



EMC RESEARCH INSTITUTE



EMI TEST REPORT

Emission of electromagnetic disturbance

Test Report No. : ERI-FCC04-0044
Equipment : Portable Digital Audio Player
Name of basic model : N10
Family model : Refer to page 4
Family ID : QDMN10
Manufacturer : AV CHASEWAY MFG.FTY.
Applicant : ReignCom Limited.
Tested date : 2004. 6. 11 – 6. 12
Issued date : 2004. 6. 16
Test results : PASS
Test Standards : FCC Part 15 Subpart B (Class B)
/Digital devices & peripherals

Test Procedure and Items:

- AC Power line Conducted emissions measurement : ANSI C63.4-1992
- Radiated emissions measurement : ANSI C63.4-1992

Tested by: YOUNG-SIK, KIM

Approved by: SANG-KYU, LEE

The results in this report apply only to the sample tested.

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CONTENTS

1. CLIENT INFORMATION
2. LABORATORY INFORMATION
3. EQUIPMENT UNDER TEST INFORMATION(EUT)
 - 3.1 Identification of the EUT
 - 3.2 Additional information about the EUT
 - 3.3 Peripheral equipment
4. CONTINUOUS DISTURBANCE VOLTAGE, MAIN TERMINAL
 - 4.1 Operating environment
 - 4.2 Test set-up and test procedures
 - 4.3 Operation Conditions
 - 4.4 Test instrument
 - 4.5 Test results (Test mode: up & download mode)
 - 4.6 Test results (Test mode: AC/DC adaptor mode)
5. RADIATED DISTURBANCE : 30MHz – 1000MHz
 - 5.1 Operating environment
 - 5.2 Test set-up
 - 5.3 Test conditions
 - 5.4 Test instrument
 - 5.5 Test results (Test mode: Up & Download mode)
 - 5.6 Test results (Test mode: Play mode)

APPENDIX

(None)

1. CLIENT INFORMATION

The EUT has been tested by request of :

Company : ReignCom Limited.
Address : 8F Posgen VentureTower, 1586-7 Seocho-dong,
Seocho-gu, Seoul, Korea
Name of contact : H.J. Mun
Telephone : +82-2-3019-1723
Facsimile : +82-2-3019-1746

2. LABORATORY INFORMATION

The 10m full-anechoic chamber and/or EMC facilities are used for these testing.
These facilities were accredited by KOLAS, EK, MIC of Korea and FCC of USA.

Address

ELECTROMAGNETIC RESEARCH INSTITUTE.
66-6, JEIL-RI, YANGJI-MYUN, YOUNGIN-CITY, KYUNGGI-DO, KOREA
Telephone No. : +82-31-336-1186~7
Facsimile No. : +82-31-336-1184

Registered No.

KOLAS : 111
EK : J
MIC : KR0030
FCC Filing No. : 302567

3. EQUIPMENT UNDER TEST INFORMATION(EUT)**3.1 Identification of the EUT**

Type of equipment : Portable Digital Audio Player
Model name : N10
Brand name : -
Manufacturer : AV CHASEWAY MFG.FTY.
Address : Langang Village, Chongguang Town, Baoan District,
Shenzhen City, Guangdong, China
Telephone : +86-755-708-4671
Facsimile : +86-755-708-5490
Country of origin : CHINA
Rating : 120V, 60Hz

3.2 Additional information about the EUT

Class B,

Family Models List:

Basic Model	Variant Model	Differential point	Memory size
N10 (512M)	N10	Memory size	256M
	N10	Memory size	128M

3.3 Peripheral equipment

Defined as equipment needed for correct operation of the EUT.

