EMC TEST REPORT

Reference No. : WT11062625-S-E-E

Applicant : GlobTek, Inc.
Address : 186 Veterans Dr. Northvale, NJ 07647 USA.

Equipment Under Test (EUT) :

Product Name : Switching Power Adaptor
Model No : GT-81087-WWVV-X.X-W2Z series(more details refer to 3.3 model list)

Standards : EN 55022: 2006 +A1: 2007
EN 55024: 1998+A1: 2001+A2: 2003
EN 61000-3-2: 2006+A1:2009+A2:2009
EN 61000-3-3: 2008

Date of Test : June 1~9, 2011

Project Engineer : Andy wu

Reviewed By : Philo.Zhong

Test Result :	**PASS ***

Prepared By:
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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	EN 55022:2006 +A1:2007	EN 55022:2006 +A1:2007	Class B	PASS
Radiation Emission, 30MHz to 1000MHz	EN 55022:2006 +A1:2007	EN 55022:2006 +A1:2007	Class B	PASS
Harmonic Emission, 100Hz to 2kHz	EN 61000-3-2:2006+A1:2009 +A2:2009	EN 61000-3-2:2006+A1:2009 +A2:2009	Clause 7 of EN61000-3-2	N/A
Flicker Emission on AC	EN 61000-3-3 :2008	EN 61000-3-3 :2008	Clause 5 of EN61000-3-3	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) on AC	EN 55024 : 1998 +A1:2001+A2:2003	EN 61000-4-4:2004	AC±1.0kV DC±0.5kV	PASS
Surge Immunity on AC	EN 55024 : 1998 +A1:2001+A2:2003	EN 61000-4-5:2006	±1kV D.M.† ±2kV C.M.‡	PASS
Injected Currents on AC, 150kHz to 80MHz	EN 55024 : 1998 +A1:2001+A2:2003	EN61000-4-6:2009	3Vrms(emf), 80%, 1kHz Amp. Mod.	PASS
Power-frequency magnetic field	EN 55024 : 1998 +A1:2001+A2:2003	EN 61000-4-8:2010	1A/m	PASS
Voltage Dips and Interruptions on AC	EN 55024 : 1998 +A1:2001+A2:2003	EN 61000-4-11:2004	＜5 % U_T* for 0.5per ＜5 % U_T* for 250per 70 % U_T* for 25per	PASS

Remark:

A.M. Amplitude Modulation.

P.M. Pulse Modulation.

† D.M. – Differential Mode.

- U_T is the nominal supply voltage

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3 General Information

3.1 Client Information

Applicant : GlobTek, Inc.

Address of Applicant : 186 Veterans Dr. Northvale, NJ 07647 USA.

Manufacturer 1 : GlobTek, Inc.

Address of Manufacturer 1: 186 Veterans Dr. Northvale, NJ 07647 USA.

Manufacturer 2: GlobTek (Suzhou) Co., Ltd.

Address of Manufacturer 2: Building 4, No. 76, Jin Ling East Rd., Suzhou Industrial Park, Suzhou,JiangSu 215021, China.

3.2 General Description of E.U.T.

Product Name : Switching Power Adaptor

Model No. : GT-81087-WWVV-X.X-W2Z series(more details refer to 3.3 model list)

Remark : The models GT-81087-157.5-2.5-W2E, GT-81087-2012-1.8-W2E and GT-81087-2018-W2E are the test samples.The test datas were shown below.

3.3 Details of E.U.T.

Model list

Model (GT-81087-WWVV-X.X-W2Z series)	Input	Output voltage	Output current	Max.Power
GT-81087-WW7.5-X.X-W2Z	100-240Vac,50/60Hz	5-7.5V	Max 3.0A	Max.15W
GT-81087-WW12-X.X-W2Z	100-240Vac,50/60Hz	9-12V	Max 2.0A	Max.20.4W
GT-81087-WW18-X.X-W2Z	100-240Vac,50/60Hz	15-18V	Max 1.36A	Max.20.4W

Remark：GT-81087-WWVV-X.X-W2Z series:

WW is the standard output wattage, with a maximum value of "20.4"

VV is the standard rated output voltage designation, with a maximum value of "18";

-X.X is optional or blank and denotes the output voltage differentiator, subtracting or adding X.X volts from standard output voltage VV in 0.1V increments, blank is to indicate the no voltage different. "Z" designates type of plug and can be E for European plug, U for British plug, blank for North American / Japan plug/Taiwan plug, C for Chinese plug, A for Australia plug, K for Korea plug.

3.4 Description of Support Units

The EUT has been tested as an independent unit. All the tests were performed in the condition of AC 230V/50Hz.

3.5 Standards Applicable for Testing

The customer requested EMC tests for a Switching Power Adaptor. The standards used were EN55022, EN61000-3-2, EN61000-3-3 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 61000-3-2: 2006+A1:2009+A2:2009& EN 61000-3-3: 2008

EN 61000-3-2: 2006+A1:2009+A2:2009	Harmonics Emissions on AC	x
EN 61000-3-3: 2008	Flicker Emissions on AC	√

Table 3 : 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 61000-4-8:2010	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

3.6 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 .03, 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.

3.7 Test Location

All the 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 Name	Model	Equipment No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
EMC Analyzer	Agilent/ E7405A	MY45114943	9K-26.5GHz	2010-8-3	2011-8-3	WWM20100587	±1dB
Test Receiver	ROHDE&SCHWARZ/ ESPI	101155	9KHz-3GHz	2010-8-3	2011-8-3	WWM20100588	±1dB
Test Receiver	ROHDE&SCHWARZ/ ESCI	100947	9KHz-3GHz	2010-8-3	2011-8-3	WWM20100589	±1dB
Digital Power Analyzer	Em Test AG/Switzerland / DPA 500	V0745103095	Power:2000VA Vol-range:0-300V Freq_range:10-80Hz	2010-8-3	2011-8-3	WWD20101078	Voltage distinguish: 0.025% Power:freq distingish: 0.02Hz
Power Source	Em Test AG/Switzerland /ACS 500	V0745103096	Vol-range:0-300V Freq_range:10-80Hz	2010-8-3	2011-8-3	WWD20101078	Voltage distinguish: 0.025% Power:freq distingish: 0.02Hz
Electrostatic Discharge Simulator	Em Test AG/Switzerland / DITO	V0745103094	Contact discharge: 500V-10KV Air discharge: 500V-16.5KV	2010-8-3	2011-8-3	WWM20100586	7.5A Current Will be changed in Vm=1.5V
RF Generator	TESEQ GmbH/NSG4070	25781	Fraq-range: 9K-1GHz RF voltage: -60dB to 10dB	2010-8-3	2011-8-3	WWM20100590	Power_freq distinguish: 0.1Hz Rfeletricity distinguish:0.1dB
ALL Modules Generator	SCHAFFNER/ 6150	34579	Voltage:200V-4.4KV Cuttent:100A-2.2KA	2010-8-3	2011-8-3	WWM20100591	Voltage:±10% Pulse Cuttent:±10%
AC Power Supply	Beijing hengyuan/ DTDGC-4	W2008020	Voltage: 0-250V Current: 0-20A	2010-8-3	2011-8-3	WWM20100592	ACV:0.06% ACA:0.15%
Trilog Broadband Antenna	SCHWARZBECK MESS-ELEKTRONIK/ VULB9163	336	25-3000MHz	2009-8-20	2010-8-19	XDdj2009-2658	±1dB
Two-Line V-Network	ROHDE&SCHWARZ/ ENV216	100115	9KHz-3GHz	2010-8-3	2011-8-3	WWC20100909	±10%
Absorbing Clamp	ROHDE&SCHWARZ/ MDS-21	100205	impandance 50 ohm Loss:17dB	2010-8-3	2011-8-3	WWC20100901	±1dB
V-LISN	SCHWARZBECK MESS-ELEKTRONIK/ NSLK 8128	8128-259	9KHz-3GHz	2010-8-3	2011-8-3	WWC20100903	±10%

