

Emission of electromagnetic disturbance

Test Report No. : ERI-FCC05-0022

Equipment : Digital Audio Player

Name of basic model : MP-510F

Family model : None

Manufacturer : CENIX DIGICOM CO., LTD.

Applicant : CENIX DIGICOM CO., LTD.

Tested date : 2005. 04.14 – 04.15

Issued date : 2005. 04.19.

Test results : PASS

Test Standards : FCC Part 15 Subpart B (Class B)
/Other Class B digital devices & peripherals

Affirmation	Measurements performed by	Approved by
	Name : Park, Myung-Chu 	Title : Manager Name: Rim, Uk-CI 



EMC Research Institute President



April 19, 2005

The above test certificate is the accredited test results by Korea Laboratory Accreditation Scheme, which signed the ILAC-MRA.

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APPENDIX (NONE)



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 : -
Telephone : +82-31-245-2900
Facsimile : +82-31-251-6425

2. LABORATORY INFORMATION

The 10 m 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

EMC 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 : Digital Audio Player
Model name : MP-510F
Family name : None
Manufacturer : CENIX DIGICOM CO., LTD.
Address : CENIX DIGICOM CO., LTD.
Telephone : +82-31-245-2900
Facsimile : +82-31-251-6425
Country of origin : Korea
Rating : DC 3.7V

3.2 Additional information about the EUT

Classification : Class B;

The essential components for EUT working is below.

Units	Model No.	Serial No.	Manufacture
-	-	-	-

Family Models List:

Basic Model	Variant Model	Differential point
MP-510F	None	-

3.3 Peripheral equipment

Equipment needed to operate the EUT correctly is following.

Description	Model No.	Serial No.	Manufacture
PC	MTC2	FSZS91S	Dell
Monitor	-	-	Samsung
Printer	DeskJet930C	CN13V1B1SZ	HP
Mouse	M-SAS51	LZB01036002	-
Keyboard	KB-9860	B1399ONBUHY9IO	Compaq
Earphone	-	-	-

4. TEST SPECIFICATIONS

4.1 Standards

The standards for a EUT are the following:

FCC Part 15 Subpart B (Class B) /Other Class B digital devices & peripherals

5. TEST RESULTS

The results in this report apply only to sample tested:

Standards	Test items / Frequency	Result
ANSI C63.4-1992	1. Main Terminal disturbance voltage : 150 kHz – 30 MHz	Pass
ANSI C63.4-1992	2. Radiated disturbance : 30 MHz – 1000 MHz	Pass

