



## DUT: HAC Dipole 1900 MHz

Type: CD1880V3

Serial: 1002

Communication System: CW; Frequency: 1880 MHz;

Measurement Standard: DASY4 (High Precision Assessment)

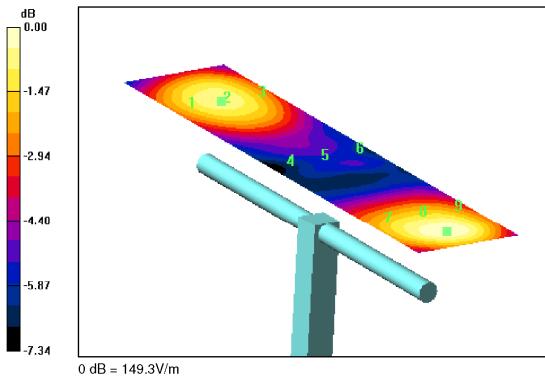
DASY4 Configuration:

- Probe: ERDV6 - SN2332; Calibrated: 1/31/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn637; Calibrated: 9/22/2004
- Phantom: HAC Phantom; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19;

**CW/Hearing Aid Compatibility Test (41x181x1):** Measurement grid: dx=5mm, dy=5mm  
 Maximum value of Total field (slot averaged) = 149.3 V/m  
**Hearing Aid Near-Field Category: M2 (AWF 0 dB)**

E in V/m (Time averaged)			E in V/m (Slot averaged)		
Grid 1	Grid 2	Grid 3	Grid 1	Grid 2	Grid 3
134.1	139.7	135.4	134.1	139.7	135.4
97.4	100.1	96.7	Grid 4	Grid 5	Grid 6
Grid 7	Grid 8	Grid 9	97.4	100.1	96.7
142.4	149.3	143.8	Grid 7	Grid 8	Grid 9
			142.4	149.3	143.8

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
	-5	<47.3	<0.15



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PCTEST™ HAC REPORT	PCTEST™	FCC MEASUREMENT REPORT		UTStarcom	Reviewed by: Quality Manager
HAC Filename: HAC.0505240390-R2.PP4	Test Dates: May 25 - 27, 2005	EUT Type: Dual-Band CDMA Phone	FCC ID: PP4TX-180	Page 31 of 66	

**PCTEST**  
Hearing-Aid Compatibility Facility

**DUT: HAC Dipole 1900 MHz**

Type: CD1880V3

Serial: 1002

Communication System: 80% AM; Frequency: 1880 MHz;

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ER3DV6 - SN2332; Calibrated: 1/31/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn637; Calibrated: 9/22/2004
- Phantom: HAC Main; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19;

**80%AM/Hearing Aid Compatibility Test (41x181x1):** Measurement grid: dx=5mm, dy=5mm

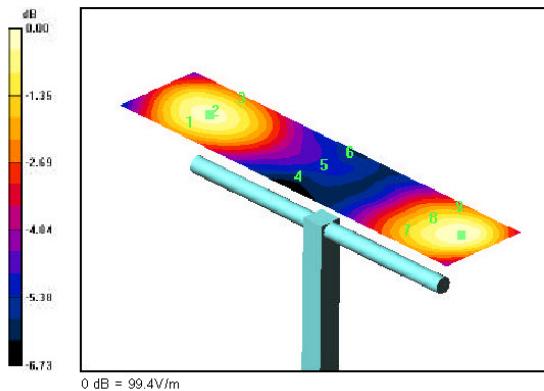
Maximum value of Total field (slot averaged) = 141.3 V/m

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

E in V/m (Time averaged) E in V/m (Slot averaged)

Grid 1	Grid 2	Grid 3	Grid 1	Grid 2	Grid 3
88.0	97.6	87.9	125.1	136.7	125.0
Grid 4	Grid 5	Grid 6	Grid 4	Grid 5	Grid 6
64.8	66.6	64.3	92.1	94.7	91.4
Grid 7	Grid 8	Grid 9	Grid 7	Grid 8	Grid 9
87.6	99.4	91.8	124.5	141.3	130.5

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
	-5	<47.3	<0.15



PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT			Reviewed by: Quality Manager
HAC Filename: HAC.0505240390-R2.PP4	Test Dates: May 25 - 27, 2005	EUT Type: Dual-Band CDMA Phone	FCC ID: PP4TX-180	UTStarcom	Page 32 of 66



## DUT: HAC Dipole 1900 MHz

Type: CD1880V3

Serial: 1002

Communication System: CDMA; Frequency: 1880 MHz;

Measurement Standard: DASY4 (High Precision Assessment)

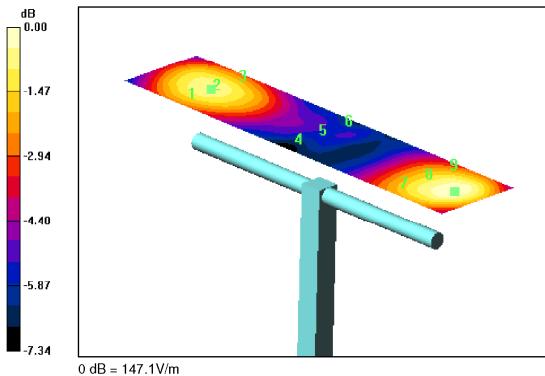
DASY4 Configuration:

- Probe: ER3DV6 - SN2332; Calibrated: 1/31/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn637; Calibrated: 9/22/2004
- Phantom: HAC Phantom; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19;

**CDMA/Hearing Aid Compatibility Test (41x181x1):** Measurement grid: dx=5mm, dy=5mm  
 Maximum value of Total field (slot averaged) = 143.4 V/m  
**Hearing Aid Near-Field Category: M2 (AWF 0 dB)**

E in V/m (Time averaged)			E in V/m (Slot averaged)		
Grid 1	Grid 2	Grid 3	Grid 1	Grid 2	Grid 3
134.1	139.7	135.4	134.1	139.7	135.4
Grid 4	Grid 5	Grid 6	Grid 4	Grid 5	Grid 6
97.5	100.1	97.1	97.5	100.1	97.1
Grid 7	Grid 8	Grid 9	Grid 7	Grid 8	Grid 9
140.2	147.1	140.6	140.2	147.1	140.6

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
	-5	<47.3	<0.15



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PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT			Reviewed by: Quality Manager
HAC Filename:	Test Dates:	EUT Type:	FCC ID:	UTStarcom	
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## DUT: HAC Dipole 835 MHz

Type: CD835V3  
Serial: 1003

Communication System: CW; Frequency: 835 MHz;

Measurement Standard: DASY4 (High Precision Assessment)

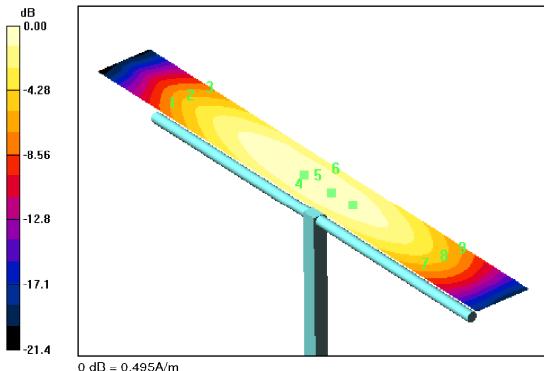
DASY4 Configuration:

- Probe: H3DV6 - SN6180; Calibrated: 10/6/2004
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn637; Calibrated: 9/22/2004
- Phantom: HAC Phantom; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19;

