HAC TEST REPORT

Issued to

REACH Tech (Xiamen) Co., Ltd.

For

A58w

Model Name	:	A58w
Trade Name	:	CINCINNATI BELL HOLA
Brand Name	:	CINCINNATI BELL
FCC ID	:	Z5J-A58W
Standard	:	ANSI C 63.19:2007
HAC Level	:	H-Field: M3 E-Field: M3
Test date	:	2011-10-11
Issue date	:	2011-10-19

by

Shenzhen MORLAB Communication Technology Co., Ltd.

Tested by Zhu Zhan	*Approved by* Zeng Dexin	*Review by* Samuel Peng
Zhu Zhan	Zeng Dexin	Samuel Peng
Date 2011.10.19	*Date* 2011.10.19	*Date* 2011.10.19

CTIA Authorized Test Lab LAB CODE 20081223-00 IEEE 1725 OTA — OFTA 電訊管理局 — ilac-MRA — TAF Testing Laboratory — GCF Official Observer of Global Certification Forum — Bluetooth BQTF — FCC Reg. No. 741109

Contents

1.1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	3/F, Electronic Testing Building, Shahe Road, Nanshan District, Shenzhen, 518055 P. R. China
Responsible Test Lab Manager:	Mr. Shu Luan
Telephone:	+86 755 86130268
Facsimile:	+86 755 86130218

1.2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	3/F, Electronic Testing Building, Shahe Road, Nanshan District, Shenzhen, 518055 P. R. China

1.3. Accreditation Certificate

Accredited Testing Laboratory: No. CNAS L1659

1.4. List of Test Equipments

No.	Instrument	Type
1	PC	Dell (Pentium IV 2.4GHz, SN:X10-23533)
2	Network Emulator	Rohde&Schwarz (CMU200, SN:105894)
3	Voltmeter	Keithley (2000, SN:1000572)
4	Synthetizer	Rohde&Schwarz (SML_03, SN:101868)
5	Amplifier	Nucl udes (ALB216, SN:10800)
6	Power Meter	Rohde&Schwarz (NRVD, SN:101066)
7	Audio DAQ	NI (MonDAQ, SN:MonNumero)
8	E-FIELD PROBE	SN: SN 41/08 EPH17
9	H-FIELD PROBE	SN: SN 41/08 HPH18
10	T-COIL PROBE	SN: SN 39/08 TCP11
11	800-950 MHZ DIPOLE	SN: SN 36/08 DHA16
12	1700-2000 MHZ DIPOLE	SN: SN 36/08 DHB16
13	HAC holder	SN02_EPH02 (SN:SN_3608_SUPH16)

2. Technical Information

Note: the following data is based on the information by the applicant.

2.1. Identification of Applicant

Company Name:	REACH Tech (Xiamen) Co., Ltd.
Address:	RM.303,#18,Guanri Road, Software Park II, Xiamen, China

2.2. Identification of Manufacturer

Company Name:	REACH Tech (Xiamen) Co., Ltd.
Address:	RM.303,#18,Guanri Road, Software Park II, Xiamen, China

2.3. Equipment Under Test (EUT)

Brand Name:	CINCINNATI BELL
Type Name:	CINCINNATI BELL HOLA
Marking Name:	A58w
Hardware Version:	E407mb_v2.0
Software Version:	E407RWLite_SS_V0.1.0.22090
Frequency Bands:	GSM 850 / GSM 1900 WCDMA 1700 BT: 2402MHz-2480MHz
Modulation Mode:	GSM/GPRS:GMSK EDGE: 8PSK WCDMA : CDMA BT: GFSK
Multislot Class	GPRS: Multislot Class 12, EDGE: Multislot Class 12
Antenna type:	Fixed Internal Antenna
Development Stage:	Identical prototype
Battery Model:	BL-4C
Battery specification:	800mAh 3.7V

2.3.1. Photographs of the EUT

Please see for photographs of the EUT.

2.3.2. Identification of all used EUTs

The EUT identity consists of numerical and letter characters, the letter character indicates the test sample, and the following two numerical characters indicate the software version of the test sample.

EUT Identity	Hardware Version	Software Version
1#	E407mb_v2.0	E407RWLite_SS_V0.1.0.22090

2.4. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	**ANSI C 63.19:2007**	American National Standard Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids

Note: Test report, reference KDB 285076 documents.

2.5. Test Environment/Conditions

Normal Temperature (NT):	20 ... 25 °C		
Relative Humidity:	30 ... 75 %		
Air Pressure:	980 ... 1020 hPa		
Extreme Voltage of the EUT:	Normal Voltage (NV)	=	3.70V
	Low Voltage (LV)	=	3.60V
	High Voltage (HV)	=	4.20V
Test frequency:	GSM 850MHz/GSM 1900MHz WCDMA 1700MHz		
Operation mode:	Call established		
Power Level:	Maximum output power		

During SAR test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established.
The Absolute Radio Frequency Channel Number (ARFCN) is 128, 1904 and251 respectively in the case of GSM 850MHz or is allocated to 512, 661 and 810 respectively in the case of GSM 1900MHz, and located 1313, 1450 and 1512 for WCDMA 1700. The EUT is commanded to operate at maximum transmitting power.
The EUT shall use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the manufacturer. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link is used, the antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the handset.
The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the handset by at least 35 dB.

2.6.Operational Conditions During Test

2.6.1. INTRODUCTION

On July 10.2003.the Federal Communications Commission (FCC) adopted new rules requiring wireless manufacturers and service providers to provide digital wireless phones that are compatible with hearing aids. The FCC has modified the exemption for wireless phones under the Hearing Aid Compatibility Act of 1998 (HAC Act) in WT Docket 01-309 RM-8658 to extend the benefits of wireless telecommunications to individuals with hearing disabilities. These benefits encompass business, social and emergency communications, which increase the value of the wireless network for everyone. An estimated more than 10% of the population in the United States show signs of hearing impairment and of that fraction, almost 80% use hearing aids. Approximately 500 million people worldwide suffer from hearing loss.

Compatibility Tests involved:

The standard calls for wireless communications devices to be measured for:

- RF Electric-field emissions.
- RF Magnetic- field emissions.
- T-coil mode, magnetic-signal strength in the audio band.
- T-coil mode, magnetic-signal frequency response through the audio band.
- T-coil mode, magnetic-signal and noise articulation index.

The hearing aid must be measured for:

- RF immunity in microphone mode
- RF immunity in T-coil mode

In the following tests and results, this report includes the evaluation for a wireless communications device

2.6.2. ANSI/IEEE PC 63.19 PERFORMANCE CATEGORIES

4.3.2.1. RF EMISSIONS

The ANSI Standard presents performance requirements for acceptable interoperability of hearing with wireless communications devices. When these parameters are met, a hearing aid operates acceptably in close proximity to a wireless communications device.

<960MHz Limit:

Category	AWF (dB)	Limits for E-Field Emission (V/m)	Limits for H-Field Emission (A/m)
M1	0	631.0 - 1122.0	1.91 - 3.39
	-5	473.2 - 841.4	1.43 - 2.54
M2	0	354.8 - 631.0	1.07 - 1.91
	-5	266.1 - 473.2	0.80 - 1.43
M3	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.80
M4	0	<199.5	<0.60
	-5	<149.6	<0.45
Hearing aid and WD near-field categories as defined in ANSI PC 63.19. During testing, the hearing aid must maintain an input-referenced interference level of less than 55dB a gain compression of less than 6dB.			