5.1 CONTINUOUS DISTURBANCE VOLTAGE, MAIN TERMINAL

: Frequency range 0.15 MHz to 30 MHz

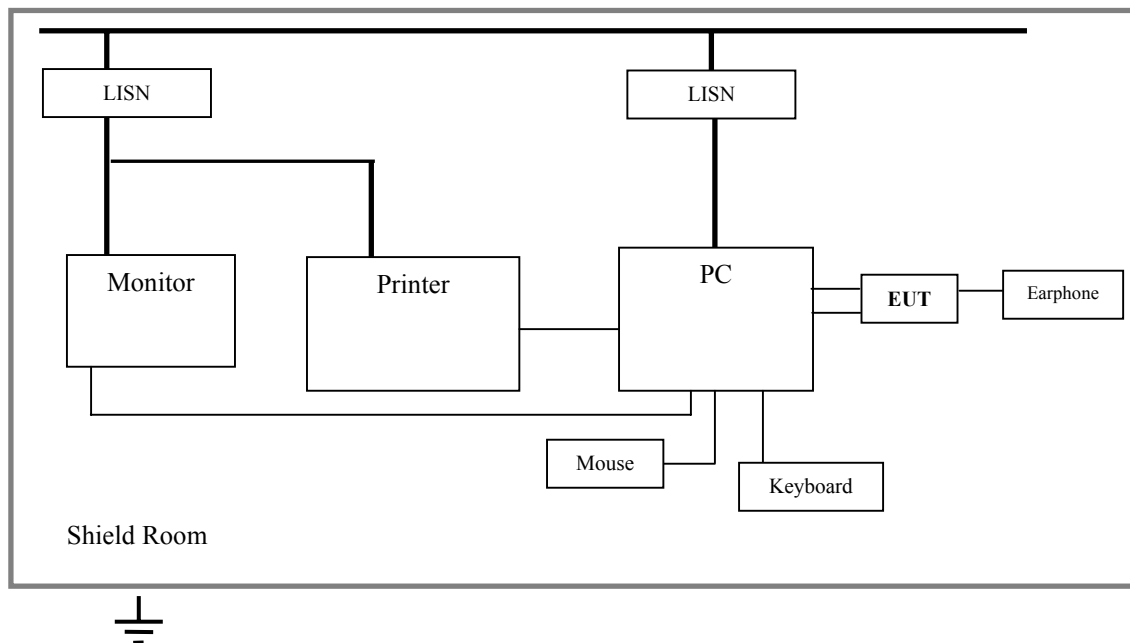
5.1.1 Operating environment

Temperature : 20.0 ± 5 °C
Relative Humidity : 40.0 ± 5 %
Atmospheric pressure : 1005 ± 5 mbar

5.1.2 Test set-up and test procedures



Continuous Disturbance Voltage, Main Terminal



The mains terminal of the EUT was measured in a shield room. The EUT was connected to an artificial mains network(AMN) placed on the floor and placed on non-metallic table 80Cm above the metallic, grounded floor. the AMN was 80Cm from the EUT and at least 80Cm from other Units and other metal planes. The measurements were performed with a quasi-peak detector and an average detector.

Operation condition: Up & Down load mode

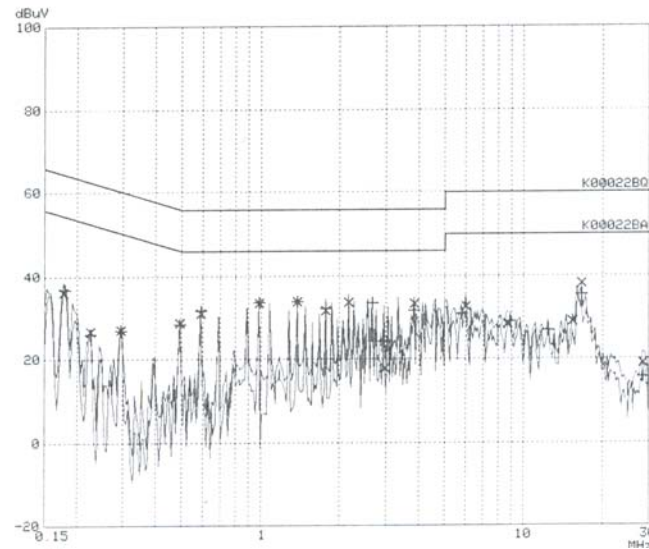
5.1.3 Test instrument

Instrument	Model No	Makers	Serial No.	Next cal.date	Used
Test receiver	ESCS30	R&S	100022	2005. 5. 30	x
L.I.S.N.	ESH3-Z5	R&S	827246/008	2006. 2. 21.	x
	ESH3-Z5	R&S	100028	2005. 11.11.	x
Shield room	8.0 m L × 6.0 m W × 3.3 m H	-	-	-	x

5.1.4 Test results

Date of test: April 14, 2005

The overview measurements performed with a peak detector & an average detector are included in the report.



CONTINUOUS DISTURBANCE VOLTAGE

Op Cond: N
Operator: ERI
Date: 14. Apr 05 11:14

Final Measurement Results:

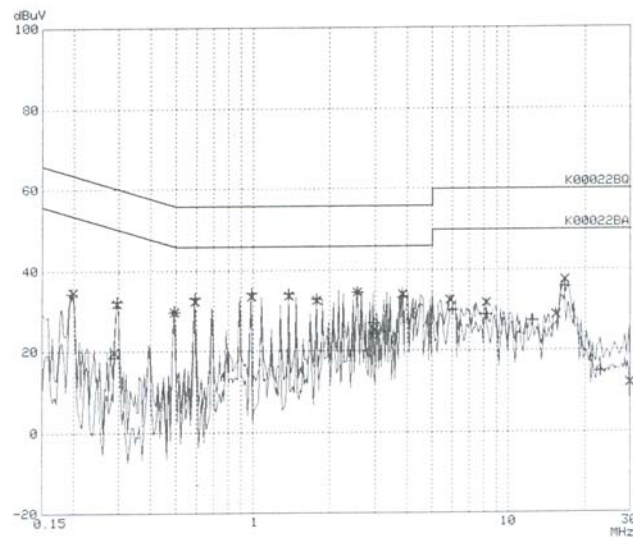
Indicated Phase/PE shows Configuration of max. Emission