**CW/Hearing Aid Compatibility Test (41x361x1):** Measurement grid: dx=5mm, dy=5mm  
Maximum value of Total field (slot averaged) = 0.495 A/m  
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

H in A/m (Time averaged)			H in A/m (Slot averaged)		
Grid 1	Grid 2	Grid 3	Grid 1	Grid 2	Grid 3
<b>0.409</b>	<b>0.444</b>	<b>0.429</b>	<b>0.409</b>	<b>0.444</b>	<b>0.429</b>
Grid 4	Grid 5	Grid 6	Grid 4	Grid 5	Grid 6
<b>0.468</b>	<b>0.495</b>	<b>0.467</b>	<b>0.468</b>	<b>0.495</b>	<b>0.467</b>
Grid 7	Grid 8	Grid 9	Grid 7	Grid 8	Grid 9
<b>0.416</b>	<b>0.442</b>	<b>0.414</b>	<b>0.416</b>	<b>0.442</b>	<b>0.414</b>

Category AWF (dB)	Limits for E-Field Emissions (V/m)	Limits for H-Field Emissions (A/m)
M1	0	199.5 - 354.8
	-5	149.6 - 266.1
M2	0	112.2 - 199.5
	-5	84.1 - 149.6
M3	0	63.1 - 112.2
	-5	47.3 - 84.1
M4	0	<63.1
	-5	<47.3



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**PCTEST**  
Hearing-Aid Compatibility Facility

**DUT: HAC Dipole 835 MHz**

Type: CD835V3

Serial: 1003

Communication System: 80% AM; Frequency: 835 MHz;

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: H3DW6 - SN6180; Calibrated: 10/6/2004
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn637; Calibrated: 9/22/2004
- Phantom: HAC Main; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19;

**80%AM/Hearing Aid Compatibility Test 5 (41x361x1):** Measurement grid: dx=5mm, dy=5mm

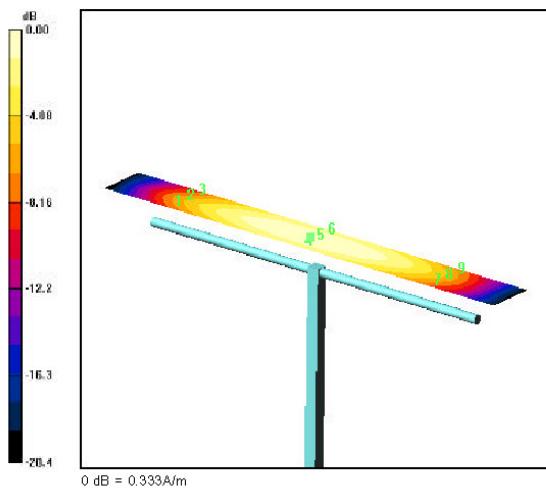
Maximum value of Total field (slot averaged) = 0.473 A/m

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

H in A/m (Time averaged) H in A/m (Slot averaged)

Grid 1	Grid 2	Grid 3	Grid 1	Grid 2	Grid 3
0.277	0.295	0.281	0.393	0.419	0.399
Grid 4	Grid 5	Grid 6	Grid 4	Grid 5	Grid 6
0.315	0.333	0.319	0.447	0.473	0.454
Grid 7	Grid 8	Grid 9	Grid 7	Grid 8	Grid 9
0.268	0.291	0.282	0.380	0.413	0.401

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
	-5	<47.3	<0.15



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## DUT: HAC Dipole 835 MHz

Type: CD835V3  
Serial: 1003

Communication System: CDMA; Frequency: 835 MHz;

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

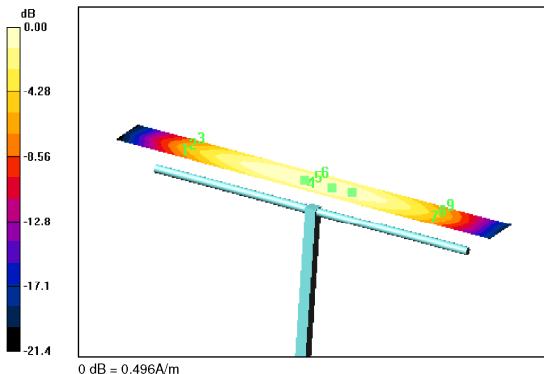
- Probe: H3DV6 - SN6180; Calibrated: 10/6/2004
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn637; Calibrated: 9/22/2004
- Phantom: HAC Phantom; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19;

## CDMA/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of Total field (slot averaged) = 0.496 A/m  
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

H in A/m (Time averaged)			H in A/m (Slot averaged)		
Grid 1	Grid 2	Grid 3	Grid 1	Grid 2	Grid 3
0.410	0.443	0.417	0.410	0.443	0.417
0.469	0.496	0.467	0.469	0.496	0.467
0.416	0.442	0.412	0.416	0.442	0.412

Category AWF (dB)	Limits for E-Field Emissions (V/m)	Limits for H-Field Emissions (A/m)
M1	0	199.5 - 354.8
	-5	149.6 - 266.1
M2	0	112.2 - 199.5
	-5	84.1 - 149.6
M3	0	63.1 - 112.2
	-5	47.3 - 84.1
M4	0	<63.1
	-5	<47.3



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## DUT: HAC Dipole 1900 MHz

Type: CD1880V3

Serial: 1002

Communication System: CW; Frequency: 1880 MHz;

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

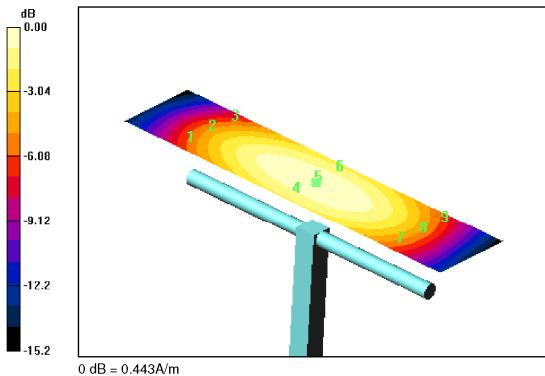
- Probe: H3DV6 - SN6180; Calibrated: 10/6/2004
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn637; Calibrated: 9/22/2004
- Phantom: HAC Phantom; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19;

## CW/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of Total field (slot averaged) = 0.443 A/m  
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

H in A/m (Time averaged)			H in A/m (Slot averaged)		
Grid 1	Grid 2	Grid 3	Grid 1	Grid 2	Grid 3
0.372	0.395	0.375	0.372	0.395	0.375
Grid 4	Grid 5	Grid 6	Grid 4	Grid 5	Grid 6
0.420	0.443	0.421	0.420	0.443	0.421
Grid 7	Grid 8	Grid 9	Grid 7	Grid 8	Grid 9
0.388	0.403	0.382	0.388	0.403	0.382

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
	-5	<47.3	<0.15



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**PCTEST**  
Hearing-Aid Compatibility Facility

**DUT: HAC Dipole 1900 MHz**

Type: CD1880V3

Serial: 1002

Communication System: 80% AM; Frequency: 1880 MHz;

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: H3DW6 - SN6180; Calibrated: 10/6/2004
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn637; Calibrated: 9/22/2004
- Phantom: HAC Main; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19;

