



EMISSION TEST REPORT

Test report file No. : **02-IST-156/FB** Date of issue : Aug. 02, 2002.

Model / Type No. : MP3 Player

Kind of product : InterMagic

Brand name : InterMagic, Corp.

Applicant : InterMagic, Corp.

Manufacturer : InterMagic, Corp.

Address : 7F., Yoojin Bldg., 37-2, Daebang-dong, Dongjak-ku, Seoul, Korea

Test result according to the regulation(s)

☒ Positive ☐ Negative

at page 3.

This test report without appendix consists of 20 pages.

It is not allowed to copy this report even partly without the allowance of the Test Laboratory.

This equipment is complied with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-1992.

DIRECTORY

A) Documentation.

Page

Directory	<u>2</u>
Test regulations	<u>3</u>
Environmental Conditions	<u>3</u>
Test Conditions	<u>4~5</u>
Equipment under Test	<u>6</u>
Test Result	<u>7</u>
Test-setups (Photos)	<u>8~10</u>
Test-setup (Figures)	<u>11~12</u>
Summary	<u>20</u>

B) Test Data.

Conducted emissions (Mains)	: 450 kHz - 30 MHz	<u>13~15</u>
Radiated emissions	: 30 MHz – 1 GHz	<u>16~19</u>

C) Appendix

TEST REGULATIONS

The tests were performed according to the following regulations ;

-
- - FCC Part 15, Subpart B (Unintentional Radiators, Class B)

Information of Test Laboratory

IST EMC Lab.

San 21-8 Goan-Ri, Baekam-Myun, Yongin-Si, Kyunggi-Do, Korea
International - Tel : 82-31 - 333 - 4093. Fax : 82-31 - 333 - 4094.
Domestic - Tel : 031 - 333 - 4093. Fax : 031 - 333 - 4094.

ENVIRONMENTAL CONDITIONS

Temperature	<u>27</u>
Humidity	<u>46</u> %
Atmospheric pressure	<u>1003</u> mbar

TEST CONDITIONS

The **measurement of the conducted emissions (Interference voltage)** was performed in a shielded room.

Test location :

☒ Shielded room. No.1

☐ Compact chamber 2

Used testing instruments :

Name	Type	Manufacturer	Calibration. Date	Serial Number
ESH 3	Test Receiver	Rohde & Schwarz	Jul. 25, 2002	861742/015
3725/2	LISN	EMCO	Jul. 27, 2002	9101-2068
KNW-407	LISN	Hyup-Rip	Jul. 26, 2002	8-883-10
ESH 3-Z2	Pulse Limiter	Rohde & Schwarz	Jul. 25, 2002	357.8810.52

Test - accessories :

Type	Manufacturer
Aneroid Barometer	Sato
Hygrometer	Sato

Measurement Procedures :

Conducted emissions measurements were made in accordance with ANSI C-63.4-1992, "Method of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The measurement were performed over the frequency range of 0.45MHz to 30MHz using a 50Ω/50uH LISN as the input transducer to an EMI/Field Intensity Meter. The measurements were made with the detector set for "Peak" amplitude within an IF bandwidth of 10kHz or for "quasi-peak" within a bandwidth of 9kHz.

All used test-instruments as well as the test-accessories are calibrated regularly.

Test engineer :



Y.J.Kim / Research Engineer
IST EMC Lab.

The **measurement of the radiated emissions (Electric field)** in the frequency range from 30 MHz to 1GHz was performed in horizontal and vertical antenna polarization at a open-site which meet the site attenuation requirement of ANSI C63.4-1992 and a test distance of :

Location : ☒ Open Site No. 1 ☐ Open Site No. 2 ☐ Open Site No. 3
 Distance : ☒ 3 meters ☐ 10 meters

Used testing instruments :

Name	Type	Manufacturer	Calibration. Date	Serial Number
ESVP	Test Receiver	Rohde & Schwarz	Jul. 26, 2002	860688/011
VULB 9160	Antenna	Schwarzbeck	Jul. 10, 2002	3048

Test - accessories :

Type	Manufacturer
Aneroid Barometer	Sato
Hygrometer	Sato

Measurement procedures

Radiated measurements were in accordance with ANSI C63.4-1992 "Method of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The measurements were performed over the frequency range of 30MHz to 1GHz using antenna as the input transducer to a EMI/Field Intensity Meter. The measurements were made with the detector set for "quasi-peak" within a bandwidth of 120kHz.

All used test-instruments as well as the test-accessories are calibrated regularly.

Test engineer :



Y.J.Kim / Research Engineer
IST EMC Lab.

