

EMC TEST REPORT For FCC

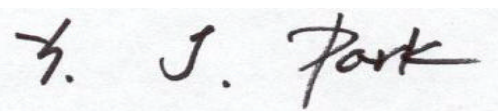


Test Report No. : CTK03-F064
Date of Issue : June 9, 2003
Model/Type No: : DAH-1100 [FCC ID : PCMDAH1100]
Kind of Product : MP3 PLAYER
Applicant : HYUN WON INC.
Applicant Address : 333-1 Shindea-Ri, Kumho-Eup, Young cheon-City Kyung Buk, Korea
Manufacturer : HYUN WON INC.
Manufacturer Address : 333-1 Shindea-Ri, Kumho-Eup, Young cheon-City Kyung Buk, Korea
Contact Person : Mr. Chang-Bae Lee (Assistant Manager)
Telephone : +82-54-337-9977
Received Date : May 28, 2003
Test period : Start: May 28, 2003 End: June 7, 2003
Test Results : ☒ In Compliance ☐ Not in Compliance

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

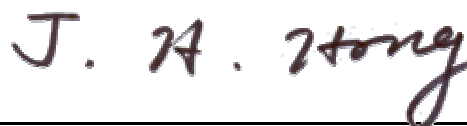
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Tested by



Joon Pak
EMC Test Engineer
Date: June 9, 2003

Reviewed by



James Hong
EMC Technical Manager
Date: June 9, 2003

REPORT REVISION HISTORY

Date	Revision	Page No
June 9, 2003	Issued (CTK03-F064)	All

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1.0 General Product Description

1.0.1 Tested Equipment

- ☒ Unless otherwise indicated, all tests were conducted on Model DAH-1100.
- ☐ Tests performed on Model _____ were considered to be representative of Model(s) _____.

1.0.2 Equipment Size, Mobility and Identification

Dimensions: 84 by 14 by 46 ☒ mm ☐ in
Mobility: ☒ Hand-Held ☐ Table-top ☐ Floor-standing
☐ -
Serial No.: Not applicable

1.0.3 Electrical Ratings

Input: When MP3 playing – DC 1.5V (Dry Cell Battery 1EA xAAA size)
When USB downloading – Supplied by PC's USB port power
Output: Not applicable

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: DC 1.5V or PC's USB port power
Frequency: Not applicable

1.0.5 Clock & Other Frequencies Utilized

32.768kHz, 24.576MHz

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
Adaptor	LITE-ON ELECTRONICS	PA-1500-02	3100036102	-
Notebook PC	ACER	MS2133	LXT270E01831800421M000	DoC
Adaptor	KANGWON	SMPS-1205200	-	-
ODD	AOpen	ESV-189i	915MD37A01311004BEM000	DoC
Mouse (USB type)	SAMSUNG	OMS3CB	0303009875	DoC

☒ Cable Description

#	Description	Ferrited	Length (m)	Other Details
1	AC power cable, Unshielded	No	1.8	Connect to AC power
2	DC output cable, Unshielded	Yes	1.8	-
3	AC power cable, Unshielded	No	1.8	Connect to AC power
4	DC output cable, Unshielded	No	1.2	-
5	USB cable, Shielded	No	1.2	Between the EUT and notebook PC
6	Earphone cable, Unshielded	No	2.1	-
7	IEEE 1394 port cable, Shielded	No	0.2	Between the notebook PC and ODD
8	Mouse cable, Shielded	No	1.8	-

n/a = not available

1.4 Test Software

☐ Pinging

☒ Not applicable

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

☐ Test program (customer specific)

☒ Practice operation – MP3 playing and USB downloading mode

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	EMI (CE, RE) EMS (ESD, Burst, RS, Surge, CS, Power-Frequency Susceptibility, Voltage Dips and Short Interruptions)	 No. 51, KR0025
International	KOLAS	EMC	 NO.119
Europe	GLAS	EMC EN 55011, EN 55022, EN 55024, EN 61326, EN 50130-4, EN 50081-1, EN 50081-2, EN 50082-1, EN 50082-2, EN 61000-6-2, 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, EN 61000-3-2, EN 61000-3-3	 No.13000796-02

