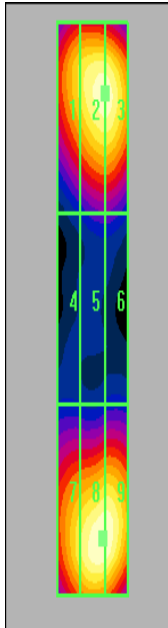
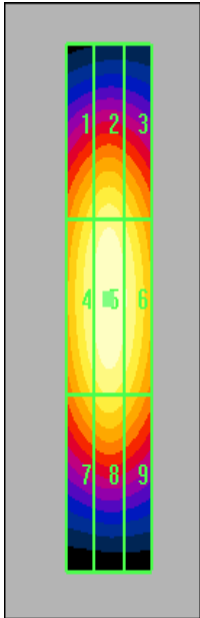

APPENDIX A: SYSTEM VALIDATION SCANS

Date/Time: 2007-10-23 11:57:29 Test Laboratory: TCC Nokia Type: D835V3; Serial: 1004	Date/Time: 2007-10-23 11:07:38 Test Laboratory: TCC Nokia Type: D835V3; Serial: SN 1004
Communication System: CW Frequency: 835 MHz; Duty Cycle: 1:1 Medium: Air; Medium Notes: Not Specified Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³ Phantom section: E Dipole Section	Communication System: CW Frequency: 835 MHz; Duty Cycle: 1:1 Medium: Air; Medium Notes: Not Specified Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³ Phantom section: H Dipole Section
DASY4 Configuration: - Probe: ER3DV6 - SN2333; Probe Notes: - ConvF(1, 1, 1); Calibrated: 2007-02-13 - Sensor-Surface: (Fix Surface) - Electronics: DAE4 Sn555; Calibrated: 2007-03-15 - Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: Not Specified - Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172	DASY4 Configuration: - Probe: H3DV6 - SN6053; Probe Notes: - ; Calibrated: 2007-02-13 - Sensor-Surface: (Fix Surface) - Electronics: DAE4 Sn555; Calibrated: 2007-03-15 - Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; - Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172
E Scan - ER probe center 10mm above CD835 Dipole/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm Maximum value of peak Total field = 167.9 V/m Probe Modulation Factor = 1.00 Reference Value = 108.3 V/m; Power Drift = 0.001 dB Hearing Aid Near-Field Category: M4 (AWF 0 dB)	H Scan - H3DV6 probe center 10mm above CD835 Dipole/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm Maximum value of peak Total field = 0.474 A/m Probe Modulation Factor = 1.00 Reference Value = 0.501 A/m; Power Drift = -0.005 dB Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Date/Time: 2007-10-23 11:45:04 Test Laboratory: TCC Nokia Type: CD1880V3; Serial: S/N=1003	Date/Time: 2007-10-23 11:21:59 Test Laboratory: TCC Nokia Type: CD1880V3; Serial: S/N=1003																																				
Communication System: CW Frequency: 1880 MHz; Duty Cycle: 1:1 Medium: Air; Medium Notes: Not Specified Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³ Phantom section: E Dipole Section	Communication System: CW Frequency: 1880 MHz; Duty Cycle: 1:1 Medium: Air; Medium Notes: Not Specified Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³ Phantom section: H Dipole Section																																				
DASY4 Configuration: - Probe: ER3DV6 - SN2333; Probe Notes: - ConvF(1, 1, 1); Calibrated: 2007-02-13 - Sensor-Surface: (Fix Surface) - Electronics: DAE4 Sn555; Calibrated: 2007-03-15 - Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; - Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172	DASY4 Configuration: - Probe: H3DV6 - SN6053; Probe Notes: - ; Calibrated: 2007-02-13 - Sensor-Surface: (Fix Surface) - Electronics: DAE4 Sn555; Calibrated: 2007-03-15 - Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; - Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172																																				
E Scan - ER probe center 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm Maximum value of peak Total field = 129.2 V/m Probe Modulation Factor = 1.00 Reference Value = 139.7 V/m; Power Drift = -0.003 dB Hearing Aid Near-Field Category: M2 (AWF 0 dB)	H Scan - H3DV6 probe center 10mm above CD1880 Dipole/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm Maximum value of peak Total field = 0.445 A/m Probe Modulation Factor = 1.00 Reference Value = 0.470 A/m; Power Drift = -0.002 dB Hearing Aid Near-Field Category: M2 (AWF 0 dB)																																				
129.2 115.2 101.1 87.0 72.9 58.9  <table><tr><td>Grid 1</td><td>Grid 2</td><td>Grid 3</td></tr><tr><td>117.5</td><td>128.0</td><td>128.0</td></tr><tr><td>Grid 4</td><td>Grid 5</td><td>Grid 6</td></tr><tr><td>74.6</td><td>81.8</td><td>81.8</td></tr><tr><td>Grid 7</td><td>Grid 8</td><td>Grid 9</td></tr><tr><td>119.5</td><td>129.2</td><td>129.1</td></tr></table>	Grid 1	Grid 2	Grid 3	117.5	128.0	128.0	Grid 4	Grid 5	Grid 6	74.6	81.8	81.8	Grid 7	Grid 8	Grid 9	119.5	129.2	129.1	0.445 0.371 0.298 0.224 0.150 0.077  <table><tr><td>Grid 1</td><td>Grid 2</td><td>Grid 3</td></tr><tr><td>0.393</td><td>0.414</td><td>0.395</td></tr><tr><td>Grid 4</td><td>Grid 5</td><td>Grid 6</td></tr><tr><td>0.424</td><td>0.445</td><td>0.427</td></tr><tr><td>Grid 7</td><td>Grid 8</td><td>Grid 9</td></tr><tr><td>0.376</td><td>0.395</td><td>0.379</td></tr></table>	Grid 1	Grid 2	Grid 3	0.393	0.414	0.395	Grid 4	Grid 5	Grid 6	0.424	0.445	0.427	Grid 7	Grid 8	Grid 9	0.376	0.395	0.379
Grid 1	Grid 2	Grid 3																																			
117.5	128.0	128.0																																			
Grid 4	Grid 5	Grid 6																																			
74.6	81.8	81.8																																			
Grid 7	Grid 8	Grid 9																																			
119.5	129.2	129.1																																			
Grid 1	Grid 2	Grid 3																																			
0.393	0.414	0.395																																			
Grid 4	Grid 5	Grid 6																																			
0.424	0.445	0.427																																			
Grid 7	Grid 8	Grid 9																																			
0.376	0.395	0.379																																			

APPENDIX B: MEASUREMENT SCANS

MEASUREMENT DATA GSM850, CHANNEL LOW (824.2 MHz)

Date/Time: 2007-10-23 12:54:31
Test Laboratory: TCC Nokia
Type: RM-135; Serial: 004400/99/167518/0

Date/Time: 2007-10-23 14:52:57
Test Laboratory: TCC Nokia
Type: RM-135; Serial: 004400/99/167518/0

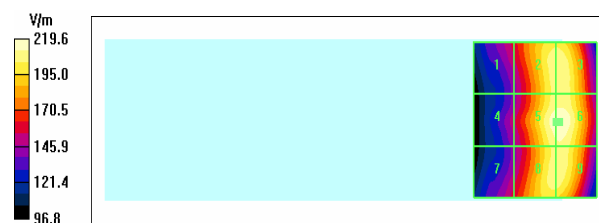
Communication System: GSM850 (ER3DV6)
Frequency: 824.2 MHz; Duty Cycle: 1:7.95
Medium: Air; Medium Notes: Not Specified
Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
Phantom section: E Device Section

Communication System: GSM850 (H3DV6)
Frequency: 824.2 MHz; Duty Cycle: 1:6.79
Medium: Air; Medium Notes: Not Specified
Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
Phantom section: H Device Section

DASY4 Configuration:
- Probe: ER3DV6 - SN2333; Probe Notes:
- ConvF(1, 1, 1); Calibrated: 2007-02-13
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn555; Calibrated: 2007-03-15
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

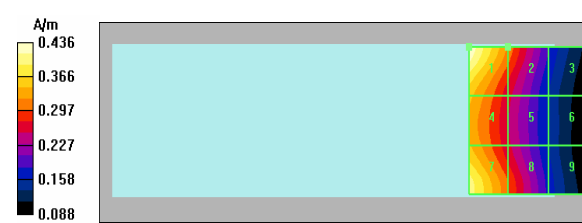
DASY4 Configuration:
- Probe: H3DV6 - SN6053; Probe Notes:
- ; Calibrated: 2007-02-13
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn555; Calibrated: 2007-03-15
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

E Scan - ER3DV6 - measurement distance from the closest probe sensor part to the Device = 10mm (low)/Hearing Aid Compatibility Test (101x101x1):
Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 219.6 V/m
Probe Modulation Factor = 2.82
Reference Value = 72.7 V/m; Power Drift = -0.095 dB
Hearing Aid Near-Field Category: M3 (AWF -5 dB)

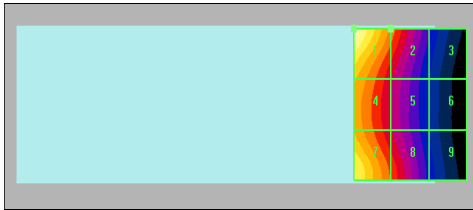


Grid 1	Grid 2	Grid 3
158.5	209.8	210.5
Grid 4	Grid 5	Grid 6
152.2	218.3	219.6
Grid 7	Grid 8	Grid 9
158.8	209.3	210.2

H Scan - H3DV6 - measurement distance from the closest probe sensor part to the Device = 10mm (Low)/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.436 A/m
Probe Modulation Factor = 2.61
Reference Value = 0.079 A/m; Power Drift = -0.003 dB
Hearing Aid Near-Field Category: M4 (AWF -5 dB)



Grid 1	Grid 2	Grid 3
0.436	0.316	0.182
Grid 4	Grid 5	Grid 6
0.353	0.260	0.158
Grid 7	Grid 8	Grid 9
0.404	0.299	0.174

