



Report No.: SZ11090185H02

# 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 : T-Coil: T3

Test date : 2011-10-11

Issue date : 2011-10-19

**Shenzhen MORLAB Communication Technology Co., Ltd.**



Tested by Zhu Zhan  
Zhu Zhan

Approved by Zeng Dexin  
Zeng Dexin

Review by Samuel Peng  
Samuel Peng

Date 2011.10.19

Date 2011.10.19

Date 2011.10.19



The report refers only to the sample tested and does not apply to the bulk. This report is issued in confidence to the client and it will be strictly treated as such by the Shenzhen MORLAB Communication Technology Co., Ltd. It may not be reproduced either in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the Shenzhen MORLAB Telecommunication Co., Ltd to his customer. Supplier or others persons directly concerned. Shenzhen MORLAB Telecommunication Co., Ltd will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report. In the event of the improper use of the report, Shenzhen MORLAB Telecommunication Co., Ltd reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

## Contents

<b>1.1. Identification of the Responsible Testing Laboratory .....</b>	<b>3</b>
<b>1.2. Identification of the Responsible Testing Location .....</b>	<b>3</b>
<b>1.3. Accreditation Certificate .....</b>	<b>3</b>
<b>1.4. List of Test Equipments .....</b>	<b>3</b>
<b>2. TECHNICAL INFORMATION .....</b>	<b>4</b>
<b>2.1. Identification of Applicant.....</b>	<b>4</b>
<b>2.2. Identification of Manufacturer .....</b>	<b>4</b>
<b>2.3. Equipment Under Test (EUT).....</b>	<b>4</b>
<b>2.3.1. Photographs of the EUT .....</b>	<b>4</b>
<b>2.3.2. Identification of all used EUTs.....</b>	<b>5</b>
<b>2.4. Applied Reference Documents .....</b>	<b>5</b>
<b>2.5. Test Environment/Conditions .....</b>	<b>6</b>
<b>2.6. Operational Conditions During Test .....</b>	<b>7</b>
<b>2.6.1. INTRODUCTION.....</b>	<b>7</b>
<b>2.6.2. ANSI/IEEE PC 63.19 PERFORMANCE CATEGORIES .....</b>	<b>8</b>
<b>2.6.3. Description of Test System .....</b>	<b>9</b>
<b>2.6.4. TEST PROCEDURE .....</b>	<b>13</b>
<b>2.6.5. Uncertainty Estimation Table .....</b>	<b>17</b>
<b>2.6.6. OVERALL MEASUREMENT SUMMARY .....</b>	<b>18</b>
<b>2.6.7. TEST DATA.....</b>	<b>19</b>
<b>ANNEX A                      PHOTOGRAPHS OF THE EUT.....</b>	<b>38</b>
<b>ANNEX B                      EUT SETUP PHOTO .....</b>	<b>39</b>

### 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	Synthesizer	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	Probe	Antenna (SN:SN_4108_EPH17)
9	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	<b>ANSI C 63.19:2007</b>	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 and 251 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. T-coil

The table below provides the signal quality requirement for the intended audio magnetic signal from a wireless device. Only the RF immunity of the hearing aid is measured in T-coil mode. It is assumed that a hearing aid can have no immunity to an interference signal in the audio band, which is the intended reception band for this mode. The only criterion that can be measured is the RF immunity in T-coil mode. This is measured using the same procedure as the audio coupling mode at the same levels.

The signal quality of the axial and radial components of the magnetic field was used to determine the T-coil mode category.

Category	Telephone RF Parameter
	Wireless Device Signal Quality (Signal + Noise-to-noise ratio in dB)
T1	0 to 10 dB
T2	10 to 20 dB
T3	20 to 30 dB
T4	> 30 dB
Magnetic Coupling Parameters	

### 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. COMO HAC 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

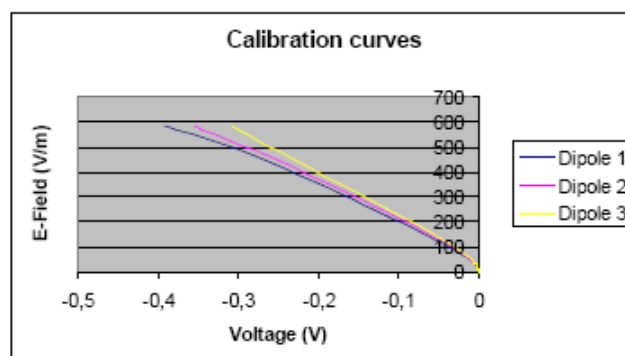
TYPE	IDENTIFICATION
Calibration bench	SATIMO AIR CALIBRATION SOFTWARE
Multimeter	Keithley 2000

## 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. COMO HAC 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

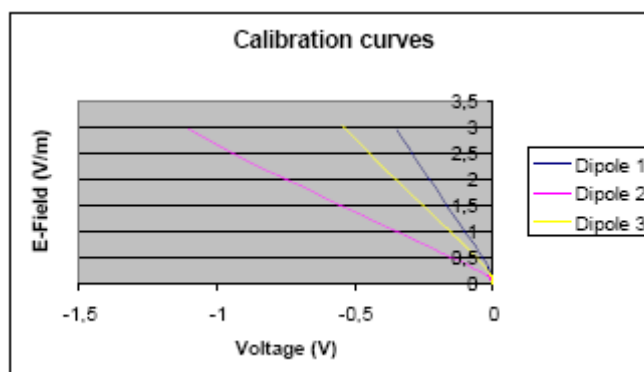
TYPE	IDENTIFICATION
Calibration bench	SATIMO AIR CALIBRATION SOFTWARE
Multimeter	Keithley 2000

### 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.

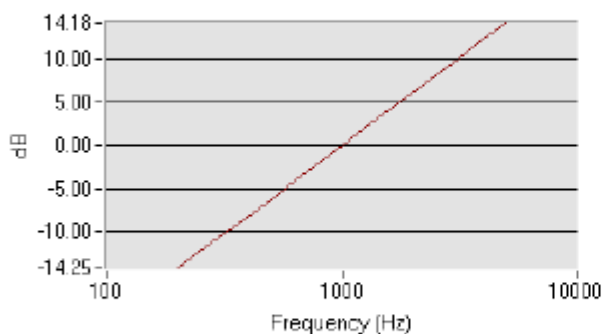
### 4.3.3.3. COMOHAC T-COIL PROBE



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

Probe coil sensitivity relative to sensitivity at 1000 Hz



T-Coil probe sensitivity (dB V/(A/m))

