CE

EMC COMPLIANCE TEST REPORT

For

Motherboard

Trade Name **:** JETWAY
Model Number **:** 7F2WE1G5D（Please see P7 for all the trade names and model numbers)
Serial Number **:** N/A
Report Number **:** SZ061031B03-ET
Date **:** December 18, 2006
Regulations **:** See below

Standards	Results (Pass/Fail)
EN 55022: 1998+A1:2000+A2:2003	PASS
EN 61000-3-2: 2000	PASS
EN 61000-3-3: 1995+A1:2001	PASS
EN 55024: 1998+A1:2001+A2:2003	
- IEC 61000-4-2: 2001	PASS
- IEC 61000-4-3: 2002	PASS
- IEC 61000-4-4: 2001	PASS
- IEC 61000-4-5: 2001	PASS
- IEC 61000-4-6: 2001	PASS
- IEC 61000-4-11: 2001	PASS

Prepared for **:**

JET WAY INFORMATION CO.,LTD
4F,NO.168,LITEHST,CHUNG AO CITY 235,TAIPEI,
TAIWAN R.O.C.

Prepared by **:**

COMPLIANCE CERTIFICATION SERVICES (SHENZHEN) INC.
NO.5 JINAO INDUSTRIAL PARK, NO.35 JUKENG ROAD,
DASHUIKENG VILLAGE,GUANLAN TOWN,
BAOAN DISTRICT, SHENZHEN, CHINA
TEL:86-755-28055000
FAX:86-755-28055221

NVLAP®
LAB CODE:200577-0

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TEST RESULT CERTIFICATION

Equipment Under Test:	Motherboard
Trade Name:	JETWAY
Model Number:	7F2WE1G5D（Please see P7 for all the trade names and model numbers)
Serial Number:	N/A
Applicant:	JET WAY INFORMATION CO.,LTD 4F,NO.168,LITEHST,CHUNG AO CITY 235,TAIPEI, TAIWAN R.O.C.
Manufacturer 1:	TOP WAY TECHNOLOGY CO.,LTD SHANG JIN INDUSTRIAL ZONE JIE KOU VILLAGE CHANG AN TOWN DONG GUAN CITY GUANG DONG PROVINCE P.R.C
Manufacturer 2:	EVER ORIENT TECHNOLOGY CO.,LTD LIAN HE INDUSTRIAL PARK,NAN YUE,LONG GONG, SHENZHEN,GUANG DONG,CHINA.
Manufacturer 3:	RIGHT TRACK ELECTRONIC TECHNOLOGY CO.,LTD NO.2 WEST WORDSHOP,NO.1 DISTRICT NANCHANG INDUSTRIAL ZONE,GUSHU VILLIAGE,XIXIANG TOWN,BAOAN, SHENZHEN,P.R.CHINA.
Type of Test:	EMC Directive 89/336/EEC for CE Marking
Technical Standards:	EN 55022: 1998+A1: 2000+A2: 2003 EN 61000-3-2: 2000 EN 61000-3-3: 1995+A1: 2001 EN 55024: 1998+A1: 2001+A2: 2003 (IEC 61000-4-2: 2001; IEC 61000-4-3: 2002; IEC 61000-4-4: 2001; IEC 61000-4-5: 2001; IEC 61000-4-6: 2001; IEC 61000-4-11: 2001)
Report Number:	SZ061031B03-ET
Date of test:	October 31~December 15, 2006
Deviation:	None
Condition of Test Sample:	Normal

The above equipment was tested by Compliance Certification Services (Shenzhen) Inc. for compliance with the requirements set forth in EMC Directive 89/336/EEC amended by 93/68/EEC and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Approved By: ***Tested By:*** **Jason He**

Reviewed By:

Clinton Kao / Manager
COMPLIANCE CERTIFICATION
SERVICES (SHENZHEN) INC.

Villian Xu / Assistant manager
COMPLIANCE CERTIFICATION
SERVICES (SHENZHEN) INC.

GENERAL INFORMATION

Applicant:	JET WAY INFORMATION CO.,LTD 4F,NO.168,LITEHST,CHUNG AO CITY 235,TAIPEI, TAIWAN R.O.C.
Manufacturer 1:	TOP WAY TECHNOLOGY CO.,LTD SHANG JIN INDUSTRIAL ZONE JIE KOU VILLAGE CHANG AN TOWN DONG GUAN CITY GUANG DONG PROVINCE P.R.C
Manufacturer 2:	EVER ORIENT TECHNOLOGY CO.,LTD LIAN HE INDUSTRIAL PARK,NAN YUE,LONG GONG, SHENZHEN,GUANG DONG,CHINA.
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Report Number:	SZ061031B03-ET
Date of Test:	October 31~December 15, 2006
Equipment Under Test:	Motherboard
Model Number:	7F2WE1G5D（Please see P7 for all the trade names and model numbers)
Serial Number:	N/A
Type of Test:	EMC Directive 89/336/EEC for CE Marking
Technical Standards:	EN 55022: 1998+A1: 2000+A2: 2003 EN 61000-3-2: 2000 EN 61000-3-3: 1995+A1: 2001 EN 55024: 1998+A1: 2001+A2: 2003 (IEC 61000-4-2: 2001; IEC 61000-4-3: 2002; IEC 61000-4-4: 2001; IEC 61000-4-5: 2001; IEC 61000-4-6: 2001; IEC 61000-4-11: 2001)
Frequency Range (EN 55022):	150kHz to 30MHz for Line Conducted Test 30MHz to 1000MHz for Radiated Emission Test
Test Site	Compliance Certification Services (Shenzhen) Inc. No. 5, Jinao industrial park, No.35 Jukeng Road, Dashuikeng Village, Guanlan Town, Baoan District, Shenzhen, China

SYSTEM DESCRIPTION

EUT Test Program:

1. Set up the EUT with the related support equipments, then run the EMC TEST in windows XP.
2. Make sure the EUT is full load during the test.

PRODUCT INFORMATION

Housing Type: N/A

EUT Power Rating: DC5V or DC12V supplied by PC

Power during Test: DC5V or DC12V supplied by PC

AC input cable: N/A

I/O Port of EUT:

I/O Port Type	Q'TY	Tested with
PS/2 PORT	2	2
USB PORT	2	2
RJ45 PORT	7	7
VIDEO PORT	1	1
AUDIO PORT	1	1
MIC PORT	1	1
S-VIDEO PORT	1	1
1394 PORT	1	1
CF CARD PORT	1	1
DVI PORT	1	1
VGA PORT	1	1
DB9 PORT	1	1

Difference between model numbers as below:

	Model Number	Trade Name
1.	7F2WE1G5D	JETWAY
2.	Migrus C787	
3.	J7F2xxyyyy	

***Note:** 1.The model names are different only for marketing purpose, except that they are entirely same.*

2. Where "xx" can be blank or A~Z;"yyyy"can be blank,0~9 or A~Z.

SUPPORT EQUIPMENT

No.	Equipment	Model #	Serial #	Trade Name	Data Cable	Power Cord
1)	LCD MONITOR	VP201B	A21050402549	View Sonic	Shielded 1.6m	Unshielded 1.8m
2)	MODEM	SUPERFAX6.0	9013593	ACEEX	Shielded 1.5m	Unshielded 1.8m
3)	PRINTER	C8942A	TH19T1G0W4	HP	Shielded 1.5m	Unshielded 1.8m
4)	USB MOUSE	M-S69	323614-001	HP	Shielded 1.8m	N/A
5)	USB KEYBOARD	SK-8115	CN-0J4633-71616-51A-0KJY	DELL	Shielded 1.6m	N/A
6)	RJ45 CABLE 1	N/A	N/A	N/A	Unshielded 1.2m	N/A
7)	RJ45 CABLE 2	N/A	N/A	N/A	Unshielded 1.2m	N/A
8)	S-VIDEO CABLE	N/A	N/A	N/A	Shielded 1.6m	N/A
9)	VIDEO CABLE	N/A	N/A	N/A	Unshielded 1.2m	N/A
10)	AUDIO CABLE	N/A	N/A	N/A	Unshielded 1.2m	N/A
11)	MIC CABLE	N/A	N/A	N/A	Unshielded 1.2m	N/A
12)	1394 CABLE	N/A	N/A	N/A	Unshielded 1.2m	N/A
13)	DVI CABLE	N/A	N/A	N/A	Shielded 1.6m	N/A
14)	CF CARD	LSFA0016	HB289008C4	PANASONIC	N/A	N/A
15)	CPU	C7-D 1500/400	D6D0T002SB0	TAIWAN	N/A	N/A
16）	MEMORY EXPERT	DDR-0035	R670070T	V-DATA	N/A	N/A
17）	PC POWER	ST-ATX340	B6058518	SHIJIZHIXING	N/A	N/A
18）	HARD DISK	M6FYA	24094LFJHMER	MAXTOR	N/A	N/A
19）	PC BOX	N/A	51200136	SHIJIZHIXING	N/A	N/A
20）	CPU FAN	DFB401012M	N/A	YOUNG LIN	N/A	N/A

***Note:** All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.*

***Grounding:** Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.*

TEST FACILITY

Location: No. 5, Jinao industrial park, No.35 Jukeng Road, Dashuikeng Village, Guanlan Town, Baoan District Shenzhen, China.