>960MHz Limit:

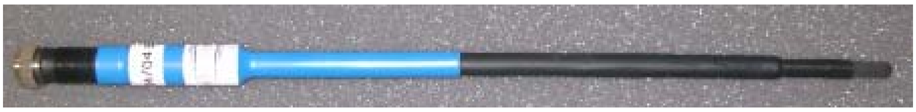
Category	AWF (dB)	Limits for E-Field Emission (V/m)	Limits for H-Field Emission (A/m)
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.15 - 0.25
M4	0	<63.1	<0.19
	-5	<47.3	<0.15

4.3.2.2. Articulation Weighing Factor (AWF)

Standard	Technology	AWF
T1/T1P1/3GPP	UMTS(WCDMA)	0
IS-95	CDMA	0
iden	GSM(22and 11Hz)	0
J-STD-007	GSM(217Hz)	-5
AWF has been developed from information presented to the committee regarding the interference potential of the various modulation types according to ANSI PC 63.19		

2.6.3. Description of Test System

4.3.3.1. COMOHAC E-FIELD PROBE



Serial Number:	SN 41/08 EPH17
Frequency:	100MHz – 3GHz
Probe length:	330mm
Length of one dipole:	3.3mm
Maximum external diameter:	8mm
Probe extremity diameter:	6mm
Distance between dipoles/probe extremity:	3mm
Resistance of the three dipole (at the connector):	Dipole 1:R1=2.1807 MΩ Dipole 2:R1=2.0612 MΩ Dipole 3:R3=2.1892 MΩ
Connector (HIROSE series SR30)	6 wire male (Hirose SR30series)

CALIBRATION TEST EQUIPMENT

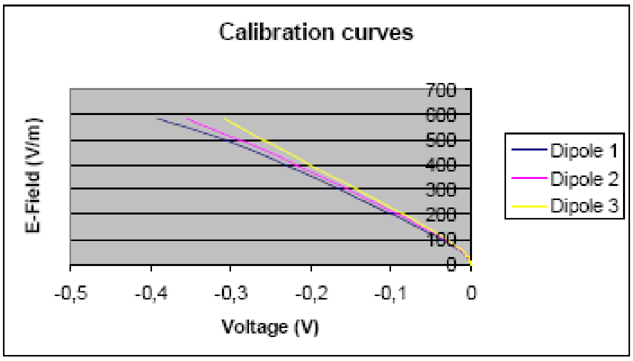
TYPE	IDENTIFICATION
Calibration bench	SATIMO AIR CALIBRATION SOFTWARE
Multimeter	Keithley 2000

MEASUREMENT PROCEDURE

Probe calibration is realized by using the waveguide method. The probe was inserted in a waveguide loading by a 50 load. By controlling the input power in the waveguide, we are able to create a know EField value in the waveguide. ,

Keithley configuration:

Rate = Medium; Filter =ON; RDGS=10; FILTER TYPE =MOVING AVERAGE; RANGE AUTO



The following tables represent the calibration curves linearization by curve segment in CW signal.

4.3.3.2. COMOHAC H-FIELD PROBE

Serial Number:	SN 41/08 HPH18
Frequency:	100MHz – 3GHz
Probe length:	330mm
Length of one dipole:	3.3mm
Maximum external diameter:	8mm
Probe extremity diameter:	6mm
Distance between dipoles/probe extremity:	3mm
Resistance of the three dipole (at the connector):	Dipole 1:R1=2.1650 MΩ Dipole 2:R1=2.2176 MΩ Dipole 3:R3=2.4084 MΩ
Connector (HIROSE series SR30)	6 wire male (Hirose SR30series)

CALIBRATION TEST EQUIPMENT

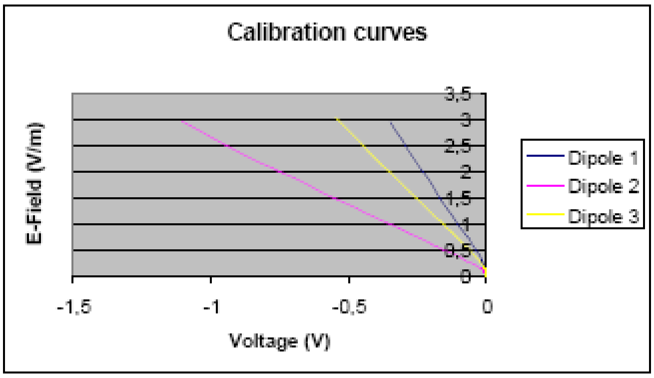
TYPE	IDENTIFICATION
Calibration bench	SATIMO AIR CALIBRATION SOFTWARE
Multimeter	Keithley 2000

MEASUREMENT PROCEDURE

Probe calibration is realized by using the waveguide method. The probe was inserted in a waveguide loading by a 50 load. By controlling the input power in the waveguide, we are able to create a know HField value in the waveguide.

Keithley configuration:

Rate = Medium; Filter =ON; RDGS=10; FILTER TYPE =MOVING AVERAGE; RANGE AUTO

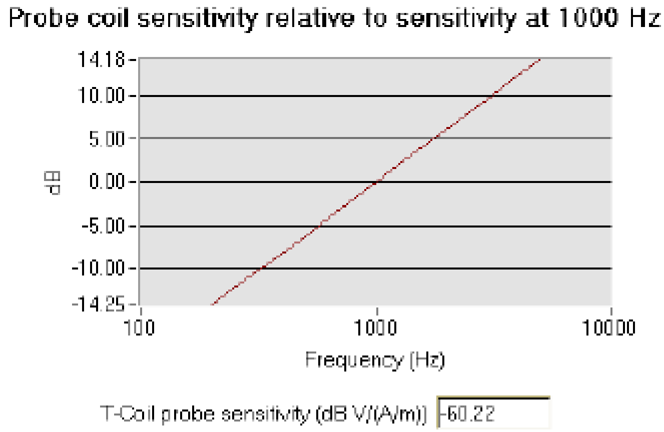


The following tables represent the calibration curves linearization by curve segment in CW signal.

4.3.3.3. COMOHAC T-COIL PROBE

Serial Number:	SN 39/08 TCP11
Dimensions:	6.55mm length*2.29mm diameter
DC resistance:	860.6Ω
Wire size:	51 AWG
Inductance:	132.1 mH at 1kHz
Sensitivity:	-60.22 dB (V/A/m) at 1kHz

SENSITIVITY



Frequency (Hz)	H (dB (V/(A/m)))
200	-73,92940009
250	-72,01119983
315	-70,06378892
400	-67,88880017
500	-66,00059991
630	-64,07318901
800	-62,00820026
1000	-60,22
1250	-58,29179974
1600	-56,20760035
2000	-54,31940009
2500	-52,36119983
3150	-50,38378892
4000	-48,50880017
5000	-46,44059991

LINEARITY

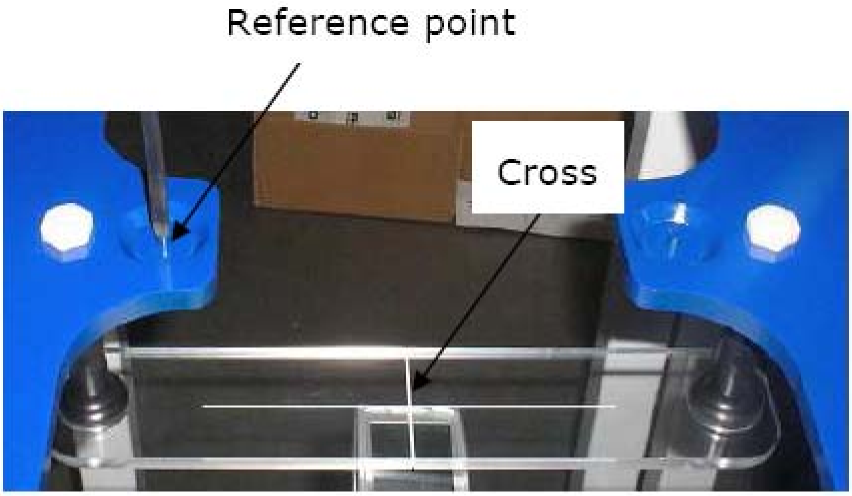
Linearity = 0.27 dB

Power (dB) relative to 1 A/m	0	-10	-20	-30	-40	-50
H (dB (V/(A/m)))	0	-9,95	-19,95	-30	-39,9	-49,73

4.3.3.4. System Hardware

The HAC positioning ruler is used to position the phone properly with the regard to the position of the probe during a measurement. The positioning system is made of a dedicated frame that can be fixed on the table. The tip of the probe is positioned on a reference point located on the top of the positioning ruler. The distance between this reference point and the cross located on the ruler being known, the speaker of the phone is positioned on this cross in order to make sure both probe and phone are positioned properly.

During the measurement, the HAC ruler has to be removed so that it does not interfere with the measurement.