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

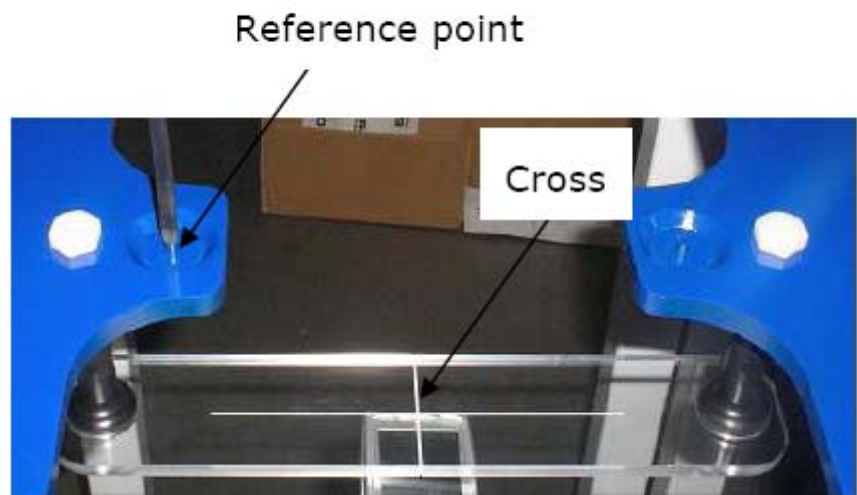
Linearity = 0.27 dB

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.

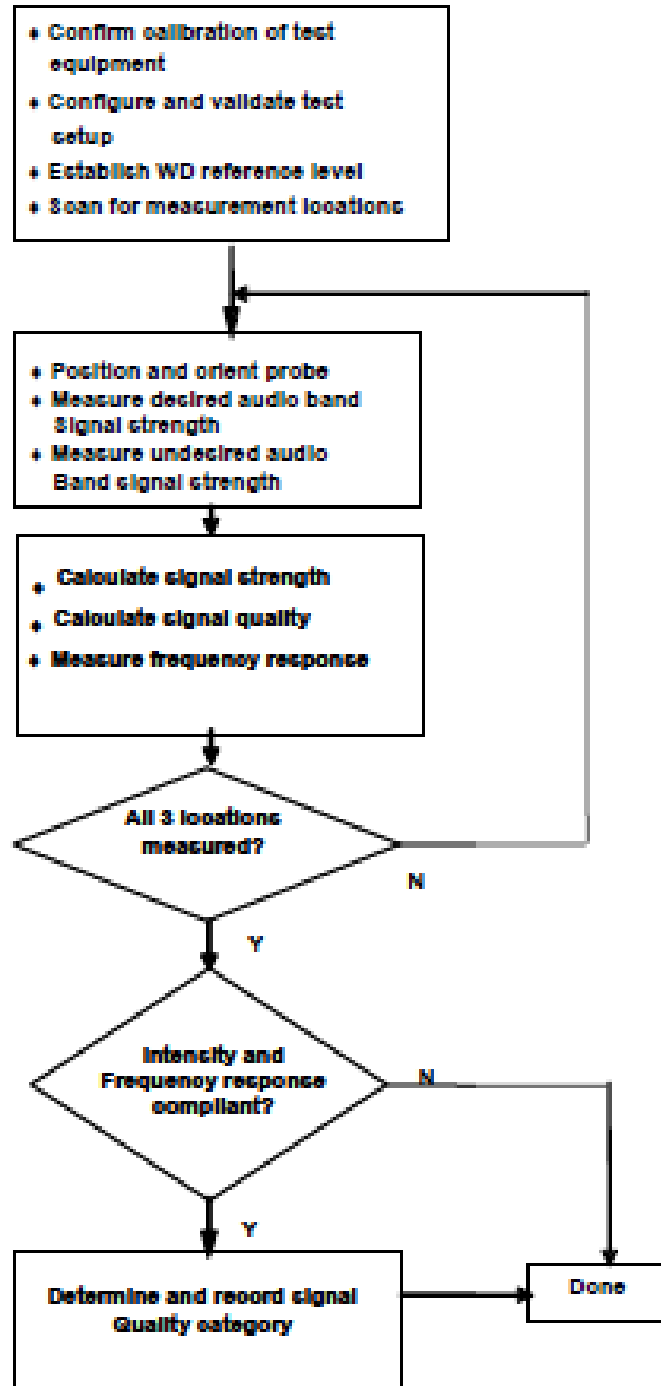


HAC positioning ruler

## 2.6.4. TEST PROCEDURE

### 4.3.4.1. T-coil Test Flow

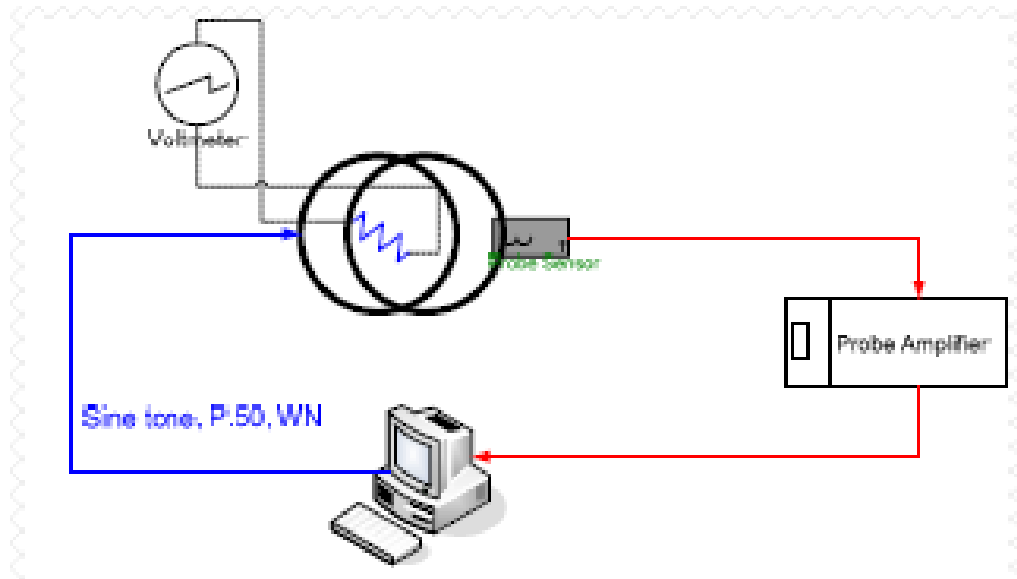
The flow diagram below was followed (From C63.19):



