



FCC CLASS B COMPLIANCE REPORT

(DoC)

for

Electromagnetic Emissions

of

Motherboard

Trade Name : JETWAY

Model Number : 7F2WE1G5D (Please see P5 for all the trade names and model numbers)

Serial Number : N/A

Report Number : SZ061031B03-EF

Date : November 18, 2006

Prepared for :

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

Prepared by :

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TEST RESULT CERTIFICATION

Equipment Under Test: Motherboard

Trade Name: JETWAY

Model Number: 7F2WE1G5D (Please see P5 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: FCC Part 15 Subpart B Class B(DoC)

Measurement Procedure: ANSI C63.4: 2003

Report Number: SZ061031B03-EF

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 the FCC Rules and Regulations Part 15, Subpart B and the measurement procedure according to ANSI C63.4. This said equipment in the configuration described in this report shows the maximum emission levels emanating from 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

Clinton Kao / Manager

COMPLIANCE CERTIFICATION
SERVICES (SHENZHEN) INC.

Reviewed By:

Villian Xu / Assistant manager

COMPLIANCE CERTIFICATION
SERVICES (SHENZHEN) INC.



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
Data 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	FCC ID
1)	LCD MONITOR	VP201B	A21050402549	View Sonic	Shielded 1.6m	Unshielded 1.8m	N/A
2)	MODEM	SUPERFAX6.0	9013593	ACEEX	Shielded 1.5m	Unshielded 1.8m	IFXDM1414
3)	PRINTER	C8942A	TH19T1G0W4	HP	Shielded 1.5m	Unshielded 1.8m	N/A
4)	USB MOUSE	M-S69	323614-001	HP	Shielded 1.8m	N/A	N/A
5)	USB KEYBOARD	SK-8115	CN-0J4633-71616-51A-0KJY	DELL	Shielded 1.6m	N/A	N/A
6)	RJ45 CABLE 1	N/A	N/A	N/A	Unshielded 1.2m	N/A	N/A
7)	RJ45 CABLE 2	N/A	N/A	N/A	Unshielded 1.2m	N/A	N/A
8)	S-VIDEO CABLE	N/A	N/A	N/A	Shielded 1.6m	N/A	N/A
9)	VIDEO CABLE	N/A	N/A	N/A	Unshielded 1.2m	N/A	N/A
10)	AUDIO CABLE	N/A	N/A	N/A	Unshielded 1.2m	N/A	N/A
11)	MIC CABLE	N/A	N/A	N/A	Unshielded 1.2m	N/A	N/A
12)	1394 CABLE	N/A	N/A	N/A	Unshielded 1.2m	N/A	N/A
13)	DVI CABLE	N/A	N/A	N/A	Shielded 1.6m	N/A	N/A
14)	CF CARD	LSFA0016	HB289008C4	PANASONIC	N/A	N/A	N/A
15)	CPU	C7-D 1500/400	D6D0T002SB0	TAIWAN	N/A	N/A	N/A
16)	MEMORY EXPERT	DDR-0035	R670070T	V-DATA	N/A	N/A	N/A
17)	PC POWER	ST-ATX340	B6058518	SHIJIZHIXING	N/A	N/A	N/A
18)	HARD DISK	M6FYA	24094LFJHMER	MAXTOR	N/A	N/A	N/A
19)	PC BOX	N/A	51200136	SHIJIZHIXING	N/A	N/A	N/A
20)	CPU FAN	DFB401012M	N/A	YOUNG LIN	N/A	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.



