Report No.: SZ12100034H01

HAC TEST REPORT

TESTING
CNAS L3572

Issued to

Verykool USA Inc

For

GSM/GPRS Dual-band Mobile Phone

Model Name	:	R623
Trade Name	:	verykool
Brand Name	:	verykool
FCC ID	:	WA6R623
Standard	:	ANSI C 63.19:2007
HAC Level	:	H-Field: M3 E-Field: M3
Test date	:	2012-11-20
Issue date	:	2012-12-5

Shenzhen MORLAB Communication Technology Co., Ltd.

Tested by	Zhu Zhan	*Approved by*	Wu Xuewen	*Review by*	Samuel Peng
Date	2012.12.5	*Date*	2012-12-5	*Date*	2012.12.5

CTIA Authorized Test Lab LAB CODE 200812223-00 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 L3572

1.4. List of Test Equipments

No.	Instrument	Type	Cal. Date	Cal. Due
1	PC	Dell (Pentium IV 2.4GHz, SN:X10-23533)	(n.a)	(n.a)
2	Network Emulator	Rohde&Schwarz (CMU200, SN:105894)	2012-9-26	1year
3	Voltmeter	Keithley (2000, SN:1000572)	2012-9-26	1year
4	Signal Generator	Rohde&Schwarz (SMP_02)	2012-9-24	1year
5	Amplifier	Nucl udes (ALB216, SN:10800)	2012-9-24	1year
6	Power Meter	Agilent (E4416A, SN:MY45102093)	2012-5-07	1year
7	Power Sensor	Agilent (N8482A, SN:MY41091706)	2012-5-07	1year
8	Directional coupler	Giga-tronics(SN:1829112)	2012-9-24	1year
9	E-FIELD PROBE	SN: SN 41/08 EPH17	2012-10-06	1year
10	H-FIELD PROBE	SN: SN 41/08 HPH18	2012-10-06	1year
11	800-950 MHZ DIPOLE	SN: SN 36/08 DHA16	2012-10-06	1year
12	1700-2000 MHZ DIPOLE	SN: SN 36/08 DHB16	2012-10-06	1year
13	HAC holder	SN02_EPH02 (SN:SN_3608_SUPH16)	2012-9-24	2year

2. Technical Information

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

2.1. Identification of Applicant

Company Name:	Verykool USA Inc
Address:	3636 Nobel Drive, Suite 325, San Diego, CA 92122 USA

2.2. Identification of Manufacturer

Company Name:	Verykool Wireless Technology Ltd.
Address:	Room 1701, Reward Building C, No.203, 2nd Section of WangJing, Li Ze Zhong Yuan, ChaoYang District, Beijing, P.R. of China 100102

2.3. Equipment Under Test (EUT)

Model Name:	R623
Trade Name:	verykool
Brand Name:	verykool
Hardware Version:	N/A
Software Version:	N/A
Frequency Bands:	GSM 850MHz; PCS 1900MHz; WIFI: 2412MHz-2462MHz BT: 2402MHz-2480MHz
Modulation Mode:	GSM:GMSK WIFI802.11B: DSSS; WIFI802.11G: OFDM WIFI 802.11N: OFDM; BT: GFSK/8-DPSK
Antenna type:	Fixed Internal Antenna
Development Stage:	Identical prototype
Battery Model:	553450AR
Battery specification:	1050mAh3.7V
HAC Test Configurations:	GSM 850; channel 128, 190, 251, BT OFF, Wifi OFF GSM 1900; channel 512, 661, 810, BT OFF, Wifif OFF

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#	N/A	N/A

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
Test frequency:	GSM 850MHz /PCS 1900MHz;
Operation mode:	Call established
Power Level:	GSM 850 MHz Maximum output power(level 5) PCS 1900 MHz Maximum output power(level 0)

During HAC 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 allocated to 125, 190 and 251 respectively in the case of GSM 850 MHz, or to 512, 661 and 810 respectively in the case of PCS 1900 MHz. 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.

Air-interface	Band (MHz)	Type	C63.19-2007 Tested	Simultaneous Transmissions Scenarios invoice (Not to be tested)	Reduced power	VOIP
GSM	850	Voice	Yes	Yes: WIFI or BT	N/A	N/A
	1900	Voice	Yes	Yes: WIFI or BT	N/A	N/A
	GPRS	Data	N/A	N/A	N/A	N/A
WIFI	2450	Data	N/A	Yes GSM or WCDMA	N/A	N/A
BT	2450	Data	N/A	Yes GSM or WCDMA	N/A	N/A

The volume is at the maximum value, and the backlight of the phone is turned off. The Manufacturer doesn't design HAC mode software on the EUT

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.

850MHz 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.			

1900MHz 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

2.6.3.1. 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

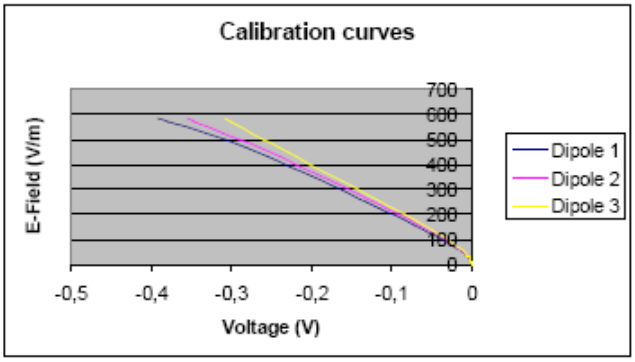
TYPE	IDENTIFICATION
Calibration bench	SATIMO AIR CALIBRATION SOFTWARE
Multimeter	Keithley 2000

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.

2.6.3.2. 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

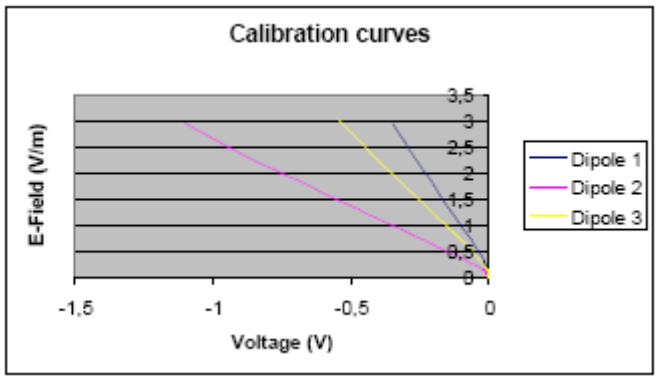
TYPE	IDENTIFICATION
Calibration bench	SATIMO AIR CALIBRATION SOFTWARE
Multimeter	Keithley 2000

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

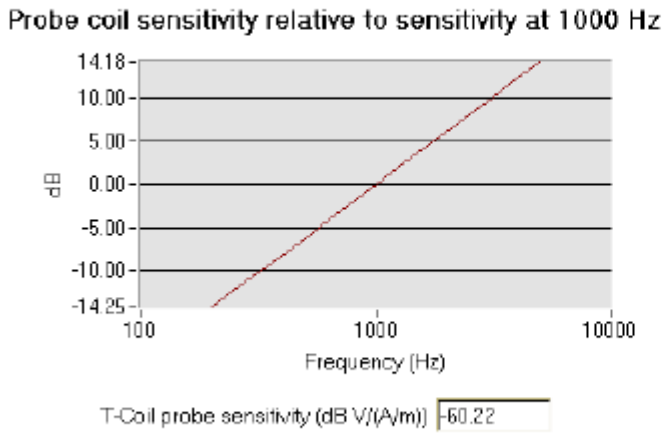


The following tables represent the calibration curves linearization by curve segment in CW signal.

