



**CMA Testing
and Certification
Laboratories**
廠商會檢定中心

TEST REPORT

Report No. : AG035424-001 Date : 2007 January 16

Application No. : LG227715(2)

Applicant : ManWa Electronic Mfg Ltd.
2/F., Blk B, 2-4 Fuk Keung Industrial Building,
66-68 Tong Mei Road, Mongkok,
Kowloon, Hong Kong

Sample Description : One(1) submitted sample(s) stated to be Weather Band AM/FM Radio With
Dual LED Lanterns of Model No. FR3807DP
Rating : AC 120 to DC 12V adaptor
6 x 1.5V C size batteries
No. of submitted sample : Two (2) piece(s) ***

Date Received : 2006 December 11

Test Period : 2006 December 11 – 2007 January 16

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.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : 
Danny Chui
Deputy Manager - EL. Division

FCC ID: BHDFR3807DP

Page 1 of 14



TEST REPORT

Report No. : AG035424-001

Date : 2007 January 16

Table of Contents

1	General Information	3
1.1	General Description	3
1.2	Location of the test site	4
1.3	List of measuring equipment.....	5
2	Description of the radiated emission test	6
2.1	Test Procedure.....	6
2.2	Test Result.....	6
2.3	Radiated Emission Measurement Data	7
3	Description of the Line-conducted Test.....	11
3.1	Test Procedure.....	11
3.2	Test Result.....	11
3.3	Graph and Table of Conducted Emission Measurement Data	11
4	Photograph	12
4.1	Photographs of the Test Setup for Radiated Emission and Conduction Emission	12
4.2	Photographs of the External and Internal Configurations of the EUT.....	12
5	Supplementary document.....	13
5.1	Bandwidth	13
5.2	Duty cycle	13
5.3	Transmission time	13
6	Appendices.....	14



TEST REPORT

Report No. : AG035424-001

Date : 2007 January 16

Test Result :

1 General Information

1.1 General Description

The equipment under test (EUT) is a multi-function product and is powered by 6 x 1.5 C size batteries and DC 12V. The EUT functions are DLL AM, FM and Weather Band, Audio amplifier and LED Lanterns.

The brief circuit description is as follows:

- IC7 CD2003GP(FM - 10.7MHz / AM - 450kHz) associated circuit acts AM/FM RF/OSC/IF amplifier mono decoder.
- IC2 YD3361(28.862MHz / 450kHz) and associated circuit acts WB RF/OSC/IF amplifier.
- IC3 D2822M and associated circuit acts as Audio amplifier.
- U1 SCS3610(32.768kHz) and associated circuit acts as clock display.
- Q1 D882 and associated circuit acts as power supply.

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



**CMA Testing
and Certification
Laboratories**
廠商會檢定中心

TEST REPORT

Report No. : AG035424-001

Date : 2007 January 16

Test Result :

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,
Fo Tan, Shatin,
New Territories,
Hong Kong.



TEST REPORT

Report No. : AG035424-001

Date : 2007 January 16

Test Result :

1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.
EMI Test Receiver	R&S	ESCI	100152
EMI Test Receiver	R&S	ESCS30	100001
Broadband Antenna	Schaffner	CBL6112B	2718
Signal Generator	IFR	2023B	202302/938
LISN	R&S	ESH3-Z5	100010

Support equipment: AC120V / DC12V adaptor model: RHD120085 (supplied by client)



TEST REPORT

Report No. : AG035424-001

Date : 2007 January 16

Test Result :

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.

2.2 Test Result

All other measurements are well below the limit. Thus, those highest emissions were presented in next page.

The emissions meeting the requirement of section 15.109 are based on measurements employing the CISPR quasi-peak detector below 1000MHz and average detector for frequencies above 1000MHz.

It was found that the EUT meet the FCC requirement.