EQUIPMENT UNDER TEST

Equipment Description

The Equipment Under Test (EUT) is the **MP3 Player of Intermagic, Corp.**

Outer dimensions	170.0(W) x 160.0(H) x 70.0(D) (mm)
Weight	50g(without battery)
Power requirements	DC 1.5V, AAA x 1 battery
Flash memory	128MB
Singnal to Noise Ratio	90dB
Battery Life time	7 Hour
Frequency Range	20Hz ~ 20kHz
PC Interface	USB(Universal Serial Bus)
File download speed	down to 2.5Mbps internal memory
PC OS	Windows 98, ME, 2000, XP

EUT Type :

- ☒ Table-Top.
☐ Floor-Standing.
☐ Table-Top and Floor-Standing(Combination).

Operation – mode of the E.U.T. :

The equipment under test was operated during the measurement under following conditions :

- ☐ Standby.
☒ Operational Condition : - Download files from PC to EUT.
 - Play

Configuration of the equipment under test :

Following peripheral devices and interface cables were connected during the measurement :

Equipment	Type	Brand	Serial No
PC	HP Pavilion 8821	HP	K1105100
Monitor	529B	Daewoo	N/A
Mouse(PS/2)	M-S48a	HP	LZA10251257AW
Mouse(Serial)	M-M28	Logitech	LCA53305547
Keyboard	5181	HP	BM10206995
Printer	A0302384	Northern Telecom	26633S60168

Connecting Interface Cables :
 - USB I/O cable(with core) : 1.2m

TEST RESULT

Download Mode :

Conducted emissions : 450 kHz - 30 MHz

The requirements are.

☒ KEPT

☐ NOT KEPT

Min. limit margin

9.4 dB at 0.5099 MHz

Remarks : See test-graph to be attached at pages 13~15.

Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are.

☒ KEPT

☐ NOT KEPT

Min. limit margin

8.3 dB at 42.1 MHz

Remarks : See test-data at page 16~17.

Play Mode :

Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are.

☒ KEPT

☐ NOT KEPT

Min. limit margin

18.4 dB at 208.1 MHz

Remarks : See test-data at page 18~19.

Test Set-Up
(Type : IMP200, Mode: Download Mode)