MEASUREMENT DATA GSM850, CHANNEL MIDDLE (836.6 MHz)																																					
Date/Time: 2007-10-23 12:43:15 Test Laboratory: TCC Nokia Type: RM-135; Serial: 004400/99/167518/0	Date/Time: 2007-10-23 14:41:32 Test Laboratory: TCC Nokia Type: RM-135; Serial: 004400/99/167518/0																																				
Communication System: GSM850 (ER3DV6) Frequency: 836.6 MHz; Duty Cycle: 1:7.95 Medium: Air; Medium Notes: Not Specified Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³ Phantom section: E Device Section	Communication System: GSM850 (H3DV6) Frequency: 836.6 MHz; Duty Cycle: 1:6.79 Medium: Air; Medium Notes: Not Specified Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³ Phantom section: H Device Section																																				
DASY4 Configuration: - Probe: ER3DV6 - SN2333; Probe Notes: - ConvF(1, 1, 1); Calibrated: 2007-02-13 - Sensor-Surface: (Fix Surface) - Electronics: DAE4 Sn555; Calibrated: 2007-03-15 - Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: Not Specified - Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172	DASY4 Configuration: - Probe: H3DV6 - SN6053; Probe Notes: - ; Calibrated: 2007-02-13 - Sensor-Surface: (Fix Surface) - Electronics: DAE4 Sn555; Calibrated: 2007-03-15 - Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: Not Specified - Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172																																				
E Scan - ER3DV6 - measurement distance from the closest probe sensor part to the Device = 10mm (Middle)/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm Maximum value of peak Total field = 222.1 V/m Probe Modulation Factor = 2.82 Reference Value = 74.7 V/m; Power Drift = -0.101 dB Hearing Aid Near-Field Category: M3 (AWF -5 dB) V/m 222.1 200.0 177.9 155.8 133.7 111.6  <table><tr><td>Grid 1</td><td>Grid 2</td><td>Grid 3</td></tr><tr><td>163.4</td><td>212.8</td><td>213.4</td></tr><tr><td>Grid 4</td><td>Grid 5</td><td>Grid 6</td></tr><tr><td>160.2</td><td>221.1</td><td>222.1</td></tr><tr><td>Grid 7</td><td>Grid 8</td><td>Grid 9</td></tr><tr><td>160.1</td><td>210.8</td><td>211.6</td></tr></table>	Grid 1	Grid 2	Grid 3	163.4	212.8	213.4	Grid 4	Grid 5	Grid 6	160.2	221.1	222.1	Grid 7	Grid 8	Grid 9	160.1	210.8	211.6	H Scan - H3DV6 - measurement distance from the closest probe sensor part to the Device = 10mm (middle)/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm Maximum value of peak Total field = 0.447 A/m Probe Modulation Factor = 2.61 Reference Value = 0.078 A/m; Power Drift = -0.031 dB Hearing Aid Near-Field Category: M4 (AWF -5 dB) A/m 0.447 0.374 0.301 0.227 0.154 0.081  <table><tr><td>Grid 1</td><td>Grid 2</td><td>Grid 3</td></tr><tr><td>0.447</td><td>0.318</td><td>0.181</td></tr><tr><td>Grid 4</td><td>Grid 5</td><td>Grid 6</td></tr><tr><td>0.355</td><td>0.259</td><td>0.155</td></tr><tr><td>Grid 7</td><td>Grid 8</td><td>Grid 9</td></tr><tr><td>0.405</td><td>0.298</td><td>0.171</td></tr></table>	Grid 1	Grid 2	Grid 3	0.447	0.318	0.181	Grid 4	Grid 5	Grid 6	0.355	0.259	0.155	Grid 7	Grid 8	Grid 9	0.405	0.298	0.171
Grid 1	Grid 2	Grid 3																																			
163.4	212.8	213.4																																			
Grid 4	Grid 5	Grid 6																																			
160.2	221.1	222.1																																			
Grid 7	Grid 8	Grid 9																																			
160.1	210.8	211.6																																			
Grid 1	Grid 2	Grid 3																																			
0.447	0.318	0.181																																			
Grid 4	Grid 5	Grid 6																																			
0.355	0.259	0.155																																			
Grid 7	Grid 8	Grid 9																																			
0.405	0.298	0.171																																			

MEASUREMENT DATA GSM850, CHANNEL HIGH (848.8 MHz)

Date/Time: 2007-10-23 12:49:30
Test Laboratory: TCC Nokia
Type: RM-135; Serial: 004400/99/167518/0

Date/Time: 2007-10-23 14:47:50
Test Laboratory: TCC Nokia
Type: RM-135; Serial: 004400/99/167518/0

Communication System: GSM850 (ER3DV6)
Frequency: 848.8 MHz; Duty Cycle: 1:7.95
Medium: Air; Medium Notes: Not Specified
Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
Phantom section: E Device Section

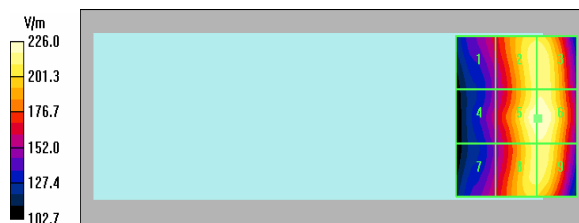
Communication System: GSM850 (H3DV6)
Frequency: 848.8 MHz; Duty Cycle: 1:6.79
Medium: Air; Medium Notes: Not Specified
Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
Phantom section: H Device Section

DASY4 Configuration:
- Probe: ER3DV6 - SN2333; Probe Notes:
- ConvF(1, 1, 1); Calibrated: 2007-02-13
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn555; Calibrated: 2007-03-15
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

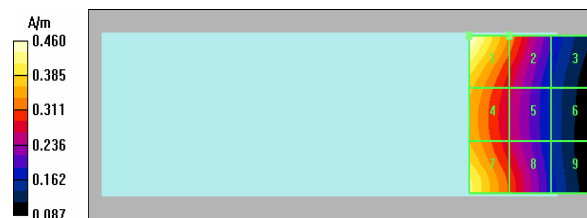
DASY4 Configuration:
- Probe: H3DV6 - SN6053; Probe Notes:
- ; Calibrated: 2007-02-13
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn555; Calibrated: 2007-03-15
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

E Scan - ER3DV6 - measurement distance from the closest probe sensor part to the Device = 10mm (High)/Hearing Aid Compatibility Test (101x101x1):
Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 226.0 V/m
Probe Modulation Factor = 2.82
Reference Value = 75.3 V/m; Power Drift = -0.019 dB
Hearing Aid Near-Field Category: M3 (AWF -5 dB)

H Scan - H3DV6 - measurement distance from the closest probe sensor part to the Device = 10mm (High)/Hearing Aid Compatibility Test (101x101x1):
Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.460 A/m
Probe Modulation Factor = 2.61
Reference Value = 0.081 A/m; Power Drift = 0.010 dB
Hearing Aid Near-Field Category: M3 (AWF -5 dB)



Grid 1	Grid 2	Grid 3
165.8	216.9	217.2
Grid 4	Grid 5	Grid 6
158.8	225.3	226.0
Grid 7	Grid 8	Grid 9
162.4	215.9	216.6



Grid 1	Grid 2	Grid 3
0.460	0.332	0.191
Grid 4	Grid 5	Grid 6
0.371	0.270	0.162
Grid 7	Grid 8	Grid 9
0.420	0.306	0.175

MEASUREMENT DATA GSM1900, CHANNEL LOW (1850.2 MHz)

Date/Time: 2007-10-23 14:03:14
Test Laboratory: TCC Nokia
Type: RM-135; Serial: 004400/99/167518/0

Date/Time: 2007-10-23 14:27:58
Test Laboratory: TCC Nokia
Type: RM-135; Serial: 004400/99/167518/0

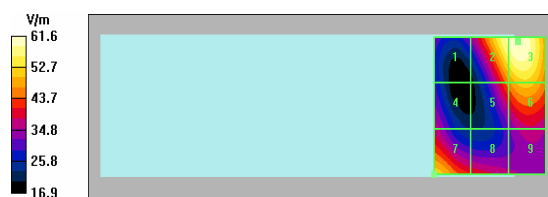
Communication System: GSM1900 (ER3DV6)
Frequency: 1850.2 MHz; Duty Cycle: 1:7.92
Medium: Air; Medium Notes: Not Specified
Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
Phantom section: E Device Section

Communication System: GSM1900 (H3DV6)
Frequency: 1850.2 MHz; Duty Cycle: 1:4.13
Medium: Air; Medium Notes: Not Specified
Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
Phantom section: H Device Section

DASY4 Configuration:
- Probe: ER3DV6 - SN2333; Probe Notes:
- ConvF(1, 1, 1); Calibrated: 2007-02-13
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn555; Calibrated: 2007-03-15
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

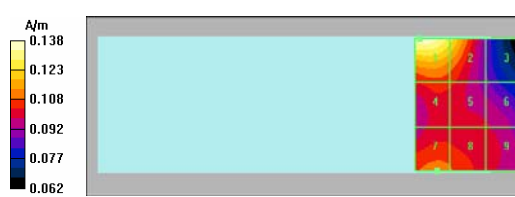
DASY4 Configuration:
- Probe: H3DV6 - SN6053; Probe Notes:
- ; Calibrated: 2007-02-13
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn555; Calibrated: 2007-03-15
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

E Scan - ER3DV6 - measurement distance from the closest probe sensor part to the Device = 10mm (low)/Hearing Aid Compatibility Test (101x101x1):
Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 61.6 V/m
Probe Modulation Factor = 2.82
Reference Value = 9.64 V/m; Power Drift = -0.069 dB
Hearing Aid Near-Field Category: M3 (AWF -5 dB)



Grid 1	Grid 2	Grid 3
33.6	59.9	61.6
Grid 4	Grid 5	Grid 6
37.0	46.1	51.7
Grid 7	Grid 8	Grid 9
52.4	41.3	37.2

H Scan - H3DV6 - measurement distance from the closest probe sensor part to the Device = 10mm (Low)/Hearing Aid Compatibility Test (101x101x1):
Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.138 A/m
Probe Modulation Factor = 2.03
Reference Value = 0.049 A/m; Power Drift = -0.011 dB
Hearing Aid Near-Field Category: M4 (AWF -5 dB)



Grid 1	Grid 2	Grid 3
0.138	0.126	0.089
Grid 4	Grid 5	Grid 6
0.106	0.104	0.098
Grid 7	Grid 8	Grid 9
0.109	0.108	0.100

MEASUREMENT DATA GSM1900, CHANNEL MIDDLE (1880 MHz)

Date/Time: 2007-10-23 13:49:56
Test Laboratory: TCC Nokia
Type: RM-135; Serial: 004400/99/167518/0

Date/Time: 2007-10-23 14:17:20
Test Laboratory: TCC Nokia
Type: RM-135; Serial: 004400/99/167518/0

Communication System: GSM1900 (ER3DV6)
Frequency: 1880 MHz; Duty Cycle: 1:7.92
Medium: Air; Medium Notes: Not Specified
Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
Phantom section: E Device Section

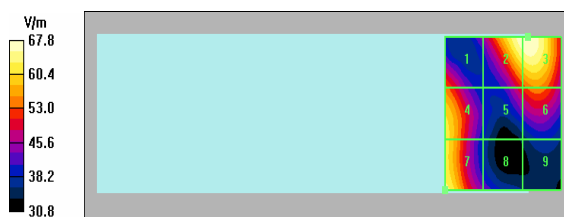
Communication System: GSM1900 (H3DV6)
Frequency: 1880 MHz; Duty Cycle: 1:4.13
Medium: Air; Medium Notes: Not Specified
Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
Phantom section: H Device Section