TEST REPORT

Report No. : AG035424-001

Date : 2007 January 16

Test Result :

2.3 Radiated Emission Measurement Data

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Operation Mode: FM

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)
98.628	H	27.5	9.5	37.0	43.5	- 6.5
109.048	H	29.3	11.1	40.4	43.5	- 3.1
118.328	H	29.2	11.1	40.3	43.5	- 3.2
197.228	H	20.2	9.5	29.7	43.5	- 13.8
218.056	H	28.0	9.8	37.8	46.0	- 8.2
236.664	H	31.7	9.8	41.5	46.0	- 4.5
295.884	H	16.2	13.9	30.1	46.0	- 15.9
327.072	H	19.7	14.9	34.6	46.0	- 11.4
354.984	H	15.6	14.9	30.5	46.0	- 15.5
436.100	H	17.5	17.9	35.4	46.0	- 10.6



TEST REPORT

Report No. : AG035424-001

Date : 2007 January 16

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Operation Mode: 162.400 MHz weather band and light on

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV/m)	Antenna and Cable factor (dB)	Field Strength (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
57.728	H	13.3	8.4	21.7	40.0	- 18.3
86.596	H	24.8	7.3	32.1	40.0	- 7.9
115.462	H	24.7	11.1	35.8	43.5	- 7.7
144.330	H	13.9	12.0	25.9	43.5	- 17.6
173.190	H	19.4	10.7	30.1	43.5	- 13.4
202.048	H	7.8	9.8	17.6	43.5	- 25.9
230.912	H	9.3	9.8	19.1	46.0	- 26.9
259.776	H	5.5	13.9	19.4	46.0	- 26.6
288.640	H	4.4	13.9	18.3	46.0	- 27.7
317.504	H	4.3	14.9	19.2	46.0	- 26.8



TEST REPORT

Report No. : AG035424-001

Date : 2007 January 16

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Operation Mode: 162.475 MHz weather band and light on

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)
57.738	H	13.1	8.4	21.5	40.0	- 18.5
86.603	H	24.6	7.3	31.9	40.0	- 8.1
115.472	H	24.5	11.1	35.6	43.5	- 7.9
144.342	H	13.8	12.0	25.8	43.5	- 17.7
173.205	H	19.5	10.7	30.2	43.5	- 13.3
202.065	H	7.7	9.8	17.5	43.5	- 26.0
230.932	H	9.1	9.8	18.9	46.0	- 27.1
259.798	H	5.6	13.9	19.5	46.0	- 26.5
288.665	H	4.3	13.9	18.2	46.0	- 27.8
317.531	H	4.1	14.9	19.0	46.0	- 27.0



TEST REPORT

Report No. : AG035424-001

Date : 2007 January 16

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Operation Mode: 162.550 MHz weather band and light on

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)
57.743	H	13.5	8.4	21.9	40.0	- 18.1
86.609	H	24.9	7.3	32.2	40.0	- 7.8
115.480	H	24.8	11.1	35.9	43.5	- 7.6
144.352	H	13.8	12.0	25.8	43.5	- 17.7
173.217	H	19.5	10.7	30.2	43.5	- 13.3
202.079	H	7.7	9.8	17.5	43.5	- 26.0
230.948	H	9.2	9.8	19.0	46.0	- 27.0
259.816	H	5.6	13.9	19.5	46.0	-26.5
288.685	H	4.5	13.9	18.4	46.0	-27.6
317.553	H	4.4	14.9	19.3	46.0	- 26.7



TEST REPORT

Report No. : AG035424-001

Date : 2007 January 16

Test Result :

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 EUT connecting with AC/DC adaptor and line in cable produced the maximum emission. The measurement data was indicated in Appendix.
The result showed that the EUT met the FCC requirement.

3.3 Graph and Table of Conducted Emission Measurement Data

For electronic filing, the documents are saved with filename TestRpt2.



**CMA Testing
and Certification
Laboratories**
廠商會檢定中心

TEST REPORT

Report No. : AG035424-001

Date : 2007 January 16

Test Result :

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 TSup5.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 InPho1.jpg to InPho10.jpg.



TEST REPORT

Report No. : AG035424-001

Date : 2007 January 16

Test Result :

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	labelSmp1.jpg – labelSmp2.jpg
Block Diagram	BlkDia.pdf
Schematic Diagram	Schem.pdf
Users Manual	UserMan.pdf
Operational Description	OpDes.pdf

5.1 Bandwidth

N/A

5.2 Duty cycle

N/A

5.3 Transmission time

N/A



TEST REPORT

Report No. : AG035424-001

Date : 2007 January 16

6 Appendices

A1	Photos of the set-up of Radiated Emissions	1	Page
A2	Photos of the set-up of Conducted Emissions	2	Pages
A3	Photos of External Configurations	2	Pages
A4	Photos of Internal Configurations	5	Pages
A5	ID Label/Location	2	Pages
A6	Conducted Emission Measurement Data	4	Pages
A7	Block Diagram	1	Page
A8	Schematics Diagram	2	Pages
A9	User Manual	7	Pages
A10	Operation Description	1	Page

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