



ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CLASS B CERTIFICATION

Test report file number : E031R-023

Applicant : Autochips Co., Ltd.

Address : Samhomulsan B/D A-2018, 275-1, Yangjae-Dong, Seocho-Gu, Seoul, Korea

Manufacturer : Autochips Co., Ltd.

Address : Samhomulsan B/D A-2018, 275-1, Yangjae-Dong, Seocho-Gu, Seoul, Korea

Type of Equipment : MP3 Player

FCC ID. : QU4ATMP-200

Model / Type No. : ATMP-200

Serial number : N/A

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

Date of Incoming : December 11, 2002

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SUMMARY

The equipment complies with the regulation; *PART 15 SUBPART B, Class B Computing Device Peripherals.*

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

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

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**1. VERIFICATION OF COMPLIANCE**

APPLICANT : Autochips Co., Ltd.
ADDRESS : Samhomulsan B/D A-2018, 275-1, Yangjae-Dong, Seocho-Gu, Seoul, Korea
CONTACT PERSON : Mr. I-Ki, Kim / Manager
TELEPHONE NO. : +82-2-589-1988
FCC ID : QU4ATMP-200
MODEL NO/NAME : ATMP-200
SERIAL NUMBER : N/A
DATE : January 11, 2003

DEVICE TYPE	Peripheral Device for Class B Personal 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)	PART 15 SUBPART B, SECTION 15.101
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	N/A
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.



2. GENERAL INFORMATION

2.1 Product Description

The Autochips Co., Ltd., Model ATMP-200 (referred to as the EUT in this report) is a MP3 Player, which have Earphone jack and USB port. Basically, This appliance decodes digital audio files in MP3 format stored in NAND flash memory and converts digital audio signal into analog audio signal. The USB controller makes the appliance download the digital audio files from personal computer through USB cable and store the files in NAND flash memory. The MCU reads the files from flash memory, puts the files into decoder chip during play operation and controls all functions by key input and displays LCD. The Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Plastic – Non coated
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1MHz)	16MHz, 12 MHz on the MCU Board 12.288MHz on the USB Board
INSTALLED MEMORY	64MB
MCU Board	6Layers
USB Board	6Layers
POWER REQUIREMENTS	□□! □□□□ □□ □□ □□ □□□□□. and DC 5V from the USB Port of a PC
EXTERNAL CONNECTOR	Earphone Jack, USB Port

Model Differences:

-. N/A

2.2 Related Submittal(s) / Grant(s)

-. Original submittal only



2.3 Test System Details

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

Model	Manufacturer	Description	FCC ID	Connected to
ATMP-200	Autochips Co., Ltd.	MP3 Player (EUT)	?	PC
PP01L	DELL CORP.	Notebook PC	DoC	-
ADP-70EB	Delta Electronics	AC/DC Adaptor	N/A	PC
X06-08477	Microsoft Corp.	MOUSE	DoC	PC
2225C	HP	PRINTER	DSI6XU2225	PC
020-0470	CARDINAL	MODEM	GDE0196	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 distance of 3 meters from EUT to the antenna.

2.5 Test Facility

The open area test site and conducted measurement facilities are located at 426-1 Daessangryung-Ri, Chowol-Myun, Gwangju-Si, Gyeonggi-Do, 464-080, Korea. Description details of test facilities were submitted to the Commission on January 18, 2002. (Registration Number: 92819)



3. SYSTEM TEST CONFIGURATION

3.1 Justification

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

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
MCU Board	PC Bank, Neutron	Board A	N/A
USB Board	PC Bank, Neutron	Board B	N/A

3.2 EUT exercise Software

-. The Earphone was connected to the earphone jack of the EUT and the USB Port on the EUT was connected to the USB connector of PC and then the EUT was continuously operated for getting maximum emission levels as following, but the worst emission levels were recorded in this report.

1. Continuously Playing Mode of the Voice and MP3 file when the EUT was not connected to the Notebook PC
2. Continuously Recording Mode of the Voice when the EUT was not connected to the Notebook PC
3. Continuously Reading and Writing Mode of the Data when the EUT was connected to the Notebook PC



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(S)
AC/DC ADAPTER	N	N/A	1.8(P)
Notebook PC	N	Y	1.8(P), 1.2(S)
MOUSE	N/A	Y	1.5(S)
PRINTER	N	Y	1.8(P), 1.2(S)
MODEM	N	Y	1.8(P), 1.2(S)

* The marked “(S)” means the Signal Cable and “(P)” means the Power Cable.