Equipment Name	Model	Equipment No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
Attenuator 6dB	TESEQ GmbH/ ATN6050	25376	Attenuator 6dB	2010-8-3	2011-8-3	WWC20100904	Attenuation:0.2dB
Magnetic Field Probe 100cm²	Narda safety TEST Solutions/ ELT-400	M-1070	Test freq range: 1-400KHz	2010-8-3	2011-8-3	WWD20101072	1-10 Hz:16.2% 10-120Hz:2.2% 120-400Hz:4.7%
Voltage Probe	SCHWARZBECK MESS-ELEKTRONIK/ TK 9420	9420-328	9K-30MHz	2010-8-3	2011-8-3	WWC20100905	Insertion Loss:<±0.5dB
Loop Antenna	Laplace/ RF300	9057	Diameter:2m	2010-8-3	2011-8-3	WWD20101079	U=2Db,K=2
CDN M-Type	TESEQ GmbH/ CDN M016	25112	Voltage correct factor: 9.5dB	2010-8-3	2011-8-3	WWC20100906	1.5K-80MHz:±1dB 80-230MHz:-2--+3dB
EM-Clamp	TESEQ GmbH/ KEMZ 801	25453	Freq_range: 0.15-1000MHz	2010-8-3	2011-8-3	WWC20100902	0.3-400MHz:±4dB Other freq:±5dB
Attenuator		61115-001-0024	9KHz-30MHz	2010-8-3	2011-8-3	WWC20100910	
Capacitive Coupling Clamp	SCHAFFNER/ CDN 8014	25311	Max.permissible burst voltage:8KV Typical coupling capacitance:100pF	2010-8-3	2011-8-3	WWC20100907	Urel:1.5%,k=2
Signal and Data Line Coupling Network	SCHAFFNER/ CDN 117	25627	1.2/50μS	2010-8-3	2011-8-3	WWC20100908	Urel:1.0%,k-2
Audio Generator	GIIIINSTEK/ GAG-809	EH831261	Freq range: 10Hz-1MHz Output Resistance: 600Ω	2010-8-3	2011-8-3	WWS20100845	Freq: ±(3%+1Hz)
Digital Multimeters	FLUKE/15B	98760784	Voltage:AC/DC 4mV-1000V Current:AC/DC40 mA-10A Resistor:400Ω-40MΩ	2010-8-3	2011-8-3	DBS2010-736	DCV Urel=0.1% ACV Urel=0.2% DCA Urel=0.2% ACA Urel=0.2% OHM Urel=0.2% K=2
Digital Multimeters	FLUKE/15B	98750790	Voltage:AC/DC 4mV-1000V Current:AC/DC40 mA-10A Resistor:400Ω-40MΩ	2010-8-3	2011-8-3	DBS2010-735	DCV Urel=0.1% ACV Urel=0.2% DCA Urel=0.2% ACA Urel=0.2% OHM Urel=0.2% K=2
Thermo meter	KTJ/TA218B	TA218B	TemperatureRange: -10ºC to 60ºC Humidity Range: 25%RH to 98%RH	2010-8-3	2011-8-3	RSD20103126	Humidity: U=3%RH(K=2) Temperature: U=1ºC(K=2)

Equipment Name	Model	Equipment No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
Thermo meter	KTJ/TA218B	TA218B	TemperatureRange: -10ºC to 60ºC Humidity Range: 25%RH to 98%RH	2010-8-3	2011-8-3	RSD20103127	Humidity: U=3%RH(K=2) Temperature: U=1ºC(K=2)
Broad-Band Horn Antenna 1-18GHz	SCHWARZBECK MESS-ELEKTRONIK/ BBHA 9120D	667	1-18GHz	2010-7-15	2011-7-15	2PB10000125-0001	f<10GHz: ±1dB 10GHz<f<18GHz: ±1.5dB
Broadband Preamplifier 0.5-18 GHz	SCHWARZBECK MESS-ELEKTRONIK/ BBV 9718	9718-147	0.5-18GHz	2010-7-19	2011-7-19	2PB10000125-0002	±1.2dB
Oscilloscope	TDS3032B	B401960	0-300MHz	2010-11-8	2011-11-8	DZ201023152398 8	Vertical deflection： +0.4% Scanning time： +0.3%

5 Emission Test Results

5.1 Mains Terminals Disturbance Voltage, 150kHz to 30MHz

Test Requirement:	EN 55022 Class B
Test Method:	EN 55022 Class B
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class/Severity:	Class B
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

5.1.1 E.U.T. Operation

Operating Environment:

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

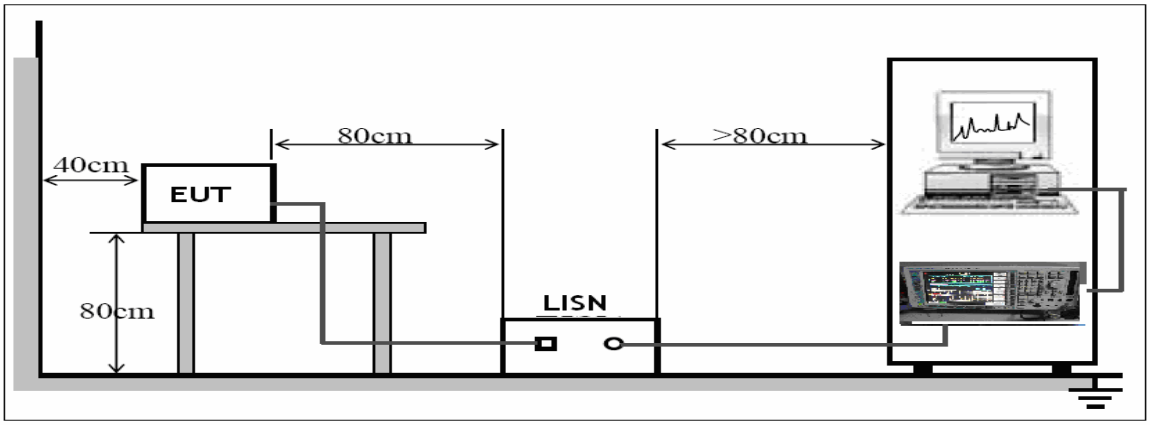
EUT Operation :

Compliance test was performed in full load,half load and no load mode.The full load is the worst,so the test datas only shown the full load mode.

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

5.1.2 Conducted Test Setup

The conducted emission tests were performed 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 5 limits.



5.1.3 Measurement Data

An initial pre-scan was performed on the live and neutral lines.

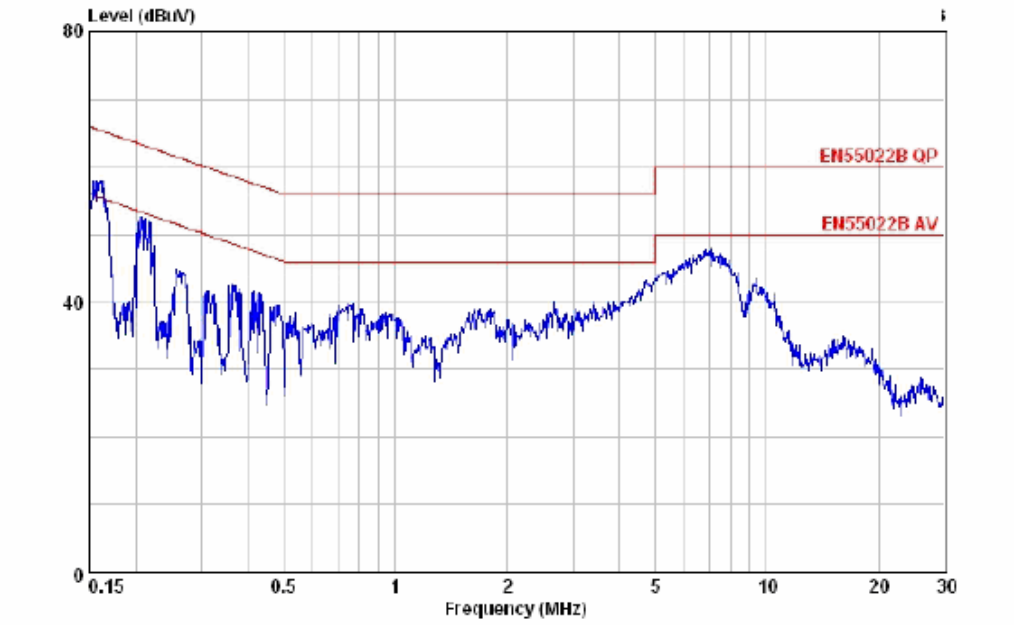
No futher quasi-peak or average measurements were performed since no peak emissions were detected within 10dB line below the average limit.

Please refer to the following peak scan graph for reference.

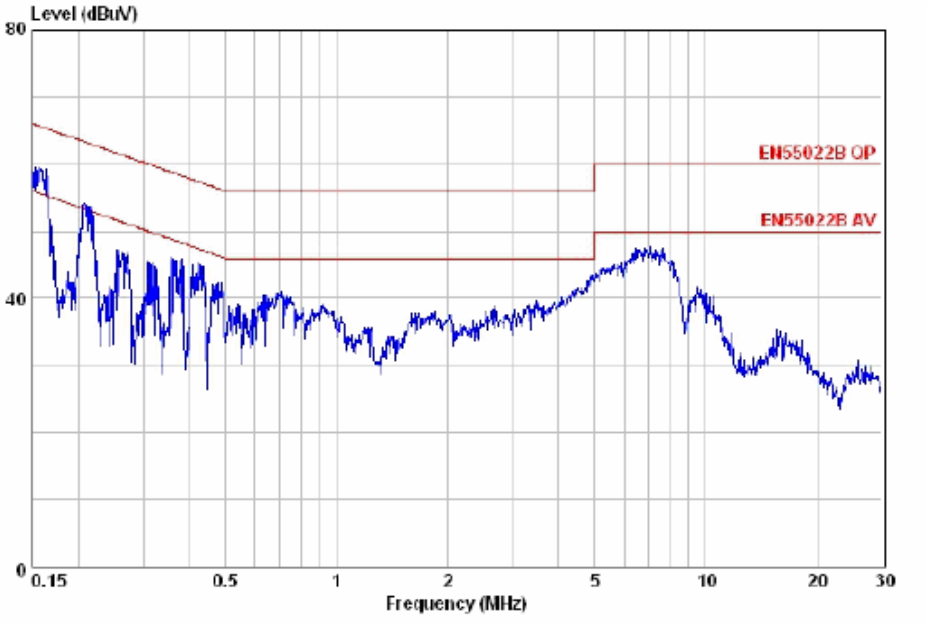
5.1.4 Conducted Emissions Test Data

Model: GT-81087-157.5-2.5-W2E

Live Line:

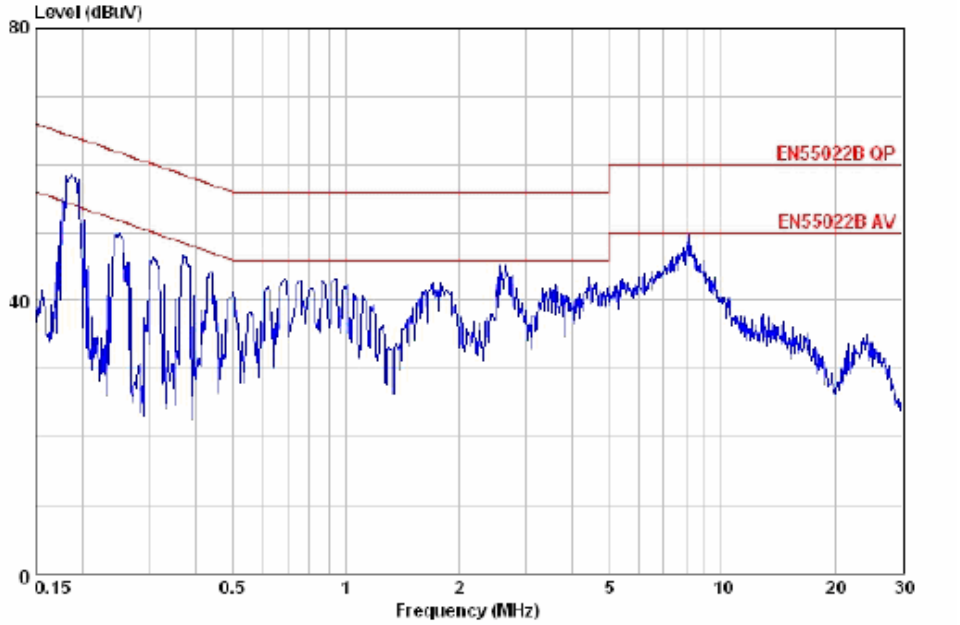


Neutral Line:

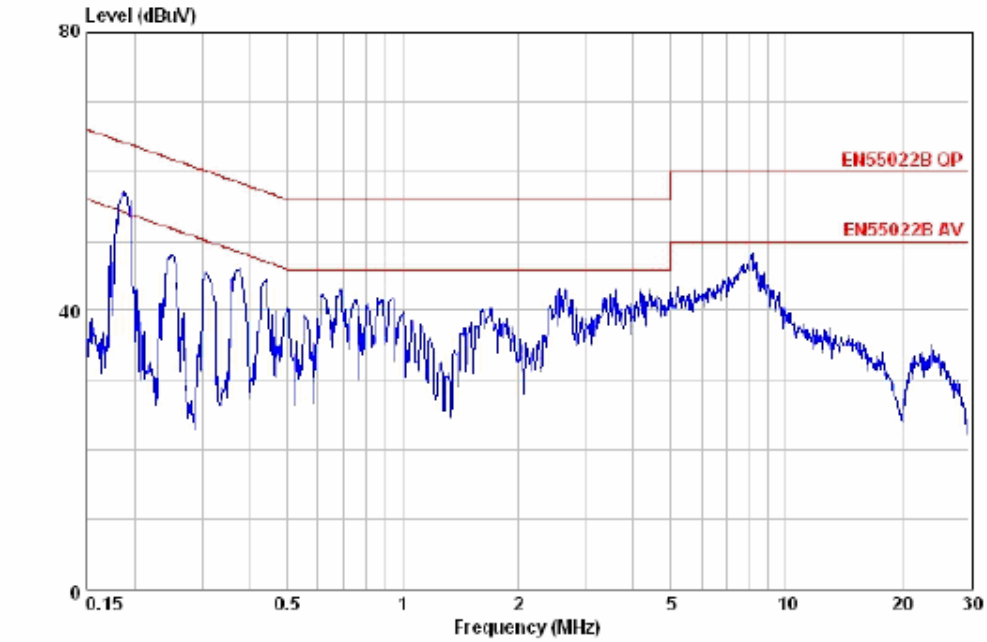


Model: GT-81087-2012-1.8-W2E

Live Line:

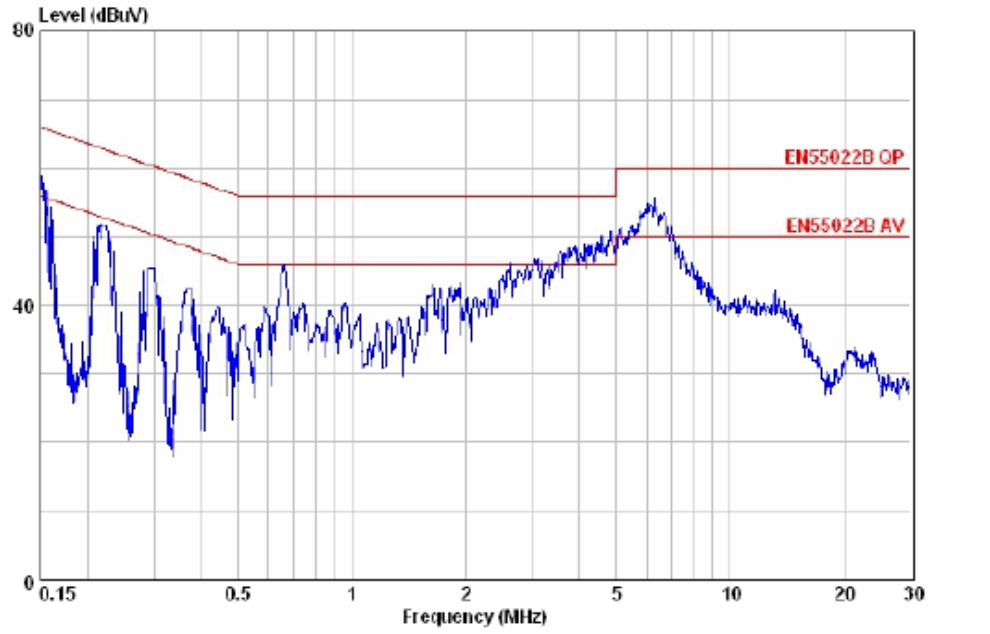


Neutral Line:

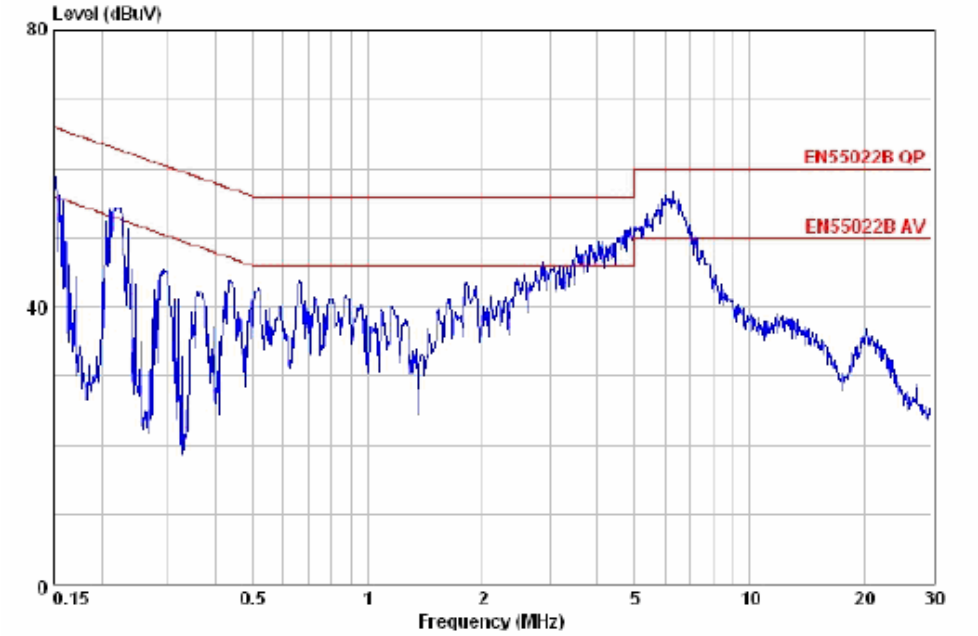


Model: GT-81087-2018-W2E

Live Line:



Neutral Line:



5.1.5 Photograph– Mains Terminal Disturbance Voltage on AC Test Setup



5.2 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

5.2.1 E.U.T. Operation

Operating Environment:

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

EUT Operation :

Compliance test was performed in full load,half load and no load mode.The full load is the worst,so the test datas only shown the full load mode