2.6.3.3. 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

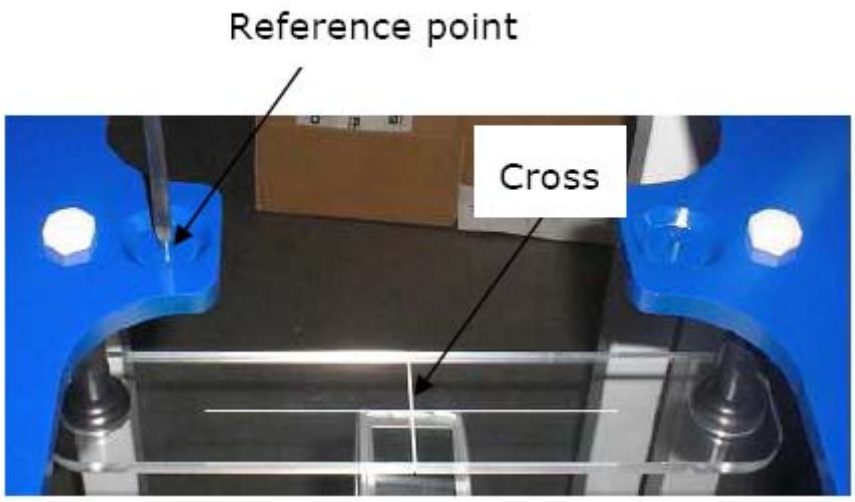
Linearity = 0.27 dB

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

2.6.3.4. 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.