Conducted emission 450kHz ~ 30MHz



**Test Set-Up
(Type : IMP200, Mode: Download Mode)**



Radiated emission 30MHz ~ 1000MHz

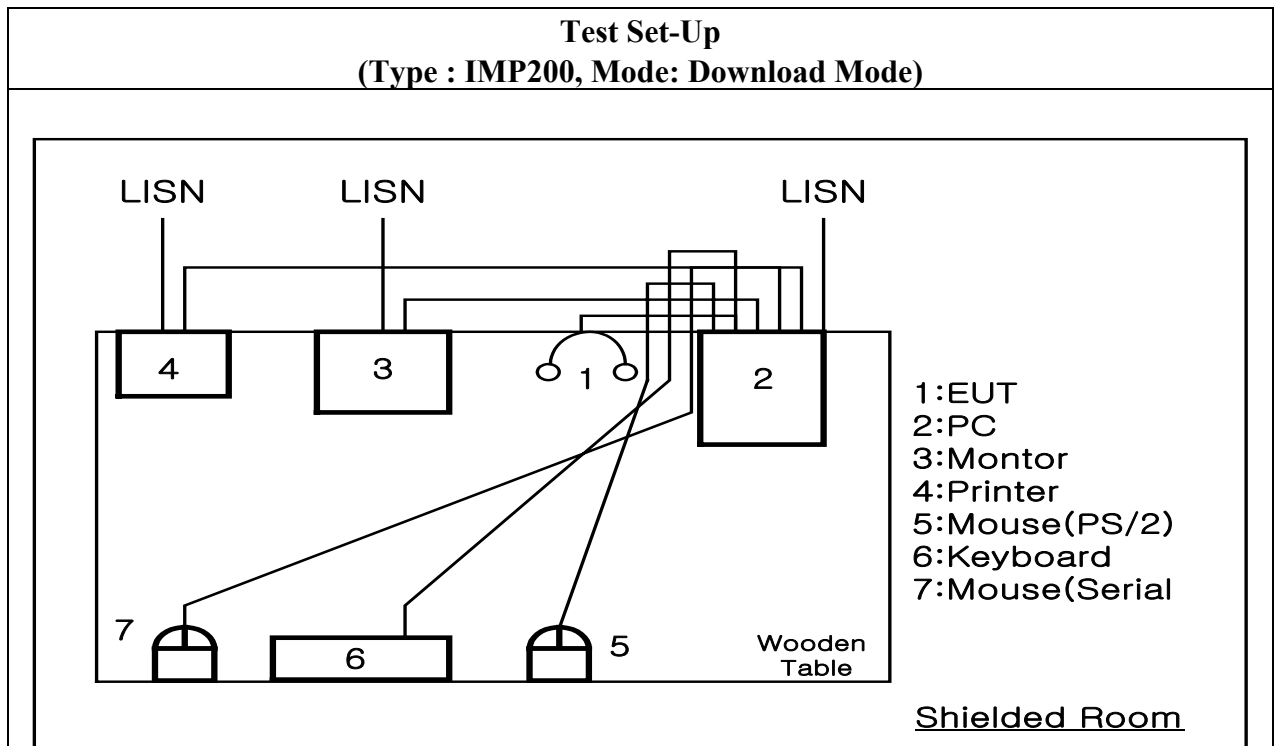


**Test Set-Up
(Type : IMP200, Mode: Play Mode)**