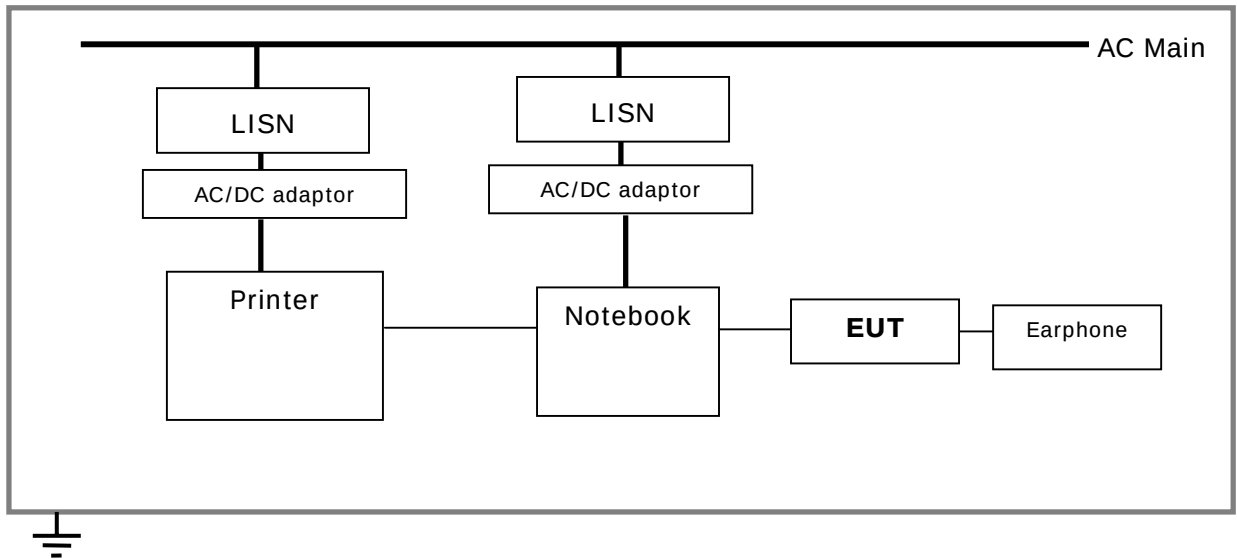
Description	Model No.	Serial No.	Manufacture
Notebook	Life Book P Series	464307 211 682	FUJITSU LIMITED.
AC/DC adaptor	CA01007-0750	03502395C	PT SANKEN INDONESIA
AC/DC adaptor	SA41-521k	-	Dongguan Qiaozi Santai Electrical Appliances Co., Ltd.
Printer	C6247A	CN13V1B1RY	HP

4. CONTINUOUS DISTURBANCE VOLTAGE, MAIN TERMINAL : Frequency range 0.15 MHz to 30 MHz

4.1 Operating environment

Temperature : 22.0 °C
Relative Humidity : 46.0 %

4.2 Test set-up and test procedures



The mains terminal disturbance voltage was measured with the equipment under test(EUT) in a shield room. The EUT was connected to an artificial mains network(LISN) placed on the floor. The EUT was placed on non-metallic table 0.4m above the metallic, grounded floor. The distance to other metallic surface was at least 0.8m.

Amplitude measurements were performed with a quasi-peak detector and an average detector.

4.3 Operation Conditions

Up & dwnload mode, play mode

4.4 Test instrument

Instrument	Model No	Serial No.	Makers	Next cal.date	Used
Test receiver	ESCS30	100022	R&S	2004. 06. 16	x
L.I.S.N.	ESH3-Z5	100029	R&S	2004. 11. 11	x
	ESH3-Z5	100031	R&S	2005. 01. 06	x
Shield room	8 × 6 × 3.3m/H	-	-	-	x

4.5 Test results (Upload mode)

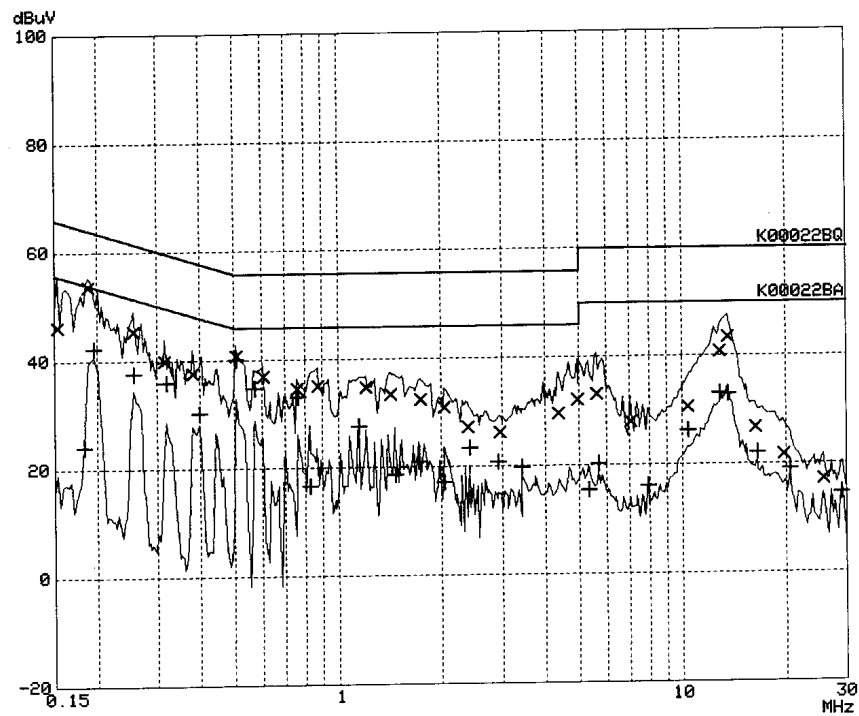
Date of test: Jun 12, 2004.