Description: There is one 3/10m open area test sites and one line conducted labs for final test.
The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements.

Site Filing: A site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.

Site Accreditation: Accredited by Nemko (Aut. No.: ELA106), VCCI(Registration No.: R-1996,C-2150), FCC (Registration No.: 101879) and NVLAP(Lab code:200577-0) for EMC.

Instrument Tolerance: All measuring equipment is in accord with ANSI C63.4 and CISPR 22 requirements that meet industry regulatory agency and accreditation agency requirement.

Ground Plane: Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna. It has no holes or gaps having longitudinal dimensions larger than one-tenth of a wavelength at the highest frequency of measurement up to 1GHz.

TEST EQUIPMENT LIST

Instrumentation: The following list contains equipment used at Compliance Certification Services (Shenzhen) Inc. for testing. The equipment conforms to the CISPR 16-1 / ANSI C63.2 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10kHz to 1.0GHz or above.

Equipment used during the tests:

Open Area Test Site: G

Open Area Test Site G					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	100145	02/09/2006	02/08/2007
Pre Amplifier	H.P.	8447D	2944A06833	09/01/2006	09/01/2007
Bi-log Antenna	SCHAFFNER	CBL6143	5082	06/10/2006	06/09/2007
Cable	TIME MICROWAVE	LMR-400	N-TYPE04	06/10/2006	06/09/2007
System-Controller	CT	SC100	N/A	N/A	N/A
Turn Table	EMCO	2081-1.21	N/A	N/A	N/A
Antenna Tower	CT	N/A	N/A	N/A	N/A
DECOUPLING NETWORK	FISCHER CUSJASON	F-201-DCN-5-6MM	12	06/10/2006	06/09/2007

Note: *The measure uncertainty is less than +/-2.5078dB, which is evaluated as per the UKAS LAB34 and CISPR/A/291/CDV.*

Conducted Emission Test Site: G

Conducted Emission Test Site G					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	100088	02/09/2006	02/08/2007
LISN	EMCO	3825/2	1371	02/09/2006	02/08/2007
LISN	EMCO	3825/2	8901-1459	02/09/2006	02/08/2007

Note: *The measure uncertainty is less than +/-2.2318dB, which is evaluated as per the UKAS LAB34 and CISPR/A/291/CDV.*

The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

TEST EQUIPMENT LIST

Power Harmonic & Voltage Fluctuation/Flicker Measurement (61000-3-2&-3-3)					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Harmonic & Flicker Tester	SCHAFFNER	CCN1000	720465	02/09/2006	02/08/2007
Power Source	SCHAFFNER	NSG1007	54789	02/09/2006	02/08/2007

ESD test (61000-4-2)					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
ESD 30 System	EM Test	ESD 30C	1202-17	10/17/2006	10/16/2007

Radiated Electromagnetic Field immunity Measurement (61000-4-3)					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Signal Generator	Maconi	2022D	119246/003	06/10/2006	06/09/2007
Power Amplifier	MIS	A00181-1000	9801-112	06/10/2006	06/09/2007
Power Amplifier	MIS	AC8113/ 800-250A	9801-179	06/10/2006	06/09/2007
Power Antenna	SCHAFFNER	CBL6140A	1204	06/10/2006	06/09/2007

Fast Transients/Burst test (61000-4-4)/Surge(61000-4-5)/Voltage Dips &Interruptions(61000-4-11)					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Fast Transients/Burst Generator	SCHAFFNER	BEST EMC V2.7	200126-012S C	02/09/2006	02/08/2007

CS test (61000-4-6)					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Signal Generator	Maconi	2022D	119246/003	06/10/2006	06/09/2007
Power Amplifier	MIS	A00181-1000	9801-112	06/10/2006	06/09/2007
CDN	MEB	M3-8016	003683	06/10/2006	06/09/2007

SECTION 1 EN 55022(LINE CONDUCTED AND RADIATED EMISSION) MEASUREMENT PROCEDURE
(PRELIMINARY LINE CONDUCTED EMISSION TEST)

1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per EN55022 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

2) Support equipment, if needed, was placed as per EN55022.

3) All I/O cables were positioned to simulate typical actual usage as per EN55022.

4) The EUT received DC power from PC power supply, and PC received AC230V/50Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.

5) All support equipments received power from a second LISN supplying power of AC230V/50Hz, if any.

6) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.

7) Analyzer / Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.

8) During the above scans, the emissions were maximized by cable manipulation.

9) The following test mode(s) were scanned during the preliminary test:

Preliminary Conducted Emission Test			
Frequency Range Investigated		150KHz TO 30 MHz	
Mode of operation	Date	Data Report No.	Worst Mode
ADPCM	2006-12-11	7F2WE1G5D_0(L,N)	☐
AD7DLVR	2006-12-11	7F2WE1G5D _1(L,N)	☐
AD4C3G	2006-12-11	7F2WE1G5D _2(L,N)	☒
AD12VB	2006-12-11	7F2WE1G5D _3(L,N)	☐
ADCF	2006-12-11	7F2WE1G5D _4(L,N)	☐
AD4C3L	2006-12-11	7F2WE1G5D _5(L,N)	☐

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

MEASUREMENT PROCEDURE
(FINAL LINE CONDUCTED EMISSION TEST)

1) EUT and support equipment was set up on the test bench as per step 9 of the preliminary test.

2) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.

3) The test data of the worst case condition(s) was reported on the Summary Data page.

Data Sample:

Freq. MHz	Peak Raw dBuV	Q.P. Raw dBuV	Average Raw dBuV	Q.P. Limit dBuV	Average Limit dBuV	Q.P. Margin dB	Average Margin dB	Note
xx.xxx	43.90	---	---	56.00	46.00	---	-2.10	L 1

Freq.	= Emission frequency in MHz
Raw dBuV	= Uncorrected Analyzer/Receiver reading
Limit dBuV	= Limit stated in standard
Margin dB	= Reading in reference to limit
Note	= Current carrying line of reading
"---"	= The emission level complied with the Average limits, with at least 2 dB margin, so no further recheck.

LINE CONDUCTED EMISSION LIMIT

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	AVERAGE(dBuV)
150kHz-500kHz	66-56	56-46
500kHz-5MHz	56	46
5MHz-30MHz	60	50

***Note:** The lower limit shall apply at the transition frequency.*

MEASUREMENT PROCEDURE
(PRELIMINARY RADIATED EMISSION TEST)

1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per EN 55022 (see Test Facility for the dimensions of the ground plane used).When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

2) Support equipment, if needed, was placed as per EN 55022.

3) All I/O cables were positioned to simulate typical actual usage as per EN 55022.

4) The EUT received DC power from PC power supply, and PC received AC230V/50Hz power through the outlet socket under the turntable. All support equipments received AC 230V/50Hz power from socket under the turntable, if any.

5) The antenna was placed at 10 meter away from the EUT as stated in EN 55022. The antenna connected to the Analyzer via a cable and at times a pre-amplifier would be used.

6) The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

7) The following test mode(s) were scanned during the preliminary test:

Preliminary Radiated Emission Test			
Frequency Range Investigated		30 MHz TO 1000 MHz	
Mode of operation	Date	Data Report No.	Worst Mode
ADPCM	2006-12-11	7F2WE1G5D_0(H,V)	☐
AD7DLVR	2006-12-11	7F2WE1G5D _1(H,V)	☐
AD4C3G	2006-12-11	7F2WE1G5D _2(H,V)	☒
AD12VB	2006-12-11	7F2WE1G5D _3(H,V)	☐
ADCF	2006-12-11	7F2WE1G5D _4(H,V)	☐
AD4C3L	2006-12-11	7F2WE1G5D _5(H,V)	☐

Then, the EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for final testing.

MEASUREMENT PROCEDURE
(FINAL RADIATED EMISSION TEST)

1) EUT and support equipment were set up on the turntable as per step 7 of the preliminary test.

2) The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

3) Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and Q.P./Peak reading is presented.

4) The test data of the worst case condition(s) was reported on the Summary Data page.