**80% AM/Hearing Aid Compatibility Test (41x181x1):** Measurement grid: dx=5mm, dy=5mm

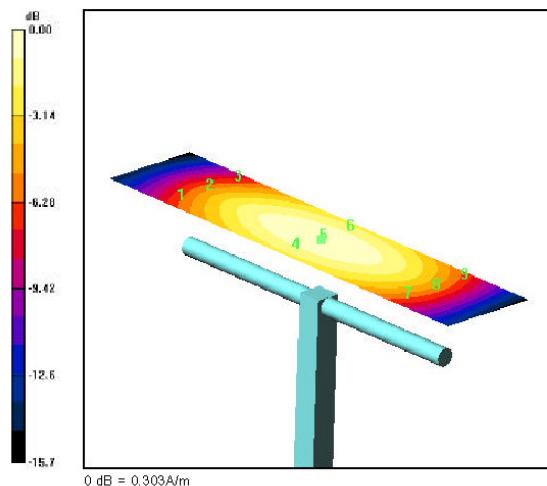
Maximum value of Total field (slot averaged) = 0.431 A/m

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

H in A/m (Time averaged) H in A/m (Slot averaged)

Grid 1	Grid 2	Grid 3	Grid 1	Grid 2	Grid 3
0.231	0.249	0.236	0.328	0.355	0.335
0.263	0.303	0.271	0.374	0.431	0.385
0.236	0.252	0.243	0.336	0.359	0.346

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
	-5	<47.3	<0.15



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## DUT: HAC Dipole 1900 MHz

Type: CD1880V3

Serial: 1002

Communication System: CDMA; Frequency: 1880 MHz;

Measurement Standard: DASY4 (High Precision Assessment)

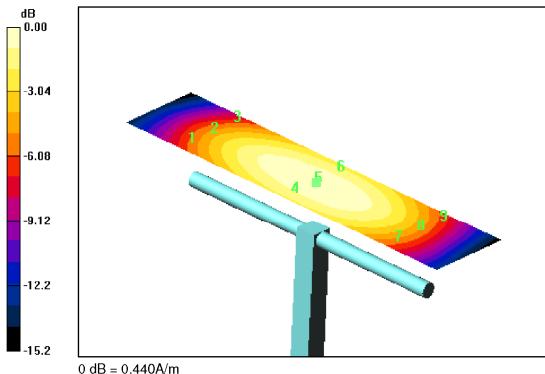
DASY4 Configuration:

- Probe: H3DV6 - SN6180; Calibrated: 10/6/2004
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn637; Calibrated: 9/22/2004
- Phantom: HAC Phantom; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19;

**CDMA/Hearing Aid Compatibility Test (41x181x1):** Measurement grid: dx=5mm, dy=5mm  
 Maximum value of Total field (slot averaged) = 0.440 A/m  
**Hearing Aid Near-Field Category: M2 (AWF 0 dB)**

H in A/m (Time averaged)			H in A/m (Slot averaged)		
Grid 1	Grid 2	Grid 3	Grid 1	Grid 2	Grid 3
<b>0.372</b>	<b>0.396</b>	<b>0.370</b>	<b>0.372</b>	<b>0.396</b>	<b>0.370</b>
Grid 4	<b>Grid 5</b>	Grid 6	Grid 4	<b>Grid 5</b>	Grid 6
<b>0.420</b>	<b>0.440</b>	<b>0.421</b>	<b>0.420</b>	<b>0.440</b>	<b>0.421</b>
Grid 7	Grid 8	Grid 9	Grid 7	Grid 8	Grid 9
<b>0.389</b>	<b>0.400</b>	<b>0.385</b>	<b>0.389</b>	<b>0.400</b>	<b>0.385</b>

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
	-5	<47.3	<0.15



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## PCTEST Hearing-Aid Compatibility Facility

## DUT: CDM-180

Type: Dual-Band

Serial: #3

Backlight off

Duty Cycle: 1:1

Communication System: PCS CDMA; Frequency: 1851.25 MHz;

Measurement Standard: DASY4 (High Precision Assessment)

## DASY4 Configuration:

- Probe: HDV6 - SN6180; Calibrated: 10/6/2004
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn637; Calibrated: 9/22/2004
- Phantom: HAC Phantom; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19;

## Ch.0025, Ant Out/Hearing Aid Compatibility Test (261x261x1): Measurement grid: dx=2mm, dy=2mm

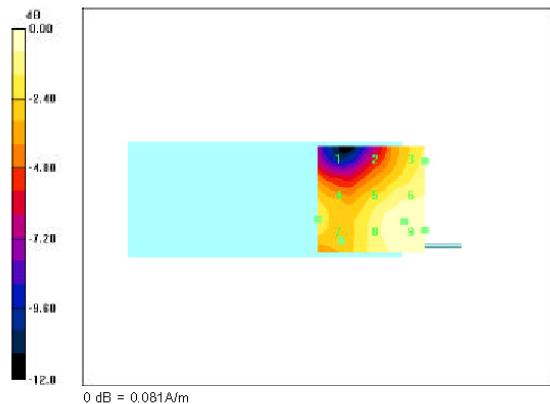
Maximum value of Total field (slot averaged) = 0.081 A/m

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

H in A/m (Time averaged) H in A/m (Slot averaged)

Grid 1	Grid 2	Grid 3	Grid 1	Grid 2	Grid 3
0.052	0.059	0.071	0.052	0.059	0.071
0.067	0.076	0.080	0.067	0.076	0.080
0.067	0.078	0.081	0.067	0.078	0.081

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
	-5	<47.3	<0.15



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## PCTEST Hearing-Aid Compatibility Facility

## DUT: CDM-180

Type: Dual-Band

Serial: #3

Backlight off

Duty Cycle: 1:1

Communication System: Cellular CDMA; Frequency: 824.7 MHz;

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: HSDV6 - SN6180; Calibrated: 10/6/2004
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn637; Calibrated: 9/22/2004
- Phantom: HAC Phantom; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19;

## Ch.1013, Ant Out/Hearing Aid Compatibility Test (261x261x1): Measurement grid: dx=2mm, dy=2mm

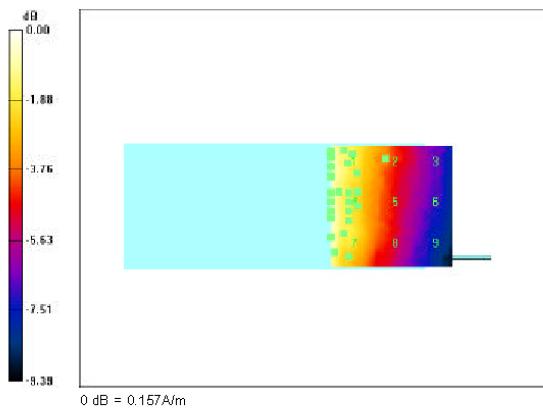
Maximum value of Total field (slot averaged) = 0.157 A/m

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

H in A/m (Time averaged) H in A/m (Slot averaged)

Grid 1	Grid 2	Grid 3	Grid 1	Grid 2	Grid 3
0.157	0.116	0.087	0.157	0.116	0.087
Grid 4	Grid 5	Grid 6	Grid 4	Grid 5	Grid 6
0.153	0.110	0.082	0.153	0.110	0.082
Grid 7	Grid 8	Grid 9	Grid 7	Grid 8	Grid 9
0.147	0.107	0.079	0.147	0.107	0.079

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
	-5	<47.3	<0.15



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PCTEST™ HAC REPORT	PCTEST™	FCC MEASUREMENT REPORT		UTStarcom	Reviewed by: Quality Manager
HAC Filename: HAC.0505240390-R2.PP4	Test Dates: May 25 - 27, 2005	EUT Type: Dual-Band CDMA Phone	FCC ID: PP4TX-180	Page 41 of 66	