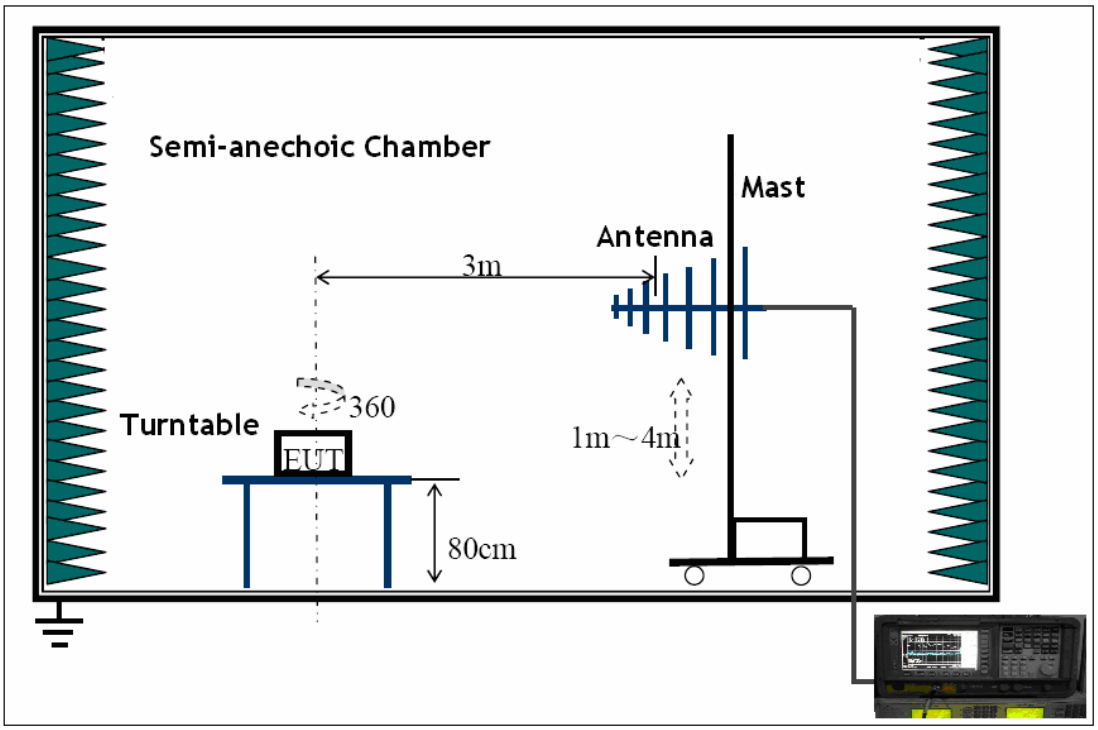
5.2.2 Measurement Uncertainty

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 $\pm$5.03 dB.

5.2.3 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+A1:2007Paragraph 6 limits.



5.2.4 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

5.2.5 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.

5.2.6 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

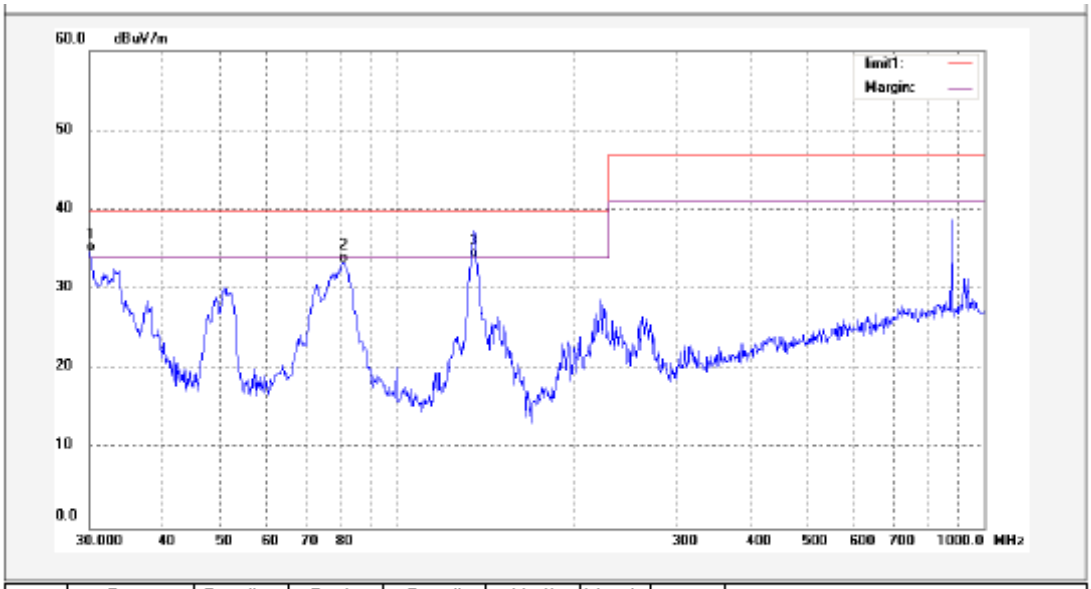
5.2.7 Summary of Test Results

According to the data in section 5.2.8, the EUT complied with the EN55022 Class B standards.

5.2.8 Radiated Emissions Test Data

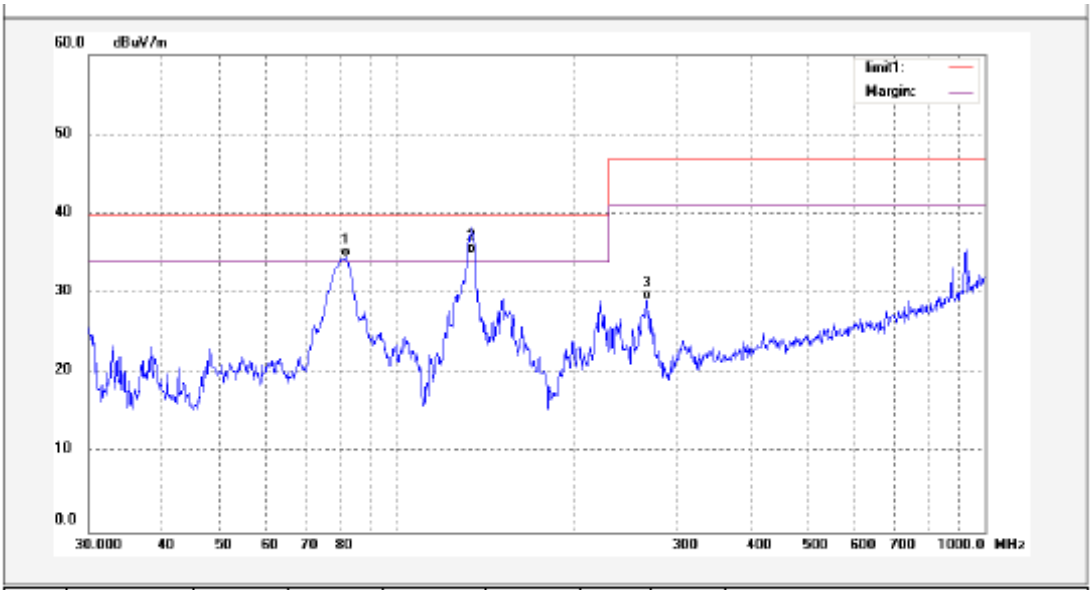
Model: GT-81087-157.5-2.5-W2E

Antenna Polarization：Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	30.0000	18.27	16.50	34.77	40.00	-5.23	QP	
2	81.3740	24.17	9.24	33.41	40.00	-6.59	QP	
3	135.4395	21.05	12.93	33.98	40.00	-6.02	QP	

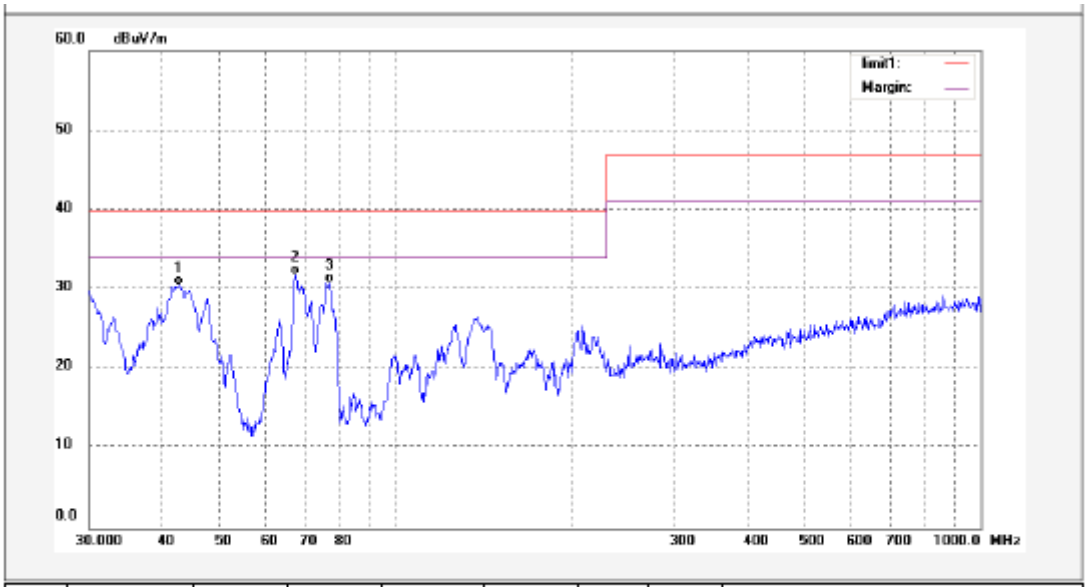
Antenna Polarization：Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	82.2363	25.27	9.33	34.60	40.00	-5.40	QP	
2	134.0192	22.03	12.94	34.97	40.00	-5.03	QP	
3	266.8395	11.67	17.52	29.19	47.00	-17.81	QP	