An overview sweep performed with peak detector & average detector are included in the report **as test reports**.

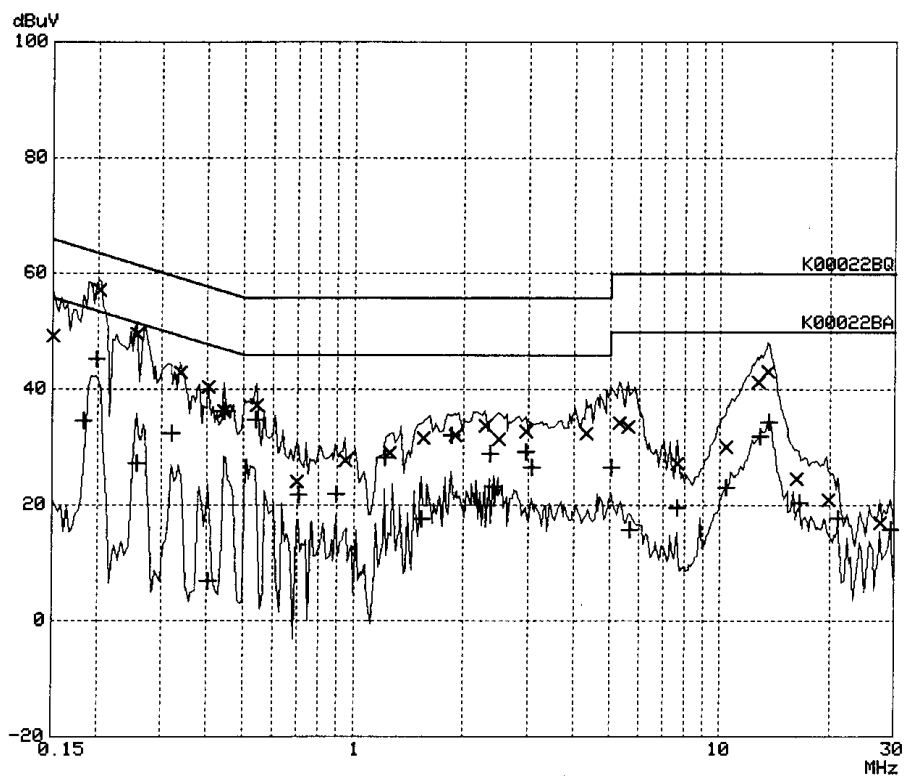
Frequency Range [MHz]	Tested Freq. [MHz]	LISN	Meter Reading		Limits		Margin	
			QP	AV	QP	AV	QP	AV
			[dBuV]		[dBuV]		[dBuV]	
0.15-30	0.150	H	49.2	48.0	66.0	56.0	16.8	8.0
	0.201	N	57.2	45.3	63.5	53.5	6.3	8.2
	0.255	N	49.6	27.4	61.5	51.5	11.9	24.1
	0.336	H	42.9	32.5	59.3	49.3	16.4	16.8
	0.402	N	40.5	7.0	57.3	47.3	16.8	40.3
	0.444	H	36.3	36.0	57.0	47.0	20.7	11.0
	0.507	H	40.9	40.1	56.0	46.0	15.1	5.9
	0.603	H	36.9	34.8	56.0	46.0	19.1	11.2
	0.759	H	34.7	33.2	56.0	46.0	21.3	12.8
	0.873	H	35.1	16.7	56.0	46.0	20.9	29.3

* <5 : mean less than 5dB

* Other frequency keep over 20dB margin.



[Live line]



[Neutral line]

