



EMC RESEARCH INSTITUTE



EMI TEST REPORT

Emission of electromagnetic disturbance

Test Report No. : ERI-FCC04-0049
Equipment : MP3 Player
Name of basic model : MP-430TH
Family model : MP-430TE, MP-430TF, MP-430TG
Manufacturer : CENIX DIGICOM CO., LTD.
Applicant : CENIX DIGICOM CO., LTD.
Tested date : 2004. 8. 24 – 8. 28
Issued date : 2004. 8. 30
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.

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

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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 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 : MP3 Player
Model name : MP-430TH
Brand name : -
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 1.5V

3.2 Additional information about the EUT

Class B,

Family Models List:

Basic Model	Variant Model	Differential point	Memory size
MP-430TH (1G)	MP-430TE	Memory size	128M
	MP-430TF		256M
	MP-430TG		512M

3.3 Peripheral equipment

Defined as equipment needed for correct operation of the EUT.

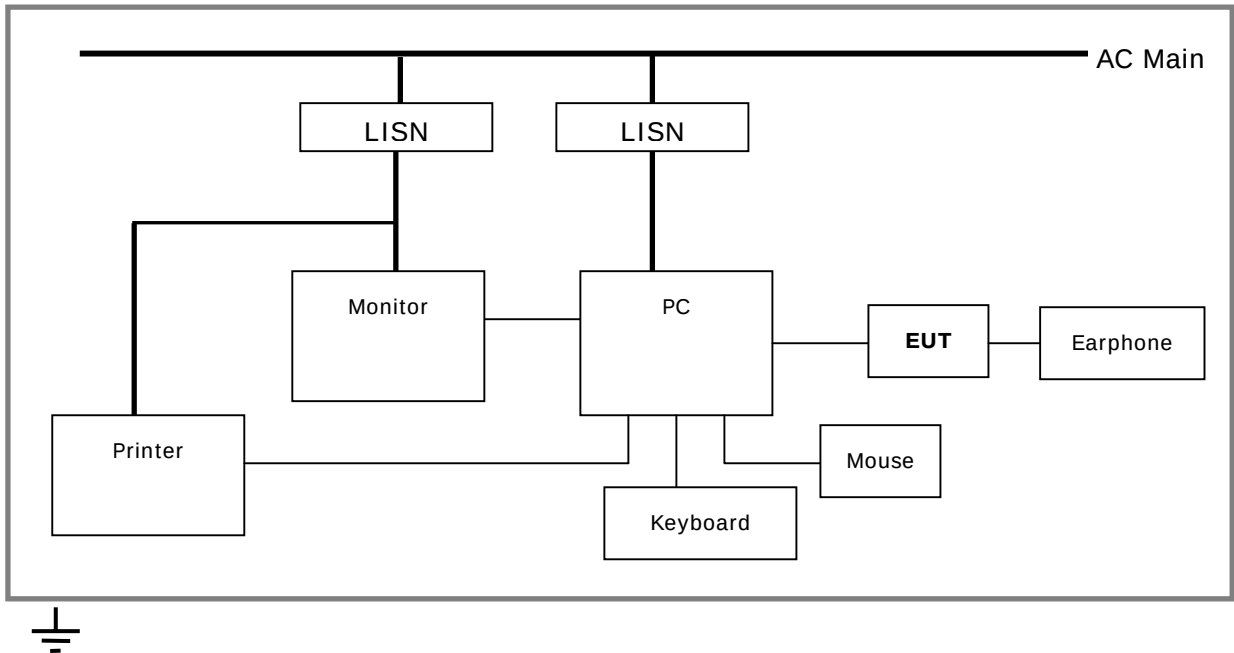
Description	Model No.	Serial No.	Manufacture
PC	MTC2	FSZS91S	Dell
Monitor	PN15VT	P181G80R907989	-
Keyboard	TRI-270	108018331	Solid Year Co., Ltd.
Mouse	M-S48a	LZA95250340	Logitech
Printer	C6247A	CN13V1B1RY	HP

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 & Down load mode, play mode

4.4 Test instrument

Instrument	Model No	Serial No.	Makers	Next cal.date	Used
Test receiver	ESCS30	100022	R&S	2005. 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