Frequency MHz	QP Level dBuV	Delta Limit dB	Phase -	PE -
0.17700	36.4	-28.2	N	gnd
0.22500	26.8	-35.8	N	gnd
0.29400	27.2	-33.2	N	gnd
0.49200	28.8	-27.3	N	gnd
0.58800	31.2	-24.7	N	gnd
0.98400	33.6	-22.3	L1	gnd
1.37700	34.0	-21.9	N	gnd
1.76700	31.8	-24.1	N	gnd
2.16600	33.9	-22.1	L1	gnd
2.97000	17.9	-38.0	L1	gnd
3.83000	33.4	-22.5	L1	gnd
6.00000	32.9	-27.0	N	gnd
8.66000	28.6	-31.3	L1	gnd
15.34000	29.2	-30.7	L1	gnd
16.53000	38.3	-21.6	L1	gnd
28.53000	19.1	-40.8	N	gnd

Frequency MHz	AV Level dBuV	Delta Limit dB	Phase -	PE -
0.18000	37.0	-17.5	N	gnd
0.22500	26.2	-26.4	N	gnd
0.29400	27.0	-23.4	L1	gnd
0.49200	28.5	-17.6	L1	gnd
0.58800	31.8	-14.1	L1	gnd
0.98100	33.9	-12.0	L1	gnd
1.37400	34.0	-11.9	N	gnd
1.77000	32.3	-13.6	L1	gnd
2.65500	33.6	-12.3	L1	gnd
2.95500	24.3	-21.6	L1	gnd
3.83000	31.8	-14.1	N	gnd
5.80000	31.0	-18.9	N	gnd
8.83000	29.2	-20.7	N	gnd
12.34000	27.1	-22.8	N	gnd
16.53000	35.6	-14.3	L1	gnd
28.53000	15.7	-34.2	N	gnd

* limit exceeded

<Neutral Line>



CONTINUOUS DISTURBANCE VOLTAGE

Op Cond: L
Operator: ERI
Date: 14. Apr 05 11:06

Final Measurement Results:

Indicated Phase/PE shows Configuration of max. Emission

Frequency MHz	QP Level dBuV	Delta Limit dB	Phase -	PE -
0.19800	34.8	-28.9	N	gnd
0.28800	19.9	-40.6	L1	gnd
0.29400	32.0	-28.4	N	gnd
0.49200	29.9	-26.2	L1	gnd
0.58800	32.5	-23.4	N	gnd
0.98400	33.7	-22.2	N	gnd
1.37400	33.9	-22.0	N	gnd
1.76700	32.6	-23.3	N	gnd
2.55300	34.7	-21.2	L1	gnd
2.95800	25.3	-30.6	L1	gnd
3.83000	34.1	-21.8	N	gnd
5.89000	32.6	-27.3	L1	gnd
8.15000	32.0	-27.9	L1	gnd
15.34000	29.0	-30.9	N	gnd
16.59000	37.6	-22.3	L1	gnd
29.87000	12.1	-47.9	L1	gnd

Frequency MHz	AV Level dBuV	Delta Limit dB	Phase -	PE -
0.19500	34.6	-19.3	N	gnd
0.28800	18.5	-32.0	L1	gnd
0.29400	32.6	-17.8	N	gnd
0.49200	29.9	-16.3	N	gnd
0.58800	33.2	-12.7	N	gnd
0.98100	34.4	-11.5	N	gnd
1.37400	34.3	-11.6	L1	gnd
1.76700	32.9	-13.0	N	gnd
2.55300	34.6	-11.3	N	gnd
2.95500	27.0	-18.9	N	gnd
3.83000	33.3	-12.6	N	gnd
6.00000	30.1	-19.8	N	gnd
8.15000	29.0	-20.9	N	gnd
12.34000	27.4	-22.5	N	gnd
16.53000	36.0	-13.9	L1	gnd
22.93000	14.9	-35.0	L1	gnd

* limit exceeded

<Live Line>

Result: Pass

The measured emission levels of the EUT have found the below of the specified limit.

