

EMC UPDATE TEST REPORT

For

Industrial Panel Computer

Applicant : Advantech Co., Ltd.
Trade Name : Advantech
Model Number : IPPC-9150T; IPPC-9150T-T; IPPC-9150T-N
Serial Number : N/A
Date : March 25, 2003
Date of Test : March 18 ~ 22, 2003
Revision : 01
Reference Standard : ANSI C63.4: 2001
(FCC Class B (DoC))

Description of Rev. 01

1. Applicant adds one LCD Panel, one HDD and one FDD for model number: IPPC-9150T-T to re-test, and not put the internal photograph as per customer requested.
(Please refer to have ** mark items on this report)
2. Other information please refer to this (Rev.00) test report.

Approved by Authorized Signatory: _____

Susan Su for
Jonson Lee / EMC Director

VERIFICATION OF COMPLIANCE

Equipment Under Test: Industrial Panel Computer
Trade Name: Advantech
Model Number: IPPC-9150T; IPPC-9150T-T; IPPC-9150T-N
Serial Number: N/A
Applicant: **Advantech Co., Ltd.**
No. 1, Alley 20, Lane 26, Rueiguang Road,
Neihu District, Taipei 114, R.O.C.
Manufacturer: **Advantech Co., Ltd.**
No. 1, Alley 20, Lane 26, Rueiguang Road,
Neihu District, Taipei 114, R.O.C.
Type of Test: FCC Class B (DoC)
Measurement Procedure: ANSI C63.4: 2001
File Number: 010017-D
Date of Test: March 18 ~ 22, 2003
Deviation: None
Condition of Test Sample: Normal
Final Result: Pass
Worst Data: See below

Test Item	Freq. (MHz)	Measured Data	Margin (M _μ C)	Remark
Radiated Emission	701.63	34.7 (dB/m)	-2.3 dB (±3.3498 dB)	
Conducted Emission	0.180 / 0150	46.4 / 47.9 (dB)	-18.1 dB (±2.8104 dB)	
<ul style="list-style-type: none">● The negative sign in Margin cell means under the specific limit.● This test result traceable to national or international standards.				

The above equipment was tested by C&C Laboratory, Co., Ltd. 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.

PRODUCT INFORMATION

Housing Type:	Plastic with metal plate	
EUT Power Rating:	100~240Vac, 47/63Hz, 3~1.5A	
AC power during Test:	230VAC/50Hz	
Power Supply Manufacturer:	SKYNET	
Power Supply Model Number:	SNP-8086	
AC Power Cord Type:	Unshielded, 1.8m (Detachable)	
CPU Manufacture:	Intel	Type: Pentium III 850MHz
OSC/Clock Frequencies:	100MHz	
Memory Capacity:		Install: 128MB
LCD Panel Manufacturer:	Acer	Model: L150X1M-1
	CPT	Model: CLAA150XA03
		** CLAA150XA01
HDD Manufacturer:	Fujitsu	Model: MHK2060AT
		** MHR2010AT
FDD Manufacturer:	YE-DATA	Model: YE DATA 702J-6637J
	** NEC	Model: FD1238T
CD-ROM Manufacturer:	Toshiba	Model: XM-1702B
VGA Card Manufacturer:	On board	

I/O Port of EUT

I/O PORT TYPES	Q'TY	TESTED WITH
1). Parallel Port	1	1
2). Serial Port	4	4
3). Video Port	1	1
4). PS/2 Keyboard/Mouse	1	1
5). Game Port	1	1
6). Microphone Port	1	1
7). Line-in Port	1	1
8). Line-out Port	1	1
9). LAN Port	1	1
10). USB Port	2	2

Note: Differences of model numbers is IPPC-9150T-T with resistive touch screen,
IPPC-9150T-N with NFI touch screen and IPPC-9150T with no touch screen.