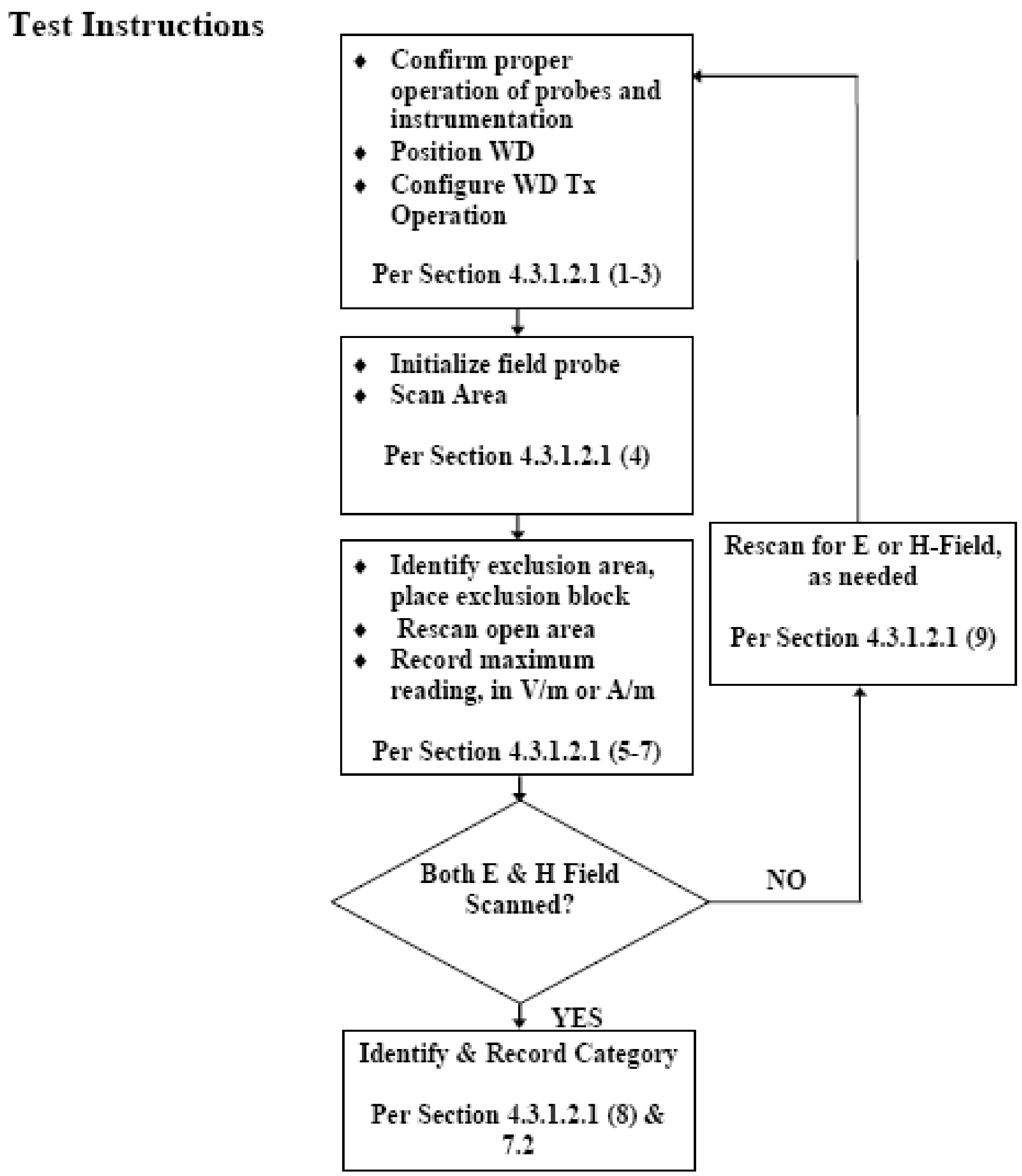


HAC positioning ruler

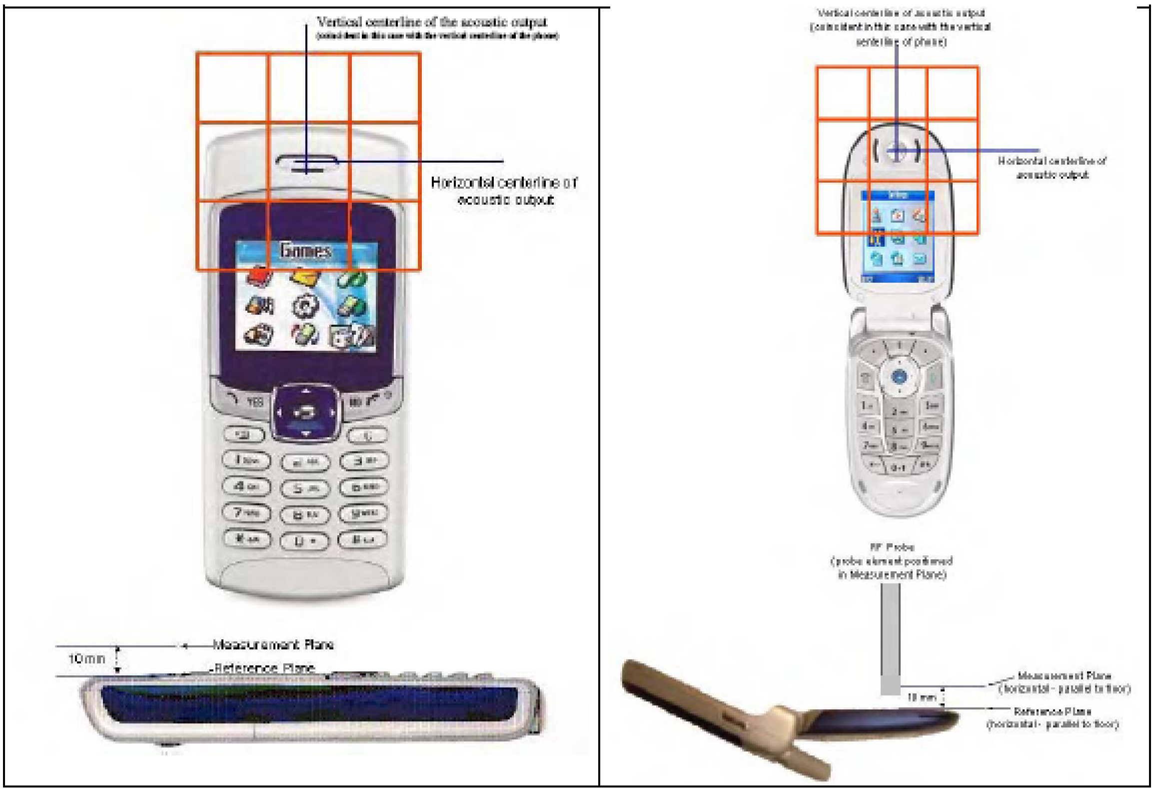
2.6.4. TEST PROCEDURE

4.3.4.1. RF EMISSIONS

Per ANSI C 63.19 2007:



4.3.4.2.TEST Setup



WD reference and plane for RF emission measurements

4.3.4.3.RF Emission Test Procedure

The following illustrate a typical RF emissions test scan over a wireless communications device:

1. Proper operation of the field probe, probe measurement system, other instrumentation, and the positioning system was confirmed.
2. WD is positioned in its intended test position, acoustic output point of the device perpendicular to the field probe.
3. The WD operation for maximum rated RF output power was configured and confirmed with the base station simulator, at the test channel and other normal operating parameters as intended for the test. The battery was ensured to be fully charged before each test.
4. The center sub-grid was centered over the center of the acoustic output (also audio band magnetic output, if applicable). The WD audio output was positioned tangent (as physically possible) to the measurement plane.
5. A surface calibration was performed before each setup change to ensure repeatable spacing and proper maintenance of the measurement plane using the HAC Phantom.
6. The measurement system measured the field strength at the reference location.

2.6.5. SYSTEM CHECK

4.3.5.1. System Check Parameters

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

- Average Input Power P = 100mW 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:

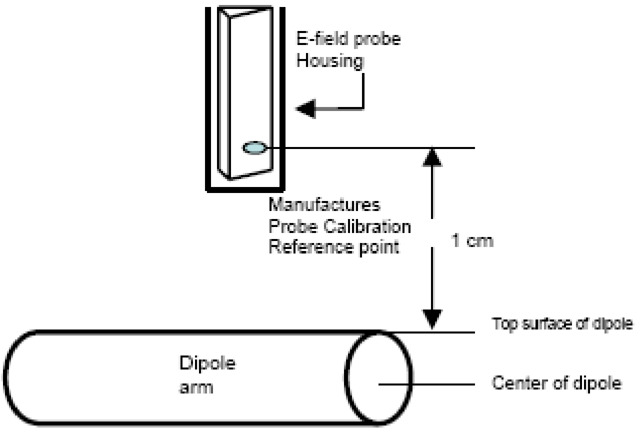


Figure 15
Separation Distance from Dipole to Field Probe

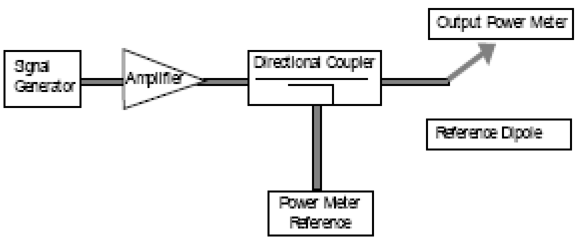
RF power was recorded using both an average reading meter and a peak reading meter. Readings of the probe are provided by the measurement system.
To assure proper operation of the near-field measurement probe the input power to the dipole shall be commensurate with the full rated output power of the wireless device (e.g. - for a cellular phone wireless device the average peak antenna input power will be on the order of 100mW (i.e. - 20dBm) RMS after adjustment for any mismatch.

