CERTiTEK

CERTiTEK Standards Laboratory Co., Ltd.
386-1, Ho-Dong, Yongin-City, Kyungki-Do, Korea 449-100
Tel: +82-31-339-9970 Fax: +82-31-339-9855
http://www.certitek.com/

EMC TEST REPORT For FCC

Test Report No.	:	CTK01-F178
Date of Issue	:	December 29, 2001
Model/Type No:	:	IMS-100B
Kind of Product	:	Potable A/V player
Applicant	:	IMPACTRA Co.,Ltd
Applicant Address	:	Junggok Bldg, 108-2, Yangjae-Dong, Seocho-Ku, Seoul, Korea
Manufacturer	:	IMPACTRA Co.,Ltd
Manufacturer Address	:	Junggok Bldg, 108-2, Yangjae-Dong, Seocho-Ku, Seoul, Korea
Contact Person	:	Gwi Young Jung
Telephone	:	+82-2-578-7533
Received Date	:	November 26, 2001
Test period	:	Start: Dec. 20, 2001 End: Dec. 20, 2001
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

The test results presented in this report relate only to the object tested.

CERTiTEK Standards Laboratory Co., Ltd. is accredited by Korea Laboratory Accreditation Scheme (KOLAS) which signed the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the above test item(s) and test method(s).

Tested by

Michael Jang
EMC Test Engineer
Date: December 29, 2001

Reviewed by

James Hong
EMC Technical Manager
Date: December 29, 2001

REPORT REVISION HISTORY

Date	Revision	Page No
Dec. 28, 2001	(CTK01-C178) Issued	All

TABLE OF CONTENTS

1.0 General Product Description

The product is Potable A/V player.

1.0.1 Tested Equipment

☒ Unless otherwise indicated, all tests were conducted on Model IMS-100B.

☐ Tests performed on Model _____ were considered to be representative of Model(s) _____.

1.0.2 Equipment Size, Mobility and Identification

Dimensions:	63 by 90 by 26 ☒ mm ☐ in
Mobility:	☒ Hand-Held ☐ Table-top ☐ Floor-standing ☐
Serial No.:	Not Applicable

1.0.3 Electrical Ratings

Input:	100-240V, 50/60Hz
Output:	Not happened

1.0.4 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage:	110V
Frequency:	60Hz

1.0.5 Clock & Other Frequencies Utilized

206MHz

1.1 Model Differences

Not applicable

1.2 Device Modifications

The following modifications were necessary for compliance:
Not applicable

1.3 EUT Configuration(s)

See Appendix A for individual test set-up configuration(s). The following peripheral devices and/or interface cables were connected during the measurement:

☒ Peripheral Devices

Device	Manufacturer	Model No.	Serial No.	FCC ID or DoC
PC	HP	DTPC-17	SG01501776	DOC
Printer	HP	C2688A	SG04K1104H	DOC
Monitor	HP	D4820A	KR64102677	DOC
Keyboard	SAN HAWK TECIINNG CO.,LTD	KB120	-	D840902 MIC
Game Pad	Microsoft	Side Winder	03421317	C3KMGP1
Headset	CAMAC	CMK-C3	-	-
PS/2 Mouse	PANWEST CHINA LIMITED	Cyber Beetle	PM1F194036164	DOC
Serial Mouse	Microsoft	BASM1	4476257-20000	DOC
USB Mouse	PANWEST CHINA LIMITED	Cyber Beetle	LZE93853157	DOC

