EMC TEST REPORT

Reference No. : WT10093998-E-E-E

Applicant : Shenzhen Reflying Electronic Co., Ltd.

Address : 6 Bldg, Fuqiao No.1 Industry Zone, Fuyong Town, Bao`an District, Shenzhen, Guangdong, China.

Equipment Under Test (EUT) :

Product Name : Earphone

Model No : AEarphone-31

Standards : EN 55022: 2006 +A1: 2007
EN 55024: 1998+A1: 2001+A2: 2003

Date of Test : Sep. 30, 2010

Project Engineer : Tenny.xu

Reviewed By : Philo zhong

Test Result :	**PASS ***

Prepared By:

Waltek Services (Shenzhen) Co., Ltd.
1/F, Fukangtai Building, West Baima Rd., Songgang Street, Baoan District,
Shenzhen 518105, China

Tel :+86-755-27553488
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* The sample detailed above has been tested to the requirements of Council Directives 2004/108/EC. The test results have been reviewed against the Directives above and found to meet their essential requirements.

1 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Mains Terminal Disturbance Voltage, 150kHz to 30MHz	EN55022:2006 +A1:2007	EN55022:2006 +A1:2007	Class B	N/A
Radiation Emission, 30MHz to 1000MHz	EN 55022:2006 +A1:2007	EN 55022:2006 +A1:2007	Class B	PASS
ESD	EN 55024 : 1998 +A1:2001+A2:2003	EN 61000-4-2: 2009	Contact Air	PASS
Radiated Immunity (80MHz to 1GHz)	EN 55024 : 1998 +A1:2001+A2:2003	EN 61000-4-3:2006	3V/m, 80%, 1kHz, Amp. Mod.	PASS
Electrical Fast Transients (EFT)	EN 55024 : 1998 +A1:2001+A2:2003	EN 61000-4-4:2004	AC±1.0kV DC±0.5kV	N/A
Surge Immunity	EN 55024 : 1998 +A1:2001+A2:2003	EN 61000-4-5:2006	±1kV D.M.† ±2kV C.M.‡	N/A
Injected Currents, 150kHz to 80MHz	EN 55024 : 1998 +A1:2001+A2:2003	EN61000-4-6:2009	3Vrms(emf), 80%, 1kHz Amp. Mod.	N/A
Power-frequency magnetic field	EN 55024 : 1998 +A1:2001+A2:2003	EN 61000-4-8:1993 +A1:2001	3A/m	N/A
Voltage Dips and Interruptions	EN 55024 : 1998 +A1:2001+A2:2003	EN 61000-4-11:2004	>95 % U_T* for 0.5per >95 % U_T* for 250per 30 % U_T* for 25per	N/A

Remark:

A.M. Amplitude Modulation.

P.M. Pulse Modulation.

† D.M. – Differential Mode

- U_T is the nominal supply voltage

2 Contents

3 General Information

3.1 Client Information

Applicant :	Shenzhen Reflying Electronic Co., Ltd.
Address Of Applicant :	6 Bldg, Fuqiao No.1 Industry Zone, Fuyong Town, Bao`an District, Shenzhen, Guangdong, China.
Manufacturer :	Shenzhen Reflying Electronic Co., Ltd.
Address Of Manufacturer :	6 Bldg, Fuqiao No.1 Industry Zone, Fuyong Town, Bao`an District, Shenzhen, Guangdong, China.
Product Name :	Earphone
Model No. :	AEarphone-31

3.2 Details of E.U.T.

Power supply : Audio Signal Input

3.3 Description of Support Units

The EUT has been tested as an independent unit.

3.4 Standards Applicable for Testing

The customer requested EMC tests for an Earphone. The standards used were EN55022 Class B for emissions & EN55024 for immunity.

