



A Test Lab Techno Corp.

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HAC EVALUATION REPORT



Test Report No.	: 1107FS21
Applicant	: HTC Corporation
Trade Name	: HTC
Model Number	: PG76210
EUT Type	: Smartphone
FCC ID	: NM8PG76210
Dates of Test	: Jun. 16 ~ Jul. 08, 2011
Issued Date	: Jul. 14, 2011
Test Environment	: Ambient Temperature : 22 ± 2 °C Relative Humidity : 40 - 70 %
FCC Rule Part(s)	: FCC 47 CFR § 20.19.
HAC Standard	: ANSI C63.19-2007
C63.19 HAC Rated Category	: M4 (RF EMISSIONS)
Test Lab.	: Chang-An Lab

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(Sam Chuang)

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1. Description of Equipment under Test (EUT)

Applicant	:	HTC Corporation
Applicant Address	:	No. 23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan
Manufacturer	:	HTC Corporation
Manufacturer Address	:	No. 23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan
EUT Type	:	Smartphone
Trade Name	:	HTC
Model Number	:	PG76210
FCC ID	:	NM8PG76210
MEID No	:	Sample 1: A100000794F8FE, Sample 2: A1000007950807
Tx Frequency	:	CDMA/1xRTT/1xEVDO Rev.0/1xEVDO Rev.A Cellular Band: 824.0 - 849.0 MHz PCS Band: 1850.2 - 1909.8 MHz AWS Band: 1710.0 – 1755.0 MHz
RF Output Power	:	0.256 W / 24.08 dBm Cellular Band 0.262 W / 24.19 dBm PCS Band 0.272 W / 24.35 dBm AWS Band
Antenna Type	:	PIFA Type
Battery Option	:	Standard / Model No.: BD29100 (3.7V 1230mAh)
Test Device	:	Production Unit
Device Category	:	Portable

Note: This device does not support power reduction option for GSM1900.

This wireless portable device has performed Hearing Aid Compatibility (HAC) measurements for the portable cellular phone. The measurements were performed to ensure compliance to the ANSI C63.19-2007 standards.



<All Air Interfaces / Bands List>

Air-Interface	Band (MHz)	Type	C63.19 Tested	Simultaneous Transmissions	Concurrent Single Transmission	Reduced Power 20.19(e)	Voice Over Digital Transport (Data)
CDMA2000	850	Voice	Yes	Yes BT/WLAN	Yes	N/A	No
	1900	Voice	Yes		Yes	N/A	No
	AWS	Voice	Yes		Yes	N/A	No
	1xRTT/EVDO	Data	No		Yes	N/A	Yes
WLAN	2450	Data	No	Yes CDMA2000 or 1xRTT or 1xEVDO & BT	Yes	N/A	Yes
Bluetooth	2450	Data	No	Yes CDMA2000 or 1xRTT or 1xEVDO & WLAN	Yes	N/A	No



2. Introduction

The A Test Lab Techno Corp. has performed measurements of the maximum potential exposure to the user of **HTC Corporation Trade Name: HTC Model(s) : PG76210**. The test procedures, as described in ANSI C63.19-2007 standard were employed. A description of the product and operating configuration, detailed summary of the test results, methodology and procedures used in the equipment are included within this test report.

3. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	Dosimetric E-Filed Probe	ER3DV6R	2256	Aug. 23, 2010	Aug. 23, 2011
SPEAG	Dosimetric H-Filed Probe	H3DV6	6076	Aug. 23, 2010	Aug. 23, 2011
SPEAG	835 MHz System Validation Kit	CD835V3	1017	Jul. 13, 2010	Jul. 13, 2011
SPEAG	1880 MHz System Validation Kit	CD1880V3	1036	Jul. 13, 2010	Jul. 13, 2011
SPEAG	Data Acquisition Electronics	DAE4	779	Jan. 31, 2011	Jan. 31, 2012
SPEAG	Device Holder	N/A	N/A	N.C.R.	
SPEAG	Phantom	SAM V4.0	TP-1150	N.C.R.	
SPEAG	Robot	Staubli TX90XL	F07/564ZA1/C/01	N.C.R.	
SPEAG	Software	DASY5 V5.0 Build 91	N/A	N.C.R.	
SPEAG	Software	SEMCAD X V13.4 Build 125	N/A	N.C.R.	
SPEAG	Measurement Server	SE UMS 011 AA	1025	N.C.R.	
Agilent	Wireless Communication Test Set	CMU200	109369	Aug. 10, 2010	Aug. 10, 2011
Agilent	Spectrum Analyzer(ESA-L)	E4408B	MY45107753	Jul. 07, 2011	Jul. 07, 2012
R&S	Spectrum Analyzer(FSL)	FSL6	100410	N.C.R.	
Agilent	MXG Vector Signal Generator	N5182A	MY47420962	May 16, 2011	May 16, 2012
R&S	Power Sensor	NRP-Z22	100179	May 27, 2011	May 27, 2012
Agilent	Dual Directional Coupler	778D	50334	N.C.R.	
Mini-Circuits	Power Amplifier	ZVE-8G	D042005 671800514	N.C.R.	
Mini-Circuits	Power Amplifier	ZHL-42W-SMA	D111103#5	N.C.R.	

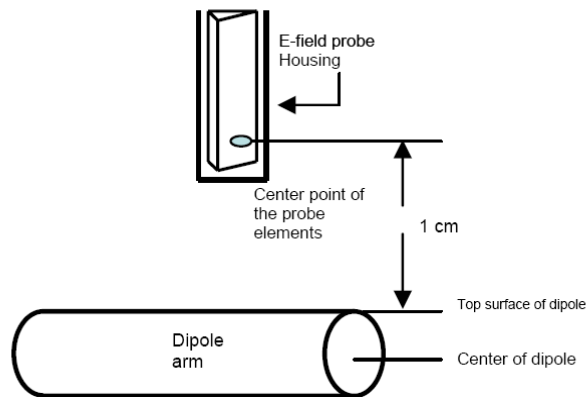
Table 1. Test Equipment List

5. System Check

5.1 System check parameters

The input signal was an un-modulated continuous wave. The following points were taken into consideration in performing this check:

- Average Input Power $P = 100\text{mW RMS}$ (20dBm RMS) after adjustment for return loss.
- The test fixture must meet the 2 wavelength separation criterion.
- The proper measurement of the 1 cm probe to dipole separation, which is measured from top surface of the dipole to the calibration reference point of the sensor, defined by the probe manufacturer is shown in the following diagram:



5.2 Validation Procedure

Place a dipole antenna meeting the requirements given in ANSI-PC63.19 in the position normally occupied by the WD. The dipole antenna serves as a known source for an electrical and magnetic output. Position the E-field and H-field probes so that:

- the probes and their cables are parallel to the coaxial feed of the dipole antenna
- the probe cables and the coaxial feed of the dipole antenna approach the measurement area from opposite directions; and
- the probes are 10 mm from the surface of the dipole elements.

Scan the length of the dipole with both E-field and H-field probes and record the maximum values for each. Compare the readings to expected values.

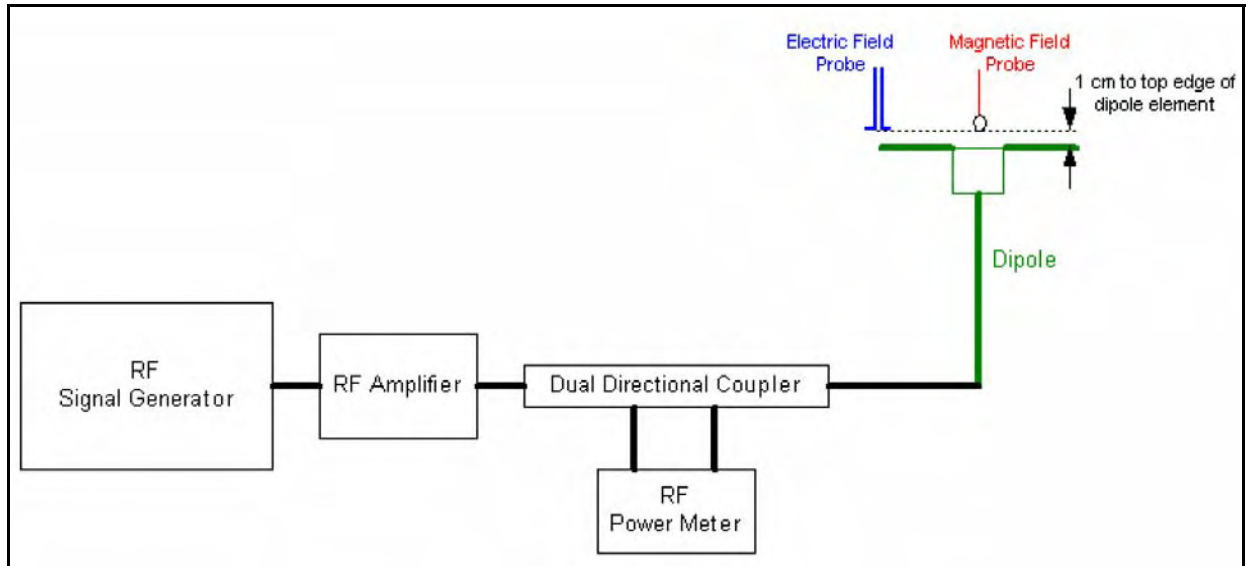


Figure 2. WD dipole calibration procedure

5.3 Illustrative dipole calculated and measured values

Baseband frequencies (MHz)	Frequency (MHz)	E-field calculated values (V/m)	E-field measured values (V/m)	E-field delta (calculated to measured) (V/m) & %	H-field calculated values (A/m)	H-field measured values (A/m)	H-field delta (calculated to measured) (A/m) & %
790–850	835	187			0.476		
806–821	813.5	190			0.481		
896–901	898.5	185			0.477		
1880–2000	1880	149			0.456		
		224.6–236.4			0.5139–0.5226		
		214.9–232.2			0.4954–0.5164		
		213.2–220.9			0.5032–0.5005		
		153.6–149.3			0.4478–0.4035		

NOTE 1— Numeric modeling results will vary based on several factors, including the size of the computational area, boundary conditions selected, grid resolution, accuracy of models for material properties, and other factors. Further, the results obtained by numeric modeling will vary from measured results based on many additional factors, including the degree to which the probe perturbs the field, the degree to which the probe averages the field strength over its dimensions, the linearity of the probe, the differences between the physical dipole and its modeled representation, and many other factors. Numeric computations provided to the committee showed significant variability between different results. Accordingly the values provided should be used judiciously and not interpreted to be absolutely correct. The calculated values provided for dipoles were developed using theoretical numerical computation.

NOTE 2— Delta % = $100 \times (\text{measured peak} - \text{calculated}) / \text{calculated}$. Values within $\pm 25\%$ are acceptable, of which 12% is deviation and 13% is measurement uncertainty. Values independently validated for the dipole actually used in the measurements should be used, when available.



5.4 Validation Results

Dipole	Freq. (MHz)	Protocol	Input Power (mW)	Target for Dipole (V/m)	E-Field Results (V/m)	Deviation	Date
SN:1017	835	CW	100	168.6	164.0	-2.73%	06/16/2011
SN:1017	835	CW	100	168.6	170.7	1.25%	06/28/2011
SN:1017	835	CW	100	168.6	166.5	-1.25%	07/01/2011
SN:1036	1880	CW	100	139.2	139.8	0.43%	06/16/2011
SN:1036	1880	CW	100	139.2	142.1	2.08%	06/28/2011
SN:1036	1880	CW	100	139.2	136.5	-1.94%	07/01/2011

Table 2. Dipole E-Field Measurement Summary

Dipole	Freq. (MHz)	Protocol	Input Power (mW)	Target for Dipole (A/m)	H-Field Results (A/m)	Deviation	Date
SN:1017	835	CW	100	0.457	0.457	0.00%	06/16/2011
SN:1017	835	CW	100	0.457	0.443	-3.06%	07/01/2011
SN:1036	1880	CW	100	0.468	0.430	-8.12%	06/16/2011
SN:1036	1880	CW	100	0.468	0.444	-5.13%	07/01/2011

Table 3. Dipole H-Field Measurement Summary

6. Probe Modulation Factor

After every probe calibration, the response of the probe to each applicable modulated signal (CDMA, GSM, WCDMA (UMTS), etc) must be assessed at both 835 MHz, 1880 MHz. The response of the probe system to a CW field at the frequency(s) of interest is compared to its response to a modulated signal with equal peak amplitude. For each PMF assessment, a Signal Generator was used to replace the original CW signal with the desired modulated signal. The PMF results are shown in Table 4. RF Field Probe Modulation Response was measured with the field probe and associated measurement equipment. The PMF was measured per ANSI C63.19-2007 using a signal generator as follows:

1. Illuminate a dipole with a CW signal at the intended measured frequency.
2. Fix the probe at a set location relative to the dipole; typically located at the field reference point.
3. Record the reading of the probe measurement system of the CW signal.
4. Substitute a modulated signal of the same amplitude, using the same modulation as that used by the intended WD for the CW signal.
5. Record the reading of the probe measurement system of the modulated signal.
6. The ratio of the CW to modulated signal reading is the probe modulation factor.
7. Spectrum analyzer settings:
 - Center Frequency: nominal center frequency of channel
 - Span: zero
 - Resolution bandwidth \geq emission bandwidth
 - Video bandwidth \geq 20 kHz.
 - Detection: RMS detection.
 - Trigger: Video or IF trigger, adjusted to give a stable display of the transmission.
 - Sweep rate: Set to show a complete transmission cycle.
 - Line max hold may be used temporarily to ease the peak reading.
8. Calculate the Probe Modulation Factor as the ratio between the CW multimeter field reading and the reading for the applicable modulation. I.e., $PMF = \frac{E_{CW}}{E_{mod}}$ and similar for H.

gfortheapplicablemodulation.I.e., $PMF = \frac{E_{CW}}{E_{mod}}$ and similar for H.

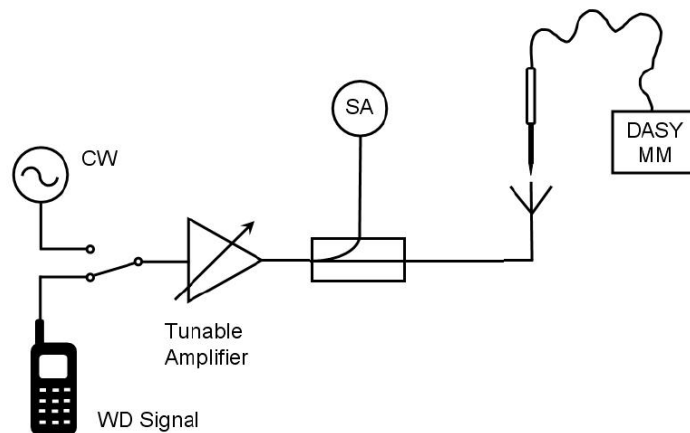


Figure 3. Probe Modulation Factor Measurement Diagram



Formula between PMF and test results

1. HAC test of device and determine the maximum value (M) of grids.
2. Determine the value (P) of PMF according to (M).
3. Find the maximum value (F) from the other data.

$$R = P * F$$

Example:

E-Field Maximum value (M) = 52, Maximum value (F) = 51.8, PMF (P) = 2.82

R = 51.8 * 2.82 = 146.076 V/m

Frequency (MHz)	Protocol	E-Field Probe SN:2256		H-Field Probe SN:6076	
		E-Field (V/m)	E-Field Modulation Factor	H-Field (A/m)	H-Field Modulation Factor
835.0	CDMA	< 47	1.13	< 0.14	0.98
		47 - 63	1.10	0.14 - 0.19	0.99
		63 - 84	1.07	0.19 - 0.25	1.00
		84 - 112	1.04	0.25 - 0.34	0.98
		112 - 150	1.01	0.34 - 0.45	0.95
		150 - 200	0.98	0.45 - 0.60	0.91
		200 - 266	0.96	0.60 - 0.80	0.85
		266 - 355	0.93	0.80 - 1.07	0.79
		355 - 473	0.90	1.07 - 1.43	0.72
		473 - 631	0.88	1.43 - 1.91	0.64
		631 - 841	0.85	1.91 - 2.54	0.57
841 - 1122	0.83	2.54 - 3.39	0.49		
1880.0	CDMA	< 47	1.01	< 0.14	0.97
		47 - 63	1.01	0.14 - 0.19	0.95
		63 - 84	1.00	0.19 - 0.25	0.91
		84 - 112	0.99	0.25 - 0.34	0.86
		112 - 150	0.98	0.34 - 0.45	0.80
		150 - 200	0.97	0.45 - 0.60	0.73
		200 - 266	0.96	0.60 - 0.80	0.66
		266 - 355	0.95	0.80 - 1.07	0.58
		355 - 473	0.94	1.07 - 1.43	0.51
		473 - 631	0.94	1.43 - 1.91	0.43
		631 - 841	0.93	1.91 - 2.54	0.36
841 - 1122	0.92	2.54 - 3.39	0.30		

Table 4. PMF Measurement Summary

Note: PMF measurements were verified at WD's power as an input to the dipole.



7. HAC Testing with RF Transmitters

The phone was tested in all normal configurations for the ear use. A DUT is mounted in the device holder equivalent as for classic dosimetric measurements. The acoustic output of the DUT shall coincide with the center point of the area formed by the dielectric wire and the middle bar of the arch's top frame. The DUT shall be moved vertically upwards until it touches the frame. The fine adjustment is possible by sliding the complete DUT holder on the yellow base plate of the Test Arch phantom. These test configurations are tested at the high, middle and low frequency channels of each applicable operating mode; for example, GSM, WCDMA (UMTS), CDMA and TDMA.

CDMA Devices setup for HAC Measurement.

The signal was setup by creating and maintaining an over the coaxial connection between the DUT and an R&S CMU200 Wireless Communications Test Set. The CDMA radio is available on CDMA 2000(1X) and IS-95. The test equipment was configured to use "all up bits" for RC1 / SO2 on J-STD-008 for CDMA 1900 and TSB-84 for CDMA 800 MHz. The 5cm x 5cm area measurement grid is centered on the acoustic output of the device. The Test Arch provided by SPEAG is used to position the DUT. The WD reference plane is parallel to the device and contains the highest point on its contour in the area of the phone that normally rests against the user's ear. The measurement plane contains the nearest point on the probe sensor(s) relative to the WD. The pictures of the setup are included in 7.3.

WCDMA Devices setup for HAC Measurement.

The following procedures are applicable to WCDMA handsets operating under 3GPP Release 99 and Release 5. The default test configuration is to measure HAC with an established radio link between the DUT and a communication test set using a 12.2 kbps RMC (reference measurement channel) configured in Test Loop Mode 1. HAC is selectively confirmed for other physical channel configurations (DPCCH & DPDCH_n) according to output power, exposure conditions and device operating capabilities. Both uplink and downlink should be configured with the same RMC or AMR, when required. Maximum output power is verified according to 3GPP TS 34.121 and HAC must be measured according to these maximum output conditions.



8. Test Results

8.1 Description of the Device under Test (DUT)

Modes and Bands of Operation	CDMA Cellular Band	CDMA PCS Band	CDMA AWS Band
Modulation Mode	QPSK	QPSK	QPSK
Duty Cycle	1/1	1/1	1/1
Transmitter Frequency Range (MHz)	824.0 – 849.0	1850.0 -1910.0	1710.0 -1755.0



8.2 HAC E-Field measurement results

Band	Rating	E-Field
CDMA Cellular Band	M3	199.5 to 354.8 V/m
	M4	< 199.5 V/m
CDMA PCS Band	M3	63.1 to 112.2 V/m
	M4	< 63.1 V/m
CDMA AWS Band	M3	63.1 to 112.2 V/m
	M4	< 63.1 V/m

Table 5. Emissions Limits

Band	Channel	Conducted Power (dBm)	Measured PMF	Drift (dB)	Excluded Cells	Peak Field (V/m)	Rating	Note
CDMA Cellular Band	1013	23.66	1.04	-0.100	6,8,9	105.5	M4	Sample1+battery#1
	1013	23.66	1.04	0.019	6,8,9	87.2	M4	Sample1+battery#2
	1013	23.66	1.04	0.050	6,8,9	100.0	M4	Sample2+battery#1
	1013	23.66	1.04	-0.080	6,8,9	95.5	M4	Sample2+battery#2
	384	24.08	1.04	-0.122	6,8,9	87.7	M4	Sample1+battery#1
	384	24.08	1.04	-0.004	6,8,9	90.5	M4	Sample2+battery#1
	777	23.75	1.04	0.080	2,3,6	85.8	M4	Sample1+battery#1
	777	23.75	1.07	0.003	2,3,6	83.6	M4	Sample2+battery#1
CDMA PCS Band	25	23.86	1.01	-0.079	7,8,9	48.1	M4	Sample1+battery#1
	25	23.86	1.01	0.076	7,8,9	46.8	M4	Sample2+battery#1
	600	23.78	1.01	-0.043	7,8,9	40.4	M4	Sample1+battery#1
	600	23.78	1.01	-0.043	7,8,9	48.3	M4	Sample1+battery#2
	600	23.78	1.01	-0.011	7,8,9	49.7	M4	Sample2+battery#1
	600	23.78	1.01	0.010	7,8,9	47.5	M4	Sample2+battery#2
	1175	24.19	1.01	-0.010	7,8,9	42.5	M4	Sample1+battery#1
	1175	24.19	1.01	0.001	7,8,9	42.9	M4	Sample2+battery#1
CDMA AWS Band	25	23.82	1.01	-0.103	7,8,9	42.3	M4	Sample1+battery#1
	25	23.82	1.01	-0.033	7,8,9	42.5	M4	Sample2+battery#1
	450	24.35	1.01	-0.019	7,8,9	50.0	M4	Sample1+battery#1
	450	24.35	1.01	0.057	7,8,9	42.0	M4	Sample1+battery#2
	450	24.35	1.01	-0.047	7,8,9	51.7	M4	Sample2+battery#1
	450	24.35	1.01	-0.061	7,8,9	50.4	M4	Sample2+battery#2
	875	23.70	1.01	0.038	7,8,9	45.1	M4	Sample1+battery#1
	875	23.70	1.01	-0.103	7,8,9	46.6	M4	Sample2+battery#1

Note: HAC E-Field measurement results for the portable cellular telephone at highest possible output power.