☐ Cable Description

#	Description	Ferrited	Length (m)	Other Details
1	PC Power Cable, Unshielded	No	1.8	Connect to AC Power
2	Printer Power Cable, Unshielded	No	1.8	Connect to AC Power
3	Monitor Power Cable, Shielded	YES	1.8	Connect to AC Power
4	Monitor Cable, Shielded	YES	1.8	Between PC and Monitor
5	Printer Cable, Shielded	Yes	1.8	Between PC and Printer
6	Game Pad Cable, Unshielded	No	2.0	Connect to PC
7	Headset Cable, Unshielded	No	3.0	Connect to PC
8	Line In Cable, Unshielded	No	1.5	Connect to PC
9	Keyboard Cable, Shielded	No	1.5	Connect to PC
10	USB Mouse Cable, Shielded	No	1.8	Connect to PC
11	USB Cable, Shielded	Yes	1.2	Between EUT and PC
12	Serial Mouse Cable, Shielded	No	1.8	Connect to PC
13	PS/2 Mouse Cable, Shielded	No	1.8	Connect to PC
14	Adaptor Power Cable, Unshielded	No	1.8	Connect to AC Power
15	Adaptor OUT Cable, Unshielded	Yes	1.8	Between EUT and Adaptor
16	Earphone Cable, Unshielded	No	1.0	Connect to EUT

n/a = not available

1.4 Test Software

☐ Pinging
☒ I-Manager (Ver1.0)

1.5 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

☐ Test program (H-Pattern)
☐ Test program (color bar)
☐ Standby
☐ Practice operation
☒ Test program (customer specific)-Download

1.6 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

1.7 Test Facility

The measurement facility is located at 386-1, Ho-Dong, Yongin-City, Kyungki-Do, Korea 449-100. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.8 Measurement Procedure

Preliminary AC power line conducted emissions tests were performed shielded room. To find worst mode, several typical mode and typical cable position were tested.
Final AC power line conducted emissions test was performed shielded room. (location is same as Preliminary test)
Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

Preliminary radiated emissions test were performed anechoic chamber (Distance of antenna and EUT was 3 m). To find worst mode, several typical mode and typical cable position were tested and peak level and frequency were recorded.

Final radiated emissions test was performed Open Area Test Site. Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

* Measurement procedures was In accordance with ANSI C63.4-1992 7.2.3, 7.2.4, 8.3.1.1, 8.3.1.2

1.9 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	**FCC**	3 and 10 meter Open Area Test Sites to perform FCC Part 15/18 measurements.	93250
JAPAN	**VCCI**	10 meter Open Area Test Site and one conducted site.	R-948, C-986
KOREA	**MIC**	10 meter Open Area Test Site and EMS (ESD, RS, EFT/Burst, Surge)	No. 51, KR0025
International	**KOLAS**	EMC	

2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

☐ EN 50081-1 /1992

☐ EN 55011 /1998 ☐ Group 1 ☐ Group 2
☐ Class A ☐ Class B

☐ EN 55013 /A12:1994

☐ EN 55014 /1987 ☐ Household appliances and similar
☐ Portable tools
☐ Semiconductor devices

☐ EN 55014 /A2:1990

☐ EN 55014 /1993 ☐ Household appliances and similar
☐ Portable tools
☐ Semiconductor devices

☐ EN 55015 /1987
☐ EN 55015 /A1:1990
☐ EN 55015 /1993

☐ EN 55022 /A1:1995 ☐ Class A ☐ Class B

☐ EN 55022 /1998 ☐ Class A ☐ Class B

☐ EN 61000-3-2 /1995 (EN 60555 Part 2 /4.87)
☐ EN 61000-3-3 /1995 (EN 60555 Part 3 /4.87)

☐ BS

☐ VCCI V-3/99.05 : 1999 ☐ Class A ☐ Class B

☒ FCC Part 15 SUBPART B ☐ Class A ☒ Class B

☐ AS 3548 (1992) ☐ Class A ☐ Class B

☐ CISPR 11 (1990) ☐ Group 1 ☐ Group 2
☐ Class A ☐ Class B

☐ CISPR 22 (1993) ☐ Class A ☐ Class B

2.1 Conducted Voltage Emissions

Test Date
December 20, 2001

Test Location
EMI-CE: Shielded Room

Test Instruments

☒ Field Strength Meter	Rohde Schwarz	ESHS30	828144/002

Test Accessories

☐ LISN	EMCO	3825/2	9206-1971
☒ LISN	EMCO	3825/2	9409-2246
☒ LISN	EMCO	3825/2	9607-2574
☒ Control PC	HP	Vectra 500	SG72000192

