



TEST REPORT

Report No. : AG018255-001 Date : 2006 July 29

Application No. : LG214761(0)

Client : Mattel Asia Pacific Sourcing Limited
13/F., South Tower, World Finance Centre,
Harbour City, Tsim Sha Tsui,
Kowloon, Hong Kong

Sample Description : One(1) submitted sample(s) stated to be Hyper Scan
of Model No. K4386
Rating : AC 120V to DC 6V adaptor
No. of submitted sample : Two(2) set(s) ***

Date Received : 2006 July 3

Test Period : 2006 July 3 – 2006 July 24

Test Requested : FCC Part 15 Certification.

Test Method : 47 CFR Part 15 (10-1-05 Edition)
ANSI C63.4 – 2003

Test Result : See attached sheet(s) from page 2 to 14.

Conclusion : The submitted sample was found to comply with requirement of FCC Part 15
Subpart B and C.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Danny Chui
Deputy Manager - EL. Division

FCC ID: PIYK4386-06A1T

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1 General Information

1.1 General Description

The equipment under test (EUT) is a multi function product for Hyper Scan. It is operated at 27MHz for MCU oscillation and it has 2unit of 4MB x 16 SDRAM for data storage. For the game controller, the operation clock is 6MHz and it has 10pcs of button keys + single joystick for user play the game. The maximum connection for game controller is 2pcs at the same time.

During the TV game mode, the player can put the game card on the RFID detector to change the game details. The radio frequency for RFID is 13.560MHz and generated by the crystal. The Hyper Scan has a loop antenna for coupling the game card data.

For the USB connection, it can plug in the PC and transfer the data to Hyper Scan.

- SPG290A, 27MHz crystal and associated circuit act as MCU.
- CMD5901 and associated circuit act as motor driver.
- U1, U5, U6 and associated circuit act as SDRAM.
- U1 and associated circuit act as Boot ROM.
- U3, U4, Q12 and associated circuit act as voltage control.
- IC1, IC2, X1 and associated circuit act as RFID.
- W55AD808, SPC11122A and associated circuit act as game controller.



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1.2 Location of the test site

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003. A Semi-Anechoic Chamber Testing Site is set up for investigation and located at:

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
Hong Kong.

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2003. A shielded room is located at :

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
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New Territories,
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1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.
Spectrum Analyser	R&S	FSP30	100628
EMI Test Receiver	R&S	ESCS30	100001
Broadband Antenna	Schaffner	CBL6112B	2692
LISN	R&S	ESH3-Z5	100038
Loop Antenna	EMCO	6502	00056620



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1.4 List of support equipment

1. Intel CPU P4 2.8GHz / 512k cache / 533MHz bus
Model: 9426A657
2. Intel Mother Board
Model: Intel Type: D815GVHZ
3. Seagate Hard-disk
Model: ST340014A, 40GB
4. Proview LCD Monitor
Model: 568
S/N: FYUJ240040133
5. IBM Mouse
Model: 12J3618
S/N: 23-005077
6. Acer Keyboard
Model: 6511-VA
7. Hewlett Packard LaserJet 2100TN
Model: C4172A
S/N: SGGS038577
8. PenPower Handwriting System
Model: PP403N
S/N: PT9122239
9. LCD TV
Model: 17074FS/97



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2 Description of the radiated emission test

2.1 Test Procedure

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is placed 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1 m above the ground.

The device was rotated through three orthogonal axes to determine which attitude and configuration produce the highest emission during measurement.

2.2 Test Result

Peak Detector data was measured unless otherwise stated.

The harmonic emissions meeting the requirement of section 15.225 are based on measurements employing the CISPR quasi-peak detector below 1000MHz and average detector for frequencies above 1000MHz.

* Emissions appearing within the restricted bands shall follow the requirement of section 15.205.

All operation modes had been tested and the emission is below section 15.209 limit.

It was found that the EUT meet the FCC requirement.



