



ELECTROMAGNETIC RESEARCH INSTITUTE

EMI COMPLIANCE REPORT

Emission of electromagnetic disturbance

Test Report No. : ERI-FCC03-0010
Equipment : MP3 Player
Name of basic model : MMR-L880
FCC ID : QW6MMRL880
Family model : MMR-L800, MMR-L860
Manufacturer : CENIX DIGICOM CO., LTD.
Applicant : Gi-Yeon, Lee
Tested date : 2003. 2. 19 - 2. 20
Issued date : 2003. 2. 26
Test results : PASS
Test Standards : FCC Part 15 Subpart B (Class B)

Test Procedure and Items :

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

Tested by: GWEON, HUR

Approved by: UK-CHO, RIM

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

This test report shall not be reproduced except in full, without the written approval of **ERI Laboratory**.

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1. CLIENT INFORMATION

The EUT has been tested by request of :

Company : CENIX DIGICOM CO., LTD.
Address : #584-4 PAJANG- DONG, JANGAN- KU, SUWON-CITY,
KYUNGGI- DO, KOREA
Name of contact : Gi-Yeon, Lee
Telephone : +82-31-245-2900
Facsimile : +82-31-251-6425

2. LABORATORY INFORMATION

The 10m semi-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 : MP3 Player
Model name : MMR-L880
Brand name : N/A
Manufacturer : CENIX DIGICOM CO., LTD.
Address : #584-4 PAJANG- DONG, JANGAN- KU, SUWON-CITY,
KYUNGGI- DO, KOREA
Telephone : +82-31-245-2900
Facsimile : +82-31-251-6425
Country of origin : KOREA
Rating : DC 1.2V



3.2 Additional information about the EUT

Class B

Family Models List:

Basic Model	Variant Model	Differential point	Memory size
MMR-L880	-	Memory size	128MB
	MMR-L860	Memory size	64MB
	MMR-L800	Memory size	32MB

3.3 Peripheral equipment

Defined as equipment needed for correct operation of the EUT.

Description	Model No.	Serial No.	Manufacture
NOTE PC	CM2080	5Y17JNZ9R892	LG electronic Co., Ltd.
AC/DC ADAPTOR	ADP-60DB	MJD0124008510	Delta electronics Co., Ltd
PRINTER	C6427A	CN13V1B1SZ	HP
KEYBOARD	SDM4510UH	4M020619	Samsung electronics Co., Ltd.
MOUSE	MOSXUB	N/A	N/A
EARPHONE	N/A	N/A	N/A
SPEAKER	CAMAC G7	N/A	FENGSHIN ELECTRONICS
MIC	N/A	N/A	N/A

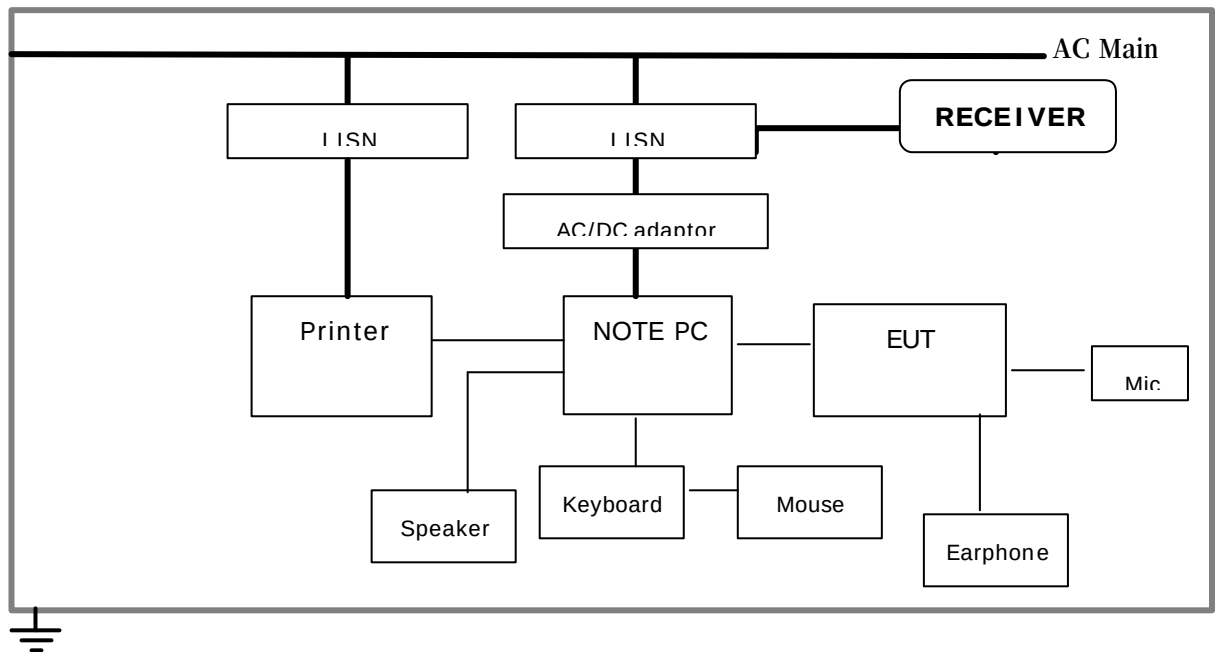
4. CONTINUOUS DISTURBANCE VOLTAGE, MAIN TERMINAL