4.3.5.2 Validation Procedure

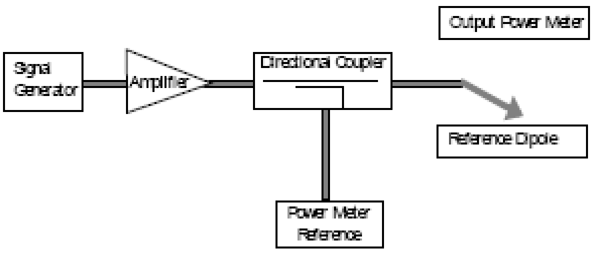
A dipole antenna meeting the requirements given in PC63.19 was placed in the position normally occupied by the WD.
The length of the dipole was scanned with both E-field and H-field probes and the maximum values for each were recorde

Using the near-field measurement system, scan the antenna over the radiating dipole and record the greatest field reading observed. Due to the nature of E-fields about free-space dipoles, the two E-field peaks measured over the dipole are averaged to compensate for non-paralellity of the setup see manufacturer method on dipole calibration certificates, Field strength measurements shall be
made only when the probe is stationary.

RF power was recorded using both an average and a peak power reading meter.



Setup for Desired Output Power to Dipole



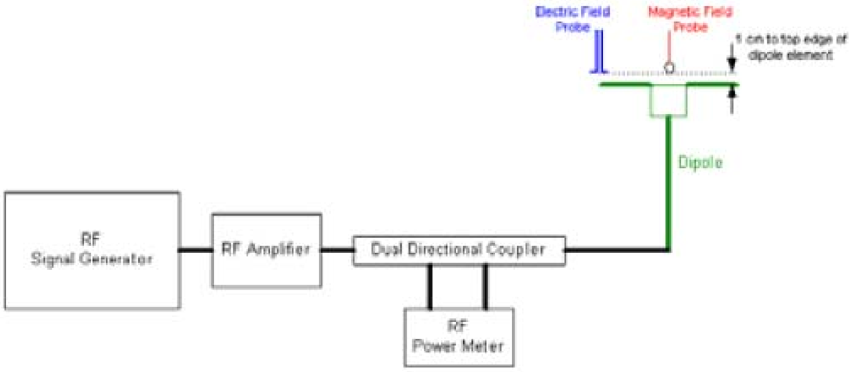
Setup to Dipole

Using this setup configuration, the signal generator was adjusted for the desired output power (100mW) at a specified frequency. The reference power from the coupled port of the directional coupler is recorded. Next, the output cable is connected to the reference dipole,

4.3.5.3. Test System Validation

Validation Results (1W forward input power), System checks the specific test data please see page 49-56

Frequency	Input Power (dBm)	E-field Result (V/m)	Target Field (V/m)
900 MHz	20.0	207	205
1800MHz	20.0	161.52	165
Frequency	**Input Power (dBm)**	**H-field Result (A/m)**	**Target Field (A/m)**
900 MHz	20.0	0.442	0.448
1800MHz	20.0	0.447	0.452



System Check Setup

2.6.6. Uncertainty Estimation Table

a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/e	k
Uncertainty Component	Sec.	Tol (+-%)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	Vi
Measurement System									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	
Axial Isotropy	E.2.2	2.5	R	√3			1.02	1.02	
Hemispherical Isotropy	E.2.2	4.0	R	√3			1.63	1.63	
Boundary effect	E.2.3	1.0	R	√3	1	1	0.58	0.58	
Linearity	E.2.4	5.0	R	√3	1	1	2.89	2.89	
System detection limits	E.2.5	1.0	R	√3	1	1	0.58	0.58	
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	
Reponse Time	E.2.7	3.0	R	√3	1	1	1.73	1.73	
Integration Time	E.2.8	2.0	R	√3	1	1	1.15	1.15	
RF ambient Conditions	E.6.1	3.0	R	√3	1	1	1.73	1.73	
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	√3	1	1	1.15	1.15	
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	√3	1	1	0.03	0.03	
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5.2	5.0	R	√3	1	1	2.89	2.89	
Test sample Related									
Test sample positioning	E.4.2.1	0.03	N	1	1	1	0.03	0.03	N-1
Device Holder Uncertainty	E.4.1.1	5.00	N	1	1	1	5.00	5.00	
Output power Variation - drift measurement	6.6.2	5.78	R		1	1	3.34	3.34	

2.6.7. OVERALL MEASUREMENT SUMMARY

4.3.7.1 E-FIELD EMISSIONS

Band	Mode	Channel	M Rating	Output power （dBm）
E-FIELD EMISSIONS				
GSM 850	GSM	128	M3	31.96
GSM 850	GSM	190	M4	31.92
GSM 850	GSM	251	M3	32.10
GSM 1900	GSM	512	M4	27.49
GSM 1900	GSM	661	M4	29.23
GSM 1900	GSM	810	M4	28.86
WCDMA 1700	CDMA	1313	M4	22.44
WCDMA 1700	CDMA	1450	M4	22.78
WCDMA 1700	CDMA	1512	M4	22.22

4.3.7.2 H-FIELD EMISSIONS

Band	Mode	Channel	M Rating	Output power （dBm）
H-FIELD EMISSIONS				
GSM 850	GSM	128	M4	31.96
GSM 850	GSM	190	M4	31.92
GSM 850	GSM	251	M4	32.10
GSM 1900	GSM	512	M4	27.49
GSM 1900	GSM	661	M4	29.23
GSM 1900	GSM	810	M4	28.86
WCDMA 1700	CDMA	1313	M4	22.44
WCDMA 1700	CDMA	1450	M4	22.78
WCDMA 1700	CDMA	1512	M4	22.22

2.6.8. TEST DATA

FREQUENCY	PARAMETERS
GSM 850	Measurement 1: Efield on Low Channel Measurement 2: Hfield on Low Channel Measurement 3: Efield on Middle Channel Measurement 4: Hfield on Middle Channel Measurement 5: Efield on High Channel Measurement 6: Hfield on High Channel
GSM 1900	Measurement 7: Efield on Low Channel Measurement 8: Hfield on Low Channel Measurement 9: Efield on Middle Channel Measurement 10: Hfield on Middle Channel Measurement 11: Efield on High Channel Measurement 12: Hfield on High Channel
WCDMA 1700	Measurement 13: Efield on Low Channel Measurement 14: Hfield on Low Channel Measurement 15: Efield on Middle Channel Measurement 16: Hfield on Middle Channel Measurement 17: Efield on High Channel Measurement 18: Hfield on High Channel

MEASUREMENT 1

A. Experimental conditions.

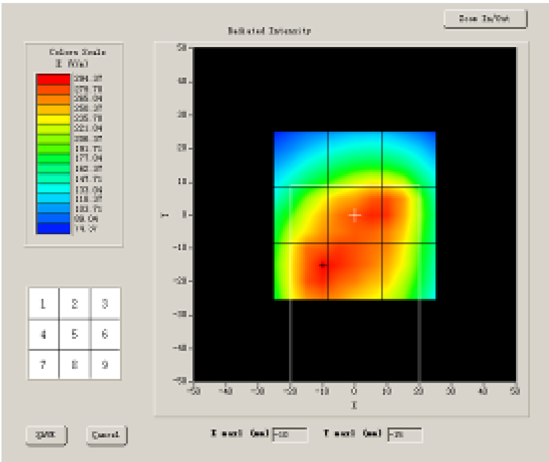
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM850
Channel	Low
Signal	GSM

B. HAC Measurement Results

Lower Band (Channel 128):

Frequency (MHz): 824.200000

SURFACE HAC



Probe Modulation Factor = 2.840000

Maximum value of total field = 152.81V/m

Hearing Aid Near-Field Category: M3 (AWF -5 dB)

E in V/m

Grid 1: 144.50	Grid 2: 144.25	Grid 3: 101.30
Grid 4: 148.48	Grid 5: 152.81	Grid 6: 112.99
Grid 7: 145.75	Grid 8: 150.47	Grid 9: 110.56

