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ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CLASS B CERTIFICATION

Test report file number : E018R-047

Applicant : OPENERS Co., Ltd.

Address : 2nd FL. Sungji BD., 499 Wolpyung 1-Dong, Seo-Ku, Taejon, 302-281, Korea

Manufacturer : OPENERS Co., Ltd.

Address : 2nd FL. Sungji BD., 499 Wolpyung 1-Dong, Seo-Ku, Taejon, 302-281, Korea

Type of Equipment : MP3 Player

FCC ID : OZXDMP-2010L

Model / Type No. : DMP-2010L

Serial number : N/A

Total page of Report : 13 pages (including this page)

Date of Incoming : August 14, 2001

Date of issuing : August 28, 2001

SUMMARY

The equipment complies with the regulation; **FCC PART 15 CFR 47 SUBPART B, Class B.**

This test report contains only the result of a single test of the sample supplied for the examination.

It is not a general valid assessment of the features of the respective products of the mass-production.

Reviewed by:

Y. K. Nam / Assist. Chief Engineer

Approved by:

Y. K. Kwon / Chief Engineer

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EMC Dept.
ONETECH Corp.

EMC Dept.
ONETECH Corp.



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1. VERIFICATION OF COMPLIANCE

APPLICANT : OPENERS Co., Ltd.
 ADDRESS : 2nd Fl. Sungji BD., 499 Wolpyung 1-Dong, Seo-Ku, Taejon, 302-281, Korea
 CONTACT PERSON : Young-Gyun, Jeong / Director
 TELEPHONE NO : +82-42-487-1117
 FCC ID : OZXDMP-2010L
 MODEL NO/NAME : DMP-2010L
 SERIAL NUMBER : N/A
 DATE : August 28, 2001

DEVICE TYPE	Peripheral Device for Class B Computing Device -Unintentional Radiator
E.U.T. DESCRIPTION	MP3 Player
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4/1992
TYPE OF EQUIPMENT TESTED	PRE-PRODUCTION
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	CERTIFICATION
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 §15.101
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
FINAL TEST WAS CONDUCTED ON	3 METER OPEN AREA TEST SITE

The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.



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2. GENERAL INFORMATION

2.1 Product Description

The OPENERS Co., Ltd., Model DMP-2010L (referred to as the EUT in this report) is an MP3 Player which has built-in flash memory and offers easy connection to PC through USB port. Also, two additional MMC slots make possible memory extension. Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Plastic – Non Coated
MEMORY	Built-In Flash Memory 32/64MB, 2 MMC Slots
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1MHz)	16.934 MHz, 48.0 MHz
POWER REQUIREMENTS	1.5Vdc x 2 batteries (AAA)
NUMBER OF LAYERS	6 Layers
EARPHONE OUTPUT	5mW
FREQUENCY	20Hz~20KHz
FILE TRANSMISSION SPEED	130 kbyte / sec
DISPLAY DEVICE	Liquid Crystal Display (LCD)
EXTERNAL CONNECTOR	Earphone Jack, USB Port.

Model Differences:

-. None

2.2 Related Submittal(s) / Grant(s)

Original submittal only

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2.3 Test System Details

The model numbers for all the equipments which were used in the tested system is:

Model	Manufacturer	FCC ID	Description	Connected to
DMP-2010L	OPENERS Co., Ltd.	OZXDMP-2010L	MP3 Player (EUT)	PC
N/A	OPENERS Co., Ltd.	N/A	EARPHONE	EUT
KDT-3861	KDS	EVOKDT-3863	PC	-
6550-23N	IBM	DoC	MONITOR	PC
SKR-1032	SEJIN Elec	GJJKR-1032B	KEYBOARD	PC
9532	ARTEC.	ITEUECMN9532	MOUSE	PC
2225C	HP	DSI6XU2225	PRINTER	PC
020-0470	CARDINAL	GDE0196	MODEM	PC

2.4 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4/1992.

Radiated testing was performed at a distance of 3 meters from EUT to the antenna.

