CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No.	:	AL024348-001	Date :	2009-07-03
Application No.	:	LL217056(0)		
Applicant	:	Tronicbros & Eclat Createurs Holdings Room 1210, 12/F Metropolis Tower, 10 Metropolis Drive, Hunghom, Kowloon, Hong Kong.		
Sample Description	:	One(1) submitted sample(s) stated to be Mini Phantom Remote – Wireless Remote Digital Cell of Model No. MR302 and MR304 Radio Frequency : 418MHz Transmitter Rating : 4 x 1.5V AAA size batteries No. of submitted sample : One (1) set (s)		
Date Received	:	2009-06-17		
Test Period	:	2009-06-17 to 2009-06-23		
Test Requested	:	FCC Part 15 Certification.		
Test Method	:	47 CFR Part 15 (10-1-08 Edition) ANSI C63.4 – 2003		
Test Result	:	See attached sheet(s) from page 2 to 11.		
Conclusion	:	The submitted sample was found to comply with requirement of FCC Part 15 Subpart C.		
Remark	:	The two models MR302 and MR304 are representing the same submitted sample with two Sound Sticks.		

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Mr. Wong Lap-pong, Andrew
Assistant Manager
Electrical Division

FCC ID: RWX09MR302304TX

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1 General Information

1.1 General Description

The equipment under test (EUT) is a transmitter for Mini Phantom Remote – Wireless Remote Digital Cell. It operates at 418MHz and the oscillation of radio control is generated by a crystal. The EUT is powered by 4 x 1.5V AAA size batteries. There are thirteen buttons at the Transmitter. When it switched "ON" and pressed the button keys once, it will transmit radio signal to receiver through Channel 1, Channel 2 or Channel 3. The three different channels are operated in same radio frequency; and the difference is the duty cycle of modulation.

The antenna is permanently attached in EUT and the radio output power is unable to adjust.

The brief circuit description is saved with filename: OpDes.pdf

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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 :

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9 – 13 Wong Chuk Yeung Street,
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1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due Date
EMI Test Receiver	R&S	ESCI	100152	2009 December 02
Spectrum Analyzer	R&S	FSP30	100628	2009 September 23
Bilog Antenna	Schaffner	CBL6112B	2718	2010 August 04
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-531	2010 May 08

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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.

"#" means emissions appearing within the restricted bands shall follow the requirement of section 15.205.

The Frequencies from Fundamental up to that tenth harmonics were investigated, and emissions more 20dB below limited were not reported. Thus, those highest emissions were presented in next page (section 2.3).

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

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV/m)	Antenna and Cable factor (dB)	Average Factor (dB)	Field Strength (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
417.920	H	47.2	19.4	-10.6	56.0	80.3	-24.0
835.836	H	27.8	23.6	-	51.4	60.3	-8.9
1253.766	V	21.1	27.3	-	48.4	60.3	-11.9
#1671.692	H	21.5	30.8	-	52.3	54.0	-1.7
2089.596	V	23.1	31.8	-	54.9	60.3	-5.4
2507.516	H	17.7	33.9	-	51.6	60.3	-8.7
2925.436	H	12.3	34.8	-	47.1	60.3	-13.2
3343.500	H	12.1	35.4	-	47.5	60.3	-12.8
#3761.264	H	12.6	36.6	-	49.2	54.0	-4.8
#4179.180	H	11.0	38.0	-	49.0	54.0	-5.0

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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

No measurement is required as the EUT is a battery-operated product.

3.3 Graph and Table of Conducted Emission Measurement Data

Not Applicable

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4 Photograph

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

For electronic filing, the photos are saved with filename TSup1.jpg to TSup2.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 ExPho2.jpg and InPho1.jpg to InPho2.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 TestRpt2.pdf shows the fundamental emission is confined in the specified band. The bandwidth requirement is 0.25% x 418MHz = 1.045MHz.

5.2 Duty cycle

The duty cycle is simply the on-time divided by the period:

The duration of one cycle = 66.0ms

Effective period of the cycle = (0.88 x 18)ms + (1.88 x 2)ms
= 19.6ms

Duty Cycle = 19.6 / 66.0
= 0.296

Therefore, the average factor is found by $20 \log_{10} 0.296 = -10.6$dB

5.3 Transmission time

The plot on saved in TestRpt4.pdf shows the duration of each transmission is 980.0ms and deactivate the transmission automatically for manually operated.

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6 Appendices

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A6.	Average Factor	2	pages
A7.	Transmission Period	1	page
A8.	Block Diagram	1	page
A9.	Schematics Diagram	3	pages
A10.	User Manual	16	pages
A11.	Operation Description	1	page

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

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