MEASUREMENT 2

A. Experimental conditions.

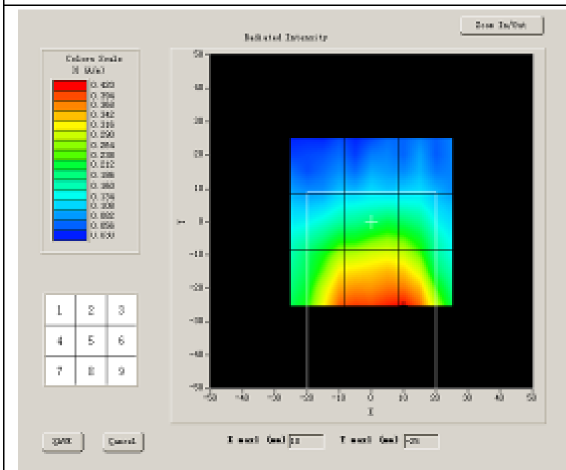
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM850
Channel	Low
Signal	GSM

B. HAC Measurement Results

Lower Band (Channel 128):

Frequency (MHz): 824.200000

SURFACE HAC



Probe Modulation Factor = 2.840000

Maximum value of total field = 0.28 A/m

Hearing Aid Near-Field Category: M4 (AWF -5 dB)

H in A/m

Grid 1: 0.10	Grid 2: 0.11	Grid 3: 0.11
Grid 4: 0.25	Grid 5: 0.28	Grid 6: 0.27
Grid 7: 0.40	Grid 8: 0.42	Grid 9: 0.42

MEASUREMENT 3

A. Experimental conditions.

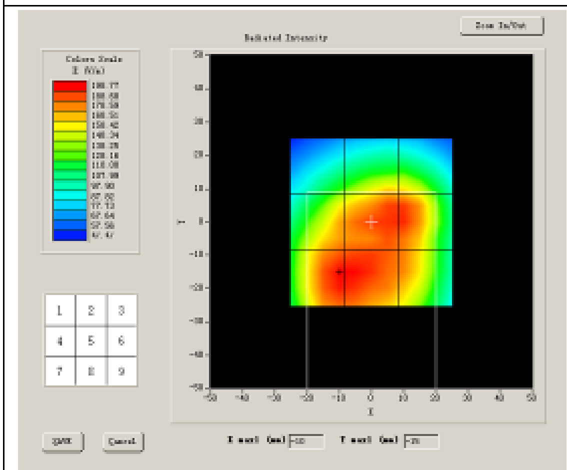
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM850
Channel	Middle
Signal	GSM

B. HAC Measurement Results

Middle Band (Channel 189):

Frequency (MHz): 836.400000

SURFACE HAC



Probe Modulation Factor = 2.840000

Maximum value of total field = 196.35 V/m

Hearing Aid Near-Field Category: M3 (AWF -5 dB)

E in V/m

Grid 1: 133.89	Grid 2: 165.05	Grid 3: 161.06
Grid 4: 179.73	Grid 5: 196.35	Grid 6: 195.77
Grid 7: 199.70	Grid 8: 199.31	Grid 9: 179.61

MEASUREMENT 4

A. Experimental conditions.

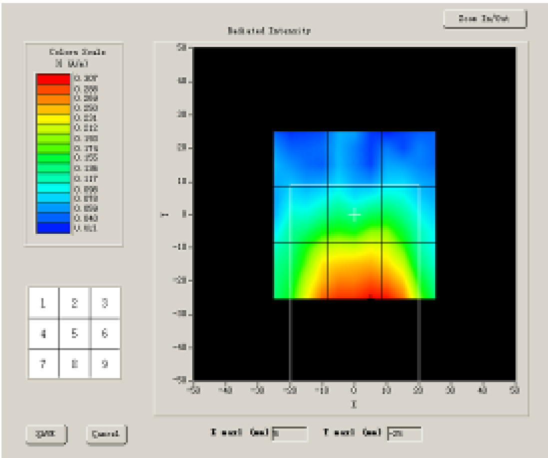
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM850
Channel	Middle
Signal	GSM

B. HAC Measurement Results

Middle Band (Channel 189):

Frequency (MHz): 836.400000

SURFACE HAC



Probe Modulation Factor = 2.840000

Maximum value of total field = 0.21 A/m

Hearing Aid Near-Field Category: M4 (AWF -5 dB)

H in A/m

Grid 1: 0.07	Grid 2: 0.08	Grid 3: 0.08
Grid 4: 0.19	Grid 5: 0.21	Grid 6: 0.20
Grid 7: 0.29	Grid 8: 0.31	Grid 9: 0.30

MEASUREMENT 5

A. Experimental conditions.

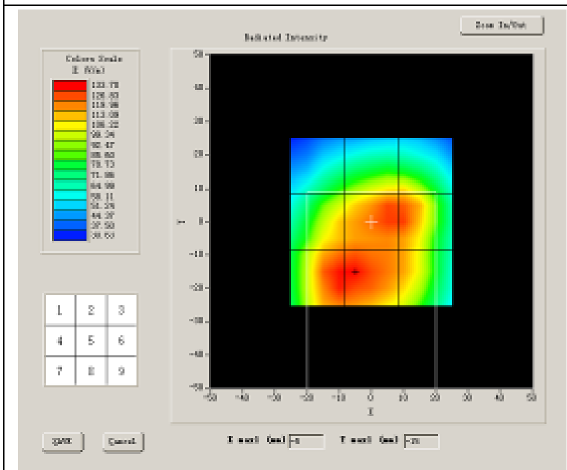
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM850
Channel	High
Signal	GSM

B. HAC Measurement Results

Higher Band (Channel 250):

Frequency (MHz): 848.600000

SURFACE HAC



Probe Modulation Factor = 2.840000

Maximum value of total field = 130.76 V/m

Hearing Aid Near-Field Category: M4 (AWF -5 dB)

E in V/m

Grid 1: 88.99	Grid 2: 109.66	Grid 3: 109.12
Grid 4: 117.82	Grid 5: 130.76	Grid 6: 128.98
Grid 7: 134.06	Grid 8: 134.09	Grid 9: 116.86

MEASUREMENT 6

A. Experimental conditions.

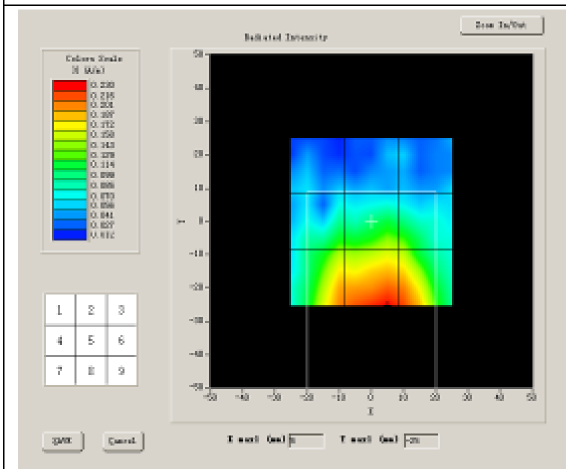
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM850
Channel	High
Signal	GSM

B. HAC Measurement Results

Higher Band (Channel 250):

Frequency (MHz): 848.600000

SURFACE HAC



Probe Modulation Factor = 2.840000

Maximum value of total field = 0.15 A/m

Hearing Aid Near-Field Category: M4 (AWF -5 dB)

H in A/m

Grid 1: 0.06	Grid 2: 0.06	Grid 3: 0.06
Grid 4: 0.13	Grid 5: 0.15	Grid 6: 0.14
Grid 7: 0.21	Grid 8: 0.23	Grid 9: 0.22

MEASUREMENT 7

A. Experimental conditions.

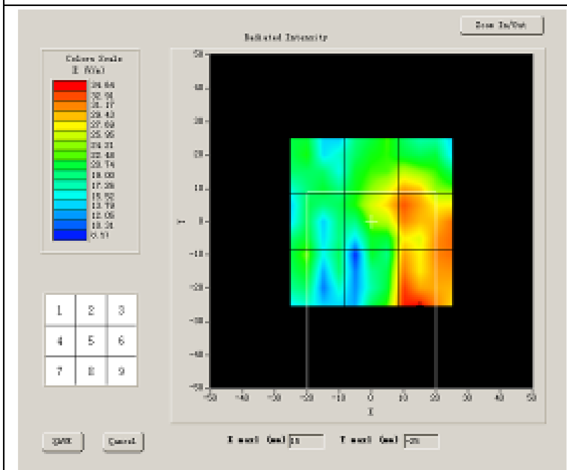
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM1900
Channel	Low
Signal	GSM