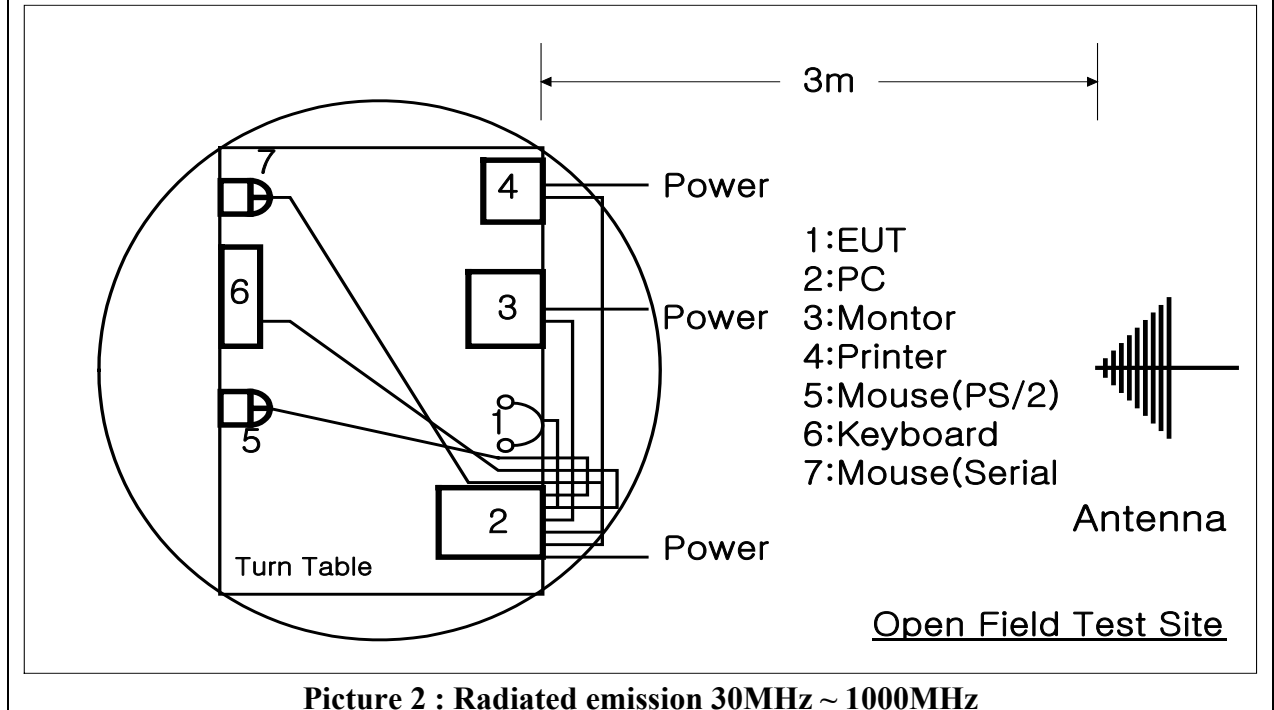


Radiated emission 30MHz ~ 1000MHz

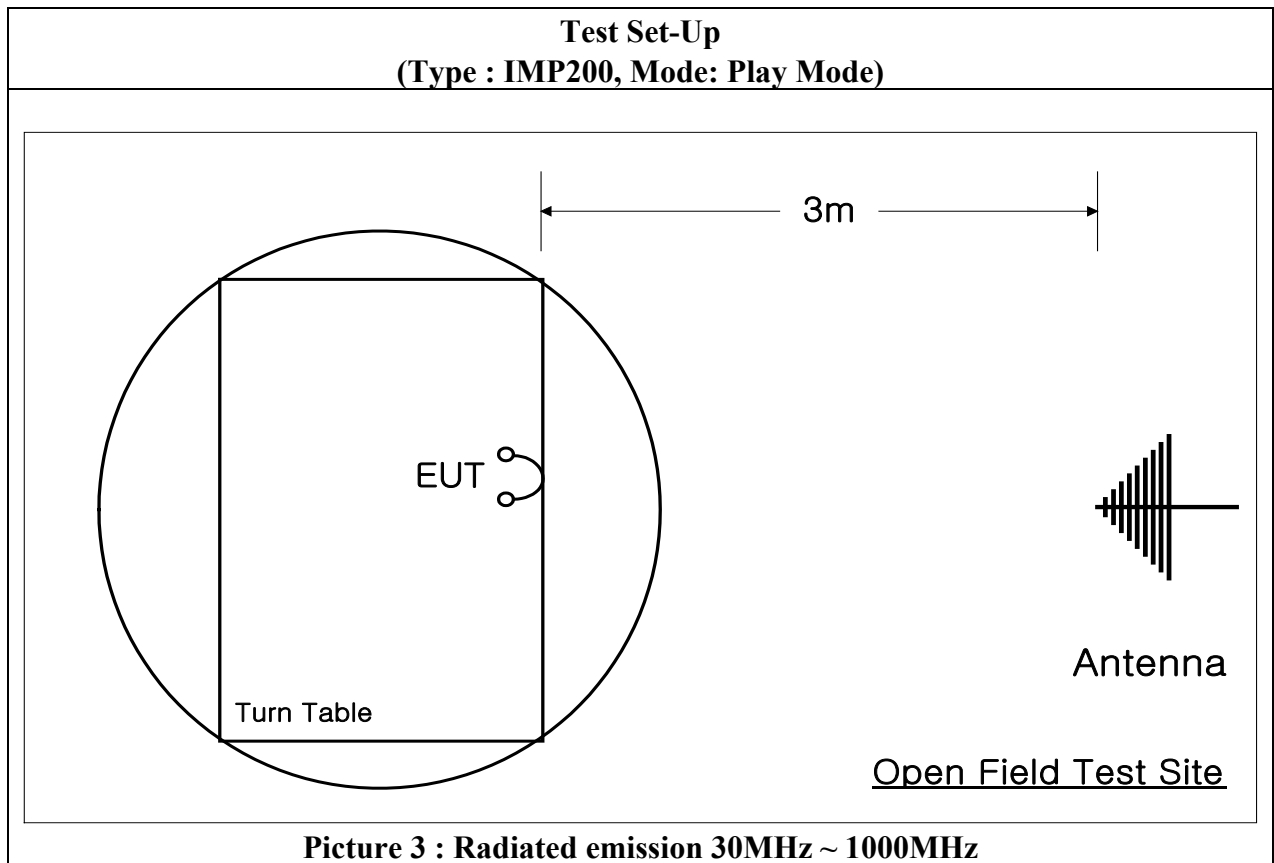




Picture 1 : Conducted emission 450kHz ~ 30MHz



Picture 2 : Radiated emission 30MHz ~ 1000MHz