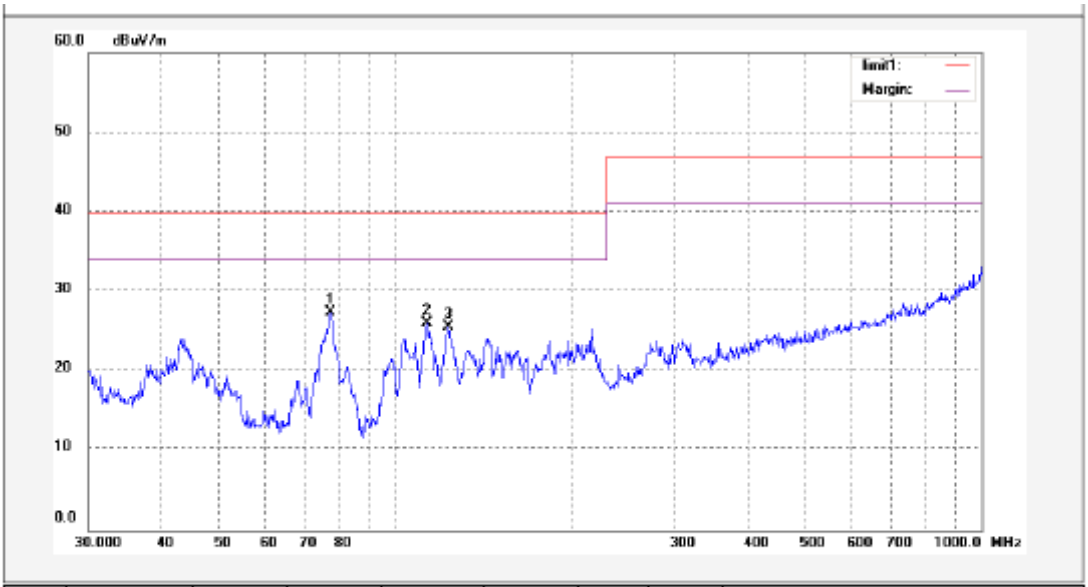
Model: GT-81087-2012-1.8-W2E

Antenna Polarization：Vertical



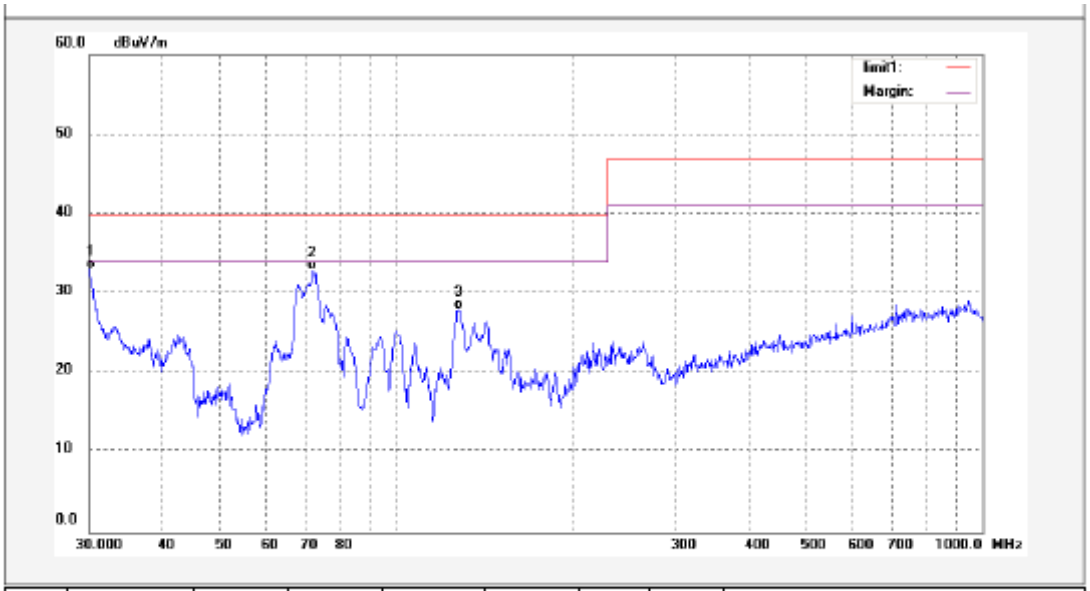
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	42.7799	15.35	15.21	30.56	40.00	-9.44	QP	
2	67.5478	21.53	10.40	31.93	40.00	-8.07	QP	
3	77.1963	21.52	9.32	30.84	40.00	-9.16	QP	

Antenna Polarization：Horizontal



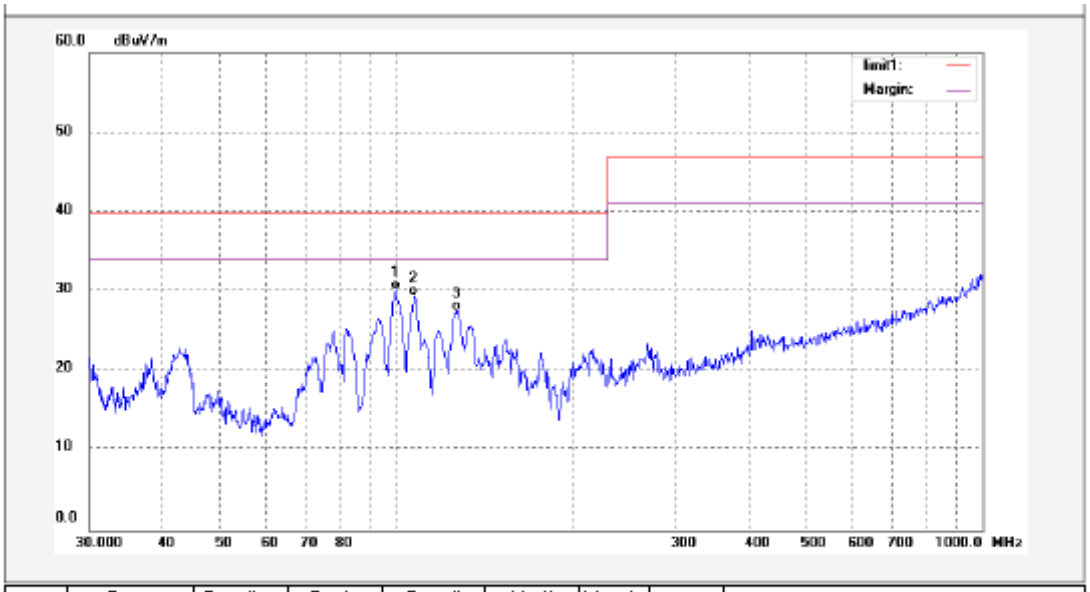
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	77.7407	18.05	9.32	27.37	40.00	-12.63	peak	
2	113.2200	12.81	13.20	26.01	40.00	-13.99	peak	
3	123.6150	12.80	12.79	25.59	40.00	-14.41	peak	

Model: GT-81087-2018-W2E
Antenna Polarization：Vertical



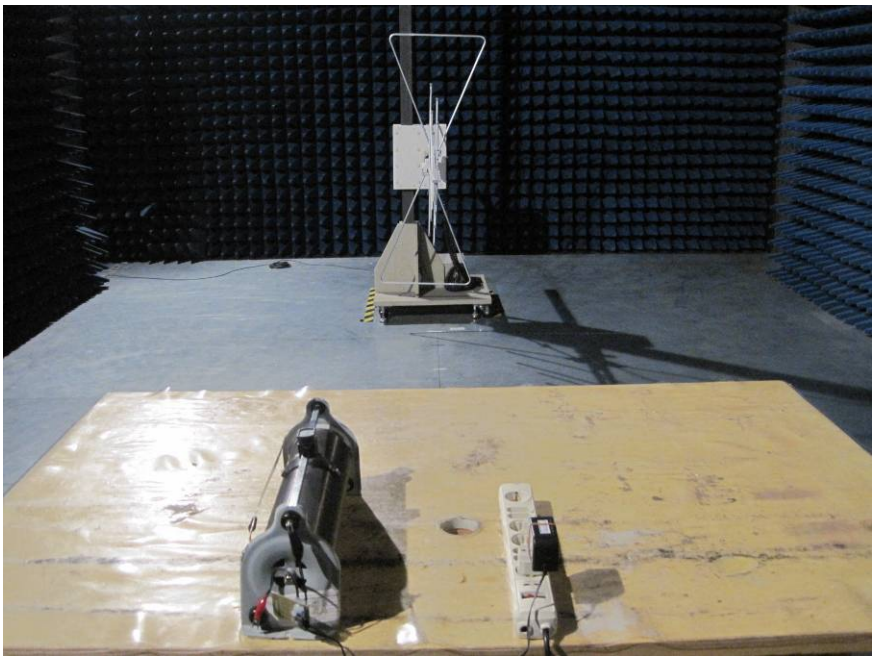
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	30.0000	16.52	16.50	33.02	40.00	-6.98	QP	
2	72.2111	23.01	9.95	32.96	40.00	-7.04	QP	
3	128.0356	15.17	12.78	27.95	40.00	-12.05	QP	

Antenna Polarization：Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	100.1188	17.18	13.10	30.28	40.00	-9.72	QP	
2	107.4074	16.08	13.33	29.41	40.00	-10.59	QP	
3	126.6931	14.71	12.82	27.53	40.00	-12.47	QP	

5.2.9 Photograph – Radiation Emission Test Setup



5.3 Harmonics Test Results

Test Requirement:	EN61000-3-2
Test Method:	EN61000-3-2
Frequency Range:	100Hz to 2kHz
Test Result:	N/A

For further details, please refer to Clause 7, Note 1 of EN61000-3-2 which states:-

"For the following categories of equipment limits are not specified in this edition of the standard.