Data Sample:

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits	Margin (dB)	Reading Type P/Q
xx.xxx	14.03	12.25	26.28	30.00	-3.72	P

Freq.	= Emission frequency in MHz
Raw Data (dBuV/m)	= Uncorrected Analyzer / Receiver reading
Corr. Factor (dB)	= Correction factors of antenna factor and cable loss
Emiss. Level	= Raw reading converted to dBuV/m and CF added
Limit dBuV/m	= Limit stated in standard
Margin dB	= Reading in reference to limit
P	=Peak Reading
Q	=Quasi-peak

RADIATED EMISSION LIMIT

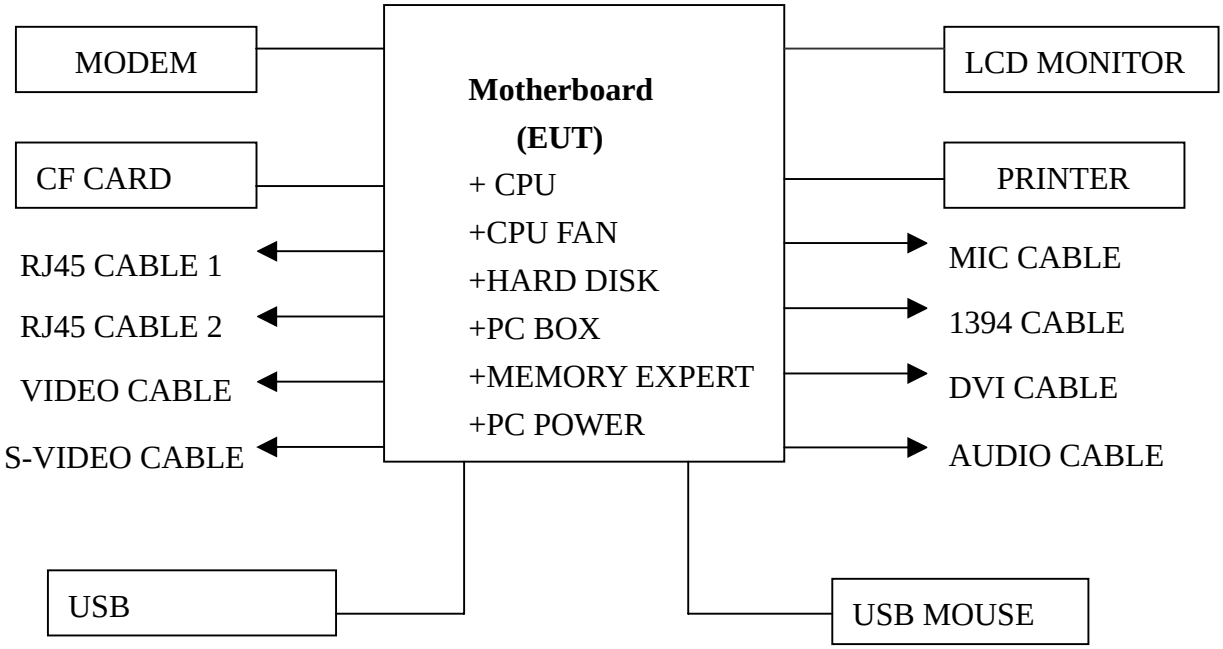
Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBuV/m/ Q.P.)
30-230	10	30.00
230-1000	10	37.00

***Note:** The lower limit shall apply at the transition frequency.*

BLOCK DIAGRAM OF TEST SETUP

System Diagram of Connections between EUT and Simulators

EUT : Motherboard
Trade Name: JETWAY
Model Number: 7F2WE1G5D



SUMMARY DATA

(LINE CONDUCTED TEST)

Model Number: 7F2WE1G5D

Tested by: Jason **Location:** Site G

Test Mode: AD4C3G

Test Results: Passed

Temperature: 27°C **Humidity:** 56%RH

(The chart below shows the highest readings taken from the final data)

FREQ MHz	PEAK RAW dBuV	Q.P. RAW dBuV	AVG RAW dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.172	55.66	51.97	43.3	65.36	55.36	-13.39	-12.06	L1
0.238	49.18	---	---	63.46	53.46	---	-4.28	L1
0.368	47.71	45.5	34.46	59.75	49.75	-14.25	-15.29	L1
0.583	41.89	---	---	56.00	46.00	---	-4.11	L1
5.703	45.42	---	---	60.00	50.00	---	-4.58	L1
9.783	43.39	---	---	60.00	50.00	---	-6.61	L1
0.172	55.55	50.55	42.33	65.36	55.36	-14.81	-13.03	L2
0.205	48.53	---	---	64.41	54.41	---	-5.88	L2
0.235	49.17	---	---	63.56	53.56	---	-4.39	L2
0.372	46.56	---	---	59.64	49.64	---	-3.08	L2
5.751	45.41	---	---	60.00	50.00	---	-4.59	L2
9.254	42.34	---	---	60.00	50.00	---	-7.66	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

***NOTE:** "---" denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.*

SUMMARY DATA

(RADIATED EMISSION TEST)

Model Number: 7F2WE1G5D **Location:** Site G

Tested by: Jason

Test Mode: AD4C3G **Polar:** Vertical / Horizontal

Test Results: Passed **Test Distance:** 10m

Temperature: 28℃ **Humidity:** 56%RH

(The chart below shows the highest readings taken from the final data)

Frequency Range Investigated (30 MHz TO 1000 MHz)							
Freq. (MHz)	**Reading(RA) (dBuV)**	**Corr.Factor(CF) (dB)**	**Measured(FS) (dBuV/m)**	**Limits(QP) (dBuV/m)**	**Safe Margins (dBuV/m)**	**Ant. H/V**	**Mark**
129.200	30.05	-7.15	22.90	30.00	-7.10	V	Peak
144.160	32.85	-6.90	25.95	30.00	-4.05	V	Peak
165.010	29.93	-8.41	21.52	30.00	-8.48	V	Peak
266.980	37.20	-5.16	32.04	37.00	-4.96	V	Q.P
297.340	32.23	-3.52	28.71	37.00	-8.29	V	Peak
368.240	33.27	-2.50	30.77	37.00	-6.23	V	Peak
165.070	33.02	-7.96	25.06	30.00	-4.94	H	Peak
233.130	30.69	-0.82	29.87	37.00	-7.13	H	Peak
239.010	33.31	-1.23	32.08	37.00	-4.92	H	Peak
263.640	37.24	-3.93	33.31	37.00	-3.69	H	Q.P
301.780	31.42	-3.59	27.83	37.00	-9.17	H	Peak
433.020	33.12	-2.28	30.84	37.00	-6.16	H	Peak

C.F.(Correction Factor)=Antenna Factor + Cable Loss - Amplifier Gain (+ Attenuator 6dB)

Corrected Reading = Metering Reading + C.F.

Margin=Corrected Reading - Limits

P=Peak Reading *H=Horizontal Polarization/Antenna*

Q=Quasi-peak *V=Vertical Polarization/Antenna*

Comments: N/A

SECTION 2 EN 61000-3-2 & EN 61000-3-3 (POWER HARMONICS & VOLTAGE FLUCTUATION / FLICKER)

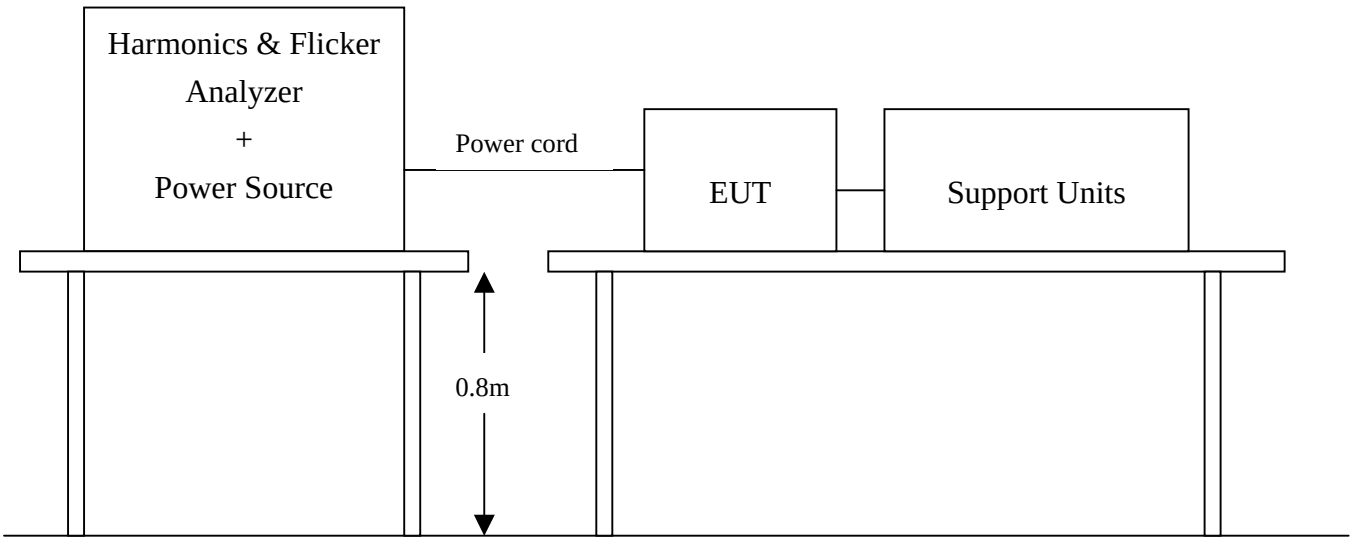
POWER HARMONICS MEASUREMENT

Port : AC mains
Basic Standard : EN 61000-3-2 :2000
Limits : ☐ CLASS A ; ☑ CLASS D
Temperature : 25°C
Humidity : 55%

VOLTAGE FLUCTUATION/FLICKER MEASUREMENT

Port : AC mains
Basic Standard : EN 61000-3-3 : 1995+A1:2001
Limits : §5 of EN 61000-3-3
Temperature : 25°C
Humidity : 55%