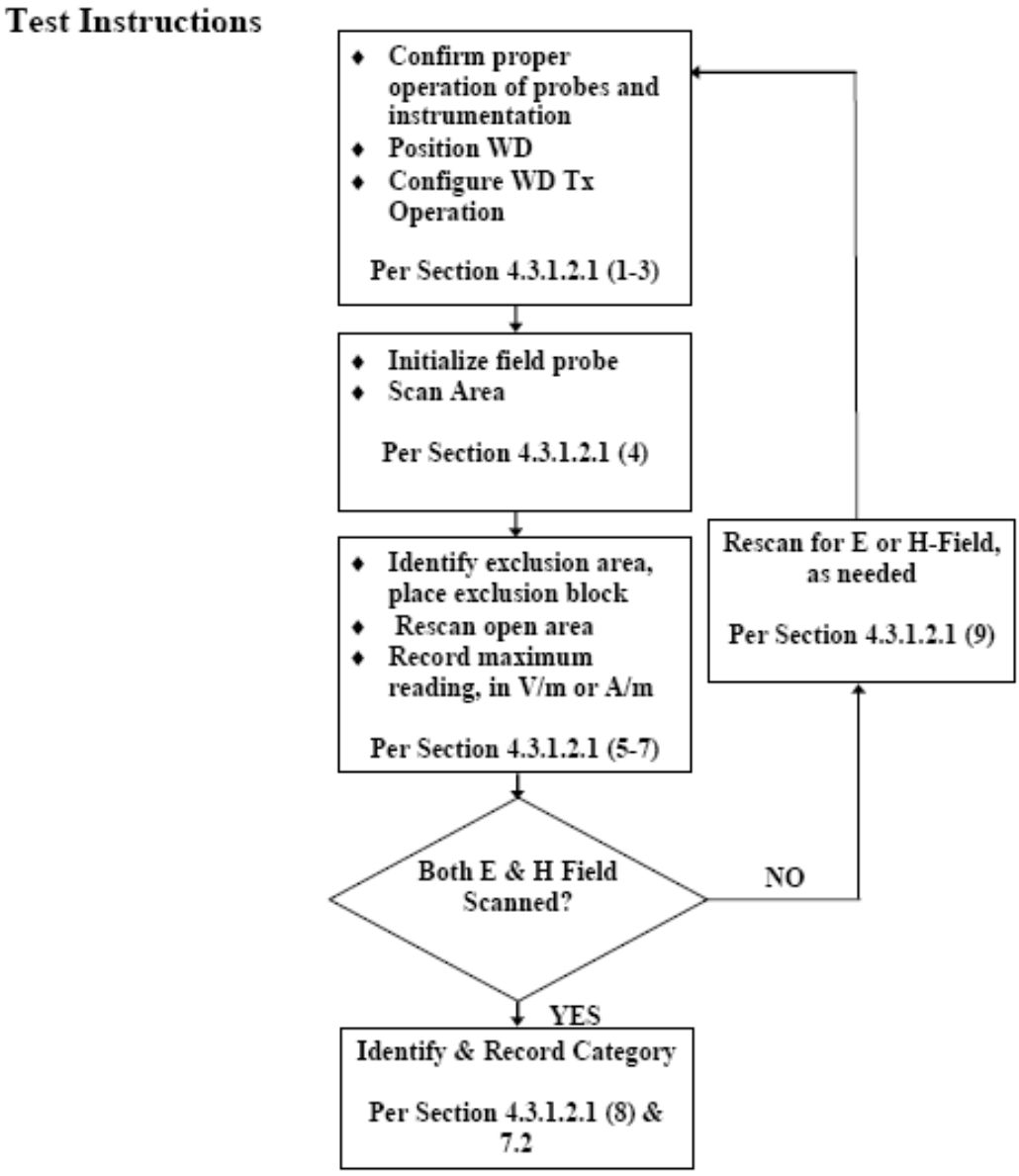


HAC positioning ruler

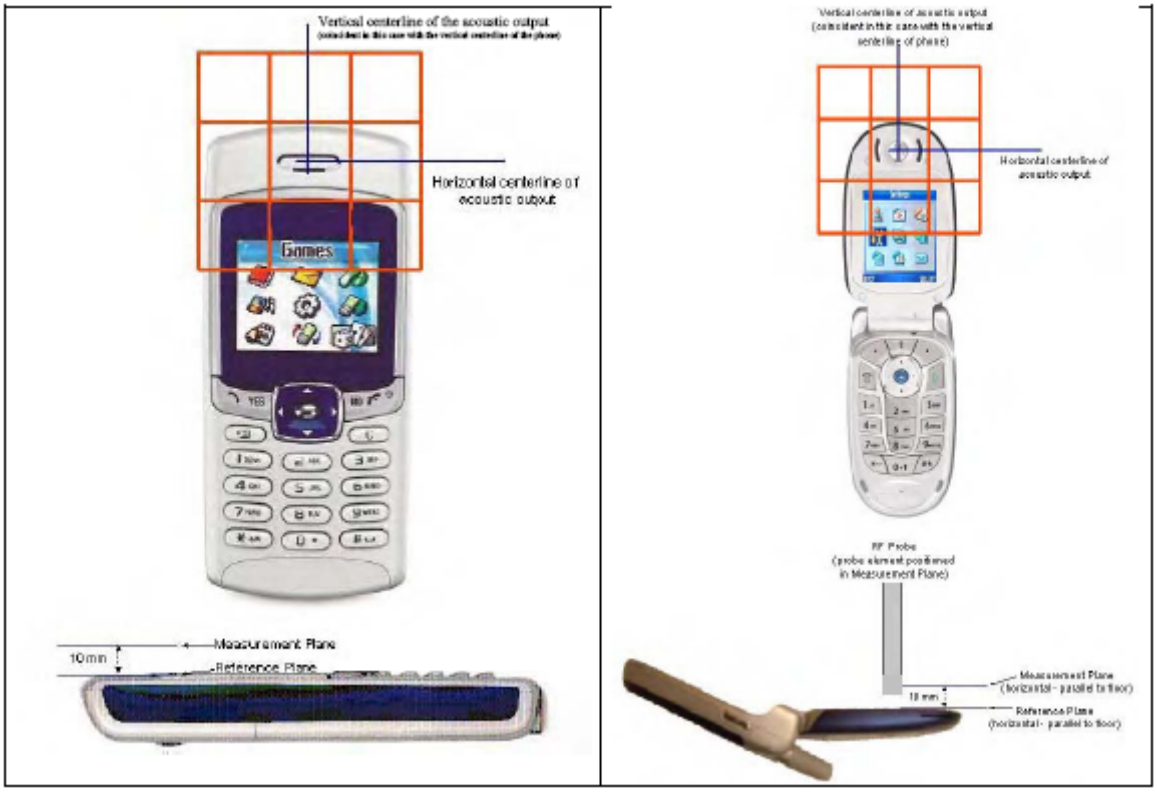
2.6.4. TEST PROCEDURE

2.6.4.1. RF EMISSIONS

Per ANSI C 63.19 2007:



2.6.4.2.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

2.6.5.1. 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:

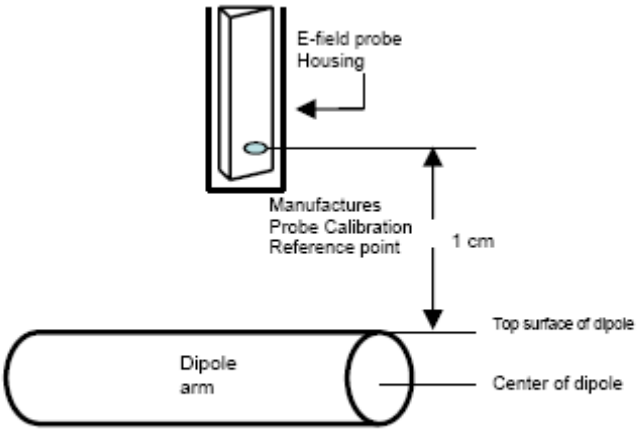


Figure 15
Separation Distance from Dipole to Field Probe

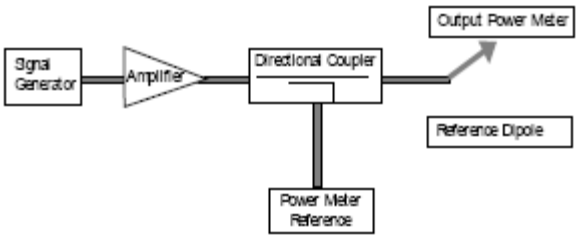
RF power was recorded using both an average reading meter and a peak reading meter. Readings of the probe are provided by the measurement system.
To assure proper operation of the near-field measurement probe the input power to the dipole shall be commensurate with the full rated output power of the 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.

2.6.5.2 Validation Procedure

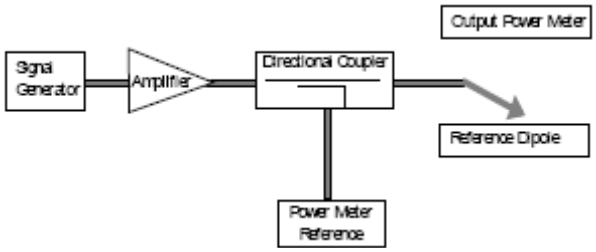
A dipole antenna meeting the requirements given in PC63.19 was placed in the position normally occupied by the WD.
The length of the dipole was scanned with both E-field and H-field probes and the maximum values for each were recorde

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



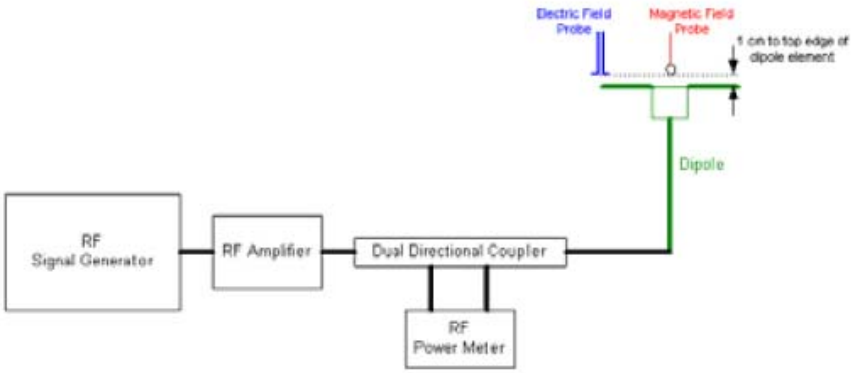
Setup to Dipole

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,

2.6.5.3. Test System Validation

Validation Results (20dBm 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)	Deviation (%)
850 MHz	20.0	196	205	-4.4
1900MHz	20.0	161.52	165	-2.1
Frequency	**Input Power (dBm)**	**H-field Result (A/m)**	**Target Field (A/m)**	**Deviation (%)**
850 MHz	20.0	0.429	0.448	-4.2
1900MHz	20.0	0.438	0.452	-3.1