DASY4 Configuration:
- Probe: ER3DV6 - SN2333; Probe Notes:
- ConvF(1, 1, 1); Calibrated: 2007-02-13
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn555; Calibrated: 2007-03-15
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

DASY4 Configuration:
- Probe: H3DV6 - SN6053; Probe Notes:
- ; Calibrated: 2007-02-13
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn555; Calibrated: 2007-03-15
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

E Scan - ER3DV6 - measurement distance from the closest probe sensor part to the Device = 10mm (Middle)/Hearing Aid Compatibility Test (101x101x1):

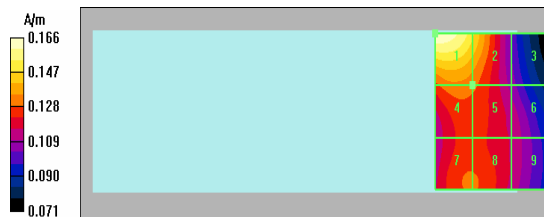
Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 67.8 V/m
Probe Modulation Factor = 2.82
Reference Value = 14.2 V/m; Power Drift = -0.236 dB
Hearing Aid Near-Field Category: M3 (AWF -5 dB)



Grid 1	Grid 2	Grid 3
54.5	67.4	67.8
Grid 4	Grid 5	Grid 6
62.0	51.5	55.1
Grid 7	Grid 8	Grid 9
64.4	43.9	38.5

H Scan - H3DV6 - measurement distance from the closest probe sensor part to the Device = 10mm (middle)/Hearing Aid Compatibility Test (101x101x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.166 A/m
Probe Modulation Factor = 2.03
Reference Value = 0.061 A/m; Power Drift = -0.085 dB
Hearing Aid Near-Field Category: M3 (AWF -5 dB)



Grid 1	Grid 2	Grid 3
0.166	0.148	0.107
Grid 4	Grid 5	Grid 6
0.133	0.130	0.114
Grid 7	Grid 8	Grid 9
0.129	0.129	0.115

MEASUREMENT DATA GSM1900, CHANNEL HIGH (1909.8 MHz)																																					
Date/Time: 2007-10-23 13:57:03 Test Laboratory: TCC Nokia Type: RM-135; Serial: 004400/99/167518/0	Date/Time: 2007-10-23 14:23:06 Test Laboratory: TCC Nokia Type: RM-135; Serial: 004400/99/167518/0																																				
Communication System: GSM1900 (ER3DV6) Frequency: 1909.8 MHz; Duty Cycle: 1:7.92 Medium: Air; Medium Notes: Not Specified Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³ Phantom section: E Device Section	Communication System: GSM1900 (H3DV6) Frequency: 1909.8 MHz; Duty Cycle: 1:4.13 Medium: Air; Medium Notes: Not Specified Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³ Phantom section: H Device Section																																				
DASY4 Configuration: - Probe: ER3DV6 - SN2333; Probe Notes: - ConvF(1, 1, 1); Calibrated: 2007-02-13 - Sensor-Surface: (Fix Surface) - Electronics: DAE4 Sn555; Calibrated: 2007-03-15 - Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: Not Specified - Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172	DASY4 Configuration: - Probe: H3DV6 - SN6053; Probe Notes: - ; Calibrated: 2007-02-13 - Sensor-Surface: (Fix Surface) - Electronics: DAE4 Sn555; Calibrated: 2007-03-15 - Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: Not Specified - Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172																																				
E Scan - ER3DV6 - measurement distance from the closest probe sensor part to the Device = 10mm (High)/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm Maximum value of peak Total field = 70.7 V/m Probe Modulation Factor = 2.82 Reference Value = 11.9 V/m; Power Drift = -0.044 dB Hearing Aid Near-Field Category: M3 (AWF -5 dB)	H Scan - H3DV6 - measurement distance from the closest probe sensor part to the Device = 10mm (High)/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm Maximum value of peak Total field = 0.171 A/m Probe Modulation Factor = 2.03 Reference Value = 0.068 A/m; Power Drift = 0.029 dB Hearing Aid Near-Field Category: M3 (AWF -5 dB)																																				
<table><tr><td>Grid 1</td><td>Grid 2</td><td>Grid 3</td></tr><tr><td>43.2</td><td>69.4</td><td>70.7</td></tr><tr><td>Grid 4</td><td>Grid 5</td><td>Grid 6</td></tr><tr><td>43.3</td><td>56.3</td><td>61.0</td></tr><tr><td>Grid 7</td><td>Grid 8</td><td>Grid 9</td></tr><tr><td>62.1</td><td>37.0</td><td>43.7</td></tr></table>	Grid 1	Grid 2	Grid 3	43.2	69.4	70.7	Grid 4	Grid 5	Grid 6	43.3	56.3	61.0	Grid 7	Grid 8	Grid 9	62.1	37.0	43.7	<table><tr><td>Grid 1</td><td>Grid 2</td><td>Grid 3</td></tr><tr><td>0.171</td><td>0.157</td><td>0.120</td></tr><tr><td>Grid 4</td><td>Grid 5</td><td>Grid 6</td></tr><tr><td>0.142</td><td>0.140</td><td>0.133</td></tr><tr><td>Grid 7</td><td>Grid 8</td><td>Grid 9</td></tr><tr><td>0.147</td><td>0.147</td><td>0.135</td></tr></table>	Grid 1	Grid 2	Grid 3	0.171	0.157	0.120	Grid 4	Grid 5	Grid 6	0.142	0.140	0.133	Grid 7	Grid 8	Grid 9	0.147	0.147	0.135
Grid 1	Grid 2	Grid 3																																			
43.2	69.4	70.7																																			
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0.147	0.147	0.135																																			

APPENDIX C: RELEVANT PAGES FROM PROBE CALIBRATION REPORT(S)

E-field probe ER3DV6, SN: 2333
H-field probe H3DV6, SN: 6053



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **Nokia Salo TCC**

Certificate No: **ER3-2333_Feb07**

CALIBRATION CERTIFICATE

Object	ER3DV6 - SN:2333
Calibration procedure(s)	QA CAL-02.v4 Calibration procedure for E-field probes optimized for close near field evaluations in air
Calibration date:	February 13, 2007
Condition of the calibrated item	In Tolerance

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41495277	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41498087	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Reference 3 dB Attenuator	SN: S5054 (3c)	10-Aug-06 (METAS, No. 217-00592)	Aug-07
Reference 20 dB Attenuator	SN: S5086 (20b)	4-Apr-06 (METAS, No. 251-00558)	Apr-07
Reference 30 dB Attenuator	SN: S5129 (30b)	10-Aug-06 (METAS, No. 217-00593)	Aug-07
Reference Probe ER3DV6	SN: 2328	2-Oct-06 (SPEAG, No. ER3-2328_Oct06)	Oct-07
DAE4	SN: 654	21-Jun-06 (SPEAG, No. DAE4-654_Jun06)	Jun-07
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	

Issued: February 13, 2007

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

DASY - Parameters of Probe: ER3DV6 SN:2333

Sensitivity in Free Space [$\mu\text{V}/(\text{V}/\text{m})^2$]		Diode Compression ^A	
NormX	1.44 ± 10.1 % (k=2)	DCP X	94 mV
NormY	1.50 ± 10.1 % (k=2)	DCP Y	94 mV
NormZ	1.46 ± 10.1 % (k=2)	DCP Z	99 mV

Frequency Correction

X	0.0
Y	0.0
Z	0.0

Sensor Offset (Probe Tip to Sensor Center)