Block Diagram of Test Setup:



Result:

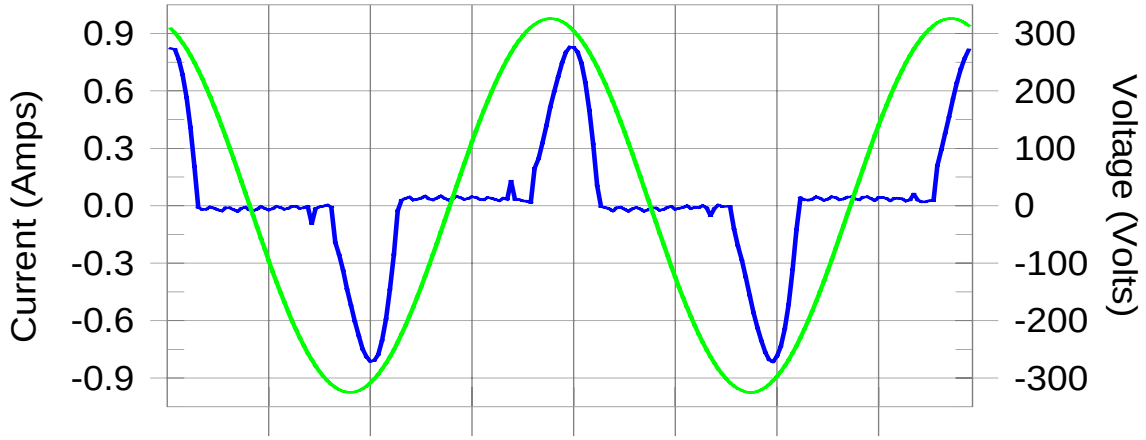
Please see the attached test data

Harmonics – Class-D

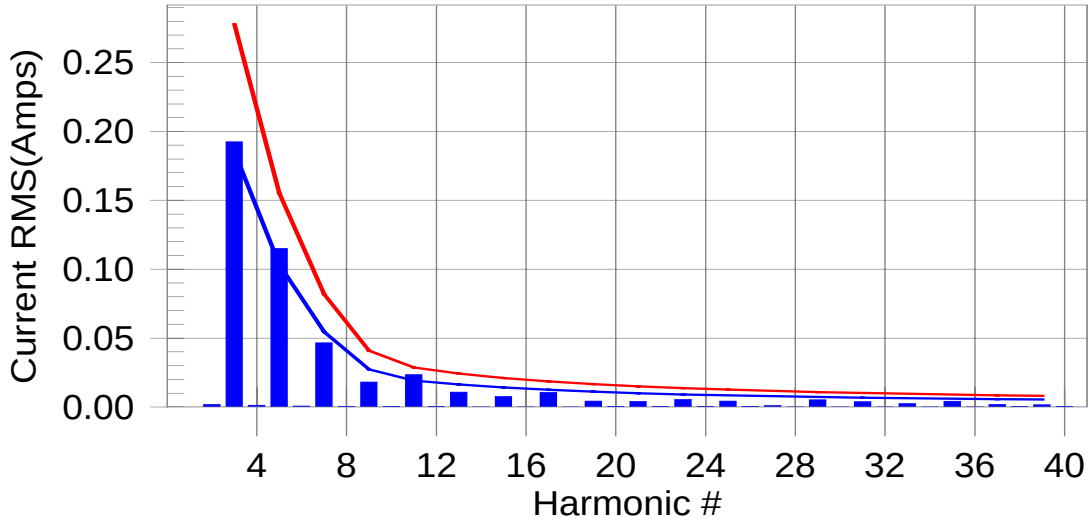
EUT: Motherboard **Tested by: Jason**
Test category: Class-D **Test Margin: 100**
Test date: 2006-12-12 **Start time: 15:22:41** **End time: 15:25:21**
Test duration (min): 2.5 **Data file name: H-000164.cts_data**
Comment: 7F2WE1G5D
Customer: JET WAY INFORMATION CO.,LTD

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class D limit line **European Limits**



Test result: Pass Worst harmonic was #0 with 0.00% of the limit.

Current Test Result Summary

EUT: Motherboard **Tested by: Jason**
Test category: Class-D **Test Margin: 100**
Test date: 2006-12-12 **Start time: 15:22:41** **End time: 15:25:21**
Test duration (min): 2.5 **Data file name: H-000164.cts_data**
Comment: 7F2WE1G5D
Customer: JET WAY INFORMATION CO.,LTD

Test Result: Pass **Source qualification: Normal**
THC(A): 0.00 **I-THD(%): 0.00** **POHC(A): 0.000** **POHC Limit(A): 0.000**
Highest parameter values during test:

V_RMS (Volts):	**230.19**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**0.837**	**I_RMS (Amps):**	**0.335**
I_Fund (Amps):	**0.240**	**Crest Factor:**	**2.511**
Power (Watts):	**54.5**	**Power Factor:**	**0.709**

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002						
3	0.189	0.185	0.0	0.192	0.278	0.00	Pass
4	0.001						
5	0.114	0.104	0.0	0.115	0.155	0.00	Pass
6	0.001						
7	0.045	0.055	0.0	0.047	0.082	0.00	Pass
8	0.000						
9	0.018	0.027	0.0	0.018	0.041	0.00	Pass
10	0.000						
11	0.023	0.019	0.0	0.023	0.029	0.00	Pass
12	0.000						
13	0.011	0.016	0.0	0.011	0.024	0.00	Pass
14	0.000						
15	0.007	0.014	0.0	0.008	0.021	0.00	Pass
16	0.000						
17	0.010	0.013	0.0	0.011	0.019	0.00	Pass
18	0.000						
19	0.004	0.011	0.0	0.004	0.017	0.00	Pass
20	0.000						
21	0.004	0.010	0.0	0.004	0.015	0.00	Pass
22	0.000						
23	0.005	0.009	0.0	0.005	0.014	0.00	Pass
24	0.000						
25	0.004	0.008	0.0	0.004	0.013	0.00	Pass
26	0.000						
27	0.001	0.008	0.0	0.001	0.012	0.00	Pass
28	0.000						
29	0.005	0.007	0.0	0.005	0.011	0.00	Pass
30	0.000						
31	0.004	0.007	0.0	0.004	0.010	0.00	Pass
32	0.000						
33	0.002	0.006	0.0	0.002	0.010	0.00	Pass
34	0.000						
35	0.004	0.006	0.0	0.004	0.009	0.00	Pass
36	0.000						
37	0.002	0.006	0.0	0.002	0.009	0.00	Pass
38	0.000						
39	0.001	0.005	0.0	0.002	0.008	0.00	Pass
40	0.000						

Note: The EUT power level is below 75.0 Watts and therefore has no defined limits

Voltage Source Verification Data

EUT: Motherboard **Tested by: Jason**
Test category: Class-D **Test Margin: 100**
Test date: 2006-12-12 **Start time: 15:22:41** **End time: 15:25:21**
Test duration (min): 2.5 **Data file name: H-000164.cts_data**
Comment: 7F2WE1G5D
Customer: JET WAY INFORMATION CO.,LTD

Test Result: Pass **Source qualification: Normal**

Highest parameter values during test:

Voltage (Vrms):	**230.19**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**0.837**	**I_RMS (Amps):**	**0.335**
I_Fund (Amps):	**0.240**	**Crest Factor:**	**2.511**
Power (Watts):	**54.5**	**Power Factor:**	**0.709**

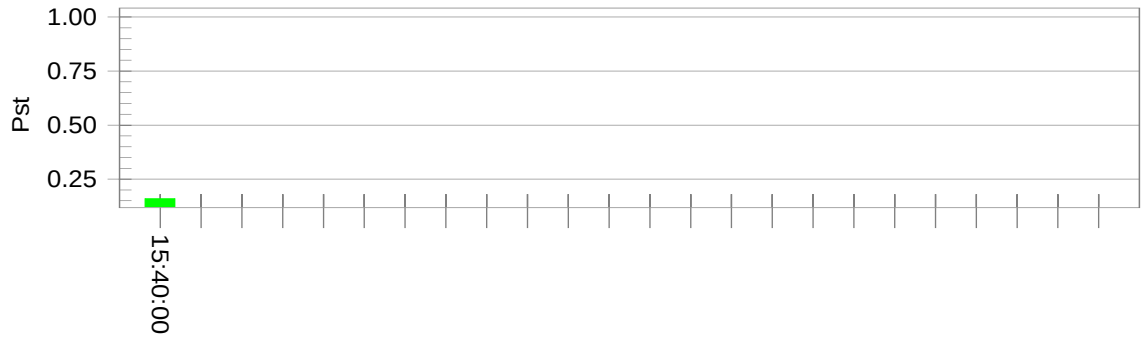
Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.123	0.460	26.74	OK
3	0.542	2.071	26.19	OK
4	0.133	0.460	28.98	OK
5	0.077	0.921	8.38	OK
6	0.073	0.460	15.78	OK
7	0.056	0.690	8.10	OK
8	0.051	0.460	11.16	OK
9	0.044	0.460	9.60	OK
10	0.050	0.460	10.78	OK
11	0.047	0.230	20.33	OK
12	0.036	0.230	15.75	OK
13	0.035	0.230	15.19	OK
14	0.026	0.230	11.09	OK
15	0.027	0.230	11.79	OK
16	0.027	0.230	11.81	OK
17	0.023	0.230	9.77	OK
18	0.027	0.230	11.77	OK
19	0.027	0.230	11.53	OK
20	0.023	0.230	10.14	OK
21	0.025	0.230	10.73	OK
22	0.018	0.230	7.91	OK
23	0.019	0.230	8.25	OK
24	0.016	0.230	6.80	OK
25	0.018	0.230	7.83	OK
26	0.019	0.230	8.41	OK
27	0.014	0.230	6.21	OK
28	0.017	0.230	7.57	OK
29	0.022	0.230	9.65	OK
30	0.016	0.230	7.01	OK
31	0.013	0.230	5.46	OK
32	0.015	0.230	6.46	OK
33	0.014	0.230	5.93	OK
34	0.011	0.230	4.80	OK
35	0.016	0.230	7.02	OK
36	0.011	0.230	4.71	OK
37	0.009	0.230	3.78	OK
38	0.009	0.230	3.81	OK
39	0.011	0.230	4.81	OK
40	0.011	0.230	4.82	OK

