

EMC TEST REPORT For FCC

Test Report No. : 2005100012
Date of Issue : October 11, 2005
FCC ID : RFSMPIO-FL400
Model/Type No. : FL400
Kind of Product : MP3 Player
Applicant : MPIO CO., LTD.
Applicant Address : 10th floor Polaris 2 15-1 Jeongja-dong, Bundang-gu,
SeongNam-Si, Gyeonggi-do, 463-010 Korea
Manufacturer : MPIO CO., LTD.
Manufacturer Address : 10th floor Polaris 2 15-1 Jeongja-dong, Bundang-gu,
SeongNam-Si, Gyeonggi-do, 463-010 Korea
Contact Person : Young-Ki, Lee (Assistant Manager)
Telephone : +82-31-785-9161
Received Date : September 29, 2005
Test period : Start : October 1, 2005 End : October 6, 2005
Test Results : ☒ In Compliance ☐ Not in Compliance

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

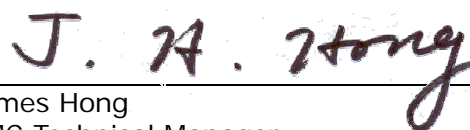
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Tested by



Seung-Min, Oh
EMC Test Engineer
Date: October 11, 2005

Reviewed by



James Hong
EMC Technical Manager
Date: October 11, 2005

REPORT REVISION HISTORY

Date	Revision	Page No
October 11, 2005	Issued (2005100012)	All

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TABLE OF CONTENTS

REPORT REVISION HISTORY	2
1.0 General Product Description	4
1.1 Model Differences	4
1.2 Device Modifications	4
1.3 EUT Configuration(s)	5
1.4 Test Software	5
1.5 EUT Operating Mode(s)	5
1.6 Configuration	6
1.7 Calibration Details of Equipment Used for Measurement	7
1.8 Test Facility	7
1.9 Measurement Procedure	7
1.10 Laboratory Accreditations and Listings	8
2.0 Emissions Test Regulations	9
2.1 Conducted Voltage Emissions	10
2.2 Radiated Electric Field Emissions	11
APPENDIX A – TEST DATA	12
Conducted Voltage Emissions	12
Radiated Electric Field Emissions	14
APPENDIX B - Test Setup Photos and Configuration	15
Conducted Voltage Emissions	15
Radiated Electric Field Emissions	16
APPENDIX C – EUT Photographs	17
EUT External Photographs	18
EUT Internal Photographs	19
PCB	20
Photographs related to Label	23
FCC ID label location	24

1.0 General Product Description

1.0.1 Tested Equipment

- ☒ Unless otherwise indicated, all tests were conducted on Model FL400.
- ☐ Tests performed on Model _____ were considered to be representative of Model(s) _____.

1.0.2 Equipment Size, Mobility and Identification

Dimensions: 46(L) by 28(W) by 13(H) ☒ mm ☐ inch
Mobility: ☒ Hand-held ☐ Table-top ☐ Built-in
☐ Traveling ☐ Floor-standing
Serial No.: prototype

1.0.3 Electrical Ratings

Input: When MP3 playing: 3.7Vdc (Built-in Li-polymer Battery)
When downloading: 3.7Vdc + Supplied by PC's USB port power
Output: -

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: 120 Vac (AC mains of PC)
Frequency: 60 Hz

1.0.5 Clock & Other Frequencies Utilized

Main : 12 MHz, 32.768 kHz

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
Personal Computer	Hewlett-Packard Company	Pavilion t812k	KRJ50403HK	DoC
Monitor	SAMSUNG	PG17HS	P0133H3NN703187	DoC
Keyboard (PS/2 type)	Hewlett-Packard Company	5219	BN5017686	E5XKB5209
Mouse (PS/2 type)	KYE SYSTEMS CORP.	N3 Optical	K045205991	DoC
Printer (Parallel type)	Seiko Epson Corp.	Stylus Color 460	BWCE136524	DoC
Headphone	-	-	-	-