Turn on Wi-Fi and Bluetooth Function

Band	Channel	Wireless Mode	Peak Field (V/m)	Note
CDMA Cellular Band	1013	----	0.162	Sample1+battery#1
		Wi-Fi	0.160	
		Bluetooth	0.159	
CDMA PCS Band	600	----	0.113	Sample1+battery#1
		Wi-Fi	0.109	
		Bluetooth	0.110	
CDMA AWS Band	450	----	0.111	Sample1+battery#1
		Wi-Fi	0.107	
		Bluetooth	0.109	
CDMA Cellular Band	1013	----	0.146	Sample2+battery#1
		Wi-Fi	0.142	
		Bluetooth	0.143	
CDMA PCS Band	600	----	0.119	Sample2+battery#1
		Wi-Fi	0.114	
		Bluetooth	0.116	
CDMA AWS Band	450	----	0.120	Sample2+battery#1
		Wi-Fi	0.115	
		Bluetooth	0.117	



8.3 HAC H-Field measurement results

Band	Rating	H-Field
CDMA Cellular Band	M3	0.6 to 1.07 A/m
	M4	< 0.6 A/m
CDMA PCS Band	M3	0.19 to 0.34 A/m
	M4	<0.19 A/m
CDMA AWS Band	M3	0.19 to 0.34 A/m
	M4	<0.19 A/m

Table 6. Emissions Limits

Band	Channel	Conducted Power (dBm)	Measured PMF	Drift (dB)	Excluded Cells	Peak Field (A/m)	Rating	Note
CDMA Cellular Band	1013	23.66	1.00	0.191	1,4,7	0.162	M4	Sample1+battery#1
	1013	23.66	0.99	0.044	1,4,7	0.131	M4	Sample1+battery#2
	1013	23.66	1.00	0.032	1,4,7	0.146	M4	Sample2+battery#1
	1013	23.66	0.99	0.009	1,4,7	0.135	M4	Sample2+battery#2
	384	24.08	0.99	-0.005	1,4,7	0.136	M4	Sample1+battery#1
	384	24.08	0.99	0.047	1,4,7	0.133	M4	Sample2+battery#1
	777	23.75	1.00	-0.037	1,4,7	0.144	M4	Sample1+battery#1
	777	23.75	0.99	-0.059	1,4,7	0.127	M4	Sample2+battery#1
CDMA PCS Band	25	23.86	0.97	-0.124	3,6,9	0.107	M4	Sample1+battery#1
	25	23.86	0.97	-0.069	7,8,9	0.112	M4	Sample2+battery#1
	600	23.78	0.97	-0.080	2,3,6	0.113	M4	Sample1+battery#1
	600	23.78	0.97	-0.065	1,2,3	0.098	M4	Sample1+battery#2
	600	23.78	0.97	-0.088	1,2,3	0.119	M4	Sample2+battery#1
	600	23.78	0.97	-0.022	1,2,3	0.116	M4	Sample2+battery#2
	1175	24.19	0.97	0.056	1,2,3	0.106	M4	Sample1+battery#1
	1175	24.19	0.97	0.002	1,2,3	0.108	M4	Sample2+battery#1
CDMA AWS Band	25	23.82	0.97	-0.124	1,4,7	0.067	M4	Sample1+battery#1
	25	23.82	0.97	0.043	7,8,9	0.099	M4	Sample2+battery#1
	450	24.35	0.97	-0.087	2,3,6	0.111	M4	Sample1+battery#1
	450	24.35	0.97	0.015	2,3,6	0.063	M4	Sample1+battery#2
	450	24.35	0.97	-0.017	2,3,6	0.120	M4	Sample2+battery#1
	450	24.35	0.97	0.008	2,3,6	0.119	M4	Sample2+battery#2
	875	23.70	0.97	-0.166	2,3,6	0.063	M4	Sample1+battery#1
	875	23.70	0.97	-0.030	2,3,6	0.109	M4	Sample2+battery#1

Note: HAC H-Field measurement results for the portable cellular telephone at highest possible output power.



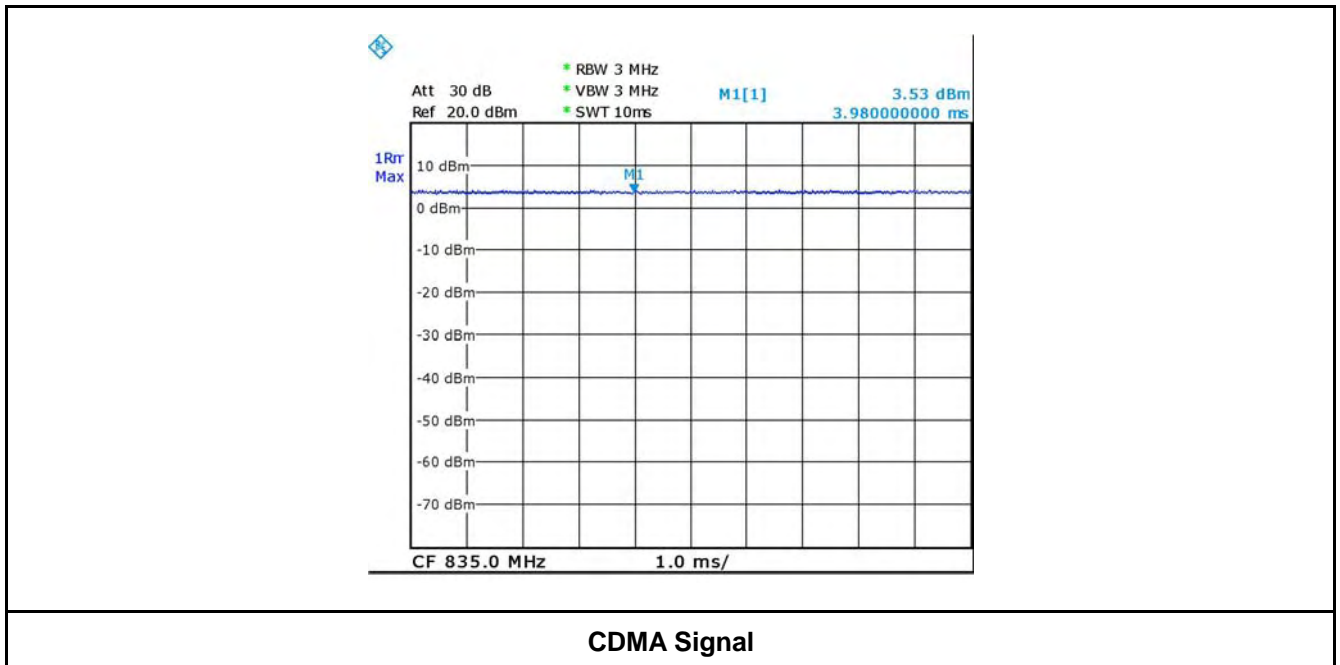
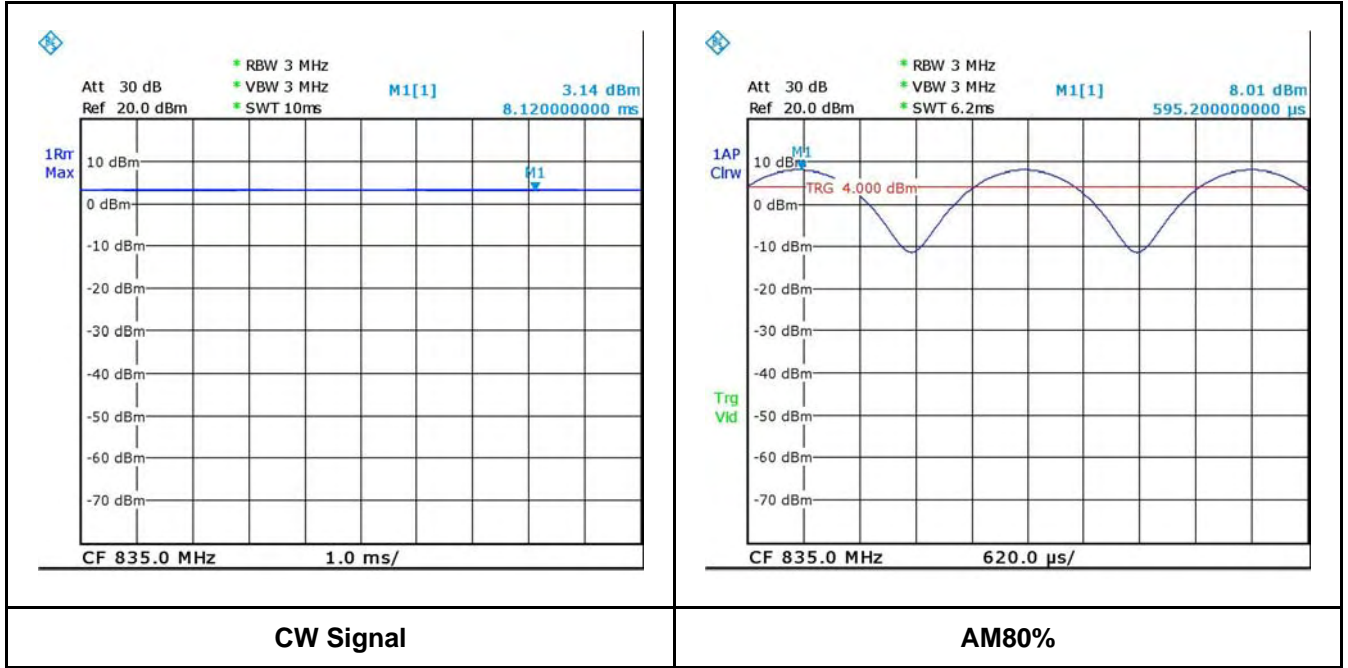
Turn on Wi-Fi and Bluetooth Function

Band	Channel	Wireless Mode	Peak Field (V/m)	Note
CDMA Cellular Band	1013	-----	105.50	Sample1+battery#1
		Wi-Fi	105.20	
		Bluetooth	105.10	
CDMA PCS Band	600	-----	37.10	Sample1+battery#1
		Wi-Fi	36.70	
		Bluetooth	36.90	
CDMA AWS Band	450	-----	35.60	Sample1+battery#1
		Wi-Fi	35.50	
		Bluetooth	35.30	
CDMA Cellular Band	1013	-----	100.00	Sample2+battery#1
		Wi-Fi	99.80	
		Bluetooth	99.60	
CDMA PCS Band	600	-----	40.00	Sample2+battery#1
		Wi-Fi	39.80	
		Bluetooth	39.70	
CDMA AWS Band	450	-----	35.20	Sample2+battery#1
		Wi-Fi	35.00	
		Bluetooth	34.80	



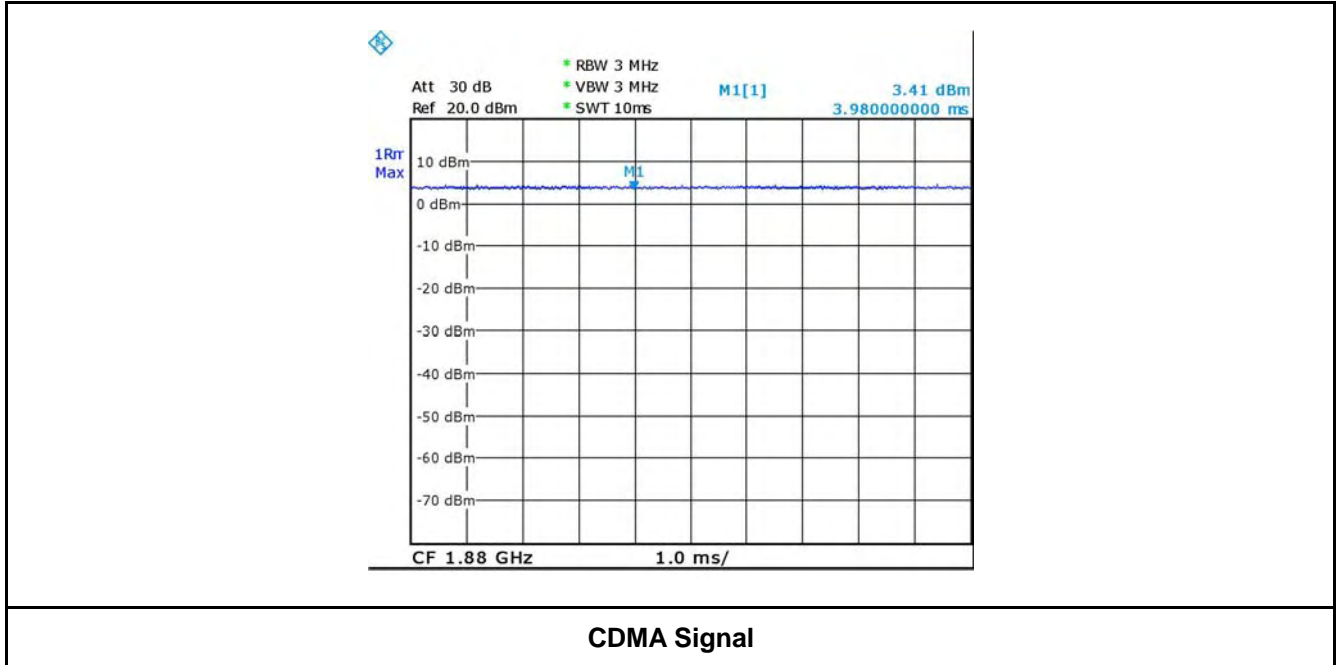
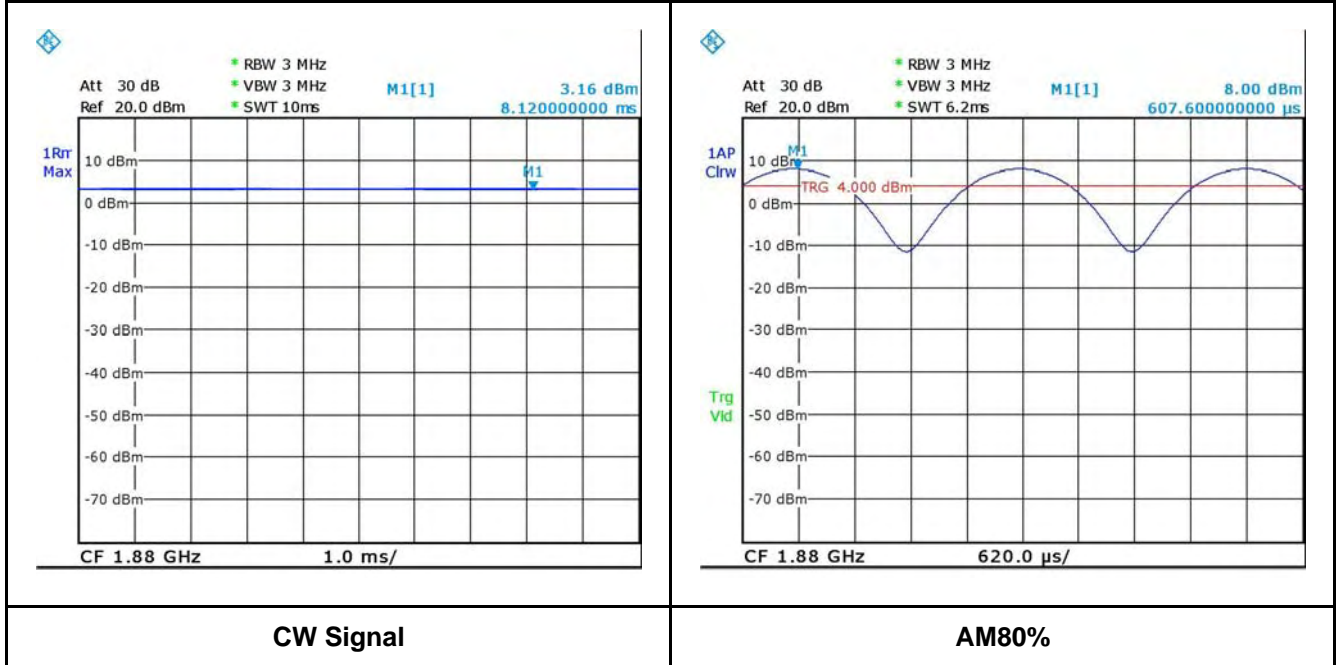
Appendix A - Details of WD signal

835 MHz





1880 MHz





Appendix B - Validation

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 4:57:02 PM

HAC_System Performance Check at 835MHz_20110616_E

DUT: Dipole 835 MHz; Type: CD835V3; Serial: CD835V3 - SN:1017

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

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

Phantom section: E Dipole Section

Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to CD835 Dipole = 10mm/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 164.0 V/m

Probe Modulation Factor = 1

Device Reference Point: 0, 0, 354.7 mm

Reference Value = 126.6 V/m; Power Drift = 0.00467 dB

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

Cursor:

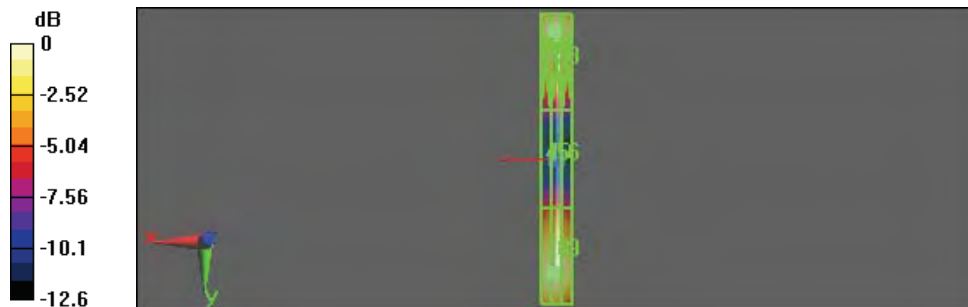
Total = 170.7 V/m

E Category: M4

Location: 1, -79.5, 364.7 mm

Peak E-field in V/m

Grid 1 167.1 M4	Grid 2 170.7 M4	Grid 3 160.4 M4
Grid 4 90.9 M4	Grid 5 92.3 M4	Grid 6 87.7 M4
Grid 7 163.2 M4	Grid 8 164.0 M4	Grid 9 154.6 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 3:50:40 PM

HAC_System Performance Check at 835MHz_20110701_E

DUT: Dipole 835 MHz; Type: CD835V3; Serial: CD835V3 - SN:1017

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to CD835 Dipole = 10mm/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm

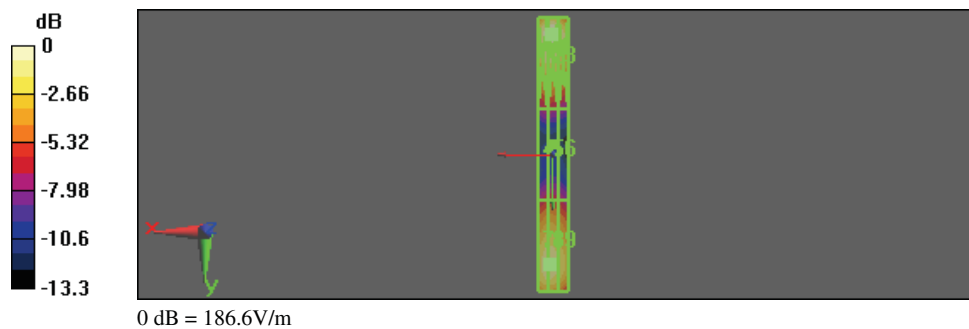
Maximum value of peak Total field = 166.5 V/m
 Probe Modulation Factor = 1
 Device Reference Point: 0, 0, 354.7 mm
 Reference Value = 126.5 V/m; Power Drift = -0.016 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 186.6 V/m
 E Category: M4
 Location: 1, -79, 364.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
182.8 M4	186.6 M4	173.7 M4
Grid 4	Grid 5	Grid 6
91.6 M4	92.4 M4	87.4 M4
Grid 7	Grid 8	Grid 9
166.1 M4	166.5 M4	155.9 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 7:03:11 PM

HAC_System Performance Check at 1880MHz_20100616_E

DUT: Dipole 1880 MHz; Type: CD1880V3; Serial: CD1880V3 - SN:1036

Communication System: CW; Frequency: 1880 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Dipole Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to CD1880 Dipole = 10mm/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm

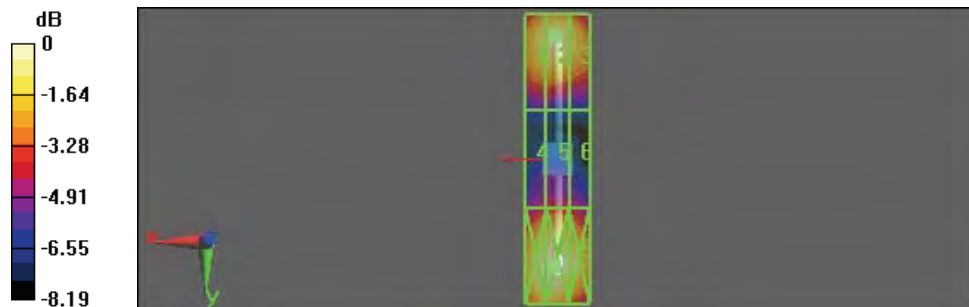
Maximum value of peak Total field = 139.8 V/m
 Probe Modulation Factor = 1
 Device Reference Point: 0, 0, 354.7 mm
 Reference Value = 150.9 V/m; Power Drift = 0.021 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Cursor:

Total = 145.8 V/m
 E Category: M2
 Location: 1, 33.5, 364.7 mm

Peak E-field in V/m

Grid 1 136.3 M2	Grid 2 139.8 M2	Grid 3 130.6 M2
Grid 4 91.5 M3	Grid 5 94.3 M3	Grid 6 90.4 M3
Grid 7 143.6 M2	Grid 8 145.8 M2	Grid 9 136.8 M2





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/28/2011 10:52:39 AM

HAC_System Performance Check at 1880MHz_20110628_E

DUT: Dipole 1880 MHz; Type: CD1880V3; Serial: CD1880V3 - SN:1036

Communication System: CW; Frequency: 1880 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Dipole Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