Flicker Test Summary

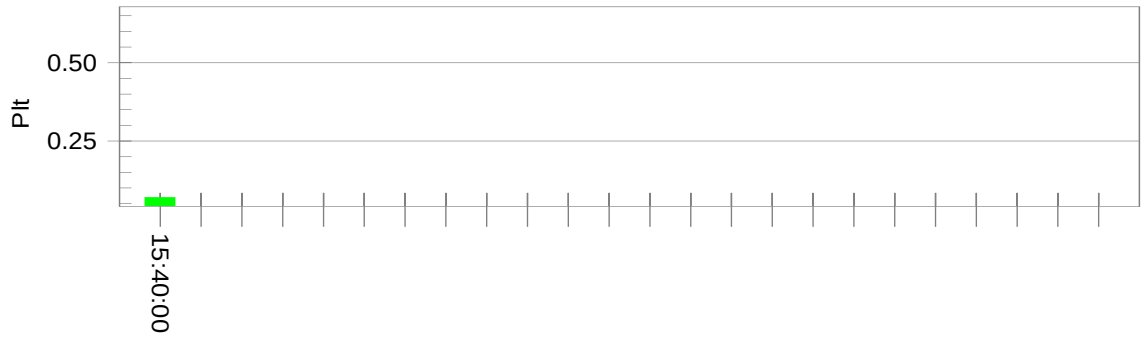
EUT: Motherboard **Tested by:Jason**
Test category: All parameters (European limits) **Test Margin: 100**
Test date: 2006-12-12 **Start time: 15:29:40** **End time: 15:40:01**
Test duration (min): 10 **Data file name: F-000165.cts_data**
Comment: 7F2WE1G5D
Customer: JET WAY INFORMATION CO.,LTD

Test Result: Pass **Status: Test Completed**

Pst_t and limit line **European Limits**



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	**229.89**			
Highest dt (%):	**0.13**	**Test limit (%):**	**3.30**	**Pass**
Time(mS) > dt:	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.09**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.160**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.070**	**Test limit:**	**0.650**	**Pass**

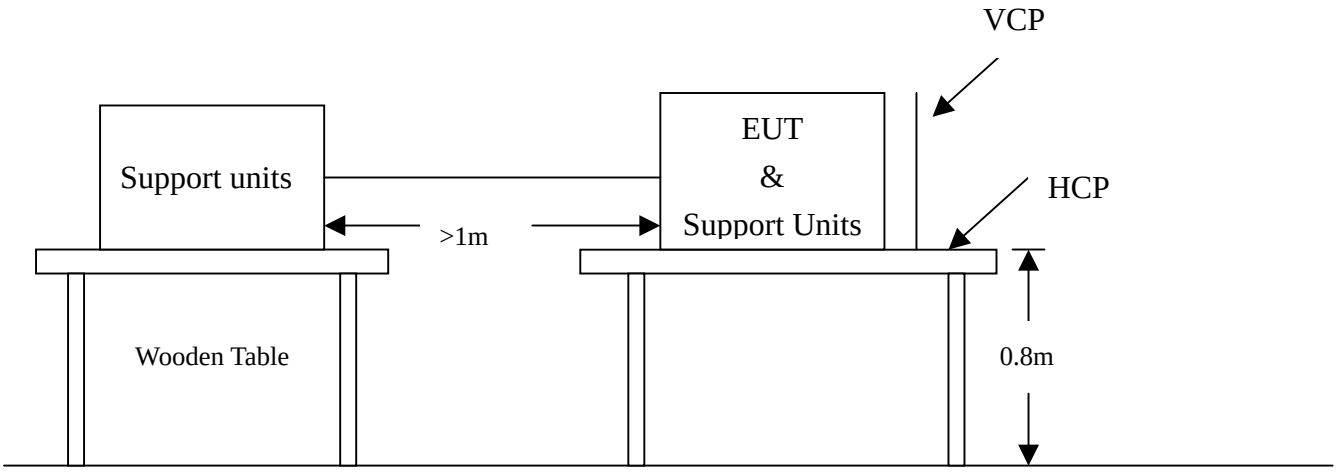
SECTION 3 IEC 61000-4-2 (ELECTROSTATIC DISCHARGE)

ELECTROSTATIC DISCHARGE (ESD) IMMUNITY TEST

Port	**:**	Enclosure
Basic Standard	**:**	IEC 61000-4-2: 2001
Test Level	**:**	± 8 kV (Air Discharge)
		± 4 kV (Contact Discharge)
Performance Criterion :		B (Standard require)
Temperature/Humidity :		29°C/55%

Block Diagram of Test Setup:

(The 470 k ohm resistors are installed per standard requirement)



Ground Reference Plane

Test Procedure:

1. The EUT was located 0.1 m minimum from all side of the HCP.
2. The support units were located 1 m minimum away from the EUT.
3. Set up the EUT with the related support equipments, then run the EMC TEST in windows XP.Make sure the EUT is full load during the test.
4. Active the communication function if the EUT with such port(s).
5. As per the requirement of EN 55024; applying direct contact discharge at the sides other than front of EUT at minimum 50 discharges (25 positive and 25 negative) if applicable, can't be applied direct contact discharge side of EUT then the indirect discharge shall be applied. One of the test points shall be subjected to at least 50 indirect discharge (contact) to the front edge of horizontal coupling plane.
6. Other parts of EUT where it is not possible to perform contact discharge then selecting appropriate points of EUT for air discharge, a minimum of 10 single air discharges shall be applied.
7. The application of ESD to the contact of open connectors is not required.
8. Putting a mark on EUT to show tested points. The following test condition was followed during the tests.

Note: As per the A2 to IEC 61000-4-2, a bleed resistor cable is connected between the EUT and HCP during the test.

The electrostatic discharges were applied as follows:

Amount of Discharges	Voltage	Coupling	Result (Pass/Fail)
Mini 25 /Point	±2kV; ±4kV	Contact Discharge	Pass
Mini 25 /Point	±2kV; ±4kV	Indirect Discharge HCP (Front)	Pass
Mini 25 /Point	±2kV; ±4kV	Indirect Discharge VCP (Left)	Pass
Mini 25 /Point	±2kV; ±4kV	Indirect Discharge VCP (Back)	Pass
Mini 25 /Point	±2kV; ±4kV	Indirect Discharge VCP (Right)	Pass
Mini 10 /Point	±2kV; ±4kV; ±8kV	Air Discharge	No discharge point

The discharge points to EUT, please refer to attached pages.

(Blue arrow mark for contact discharge, red arrow mark for air discharge.)

Performance & Result:

☑ **Criterion A:** The apparatus continues 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. In some cases the performance level may be replaced by a permissible loss of performance.