System Check Setup

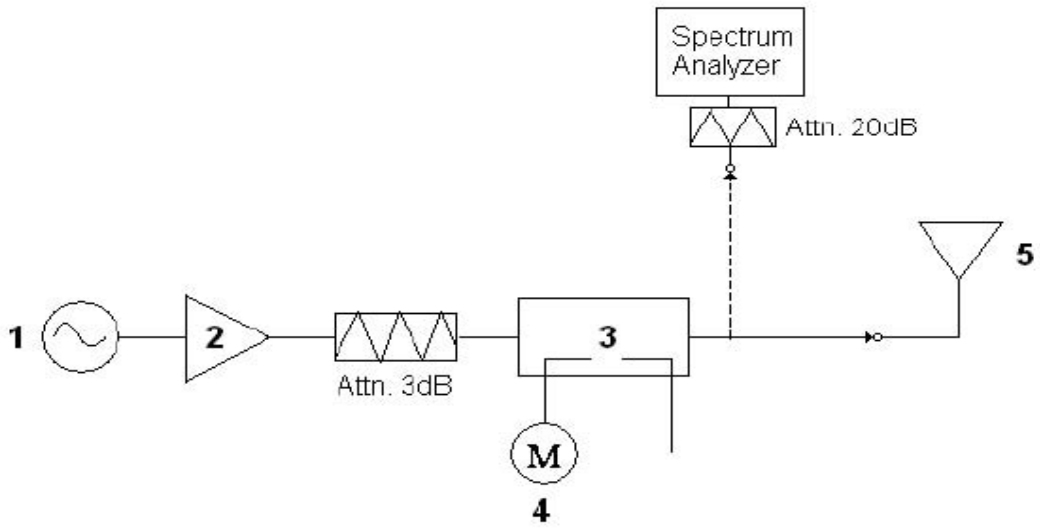
2.6.6. PROBE MODULATION FACTOR (PMF)

The Probe Modulation Factor (PMF) is defined as the ratio of the field readings for a CW and a modulated signal with the equivalent Field Envelope Peak as defined in the Standard.The field level of the test signals shall be more than 10 dB above the ambient level and the noise floor of the instrumentation being used. The ratio of the CW reading to that taken with a modulated field shall be applied to the readings taken of modulated fields of the specified type.

All voice modes for this device have been investigated in this section of the report.

This was done using the following procedure:

1. Fixing the probe in a set location relative to a field generating device.
2. Illuminate the probe with a CW signal at the intended measurement frequency.
3. Record the reading of the probe measurement system of the CW signal.
4. Determine the level of the CW signal being used to drive the field generating device.
5. Substitute a signal using the same modulation as that used by the intended WD for the CW signal.
6. Set the peak amplitude during transmission of the modulated signal to equal the amplitude of the CW signal.
7. Record the reading of the probe measurement system of the modulated signal.
8. The ratio of the CW to modulated signal reading is the modulation factor.
9. Repeat 2~8 steps at intended measurement frequency for both E and H field probe.



PMF measurement setup

PMF Summary:

Probe	Frequency (MHz)	Type of signal	E-Field (V/m)	PMF
E-Field Probe	835	GSM	74.48	2.81
		CW	209.25	
	1880	GSM	58.59	2.79
		CW	163.47	
H-Field Probe	835	GSM	0.159	2.83
		CW	0.451	
	1880	GSM	0.164	2.82
		CW	0.462	

Note: Modulation factor= E_{cw} / E_{mod} and similar for H.

2.6.7. Uncertainty Estimation Table

Error Description	Uncertainty value	Probe Dist.	Div	(Ci) E	(Ci) H	Std. Unc.(+-%)	
						E	H
Measurement System							
Probe calibration	6.00	N	1.000	1	1	6.00	6.00
Axial Isotropy	2.02	R	1.732	1	1	1.17	1.17
Sensor Displacemant	14.30	R	1.732	1	0.217	8.26	1.79
Boundary effect	2.50	R	1.732	1	1	0.87	0.87
Phantom Boundary effect	6.89	R	1.732	1	0	3.52	0.00
Linearity	2.58	R	1.732	1	1	1.49	1.49
Scaling to PMR Calibration	9.02	N	1.000	1	1	9.02	9.02
System Detection Limit	1.30	R	1.732	1	1	0.75	0.75
Readout Electronics	0.25	R	1.732	1	1	0.14	0.14
Reponse Time	1.23	R	1.732	1	1	0.71	0.71
Integration Time	2.15	R	1.732	1	1	1.24	1.24
RF Ambient Conditions	2.03	R	1.732	1	1	1.17	1.17
RF Reflections	9.09	R	1.732	1	1	5.25	5.25
Probe positioner	0.63	N	1.000	1	0.71	0.63	0.45
Probe positioning	3.12	N	1.000	1	0.71	3.12	2.22
Extrapolation and Interpolation	1.18	R	1.732	1	1	0.68	0.68
Test sample Related							
Test sample positioning Vertical	2.73	R	1.732	1	0.71	1.58	1.12
Test sample positioning Lateral	1.19	R	1.732	1	1	0.69	0.69
Device Holder and Phantom	2.20	N	1.000	1	1	2.20	2.20
Power Drift	4.08	R	1.732	1	1	2.36	2.36
Phantom and Setup Related							
Phantom Thickness	2.00	N	1.000	1	0.6	2.00	1.20
Conbined Std. Uncertainty(k=1)						**16.18**	**13.25**
Expanded Uncertainty on Power						**32.35**	**26.50**
Expanded Uncertainty on Field						**16.18**	**13.25**

Note for table

1. N-Nomal
2. R-Rectangular
3. Div.- Divisor used to obataion standard uncertanty

2.6.8. OVERALL MEASUREMENT SUMMARY

2.6.7.1 E-FIELD EMISSIONS

Band	Channel	M Rating	Output power （dBm）
GSM850	128	M3	32.46
GSM850	190	M3	32.51
GSM850	251	M3	32.52
GSM1900	512	M3	29.81
GSM1900	661	M3	29.79
GSM1900	810	M3	29.94

2.6.7.2 H-FIELD EMISSIONS

Band	Channel	M Rating	Output power （dBm）
GSM850	128	M4	32.46
GSM850	190	M4	32.51
GSM850	251	M4	32.52
GSM1900	512	M3	29.81
GSM1900	661	M3	29.79
GSM1900	810	M3	29.94

2.6.9. TEST DATA

FREQUENCY	PARAMETERS
GSM850	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

MEASUREMENT 1

Date of measurement: 20/11/2012

A. Experimental conditions.

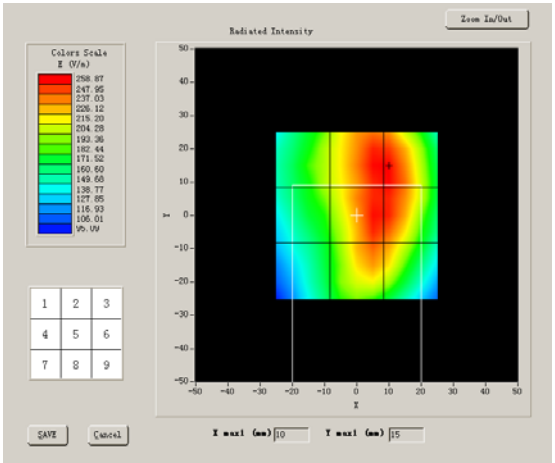
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM850
Channel	Low
Signal	GSM

B. HAC Measurement Results

Lower Band (Channel 128):