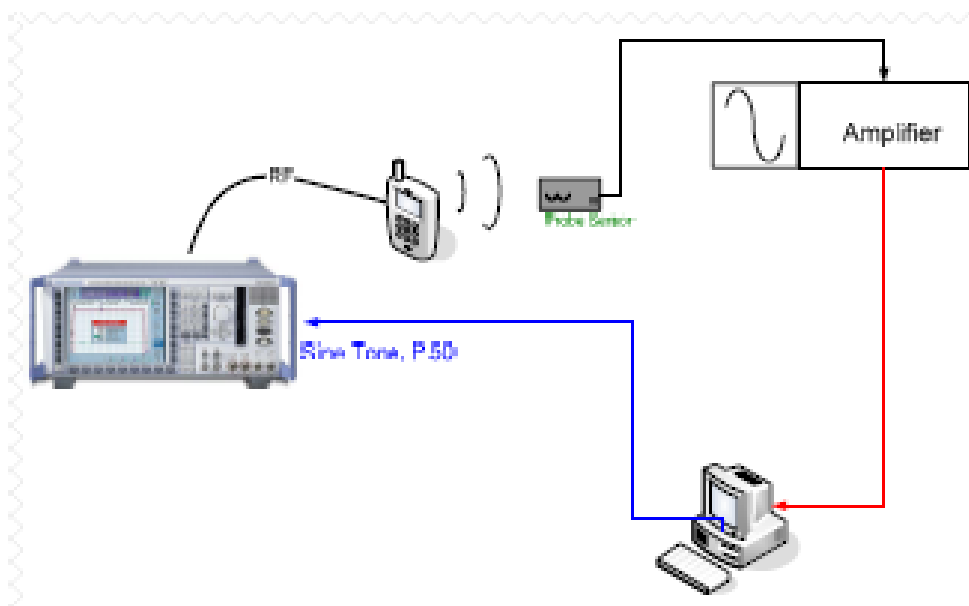
C63.19 T-Coil Signal Test Process

### 4.3.4.2. TEST Setup

The equipment was connected as shown in an acoustic/RF hemi-anechoic chamber:



Validation Setup with Helmholtz Coil



T-Coil Test Setup

#### 4.3.4.3.T-coil Test Procedure

##### Frequency Response Validation

The frequency response through the Helmholtz Coil was verified to be within 0.5 dB relative to 1 kHz, between 300 – 3000 Hz using the ITU-P.50 artificial speech signal as shown below:

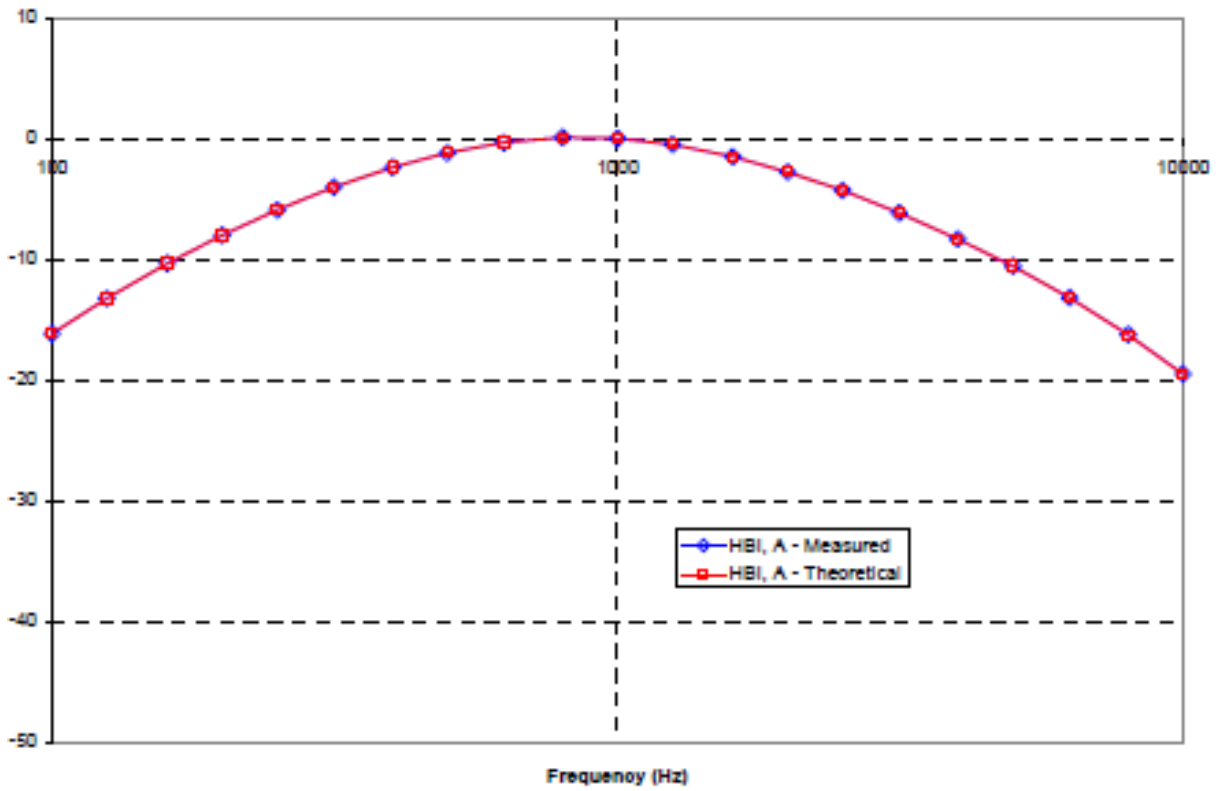


Frequency Response Validation

##### Measurement Validation

WD noise measurements are filtered with A-weighting and Half-Band Integration over a frequency range of 100Hz – 10kHz to process ABM2 measurements. Below is the verification of the system processing A-weighting and Half-Band integration between system input to output within 0.5 dB of the theoretical result:

f(Hz)	HBI, A- Measured (dB re 1kHz)	HBI, A- Theoretical (dB re 1kHz)	dB Var.
100	-16.150	-16.170	0.020
125	-13.241	-13.250	0.009
160	-10.333	-10.340	0.007
200	-8.005	-8.010	0.005
250	-5.915	-5.920	0.005
315	-4.035	-4.040	0.005
400	-2.395	-2.400	0.005
500	-1.207	-1.210	0.003
630	-0.347	-0.350	0.003
800	0.068	0.070	0.002
1000	0.001	0.000	0.001
1250	-0.501	-0.500	-0.001
1600	-1.511	-1.510	-0.001
2000	-2.783	-2.780	-0.003
2500	-4.323	-4.320	-0.003
3150	-6.175	-6.170	-0.005
4000	-8.338	-8.330	-0.008
5000	-10.599	-10.590	-0.009
6300	-13.212	-13.200	-0.012
8000	-16.284	-16.270	-0.014
10000	-19.539	-19.520	-0.019