☐ **Criterion B:** The apparatus continues 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. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

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

☑ ***PASS***	☐ ***FAIL***

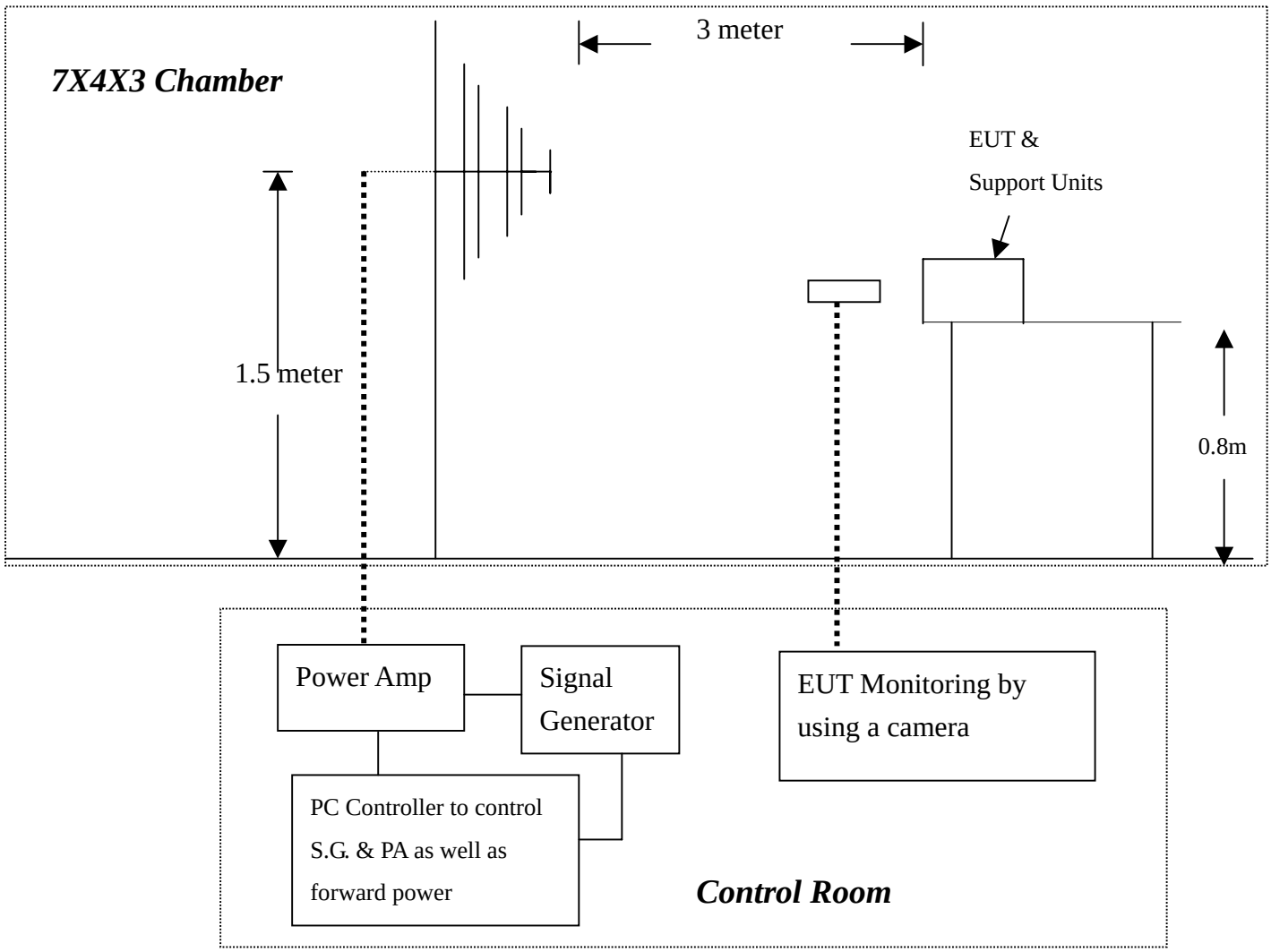
Discharge points of EUT

SECTION 4 IEC 61000-4-3 (RADIATED ELECTROMAGNETIC FIELD)

RADIATED ELECTROMAGNETIC FIELD IMMUNITY TEST

Port : Enclosure
Basic Standard : IEC 61000-4-3:2002
Requirements : 3 V/m with 80% AM. 1kHz Modulation.
Performance Criterion : A (Standard require)
Temperature : 29°C
Humidity : 60%

Block Diagram of Test Setup:



Test Procedure:

1. The EUT was located at the edge of supporting table keep 3 meter away from transmitting antenna, it just the calibrated square area of field uniformity. The support units were located outside of the uniformity area, but the cable(s) connected with EUT were exposed to the calibrated field as per IEC 61000-4-3.
2. Set up the EUT with the related support equipments, then run the EMC TEST in windows XP.Make sure the EUT is full load during the test.
3. Setting the testing parameters of RS test software per IEC 61000-4-3.
4. Performing the pre-test at each side of with double specified level (3V/m) at 1% steps.
5. From the result of pre-test in step 5, choose the worst side of EUT for final test from 80 MHz to 1000 MHz at 1% steps.
6. Recording the test result in following table.
7. It is not necessary to perform test as per annex A of EN 55024 if the EUT doesn't belong to TTE product.

IEC 61000-4-3 test conditions:

Test level : 3V/m

Steps : 1 % of fundamental

Dwell Time : 1 sec

Range (MHz)	Field	Modulation	Polarity	Position (°)	Result (Pass/Fail)
80-1000	3V/m	Yes	H	Front	Pass
80-1000	3V/m	Yes	V	Front	Pass
80-1000	3V/m	Yes	H	Right	Pass
80-1000	3V/m	Yes	V	Right	Pass
80-1000	3V/m	Yes	H	Back	Pass
80-1000	3V/m	Yes	V	Back	Pass
80-1000	3V/m	Yes	H	Left	Pass
80-1000	3V/m	Yes	V	Left	Pass

Performance & Result:

[V] **Criterion A:** The apparatus continues 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. In some cases the performance level may be replaced by a permissible loss of performance.

[ ] **Criterion B:** The apparatus continues 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. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

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

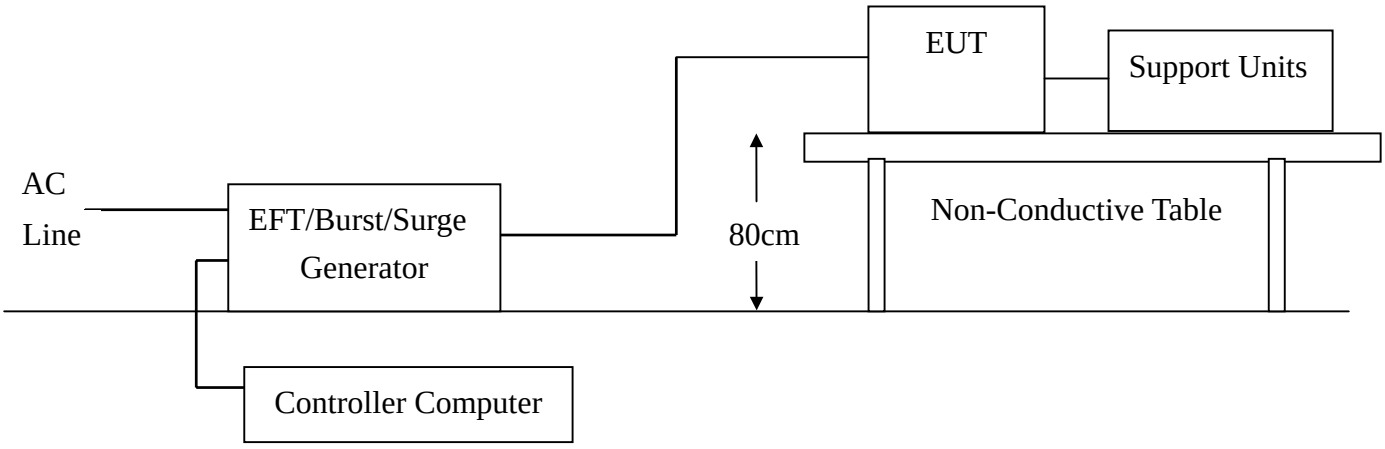
[V] ***PASS*** [ ] ***FAIL***

SECTION 5 IEC 61000-4-4 (FAST TRANSIENTS/BURST)

FAST TRANSIENTS/BURST IMMUNITY TEST

Port	**:** On Power Supply Lines
Basic Standard	**:** IEC 61000-4-4: 2001
Requirements	**:**+/-1KV for Power Supply Lines
Performance Criterion	**:** B (Standard require)
Temperature	**:** 29°C
Humidity	**:** 60%

Block Diagram of Test Setup:



Test Procedure:

1. The EUT and support units were located on a wooden table 0.8 m away from ground reference plane.
2. A 1.0 meter long power cord was attached to EUT during the test.
3. The length of communication cable between communication port and clamp was keeping within 1 meter.
4. Set up the EUT with the related support equipments, then run the EMC TEST in windows XP.Make sure the EUT is full load during the test.
5 .Related peripherals work during the test.
6. Recording the test result as shown in following table.

Test conditions:
Impulse Frequency: 5kHz
Tr/Th: 5/50ns
Burst Duration: 15ms
Burst Period: 300ms

Inject Line	Voltage kV	Inject Method	Result (Pass/Fail)
L	+/- 1	Direct	Pass
N	+/- 1	Direct	Pass
PE	+/- 1	Direct	Pass
L+N	+/- 1	Direct	Pass
L+PE	+/- 1	Direct	Pass
N+PE	+/- 1	Direct	Pass
L+N+PE	+/- 1	Direct	Pass

Performance & Result:

[V] **Criterion A:** The apparatus continues 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. In some cases the performance level may be replaced by a permissible loss of performance.