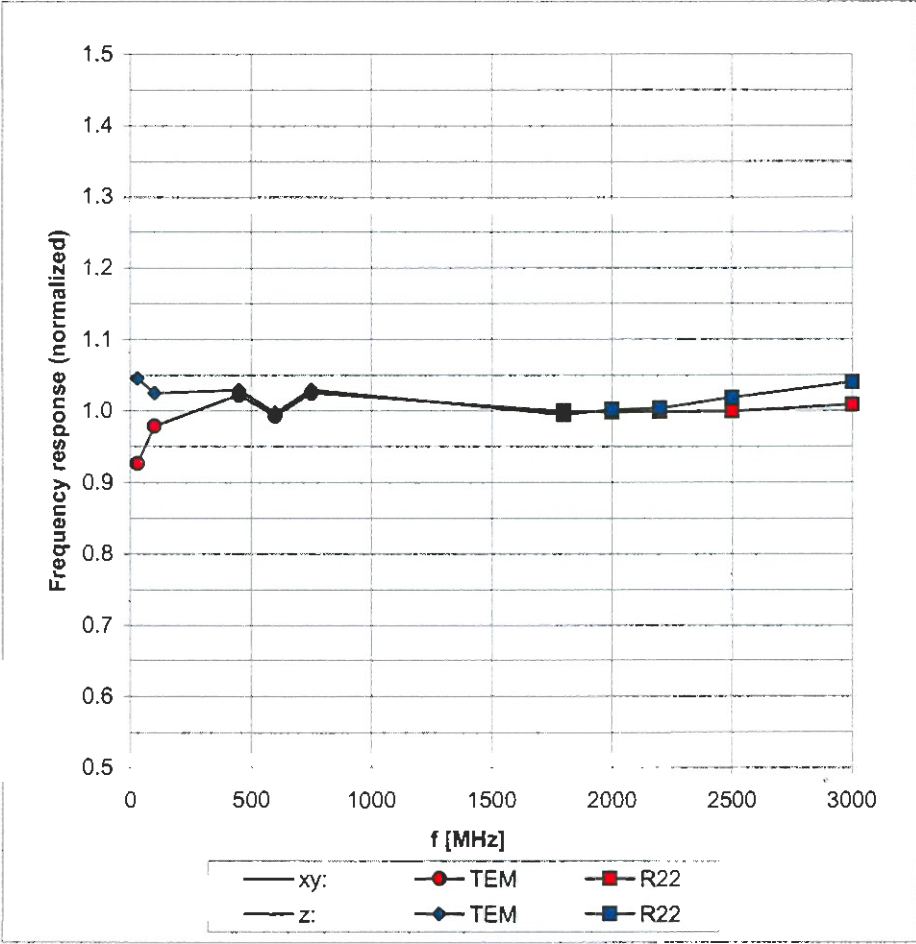
X	2.5 mm
Y	2.5 mm
Z	2.5 mm

Connector Angle -74 °

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

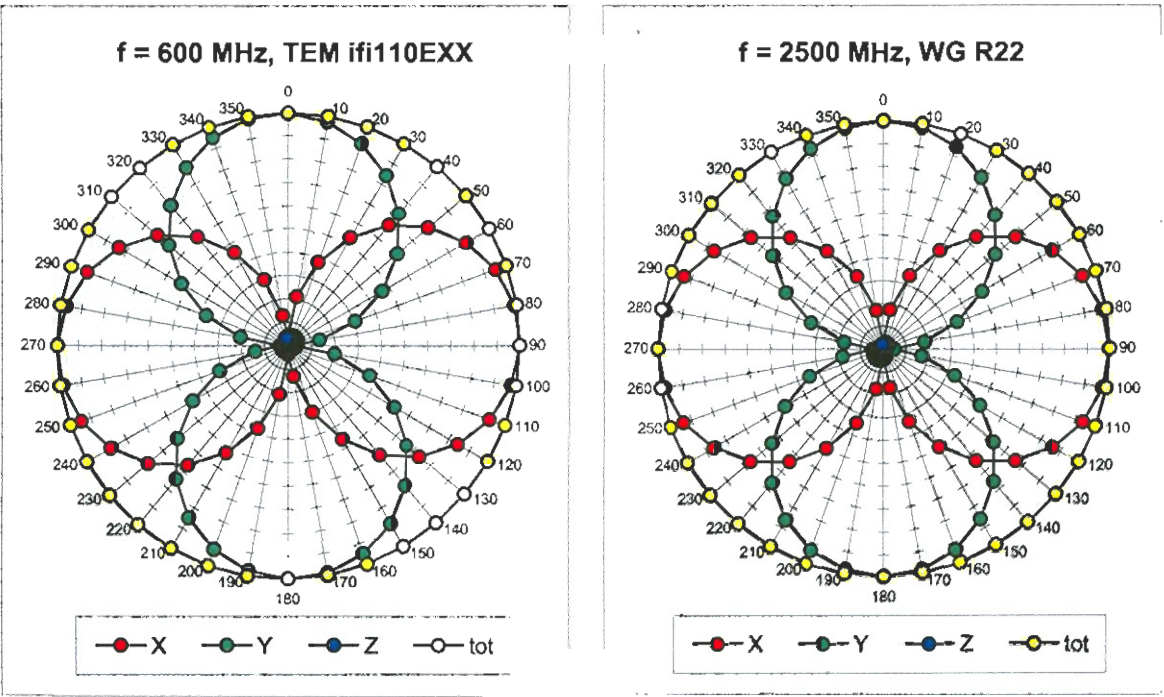
^A numerical linearization parameter: uncertainty not required

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

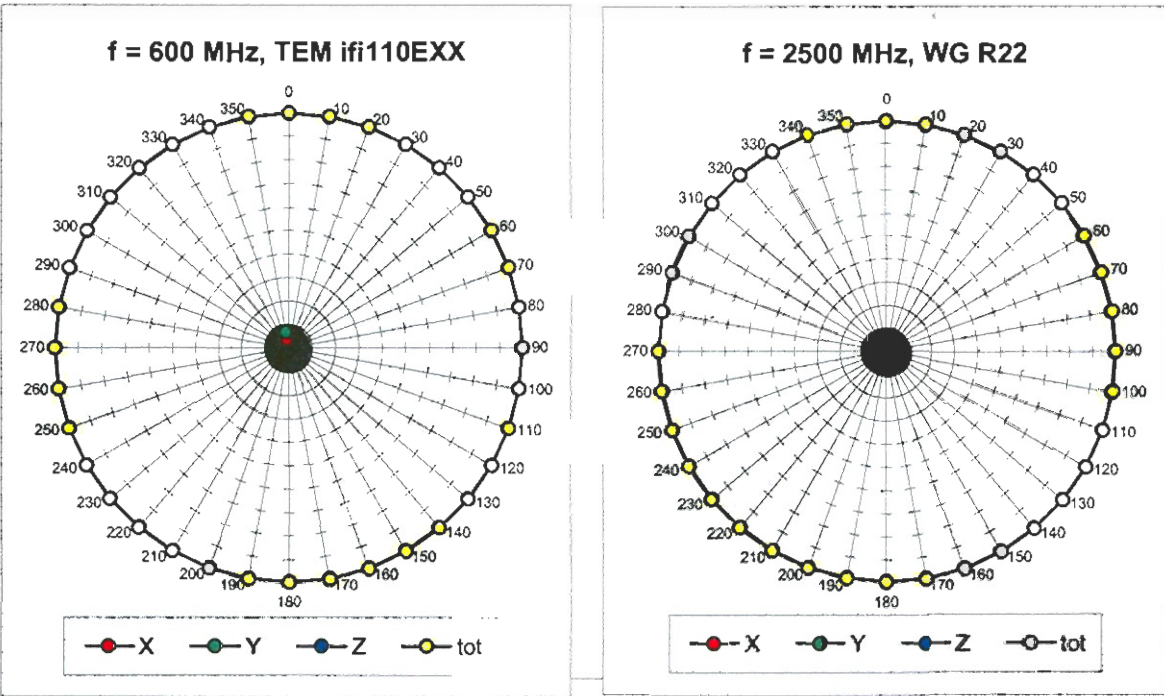


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

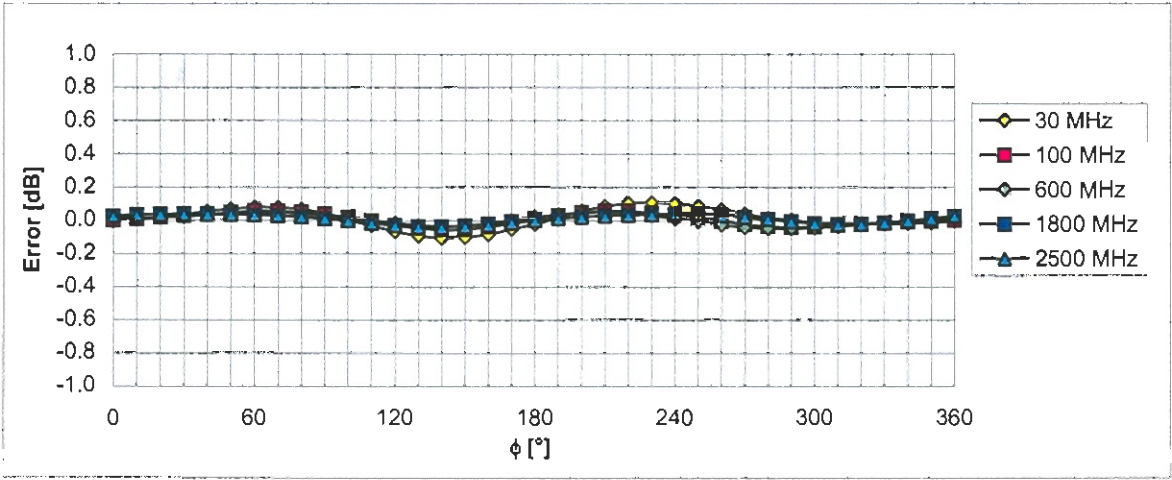
Receiving Pattern (ϕ), $\vartheta = 0^\circ$



