

Verification of Compliance

CFR 47 Part 15 Subpart B / Class B PC Peripherals

Test Report File No. 02-IST-241 **Date of Issue** Jan. 23. 2003

Models JP-150S

Kind of Product MP3 Player

Applicant Arthur Technology Co., Ltd.

Address 4th Fl. KSC Bldg, 228-13, Yongdap-Dong, Sungdong-Gu, Korea

Manufacturer Arthur Technology Co., Ltd.

Address 4th Fl. KSC Bldg, 228-13, Yongdap-Dong, Sungdong-Gu, Korea

Test Result (*) Positive () Negative

Reviewed By

Approved By



J.H. Lee / General Manager of EMC

G. Chung / Chief

- Investigations requested : Measurement to the relevant clauses of F.C.C rules and regulations Part 15 Subpart B - Class B personal computers and peripherals.
- The test report with appendix consists of 11 pages.
- The test result only responds to the tested sample.
- It is not allowed to copy this report even partly without the allowance of IST EMC Laboratory.
- This equipment as for has been shown to be capable of continued compliance 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.



TABLE OF CONTENTS

Table of contents			2
Information of test laboratory, Environmental condition,			
Power used			3
Description of test			
Conducted Emission			4
Radiated Emission			5
Summary			6
Test conditions and data			
Conducted emissions	0.15 MHz - 30 MHz	Applicable	
Test equipment			7
Data and plots			8-9
Radiated emissions	30 MHz - 1 GHz	Applicable	
Test equipment			10
Data			11
Appendix			

INFORMATIONS OF TEST LABORATORY

EMC LABORATORY of IST Co., Ltd.
San 21-8, Goan-Ri, Baekam-Myun, Yongin-City
Kyonggi-Do, 449-860, Korea
TEL : +82 31 333 4093 FAX : +82 31 333 4094

ENVIRONMENTAL CONDITIONS

Temperature	8 □
Humidity	37 %
Atmospheric pressure	1011 mbar

POWER SUPPLY SYSTEM USED

Power supply system	120Vac 60Hz
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Product Information

Find product information in User's manual.

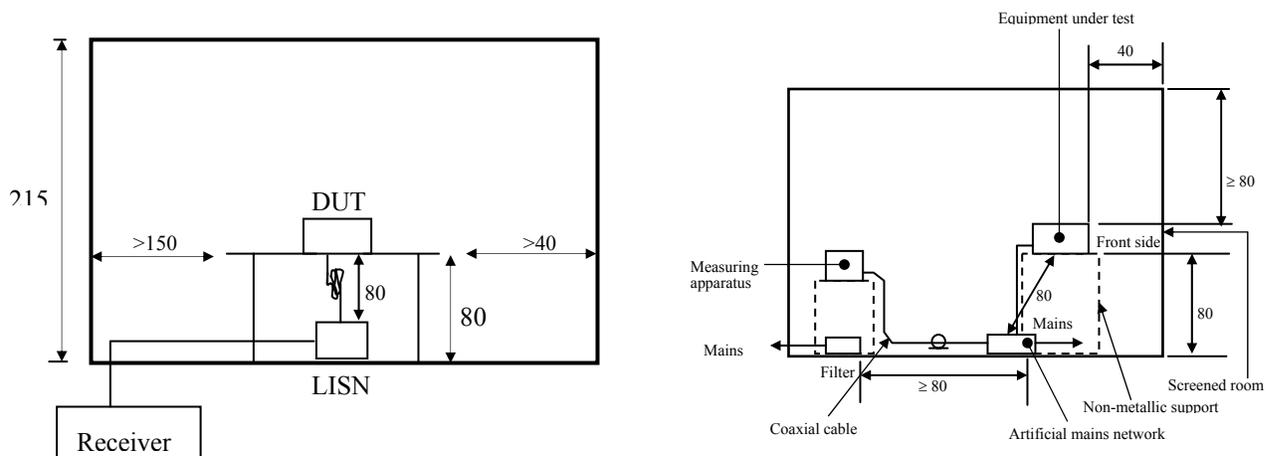
DESCRIPTIONS OF TEST

Conducted Emissions:

The measurement were performed over the frequency range of 0.45MHz to 30MHz using a 50Ω/50uH LISN as the input transducer to a Spectrum Analyzer or a Field Intensity Meter. The measurements were made with the detector set for "Peak" amplitude within an bandwidth of 10KHz or for "quasi-peak" within a bandwidth of 9KHz.