.Table 1 : Tests Carried Out Under EN 55022: 2006+A1:2007

Standard		Status
EN 55022:2006+A1:2007	Radiation Emission, 30MHz to 1000MHz	√
EN 55022:2006+A1:2007	Mains Terminal Disturbance Voltage,150KHz to 30MHz	×

Table 2 : Tests Carried Out Under EN 55024:1998+A1:2001+A2: 2003

Standard		Status
EN 61000-4-2:2009	Electro-static discharge	√
EN 61000-4-3:2006	Radio frequency EM fields (80MHz to 1GHz)	√
EN 61000-4-4:2004	Fast transients	×
EN 61000-4-5:2006	Surges	×
EN 61000-4-6: 2009	Radio frequency continuous conducted (150kHz to 80MHz)	×
EN 61000-4-8:1993+A1:2001	Power-frequency magnetic field (50Hz)	×
EN 61000-4-11:2004	Voltage dips & interruptions	×

√ Indicates that the test is applicable

× Indicates that the test is not applicable

3.5 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A**

  Waltek Services(Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration 7760A, Aug. 3, 2010

- **FCC – Registration No.: 880581**

  Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, June 24, 2008.

3.6 Test Location

All Emission test and some immunity tests were performed at:-
Waltek Services(Shenzhen) Co., Ltd. at 1/F, Fukangtai Building, West Baima Rd.,Songgang Street, Baoan District, Shenzhen, China

4 Equipment Used during Test

Equipment	Brand Name	Model	Related standards	Cal.Intal Months	Last Cal. Date	Cert No	Serial No
3m Anechoic chamber							
EMC Analyzer	Agilent	E7405A	ISO9001: 2000	12	Aug-10	1GA09003547-0001	MY45114943
Trilog Broadband Antenne 30-3000 MHz	SCHWARZBECK MESS-ELEKTROM	VULB9163	EN/ISO/IEC 17025 DIN EN ISO9001	12	Aug-10		336
Broad-band Horn Antenna 1-18 GHz	SCHWARZBECK MESS-ELEKTROM	BBHA 9120 D	EN/ISO/IEC 17025 DIN EN ISO9001	12	Aug-10		667
Broadband Preamplifier 0.5-18 GHz	SCHWARZBECK MESS-ELEKTROM	BBV 9718	EN/ISO/IEC 17025 DIN EN ISO9001	12	Aug-10		9718-148
10m Coaxial Cable with N-male Connectors usable up to 18GHz,	SCHWARZBECK MESS-ELEKTROM	AK 9515 H	EN/ISO/IEC 17025 DIN EN ISO9001	12	Aug-10		-
10m 50 Ohm Coaxial Cable with N-plug, individual length,usable up to 3(5)GHz, Connectors	SCHWARZBECK MESS-ELEKTROM	AK 9513	EN/ISO/IEC 17025 DIN EN ISO9001	12	Aug-10		-
Positioning Controller	C&C LAB	CC-C-IF	ISO9001	12	Aug-10		MF7802108
Color Monitor	SUNSPO	SP-14C	ISO9001	12	Aug-10		-
EMI Shielded Room							
Test Receiver	ROHDE&SCHWARZ	ESPI	ISO9001	12	Aug-10	1GA09003547-0002	101155
Two-Line V-Network	ROHDE&SCHWARZ	ENV216	ISO9001 EN/ISO/IEC 17025	12	Aug-10	1GA09003547-0005	100115
V－LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8128	CISPR16-1-2 EN55016-1-2：2004+A1: 2005+A2: 2006	12	Aug-10	1GA09003547-0003	8128-259
Absorbing Clamp	ROHDE&SCHWARZ	MDS-21	ISO9001 EN/ISO/IEC 17025	12	Aug-10	2GB09005546-0002	100205
10m 50 Ohm Coaxial Cable with N-plug, individual length,usable up to 3(5)GHz, Connectors	SCHWARZBECK MESS-ELEKTROM	AK 9514	EN/ISO/IEC 17025 DIN EN ISO9001	12	Aug-10		-