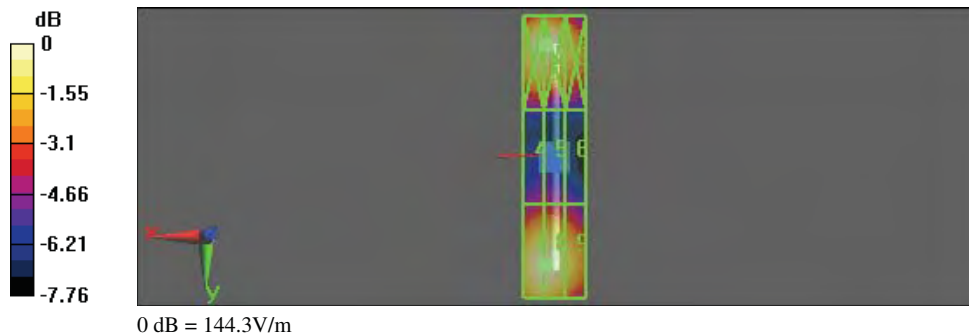
- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to CD1880 Dipole = 10mm/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm
 Maximum value of peak Total field = 142.1 V/m
 Probe Modulation Factor = 1
 Device Reference Point: 0, 0, 354.7 mm
 Reference Value = 145.5 V/m; Power Drift = -0.00804 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Cursor:
 Total = 144.3 V/m
 E Category: M2
 Location: 3, -35.5, 364.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
144.2 M2	144.3 M2	129.5 M2
Grid 4	Grid 5	Grid 6
89.3 M3	89.7 M3	85 M3
Grid 7	Grid 8	Grid 9
142.1 M2	142.1 M2	129.9 M2





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 1:13:38 PM

HAC_System Performance Check at 1880MHz_20110701_E

DUT: Dipole 1880 MHz; Type: CD1880V3; Serial: CD1880V3 - SN:1036

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

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

Phantom section: E Dipole Section

Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to CD1880 Dipole = 10mm/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 136.5 V/m

Probe Modulation Factor = 1

Device Reference Point: 0, 0, 354.7 mm

Reference Value = 139.2 V/m; Power Drift = -0.014 dB

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

Cursor:

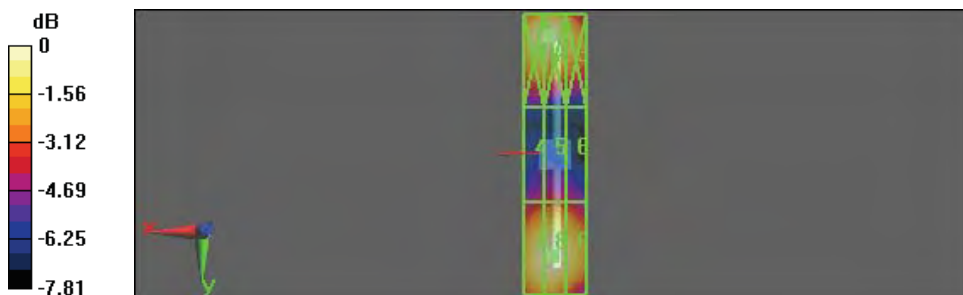
Total = 138.6 V/m

E Category: M2

Location: 2, -38, 364.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
137.9 M2	138.6 M2	126.6 M2
Grid 4	Grid 5	Grid 6
90 M3	92.3 M3	88.9 M3
Grid 7	Grid 8	Grid 9
134.5 M2	136.5 M2	128.5 M2





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 6:21:59 PM

HAC_System Performance Check at 835MHz_20100616_H

DUT: Dipole 835 MHz; Type: CD835V3; Serial: CD835V3 - SN:1017

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to CD835 Dipole = 10mm/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm

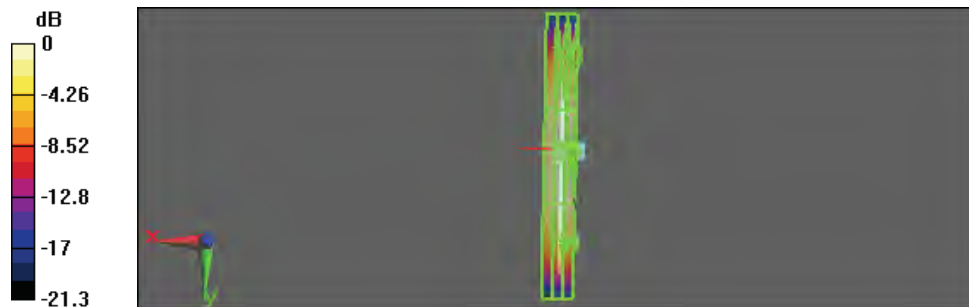
Maximum value of peak Total field = 0.457 A/m
 Probe Modulation Factor = 1
 Device Reference Point: 0, 0, 354.7 mm
 Reference Value = 0.481 A/m; Power Drift = 0.020 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.457 A/m
 H Category: M4
 Location: -1, -1, 364.7 mm

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
0.377 M4	0.408 M4	0.397 M4
Grid 4	Grid 5	Grid 6
0.423 M4	0.457 M4	0.449 M4
Grid 7	Grid 8	Grid 9
0.371 M4	0.404 M4	0.399 M4



0 dB = 0.457A/m



Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 11:40:07 AM

HAC_System Performance Check at 835MHz_20110701_H

DUT: Dipole 835 MHz; Type: CD835V3; Serial: CD835V3 - SN:1017

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

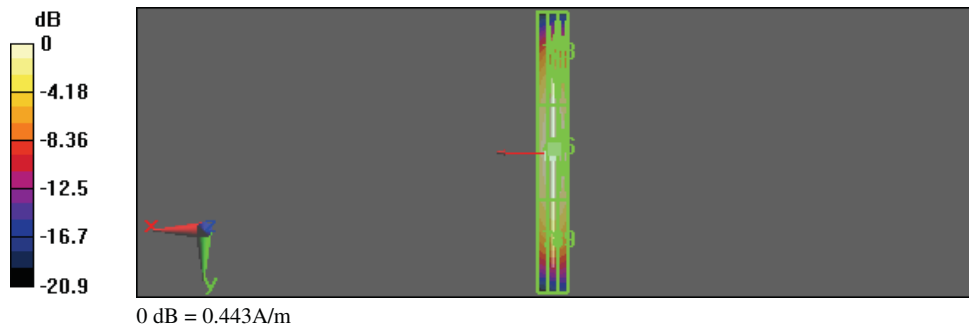
H Scan - H3DV6 - measurement distance from the probe sensor center to CD835 Dipole = 10mm/Hearing Aid Compatibility Test (41x361x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.443 A/m
 Probe Modulation Factor = 1
 Device Reference Point: 0, 0, 354.7 mm
 Reference Value = 0.467 A/m; Power Drift = -0.015 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:
 Total = 0.443 A/m
 H Category: M4
 Location: -1, -2, 364.7 mm

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
0.376 M4	0.403 M4	0.392 M4
Grid 4	Grid 5	Grid 6
0.415 M4	0.443 M4	0.433 M4
Grid 7	Grid 8	Grid 9
0.360 M4	0.384 M4	0.375 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 6:50:45 PM

HAC_System Performance Check at 1880MHz_20100616_H

DUT: Dipole 1880 MHz; Type: CD1880V3; Serial: CD1880V3 - SN:1036

Communication System: CW; Frequency: 1880 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Dipole Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

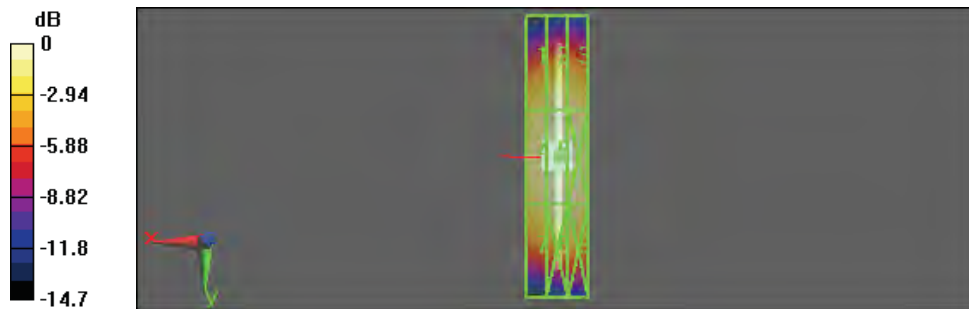
H Scan - H3DV6 - measurement distance from the probe sensor center to CD1880 Dipole = 10mm/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.430 A/m
 Probe Modulation Factor = 1
 Device Reference Point: 0, 0, 354.7 mm
 Reference Value = 0.454 A/m; Power Drift = -0.052 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Cursor:
 Total = 0.430 A/m
 H Category: M2
 Location: -1, 0, 364.7 mm

Peak H-field in A/m

Grid 1 0.365 M2	Grid 2 0.393 M2	Grid 3 0.385 M2
Grid 4 0.402 M2	Grid 5 0.430 M2	Grid 6 0.422 M2
Grid 7 0.368 M2	Grid 8 0.393 M2	Grid 9 0.388 M2



0 dB = 0.430A/m



Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 1:39:18 PM

HAC_System Performance Check at 1880MHz_20110701_H

DUT: Dipole 1880 MHz; Type: CD1880V3; Serial: CD1880V3 - SN:1036

Communication System: CW; Frequency: 1880 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Dipole Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

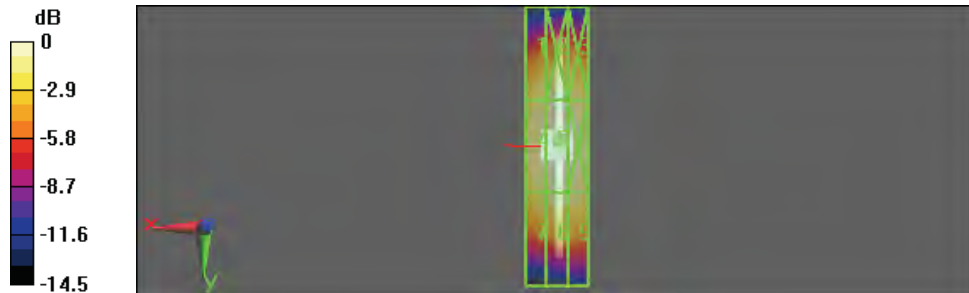
H Scan - H3DV6 - measurement distance from the probe sensor center to CD1880 Dipole = 10mm/Hearing Aid Compatibility Test (41x181x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.444 A/m
 Probe Modulation Factor = 1
 Device Reference Point: 0, 0, 354.7 mm
 Reference Value = 0.467 A/m; Power Drift = -0.00849 dB
Hearing Aid Near-Field Category: M2 (AWF 0 dB)

Cursor:
 Total = 0.444 A/m
 H Category: M2
 Location: -1, -2, 364.7 mm

Peak H-field in A/m

Grid 1 0.387 M2	Grid 2 0.411 M2	Grid 3 0.399 M2
Grid 4 0.420 M2	Grid 5 0.444 M2	Grid 6 0.434 M2
Grid 7 0.377 M2	Grid 8 0.400 M2	Grid 9 0.395 M2



0 dB = 0.444A/m



Appendix C - HAC distribution plots for E-Field and H-Field

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 5:37:25 PM

HAC_CDMA Cellular CH1013_E_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA Cellular ; Frequency: 824.7 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 105.5 V/m

Probe Modulation Factor = 1.04

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 136.9 V/m; Power Drift = -0.100 dB

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

Cursor:

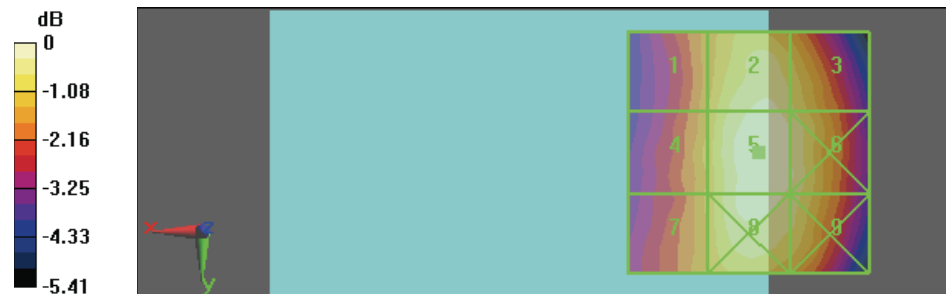
Total = 105.5 V/m

E Category: M4

Location: -2, 0, 368.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
89.1 M4	102.6 M4	98.8 M4
Grid 4	Grid 5	Grid 6
91.2 M4	105.5 M4	102.0 M4
Grid 7	Grid 8	Grid 9
90.6 M4	105.0 M4	100.3 M4



0 dB = 105.5V/m



Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 6:48:40 PM

HAC_CDMA Cellular CH1013_E_main-battery 2nd

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA Cellular ; Frequency: 824.7 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 87.2 V/m
 Probe Modulation Factor = 1.04
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 110.9 V/m; Power Drift = 0.019 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 87.2 V/m
 E Category: M4
 Location: -4.5, -0.5, 368.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
72.9 M4	84.8 M4	81.7 M4
Grid 4	Grid 5	Grid 6
75.9 M4	87.2 M4	84.3 M4
Grid 7	Grid 8	Grid 9
73.4 M4	85.3 M4	81.6 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 4:12:49 PM

HAC_CDMA Cellular CH1013_E_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA Cellular ; Frequency: 824.7 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

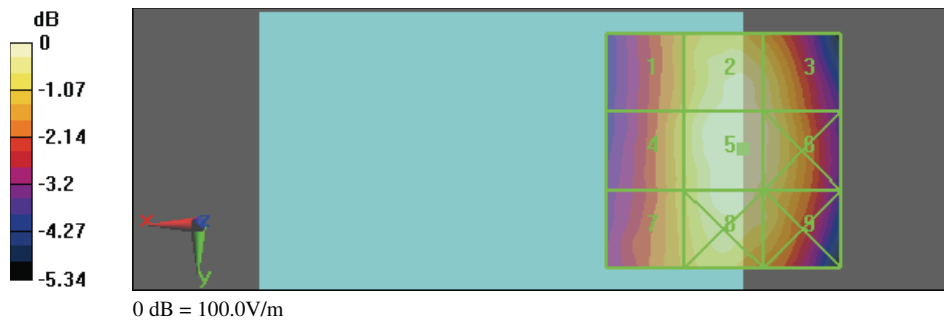
E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 100.0 V/m
 Probe Modulation Factor = 1.04
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 129.0 V/m; Power Drift = 0.050 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:
 Total = 100.0 V/m
 E Category: M4
 Location: -4, -0.5, 368.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
86.7 M4	98 M4	95.5 M4
Grid 4	Grid 5	Grid 6
88.9 M4	100.0 M4	97.2 M4
Grid 7	Grid 8	Grid 9
87.7 M4	98.9 M4	93.9 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 4:33:57 PM

HAC_CDMA Cellular CH1013_E_2nd-battery 2nd

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA Cellular ; Frequency: 824.7 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 95.5 V/m

Probe Modulation Factor = 1.04

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 122.8 V/m; Power Drift = -0.080 dB

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

Cursor:

Total = 95.5 V/m

E Category: M4

Location: -1.5, 0.5, 368.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
83.6 M4	93.4 M4	90.5 M4
Grid 4	Grid 5	Grid 6
85.2 M4	95.5 M4	93.1 M4
Grid 7	Grid 8	Grid 9
84 M4	93.8 M4	90.3 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 5:51:47 PM

HAC_CDMA Cellular CH384_E_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA Cellular ; Frequency: 836.52 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 87.7 V/m

Probe Modulation Factor = 1.04

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 115.4 V/m; Power Drift = -0.122 dB

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

Cursor:

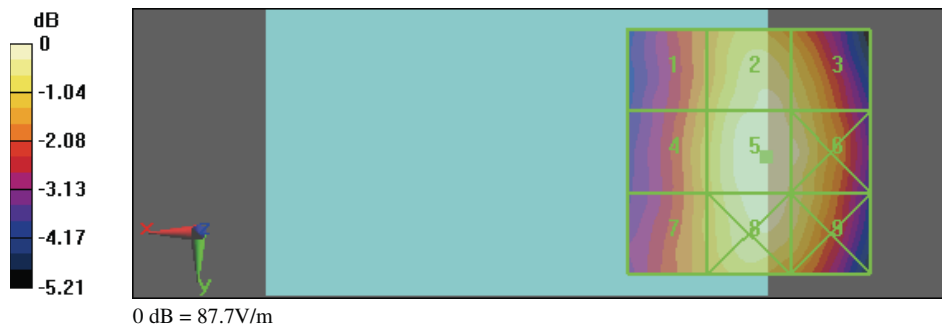
Total = 87.7 V/m

E Category: M4

Location: -3.5, 1, 368.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
75.1 M4	85.8 M4	83.1 M4
Grid 4	Grid 5	Grid 6
77.2 M4	87.7 M4	86 M4
Grid 7	Grid 8	Grid 9
76.1 M4	86.7 M4	83.9 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 4:18:47 PM

HAC_CDMA Cellular CH384_E_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA Cellular ; Frequency: 836.52 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 90.5 V/m
 Probe Modulation Factor = 1.04
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 116.4 V/m; Power Drift = -0.00414 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:
 Total = 90.5 V/m
 E Category: M4
 Location: -1.5, -3.5, 368.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
79.9 M4	88.5 M4	86.3 M4
Grid 4	Grid 5	Grid 6
81.7 M4	90.5 M4	88.6 M4
Grid 7	Grid 8	Grid 9
79.5 M4	89.2 M4	87 M4



0 dB = 90.5V/m



Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 6:00:42 PM

HAC_CDMA Cellular CH777_E_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA Cellular ; Frequency: 848.31 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 85.8 V/m

Probe Modulation Factor = 1.04

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 110.7 V/m; Power Drift = 0.080 dB

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

Cursor:

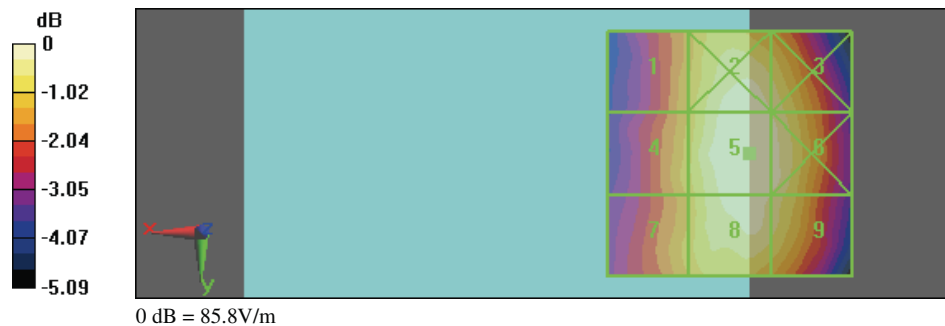
Total = 85.8 V/m

E Category: M4

Location: -4, 0, 368.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
74 M4	85.2 M4	82.5 M4
Grid 4	Grid 5	Grid 6
75.5 M4	85.8 M4	84.3 M4
Grid 7	Grid 8	Grid 9
74.9 M4	84.6 M4	82.2 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 4:25:38 PM

HAC_CDMA Cellular CH777_E_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA Cellular ; Frequency: 848.31 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 83.6 V/m

Probe Modulation Factor = 1.07

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 105.5 V/m; Power Drift = -0.00274 dB

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

Cursor:

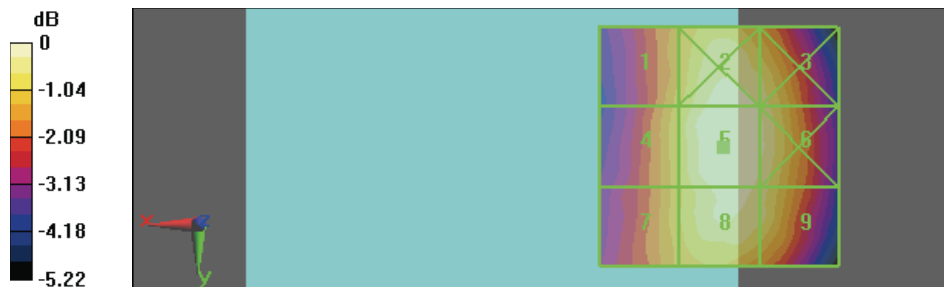
Total = 83.6 V/m

E Category: M4

Location: -1, 0, 368.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
73 M4	82.3 M4	79.8 M4
Grid 4	Grid 5	Grid 6
74.5 M4	83.6 M4	81.1 M4
Grid 7	Grid 8	Grid 9
73.5 M4	81.9 M4	79.3 M4



0 dB = 83.6V/m



Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 7:21:19 PM

HAC_CDMA PCS CH25_E_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA PCS ; Frequency: 1851.25 MHz;Duty Cycle: 1:1
Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
Phantom section: E Device Section
Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 34.6 V/m

Probe Modulation Factor = 1.01

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 22.7 V/m; Power Drift = -0.079 dB

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

Cursor:

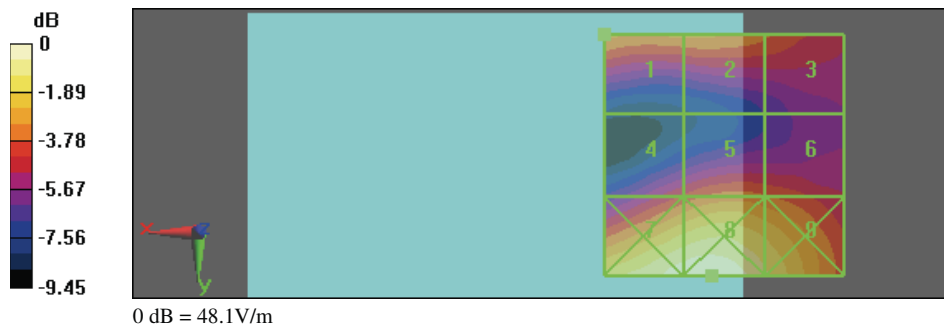
Total = 48.1 V/m

E Category: M4

Location: 2.5, 25, 368.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
34.6 M4	34.2 M4	31.7 M4
Grid 4	Grid 5	Grid 6
29.4 M4	32.4 M4	31.4 M4
Grid 7	Grid 8	Grid 9
47.2 M4	48.1 M4	42.2 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 4:56:13 PM