- Procedure of Test

The line-conducted facility is located inside a shielded room No.1. A 1m X 1.5m wooden table 80cm height is placed 40cm away from the vertical wall and 1.5m away from the other wall of the shielded room. The R/S ESH3-Z5 and EMCO 3825/2 LISN are bonded to bottom of the shielded room. The EUT is located on the wooden table with distance more than 80cm from the LISN and powered from the EMCO LISN .The peripheral equipment is powered from the other LISN. Power to the LISNs are filtered by a noise cut power line filters. All electrical cables are shielded by braided tinned steel tubing with inner ϕ 1.2cm. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply lines will be connected to the EMCO LISN. All interconnecting cables more than 1m were shortened by non-inductive bundling to a 1m length. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating conditions. The RF output of the LISN was connected to the R/S receiver to determine the frequency producing the maximum emission from the EUT. The frequency producing the maximum level was reexamined using Quasi-Peak mode by manual measurement, after scanned by automatic Peak mode for frequency range from 0.45 to 30MHz. The bandwidth of the receiver was set to 10kHz. The EUT, peripheral equipment, and interconnecting cables were arranged and manipulated to maximize each EME emission.



DESCRIPTION OF TEST

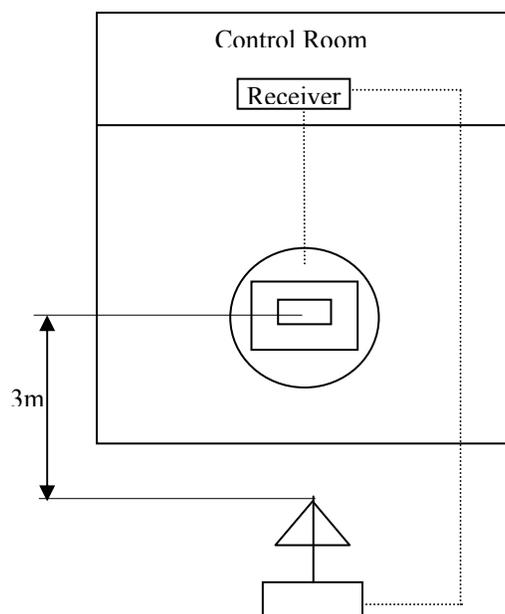
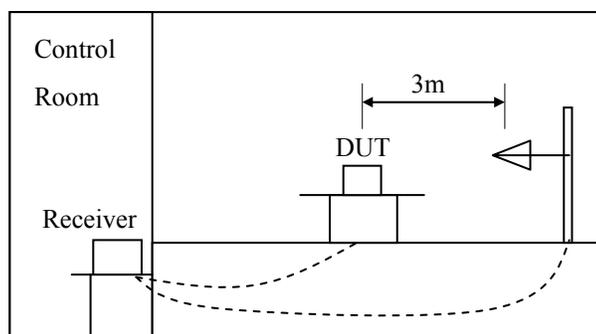
Radiated Emissions:

The measurement was performed over the frequency range of 30MHz to 1GHz using antenna as the input transducer to a Spectrum analyzer or a Field Intensity Meter. The measurement was made with the detector set for "quasi-peak" within a bandwidth of 120KHz.

- Procedure of Test

Preliminary measurements were made at 3 meter using bi-conical and log-periodic antennas, and spectrum analyzer to determine the frequency producing the max. emission in anechoic chamber. Appropriate precaution was taken to ensure that all emission from the EUT were maximized and investigated. The system configuration, mode of operation, turn-table azimuth and height with respect to the antenna were noted for each frequency found. The spectrum was scanned from 40MHz to 300MHz using S/B bi-conical antenna and 300 to 1000MHz using S/B log-periodic antenna. Above 1GHz, linearly polarized double ridge horn antennas were used. Final measurements were made at open site with 3-meters test distance using S/B bi-log antenna or horn antenna. The OATS have been verified in regular for its normalized site attenuations. The test equipment was placed on a wooden table. Sufficient time for the EUT, peripheral equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. Each frequency found during pre-scan measurements was re-examined by manual. The detector function was set to CISPR quasi-peak mode and the bandwidth of the receiver was set to 120kHz or 1MHz depending on the frequency of type of signal. The EUT, peripheral equipment and interconnecting cables were re-configured to the set-up producing the max. emission for the frequency and were placed on top of a 0.8-meter high nonmetallic 1 x 1.5 meter table. The EUT, peripheral equipment, and interconnecting cables were re-arranged and manipulated to maximize each emission. The turntable containing the system was rotated; the antenna height was varied 1 to 4 meters and stopped at the azimuth or height producing the maximum emission. Each emission was maximized by: varying the mode of operation to the EUT and/or peripheral equipment and changing the polarity of the antenna, whichever