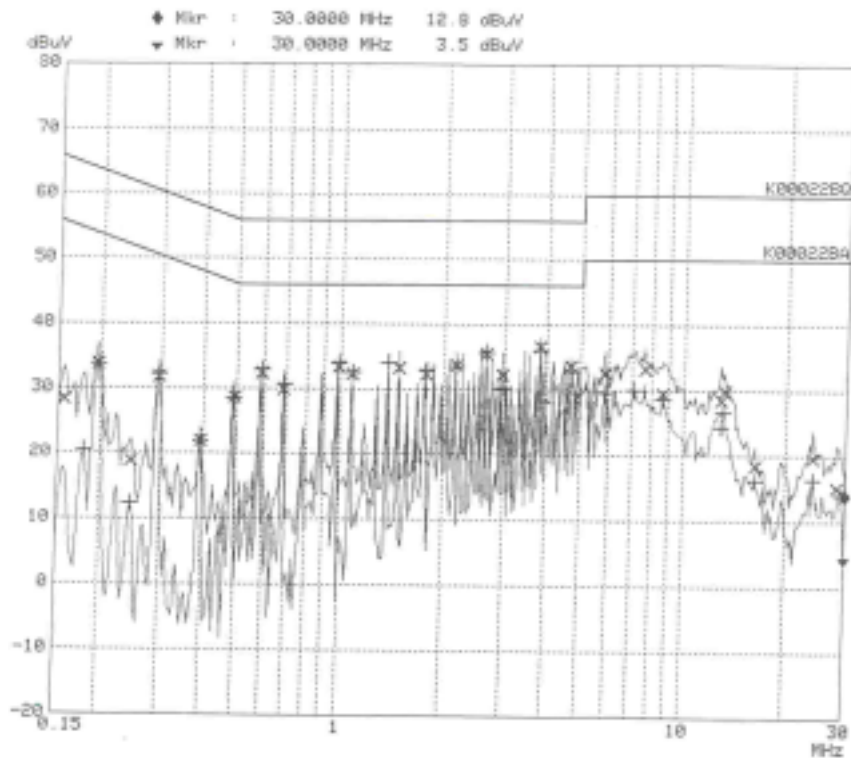
Date of test: Aug 24, 2004.

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

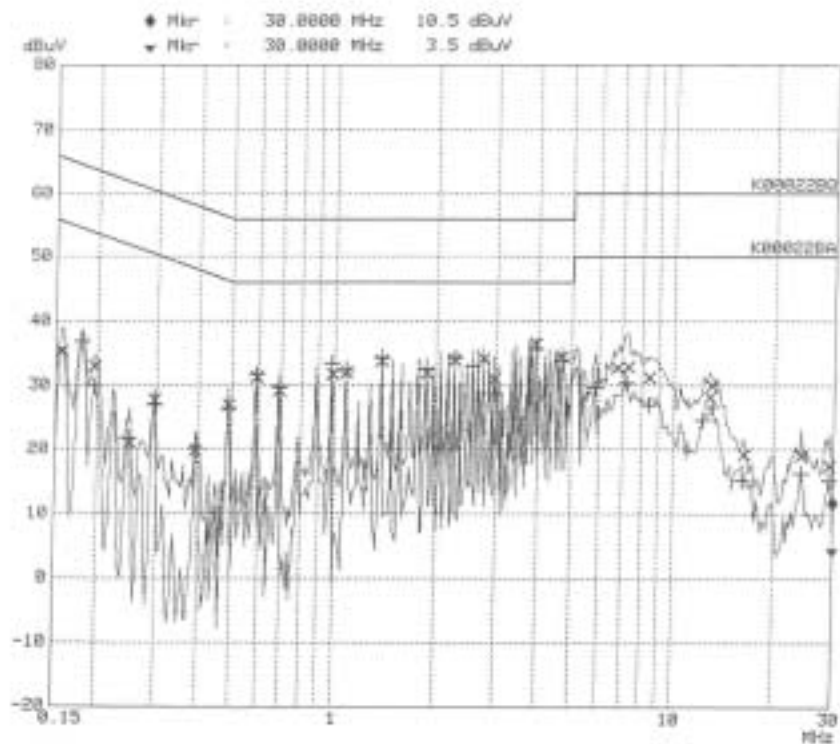
Frequency Range [MHz]	Tested Freq. [MHz]	LISN	Meter Reading		Limits		Margin	
			QP	AV	QP	AV	QP	AV
			[dBuV]		[dBuV]		[dBuV]	
0.15-30	0.156	N	35.4	35.0	65.7	55.7	30.3	20.7
	0.195	H	33.9	33.8	63.8	53.8	29.9	20.0
	0.981	H	33.4	33.0	56.0	46.0	22.6	13.0
	2.253	N	34.0	33.2	56.0	46.0	22.0	12.8
	2.646	H	35.5	35.2	56.0	46.0	20.5	10.8
	2.742	N	34.1	33.0	56.0	46.0	21.9	13.0
	3.820	H	36.6	36.1	56.0	46.0	19.4	9.9
	3.920	N	36.4	35.6	56.0	46.0	19.6	10.4
	4.700	H	33.7	32.9	60.0	50.0	26.3	17.1
	7.640	H	33.3	30.1	60.0	50.0	26.7	19.9

* <5 : mean less than 5dB

* Other frequency keep over 20dB margin.