Conducted Emission Test Data

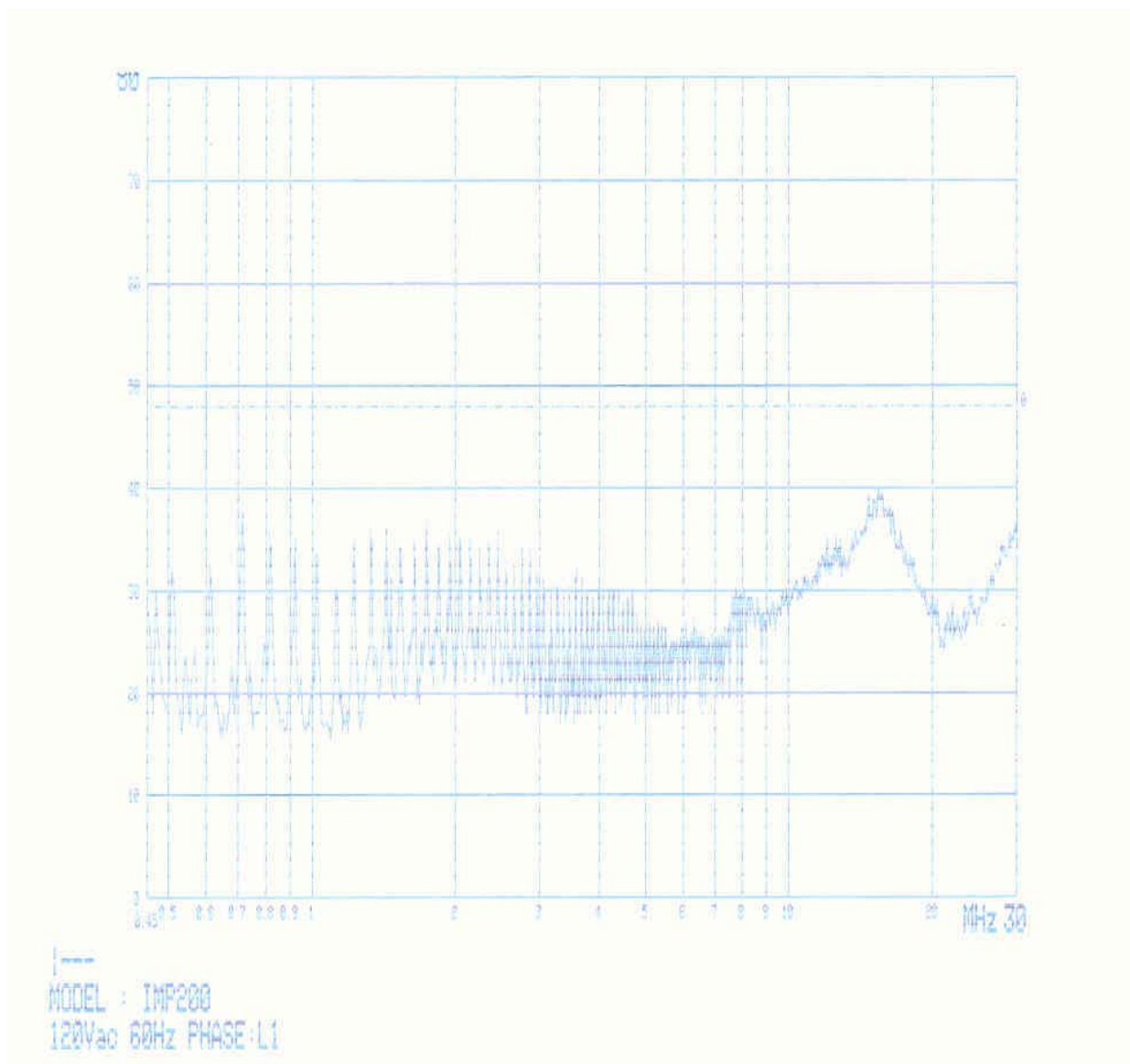
Type : IMP200
 Manufacturer : Intermagic, Corp.
 Operation mode : Download files from PC to EUT
 Date : Jul. 30, 2002