Frequency (MHz): 824.200000

SURFACE HAC



Probe Modulation Factor= 2.81

Maximum value of total field = 259.03 V/m

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

E in V/m

Grid 1: 206.65	Grid 2: 261.52	Grid 3: 259.49
Grid 4: 205.30	Grid 5: 259.03	Grid 6: 256.93
Grid 7: 182.49	Grid 8: 245.42	Grid 9: 233.28

MEASUREMENT 2

Date of measurement: 20/11/2012

A. Experimental conditions.

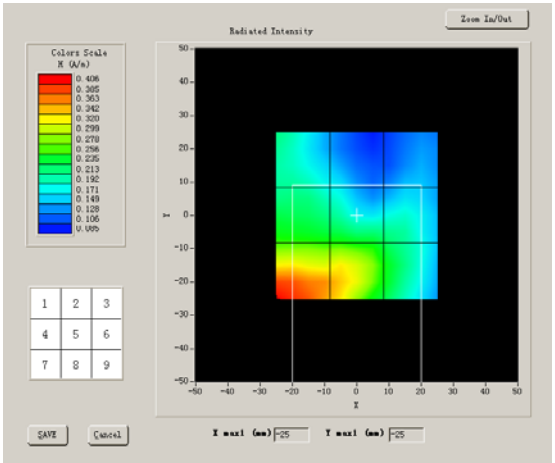
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM850
Channel	Low
Signal	GSM

B. HAC Measurement Results

Lower Band (Channel 128):

Frequency (MHz): 824.200000

SURFACE HAC



Probe Modulation Factor= 2.83

Maximum value of total field = 0.25 A/m

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

H in A/m

Grid 1: 0.21	Grid 2: 0.16	Grid 3: 0.15
Grid 4: 0.26	Grid 5: 0.25	Grid 6: 0.21
Grid 7: 0.41	Grid 8: 0.35	Grid 9: 0.24

MEASUREMENT 3

Date of measurement: 20/11/2012

A. Experimental conditions.

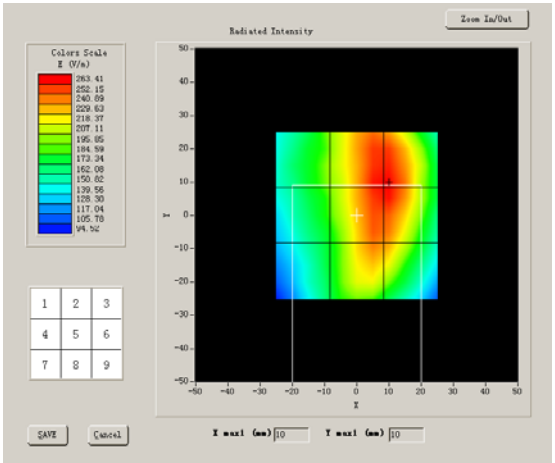
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM850
Channel	Middle
Signal	GSM

B. HAC Measurement Results

Middle Band (Channel 190):

Frequency (MHz): 836.600000

SURFACE HAC



Probe Modulation Factor= 2.81

Maximum value of total field = 265.22 V/m

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

E in V/m

Grid 1: 201.05	Grid 2: 265.07	Grid 3: 263.41
Grid 4: 196.62	Grid 5: 265.22	Grid 6: 263.85
Grid 7: 178.62	Grid 8: 243.81	Grid 9: 235.01

MEASUREMENT 4

Date of measurement: 20/11/2012

A. Experimental conditions.

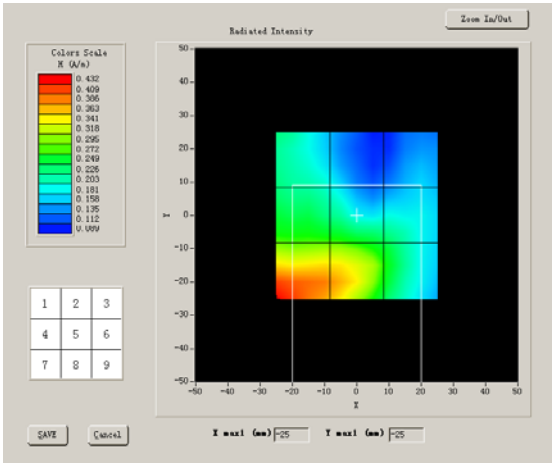
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM850
Channel	Middle
Signal	GSM

B. HAC Measurement Results

Middle Band (Channel 190):

Frequency (MHz): 836.600000

SURFACE HAC



Probe Modulation Factor= 2.83

Maximum value of total field = 0.27 A/m

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

H in A/m

Grid 1: 0.22	Grid 2: 0.17	Grid 3: 0.16
Grid 4: 0.28	Grid 5: 0.27	Grid 6: 0.23
Grid 7: 0.43	Grid 8: 0.37	Grid 9: 0.26

MEASUREMENT 5

Date of measurement: 20/11/2012

A. Experimental conditions.

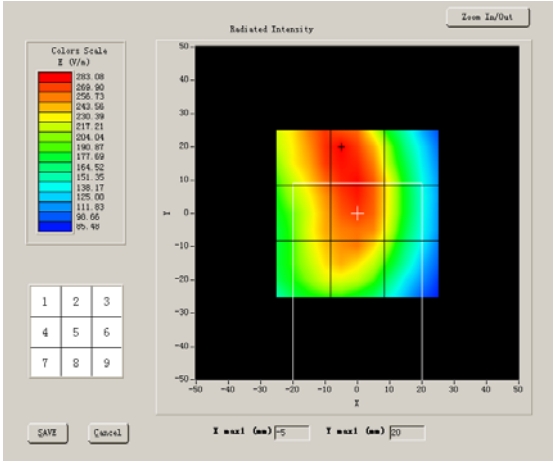
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM850
Channel	High
Signal	GSM

B. HAC Measurement Results

Higher Band (Channel 251):

Frequency (MHz): 848.800000

SURFACE HAC



Probe Modulation Factor= 2.81

Maximum value of total field = 221.08 V/m

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

E in V/m

Grid 1: 229.65	Grid 2: 223.50	Grid 3: 226.28
Grid 4: 226.89	Grid 5: 231.08	Grid 6: 227.46
Grid 7: 227.97	Grid 8: 228.94	Grid 9: 210.47

MEASUREMENT 6

Date of measurement: 20/11/2012

A. Experimental conditions.

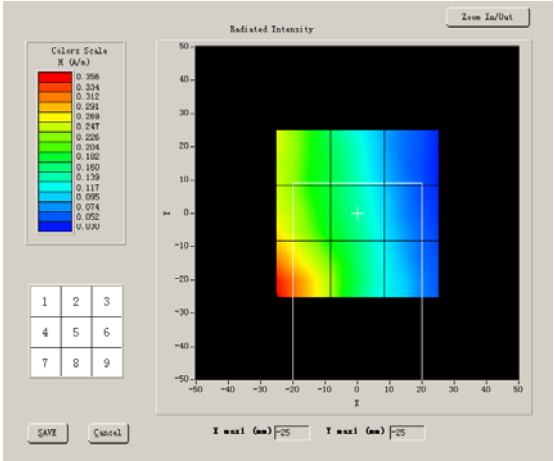
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM850
Channel	High
Signal	GSM