[Live line]



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[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.

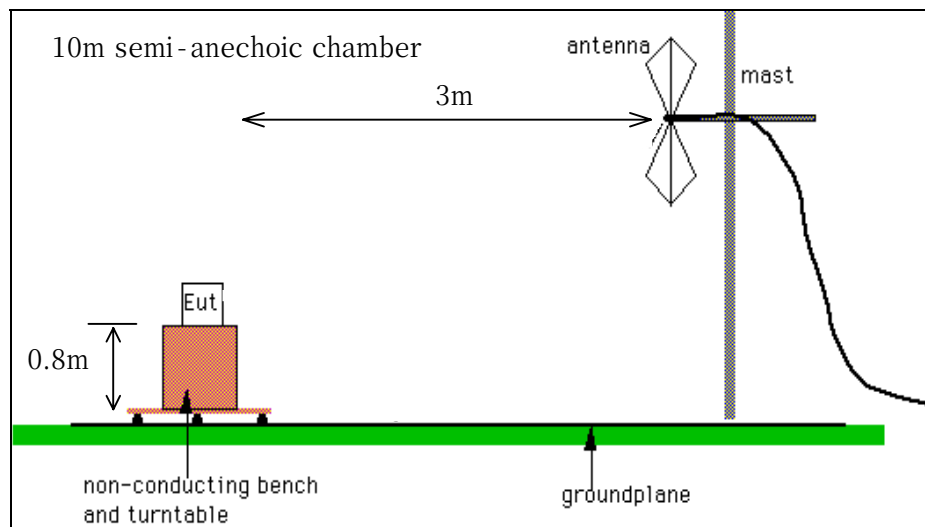
The half-wave dipole antenna was tuned to the frequency found during Preliminary radiated measurements. The EUT, support equipment and Interconnecting cables were re-configured to the set-up to the producing the Maximum emission for the frequency and were placed on top of a 0.8 meter High non-metallic 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, tuner 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: Up & Download)

Date of test: Aug 25, 2004.

Freq (MHz)	Reading (dBuV / m)	Ant	AF (dB)	CL (dB)	Result (dBuV / m)	Limit (dB)	Margin (dB)
384.10	19.03	H	15.17	4.00	38.20	46.00	7.80
445.20	16.63	H	16.27	4.30	37.20	46.00	8.80
456.80	19.36	H	16.64	4.40	40.40	46.00	5.60
468.30	15.46	H	16.64	4.40	36.50	46.00	9.50
480.10	13.74	H	17.06	4.60	35.40	46.00	10.60
505.90	10.26	H	17.34	4.70	32.30	46.00	13.70
752.20	8.62	V	20.28	5.50	34.40	46.00	11.60

* 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: Aug 25, 2004.

Freq (MHz)	Reading (dBuV / m)	Ant	AF (dB)	CL (dB)	Result (dBuV / m)	Limit (dB)	Margin (dB)
358.40	12.59	H	14.31	3.80	30.70	46.00	15.30
370.20	11.19	H	14.31	3.80	29.30	46.00	16.70
384.10	20.33	H	15.17	4.00	39.50	46.00	6.50

* 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 < Test mode: FM tuner >

Date of test: Aug 25, 2004.

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	99.8	3.2	-	43.5	40.3	-
	198.6	2.5	-	43.5	41.0	-
	297.4	-	-	46.0	-	-
	396.2	-	-	46.0	-	-
	495.0	-	-	46.0	-	-
	593.8	-	-	46.0	-	-
	692.6	-	-	46.0	-	-
	791.4	-	-	46.0	-	-
	890.2	-	-	46.0	-	-
	989.0	-	-	54.0	-	-
98.0	108.8	2.7	-	43.5	40.8	-
	217.6	2.0	-	46.0	44.0	-
	326.4	-	-	46.0	-	-
	435.2	-	-	46.0	-	-
	544.0	-	-	46.0	-	-
	652.8	-	-	46.0	-	-
	761.6	-	-	46.0	-	-
	870.4	-	-	46.0	-	-
	979.2	-	-	54.0	-	-
108.0	118.4	3.1	-	43.5	40.4	-
	236.8	1.9	-	46.0	44.1	-
	355.2	-	-	46.0	-	-
	473.6	-	-	46.0	-	-
	592.0	-	-	46.0	-	-
	710.4	-	-	46.0	-	-
	828.8	-	-	46.0	-	-
	947.2	-	-	46.0	-	-
Others	174.5	14.84	-	46.0	12.4	-
	192.0	6.30	-	46.0	20.2	-
	239.9	3.10	-	46.0	22.5	-
	384.1	11.73	-	46.0	15.1	-
* 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.