Frequency Range of Measurement
☐ 150 kHz to 30 MHz
☒ 450 kHz to 30 MHz
☐ _____

Instrument Settings
IF Band Width: 9 kHz

Test Results
The requirements are:

☒ MET minimum margin is 9.4 dBμV at 2.34 MHz
☐ NOT MET limit exceeded by maximum of ___ dBμV at _____ MHz
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

2.2 Radiated Electric Field Emissions

Test Date
December 20, 2001

Test Location
☐ EMI-OATS: Testing was performed at a test distance of 10 m
☒ EMI-OATS: Testing was performed at a test distance of 3 m

Test Instruments

☒ Field Strength Meter	Rohde Schwarz	ESVS30	826638/008

Test Accessories

☒ ULTRA Broadband Antenna	R & S	HL562	361324/014
☐ Biconical Antenna	Schwarzbeck	BBA9106	41-00201
☐ Biconical Antenna	EMCO	3110B	9607-2564
☐ Log-periodic Antenna	EMCO	3146	9607-4567

Frequency Range of Measurement
30 MHz to 2 GHz

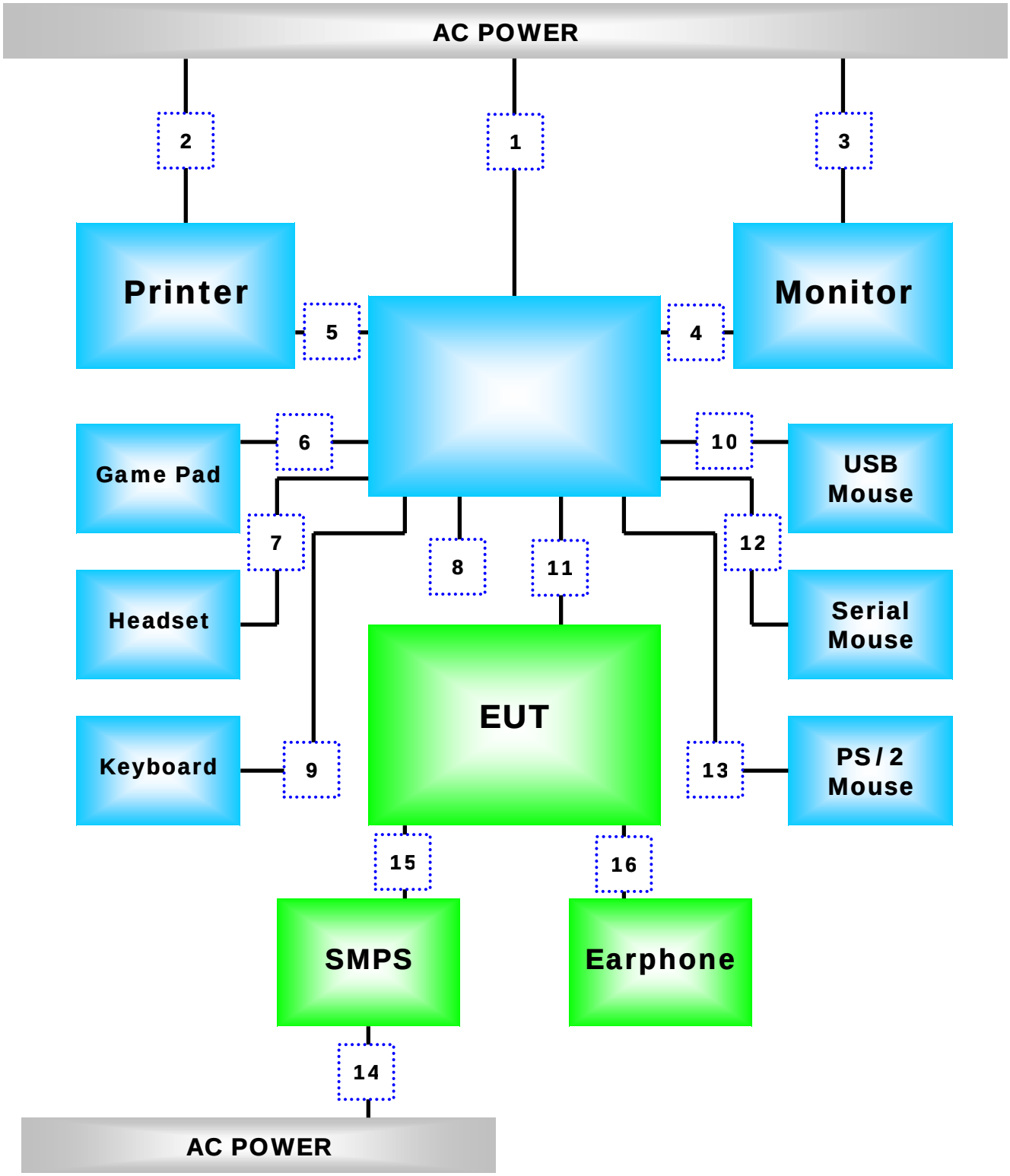
Instrument Settings
IF Band Width: 120 kHz