Note 1: Equipment with a rated power of 75W or less, other than lighting equipment."

5.4 Flicker Test

Test Requirement:	EN 61000-3-3: 2008
Test Method:	EN 61000-3-3: 2008
Test Result	PASS

5.4.1 E.U.T. Operation

Operating Environment:

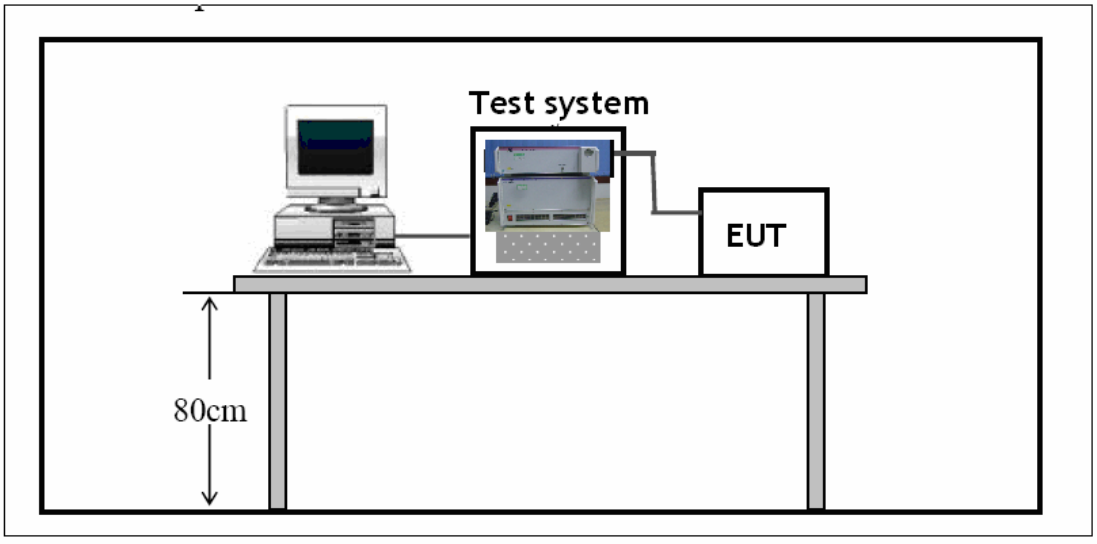
Temperature:	25.5 ° C
Humidity:	51 % RH
Barometric Pressure:	1012 mbar

EUT Operation:

Compliance test was performed in full load mode.

5.4.2 Test Setup

The Flicker Test steup accordance with the EN 61000-3-3, The Specification used in this report was the EN61000-3-3 Paragraph 5 limits.



5.4.3 Test Data

Limit / Model	Pst(1.00)	Plt(0.65)	dc [%](3.30)	dmax [%](4.00)	dt [s](0.50)
GT-81087-157.5-2.5-W2E	0.028	\	0.000	0.000	0.000
GT-81087-2012-1.8-W2E	0.028	\	0.000	0.000	0.000
GT-81087-2018-W2E	0.064	\	0.000	0.000	0.000

5.4.4 Photograph- Flicker 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:

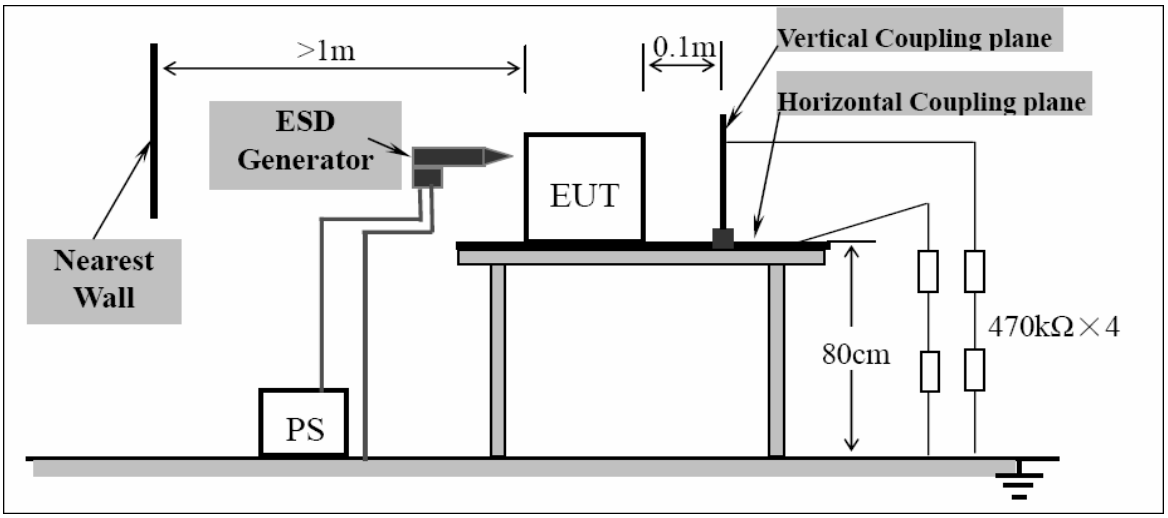
Temperature :	25.5 ° C
Humidity :	51 % RH
Barometric Pressure :	1012 mbar

EUT Operation:

Compliance test was performed in full load mode.

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: Degradation in the performance of the E.U.T. was observed.
N/A: Not applicable.

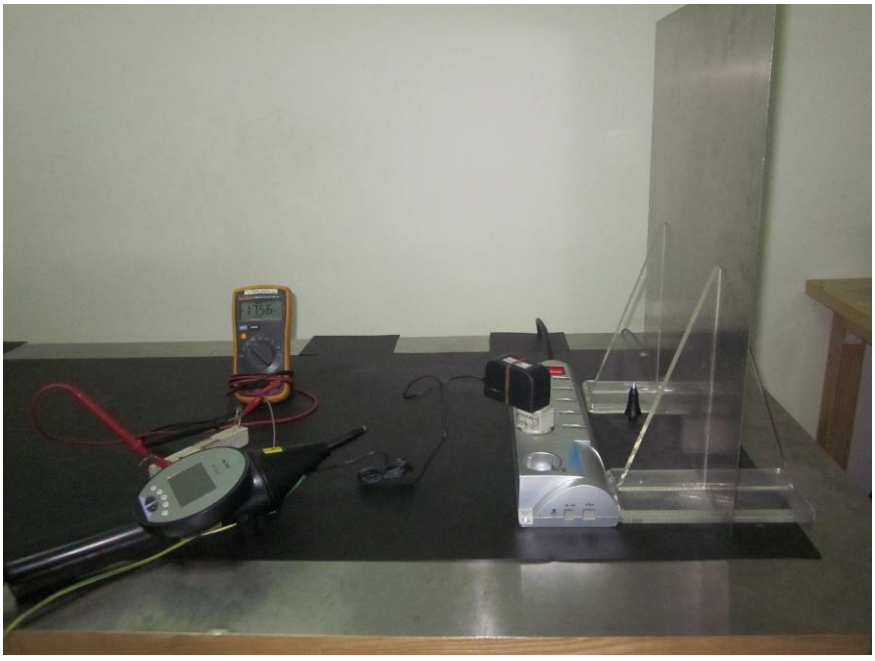
6.2.4 Indirect Application Test Results

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: Degradation in the performance of the E.U.T. was observed.

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:

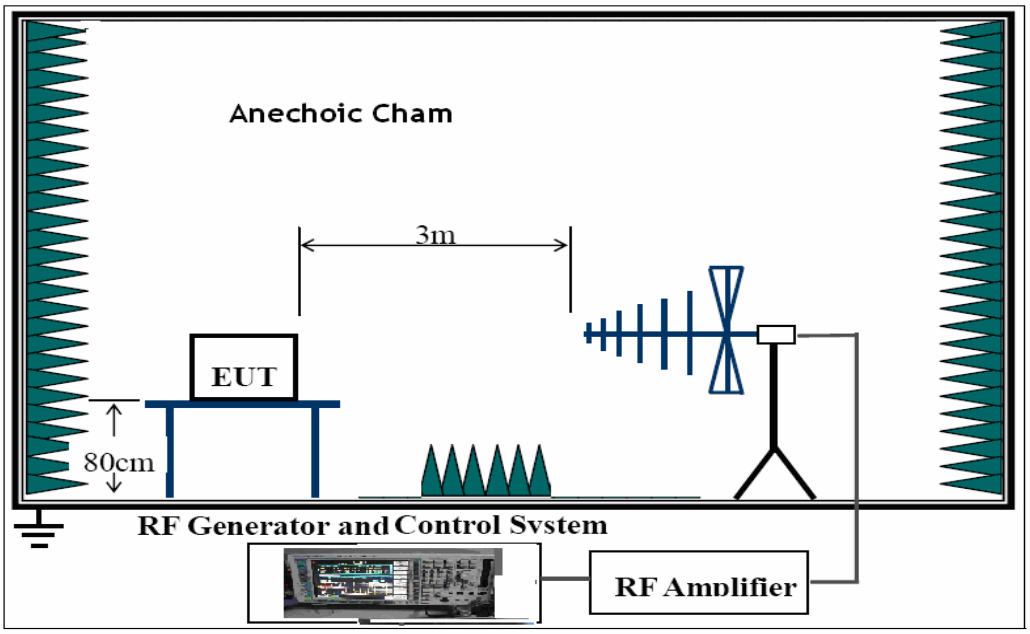
Temperature:	25.5° C
Humidity:	51 % RH
Barometric Pressure:	1012 mbar

EUT Operation:

Compliance test was performed in full load mode.