5.2 RADIATED DISTURBANCE : Frequency range 30 MHz to 1000 MHz

5.2.1 Operating environment

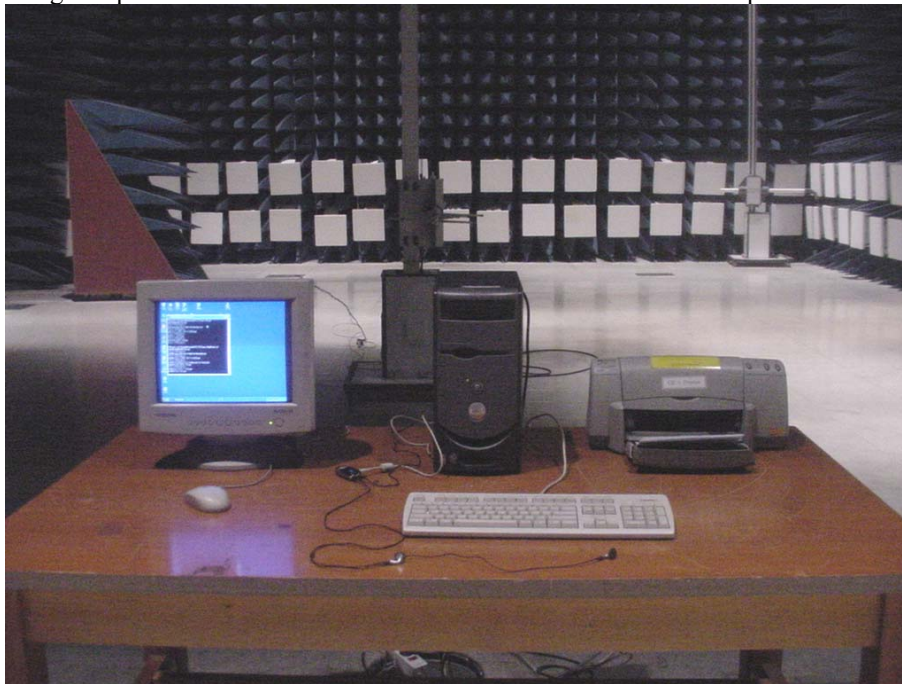
Temperature	: 20.0 ± 5 °C
Relative Humidity	: 34.0 ± 5 %
Atmospheric pressure	: 1009 ± 5 mbar

5.2.2 Test set-up

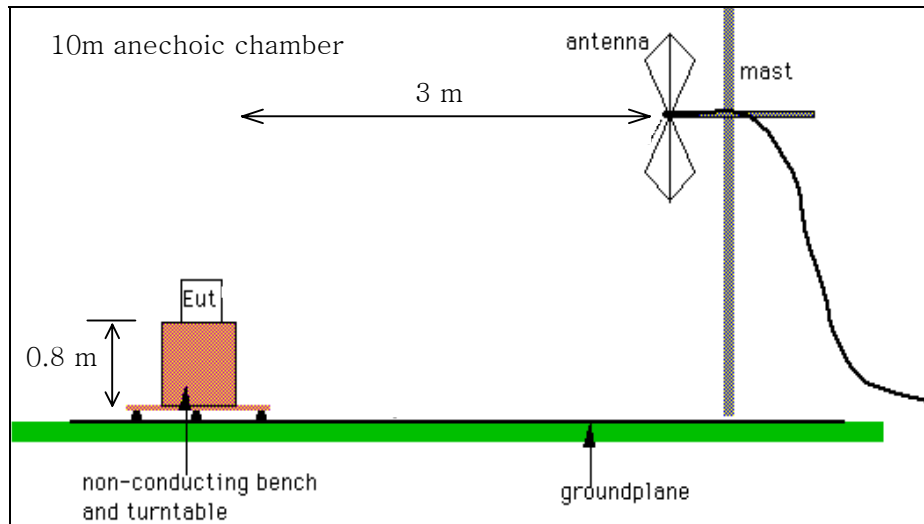
The frequency range investigated was 30 MHz to 1000 MHz.

All data results were a quasi-peak unless stated otherwise; a Biconical & a Log-periodic antenna were tuned to the frequency during Preliminary radiated measurements. The EUT, support equipment and interconnected cables were re-configured to produce the Maximum emission for the frequency and were placed on top of a 0.8 meter A High non-metallic 1 X 1.5 meter table. the EUT, the support equipment, and interconnecting cables were re-arranged and manipulated to maximize each a EME emission.

The turntable containing the system was rotated and the antenna height was varied 1 to 4 meters and stopped at the azimuth and the height producing the maximum emission. And this device (EUT) was tested in 3 orthogonal planes. The antenna measured both horizontal and vertical polarization.