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2.3 Radiated Emission Measurement Data

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Operation Mode: RFID Mode

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dB μ V/m)	Antenna and Cable factor (dB)	Field Strength (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
13.560	H	44.9	10.7	55.6	124.0	-68.4
27.134	H	4.3	18.4	22.7	40.0	-17.3
40.681	H	10.0	12.9	22.9	40.0	-17.1
52.382	H	14.9	8.1	23.0	40.0	-17.0
69.352	H	17.2	5.7	22.9	40.0	-17.1
83.762	H	15.9	7.2	23.1	40.0	-16.9
97.532	H	14.0	9.2	23.2	43.5	-20.3
*108.012	H	28.5	11.0	39.5	43.5	-4.0
*125.978	H	11.5	12.4	23.9	43.5	-19.6
138.721	H	10.7	12.4	23.1	43.5	-20.4



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Radiated emission

pursuant to

the requirement of FCC Part 15 subpart B

Operation Mode: TV Game

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dB μ V/m)	Antenna and Cable factor (dB)	Field Strength (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
32.416	H	12.4	18.4	30.8	40.0	-9.2
99.552	H	22.3	9.2	31.5	43.5	-12.0
108.008	H	26.4	11.0	37.4	43.5	-6.1
117.042	H	20.7	11.0	31.7	43.5	-11.8
122.316	H	16.6	12.4	29.0	43.5	-14.5
158.460	H	17.6	11.9	29.5	43.5	-14.0
201.720	H	19.6	9.7	29.3	43.5	-14.2
216.020	H	29.7	9.7	39.4	46.0	-6.6
222.430	H	22.4	9.7	32.1	46.0	-13.9
324.040	H	23.8	14.9	38.7	46.0	-7.3



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Radiated emission

pursuant to

the requirement of FCC Part 15 subpart B

Operation Mode: PC connection

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dB μ V/m)	Antenna and Cable factor (dB)	Field Strength (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
40.272	V	20.2	12.9	33.1	40.0	-6.9
101.840	H	20.0	11.0	31.0	43.5	-12.5
108.010	H	22.4	11.0	33.4	43.5	-10.1
144.024	H	20.3	11.9	32.2	43.5	-11.3
171.820	H	20.6	10.4	31.0	43.5	-12.5
216.667	H	20.4	9.7	30.1	46.0	-15.9
239.720	H	20.9	9.7	30.6	46.0	-15.4
302.080	H	17.1	14.9	32.0	46.0	-14.0
324.953	H	-19.8	14.9	34.7	46.0	-11.3
432.080	H	21.3	17.7	39.0	46.0	-7.0



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3 Description of the Line-conducted Test

3.1 Test Procedure

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2003. The EUT was setup as described in the procedures, and both lines were measured.

3.2 Test Result

The PC connected mode has been tested. The EUT is connecting with an USB cable and all accessory parts for measurement. The data was indicated in Appendix.

3.3 Graph and Table of Conducted Emission Measurement Data

For electronic filing, the document are saved with filename TestRpt2.pdf.



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4 Photograph

4.1 Photographs of the Test Setup for Radiated Emission and Conduction Emission

For electronic filing, the photos are saved with filename TSup1.jpg to TSup10.jpg

4.2 Photographs of the External and Internal Configurations of the EUT

For electronic filing, the photos are saved with filename ExPho1.jpg to ExPho4.jpg and InPho5.jpg to InPho10.jpg.



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5 Supplementary document

The following document were submitted by applicant, and for electronic filing, the document are saved with the following filenames:

Document	Filename
ID Label/Location	LabelSmp.jpg
Block Diagram	BlkDia.pdf
Schematic Diagram	Schem.pdf
Users Manual	UserMan.pdf
Operational Description	OpDes.pdf

5.1 Bandwidth

The plot on saved in TestRpt3.pdf shows the field strength of any emission is below section 15.255(b) and 15.255(c) limit.

5.2 Duty cycle

N/A

5.3 Transmission time

N/A

5.4 Frequency Error

The following table shows the stability of the operation frequency fulfill section 15.225(e) requirement. The variable temperature is -20 to +50 degrees and supply voltage is 85% to 115% of operated voltage.

Test Condition	Voltage (V)	Required Temperature	Measured frequency (MHz)	Tolerance (%)	Limit (%)
Lower Extreme Temp	6.0	-20 °C	13.560132	-0.000442	± 0.01
Normal Temp	5.1	+20 °C	13.560138	0	± 0.01
Normal Temp	6.0	+20 °C	13.560138	Reference value	Reference value
Normal Temp	6.9	+20 °C	13.560138	0	± 0.01
Higher Extreme Temp	6.0	+50 °C	13.560040	-0.000722	± 0.01



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6 Appendices

A1	Photos of the set-up of Radiated Emissions	2	pages
A2	Photos of the set-up of Conducted Emissions	3	pages
A3	Photos of External Configurations	2	pages
A4	Photos of Internal Configurations	5	pages
A5	Conducted Emission Test Result	2	pages
A6	ID Label/Location	1	page
A7	Block Diagram	1	page
A8	Schematics	9	pages
A9	User Manual	9	pages
A10	Operation Description	1	page

***** End of Report *****