Harmonic & Flicker Test							
Digital Power Analyzer	Em Test AG/Switzerland	DPA 500	EN/IEC JIS C 61000-3-2 EN/IEC 61000-3-3	12	Aug-10	1GA09003554-0005	V0745103095
Power Source	Em Test AG/Switzerland	ACS 500	IEC 61000-3-3 IEC61000-3-2	12		1GA09003554-0004	V0745103096
Electrostatic Discharge Test							
Electrostatic Discharge Simulator	Em Test AG/Switzerland	DITO	IEC 61000-4-2 ISO 10605	12	Aug-10	2GB09005546-0001	V0745103094
Radio-Frequency Conducted Immunity Test							
RF Generator	TESEQ GmbH	NSG4070	IEC61000-4-6	12	Aug-10	1GA09003554-0003	25781
CDN M-Type	TESEQ GmbH	CDN M016	IEC61000-4-6	12	Aug-10		25112
EM-Clamp	TESEQ GmbH	KEMZ 801	IEC61000-4-6	12	Aug-10		25453
Attenuator 6dB	TESEQ GmbH	ATN6050	IEC61000-4-6	12	Aug-10	1GA09003547-0004	25365
Calibrated Equipment	TESEQ GmbH	CAL 801	IEC61000-4-6	12	Aug-10		70348
Calibrated Equipment	TESEQ GmbH	CAL U100A	IEC61000-4-6	12	Aug-10		25018
Calibrated Equipment	TESEQ GmbH	TRA U150	IEC61000-4-6	12	Aug-10		25299
Fast Transient/Surges/Voltage Dips Short Interruptions and Voltage Variations Immunity Tests							
All Modules Generator	SCHAFFNER	6150	IEC61000-4-4 IEC61000-4-5 IEC61000-4-11	12	Aug-10	1GA09003554-0001	34579
Capacitive Coupling Clamp	SCHAFFNER	CDN 8014	IEC61000-4-4	12	Aug-10		25311
Signal and Data Line Coupling Network	SCHAFFNER	CDN 117	IEC61000-4-5	12	Aug-10		25627
AC Power Supply	TONGYUN	DTDGC-4		12	Aug-10	1GA09003554-0002	-
Electromagnetic Fields Radiation Exposure Test							
Exposure Level Tester ELT-400	Narda Safety TEST Solutions	2304/03	ISO 9001 ISO 10012-1	12	Aug-10		M-0155
Magnetic Field Probe 100cm^2	Narda Safety TEST Solutions	2300/90.10	ISO 9001 ISO 10012-1	12			M-1070
Low Frequency Radiation Test							
Active Loop Antenna Charger 10kHz-30MHz	Beijing Dazhi	ZN30900A	ISO 9001	12	Aug-10		-
Large loop antenna	Laplace	RF300		12	Aug-10		9057
Other							
computer	Acer	AG1720					
Mp3	iPod A1285	5K85004U3R0	-	-	N/A	N/A	-

5 Radiation Emission Test Results

5.1 Radiation Emission Data

Test Requirement:	EN 55022 Class B
Test Method:	EN 55022 Class B
Test Result:	PASS
Frequency Range:	30MHz to 1000MHz
Class/Severity:	Class B
Detector:	Peak for pre-scan (120kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

5.1.1 Measurement Uncertainty

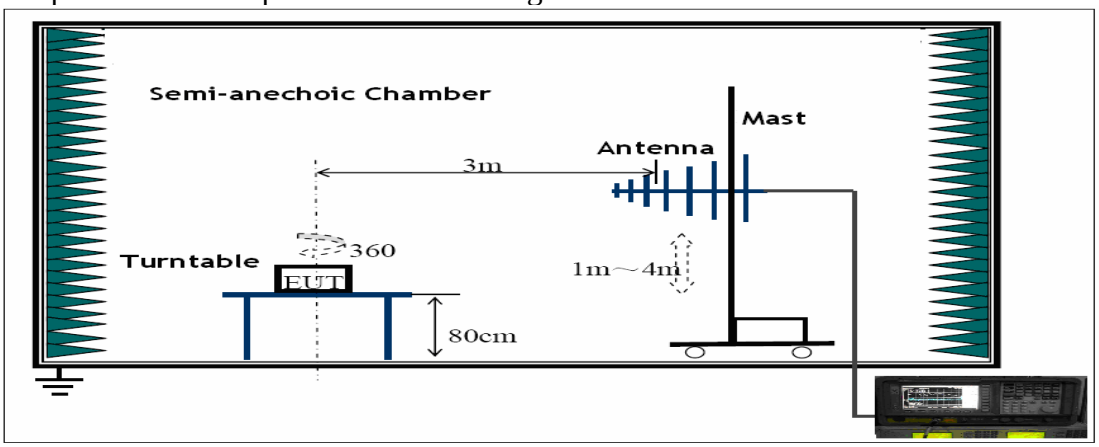
All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Waltek EMC Lab is ±5.03 dB.