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
AC/DC ADAPTER	Y	PC END	Y	PC END
Notebook PC	-	-	-	-
MOUSE	N	N/A	Y	PC END
PRINTER	N	N/A	Y	BOTH END
MODEM	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 were no Modified items during EMI test”



3.6 Configuration of Test System

Line Conducted Test: The power of the EUT was supplied by Battery(AAA Size) and Notebook PC, and the adapter of Notebook 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 performed at 3 meters open area test site.

4. PRELIMINARY TEST

4.1 AC Power line Conducted Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Reading and Writing	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)
Voice Recording	
Voice and MP3 File Playing	
Reading and Writing	X

**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 : 37%

Temperature : 22°C

Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.107Type of Test : CLASS BResult : PASSED BY -8.63 dB at 0.18 MHz when used a Peak detector mode

EUT : MP3 Player

Date : December 28, 2002

Operating Condition : Continuously displayed "H" characters on the screen of the EUT

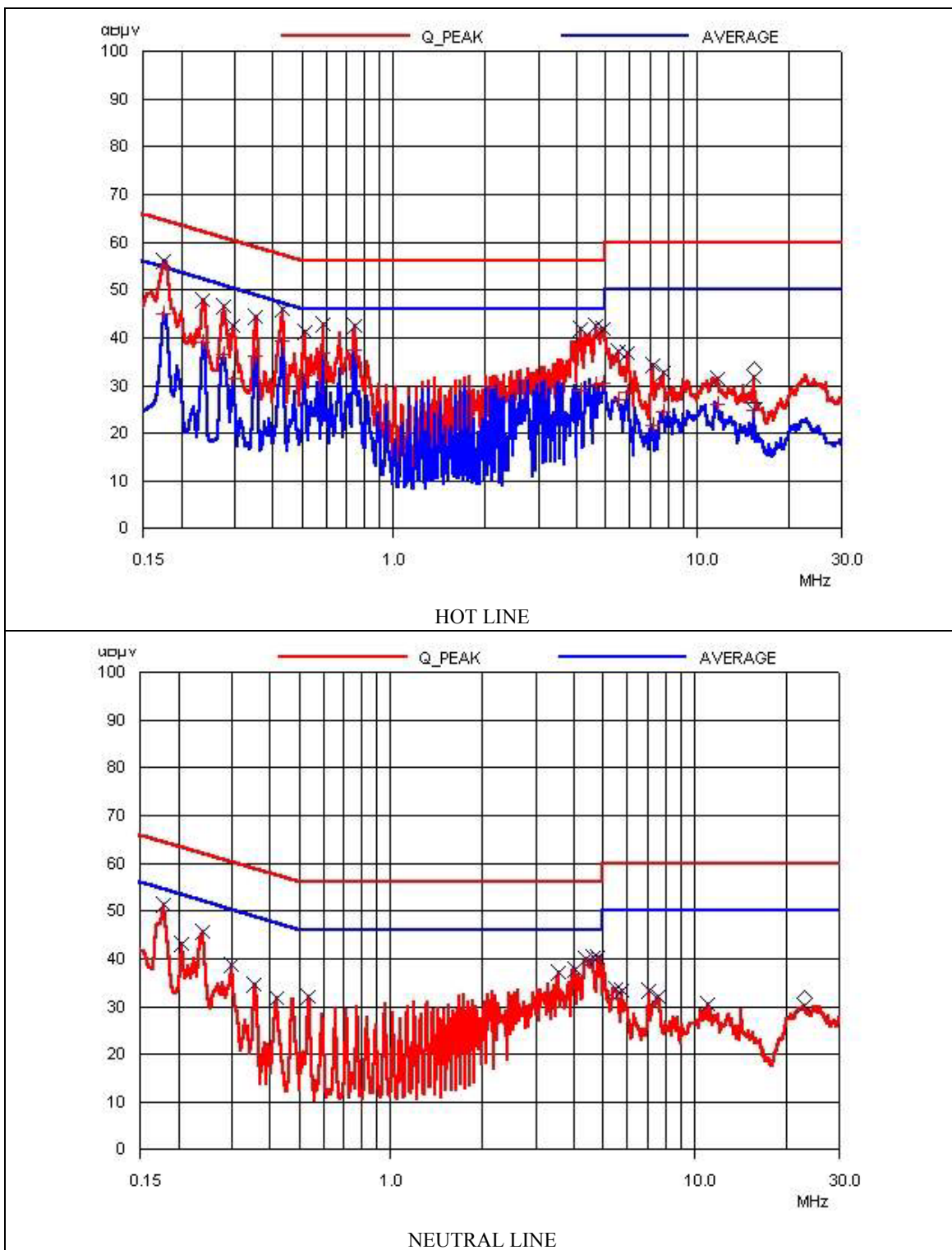
Detector : CISPR Quasi-Peak and Average(6 dB Bandwidth: 9 kHz)