6.3.2 Radiated Immunity Test Setup

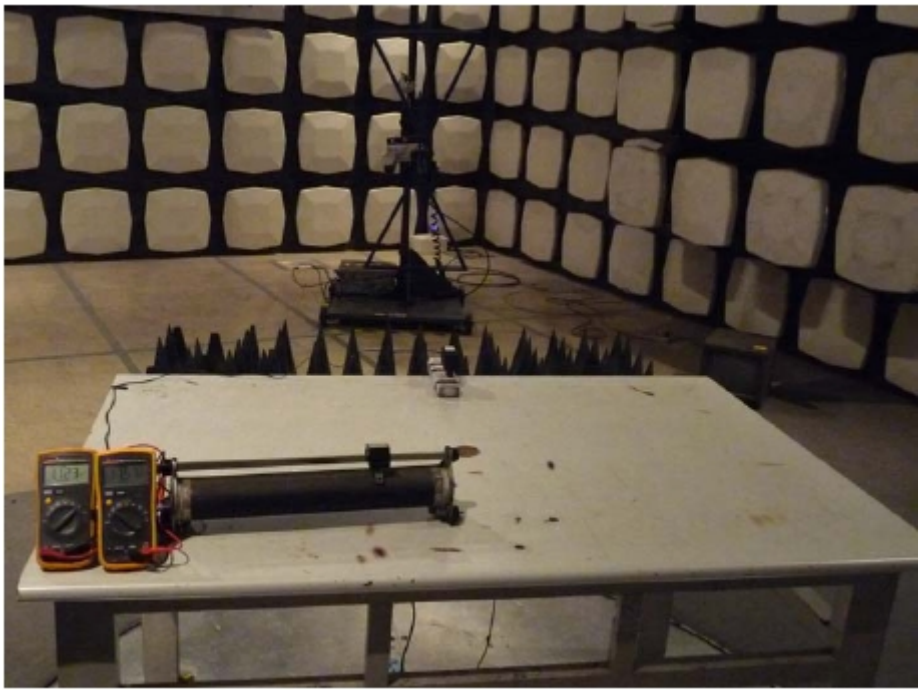
The Radiated Immunity test setup accordance with the EN 61000-4-3, The Specification used in this report was the EN 55024 Paragraph 4.2.3 requirements.



6.3.3 Test Results

Frequency	Level	Modulation	Position	Result	Observations
80MHz-1GHz	3V/m	1kHz, 80%, Amp. Mod.	Front	Pass	During test and after test, the EUT was normal(A).
			Right	Pass	
			Rear	Pass	
			Left	Pass	

6.3.4 Photograph - Radiated Immunity Test Setup



6.4 Electrical Fast Transients (EFT)

Test Requirement:	EN 55014-2
Test Method:	EN 61000-4-4
Test Result:	PASS
Test Level:	1.0kV on AC
Polarity:	Positive & Negative
Repetition Frequency:	5kHz
Burst Duration:	300ms
Test Duration:	2 minutes per level & polarity

6.4.1 E.U.T. Operation

Operating Environment:

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

EUT Operation:

Compliance test was performed in full load mode.

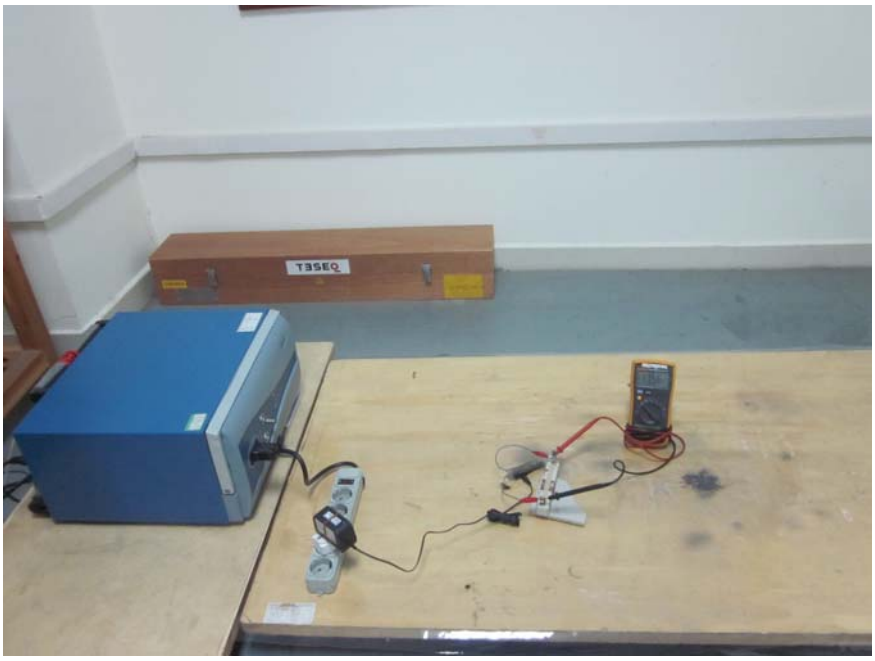
6.4.2 Test Results On AC Cable

Lead under Test	Level (±kV)	Coupling Direct/Clamp	EUT operating mode	Observations (Performance Criterion)
L	±1.0	Direct	full load	B
N	±1.0			B
L-N	±1.0			B

Results

B: Degradation in the performance of the E.U.T. was observed.

6.4.3 Photograph - EFT Test Setup For EUT On AC Cable



6.5 Surge

Test Requirement: EN 55014-2
Test Method: EN 61000-4-5
Test Result: PASS
Test level: ±1kV Live to Neutral
Interval: 60s between each surge
No. of surges: 5 positive, 5 negative at 0° , 90° , 180° , 270° .

6.5.1 E.U.T. Operation

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

EUT Operation:

Compliance test was performed in full load mode.

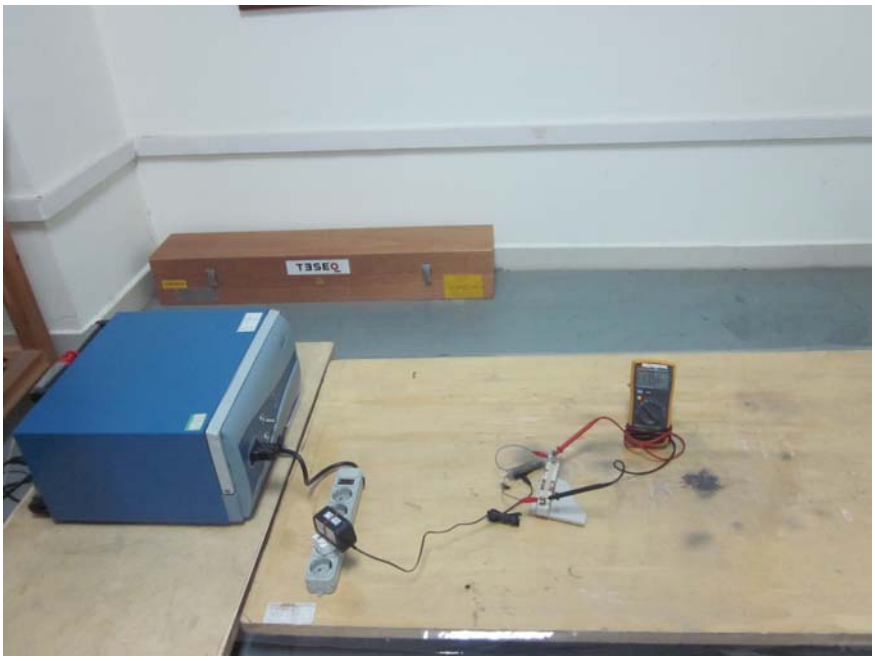
6.5.2 Test Results

Level	Voltage	Poll	Path	Pass	Fail
1	0.5kV	±	L-N	/	/
2	1kV	±	L-N	B	/
3	2kV	±	L-PE, N-PE	/	/
4	4kV	±	L-N, L-PE, N-PE	/	/

Results

B: Degradation in the performance of the E.U.T. was observed.

6.5.3 Photograph -Surge Test Setup



6.6 Conducted Immunity 0.15MHz to 80MHz

Test Requirement: EN 55014-2
Test Method: EN 61000-4-6
Test Result: PASS
Frequency Range: 0.15MHz to 80MHz
Test level: 3V rms (unmodulated emf into 150 Ω)
Modulation: 80%, 1kHz Amplitude Modulation.

6.6.1 E.U.T. Operation

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

EUT Operation:
Compliance test was performed in full load mode.