HAC_CDMA PCS CH25_E_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA PCS ; Frequency: 1851.25 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 36.5 V/m

Probe Modulation Factor = 1.01

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 20 V/m; Power Drift = 0.076 dB

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

Cursor:

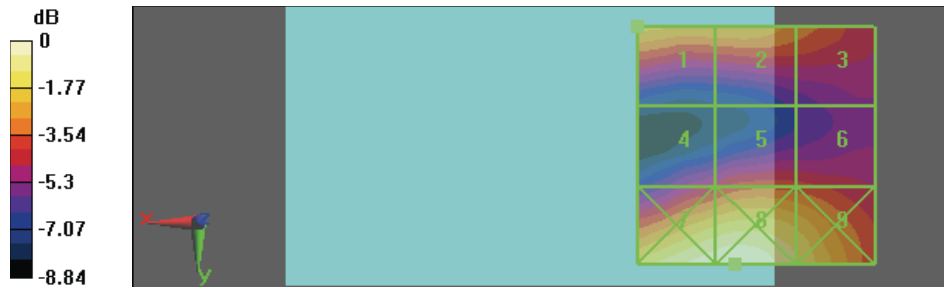
Total = 46.8 V/m

E Category: M4

Location: 4.5, 25, 368.7 mm

Peak E-field in V/m

Grid 1 36.5 M4	Grid 2 36.2 M4	Grid 3 32.6 M4
Grid 4 28 M4	Grid 5 30.6 M4	Grid 6 30.1 M4
Grid 7 45.9 M4	Grid 8 46.8 M4	Grid 9 41.1 M4



0 dB = 46.8V/m



Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 5:55:39 PM

HAC_CDMA PCS CH600_E_main-battery 2nd

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA PCS ; Frequency: 1880 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 32.1 V/m

Probe Modulation Factor = 1.01

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 19.9 V/m; Power Drift = -0.043 dB

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

Cursor:

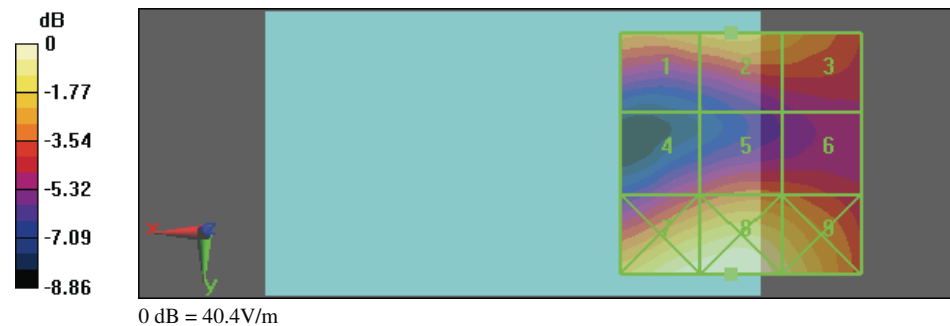
Total = 40.4 V/m

E Category: M4

Location: 2, 25, 368.7 mm

Peak E-field in V/m

Grid 1 31.3 M4	Grid 2 32.1 M4	Grid 3 30.3 M4
Grid 4 25 M4	Grid 5 27.7 M4	Grid 6 27.2 M4
Grid 7 39.8 M4	Grid 8 40.4 M4	Grid 9 36.8 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 7:30:39 PM

HAC_CDMA PCS CH600_E_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA PCS ; Frequency: 1880 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 37.1 V/m

Probe Modulation Factor = 1.01

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 23.1 V/m; Power Drift = -0.043 dB

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

Cursor:

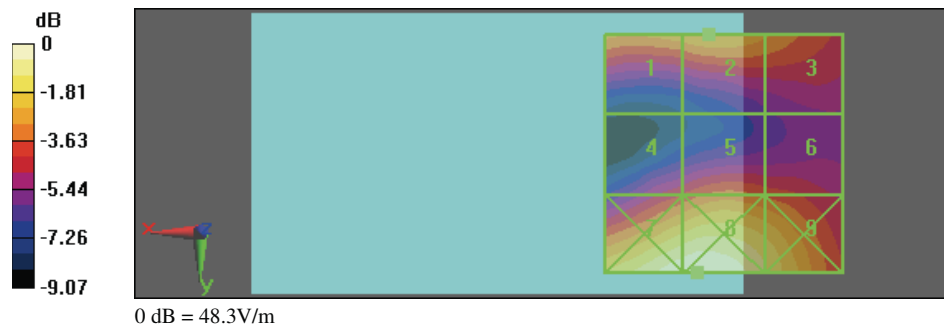
Total = 48.3 V/m

E Category: M4

Location: 5.5, 25, 368.7 mm

Peak E-field in V/m

Grid 1 36.2 M4	Grid 2 37.1 M4	Grid 3 34.7 M4
Grid 4 29.9 M4	Grid 5 32.8 M4	Grid 6 31.4 M4
Grid 7 48 M4	Grid 8 48.3 M4	Grid 9 42 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 5:01:48 PM

HAC_CDMA PCS CH600_E_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA PCS ; Frequency: 1880 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

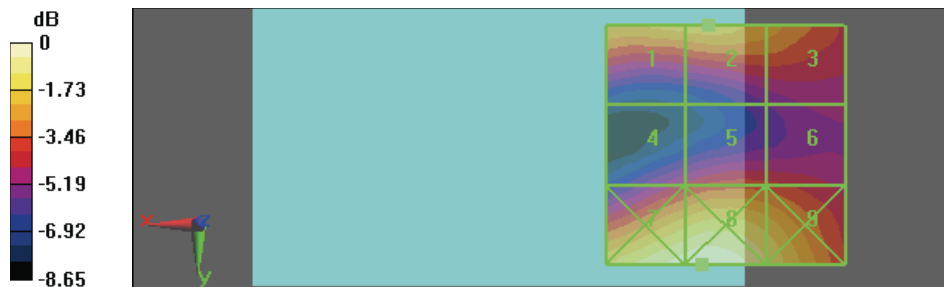
E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 40 V/m
 Probe Modulation Factor = 1.01
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 22.3 V/m; Power Drift = 0.011 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:
 Total = 49.7 V/m
 E Category: M4
 Location: 5, 25, 368.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
39.7 M4	40 M4	37.2 M4
Grid 4	Grid 5	Grid 6
30 M4	32.8 M4	32.3 M4
Grid 7	Grid 8	Grid 9
48.4 M4	49.7 M4	43.6 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 5:17:13 PM

HAC_CDMA PCS CH600_E_2nd-battery 2nd

DUT PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA PCS ; Frequency: 1880 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 38.6 V/m

Probe Modulation Factor = 1.01

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 21.8 V/m; Power Drift = 0.010 dB

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

Cursor:

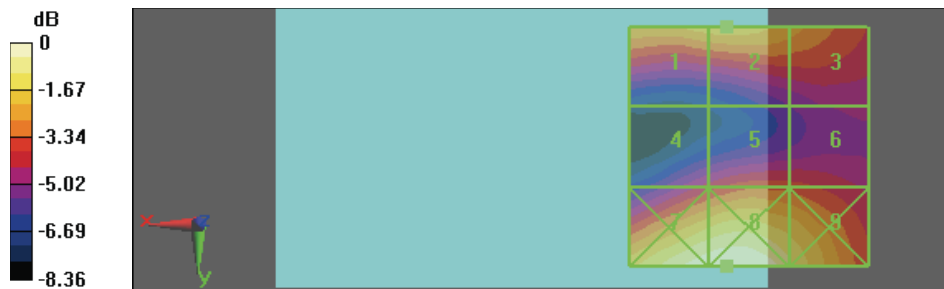
Total = 47.5 V/m

E Category: M4

Location: 4.5, 25, 368.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
38.2 M4	38.6 M4	35.7 M4
Grid 4	Grid 5	Grid 6
29.5 M4	32.1 M4	31.5 M4
Grid 7	Grid 8	Grid 9
46.8 M4	47.5 M4	42.1 M4



0 dB = 47.5V/m



Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 7:37:59 PM

HAC_CDMA PCS CH1175_E_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA PCS ; Frequency: 1908.75 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

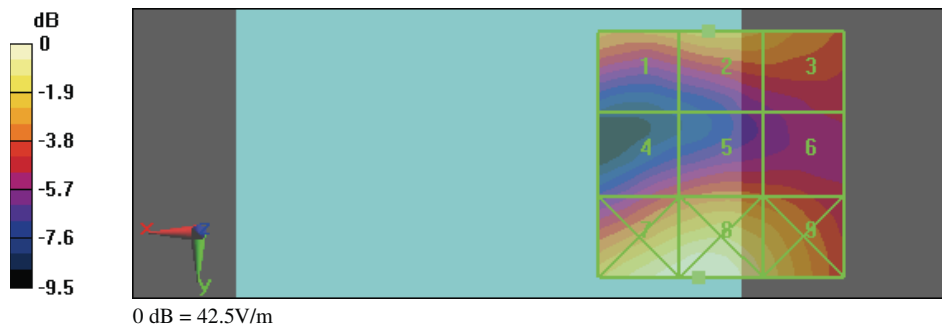
E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 33 V/m
 Probe Modulation Factor = 1.01
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 20.9 V/m; Power Drift = -0.00957 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:
 Total = 42.5 V/m
 E Category: M4
 Location: 4.5, 25, 368.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
31.6 M4	33 M4	31.7 M4
Grid 4	Grid 5	Grid 6
26.4 M4	28.5 M4	27.7 M4
Grid 7	Grid 8	Grid 9
41.8 M4	42.5 M4	36.5 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 5:08:40 PM

HAC_CDMA PCS CH1175_E_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA PCS ; Frequency: 1908.75 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 35.3 V/m

Probe Modulation Factor = 1.01

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 19.7 V/m; Power Drift = 0.000942 dB

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

Cursor:

Total = 42.9 V/m

E Category: M4

Location: 4.5, 25, 368.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
34.3 M4	35.3 M4	33.6 M4
Grid 4	Grid 5	Grid 6
25.8 M4	28.2 M4	27.9 M4
Grid 7	Grid 8	Grid 9
42 M4	42.9 M4	37.9 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/28/2011 11:21:23 AM

HAC_CDMA AWS CH25_E_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA AWS; Frequency: 1711.25 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 28.4 V/m

Probe Modulation Factor = 1.01

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 21.3 V/m; Power Drift = -0.103 dB

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

Cursor:

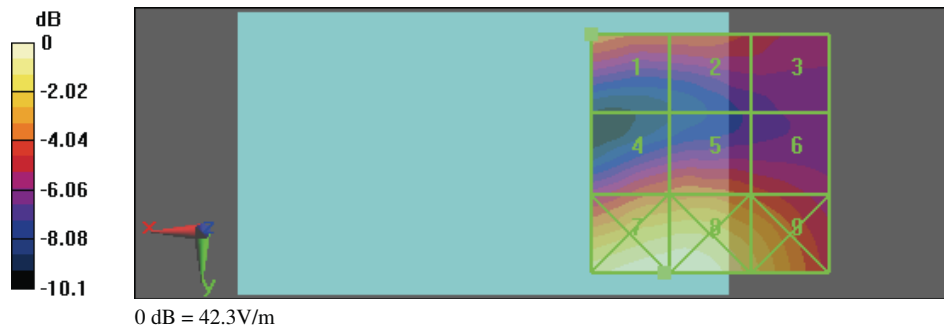
Total = 42.3 V/m

E Category: M4

Location: 9.5, 25, 368.7 mm

Peak E-field in V/m

Grid 1 28.4 M4	Grid 2 26.8 M4	Grid 3 24.4 M4
Grid 4 27.3 M4	Grid 5 28.1 M4	Grid 6 26 M4
Grid 7 42.3 M4	Grid 8 42.3 M4	Grid 9 34.9 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 5:25:15 PM

HAC_CDMA AWS CH25_E_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA AWS; Frequency: 1711.25 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

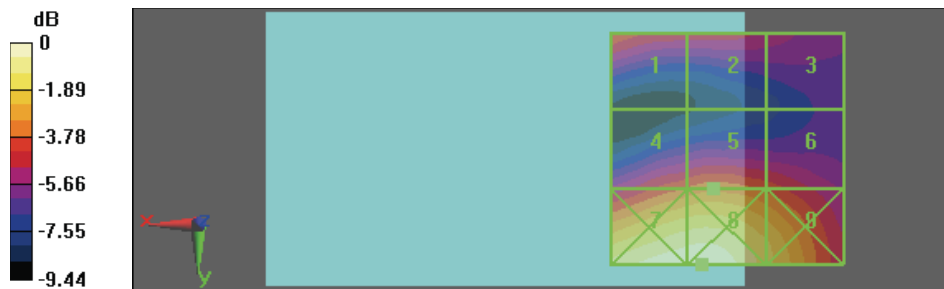
E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 29 V/m
 Probe Modulation Factor = 1.01
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 22.3 V/m; Power Drift = -0.033 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:
 Total = 42.5 V/m
 E Category: M4
 Location: 5.5, 25, 368.7 mm

Peak E-field in V/m

Grid 1 27.5 M4	Grid 2 25.4 M4	Grid 3 23.7 M4
Grid 4 27.8 M4	Grid 5 29 M4	Grid 6 27 M4
Grid 7 41.8 M4	Grid 8 42.5 M4	Grid 9 35.2 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 8:01:12 PM

HAC_CDMA AWS CH450_E_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA AWS; Frequency: 1732.5 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 35.6 V/m

Probe Modulation Factor = 1.01

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 29.3 V/m; Power Drift = -0.019 dB

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

Cursor:

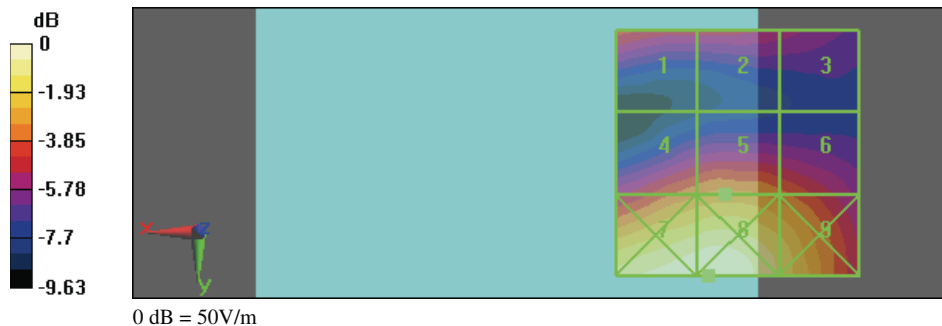
Total = 50 V/m

E Category: M4

Location: 6, 25, 368.7 mm

Peak E-field in V/m

Grid 1 30.9 M4	Grid 2 28.9 M4	Grid 3 27 M4
Grid 4 34.3 M4	Grid 5 35.6 M4	Grid 6 33.3 M4
Grid 7 49.6 M4	Grid 8 50 M4	Grid 9 42.6 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 6:05:05 PM

HAC_CDMA AWS CH450_E_main-battery 2nd

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA AWS; Frequency: 1732.5 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 29.1 V/m

Probe Modulation Factor = 1.01

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 23.2 V/m; Power Drift = 0.057 dB

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

Cursor:

Total = 42 V/m

E Category: M4

Location: 5.5, 25, 368.7 mm

Peak E-field in V/m

Grid 1 27.5 M4	Grid 2 26 M4	Grid 3 23.8 M4
Grid 4 27.7 M4	Grid 5 29.1 M4	Grid 6 27.5 M4
Grid 7 41.4 M4	Grid 8 42 M4	Grid 9 35.5 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 5:35:20 PM

HAC_CDMA AWS CH450_E_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA AWS; Frequency: 1732.5 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 35.2 V/m

Probe Modulation Factor = 1.01

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 26.9 V/m; Power Drift = -0.047 dB

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

Cursor:

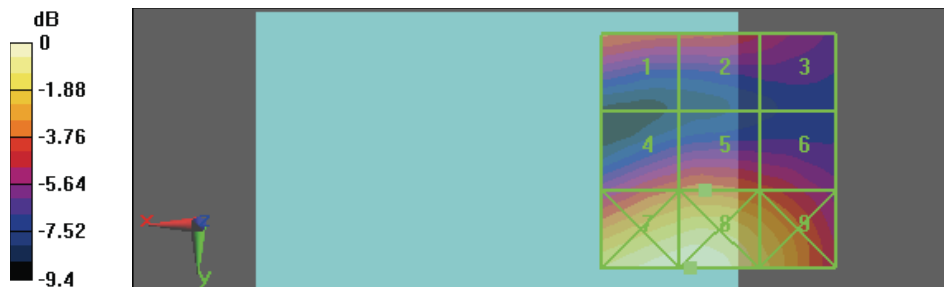
Total = 51.7 V/m

E Category: M4

Location: 6, 25, 368.7 mm

Peak E-field in V/m

Grid 1 34.1 M4	Grid 2 32.2 M4	Grid 3 29.4 M4
Grid 4 34.1 M4	Grid 5 35.2 M4	Grid 6 32.9 M4
Grid 7 51.4 M4	Grid 8 51.7 M4	Grid 9 43.6 M4



0 dB = 51.7V/m



Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 5:49:29 PM

HAC_CDMA AWS CH450_E_2nd-battery 2nd

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA AWS; Frequency: 1732.5 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 34.9 V/m

Probe Modulation Factor = 1.01

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 27 V/m; Power Drift = -0.061 dB

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

Cursor:

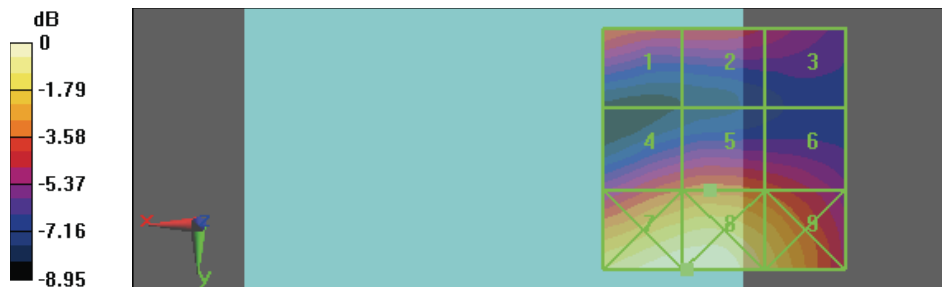
Total = 50.4 V/m

E Category: M4

Location: 7.5, 25, 368.7 mm

Peak E-field in V/m

Grid 1 33.8 M4	Grid 2 31.9 M4	Grid 3 28.9 M4
Grid 4 33.7 M4	Grid 5 34.9 M4	Grid 6 32.9 M4
Grid 7 50.4 M4	Grid 8 50.4 M4	Grid 9 43.2 M4



0 dB = 50.4V/m



Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/28/2011 11:30:03 AM

HAC_CDMA AWS CH875_E_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA AWS; Frequency: 1753.75 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 29.9 V/m

Probe Modulation Factor = 1.01

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 22.6 V/m; Power Drift = 0.038 dB

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

Cursor:

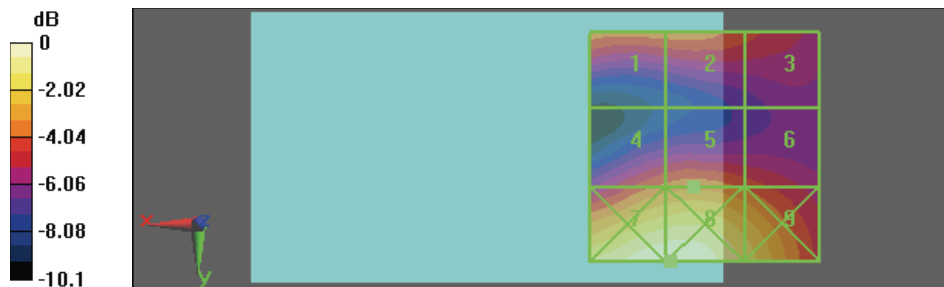
Total = 45.1 V/m

E Category: M4

Location: 7.5, 25, 368.7 mm

Peak E-field in V/m

Grid 1 29.7 M4	Grid 2 29.7 M4	Grid 3 27.3 M4
Grid 4 29.1 M4	Grid 5 29.9 M4	Grid 6 27.9 M4
Grid 7 45 M4	Grid 8 45.1 M4	Grid 9 38 M4



0 dB = 45.1V/m



Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 5:41:39 PM

HAC_CDMA AWS CH875_E_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA AWS; Frequency: 1753.75 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
 Phantom section: E Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: ER3DV6R - SN2256; ConvF(1, 1, 1); Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

E Scan - ER3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 31.6 V/m

Probe Modulation Factor = 1.01

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 24.1 V/m; Power Drift = -0.103 dB

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

Cursor:

Total = 46.6 V/m

E Category: M4

Location: 8, 25, 368.7 mm

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
30.3 M4	29.4 M4	27.4 M4
Grid 4	Grid 5	Grid 6
30.6 M4	31.6 M4	29.8 M4
Grid 7	Grid 8	Grid 9
46.6 M4	46.6 M4	39.7 M4



Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 8:59:02 PM

HAC_CDMA Cellular CH1013_H_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA Cellular ; Frequency: 824.7 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

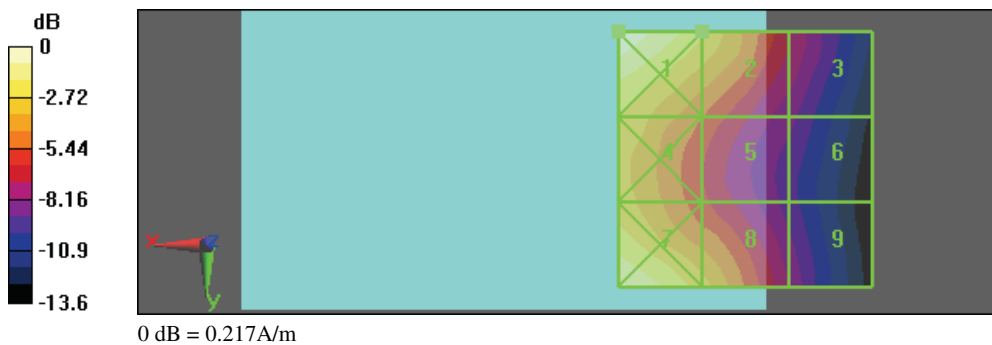
Maximum value of peak Total field = 0.162 A/m
 Probe Modulation Factor = 1
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.084 A/m; Power Drift = 0.191 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.217 A/m
 H Category: M4
 Location: 25, -25, 368.7 mm