B. HAC Measurement Results

Lower Band (Channel 513):

Frequency (MHz): 1850.400000

SURFACE HAC



Probe Modulation Factor = 2.840000

Maximum value of total field = 32.09 V/m

Hearing Aid Near-Field Category: M4 (AWF -5 dB)

E in V/m

Grid 1: 22.51	Grid 2: 29.76	Grid 3: 30.51
Grid 4: 23.11	Grid 5: 32.09	Grid 6: 32.63
Grid 7: 24.37	Grid 8: 32.22	Grid 9: 35.47

MEASUREMENT 8

A. Experimental conditions.

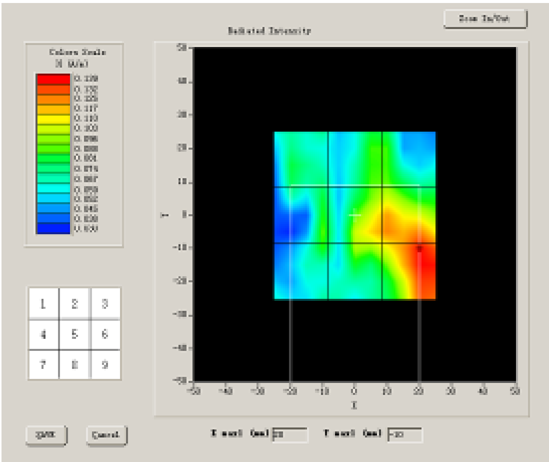
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM1900
Channel	Low
Signal	GSM

B. HAC Measurement Results

Lower Band (Channel 513):

Frequency (MHz): 1850.400000

SURFACE HAC



Probe Modulation Factor = 2.840000

Maximum value of total field = 0.12 A/m

Hearing Aid Near-Field Category: M4 (AWF -5 dB)

H in A/m

Grid 1: 0.08	Grid 2: 0.10	Grid 3: 0.09
Grid 4: 0.09	Grid 5: 0.12	Grid 6: 0.13
Grid 7: 0.09	Grid 8: 0.11	Grid 9: 0.14

MEASUREMENT 9

A. Experimental conditions.

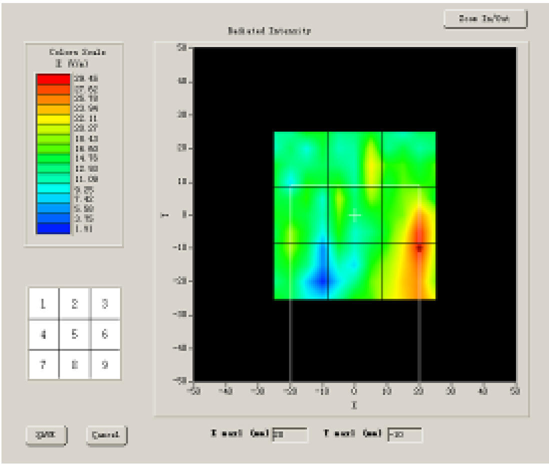
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM1900
Channel	Middle
Signal	GSM

B. HAC Measurement Results

Middle Band (Channel 661):

Frequency (MHz): 1880.000000

SURFACE HAC



Probe Modulation Factor = 2.840000

Maximum value of total field = 22.41 V/m

Hearing Aid Near-Field Category: M4 (AWF -5 dB)

E in V/m

Grid 1: 16.35	Grid 2: 22.41	Grid 3: 17.73
Grid 4: 19.05	Grid 5: 20.44	Grid 6: 29.14
Grid 7: 19.06	Grid 8: 20.06	Grid 9: 29.45

MEASUREMENT 10

A. Experimental conditions.

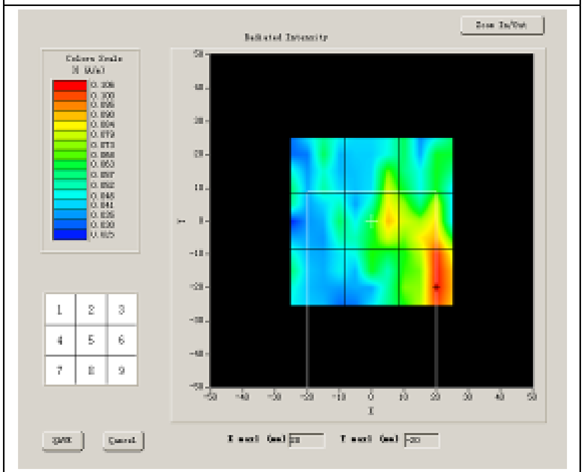
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM1900
Channel	Middle
Signal	GSM

B. HAC Measurement Results

Middle Band (Channel 661):

Frequency (MHz): 1880.000000

SURFACE HAC



Probe Modulation Factor = 2.840000

Maximum value of total field = 0.09 A/m

Hearing Aid Near-Field Category: M4 (AWF -5 dB)

H in A/m

Grid 1: 0.06	Grid 2: 0.08	Grid 3: 0.07
Grid 4: 0.06	Grid 5: 0.09	Grid 6: 0.10
Grid 7: 0.06	Grid 8: 0.07	Grid 9: 0.11

MEASUREMENT 11

A. Experimental conditions.

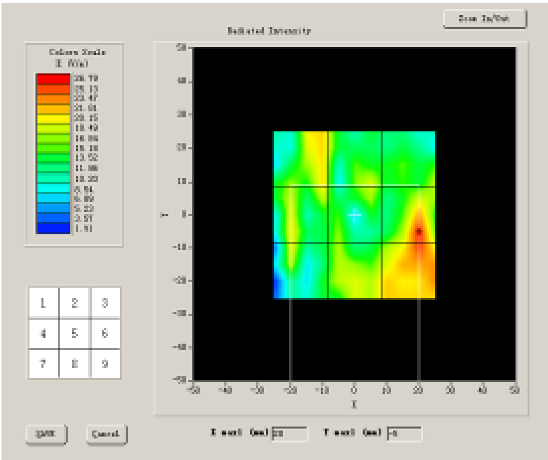
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM1900
Channel	High
Signal	GSM

B. HAC Measurement Results

Higher Band (Channel 809):

Frequency (MHz): 1909.600000

SURFACE HAC



Probe Modulation Factor = 2.840000

Maximum value of total field = 22.35 V/m

Hearing Aid Near-Field Category: M4 (AWF -5 dB)

E in V/m

Grid 1: 22.35	Grid 2: 19.26	Grid 3: 17.99
Grid 4: 20.31	Grid 5: 19.36	Grid 6: 26.79
Grid 7: 19.89	Grid 8: 20.84	Grid 9: 26.15

MEASUREMENT 12

A. Experimental conditions.

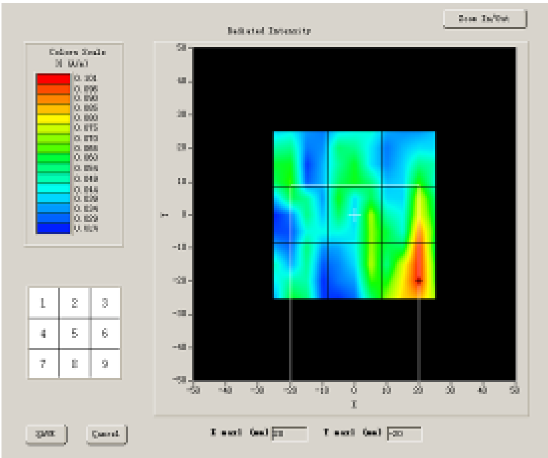
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM1900
Channel	High
Signal	GSM

B. HAC Measurement Results

Higher Band (Channel 809):

Frequency (MHz): 1909.600000

SURFACE HAC



Probe Modulation Factor = 2.840000

Maximum value of total field = 0.07 A/m

Hearing Aid Near-Field Category: M4 (AWF -5 dB)

H in A/m

Grid 1: 0.07	Grid 2: 0.06	Grid 3: 0.07
Grid 4: 0.07	Grid 5: 0.07	Grid 6: 0.09
Grid 7: 0.06	Grid 8: 0.07	Grid 9: 0.10