[ ] **Criterion B:** The apparatus continues 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. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

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

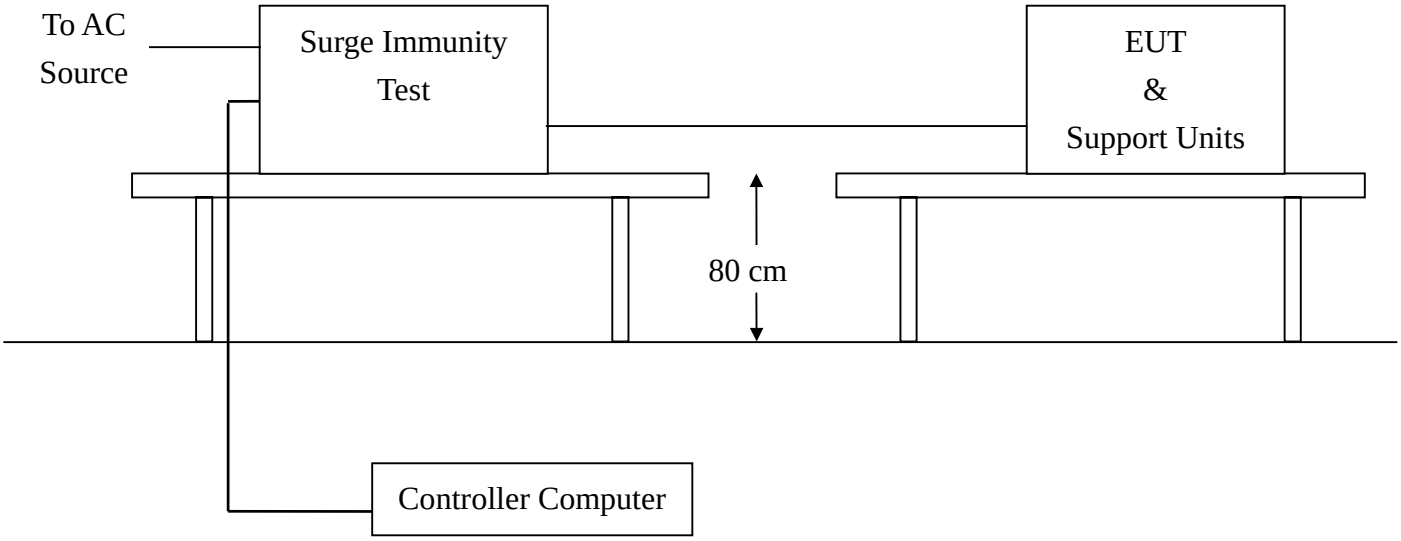
[V] ***PASS*** [ ] ***FAIL***

SECTION 6 IEC 61000-4-5 (SURGE IMMUNITY)

SURGE IMMUNITY TEST

Port **:** On Power Supply Lines
Basic Standard **:** IEC 61000-4-5: 2001
Requirements **:** +/- 1kV (Line to Line)
: +/- 2kV (Line to Ground)
Performance Criterion: B (Standard require)
Temperature **:** 29°C
Humidity **:** 60%

Block Diagram of Test Setup:



Test Procedure:

1. The EUT and support units were located on a wooden table 0.8 m away from ground floor.
2. Set up the EUT with the related support equipments, then run the EMC TEST in windows XP.Make sure the EUT is full load during the test.
3. Recording the test result as shown in following table.

Test conditions:
Voltage Waveform : 1.2/50 *u*s
Current Waveform : 8/20 *u*s
Polarity : Positive/Negative
Phase angle : 0^o, 90^o, 270^o
Number of Test : 5

Coupling Line	Voltage (kV)	Polarity	Coupling Method	Result (Pass/Fail)
L1-L2	1	Positive	Capacitive	Pass
L1-PE	2	Positive	Capacitive	Pass
L2-PE	2	Positive	Capacitive	Pass
L1-L2	1	Negative	Capacitive	Pass
L1-PE	2	Negative	Capacitive	Pass
L2-PE	2	Negative	Capacitive	Pass

Performance & Result:

☐ **Criterion A:** The apparatus continues 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. In some cases the performance level may be replaced by a permissible loss of performance.

☑ **Criterion B:** The apparatus continues 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. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

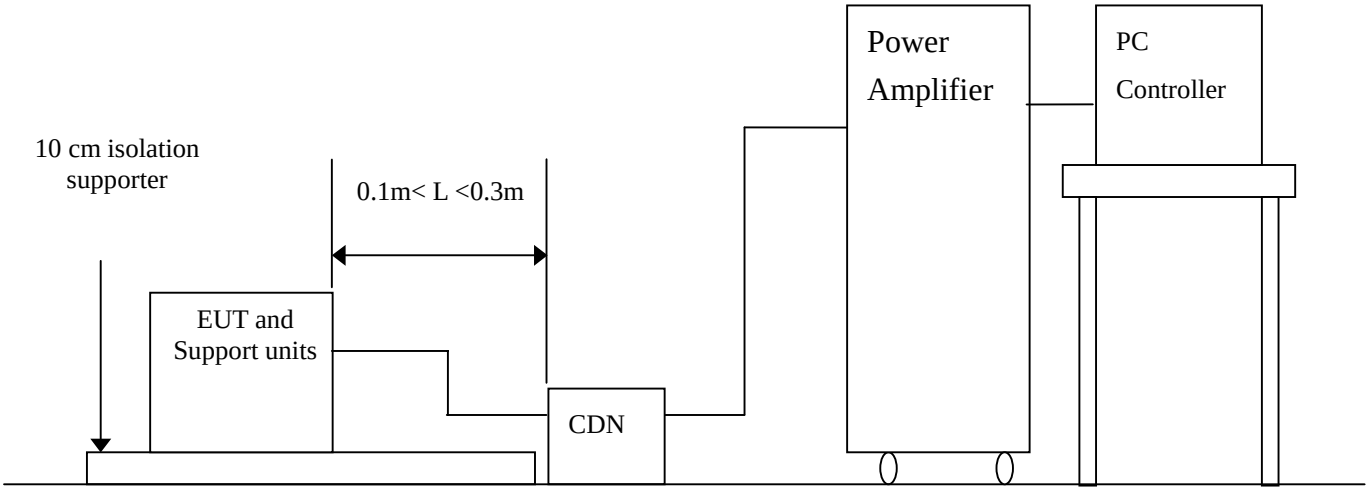
☐ **Criterion C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

☑ ***PASS*** ☐ ***FAIL***

SECTION 7 IEC 61000-4-6(CONDUCTED DISTURBANCE/INDUCED BY RADIO-FREQUENCY FIELD)

Port : On Power Supply Lines
Basic Standard : IEC 61000-4-6: 2001
Requirements : 3V with 80% AM. 1kHz Modulation
Injection Method : CDN
Performance Criterion : A (Standard require)
Temperature : 29°C
Humidity : 60%

Block Diagram of Test Setup:



Test Procedure:

1. The EUT and support units were located at a ground reference plane with the interposition of a 0.1 m thickness insulating support and the CDN was located on GRP directly.
2. Set up the EUT with the related support equipments, then run the EMC TEST in windows XP.Make sure the EUT is full load during the test.
3. Related peripherals work during the test.
4. Setting the testing parameters of CS test software per IEC 61000-4-6.
5. Recording the test result in following table.

Test conditions:

Frequency Range : 0.15MHz-80MHz

Frequency Step : 1% of fundamental

Dwell Time : 1 sec

Range (MHz)	Field	Modulation	Result (Pass/Fail)
0.15-80	3V	Yes	Pass

Performance & Result:

[V] **Criterion A:** The apparatus continues 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. In some cases the performance level may be replaced by a permissible loss of performance.

[ ] **Criterion B:** The apparatus continues 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. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

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

[V] ***PASS*** [ ] ***FAIL***

SECTION 8 IEC 61000-4-11 (VOLTAGE DIPS, SHORT INTERRUPTIONS AND VOLTAGE VARIATIONS)