Receiving Pattern (ϕ), $\vartheta = 90^\circ$

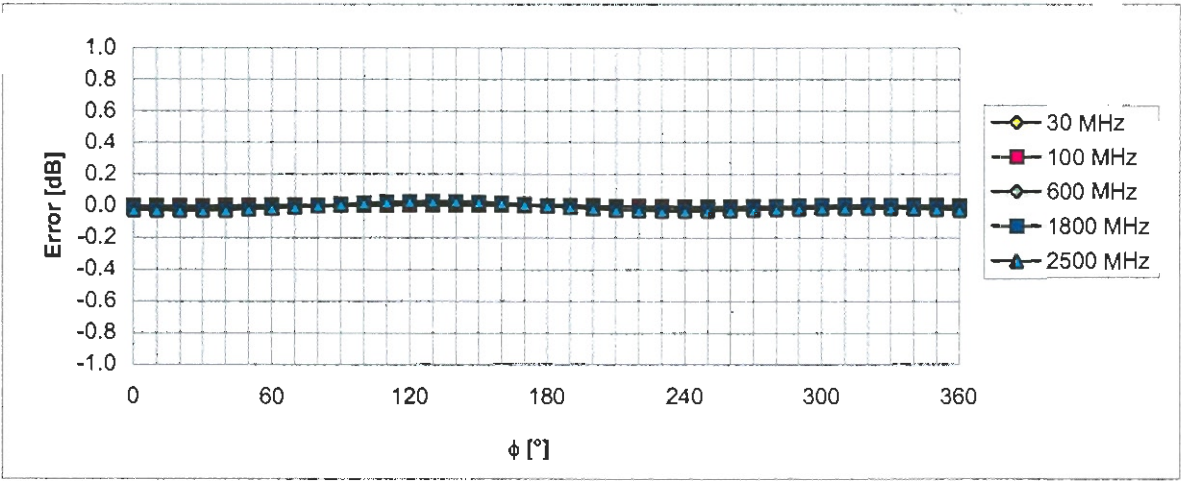


Receiving Pattern (ϕ), $\vartheta = 0^\circ$



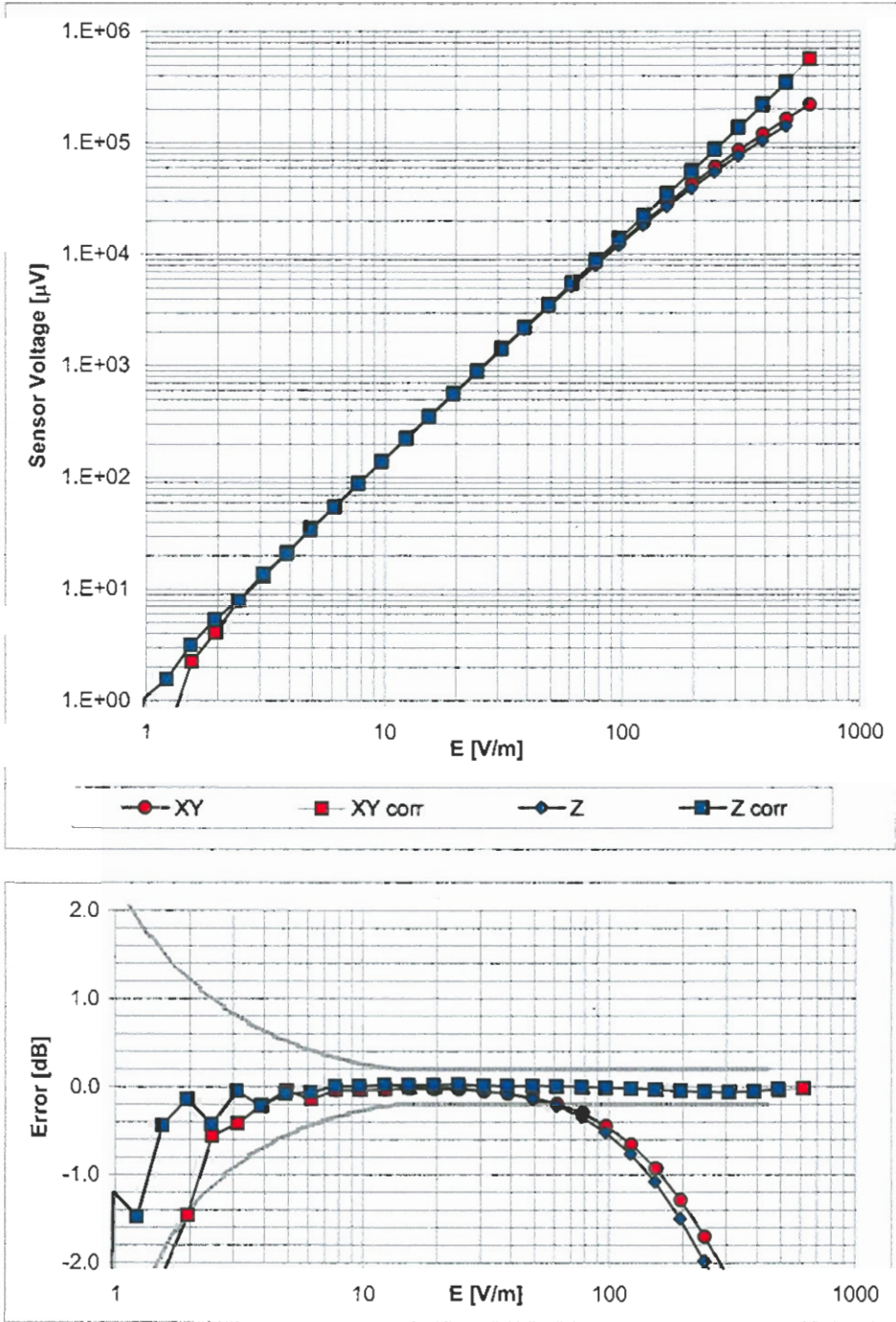
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

Receiving Pattern (ϕ), $\vartheta = 90^\circ$



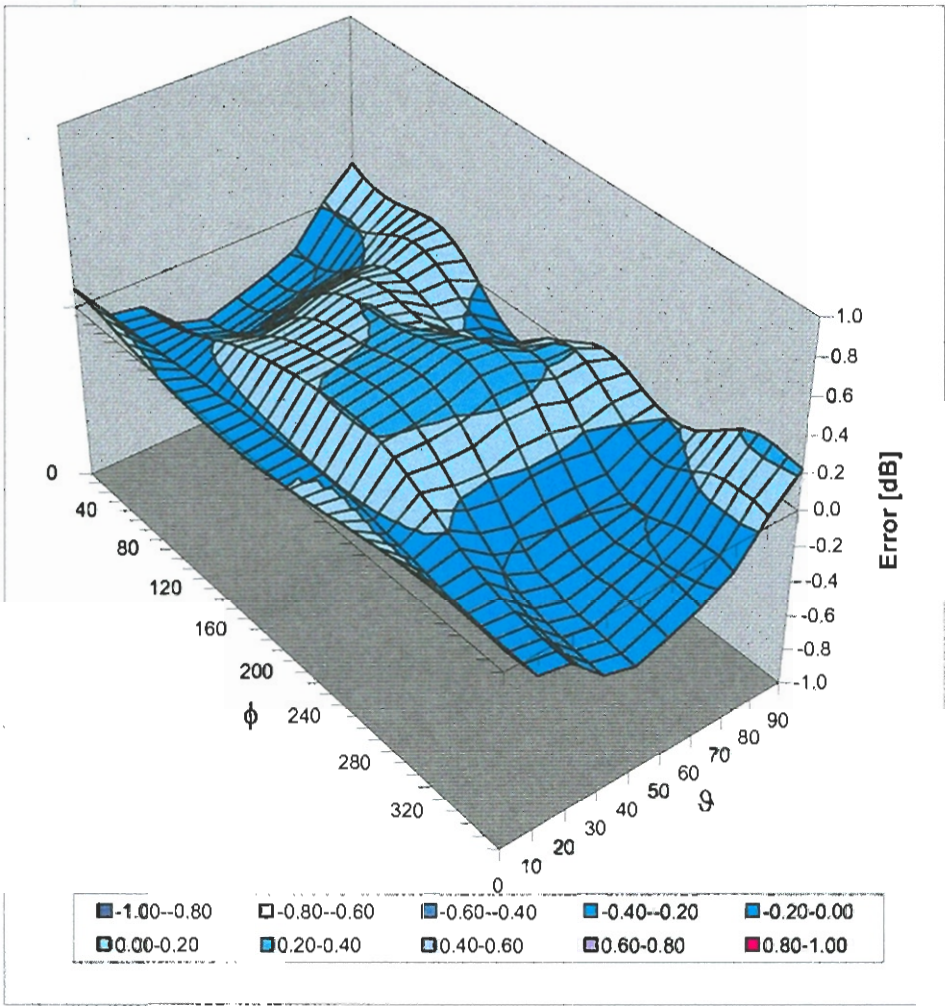
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

Dynamic Range f(E-field)
(Waveguide R22, f = 1800 MHz)



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

Deviation from Isotropy in Air
Error (ϕ , θ) , $f = 900 \text{ MHz}$



Uncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ ($k=2$)



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Accreditation No.: SCS 108

Client **Nokia Salo TCC**

Certificate No: **H3-6053_Feb07**

CALIBRATION CERTIFICATE

Object	H3DV6 - SN:6053
Calibration procedure(s)	QA CAL-03.v4 Calibration procedure for H-field probes optimized for close near field evaluations in air
Calibration date:	February 13, 2007
Condition of the calibrated item	In Tolerance

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41495277	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41498087	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Reference 3 dB Attenuator	SN: S5054 (3c)	10-Aug-06 (METAS, No. 217-00592)	Aug-07
Reference 20 dB Attenuator	SN: S5086 (20b)	4-Apr-06 (METAS, No. 251-00558)	Apr-07
Reference 30 dB Attenuator	SN: S5129 (30b)	10-Aug-06 (METAS, No. 217-00593)	Aug-07
Reference Probe H3DV6	SN: 6182	2-Oct-06 (SPEAG, No. H3-6182_Oct06)	Oct-07
DAE4	SN: 654	21-Jun-06 (SPEAG, No. DAE4-654_Jun06)	Jun-07
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	

Issued: February 13, 2007

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

DASY - Parameters of Probe: H3DV6 SN:6053

Sensitivity in Free Space [A/m / $\sqrt{\mu\text{V}}$]

	a0	a1	a2
X	2.724E-03	-8.535E-5	-3.619E-5 ± 5.1 % (k=2)
Y	2.567E-03	-2.007E-4	7.239E-5 ± 5.1 % (k=2)
Z	2.914E-03	-3.715E-4	5.754E-5 ± 5.1 % (k=2)

Diode Compression¹

DCP X	85 mV
DCP Y	85 mV
DCP Z	85 mV

Sensor Offset (Probe Tip to Sensor Center)