☒ Cable Description

#	Description	Ferrite Core	Length (m)	Other Details
1	USB cable, Shielded	Yes	1.0	Between the EUT and PC
2	Headphone cable, Unshielded	No	2.0	Between the PC and Headphone
3	Mouse cable, Shielded	No	1.5	PS/2 type
4	Keyboard cable, Shielded	No	1.5	PS/2 type
5	Monitor cable, Shielded	Yes	1.8	Between the PC and Monitor
6	Printer cable, Shielded	No	1.8	Between the PC and Printer
7	AC power cable, Unshielded	No	1.8	Connect to AC power
8	AC power cable, Unshielded	No	1.8	Connect to AC power
9	AC power cable, Unshielded	No	1.8	Connect to AC power

1.4 Test Software

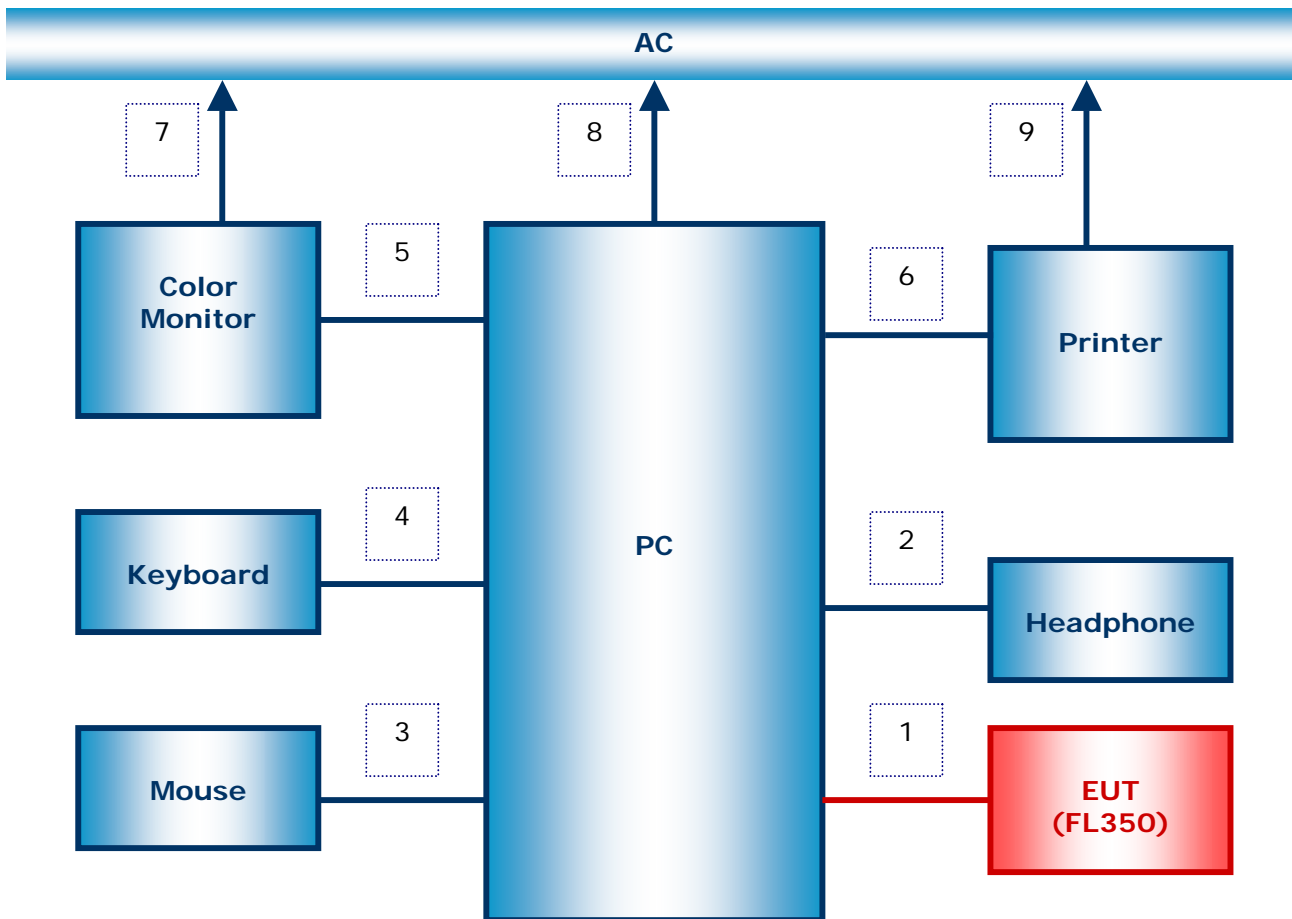
- ☐ EMC Test V 1.0
☐ Display Test Patterns – V1.5
☐ Ping.exe
☒ Not applicable : Used PC's OS was Windows XP.

