



FCC 47 CFR PART 15 SUBPART B

TEST REPORT

For

IPC

Model: IPC-623BP00XB-ES

Trade Name: ADVANTECH

Issued for

Advantech Co., Ltd.

**No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District,
Taipei 114, Taiwan, R.O.C.**

Issued by

COMPLIANCE CERTIFICATION SERVICES INC.

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1 TEST RESULT CERTIFICATION

Applicant: Advantech Co., Ltd.
No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District,
Taipei 114, Taiwan, R.O.C.

Manufacturer: Advantech Co., Ltd.
No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District,
Taipei 114, Taiwan, R.O.C.

Equipment Under Test: IPC

Trade Name: ADVANTECH

Model: IPC-623BP00XB-ES

Detailed EUT Description: See Item 2 of this report

Date of Test: January 25 ~ 28, 2005

Applicable Standard	Class / Limit	Test Result
FCC Part 15 Subpart B	Class A	No non-compliance noted
Deviation from Applicable Standard		
According to applicant's declaration this EUT is a class A product, and to be market in industrial environment only.		

The above equipment was tested by Compliance Certification Services Inc. for compliance with the requirements set forth in the FCC Rules and Regulations Part 15, Subpart B and the measurement procedures were 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.

Approved by:

Reviewed by:

Kurt Chen
Director of Linkou Laboratory
Compliance Certification Services Inc.

Susan Su
Section Manager of Linkou Laboratory
Compliance Certification Services Inc.



2 EUT DESCRIPTION

Product	IPC		
Trade Name	ADVANTECH		
Model	IPC-623BP00XB-ES		
Housing Type	Metal Case		
EUT Power Rating	DCV From Power Supply		
Power Supply Manufacturer	Zippy	Model	HG2-6400P
			HP2-6500P
Power Supply Power Rating	For HG2-6400P I/P: 100-240VAC, 63-47Hz, 8-4A O/P: +5VDC, 35A; -5VDC, 0.5A; +12VDC, 30A; -12VDC, 0.8A; +3.3VDC, 28A; +5VSB, 2.0A For HP2-6500P I/P: 115-240VAC, 47-63Hz, 8-4A O/P: +5VDC, 40A; -5VDC, 0.8A; +12VDC, 32A; -12VDC, 1.0A; +3.3VDC, 30A; +5VSB, 2.0A		
AC Power Cord Type	Unshielded, 1.8m (Detachable)		
CPU Manufacturer	Intel	Model	P4 3.2GHz
Memory Capacity	256MB		
HDD Manufacturer	Seagate	Model	ST340014A
FDD Manufacturer	TEAC	Model	FD-235HF
CD-ROM Manufacturer	Aopan	Model	CD-9501/TKC
VGA Manufacturer	On Board		
LAN Manufacturer	On Board		

I/O Port of EUT

I/O Port Type	Q'TY	TESTED WITH
1) Serial Port	1	1
2) PS/2 Keyboard / Mouse Port	1	1
3) Video Out Port (VGA)	1	1
4) LAN Port	1	1



3 TEST METHODOLOGY

3.1 EUT SYSTEM OPERATION

1. EMI test software was loaded and executed under “Windows 2000” environment.
2. A communicated software was loaded and executed to communicate between EUT and remote side.
3. EUT sends and receives data from Notebook PC on remote side via LAN Cable.
4. Data was sent to monitor filling the screen with upper case of “H” patterns.
5. Test program sequentially exercised all related I/O’s of EUT and sent “H” patterns to all applicable output ports of EUT.
6. Repeat step 2 to 5

Note: Test program is self-repeating throughout the test.