Radiated Disturbance



<General test set-up for radiated emissions>

5.2.3 Test Conditions

Up & Down load mode, Recording & play mode, FM tuner mode

5.2.4 Test instrument

Instrument	Model No.	Serial No.	Makers	Next cal.date	Used
Test receiver	ESCS30	100021	R&S	2006. 2. 6	x
Biconical Antenna	VHA9103	91031950	Schwarzbeck	2006. 2. 4	x
Log-Periodic Antenna	UHALP9108A	0392	Schwarzbeck	2006. 2. 4	x
Antenna Mast	MA240	N/A	HD	-	x
Turn Table	DT430S	N/A	HD	-	x
Test receiver	ESCS30	100021	R&S	2006. 2. 6	x
ERI lab	-	-	-	-	x

5.2.5 Test results(Recording & Playing mode)

Date of test: April 16, 2005

Tested Frequency [MHz]	ANT Pol.	Meter Reading [dBuV]	Antenna Factor [dB/m]	Cable Loss [dB]	Results [dBuV/m]	Limits [dBuV/m]
198.08	V	14.31	16.16	2.50	32.97	43.50
258.15	H	12.60	17.76	2.90	33.25	46.00
287.85	H	13.34	19.03	3.15	35.52	46.00
462.00	H	19.38	16.84	3.68	39.90	46.00
468.00	H	20.60	16.93	3.66	41.20	46.00
480.00	H	19.24	17.12	3.64	40.00	46.00

- Receiving Antenna Polarization : **Horizontal, Vertical**
- Test site : **10m anechoic chamber**

Note : ANT Polarization H : Horizontal V : Vertical

5.2.6 Test results(Up & download mode)

Date of test: April 16, 2005

Tested Frequency [MHz]	ANT Pol.	Meter Reading [dBuV]	Antenna Factor [dB/m]	Cable Loss [dB]	Results [dBuV/m]	Limits [dBuV/m]
43.50	H	13.57	13.53	1.36	28.46	40.00
63.75	H	18.78	7.19	1.43	27.40	40.00
118.43	V	16.76	13.04	1.97	31.77	43.50
480.25	H	10.46	17.12	3.64	31.22	46.00
566.00	H	12.18	17.99	4.20	34.37	46.00
797.00	V	7.50	20.89	4.90	33.29	46.00

- Receiving Antenna Polarization : **Horizontal, Vertical**
- Test site : **10m anechoic chamber**

Note : ANT Polarization H : Horizontal V : Vertical

5.2.7 Test results(FM tuner mode)

Date of test: April 16, 2005

T.	Tested	Meter Reading (quasi-peak)		Limits	Margins	
Frequency	Frequency	H	V		H	V
[MHz]	[MHz]	[dBuV/m]	[dBuV/m]		[dBuV/m]	[dBuV/m]
87.5	98.20	-	-	43.50	-	-
	196.39	-	22.89	43.50	-	20.61
	294.59	-	-	46.00	-	-
	392.78	-	-	46.00	-	-
	490.98	-	30.62	46.00	-	15.38
	589.17	-	-	46.00	-	-
	687.37	-	-	46.00	-	-
	785.56	-	-	46.00	-	-
	883.76	-	-	46.00	-	-
	981.95	-	-	54.00	-	-
98.0	108.70	-	-	43.50	-	-
	217.40	-	-	46.00	-	-
	326.10	-	-	46.00	-	-
	434.80	25.69	-	46.00	20.31	-
	543.50	-	27.71	46.00	-	18.29
	652.20	-	-	46.00	-	-
	760.90	-	-	46.00	-	-
	869.60	-	-	46.00	-	-
	978.30	-	-	54.00	-	-
108.0	118.60	-	-	43.50	-	-
	237.20	-	-	46.00	-	-
	355.80	-	-	46.00	-	-
	474.40	-	21.54	46.00	-	24.46
	593.00	27.41	-	46.00	18.59	-
	711.60	-	-	46.00	-	-
	830.20	-	-	46.00	-	-
	948.80	-	-	46.00	-	-
Others	175.80	24.58	-	43.50	18.92	-
	205.50	-	24.00	43.50	-	19.50
	287.85	-	28.49	46.00	-	17.51
	492.50	-	30.62	46.00	-	15.38
	497.75	33.34	-	46.00	12.66	-

* Meter reading: *Loss include*
* Margins : *[Limits] - [Meter reading]*
* Receiving Antenna Mode: *Horizontal, Vertical*
* 10m chamber
* <5 : mean less than 5dB

Result: Pass

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

6. PRODUCT PHOTOGRAPHS

6.1 Front Photograph of EUT



6.2 Rear Photograph of EUT



6.3 Inner Photograph of EUT