B. HAC Measurement Results

Higher Band (Channel 251):

Frequency (MHz): 848.800000

SURFACE HAC



Device Reference Point: 0 , 0 , -7mm

Reference Value=0.297A/m; Power Drift:-4.2%

Probe Modulation Factor= 2.83

Maximum value of total field = 0.22 A/m

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

H in A/m

Grid 1: 0.26	Grid 2: 0.17	Grid 3: 0.08
Grid 4: 0.28	Grid 5: 0.19	Grid 6: 0.10
Grid 7: 0.36	Grid 8: 0.22	Grid 9: 0.11

MEASUREMENT 7

Date of measurement: 20/11/2012

A. Experimental conditions.

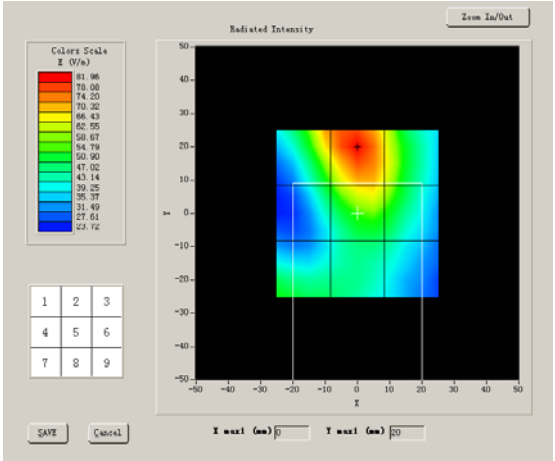
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM1900
Channel	Low
Signal	GSM

B. HAC Measurement Results

Lower Band ((Channel 512):

Frequency (MHz): 1850.200000

SURFACE HAC



Probe Modulation Factor= 2.79

Maximum value of total field = 70.75 V/m

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

E in V/m

Grid 1: 74.72	Grid 2: 81.96	Grid 3: 64.49
Grid 4: 56.76	Grid 5: 70.75	Grid 6: 61.22
Grid 7: 53.40	Grid 8: 48.35	Grid 9: 45.02

MEASUREMENT 8

Date of measurement: 20/11/2012

A. Experimental conditions.

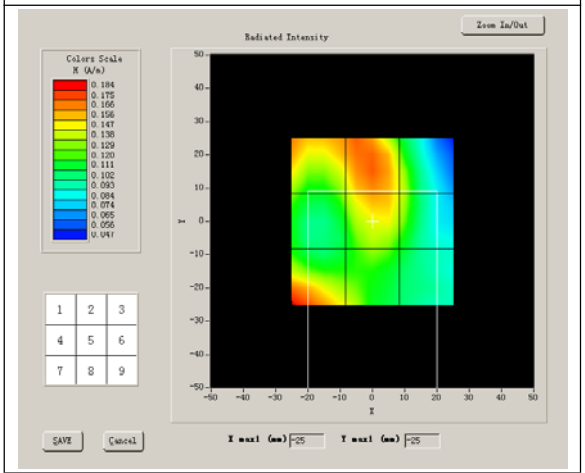
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM1900
Channel	Low
Signal	GSM

B. HAC Measurement Results

Lower Band ((Channel 512):

Frequency (MHz): 1850.200000

SURFACE HAC



Probe Modulation Factor= 2.82

Maximum value of total field = 0.17 A/m

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

H in A/m

Grid 1: 0.17	Grid 2: 0.17	Grid 3: 0.13
Grid 4: 0.14	Grid 5: 0.16	Grid 6: 0.13
Grid 7: 0.18	Grid 8: 0.14	Grid 9: 0.11

MEASUREMENT 9

Date of measurement: 20/11/2012

A. Experimental conditions.

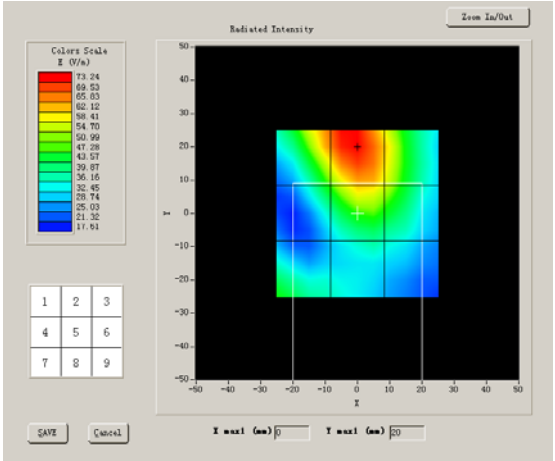
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM1900
Channel	Middle
Signal	GSM

B. HAC Measurement Results

Middle Band (Channel 661):

Frequency (MHz): 1880.000000

SURFACE HAC



Probe Modulation Factor= 2.79

Maximum value of total field = 63.03 V/m

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

E in V/m

Grid 1: 68.27	Grid 2: 74.35	Grid 3: 58.10
Grid 4: 50.35	Grid 5: 63.03	Grid 6: 53.94
Grid 7: 46.52	Grid 8: 37.59	Grid 9: 34.37

MEASUREMENT 10

Date of measurement: 20/11/2012

A. Experimental conditions.

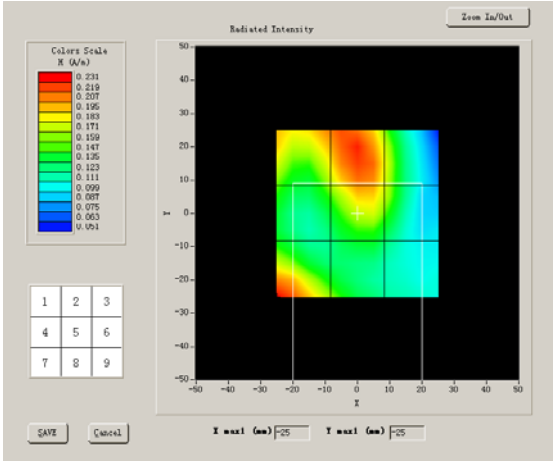
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM1900
Channel	Middle
Signal	GSM

B. HAC Measurement Results

Middle Band (Channel 661):

Frequency (MHz): 1880.000000

SURFACE HAC



Probe Modulation Factor= 2.82

Maximum value of total field = 0.23 A/m

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

H in A/m

Grid 1: 0.21	Grid 2: 0.23	Grid 3: 0.17
Grid 4: 0.17	Grid 5: 0.21	Grid 6: 0.16
Grid 7: 0.23	Grid 8: 0.16	Grid 9: 0.12