SECTION 1 FCC (LINE CONDUCTED & 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 ANSI C63.4 (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 ANSI C63.4.
- 3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4) The EUT received DC power from PC power supply, and PC received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5) All support equipments received AC120V/60Hz power from a second LISN, 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)	<input type="checkbox"/>
AD7DLVR	2006-12-11	7F2WE1G5D_1(L,N)	<input type="checkbox"/>
AD4C3G	2006-12-11	7F2WE1G5D_2(L,N)	<input checked="" type="checkbox"/>
AD12VB	2006-12-11	7F2WE1G5D_3(L,N)	<input type="checkbox"/>
ADCF	2006-12-11	7F2WE1G5D_4(L,N)	<input type="checkbox"/>
AD4C3L	2006-12-11	7F2WE1G5D_5(L,N)	<input type="checkbox"/>

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
x.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 ANSI C63.4 (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 ANSI C63.4.
- 3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4) The EUT received DC power from PC power supply, and PC received AC120V/60Hz power through the outlet socket under the turntable. All support equipments received AC 120V/60Hz power from socket under the turntable, if any.
- 5) The antenna was placed at 10 meter away from the EUT as stated in ANSI C63.4. 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)	<input type="checkbox"/>
AD7DLVR	2006-12-11	7F2WE1G5D_1(H,V)	<input type="checkbox"/>
AD4C3G	2006-12-11	7F2WE1G5D_2(H,V)	<input checked="" type="checkbox"/>
AD12VB	2006-12-11	7F2WE1G5D_3(H,V)	<input type="checkbox"/>
ADCF	2006-12-11	7F2WE1G5D_4(H,V)	<input type="checkbox"/>
AD4C3L	2006-12-11	7F2WE1G5D_5(H,V)	<input type="checkbox"/>

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	14.02	12.25	26.27	30.00	-3.73	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.



SUMMARY DATA (LINE CONDUCTED TEST)

Model Number: 7F2WE1G5D**Location:** Site G**Tested by:** Jason**Test Mode:** AD4C3G**Test Results:** Passed**Temperature:** 25°C**Humidity:** 55%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	55.17	50.73	42.32	65.36	55.36	-14.63	-13.04	L1
0.194	54.09	45.10	39.76	64.73	54.73	-19.63	-14.97	L1
0.235	51.27	48.76	42.02	63.56	53.56	-14.80	-11.54	L1
0.372	47.84	45.64	36.01	59.64	49.64	-14.00	-13.63	L1
0.735	49.80	43.60	36.71	56.00	46.00	-12.40	-9.29	L1
5.639	45.44	---	---	60.00	50.00	---	-4.56	L1
0.164	54.95	48.77	40.53	65.58	55.58	-16.81	-15.05	L2
0.198	55.92	48.39	38.56	64.62	54.62	-16.23	-16.06	L2
0.235	49.23	---	---	63.56	53.56	---	-4.33	L2
0.368	46.25	---	---	59.75	49.75	---	-3.50	L2
5.711	45.89	---	---	60.00	50.00	---	-4.11	L2
9.671	40.37	---	---	60.00	50.00	---	-9.63	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**Polar:** Vertical / Horizontal**Test Mode:** AD4C3G**Test distance:** 10m**Test Results:** Passed**Temperature:** 25°C**Humidity:** 55%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
129.230	30.61	-7.15	23.46	30.00	-6.54	V	Peak
144.130	32.72	-6.90	25.82	30.00	-4.18	V	Peak
165.000	29.34	-8.41	20.93	30.00	-9.07	V	Peak
266.930	36.85	-5.15	31.70	37.00	-5.30	V	Q.P
297.310	32.01	-3.52	28.49	37.00	-8.51	V	Peak
368.260	33.06	-2.50	30.56	37.00	-6.44	V	Peak
165.030	32.79	-7.96	24.83	30.00	-5.17	H	Peak
233.160	30.85	-0.82	30.03	37.00	-6.97	H	Peak
239.990	33.72	-1.30	32.42	37.00	-4.58	H	Peak
263.560	37.39	-3.93	33.46	37.00	-3.54	H	Q.P
301.770	31.27	-3.59	27.68	37.00	-9.32	H	Peak
433.010	32.97	-2.28	30.69	37.00	-6.31	H	Peak