Peak H-field in A/m

Grid 1 0.217 M4	Grid 2 0.162 M4	Grid 3 0.096 M4
Grid 4 0.158 M4	Grid 5 0.117 M4	Grid 6 0.080 M4
Grid 7 0.201 M4	Grid 8 0.150 M4	Grid 9 0.085 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 6:23:54 PM

HAC_CDMA Cellular CH1013_H_main-battery 2nd

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA Cellular ; Frequency: 824.7 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.131 A/m
 Probe Modulation Factor = 0.990
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.067 A/m; Power Drift = 0.044 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.180 A/m
 H Category: M4
 Location: 25, -25, 368.7 mm

Peak H-field in A/m

Grid 1 0.180 M4	Grid 2 0.131 M4	Grid 3 0.077 M4
Grid 4 0.125 M4	Grid 5 0.092 M4	Grid 6 0.064 M4
Grid 7 0.162 M4	Grid 8 0.117 M4	Grid 9 0.067 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 1:54:09 PM

HAC_CDMA Cellular CH1013_H_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA Cellular ; Frequency: 824.7 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.146 A/m
 Probe Modulation Factor = 1
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.077 A/m; Power Drift = 0.032 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.204 A/m
 H Category: M4
 Location: 25, -25, 368.7 mm

Peak H-field in A/m

Grid 1 0.204 M4	Grid 2 0.146 M4	Grid 3 0.088 M4
Grid 4 0.149 M4	Grid 5 0.108 M4	Grid 6 0.073 M4
Grid 7 0.201 M4	Grid 8 0.146 M4	Grid 9 0.081 M4



Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 2:15:50 PM

HAC_CDMA Cellular CH1013_H_2nd-battery 2nd

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA Cellular ; Frequency: 848.31 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

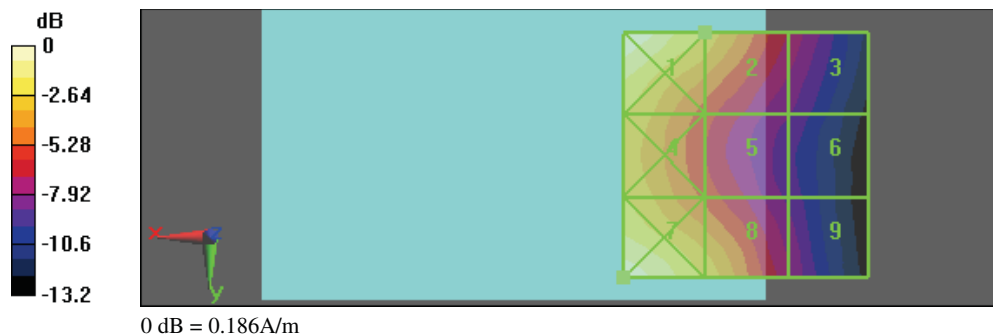
Maximum value of peak Total field = 0.135 A/m
 Probe Modulation Factor = 0.990
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.073 A/m; Power Drift = 0.00899 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.186 A/m
 H Category: M4
 Location: 25, 25, 368.7 mm

Peak H-field in A/m

Grid 1 0.183 M4	Grid 2 0.135 M4	Grid 3 0.083 M4
Grid 4 0.139 M4	Grid 5 0.099 M4	Grid 6 0.068 M4
Grid 7 0.186 M4	Grid 8 0.134 M4	Grid 9 0.076 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 9:07:09 PM

HAC_CDMA Cellular CH384_H_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA Cellular ; Frequency: 824.7 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

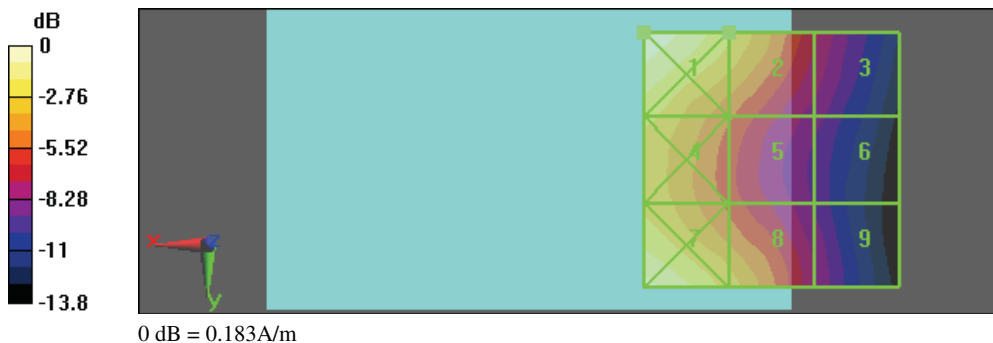
Maximum value of peak Total field = 0.136 A/m
 Probe Modulation Factor = 0.990
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.073 A/m; Power Drift = -0.00534 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.183 A/m
 H Category: M4
 Location: 25, -25, 368.7 mm

Peak H-field in A/m

Grid 1 0.183 M4	Grid 2 0.136 M4	Grid 3 0.081 M4
Grid 4 0.139 M4	Grid 5 0.100 M4	Grid 6 0.067 M4
Grid 7 0.173 M4	Grid 8 0.127 M4	Grid 9 0.072 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 1:59:45 PM

HAC_CDMA Cellular CH384_H_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA Cellular ; Frequency: 836.52 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

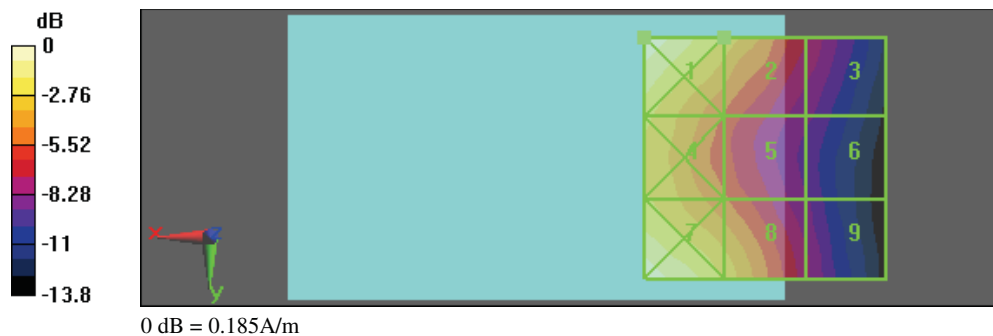
Maximum value of peak Total field = 0.133 A/m
 Probe Modulation Factor = 0.990
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.071 A/m; Power Drift = 0.047 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.185 A/m
 H Category: M4
 Location: 25, -25, 368.7 mm

Peak H-field in A/m

Grid 1 0.185 M4	Grid 2 0.133 M4	Grid 3 0.080 M4
Grid 4 0.139 M4	Grid 5 0.100 M4	Grid 6 0.066 M4
Grid 7 0.184 M4	Grid 8 0.132 M4	Grid 9 0.074 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 9:17:11 PM

HAC_CDMA Cellular CH777_H_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA Cellular ; Frequency: 824.7 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.144 A/m
 Probe Modulation Factor = 1
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.077 A/m; Power Drift = -0.037 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.191 A/m
 H Category: M4
 Location: 25, -25, 368.7 mm

Peak H-field in A/m

Grid 1 0.191 M4	Grid 2 0.144 M4	Grid 3 0.084 M4
Grid 4 0.150 M4	Grid 5 0.106 M4	Grid 6 0.071 M4
Grid 7 0.178 M4	Grid 8 0.133 M4	Grid 9 0.075 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 2:05:17 PM

HAC_CDMA Cellular CH777_H_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA Cellular ; Frequency: 848.31 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

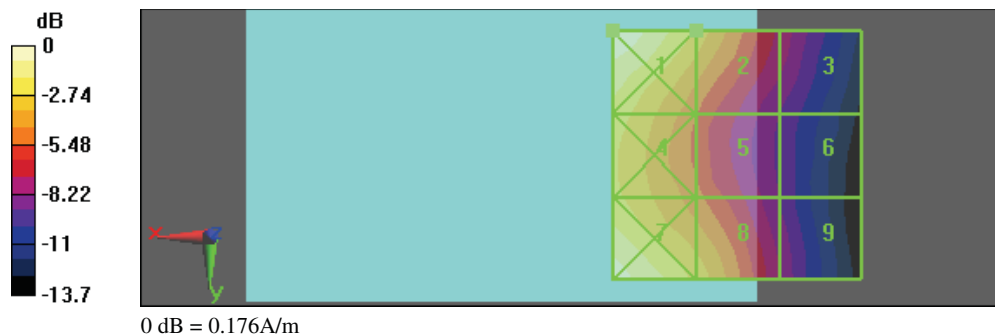
Maximum value of peak Total field = 0.127 A/m
 Probe Modulation Factor = 0.990
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.072 A/m; Power Drift = -0.059 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.176 A/m
 H Category: M4
 Location: 25, -25, 368.7 mm

Peak H-field in A/m

Grid 1 0.176 M4	Grid 2 0.127 M4	Grid 3 0.074 M4
Grid 4 0.137 M4	Grid 5 0.098 M4	Grid 6 0.062 M4
Grid 7 0.171 M4	Grid 8 0.125 M4	Grid 9 0.068 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 9:26:29 PM

HAC_CDMA PCS CH25_H_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA PCS ; Frequency: 1851.25 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

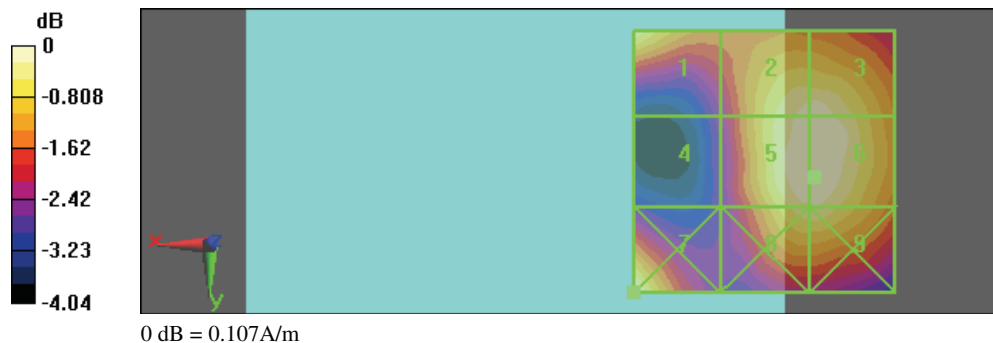
Maximum value of peak Total field = 0.107 A/m
 Probe Modulation Factor = 0.970
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.119 A/m; Power Drift = -0.124 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.107 A/m
 H Category: M4
 Location: 25, 25, 368.7 mm

Peak H-field in A/m

Grid 1 0.104 M4	Grid 2 0.105 M4	Grid 3 0.106 M4
Grid 4 0.080 M4	Grid 5 0.107 M4	Grid 6 0.107 M4
Grid 7 0.107 M4	Grid 8 0.103 M4	Grid 9 0.104 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 2:28:01 PM

HAC_CDMA PCS CH25_H_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA PCS ; Frequency: 1851.25 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.112 A/m

Probe Modulation Factor = 0.970

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 0.123 A/m; Power Drift = -0.069 dB

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

Cursor:

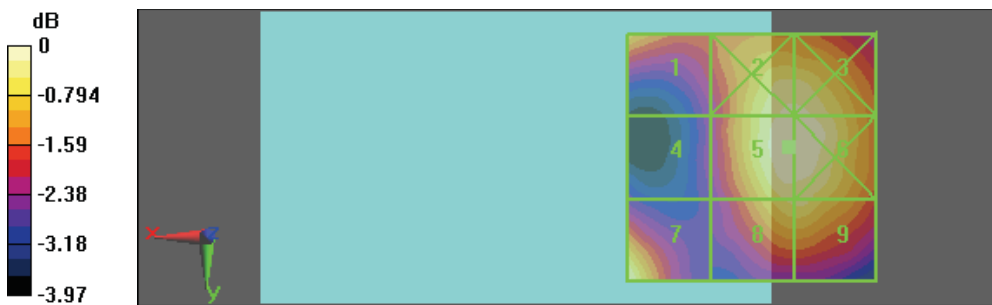
Total = 0.112 A/m

H Category: M4

Location: -7.5, -2, 368.7 mm

Peak H-field in A/m

Grid 1 0.102 M4	Grid 2 0.110 M4	Grid 3 0.110 M4
Grid 4 0.085 M4	Grid 5 0.112 M4	Grid 6 0.112 M4
Grid 7 0.111 M4	Grid 8 0.107 M4	Grid 9 0.107 M4



0 dB = 0.112A/m



Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 9:34:26 PM

HAC_CDMA PCS CH600_H_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA PCS ; Frequency: 1880 MHz;Duty Cycle: 1:1

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

Phantom section: H Device Section

Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.113 A/m

Probe Modulation Factor = 0.970

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 0.121 A/m; Power Drift = -0.080 dB

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

Cursor:

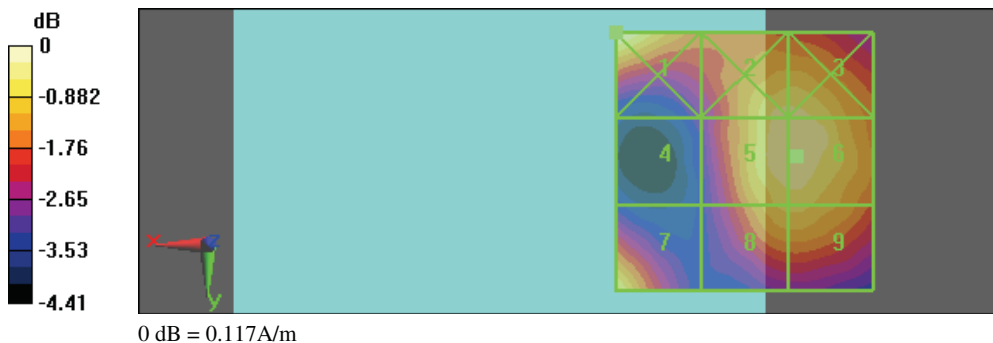
Total = 0.117 A/m

H Category: M4

Location: 25, -25, 368.7 mm

Peak H-field in A/m

Grid 1 0.117 M4	Grid 2 0.111 M4	Grid 3 0.111 M4
Grid 4 0.084 M4	Grid 5 0.113 M4	Grid 6 0.113 M4
Grid 7 0.112 M4	Grid 8 0.107 M4	Grid 9 0.107 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 6:32:28 PM

HAC_CDMA PCS CH600_H_main-battery 2nd

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA PCS ; Frequency: 1880 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.098 A/m
 Probe Modulation Factor = 0.970
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.102 A/m; Power Drift = -0.065 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.101 A/m
 H Category: M4
 Location: 25, -25, 368.7 mm

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
0.101 M4	0.096 M4	0.096 M4
Grid 4	Grid 5	Grid 6
0.072 M4	0.096 M4	0.096 M4
Grid 7	Grid 8	Grid 9
0.098 M4	0.090 M4	0.091 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 2:33:54 PM

HAC_CDMA PCS CH600_H_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA PCS ; Frequency: 1880 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

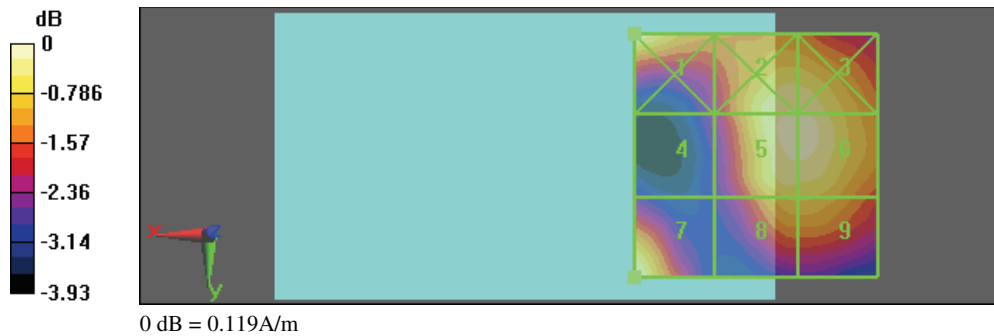
Maximum value of peak Total field = 0.119 A/m
 Probe Modulation Factor = 0.970
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.129 A/m; Power Drift = -0.088 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.119 A/m
 H Category: M4
 Location: 25, -25, 368.7 mm

Peak H-field in A/m

Grid 1 0.119 M4	Grid 2 0.116 M4	Grid 3 0.116 M4
Grid 4 0.091 M4	Grid 5 0.118 M4	Grid 6 0.118 M4
Grid 7 0.119 M4	Grid 8 0.110 M4	Grid 9 0.110 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 2:47:43 PM

HAC_CDMA PCS CH600_H_2nd-battery 2nd

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA PCS ; Frequency: 1880 MHz;Duty Cycle: 1:1

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

Phantom section: H Device Section

Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.116 A/m

Probe Modulation Factor = 0.970

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 0.126 A/m; Power Drift = -0.022 dB

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

Cursor:

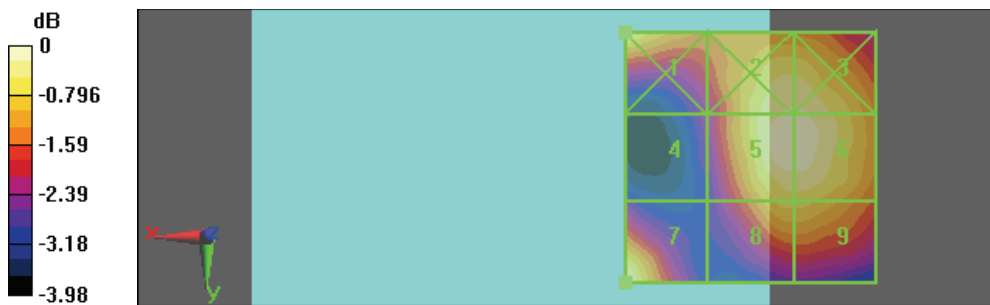
Total = 0.116 A/m

H Category: M4

Location: 25, -25, 368.7 mm

Peak H-field in A/m

Grid 1 0.116 M4	Grid 2 0.113 M4	Grid 3 0.113 M4
Grid 4 0.089 M4	Grid 5 0.115 M4	Grid 6 0.115 M4
Grid 7 0.116 M4	Grid 8 0.108 M4	Grid 9 0.108 M4



0 dB = 0.116A/m



Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 9:42:11 PM

HAC_CDMA PCS CH1175_H_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA PCS ; Frequency: 1908.75 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

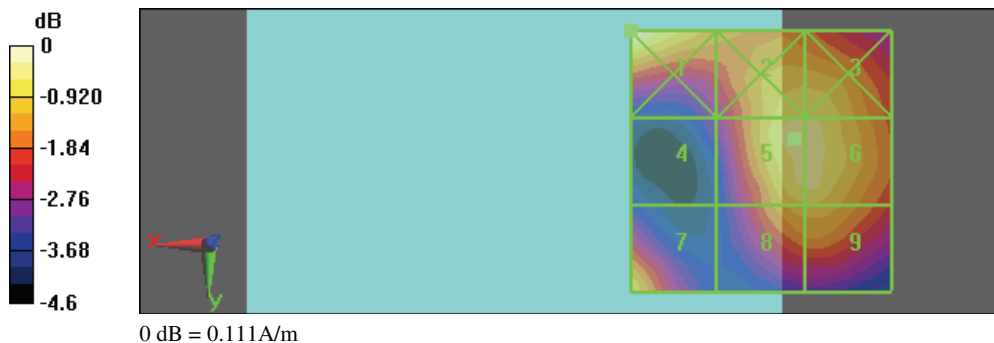
Maximum value of peak Total field = 0.106 A/m
 Probe Modulation Factor = 0.970
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.112 A/m; Power Drift = 0.056 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.111 A/m
 H Category: M4
 Location: 25, -25, 368.7 mm

Peak H-field in A/m

Grid 1 0.111 M4	Grid 2 0.104 M4	Grid 3 0.104 M4
Grid 4 0.080 M4	Grid 5 0.106 M4	Grid 6 0.105 M4
Grid 7 0.102 M4	Grid 8 0.099 M4	Grid 9 0.099 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 2:39:58 PM

HAC_CDMA PCS CH1175_H_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA PCS ; Frequency: 1908.75 MHz;Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125;SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

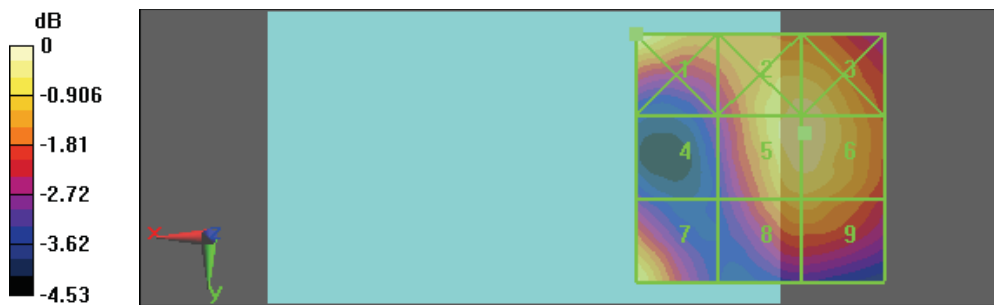
Maximum value of peak Total field = 0.108 A/m
 Probe Modulation Factor = 0.970
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.116 A/m; Power Drift = 0.00215 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.112 A/m
 H Category: M4
 Location: 25, -25, 368.7 mm