Frequency Response Validation



### 2.6.5. 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 (+-%)	V i
<b>Measurement System</b>									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$			1.02	1.02	
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$			1.63	1.63	
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	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	$\sqrt{3}$	1	1	1.73	1.73	
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	
<b>Test sample Related</b>									
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	

## 2.6.6. OVERALL MEASUREMENT SUMMARY

### 4.3.7.1 T-coil

Mode	Channel	Antenna	T ESULT	Output power (dBm)
T-coil				
GSM 850	128	Fixed	T3	31.96
GSM 850	190	Fixed	T3	31.92
GSM 850	251	Fixed	T3	32.10
GSM 1900	512	Fixed	T3	27.49
GSM 1900	661	Fixed	T3	29.23
GSM 1900	810	Fixed	T3	28.86
WCDMA 1700	1313	Fixed	T3	22.44
WCDMA 1700	1450	Fixed	T3	22.78
WCDMA 1700	1512	Fixed	T3	22.22

### 2.6.7. TEST DATA

<u>FREQUENCY</u>	<u>PARAMETERS</u>
<b><u>CDMA 800</u></b>	<u>Measurement 1:</u> T-coil on Low Channel
	<u>Measurement 2:</u> T-coil on Middle Channel
	<u>Measurement 3:</u> T-coil on High Channel
<b><u>CDMA 1900</u></b>	<u>Measurement 4:</u> T-coil on Low Channel
	<u>Measurement 5:</u> T-coil on Middle Channel
	<u>Measurement 6:</u> T-coil on High Channel
<b><u>CDMA 1900</u></b>	<u>Measurement 7:</u> T-coil on Low Channel
	<u>Measurement 8:</u> T-coil on Middle Channel
	<u>Measurement 9:</u> T-coil on High Channel

## MEASUREMENT 1

### A. Experimental conditions.

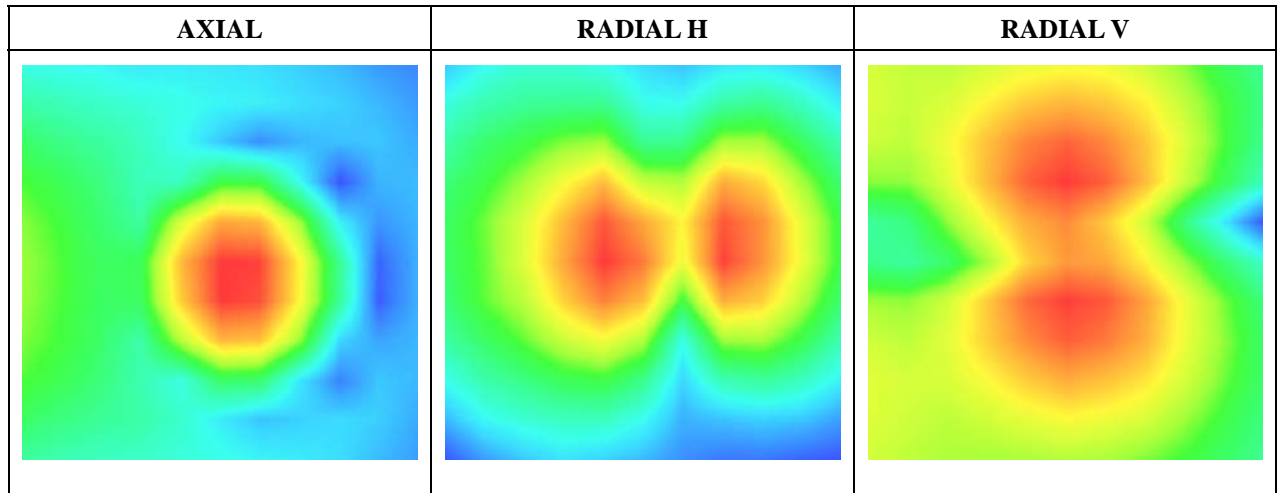
<b>Grid size (mm x mm)</b>	50.0, 50.0
<b>Step (mm)</b>	5
<b>Scanning Height (mm)</b>	10.0
<b>Band</b>	GSM850
<b>Date of measurement</b>	15/10/2011

### B. HAC Measurement Results

Frequency (MHz): 824.200000

C63.19	Mode	Band	Test Description	Minimum Limit	Location	Measured	Categor y	Verdict
				dB/m	-	dB/m	-	Pass/Fai l
7.3.1.1	GSM	GSM850	Intensity, Axial	-18	Max	3.14	-	PASS
7.3.1.2			Intensity, RadialH	-18	Max	-4.57	-	PASS
				-	-	-	-	-
7.3.1.2			Intensity, RadialV	-18	Max	-5.86	-	PASS
				-	-	-	-	-
				dB		dB		
7.3.3			Signal to noise/noise, Axial	5	Max	35.48	T4	PASS
7.3.3			Signal to noise/noise, RadialH	5	Max	27.54	T3	PASS
				-	-	-	-	-
7.3.3			Signal to noise/noise, RadialV	5	Max	24.14	T3	PASS
		-	-	-	-	-		
7.3.2	Frequency reponse, Axial	-	-	-	-	-		

## T.Coil Scan Overlay Magnetic Field Distributions



## MEASUREMENT 2

### A. Experimental conditions.

<b>Grid size (mm x mm)</b>	50.0, 50.0
<b>Step (mm)</b>	5
<b>Scanning Height (mm)</b>	10.0
<b>Band</b>	GSM850
<b>Date of measurement</b>	15/10/2011