5.1.2 Radiated Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the EN 55022:2006+A1:2007, The specification used in this report was the EN 55022:2006+A1:2007 Paragraph 6 limits.

Compliance test was performed in working mode connected with the PC.



5.1.3 Spectrum Analyzer Setup

According to EN55022 Class B Rules, the system was tested to 1000 MHz.

Start Frequency.....30 MHz
Stop Frequency.....1000 MHz
Sweep Speed Auto
IF Bandwidth.....120KHz
Video Bandwidth.....100KHz
Quasi-Peak Adapter Bandwidth .....120 KHz
Quasi-Peak Adapter Mode .....Normal
Resolution Bandwidth 100KHz

5.1.4 Test procedure

For the radiated emissions test, maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within +/-4 dBμV of specification limits), and are distinguished with a "**Qp**" in the data table.
The EUT was under normal mode during the final qualification test and the configuration was used to represent the worst case results.

5.1.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain
The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBμV means the emission is 7dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

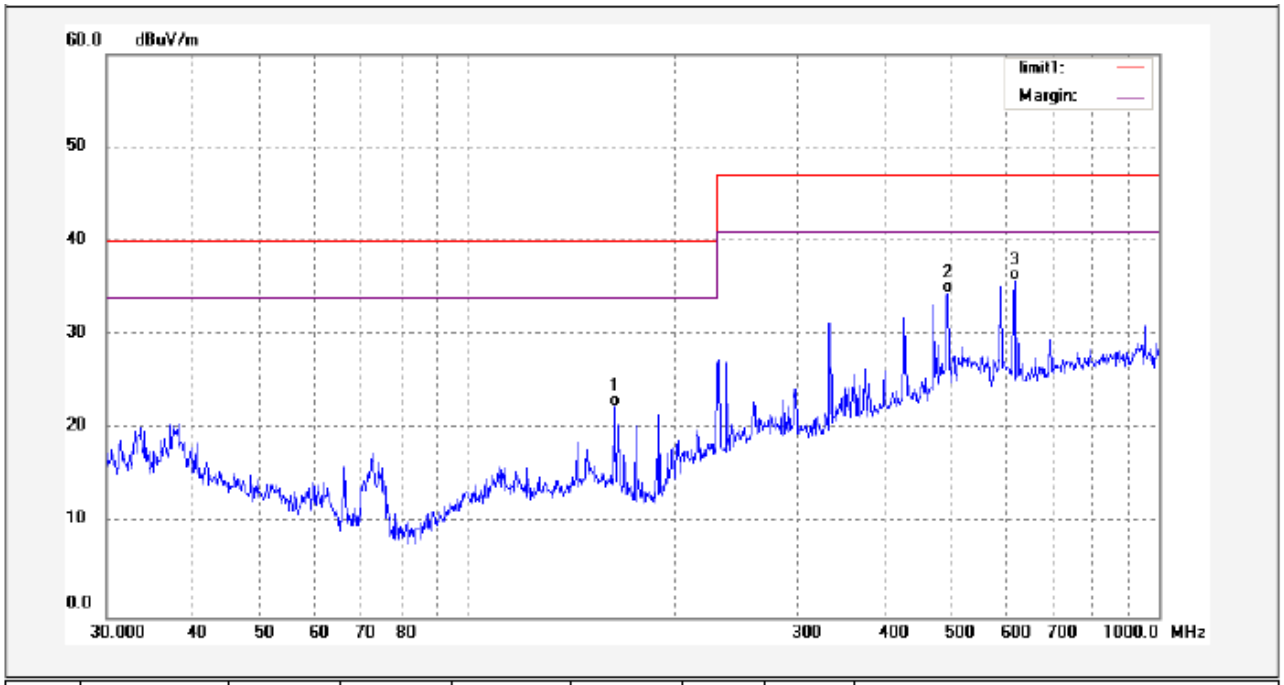
Margin = Corr. Ampl. – Class B Limit

5.1.6 Summary of Test Results

According to the data in section 5.1.7, the EUT complied with the EN55022 Class B standards.

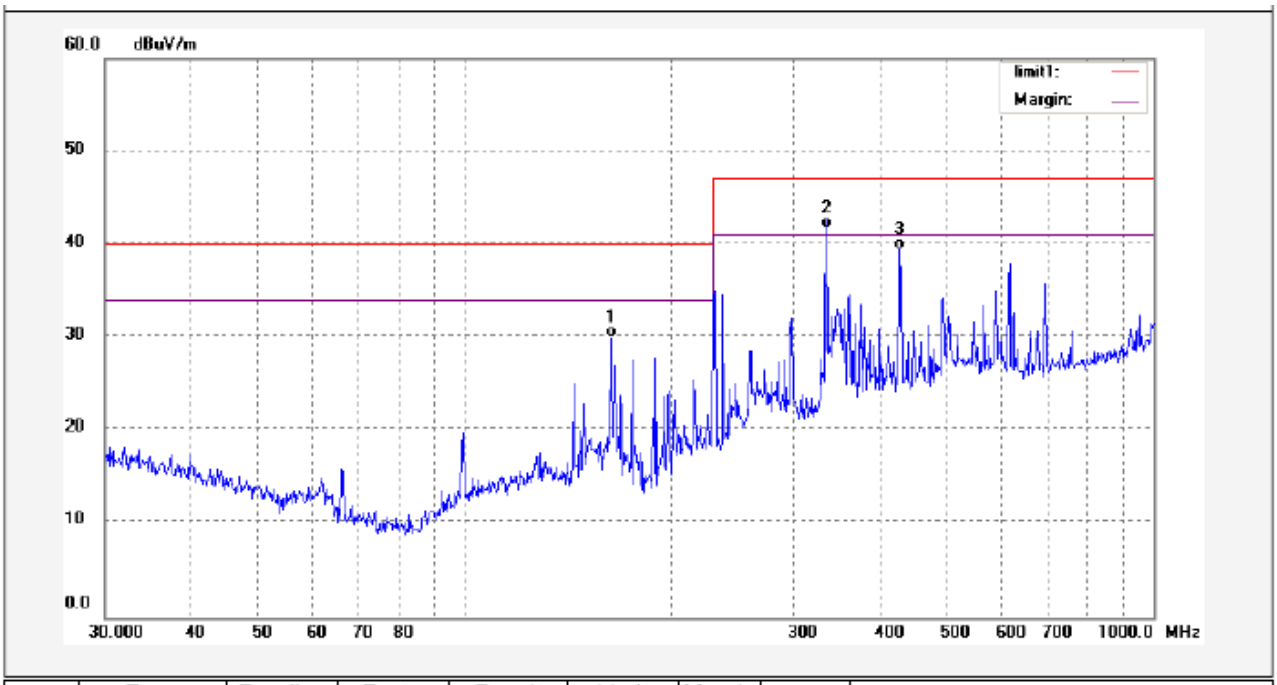
5.1.7 Radiated Emissions Test Data

Polarization: Vertical:



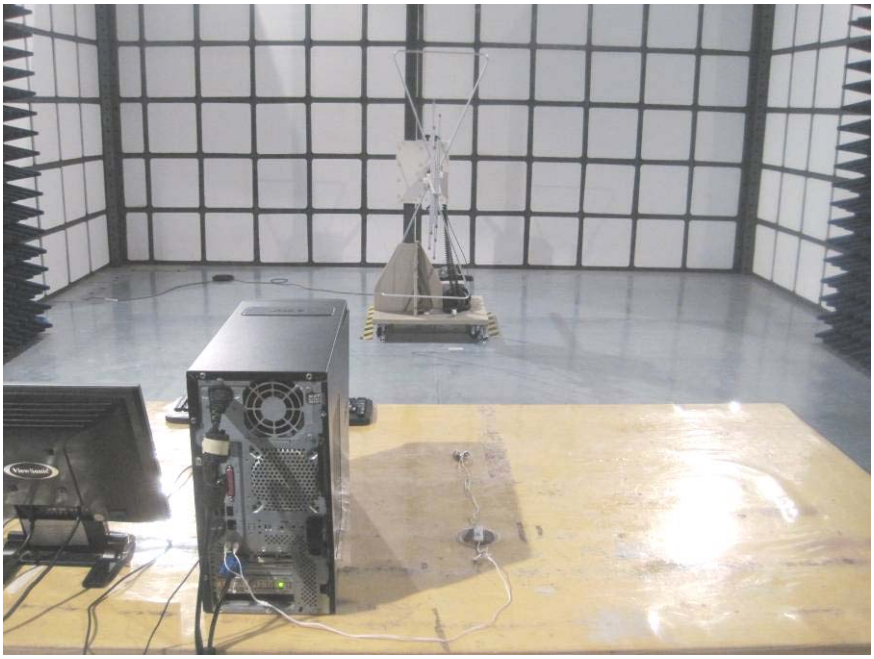
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	163.1623	8.97	13.50	22.47	40.00	-17.53	QP	
2	495.2379	11.86	22.54	34.40	47.00	-12.60	QP	
3	617.9417	11.37	24.44	35.81	47.00	-11.19	QP	

Polarization: Horizontal:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	163.1623	16.53	13.47	30.00	40.00	-10.00	QP	
2	335.3016	22.23	19.44	41.67	47.00	-5.33	QP	
3	428.7960	17.76	21.65	39.41	47.00	-7.59	QP	

5.1.8 Photograph – Radiation Emission Test Setup



6 Immunity Test Results

6.1 Performance Criteria Description

Criterion A: The apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion B: The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion C: Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

For further details, please refer to EN55024.

6.2 ESD

Test Requirement:	EN55024	
Test Method:	EN61000-4-2	
Test Result:	PASS	
Discharge Impedance:	330 Ω / 150 pF	
Discharge Voltage:	Air Discharge:	+/- 8 kV
	Contact Discharge:	+/- 4 kV
	HCP & VCP:	+/- 4 kV
Polarity:	Positive & Negative	
Number of Discharge:	Minimum 10 times at each test point	
Discharge Mode:	Single Discharge	
Discharge Period:	1 second minimum	

6.2.1 E.U.T. Operation

Operating Environment:

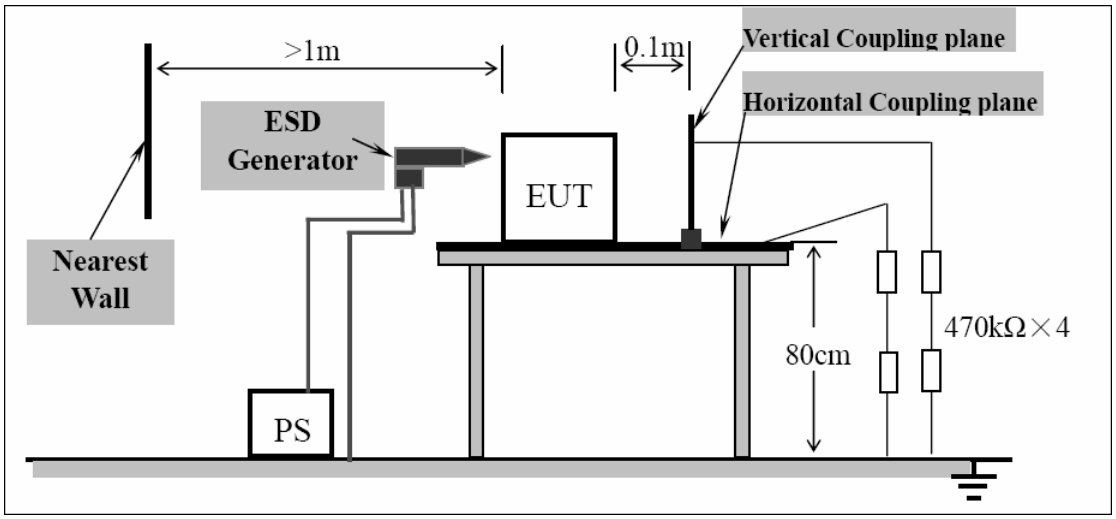
Temperature :	25.5 °C
Humidity :	51 % RH
Barometric Pressure :	1012 mbar