## PCTEST Hearing-Aid Compatibility Facility

## DUT: CDM-180

Type: Dual-Band

Serial: #3

Backlight off

Duty Cycle: 1:1

Communication System: PCS CDMA; Frequency: 1851.25 MHz;

Measurement Standard: DASY4 (High Precision Assessment)

## DASY4 Configuration:

- Probe: ER3DV6 - SN2332; Calibrated: 1/31/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn637; Calibrated: 9/22/2004
- Phantom: HAC Phantom; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19;

## Ch.0025, Ant Out/Hearing Aid Compatibility Test (261x261x1): Measurement grid: dx=2mm, dy=2mm

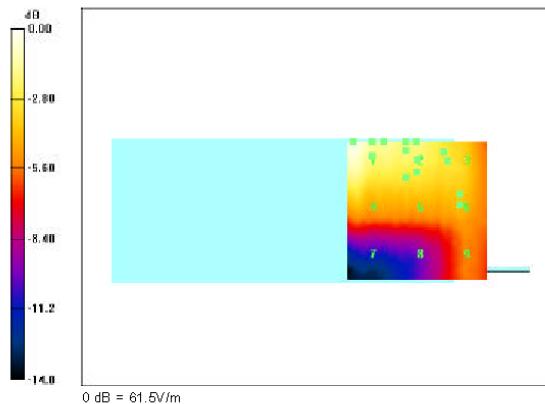
Maximum value of Total field (slot averaged) = 61.5 V/m

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

E in V/m (Time averaged) E in V/m (Slot averaged)

Grid 1	Grid 2	Grid 3	Grid 1	Grid 2	Grid 3
61.5	50.5	45.1	61.5	50.5	45.1
Grid 4	Grid 5	Grid 6	Grid 4	Grid 5	Grid 6
45.9	41.5	40.4	45.9	41.5	40.4
Grid 7	Grid 8	Grid 9	Grid 7	Grid 8	Grid 9
24.6	27.6	34.0	24.6	27.6	34.0

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
	-5	<47.3	<0.15



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PCTEST™ HAC REPORT	PCTEST™	FCC MEASUREMENT REPORT		UTStarcom	Reviewed by: Quality Manager
HAC Filename: HAC.0505240390-R2.PP4	Test Dates: May 25 - 27, 2005	EUT Type: Dual-Band CDMA Phone	FCC ID: PP4TX-180	Page 42 of 66	



## PCTEST Hearing-Aid Compatibility Facility

## DUT: CDM-180

Type: Dual-Band

Serial: #3

Backlight on

Duty Cycle: 1:1

Communication System: Cellular CDMA; Frequency: 836.52 MHz;

Measurement Standard: DASY4 (High Precision Assessment)

## DASY4 Configuration:

- Probe: ER3DV6 - SN2332; Calibrated: 1/31/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn637; Calibrated: 3/22/2004
- Phantom: HAC Phantom; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19;

## Ch.0384, Ant Out/Hearing Aid Compatibility Test (261x261x1): Measurement grid: dx=2mm, dy=2mm

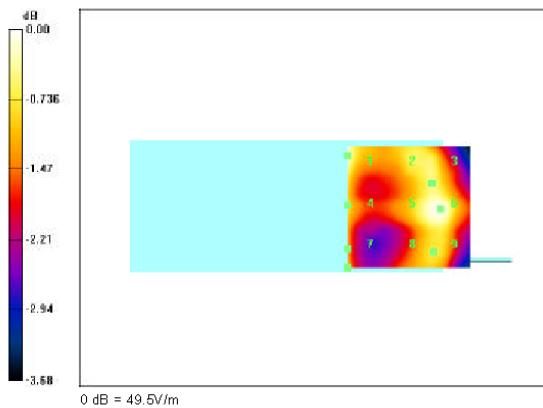
Maximum value of Total field (slot averaged) = 49.5 V/m

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

E in V/m (Time averaged) E in V/m (Slot averaged)

Grid 1	Grid 2	Grid 3	Grid 1	Grid 2	Grid 3
49.2	46.9	47.0	49.2	46.9	47.0
45.2	48.4	49.5	45.2	48.4	49.5
43.9	45.4	46.4	43.9	45.4	46.4

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
	-5	<47.3	<0.15



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PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT			Reviewed by: Quality Manager
HAC Filename:	Test Dates:	EUT Type:	FCC ID:		
HAC.0505240390-R2.PP4	May 25 - 27, 2005	Dual-Band CDMA Phone	PP4TX-180	Page 43 of 66	

## 13. PROBE CALIBRATION

The following pages include the probe calibration used to evaluate HAC for the DUT.

PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT			Reviewed by: Quality Manager
HAC Filename: HAC.0505240390-R2.PP4	Test Dates: May 25 - 27, 2005	EUT Type: Dual-Band CDMA Phone	FCC ID: PP4TX-180	Page 44 of 66	

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client

**PC test**

Certificate No: **ER3-2332\_Jan05**

## CALIBRATION CERTIFICATE

Object	<b>ER3DV6 - SN:2332</b>
Calibration procedure(s)	<b>QA CAL-02_v4</b> Calibration procedure for E-field probes optimized for close near field evaluations in air
Calibration date:	<b>January 31, 2005</b>
Condition of the calibrated item	<b>In Tolerance</b>

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  $(22 \pm 3)^\circ\text{C}$  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-May-04 (METAS, No. 251-00388)	May-05
Power sensor E4412A	MY41495277	5-May-04 (METAS, No. 251-00388)	May-05
Reference 3 dB Attenuator	SN: S5054 (3c)	10-Aug-04 (METAS, No. 251-00403)	Aug-05
Reference 20 dB Attenuator	SN: S5086 (20b)	3-May-04 (METAS, No. 251-00389)	May-05
Reference 30 dB Attenuator	SN: S5129 (30b)	10-Aug-04 (METAS, No. 251-00404)	Aug-05
Reference Probe ER3DV6	SN: 2328	6-Oct-04 (SPEAG, No. ER3-2328_Oct04)	Oct-05
DAE4	SN: 617	19-Jan-05 (SPEAG, No. DAE4-617_Jan05)	Jan-06
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092180	18-Sep-02 (SPEAG, in house check Oct-03)	In house check: Oct 05
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-04)	In house check: Nov 05
Calibrated by:	Name <b>Katja Pokovic</b>	Function <b>Technical Manager</b>	Signature 
Approved by:	Name <b>Niels Kuster</b>	Function <b>Quality Manager</b>	Signature 

Issued: February 19, 2005

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Certificate No: ER3-2332\_Jan05

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PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT		UTStarcom	Reviewed by: Quality Manager
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Accreditation No.: **SCS 108**

**Glossary:**

NORM $x,y,z$	sensitivity in free space
DCP	diode compression point
Polarization $\varphi$	$\varphi$ rotation around probe axis
Polarization $\vartheta$	$\vartheta$ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

**Calibration is Performed According to the Following Standards:**

- a) IEEE Std 1309-1996, "IEEE Standard for calibration of electromagnetic field sensors and probes, excluding antennas, from 9 kHz to 40 GHz", 1996.

**Methods Applied and Interpretation of Parameters:**

- $NORMx,y,z$ : Assessed for E-field polarization  $\vartheta = 0$  for XY sensors and  $\vartheta = 90$  for Z sensor ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: R22 waveguide).
- $NORM(f)x,y,z = NORMx,y,z * frequency\_response$  (see Frequency Response Chart).
- $DCPx,y,z$ : DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency.
- *Spherical isotropy (3D deviation from isotropy)*: in a locally homogeneous field realized using an open waveguide setup.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the  $NORMx$  (no uncertainty required).

PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT			Reviewed by: Quality Manager
HAC Filename: HAC.0505240390-R2.PP4	Test Dates: May 25 - 27, 2005	EUT Type: Dual-Band CDMA Phone	FCC ID: PP4TX-180	Page 46 of 66	

# Probe ER3DV6

## SN:2332

Manufactured: September 9, 2003  
Calibrated: January 31, 2005

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT			Reviewed by: Quality Manager
HAC Filename: HAC.0505240390-R2.PP4	Test Dates: May 25 - 27, 2005	EUT Type: Dual-Band CDMA Phone	FCC ID: PP4TX-180	Page 47 of 66	

ER3DV6 SN:2332

January 31, 2005

## DASY - Parameters of Probe: ER3DV6 SN:2332

Sensitivity in Free Space [ $\mu\text{V}/(\text{V}/\text{m})^2$ ] Diode Compression<sup>A</sup>

NormX	<b>1.34</b> $\pm$ 10.1 % (k=2)	DCP X	<b>95</b> mV
NormY	<b>1.47</b> $\pm$ 10.1 % (k=2)	DCP Y	<b>95</b> mV
NormZ	<b>1.64</b> $\pm$ 10.1 % (k=2)	DCP Z	<b>97</b> mV

### Frequency Correction

X	<b>0.0</b>
Y	<b>0.0</b>
Z	<b>0.0</b>

Sensor Offset (Probe Tip to Sensor Center)

X	<b>2.5</b> mm
Y	<b>2.5</b> mm
Z	<b>2.5</b> mm

Connector Angle **139** °

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%.

<sup>A</sup> numerical linearization parameter: uncertainty not required

Certificate No: ER3-2332\_Jan05

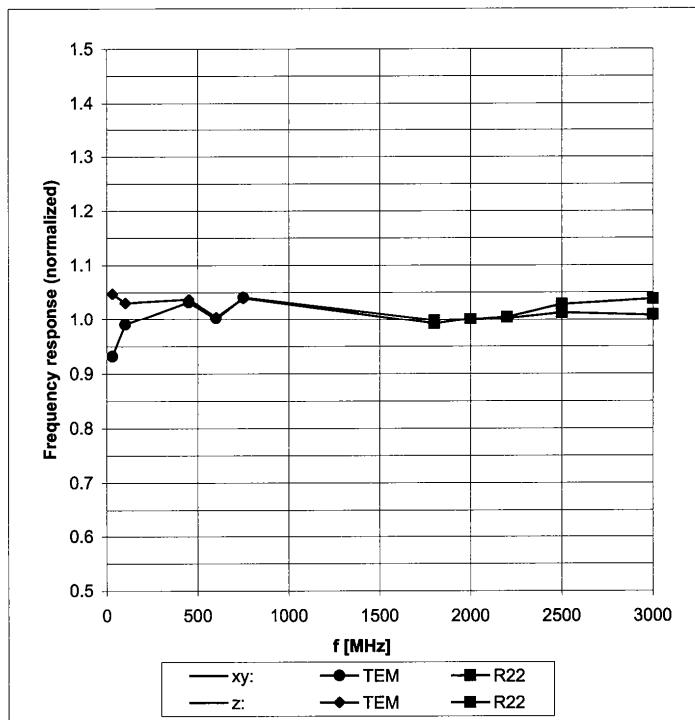
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PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT			Reviewed by: Quality Manager
HAC Filename: HAC.0505240390-R2.PP4	Test Dates: May 25 - 27, 2005	EUT Type: Dual-Band CDMA Phone	FCC ID: PP4TX-180		Page 48 of 66

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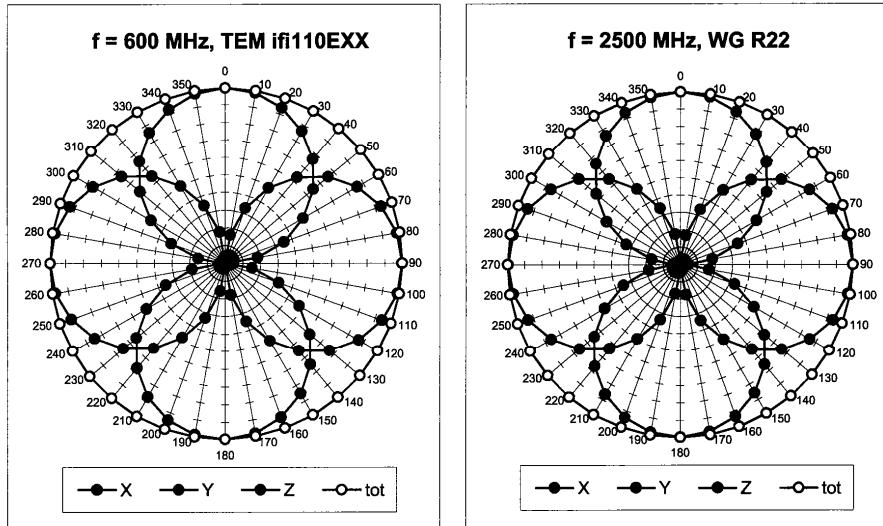
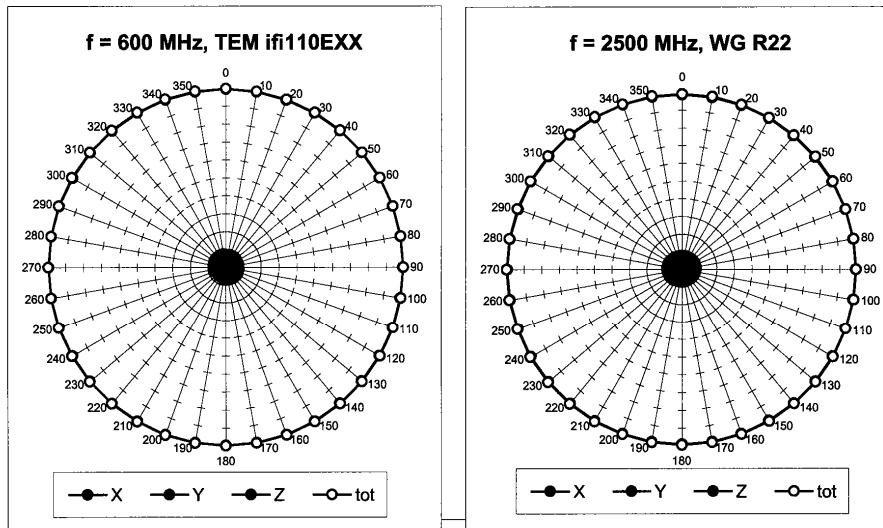
## Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide R22)

