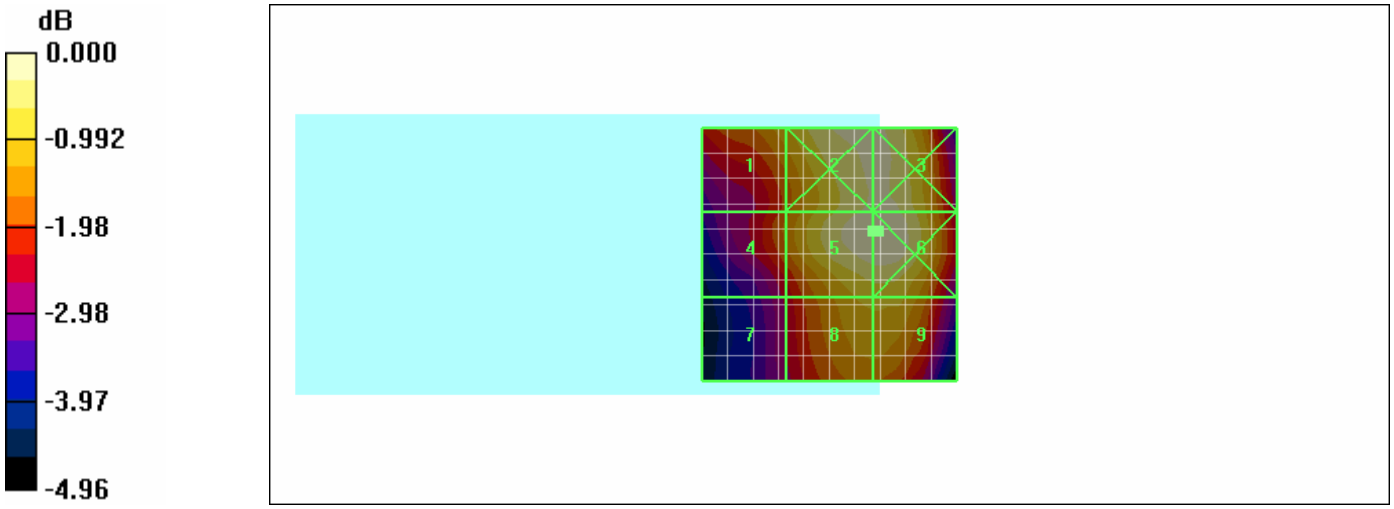
E Scan - ER probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 65.3 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 64.7 V/m; Power Drift = 0.056 dB
Maximum value of Total (measured) = 65.0 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 188.1 V/m
Probe Modulation Factor = 2.90
Reference Value = 64.7 V/m; Power Drift = 0.056 dB
Hearing Aid Near-Field Category: M1 (AWF -5 dB)

Peak E-field in V/m

Grid **167.1**	Grid **184.0**	Grid **184.2**
Grid **157.8**	Grid **188.1**	Grid **188.5**
Grid	Grid	Grid



0 dB = 188.5V/m

Date/Time: 28/06/2006 12:23:15 PM

Test Laboratory: RTS

HAC_E_RBH42GW_GSM850_Spk center_high_chan
DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: E Device Section
DASY4 Configuration:

- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

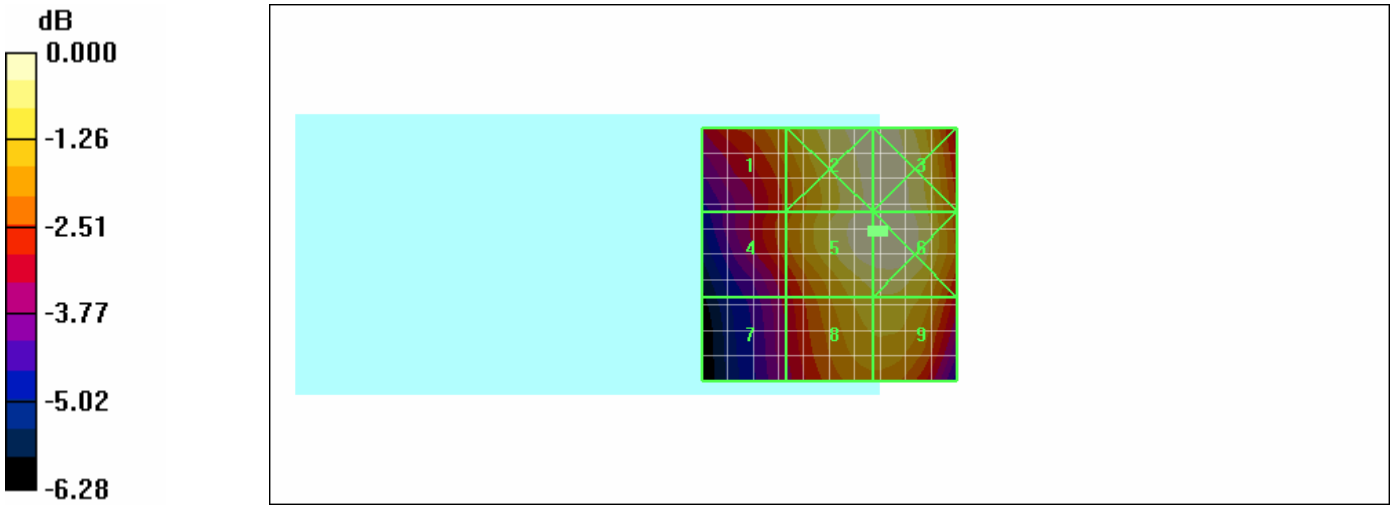
E Scan - ER probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 70.5 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 68.1 V/m; Power Drift = -0.026 dB
Maximum value of Total (measured) = 70.7 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 204.1 V/m
Probe Modulation Factor = 2.90
Reference Value = 68.1 V/m; Power Drift = -0.026 dB
Hearing Aid Near-Field Category: M1 (AWF -5 dB)

Peak E-field in V/m

Grid **172.3**	Grid **200.7**	Grid **201.2**
Grid **160.7**	Grid **204.1**	Grid **205.2**
Grid	Grid	Grid



0 dB = 205.2V/m

Date/Time: 28/06/2006 11:30:52 AM

Test Laboratory: RTS

HAC_E_RBH42GW_GSM850_T_Coil_center_low_chan
DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: E Device Section
DASY4 Configuration:

- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

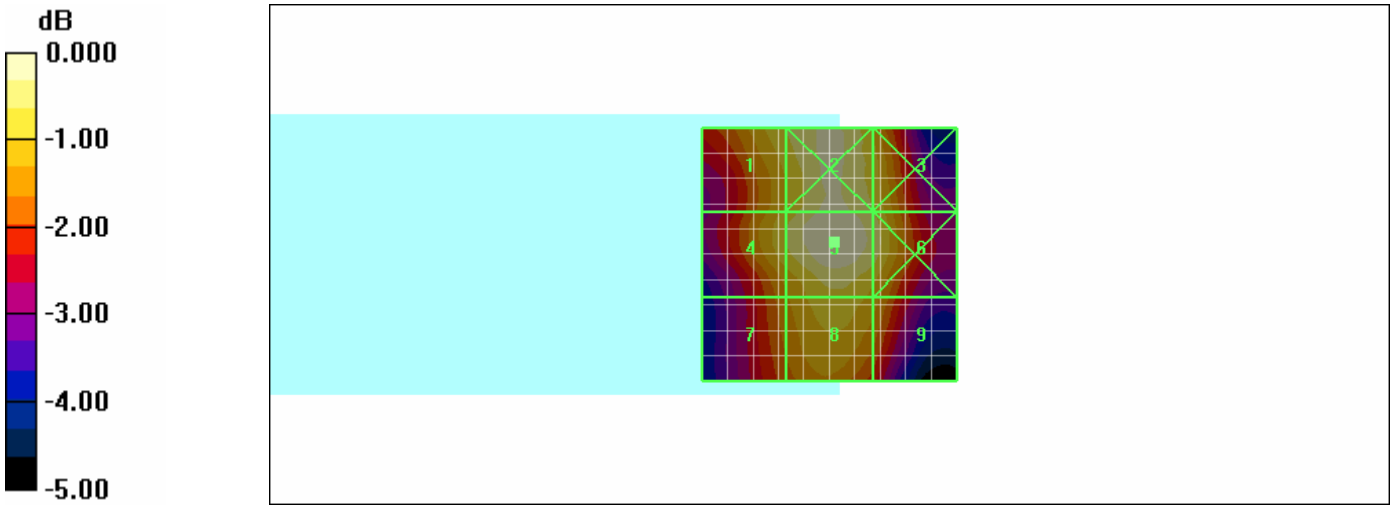
E Scan - ER probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 79.3 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 77.6 V/m; Power Drift = -0.055 dB
Maximum value of Total (measured) = 78.0 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 227.0 V/m
Probe Modulation Factor = 2.90
Reference Value = 77.6 V/m; Power Drift = -0.055 dB
Hearing Aid Near-Field Category: M1 (AWF -5 dB)

Peak E-field in V/m

Grid **210.8**	Grid **221.4**	Grid **211.0**
Grid **210.5**	Grid **227.0**	Grid **215.8**
Grid	Grid	Grid



0 dB = 227.0V/m

Date/Time: 28/06/2006 11:49:46 AM

Test Laboratory: RTS

HAC_E_RBH42GW_GSM850_T_coil center_mid_chan
DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 836.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: E Device Section
DASY4 Configuration:

- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

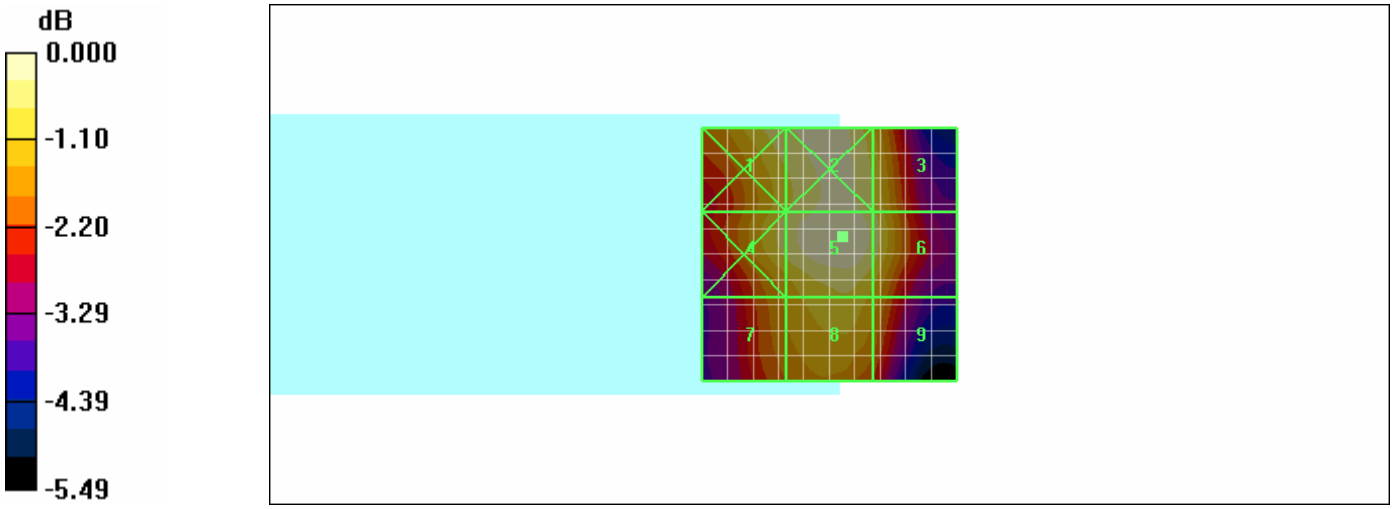
E Scan - ER probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 65.6 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 65.3 V/m; Power Drift = 0.022 dB
Maximum value of Total (measured) = 65.4 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 190.4 V/m
Probe Modulation Factor = 2.90
Reference Value = 65.3 V/m; Power Drift = 0.022 dB
Hearing Aid Near-Field Category: M1 (AWF -5 dB)

Peak E-field in V/m

Grid **181.4**	Grid **186.4**	Grid **176.8**
Grid **179.0**	Grid **190.4**	Grid **180.2**
Grid	Grid	Grid



0 dB = 190.4V/m

Date/Time: 28/06/2006 11:56:46 AM

Test Laboratory: RTS

HAC_E_RBH42GW_GSM850_T_coil center_high_chan
DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: E Device Section
DASY4 Configuration:

- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

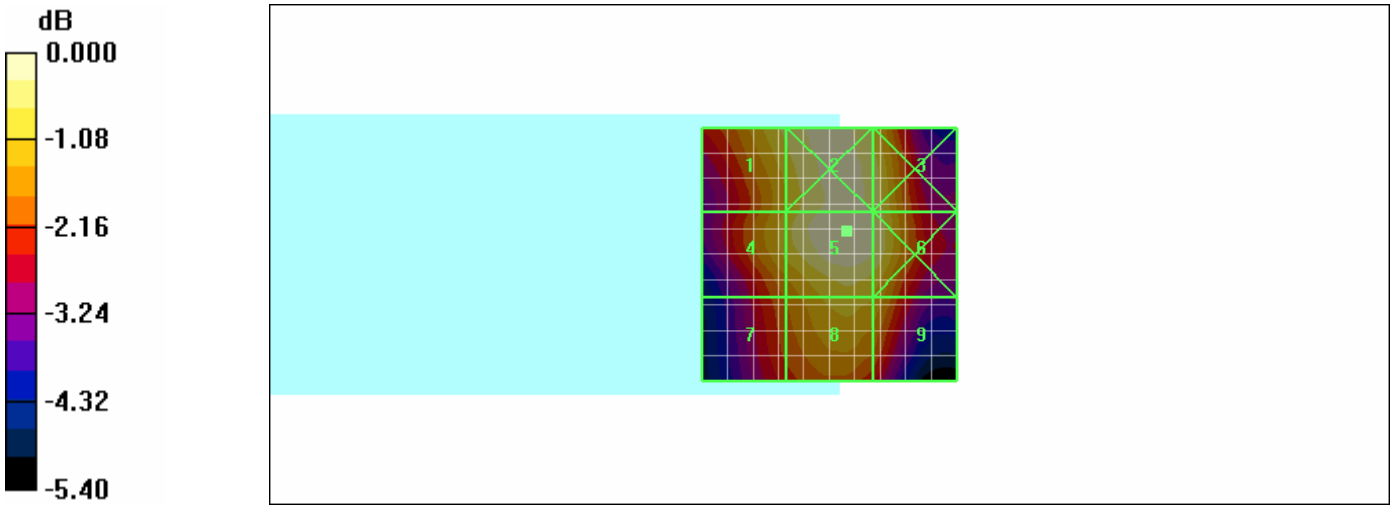
E Scan - ER probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 72.5 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 68.7 V/m; Power Drift = 0.027 dB
Maximum value of Total (measured) = 70.9 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 206.8 V/m
Probe Modulation Factor = 2.90
Reference Value = 68.7 V/m; Power Drift = 0.027 dB
Hearing Aid Near-Field Category: M1 (AWF -5 dB)

Peak E-field in V/m

Grid **193.1**	Grid **203.0**	Grid **197.4**
Grid **187.5**	Grid **206.8**	Grid **200.3**
Grid	Grid	Grid



0 dB = 206.8V/m

Date/Time: 28/06/2006 12:36:01 PM

Test Laboratory: RTS

HAC_E_RBH42GW_GSM850_Spk center_low_chan_battery 2
DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: E Device Section
DASY4 Configuration:

- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

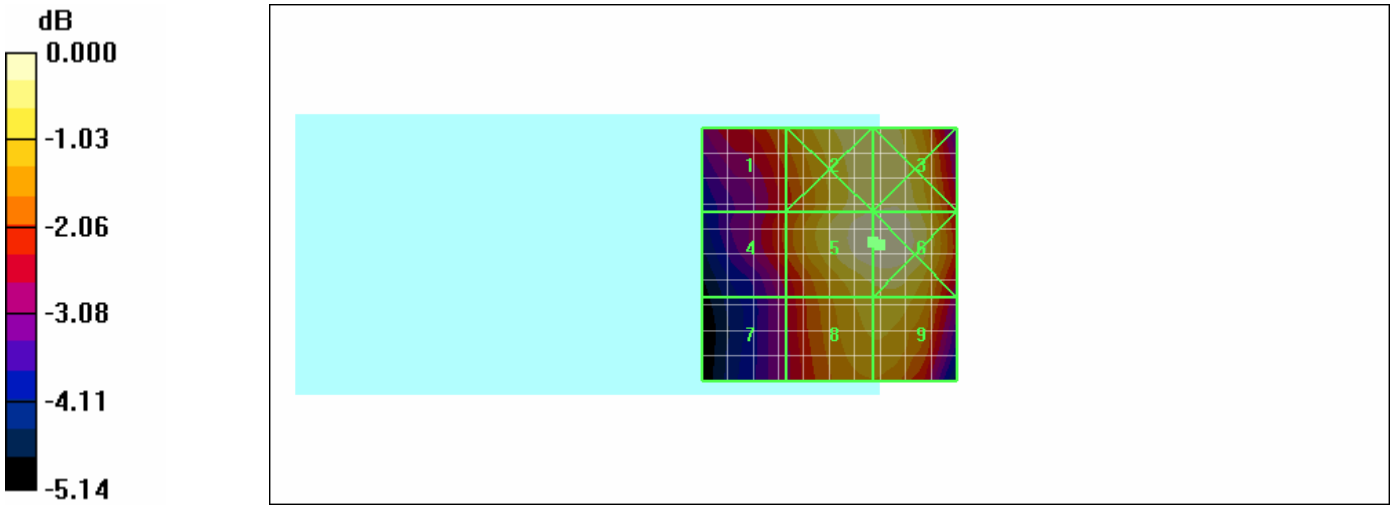
E Scan - ER probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 79.1 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 76.4 V/m; Power Drift = 0.030 dB
Maximum value of Total (measured) = 78.2 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 226.9 V/m
Probe Modulation Factor = 2.90
Reference Value = 76.4 V/m; Power Drift = 0.030 dB
Hearing Aid Near-Field Category: M1 (AWF -5 dB)

Peak E-field in V/m

Grid **190.3**	Grid **219.3**	Grid **220.2**
Grid **182.5**	Grid **226.9**	Grid **227.7**
Grid	Grid	Grid