3.2 DECISION OF FINAL TEST MODE

1. The following test mode was scanned during the preliminary test:

Mode 1

2048 × 1536 Resolution 100Mbps + HG2-6400P Power Supply

Mode 2

2048 × 1536 Resolution 10Mbps + HG2-6400P Power Supply

Mode 3

1280 × 1024 Resolution 100Mbps + HG2-6400P Power Supply

Mode 4

1024 × 768 Resolution 100Mbps + HG2-6400P Power Supply

Mode 5

640 × 480 Resolution 100Mbps + HG2-6400P Power Supply

Mode 6

2048 × 1536 Resolution 100Mbps + HP2-6500P Power Supply

Mode 7

2048 × 1536 Resolution 10Mbps + HP2-6500P Power Supply

Mode 8

1280 × 1024 Resolution 100Mbps + HP2-6500P Power Supply

Mode 9

1024 × 768 Resolution 100Mbps + HP2-6500P Power Supply

Mode 10

640 × 480 Resolution 100Mbps + HP2-6500P Power Supply

2. After the preliminary scan, the following test mode was found to produce the highest emission level.

Mode 1, 6

Then, the EUT configuration and cable configuration of the above highest emission mode was chosen for all final test items.



4 SETUP OF EQUIPMENT UNDER TEST

Setup Diagram

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

Support Equipment

No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1	Monitor	959NF	AQ19H2RT706126P	FCC DoC	SAMSUNG	Shielded, 1.8m with two cores	Unshielded, 1.8m
2	Modem	DM-1414	304012263	IFAXDM1414	ACEEX	Unshielded, 1.5m	Unshielded, 1.8m
3	PS/2 Keyboard (One to two adapter)	Y-SP29	SYU30272823	FCC DoC	Logitech	Shielded, 1.8m	N/A
4	PS/2 Mouse (One to two adapter)	M-S34	HCA25200436	DZL211029	Logitech	Shielded, 1.8m	N/A
5	Notebook PC (Remote)	COMPAQ NC 4010	CNU441F8LV	FCC DOC	HP	LAN Cable: Unshielded, 10m	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core

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.

5 FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at CCS Taiwan Linkou Lab at No. 81-1, Lane 210, Bade Rd., 2, Luchu Hsiang, Taoyuan Hsien, Taiwan.

The measurement facilities are constructed in conformance with the requirements of CISPR 16-1, ANSI C63.4 and other equivalent standards.

5.2 LABORATORY ACCREDITATIONS AND LISTINGS

The test facilities used to perform Electromagnetic compatibility tests are registered or accredited by the organizations listed in the following table which includes the recognized scope specifically.

Country	Agency	Scope of Accreditation	Logo
USA	NVLAP	EN 55011, EN 55014-1, AS/NZS 1044, CNS 13783-1, EN 55022, CNS 13438, EN 61000-3-2, EN 61000-3-3, ANSI C63.4, FCC OST/MP-5, AS/NZS CISPR 22, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11	 Lab. Code: 200650-0
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	 93105, 90471
Japan	VCCI	3/10 meter Open Area Test Sites and conducted test sites to perform radiated/conducted measurements	 R-393/1066/725/879/1868 C-402/747/912
Norway	NEMKO	EN 50081-1/2, EN 50082-1/2, IEC 61000-6-1/2, EN 50091-2, EN 50130-4, EN 55011, EN 55013, EN 55014-1/2, EN 55015, EN 55022, EN 55024, EN 61000-3-2/3, EN 61326-1, IEC 61000-4-2/3/4/5/6/8/11, EN 60601-1-2, EN 300 328-2, EN 300 422-2, EN 301 419-1, EN 301 489-01/03/07/08/09/17, EN 301 419-2/3, EN 300 454-2, EN 301 357-2	 ELA 124a ELA 124b ELA 124c
Taiwan	CNLA	EN 300 328-1, EN 300 328-2, EN 300 220-1, EN 300 220-2, EN 300 220-3, 47 CFR FCC Part 15 Subpart C, EN 61000-3-2, EN 61000-3-3, CNS 13439, CNS 13783-1, CNS 14115, CNS 13438, AS/NZS CISPR 22, CNS 13022-1, IEC 61000-4-2/3/4/5/6/8/11, CNS 13022-2/3	 0363 ILAC MRA
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439, CNS 14115	 SL2-IS-E-0014 / IN-E-0014 /A1-E-0014 /R1-E-0014 /R2-E-0014 /L1-E-0014
Canada	Industry Canada	RSS212, Issue 1	 IC 3991-3 IC 3991-4

Note: No part of this report may be used to claim or imply product endorsement by CNLA, NVLAP or other government agency.