2.5 Test Facility

The open area test site and conducted measurement facilities are located on at 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Kun, Kyunggi-Do 464-080 Korea. Description details of test facilities were submitted to the Commission on January 12, 1999. (Registration Number: 92819)

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3. SYSTEM TEST CONFIGURATION

3.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
MAIN B/D	OPENERS Co., Ltd.	DMP2010L	N/A

3.2 EUT exercise Software

The EUT was operated at each mode for playing mode and data communication mode.

EUT was connected to earphone port using earphone cable for playing music and connected to USB port of PC using USB cable for data communication between PC and EUT, and then EUT played music files recorded in a MMC card and data communication between PC and EUT continuously and during the testing.

3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
MP3 Player (EUT)	N/A	Y	1.2(D)
EARPHONE	N/A	N	1.8(D)
PC	N	-	1.5(P)
MONITOR	N	Y	1.5(P), 1.8(D)
KEYBOARD	N/A	Y	1.2(D)
MOUSE	N/A	Y	1.2(D)
MODEM	N	Y	1.5(D)
PRINTER	N	Y	1.5(P), 1.2 (D)

* The marked “(P)” means the Power Cable, “(D)” means the Data Cable.



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3.4 Noise Suppression Parts on Cable

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
MP3 Player (EUT)	N	N/A	Y	BOTH END
EARPHONE	N	N/A	Y	EUT END
PC	-	-	-	-
MONITOR	Y	PC END	Y	PC END
KEYBOARD	N	N/A	Y	PC END
MOUSE	N	N/A	Y	PC END
MODEM	N	N/A	Y	BOTH END
PRINTER	N	N/A	Y	BOTH END

3.5 Equipment Modifications

To achieve compliance to CLASS B levels, the following change(s) was made by ONETECH Corp. during compliance testing:

“There was no Modified items during EMI test”

3.6 Configuration of Test System

Line Conducted Test: The EUT was connected to USB port of PC and the power line of PC was connected to LISN. All supporting equipments were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.4/1992 7.2.3 to determine the worse operating conditions.

Radiated Emission Test: Preliminary radiated emission test was conducted using the procedure in ANSI C63.4/1992 8.3.1.1 to determine the worse operating conditions. Final radiated emission test was conducted at 3 meters open area test site.



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4. PRELIMINARY TEST

4.1 Conducted Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Stand-by mode	
Playing mode	
Data communication mode	X

4.2 Radiated Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Stand-by mode	
Playing mode	
Data communication mode	X



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5. FINAL RESULT OF MEASUREMENT

Preliminary test was done in normal operation mode. And the final measurement was selected for the maximized emission level

5.1 Conducted Emission Test

Humidity Level : 53 %

Temperature : 24 •

Limits apply to : FCC CFR 47, PART 15, SUBPART B

Type of Test : CLASS B

Result : PASSED BY -9.33 dB at 0.47 MHz

EUT : MP3 Player

Date: August 20, 2001

Operating Condition : Data communication between PC and EUT

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)

Power Line Conducted Emission			FCC CLASS B	
Frequency (MHz)	Amplitude (dBuV)	Conductor	Limit (dBuV)	Margin (dB)
0.47	38.67	NEUTRAL	48.00	-9.33
0.55	33.82	NEUTRAL	48.00	-14.18
0.67	34.30	NEUTRAL	48.00	-13.70
0.76	38.47	NEUTRAL	48.00	-9.53
1.33	31.53	HOT	48.00	-16.47
2.56	34.67	NEUTRAL	48.00	-13.33
9.39	33.38	NEUTRAL	48.00	-14.62

Line Conducted Emission Tabulated Data

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HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea
(TEL: +82-31-746-8500 FAX: +82-31-746-8700)