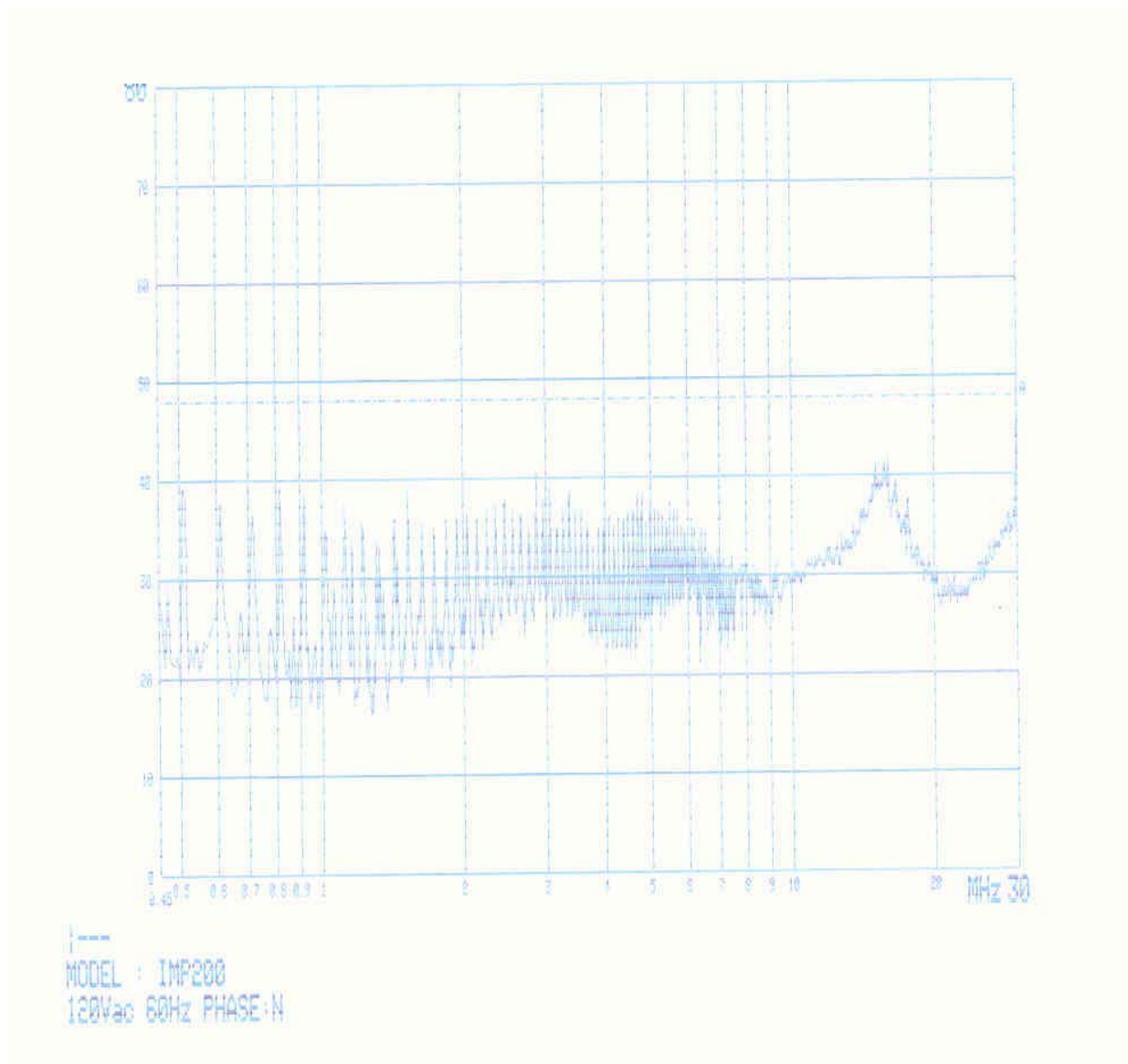
Frequency [MHz]	Reading [dBμV]	Insertion loss [dB]	Phase (L1/N)	Result [dBμV]	Limit [dBμV]	Margin [dB]
0.7157	33.7	0.8	L1	34.5	48.0	13.5
0.8159	34.5	0.8		35.3	48.0	12.7
1.4286	33.0	0.8		33.8	48.0	14.2
1.7348	34.1	0.8		34.9	48.0	13.1
15.4246	36.8	0.8		37.6	48.0	10.4
29.9999	29.7	0.8		30.5	48.0	17.5
0.5099	37.8	0.8	N	38.6	48.0	9.4
0.8160	37.2	0.8		38.0	48.0	10.0
1.5302	34.1	0.8		34.9	48.0	13.1
2.8564	35.4	0.8		36.2	48.0	11.8
16.0040	36.3	0.8		37.1	48.0	10.9
29.9999	32.1	0.8		32.9	48.0	15.1
Cable loss are less than 0.1 dB						