0 dB = 227.7V/m

Date/Time: 29/06/2006 8:24:15 AM

Test Laboratory: RTS

HAC_H_RBH42GW_GSM850_Spk center_low_chan
DUT: BlackBerry Wireless Handheld Model; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3
Phantom section: E Device Section
DASY4 Configuration:

- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

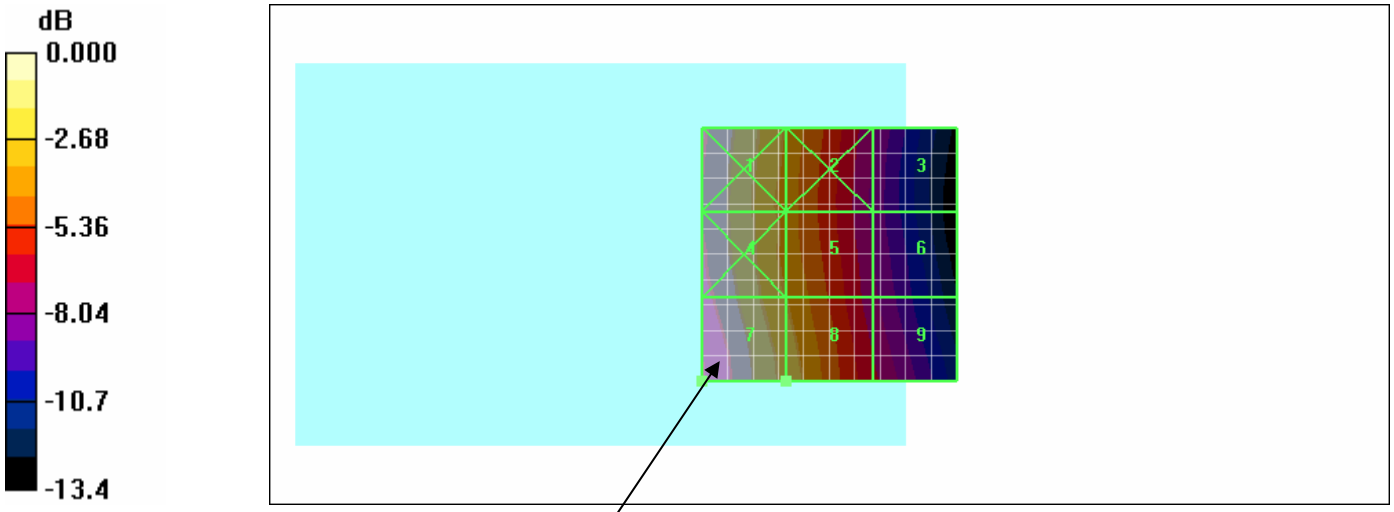
H Scan - H3DV6 probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 0.158 A/m

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.085 A/m; Power Drift = -0.036 dB
Maximum value of Total (measured) = 0.160 A/m

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.441 A/m
Probe Modulation Factor = 2.75
Reference Value = 0.085 A/m; Power Drift = -0.036 dB
Hearing Aid Near-Field Category: M2 (AWF -5 dB)

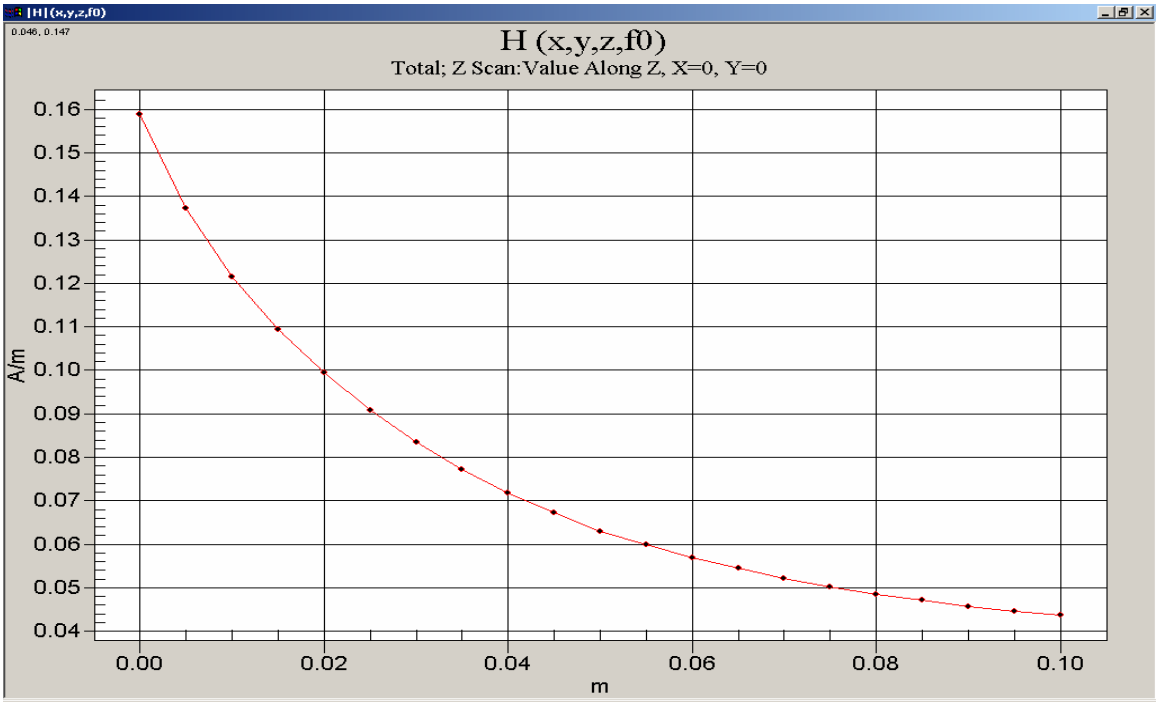
Peak H-field in A/m

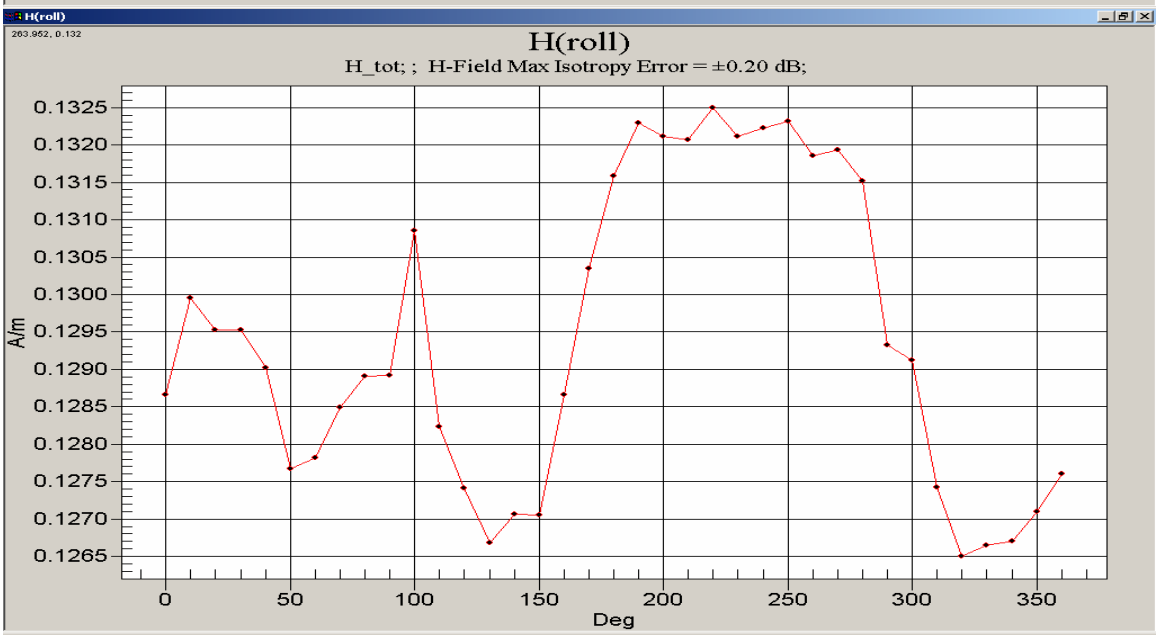
Grid **0.403**	Grid **0.288**	Grid **0.179**
Grid **0.413**	Grid **0.291**	Grid **0.181**
Grid	Grid	Grid



0 dB = 0.441A/m

Location of the probe rotation





H (delta) = (H max - H at zero degress) * PMF
= (0.1325 – 0.1285) * 2.75
= 0.004 * 2.75
= 0.01 A/m

Date/Time: 29/06/2006 8:34:31 AM

Test Laboratory: RTS

HAC_H_RBH42GW_GSM850_Spk center_mid_chan
DUT: BlackBerry Wireless Handheld Model; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 836.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3
Phantom section: E Device Section
DASY4 Configuration:

- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

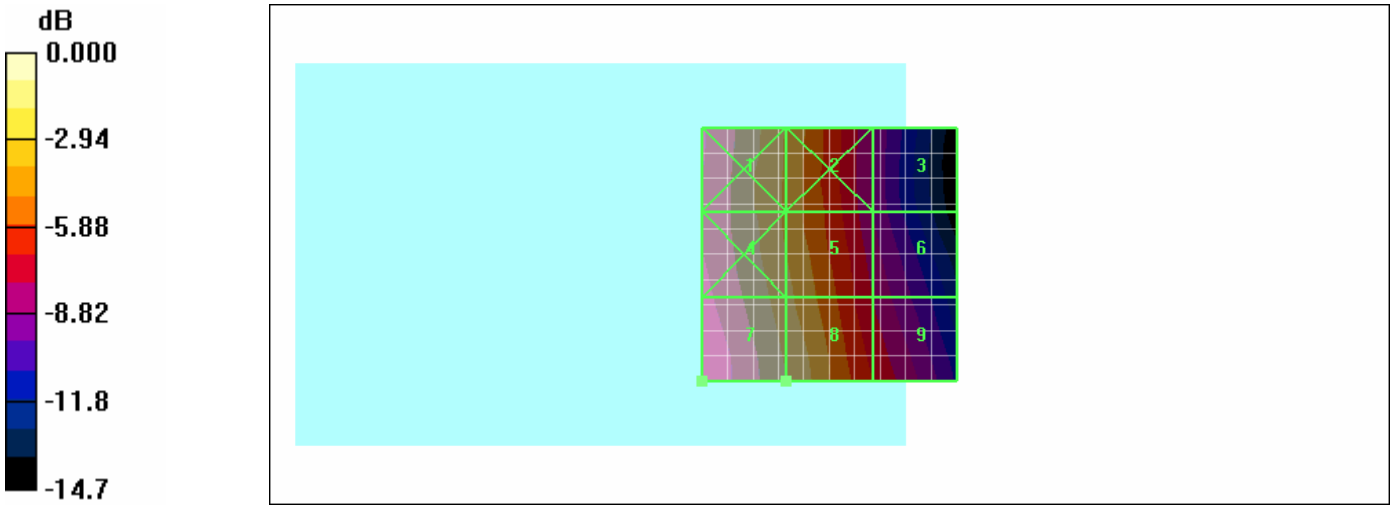
H Scan - H3DV6 probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 0.140 A/m

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.075 A/m; Power Drift = -0.040 dB
Maximum value of Total (measured) = 0.142 A/m

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.392 A/m
Probe Modulation Factor = 2.75
Reference Value = 0.075 A/m; Power Drift = -0.040 dB
Hearing Aid Near-Field Category: M2 (AWF -5 dB)

Peak H-field in A/m

Grid **0.355**	Grid **0.248**	Grid **0.143**
Grid **0.365**	Grid **0.260**	Grid **0.159**
Grid	Grid	Grid



0 dB = 0.392A/m

Date/Time: 29/06/2006 8:46:35 AM

Test Laboratory: RTS

HAC_H_RBH42GW_GSM850_Spk center_high_chan
DUT: BlackBerry Wireless Handheld Model; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3
Phantom section: E Device Section
DASY4 Configuration:

- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

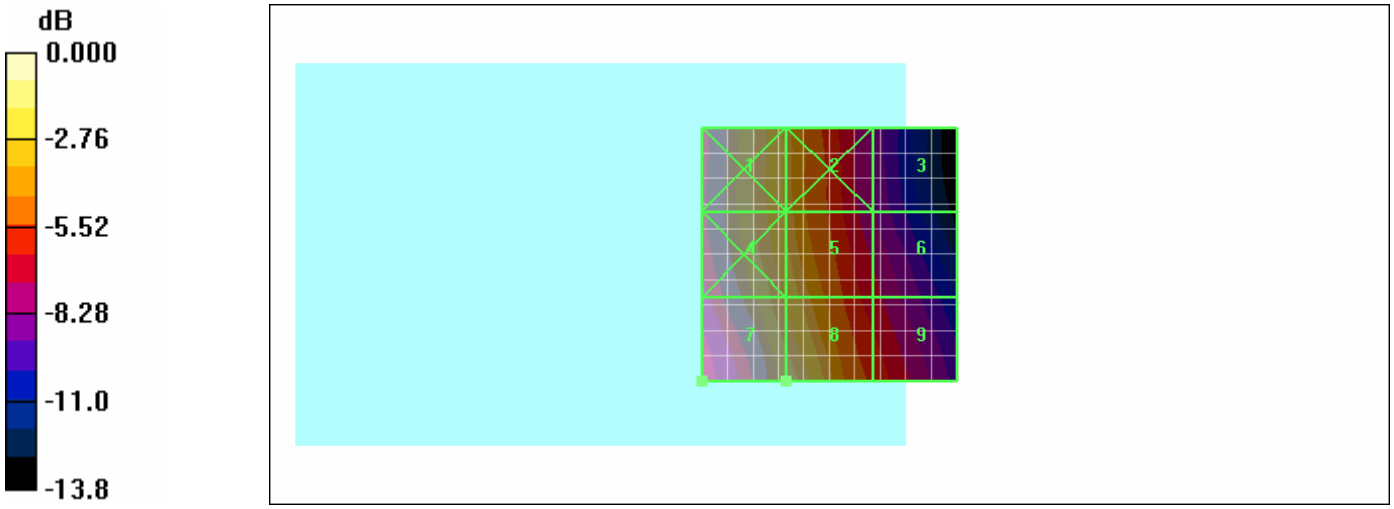
H Scan - H3DV6 probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 0.154 A/m

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.083 A/m; Power Drift = -0.015 dB
Maximum value of Total (measured) = 0.153 A/m

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.420 A/m
Probe Modulation Factor = 2.75
Reference Value = 0.083 A/m; Power Drift = -0.015 dB
Hearing Aid Near-Field Category: M2 (AWF -5 dB)

Peak H-field in A/m

Grid **0.371**	Grid **0.273**	Grid **0.165**
Grid **0.386**	Grid **0.289**	Grid **0.190**
Grid	Grid	Grid



0 dB = 0.420A/m

Date/Time: 29/06/2006 9:35:31 AM

Test Laboratory: RTS

HAC_H_RBH42GW_GSM850_Spk center_low_chan_batt2
DUT: BlackBerry Wireless Handheld Model; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: E Device Section
DASY4 Configuration:

- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

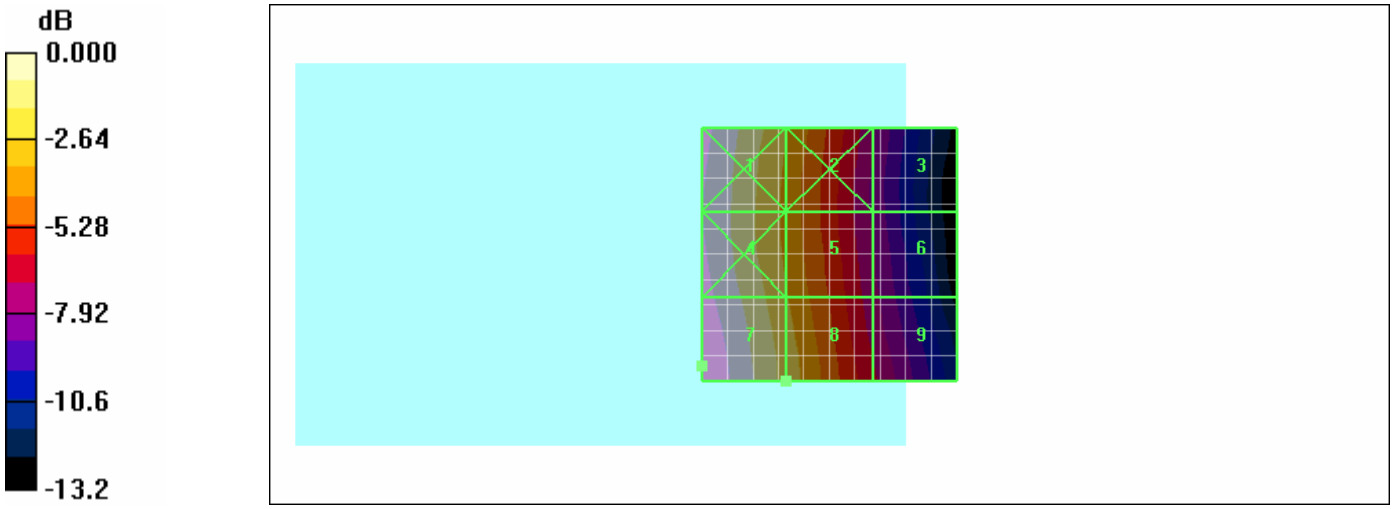
H Scan - H3DV6 probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 0.160 A/m

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.084 A/m; Power Drift = 0.060 dB
Maximum value of Total (measured) = 0.158 A/m

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.435 A/m
Probe Modulation Factor = 2.75
Reference Value = 0.084 A/m; Power Drift = 0.060 dB
Hearing Aid Near-Field Category: M2 (AWF -5 dB)

Peak H-field in A/m

Grid **0.408**	Grid **0.294**	Grid **0.178**
Grid **0.413**	Grid **0.294**	Grid **0.182**
Grid	Grid	Grid



0 dB = 0.435A/m

Date/Time: 29/06/2006 8:55:50 AM

Test Laboratory: RTS

HAC_H_RBH42GW_GSM850_T_coil center_low_chan
DUT: BlackBerry Wireless Handheld Model; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: E Device Section
DASY4 Configuration:

- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

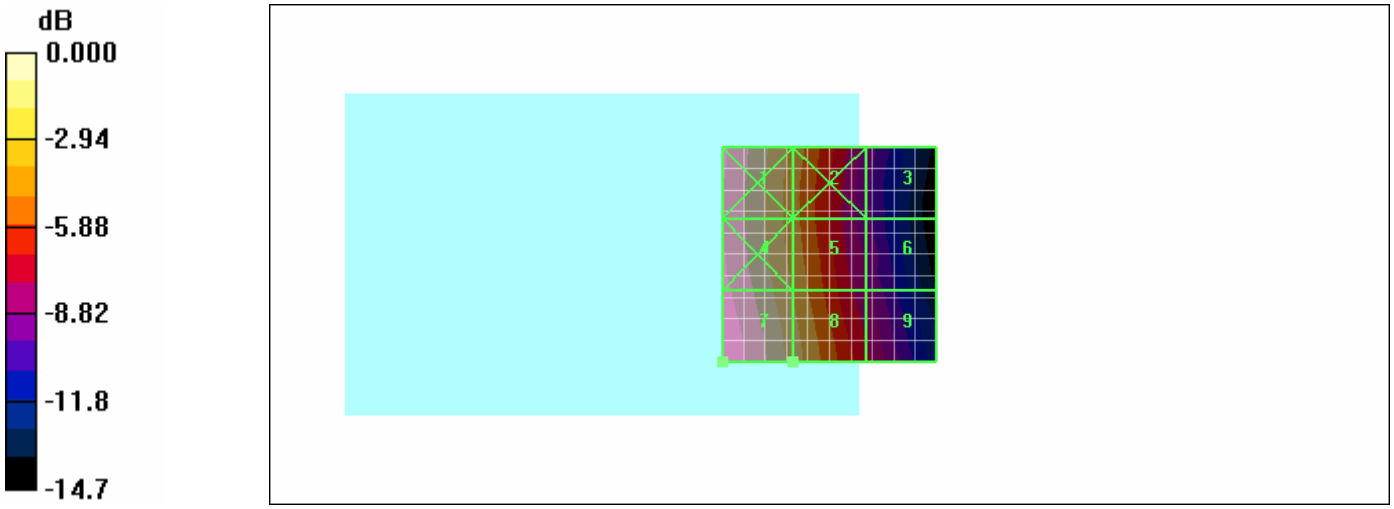
H Scan - H3DV6 probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 0.135 A/m

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.083 A/m; Power Drift = 0.007 dB

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.371 A/m
Probe Modulation Factor = 2.75
Reference Value = 0.083 A/m; Power Drift = 0.007 dB
Hearing Aid Near-Field Category: M2 (AWF -5 dB)

Peak H-field in A/m

Grid **0.342**	Grid **0.228**	Grid **0.131**
Grid **0.346**	Grid **0.235**	Grid **0.138**
Grid	Grid	Grid



0 dB = 0.371A/m

Date/Time: 29/06/2006 9:03:11 AM

Test Laboratory: RTS

HAC_H_RBH42GW_GSM850_T_coil center_mid_chan
DUT: BlackBerry Wireless Handheld Model; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 836.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: E Device Section
DASY4 Configuration:

- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

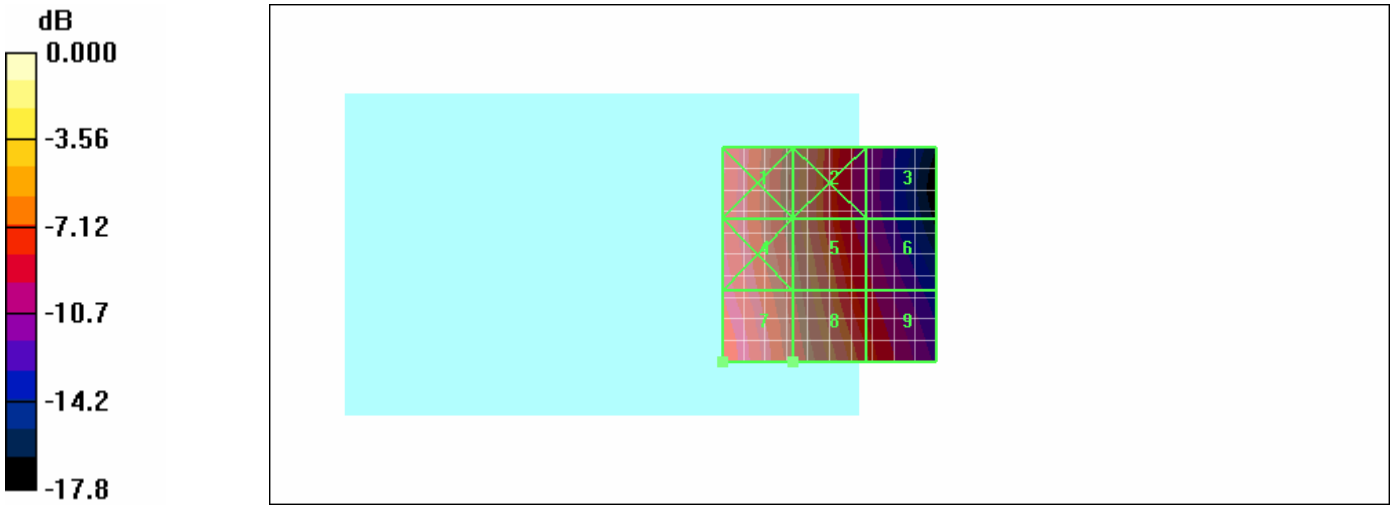
H Scan - H3DV6 probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 0.121 A/m

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.074 A/m; Power Drift = -0.053 dB
Maximum value of Total (measured) = 0.123 A/m

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.339 A/m
Probe Modulation Factor = 2.75
Reference Value = 0.074 A/m; Power Drift = -0.053 dB
Hearing Aid Near-Field Category: M2 (AWF -5 dB)

Peak H-field in A/m

Grid **0.301**	Grid **0.194**	Grid **0.103**
Grid **0.314**	Grid **0.211**	Grid **0.122**
Grid	Grid	Grid



0 dB = 0.339A/m

Date/Time: 29/06/2006 9:10:48 AM

Test Laboratory: RTS

HAC_H_RBH42GW_GSM850_T_coil center_high_chan
DUT: BlackBerry Wireless Handheld Model; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: E Device Section
DASY4 Configuration:

- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

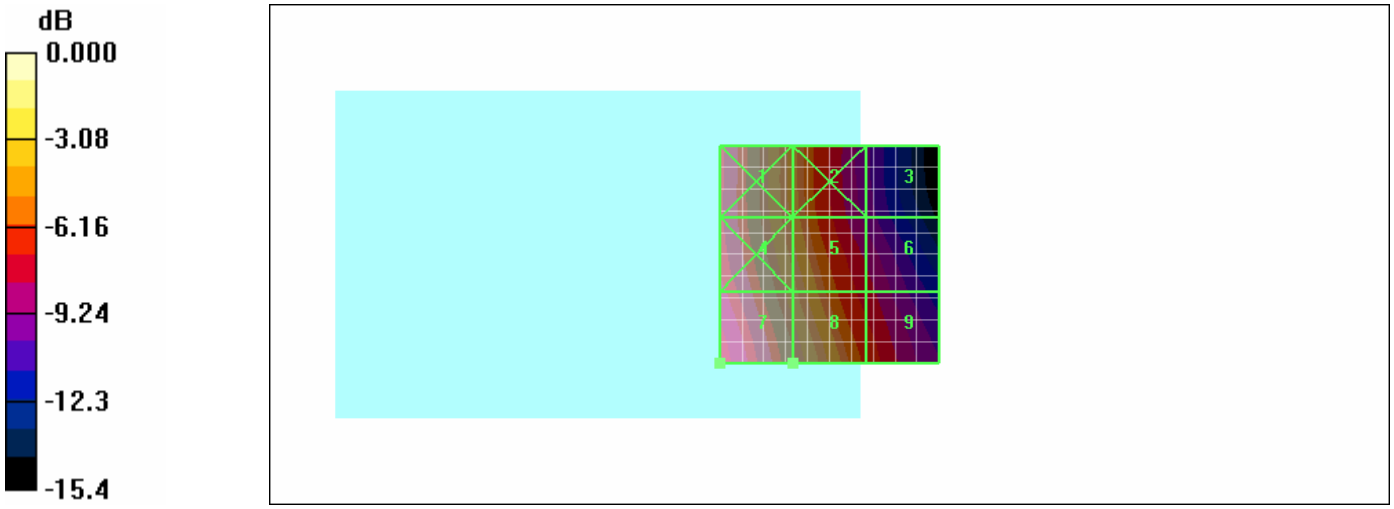
H Scan - H3DV6 probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 0.135 A/m

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.083 A/m; Power Drift = 0.122 dB

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.371 A/m
Probe Modulation Factor = 2.75
Reference Value = 0.083 A/m; Power Drift = 0.122 dB
Hearing Aid Near-Field Category: M2 (AWF -5 dB)

Peak H-field in A/m

Grid **0.322**	Grid **0.217**	Grid **0.124**
Grid **0.339**	Grid **0.238**	Grid **0.153**
Grid	Grid	Grid