Peak H-field in A/m

Grid 1 0.112 M4	Grid 2 0.107 M4	Grid 3 0.107 M4
Grid 4 0.082 M4	Grid 5 0.108 M4	Grid 6 0.108 M4
Grid 7 0.107 M4	Grid 8 0.100 M4	Grid 9 0.100 M4



0 dB = 0.112A/m



Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 7:45:12 PM

HAC_CDMA AWS CH25_H_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA AWS; Frequency: 1711.25 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.067 A/m
 Probe Modulation Factor = 0.970
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.086 A/m; Power Drift = -0.124 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.072 A/m
 H Category: M4
 Location: 25, 25, 368.7 mm

Peak H-field in A/m

Grid 1 0.069 M4	Grid 2 0.066 M4	Grid 3 0.065 M4
Grid 4 0.062 M4	Grid 5 0.067 M4	Grid 6 0.066 M4
Grid 7 0.072 M4	Grid 8 0.062 M4	Grid 9 0.061 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 2:59:47 PM

HAC_CDMA AWS CH25_H_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA AWS; Frequency: 1711.25 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

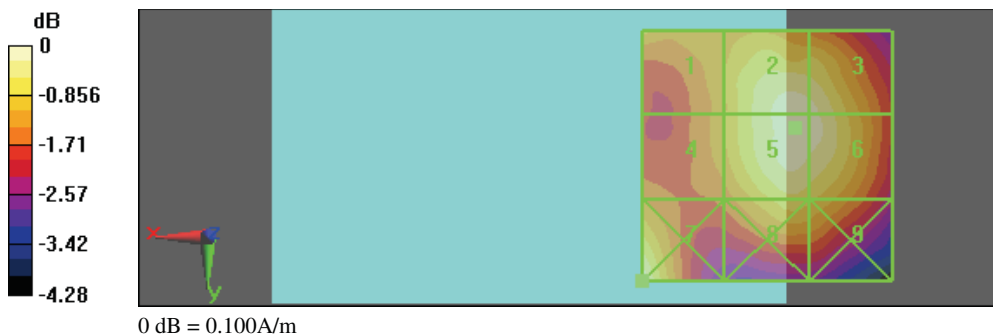
Maximum value of peak Total field = 0.099 A/m
 Probe Modulation Factor = 0.970
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.115 A/m; Power Drift = 0.043 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.100 A/m
 H Category: M4
 Location: 25, 25, 368.7 mm

Peak H-field in A/m

Grid 1 0.089 M4	Grid 2 0.099 M4	Grid 3 0.098 M4
Grid 4 0.088 M4	Grid 5 0.099 M4	Grid 6 0.099 M4
Grid 7 0.100 M4	Grid 8 0.093 M4	Grid 9 0.092 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 6/16/2011 10:01:14 PM

HAC_CDMA AWS CH450_H_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA AWS; Frequency: 1732.5 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

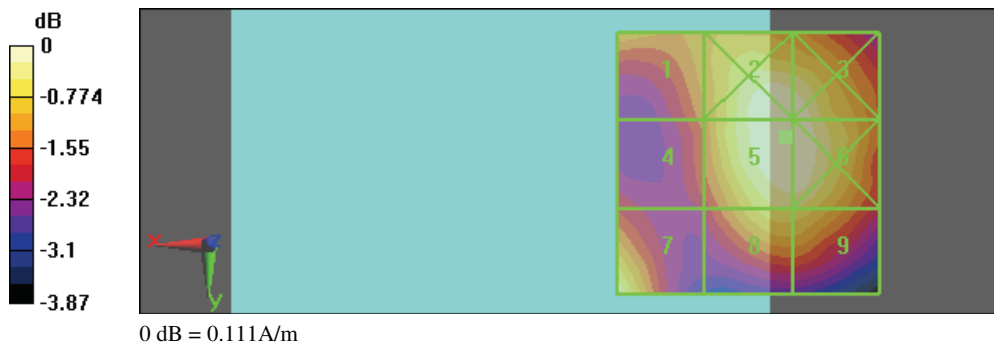
Maximum value of peak Total field = 0.111 A/m
 Probe Modulation Factor = 0.970
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.129 A/m; Power Drift = -0.087 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.111 A/m
 H Category: M4
 Location: -7, -5, 368.7 mm

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
0.100 M4	0.111 M4	0.111 M4
Grid 4	Grid 5	Grid 6
0.095 M4	0.111 M4	0.111 M4
Grid 7	Grid 8	Grid 9
0.108 M4	0.105 M4	0.105 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 6:00:32 PM

HAC_CDMA AWS CH450_H_main-battery 2nd

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA AWS; Frequency: 1732.5 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS5 (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.063 A/m
 Probe Modulation Factor = 0.970
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.073 A/m; Power Drift = 0.015 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.063 A/m
 H Category: M4
 Location: -5, -1, 368.7 mm

Peak H-field in A/m

Grid 1 0.056 M4	Grid 2 0.063 M4	Grid 3 0.062 M4
Grid 4 0.055 M4	Grid 5 0.063 M4	Grid 6 0.062 M4
Grid 7 0.062 M4	Grid 8 0.058 M4	Grid 9 0.058 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 3:05:56 PM

HAC_CDMA AWS CH450_H_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA AWS; Frequency: 1732.5 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

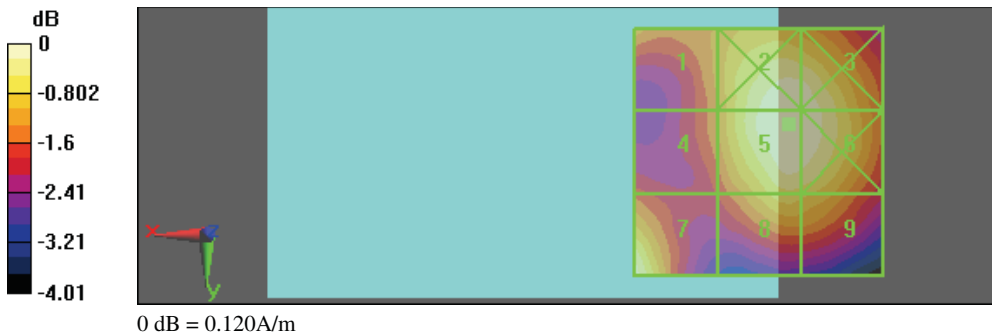
Maximum value of peak Total field = 0.120 A/m
 Probe Modulation Factor = 0.970
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.140 A/m; Power Drift = -0.017 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.120 A/m
 H Category: M4
 Location: -6, -5.5, 368.7 mm

Peak H-field in A/m

Grid 1 0.106 M4	Grid 2 0.120 M4	Grid 3 0.119 M4
Grid 4 0.103 M4	Grid 5 0.120 M4	Grid 6 0.120 M4
Grid 7 0.119 M4	Grid 8 0.112 M4	Grid 9 0.111 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 3:35:32 PM

HAC_CDMA AWS CH450_H_2nd-battery 2nd

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA AWS; Frequency: 1732.5 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS5 (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.119 A/m

Probe Modulation Factor = 0.970

Device Reference Point: 0, 0, 353.7 mm

Reference Value = 0.136 A/m; Power Drift = 0.00783 dB

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

Cursor:

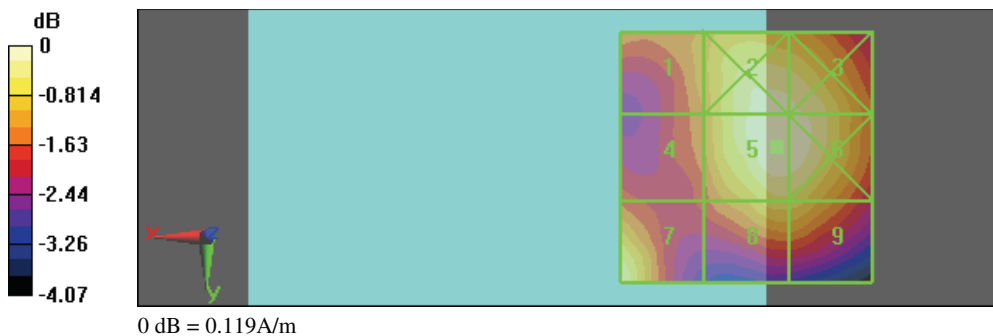
Total = 0.119 A/m

H Category: M4

Location: -6, -2, 368.7 mm

Peak H-field in A/m

Grid 1 0.104 M4	Grid 2 0.118 M4	Grid 3 0.117 M4
Grid 4 0.102 M4	Grid 5 0.119 M4	Grid 6 0.119 M4
Grid 7 0.117 M4	Grid 8 0.111 M4	Grid 9 0.111 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 6:52:43 PM

HAC_CDMA AWS CH875_H_main-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA AWS; Frequency: 1753.75 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

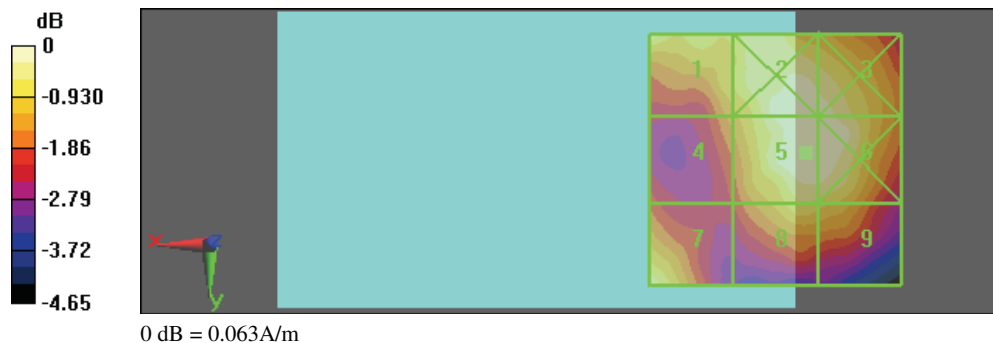
Maximum value of peak Total field = 0.063 A/m
 Probe Modulation Factor = 0.970
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.074 A/m; Power Drift = -0.166 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.063 A/m
 H Category: M4
 Location: -6, -1.5, 368.7 mm

Peak H-field in A/m

Grid 1	Grid 2	Grid 3
0.062 M4	0.062 M4	0.062 M4
Grid 4	Grid 5	Grid 6
0.054 M4	0.063 M4	0.063 M4
Grid 7	Grid 8	Grid 9
0.061 M4	0.059 M4	0.058 M4





Test Laboratory: A Test Lab Techno Corp.

Date/Time: 7/1/2011 3:19:41 PM

HAC_CDMA AWS CH875_H_2nd-battery main

DUT: PG76210; Type: Smartphone; FCC ID: NM8PG76210

Communication System: CDMA AWS; Frequency: 1753.75 MHz; Duty Cycle: 1:1
 Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1$ kg/m³
 Phantom section: H Device Section
 Measurement Standard: DASYS (IEEE/IEC)

DASY5 Configuration:

- Probe: H3DV6 - SN6076; ; Calibrated: 8/23/2010
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn779; Calibrated: 1/31/2011
- Phantom: HAC Test Arch 4.6; Type: SD HAC P01 BA; Serial: 1038
- Measurement SW: DASYS, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

H Scan - H3DV6 - measurement distance from the probe sensor center to the Device = 15mm/Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 0.109 A/m
 Probe Modulation Factor = 0.970
 Device Reference Point: 0, 0, 353.7 mm
 Reference Value = 0.123 A/m; Power Drift = -0.030 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Cursor:

Total = 0.109 A/m
 H Category: M4
 Location: -6, -1, 368.7 mm

Peak H-field in A/m

Grid 1 0.094 M4	Grid 2 0.108 M4	Grid 3 0.107 M4
Grid 4 0.090 M4	Grid 5 0.109 M4	Grid 6 0.107 M4
Grid 7 0.105 M4	Grid 8 0.100 M4	Grid 9 0.100 M4





Appendix D - Calibration

All of the instruments Calibration information are listed below.

- Dipole _ CD835V3 SN:1017 Calibration No.CD835V3-1017_Jul10
- Dipole _ CD1880V3 SN:1036 Calibration No.CD1880V3-1036_Jul10
- Probe _ ER3DV6R SN: 2256 Calibration No. ER3-2256_Aug10
- Probe _ H3DV6 SN: 6076 Calibration No. H3-6076_ Aug10
- DAE _ DAE4 SN:779 Calibration No.DAE4-779_ Jan11



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Accreditation No.: **SCS 108**

Client **ATL (Auden)**

Certificate No: **CD835V3-1017_Jul10**

CALIBRATION CERTIFICATE

Object **CD835V3 - SN: 1017**

Calibration procedure(s) **QA CAL-20.v5
Calibration procedure for dipoles in air**

Calibration date: **July 13, 2010**

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 (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Probe ER3DV6	SN: 2336	30-Dec-09 (No. ER3-2336_Dec09)	Dec-10
Probe H3DV6	SN: 6065	30-Dec-09 (No. H3-6065_Dec09)	Dec-10
DAE4	SN: 781	22-Jan-10 (No. DAE4-781_Jan10)	Jan-11
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter Agilent 4419B	SN: GB42420191	09-Oct-09 (in house check Oct-09)	In house check: Oct-10
Power sensor HP 8482H	SN: 3318A09450	09-Oct-09 (in house check Oct-09)	In house check: Oct-10
Power sensor HP 8482A	SN: US37295597	09-Oct-09 (in house check Oct-09)	In house check: Oct-10
Network Analyzer HP 8753E	US37380585	18-Oct-01 (in house check Oct-09)	In house check: Oct-10
RF generator E4433B	MY 4100675	03-Nov-04 (in house check Oct-09)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Mike Meili	Laboratory Technician	
Approved by:	Fin Bornholt	Technical Director	

Issued: July 15, 2010

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

Certificate No: CD835V3-1017_Jul10

Page 1 of 6

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Accreditation No.: **SCS 108**

References

- [1] ANSI-C63.19-2006
American National Standard for Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids.
- [2] ANSI-C63.19-2007
American National Standard for Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids.

Methods Applied and Interpretation of Parameters:

- *Coordinate System:* y-axis is in the direction of the dipole arms. z-axis is from the basis of the antenna (mounted on the table) towards its feed point between the two dipole arms. x-axis is normal to the other axes. In coincidence with the standards [1, 2], the measurement planes (probe sensor center) are selected to be at a distance of 10 mm above the top edge of the dipole arms.
- *Measurement Conditions:* Further details are available from the hardcopies at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated. The forward power to the dipole connector is set with a calibrated power meter connected and monitored with an auxiliary power meter connected to a directional coupler. While the dipole under test is connected, the forward power is adjusted to the same level.
- *Antenna Positioning:* The dipole is mounted on a HAC Test Arch phantom using the matching dipole positioner with the arms horizontal and the feeding cable coming from the floor. The measurements are performed in a shielded room with absorbers around the setup to reduce the reflections. It is verified before the mounting of the dipole under the Test Arch phantom, that its arms are perfectly in a line. It is installed on the HAC dipole positioner with its arms parallel below the dielectric reference wire and able to move elastically in vertical direction without changing its relative position to the top center of the Test Arch phantom. The vertical distance to the probe is adjusted after dipole mounting with a DASY5 Surface Check job. Before the measurement, the distance between phantom surface and probe tip is verified. The proper measurement distance is selected by choosing the matching section of the HAC Test Arch phantom with the proper device reference point (upper surface of the dipole) and the matching grid reference point (tip of the probe) considering the probe sensor offset. The vertical distance to the probe is essential for the accuracy.
- *Feed Point Impedance and Return Loss:* These parameters are measured using a HP 8753E Vector Network Analyzer. The impedance is specified at the SMA connector of the dipole. The influence of reflections was eliminated by applying the averaging function while moving the dipole in the air, at least 70cm away from any obstacles.
- *E-field distribution:* E field is measured in the x-y-plane with an isotropic ER3D-field probe with 100 mW forward power to the antenna feed point. In accordance with [1, 2], the scan area is 20mm wide, its length exceeds the dipole arm length (180 or 90mm). The sensor center is 10 mm (in z) above the top of the dipole arms. Two 3D maxima are available near the end of the dipole arms. Assuming the dipole arms are perfectly in one line, the average of these two maxima (in subgrid 2 and subgrid 8) is determined to compensate for any non-parallelity to the measurement plane as well as the sensor displacement. The E-field value stated as calibration value represents the maximum of the interpolated 3D-E-field, 10mm above the dipole surface.
- *H-field distribution:* H-field is measured with an isotropic H-field probe with 100mW forward power to the antenna feed point, in the x-y-plane. The scan area and sensor distance is equivalent to the E-field scan. The maximum of the field is available at the center (subgrid 5) above the feed point. The H-field value stated as calibration value represents the maximum of the interpolated H-field, 10mm above the dipole surface at the feed point.

1 Measurement Conditions

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

DASY Version	DASY5	V52.2 B0
DASY PP Version	SEMCAD X	V14.2 B2
Phantom	HAC Test Arch	SD HAC P01 BA, #1070
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	< 0.05 dB	

2 Maximum Field values

H-field 10 mm above dipole surface	condition	interpolated maximum
Maximum measured	100 mW forward power	0.457 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	168.6 V/m
Maximum measured above low end	100 mW forward power	155.7 V/m
Averaged maximum above arm	100 mW forward power	162.2 V/m

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

3 Appendix

3.1 Antenna Parameters

Frequency	Return Loss	Impedance
800 MHz	16.2 dB	(42.3 – j12.1) Ohm
835 MHz	28.6 dB	(50.2 + j3.7) Ohm
900 MHz	17.7 dB	(56.1 – j12.6) Ohm
950 MHz	20.8 dB	(45.5 + j7.5) Ohm
960 MHz	15.5 dB	(51.3 + j17.2) 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.

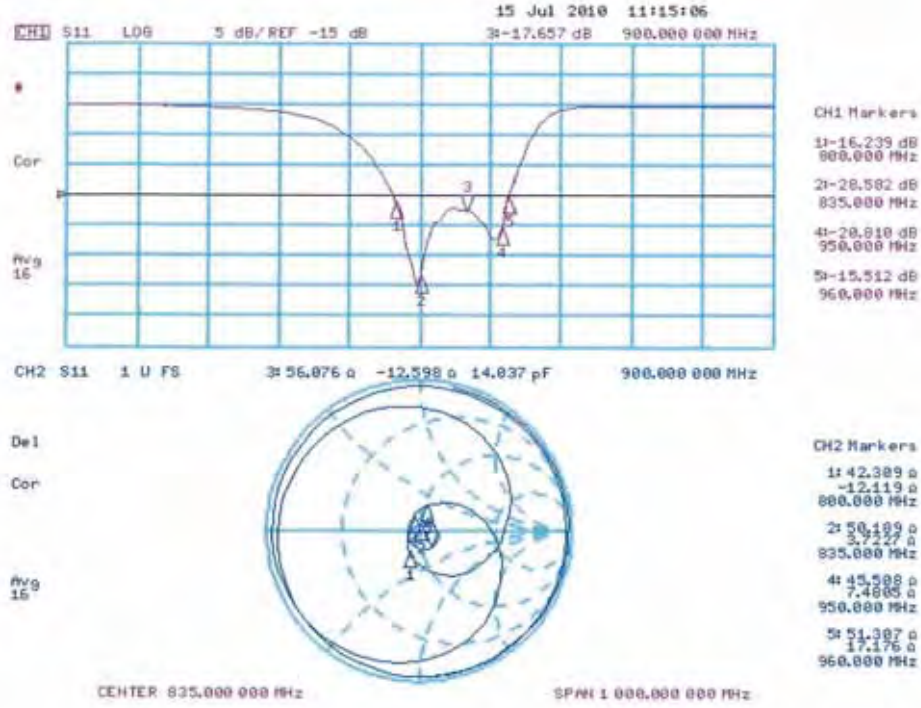
Do not apply force to dipole arms, as they are liable to bend. The soldered connections near the feedpoint may be damaged. After excessive mechanical stress or overheating, check the impedance characteristics to ensure that the internal matching network is not affected.