6 INSTRUMENT AND CALIBRATION

6.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the IEC 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

6.2 TEST AND MEASUREMENT EQUIPMENT

The following list contains measurement equipment used for testing. The equipment conforms to the requirement of CISPR 16-1, ANSI C63.2 and other required standards.

Calibration of all test and measurement, including any accessories that may effect such calibration, is checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective manual.

Equipment Used for Emission Measurement

Conducted Emission Test Site # 3				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESCS30	845552/030	03/14/2005
LISN	R&S	ESH2-Z5	843285/010	01/08/2006
LISN	EMCO	3825/2	9003-1628	07/26/2005

Note: The measurement uncertainty is less than +/- 2.83dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.



Open Area Test Site # 2				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	ADVANTEST	R3261A	21720279	N.C.R
EMI Test Receiver	SCHAFFNER	SCR 3501	436	11/18/2005
Pre-Amplifier	HP	8447D	2944A08780	07/14/2005
Bilog Antenna	SCHWAZBECK	VULB9160	3065	12/11/2005
Turn Table	EMCO	2081-1.21	9709-1885	N.C.R
Antenna Tower	EMCO	2075-2	9707-2060	N.C.R
Controller	EMCO	2090	9709-1256	N.C.R
RF Switch	ANRITSU	MP59B	M76890	N.C.R
Site NSA	CCS	N/A	N/A	08/13/2005

Note: The measurement uncertainty is less than +/- 3.36dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.

3 meter Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	ADVANTEST	R3271A	85060321	10/21/2005
Pre-Amplifier	HP	8449B	3008A00965	11/11/2005
Horn Antenna	EMCO	3115	9602-4659	04/25/2005
Coaxial Cable	ANOREW	LDF-2-50	79027	10/13/2005
Turn Table	HD	HD320	N/A	N.C.R
Antenna Tower	HD	MA 240	N/A	N.C.R
Controller	HD	HD 100	N/A	N.C.R



7 LINE CONDUCTED & RADIATED EMISSION TEST

7.1 LIMIT

Maximum permissible level of Line Conducted Emission

Frequency (MHZ)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

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

Maximum permissible level of Radiated Emission measured at 10 meter

Frequency (MHZ)	Class A (dBuV/m)	Class B (dBuV/m)
	Quasi-peak	Quasi-peak
30 – 230	40	30
230 - 1000	47	37

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

Maximum permissible level of Radiated Emission measured at 3 meter

Frequency (MHZ)	Class A (dBuV/m)		Class B (dBuV/m)	
	Average	Peak	Average	Peak
Above 1000	59.3	79.3	53.9	73.9

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



7.2 TEST PROCEDURE OF LINE CONDUCTED EMISSION

Procedure of Preliminary Test

- The EUT was set up as per the test configuration to simulate typical 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.
- Support equipment, if needed, was placed as per ANSI C63.4.
- All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- The test equipment EUT installed received AC power, 120VAC/60Hz, through a Line Impedance Stabilization Network (LISN), which supplied power source and was grounded to the ground plane.
- All support equipment received power from a second LISN.
- The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a EMI Test 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 the 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 Receiver.
- The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.
- During the above scans, the emissions were maximized by cable manipulation.
- The test mode(s) described in Item 3.2 were scanned during the preliminary test.
- After the preliminary scan, we found the test mode described in Item 3.2 producing the highest emission level.
- The EUT configuration and cable configuration of the above highest emission level were recorded for reference of the final test.

**Procedure of Final Test**

- EUT and support equipment were set up on the test bench as per step 10 of the preliminary test.
- 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 AV. limit in Q.P. mode, then the emission signal was re-checked using an AV. detector.
- The test data of the worst-case condition(s) was recorded.

Data Sample:

Freq. (MHz)	Q.P. Raw (dBuV)	Average Raw (dBuV)	Q.P. Limit (dBuV)	Average Limit (dBuV)	Q.P. Margin (dB)	Average Margin (dB)	Note
x.xx	43.95	---	73.00	60.00	-29.05	---	L1

Freq. = Emission frequency in MHz

Raw dBuV = Uncorrected Analyzer/Receiver reading + Insertion loss of LISN, if it > 0.5 dB

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 2dB margin limits, so no further recheck.