EUT Operation:

Compliance test was performed in working mode connected with the PC.

6.2.2 ESD Test Setup

The ESD Test steup accordance with the EN 61000-4-2, The Specification used in this report was the EN 55024 Paragraph 4.2 requirements



6.2.3 Direct Application Test Results

Observations : Test points : 1. All Exposed Surface & Seams;
2. All metallic part

Direct Application			Test Results	
Discharge Level (kV)	**Polarity (+/-)**	**Test Point**	**Contact Discharge**	**Air Discharge**
8	+/-	1	N/A	B
4	+/-	2	B	N/A

Results

B: Criterion B, please refers to clause 6.1 for more details.
N/A: Not applicable.

6.2.4 Indirect Application Test Results

Observations : Test points : 1. All sides.

Indirect Application			Test Results	
Discharge Level (kV)	**Polarity (+/-)**	**Test Point**	**Horizontal Coupling**	**Vertical Coupling**
4	+/-	1	B	B

Results

B: Criterion B,please refers to clause 6.1 for more details.

6.2.5 Photograph - ESD Test Setup

6.3 Radiated Immunity

Test Requirement:	EN55024
Test Method:	EN61000-4-3
Frequency Range:	80MHz–1GHz
Face Under Test:	Three Mutually Orthogonal Faces
Severity:	3V/m, 1kHz, 80% Amp. Mod. from 80MHz to 1GHz
Test Result:	PASS

6.3.1 E.U.T. Operation

Operating Environment:

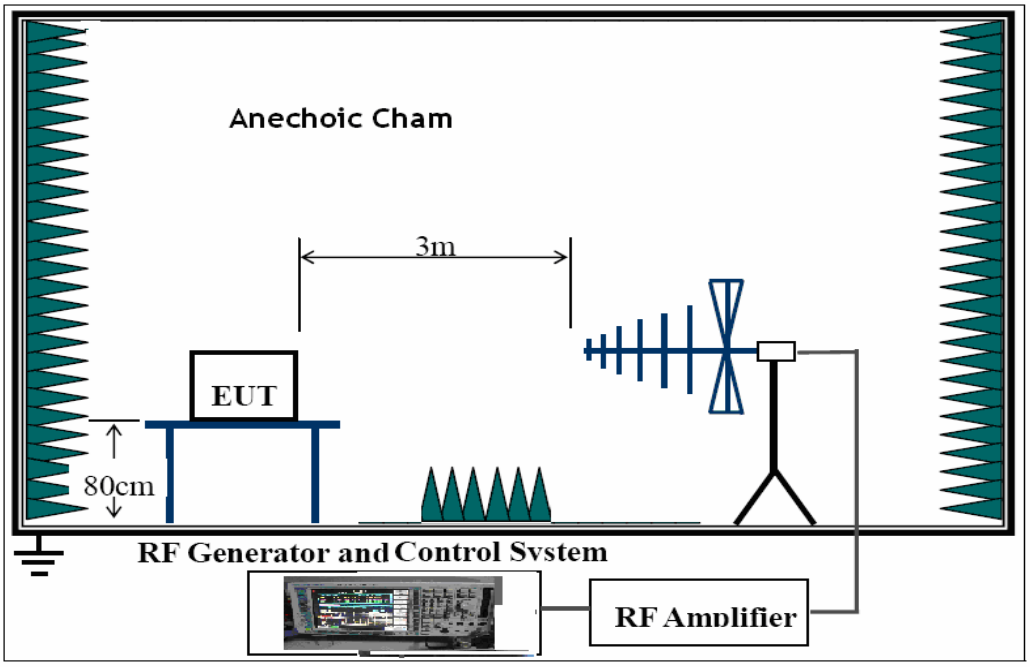
Temperature:	25.5 °C
Humidity:	51 % RH
Barometric Pressure:	1012 mbar