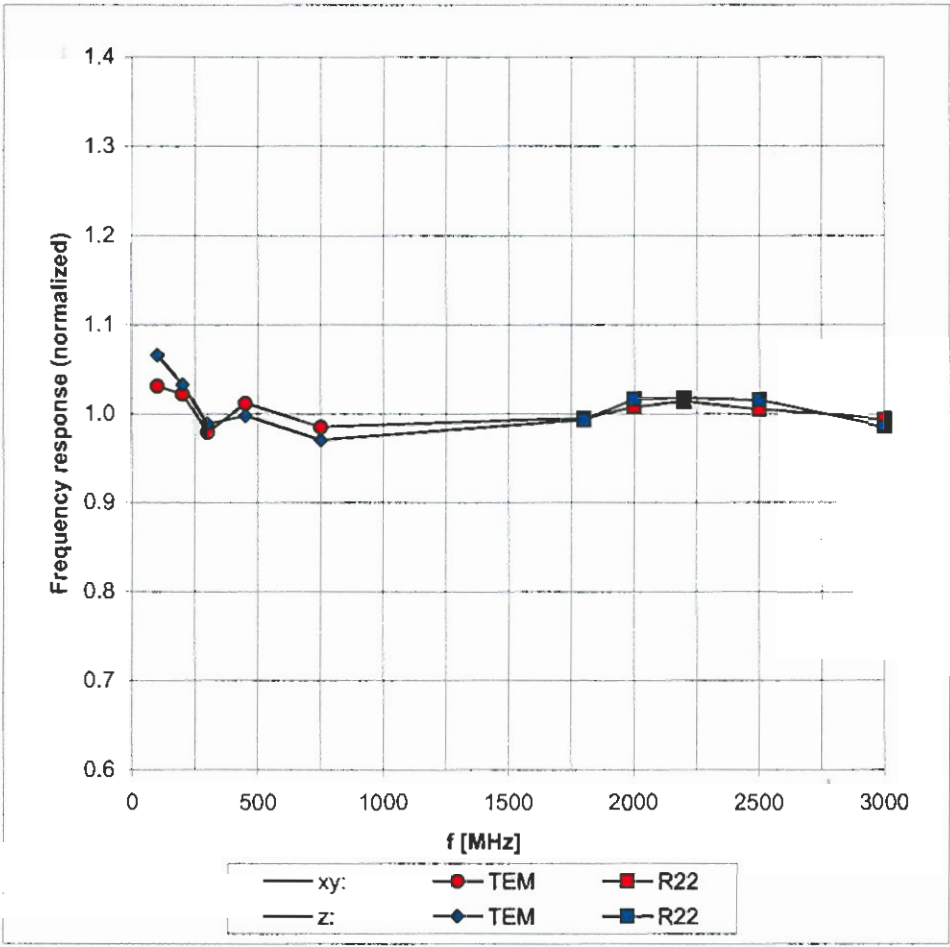
X	3.0 mm
Y	3.0 mm
Z	3.0 mm

Connector Angle 37 °

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

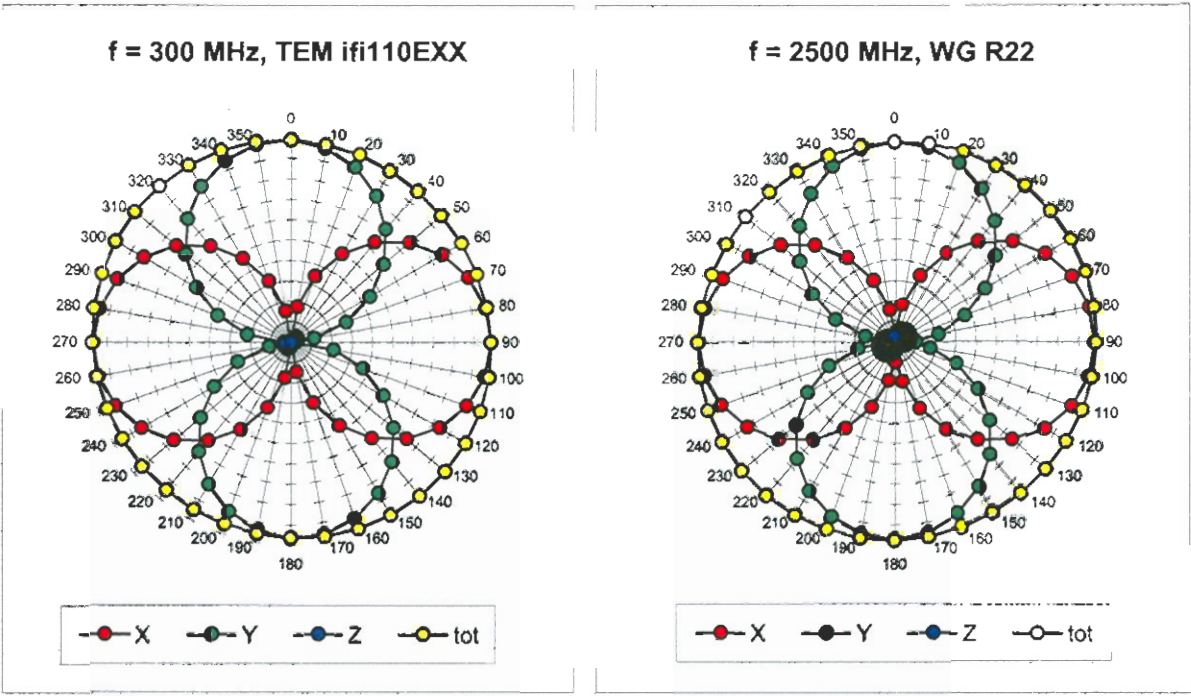
¹ numerical linearization parameter: uncertainty not required

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

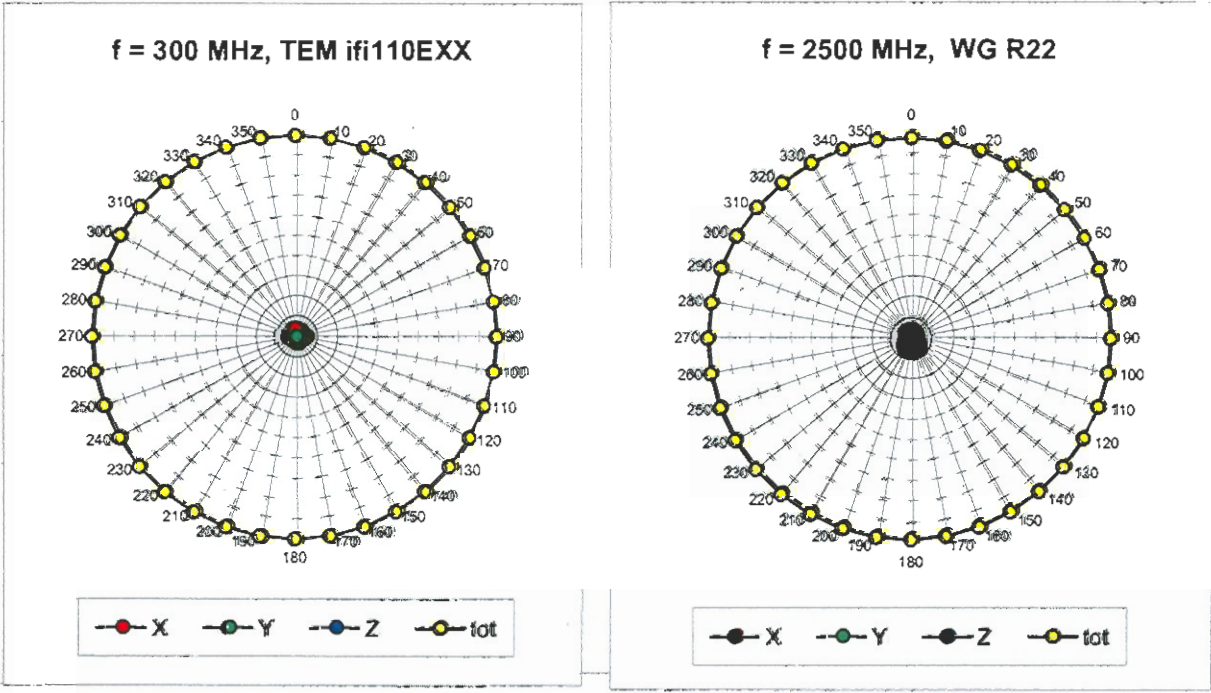


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

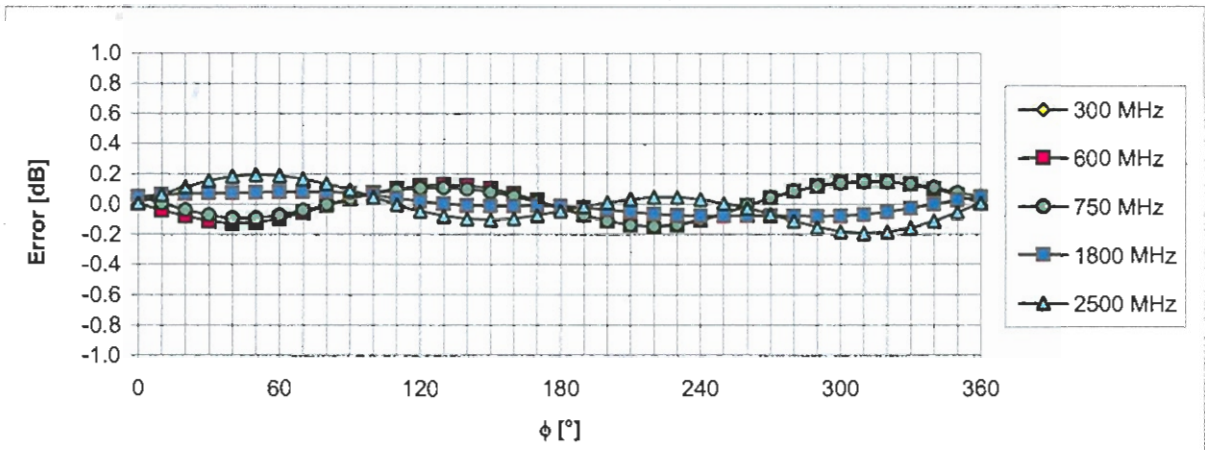
Receiving Pattern (ϕ), $\vartheta = 90^\circ$



Receiving Pattern (ϕ), $\vartheta = 0^\circ$

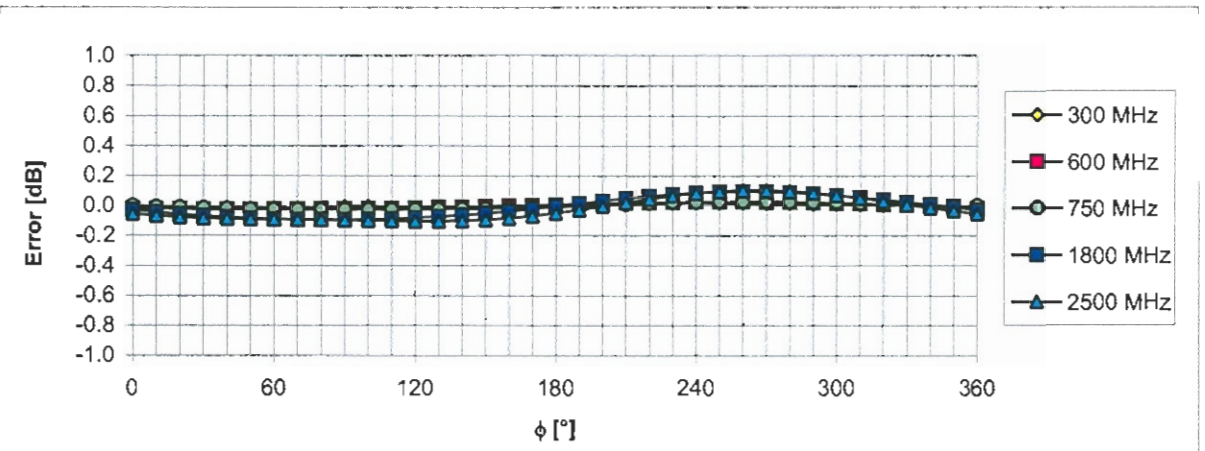


Receiving Pattern (ϕ), $\vartheta = 90^\circ$



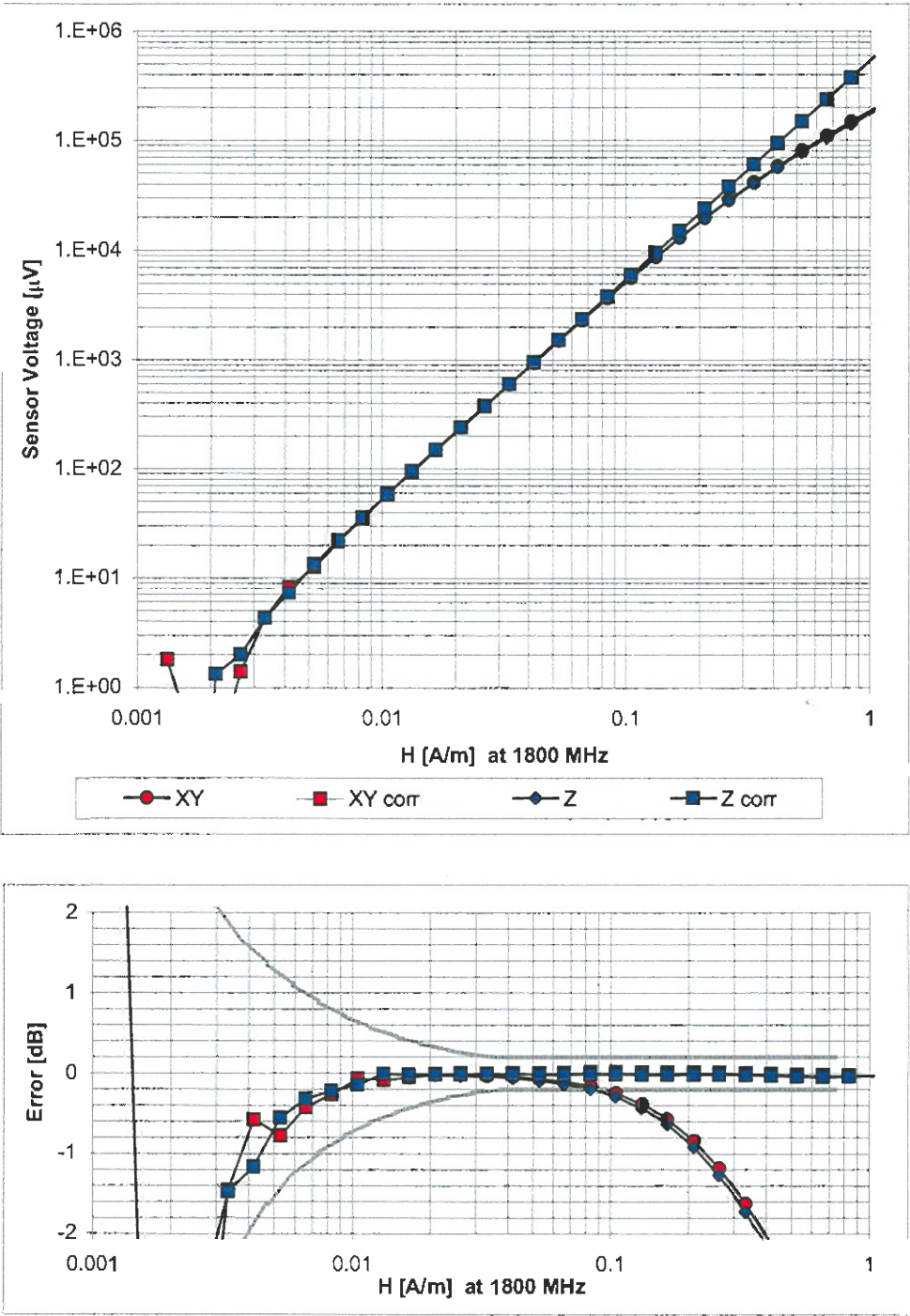
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