MEASUREMENT 11

Date of measurement: 20/11/2012

A. Experimental conditions.

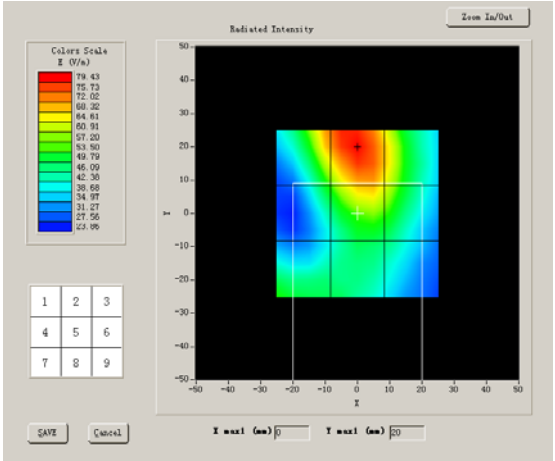
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM1900
Channel	High
Signal	GSM

B. HAC Measurement Results

Higher Band (Channel 810):

Frequency (MHz): 1909.800000

SURFACE HAC



Probe Modulation Factor= 2.79

Maximum value of total field = 70.32 V/m

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

E in V/m

Grid 1: 73.78	Grid 2: 79.46	Grid 3: 64.81
Grid 4: 56.53	Grid 5: 70.32	Grid 6: 60.79
Grid 7: 53.71	Grid 8: 49.06	Grid 9: 45.45

MEASUREMENT 12

Date of measurement: 20/11/2012

A. Experimental conditions.

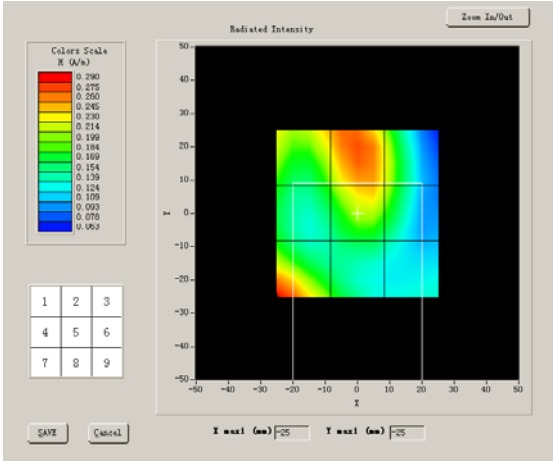
Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	GSM1900
Channel	High
Signal	GSM

B. HAC Measurement Results

Higher Band (Channel 810):

Frequency (MHz): 1909.800000

SURFACE HAC



Device Reference Point: 0 , 0 , -7mm

Reference Value=0.229A/m; Power Drift:-4.6%

Probe Modulation Factor= 2.82

Maximum value of total field = 0.24 A/m

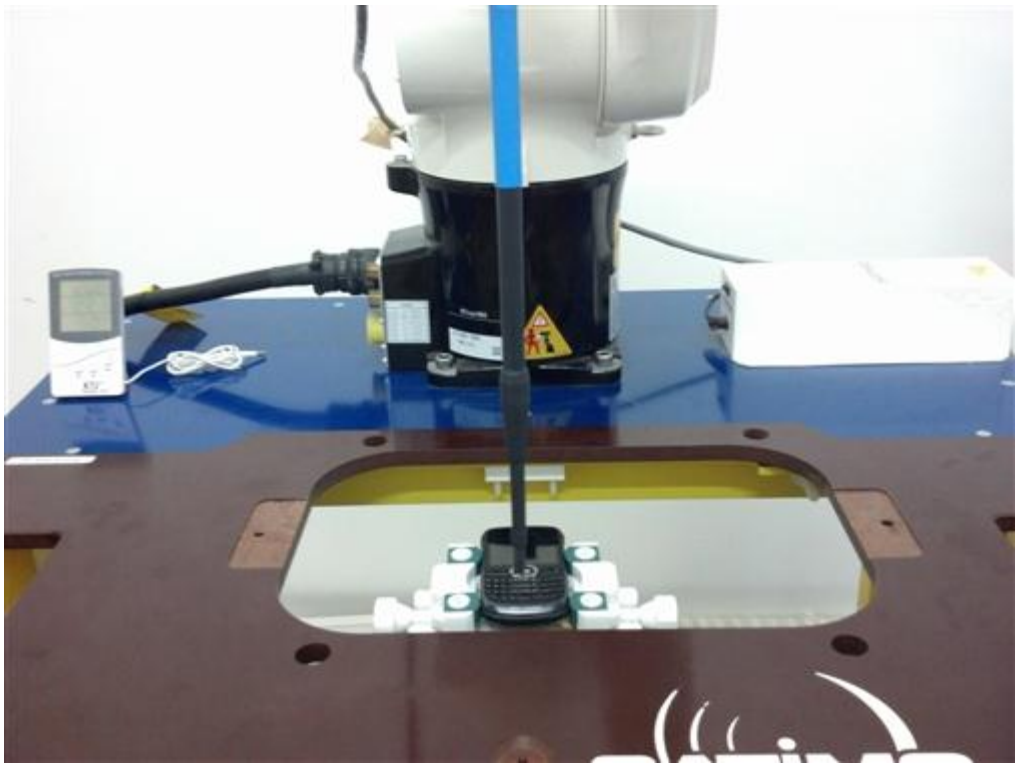
Hearing Aid Near-Field Category: M3 (AWF -5 dB)

H in A/m

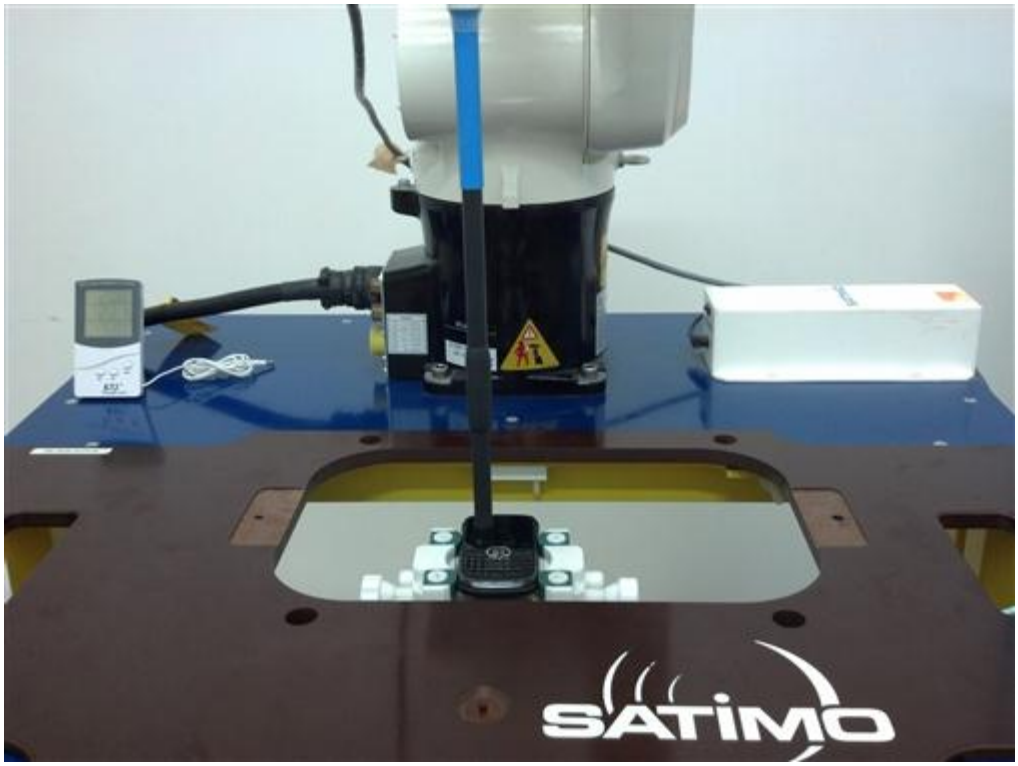
Grid 1: 0.22	Grid 2: 0.23	Grid 3: 0.21
Grid 4: 0.20	Grid 5: 0.24	Grid 6: 0.21
Grid 7: 0.22	Grid 8: 0.18	Grid 9: 0.14