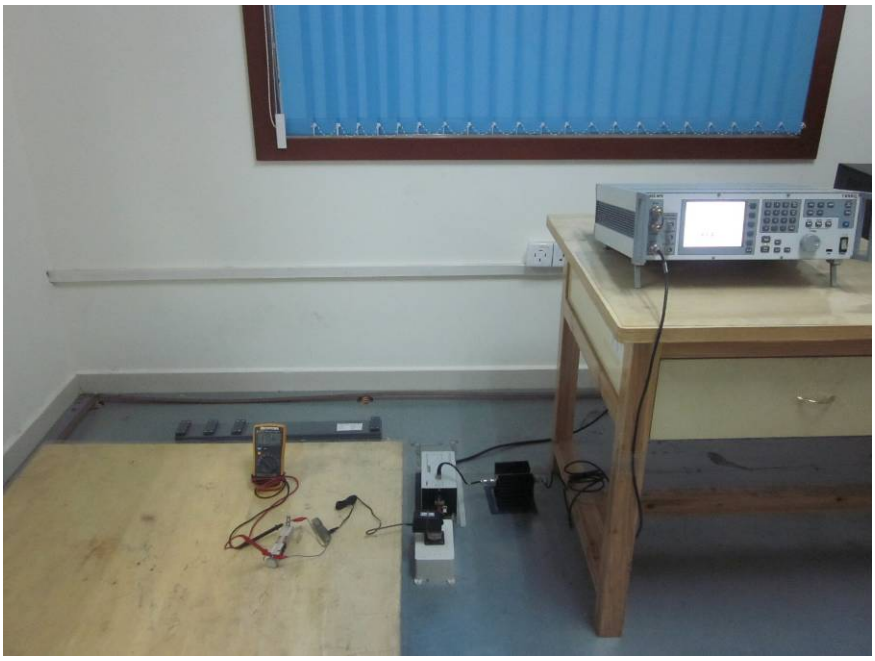
6.6.2 Test Results AC mains of EUT

Frequency	Line	Test Level	Modulation	Step Size	Dwell Time	Observation (Performance Criterion)
150kHz to 80MHz	2Wire AC Supply Cable	3Vrms	80%, 1kHz Amp. Mod.	1%	1s	During test and after test,EUT was normal (A).

Results

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

6.6.3 Photograph -Conducted Immunity Test Setup On AC Cable



6.7 Power-frequency Magnetic Fields

Test Requirement:	EN 55024
Test Method:	EN 61000-4-8
Test Result:	PASS
Test level:	1A/m(r.m.s) for continuous field

6.7.1 E.U.T. Operation

Operating Environment:

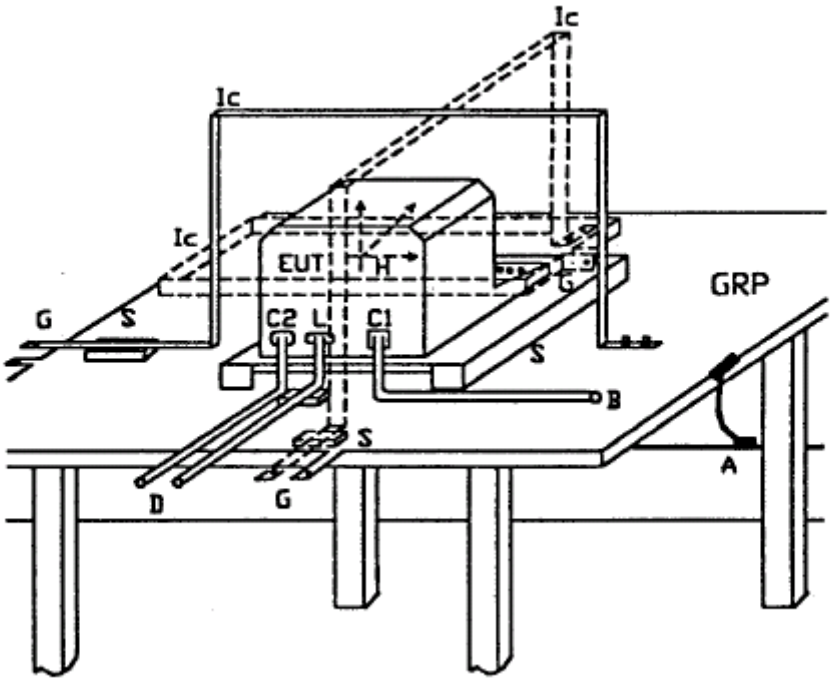
Temperature:	25.5 ° C
Humidity:	51 % RH
Barometric Pressure:	1012 mbar

EUT Operation:

Compliance test was performed in full load mode.

6.7.2 Power-frequency Magnetic Fields Test Setup

The Power-frequency Magnetic Fields test setup accordance with the EN 61000-4-8, The Specification used in this report was the EN 55024 Paragraph 4.2.4 requirements.



Test Results

Test level	Test duration	Coil Orientation	Criterion	Result
1A/m	5 mins	X	A	Pass
1A/m	5 mins	Y	A	Pass
1A/m	5 mins	Z	A	Pass

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

6.7.3 Photograph –Power-frequency Magnetic Fields Test Setup



6.8 Voltage Dips and Interruptions

Test Requirement: EN 55014-2
Test Method: EN 61000-4-11
Test Result: PASS
Test Level(Voltage reduction): ＜5% & ＜5% & 70 % of U_T (Supply Voltage)
No. of Dips / Interruptions: 1 per Level at 20ms intervals

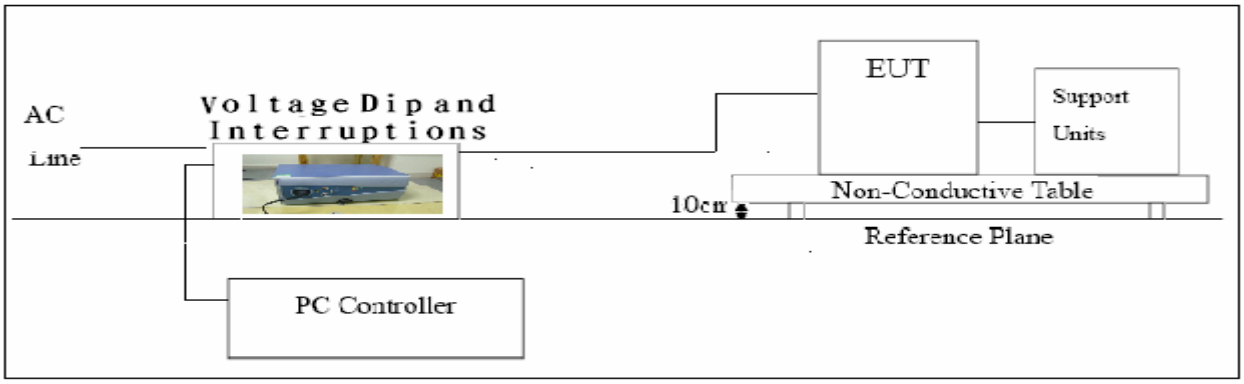
6.8.1 E.U.T. Operation

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

EUT Operation:
Compliance test was performed in full load mode.

6.8.2 Voltage Dips and Interruptions Test Setup

The Voltage dips and Interruptions Test setup accordance with the EN 61000-4-11, the Specification used in this report was the EN 55024 Paragraph 4.2.6 requirements.



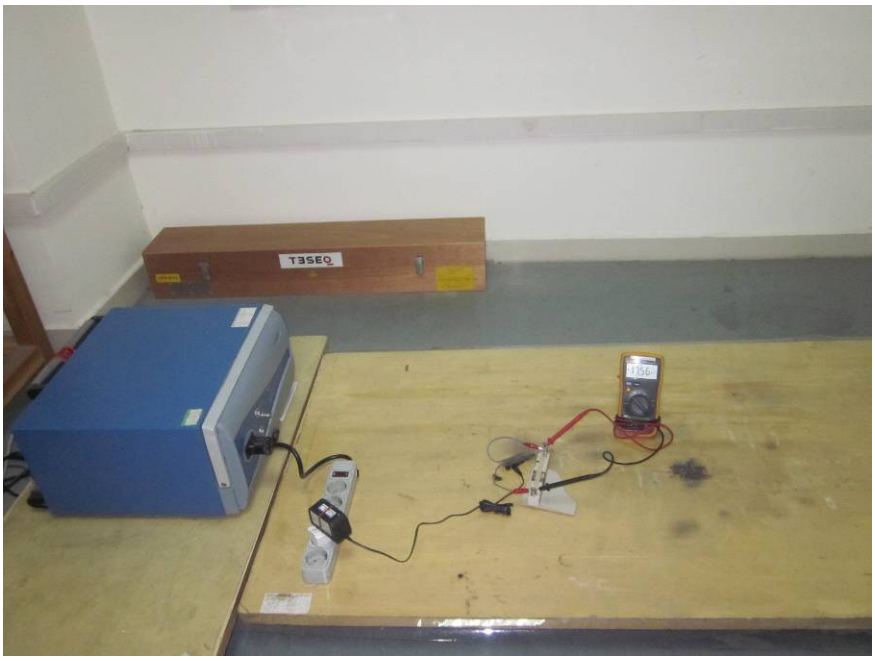
6.8.3 Measurement Data

EUT operating mode	Dropout % U_T	Phase	Duration of dropout in Periods	No of dropout	Time between dropout	Observations (Performance Criterion)
full load	95	0°	0.5	3	10ms	B
ditto	95	0°	250	3	5000ms	C
ditto	30	0°	25	3	500ms	C

Results

B : During test, This was within the minimum performance criteria set by the applicant. Please refer to section 6.1 of this report for further details.

6.8.4 Photograph - Voltage Dips and Interruptions Test Setup



7 Photographs - Constructional Details

7.1 EUT-Appearance View





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

EUT Front View/proposed CE Mark Location