2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

- | | | |
|--|---|---|
| <input type="checkbox"/> EN 50081-1:1992 | | |
| <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 55013:1990 +A12:1994 +A13:1996 +A14:1999 | | |
| <input type="checkbox"/> EN 55013:2001 | | |
| <input type="checkbox"/> EN 55014-1:1993 +A1:1997 +A2:1999 | <input type="checkbox"/> Household appliances and similar | |
| | <input type="checkbox"/> Portable tools | |
| | <input type="checkbox"/> Semiconductor devices | |
| <input type="checkbox"/> EN 55014-1:2000 | | |
| <input type="checkbox"/> EN 55014-2:1997 | | |
| <input type="checkbox"/> EN 55015:1996 +A1:1997 +A2:1999 | | |
| <input type="checkbox"/> EN 55015:2000 | | |
| <input type="checkbox"/> EN 55020:1994 +A11:1996 +A13:1999 +A14:1999 | | |
| <input type="checkbox"/> EN 55020:1994 +A11:1996 +A12:1999 +A13:1999 +A14:1999 | | |
| <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 +A1:2000 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 61000-3-2:1995 +A1:1998 +A2:1998 | | |
| <input type="checkbox"/> EN 61000-3-2:1995 +A1:1998 +A2:1998 +A14:2000 | | |
| <input type="checkbox"/> EN 61000-3-2:2000 | | |
| <input type="checkbox"/> EN 61000-3-3:1995 | | |
| <input type="checkbox"/> VCCI V-3/99.05 : 1999 | <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 type="checkbox"/> AS 3548 (1992) | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input checked="" type="checkbox"/> CISPR 22 (1997) | <input type="checkbox"/> Class A | <input checked="" type="checkbox"/> Class B |

2.1 Conducted Voltage Emissions

Test Date

June 2, 2003

Test Location

EMI-CE: Shielded Room

Test Instruments

<input checked="" type="checkbox"/> Field Strength Meter	Rohde & Schwarz	ESHS30	828144/002
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Test Accessories

<input type="checkbox"/> LISN	EMCO	3825/2	9206-1971
<input checked="" type="checkbox"/> LISN	EMCO	3825/2	9409-2246
<input checked="" type="checkbox"/> LISN	EMCO	3825/2	9607-2574
<input checked="" type="checkbox"/> 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:

<input checked="" type="checkbox"/> MET	minimum margin is 5.3 dBuV at 0.16 MHz
<input type="checkbox"/> NOT MET	limit exceeded by maximum of ____ dBuV at ____ MHz
<input type="checkbox"/> NOT APPLICABLE	

Remarks

See Appendix A for test data.

2.2 Radiated Electric Field Emissions

Test Date

June 3, 2003

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

- | | | | |
|--|-----------------|--------|------------|
| <input checked="" type="checkbox"/> Field Strength Meter | Rohde & Schwarz | ESVS30 | 826638/008 |
|--|-----------------|--------|------------|

Test Accessories

- | | | | |
|---|-----------------|---------|------------|
| <input checked="" type="checkbox"/> ULTRA Broadband Antenna | Rohde & Schwarz | HL562 | 361324/014 |
| <input type="checkbox"/> Biconical Antenna | Schwarzbeck | BBA9106 | 41-00201 |
| <input type="checkbox"/> Biconical Antenna | EMCO | 3110B | 9607-2564 |
| <input type="checkbox"/> Log-periodic Antenna | EMCO | 3146 | 9607-4567 |