SUPPORT EQUIPMENT

No	Equipment	Model #	Serial #	FCC ID	Trade Name	Data Cable	Power Cord
1.	Monitor	CPD-G200	2715863	FCC DoC	SONY	Shielded, 1.8m with a core	Unshielded, 1.8m
2.	Modem	231AA	A25531083541	BFJ9D93108US	Hayes	Shielded, 1.9m	Unshielded, 1.9m
3.	Modem	2400	94-364-176277	DK467GSM24	Computer Peripherals	Shielded, 1.8m	Shielded, 1.8m
4.	Printer	2225C	3006S67978	DSI6XU2225	HP	Shielded, 1.8m	Unshielded, 1.8m
5.	PS/2 Keyboard	SK-2800C	B1C790BCPJ73JM	GYUR79SK	Compaq	Shielded, 1.6m	N/A
6.	PS/2 Mouse	M-CAA43	LZE02801285	FCC DoC	Logitech	Shielded, 1.8m	N/A
7.	Mouse	M-MM43	LZE94052771	FCC DoC	Logitech	Shielded, 1.9m	N/A
8.	Mouse	M-MM43	LZE93353024	FCC DoC	Logitech	Shielded, 1.9m	N/A
9.	USB Mouse	M-BB48	LZE01450904	FCC DoC	Logitech	Shielded, 1.8m	N/A
10.	USB Mouse	M-BB48	LZE01361333	FCC DoC	Logitech	Shielded, 1.8m	N/A
11.	Headset	GT-2004V	N/A	N/A	GITON	Unshielded, 1.25m	N/A
12.	Walkman	RQ-L10	HB004471	FCC DoC	Panasonic	Unshielded, 1.8m	N/A
13.	Microphone	DM-510	N/A	N/A	KOKA	Unshielded, 2.8m	N/A
14.	Joystick	G-ZA-PHI	PHB01600992	FCC DoC	Logitech	Shielded, 1.8m	N/A
15.	Notebook PC (Remote)	M285	NU2503589	FCC DoC	LEO	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.

BLOCK DIAGRAM OF TEST SETUP

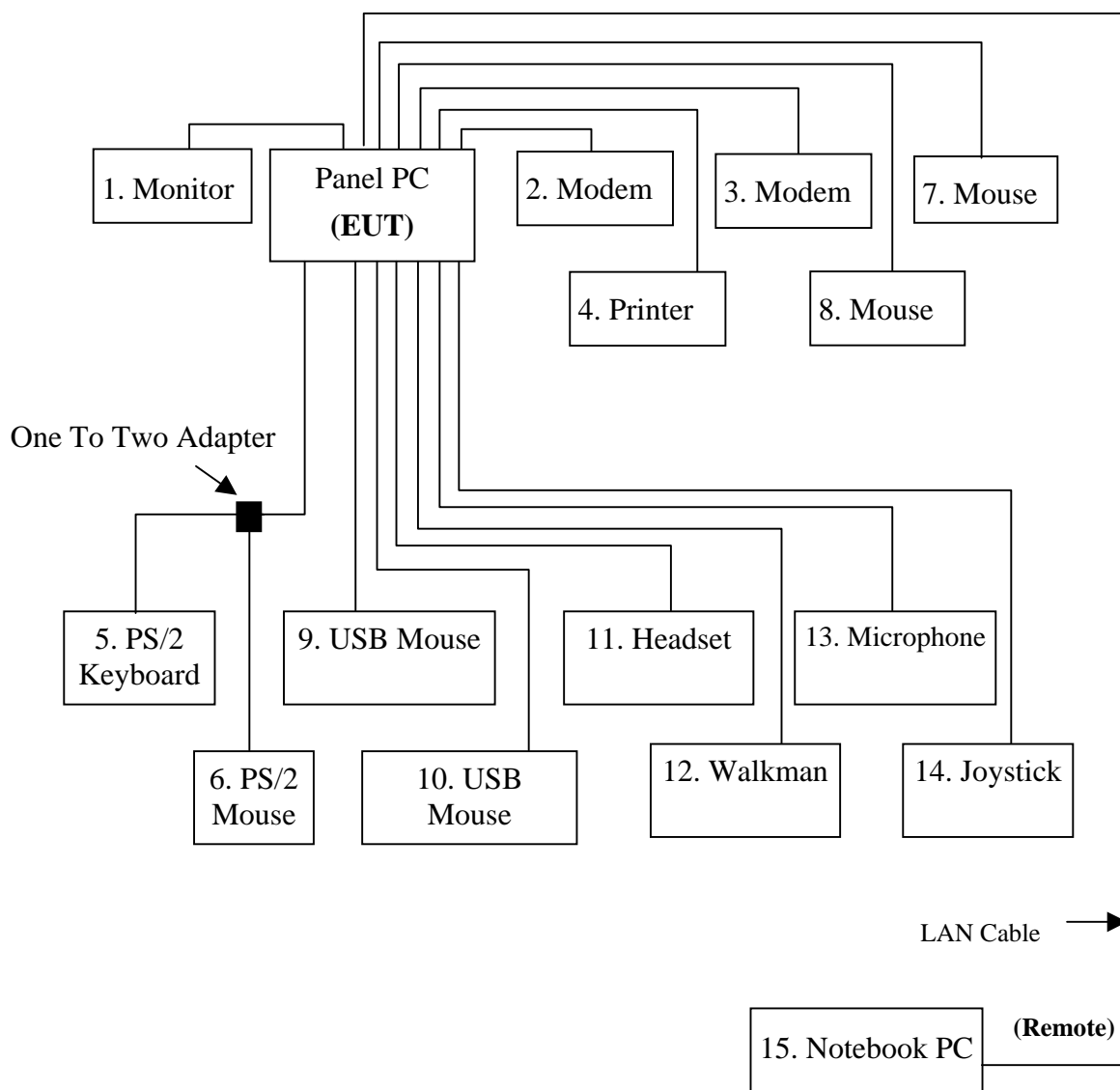
System Diagram of Connections between EUT and Simulators