1.5 EUT Operating Mode(s)

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

- ☐ Standby
☐ Display circles pattern
☒ Practice operation – File downloading and uploading mode
☐ Scrolling 'H'
☐ Read / Write
- During testing, the EUT was connected to a PC via USB port.

1.6 Configuration



1.7 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.

1.8 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.

1.9 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 C63.4-2001 7.2.3, 7.2.4, 8.3.1.1, 8.3.1.2

1.10 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3 & 10 meter Open Area Test Sites and one conducted site 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	EMI (10 meter Open Area Test Site and two conducted sites) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 No. 51, KR0025
International	KOLAS	EMC	 TESTING NO. 119
Europe	GLAS	EMC EN 55011, EN 55022, EN 61000-6-3, EN 61000-6-4, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2, EN 50130-4, EN 55024, EN 61204-3, EN 60601-1-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11	 No.13000796-02

2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

- | | | |
|--|----------------------------------|---|
| <input type="checkbox"/> EN 61000-6-3:2001 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 61000-6-4:2001 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 50083-2:2001 | | |
| <input type="checkbox"/> EN 55011:1998 +A1:1999 | <input type="checkbox"/> Group 1 | <input type="checkbox"/> Group 2 |
| | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 55011:1998 +A1:1999 +A2:2002 | <input type="checkbox"/> Group 1 | <input type="checkbox"/> Group 2 |
| | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 55013:1990 +A12:1994 +A13:1996 +A14:1999 | | |
| <input type="checkbox"/> EN 55013:2001 | | |
| <input type="checkbox"/> EN 55014-1:2000 | | |
| <input type="checkbox"/> EN 55014-1:2000 +A1:2001 | | |
| <input type="checkbox"/> EN 55015:2000 | | |
| <input type="checkbox"/> EN 55015:2000 +A1:2001 | | |
| <input type="checkbox"/> EN 55022:1994 +A1:1995 +A2:1997 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 55022:1998 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 55022:1998 +A1:2000 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 55022:1998 +A1:2000 +A2:2003 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 61000-3-2:2000 | | |
| <input type="checkbox"/> EN 61000-3-3:1995 +A1:2001 | | |
| <input type="checkbox"/> VCCI V-3/2004.04 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> AS/NZS 3548:1995 +A1:1997 +A2:1997 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input checked="" type="checkbox"/> FCC Part 15 Subpart B | <input type="checkbox"/> Class A | <input checked="" type="checkbox"/> Class B |
| <input checked="" type="checkbox"/> CISPR 22:1997 | <input type="checkbox"/> Class A | <input checked="" type="checkbox"/> Class B |
| The unit was tested to CISPR 22 and complied with the alternate methods allowed by FCC under paragraphs 15.107 and 15.109. | | |
| <input type="checkbox"/> CISPR 22:1997 +A1:2000 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |

2.1 Conducted Voltage Emissions

Test Date

October 6, 2005

Test Location

Shielded Room

Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
<input checked="" type="checkbox"/>	Field Strength Meter	Rohde & Schwarz	ESHS30	828144/002	2006-02-01
<input checked="" type="checkbox"/>	LISN	EMCO	3825/2	9607-2574	2006-09-03
<input checked="" type="checkbox"/>	LISN	EMCO	3825/2	9409-2246	2006-09-03