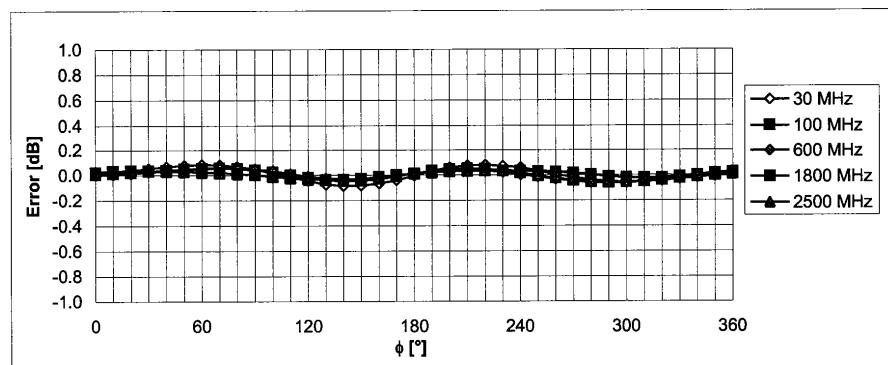
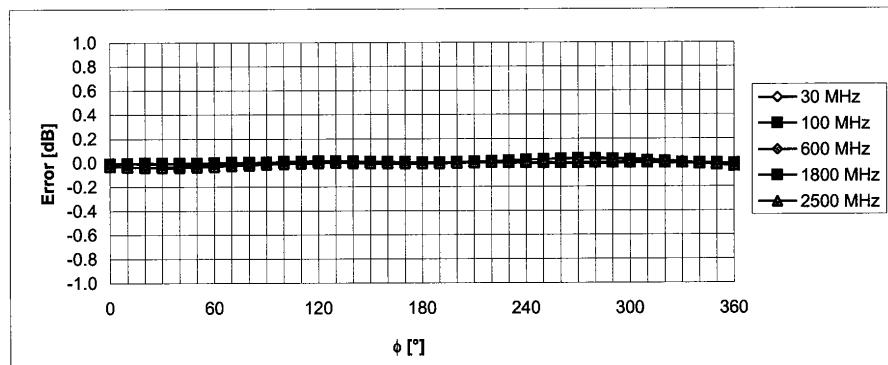


Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  (k=2)

PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT			Reviewed by: Quality Manager
HAC Filename: HAC.0505240390-R2.PP4	Test Dates: May 25 - 27, 2005	EUT Type: Dual-Band CDMA Phone	FCC ID: PP4TX-180		Page 49 of 66

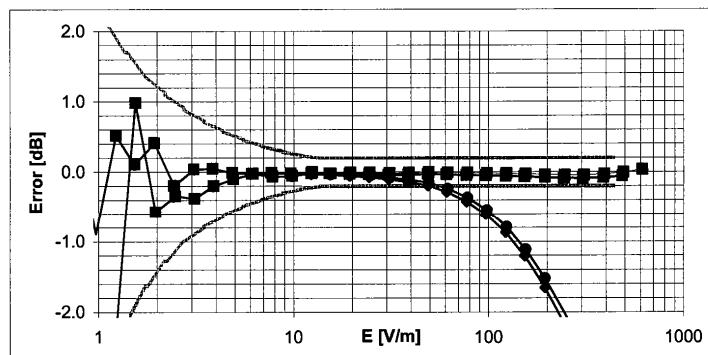
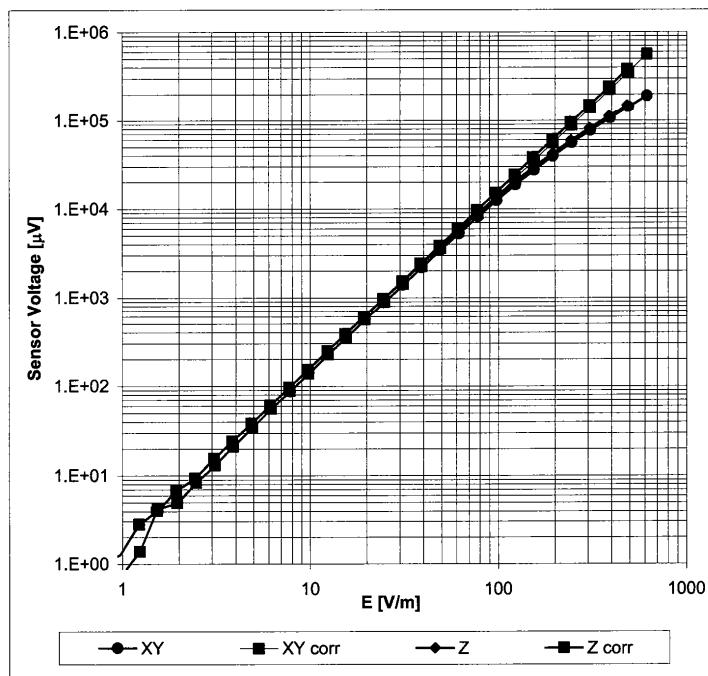
Receiving Pattern ( $\phi$ ),  $\theta = 0^\circ$ Receiving Pattern ( $\phi$ ),  $\theta = 90^\circ$ 

PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT		Reviewed by: Quality Manager
HAC Filename: HAC.0505240390-R2.PP4	Test Dates: May 25 - 27, 2005	EUT Type: Dual-Band CDMA Phone	FCC ID: PP4TX-180	Page 50 of 66

**Receiving Pattern ( $\phi$ ),  $\theta = 0^\circ$** Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  ( $k=2$ )**Receiving Pattern ( $\phi$ ),  $\theta = 90^\circ$** Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  ( $k=2$ )

PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT			Reviewed by: Quality Manager
HAC Filename: HAC.0505240390-R2.PP4	Test Dates: May 25 - 27, 2005	EUT Type: Dual-Band CDMA Phone	FCC ID: PP4TX-180	Page 51 of 66	

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



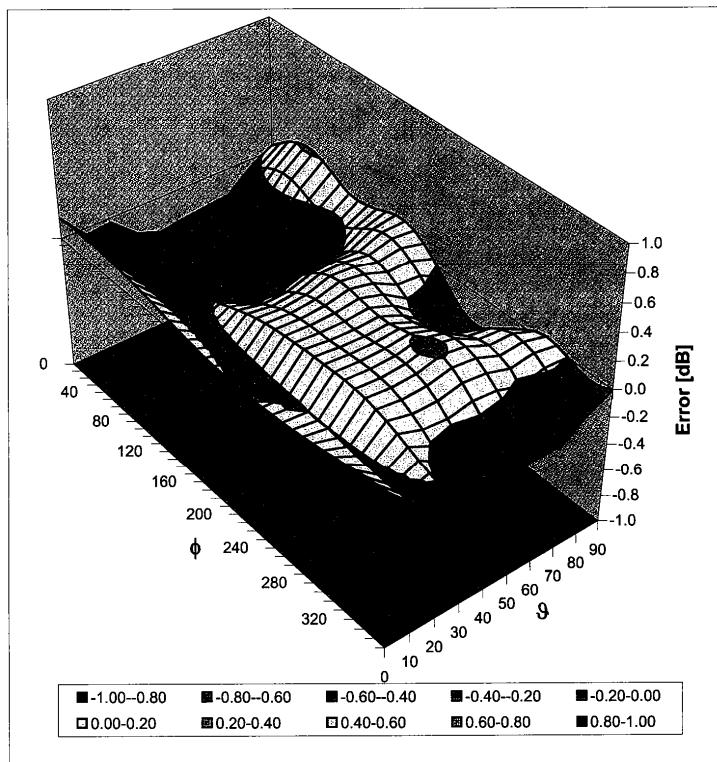
**Uncertainty of Linearity Assessment:  $\pm 0.6\%$  ( $k=2$ )**

PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT			Reviewed by: Quality Manager
HAC Filename: HAC.0505240390-R2.PP4	Test Dates: May 25 - 27, 2005	EUT Type: Dual-Band CDMA Phone	FCC ID: PP4TX-180	Page 52 of 66	

ER3DV6 SN:2332

January 31, 2005

**Deviation from Isotropy in Air  
Error ( $\phi, \theta$ ),  $f = 900$  MHz**



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

Certificate No: ER3-2332\_Jan05

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PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT			Reviewed by: Quality Manager
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Accreditation No.: **SCS 108**