0 dB = 0.371A/m

Date/Time: 27/06/2006 3:24:58 PM

Test Laboratory: RTS

HAC_E_RBH42GW_GSM1900_Spk center_low_chan

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified

Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

E Scan - ER probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 27.5 V/m

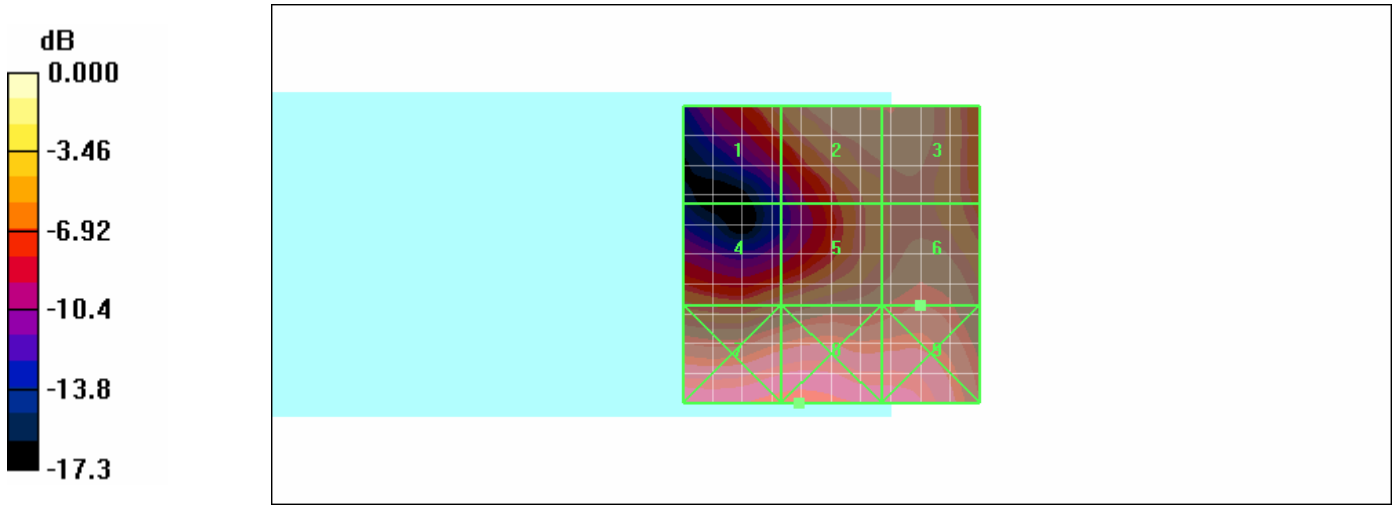
E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 12.1 V/m; Power Drift = 0.185 dB
Maximum value of Total (measured) = 27.6 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 2.88
Reference Value = 12.1 V/m; Power Drift = 0.185 dB
Maximum value of Total (interpolated) = 79.7 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 52.1 V/m
Probe Modulation Factor = 2.88
Reference Value = 12.1 V/m; Power Drift = 0.185 dB
Hearing Aid Near-Field Category: M3 (AWF -5 dB)

Peak E-field in V/m

Grid **39.3**	Grid **51.1**	Grid **51.1**
Grid **42.6**	Grid **49.2**	Grid **52.1**
Grid	Grid	Grid



0 dB = 79.7V/m

Date/Time: 28/06/2006 8:23:27 AM

Test Laboratory: RTS

HAC_E_RBH42GW_GSM1900_T_coil_center_high_chan

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified

Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

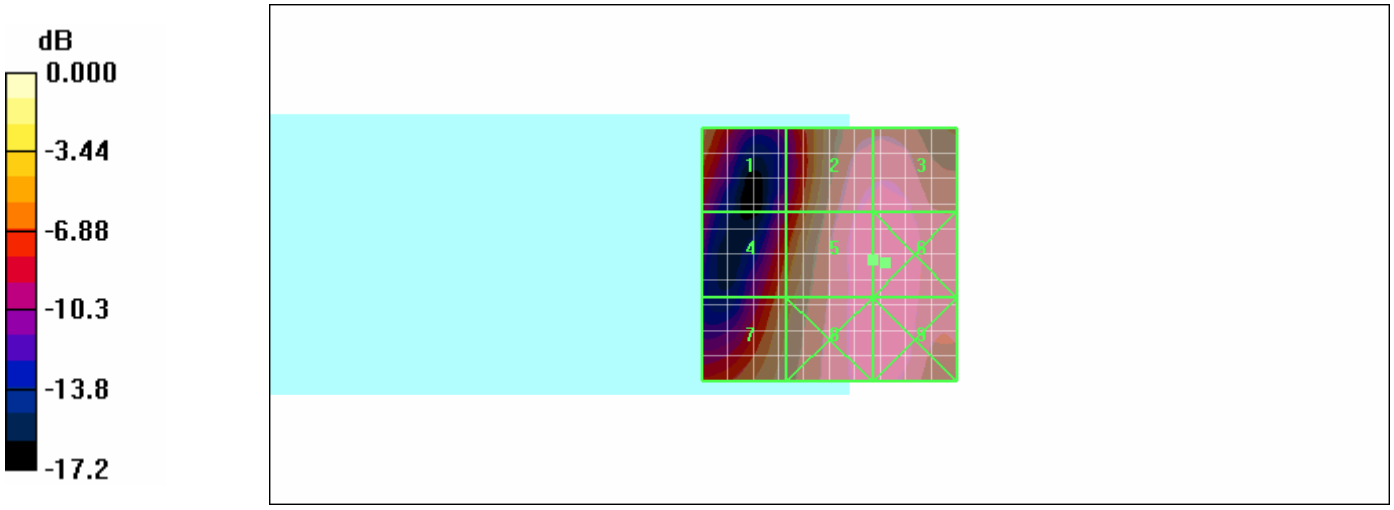
E Scan - ER probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 22.5 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 13.0 V/m; Power Drift = 0.142 dB
Maximum value of Total (measured) = 22.4 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 63.9 V/m
Probe Modulation Factor = 2.88
Reference Value = 13.0 V/m; Power Drift = 0.142 dB
Hearing Aid Near-Field Category: M3 (AWF -5 dB)

Peak E-field in V/m

Grid **36.6**	Grid **60.3**	Grid **61.1**
Grid **35.4**	Grid **63.9**	Grid **64.9**
Grid	Grid	Grid



0 dB = 64.9V/m

Date/Time: 28/06/2006 9:30:58 AM

Test Laboratory: RTS

HAC_E_RBH42GW_GSM1900_T_coil_center_high_chan_batt2

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified

Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Phantom section: E Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 27/04/2006
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

E Scan - ER probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 23.8 V/m

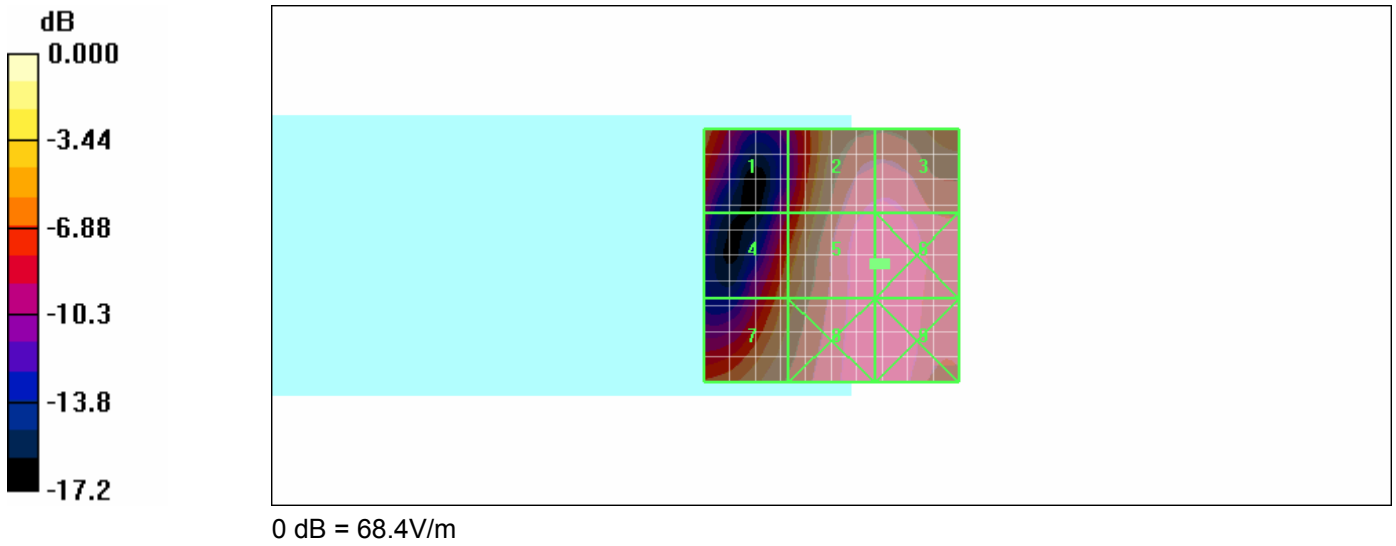
E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 14.2 V/m; Power Drift = 0.079 dB
Maximum value of Total (measured) = 23.7 V/m

E Scan - ER probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 67.6 V/m
Probe Modulation Factor = 2.88
Reference Value = 14.2 V/m; Power Drift = 0.079 dB
Hearing Aid Near-Field Category: M3 (AWF -5 dB)

Peak E-field in V/m

Grid **36.5**	Grid **62.1**	Grid **62.7**
Grid **37.7**	Grid **67.6**	Grid **68.4**
Grid	Grid	Grid