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



3.3 Measurement Sheets

3.3.1 Return Loss and Smith Chart



3.3.2 DASY4 H-field Result

Date/Time: 13.07.2010 18:17:07

Test Laboratory: SPEAG Lab2

DUT: HAC-Dipole 835 MHz; Type: CD835V3; Serial: 1017

Communication System: CW; Communication System Band: CD835 (835.0 MHz); Frequency: 835 MHz; Communication System PAR: 0 dB

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

Phantom section: RF Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: H3DV6 - SN6065; : Calibrated: 30.12.2009
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn781; Calibrated: 22.01.2010
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA; Serial: 1070
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685)

Dipole H-Field measurement @ 835MHz/H Scan - measurement distance from the probe sensor center to CD835 Dipole = 10mm/Hearing Aid Compatibility Test (41x361x1):

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

Maximum value of peak Total field = 0.457 A/m

Probe Modulation Factor = 1

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.486 A/m; Power Drift = -9.15e-005 dB

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

Peak H-field in A/m

Grid 1 0.381 M4	Grid 2 0.397 M4	Grid 3 0.373 M4
Grid 4 0.431 M4	Grid 5 0.457 M4	Grid 6 0.435 M4
Grid 7 0.377 M4	Grid 8 0.403 M4	Grid 9 0.387 M4



0 dB = 0.457A/m

3.3.3 DASY4 E-field Result

Date/Time: 13.07.2010 12:42:14

Test Laboratory: SPEAG Lab2

DUT: HAC-Dipole 835 MHz; Type: CD835V3; Serial: 1017

Communication System: CW; Communication System Band: CD835 (835.0 MHz); Frequency: 835 MHz; Communication System PAR: 0 dB

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

Phantom section: RF Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ER3DV6 - SN2336; ConvF(1, 1, 1); Calibrated: 30.12.2009
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn781; Calibrated: 22.01.2010
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA; Serial: 1070
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685)

Dipole E-Field measurement @ 835MHz/E Scan - measurement distance from the probe sensor center to CD835 Dipole = 10mm/Hearing Aid Compatibility Test

(41x361x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 168.6 V/m

Probe Modulation Factor = 1

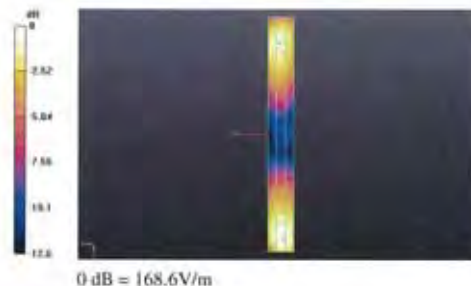
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 106.1 V/m; Power Drift = -0.050 dB

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

Peak E-field in V/m

Grid 1 154.5 M4	Grid 2 155.7 M4	Grid 3 147.4 M4
Grid 4 87.8 M4	Grid 5 89.1 M4	Grid 6 85.4 M4
Grid 7 157.6 M4	Grid 8 168.6 M4	Grid 9 166.9 M4





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Accreditation No.: **SCS 108**

Client **ATL (Auden)**

Certificate No: **CD1880V3-1036_Jul10**

CALIBRATION CERTIFICATE

Object **CD1880V3 - SN: 1036**

Calibration procedure(s) **QA CAL-20.v5
Calibration procedure for dipoles in air**

Calibration date: **July 13, 2010**

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 (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Probe ER3DV6	SN: 2336	30-Dec-09 (No. ER3-2336_Dec09)	Dec-10
Probe H3DV6	SN: 6065	30-Dec-09 (No. H3-6065_Dec09)	Dec-10
DAE4	SN: 781	22-Jan-10 (No. DAE4-781_Jan10)	Jan-11

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter Agilent 4419B	SN: GB42420191	09-Oct-09 (in house check Oct-09)	In house check: Oct-10
Power sensor HP 8482H	SN: 3318A09450	09-Oct-09 (in house check Oct-09)	In house check: Oct-10
Power sensor HP 8482A	SN: US37295597	09-Oct-09 (in house check Oct-09)	In house check: Oct-10
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-09)	In house check: Oct-10
RF generator E4433B	MY 41000675	03-Nov-04 (in house check Oct-09)	In house check: Oct-11

Calibrated by: **Name: Mike Meili, Function: Laboratory Technician, Signature: [Handwritten Signature]**

Approved by: **Name: Fin Bomholt, Function: Technical Director, Signature: [Handwritten Signature]**

Issued: July 15, 2010

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Accreditation No.: **SCS 108**

References

- [1] ANSI-C63.19-2007
American National Standard for Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids.

Methods Applied and Interpretation of Parameters:

- **Coordinate System:** y-axis is in the direction of the dipole arms. z-axis is from the basis of the antenna (mounted on the table) towards its feed point between the two dipole arms. x-axis is normal to the other axes. In coincidence with the standards [1], the measurement planes (probe sensor center) are selected to be at a distance of 10 mm above the top edge of the dipole arms.
- **Measurement Conditions:** Further details are available from the hardcopies at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated. The forward power to the dipole connector is set with a calibrated power meter connected and monitored with an auxiliary power meter connected to a directional coupler. While the dipole under test is connected, the forward power is adjusted to the same level.
- **Antenna Positioning:** The dipole is mounted on a HAC Test Arch phantom using the matching dipole positioner with the arms horizontal and the feeding cable coming from the floor. The measurements are performed in a shielded room with absorbers around the setup to reduce the reflections. It is verified before the mounting of the dipole under the Test Arch phantom, that its arms are perfectly in a line. It is installed on the HAC dipole reference wire with its arms parallel below the dielectric reference wire and able to move elastically in vertical direction without changing its relative position to the top center of the Test Arch phantom. The vertical distance to the probe is adjusted after dipole mounting with a DASY5 Surface Check job. Before the measurement, the distance between phantom surface and probe tip is verified. The proper measurement distance is selected by choosing the matching section of the HAC Test Arch phantom with the proper device reference point (upper surface of the dipole) and the matching grid reference point (tip of the probe) considering the probe sensor offset. The vertical distance to the probe is essential for the accuracy.
- **Feed Point Impedance and Return Loss:** These parameters are measured using a HP 8753E Vector Network Analyzer. The impedance is specified at the SMA connector of the dipole. The influence of reflections was eliminated by applying the averaging function while moving the dipole in the air, at least 70cm away from any obstacles.
- **E- field distribution:** E field is measured in the x-y-plane with an isotropic ER3D-field probe with 100 mW forward power to the antenna feed point. In accordance with [1], the scan area is 20mm wide, its length exceeds the dipole arm length (180 or 90mm). The sensor center is 10 mm (in z) above the top of the dipole arms. Two 3D maxima are available near the end of the dipole arms. Assuming the dipole arms are perfectly in one line, the average of these two maxima (in subgrid 2 and subgrid 8) is determined to compensate for any non-parallelity to the measurement plane as well as the sensor displacement. The E-field value stated as calibration value represents the maximum of the interpolated 3D-E-field, 10mm above the dipole surface.
- **H-field distribution:** H-field is measured with an isotropic H-field probe with 100mW forward power to the antenna feed point, in the x-y-plane. The scan area and sensor distance is equivalent to the E-field scan. The maximum of the field is available at the center (subgrid 5) above the feed point. The H-field value stated as calibration value represents the maximum of the interpolated H-field, 10mm above the dipole surface at the feed point.

1. Measurement Conditions

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

DASY Version	DASY5	V52.2 B0
DASY PP Version	SEMCAD X	V14.2 B2
Phantom	HAC Test Arch	SD HAC P01 BA, #1070
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	0.468 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	139.2 V/m
Maximum measured above low end	100 mW forward power	136.7 V/m
Averaged maximum above arm	100 mW forward power	138.0 V/m

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

3. Appendix

3.1 Antenna Parameters

Frequency	Return Loss	Impedance
1710 MHz	19.6 dB	(50.2 + j10.6) Ohm
1880 MHz	22.4 dB	(52.1 + j7.5) Ohm
1900 MHz	22.8 dB	(54.1 + j6.3) Ohm
1950 MHz	31.1 dB	(52.7 - j1.0) Ohm
2000 MHz	20.2 dB	(41.3 + j2.0) 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.

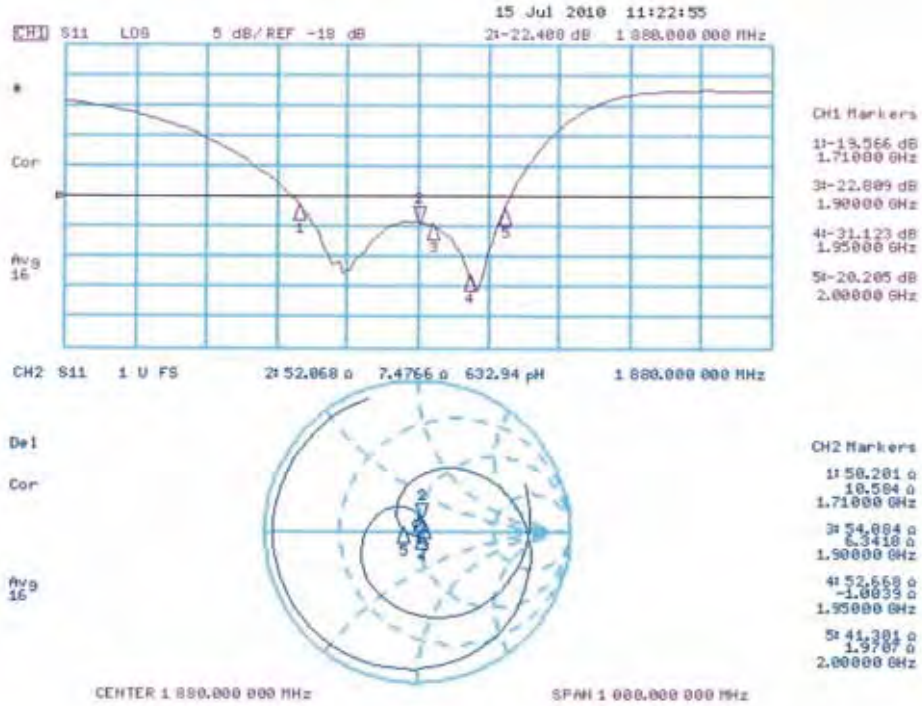
Do not apply force to dipole arms, as they are liable to bend. The soldered connections near the feedpoint may be damaged. After excessive mechanical stress or overheating, check the impedance characteristics to ensure that the internal matching network is not affected.

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



3.3 Measurement Sheets

3.3.1 Return Loss and Smith Chart



3.3.2 DASY4 H-Field Result

Date/Time: 13.07.2010 17:49:33

Test Laboratory: SPEAG Lab2

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: 1036

Communication System: CW; Communication System Band: CD1880 (1880.0 MHz); Frequency: 1880 MHz;

Communication System PAR: 0 dB

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

Phantom section: RF Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: H3DV6 - SN6065; ; Calibrated: 30.12.2009
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn781; Calibrated: 22.01.2010
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA; Serial: 1070
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685)

Dipole H-Field measurement @ 1880MHz/H Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm/Hearing Aid Compatibility Test (41x181x1):

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

Maximum value of peak Total field = 0.468 A/m

Probe Modulation Factor = 1

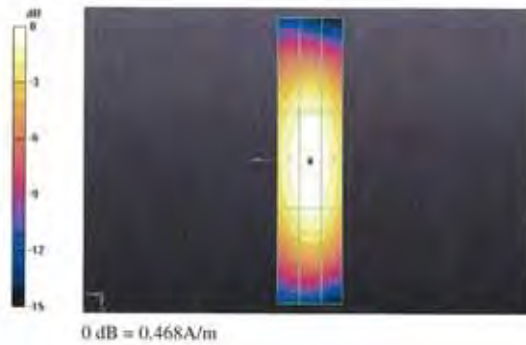
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.496 A/m; Power Drift = -0.00099 dB

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

Peak H-field in A/m

Grid 1 0.404 M2	Grid 2 0.422 M2	Grid 3 0.400 M2
Grid 4 0.447 M2	Grid 5 0.468 M2	Grid 6 0.446 M2
Grid 7 0.408 M2	Grid 8 0.433 M2	Grid 9 0.411 M2



3.3.3 DASY4 E-Field Result

Date/Time: 13.07.2010 14:56:29

Test Laboratory: SPEAG Lab2

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: 1036

Communication System: CW; Communication System Band: CD1880 (1880.0 MHz); Frequency: 1880 MHz;

Communication System PAR: 0 dB

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

Phantom section: RF Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ER3DV6 - SN2336; ConvF(1, 1, 1); Calibrated: 30.12.2009
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn781; Calibrated: 22.01.2010
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA; Serial: 1070
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685)

Dipole E-Field measurement @ 1880MHz/E Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm/Hearing Aid Compatibility Test (41x181x1):

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

Maximum value of peak Total field = 139.2 V/m

Probe Modulation Factor = 1

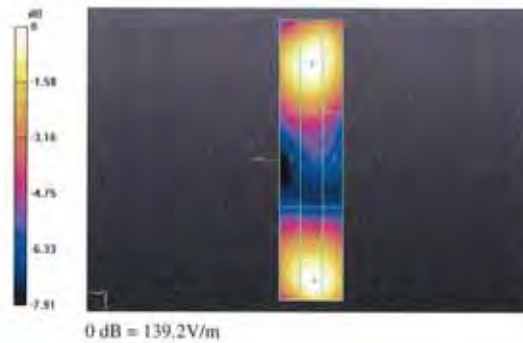
Device Reference Point: 0, 0, -6.3 mm

Reference Value = 156.8 V/m; Power Drift = 0.043 dB

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

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
132.8	136.7	133.9
M2	M2	M2
Grid 4	Grid 5	Grid 6
92.6	95.1	91.8
M3	M3	M3
Grid 7	Grid 8	Grid 9
130.6	139.2	137.4
M2	M2	M2



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Accreditation No.: **SCS 108**

Client **ATL (Auden)**

Certificate No: **ER3-2256_Aug10**

CALIBRATION CERTIFICATE

Object **ER3DV6R - SN:2256**

Calibration procedure(s) **QA CAL-02.v5 and QA CAL-25.v2
Calibration procedure for E-field probes optimized for close near field
evaluations in air**

Calibration date: **August 23, 2010**

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 (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41495277	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41498087	1-Apr-10 (No. 217-01136)	Apr-11
Reference 3 dB Attenuator	SN: S5054 (3c)	30-Mar-10 (No. 217-01159)	Mar-11
Reference 20 dB Attenuator	SN: S5086 (20b)	30-Mar-10 (No. 217-01161)	Mar-11
Reference 30 dB Attenuator	SN: S5129 (30b)	30-Mar-10 (No. 217-01160)	Mar-11
Reference Probe ER3DV6	SN: 2328	3-Oct-09 (No. ER3-2328_Oct09)	Oct-10
DAE4	SN: 789	23-Dec-09 (No. DAE4-789_Dec09)	Dec-10
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8948C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-09)	In house check: Oct10
Calibrated by:	Name Jeton Kastrati	Function Laboratory Technician	Signature 
Approved by:	Name Katja Pokovic	Function Technical Manager	Signature 
			Issued: August 24, 2010

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Accreditation No.: **SCS 108**

Glossary:

NORM _{x,y,z}	sensitivity in free space
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ 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 1309-2005, "IEEE Standard for calibration of electromagnetic field sensors and probes, excluding antennas, from 9 kHz to 40 GHz", December 2005.

Methods Applied and Interpretation of Parameters:

- *NORM_{x,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}* = *NORM_{x,y,z}* * *frequency_response* (see Frequency Response Chart).
- *DCP_{x,y,z}*: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; VR_{x,y,z}*: A, B, C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- *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 *NORM_x* (no uncertainty required).



ER3DV6R SN:2256

August 23, 2010

Probe ER3DV6R

SN:2256

Manufactured:	March 15, 2001
Last calibrated:	August 21, 2009
Recalibrated:	August 23, 2010

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)



ER3DV6R SN:2256

August 23, 2010

DASY/EASY - Parameters of Probe: ER3DV6R SN:2256

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)	2.21	1.59	1.68	$\pm 10.1\%$
DCP (mV) ^a	94.2	93.8	101.1	

Modulation Calibration Parameters

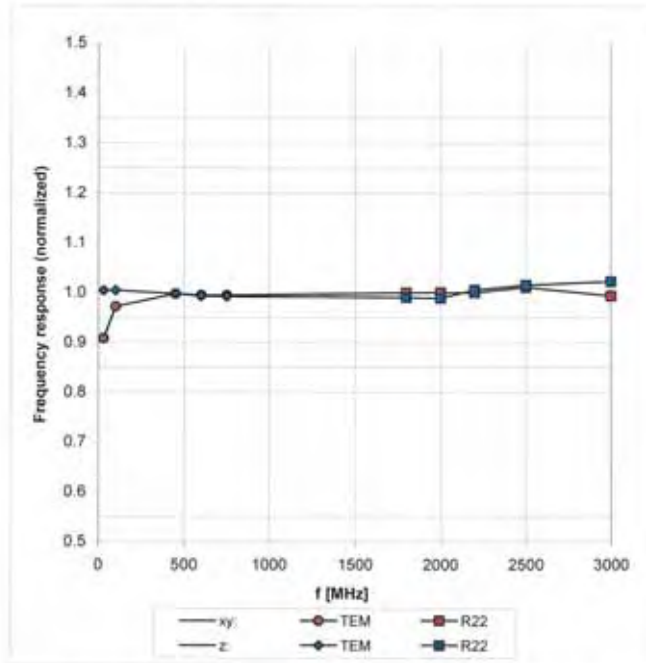
UID	Communication System Name	PAR		A dB	B dBuV	C	VR mV	Unc ^e (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	300	$\pm 1.5\%$
			Y	0.00	0.00	1.00	300	
			Z	0.00	0.00	1.00	300	

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

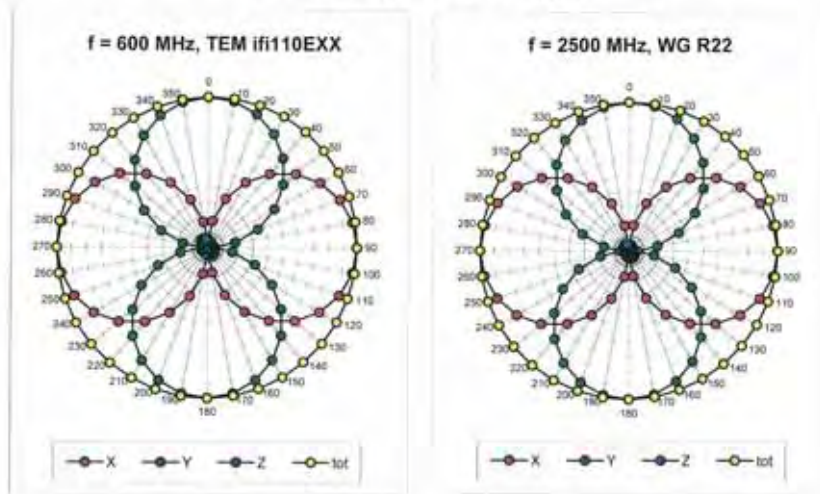
^e Uncertainty is determined using the maximum deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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

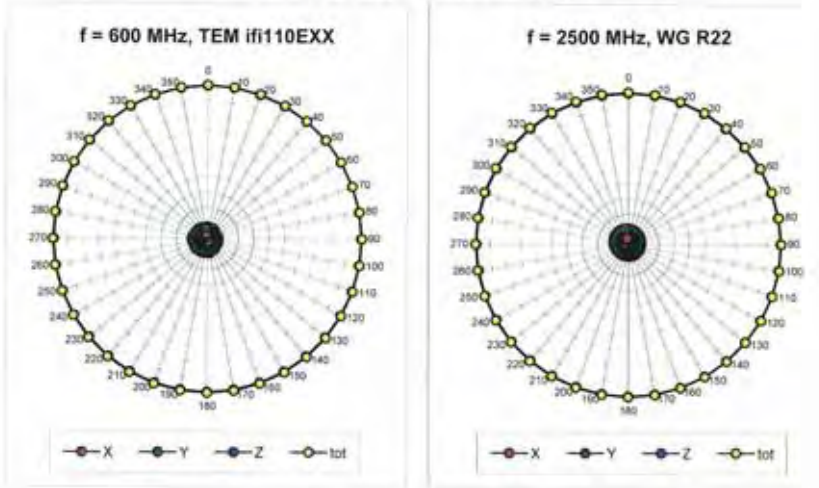


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

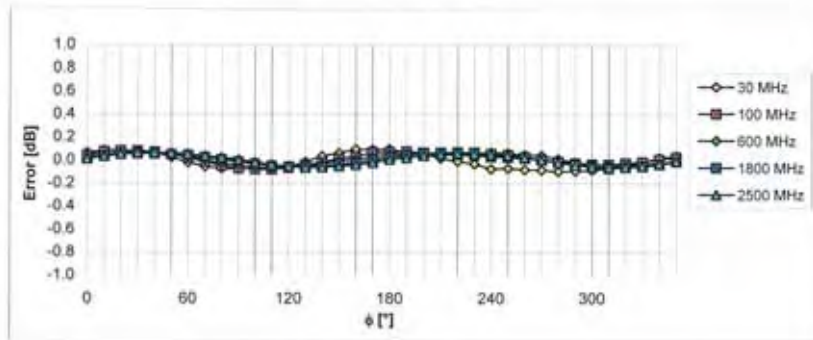
Receiving Pattern (ϕ), $\vartheta = 0^\circ$



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

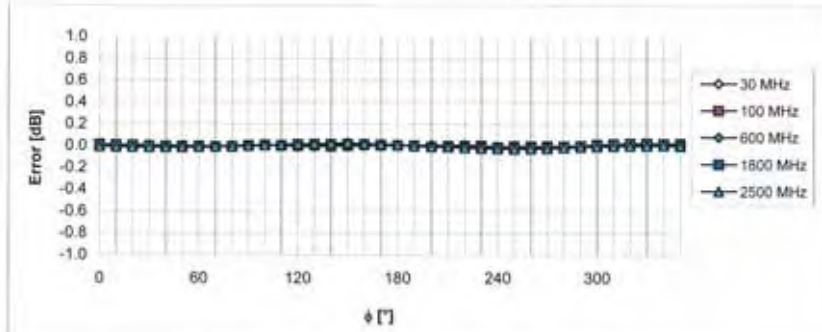


Receiving Pattern (ϕ), $\vartheta = 0^\circ$



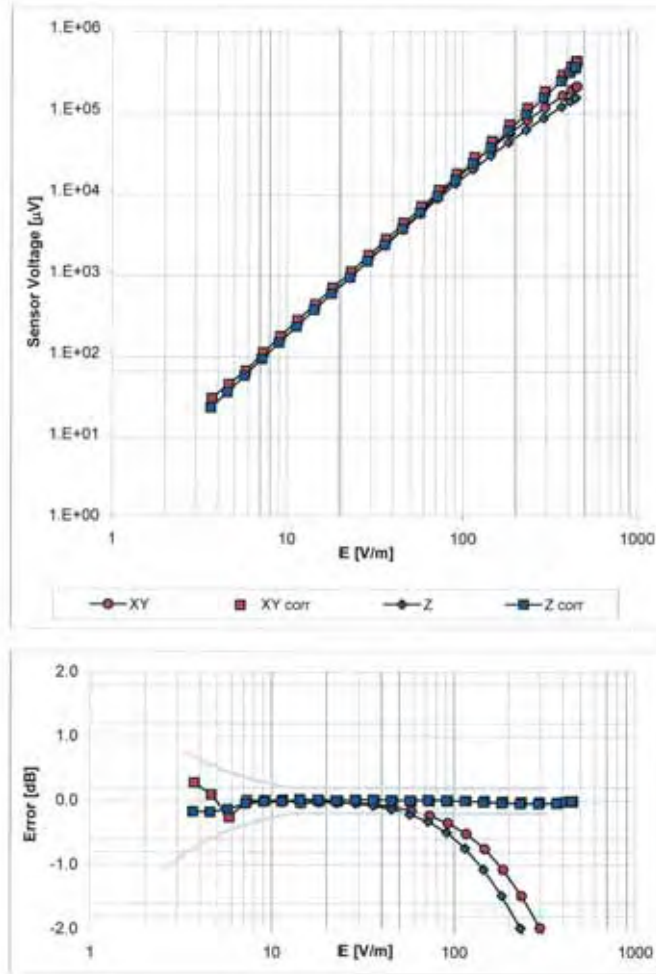
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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