Calculation Formula

Margin (dB) = RAW (dBuV) – Limit (dBuV)



7.3 TEST PROCEDURE OF RADIATED EMISSION

Procedure of Preliminary Test

- The equipment was set up as per the test configuration to simulate typical 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. 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.
- Support equipment, if needed, was placed as per ANSI C63.4.
- All I/O cables were positioned to simulate typical usage as per ANSI C63.4.
- The EUT received AC power source, 120VAC/60Hz, from the outlet socket under the turntable. All support equipment received power from another socket under the turntable.
- The antenna was placed at 10 meter away from the EUT as stated in ANSI C63.4. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.
- The Analyzer / Receiver quickly scanned from 30MHz to 40GHz maximum, if any. 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.
- The test mode(s) described in Item 3.2 were scanned during the preliminary test:
- After the preliminary scan, we found the test mode described in Item 3.2 producing the highest emission level.
- The EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the final test.

**Procedure of Final Test**

- EUT and support equipment were set up on the turntable as per step 8 of the preliminary test.
- The Analyzer / Receiver scanned from 30MHz to 40GHz maximum, if any. 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.
- 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 only Q.P. reading is presented.
- The test data of the worst case condition(s) was recorded.

Data Sample:

Freq. (MHz)	Raw Data (dBuV)	Corr. Factor (dB/m)	Emiss. Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
xx.xx	14.00	12.20	26.20	40.00	-13.80

Freq.	= Emission frequency in MHz
Raw Data (dBuV)	= Uncorrected Analyzer / Receiver reading
Corr. Factor (dB/m)	= Antenna factor + Cable loss – Amplifier gain
Emiss. Level (dBuV/m)	= 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 Reading
A	= Average Reading

Calculation Formula

Margin (dB) = Emiss. Level (dBuV/m) – Limits (dBuV/m)

Emission Level (dBuV/m) = Raw Data (dBuV) + Corr Factor (dB/m)



7.4 TEST RESULTS

Line Conducted Emission

Model: IPC-623BP00XB-ES**Test Mode:** Mode 1**Temperature:** 23°C**Humidity:** 56% RH**Tested by:** Ken Jung**Test Results:** Pass

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

Freq. (MHz)	Q.P. Raw (dBuV)	AVG Raw (dBuV)	Q.P. Limit (dBuV)	AVG Limit (dBuV)	Q.P. Margin (dB)	AVG Margin (dB)	NOTE
1.264	32.10	---	73.00	60.00	-40.90	---	L1
7.486	33.90	---	73.00	60.00	-39.10	---	L1
16.091	32.40	---	73.00	60.00	-40.60	---	L1
17.695	32.30	---	73.00	60.00	-40.70	---	L1
18.293	33.70	---	73.00	60.00	-39.30	---	L1
21.666	32.90	---	73.00	60.00	-40.10	---	L1
6.814	33.20	---	73.00	60.00	-39.80	---	L2
7.546	36.90	---	73.00	60.00	-36.10	---	L2
17.569	34.10	---	73.00	60.00	-38.90	---	L2
18.494	35.80	---	73.00	60.00	-37.20	---	L2
22.031	33.70	---	73.00	60.00	-39.30	---	L2
23.305	32.60	---	73.00	60.00	-40.40	---	L2

L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)

Note: “---” denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.