*L1 : Live Line

**N : Neutral Line

*** Please refer to data graphs at page 14 ~ 15



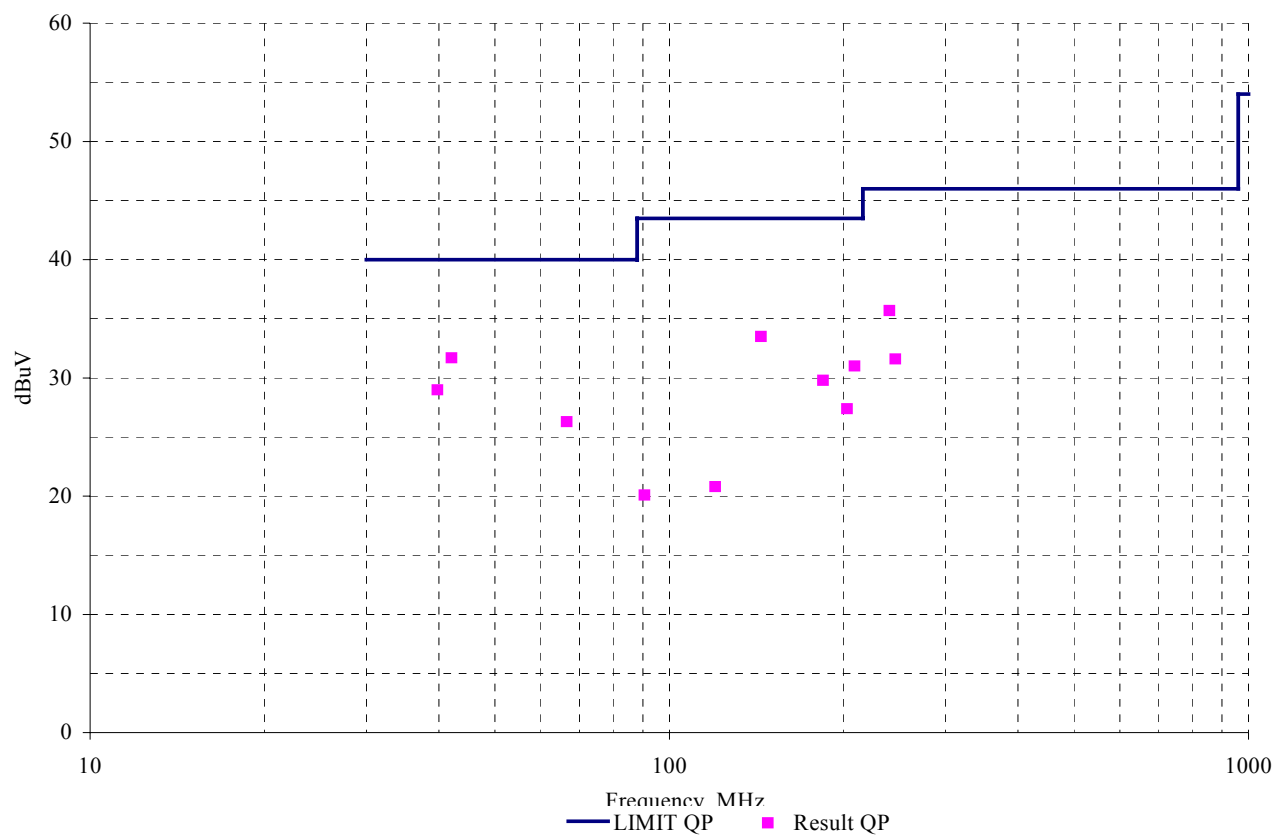


Radiation Test Data

Type : IMP200
 Manufacturer : Intermagic, Corp.
 Operation mode : Download files from PC to EUT
 Test distance : 3 m
 Antenna : VULB9160
 Date : Jul. 31, 2002.

Freq. [MHz]	Reading [dBuV]	Antenna Factor [dB]	Cable Loss [dB]	Angle [deg]	Height [cm]	Polar [H/V]	Result [dBuV]	Limit [dBuV]	Margin [dB]
39.8	14.2	13.6	1.2	18	112	V	29.0	40.0	11.0
42.1	17.8	12.7	1.2	11	131	V	31.7	40.0	8.3
66.5	14.5	10.3	1.5	164	129	V	26.3	40.0	13.7
90.6	11.5	6.9	1.7	180	134	V	20.1	43.5	23.4
120.0	9.0	9.8	2.0	175	124	V	20.8	43.5	22.7
144.0	19.5	11.8	2.2	177	167	V	33.5	43.5	10.0
184.4	17.4	10.0	2.4	158	141	V	29.8	43.5	13.7
202.8	16.4	8.5	2.5	185	218	H	27.4	43.5	16.1
208.9	20.1	8.4	2.5	0	225	H	31.0	43.5	12.5
240.0	22.5	10.3	2.9	0	221	H	35.7	46.0	10.3
245.8	18.2	10.5	2.9	12	182	V	31.6	46.0	14.4
251.9	22.5	10.8	2.8	268	100	V	36.1	46.0	9.9
258.1	18.4	11.2	2.9	288	116	V	32.5	46.0	13.5
264.2	16.1	11.4	2.9	14	118	V	30.4	46.0	15.6
270.4	16.6	11.6	3.0	7	110	V	31.2	46.0	14.8
276.5	19.6	11.7	3.1	145	105	V	34.4	46.0	11.6
282.7	14.4	11.9	3.1	159	118	V	29.4	46.0	16.6
288.8	12.1	11.8	3.1	155	120	V	27.0	46.0	19.0
301.1	10.9	11.7	3.3	162	116	V	25.9	46.0	20.1
319.5	7.0	11.7	3.4	349	105	V	22.1	46.0	23.9
325.7	10.1	11.7	3.4	355	124	V	25.2	46.0	20.8