Frequency Range of Measurement

150 kHz to 30 MHz

Test Results

The requirements are:

☒ MET

Frequency (MHz)	Measured Data (dBuV)	Margin (dB)	Remark
0.15	59.7	6.3	Quasi-peak

☐ NOT MET

Frequency (MHz)	Measured Data (dBuV)	Margin (dB)	Remark

☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

2.2 Radiated Electric Field Emissions

Test Date

October 5, 2005

Test Location

☒ Testing was performed at a test distance of 10 meter Open Area Test Site

Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
<input checked="" type="checkbox"/>	Field Strength Meter	Rohde & Schwarz	ESVS30	826638/008	2005-11-15
<input checked="" type="checkbox"/>	ULTRA Broadband Antenna	Rohde & Schwarz	HL562	361324/014	2006-05-27
<input type="checkbox"/>	Biconical Antenna	EMCO	3110	9202-1510	2006-04-13
<input type="checkbox"/>	Log-periodic Antenna	EMCO	3146	9607-4567	2006-04-08

Frequency Range of Measurement

30 MHz to 1 GHz

Test Results

The requirements are:

☒ MET

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
204.82	26.9	3.1	Quasi-peak

☐ NOT MET

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark

☐ NOT APPLICABLE

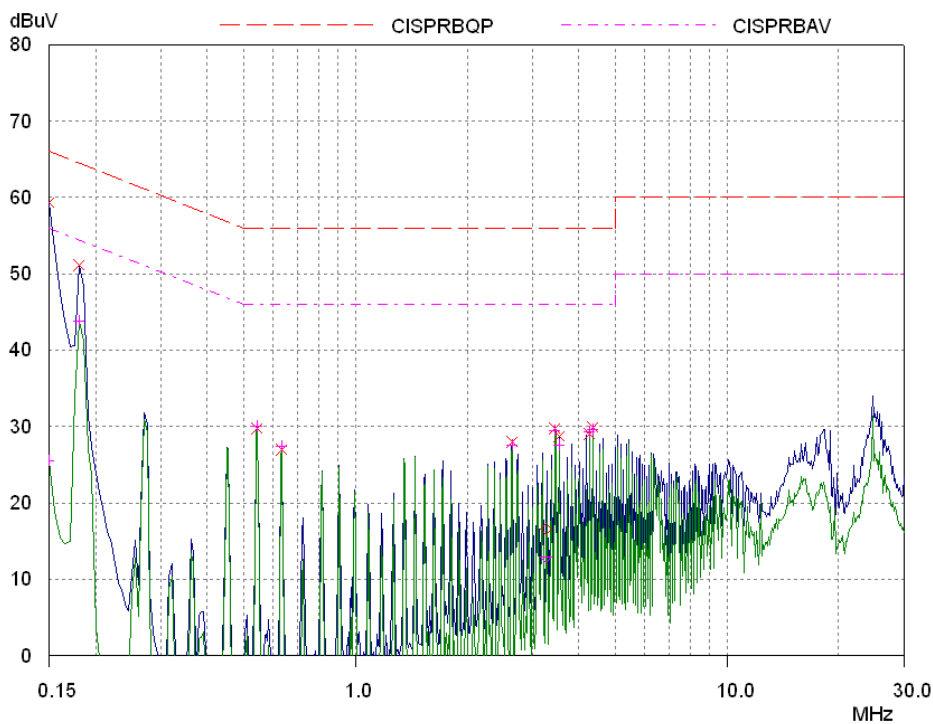
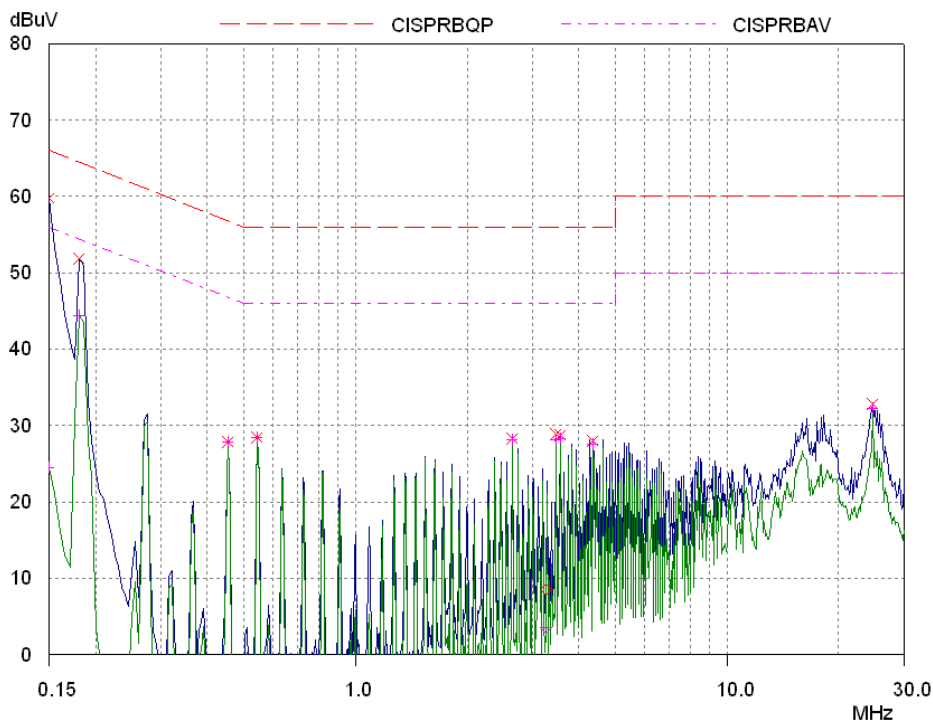
Remarks