Receiving Pattern (ϕ), $\vartheta = 0^\circ$



Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

Dynamic Range f(H-field)
(Waveguide R22, f = 1800 MHz)



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

APPENDIX D: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORT(S)

835MHz dipole CD835V3, SN: 1004
1880MHz dipole CD1880V3, SN: 1003



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client Nokia Salo TCC

Certificate No: CD835V3-1004_Feb07

CALIBRATION CERTIFICATE

Object CD835V3 - SN: 1004

Calibration procedure(s) QA CAL-20.v4
Calibration procedure for dipoles in air

Calibration date: February 13, 2007

Condition of the calibrated item In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
DAE4	SN: 660	1-Mar-06 (SPEAG, No. DAE4-660_Mar06)	Calibration, Mar-07
Probe ER3DV6	SN: 2336	27-Dec-06 (SPEAG, No. ER3-2336_Dec06)	Calibration, Dec-07
Probe H3DV6	SN: 6065	27-Dec-06 (SPEAG, No. H3-6065-Dec06)	Calibration, Dec-07
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-4419B	GB43310788	12-Aug-03 (SPEAG, in house check Oct-06)	In house check: Oct-07
Power sensor HP 8481A	MY41093312	10-Aug-03 (SPEAG, in house check Oct-06)	In house check: Oct-08
Power sensor HP 8481A	MY41093315	10-Aug-03 (SPEAG, in house check Oct-06)	In house check: Oct-08
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07
RF generator R&S SMT06	SN: 100005	26-Jul-04 (SPEAG, in house check Nov-05)	In house check: Nov-07

Calibrated by: Name Claudio Leubler Function Laboratory Technician Signature

Approved by: Fin Bomholt Technical Director

Issued: March 6, 2007

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

1 Measurement Conditions

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

DASY Version	DASY4	V4.7 B53
DASY PP Version	SEMCAD	V1.8 B172
Phantom	HAC Test Arch	SD HAC P01 BA, #1002
Distance Dipole Top - Probe Center	10 mm	
Scan resolution	dx, dy = 5 mm	area = 20 x 180 mm
Frequency	835 MHz ± 1 MHz	
Forward power at dipole connector	20.0 dBm = 100mW	
Input power drift	< 0.07 dB	

2 Maximum Field values

H-field 10 mm above dipole surface	condition	interpolated maximum
Maximum measured	100 mW forward power	0.452 A/m

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

E-field 10 mm above dipole surface	condition	Interpolated maximum
Maximum measured above high end	100 mW forward power	161.7 V/m
Maximum measured above low end	100 mW forward power	158.3 V/m
Averaged maximum above arm	100 mW forward power	160.0 V/m

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

3 Appendix

3.1 Antenna Parameters

Frequency	Return Loss	Impedance
800 MHz	16.8 dB	(42.5 – j11.2) Ohm
835 MHz	26.1 dB	(52.9 + j4.2) Ohm
900 MHz	15.6 dB	(57.3 – j16.4) Ohm
950 MHz	24.7 dB	(45.3 + j2.9) Ohm
960 MHz	19.1 dB	(51.7 + j11.2) Ohm

3.2 Antenna Design and Handling

The calibration dipole has a symmetric geometry with a built-in two stub matching network, which leads to the enhanced bandwidth.

The dipole is built of standard semirigid coaxial cable. The internal matching line is open ended. The antenna is therefore open for DC signals.

Do not apply force to dipole arms, as they are liable to bend. The soldered connections near the feedpoint may be damaged. After excessive mechanical stress or overheating, check the impedance characteristics to ensure that the internal matching network is not affected.

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

3.3.2 DASY4 H-Field Result

Test Laboratory: SPEAG, Zurich, Switzerland
DUT: HAC-Dipole 835 MHz; Type: CD835V3; Serial: 1004

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: Air
Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
Phantom section: H Dipole Section

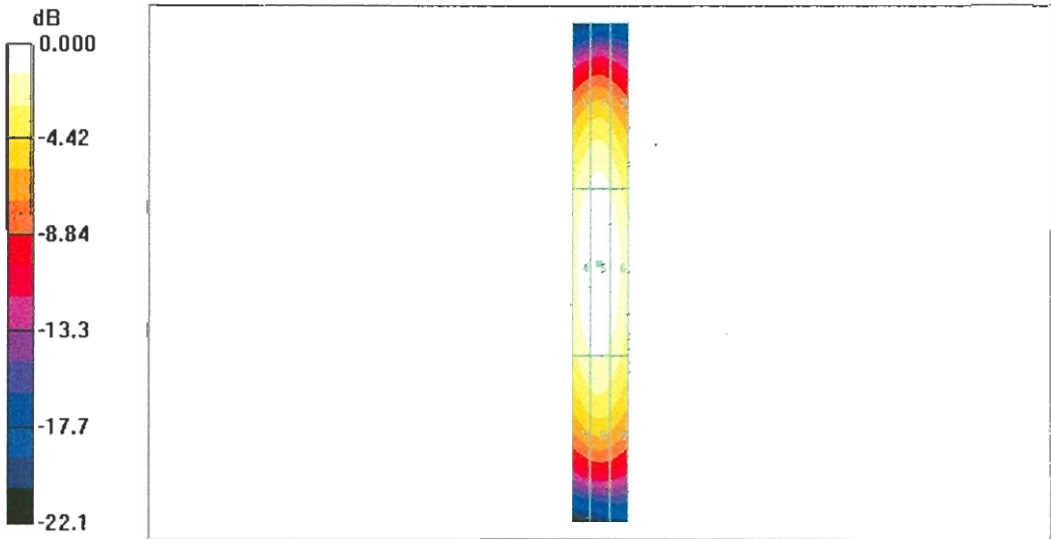
DASY4 Configuration:

- Probe: H3DV6 - SN6065; ; Calibrated: 12/27/2006
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn660: Calibrated: 3/1/2006
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1002
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

H Scan - Sensor Center 10mm above CD835 Dipole/Hearing Aid Compatibility Test (41x361x1):
Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.452 A/m
Probe Modulation Factor = 1.00
Reference Value = 0.479 A/m; Power Drift = 0.012 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
0.393	0.408	0.380
Grid 4	Grid 5	Grid 6
0.436	0.452	0.425
Grid 7	Grid 8	Grid 9
0.374	0.387	0.365



0 dB = 0.452A/m

3.3.3 DASY4 E-Field Result

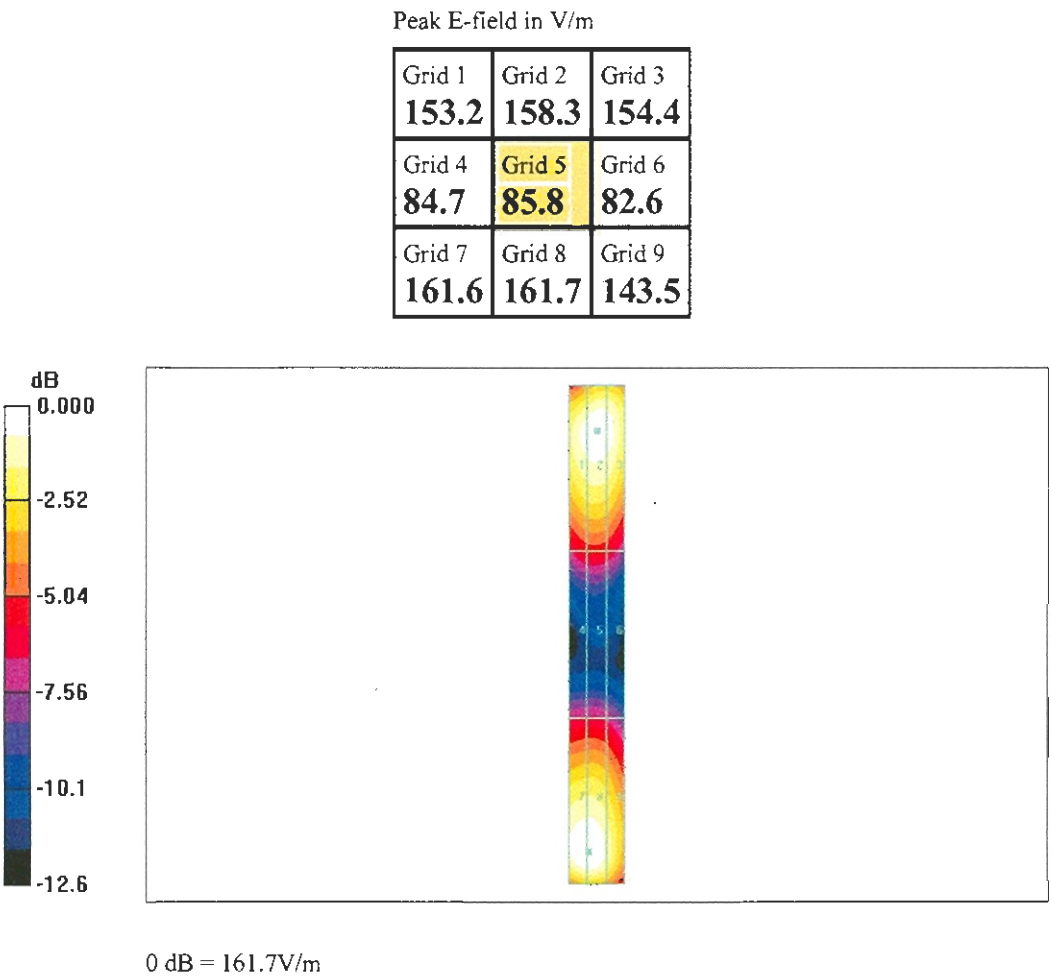
Date/Time: 2/13/2007 2:25:30 PM

Test Laboratory: SPEAG, Zurich, Switzerland
DUT: HAC-Dipole 835 MHz; Type: D835V3; Serial: 1004