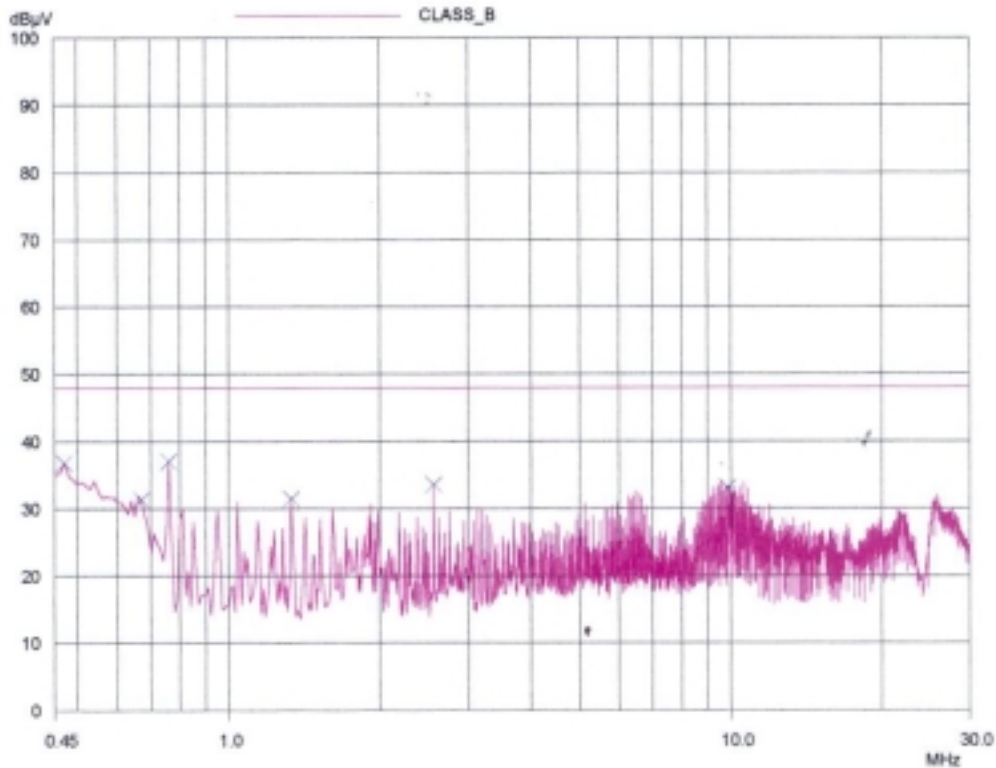
EMC Testing Dept : 426-1 Daeangryong-Ri Chongwoldo Myun Kwangju-Kun Kyunggi-Do 464-860 Korea (TEL: +82-31-765-8289 FAX: +82-31-766-2904)

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Tested by: Seung-Hyun, Nam / Test Engineer