determined the worst-case emission.



SUMMARY

Conducted Emission

The requirements are
Minimum limit margin
Maximum limit exceeding

● MET ○ Not MET
13.5dB at 0.213MHz

Remarks :

Radiated Emission

The requirements are
Minimum limit margin
Maximum limit exceeding

● MET ○ Not MET
3.5dB at 48.0MHz

Remarks :

Reported By



H.C. Kim / EMC Engineer

Note :

means the test is applicable, is not applicable.

TEST CONDITIONS AND DATA

Conducted Emissions

[Applicable]

Test Equipment Used

<u>Model Name</u>	<u>Manufacturer</u>	<u>Description</u>	<u>Next Cal. Date</u>
ESH3	Rohde Schwarz	Receiver	Jul. 25, 2003
ESH3-Z2	Rohde Schwarz	Pulse Limiter	Jul. 25, 2002
EZM	Rohde Schwarz	Spectrum monitor	-
3825/2	EMCO	LISN	Aug. 21, 2003

Auxiliary Equipment Used

<u>Model Name</u>	<u>Manufacturer</u>	<u>Descriptions</u>	<u>FCC Compliance Information</u>
Vectra	HP	Desktop Computer	DoC
SK-2502C	HP	Keyboard	DoC
M-48a	HP	Mouse	JNZ201213
529B	Daewoo	Monitor	C5F7NFCMC529B
A0302380	Northern Telecom	Printer	DSI6XU2225C-L