: Frequency range 0.15 MHz to 30 MHz

4.1 Operating environment

Temperature : 25.0 °C
Relative Humidity : 65.0 %

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 0.8m 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.

Operation condition : Data download mode

4.3 Test instrument

Instrument	Model No	Serial No.	Makers	Next cal.date	Used
Test receiver	ESCS30	100022	R&S	2003. 3. 25	X
L.I.S.N.	ESH3-Z5	827246/008	R&S	2003. 3. 12	X
	ESH3-Z5	831887/018	R&S	2003. 3. 12	
Shield room	8 × 6 × 3.3m/H	-	-	-	X

4.4 Test results

Date of test : Feb 20, 2003.

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

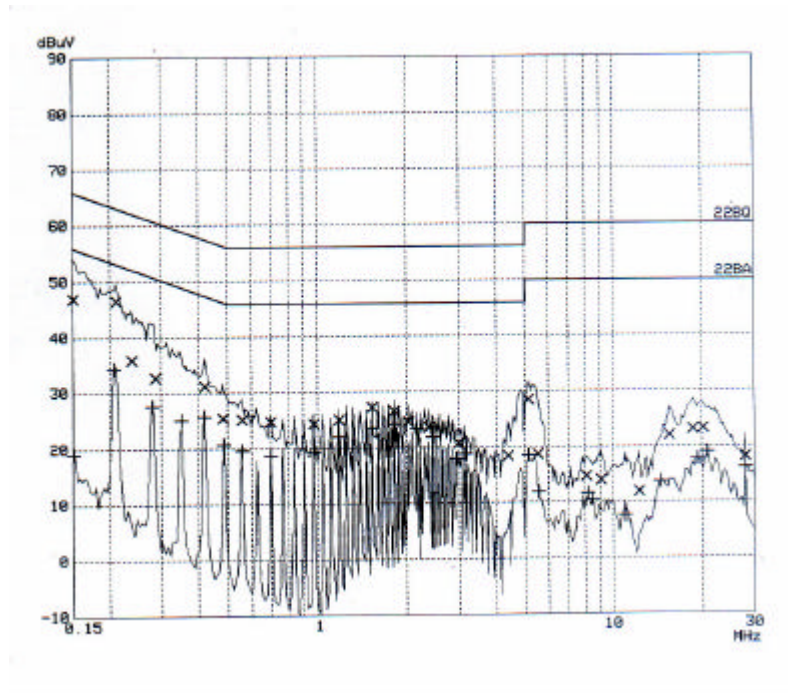
Frequency Range [MHz]	Tested Freq. [MHz]	LISN	Meter Reading		Limits		Margin	
			QP	AV	QP	AV	QP	AV
			[dBuV]		[dBuV]		[dBuV]	
0.15-0.5	0.150	N	47.0	19.1	66.0	56.0	19.0	36.9
	0.210	N	46.6	34.5	63.2	53.2	16.6	18.7
	0.237	N	35.9	33.9	63.1	53.1	27.2	19.2
	0.285	N	32.7	27.7	60.6	50.6	27.9	22.9
	0.420	N	31.2	25.6	57.5	47.5	26.3	21.9
0.5-30	0.558	H	26.7	24.8	56.0	46.0	29.3	21.2
	1.182	N	25.0	21.9	56.0	46.0	31.0	24.1
	1.530	N	27.2	23.5	56.0	46.0	28.8	22.5
	1.809	N	26.6	24.2	56.0	46.0	29.4	21.8
	5.150	N	28.5	18.6	60.0	50.0	31.5	31.4