EUT Operation:

Compliance test was performed in working mode connected with the PC.

6.3.2 Test Setup

The Radiated Immunity test steup accordance with the EN 61000-4-3, The Specification used in this report was the EN 55024 Paragraph 4.2.3 requirements.



6.3.3 Test Results

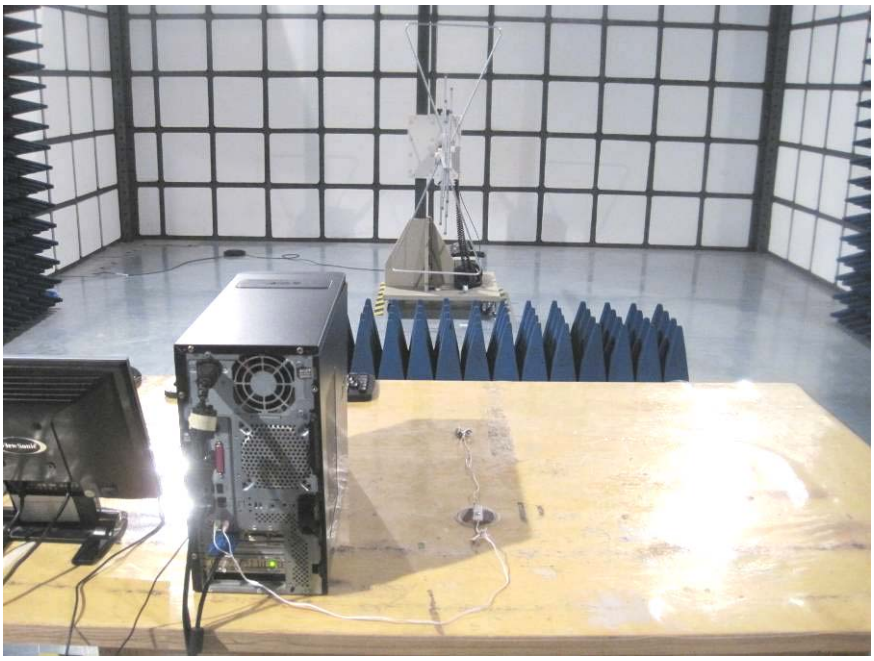
Frequency	Level	Modulation	EUT Face	Result / Observations
80MHz-1GHz	3V/m	1kHz, 80%, Amp. Mod.	X Y Z	During test and after test, the EUT was normal (A).

Remarks:
AM : Amplitude Modulation.
PM : Pulse Modulation.
Y : EUT as per photograph in section 6.3.4 of this report.
X : As Y, but rotate EUT by 90° clockwise.
Z : As Y, but rotate EUT by 90° vertically.

Results

A : No degradation in the performance of the E.U.T. was observed.

6.3.4 Photograph - Radiated Immunity Test Setup



7 Photographs - Constructional Details

7.1 EUT–AppearanceView

8 CE Label

1. The CE conformity marking must consist of the initials‘CE’taking the following form: If the CE marking is reduced or enlarged, the proportions given in the above graduated drawing must be respected.
2. The CE marking must have a height of at least 5 mm except where this is not possible on account of the nature of the apparatus.
3. The CE marking must be affixed to the product or to its data plate. Additionally it must be affixed to the packaging, if any, and to the accompanying documents.
4. The CE marking must be affixed visibly, legibly and indelibly.
   It must have the same height as the initials‘CE’

Proposed Label Location on EUT