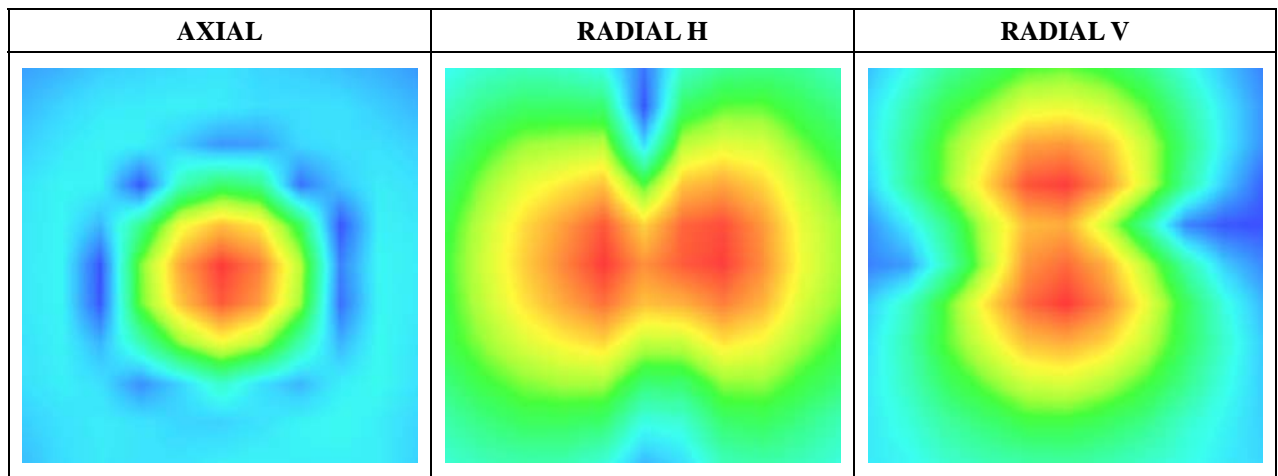
### B. HAC Measurement Results

Frequency (MHz): 836.400000

### Test Summary

C63.19	Mode	Band	Test Description	Minimum Limit	Location	Measured	Category	Verdict	
				dBA/m	-	dBA/m	-	Pass/Fail	
7.3.1.1	GSM	GSM850	Intensity, Axial	-18	Max	-3.72	-	PASS	
7.3.1.2			Intensity, RadialH	-18	Max	-12.09	-	PASS	
				-	-	-	-	-	
7.3.1.2			Intensity, RadialV	-18	Max	-11.96	-	PASS	
				-	-	-	-	-	
				dB		dB			
7.3.3			Signal to noise/noise, Axial	5	Max	30.46	T4	PASS	
7.3.3			Signal to noise/noise, RadialH	5	Max	24.41	T4	PASS	
				-	-	-	-	-	
7.3.3			Signal to noise/noise, RadialV	5	Max	21.92	T4	PASS	
		-	-	-	-	-			
7.3.2	Frequency response, Axial	-	-	-	-	-			

## T.Coil Scan Overlay Magnetic Field Distributions



## MEASUREMENT 3

### A. Experimental conditions.

<b>Grid size (mm x mm)</b>	50.0, 50.0
<b>Step (mm)</b>	5
<b>Scanning Height (mm)</b>	10.0
<b>Band</b>	GSM850
<b>Date of measurement</b>	15/10/2011

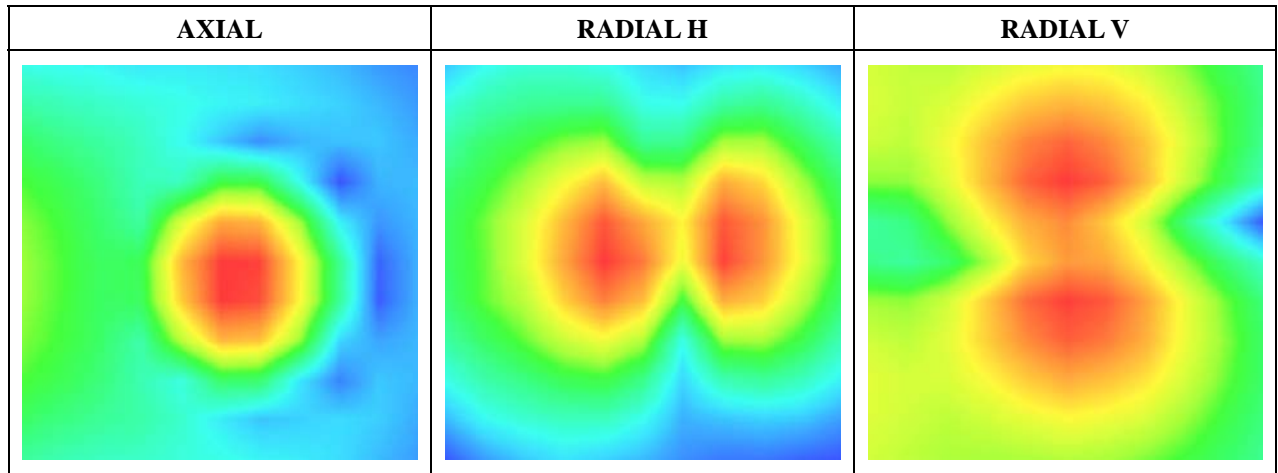
### B. HAC Measurement Results

Frequency (MHz): 848.800000

C63.19	Mode	Band	Test Description	Minimum Limit	Location	Measured	Categor y	Verdict		
				dB/m	-	dB/m	-	Pass/Fai l		
7.3.1.1	GSM	GSM900	Intensity, Axial	-18	Max	3.16	-	PASS		
7.3.1.2			Intensity, RadialH	-18	Max	-4.51	-	PASS		
						-	-	-	-	
7.3.1.2			Intensity, RadialV	-18	Max	-5.53	-	PASS		
						-	-	-	-	
						dB		dB		
7.3.3			Signal to noise/noise, Axial	5	Max	25.21	T3	PASS		
7.3.3			Signal to noise/noise, RadialH	5	Max	27.19	T3	PASS		
						-	-	-	-	
7.3.3			Signal to noise/noise, RadialV	5	Max	24.53	T3	PASS		
				-	-	-	-			
7.3.2	Frequency reponse, Axial	-	-	-	-	-	-			



### T.Coil Scan Overlay Magnetic Field Distributions



## MEASUREMENT 4

### A. Experimental conditions.

<b>Grid size (mm x mm)</b>	50.0, 50.0
<b>Step (mm)</b>	5
<b>Scanning Height (mm)</b>	10.0
<b>Band</b>	GSM1900
<b>Date of measurement</b>	15/10/2011