4.6 Test results (AC/DC adaptor mode)

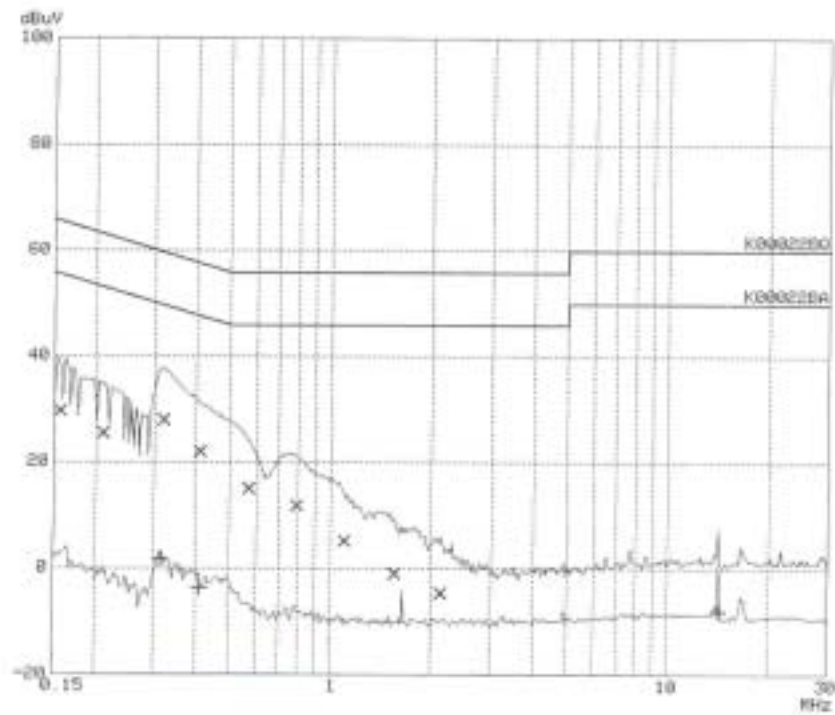
Date of test: Jun 12, 2004.

An overview sweep performed with peak detector & average detector are included in the report **as test reports**.

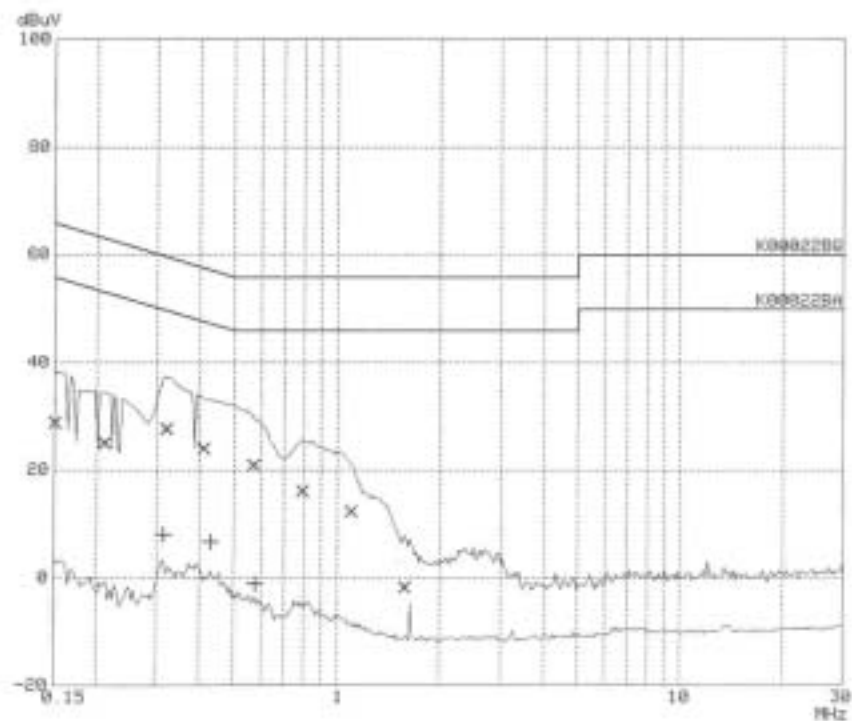
Frequency Range [MHz]	Tested Freq. [MHz]	LISN	Meter Reading		Limits		Margin	
			QP	AV	QP	AV	QP	AV
			[dBuV]		[dBuV]		[dBuV]	
0.15-30	0.156	H	29.9	<5	65.7	55.7	35.8	-
	0.210	H	25.6	<5	63.1	53.1	37.5	-
	0.318	H	28.2	<5	59.8	49.8	31.6	-
	0.408	H	22.1	<5	57.6	47.6	35.5	-
	0.570	H	15.1	<5	56.0	46.0	40.9	-
	0.789	H	11.9	<5	56.0	46.0	44.1	-
	1.101	H	5.2	<5	56.0	46.0	50.8	-

* <5 : mean less than 5dB

* Other frequency keep over 20dB margin.



PAGE 1
[Live line]



PAGE 1
[Neutral line]

5. RADIATED DISTURBANCE : 30MHz – 1000MHz

5.1 Operating environment

Temperature : 23.0 °C
Relative Humidity : 48.0 %

5.2 Test set-up

The frequency range investigated was 30 MHz to 1000 MHz.

All readings are quasi-peak unless stated otherwise.