**Line Conducted Emission****Model:** IPC-623BP00XB-ES**Test Mode:** Mode 6**Temperature:** 23°C**Humidity:** 56% RH**Tested by:** Ken Jung**Test Results:** Pass

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

Freq. (MHz)	Q.P. Raw (dBuV)	AVG Raw (dBuV)	Q.P. Limit (dBuV)	AVG Limit (dBuV)	Q.P. Margin (dB)	AVG Margin (dB)	NOTE
0.156	47.60	---	79.00	66.00	-31.40	---	L1
7.514	41.70	---	73.00	60.00	-31.30	---	L1
10.011	43.10	---	73.00	60.00	-29.90	---	L1
12.507	50.40	---	73.00	60.00	-22.60	---	L1
15.398	39.60	---	73.00	60.00	-33.40	---	L1
29.913	38.90	---	73.00	60.00	-34.10	---	L1
0.155	50.10	---	79.00	66.00	-28.90	---	L2
6.474	40.20	---	73.00	60.00	-32.80	---	L2
9.408	41.30	---	73.00	60.00	-31.70	---	L2
12.445	40.40	---	73.00	60.00	-32.60	---	L2
13.757	42.80	---	73.00	60.00	-30.20	---	L2
29.917	41.50	---	73.00	60.00	-31.50	---	L2

L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)

Note: “---” denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.

**Radiated Emission (A)****Model:** IPC-623BP00XB-ES**Test Mode:** Mode 1**Temperature:** 23°C**Humidity:** 57% RH**Detector Function:** Quasi-peak.**Antenna:** Vertical at 10m**Tested by:** Ken Jung**Test Results:** Pass

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

Freq. (MHz)	Raw Data (dBuV)	Corr. Factor (dB/m)	Emiss. Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
44.51	19.1	12.3	31.4	40.0	-8.6
55.27	24.7	9.4	34.1	40.0	-5.9
69.10	27.2	10.1	37.3	40.0	-2.7
72.74	21.8	10.2	32.0	40.0	-8.0
133.33	21.1	15.7	36.8	40.0	-3.2
165.99	22.2	14.3	36.5	40.0	-3.5
186.51	23.7	14.2	37.9	40.0	-2.1
200.01	22.6	14.7	37.3	40.0	-2.7
213.17	21.9	14.2	36.1	40.0	-3.9
250.11	26.7	14.6	41.3	47.0	-5.7
300.11	18.8	16.0	34.8	47.0	-12.2
320.40	23.2	16.9	40.1	47.0	-6.9
360.30	18.4	18.3	36.7	47.0	-10.3
450.93	16.4	20.3	36.7	47.0	-10.3
586.40	15.2	23.2	38.4	47.0	-8.6
613.60	16.8	23.6	40.4	47.0	-6.6
746.70	12.5	25.1	37.6	47.0	-9.4

**Radiated Emission (B)****Model:** IPC-623BP00XB-ES**Test Mode:** Mode 1**Temperature:** 23°C**Humidity:** 57% RH**Detector Function:** Quasi-peak.**Antenna:** Horizontal at 10m**Tested by:** Ken Jung**Test Results:** Pass

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

Freq. (MHz)	Raw Data (dBuV)	Corr. Factor (dB/m)	Emiss. Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
65.41	21.2	9.8	31.0	40.0	-9.0
69.14	22.3	10.1	32.4	40.0	-7.6
132.70	16.3	15.7	32.0	40.0	-8.0
150.13	17.7	14.9	32.6	40.0	-7.4
159.97	16.9	14.4	31.3	40.0	-8.7
166.14	18.2	14.2	32.4	40.0	-7.6
186.77	22.2	14.2	36.4	40.0	-3.6
200.01	20.9	14.7	35.6	40.0	-4.4
213.15	20.1	14.2	34.3	40.0	-5.7
236.66	24.8	14.1	38.9	47.0	-8.1
300.12	21.6	16.0	37.6	47.0	-9.4
346.90	19.9	18.1	38.0	47.0	-9.0
453.00	20.2	20.4	40.6	47.0	-6.4
586.33	18.4	23.2	41.6	47.0	-5.4
613.60	18.4	23.6	42.0	47.0	-5.0
704.60	14.8	25.0	39.8	47.0	-7.2
878.90	8.7	27.4	36.1	47.0	-10.9

**Radiated Emission (A)****Model:** IPC-623BP00XB-ES**Test Mode:** Mode 6**Temperature:** 20°C**Humidity:** 64% RH**Detector Function:** Quasi-peak.**Antenna:** Vertical at 10m**Tested by:** Ken Jung**Test Results:** Pass