Annex A Photographs of the EUT

Annex B EUT Setup photo



E-Field



H-Field

System Performance Check (E-field)

Date of measurement: 20/11/2012

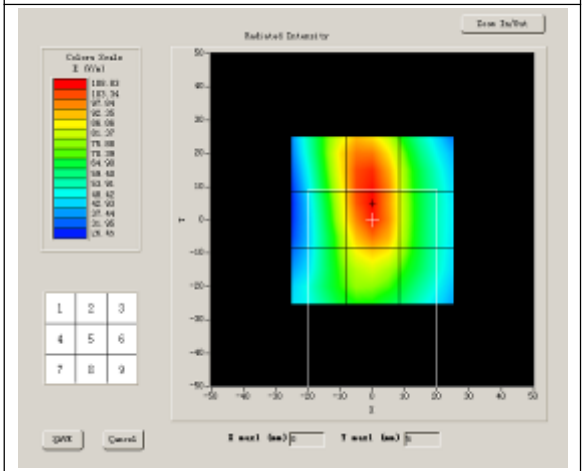
A. Experimental conditions.

Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	850 MHz
Channel	
Signal	CW

B. HAC Measurement Results

Frequency (MHz): 850.000000

SURFACE HAC



Device Reference Point: 0 , 0 , -7mm

Reference Value=193.184V/m; Power Drift:-1.4%

Probe Modulation Factor= 1.00

Maximum value of total field = 196.00 V/m;Location: 0, 7, 3 mm

E in V/m

Grid 1: 194.51	Grid 2: 198.12	Grid 3: 177.56
Grid 4: 192.69	Grid 5: 196.00	Grid 6: 178.98
Grid 7: 181.13	Grid 8: 194.18	Grid 9: 176.51

System Performance Check (H-field)

Date of measurement: 20/11/2012

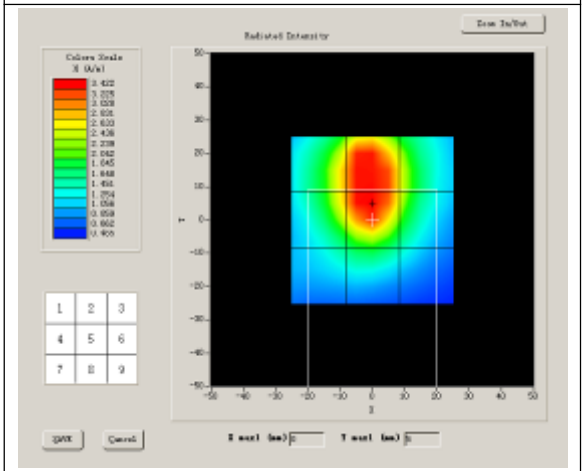
A. Experimental conditions.

Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	850 MHz
Channel	
Signal	CW

B. HAC Measurement Results

Frequency (MHz): 850.000000

SURFACE HAC



Device Reference Point: 0 , 0 , -7mm

Reference Value=0.412 A/m; Power Drift:-4.0%

Probe Modulation Factor= 1.00

Maximum value of total field = 0.429 A/m; Location: 0, 6, 3 mm

H in A/m

Grid 1: 0.302	Grid 2: 0.421	Grid 3: 0.336
Grid 4: 0.381	Grid 5: 0.429	Grid 6: 0.332
Grid 7: 0.370	Grid 8: 0.400	Grid 9: 0.239

System Performance Check (E-field)

Date of measurement: 20/11/2012

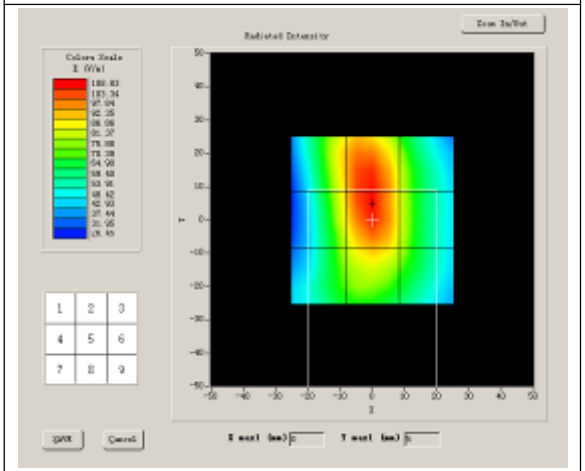
A. Experimental conditions.

Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	1900 MHz
Channel	
Signal	CW

B. HAC Measurement Results

Frequency (MHz): 1900.000000

SURFACE HAC



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)

Date of measurement: 20/11/2012

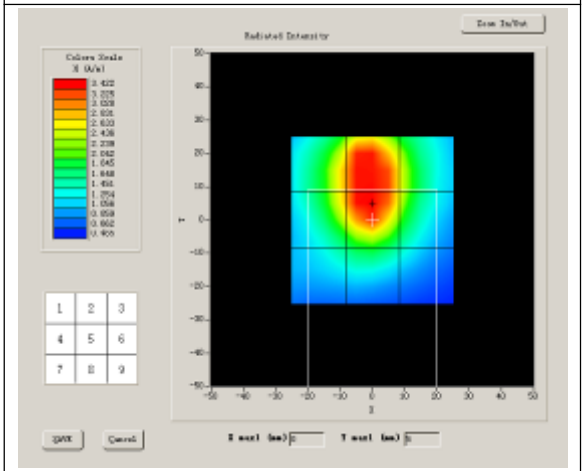
A. Experimental conditions.

Grid size (mm x mm)	50.0, 50.0
Step (mm)	5
Band	1900 MHz
Channel	
Signal	CW

B. HAC Measurement Results

Frequency (MHz): 1900.000000

SURFACE HAC



Probe Modulation Factor= 1.00

Maximum value of total field = 0.438 A/m;

H in A/m

Grid 1: 0.424	Grid 2: 0.434	Grid 3: 0.384
Grid 4: 0.437	Grid 5: 0.438	Grid 6: 0.415
Grid 7: 0.432	Grid 8:0.415	Grid 9: 0.361