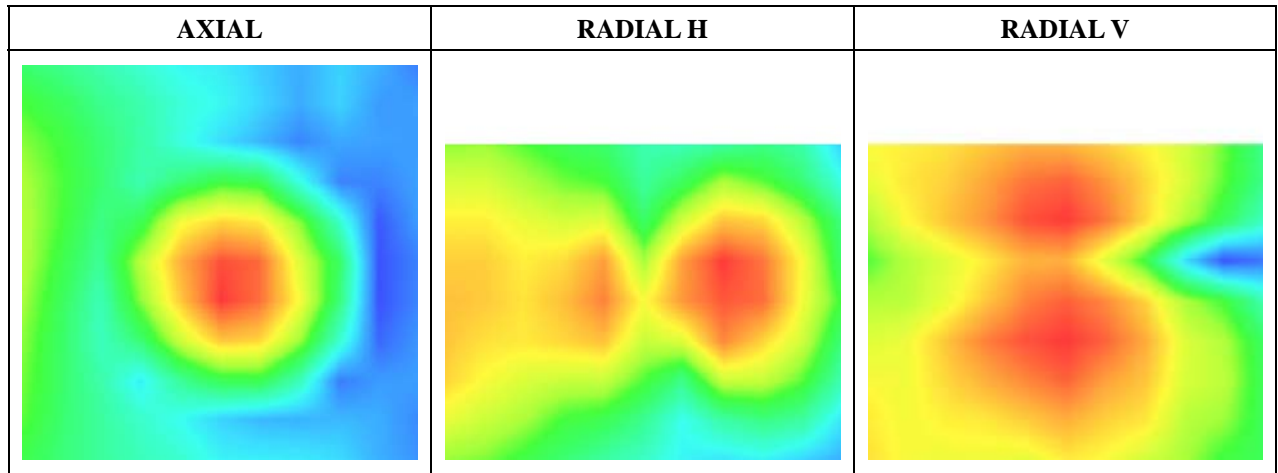
### B. HAC Measurement Results

Frequency (MHz): 1850.200000

### Test Summary

C63.19	Mode	Band	Test Description	Minimum Limit	Location	Measured	Category	Verdict		
				dB/m	-	dB/m	-	Pass/Fail		
7.3.1.1	GSM	GSM1900	Intensity, Axial	-18	Max	3.95	-	PASS		
7.3.1.2			Intensity, RadialH	-18	Max	-4.01	-	PASS		
						-	-	-	-	
7.3.1.2			Intensity, RadialV	-18	Max	-5.27	-	PASS		
						-	-	-	-	
						dB		dB		
7.3.3			Signal to noise/noise, Axial	5	Max	32.39	T4	PASS		
7.3.3			Signal to noise/noise, RadialH	5	Max	22.16	T3	PASS		
						-	-	-	-	
7.3.3			Signal to noise/noise, RadialV	5	Max	22.08	T3	PASS		
				-	-	-	-			
7.3.2	Frequency response, Axial	-	-	-	-	-	-			

### T.Coil Scan Overlay Magnetic Field Distributions



## MEASUREMENT 2

### A. Experimental conditions.

<b>Grid size (mm x mm)</b>	50.0, 50.0
<b>Step (mm)</b>	5
<b>Scanning Height (mm)</b>	10.0
<b>Band</b>	GSM1900
<b>Date of measurement</b>	15/10/2011

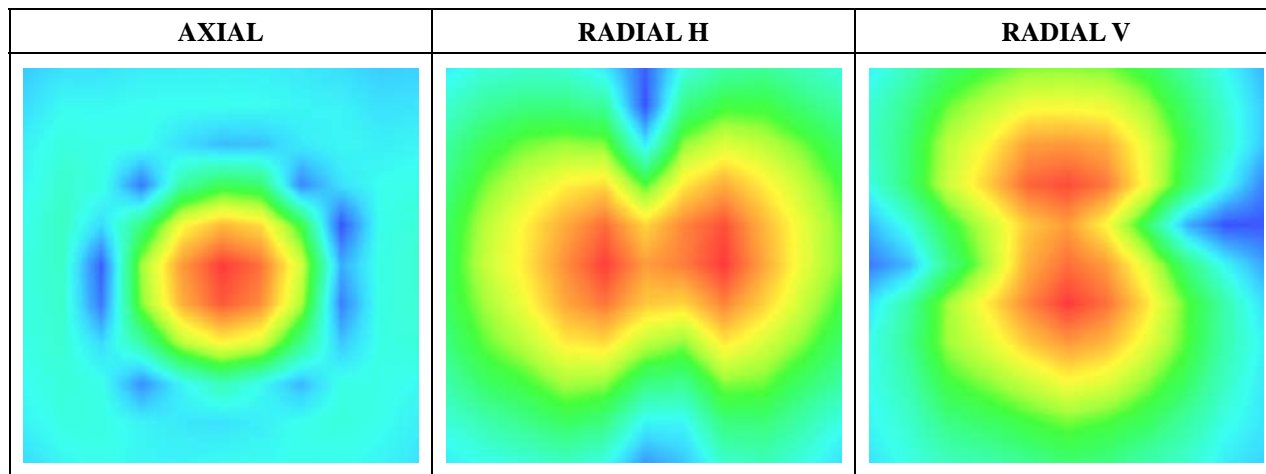
### B. HAC Measurement Results

Frequency (MHz): 1880.000000

### Test Summary

C63.19	Mode	Band	Test Description	Minimum Limit	Location	Measured	Category	Verdict		
				dB/m	-	dB/m	-	Pass/Fail		
7.3.1.1	GSM	GSM1900	Intensity, Axial	-18	Max	-5.75	-	PASS		
7.3.1.2			Intensity, RadialH	-18	Max	-11.78	-	PASS		
						-	-	-	-	
7.3.1.2			Intensity, RadialV	-18	Max	-12.57	-	PASS		
						-	-	-	-	
						dB		dB		
7.3.3			Signal to noise/noise, Axial	5	Max	33.11	T4	PASS		
7.3.3			Signal to noise/noise, RadialH	5	Max	24.42	T3	PASS		
						-	-	-	-	
7.3.3			Signal to noise/noise, RadialV	5	Max	25.85	T3	PASS		
				-	-	-	-			
7.3.2	Frequency response, Axial	-	-	-	-	-	-			