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

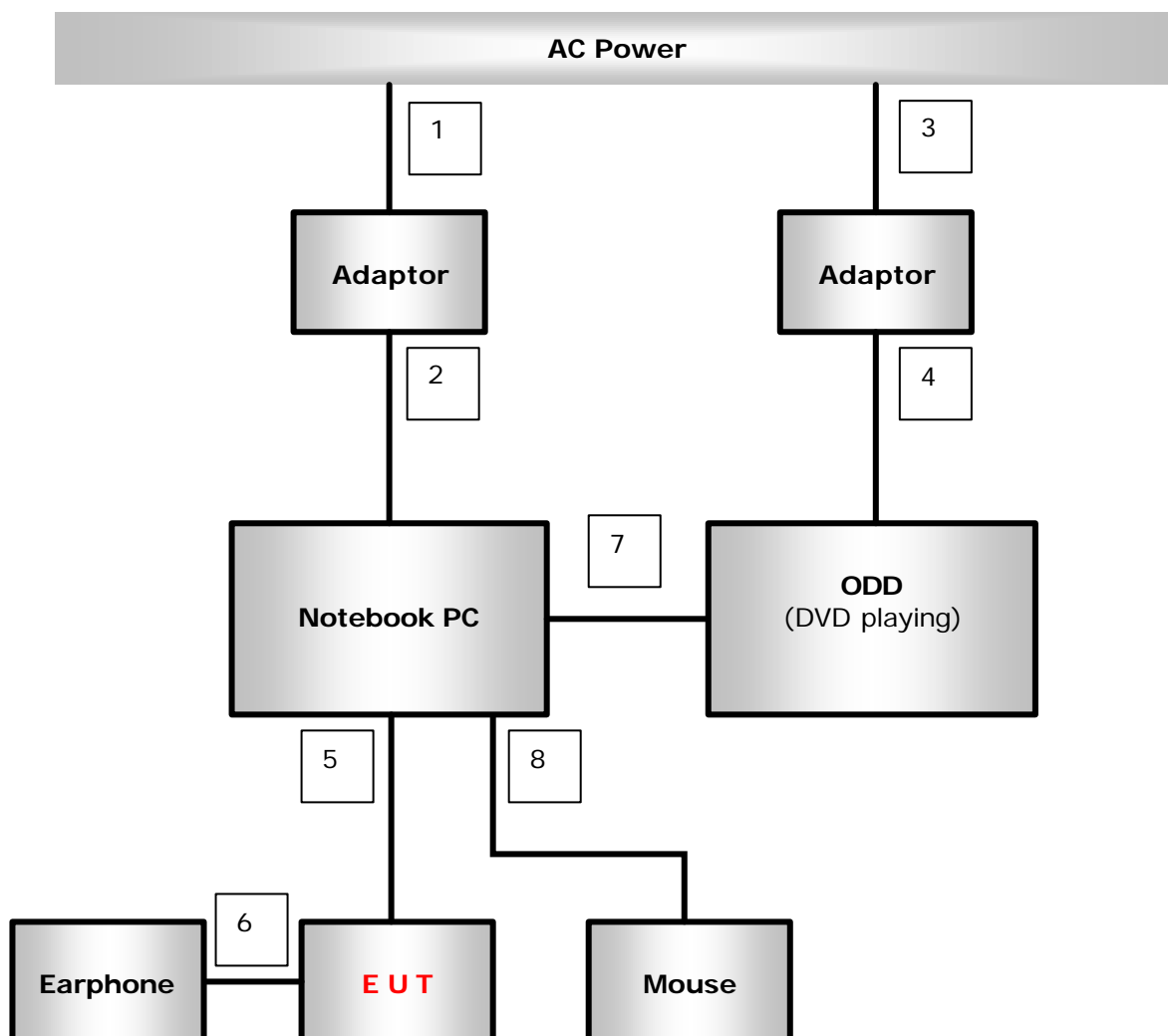
The requirements are:

- | | |
|---|--|
| <input checked="" type="checkbox"/> MET | minimum margin is 3.72 dB (uV/m) at 260.90 MHz |
| <input type="checkbox"/> NOT MET | limit exceeded by maximum of ____ dB(uV/m) at ____ MHz |
| <input type="checkbox"/> NOT APPLICABLE | |