EUT: Industrial Panel Computer

Trade Name: Advantech

Model Number: IPPC-9150T-T

Power Cord: Unshielded, 1.8m to Power Supply



TEST EQUIPMENT LIST (EMISSION)

Instrumentation: The following list contains equipment used at C & C Laboratory, Co., Ltd. for testing. The equipment conforms to the CISPR 16-1 / ANSI C63.2-1988 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 9kHz to 1.0GHz or above.

Equipment used during the tests:

Open Area Test Site: # 1

Open Area Test Site # 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
Spectrum Analyzer	HP	8568B	3001A05004	07/03/2002	07/02/2003
S.P.A Display	HP	85662A	3014A18846	07/03/2002	07/02/2003
Q.P Adaptor	HP	85650A	2811A01399	07/03/2002	07/02/2003
RF Pre-selector	HP	85685A	2947A01064	07/03/2002	07/02/2003
Spectrum Analyzer	Anritsu	MS2601A	MT09950	N/A	N/A
Pre-Amplifier	HP	8447D	2944A08432	N/A	N/A
Bilog Antenna	CHASE	CBL6112A	2309	02/28/2003	02/27/2004
Turn Table	EMCO	2081-1.21	N/A	N.C.R	N.C.R
Antenna Tower	EMCO	2075-2	9707-2604	N.C.R	N.C.R
Controller	EMCO	2090	N/A	N.C.R	N.C.R
RF Switch	ANRITSU	MP59B	M54367	N.C.R	N.C.R
Site NSA	C&C	N/A	N/A	08/31/2002	08/30/2003
Thermo-Hygro Meter	SATO	N/A	SITE1	05/06/2002	05/05/2003

3 meter chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
Spectrum Analyzer	ADVANTEST	R3271A	85060321	10/16/2002	10/15/2003
Pre-Amplifier	HP	8449B	3008A00965	10/15/2002	10/14/2003
Horn Antenna	EMCO	3115	9602-4659	04/16/2002	04/15/2003
Coaxial Cable	ANOREW	LDF-2-50	79027	10/14/2002	10/13/2003
Turn Table	HD	HD320	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA 240	N/A	N.C.R	N.C.R
Controller	HD	HD 100	N/A	N.C.R	N.C.R



Conducted Emission Test Site: # 3

Conducted Emission Test Site # 3					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
EMI Test Receiver	R&S	ESCS30	847793/012	12/21/2002	12/20/2003
LISN	R&S	ESH2-Z5	843285/010	12/16/2002	12/15/2003
LISN	EMCO	3825/2	9003-1628	07/26/2002	07/25/2003

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.

EUT Configuration during measurement:

1) Pre-scan mode(s) are list as below:

Mode(s):

- 1. 1024 × 768 Resolution / 100Mbps with CPT CLAA150XG01 LCD Panel + Fujitsu MHR2010AT HDD + NEC FD1238T FDD**
- 2. 1024 × 768 Resolution / 10Mbps with CPT CLAA150XG01 LCD Panel + Fujitsu MHR2010AT HDD + NEC FD1238T FDD**
- 3. 800 × 600 Resolution / 100Mbps with CPT CLAA150XG01 LCD Panel + Fujitsu MHR2010AT HDD + NEC FD1238T FDD**
- 4. 640 × 480 Resolution / 100Mbps with CPT CLAA150XG01 LCD Panel + Fujitsu MHR2010AT HDD + NEC FD1238T FDD**

2) After pre-scan, found mode 1 producing the highest emission level, used this mode for all final test.