### T.Coil Scan Overlay Magnetic Field Distributions



## MEASUREMENT 6

### A. Experimental conditions.

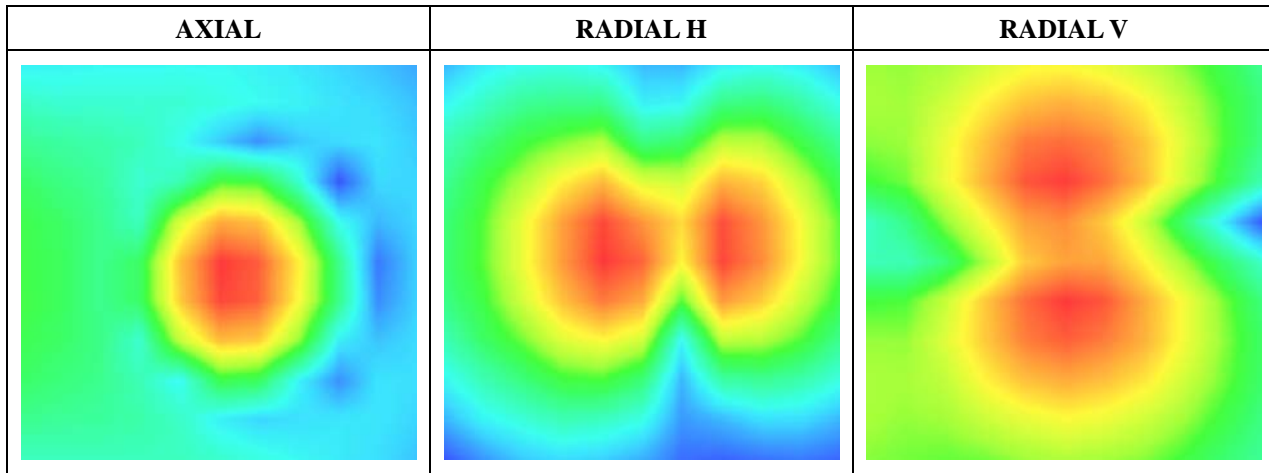
<b>Grid size (mm x mm)</b>	50.0, 50.0
<b>Step (mm)</b>	5
<b>Scanning Height (mm)</b>	10.0
<b>Band</b>	GSM1800
<b>Date of measurement</b>	15/10/2011

### B. HAC Measurement Results

Frequency (MHz): 1909.000000

C63.19	Mode	Band	Test Description	Minimum Limit	Location	Measured	Category	Verdict		
				dB/m	-	dB/m	-	Pass/Fail		
7.3.1.1	GSM	GSM1800	Intensity, Axial	-18	Max	4.32	-	PASS		
7.3.1.2			Intensity, RadialH	-18	Max	-5.21	-	PASS		
					-	-	-	-	-	
7.3.1.2			Intensity, RadialV	-18	Max	-5.53	-	PASS		
					-	-	-	-	-	
						dB		dB		
7.3.3			Signal to noise/noise, Axial	5	Max	29.56	T3	PASS		
7.3.3			Signal to noise/noise, RadialH	5	Max	22.21	T3	PASS		
					-	-	-	-	-	
7.3.3			Signal to noise/noise, RadialV	5	Max	25.52	T3	PASS		
			-	-	-	-	-			
7.3.2	Frequency response, Axial	-	-	-	-	-	-			

### T.Coil Scan Overlay Magnetic Field Distributions



## MEASUREMENT 7

### A. Experimental conditions.

<b>Grid size (mm x mm)</b>	50.0, 50.0
<b>Step (mm)</b>	5
<b>Scanning Height (mm)</b>	10.0
<b>Band</b>	WCDMA1700
<b>Date of measurement</b>	15/10/2011

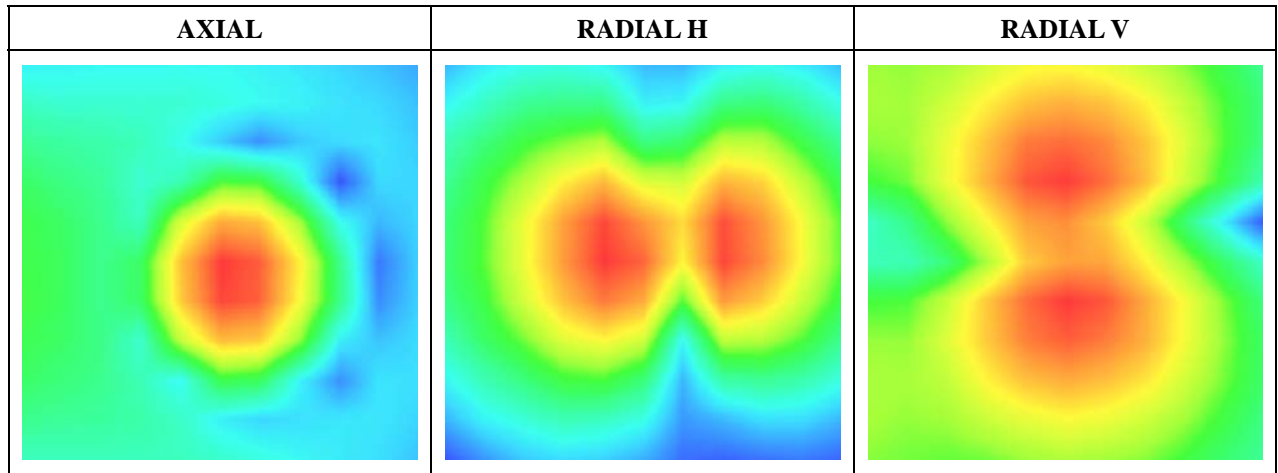
### B. HAC Measurement Results

Frequency (MHz): 1710.000000

C63.19	Mode	Band	Test Description	Minimum Limit	Location	Measured	Category	Verdict		
				dB/m	-	dB/m	-	Pass/Fail		
7.3.1.1	WCDMA	WCDMA 1700	Intensity, Axial	-18	Max	4.29	-	PASS		
7.3.1.2			Intensity, RadialH	-18	Max	-5.15	-	PASS		
						-	-	-	-	
7.3.1.2			Intensity, RadialV	-18	Max	-5.77	-	PASS		
						-	-	-	-	
						dB		dB		
7.3.3			Signal to noise/noise, Axial	5	Max	32.42	T4	PASS		
7.3.3			Signal to noise/noise, RadialH	5	Max	22.22	T3	PASS		
						-	-	-	-	
7.3.3			Signal to noise/noise, RadialV	5	Max	26.27	T3	PASS		
				-	-	-	-			
7.3.2	Frequency response, Axial	-	-	-	-	-	-			