MEASUREMENT OF DISTURBANCE RADIATION

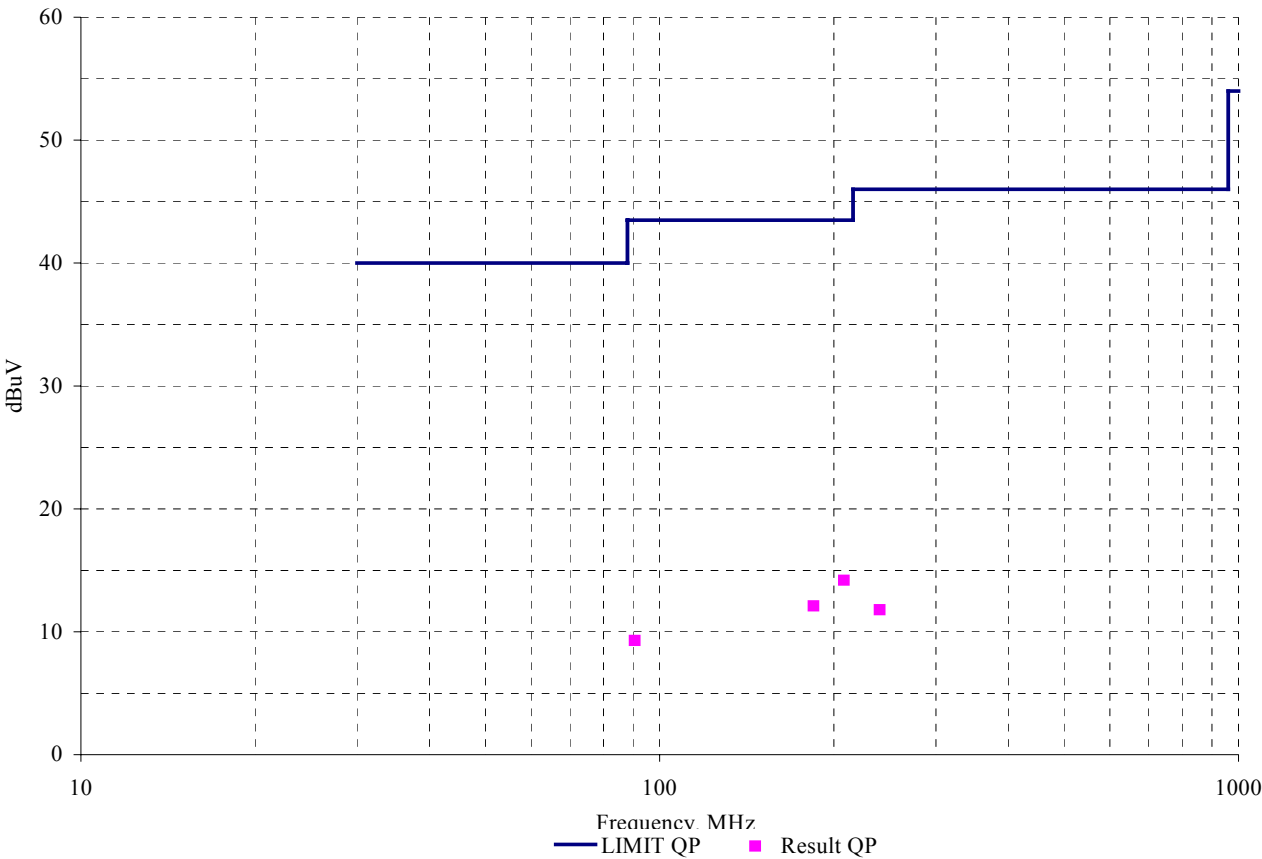


Radiation Test Data

Type : IMP200
 Manufacturer : Intermagic, Corp.
 Operation mode : Play Mode
 Test distance : 3 m
 Antenna : VULB9160
 Date : Jul. 31, 2002.

Freq. [MHz]	Reading [dBuV]	Antenna Factor [dB]	Cable Loss [dB]	Angle [deg]	Height [cm]	Polar [H/V]	Result [dBuV]	Limit [dBuV]	Margin [dB]
90.6	9.3	6.9	1.7	178	118	V	17.9	43.5	25.6
184.4	12.1	9.9	2.4	17	110	V	24.4	43.5	19.1
208.1	14.2	8.4	2.5	349	114	V	25.1	43.5	18.4
240.0	11.8	10.3	2.9	187	211	H	25.0	46.0	21.0

MEASUREMENT OF DISTURBANCE RADIATION



SUMMARY

GENERAL REMARKS :

The equipment is not modified anything, mechanical or circuit to improve EMI status during a measurement and complied the regulation "Part 15 subpart B Class B of CFR 47"

FINAL JUDGMENT :

The requirements according to the technical regulations are

☒ Kept ☐ Not kept

The equipment under test does

☒ Fulfill the general approval requirements mentioned on page 3.
☐ Not fulfill the general approval requirements mentioned on page 3.

Begin of testing : Jul. 30, 2002

End of testing : Jul. 31, 2002

Reviewed by :



Joon H. Lee, EMC Manager
IST EMC Lab.

Approved by :



G. Chung, Chief of EMC Lab.