* <5 : mean less than 5dB

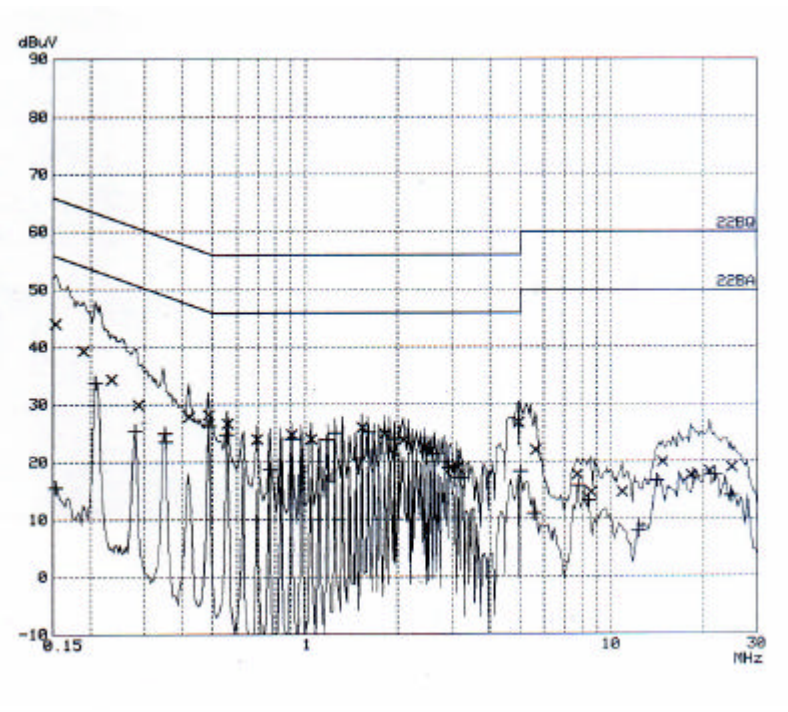
* other frequency keep over 20dB margin.

Result: Pass

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



[Neutral line]



[Hot line]

5. RADIATED DISTURBANCE : 30MHz – 1000MHz

5.1 Operating environment

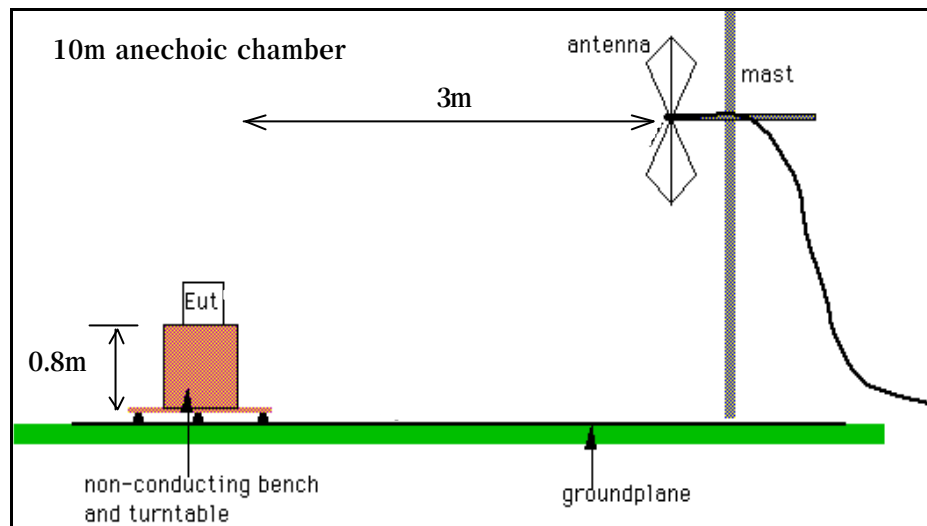
Temperature : 20.0 °C
Relative Humidity : 30.0 %

5.2 Test set-up

The frequency range investigated was 30 MHz to 1000 MHz and 30 MHz to 10 GHz..
All readings are quasi-peak unless stated otherwise.