MEASUREMENT 13

A. Experimental conditions.

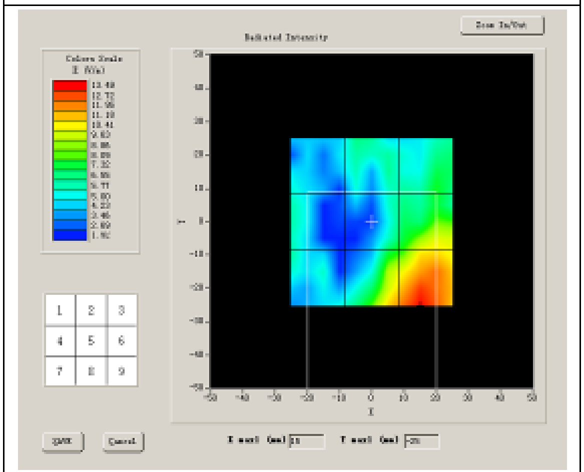
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	WCDMA 1700
Channel	Low
Signal	CDMA

B. HAC Measurement Results

Lower Band (Channel 1313):

Frequency (MHz): 1710.000000

SURFACE HAC



Probe Modulation Factor = 1.000000

Maximum value of total field = 7.68 V/m

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

E in V/m

Grid 1: 5.33	Grid 2: 6.52	Grid 3: 7.68
Grid 4: 5.92	Grid 5: 7.55	Grid 6: 10.39
Grid 7: 6.00	Grid 8: 12.10	Grid 9: 13.49

MEASUREMENT 14

A. Experimental conditions.

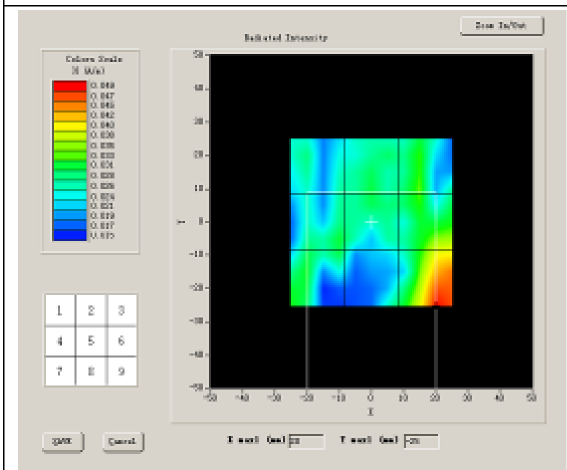
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	WCDMA 1700
Channel	Low
Signal	CDMA

B. HAC Measurement Results

Lower Band (Channel 1313):

Frequency (MHz): 1710.000000

SURFACE HAC



Probe Modulation Factor = 1.000000

Maximum value of total field = 0.03 A/m

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

H in A/m

Grid 1: 0.03	Grid 2: 0.03	Grid 3: 0.03
Grid 4: 0.03	Grid 5: 0.03	Grid 6: 0.04
Grid 7: 0.03	Grid 8: 0.03	Grid 9: 0.05

MEASUREMENT 15

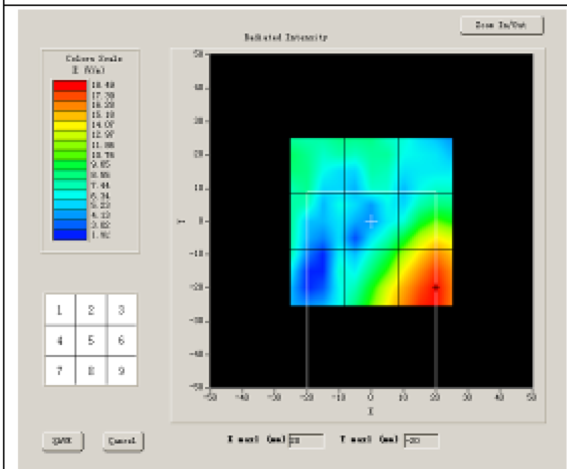
A. Experimental conditions.

Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	WCDMA 1700
Channel	Middle
Signal	CDMA

B. HAC Measurement Results

Middle Band (Channel 1450):

Frequency (MHz): 1732.000000

SURFACE HAC


Probe Modulation Factor = 1.000000

Maximum value of total field = 10.39 V/m

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

E in V/m

Grid 1: 9.02	Grid 2: 8.33	Grid 3: 6.97
Grid 4: 8.12	Grid 5: 10.39	Grid 6: 15.14
Grid 7: 7.67	Grid 8: 15.86	Grid 9: 18.54

MEASUREMENT 16

A. Experimental conditions.

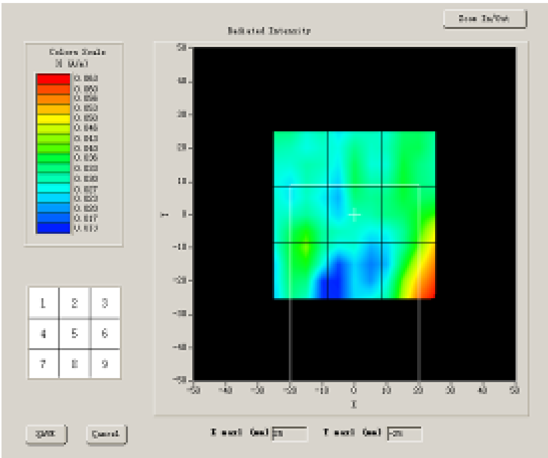
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	WCDMA 1700
Channel	Middle
Signal	CDMA

B. HAC Measurement Results

Middle Band (Channel 1450):

Frequency (MHz): 1747.000000

SURFACE HAC



Probe Modulation Factor = 1.000000

Maximum value of total field = 0.04 A/m

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

H in A/m

Grid 1: 0.03	Grid 2: 0.04	Grid 3: 0.04
Grid 4: 0.04	Grid 5: 0.04	Grid 6: 0.05
Grid 7: 0.04	Grid 8: 0.03	Grid 9: 0.06

MEASUREMENT 17

A. Experimental conditions.

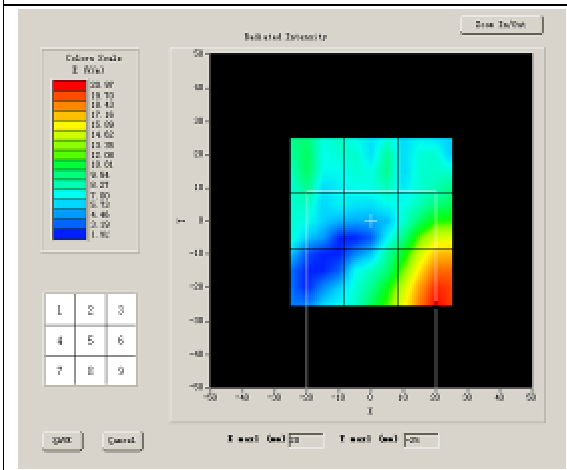
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	WCDMA 1700
Channel	High
Signal	CDMA

B. HAC Measurement Results

Higher Band (Channel 1512):

Frequency (MHz): 1755.000000

SURFACE HAC



Probe Modulation Factor = 1.000000

Maximum value of total field = 10.26 V/m

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

E in V/m

Grid 1: 10.26	Grid 2: 9.07	Grid 3: 9.28
Grid 4: 8.88	Grid 5: 9.60	Grid 6: 16.13
Grid 7: 7.04	Grid 8: 14.96	Grid 9: 20.97

MEASUREMENT 18

A. Experimental conditions.

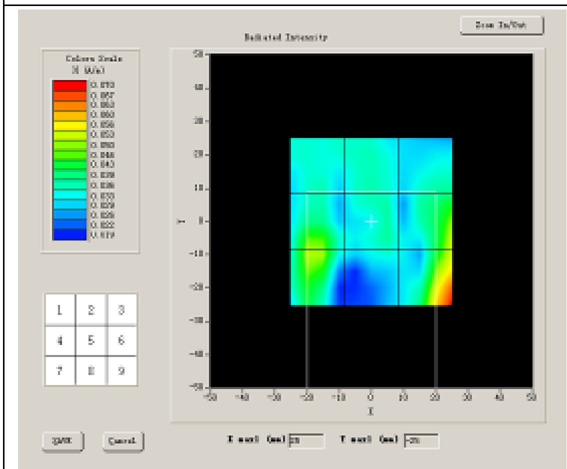
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	WCDMA 1700
Channel	High
Signal	CDMA

B. HAC Measurement Results

Higher Band (Channel 1512):