47.1	67.8	68.4



0 dB = 68.4V/m

Date/Time: 28/06/2006 2:19:44 PM

Test Laboratory: RTS

HAC_H_RBH42GW_GSM1900_Spk center_low_chan

DUT: BlackBerry Wireless Handheld Model; Type: Sample ; Serial: Not Specified

Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3
Phantom section: H Dipole Section

DASY4 Configuration:

- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

H Scan - H3DV6 probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 0.095 A/m

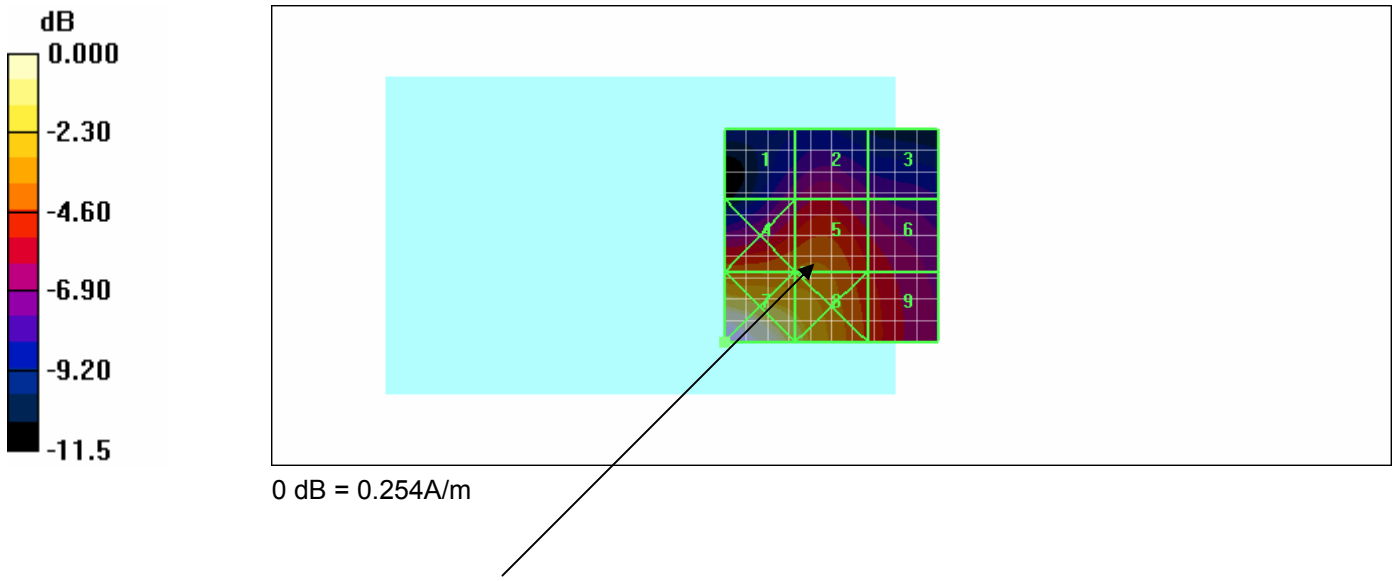
H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.062 A/m; Power Drift = 0.070 dB

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.169 A/m
Probe Modulation Factor = 2.68
Reference Value = 0.062 A/m; Power Drift = 0.070 dB
Hearing Aid Near-Field Category: M3 (AWF -5 dB)

Peak H-field in A/m

Grid **0.115**	Grid **0.127**	Grid **0.110**
Grid **0.167**	Grid **0.169**	Grid **0.139**
Grid	Grid	Grid

0.254	0.206	0.148



0 dB = 0.254A/m

Date/Time: 28/06/2006 3:01:12 PM

Test Laboratory: RTS

HAC_H_RBH42GW_GSM1900_T-Coil_center_low_chan

DUT: BlackBerry Wireless Handheld Model; Type: Sample ; Serial: Not Specified

Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1 kg/m^3
Phantom section: H Dipole Section

DASY4 Configuration:

- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

H Scan - H3DV6 probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 0.088 A/m

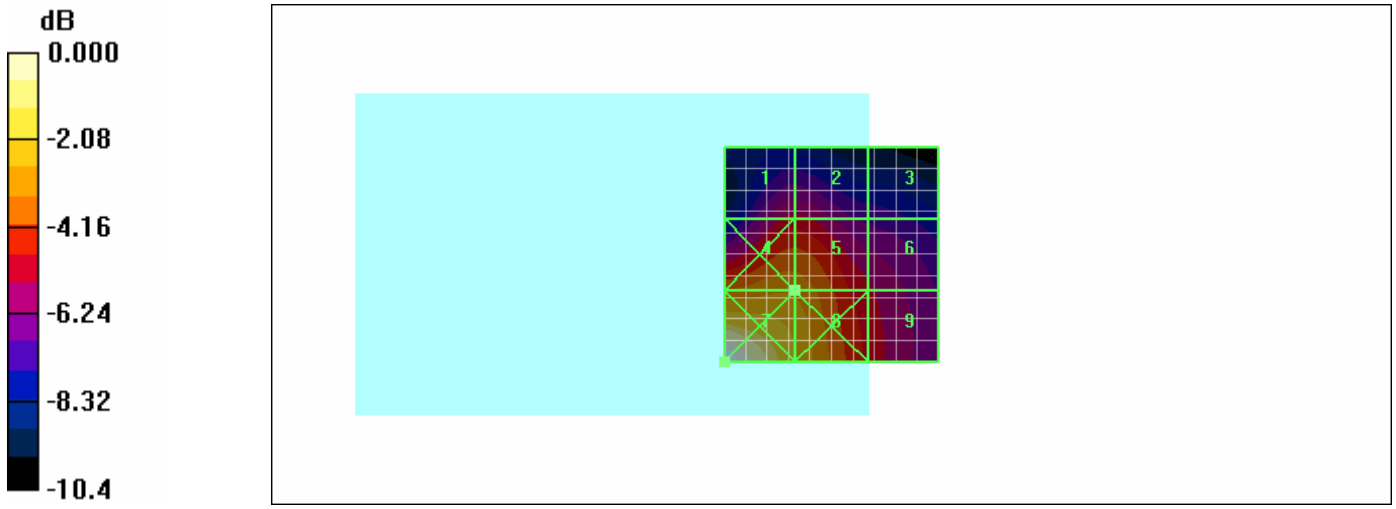
H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test

(11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.061 A/m; Power Drift = 0.117 dB
Maximum value of Total (measured) = 0.087 A/m

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.166 A/m
Probe Modulation Factor = 2.68
Reference Value = 0.061 A/m; Power Drift = 0.117 dB
Hearing Aid Near-Field Category: M3 (AWF -5 dB)

Peak H-field in A/m

Grid **0.126**	Grid **0.126**	Grid **0.103**
Grid **0.169**	Grid **0.166**	Grid **0.126**
Grid	Grid	Grid



0 dB = 0.233A/m

Date/Time: 28/06/2006 3:30:48 PM

Test Laboratory: RTS

HAC_H_RBH42GW_GSM1900_Spk center_low_chan_battery 2

DUT: BlackBerry Wireless Handheld Model; Type: Sample ; Serial: Not Specified

Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Phantom section: H Dipole Section

DASY4 Configuration:

- Probe: H3DV6 - SN6105; ; Calibrated: 11/11/2005
- Sensor-Surface: 0mm (Fix Surface)Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 25/04/2006
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

H Scan - H3DV6 probe tip 10mm above Device Reference/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 0.098 A/m

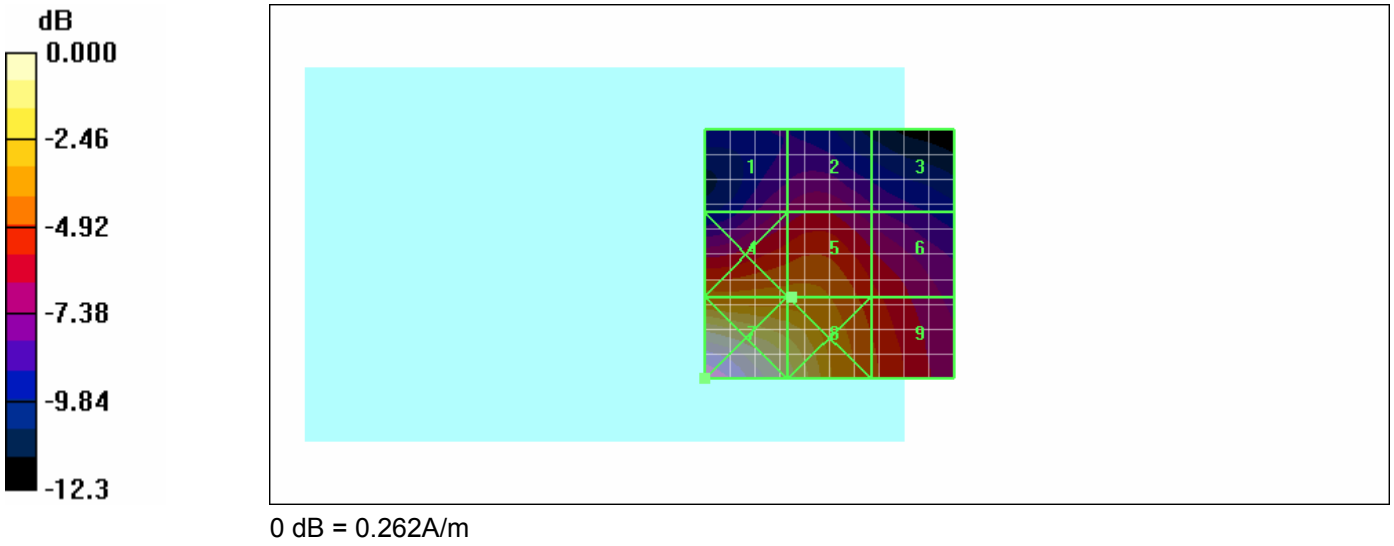
H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (11x11x1): Measurement grid: dx=5mm, dy=5mm
Probe Modulation Factor = 1.00
Reference Value = 0.062 A/m; Power Drift = 0.117 dB