Judgment: Passed by ____ dBuV/m

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 0.8m high non-metallic 1 x 1.5m table. The EUT, support equipment, and interconnecting cables were re-arranged and manipulated to maximize each EME emission. The turntable containing system was rotated the antenna height was varied 1 to 4 m and stopped at the azimuth or height producing the maximum emission. The antenna measured both horizontal and vertical polarization



<General test set-up for radiated emissions>

5.3 Operation Conditions

Data download, play mode

5.4 Test instrument

Instrument	Model No.	Serial No.	Makers	Next cal.date	Used
Test receiver	ESCS30	100022	R&S	2003. 3. 25	x
L.I.S.N.	ESH3-Z5	827246/008	R&S	2003. 3. 12	x
	ESH3-Z5	831887/018	R&S	2003. 3. 12	
Anechoic chamber	8 × 6 × 3.3m/H	-	Daetong shield	-	x

5.5 Test results(download mode)

Date of test: Feb 19, 2003.

Tested Frequency	ANT Pol.	Meter Reading [QP]	Antenna Factor	Cable Loss	Results	Limits
[MHz]		[A] [dBuV]	[B] [dB/ m]	[C] [dB]	[A+B+C] [dBuV/m]	[dBuV/ m]
192.00	H	11.50	16.40	2.70	30.60	43.5
312.01	H	19.00	13.80	3.70	36.50	46.0
384.24	H	20.10	14.31	3.80	38.21	
532.01	H	14.60	17.34	4.30	36.24	
576.04	H	13.70	18.16	5.00	36.86	
768.90	H	14.50	20.28	5.70	40.48	
864.10	H	15.00	21.51	6.10	42.61	
934.24	H	12.40	21.86	6.40	40.66	

* 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)

5.6 Test results(play mode)

Date of test: Feb 19, 2003.

Tested Frequency	ANT Pol.	Meter Reading [QP]	Antenna Factor	Cable Loss	Results	Limits
[MHz]		[A] [dBuV]	[B] [dB/ m]	[C] [dB]	[A+B+C] [dBuV/m]	[dBuV/m]
237.20	H	10.50	16.90	3.00	30.40	46.0
258.12	H	9.10	17.35	3.20	29.65	
260.24	H	8.50	17.70	3.30	29.50	

* 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.

5.7 Test results(FM tuner)

T.	Tested	Meter Reading[QP]	Total	Results	Margins	Limits
Frequency	Frequency	[dBuV/m]	Loss	[dBuV/m]	[dBuV/m]	
[MHz]	[MHz]	[A]	[B]	[A+B]	[C]-[A+B]	[C]
88.0	98.2	-	11.9	-	-	-
	196.4	-	17.8	-	-	-
	294.6	1.80	24.3	26.1	19.9	46.00
	392.8	6.40	21.4	27.8	18.2	46.00
	491.0	-	23.9	-	-	-
	589.2	-	26.2	-	-	-
	687.4	-	28.7	-	-	-
	785.6	-	30.0	-	-	-
	883.8	-	31.9	-	-	-
	982.0	-	33.1	-	-	-
98.0	108.7	-	12.7	-	-	-
	217.4	6.50	18.9	25.4	18.1	43.50
	326.1	6.70	18.9	25.6	20.4	46.00
	434.8	1.90	22.4	24.3	21.7	46.00
	543.5	-	25.2	-	-	-
	652.2	-	27.5	-	-	-
	760.9	-	29.7	-	-	-
	869.6	-	31.8	-	-	-
	978.3	-	33.0	-	-	-
108.0	118.7	-	13.7	-	-	-
	237.4	10.10	19.0	29.1	16.9	46.00
	356.1	3.80	20.1	23.9	22.1	46.00
	474.8	-	23.4	-	-	-
	593.5	-	26.3	-	-	-
	712.2	-	29.1	-	-	-
	830.9	-	30.6	-	-	-
	949.6	-	32.1	-	-	-
* Receiving Antenna Mode : Horizontal, Vertical * 10m chamber * <5 : mean less than 5dB * Total = Antenna Factor [dB] + Cable Loss [dB] * Measurement uncertainty (K=2) 30-300MHz : +3.96dB / -4.04dB 300-1000MHz : +3.04dB / -3.00dB						

Result : Pass

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