### T.Coil Scan Overlay Magnetic Field Distributions



## MEASUREMENT 8

### A. Experimental conditions.

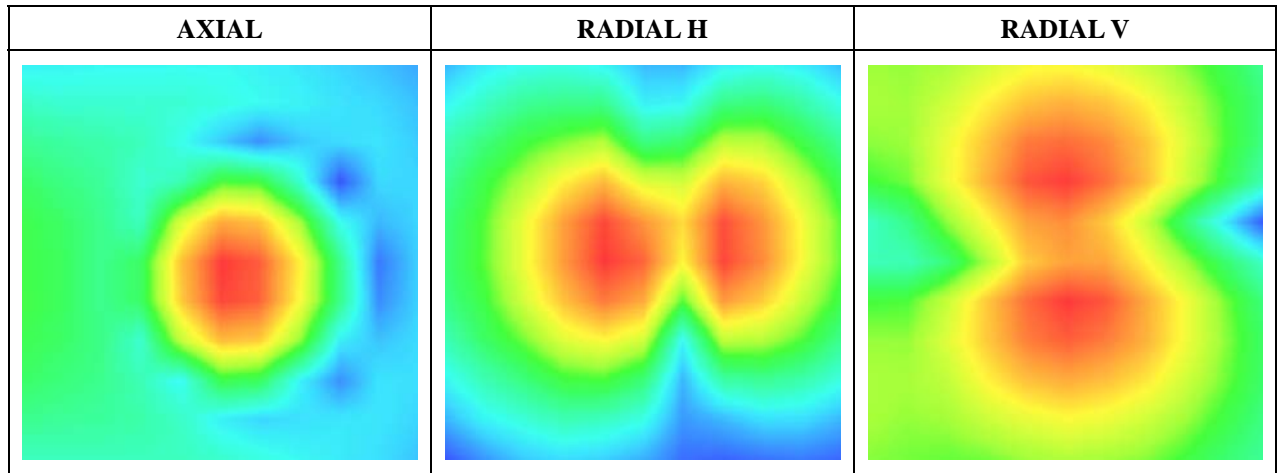
<b>Grid size (mm x mm)</b>	50.0, 50.0
<b>Step (mm)</b>	5
<b>Scanning Height (mm)</b>	10.0
<b>Band</b>	WCDMA1700
<b>Date of measurement</b>	15/10/2011

### B. HAC Measurement Results

Frequency (MHz): 1732.000000

C63.19	Mode	Band	Test Description	Minimum Limit	Location	Measured	Categor y	Verdict
				dB/m	-	dB/m	-	Pass/Fai l
7.3.1.1	WCD MA	WCDMA 1700	Intensity, Axial	-18	Max	4.33	-	PASS
7.3.1.2			Intensity, RadialH	-18	Max	-5.22	-	PASS
				-	-	-	-	-
7.3.1.2			Intensity, RadialV	-18	Max	-5.54	-	PASS
				-	-	-	-	-
				dB		dB		
7.3.3			Signal to noise/noise, Axial	5	Max	29.58	T3	PASS
7.3.3			Signal to noise/noise, RadialH	5	Max	24.20	T3	PASS
				-	-	-	-	-
7.3.3			Signal to noise/noise, RadialV	5	Max	25.41	T3	PASS
		-	-	-	-	-		
7.3.2	Frequency reponse, Axial	-	-	-	-	-		

### T.Coil Scan Overlay Magnetic Field Distributions



## MEASUREMENT 9

### A. Experimental conditions.

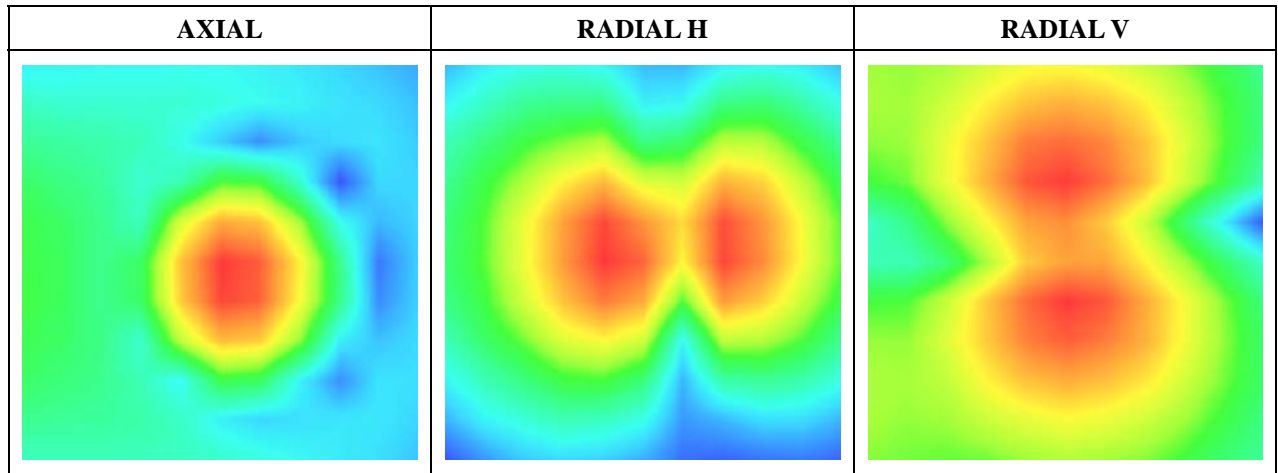
<b>Grid size (mm x mm)</b>	50.0, 50.0
<b>Step (mm)</b>	5
<b>Scanning Height (mm)</b>	10.0
<b>Band</b>	WCDMA1700
<b>Date of measurement</b>	15/10/2011

### B. HAC Measurement Results

Frequency (MHz): 1755.000000

C63.19	Mode	Band	Test Description	Minimum Limit	Location	Measured	Categor y	Verdict
				dBa/m	-	dBa/m	-	Pass/Fai l
7.3.1.1	WCD MA	WCDMA 1700	Intensity, Axial	-18	Max	4.32	-	PASS
7.3.1.2			Intensity, RadialH	-18	Max	-5.21	-	PASS
				-	-	-	-	-
7.3.1.2			Intensity, RadialV	-18	Max	-5.53	-	PASS
				-	-	-	-	-
				dB		dB		
7.3.3			Signal to noise/noise, Axial	5	Max	32.56	T4	PASS
7.3.3			Signal to noise/noise, RadialH	5	Max	22.21	T3	PASS
				-	-	-	-	-
7.3.3			Signal to noise/noise, RadialV	5	Max	25.52	T3	PASS
		-	-	-	-	-		
7.3.2	Frequency reponse, Axial	-	-	-	-	-		

### T.Coil Scan Overlay Magnetic Field Distributions



### Annex A Photographs of the EUT



**Annex B EUT Setup photo**