CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No.	:	AK022271-001	Date :	2008-07-26

Application No. : LK216553(0)

Client : Bicygnals Limited
8 The Green, Richmond,
Surrey, TW9 1PL,
United Kingdom

Sample Description : One(1) submitted sample(s) stated to be 2.4GHz Wireless Bike Light of Model No.BIC241
Radio Frequency : 2403MHz ~ 2479MHz Transceiver
Rating : 4 x 1.5V AAA size batteries
No. of submitted sample : One (1) piece(s) ***

Date Received : 2008-06-06.

Test Period : 2008-06-24 to 2008-07-21.

Test Requested : FCC Part 15 Certification.

Test Method : 47 CFR Part 15 (10-1-07 Edition)
ANSI C63.4 – 2003

Test Result : See attached sheet(s) from page 2 to 12.

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

Remark : The receiver within the transceiver is subject to verification procedure.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Andrew Wong
Senior Technical Officer
Electrical Division

FCC ID: WFDBIC241R01

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TEST REPORT

Report No. : AK022271-001 Date : 2008-07-26

Table of Contents

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TEST REPORT

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1 General Information

1.1 General Description

The equipment under test (EUT) is a transceiver for 2.4GHz Wireless Bike Light. It operates at 2403MHz ~ 2479MHz and the oscillation of MCU is generated by a crystal. The EUT is powered by 4 x 1.5V AAA size batteries. There is a button on the rear light. When the rear light is synchronized with the front light, the cyclist can control the front light and rear light. There are three sets of flash lights on the rear light rear light, right hand side, centre and left hand side.

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

The brief circuit description is listed as follows:

- STO68 and associated circuit act as a MCU.
- SPT0024 and associated circuit act as a RF module.

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TEST REPORT

Report No. : AK022271-001 Date : 2008-07-26

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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TEST REPORT

Report No. : AK022271-001 Date : 2008-07-26

1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due Date
Spectrum Analyzer	R&S	FSP30	100628	2008 July 15
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-531	2010 May 19
Broadband Pre-Amplifier	Schwarzbeck	BBV 9718	9718-119	2010 May 08

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TEST REPORT

Report No. : AK022271-001 Date : 2008-07-26

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

Both Average and Peak Detector data were 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 the tenth harmonics were investigated. The emissions which lower than the radiated ambiance were not reported. Thus, those highest emissions were presented in next pages.

It was found that the EUT meet the FCC requirement.

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TEST REPORT

Report No. : AK022271-001 Date : 2008-07-26

2.3 Radiated Emission Measurement Data

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Rear Light with Peak Detector

	Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV/m)	Transducer factor (dB)	Field Strength (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
First Channel	2402.886	V	91.4	-6.8	84.6	114.0	-29.4
	#4805.647	H	27.3	1.0	28.3	74.0	-45.7
	7208.535	H	38.8	9.9	48.7	74.0	-25.3
Middle Channel	2439.848	V	90.9	-6.8	84.1	114.0	-29.9
	#4879.761	H	28.2	1.0	29.2	74.0	-44.8
	#7319.360	H	39.6	9.9	49.5	74.0	-24.5
Last Channel	2478.823	V	88.8	-6.8	82.0	114.0	-32.0
	#4957.575	H	28.9	1.0	29.9	74.0	-44.1
	#7436.529	H	45.9	9.9	55.8	74.0	-18.2

Remark: Transducer Factor = Antenna Factor + Cable Loss - Gain of Pre-Amplifier

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TEST REPORT

Report No. : AK022271-001 Date : 2008-07-26

2.3 Radiated Emission Measurement Data (Con't)

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Rear Light with Average Detector

	Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV/m)	Transducer factor (dB)	Field Strength (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
First Channel	2402.886	V	91.3	-6.8	84.5	94.0	-9.5
	#4805.647	H	24.4	1.0	25.4	54.0	-28.6
	7208.535	H	34.2	9.9	44.1	54.0	-9.9
Middle Channel	2439.848	V	90.6	-6.8	83.8	94.0	-10.2
	#4879.761	H	25.9	1.0	26.9	54.0	-27.1
	#7319.360	H	33.6	9.9	43.5	54.0	-10.5
Last Channel	2478.823	V	88.6	-6.8	81.8	94.0	-12.2
	#4957.575	H	26.6	1.0	27.6	54.0	-26.4
	#7436.529	H	40.6	9.9	50.5	54.0	-3.5

Remark: Transducer Factor = Antenna Factor + Cable Loss - Gain of Pre-Amplifier

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TEST REPORT

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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 Conduction 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 plots saved in TestRpt2.pdf show the first and last channels are confined in the specific band. It also shows that the band edges met 15.249(d) requirements at 2.4GHz and 2.4835GHz.

5.2 Duty cycle

Not Applicable

5.3 Transmission time

Not Applicable

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TEST REPORT

Report No. : AK022271-001 Date : 2008-07-26

6 Appendices

A1.	Photos of the set-up of Radiated Emissions	1	page
A2.	Photos of External Configurations	1	page
A3.	Photos of Internal Configurations	1	page
A4.	ID Label/Location	1	page
A5.	Bandwidth Plot	2	pages
A6.	Block Diagram	1	page
A7.	Schematics Diagram	1	page
A8.	User Manual	2	pages
A9.	Operation Description	2	pages

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

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