H Scan - H3DV6 probe tip 10mm above Device Reference/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.172 A/m
Probe Modulation Factor = 2.68
Reference Value = 0.062 A/m; Power Drift = 0.117 dB
Hearing Aid Near-Field Category: M3 (AWF -5 dB)

Peak H-field in A/m

Grid **0.116**	Grid **0.124**	Grid **0.106**
Grid	Grid	Grid

Grid	Grid	Grid



0 dB = 0.262A/m

Annex B: Probe and dipole descriptions and calibration certificates

B.1 Probe and measurement chain descriptions and specifications

DASY Dosimetric Assessment System by Schmid & Partner Engineering AG

Applications

Support & Downloads

Products

- DASY4 Packages
- EASY4
- Probes
  - ET3DV6 - Isotropic Dos-Probe
  - ES3DV3 - Isotropic Dos-Probe
  - EX3DV4 - Isotropic Dos-Probe
  - ET1DV3 - D-Probe
  - EUV3 - Universal Vector E-Probe
  - H3DV6 - Isotropic H-Probe
  - HUV4 - Universal Vector H-Probe
  - T1V3 - Temp-Probe
  - DP1 - Dummy-Probe
- Data Acquisition System
- Software
- Phantoms
- Robots
- Validation Kits & Calibration Dipoles
- Hearing Aid Compatibility (HAC) Ext
- Tissue Simulating Liquids

SPEAG Home

ER3DV6 ISOTROPIC E-FIELD PROBE FOR GENERAL NEAR-FIELD MEASUREMENTS

Download Product Flyer (PDF, 192kB)

Construction	One dipole parallel, two dipoles normal to probe axis Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., glycolether)
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)
Directivity	± 0.2 dB in air (rotation around probe axis) ± 0.4 dB in air (rotation normal to probe axis)
Dynamic Range	2 V/m to > 1000 V/m; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm (Tip: 16 mm) Tip diameter: 8 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.5 mm
Application	General near-field measurements up to 6 GHz Field component measurements Fast automatic scanning in phantoms

http://www.dasy4.com/er3.htm

DASY Dosimetric Assessment System by Schmid & Partner Engineering AG

Applications

Support & Downloads

Products

- DASY4 Packages
- EASY4
- Probes
  - ET3DV6 - Isotropic Dos-Probe
  - ES3DV3 - Isotropic Dos-Probe
  - EX3DV4 - Isotropic Dos-Probe
  - ET1DV3 - D-Probe
  - ER3DV6 - Isotropic E-Probe
  - EUV3 - Universal Vector E-Probe
  - HUV4 - Universal Vector H-Probe
  - T1V3 - Temp-Probe
  - DP1 - Dummy-Probe
- Data Acquisition System
- Software
- Phantoms
- Robots
- Validation Kits & Calibration Dipoles
- Hearing Aid Compatibility (HAC) Ext
- Tissue Simulating Liquids

SPEAG Home

H3DV6 3-DIMENSIONAL H-FIELD PROBE FOR SMALL BAND APPLICATIONS

Download Product Flyer (PDF, 192kB)

Construction	Three concentric loop sensors with 3.8 mm loop diameters Resistively loaded detector diodes for linear response Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., glycolether)
Frequency	200 MHz to 3 GHz (absolute accuracy ± 6.0%, k=2); Output linearized
Directivity	± 0.25 dB (spherical isotropy error)
Dynamic Range	10 mA/m to 2 A/m at 1 GHz
E-Field Interference	< 10% at 3 GHz (for plane wave)
Dimensions	Overall length: 330 mm (Tip: 40 mm) Tip diameter: 6 mm (Body: 12 mm) Distance from probe tip to dipole centers: 3 mm
Application	General magnetic near-field measurements up to 3 GHz Field component measurements Surface current measurements Measurements in air or liquids Low interaction with the measured field

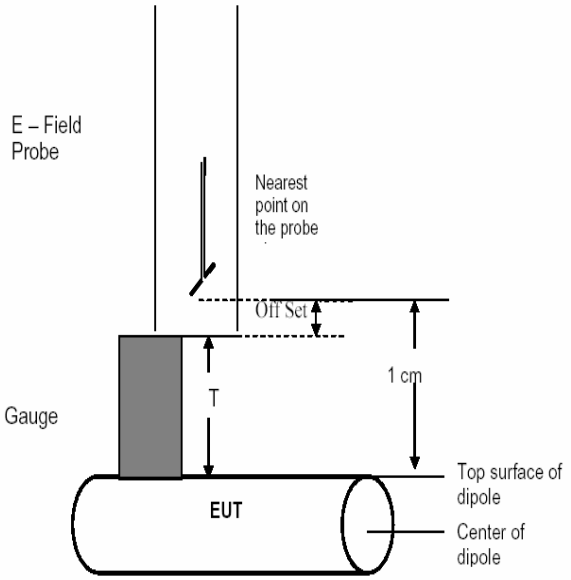
http://www.dasy4.com/h3d.htm

All measurements were performed to the nearest element point as per the C63.19 standard. Offset distances were entered in the DASY4 software so that the measurement was to the nearest element.

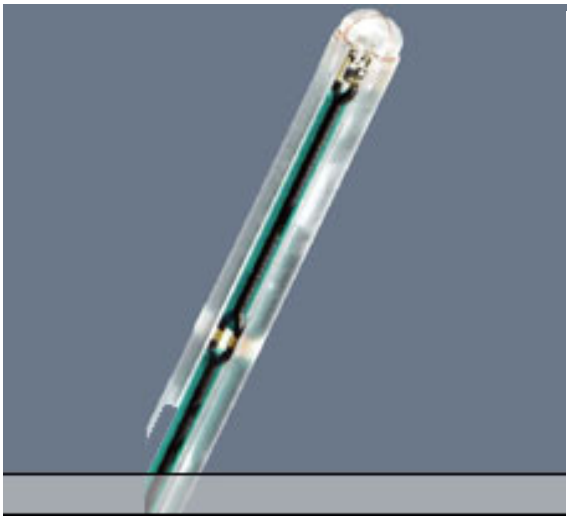
Figures 1 and 2, provided by the manufacturer, illustrate detail of the probe tip and its dimensions.

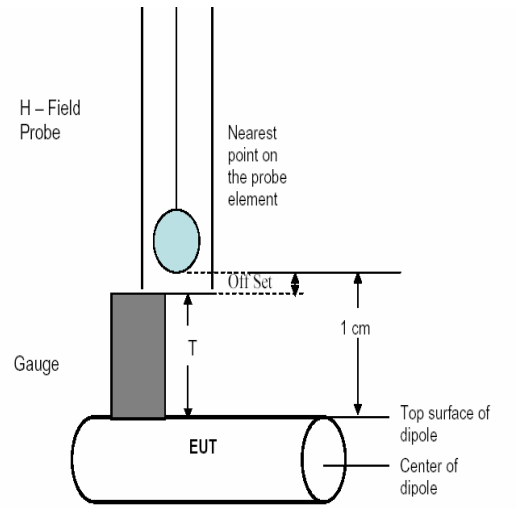
ER3DV6 E-Field probe: The distances from the probe tip to the closest points on the dipole sensors are 1.45mm for X and Y and 1.25mm for Z. From the probe tip to the center of the sensors is 2.5mm.

H3DV6 H-Field probe: The distance from the probe tip to the closest point of the X, Y and Z loop sensors is 1.1mm. From the probe tip to the center of the sensor is 3.00mm.



E-Field Probe (ER3DV6)





H-Field Probe (H3DV6)

The following information is from the system manufacturer user manual describing the process chain:

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i} \qquad (20.1)$$

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

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

$$\text{E} - \text{fieldprobes}: \qquad E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}$$

$$\text{H} - \text{fieldprobes}: \qquad H_i = \sqrt{V_i} \cdot \frac{a_{i0} + a_{i1} f + a_{i2} f^2}{f}$$

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

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

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2} \qquad (20.2)$$

The measurement / integration time per point is > 500 ms, as per the system manufacturer:

The time response of the field probes has been assessed by exposing the probe to a well-controlled field producing signals larger than HAC E- and H-fields of class M4. 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 500 ms and a probe response time of <5 ms. In the current implementation, DASY4 waits longer than 100 ms after having reached the grid point before starting a measurement, i.e., the response time uncertainty is negligible.

If the device under test does not emit a CW signal, the integration time applied to measure the electric field at a specific point may introduce additional uncertainties due to the discretization. The tolerances for the different systems had the worst-case of 2.6%.