$C.F.(\text{Correction Factor}) = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain} (+ \text{Attenuator } 6\text{dB})$

$\text{Corrected Reading} = \text{Metering Reading} + C.F.$

$\text{Margin} = \text{Corrected Reading} - \text{Limits}$

$P = \text{Peak Reading}$

$H = \text{Horizontal Polarization/Antenna}$

$Q = \text{Quasi-peak}$

$V = \text{Vertical Polarization/Antenna}$

Comments: N/A



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
ESCI EMI TEST RECEIV.ESCI	ROHDE&SCHWARZ	1166.5950 03	100145	02/09/2006	02/08/2007
Amplifier	H.P.	8447D	2944A07999	02/09/2006	02/08/2007
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

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
ESCI EMI TEST RECEIV.ESCI	ROHDE&SCHWARZ	1166.5950 03	100145	02/09/2006	02/08/2007
LISN	EMCO	3825/2	1435	02/09/2006	02/08/2007
LISN	EMCO	3825/2	8305114	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.

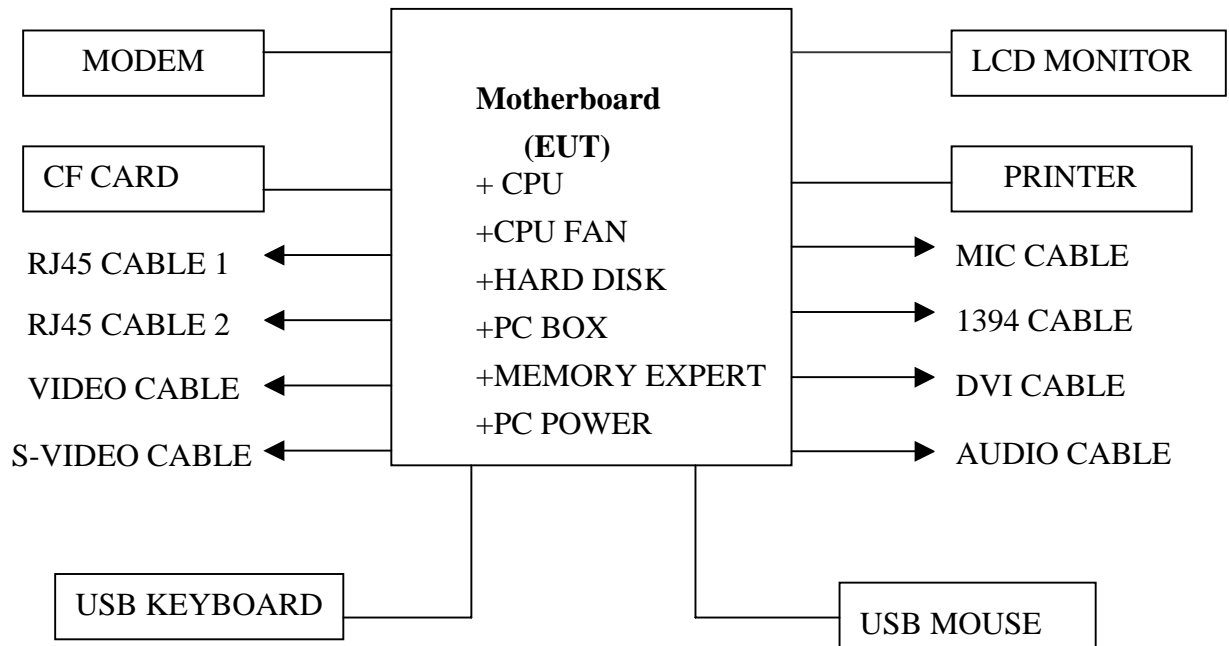
The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.



BLOCK DIAGRAM OF TEST SETUP

System Diagram of Connections between EUT and Simulators

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





APPENDIX 1

PHOTOGRAPHS OF TEST SETUP

LINE CONDUCTED EMISSION TEST





RADIATED EMISSION TEST