Frequency (MHz): 1755.000000

SURFACE HAC



Probe Modulation Factor = 1.000000

Maximum value of total field = 0.05 A/m

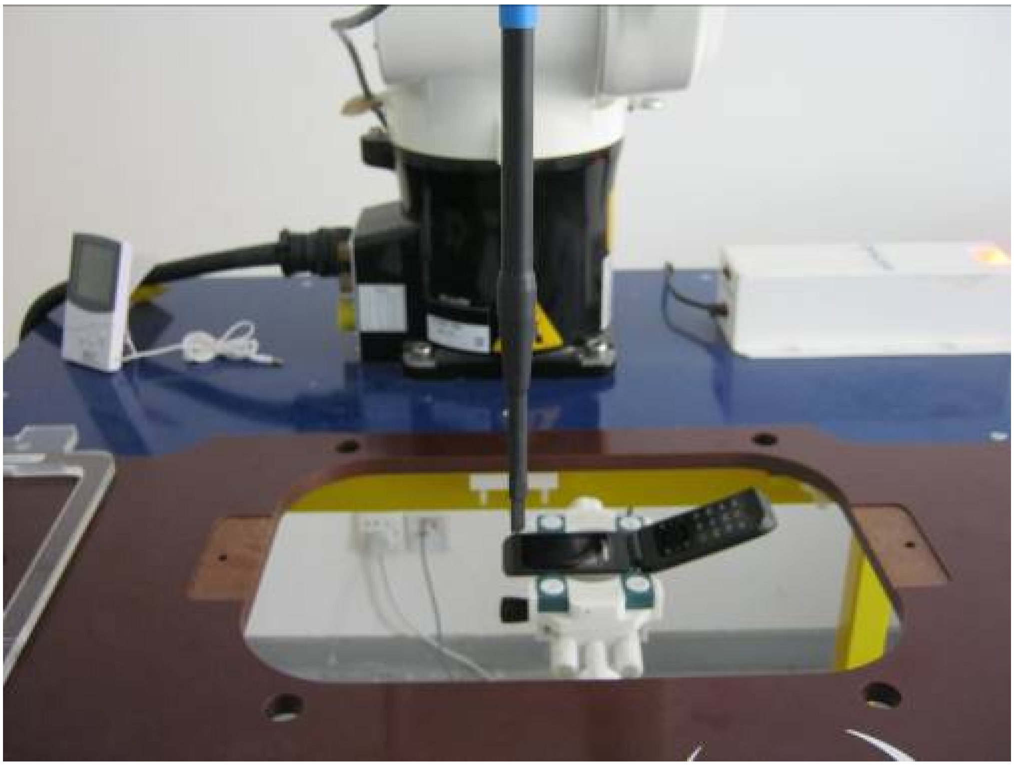
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

H in A/m

Grid 1: 0.04	Grid 2: 0.04	Grid 3: 0.04
Grid 4: 0.05	Grid 5: 0.04	Grid 6: 0.05
Grid 7: 0.05	Grid 8: 0.04	Grid 9: 0.07

Annex A Photographs of the EUT

Annex B EUT Setup photo



System Performance Check (E-field)

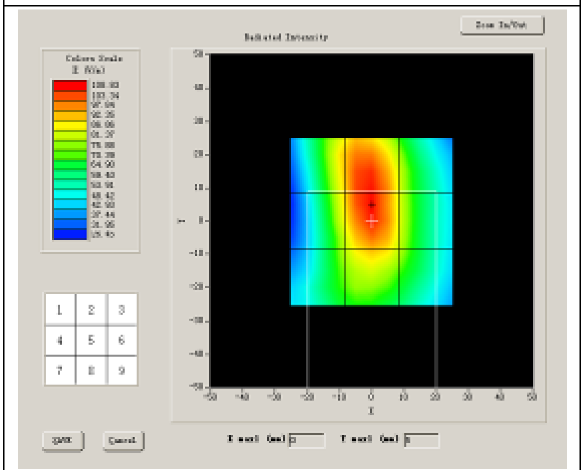
A. Experimental conditions.

Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	850 MHz
Channel	
Signal	CW
Date of measurement	2011-08-04

B. HAC Measurement Results

Frequency (MHz): 850.000000

SURFACE HAC



Probe Modulation Factor = 1.000000

Maximum value of total field = 205 V/m

E in V/m

Grid 1: 194.51	Grid 2: 198.12	Grid 3: 177.56
Grid 4: 192.69	Grid 5: 205.00	Grid 6: 178.98
Grid 7: 181.13	Grid 8: 194.18	Grid 9: 176.51

System Performance Check (H-field)

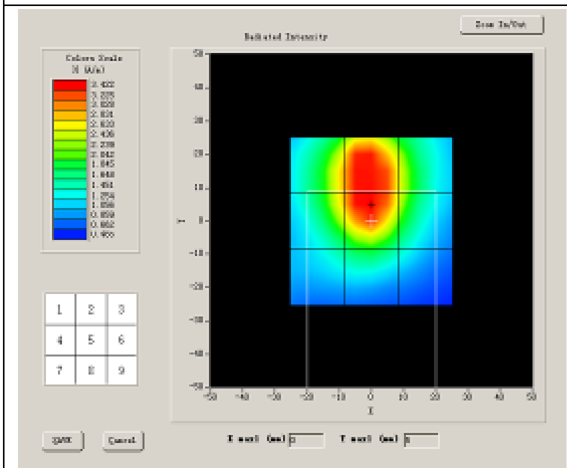
A. Experimental conditions.

Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	850 MHz
Channel	
Signal	CW
Date of measurement	2011-08-04

B. HAC Measurement Results

Frequency (MHz): 850.000000

SURFACE HAC



Probe Modulation Factor = 1.000000

Maximum value of total field = 0.448 A/m

H in A/m

Grid 1: 0.302	Grid 2: 0.421	Grid 3: 0.336
Grid 4: 0.381	Grid 5: 0.449	Grid 6: 0.332
Grid 7: 0.370	Grid 8: 0.400	Grid 9: 0.239

System Performance Check (E-field)

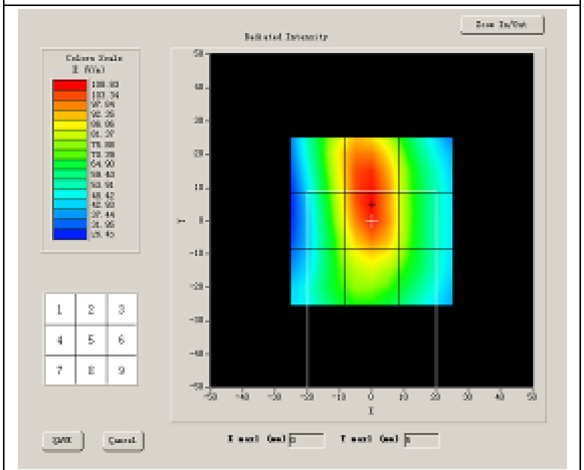
A. Experimental conditions.

Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	1800 MHz
Channel	
Signal	CW
Date of measurement	2011-08-04

B. HAC Measurement Results

Frequency (MHz): 1800.000000

SURFACE HAC



Probe Modulation Factor = 1.000000

Maximum value of total field = 161.52V/m

E in V/m

Grid 1: 145.51	Grid 2: 158.33	Grid 3: 136.11
Grid 4: 151.64	Grid 5: 161.52	Grid 6: 142.95
Grid 7: 141.52	Grid 8: 148.62	Grid 9: 126.77

System Performance Check (H-field)

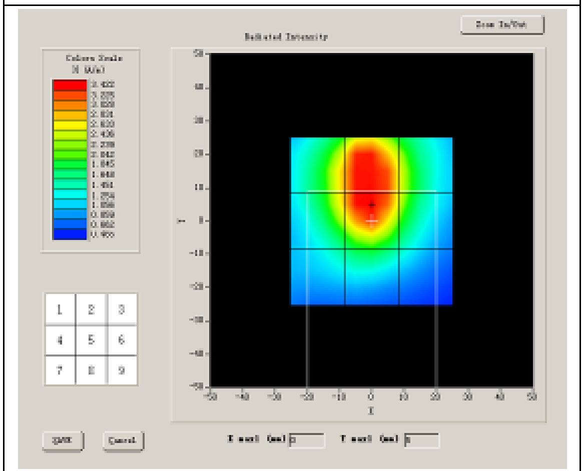
A. Experimental conditions.

Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	1800 MHz
Channel	
Signal	CW
Date of measurement	2011-08-04

B. HAC Measurement Results

Frequency (MHz): 1800.000000

SURFACE HAC



Probe Modulation Factor = 1.000000

Maximum value of total field = 0.447 A/m

H in A/m

Grid 1: 0.424	Grid 2: 0.434	Grid 3: 0.384
Grid 4: 0.437	Grid 5: 0.447	Grid 6: 0.415
Grid 7: 0.432	Grid 8:0.415	Grid 9: 0.361