Remarks

See Appendix A for test data

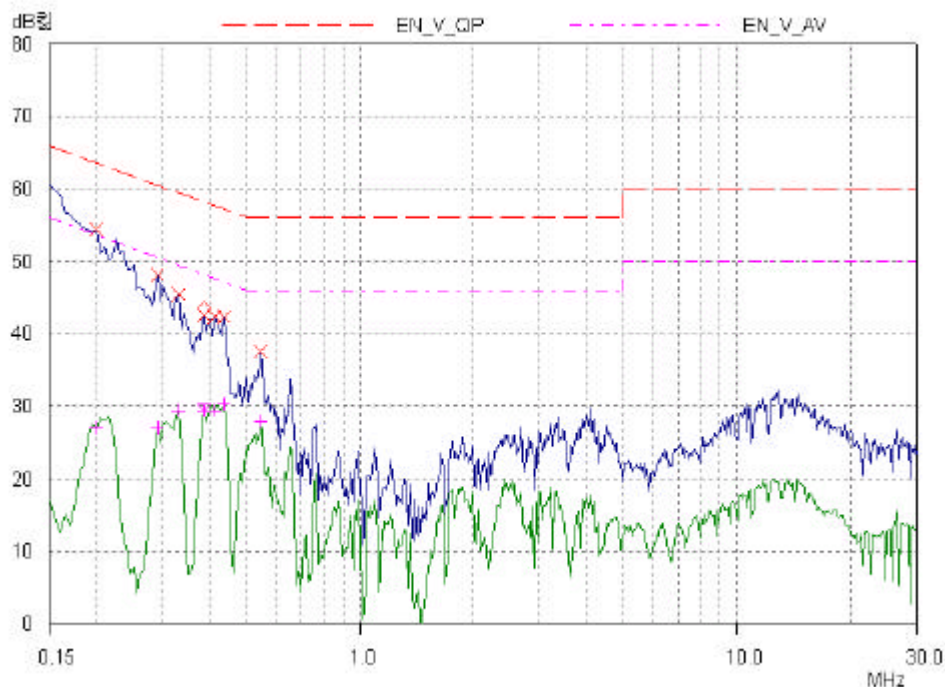
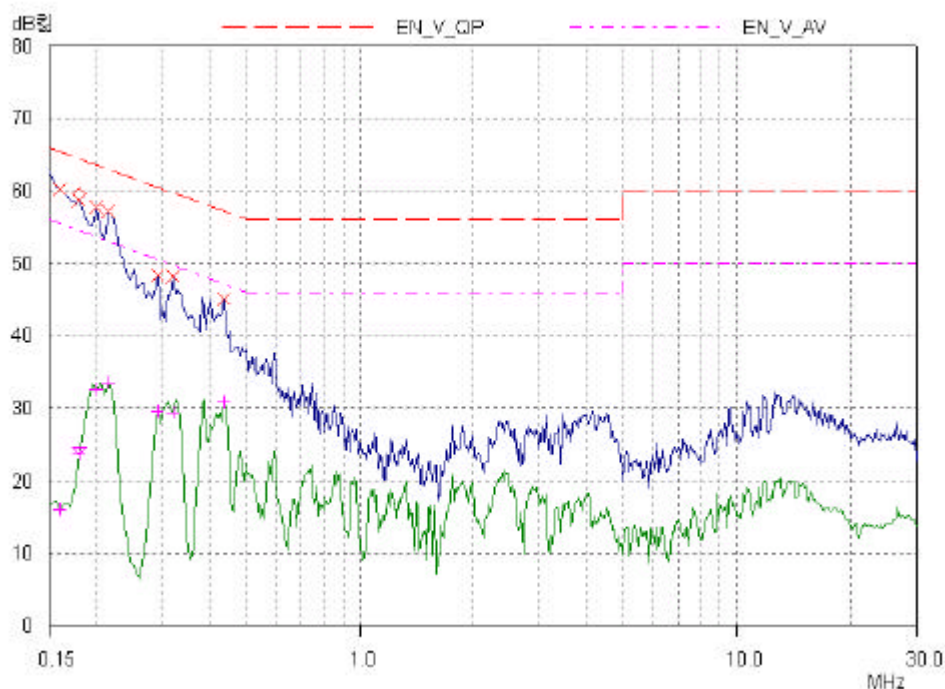
Configuration



APPENDIX A – TEST DATA

Conducted Voltage Emissions (Quasi-Peak reading)

Frequency [MHz]	Correction Factor		Line	Quasi-peak				Average			
	LISN	Cable		Limit [dBuV]	Reading [dBuV]	Result [dBuV]	Margin [dB]	Limit [dBuV]	Reading [dBuV]	Result [dBuV]	Margin [dB]
0.16	2.2	0.1	L	65.5	57.9	60.2	5.3	55.5	13.6	15.9	39.6
0.18	1.7	0.1	L	64.5	56.8	58.6	5.9	54.5	21.9	23.7	30.8
0.20	1.7	0.1	L	63.6	55.8	57.6	6.0	53.6	30.9	32.7	20.9
0.22	1.7	0.1	L	63.0	55.4	57.2	5.8	53.0	31.8	33.6	19.4
0.29	0.8	0.1	L	60.5	47.5	48.4	12.1	50.5	28.6	29.5	21.0
0.32	0.8	0.1	L	59.7	47.2	48.1	11.6	49.7	28.4	29.3	20.4
0.44	0.5	0.1	L	57.2	44.5	45.1	12.1	47.2	30.1	30.7	16.4





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			
119.80	13.3	V	1.0	9.70	2.00	30.0	25.01	4.99
195.40	14.7	V	1.1	7.00	2.70	30.0	24.40	5.60
260.90	20.3	H	4.0	9.80	3.20	37.0	33.28	3.72
265.60	13.5	H	4.0	9.90	3.30	37.0	26.71	10.29
298.70	13.7	H	4.0	10.90	3.60	37.0	28.21	8.79
699.00	9.0	H	2.5	18.40	5.70	37.0	33.10	3.90
725.00	1.1	H	2.5	18.90	6.00	37.0	26.02	10.98
730.50	4.3	V	2.0	18.90	6.00	37.0	29.21	7.79