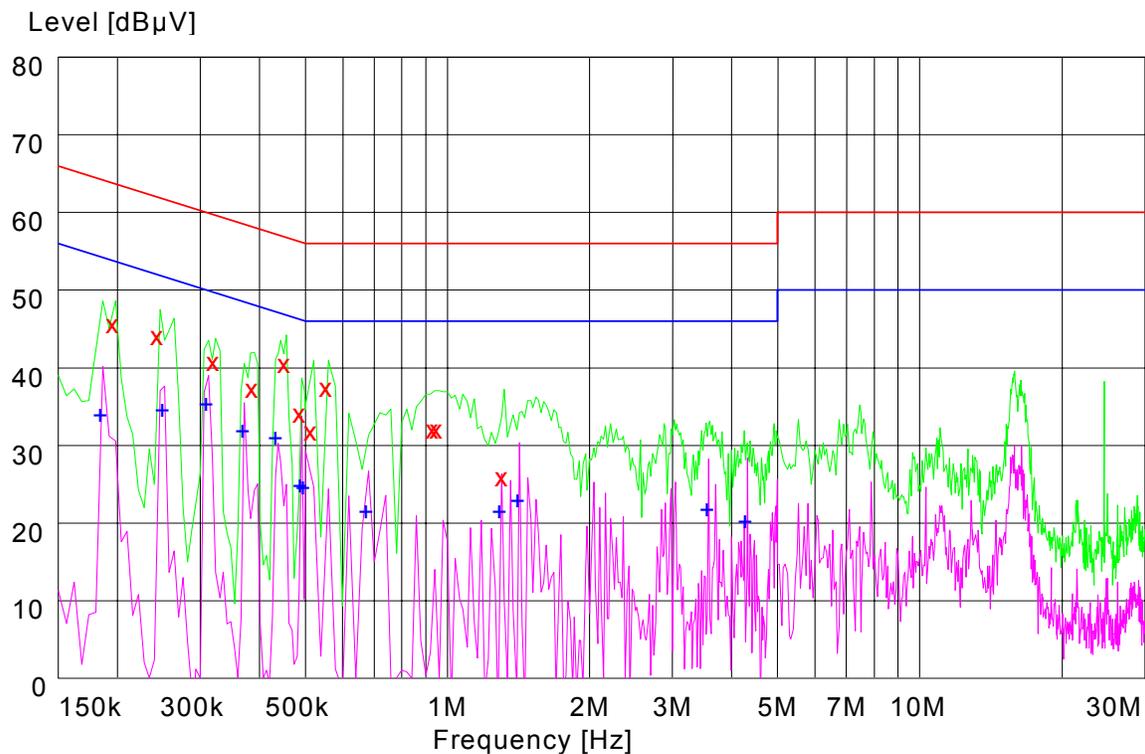
Test ProgramUp/Download

Test Area Bottom Shielded Room

Note :

Conducted Emissions

(Mains Terminal Disturbance Voltages)



x MES 021118-03_fin QP — MES 021118-03_pre PK
+ MES 021118-03_fin AV — MES 021118-03_pre AV