Client **PC Test**

Certificate No: **H3-6180\_Oct04**

## CALIBRATION CERTIFICATE

Object **H3DV6 - SN:6180**

Calibration procedure(s) **QA CAL-03.v4**  
 Calibration procedure for H-field probes optimized for close near field evaluations in air

Calibration date: **October 6, 2004**

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-May-04 (METAS, No. 251-00388)	May-05
Power sensor E4412A	MY41495277	5-May-04 (METAS, No. 251-00388)	May-05
Reference 3 dB Attenuator	SN: S5064 (3c)	3-Apr-03 (METAS, No. 251-00403)	Aug-05
Reference 20 dB Attenuator	SN: S5066 (20b)	3-May-04 (METAS, No. 251-00389)	May-05
Reference 30 dB Attenuator	SN: S5129 (30b)	3-Apr-03 (METAS, No. 251-00404)	Aug-05
Reference Probe H3DV6	SN: 5065	17-Dec-03 (SPEAG, No. H3-6065_Dec03)	Dec-04
DAE4	SN: 617	26-May-04 (SPEAG, No. DAE4-617_May04)	May-05
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092180	18-Sep-02 (SPEAG, in house check Oct-03)	In house check: Oct 05
RF generator HP 8848C	US3642U01700	4-Aug-99 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-03)	In house check: Nov 04
Calibrated by:	Name Katica Pokovic	Function Technical Manager	Signature 
Approved by:	Name Nils Kuster	Function Quality Manager	Signature 

Issued: October 23, 2004

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Certificate No: **H3-6180\_Oct04**

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PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT		Reviewed by: Quality Manager
HAC Filename: HAC.0505240390-R2.PP4	Test Dates: May 25 - 27, 2005	EUT Type: Dual-Band CDMA Phone	FCC ID: PP4TX-180	Page 54 of 66

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Accreditation No.: **SCS 108**

**Glossary:**

NORM $x,y,z$	sensitivity in free space
DCP	diode compression point
Polarization $\phi$	$\phi$ rotation around probe axis
Polarization $\vartheta$	$\vartheta$ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

**Calibration is Performed According to the Following Standards:**

- a) IEEE Std 1309-1996, "IEEE Standard for calibration of electromagnetic field sensors and probes, excluding antennas, from 9 kHz to 40 GHz", 1996.

**Methods Applied and Interpretation of Parameters:**

- $X,Y,Z_a0a1a2$ : Assessed for E-field polarization  $\vartheta = 90$  for XY sensors and  $\vartheta = 0$  for Z sensor ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: R22 waveguide).
- $X,Y,Z(f)_a0a1a2 = X,Y,Z_a0a1a2^*$  frequency\_response (see Frequency Response Chart).
- $DCPx,y,z$ : DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency.
- *Spherical isotropy (3D deviation from isotropy)*: in a locally homogeneous field realized using an open waveguide setup.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the  $X_a0a1a2$  (no uncertainty required).

PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT			Reviewed by: Quality Manager
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# Probe H3DV6

## SN:6180

Manufactured: July 6, 2004  
Calibrated: October 6, 2004

### Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT			Reviewed by: Quality Manager
HAC Filename: HAC.0505240390-R2.PP4	Test Dates: May 25 - 27, 2005	EUT Type: Dual-Band CDMA Phone	FCC ID: PP4TX-180	Page 56 of 66	

## DASY - Parameters of Probe: H3DV6 SN:6180

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

	a0	a1	a2	
X	2.490E-03	1.788E-05	-2.842E-05	$\pm 5.0\% (k=2)$
Y	2.681E-03	3.017E-05	-3.113E-05	$\pm 5.0\% (k=2)$
Z	2.912E-03	-1.610E-05	1.858E-05	$\pm 5.0\% (k=2)$

Diode Compression<sup>1</sup>

DCP X	85 mV
DCP Y	85 mV
DCP Z	87 mV

Sensor Offset (Probe Tip to Sensor Center)

X	3.0 mm
Y	3.0 mm
Z	3.0 mm

Connector Angle 4 °

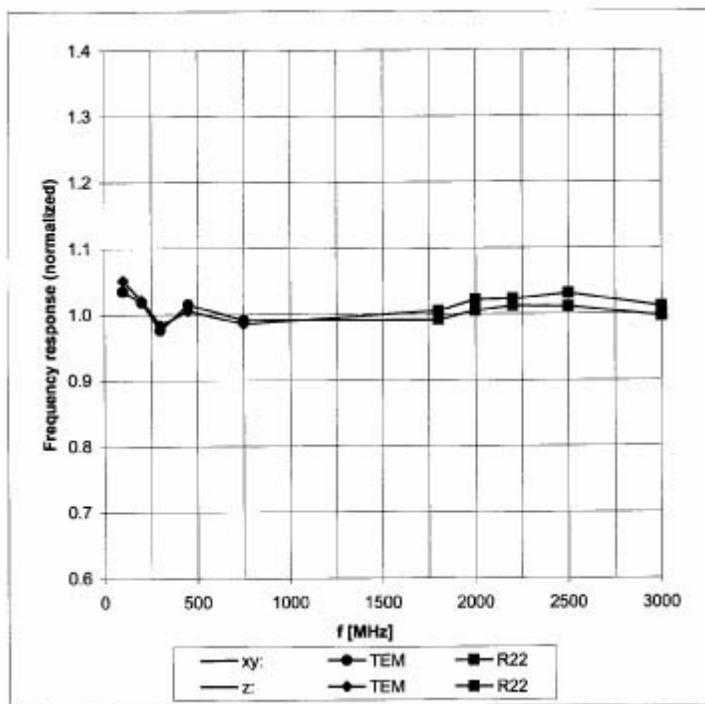
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>1</sup> numerical linearization parameter: uncertainty not required

PCTEST™ HAC REPORT		FCC MEASUREMENT REPORT			Reviewed by: Quality Manager
HAC Filename: HAC.0505240390-R2.PP4	Test Dates: May 25 - 27, 2005	EUT Type: Dual-Band CDMA Phone	FCC ID: PP4TX-180	UTStarcom	Page 57 of 66