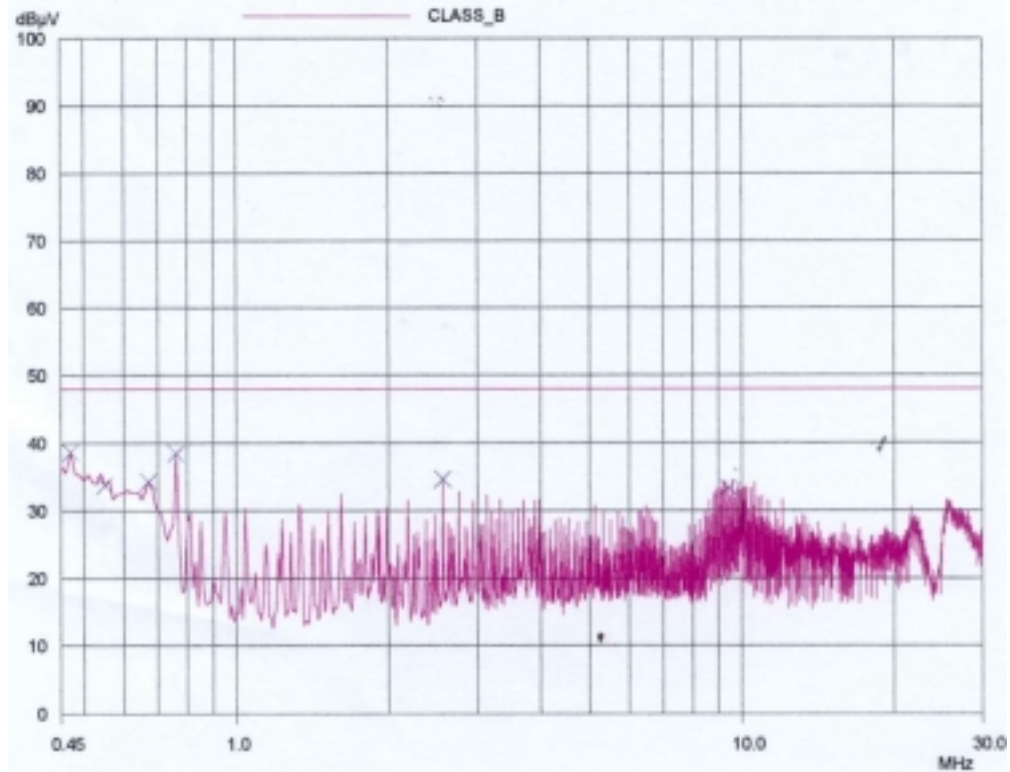


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HOT LINE

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NEUTRAL LINE



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5.2 Radiated Emission Test

The following table shows the highest levels of radiated emission on both polarizations of horizontal and vertical.

Humidity Level : 56 % Temperature : 24•
 Limits apply to : FCC CFR 47, PART 15, SUBPART B
 Type of Test : CLASS B
 Result : PASSED BY -4.25 dB at 288.00 MHz

EUT : MP3 Player Date: August 20, 2001
 Operating Condition : Data communication between PC and EUT
 Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
 Distance : 3 Meter

Radiated Emission		Ant	Correction Factors		Total	FCC CLASS B	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
48.00	23.40	V	11.25	0.91	35.56	40.00	-4.44
60.00	15.70	V	9.63	0.98	26.31	40.00	-13.69
71.95	25.30	V	6.91	1.00	33.21	40.00	-6.79
144.00	17.50	V	12.96	1.33	31.79	43.50	-11.71
191.99	19.60	V	16.44	1.52	37.56	43.50	-5.94
215.40	21.30	V	11.79	1.65	34.74	43.50	-8.76
239.80	20.80	H	12.20	1.78	34.78	46.00	-11.22
263.80	22.80	H	13.34	1.86	38.00	46.00	-8.00
288.00	25.10	H	14.70	1.95	41.75	46.00	-4.25
312.20	21.20	H	15.22	2.07	38.49	46.00	-7.51
336.20	18.40	H	15.20	2.21	35.81	46.00	-10.19
372.80	19.80	H	15.48	2.38	37.66	46.00	-8.34

Radiated Emission Tabulated Data

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Tested by: Seung-Hyun, Nam / Test Engineer

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6. FIELD STRENGTH CALCULATION

Meter readings are compared to the specification limit correcting for antenna and cable losses

+ Meter reading (dBuV)

+ Cable Loss (dB)

+ Antenna Factor (Loss) (dB/meter)

= Corrected Reading (dBuV/meter)

- Specification Limit (dBuV/meter)

= dB Relative to Spec (+/- dB)

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7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVS 10	827864/005	OCT/00	12MONTH	
2.	Test receiver	R/S	ESHS10	834467/007	APR/01	12MONTH	
3.	Spectrum analyzer	HP	8568B	3026A0226	SEP/00	12MONTH	
4.	RF preselector	HP	85685A	3107A01264	SEP/00	12MONTH	
5.	Quasi-Peak Adapter	HP	85650A	3107A01542	SEP/00	12MONTH	
6.	Dipole Antenna	EMCO	3121C	9107-745	JUN/00	12MONTH	
7.	Biconical antenna	EMCO	3104C	9109-4441 9109-4443 9109-4444	MAR/01	12MONTH	
8.	Log Periodic antenna	EMCO	3146	9109-3213 9109-3214 9109-3217	JUN/01	12MONTH	
9.	LISN	EMCO	3825/2	9109-1867 9109-1869	JUN/01	12MONTH	
10.	RF Amplifier	HP	8447F	3113A04554	JUN/01	N/A	
11.	Spectrum Analyzer	HP	8591A	3131A02312	APR/01	12MONTH	
12.	Computer System	HP	98581C	98543A	N/A	N/A	
	Hard disk drive		9153C	CMC762Z9153	N/A	N/A	
13.	Plotter	HP	7475A	30052 22986	N/A	N/A	
14.	Position Controller	EMCO	1090	9107-1038	N/A	N/A	
15.	Turn Table	EMCO	1080-1.21	9109-1576	N/A	N/A	
16.	Antenna Master	EMCO	1070-1	9109-1624	N/A	N/A	