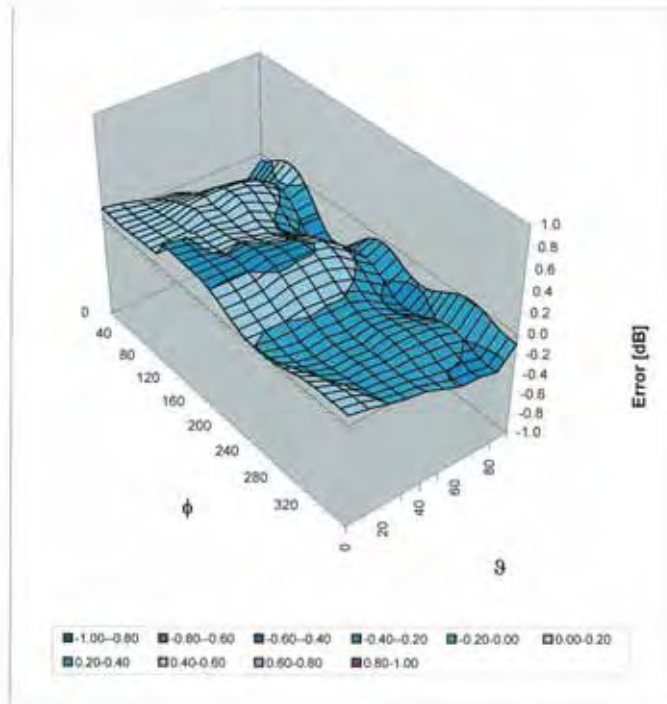
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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



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

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



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



ER3DV6R SN:2256

August 23, 2010

Other Probe Parameters

Sensor Arrangement	Rectangular
Connector Angle (°)	-244.9
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	8.0 mm
Probe Tip to Sensor X Calibration Point	2.5 mm
Probe Tip to Sensor Y Calibration Point	2.5 mm
Probe Tip to Sensor Z Calibration Point	2.5 mm



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Accreditation No.: **SCS 108**

Client **ATL (Auden)**

Certificate No: **H3-6076_Aug10**

CALIBRATION CERTIFICATE

Object **H3DV6 - SN:6076**

Calibration procedure(s) **QA CAL-03.v5 and QA CAL-25.v2
Calibration procedure for H-field probes optimized for close near field
evaluations in air**

Calibration date: **August 23, 2010**

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 (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41495277	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41498087	1-Apr-10 (No. 217-01136)	Apr-11
Reference 3 dB Attenuator	SN: S5054 (3c)	30-Mar-10 (No. 217-01159)	Mar-11
Reference 20 dB Attenuator	SN: S5086 (20b)	30-Mar-10 (No. 217-01161)	Mar-11
Reference 30 dB Attenuator	SN: S5129 (30b)	30-Mar-10 (No. 217-01160)	Mar-11
Reference Probe H3DV6	SN: 6182	3-Oct-09 (No. H3-6182_Oct09)	Oct-10
DAE4	SN: 789	23-Dec-09 (No. DAE4-789_Dec09)	Dec-10
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

Calibrated by:	Name Jeton Kastrati	Function Laboratory Technician	Signature
Approved by:	Name Katja Pokovic	Technical Manager	

Issued: August 24, 2010

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Certificate No: H3-6076_Aug10

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Accreditation No.: **SCS 108**

Glossary:

NORM _{x,y,z}	sensitivity in free space
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ 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 1309-2005, "IEEE Standard for calibration of electromagnetic field sensors and probes, excluding antennas, from 9 kHz to 40 GHz", December 2005.

Methods Applied and Interpretation of Parameters:

- NORM_{x,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).
- X, Y, Z(f) $a_0 a_1 a_2 = X, Y, Z_{a_0 a_1 a_2} \cdot \text{frequency_response}$ (see Frequency Response Chart).
- DCP_{x,y,z}: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- Ax,y,z; Bx,y,z; Cx,y,z, VR_{x,y,z}: A, B, C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- 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_{a_0 a_1 a_2} (no uncertainty required).



H3DV6 SN:6076

August 23, 2010

Probe H3DV6

SN:6076

Manufactured:	October 2, 2000
Last calibrated:	August 19, 2009
Recalibrated:	August 23, 2010

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)



H3DV6 SN:6076

August 23, 2010

DASY/EASY - Parameters of Probe: H3DV6 SN:6076

Basic Calibration Parameters

		Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (A/m / $\sqrt{\mu V}$)	a0	2.85E-3	2.72E-3	3.05E-3	± 5.1%
Norm (A/m / $\sqrt{\mu V}$)	a1	-8.80E-5	-2.35E-4	-3.28E-5	± 5.1%
Norm (A/m / $\sqrt{\mu V}$)	a2	3.38E-5	1.15E-5	-1.72E-4	± 5.1%
DCP (mV) ^A		92.1	81.7	78.1	

Modulation Calibration Parameters

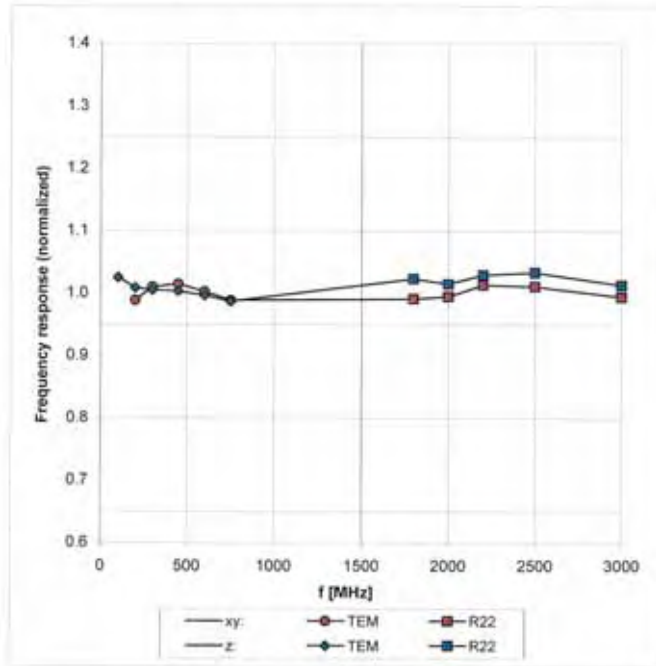
UID	Communication System Name	PAR		A dB	B dBuV	C	VR mV	Unc ^E (k=2)
10000	CW	0,00	X	0.00	0.00	1.00	300	± 1.5 %
			Y	0.00	0.00	1.00	300	
			Z	0.00	0.00	1.00	300	

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

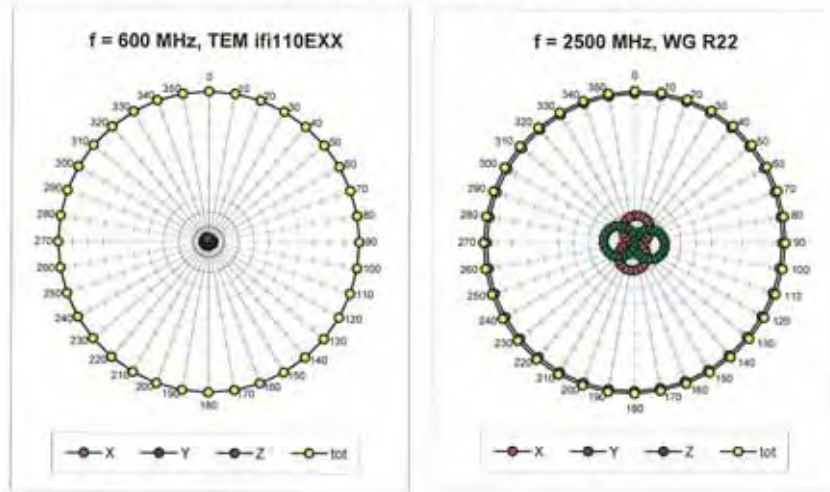
^E Uncertainty is determined using the maximum deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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

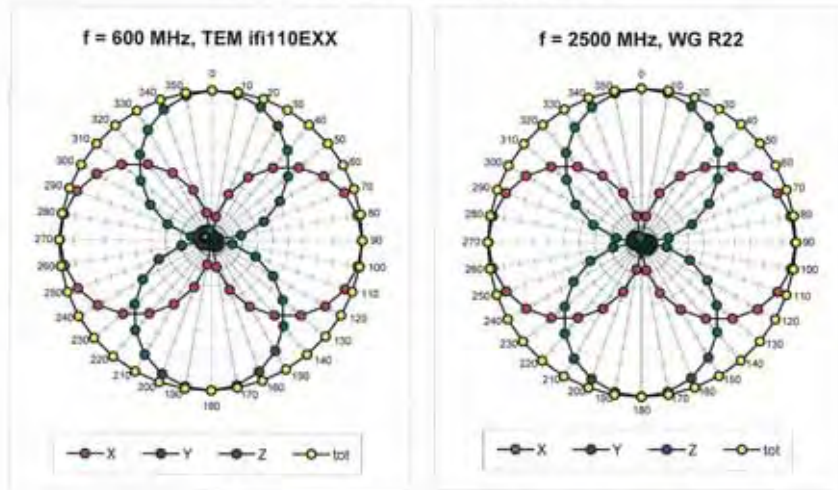


Uncertainty of Frequency Response of H-field: $\pm 6.3\%$ (k=2)

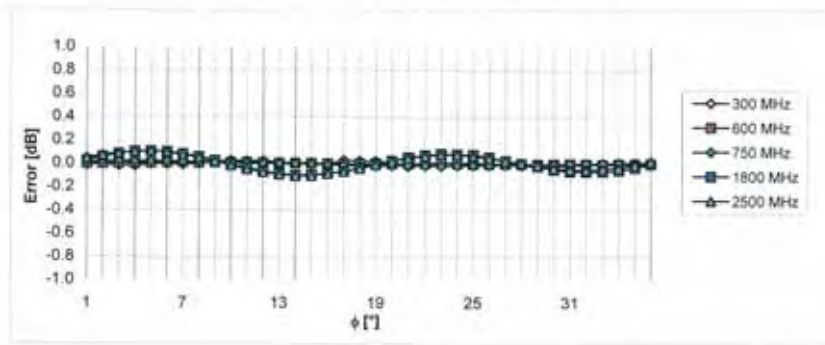
Receiving Pattern (ϕ), $\vartheta = 90^\circ$



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

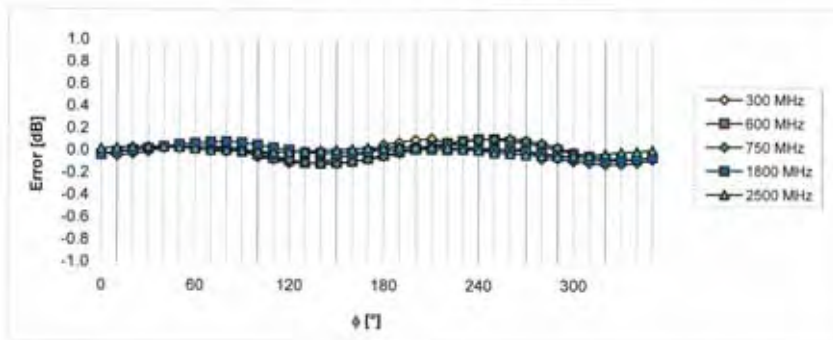


Receiving Pattern (ϕ), $\vartheta = 90^\circ$



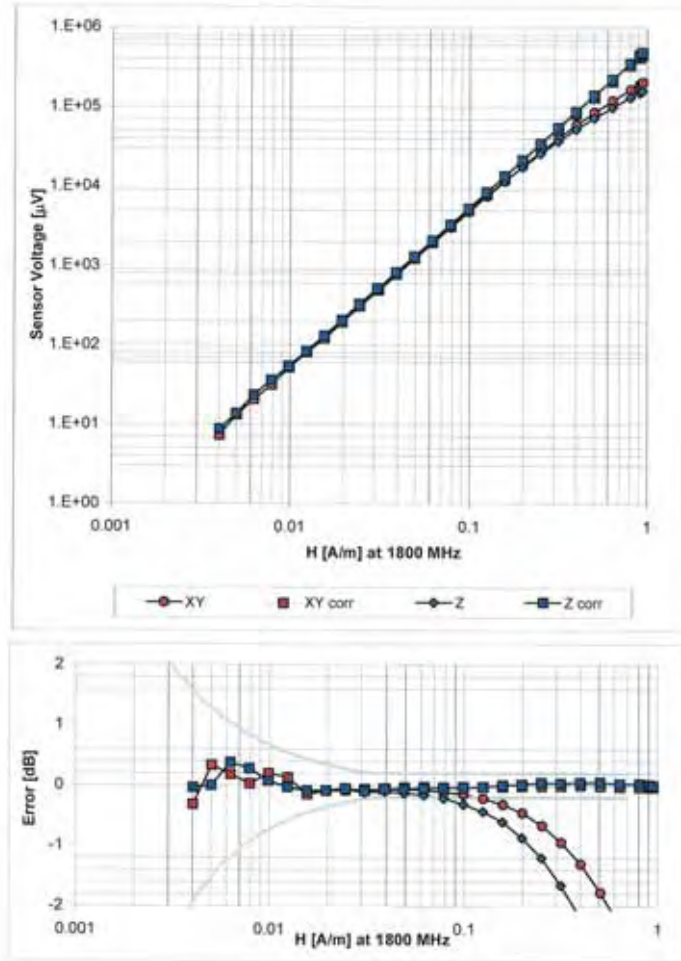
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

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



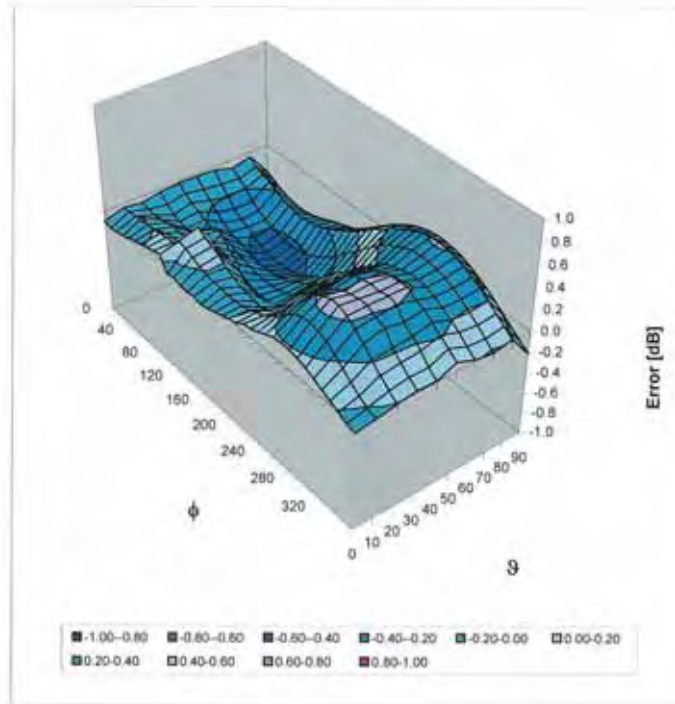
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

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



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

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



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



H3DV6 SN:6076

August 23, 2010

Other Probe Parameters

Sensor Arrangement	Rectangular
Connector Angle (°)	81.5
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	20 mm
Tip Diameter	6.0 mm
Probe Tip to Sensor X Calibration Point	3 mm
Probe Tip to Sensor Y Calibration Point	3 mm
Probe Tip to Sensor Z Calibration Point	3 mm

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Accreditation No.: **SCS 108**

Client **ATL (Auden)**

Certificate No: **DAE4-779_Jan11**

CALIBRATION CERTIFICATE

Object **DAE4 - SD 000 D04 BJ - SN: 779**

Calibration procedure(s) **QA CAL-08.v22
Calibration procedure for the data acquisition electronics (DAE)**

Calibration date: **January 31, 2011**

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 (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	28-Sep-10 (No:10376)	Sep-11
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Calibrator Box V1.1	SE UMS 006 AB 1004	07-Jun-10 (in house check)	In house check: Jun-11

	Name	Function	Signature
Calibrated by:	Andrea Guntli	Technician	
Approved by:	Fin Bombholt	R&D Director	

Issued: January 31, 2011

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Accreditation No.: **SCS 108**

Glossary

DAE data acquisition electronics
Connector angle information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- **DC Voltage Measurement:** Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- **Connector angle:** The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
 - **DC Voltage Measurement Linearity:** Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
 - **Common mode sensitivity:** Influence of a positive or negative common mode voltage on the differential measurement.
 - **Channel separation:** Influence of a voltage on the neighbor channels not subject to an input voltage.
 - **AD Converter Values with inputs shorted:** Values on the internal AD converter corresponding to zero input voltage
 - **Input Offset Measurement:** Output voltage and statistical results over a large number of zero voltage measurements.
 - **Input Offset Current:** Typical value for information; Maximum channel input offset current, not considering the input resistance.
 - **Input resistance:** Typical value for information; DAE input resistance at the connector, during internal auto-zeroing and during measurement.
 - **Low Battery Alarm Voltage:** Typical value for information. Below this voltage, a battery alarm signal is generated.
 - **Power consumption:** Typical value for information. Supply currents in various operating modes.



DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1 μ V, full range = -100...+300 mV

Low Range: 1LSB = 61nV, full range = -1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	404.517 \pm 0.1% (k=2)	403.748 \pm 0.1% (k=2)	403.972 \pm 0.1% (k=2)
Low Range	3.96927 \pm 0.7% (k=2)	3.98585 \pm 0.7% (k=2)	3.99915 \pm 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	155.5 \pm 1 $^{\circ}$
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Appendix

1. DC Voltage Linearity

High Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	200001.8	6.19	0.00
Channel X + Input	20003.75	4.25	0.02
Channel X - Input	-19996.56	3.04	-0.02
Channel Y + Input	200005.0	0.90	0.00
Channel Y + Input	20000.78	1.38	0.01
Channel Y - Input	-19996.43	2.97	-0.01
Channel Z + Input	200002.2	-1.15	-0.00
Channel Z + Input	19999.59	0.19	0.00
Channel Z - Input	-19995.05	4.35	-0.02

Low Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	2000.4	0.25	0.01
Channel X + Input	200.27	0.37	0.18
Channel X - Input	-199.08	1.12	-0.56
Channel Y + Input	2000.1	0.19	0.01
Channel Y + Input	199.01	-0.89	-0.45
Channel Y - Input	-199.30	0.50	-0.25
Channel Z + Input	1999.6	-0.40	-0.02
Channel Z + Input	199.22	-0.88	-0.44
Channel Z - Input	-200.27	-0.37	0.19

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	-3.66	-5.39
	-200	5.82	4.90
Channel Y	200	13.39	13.58
	-200	-14.98	-15.16
Channel Z	200	2.20	2.53
	-200	-4.84	-4.61

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	1.33	-0.57
Channel Y	200	1.97	-	3.29
Channel Z	200	1.19	-0.28	-

4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	15613	15134
Channel Y	15831	16218
Channel Z	16150	17743

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Input 10M Ω

	Average (μ V)	min. Offset (μ V)	max. Offset (μ V)	Std. Deviation (μ V)
Channel X	-0.26	-1.03	0.79	0.42
Channel Y	0.52	-1.04	2.07	0.58
Channel Z	-2.22	-3.25	-0.85	0.44

6. Input Offset Current

Nominal input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	-0.01	-8	-9



Appendix E - Uncertainty

HAC Uncertainty Budget According to NSIC63.19 [1], [2]							
Error Description	Uncertainty value	Prob. Dist.	Div.	(ci) E	(ci) H	Std. Unc. E	Std. Unc. H
Measurement System							
Probe Calibration	±5.1%	N	1	1	1	±5.1%	±5.1%
Axial Isotropy	±4.7%	R	$\sqrt{3}$	1	1	±2.7%	±2.7%
Sensor Displacement	±16.5%	R	$\sqrt{3}$	1	0.145	±9.5%	±1.4%
Test Arch	±7.2%	R	$\sqrt{3}$	1	0	±4.02%	±0.0%
Linearity	±4.7%	R	$\sqrt{3}$	1	1	±2.7%	±2.7%
Probe modulation Factor	±15.0%	R	$\sqrt{3}$	1	1	±8.7%	±8.7%
Scaling to Peak Envelope Power	±0.0%	R	$\sqrt{3}$	1	1	±0.0%	±0.0%
System Detection Limit	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%
Readout Electronics	±0.3%	N	1	1	1	±0.3%	±0.3%
Response Time	±0.8%	R	$\sqrt{3}$	1	1	±0.5%	±0.5%
Integration Time	±2.6%	R	$\sqrt{3}$	1	1	±1.5%	±1.5%
RF Ambient Conditions	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%
RF Reflections	±12.0%	R	$\sqrt{3}$	1	1	±6.9%	±6.9%
Probe Positioner	±1.2%	R	$\sqrt{3}$	1	0.67	±0.7%	±0.5%
Probe Positioning	±4.7%	R	$\sqrt{3}$	1	0.67	±2.7%	±1.8%
Extrap. and Interpolation	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%
Test Sample Related							
Device Positioning Vertical	±4.7%	R	$\sqrt{3}$	1	0.67	±2.7%	±1.8%
Device Positioning Lateral	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%
Device Holder and Phantom	±2.4%	R	$\sqrt{3}$	1	1	±1.4%	±1.4%
Power Drift	±5.0%	R	$\sqrt{3}$	1	1	±2.9%	±2.9%
Phantom and Setup Related							
Phantom Thickness	±2.4%	R	$\sqrt{3}$	1	0.67	±1.4%	±0.9%
Combined Std. Uncertainty		RSS				±17.5%	±13.8%
Expanded Std. Uncertainty on Power		K=2				±35.0%	±27.6%
Expanded Std. Uncertainty on Field						±17.5%	±13.8%