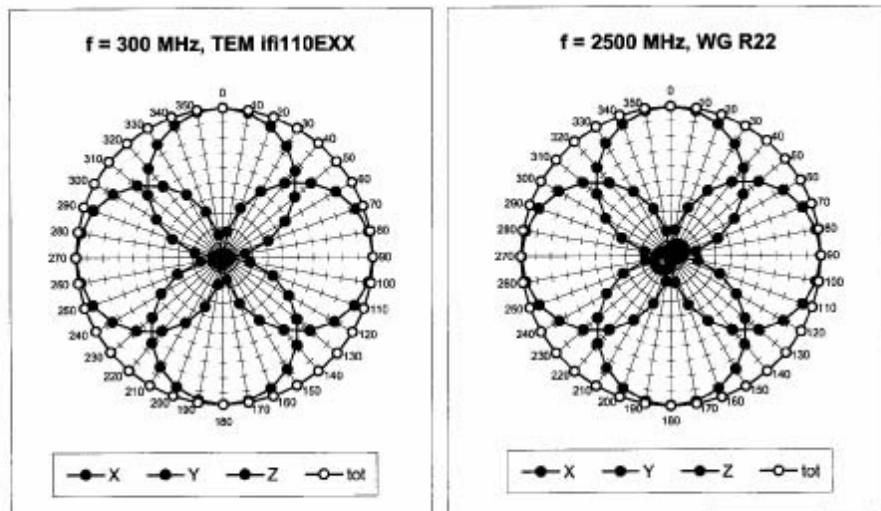
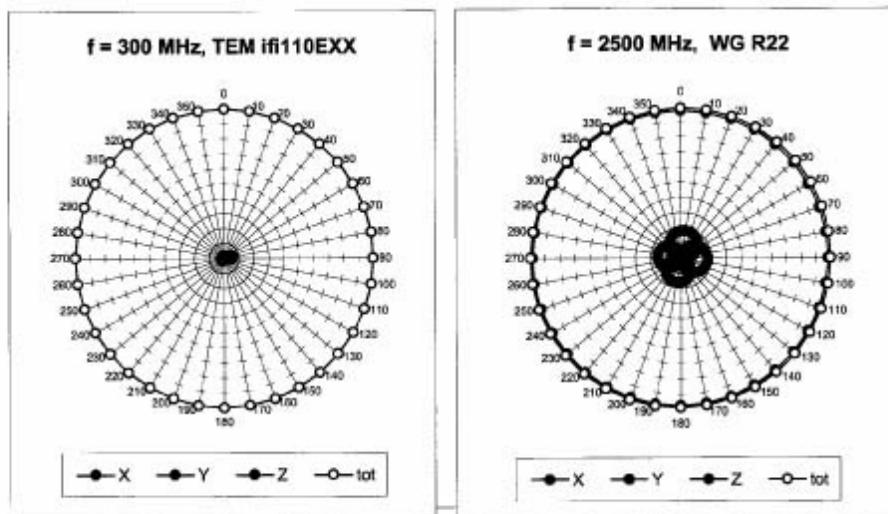
## Frequency Response of H-Field

(TEM-Cell:ifi110, Waveguide R22)

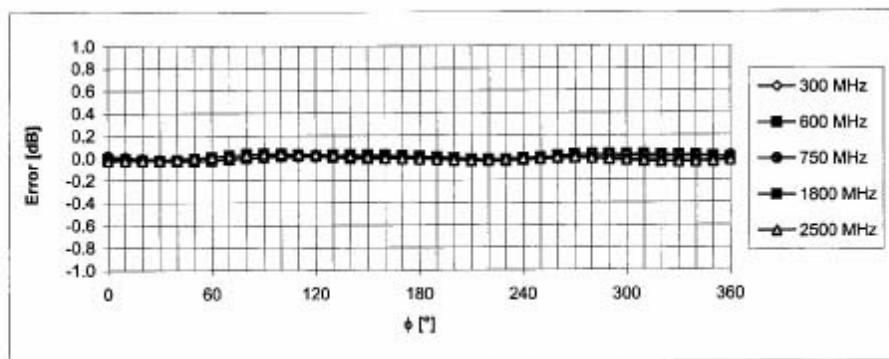
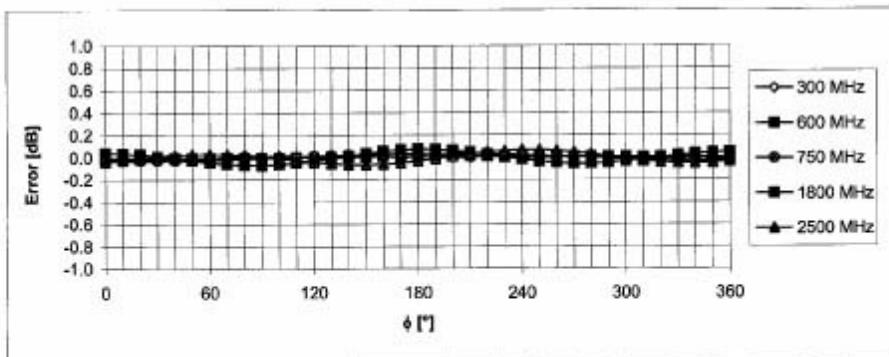


Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  ( $k=2$ )

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Receiving Pattern ( $\phi$ ),  $\theta = 90^\circ$ Receiving Pattern ( $\phi$ ),  $\theta = 0^\circ$ 

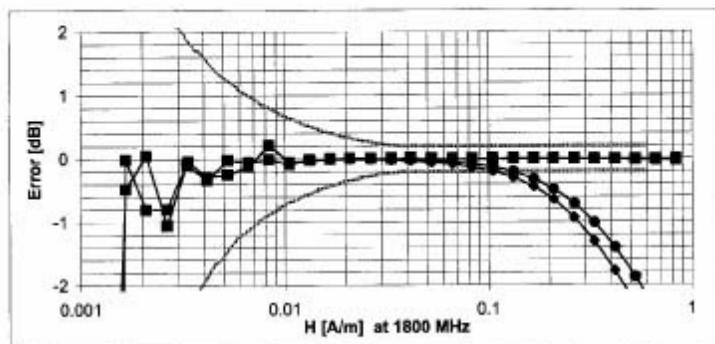
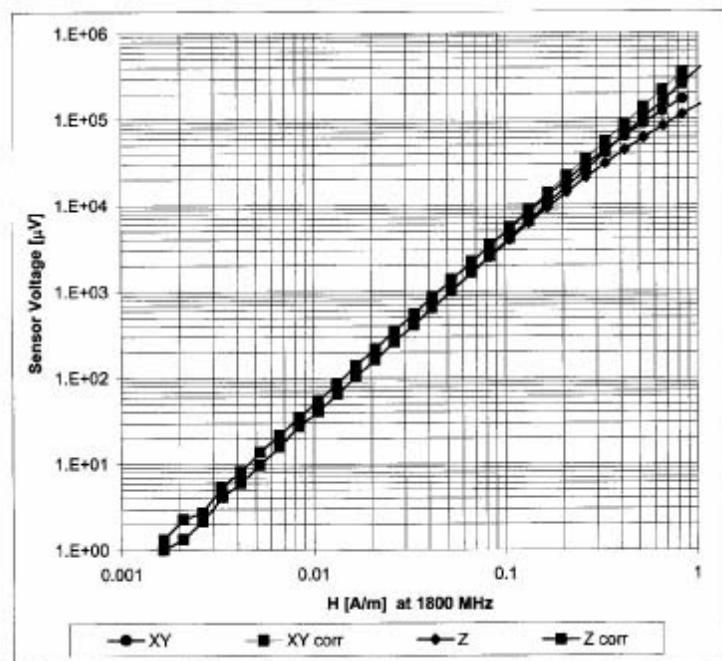
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Receiving Pattern ( $\phi$ ),  $\theta = 90^\circ$ Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  ( $k=2$ )Receiving Pattern ( $\phi$ ),  $\theta = 0^\circ$ Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  ( $k=2$ )

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### Dynamic Range f(H-field)

(Waveguide R22, f = 1800 MHz)



Uncertainty of Linearity Assessment:  $\pm 0.6\%$  ( $k=2$ )

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## 15. CONCLUSION

The measurements indicate that the wireless communications device complies with the HAC limits specified in accordance with the ANSI PC63.19 Standard and FCC WT Docket No. 01-309 RM-8658. Precise laboratory measures were taken to assure repeatability of the tests. The tested device complies with the requirements in respect to all parameters specific to the test. The test results and statements relate only to the item(s) tested.

Please note that the M-rating for this equipment only represents the field interference possible against a hypothetical and typical hearing aid. The measurement system and techniques presented in this evaluation are proposed in the ANSI standard as a means of best approximating wireless device compatibility with a hearing-aid. The literature is under continual re-construction.

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