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

Freq. (MHz)	Raw Data (dBuV)	Corr. Factor (dB/m)	Emiss. Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
53.90	20.0	9.4	29.4	40.0	-10.6
133.47	20.7	15.7	36.4	40.0	-3.6
166.89	21.7	14.2	35.9	40.0	-4.1
186.69	23.8	14.2	38.0	40.0	-2.0
200.89	18.7	14.7	33.4	40.0	-6.6
213.89	20.9	14.1	35.0	40.0	-5.0
300.70	19.1	16.0	35.1	47.0	-11.9
451.58	19.8	20.3	40.1	47.0	-6.9
614.89	18.7	23.6	42.3	47.0	-4.7
746.84	14.1	25.1	39.2	47.0	-7.8

**Radiated Emission (B)****Model:** IPC-623BP00XB-ES**Test Mode:** Mode 6**Temperature:** 20°C**Humidity:** 64% RH**Detector Function:** Quasi-peak.**Antenna:** Horizontal at 10m**Tested by:** Ken Jung**Test Results:** Pass

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

Freq. (MHz)	Raw Data (dBuV)	Corr. Factor (dB/m)	Emiss. Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
69.89	20.1	10.2	30.3	40.0	-9.7
133.58	17.0	15.7	32.7	40.0	-7.3
186.47	19.4	14.2	33.6	40.0	-6.4
200.70	17.1	14.7	31.8	40.0	-8.2
213.98	20.1	14.1	34.2	40.0	-5.8
249.80	17.5	14.6	32.1	47.0	-14.9
300.56	21.6	16.0	37.6	47.0	-9.4
454.98	17.4	20.4	37.8	47.0	-9.2
587.00	17.4	23.2	40.6	47.0	-6.4
614.70	19.1	23.6	42.7	47.0	-4.3
745.28	15.4	25.1	40.5	47.0	-6.5

**Radiated Emission – Above 1GHz (A)****Model:** IPC-623BP00XB-ES**Test Mode:** Mode 1**Temperature:** 23°C**Humidity:** 57% RH**Detector Function:** Pk/ A.V.**Antenna:** Vertical at 10m**Tested by:** Ken Jung**Test Results:** Pass

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

Freq. (MHz)	Raw Data (dBuV)	Corr. Factor (dB/m)	Emiss. Level (Pk) (dBuV/m)	Limit 3m (Pk) (dBuV/m)	Margin (dB)
1354.29	53.25	-11.01	42.24	79.30	-37.06
1600.00	52.50	-9.72	42.78	79.30	-36.52
1802.86	55.25	-8.57	46.68	79.30	-32.62
6421.43	39.50	2.37	41.87	79.30	-37.43
6478.57	39.75	2.38	42.13	79.30	-37.17
7914.29	37.50	4.71	42.21	79.30	-37.09

Note: In case of peak reading complied with the limit at least 22dB margin, no measurement with A.V. detector required.

**Radiated Emission – Above 1GHz (B)****Model:** IPC-623BP00XB-ES**Test Mode:** Mode 1**Temperature:** 23°C**Humidity:** 57% RH**Detector Function:** Pk/ A.V.**Antenna:** Horizontal at 10m**Tested by:** Ken Jung**Test Results:** Pass

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

Freq. (MHz)	Raw Data (dBuV)	Corr. Factor (dB/m)	Emiss. Level (Pk) (dBuV/m)	Limit 3m (Pk) (dBuV/m)	Margin (dB)
1365.71	52.00	-10.95	41.05	79.30	-38.25
1400.00	53.00	-10.78	42.22	79.30	-37.08
5350.00	40.75	0.95	41.70	79.30	-37.60
5800.00	40.00	1.91	41.91	79.30	-37.39
6421.43	40.00	2.37	42.37	79.30	-36.93
7871.43	38.25	4.70	42.95	79.30	-36.35

Note: In case of peak reading complied with the limit at least 22dB margin, no measurement with A.V. detector required.

APPENDIX 1 - PHOTOGRAPHS OF TEST SETUP

LINE CONDUCTED EMISSION TEST (EN 55022)



RADIATED EMISSION TEST (EN 55022)