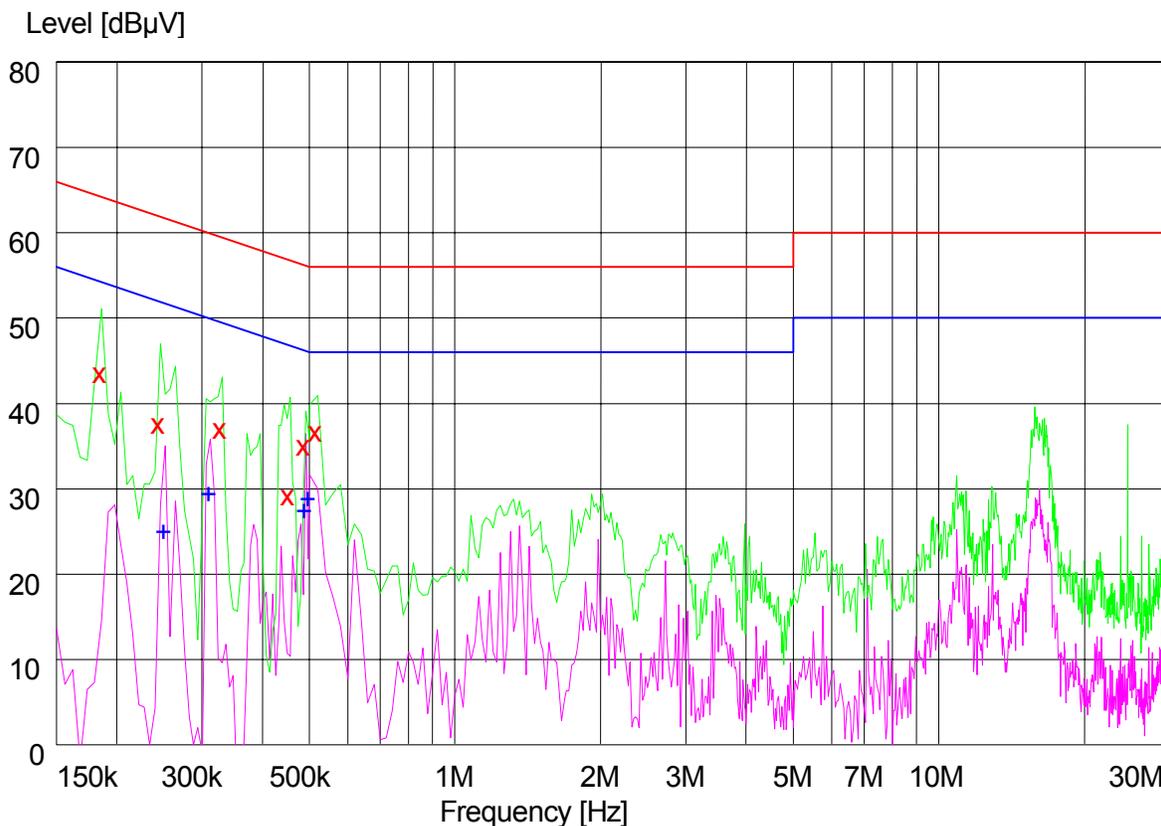
Live

Quasi-Peak				Average			
Freq [MHz]	Reading [dBuV]	Limit [dBuV]	Margin [dBuV]	Freq [MHz]	Reading [dBuV]	Limit [dBuV]	Margin [dBuV]
0.198	46.90	64	16.8	0.186	35.10	54	19.1
0.246	45.20	62	16.7	0.252	35.70	52	16.0
0.324	41.90	60	17.7	0.312	36.40	50	13.5
0.390	38.50	58	19.6	0.372	33.00	49	15.5
0.456	41.70	57	15.1	0.438	32.00	47	15.1
0.492	35.30	56	20.8	0.492	25.90	46	20.2
0.520	32.90	56	23.1	0.500	25.70	46	20.3
0.560	38.60	56	17.4	0.680	22.50	46	23.5
0.940	33.30	56	22.7	1.300	22.60	46	23.4
0.960	33.30	56	22.7	1.420	24.00	46	22.0
1.320	27.10	56	28.9	3.580	22.90	46	23.1
				4.320	21.30	46	24.7

Note : The insertion loss of test instrument is negligible with less than 0.5dB.

Conducted Emissions

(Mains Terminal Disturbance Voltages)



- x MES 021118-04_fin QP
- + MES 021118-04_fin AV
- MES 021118-04_pre PK
- MES 021118-04_pre AV

Neutral

Quasi-Peak				Average			
Freq [MHz]	Reading [dBuV]	Limit [dBuV]	Margin [dBuV]	Freq [MHz]	Reading [dBuV]	Limit [dBuV]	Margin [dBuV]
0.186	44.80	64	19.4	0.252	26.10	52	25.6
0.246	38.80	62	23.1	0.312	30.50	50	19.4
0.330	38.20	60	21.3	0.492	28.60	46	17.5
0.456	30.40	57	26.4	0.500	29.90	46	16.1
0.492	36.20	56	19.9				
0.520	37.80	56	18.2				

Note : The insertion loss of test instrument is negligible with less than 0.5dB.

TEST CONDITIONS AND DATA
Radiated Emission

[Applicable]

Test Equipment Used

<u>Model Name</u>	<u>Manufacturer</u>	<u>Description</u>	<u>Next Cal. Date</u>
ESVP	Rohde & Schwarz	Receiver	Jul. 26, 2003
VULB9106	Schwarzbeck	Antenna	Jul. 10, 2003
EZM	Rohde & Schwarz	Spectrum Monitor	-

Auxiliary Equipment Used

<u>Model Name</u>	<u>Manufacturer</u>	<u>Descriptions</u>	<u>FCC Compliance Information</u>
Vectra	HP	Desktop Computer	DoC
SK-2502C	HP	Keyboard	DoC
M-48a	HP	Mouse	JNZ201213
529B	Daewoo	Monitor	C5F7NFCMC529B
A0302380	Northern Telecom	Printer	DSI6XU2225C-L

Test ProgramUp/Download

Test Area Open Field Area Site #1

Note :

Radiated Emissions

(Disturbance Radiation)

- The measured values are as following

	Freq. [MHz]	Reading [dBuV]	Antenna Factor [dB]	Cable Loss [dB]	Angle [deg]	Polar. [H/V]	Result [dBuV]	Limit [dBuV]	Margin [dB]
	48.0	23.0	11.5	1.5	100	V	36.0	39.5	3.5
	64.0	18.5	10.6	1.8	100	V	30.9	39.5	8.6
	86.0	17.0	8.1	2.1	100	V	27.2	39.5	12.3
	120.0	21.6	11.5	2.6	105	V	35.7	43.5	7.8
	143.9	19.4	12.4	2.8	109	V	34.6	43.5	8.9
	167.8	15.6	12.4	3.1	105	V	31.1	43.5	12.4
	192.0	19.7	9.7	3.3	236	H	32.7	43.5	10.8
	216.0	14.8	9.4	3.5	100	V	27.7	46.0	18.3
	288.0	20.4	12.1	4.2	109	V	36.7	46.0	9.3
	312.4	15.7	12.5	4.4	110	V	32.6	46.0	13.4
	336.0	18.4	13.2	4.7	100	V	36.3	46.0	9.7
	384.0	16.2	14.4	5.1	100	V	35.7	46.0	10.3

End of data

Note :