VOLTAGE DIPS / SHORT INTERRUPTIONS

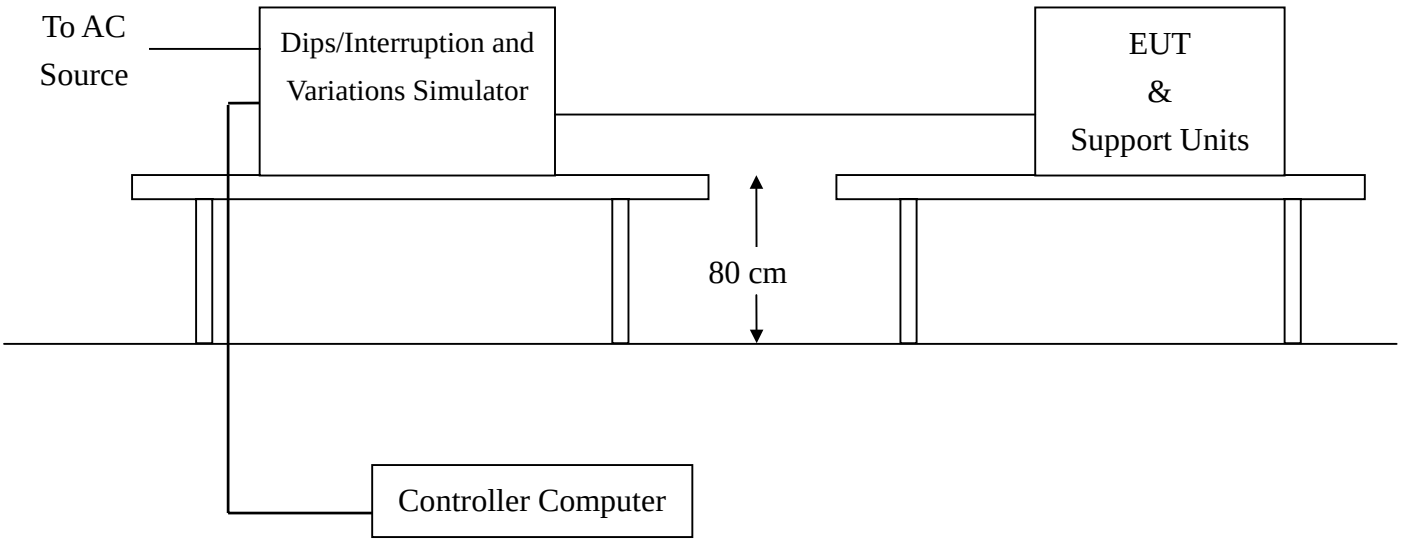
Port **:** On Power Supply Lines
Basic Standard **:** IEC 61000-4-11: 2001
Requirement **:** PHASE ANGLE 0, 45, 90, 135, 180, 225, 270, 315 degrees

	Test Level % U_T	Reduction (%)	Duration (periods)	Performance Criterion
Voltage Dips	<5	>95	0.5	B
	70	30	25	C

	Test Level % U_T	Reduction (%)	Duration (periods)	Performance Criterion
Voltage Interceptions	<5	>95	250	C

Test Interval **:** Min. 10 sec.
Temperature **:** 29°C
Humidity **:** 56%

Block Diagram of Test Setup:



Test Procedure:

1. The EUT and support units were located on a wooden table, 0.8 m away from ground floor.
2. Set up the EUT with the related support equipments, then run the EMC TEST in windows XP.Make sure the EUT is full load during the test.
3. Setting the parameter of tests and then Perform the test software of test simulator.
4. Conditions changes to occur at 0 degree crossover point of the voltage waveform.
5. Recording the test result in test record form.

Test conditions:

The duration with a sequence of three dips/interruptions with interval of 10 s minimum (Between each test event)

Voltage Dips:

Test Level % U_T	Reduction (%)	Duration (periods)	Observation	Meet Performance Criterion
0	100	0.5	Normal	A
70	30	25	EUT shut down, and can recover by itself.	B

Voltage Interruptions:

Test Level % U_T	Reduction (%)	Duration (periods)	Observation	Meet Performance Criterion
0	100	250	EUT shut down, and can recover by itself.	B

Performance & Result:

Criterion A: The apparatus continues 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. In some cases the performance level may be replaced by a permissible loss of performance.

Criterion B: The apparatus continues 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. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

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

[V] ***PASS***	[ ] ***FAIL***

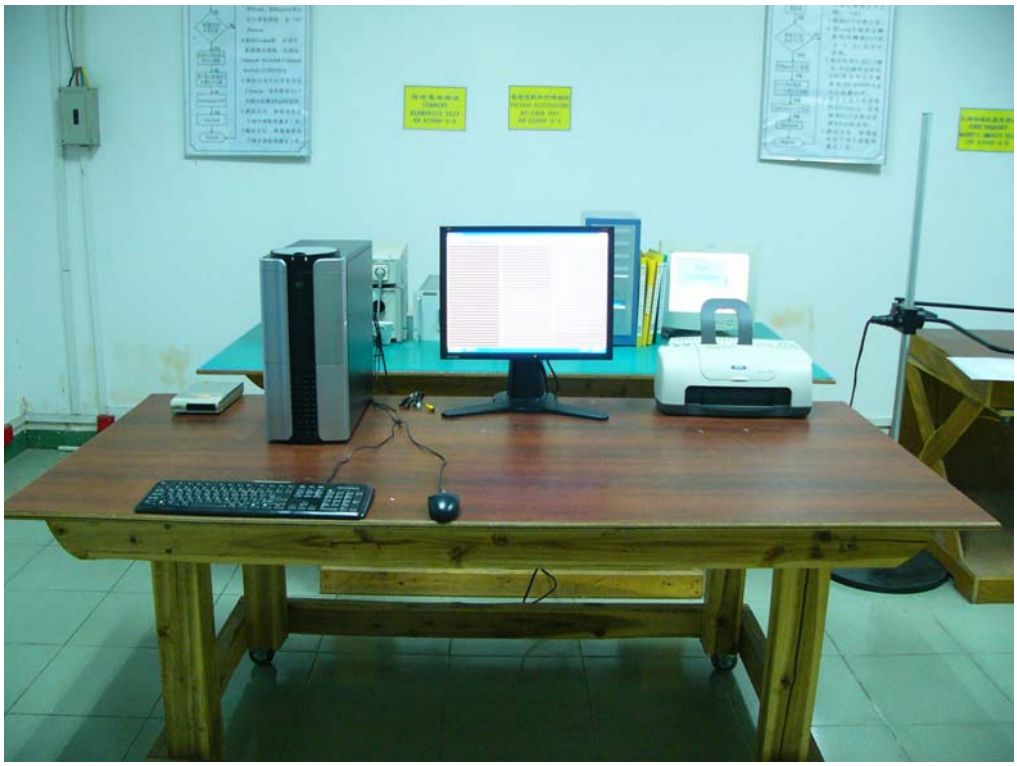
APPENDIX 1

PHOTOGRAPHS OF TEST SETUP

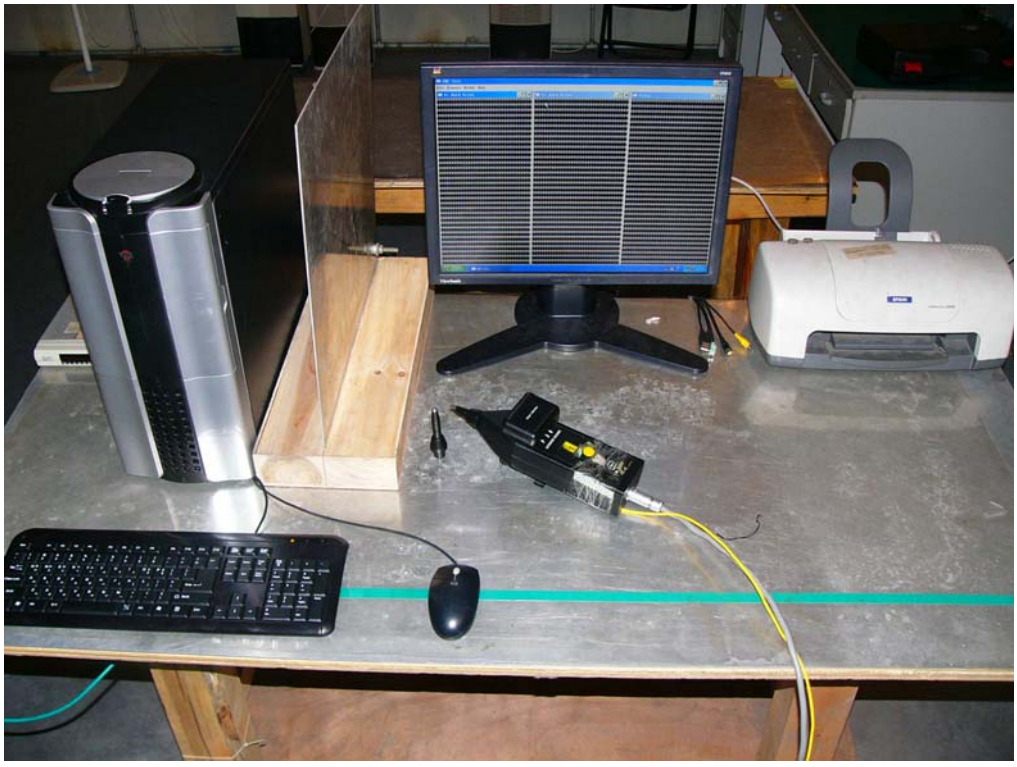
LINE CONDUCTED EMISSION TEST (EN 55022)

RADIATED EMISSION TEST (EN 55022)

POWER HARMONIC & VOLTAGE FLUCTUATION / FLICKER TEST (EN 61000-3-2, EN 61000-3-3)



ELECTROSTATIC DISCHARGE TEST (IEC 61000-4-2)



RADIATED ELECTROMAGNETIC FIELD (IEC 61000-4-3)

FAST TRANSIENTS/BURST TEST (IEC 61000-4-4)
SURGE IMMUNITY TEST (IEC 61000-4-5)
VOLTAGE DIPS / INTERRUPTION TEST (IEC 61000-4-11)

CONDUCTED DISTURBANCE, INDUCED BY RADIO-FREQUENCY FIELDS TEST (IEC 61000-4-6)