Test Results
The requirements are:

☒ MET minimum margin is 14.4 dB (μV/m) at 361.3 MHz
☐ NOT MET limit exceeded by maximum of ___ dB(μV/m) at _____ MHz
☐ NOT APPLICABLE

Remarks
See Appendix A for test data

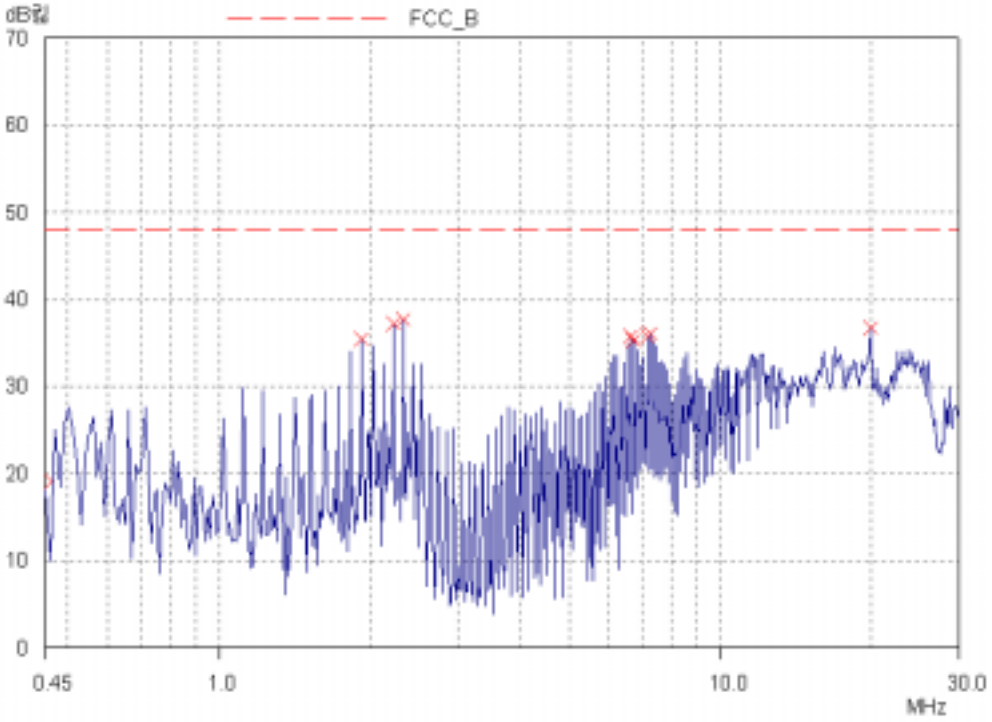
Configuration

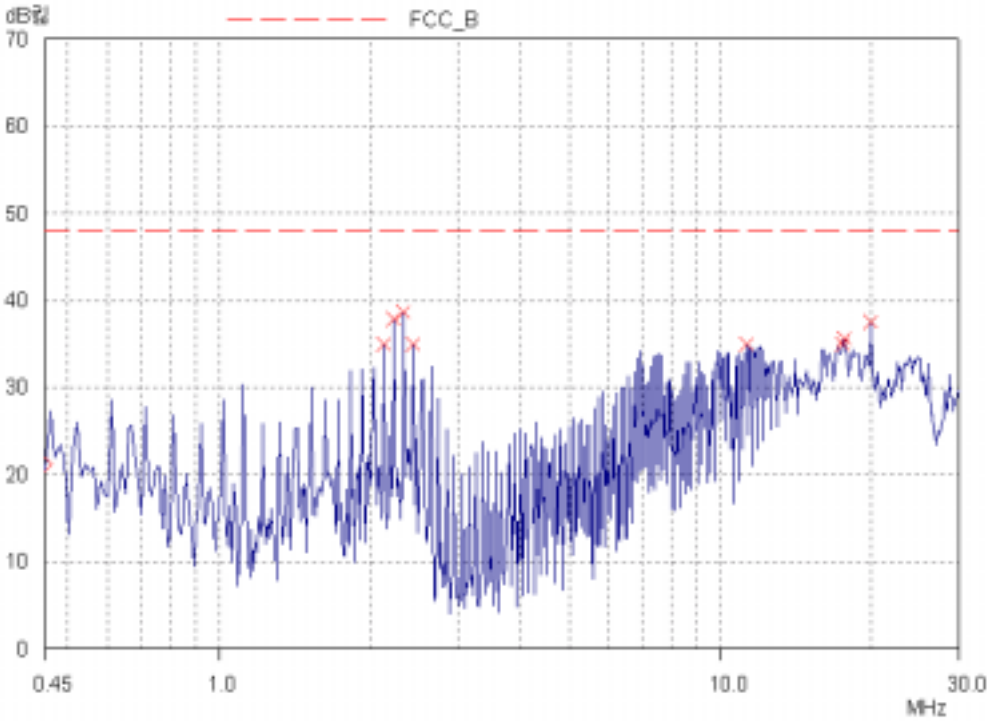


APPENDIX A – TEST DATA

Conducted Voltage Emissions (Quasi-Peak reading)

Frequency	Correction Factor		Line	Quasi-peak				Average			
				Limit	Reading	Result	Margin	Limit	Reading	Result	Margin
[MHz]	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dB]
1.93	0.3	0.1	L	48.0	35.0	35.4	12.6				
2.14	0.3	0.1	N	48.0	34.6	35.0	13.0				
2.24	0.3	0.1	N	48.0	37.5	37.9	10.1				
2.34	0.3	0.1	N	48.0	38.2	38.6	9.4				
6.61	0.2	0.2	L	48.0	35.4	35.8	12.2				
6.71	0.2	0.2	L	48.0	34.9	35.3	12.7				
7.12	0.2	0.2	L	48.0	35.3	35.7	12.3				