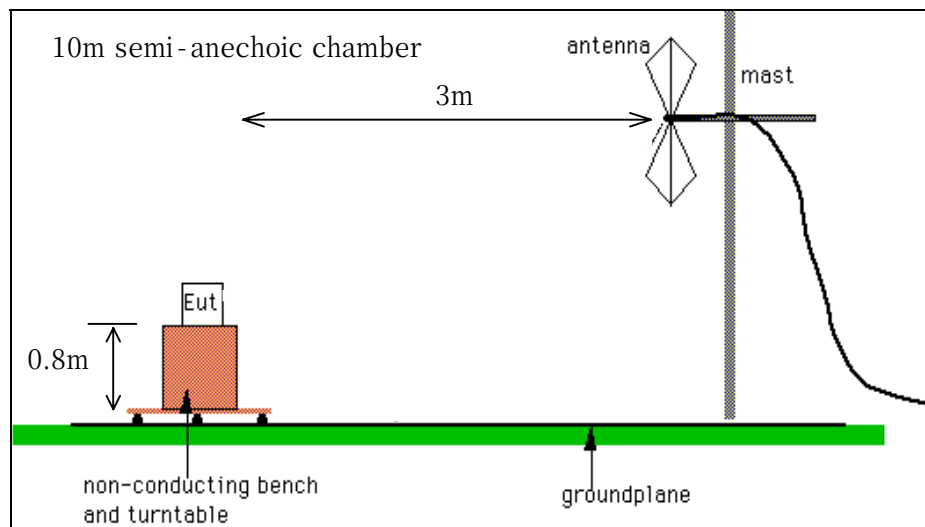
The half-wave dipole antenna was tuned to the frequency found during Preliminary radiated measurements. The EUT, support equipment and Interconnecting cables were re-configured to the set-up to the producing the Maximum emission for the frequency and were placed on top of a 0.8 meter High non-metallic 1 X 1.5 meter table. The EUT, support equipment, and interconnecting cables were re-arranged and manipulated to maximize each EME 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.

And this device(EUT) was tested in 3 orthogonal planes.

The antenna measured both horizontal and vertical polarization.



<General test set-up for radiated emissions>

5.3 Operation Conditions

Up load mode, play mode

5.4 Test instrument

Instrument	Model No.	Serial No.	Makers	Next cal.date	Used
Test receiver	ESCS30	100021	R&S	2005. 02.06	x
Biconical Antenna	VHA9103	91031950	Schwarzbeck	2005. 02.04	x
Log-Periodic Antenna	UHALP9108A	0392	Schwarzbeck	2005. 02.04	x
Antenna Mast	MA240	N/A	HD	-	x
Turn Table	DT430S	N/A	HD	-	x

5.5 Test results (Test mode: Upload mode)

Date of test: Jun 11, 2004.

Freq (MHz)	Reading (dBuV / m)	Ant	AF (dB)	CL (dB)	Result (dBuV / m)	Limit (dB)	Margin (dB)
208.90	7.31	H	16.29	3.20	26.80	43.50	16.70
244.70	11.70	H	17.10	3.50	32.30	46.00	13.70
326.10	15.85	H	13.85	3.90	33.60	46.00	12.40
400.10	15.23	V	15.87	4.10	35.20	46.00	10.80
432.50	17.63	V	16.27	4.30	38.20	46.00	7.80
501.20	8.96	V	17.34	4.70	31.00	46.00	15.00
564.10	8.34	V	18.16	5.00	31.50	46.00	14.50

* Receiving Antenna Mode : **Horizontal, Vertical**

* <5 : mean less than 5dB

Note : Reading = Test Receiver meter, P= Polarization → POL H = Horizontal POL V = Vertical A = Angle, AF = Antenna Factor CL = Cable Loss Result = Field Strength(AF + CL+ Reading)

Result: Pass

The measured emissions level of the EUT have found the below of the specified limit.

5.6 Test results (Test mode: Play mode)

Date of test: Jun 11, 2004.

Freq (MHz)	Reading (dBuV / m)	Ant	AF (dB)	CL (dB)	Result (dBuV / m)	Limit (dB)	Margin (dB)
225.80	4.50	H	16.70	3.50	24.70	46.00	21.30
298.40	1.47	H	19.13	3.80	24.40	46.00	21.60
305.10	9.91	H	13.69	3.90	27.50	46.00	18.50

* Receiving Antenna Mode : **Horizontal, Vertical**

* <5 : mean less than 5dB

Note : Reading = Test Receiver meter, P= Polarization → POL H = Horizontal POL V = Vertical A = Angle, AF = Antenna Factor CL = Cable Loss Result = Field Strength(AF + CL+ Reading)

Result: Pass

The measured emissions level of the EUT have found the below of the specified limit.