Frequency (MHz)	Line	Quasi-Peak (dBuV)			Margin (dB)	Average (dBuV)		Margin (dB)
		Emission Level	Detector Mode	Limits		Emission level	Limits	
0.18	H	56.09	P	64.72	-8.63	45.02	54.72	-9.70
0.28	H	46.77	P	60.97	-14.20	-	-	-
0.43	H	46.02	P	57.25	-11.23	-	-	-
0.59	H	42.87	P	56.00	-13.13	-	-	-
0.75	H	42.37	P	56.00	-13.63	-	-	-
4.15	H	41.92	P	56.00	-14.08	-	-	-
4.63	H	42.41	P	56.00	-13.59	-	-	-
4.92	H	41.73	P	56.00	-14.27	-	-	-

Line Conducted Emission Tabulated Data

Remark : "H": Hot Line, "N": Neutral line, "P": Peak detector, "Q.P.": Quasi-Peak Detector Mode

Tested by : Dan-ki, Lee / Test Engineer



**5.2 Radiated Emission Test for Digital mode**

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

Humidity Level : 41 % Temperature : 22°C
 Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.109
 Type of Test : CLASS B
 Result : PASSED BY -3.50 dB at 360.14 MHz

EUT : MP3 Player Date : December 28, 2002
 Operating Condition : Continuously displayed "H" characters on the screen of the EUT
 Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
 Distance : 3 Meter

Frequency (MHz)	Reading (dBuV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBuV/m)	Limits (dBuV/m)	Margin (dB)
108.00	16.7	P	H	12.75	1.19	30.64	43.50	-12.86
119.78	17.6	P	H	13.46	1.23	32.29	43.50	-11.21
131.69	19.3	P	H	12.91	1.27	33.48	43.50	-10.02
180.00	17.3	P	H	16.12	1.45	34.87	43.50	-8.63
360.14	25.66	P	H	14.52	2.32	42.50	46.00	-3.50
420.28	22.5	P	H	15.63	2.47	40.60	46.00	-5.40
480.42	18.3	P	H	17.08	2.62	38.00	46.00	-8.00
552.45	19.12	P	H	18.10	2.78	40.00	46.00	-6.00

Radiated Emission Tabulated Data

Remark : "P": Peak detector, "Q.P.": Quasi-Peak Detector Mode

Tested by : Dan-Gi, Lee / Test Engineer



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)

**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/02	12MONTH	■
2.	Test receiver	R/S	ESHS10	834467/007	APR/02	12MONTH	■
3.	Spectrum analyzer	HP	8568B	3026A0226	APR/02	12MONTH	■
4.	RF preselector	HP	85685A	3107A01264	APR/02	12MONTH	■
5.	Quasi-Peak Adapter	HP	85650A	3107A01542	APR/02	12MONTH	■
6.	Dipole Antenna	EMCO	3121C	9107-745	JUN/02	12MONTH	
7.	Biconical antenna	EMCO	3104C	9109-4441 9109-4443 9109-4444	MAR/02	12MONTH	■
8.	Log Periodic antenna	EMCO	3146	9109-3213 9109-3214 9109-3217	JUN/02	12MONTH	■
9.	LISN	EMCO	3825/2	9109-1867 9109-1869	JUN/02	12MONTH	■
10.	RF Amplifier	HP	8447F	3113A04554	JUN/02	N/A	
11.	Spectrum Analyzer	HP	8591A	3131A02312	APR/02	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	■

* Mark “■” means used equipment.