7.22	0.2	0.2	L	48.0	35.7	36.1	11.9				
11.30	0.2	0.2	N	48.0	34.6	35.0	13.0				
17.71	0.3	0.2	N	48.0	35.1	35.6	12.4				
19.99	0.5	0.3	N	48.0	36.8	37.6	10.4				





Radiated Electric Field Emissions (Quasi-Peak reading)

Frequency [MHz]	Reading [dBuV/m]	Pol.	Height [m]	Correction Factor		Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
				Antenna	Cable			
36.10	7.1	V	1.0	17.2	0.5	40.0	24.8	15.3
233.90	20.4	H	4.0	8.8	2.0	46.0	31.2	14.8
246.00	15.0	H	3.0	9.2	2.0	46.0	26.2	19.8
294.60	15.8	H	3.7	10.8	2.4	46.0	29.0	17.0
361.30	16.4	V	2.6	12.6	2.6	46.0	31.6	14.4
399.80	9.9	H	2.4	13.5	2.7	46.0	26.1	19.9
399.80	12.6	V	3.5	13.5	2.7	46.0	28.8	17.2
445.30	10.4	V	2.6	14.6	3.1	46.0	28.1	17.9
861.80	4.4	V	1.2	20.1	4.5	46.0	29.0	17.0
1178.80	6.2	H	2.6	23.20	5.40	54.0	34.84	19.16
1150.00	8.2	H	3.5	23.20	5.40	54.0	36.84	17.16