SUMMARY DATA

(LINE CONDUCTED TEST)

Model Number: IPPC-9150T-T

Location: Site # 3

Tested by: Lung Tasi

Test Mode: Mode 1

Test Results: Passed

Temperature: 18°C

Humidity: 67%RH

(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
0.180	46.40	---	64.50	54.50	-18.10	---	L1
13.063	27.40	---	60.00	50.00	-32.60	---	L1
15.841	26.30	---	60.00	50.00	-33.70	---	L1
21.034	24.70	---	60.00	50.00	-35.30	---	L1
23.761	35.60	---	60.00	50.00	-24.40	---	L1
24.007	25.80	---	60.00	50.00	-34.20	---	L1
0.150	47.90	---	66.00	56.00	-18.10	---	L2
0.963	24.70	---	56.00	46.00	-31.30	---	L2
19.803	23.60	---	60.00	50.00	-36.40	---	L2
21.014	25.30	---	60.00	50.00	-34.70	---	L2
23.731	35.30	---	60.00	50.00	-24.70	---	L2
24.007	25.70	---	60.00	50.00	-34.30	---	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: IPPC-9150T-T

Location: Site # 1

Tested by: Hank Huang

Polar: Vertical – 10m

Test Mode: Mode 1

Detector Function: Quasi-Peak

Test Results: Passed

Temperature: 18°C

Humidity: 60% RH

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

Freq. (MHz)	Raw Data (dBuV)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits	Margin (dB)
57.26	14.3	7.5	21.8	30.0	-8.2
120.33	6.6	11.8	18.4	30.0	-11.6
150.31	7.0	11.0	18.0	30.0	-12.0
168.02	12.4	10.5	22.9	30.0	-7.1
601.75	11.5	22.1	33.6	37.0	-3.4
701.63	10.9	23.8	34.7	37.0	-2.3



SUMMARY DATA

(RADIATED EMISSION TEST)

Model Number: IPPC-9150T-T

Location: Site # 1

Tested by: Hank Huang

Polar: Horizontal – 10m

Test Mode: Mode 1

Detector Function: Quasi-Peak

Test Results: Passed

Temperature: 18°C

Humidity: 60% RH

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

Freq. (MHz)	Raw Data (dBuV)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits	Margin (dB)
216.03	14.9	10.5	25.4	30.0	-4.6
300.69	14.1	15.6	29.7	37.0	-7.3
501.13	7.9	21.1	29.0	37.0	-8.0
601.74	9.6	22.1	31.7	37.0	-5.3
633.95	6.1	23.1	29.2	37.0	-7.8
701.63	10.0	23.8	33.8	37.0	-3.2



SUMMARY DATA

(RADIATED EMISSION TEST)

Model Number: IPPC-9150T-T

Location: 3 meter chamber

Tested by: Arno Hsieh

Polar: Vertical ---3 m

Test Mode: Mode 1

Detector Function: Pk / A.V.

Test Results: Passed

Temperature: 19°C

Humidity: 67%RH

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

Freq. (MHz)	Raw Data (dBuV)	Corr. Factor (dB)	Emiss. Level(Pk) (dBuV/m)	Limits (Pk)	Margin (dB)
1109.00	16.2	26.7	42.9	73.9	-31.0
1274.00	14.2	27.3	41.5	73.9	-32.4
1343.00	12.8	27.5	40.3	73.9	-33.6
1406.00	13.7	27.7	41.4	73.9	-32.5
1709.00	13.3	28.6	41.9	73.9	-32.0
2291.00	10.6	30.7	41.3	73.9	-32.6

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

SUMMARY DATA

(RADIATED EMISSION TEST)

Model Number: IPPC-9150T-T

Location: 3 meter chamber

Tested by: Arno Hsieh

Polar: Horizontal ---3 m

Test Mode: Mode 1

Detector Function: Pk / A.V.

Test Results: Passed

Temperature: 19°C

Humidity: 67%RH

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

Freq. (MHz)	Raw Data (dBuV)	Corr. Factor (dB)	Emiss. Level(Pk) (dBuV/m)	Limits (Pk)	Margin (dB)
1109.00	16.3	26.7	43.0	73.9	-30.9
1309.00	13.8	27.4	41.2	73.9	-32.7
1474.00	12.1	27.9	40.0	73.9	-33.9
1709.00	12.5	28.6	41.1	73.9	-32.8
2246.00	10.3	30.5	40.8	73.9	-33.1
2731.00	9.8	32.5	42.3	73.9	-31.6

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 (TEST SETUP OF LINE CONDUCTED EMISSION)

LINE CONDUCTED EMISSION TEST



APPENDIX 2

PHOTOGRAPHS OF TEST SETUP (TEST SETUP OF LINE RADIATED EMISSION)

RADIATED EMISSION TEST



APPENDIX 3

PHOTOGRAPHS OF EUT

Front View of EUT



Back View of EUT



Left View of EUT



Right View of EUT



Bottom View of EUT