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: Air
Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
Phantom section: E Dipole Section

- DASY4 Configuration:
- Probe: ER3DV6 - SN2336; ConvF(1, 1, 1); Calibrated: 12/27/2006
 - Sensor-Surface: (Fix Surface)
 - Electronics: DAE4 Sn660; Calibrated: 3/1/2006
 - Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1002
 - Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

E Scan - Sensor Center 10mm above CD835 Dipole/Hearing Aid Compatibility Test (41x361x1):
Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 161.7 V/m
Probe Modulation Factor = 1.00
Reference Value = 107.2 V/m; Power Drift = 0.001 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)





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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **Nokia Salo TCC**

Certificate No: **CD1880V3-1003_Feb07**

CALIBRATION CERTIFICATE

Object	CD1880V3 - SN: 1003
Calibration procedure(s)	QA CAL-20.v4 Calibration procedure for dipoles in air
Calibration date:	February 12, 2007
Condition of the calibrated item	In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
DAE4	SN: 660	1-Mar-06 (SPEAG, No. DAE4-660_Mar06)	Calibration, Mar-07
Probe ER3DV6	SN: 2336	27-Dec-06 (SPEAG, No. ER3-2336_Dec06)	Calibration, Dec-07
Probe H3DV6	SN: 6065	27-Dec-06 (SPEAG, No. H3-6065-Dec06)	Calibration, Dec-07
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-4419B	GB43310788	12-Aug-03 (SPEAG, in house check Oct-06)	In house check: Oct-07
Power sensor HP 8481A	MY41093312	10-Aug-03 (SPEAG, in house check Oct-06)	In house check: Oct-08
Power sensor HP 8481A	MY41093315	10-Aug-03 (SPEAG, in house check Oct-06)	In house check: Oct-08
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07
RF generator R&S SMT06	SN: 100005	26-Jul-04 (SPEAG, in house check Nov-05)	In house check: Nov-07

Calibrated by:	Name	Function	Signature
	Mike Meili	Laboratory Technician	M. Meili
Approved by:	Fin Bomholt	Technical Director	F. Bomholt

Issued: February 14, 2007

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

1 Measurement Conditions

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

DASY Version	DASY4	V4.7 B53
DASY PP Version	SEMCAD	V1.8 B172
Phantom	HAC Test Arch	SD HAC P01 BA, #1002
Distance Dipole Top - Probe Center	10 mm	
Scan resolution	dx, dy = 5 mm	area = 20 x 90 mm
Frequency	1880 MHz ± 1 MHz	
Forward power at dipole connector	20.0 dBm = 100mW	
Input power drift	< 0.05 dB	

2 Maximum Field values

H-field 10 mm above dipole surface	condition	Interpolated maximum
Maximum measured	100 mW forward power	0.452 A/m

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

E-field 10 mm above dipole surface	condition	Interpolated maximum
Maximum measured above high end	100 mW forward power	130.9 V/m
Maximum measured above low end	100 mW forward power	126.7 V/m
Averaged maximum above arm	100 mW forward power	128.8 V/m

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

3 Appendix

3.1 Antenna Parameters

Frequency	Return Loss	Impedance
1710 MHz	19.0 dB	(49.8 + j11.3) Ohm
1880 MHz	19.9 dB	(53.7 + j9.9) Ohm
1900 MHz	19.8 dB	(56.3 + j9.0) Ohm
1950 MHz	23.7 dB	(57.0 – j0.7) Ohm
2000 MHz	26.2 dB	(45.4 + j0.7) Ohm

3.2 Antenna Design and Handling

The calibration dipole has a symmetric geometry with a built-in two stub matching network, which leads to the enhanced bandwidth.

The dipole is built of standard semirigid coaxial cable. The internal matching line is open ended. The antenna is therefore open for DC signals.

Do not apply force to dipole arms, as they are liable to bend. The soldered connections near the feedpoint may be damaged. After excessive mechanical stress or overheating, check the impedance characteristics to ensure that the internal matching network is not affected.

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

3.3.2 DASY4 H-Field Result

Date/Time: 2/12/2007 4:55:48 PM

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: 1003

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

Medium: Air

Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³

Phantom section: H Dipole Section

DASY4 Configuration:

- Probe: H3DV6 - SN6065; ; Calibrated: 12/27/2006
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn660; Calibrated: 3/1/2006
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1002
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

H Scan - Sensor Center 10mm above CD1880V3 Dipole/Hearing Aid Compatibility Test (41x181x1):

Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.452 A/m

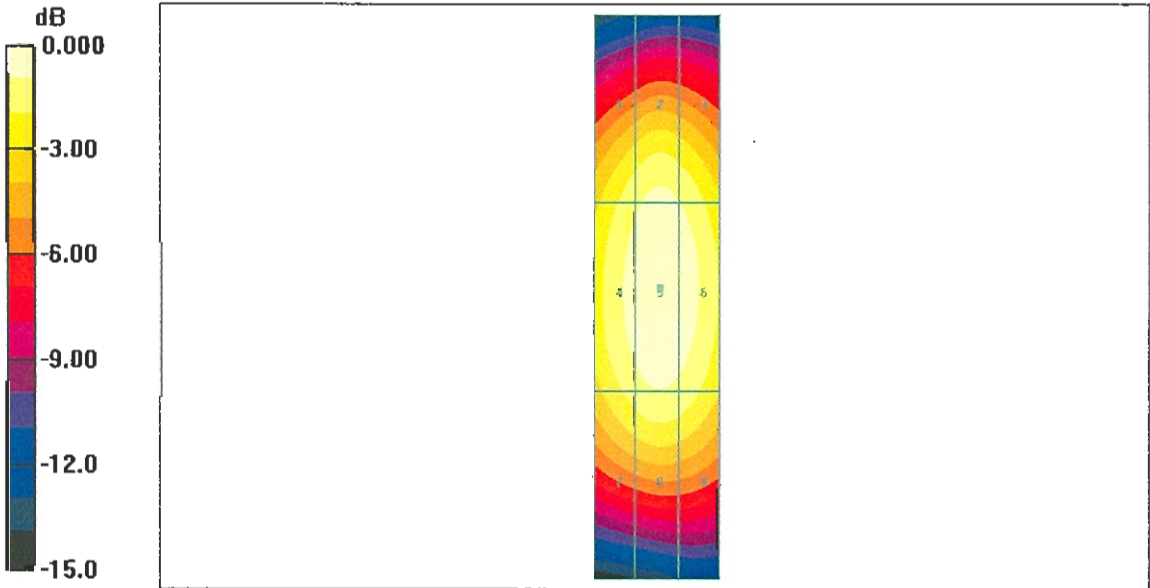
Probe Modulation Factor = 1.00

Reference Value = 0.476 A/m; Power Drift = 0.007 dB

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

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
0.392	0.419	0.404
Grid 4	Grid 5	Grid 6
0.425	0.452	0.437
Grid 7	Grid 8	Grid 9
0.378	0.401	0.388



0 dB = 0.452A/m

3.3.3 DASY4 E-Field Result

Date/Time: 2/12/2007 2:59:33 PM

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: 1003

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

Medium: Air

Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³

Phantom section: E Dipole Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2336; ConvF(1, 1, 1); Calibrated: 12/27/2006
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn660; Calibrated: 3/1/2006
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1002
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

E Scan - Sensor Center 10mm above CD1880V3 Dipole/Hearing Aid Compatibility Test (41x181x1):

Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 130.9 V/m

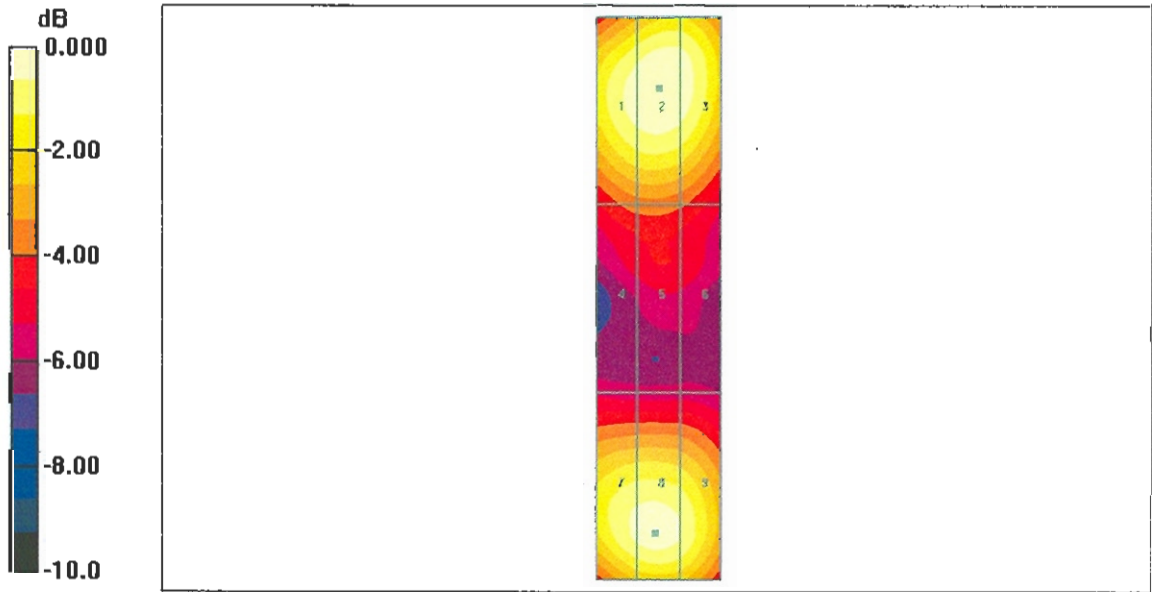
Probe Modulation Factor = 1.00

Reference Value = 139.0 V/m; Power Drift = 0.015 dB

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

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
126.8	130.9	127.9
Grid 4	Grid 5	Grid 6
86.2	87.1	84.0
Grid 7	Grid 8	Grid 9
123.9	126.7	121.4



0 dB = 130.9V/m