See Appendix A for test data.

APPENDIX A – TEST DATA

Conducted Voltage Emissions

Frequency [MHz]	Correction Factor		Line	Quasi-peak				Average			
				Limit	Reading	Result	Margin	Limit	Reading	Result	Margin
	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dB]
0.15	0.2	0.1	H	66.0	59.4	59.7	6.3	56.0	24.2	24.5	31.5
0.18	0.2	0.1	H	64.5	51.5	51.8	12.7	54.5	44.1	44.4	10.1
0.54	0.1	0.1	N	56.0	29.4	29.6	26.4	46.0	29.8	30.0	16.0
3.43	0.1	0.2	N	56.0	29.4	29.7	26.3	46.0	29.2	29.5	16.5
3.44	0.1	0.2	H	56.0	28.5	28.8	27.2	46.0	27.8	28.1	17.9
4.25	0.1	0.2	N	56.0	28.7	29.0	27.0	46.0	29.0	29.3	16.7
4.34	0.1	0.2	N	56.0	29.6	29.9	26.1	46.0	29.2	29.5	16.5
24.57	0.2	0.4	H	60.0	32.2	32.8	27.2	50.0	31.5	32.1	17.9
								</			



Radiated Electric Field Emissions

Frequency [MHz]	Reading [dBuV/m]	Pol.	Height [m]	Correction Factor		Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
				Antenna	Cable			
189.97	15.0	H	4.0	6.8	2.7	30.0	24.5	5.5
192.67	15.6	H	4.0	6.9	2.6	30.0	25.0	5.0
202.12	16.3	H	3.2	7.2	2.8	30.0	26.3	3.7
203.50	16.0	H	3.0	7.2	2.8	30.0	26.0	4.0
204.82	16.8	H	3.6	7.3	2.8	30.0	26.9	3.1
208.20	15.5	H	3.0	7.4	2.8	30.0	25.7	4.3
480.00	14.2	V	1.5	15.0	4.3	37.0	33.5	3.5